



**DECLARATION
FOR THE

EXPLANATION OF SIGNIFICANT DIFFERENCES**

SITE NAME AND LOCATION:

The Pownal Tannery Superfund Site is located in the Town of Pownal, Vermont.

IDENTIFICATION OF LEAD AND SUPPORT AGENCIES:

Lead Agency: **United States Environmental Protection Agency**

Support Agency: **Vermont Department of Environmental Conservation**

STATEMENT OF PURPOSE:

This decision document sets forth the basis for the determination to issue the attached Explanation of Significant Differences (ESD) for the Pownal Tannery Superfund Site (Site) in Pownal, Vermont.

STATUTORY BASIS FOR ISSUANCE OF ESD:

Under Section 117(c) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C § 9617(c), if the U.S. Environmental Protection Agency (EPA) determines that the remedial action being undertaken at a site differs significantly from the Record of Decision (ROD) for that site, EPA shall publish an Explanation of Significant Differences (ESD), which explains the change between the remedial action that is being undertaken and the remedial action set forth in the ROD, and the reasons such changes are being made. Section 300.435 (c) of the National Contingency Plan (NCP), 40 C.F.R 300.435(c), and EPA guidance (Office of Solid Waste and Emergency Response (OSWER) Directive 9200.1-23-P, July 1999), indicate that an ESD, rather than a ROD amendment, is appropriate where the adjustments being made to the ROD are significant but do not fundamentally alter the remedy with respect to scope, performance or cost. EPA has determined that the adjustments to the ROD provided in this ESD are significant but do not fundamentally alter the overall remedy for the Site with respect to scope, performance, or cost. Therefore, this ESD is being properly issued.

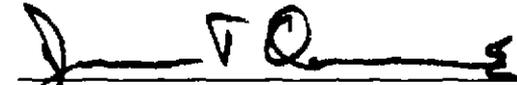
In accordance with Section 117(d) of CERCLA and Section 300.825(a) of the NCP, this ESD will become part of the Administrative Record, which is available for public review at the EPA Region 1 Record Center in Boston, Massachusetts and the Solomon Wright Public Library in Pownal, Vermont.

OVERVIEW OF THE ESD:

Based on the information and data generated since the issuance of the 2002 ROD and the 2006 Remedial Action Report, the ROD has been modified. Specifically, the extent of the Institutional Controls required for the Site have been further characterized and defined, the monitoring requirements for the Operation and Maintenance (O&M) component of the remedy have been detailed, and a determination that a limited portion of a protective earthen berm adjacent to the Hoosic River and the Lagoon Area Landfill constructed pursuant to the 2002 ROD is an integral component of the remedy (institutional controls, long-term O&M, and Five Year Reviews). The State of Vermont has reviewed and commented on this ESD and concurs with its issuance.

DECLARATION:

For the foregoing reasons, by my signature below, I approve the issuance of an Explanation of Significant Differences for the Pownal Tannery Superfund Site in Pownal, Vermont, and the changes stated therein.



James T. Owens, III, Director
Office of Site Remediation and Restoration



Date

EXPLANATION OF SIGNIFICANT DIFFERENCES

Pownal Tannery Superfund Site Pownal, Vermont

1. INTRODUCTION

A. Site Name and Location

Site Name: **Pownal Tannery Superfund Site**

Site Location: **Town of Pownal, Vermont**

B. Lead and Support Agencies

Lead Agency: **United States Environmental Protection Agency (EPA)**

Support Agency: **Vermont Department of Environmental Conservation (VT DEC)**

C. Legal Authority

Under Section 117 (c) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)¹, Section 300.435 (c) of the National Contingency Plan (NCP)², U.S. Environmental Protection Agency (EPA) guidance³, if EPA determines that differences in the remedial action significantly change, but do not fundamentally alter the remedy selected in the Record of Decision (ROD) signed in September 2002, with respect to scope, performance, or cost, EPA shall publish an Explanation of the Significant Differences (ESD) between the remedial action taken and the remedial action set forth in the 2002 ROD and shall include the reasons such changes are being made.

¹ 42 U.S.C. § 9617(c).

² 40 C.F.R. § 300.435 (c).

³ Office of Solid Waste and Emergency Response (OSWER) Directive 9200.1-23P

D. Summary of Circumstances Necessitating this Explanation of Significant Differences

Since the 2002 ROD was issued, and the 2005 Remedial Action Cleanup Report was signed, additional information has become available. This ESD specifies 1) what actions are required to ensure that Institutional Controls are implemented at the Site, and 2) addresses issues related to a 2005 flood event which damaged a portion of the former facility's earthen berm adjacent to the Hoosic River. Parts of the undamaged berm provides a protective cover over a limited area of soil contamination on the Site.

E. Availability of Documents

In accordance with Section 117 (d) of CERCLA, this ESD will become part of the Administrative Record (Attachment E). The ESD, supporting documentation for the ESD, and the Administrative Record are available to the public at the following locations and may be reviewed at the times listed:

U.S. Environmental Protection Agency Records Center 1 Congress Street
Boston, MA 02114 Weekdays from 10:00 am to 1:00 pm and from 2:00 pm to 5:00 pm
(617) 918-1440

Internet users may access general Superfund Program information on EPA's Superfund Web page at:

<http://www.epa.gov/superfund>

or

Solomon Wright Public Library
North Pownal, VT
(Hours vary, call ahead for schedule)
(802) 823-7757

2. BACKGROUND

The 2002 ROD set forth the selected remedy for the Lagoon Area portion of the Site which involved the excavation and consolidation of tannery lagoon waste, construction of a low permeability cap over the consolidated wastes on-site, long-term monitoring of river sediments and groundwater, Five-Year Reviews, and institutional controls to prevent groundwater consumption and excavation or disturbance of sludge waste in the lagoon area. The remedy also encompassed operation and maintenance (O&M) activities at a nearby tannery sludge landfill

(Dean Road Landfill) and demolition and off-site disposal of the former tannery building site. Those actions were addressed by EPA under a previous March 1999 Non-Time Critical Removal action (NTCRA).

The final 2002 remedy addressed contamination at the Lagoon Area only and was intended to be the final action to address all current and future potential risks caused by Site wastes. The overall cleanup approach was intended to prevent direct contact risks with contaminated sludge/soil, to decrease further off-site migration of Lagoon Area Landfill waste that could occur through leaching into the ground water or from erosion to the adjacent Hoosic River through flooding events, and to prevent ingestion of the groundwater from the area under the Landfill. (see Figure 1 for identification of all Site locations)

As a result of the previous removal actions, the soil and sludge contamination in the Lagoon Area was the only media requiring final remedial action. The groundwater, except for the areas under the Lagoon Area and Dean Road Landfills, was determined not to present a significant human health concern.

3. SUMMARY OF SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

All site history, nature and extent of contamination, as well as the selected actions for the Site are documented in the November 2001 Removal Action Report and the September 2005 Remedial Action Report. The Vermont Department of Environmental Conservation (VT DEC) and EPA determined that the remedy as described in the 2002 remedial action for the lagoon area was Operational and Functional on September 28, 2005.

4. BASIS FOR DOCUMENT

In October of 2005, a significant flood event altered a portion of the former facility's earthen berm that is located between the newly constructed Lagoon Area Landfill and the Hoosic River (Attachment A and Figure 2). While this flooding event did not damage the Landfill, it damaged the surrounding access road to the Landfill. The effects of the berm breach were likely exacerbated by the presence of a large soil stockpile in the engineered flood conveyance area. This stockpile was created without the knowledge of EPA or the VTDEC by the contractor building a town waste water treatment facility on-site. The Town of Pownal removed the stockpile and repaired the access road. It was determined by EPA and the VT DEC that the section of the berm that eroded did not alter the protectiveness of the remedy and should not be repaired. Furthermore, the breaching of the berm did not impair flood storage capacity or the protection of the Lagoon Area Landfill from future storm events (Attachment B). EPA and the VT DEC acknowledged that a portion of the remaining berm, not affected by the

2005 flood, has a small volume of waste under the berm that could not be addressed by the remediation and therefore requires that the limited section of the berm be maintained and that institutional controls be established to limit future disturbance/excavation in that area (e.g., deed restrictions) (Figure 2).

EPA has completed its evaluation and has determined that the remedy selected in the 2002 ROD should be modified to address the above incidence and to further clarify what additional locations at the Site warrant institutional controls (as described further in Section 5 below).

5. DESCRIPTION OF SIGNIFICANT DIFFERENCES

The 2002 ROD required that institutional controls be imposed to 1) prevent the disturbance of the capped soil and sludge in the Lagoon area, and 2) to prevent the ingestion of groundwater from beneath the five existing lagoons. While the ROD did not include a requirement for institutional controls for the other parcels at the Site (that were addressed through the 1999 NTCRA), EPA has determined that institutional controls are necessary at all parcels at the Site where waste has been left in place. This specifically includes, deed restrictions at the Dean Road Landfill and the Lagoon Area Landfill to protect the integrity of the caps and other components of the remedy, groundwater use restrictions, and deed restrictions in portions of the Lagoon Area berm where waste is still present to prevent future disturbance and/or excavation.

The modified remedy is expected to have the same outcome as the original remedy presented in the 2002 ROD; which is to be comprehensively protective of human health and the environment at the Site.

Pursuant to a July 2002 Memorandum of Agreement between the EPA and the VT DEC, and a July 2003 Superfund State Contract between EPA and the VT DEC, the VT DEC has assumed responsibility for all O&M and sampling activities. The April 2005 O&M plan (Attachment C) encompasses all O&M requirements detailed in the NTCRA and the ROD. This O&M plan is currently in effect, and will be updated in 2007, based upon the data collected to date.

6. SUPPORT AGENCY COMMENTS

The VT DEC has participated with EPA in developing the modifications to the selected remedy described herein and concurs with the modifications adopted by EPA (Attachment D). They are currently performing all Operation and Maintenance activities at the Site pursuant to a July 2003 Superfund State Contract between EPA and the State of Vermont. This includes the Dean Road Landfill and the Lagoon Area.

7. STATUTORY DETERMINATIONS

EPA believes that this remedy, as adjusted herein, will remain protective of human health and the environment. Obtaining the appropriate institutional controls on all applicable Site properties, and continuing with the long-term O&M plan (Attachment C) satisfies the closure/post closure requirements under the Vermont Solid Waste Management Rules, Subchapter 10, EPR 6-1001 (which is added as an Applicable Action-specific requirement under the remedy), and under Section 121 of CERCLA, 42 U.S.C. Section 9621. The modifications to the remedy described herein will allow the remedy to continue to perform in the most protective way.

8. PUBLIC PARTICIPATION COMPLIANCE

In accordance with Section 117(d) with CERCLA and Section 300.825(a) of the NCP, this ESD will become part of the Site's Administrative Record which is available for public review at both the EPA Region 1 Record Center at One Congress Street, Boston, Massachusetts 02114 (617-9181440), and the Solomon Public Library in Pownal, VT (802-823-7757). Additionally, a notice that briefly summarizes the changes and the reasons for making such changes described in the ESD will be published in a major local newspaper of general (e.g., the Bennington Banner) following the signing of this ESD.

FIGURE 1

Landfill Area

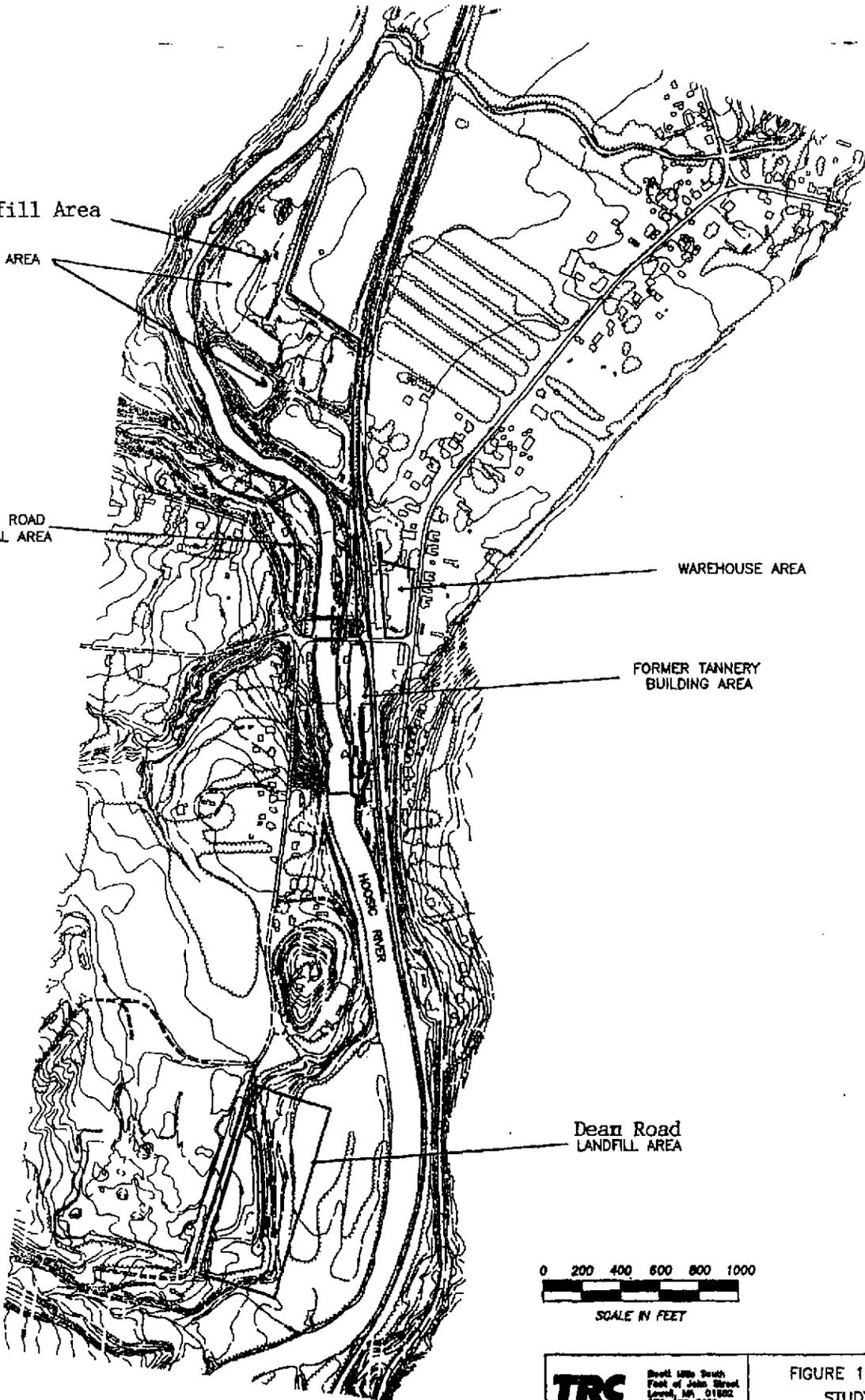
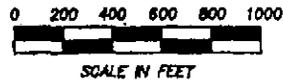
LAGOON AREA

WOODS ROAD DISPOSAL AREA

WAREHOUSE AREA

FORMER TANNERY BUILDING AREA

Dean Road LANDFILL AREA



LEGEND

— TANNERY PROPERTY BOUNDARY

TRC

Route 100 South
East of John Street
Lowell, MA 01852
978-970-8800

TRC PROJ. NO.: 02138-0220-01465

EPA CONTRACT NO.: 88-W8-0042

RAC SUBCONTRACTOR NO.: 107061

FIGURE 1
STUDY
AREA

POWNAI TANNERY
POWNAI, VERMONT

M&E Metcalf & Eddy

FIGURE 2

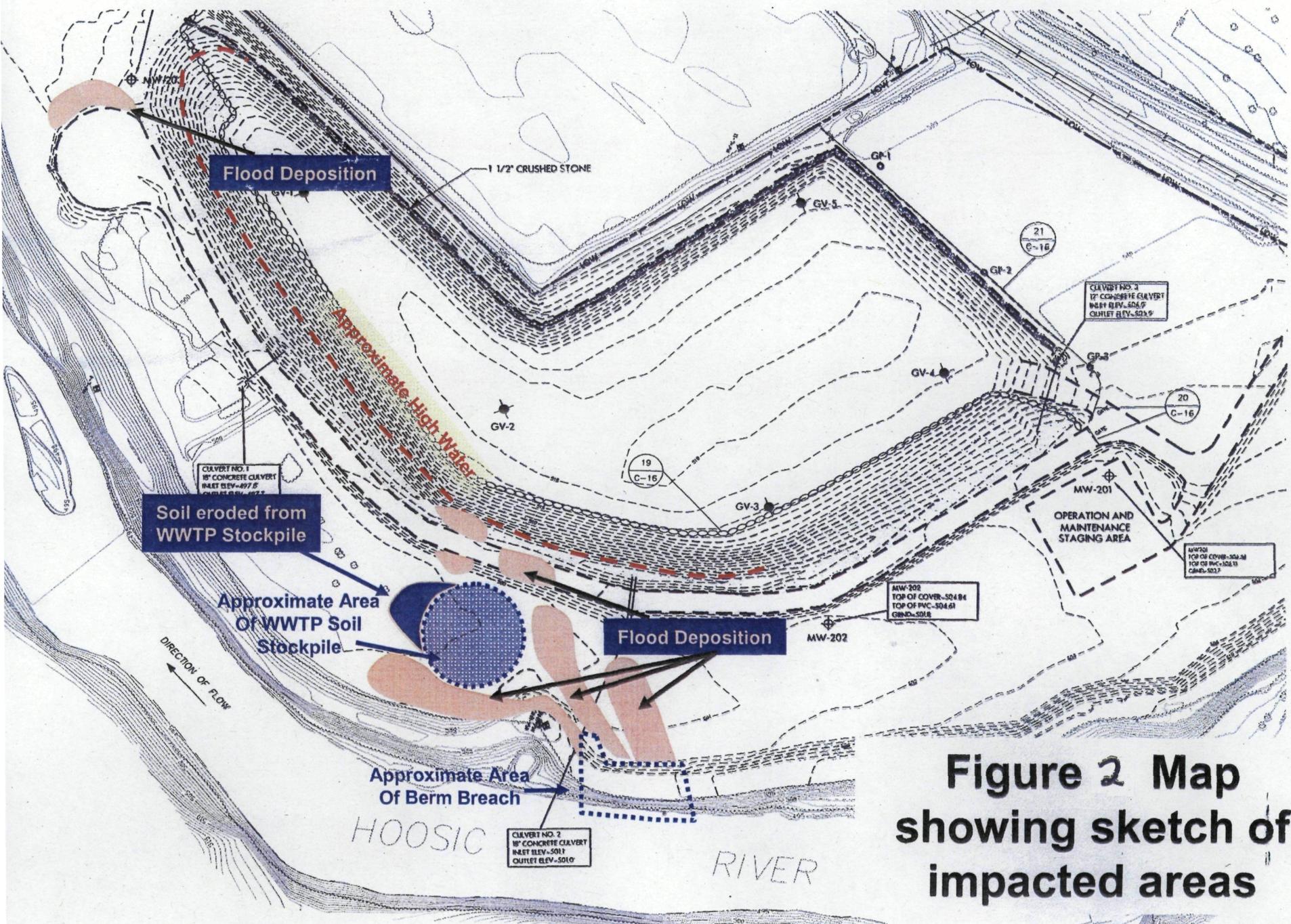


Figure 2 Map showing sketch of impacted areas

FIGURE 3

ATTACHMENT A

**Agency of Natural Resources Department of Environmental
Conservation**

Waste Management Division West Building 802-241-3888

MEMORANDUM

To: Pownal Tannery File #77-0066

From: Brian Woods, Waste Management Division

Date: July 5, 2006

Subject: Site Inspection June 30 2006

I visited the site on the afternoon of Friday June 30 2006 to inspect the condition of the facility, and particularly the breach in the riverside berm at the former lagoon area.

Lagoon Area

Despite relatively high water on the evening of June 29 (gage height 7.44', 1630 cfs as measured at the Williamstown station) it did not appear that water entered the lagoon area through the breach. Grass is beginning to reestablish itself in this area. There did not appear to be much additional erosion damage in the lagoon area itself. The river bank still appears susceptible to erosion, although it was difficult to judge how much additional loss has actually occurred since the last inspection. It does not appear that erosion in this area is affecting the performance of the engineered portions of the remedy (Photos 1-3).

Vegetation is also beginning to establish itself in the rip-rap face of the landfill. This should be removed as part of the maintenance of the landfill cover (Photo 4).

There is erosion/runoff damage in two areas of the lagoon. The first is at the north corner of the parking lot area. The second is on the access road sideslope. Both areas need repair (Photos 5, 15)

The grass cover on the landfill was in very good condition, and had been recently mowed (Photos 6-14)

Dean Road Landfill

The Dean Road landfill had been very recently mowed. The cover was in very good condition, but there

were once again rodent burrows in the cap surface.

The leachate level in the tank was 25.5", corresponding to approximately 1700 gallons.

Mill Building Area

The mill building area was in very good condition. The grass had recently been mowed.

Vegetation is fairly well established on the rip rap, and it may be time to remove it (Photos 16 and 17)

ATTACHMENT B

Agency of Natural Resources Department of Environmental
Conservation

Waste Management Division West Building 802-241-3888

MEMORANDUM

To: Fred Nicholson, River Corridor Management Engineer
Copy: Barry Cahoon, River Corridor Management Section Chief
From: Brian Woods
Date: May 5, 2006
Subject: Pownal Tannery Riverside Berm Breach

This memorandum requests your evaluation and recommendation for measures to be taken in response to the breach of the riverside berm at the site of the Pownal Tannery Lagoon area in North Pownal, Vermont.

In October 2005 a high water event on the Hoosic River resulted in the failure of a portion of the riverside berm at the former wastewater lagoon area of the Pownal Tannery Superfund Site in North Pownal Vermont. You inspected the area in January 2006 and did not report any conditions that were of concern. We agreed that the need for any corrective measures would be determined after a spring inspection of the site.

I visited the site on April 28, 2006 with Leslie McVickar of the USEPA, Dale Weiss of TRC and Ken Munney of the US Fish and Wildlife Service.

As can be seen by the enclosed photographs, the area remains affected by the breach. Approximately 1500m² of the overbank area is covered with sand and gravel deposited during the October event. Vegetation has not yet begun to establish itself in this area, and may take some time to establish itself naturally due to the nature of this material. The engineered grade of the overbank area has been altered by this deposit. The group discussed how this alteration would affect the performance of the overbank area, particularly during events of lower intensity than the design flood (100 year event). It was difficult to determine how the area would perform during an event of similar magnitude to the October 2005 event. Clearly water would enter the overbank area through this breach. Because the majority of the sand and gravel deposit lies to the north (downstream) of the breach, it appears as if water entering through this breach

will be confined to the south. It was not clear whether such a flood event would cause additional damage to the site access road.

Munney was interested in establishing additional vernal pool habitat in the area of the breach. He also believes that stabilizing the area of the breach with riprap, similar to that which exists around the wastewater treatment plant outlet located approximately 20m north of the breach, would be beneficial.

Pownal Tannery Riverside Berm Breach May 5, 2006 Page 2

McVickar expressed interest in excavating or relocating the sand and gravel deposit to reestablish the originally engineered grade of the overbank area.

I did not express an opinion but indicated that in general the River Corridor Management Program preferred to allow rivers to reestablish their courses to the extent practical.

Please review the enclosed photographs and if possible visit the site. I am looking for your recommendation as to what if anything should be done here.

If you have any questions or need additional information then please contact me.

ATTACHMENT C

OPERATIONS AND MAINTENANCE PLAN

POWNAL TANNERY

NORTH POWNAL, VERMONT

**Prepared by the Vermont Department of Environmental
Conservation, Waste Management Division**

Revised: March, 2006

Prepared by:
Brian Woods
Vermont Department of Environmental Conservation
Waste Management Division

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- APPENDIX E – Health and Safety Plans
- APPENDIX F – Groundwater, Surface Water and Sediment Sampling and Analysis Plans
- APPENDIX G – Gas Monitoring Plan

1. INTRODUCTION

This plan describes the operation and maintenance activities to be performed at the Pownal Tannery Superfund site. The Pownal Tannery Site is located in Bennington County in the Village of North Pownal, Vermont. The site was the location of a former sheep and cow hide tannery from 1936 to 1988. The Pownal Tanning Company declared bankruptcy in 1988 and abandoned the site.

1.1. *Background*

The United States Environmental Protection Agency (USEPA) performed a series of environmental cleanup actions at the Pownal Tannery site between 1993 and 2004. In 1993-94 the USEPA performed a time-critical removal action in the former mill building area and lagoon area, focused on the removal of tanning-related chemicals from on-site tanks and drums. In 1999-2000-2001 the USEPA performed a non-time critical removal action that included decontamination, demolition and removal of the mill building, excavation of a riverbank waste disposal area, and reconstruction of the tannery lagoon sludge landfill located on Dean Road. In 2003-2004 a remedial action was performed at the lagoon area, consisting of stabilization and consolidation of the tannery sludge remaining in the lagoon area.

The Town of Pownal is now the owner of the mill building area and the lagoon area. The Dean Road landfill is still owned by the now defunct Pownal Tanning Company.

Under the terms of a Memorandum of Understanding (July 2002), the State Superfund Contract (July 2003) and the first amendment to the State Superfund Contract (March 2006) the Vermont Department of Environmental Conservation (VTDEC) agreed to perform operation and maintenance activities at all areas of the site. This work includes regular inspections and necessary repairs of surfaces, fences, access road and other site features, inspections to confirm compliance with any environmental or other use restrictions imposed on the site ("institutional controls"), mowing of grass surfaces, and performance of environmental monitoring. The O&M activities described shall be conducted for a minimum of 30 years after the completion of the Remedial Action, unless otherwise approved by the EPA

2. DESCRIPTION

2.1. *Former Mill Building Area*

The 169,000 square foot mill building complex was demolished as part of the removal action performed by the USEPA in 1999-2000. The area now consists of a grass slope on the northern half of the property, and rip-rap slopes and the masonry floor of the former tannery building in the southern portion. The hydroelectric dam and associated works have been kept intact. There is a small building that houses the hydroelectric generating equipment, although this equipment is not believed to be functional.

2.1.1. Perimeter Site Features

The site is intended to be available for use as public space and as such is not fenced. There are vehicle guardrails and hand guardrails in various area of the site for safety reasons.

2.1.2. Monitoring Wells

There are three groundwater monitoring wells located in this area: MW-110U, MW-110R and MW-113. There is also one surface water location, a flowing culvert OF-1.

2.2. *Woods Road*

This area is located on the west bank of the Hoosic River approximately 500 feet downstream of the mill building area. An 18,000 square foot area of mixed fill and tannery debris was excavated from this area by the USEPA in 2000. The streambank was sloped, rip-rap placed on the lower third of the new slope, and the area revegetated with indigenous plants.

2.2.1. Perimeter Site Features

The area is bordered by Woods Road to the southwest, the Hoosic River to the northeast, private property to the northwest, and the temporary bridge over the Hoosic River to the southeast. No additional site control is planned.

2.2.2. Monitoring Wells

Monitoring wells MW-106U and MW112U are located in this area.

2.3. *Dean Road Landfill*

The Dean Road Landfill is located approximately ¼ mile south of the former mill building area, and to the west of the Hoosic River. The landfill was originally designed and constructed by the Pownal Tanning Company for permanent disposal of sludge excavated from the lagoon area. The company received Disposal Facility Certification for construction of the landfill from the State of Vermont Solid Waste Program in April 1982. Key design features included a Hypalon™ (chlorosulfonated polyethylene) liner and leachate collection system, and a polyvinyl chloride cap. Two of four originally planned cells of the landfill were filled with lagoon area sludge and capped, and a third was partially filled when the company declared bankruptcy and ceased operations in 1988. The landfill remained uncompleted until 1999, when the USEPA undertook reconstruction of the landfill. The remaining area of cell three was filled with contaminated sludge and sediment excavated from the mill building area, and the entire landfill was regraded and capped with a multi-

layer RCRA Subtitle C compliant landfill cap system. The reconstruction work was completed in October 2000.

2.3.1. Landfill Cap

The cap system consists of an arrangement of soil layers, geosynthetic layers and a vegetative layer to achieve the above goals. The cap system for the top of the landfill varies slightly from that of the sideslopes to achieve slope stability. The cap arrangements constructed consist of the following:

Top of the landfill

- 6 - inch vegetated topsoil layer
- 6 - inch select fill layer
- 12 - inch drainage/protection layer
- Geocomposite drainage layer
- Geomembrane – 60 mil linear low density polyethylene (LLDPE)
- Geosynthetic clay liner
- Geocomposite gas collection layer (same as geocomposite drainage layer)
- Subgrade – random fill

Sideslopes of the landfill

- 6 - inch vegetated topsoil layer
 - 6 - inch select fill layer
 - 12 - inch drainage/protection layer*
 - Geocomposite drainage layer *
 - Geomembrane – 60 mil LLDPE*
 - 12 - inch drainage/protection layer
 - Geocomposite drainage layer
 - Geomembrane – 60 mil LLDPE
 - 12 - inch low permeability soil
 - Geocomposite gas collection layer – (same as geocomposite drainage layer)
 - Subgrade – Random fill
- * These components were added to address the out-of-specification condition of the 12-inch low permeability soil layer.

Refer to Appendix C (Record Drawings) for details of the top and sideslope cap sections.

2.3.2. Leachate Collection System

The leachate collection system, as it existed prior to closure, consisted of collection laterals in cells #1, #2, and #3, a leachate header pipe, and a 6,000 - gallon storage tank. The storage tank was decontaminated, flushed, filled with flowable fill, and abandoned in-place. The existing leachate header pipe was completely removed and the existing laterals were incorporated into the new leachate collection system.

A new leachate collection system was constructed including the following components:

- 8,000- gallon, double wall, fiberglass coated, steel tank
- Double wall high density polyethylene (HDPE) leachate collection header pipe
- Single wall HDPE lateral connections
- Collection system monitoring equipment

The 8,000 - gallon double wall fiberglass coated steel tank was manufactured by Highland Tank. The interior of the tank was specially lined with Corrocote II to protect against corrosion of the interior tank, and equipped with anodes to protect the exterior of the tank from corrosion.

The double wall leachate header pipe, manufactured by Plexco, was constructed of HDPE consisting of a six-inch primary pipe and a ten-inch secondary pipe. The 400 linear feet of installed header pipe connects to the collection system laterals and carries leachate directly to the leachate tank. Four double wall HDPE clean-outs were installed to allow access to the header in the event of any blockages or leaks.

The existing leachate collection system laterals for each cell were connected to the new leachate header pipe via HDPE single wall pipe. The lateral piping installed carries leachate from each landfill cell to the collection header pipe.

The leachate collection system included an electronic tank monitoring system. The monitoring system includes probes for monitoring the interstitial space, tank sump, and measuring the liquid level in the tank. Due to low leachate accumulation rates, the electronic monitoring system has been shut down.

See Appendix D (Equipment) for vendor information on the leachate collection tank, leachate piping and leachate monitoring system.

2.3.3. Perimeter Site Features

Perimeter site features include the landfill perimeter fence and access road. The landfill is enclosed with a chain link perimeter fence. The perimeter fence has a gate for the access road at the north end of the landfill and two pedestrian gates located at the drainage outlets on the east side of the landfill. Warning signs have been placed on the perimeter fence and all gates remain locked at all times.

The landfill access road branches off of Burdick Drive to the perimeter gate on the north end of the site. The road continues along the toe of the eastern sideslope into cell #4 of the landfill. An access ramp at the north end of the landfill has been constructed to allow mowing equipment to access the top of the landfill.

2.3.4. Monitoring Wells

Monitoring wells B-7, B-8, B-9, B-10, MW-101U, MW-102U, MW-103U, MW-103R are located in this area.

2.4. Lagoon Area Landfill

A Remedial Investigation (RI) and Feasibility Study (FS) completed in 2002 concluded that direct exposure to the tannery sludge within the lagoons of the Lagoon Area posed an unacceptable risk to human health and the environment. The former tannery wastewater treatment lagoon area was subject to a remedial action by the USEPA in 2003-2004. Sludge was treated with Portland cement in-situ in two lagoons adjacent to the Hoosic River, and then excavated and placed in an engineered landfill constructed in the lagoon area but separated from the river. The remedial action also included regrading of the former lagoon area to increase the ability of the area to convey water in the case of flooding conditions.

2.4.1. Landfill Cap

The lagoon area landfill covers an area of approximately 4.5 acres and was designed to meet the performance requirements of the Vermont Solid Waste Management Rules. The cover on the vegetated portion of the cap system consists (from the bottom) of the following:

- 6 inches of gas collection sand
- synthetic LLDPE 40 mil textured geomembrane
- geocomposite drainage layer
- minimum of 24 inches of cover soil
- 6 inches of topsoil

The cover on the riprap side slopes of the cap system consists (from the bottom) of the following:

- 6 inches of gas collection sand
- synthetic LLDPE 40 mil textured geomembrane
- geotextile cushion
- 12 inch layer of crushed gravel
- 24 inch layer of riprap.

The cover system also includes 4 passive gas vents, perimeter ditches, and a combination boulder barrier/chain link fence. The gas vents were provided to allow the escape of gasses that may be generated from within the waste thus minimizing the potential for gas pressure to build up and destabilize the cover system. Possible gasses that may be generated include methane, carbon dioxide, hydrogen sulfide, and various volatile organic compounds (VOCs). The perimeter ditches were designed to convey the peak flow of the 25-year storm event with 6 inches of freeboard. A boulder barrier/chain link fence was constructed around the top, vegetated portion of the cap to prevent access of motorized vehicles that could damage the surface. A small length of access road and a gate has been provided to allow maintenance vehicle access the top of the Landfill. No attempt was made to restrict pedestrian access. The project was constructed as documented in the Final Completion of Removal Action Report, which should be consulted for detailed information about the constructed system, including the record drawings, the project specifications, and the Construction Quality Assurance Plan. Refer to Appendix C (Record Drawings) for construction details of the landfill cap.

2.4.2. Perimeter Site Features

Perimeter site features include access roads, drainage culverts, soil berms separating the Lagoon Area from the River, an area of riparian/wetland buffer zone restoration, and a stabilized outlet structure located in the soil berm at the north end of the Lagoon Area. The access road leads to the gate and the access road on the landfill cap, and the extreme north end of the landfill. Three culverts are provided to safely convey storm water under the access road and away from the landfill. Areas of riparian/wetland buffer zone that were disturbed during the RA were restored with appropriate vegetation. Plantings that do not survive after one year from installation (until September 2005) will be replaced by the RA Contractor. No maintenance of the plantings is required after the first year following installation. The soil berms were left in place or partially reconstructed to maintain the existing riparian vegetation along the edge of the River. The soil berms will also minimize the frequency that flood water flow will occur in the Lagoon Area between the River and the Landfill. The soil berm at the north end of the Lagoon Area was partially removed to create an outlet for flood water flow from the 100-year flood event of the Hoosic River. A three foot thick layer of riprap was placed on the disturbed soils to resist the erosive forces of the anticipated flood water flow.

2.4.3. Monitoring Wells

Monitoring wells MW-104U, MW-107R, MW-107U, MW-L-4, MW-L-10, MW-L-11, MW-201, MW-202, MW-203 are located in the former lagoon area. Monitoring wells MW-L-7, MW-L-8, MW-L-9 are located to the east of the former lagoon area, and are hydraulically upgradient of the remainder of the monitoring wells.

2.5. Residential Wells

There exist six residences in proximity to the various areas of the site that have historically been included in the monitoring program. These residences are known by their current owners. They are the Ascevich, Dupuis (formally Tudor), Bisson and Lubeck residences on Route 346 in the vicinity of the former mill building area and lagoon area; and the Pimental and Nicholas residences in the vicinity of the Dean Road landfill. E-911 addresses for these residences are listed below:

- Ascevich 3115 Route 346
- Bisson 3185 Route 346
- DuPuis 3227 Route 346
- Lubeck 3261 Route 346

- Nicholas 813 Dean Road
- Pimental 501 Dean Road

3. OPERATION ACTIVITIES

Operation activities include routine site entry, gas monitoring, groundwater, surface water and sediment sampling, operation of monitoring equipment, scheduled operating events, and unscheduled operating events. The VTDEC shall provide designated representatives to conduct

operation, monitoring, and inspections. Also included is record keeping of all operating events conducted by personnel authorized by the VTDEC.

3.1. Area-Specific Activities

3.1.1. Former Mill Building Area

Operation activities in the former mill building area are limited to environmental monitoring (discussed below) and inspections of the grass slope, rip-rap area, access road, and the hydrostation enclosure.

3.1.2. Woods Road

Operation activities in the Woods Road area are limited to environmental monitoring (discussed below) and inspection of the vegetated riverbank area.

3.1.3. Dean Road Landfill

Operation activities at the Dean Road Landfill include environmental monitoring (discussed below), inspection of the fence, landfill surface, gabion wall, and leachate collection system and monitoring equipment, including measurement and removal of accumulated leachate.

3.1.3.1. Leachate Removal

The leachate collection tank located on the eastern edge of cell #4 shall be checked at least semi-annually and emptied as needed. A leachate disposal contractor should also be readily available for responding to emergency leachate removal events. Accumulation rates in the tank shall be monitored to allow adjustments in the number of removal events per year. Documentation for leachate levels and removal activities shall be maintained by the VTDEC.

The leachate tank shall be emptied via a four inch diameter extract pipe via a quick connect fitting. The vacuum truck shall connect to the extract pipe for removal of leachate.

Leachate shall be transported to a VTDEC approved Public Operated Treatment Works (POTW) or commercial treatment facility able to handle and treat approximately 5,000 gallons of leachate per event.

3.1.4. Former Lagoon Area

Operation activities at the Lagoon Area include environmental monitoring (discussed below), inspection of the landfill surface, access gates, access road, rip-rap areas and riparian buffer.

3.1.5. Landfill Settlement Monitoring

Settlement monitoring of the Lagoon Area Landfill and the Dean Road Landfill shall be conducted on a visual basis during scheduled inspections. Areas with minimal settlement shall be filled with topsoil and regraded. Areas with extensive settlement shall require monitoring and investigation for potential failure in the cap system.

3.2. Environmental Monitoring

The environmental monitoring program includes collection of groundwater, surface water, residential water and river sediment samples for laboratory analysis, and monitoring of landfill gas discharges with field instrumentation.

Annual groundwater monitoring has been performed at the former mill building area, the Woods Road area and the Dean Road landfill since 2001. Completion of the cleanup action in the Lagoon area requires monitoring to commence in that area as well.

See Table 2 for a summary of environmental monitoring activities planned for the site.

3.2.1. Groundwater

Groundwater monitoring frequency in the Lagoon area monitoring wells (MW-104U, MW-107R, MW-107U, MW-L-4, MW-L-11, MW-201, MW-202, MW-203) will be once every three months (quarterly) for two years (2005-2006). Groundwater monitoring frequency for the Lagoon area background wells (MW-L-7, MW-L-8, MW-L-9) and for monitoring wells in the Mill Building, Woods Road and Dean Road Landfill areas will be once a year for the first two years (2005-2006). After two years of monitoring the results will be reviewed and as appropriate reduced in scope and frequency (see Table 2 for details on the groundwater monitoring program).

Samples from all groundwater wells shall be tested for the following indicator parameters (See Groundwater Surface Water and Sediment Sampling Plan in Appendix E):

- Temperature
- pH
- ORP/Eh
- Specific Conductance
- Dissolved Oxygen

In the Lagoon Area, groundwater samples will be analyzed for the following analytical parameters:

- Volatile organic compounds (EPA 8260B)
- Semi-volatile organic compounds (EPA 8270C)
- Metals aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium (total), cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, zinc, cyanide
- Pesticides (EPA 680)
- Dioxins (EPA 8290)

In the Mill Building, Woods Road and Dean Road Landfill areas, groundwater samples will be analyzed for the following analytical parameters:

- Volatile organic compounds (EPA 8260B)
- Semi-volatile organic compounds (EPA 8270C)

- Metals antimony, Arsenic, Barium, Chromium (total), Lead, Manganese and Zinc

3.2.2. Surface Water

Surface water will be sampled annually. The following sampling points shall be included in the sampling plan:

- Surface Water Outlet OF-1 (located in the Mill Building Area)
- Any other identified seeps or surface water locations

Sampling of surface water and seeps shall include the following indicator parameters and analytical parameters (See Groundwater Surface Water and Sediment Sampling Plan in Appendix E):

- Temperature
- pH
- Specific conductance
- Volatile organic compounds (EPA 8260B)
- Semi-volatile organic compounds (EPA 8270C)
- Antimony, Arsenic, Barium, Chromium (total), Lead, Manganese, and Zinc

After two years of monitoring the results will be reviewed and as appropriate reduced in scope and frequency

3.2.3. Residential Wells

Drinking water samples shall be collected from the six residences that are included in the monitoring program (Asceovich, Bisson, Dupuis (formerly Tudor), Lubeck, Nicholas and Pimental) once per year. Sampling of groundwater shall include the following indicator parameters and analytical parameters (for details see Groundwater Surface Water and Sediment Sampling and Analysis Plan in Appendix E):

- Temperature
- pH
- Specific Conductance
- Volatile organic compounds (EPA 8260B)
- Semi-volatile organic compounds (EPA 8270C)
- Antimony, Arsenic, Barium, Chromium (total), Lead, Manganese, and Zinc

After two years of monitoring the results will be reviewed and as appropriate reduced in scope and frequency

3.2.4. Sediment

Sediment samples will be collected annually from five (5) locations along the Hoosic River adjacent to the Lagoon Area. Sediment samples were previously collected from these locations during performance of the Remedial Investigation (for details see Groundwater Surface Water and Sediment Sampling and Analysis Plan in Appendix E).

Sediment samples will be analyzed for the following analytical parameters:

- Volatile organic compounds (EPA 8260B)
- Semi-volatile organic compounds (EPA 8270C)
- Metals aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium (total), cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, zinc, cyanide
- Pesticides (EPA 8082)
- PCBs (EPA 680)
- Dioxins (EPA 8290)

After two years of monitoring the results will be reviewed and as appropriate reduced in scope and frequency

3.2.5. Landfill Gas

There are four passive gas vents located along the top of the Lagoon Area Landfill, and three passive gas vents located along the top western edge of the Dean Road Landfill. These gas vents shall be monitored for flow rate and gas composition. Monitoring shall be conducted using a three gas meter calibrated for methane and hydrogen sulfide, and a photoionization detector (PID) for monitoring organic vapors. Each gas vent shall be monitored annually for flow rate and gas composition during the summer months. In addition, three gas monitoring probes were installed along the east edge of the Lagoon Area Landfill as a way to detect subsurface gas that could impact any below grade structures of the adjacent wastewater treatment plant. These gas probes shall be monitored monthly for the first six months following completion of the RA, and semi-annually thereafter for methane and hydrogen sulfide concentrations. The perimeter of both landfill areas shall also be monitored for odors and gas migration. Monitoring results shall be documented and filed with the VTDEC. See Appendix F for the Gas Monitoring Plan.

After two years of monitoring the results will be reviewed and as appropriate reduced in scope and frequency

4. MAINTENANCE ACTIVITIES

Maintenance includes the routine inspection of site area components, scheduled maintenance events, and unscheduled maintenance events. VTDEC designated personnel shall conduct maintenance and inspections of the site areas and their components. Also included is record keeping of all inspections and maintenance events conducted by personnel authorized by the VTDEC.

4.1. *Inspection and Maintenance Records*

Inspections shall be held semi-annually in the spring and fall of the year and be documented on the Inspection Log Sheets for each area provided in Appendix A. The log sheets from all inspections shall be filed at the VTDEC. Supplemental inspections will be performed immediately following significant storms or unforeseen events that may compromise the integrity of the remedial measures.

Once an inspection has been conducted, any maintenance work recorded shall be performed within two months of the inspection. The Maintenance Log provided in Appendix A shall be filed with the VTDEC following site inspections. See Tables 3A-C for the Maintenance Schedule to be conducted in addition to any work documented from site inspections.

4.2. Semi-Annual Inspections and Maintenance

Semi-annual inspections will be conducted on each site area component. Specific items are detailed in the following sections for the perimeter and site features, vegetated surface, access road and ramp to the hydrostation, rip-rap surfaces, erosion and sediment controls, and monitoring wells.

4.2.1. Perimeter and Site Features

Inspection of perimeter and site features will be conducted semi-annually by the VTDEC or a designated representative. Evidence of vandalism should be reported to the Vermont State Police (802-442-5421) and the VTDEC.

4.2.2. Vegetated Surfaces

Successful maintenance of the vegetated surfaces is dependent upon visual inspections of the Site. The VTDEC or a designated representative shall perform the required inspections and maintenance work as described in this section. Required maintenance identified by the inspections should be performed immediately following the inspection date.

Erosion control matting was originally installed on the topsoil and seeded surfaces to provide initial soil stabilization until grass cover is established. The matting will be inspected during the material's useful life and repaired if necessary.

The vegetative cover shall be inspected and maintained. The vegetation is designed to limit erosion of the topsoil. The vegetation on the site requires minimal maintenance and should survive with natural precipitation. Areas of dead or dying vegetation should be noted during inspection and these areas re-vegetated using an appropriate seed mixture and fertilizer. Any areas that are in need of repair due to erosion or other damage should be seeded, mulched, and fertilized immediately following repair work.

In the spring of each growing season qualified personnel shall evaluate the vegetative cover and topsoil. Fertilizer selection and application rates shall be applied to the cover as required to maintain a healthy vegetative cover.

Maintenance of the vegetated soil cover includes filling and compaction of rodent burrows, holes, settled areas, depressions, cracked or eroded areas. The above shall be filled by the appropriate imported fill material and shall be compacted to original specifications. Any depressions noted where standing water accumulates should be repaired and maintained at the design grade.

The grass portions of the former mill building area, the Dean Road landfill and the Lagoon Area landfill shall be mowed regularly to prevent the establishment of woody vegetation. The mowing equipment should be equipped with non-aggressive tire treads to prevent any tracking of the topsoil.

Documentation of inspections and any deficiencies observed during the inspections shall be kept on an Inspection Log Sheet. Maintenance actions will be documented on a Maintenance Log Sheet. The documentation of the inspections and corrective actions shall be kept by the VTDEC.

4.2.3. Monitoring Well Inspection

All monitoring wells shall be inspected at the time of sampling for damage to the casings, locks, and to ensure the wells are identified. Locks shall be replaced if not working properly and wells labeled if identification is missing. Documentation of inspections and any deficiencies observed during the inspections shall be kept on an Inspection Log Sheet. Damage to a well or its protective casing will be repaired to facilitate continued usage of the well. Maintenance actions will be documented on a Maintenance Log Sheet. The documentation of the inspections and corrective actions shall be kept by the VTDEC.

4.2.4. Rip-Rap Surfaces

The rip-rap shall be inspected and maintained. The rip-rap is designed to limit erosion of the sideslopes and requires minimal maintenance. Areas of settlement should be noted during inspection and these areas rip-rapped using the specified type rip-rap. Vegetation in rip-rap areas shall be noted.

Maintenance of the rip-rap includes placement of non-woven geotextile where necessary and placement of rip-rap in settled areas, depressions, or eroded areas. The above shall be filled by the appropriate type rip-rap according to the original specifications. Any vegetation noted should be maintained by trimming and/or the application of herbicide.

4.2.5. Area-Specific Activities

4.2.5.1. Former Mill Building Area

Fencing, handrails, and guardrails shall be inspected for damage or failure. Fencing, handrails, and guardrails shall be repaired as soon as possible following the identification of a problem during inspection.

Inspection of the hydrostation enclosure shall be conducted semi-annually by the VTDEC or a designated representative. Inspection shall include visual inspection of the roofing, siding, doors, and foundation. Maintenance actions will be documented on a Maintenance Log Sheet. The documentation of the inspections and corrective actions shall be kept by the VTDEC and will be available for review.

Maintenance of the hydrostation enclosure includes repairs to the concrete foundation, repairs to the T-111 siding, repairs to the roof, and repairs to the overhead doors as required from the site inspections. Required maintenance should be performed as soon as possible following the identification of a problem during inspection.

4.2.5.2. Access Road and Access Ramp to the Hydrostation

The access road and access ramp to the hydrostation shall be inspected and maintained semi-annually. The intent of inspection is to ensure potholes, obstructions, *and/or animal holes and burrows have not developed.* The VTDEC or a designated representative shall perform the required inspections and maintenance work as described in this section. Required maintenance should be performed as soon as possible following the identification of a problem during inspection.

Maintenance of the access road and ramp includes backfilling and compacting acceptable new or recovered material in potholes, erosion/washout areas, and animal burrows. Obstructions shall be immediately removed and placed in a secure area pending off-site removal. If soil is washed onto the access road or ramp, the soil shall be removed without disturbing the asphalt road or gravel ramp to the hydrostation.

4.2.5.3. Drainage Outlet Piping

Inspection of all drainage outlet piping shall be conducted semi-annually by the VTDEC or a designated representative. Inspection shall include visual inspection of the ADS N-12 outlet pipes, verification all outlet pipes are not clogged with debris, and verification the outlet pipes have not lost stability due to settlement. Damage to an outlet pipe will be repaired to facilitate continued usage of the pipe.

4.2.5.4. Woods Road

No area-specific maintenance

4.2.5.5. Dean Road Landfill

4.2.5.5.1. Leachate Collection System

The leachate collection system shall be inspected and maintained semi-annually by the VTDEC or a designated representative. The intent of the inspection is to ensure the collection system is in good working order including the leachate tank sump, clean-outs, streetboxes, and monitoring equipment. Required maintenance shall be performed as soon as possible following the identification of a problem during inspection.

Inspection and maintenance of the leachate tank sump will include opening the streetbox and removing the watertight sump cover to allow visual inspection inside the sump. In the event maintenance activities are required inside the

leachate tank sump, air monitoring shall be conducted prior to entry. See Appendix E for the Health and Safety Plan. There should be no water inside the sump and a tight flange connection of the primary piping to the tank should be observed. The sump cover shall have no cracks or holes and should sit level on the sump creating a watertight seal. The streetbox cover shall be bolted to the frame at all times and damaged bolts will be replaced as necessary

The new leachate tank shall be tested every three years for cathodic protection. Testing shall be conducted in accordance with all state and federal regulations and the manufacturers recommendations.

Inspection and maintenance of the header pipe clean-outs shall include opening the streetboxes, inspecting the double wall clean-outs for debris or damage, and ensuring the clean-outs are capped. Substantial settlement of clean-out streetboxes shall be attended to immediately to avoid damage to the clean-outs and the covers shall be bolted down at all times. Damaged bolts will be replaced as necessary.

4.2.5.5.2. Gas Vents

Each gas vent structure shall be inspected to verify that the vent pipe has not been damaged, and that the insect screens are in place. All damage shall be repaired to facilitate continued function of the vent. The gas vent should be vertical and the surrounding soil should be firmly supporting the riser pipe, with no voids or spaces that could indicate movement of the riser or adjacent soil. If any improper conditions are observed, additional investigations should be performed to determine if there is damage to the vent structure that requires repairs.

4.2.5.6. Former Lagoon Area

In addition to regularly-scheduled inspections, the Lagoon Area shall be inspected after every 100-year flood event or every flood event where water from the Hoosic River was known to have entered the Lagoon Area.

The site Lagoon Area shall also be inspected after each significant weather event during the first year of the O&M program, or until the Landfill cap vegetation becomes established. A significant weather event is defined as 1-inch or more of rainfall in a 24-hour period. The inspection may be performed by qualified personnel and shall be documented on the Inspection Log Sheet. The EPA shall be immediately notified if erosion greater than 12 inches in depth is observed on the cap.

Significant accumulations of silt or debris that collects in the drainage systems must be removed. All of the drainage channels are designed with freeboard above the flow depth of the 100-year frequency storm. In the perimeter ditches, the maximum allowable sediment depth is 6 inches. The allowable sediment depth in pipes and the flat bottom channels is 2 inches. Any debris that restricts drainage flow shall be removed from drainage channels and structures. The stone rip-rap linings of the drainage channels are provided to stabilize the surface from erosion when vegetation

is not present. Over time, the rip-rap channels will accumulate soil material and may support the growth of grass, and this is acceptable. In fact, the grass vegetation should provide some stormwater quality benefit. However, sediment should not completely cover the riprap.

If normal maintenance requires the removal of sediment or debris from drainage channels or structures, the work shall be performed with typical equipment used for the purpose, taking care not to damage any other site features and structures as part of the work. If there is any possibility that damage was done to underlying cover materials or systems, it shall be reported and investigated accordingly. All normal maintenance activities shall be recorded on the Maintenance Record Form attached to this Plan.

4.2.5.6.1. Gas Vents

Each gas vent structure shall be inspected to verify that the vent pipe has not been damaged, and that the insect screens are in place. All damage shall be repaired to facilitate continued function of the vent. The gas vent should be vertical and the surrounding soil should be firmly supporting the riser pipe, with no voids or spaces that could indicate movement of the riser or adjacent soil. If any improper conditions are observed, additional investigations should be performed to determine if there is damage to the vent structure that requires repairs.

Signs of poor performance would include a clogged gas vent screen, or an indication that gas is releasing through or beyond the cover system. This condition is usually indicated by stress in the vegetation that cannot otherwise be explained. If this is the case, additional investigations should be performed to determine if gas is not being properly vented, and if further repairs or improvements are required.

4.2.5.6.2. Gas Probes

The well heads shall be inspected for damage to the casings and locks. The locks shall be replaced if not working properly and the protective casing shall be replaced if the damage threatens the integrity of the gas probe.

4.3. Annual Institutional Control Inspection

All site areas (former mill building area, Dean Road Landfill, and former lagoon area) will be inspected once a year to confirm that no activities contrary to the institutional controls placed on the site (e.g. residential use buildings, ground water supply wells) have been undertaken. Documentation of inspections and any deficiencies observed during the inspections shall be noted on the Institutional Controls Inspection Log Sheet (included in Appendix A). The documentation of the inspections and corrective actions shall be kept by the VTDEC. In addition, the records of applicable State and local land use authorities shall be reviewed periodically to determine whether any permits or other approvals have been granted that may violate the site's environmental restrictions. Any violations of the Record of Decision, the recorded deed restrictions and easements shall be noted and reported to the VTDEC and to

EPA. If the annual review of institutional controls shows that a violation has or may take place, the State shall consult with EPA to determine an appropriate course of action

4.4. *Schedule of Maintenance*

Maintenance activities shall be completed in accordance with the Maintenance Schedule presented in Tables 3A-C in addition to items documented from semi-annual inspections.

5. REPORTING REQUIREMENTS

The following reports will be prepared by or on behalf of the VTDEC and provided to the USEPA:

- Brief summary reports of the results of the March, June and September sampling events, due sixty (60) days after performance of the event;
- Comprehensive report on the year's O&M activities, including the results of site inspections, institutional control inspections, reports on any maintenance or repair activities, and monitoring events (March, June, September, December) and results, including analysis, due ninety (90) days after the December monitoring event
- Spring and fall semi-annual site inspection reports, including checklists, due thirty (30) days after inspection.

6. HEALTH AND SAFETY PLAN

Two O&M Health and Safety Plans has been prepared and incorporated into this Operations and Maintenance Manual by the VTDEC. The primary Health and Safety Plan presents health and safety information and procedures designed to minimize potential risk of harm to workers performing inspection or maintenance activities at the Pownal Tannery Landfill. The Landscape Health and Safety Plan presents health and safety information and procedures specific to non-invasive landscaping activities (primarily mowing and other surface maintenance). The Health and Safety Plans are included as Appendix E of this O&M Manual.

TABLES

| Table 1 Contaminants of Concern | | |
|------------------------------------|----|----------|
| Compound | GW | Sediment |
| VOCs | | |
| Acetone | X | X |
| 2-Butanone (MEK) | | X |
| Carbon disulfide | | X |
| Carbon tetrachloride | X | |
| Chlorobenzene (Monochlorobenzene) | X | |
| 1,2-Dichlorobenzene | X | |
| 1,3-Dichlorobenzene | X | |
| 1,4-Dichlorobenzene | X | |
| 1,1-Dichloroethene | | X |
| Ethylbenzene | X | |
| Isopropylbenzene | X | |
| Methyl tert-butyl ether | X | |
| Methylcyclohexane | X | |
| Methylene chloride | X | X |
| Tetrachloroethylene | X | |
| Toluene | X | |
| 1,2,4-Trichlorobenzene | X | |
| Trichloroethene | X | |
| Xylene | X | |
| SVOCs | | |
| Acenaphthene | | X |
| Acenaphthylene | | X |
| Anthracene | | X |
| Atrazine | X | |
| Benzaldehyde | | X |
| Benzo(a)anthracene | | X |
| Benzo(a)pyrene | | X |
| Benzo(b)fluoranthene | | X |
| Benzo(g,h,i)perylene | | X |
| Benzo(k)fluoranthene | | X |
| Bis(2-ethylhexyl)phthalate | X | X |
| Butylbenzylphthalate | | X |
| Carbazole | | X |
| Chrysene | | X |

| Table 1 Contaminants of Concern | | |
|--|-----------|-----------------|
| Compound | GW | Sediment |
| 4-Chloroaniline | | X |
| Dibenzo(a,h)anthracene | | X |
| Dibenzofuran | | X |
| Diethylphthalate | X | X |
| Di-n-butylphthalate | X | X |
| Fluoranthene | | X |
| Fluorene | | X |
| Hexachlorethane | X | |
| Indeno(1,2,3-cd)pyrene | | X |
| 2-Methylnaphthalene | | X |
| 4-Methylphenol | X | X |
| Naphthalene | X | X |
| Pentachlorophenol | X | X |
| Phenanthrene | | X |
| Pyrene | | X |
| Metals | | |
| Aluminum | X | X |
| Antimony | X | X |
| Arsenic | X | X |
| Barium | X | X |
| Beryllium | | X |
| Cadmium | X | X |
| Calcium | X | X |
| Chromium | X | X |
| Cobalt | X | X |
| Copper | X | X |
| Iron | X | X |
| Lead | X | X |
| Magnesium | X | X |
| Manganese | X | X |
| Mercury | X | X |
| Nickel | X | X |
| Potassium | X | X |
| Selenium | X | X |
| Silver | X | X |
| Sodium | X | X |
| Thallium | X | X |
| Vanadium | X | X |

| Table 1 Contaminants of Concern | | |
|--|-----------|-----------------|
| Compound | GW | Sediment |
| Zinc | X | X |
| Cyanide | X | X |
| Pesticides/PCBs | | |
| Aldrin | | X |
| Aroclor 1242 | | X |
| Aroclor 1254 | | X |
| Aroclor 1260 | | X |
| alpha-BHC | | X |
| beta-BHC | | X |
| delta-BHC | | X |
| alpha-Chlordane | | X |
| 4,4'-DDD | | X |
| 4,4'-DDE | | X |
| 4,4'-DDT | | X |
| Dichlorobiphenyls | | X |
| Dieldrin | | X |
| Endosulfan sulfate | | X |
| Endrin | | X |
| Endrin ketone | | X |
| gamma-BHC (Lindane) | | X |
| gamma-Chlordane | | X |
| Heptachlor | | X |
| Heptachlor epoxide | X | X |
| Heptachlorobiphenyls | | X |
| Hexachlorobiphenyls | | X |
| Methoxychlor | | X |
| Pentachlorobiphenyls | | X |
| Tetrachlorobiphenyls | | X |
| Trichlorobiphenyls | | X |
| Dioxin | | |
| Dioxin (2,3,7,8-TCDD) | X | X |

| Table 2 | | | | |
|--|--|--|---|--|
| Monitoring Intervals and Parameters | | | | |
| Locations | Analyses | Years 1-2 | Years 3-5 | Years 5-10 |
| Lagoon Area Groundwater – On-Site Monitoring Wells MW-104U, MW-107R, MW-107U, MW-L-4 ¹ , MW-L-10, MW-L-11, MW-201, MW-202, MW-203 | VOCs SVOCs Metals ² Pesticides Dioxin | Quarterly (March/June/September/December) | Semi-Annually (VOCs, SVOCs, and Metals only) | Annually (VOCs, SVOCs, and Metals only) |
| Lagoon Groundwater – Upgradient Monitoring Wells MW-L-7, MW-L-8, MW-L-9 | VOCs SVOCs Metals ² Pesticides Dioxin | Annually (September) | TBD | TBD |
| Lagoon Area Sediment Sample Locations SD-031, SD-034, SD-036, SD-037, and 1 new upgradient location | VOCs SVOCs Metals ² Pesticides PCBs Dioxin | Annually (September) | TBD | TBD |
| Former Mill Building Area Groundwater Monitoring Wells: MW-110U, MW-110R, MW-113R Surface Water Outfall: OF-1 | VOCs SVOCs Metals ³ | Annually (September) | TBD | TBD |
| Woods Road Area Groundwater Monitoring Wells: MW-106U, MW-112U | VOCs SVOCs Metals ³ | Annually (September) | TBD | TBD |
| Dean Road Landfill Groundwater Monitoring Wells: B-7 ¹ , B-8 ¹ , B-9, B-10, MW-101U, MW-102U, MW-103U, MW-103R Leachate Collection Tank | VOCs SVOCs Metals ³ | Annually (September) | TBD | TBD |

1. These monitoring well locations are not accessible by vehicle.
2. Full metals list including aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium (total), cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, zinc, cyanide.
3. Abbreviated metals list including antimony, arsenic, barium, chromium (total), lead, manganese and zinc.

TBD – Parameters and frequency To Be Determined, based on the review of the results from Years 1-2

| TABLE 3A - Maintenance Schedule | | |
|--|--|--|
| Former Mill Building Area | | |
| | Tasks | Frequency of Occurrence |
| 1 | Maintenance of level vegetated surface and vegetated sideslopes and ensure the site conforms with surroundings -including regrading, reseeding, refertilization as necessary -burrowing animal control | Semi-Annually, as needed |
| 2. | Mowing | Bi-monthly, or as needed during growing season |
| 3. | Runoff Control Maintenance -inspection, repair, replacement of erosion control matting, haybales as necessary | Semi-Annually, as needed |
| 4. | Groundwater Well Maintenance -redevelopment of wells -replacement of wells | As needed As needed |
| 5. | Drainage Outlet Piping Maintenance - inspection for settlement or blockages | Semi-Annually |
| 6. | Miscellaneous Maintenance and Inspection -including maintenance of fence, handrails, guardrails, access road and access ramp to the hydrostation | Semi-Annually, as needed |
| 7. | Inspection of Rip-Rap -inspection for settlement or erosion | Semi-Annually |
| 8. | Hydrostation Enclosure | Semi-Annually |

| TABLE 3B - MAINTENANCE SCHEDULE | | |
|--|--|--------------------------------|
| Dean Road Landfill | | |
| | Post-Closure Tasks | Frequency of Occurrence |
| 1. | Maintenance of Final Cover System on Top Slopes and Side Slopes and ensure site conforms with surroundings -including regrading, reseeding, refertilization as necessary; mowing -burrowing animal control | Semi-Annually, as needed |
| 2. | Runoff Control Maintenance -inspection, repair, replacement of erosion control matting, haybales as necessary | Semi-Annually, as needed |
| 3. | Groundwater Well Maintenance -redevelopment of wells -replacement of wells | As needed As needed |
| 4. | Gas Vent Maintenance -gas vent inspection and repair as necessary | Semi-Annually |
| 5. | Miscellaneous Maintenance and Inspection -including maintenance of fence and gate and access road | Semi-Annually, as needed |
| 6. | Inspection of leachate tank and collection system -removal for treatment of any accumulated leachate | Semi-Annually, as needed |
| 7. | Cathodic protection testing | Every 3 years |

TABLE 3C – MAINTENANCE SCHEDULE

Lagoon Area Landfill

| Post-Closure Tasks | Frequency of Occurrence |
|---|--------------------------------|
| 1. Maintenance of final Cover System on Top Slopes and Side Slopes and ensure site conforms with surroundings - including regarding, reseeding, refertilization as necessary; mowing - burrowing animal control | Semi-Annually, as needed |
| 2. Perimeter Ditch and Culvert Maintenance - Inspection repair, remove sediments and obstructions | Semi-Annually, as needed |
| 3. Groundwater Well Maintenance - redevelopment of wells - replacement of wells | As needed As needed |
| 4. Gas Vent Maintenance - Gas vent inspection and repair as necessary | Semi-Annually, as needed |
| 5. Miscellaneous Maintenance and Inspection - including maintenance of fence and gate and access road | Semi-Annually, as needed |

FIGURES

Site Location

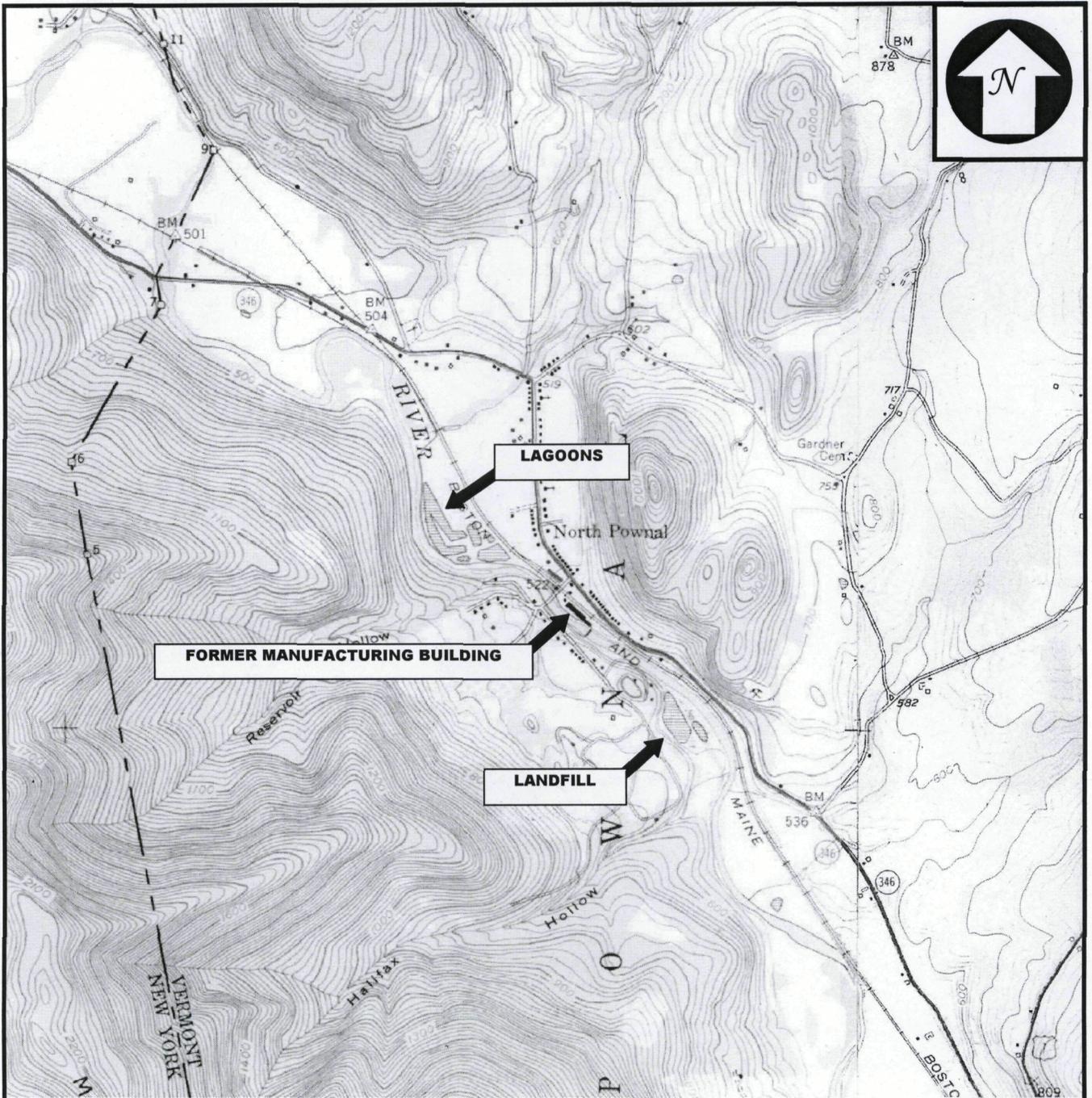
Site Areas

Mill Building Area

Woods Road Area

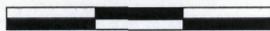
Dean Road Landfill

Lagoon Area



**BASE MAP IS A PORTION OF THE FOLLOWING 7.5' USGS TOPOGRAPHIC QUADRANGLES:
 POWNAL, VT, 1954; NORTH POWNAL, VT-NY, 1954, PHOTOREVISED 1980**

0 1000 2000 3000



approximate scale in feet

SITE LOCATION MAP

**POWNALE TANNERY
 POWNAL, VERMONT**

M&E Metcalf & Eddy

TRC

Boott Mills South
 Foot of John Street
 Lowell, MA 01852
 978-970-5600

QUADRANGLE
 LOCATION

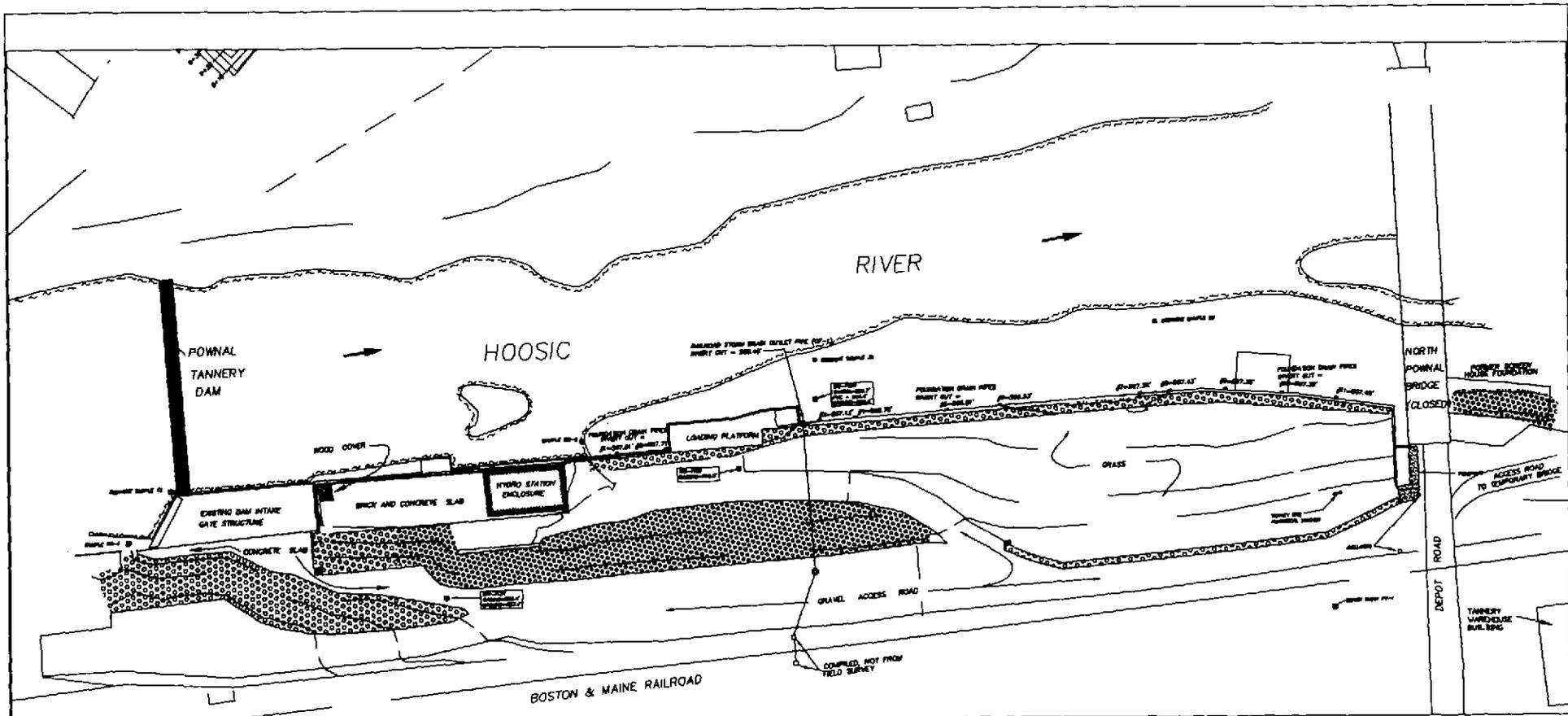


TRC PROJ. NO.: 02136-0380-01N9

EPA CONTRACT NO.: 68-W6-0042

RAC SUBCONTRACTOR NO.: 107061

01236/R/SITE.LOC2



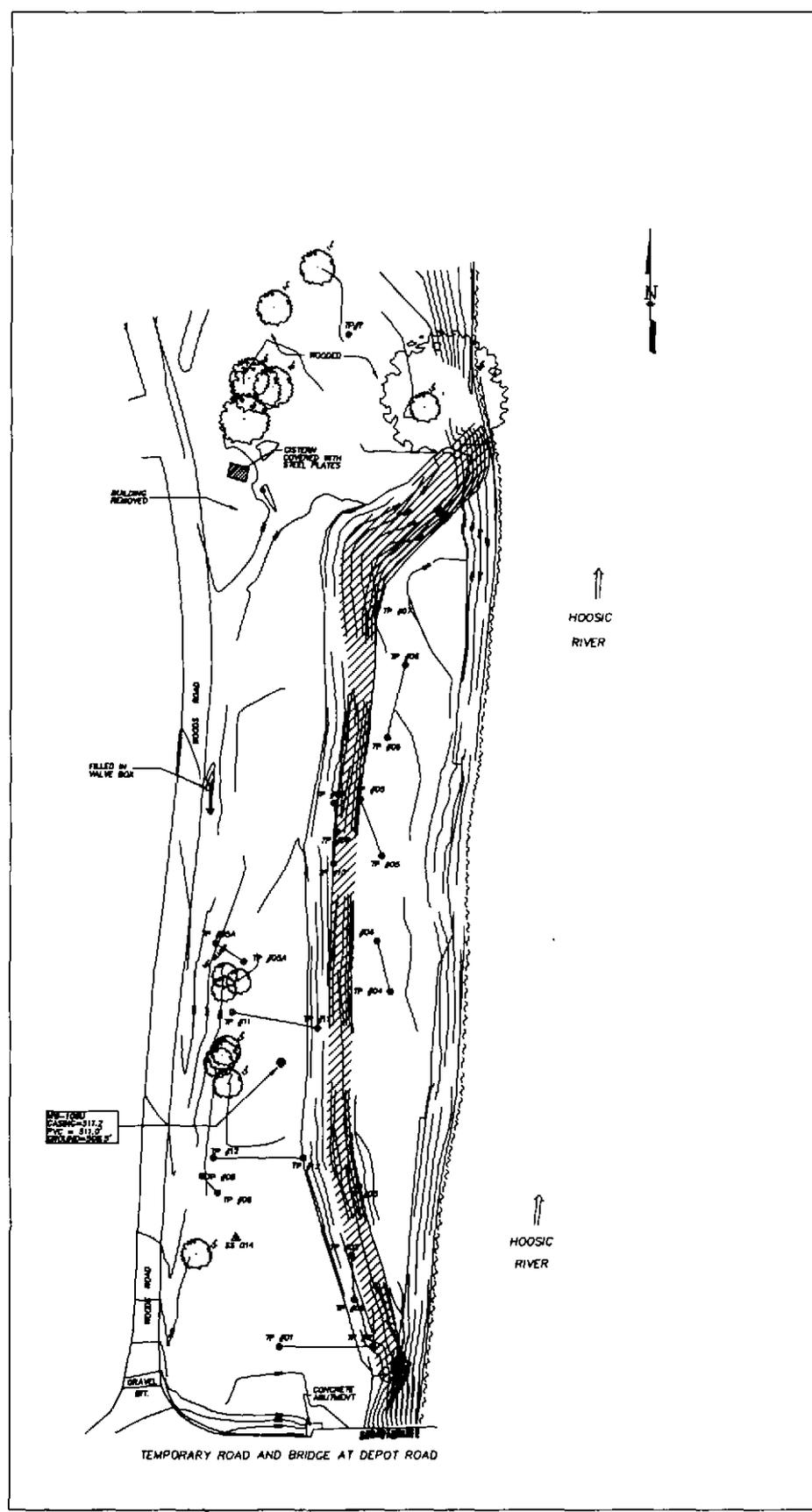
| STONE & WEBSTER | | | |
|--|-------------------------------|----------------------|----------|
| NORTH POWNAL | | VERMONT | |
| 1" = 80' | | NO. | REV. |
| 11-20-00 | | | |
| 10/11/01 | UPDATES | NOV | 11/14/01 |
| | REVISIONS, CHANGE INFORMATION | EXP | 12/11/01 |
| PROJECT: POWNAL TANNERY BUILDING COMPLEX | | SITE: 376-TN-448/01C | |
| SITE RESTORATION PLAN | | SRV-376-4 | B |



30 Chapel Street
 Burlington, VT 05402
 (813) 866-0000

LEGEND

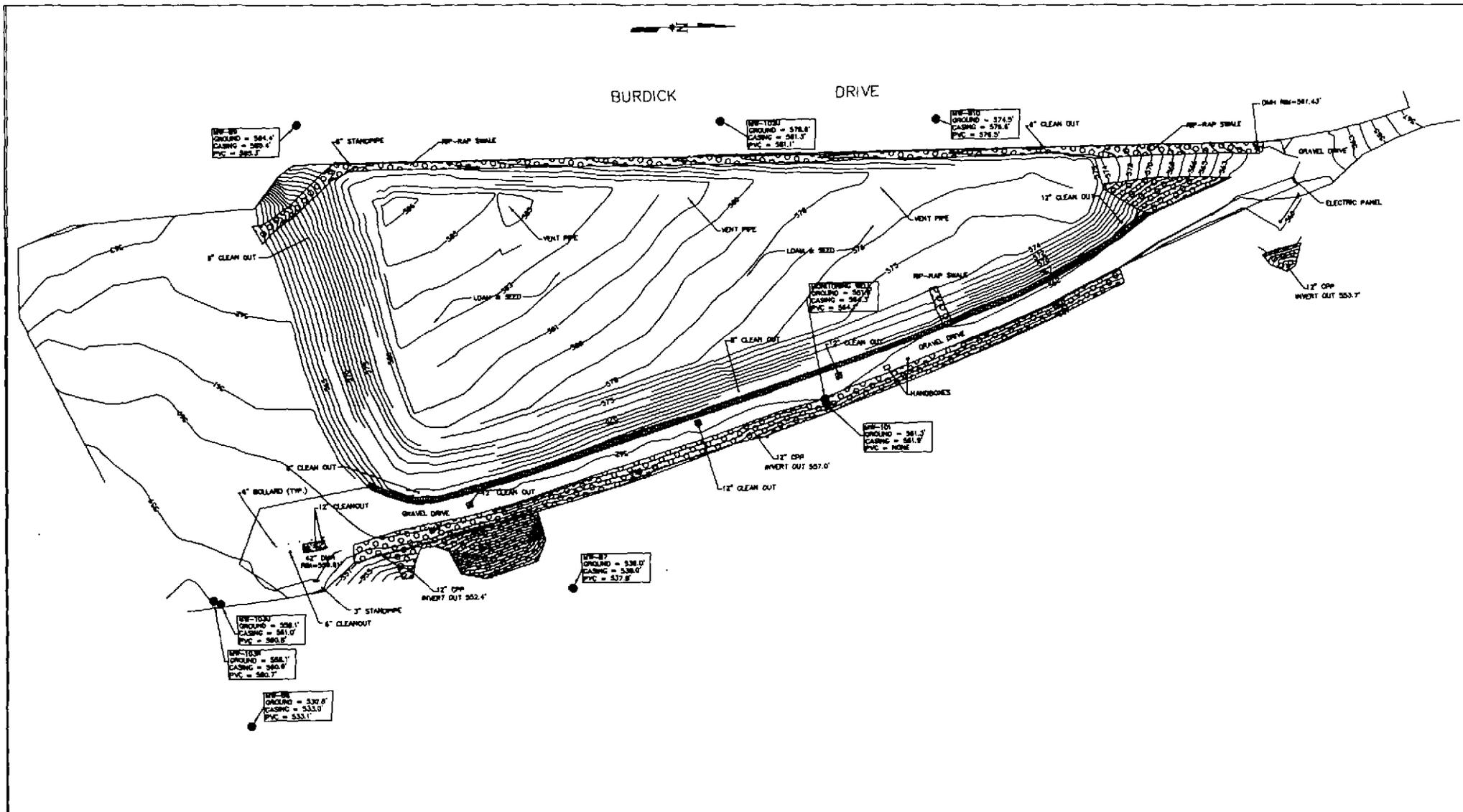
- IRON PIN FOUND
- MONTING BELL
- ⊙ WATER SHUTOFF
- EDGE OF TRAVELED WAY
- - - EDGE OF EXCAVATION
- ⊕ TEST PITS
- GUARD RAILS
- EDGE OF WATER
- EDGE OF BRUSH/WRECKAGE
- DECIDUOUS TREE
- ⊕ HAY BALES w/ SILT FENCE
- ▨ HWRAP



NOTES:

1. AS-BUILT TOPOGRAPHIC MEASUREMENTS MADE BY HILL-ENGINEERS ARCHITECTS, PLANNERS, INC. ON DECEMBER 11, 2000
2. ELEVATIONS SHOWN HEREON ARE BASED UPON AN ALTIMETER BENCH ELEVATION = 521.18'. BENCHMARK LOCATED ALONG RAILROAD RIGHT-OF-WAY, APPROXIMATELY 65' FEET SOUTHERLY OF THE MAIN ROAD INTO THE POWNALL TANNERY SITE.
3. APPROXIMATELY 16,840 SQ. FT. OF GEO-FABRIC PLACED OVER EXCAVATED AREA.
4. EXCAVATED VOLUME = 2,490 CY
5. HWRAP VOLUME = 224 CY

| STONE & WEBSTER | | | |
|---------------------------------|----------|-------------|---------|
| PROJECT | DATE | BY | CHECKED |
| POWELL TANNERY SITE | 12-12-00 | JW | JW |
| WOODS ROAD DISPOSAL AREA | | | |
| SOIL REMOVAL & SITE RESTORATION | | | |
| SRV-376-5AB | | SRV-376-5AB | |



NOTES

1. AS-BUILT TOPOGRAPHIC SURVEY PERFORMED BY HILL-ENGINEERS, ARCHITECTS, PLANNERS, INC. ON NOVEMBER 14, 2000. ELEVATIONS AND TOPOGRAPHY BASED ON TOP OF FORMER MONITORING WELL CASING B-11, ELEVATION 584.36'. AS SHOWN ON SEA PLANTATIONS ENVIRONMENTAL SERVICES, LTD. PLAN ENTITLED "SLUDGE DISPOSAL SITE AS-BUILT PLAN" DATED JULY, 1982.

STONE & WEBSTER

NORTH POINT

| NO. | DATE | DESCRIPTION | BY | CHECKED | DATE |
|-----|----------|------------------------------|-----|---------|----------|
| 1 | 11-13-00 | | | | |
| 2 | 12/18/00 | MONITORING WELL INFO | KTP | | 12/18/00 |
| 3 | 12/11/00 | CLEVERT LOCATION & WELL INFO | KTP | | 12/11/00 |

PROJECT: POWNAL TANNERY LANDFILL
 DRAWING: SRV-376-34B
 SHEET: B

APPENDICES

Appendix A - Inspection and Maintenance Logs

Appendix B – Monitoring Well Construction Details

Appendix C - Record Drawings

Appendix D – Equipment

Appendix E – Health and Safety Plan

***Appendix F – Groundwater, Surface Water and Sediment
Sampling and Analysis Plan***

Appendix G – Gas Monitoring Plan

APPENDIX A – INSPECTION AND MAINTENANCE LOGS

INSPECTION LOG

Pownal Tannery Former Mill Building Area North Pownal, Vermont

| | | | |
|---|---|--------------------------|----|
| Inspector Name: | | Date: | |
| Areas: | All access roads, fencing, guardrails, handrails, vegetated surfaces, rip-rap surfaces, drainage outlet piping, and the hydrostation enclosure. | | |
| Inspect | Inspect for | Action Required | |
| | | Location Comments | |
| Vegetated Surface | Erosion/Washouts | Yes | No |
| | Bare Areas | Yes | No |
| | Distressed Vegetation | Yes | No |
| | Ponding | Yes | No |
| | Other | Yes | No |
| Access Road and Access Ramp to the hydrostation | Erosion | Yes | No |
| | Obstruction | Yes | No |
| | Grading/Potholes | Yes | No |
| | Drainage/Puddles | Yes | No |
| | Debris | Yes | No |
| Drainage Outlet Piping | Slope/Bank Erosion | Yes | No |
| | Flooding | Yes | No |
| | Debris | Yes | No |
| | Other | Yes | No |
| Rip-Rap Surfaces | Settlement | Yes | No |
| | Erosion | Yes | No |
| | Vegetation | Yes | No |
| | Other | Yes | No |
| Hydrostation Enclosure | Integrity of structure | Yes | No |
| | Roofing | Yes | No |
| | Siding | Yes | No |
| | Doors | Yes | No |
| | Other | Yes | No |
| Site Security | Integrity of Fence | Yes | No |
| | Integrity of Handrails | Yes | No |
| | Integrity of Guardrails | Yes | No |
| | Other | Yes | No |

Inspector's Signature: _____

MAINTENANCE LOG

Pownal Tannery Former Mill Building Area North Pownal, Vermont

| | | | |
|---|---|------------------------------|--|
| Inspector Name: _____ | | Date: _____ | |
| Areas: | A All access roads, fencing, guardrails, handrails, vegetated surfaces, rip-rap surfaces, drainage outlet piping, and the hydrostation enclosure. | | |
| Inspected Item | Maintenance Item | Maintenance Completed | |
| Vegetated Surface | | | |
| Access Road and Access Ramp to the Hydrostation Enclosure | | | |
| Drainage Outlet Piping | | | |
| Rip-Rap Surface | | | |
| Monitoring Wells | | | |
| Hydrostation Enclosure | | | |
| Site Security | | | |

Note: Attach Additional sheets as necessary

Inspector's Signature: _____

INSPECTION LOG
Pownal Tannery Dean Road Landfill
North Pownal, Vermont

| | | | | |
|-----------------------------|---|------------------------|----|--------------------------|
| Inspector Name: | | Date: | | |
| Areas: | All access roads, perimeter security fence, vegetated soil cover and associated slopes, ditches and installations | | | |
| Inspect | Inspect for | Action Required | | Location Comments |
| Vegetated Soil Cover | Erosion/Washouts | Yes | No | |
| | Bare Areas | Yes | No | |
| | Distressed Vegetation | Yes | No | |
| | Ponding | Yes | No | |
| | Other | | | |
| Access Road and Access Ramp | Erosion | Yes | No | |
| | Obstruction | Yes | No | |
| | Grading/Potholes | Yes | No | |
| | Drainage/Puddles | Yes | No | |
| | Debris | Yes | No | |
| Drainage Outlets | Riprap | Yes | No | |
| | Slope/Bank Erosion | Yes | No | |
| | Flooding | Yes | No | |
| | Debris | Yes | No | |
| | Other | | | |
| Leachate Collection System | Integrity of clean-outs and streetboxes | Yes | No | |
| | Monitoring Equipment operating | Yes | No | |
| | Integrity of sump streetbox | Yes | No | |
| | Integrity of interior of sump | Yes | No | |
| | Integrity of vent | Yes | No | |
| | Integrity of bollards | Yes | No | |
| | Integrity of Extract pipe | Yes | No | |
| | Integrity of overhead lighting | Yes | No | |
| Other | | | | |
| Monitoring Wells | Integrity of casing | Yes | No | |
| | Locks in tact/corroded | Yes | No | |
| | Well clearly designated | Yes | No | |
| | Other | Yes | No | |
| Gas Vents | Integrity of PVC piping | Yes | No | |
| | Integrity of screens | Yes | No | |
| | Other | | | |
| Gabion Wall | Settlement or failure | Yes | No | |
| Site Security | Integrity of Fence | Yes | No | |
| | Integrity of Main Gate | Yes | No | |
| | Integrity of Pedestrian Gates | Yes | No | |
| | Integrity of Locks | Yes | No | |
| | Integrity of Signs | Yes | No | |
| Other | | | | |

Inspector's Signature: _____

MAINTENANCE LOG
Pownal Tannery Dean Road Landfill
North Pownal, Vermont

| | | |
|-----------------------------|---|-----------------------|
| Inspector Name: | | Date: |
| Areas: | All access roads, perimeter security fence, vegetated soil cover and associated ditches and installations | |
| Inspected Item | Maintenance Item | Maintenance Completed |
| Vegetated Soil Cover | | |
| Access Road and Access Ramp | | |
| Drainage Outlets | | |
| Leachate Collection System | | |
| Monitoring Wells | | |
| Gas Vents | | |
| Gabion Wall | | |
| Site Security | | |

Note: Attach Additional sheets as necessary

Inspector's Signature: _____

INSPECTION LOG

Pownal Tannery Lagoon Area Landfill North Pownal, Vermont

| | | | | |
|--|---|------------------------|----|--------------------------|
| Inspector Name: | | Date: | | |
| Areas: | All access roads, perimeter security fence, vegetated soil cover and associated slopes, ditches, and installations. | | | |
| Inspect | Inspect for | Action Required | | Location Comments |
| Vegetated Soil Cover | Erosion/Washouts | Yes | No | |
| | Bare Areas | Yes | No | |
| | Distressed Vegetation | Yes | No | |
| | Ponding | Yes | No | |
| | Settlement | Yes | No | |
| | Animal Burrows | Yes | No | |
| | Woody Vegetation | Yes | No | |
| Access Road and Access Ramp | Erosion | Yes | No | |
| | Obstruction | Yes | No | |
| | Grading/Potholes | Yes | No | |
| | Drainage/Puddles | Yes | No | |
| | Debris | Yes | No | |
| | Other | | | |
| Drainage Culverts and Perimeter Ditches | Riprap | Yes | No | |
| | Slope/Bank Erosion | Yes | No | |
| | Sedimentation | Yes | No | |
| | Debris | Yes | No | |
| Soil Berms and Water Flood Outlet | Erosion/Workouts | Yes | No | |
| | Displacement of Riprap | Yes | No | |
| | Settlement | Yes | No | |
| Riprap Landfill Cover | Erosion | Yes | No | |
| | Displacement of riprap | Yes | No | |
| | Sedimentation | Yes | No | |
| | Settlement | Yes | No | |
| | Slumping | Yes | No | |
| | Other | | | |
| Monitoring Wells and Gas Probes | Integrity of casing | Yes | No | |
| | Locks in tact/corroded | Yes | No | |
| | Well clearly designated | Yes | No | |
| | Other | | | |
| Gas Vents | Integrity of piping | Yes | No | |
| | Integrity of screens | Yes | No | |
| | Other | | | |
| Site Security | Integrity of Fence | Yes | No | |
| | Integrity of Gates | Yes | No | |
| | Integrity of Pedestrian Gates | Yes | No | |
| | Integrity of Locks | Yes | No | |
| | Integrity of Signs | Yes | No | |
| | Other | | | |

Inspector's Signature: _____

MAINTENANCE LOG

Pownal Tannery Lagoon Area Landfill North Pownal, Vermont

| Inspector Name: | | Date: |
|---|---|--------------------------------------|
| Areas: | All access roads, perimeter security fence, vegetated soil cover and associated slopes, ditches, and installations. | |
| Inspect Item | Maintenance Item | Action Required Location Comments |
| Vegetated Soil Cover | | |
| Access Road and Access Ramp | | |
| Drainage Culverts and Perimeter Ditches | | |
| Riprap Landfill Cover | | |
| Monitoring Wells and Gas Probes | | |
| Gas Vents | | |
| Site Security (Fences and Gates) | | |

Note: Attached additional sheets as necessary.

Inspector's Signature: _____

INSTITUTIONAL CONTROL INSPECTION LOG

**Pownal Tannery
North Pownal, Vermont**

Physical On-Site Inspection:

| | ITEM | Y/N | COMMENTS* |
|----|---|-----|-----------|
| 1. | Land-Use Condition; i.e. Residential-Use Buildings Present? | | |
| 2. | Evidence of any ground-water supply wells? | | |
| 3. | Other activities or conditions of note? | | |
| 3. | Weather Conditions? | | |

Inspector name:

Date:

Inspector's Signature: _____

* If the answer to a question is 'Yes', use the 'Comments' column to explain, e.g. list type(s) and name(s) of notices, permits, variances, notices of intent found; describe the type and location of where a residential-use building or ground-water supply well was observed.

APPENDIX B – MONITORING WELL INFORMATION

MILL BUILDING AREA MONITORING WELL CONSTRUCTION DETAILS

| Well ID | Total Depth (ft.) | Depth to Top of Screen (ft.) | Depth to Bottom of Screen (ft.) | Formation Screened | Well Diameter | Reference Elevation |
|---------|-------------------|------------------------------|---------------------------------|--------------------|---------------|---------------------|
| MW-110U | 10 | 3 | 10 | Sand/Gravel | 2-inch | 506.39 |
| MW-110R | 31 | 17 | 27 | Bedrock | 2-inch | 508.98 |
| MW-113R | 30 | 18 | 28 | Bedrock | 2-inch | 523.30 |

WOODS ROAD MONITORING WELL CONSTRUCTION DETAILS

| Well ID | Total Depth (ft.) | Depth to Top of Screen (ft.) | Depth to Bottom of Screen (ft.) | Formation Screened | Well Diameter | Reference Elevation |
|---------|-------------------|------------------------------|---------------------------------|--------------------|---------------|---------------------|
| MW-106U | 151 | 8 | 18 | Sand/Gravel | 2-inch | 511.02 |
| MW-112U | 151 | 5 | 15 | Sand/Gravel | 2-inch | 504.49 |

DEAN ROAD LANDFILL MONITORING WELL CONSTRUCTION DETAILS

| Well ID | Total Depth (ft.) | Depth to Top of Screen (ft.) | Depth to Bottom of Screen (ft.) | Formation Screened | Well Diameter | Reference Elevation |
|---------|-------------------|------------------------------|---------------------------------|--------------------|---------------|---------------------|
| B-7 | 8.9 | Unknown | Unknown | Unknown | 2-inch | 537.54 |
| B-8 | 10.2 | Unknown | Unknown | Unknown | 2-inch | 532.94 |
| B-9 | 30.27 | Unknown | Unknown | Unknown | 2-inch | 584.84* |
| B-10 | 26.98 | Unknown | Unknown | Unknown | 2-inch | 576.20 |
| MW-101U | 19 | 7 | 17 | Silty Sand | 2-inch | 563.98 |
| MW-102U | 31 | 21 | 31 | Silty Sand | 2-inch | 580.99 |
| MW-103U | 25 | 15 | 25 | Silty Sand | 2-inch | 560.70 |
| MW-103R | 117 | 97 | 117 | Bedrock | 2-inch | 560.64 |

* Well B-9 repaired and new reference elevation established in 2002. Former reference elevation was 585.00.

LAGOON AREA MONITORING WELL CONSTRUCTION DETAILS

| Well ID | Total Depth (ft.) | Depth to Top of Screen (ft.) | Depth to Bottom of Screen (ft.) | Formation Screened | Well Diameter | Reference Elevation |
|---------|-------------------|------------------------------|---------------------------------|--------------------------|---------------|---------------------|
| MW-104U | 58 | 4 | 14 | Silty Sand/Sand & Gravel | 2-inch | 501.64 |
| MW-107U | 87 | 12 | 22 | Silty Sand | 2-inch | 510.89 |
| MW-107R | 119 | 109 | 119 | Bedrock | 2-inch | 509.61 |
| MW-L-4 | 21.6 | 11 | 21 | Unknown | 2-inch | 512.37 |
| MW-L-7 | 21.4 | 11 | 21 | Silty Sand | 2-inch | 517.99 |
| MW-L-8 | 26.3 | 16 | 26 | Unknown | 2-inch | 513.44 |
| MW-L-9 | 17.3 | 7 | 17 | Silty Sand | 2-inch | 511.49 |
| MW-L-10 | 15.8 | 5 | 15 | Silty Sand | 2-inch | 506.89 |
| MW-L-11 | 14.5 | 3 | 13 | Silty Sand | 2-inch | 503.06 |
| MW-201 | 14.6 | 4.4 | 14.4 | Sand & Gravel | 2-inch | 506.13 |
| MW-202 | 15 | 4.8 | 14.8 | Sand & Gravel | 2-inch | 504.61 |
| MW-203 | 12 | 1.8 | 11.8 | Sand & Gravel | 2-inch | 502.51 |

APPENDIX C - RECORD DRAWINGS

APPENDIX D - EQUIPMENT MANUALS

APPENDIX E - HEALTH AND SAFETY PLANS

**APPENDIX F - GROUNDWATER, SURFACE WATER AND SEDIMENT
SAMPLING AND ANALYSIS PLANS**

GROUNDWATER, SURFACE WATER AND SEDIMENT SAMPLING AND ANALYSIS PLAN

1. INTRODUCTION

This Sampling and Analysis plan (SAP) was prepared to specify the requirements for post-remedial action (RA) monitoring of groundwater and sediment at the Pownal Tannery Superfund Site Mill Building Area, Dean Road Landfill and Lagoon Area.

2. FIELD SAMPLING PLAN

2.1. Plan Rationale

Groundwater (including residential water supplies), surface water and Hoosic River sediment will be monitored following completion of the Remedial Action (RA). The goal of the groundwater sampling and analysis program is to monitor the condition of the groundwater upgradient and downgradient of the areas where response actions were performed to ensure that contaminant concentrations remain at or below their current concentrations. The goal of the surface water monitoring program is to confirm that contaminants are not present in the surface water discharge located in the mill building area. The goal of the sediment sampling and analysis program is to monitor contaminant concentrations in Hoosic River sediment to confirm that contaminants of concern are not increasing in concentration.

2.2. Data Quality Objectives

The primary objective of the sampling program is to develop data sufficient to confirm that contaminants present in the Dean Road and Lagoon Area landfills are not being released to groundwater or sediment. Sampling in the former Mill Building/Woods Road areas will be performed to confirm the efficacy of the remedial action in those areas.

Baseline groundwater and sediment data were collected as part of the Remedial Investigation.

The primary data quality objective for the long term monitoring program is that all measurements be representative of the actual site conditions and that all data resulting from field measurements and analysis activities be comparable.

2.3. Contaminants of Concern

See Table 1 for a list of the identified contaminants of concern at the site.

2.4. Sampling Locations and Sampling Frequency

2.4.1. Mill Building Area

There are currently three groundwater monitoring wells installed in the former mill building area. One of these wells is screened in overburden, and two are screened in bedrock. There is also one surface water outfall.

Samples from these locations will be collected annually for the first two years after completion of the response action in the lagoon area (the response action was completed in September 2004). The schedule for future sampling will be determined based upon a review of the historical data.

2.4.2. Woods Road

There are currently two groundwater monitoring wells installed in the Woods Road area. Both of these wells are screened in overburden.

Samples from these locations will be collected annually for the first two years after completion of the response action in the lagoon area (the response action was completed in September 2004). The schedule for future sampling will be determined based upon a review of the historical data.

2.4.3. Dean Road Landfill

2.4.3.1. Leachate Collection Tank

The leachate collection tank is located at the southeast corner of the landfill area. The tank collects leachate from the three lined landfill cells.

Landfill leachate will be sampled at least annually, and more frequently if required by the receiving facility or if the annual sampling event results indicate a significant (>50%) increase in the concentration of any contaminant from the previous sampling round.

2.4.3.2. Landfill Groundwater

There are currently eight groundwater monitoring wells surrounding the Dean Road Landfill. Seven of these wells are screened in overburden, and one is screened in bedrock.

The long-term monitoring program for the site calls for collection of samples from the eight area monitoring wells annually for the first two years after completion of the response action in the lagoon area (the response action was completed in September 2004). The schedule for future sampling will be determined based upon a review of the historical data. See Table 2 for monitoring intervals and parameter list for each group of wells.

2.4.4. Lagoon Area

There are currently none (9) onsite monitoring wells and three (3) upgradient monitoring wells in the Lagoon area. Eleven of these wells are screened in overburden, and one is screened in bedrock.

The long-term monitoring program for the site calls for collection of samples from the nine onsite monitoring wells quarterly (four times per year) for the first two years after completion of the response action in the lagoon area (the response action was completed in September 2004). Samples from the upgradient off-site wells will be collected annually. The schedule for future sampling will be determined based upon a review of the historical data.

2.5. Sampling Procedures

2.5.1. Field Parameters

All water samples will have the following parameters measured in the field at the time of sample collection:

- Temperature (°C)
- pH
- Specific Conductance

Additional parameters may be specified in response to site specific conditions.

2.5.2. Sample Analytical Methods, Container/Preservation Requirements, Holding Times

Sample collection methods, analytical methods, required sample volume, containers, preservation requirements, and holding times are outlined in Table 3.

2.5.3. Sample Handling/Sample Custody

Samples collected will be managed under chain-of-custody procedures. Sample custody will be documented from sample collection through shipment and laboratory receipt. Sample chain-of-custody procedures shall be submitted by the sampling contractor and approved by the VTDEC. Samples shall be packaged and shipped in accordance with an approved standard operating procedure.

3. QUALITY ASSURANCE PLAN

3.1. Sampling Standard Operating Procedures

The following SOPs are referenced in this Sampling and Analysis Plan:

- Groundwater Sampling
- Surface Water and Sampling

- Packaging and Shipping of Environmental Samples
- Sample Chain of Custody

Field personnel conducting sampling shall adhere to the methods described within the approved SOPs. Any modifications or deviations to the SOPs shall be clearly described in the field notes.

3.2. Field and Quality Control Sample Plan

See Table 4 for the field and quality control sample collection schedule.

3.3. Field Instrument Maintenance, Testing, Inspection and Calibration

Where applicable, field instrument maintenance, testing, inspection, and calibration shall be in accordance with the SOPs and the instruments' instruction manuals.

3.4. Laboratory Quality Assurance Plan

All samples will be delivered to an approved analytical laboratory or laboratories for analysis. The laboratory shall provide a copy of their Quality Assurance procedures.

TABLES

| Table 1 Contaminants of Concern | | |
|--------------------------------------|----|----------|
| Compound | GW | Sediment |
| VOCs | | |
| Acetone | X | X |
| 2-Butanone (MEK) | | X |
| Carbon disulfide | | X |
| Carbon tetrachloride | X | |
| Chlorobenzene (Monochlorobenzene) | X | |
| 1,2-Dichlorobenzene | X | |
| 1,3-Dichlorobenzene | X | |
| 1,4-Dichlorobenzene | X | |
| 1,1-Dichloroethene | | X |
| Ethylbenzene | X | |
| Isopropylbenzene | X | |
| Methyl tert-butyl ether | X | |
| Methylcyclohexane | X | |
| Methylene chloride | X | X |
| Tetrachloroethylene | X | |
| Toluene | X | |
| 1,2,4-Trichlorobenzene | X | |
| Trichloroethene | X | |
| Xylene | X | |
| SVOCs | | |
| Acenaphthene | | X |
| Acenaphthylene | | X |
| Anthracene | | X |
| Atrazine | X | |
| Benzaldehyde | | X |
| Benzo(a)anthracene | | X |
| Benzo(a)pyrene | | X |
| Benzo(b)fluoranthene | | X |
| Benzo(g,h,i)perylene | | X |
| Benzo(k)fluoranthene | | X |
| Bis(2-ethylhexyl)phthalate | X | X |
| Butylbenzylphthalate | | X |
| Carbazole | | X |

| Table 1 Contaminants of Concern | | |
|------------------------------------|----|----------|
| Compound | GW | Sediment |
| Chrysene | | X |
| 4-Chloroaniline | | X |
| Dibenzo(a,h)anthracene | | X |
| Dibenzofuran | | X |
| Diethylphthalate | X | X |
| Di-n-butylphthalate | X | X |
| Fluoranthene | | X |
| Fluorene | | X |
| Hexachlorethane | X | |
| Indeno(1,2,3-cd)pyrene | | X |
| 2-Methylnaphthalene | | X |
| 4-Methylphenol | X | X |
| Naphthalene | X | X |
| Pentachlorophenol | X | X |
| Phenanthrene | | X |
| Pyrene | | X |
| Metals | | |
| Aluminum | X | X |
| Antimony | X | X |
| Arsenic | X | X |
| Barium | X | X |
| Beryllium | | X |
| Cadmium | X | X |
| Calcium | X | X |
| Chromium | X | X |
| Cobalt | X | X |
| Copper | X | X |
| Iron | X | X |
| Lead | X | X |
| Magnesium | X | X |
| Manganese | X | X |
| Mercury | X | X |
| Nickel | X | X |
| Potassium | X | X |
| Selenium | X | X |

TABLES

| Table 1 Contaminants of Concern | | |
|--|-----------|-----------------|
| Compound | GW | Sediment |
| Silver | X | X |
| Sodium | X | X |
| Thallium | X | X |
| Vanadium | X | X |
| Zinc | X | X |
| Cyanide | X | X |
| Pesticides/PCBs | | |
| Aldrin | | X |
| Aroclor 1242 | | X |
| Aroclor 1254 | | X |
| Aroclor 1260 | | X |
| alpha-BHC | | X |
| beta-BHC | | X |
| delta-BHC | | X |
| alpha-Chlordane | | X |
| 4,4'-DDD | | X |
| 4,4'-DDE | | X |
| 4,4'-DDT | | X |
| Dichlorobiphenyls | | X |
| Dieldrin | | X |
| Endosulfan sulfate | | X |
| Endrin | | X |
| Endrin ketone | | X |
| gamma-BHC (Lindane) | | X |
| gamma-Chlordane | | X |
| Heptachlor | | X |
| Heptachlor epoxide | X | X |
| Heptachlorobiphenyls | | X |
| Hexachlorobiphenyls | | X |
| Methoxychlor | | X |
| Pentachlorobiphenyls | | X |
| Tetrachlorobiphenyls | | X |
| Trichlorobiphenyls | | X |
| Dioxin | | |
| Dioxin (2,3,7,8-TCDD) | X | X |

TABLES

SAMPLING LOCATIONS AND FREQUENCY

| Table 2 Monitoring Intervals and Parameters | | | | |
|--|---|------------------------------------|---|--|
| Locations | Analyses | Years 1-2 | Years 3-5 | Years 5-10 |
| Lagoon Area Groundwater – On-Site Monitoring Wells MW-104U, MW-107R, MW-107U, MW-L-4, MW-L-10, MW-L-11, MW-201, MW-202, MW-203 | VOCs SVOCs Metals Pesticides Dioxin | Quarterly (March/June/Sept/Dec) | Semi-Annually (VOCs, SVOCs, and Metals only) | Annually (VOCs, SVOCs, and Metals only) |
| Lagoon Area Groundwater – Upgradient Monitoring Wells MW-L-7, MW-L-8, MW-L-9 | VOCs SVOCs Metals Pesticides Dioxin | Annually (September) | TBD | TBD |
| Sediment Sample Locations SD-031, SD-034, SD-036, SD-037, and 1 new upgradient location | VOCs SVOCs Metals Pesticides PCBs Dioxin | Annually (September) | TBD | TBD |
| Former Mill Building Area Groundwater Monitoring Wells: MW-110U, MW-110R, MW-113R Surface Water Outfall: OF-1 | VOCs SVOCs Metals | Annually (September) | TBD | TBD |
| Dean Road Landfill Groundwater: Monitoring Wells: B-7, B-8, B-9, B-10, MW-101U, MW-102U, MW-103U, MW-103R Leachate Tank | VOCs SVOCs Metals | Annually (September) | TBD | TBD |

1. These monitoring wells are not accessible by vehicle
2. Full metals list including aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, zinc, cyanide.
3. Target metals list including antimony, arsenic, barium, chromium (total), lead, manganese and zinc

TBD – Parameters and frequency To Be Determined based upon review of the results from Years 1 and 2

TABLES

SAMPLE ANALYTICAL METHODS, CONTAINER/PRESERVATION REQUIREMENTS, HOLDING TIMES

| Table 3 Sample Analytical Methods, Container/Preservation Requirements, Holding Times | | | | | | | |
|--|-----------------------------|----------------------|-------------------------------------|----------------------|--------------------------|-------------------------------------|-------------------------------------|
| Matrix | Analytical Parameter | Sampling SOP | Analytical Method | Sample Volume | Container(s) | Preservation | Maximum Holding Time |
| Groundwater | VOCs | SOP-001 | EPA 8260 | 40 mL | 3 x 40 mL glass vials | HCl pH<2, Ice to 4°C | 14 days |
| Groundwater | SVOCs | SOP-001 | EPA 8270 | 1 Liter | 2 x 1 Liter glass bottle | Ice to 4°C | 7 days extract; 40 days analysis |
| Groundwater | Metals | SOP-001 | EPA 7470 6010/6020/ 9010/9012 | 1 Liter | 1 x 1 Liter plastic | HNO ₃ pH<2 Ice to 4°C | 28 days for Hg, 180 days for others |
| Groundwater | Pesticides | SOP-001 | EPA 8081 | 1 Liter | 2 x 1 Liter glass bottle | Ice to 4°C | 7 days extract; 40 days analysis |
| Groundwater | Dioxin | SOP-001 | EPA 8290 | 1 Liter | 2 x 1 Liter glass bottle | Ice to 4°C | 30 days extract; 45 days analysis |
| Sediment | VOCs | SOP-003, EPA 5035 | EPA 8260 | 4 oz. | 1 x 8 oz. | Methanol Ice to 4°C | 14 days |
| Sediment | SVOCs | SOP-003 | EPA 8270 | 8 oz. | 1 x 8 oz. glass | Ice to 4°C | 14 days extract; 40 days analysis |
| Sediment | Metals | SOP-003 | EPA 7471 6010/6020/ 9010/9012 | 8 oz. | 1 x 8 oz. glass | Ice to 4°C | 28 days for Hg, 180 days for others |
| Sediment | Pesticides/ PCBs | SOP-003 | EPA 8081/ 680 | 8 oz. | 1 x 8 oz. glass | Ice to 4°C | 14 days extract; 40 days analysis |
| Sediment | Dioxin | SOP-003 | EPA 8290 | 8 oz. | 3 x 8 oz. glass | Ice to 4°C | 30 days extract; 45 days analysis |

TABLES

FIELD AND QUALITY CONTROL SAMPLE SUMMARY TABLE

| Table 4 FIELD AND QUALITY CONTROL SAMPLE SUMMARY TABLE | | | | | | | |
|--|------------|-------------------|--|---------|------------------------|-----------------|--------|
| Locations | Analysis | No. Field Samples | No. Field Duplicates | MS/MSDs | Trip Blank | Equipment Blank | Totals |
| Lagoon Area Groundwater – On-Site Monitoring Wells MW-104U, MW-107R, MW-107U, MW-L-4, MW-L-10, MW-L-11, MW-201, MW-202, MW-203 | VOCs | 9 | 1 for each analysis for this group of 12 samples | 0 | 1 per cooler VOCs only | 1 | 12 |
| | SVOCs | 9 | | 0 | | 1 | 11 |
| | Metals | 9 | | 0 | | 1 | 11 |
| | Pesticides | 9 | | 0 | | 1 | 11 |
| | Dioxin | 9 | | 0 | | 1 | 11 |
| Lagoon Area Groundwater – Upgradient Monitoring Wells MW-L-7, MW-L-8, MW-L-9 | VOCs | 3 | | 0 | | 1 | 6 |
| | SVOCs | 3 | | 0 | | 1 | 5 |
| | Metals | 3 | | 0 | | 1 | 5 |
| | Pesticides | 3 | | 0 | | 1 | 5 |
| | Dioxin | 3 | | 0 | | 1 | 5 |
| Lagoon Area Sediment Sample Locations SD-031, SD-034, SD-036, SD-037, and 1 new upgradient location | VOCs | 5 | 1 | 1 | 1 | 9 | |
| | SVOCs | 5 | 1 | 1 | 1 | 8 | |
| | Metals | 5 | 1 | 1 | 1 | 8 | |
| | Pest/PCBs | 5 | 1 | 1 | 1 | 8 | |
| | Dioxin | 5 | 1 | 1 | 1 | 8 | |
| | TOC | 5 | NA | NA | NA | 5 | |
| Former Mill Building Area/Woods Road Area Groundwater Monitoring Wells: MW-110U, MW-110R, MW-113R, MW-106U, MW-112U Surface Water Outfall: OF-1 | VOCs | 6 | 1 for each analysis for this group of 15 samples | 0 | 1 | 9 | |
| | SVOCs | 6 | | 0 | 1 | 8 | |
| | Metals | 6 | | 0 | 1 | 8 | |
| Dean Road Landfill Groundwater Monitoring Wells: B-7, B-8, B-9, B-10, MW-101U, MW-102U, MW-103U, MW-103R; Leachate Collection Tank | VOCs | 9 | 0 | 1 | 12 | | |
| | SVOCs | 9 | 0 | 1 | 11 | | |
| | Metals | 9 | 0 | 1 | 11 | | |

Revised 12/30/04

APPENDIX G – GAS MONITORING PLAN

GAS MONITORING SAMPLING and ANALYSIS PLAN

1. INTRODUCTION

2. Field Sampling Plan

2.1. Plan Rationale

2.2. Data Quality Objectives

The primary objective of the sampling program is to develop data sufficient to confirm that contaminants present in the landfill are not being released to the atmosphere. In addition, the program is intended to detect the presence of potentially explosive gases (methane) in the landfill and vicinity.

2.3. Contaminants of Concern

Based upon the substances known to be disposed of at the site, and contaminants detected during removal action and remedial investigation activities, the primary contaminants of concern are methane and hydrogen sulfide.

2.4. Sampling Locations and Sampling Frequency

Gas discharge rate measurement and gas samples will be collected from the gas vents that are located on the top of the landfills. At the Lagoon area landfill, there are three additional subsurface gas probes.

Gas discharge rates and gas sampling will be conducted annually.

2.5. Sampling Procedures

Each sampling event will consist of the following activities: Measure of gas discharge rates from each gas vent, and if a discharge is measured, determination of the characteristics of any discharge.

Gas Discharge Rate Measurement: By use of a bubble meter connected directly to the gas vent. Gas discharge measurements should be planned to coincide with times of low atmospheric pressure. Atmospheric pressure will be as measured at the Bennington Morse State Airport (KDDH). If possible, a correlation between atmospheric pressure (in mm Hg) and gas discharge should be developed.

Gas Characteristics Measurement: By photoionization detector and multi-gas meter configured for methane and hydrogen sulfide.

2.6. Sample Handling/Sample Custody

This sampling program does not require collection of samples for laboratory analysis; therefore, sample handling/sample custody is not an issue.

3. Quality Assurance Plan

3.1. Sampling Standard Operating Procedures

This sampling program does not require collection of samples for laboratory analysis; therefore, sample handling/sample custody is not an issue.

3.2. Field and Quality Control Sample Plan

This sampling program does not require collection of samples for laboratory analysis; therefore, sample QA/QC is not an issue.

3.3. Field Instrument Maintenance, Testing, Inspection and Calibration

All field instrumentation will be calibrated according to the manufacturers instructions prior to use.

3.4. Data Evaluation/Validation

This sampling program does not require collection of samples for laboratory analysis; therefore, data evaluation/validation is not an issue.

ATTACHMENT D



Vermont Department of Environmental Conservation

Commissioner's Office

103 South Main Street, 1 South [phone] 802-241-3808
Waterbury, VT 05671-0401 [fax] 802-244-5141

Agency of Natural Resources

September 27, 2007

James T. Owens III, Director
Office of Site Remediation and Restoration
US EPA Region I
1 Congress Street, Suite 1100
Boston, MA 02114-2023

Subject: September 2007 Explanation of Significant Difference at the Pownal Tannery Superfund Site
 Pownal, Vermont (State Site #77-0066)

Dear Mr. Owens:

With this letter the Vermont Department of Environmental Conservation (VTDEC) provides its concurrence with the September 2007 Explanation of Significant Differences (ESD) proposed by the USEPA to revise the list of areas at the Pownal Tannery site where institutional controls will be imposed.

The original remedy provided for institutional controls to prevent the disturbance of the capped soil and sludge, and to prevent the ingestion of ground water in the former lagoon area. The modified remedy expands institutional controls so that they apply to a portion of the lagoon area where buried waste remains in place, and to the sludge disposal facility on Dean Road that was constructed during the Non-Time Critical Removal Action completed at the site in 2001.

The VTDEC agrees that these modifications to the remedy described in the 2002 Record of Decision for the site enhance the protectiveness of the entire remedy.

I appreciate the continued diligence of the USEPA in ensuring the continued effectiveness of the remedy at this site.

Sincerely,

A handwritten signature in black ink, appearing to read "Justin G. Johnson".

Justin G. Johnson
Acting Commissioner

JW/JS/lr

c: Leslie McVickar, USEPA
 Karen Burrington, Pownal Town Clerk
 Brian Woods, VT DEC

ATTACHMENT E

Pownal Tannery
NPL Site Administrative Record File
Explanation of Significant Differences
(ESD)
Operable Unit 1 – Sitewide

Index

ESD Dated September 2007
Released September 2007

Prepared by
EPA New England
Office of Site Remediation & Restoration

Introduction to the Collection

This is the administrative record file for the Pownal Tannery Superfund Site, North Pownal, Vermont, Operable Unit 1, Explanation of Significant Differences (ESD), released September, 2007. The file contains site-specific documents and a list of guidance documents used by EPA staff in selecting a response action at the site.

This file includes, by reference, the administrative record file for the Pownal Tannery Removal Action, issued April 1993; the Non-Time Critical Removal Action (NTCRA), issued March 1999; and the Record of Decision (ROD), issued September 2002.

The administrative record file is available for review at:

EPA New England Office of
Site Remediation & Restoration
1 Congress Street, Suite 1100 (HSC)
Boston, MA 02114
(by appointment)
617-918-1440 (phone)
617-918-0440 (fax)

www.epa.gov/region01/superfund/resource/records.htm

Solomon Wright Public Library
Main Street
Pownal, VT 05261
802-823-5400 (phone)
<http://www.pownal.lib.vt.us/>

Questions about this administrative record file should be directed to the EPA New England site manager.

An administrative record file is required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA).

07: REMEDIAL ACTION (RA)

240690 REMEDIAL ACTION (RA) REPORT

Author: US EPA REGION 1

Doc Date: 09/30/2005 # of Pages: 28

Addressee:

File Break: 07.05

Doc Type: REPORT
RA REPORT AND APPROVAL

08: POST REMEDIAL ACTION

204901 PRELIMINARY CLOSE OUT REPORT (PCOR) / CONSTRUCTION COMPLETION

Author: LESLIE MCVICKAR US EPA REGION 1

Doc Date: 09/30/2004 # of Pages: 28

Addressee: SUSAN STUDIEN US EPA REGION 1 - OFFICE OF SITE REMEDIATION & RESTORATION

File Break: 08.03

Doc Type: REPORT
PCOR

Number of Documents in Collection: 2