

Browning-Ferris Industries, Inc. (MA)
BFI Fall River Landfill
Fall River, Massachusetts 02720

Proposal for:
Final Closure Activities *at*
Inactive Unlined Landfill Areas
Southwest of Phase I

Prepared for:
Browning-Ferris Industries, Inc.
1080 Airport Road
Fall River, Massachusetts 02720

Prepared by:
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November 18, 2014

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**Browning-Ferris Industries, Inc. (MA)
BFI Fall River Landfill**

Proposal for:
**Final Closure Activities at
Inactive Unlined Landfill Areas
Southwest of Phase I**

I. Proposal Summary

A. Overview

Browning-Ferris Industries, Inc. (MA), a wholly owned subsidiary of Republic Services and herein referred to as BFI, is proposing to complete Landfill closure construction activities on a previously uncapped area of buried waste located at the southwest corner of the closed Phase I Landfill. This area of buried waste has been determined to also extend outward and beyond the BFI property boundary onto two adjacent parcels of land owned by Rex Cut Products, Inc. and by Fall River Freeholders Limited Partnership. These parcels are identified on City of Fall River Assessors Map Z-03 as Lots 25 and 9, respectively and are shown on the enclosed Locus Map included in Exhibit A and on the drawings included in *Exhibits C and D*. These two parcels are in the process of being subdivided, and ownership of the northern areas where the buried waste is located will be transferred to the City of Fall River. BFI's proposal to complete Landfill closure construction activities associated with the off-site buried waste also includes both of these adjacent properties, though BFI accepts no culpability for its historic placement.

Historic aerial photographs reveal that there was activity within this specific area during the late 1960s – early 1970s prior to BFI's acquisition of the Landfill from Fall River Landfill, Inc. in 1986. These photographs are included as *Exhibit B*. These photographs also show ongoing activities in this direct area prior to Fall River Landfill, Inc.'s purchase of the Landfill from the City of Fall River in 1981.

During various Public Meetings on this subject, the Massachusetts Department of Environmental Protection (MassDEP) has stated their preference of a single-unified solution that involved the buried waste area as a whole. BFI is proceeding with this proposal to complete all Landfill closure construction with the assistance and cooperation of the City of Fall River in obtaining access authorizations from adjacent property owners to perform necessary work and to resolve environmental matters related to historic waste disposal and Landfill operations.

This proposal is being submitted in accordance with MassDEP "*Guidelines for Determining Closure Activities at Inactive Unlined Landfill Sites*" dated July 6, 2001. In accordance with these Guidelines, BFI is proposing that a landfill final cover system be constructed over the entire area of uncapped buried waste. The Limits of Buried Waste have been determined

and are presented on the *Existing Conditions Plan* included with this Proposal in *Exhibit C, Drawings*. The initial investigations to determine the nature and extent of the waste was conducted at the request of MassDEP as part of a Supplemental Comprehensive Site Assessment (SCSA) that was being conducted by Brown & Caldwell on behalf of BFI. These investigations included the excavation of test pits throughout the area to the south of the Phase I Landfill. Subsequent investigations included the advancement of numerous soil borings to better define these limits.

As indicated, it is proposed by BFI to complete final closure of the uncapped area through the construction of a traditional Landfill final cover system. The construction of this cover system will generally include, the following components:

- The consolidation of the existing buried waste footprint to minimize the area needed to be capped and to provide uniform and defined limits for construction.
- The construction of site improvements such as access roads and stormwater management features.
- The preparation of the site for the acceptance and placement of grading and shaping materials.
- The acceptance of grading and shaping materials, as allowed by the MassDEP Guidelines, in order to achieve necessary grade and elevation to promote stormwater runoff and to accommodate differential settlement. The acceptance of grading and shaping materials is also intended to offset the costs associated with the final closure construction and for the completion of the Comprehensive Site Assessment (CSA) that is required as part of the final closure process.
- The construction of the Landfill final cover system, which will include a gas vent layer of sand, a 40 mil HDPE geomembrane cap, a sand drainage layer above the geomembrane and a topsoil layer to support vegetative growth. Other components of the final cover system will include stormwater diversion berms, subdrain piping within the sand drainage layer above the geomembrane and stone lined channels to enhance the performance of the cover system. The stormwater runoff from the closure area will be directed to the existing site-wide stormwater management system for treatment prior to discharge.
- A series of passive landfill gas vents will also be installed primarily for pressure equalization beneath the cap and for the release of landfill gas, should any be generated.

It is estimated that the project will occur within a 2-3 year period, once initiated and fully permitted.

B. Current Landfill Status

The BFI Fall River Landfill has ceased accepting solid waste for disposal as all capacity has been utilized and there is no more space available for expansion. Landfill gas extraction system installation and final cover system construction is ongoing within the final stages of the Area 3 Expansion located on the easterly side of the landfill.

BFI has recently constructed and began the operation of a solid waste transfer station at this site. BFI is permitted to accept up to 1,000 tons of municipal solid waste (MSW) per day at this facility for transfer off-site to other solid waste disposal / incineration facilities. This operation is intended to continue for as long as it remains a viable business venture for BFI.

C. Nature and Extent of Uncapped Buried Waste

As indicated, the delineation of the approximate limit of buried waste along the southern property boundary was conducted as part of the Supplemental Comprehensive Site Assessment (SCSA) required by MassDEP. The findings from the delineation efforts were previously documented in the report entitled "Supplemental Comprehensive Site Assessment Report, Fall River Landfill, Fall River, Massachusetts" (Brown and Caldwell, July 2006). The SCSA Report was submitted to MassDEP in July 2006.

Test Pit Excavations:

As part of the SCSA activities, ten test pits (TP-1 through TP-10) were excavated under the supervision of SITEC within the cleared area between the toe of the Phase I slope and an existing drainage ditch located to the south of the BFI property. The test pits were visually logged as each excavation progressed and the presence, type and depth of waste, if present, was noted. Upon completion, the test pits were backfilled with the excavated soil. If waste was encountered, it was segregated for disposal in the then active portion of the landfill. The waste observed at each test pit location was comprised primarily of municipal solid waste (MSW), industrial waste and construction and debris waste (C&D). The vertical extent of the buried waste varied from 11 feet to more than 20 feet below ground surface. Equipment limitations prevented the identification of the maximum vertical extent of the waste in 6 of the 10 test pits, as the maximum reach of the excavator was approximately 20 feet below ground surface. Depth to groundwater in the excavated areas ranged from approximately 4 to 8 feet below ground surface. The full lateral extent of the waste was not determined by the test pit program, as it appeared to extend into the woods line to the south of the ditch that was inaccessible to the excavator. The locations of the test pits were surveyed by SITEC and are presented *Limit of Buried Waste Determination Site Plan* in *Exhibit D*.

Additional Subsurface Investigations:

Additional efforts to delineate the lateral extent of the buried waste were performed following the submission of the SCSA report to the MassDEP. This work was also conducted by SITEC through the completion of direct-push soil borings. Fifty-two (52) soil borings (SB-1 through SB-52) were completed on August 16 and 17, 2010 with the use of a direct-push

drill rig. Buried waste was not encountered in 18 of the 52 soil borings completed during the subsequent delineation efforts. The locations of these soil borings were surveyed by SITEC and are presented on the *Limit of Buried Waste Determination Site Plan* in *Exhibit D*.

Soil boring logs are also included in *Exhibit D*.

D. Timing of Historic Waste Disposal Activities

An evaluation of historical aerial photographs and a records search was performed in an effort to estimate the approximate dates of placement of the uncapped buried waste. This evaluation was conducted in an effort to identify the landfill operator(s) during the time period when active waste disposal was ongoing at this location.

A series of available historic aerial photographs ranging from the years 1961 to 2001 were reviewed. The photographs were geo-registered within the existing geographic information system (GIS) and overlain on various map features, including the landfill property boundary. These historic aerial photographs are included in *Exhibit B*. Aerial photographs from the following dates were obtained and reviewed:

- April 12, 1961
- 1971 (month and day unknown)
- April 1, 1977
- April 7, 1980
- April 19, 1985
- March 17, 1988
- April 2001 (day unknown)

The photos demonstrate that the area was initially disturbed sometime during the period from 1961 and 1971. No indications of disturbance are apparent from the 1961 photograph, whereas clear indications of disturbance to the area south of the Phase I Landfill and property boundary can be seen in the photograph taken in 1971. Even though the photographs listed above do not provide sufficient resolution to identify actual solid waste filling in the area, the evidence of disturbance and filling is likely related to the placement of the solid waste. Given this observation, the placement of the solid waste throughout this area likely started prior to April 1971.

The Landfill was owned and operated by the City of Fall River from the 1930's through 1981 at which time it was purchased by Fall River Landfill, Inc., a privately owned company. Fall River Landfill, Inc. owned and operated the Landfill from 1981 to 1987, after which the ownership was conveyed to Browning-Ferris Industries, Inc. (BFI).

Historical records from Fall River, Inc. and BFI depict a landfill waste disposal fill progression away from the area in question. These records are based upon submitted permit application documents, MassDEP permit approvals and construction quality assurance documentation.

Based on the above-described ownership history of the landfill facility, the deposition of off-site and off-landfill waste occurred during a time period before the Landfill was owned by BFI.

The following sections of this Proposal have been formatted to correspond with the proposal outline and project review criteria provided by MassDEP:

II. Project Description

A. Plans:

1. Locus Map: - site location

A USGS Locus Map showing the approximate location of the proposed project including the two adjacent parcels of land where buried waste is known to be present is included in *Exhibit A*.

2. Conceptual closure plan showing preliminary areas for cap, final grades, approximate location of storm water controls, location of project controls such as the weigh scale and wheel wash, access road improvements, etc., preliminary cross sections showing principle components and grades (existing and after).

A *Conceptual Closure Plan* is included in *Exhibit C*. The proposed limits of final cap construction are presented on this plan along with final design grades, perimeter access roads, stormwater controls and landfill gas controls. Areas of waste consolidation in an effort to reduce the footprint of the area to be capped are also shown on this plan.

The final grades and the volume of grading and shaping materials for the successful completion of this project were established based on the estimated final closure and environmental assessment cost estimate included as Part III of this Proposal. The maximum height of the exterior 3:1 slope will be twenty-six (26) feet above the existing ground surface. The top plateau area will be graded to a minimum five percent (5%) slope so as to promote stormwater runoff and to accommodate some differential settlement. The maximum elevation at the exterior side slope is elevation 238 MSL. The maximum elevation of the top plateau area is elevation 248 MSL. For perspective, the existing elevation at the top of the main landfill is elevation 410 MSL. In order to achieve the proposed final grades, approximately 251,800 cubic yards of grading and shaping material will be required.

The stormwater controls on the landfill surface will include diversion berms, drainage layer subdrains and stone channels. The details of these drainage features are typical of those used for the final closure of the main landfill.

An access road with an internal drainage channel will be constructed around the perimeter of the proposed final closure area so as to maintain access to other parts of the landfill site and to the perimeter of this closure area for maintenance purposes.

The infrastructure that once serviced the active landfill operation, including the site entrance road and truck scales will be used as part of this proposed closure project.

A *Landfill Cross-Section* is included in *Exhibit C*.

- 3. Existing Condition Plan – topography, known limits of waste, suspected limits of waste, environmental monitoring points and controls (monitoring wells, gas vents etc.), storm water controls, property boundaries, identification of abutters,**

An *Existing Conditions Plan* is included in *Exhibit C*. The topographic information shown on this plan has been established through aerial mapping conducted in 2014. The Limit of Buried Waste, as determined through test pit excavations and soil borings along with the property boundaries have been added to the Plan. Other features shown on the *Existing Conditions Plan* include the perimeter drainage channels, existing groundwater monitoring wells in the vicinity and landfill gas extraction and leachate collection system components within the existing closed Phase I Landfill. Abutting property owners are also labeled on the Plan.

- 4. Aerial Photograph: showing site and vicinity, with the proposed traffic routes and sensitive receptors (drinking water sources, hospitals, schools, etc.) identified.**

A *Vicinity Map* has been prepared and is included in *Exhibit A*. This aerial map shows the location of the site along with the traffic routes that trucks delivering material to the site will utilize. These are the same truck routes that have been utilized during the years of active waste disposal operation within the landfill. They include Route 24 to Exit 8 to Airport Road and the use of the recently constructed Innovation Way through the Fall River Industrial Park. The site is located within the Fall River Industrial Park and there are no sensitive receptors in the immediate vicinity that could be affected by this proposed project.

B. Narrative

- 1. Proposed landfill area to be closed/capped**

Following the consolidation of the landfill footprint, approximately 9.7 acres will require final closure construction

- 2. Proposed final elevation landfill**

The maximum height of the exterior 3:1 slope will be twenty-six (26) feet above the existing ground surface. The top plateau area will be graded to a minimum five percent (5%) slope so as to promote stormwater runoff and to accommodate some differential settlement. The proposed maximum elevation at the exterior side slope is elevation 238 MSL. The proposed maximum elevation of the top plateau area is elevation 248 MSL.

3. Type(s) of proposed grading/shaping material

It is proposed at this time that all materials listed within the MassDEP *“Guidelines for Determining Closure Activities at Inactive Unlined Landfill Sites”* dated July 6, 2001 be determined suitable for use as grading and shaping material on this project. These material types are listed below. BFI may decide to amend this list and decide not to utilize certain materials on this list. Other materials not included on the list below that BFI believes to be suitable and may wish to use on this project will require specific MassDEP approval.

- a) clean soil;
- b) street sweepings;
- c) contaminated soil as defined by DEP Policy # COMM-97-001;
- d) dewatered catch basin cleanings from separate storm sewers;
- e) dewatered dredge spoils (see DEP Policy 94-007).

Please be advised that BFI is not proposing the use of C&D fines, coal ash or residuals from solid waste processing facilities or recycling operations as grading and shaping materials on this project.

4. Volumes and weights of proposed grading/shaping materials to achieve final capping grades/elevations in tons & cubic yards (yds³)

It is estimated that approximately 252,000 cubic yards of grading and shaping material will be required to achieve subgrade elevations suitable for final cover installation and to generate adequate revenue to fund this closure project. Approximately 40,000 cubic yards for cover soils will be required to complete the closure construction. If all subgrade materials accepted and used on this project were soils, the weight would be approximately 352,800 tons.

5. Compacted in place soil density. Un-compacted soil density in truck

The in-place density for compacted soil is approximately 2,800 pounds (1.4 tons) per cubic yard. Uncompacted soil within the truck being delivered to the site weighs approximately 2,200 pounds (1.1 tons) per cubic yard.

6. If utilizing C&D “fines” & “residuals”: Proposed volumetric mixing ratio of C&D fines and residual.

N/A - The project is not proposing to use either C&D fines or residuals.

7. If utilizing C&D “fines” & “residuals”: Proposed weight-based mixing ratio of C&D fines and residuals.

N/A - The project is not proposing to use either C&D fines or residuals.

8. If utilizing C&D “fines” & “residuals”, un-compacted C&D fines and residuals. density

N/A - The project is not proposing to use either C&D fines or residuals.

9. If utilizing C&D “fines” & “residuals”, compacted in place C&D fines and residuals density

N/A - The project is not proposing to use either C&D fines or residuals.

10. Proposed daily tonnage rate: tons/day

The nature of grading and shaping materials is highly dependent upon the construction environment of the region. The New England area typically sees construction during its warmer, summer months while colder periods may see little to no construction activity with no available material.

It is proposed that grading and shaping materials be accepted at a maximum daily rate of 3,000 tons per day. Please refer to Item 18 below for additional discussion concerning the variability of material availability and anticipated daily tonnage rates.

11. Maximum legal vehicle weight limit

The maximum gross vehicle weight for a tractor trailer is 80,000 pounds (40 tons)

12. Transfer trailer capacity

NA

13. Average load per trailer

30 cubic yards and 32 tons for soil

14. Maximum load per vehicle

30 cubic yards and 32 tons for soil

15. Typical load per vehicle

30 cubic yards and 32 tons for soil

16. Description of the proposed cap side slope grades, plateau area etc.

The maximum height of the exterior 3:1 slope will be twenty-three (23) feet above the existing ground surface. The top plateau area will be graded to a minimum five percent (5%) slope so as to promote stormwater runoff and to accommodate some differential settlement. The maximum elevation at the exterior side slope is elevation 238 MSL. The maximum elevation of the top plateau area is elevation 248 MSL.

17. Discussion of potential/proposed post-closure use

Currently, there is no proposed post closure use for this site. Security fencing will be installed at the site perimeter and post closure maintenance will be conducted. Should an appropriate post closure use be proposed, BFI will request written

approval from the MassDEP in accordance with Solid Waste Regulation 310 CMR 19.016, Post Closure Use.

18. Traffic Routes: Proposed route and number of trucks per day which will utilize the site.

The same truck routes that have been utilized during the years of active waste disposal operation within the landfill will continue to be utilized during this proposed project. They include Route 24 to Exit 8 to Airport Road and the use of the recently constructed Innovation Way through the Fall River Industrial Park. The site is located within the Fall River Industrial Park. Please refer to the *Vicinity Map* included in *Exhibit A*.

BFI anticipates that the rates at which grading and shaping materials become available and are to be accepted at the site will not be constant due to the nature of the remediation projects that generate the soils intended for reused on this project. During an average week, BFI anticipates the following daily tonnages could reasonably be expected:

- 1 day per week (100% max.): 3,000 tons
- 1 day per week (50% max.): 1,500 tons
- 1 day per week (25% max.): 750 tons
- 2 days per week: 0 tons

Based on this variability in material availability and acceptance, it is estimated that the average daily tonnage received during a normal week will be approximately 1,050 tons per day. At this average daily tonnage, approximately 33 trucks will be delivering grading and shaping materials to the site per day. The infrastructure at and in the vicinity of the site can accommodate this level of truck traffic.

19. Hours of operation.

It is proposed that grading and shaping material be accepted Monday through Friday from 7:00 am to 4:00 pm and on Saturdays from 7:00 am to 1:00 pm.

20. Project schedule thru certification of the final cap including major milestones (such as, duration of placement of shaping and grading material).

Depending on the timing of permits, it is estimated that project construction will be initiated in 2015.

It is estimated that approximately 352,800 tons (252,000 cubic yards) of grading and shaping material will be required to achieve subgrade elevations suitable for final cover installation and to generate adequate revenue to fund this closure project. The receipt and placement of this material will occur over a one to two (1-2) year period beginning when final approval has been received and site preparation has been

completed. Final cover system construction will be completed during the following year.

The Final Closure Certification documentation will be submitted within ninety (90) days of having completed final cover system construction.

21. Summarize other anticipated permit requirements and timelines (MEPA, wetlands, local, etc.).

The following permits are anticipated to be required for the commencement of this proposed project:

- The negotiation and signing of an Administrative Consent Order (ACO) with the MassDEP in accordance with MassDEP's "*Guidance for Determining Closure Activities at Inactive Unlined Landfill Sites*".
- The submission of a Notice of Intent and receipt of an Order of Conditions from the City of Fall River Conservation Commission for proposed construction activities within 100 feet of wetlands resource areas located west of the project site.
- The preparation of a Corrective Action Design (CAD) application for the placement of grading and shaping materials and final cap construction.
- The completion of the landfill assessment process which will include the preparation of a Supplemental Comprehensive Site Assessment (SCSA).

22. Public outreach plan.

BFI will conduct public outreach to the full extent required by MassDEP's "*Guidelines for determining Closure Activities at Inactive Unlined Landfill Sites*". This outreach includes affording opportunities for public comments during the planning and design stages of the project. BFI will attend a public informational session to describe the proposal and allow for public comment and participation. This informational session will be scheduled before the Administrative Consent Order is signed by the MassDEP. The general public will also have an opportunity to comment on a DRAFT approval of the Corrective Action Design (CAD), the closure plan approval. This DRAFT approval will have a 21 day public comment period.

As provided within the *Guidelines*, the MassDEP may, at its discretion, hold a public hearing before issuing a final decision to approve or deny the closure plan.

The Fall River Landfill has been in operation at this location for many years and this proposed project to install a final cover system on previously uncapped buried waste is a final step towards securing the Landfill and ultimately the protection of the environment. Public opposition to this project is not anticipated and the opportunities to be provided for public input described above should be sufficient.

23. Proposed Financial Assurance Mechanism

BFI currently maintains Financial Assurance in the amount of approximately \$10 million that is associated with the closure and post closure of the main landfill. Final closure construction activities are nearly complete leaving considerable funds available within the FAM, a portion of which can be assigned to the closure and assessment of this uncapped area.

24. Discussion/demonstration of compliance with MassDEP guidance document “Revised Guidelines for Determining Closure Activities at Inactive Unlined Landfill Sites,” dated July 6, 2001.

The primary objective of this project is to complete final closure of an unlined landfill area outside the limits of the Fall River Landfill, in order to protect health, safety and the environment. The closure will utilize waste consolidation and the placement of grading and shaping materials to support the final cap construction in accordance with MassDEP closure requirements under 310 CMR 19.000.

III. Cost Estimates

BFI Fall River Landfill
Buried Waste Area Closure

Estimated Financial Summary

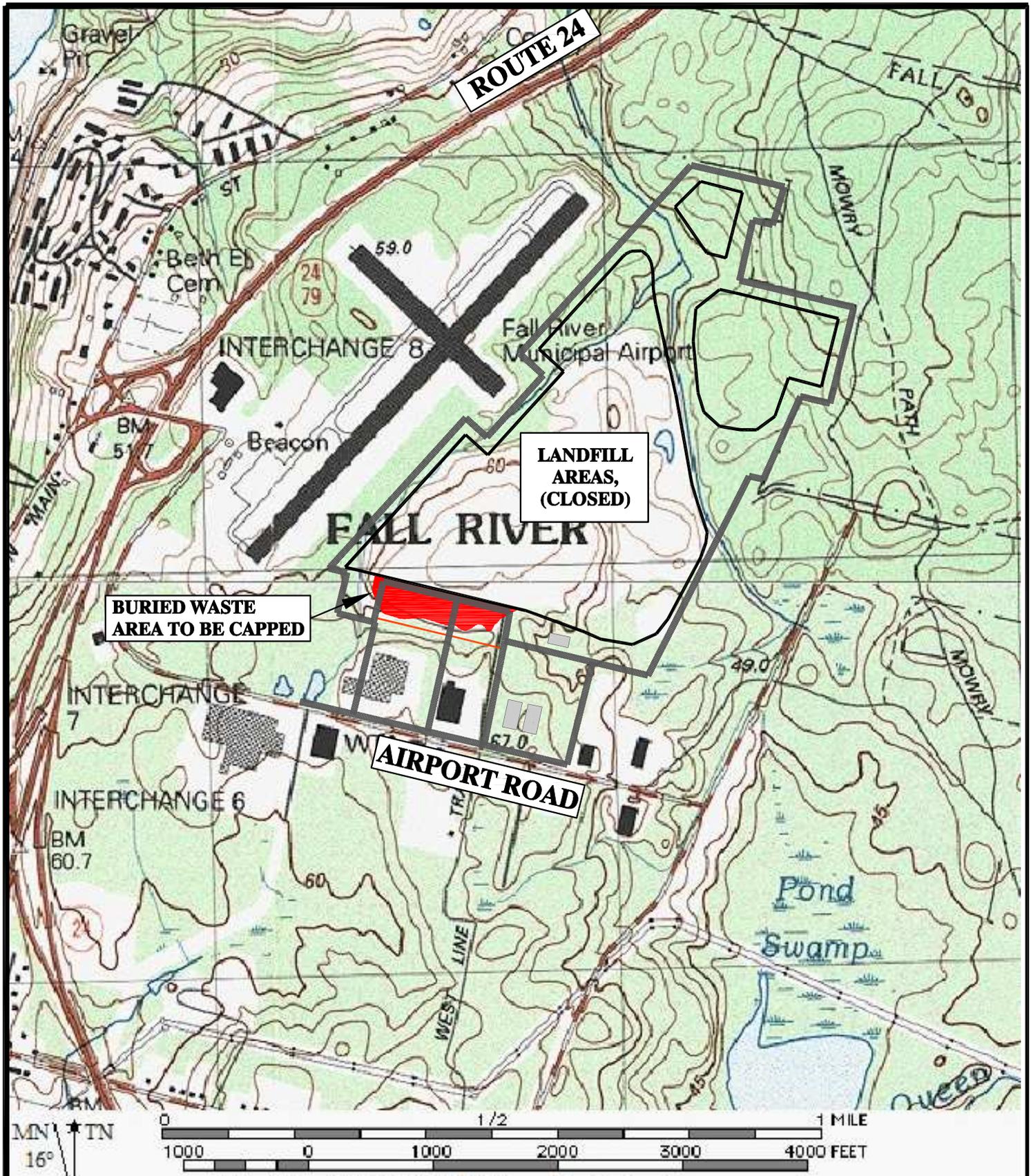
ESTIMATED REVENUE	
Revenue from Contaminated Soils (Grading and Shaping Materials)	\$4,628,000
ESTIMATED CLOSURE COSTS	
Permitting, Engineering and Assessment	\$185,000
Site Preparation	\$570,000
Engineering / Closure Reports and Construction Quality Assurance	\$225,000
Financial Assurance Mechanism and Financing	\$275,000
Landfill Cap Construction Costs	\$1,563,000
Contingency	\$282,000
Daily Operation	\$1,510,000
Total Cost	\$4,610,000
ESTIMATED DIFFERENCE	\$18,000

NOTE:

Overall project intent is to pay for overall remediation and post closure care cost.
The project is not intended as a (BFI-City) joint profit making venture.

Exhibit A – Figures

- Locus Map
- Vicinity Map



SOURCE: USGS Topographic Map - Somerset R 1998

LOCUS MAP - SITE LOCATION

Browning-Ferris Industries, Inc. (MA)
 1080 Airport Road
 Fall River, Massachusetts 02720

scale:

AS SHOWN

SITEC
 ENVIRONMENTAL
 Civil and Environmental Engineering
 Land Use Planning and Surveying
 Hazardous and Solid Waste Consultants



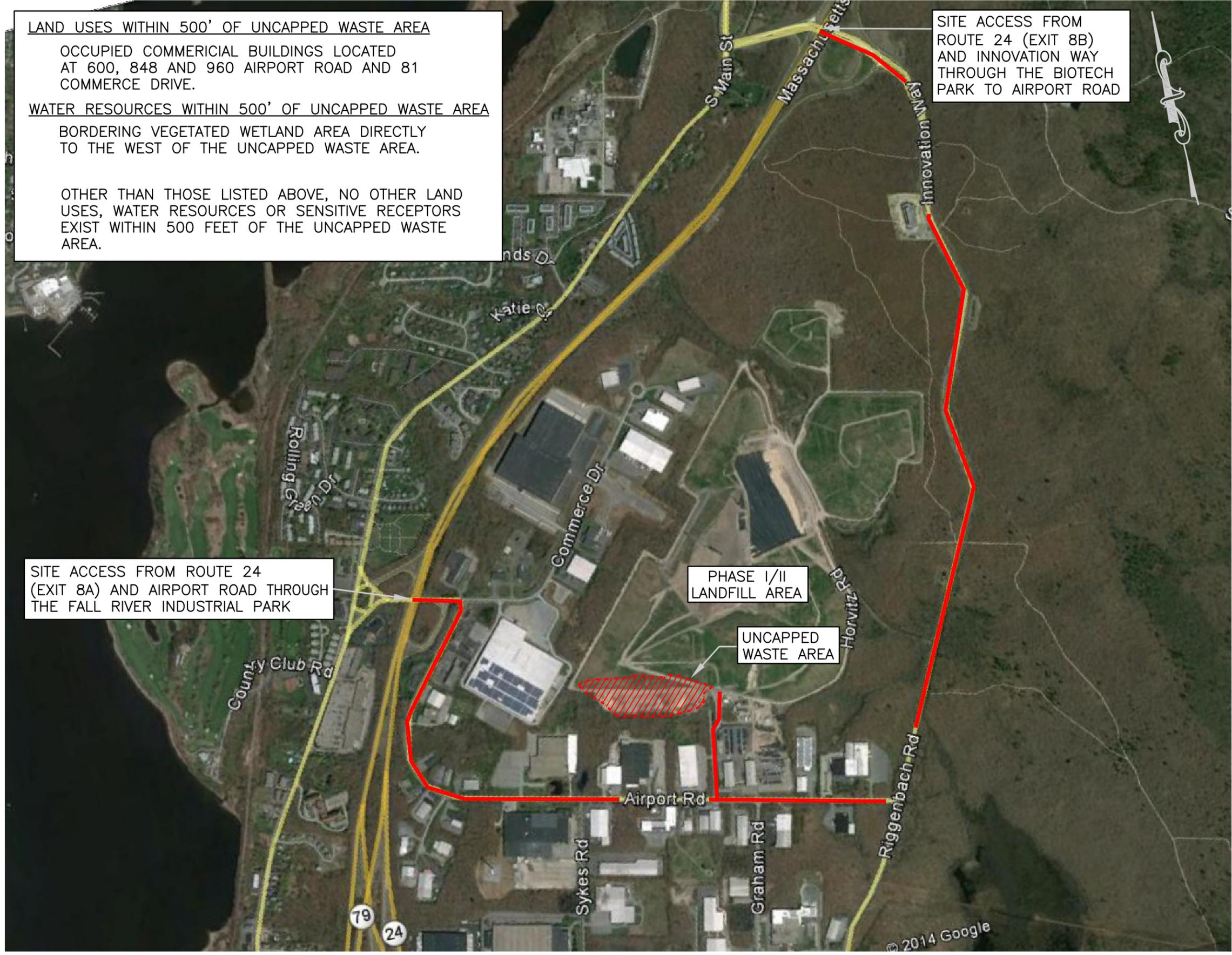
LAND USES WITHIN 500' OF UNCAPPED WASTE AREA
 OCCUPIED COMMERCIAL BUILDINGS LOCATED AT 600, 848 AND 960 AIRPORT ROAD AND 81 COMMERCE DRIVE.

WATER RESOURCES WITHIN 500' OF UNCAPPED WASTE AREA
 BORDERING VEGETATED WETLAND AREA DIRECTLY TO THE WEST OF THE UNCAPPED WASTE AREA.

OTHER THAN THOSE LISTED ABOVE, NO OTHER LAND USES, WATER RESOURCES OR SENSITIVE RECEPTORS EXIST WITHIN 500 FEET OF THE UNCAPPED WASTE AREA.

SITE ACCESS FROM ROUTE 24 (EXIT 8A) AND AIRPORT ROAD THROUGH THE FALL RIVER INDUSTRIAL PARK

SITE ACCESS FROM ROUTE 24 (EXIT 8B) AND INNOVATION WAY THROUGH THE BIOTECH PARK TO AIRPORT ROAD



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SITTEC
ENVIRONMENTAL
 Civil and Environmental Engineering
 Land Use Planning and Surveying
 Hazardous and Solid Waste Consultants

project:
 FALL RIVER LANDFILL
 UNCAPPED WASTE AREA
 1080 AIRPORT ROAD
 FALL RIVER, MASSACHUSETTS

drawing title:
 AERIAL PHOTOGRAPH
 SITE VICINITY MAP

sheet:
 1 of 1

scale:
 1" = 1,000'

date:
 OCT. 29, 2014

job no.:
 SE98-341

Exhibit B - Historic Aerial Photographs

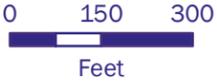


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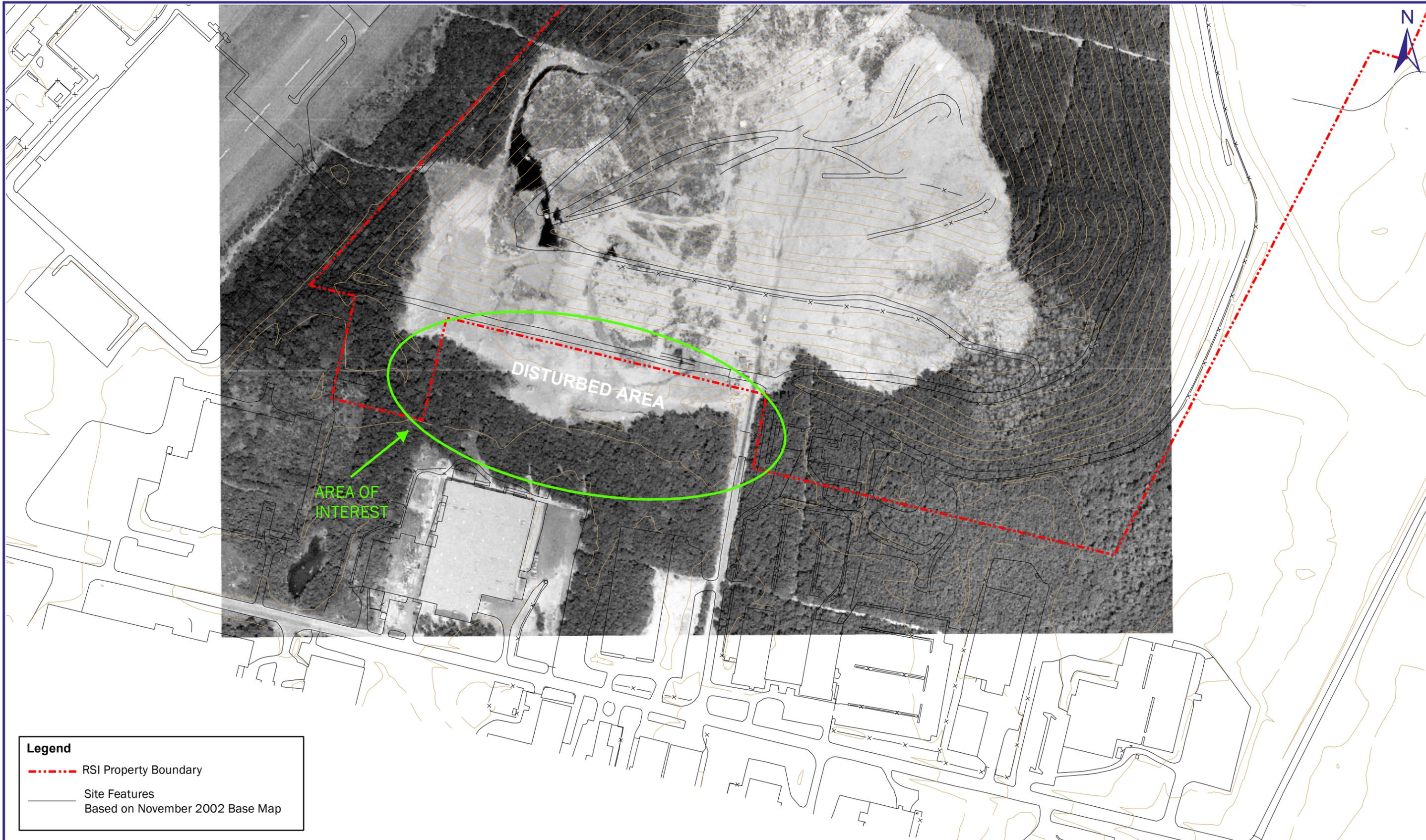
- - - - - RSI Property Boundary
- Site Features
Based on November 2002 Base Map



**HISTORIC AERIAL PHOTO - APRIL 12, 1961
REPUBLIC SERVICES, INC.
FALL RIVER LANDFILL, FALL RIVER, MASSACHUSETTS**



Source:
Hardcopy 9" x 9" USGS Aerial Photograph,
Flown 4/12/61. Photo provided by
Aerial Data Reduction Associates.

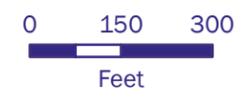


Legend

- - - RSI Property Boundary
- Site Features
Based on November 2002 Base Map



**HISTORIC AERIAL PHOTO - 1971
REPUBLIC SERVICES, INC.
FALL RIVER LANDFILL, FALL RIVER, MASSACHUSETTS**



Source:
GeoTIFF, Flown 1971
Photo provided by HistoricAerials

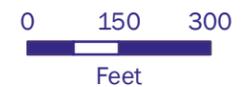


Legend

- - - RSI Property Boundary
- Site Features
- Based on November 2002 Base Map



HISTORIC AERIAL PHOTO - APRIL 01, 1977
REPUBLIC SERVICES, INC.
FALL RIVER LANDFILL, FALL RIVER, MASSACHUSETTS



Source:
 Harcopy 9" x 9" USGS Aerial Photograph,
 Flown 04/01/77. Original scale 1:60,000
 ID: 1-124. Photo provided by Mapmart

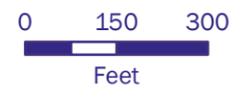


Legend

- - - - - RSI Property Boundary
- — — — — Site Features
- Based on November 2002 Base Map



**HISTORIC AERIAL PHOTO - APRIL 07, 1980
REPUBLIC SERVICES, INC.
FALL RIVER LANDFILL, FALL RIVER, MASSACHUSETTS**



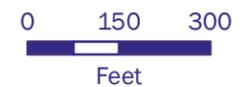


Legend

- RSI Property Boundary
- Site Features
Based on November 2002 Base Map



HISTORIC AERIAL PHOTO - APRIL 19, 1985
REPUBLIC SERVICES, INC.
FALL RIVER LANDFILL, FALL RIVER, MASSACHUSETTS



Source:
 Hardcopy 9" x 9" USGS Aerial Photograph,
 Flown 4/19/85. Photo provided by
 Aerial Data Reduction Associates.

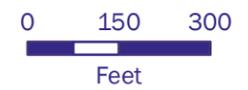


Legend

- RSI Property Boundary
- Site Features
Based on November 2002 Base Map



HISTORIC AERIAL PHOTO - MARCH 17, 1988
REPUBLIC SERVICES, INC.
FALL RIVER LANDFILL, FALL RIVER, MASSACHUSETTS





Legend

- - - - - RSI Property Boundary
- Site Features
Based on November 2002 Base Map



**HISTORIC AERIAL PHOTO - APRIL 2001
REPUBLIC SERVICES, INC.
FALL RIVER LANDFILL, FALL RIVER, MASSACHUSETTS**

0 150 300
Feet

Source:
MassGIS Data

Exhibit C – Drawings

- Current Conditions Plan
- Conceptual Closure Plan
- Landfill Cross-Section

Exhibit D - Sub-Surface Investigations

- SITEC Memorandum
- Limit of Buried Waste Determination Site Plan
- Test Pit Logs
- Test Pit Photographs
- Soil Boring Logs

SITEC

ENVIRONMENTAL
Hazardous and Solid Waste Consultants

769 Plain Street, Unit C
Marshfield, Massachusetts 02050
Tel. (781) 319-0100 FAX (781) 834-4783

MEMORANDUM

To: John DiNapoli
Company: Browning-Ferris Industries, Inc.
From: Mike Quatromoni
Date: 4/15/04
Subject: BFI Fall River Landfill, Comprehensive Site Assessment (CSA)

On December 10, 2003, SITEC Environmental, Inc. observed the excavation of test pits along the southerly side of the Phase I landfill area. This work was performed in accordance with Sub-Task 5.5 of the CSA Scope of Work, approved by the DEP on January 8, 2003, in order to determine if buried waste is present beyond the limits of the capped Phase I landfill.

This property is currently used by BFI for the storage of roll-off containers and collection vehicles. Stockpiles of soil used by the landfill are also present within this area. The topography of the land slopes gently to the south, away from the landfill, for a distance of about 250 feet. A drainage ditch exists along the limit of clearing that flows in a westerly direction and discharges to the landfill's stormwater management system. Woodland areas exist between the drainage ditch and the rear of the adjacent buildings occupied by Rex Cut Products and New England Rope, Inc. These buildings have frontage along Airport Road.

Ten test pits were excavated within the cleared area between the toe of the Phase I slope and the drainage ditch to the south. The locations of these test pits are shown on the enclosed site plan. Please be advised that buried waste was encountered at each location. The waste appeared to be comprised of both MSW and C&D debris and the depths varied between 13 and more than 20 feet. Groundwater was encountered as shallow as 4 feet below grade. Photos of the excavation are enclosed. The full lateral extent of the waste was not determined, as it appears to extend into the woods line to the south of the ditch. The buried waste encountered during this investigation is situated beyond the BFI property boundary along this side of the landfill. Additional investigation is required to determine the extent of this material and to fully evaluate alternatives for corrective action.

Should you have any questions please do not hesitate to contact me.

SITEC

ENVIRONMENTAL

Hazardous and Solid Waste Consultants

DAILY FIELD REPORT

Client: Browning-Ferris Industries, Inc.

Project: Comprehensive Site Assessment

Inspector: Chris Capone

Date: December 10, 2003

WORK SUMMARY:

Test Pit No. 1:

- Located 100' from toe of slope toward Airport Rd.
- 3' of cover soil
- MSW/C&D debris found in test pit
- Water Table 6' - 7'
- Depth of waste >20; to limit of excavator

Test Pit No. 2:

- Located 205' from slope toward Airport Rd.
- 3' of cover soil
- MSW/C&D debris found in test pit
- Water Table 4'
- Depth of trash >20; limit of excavator

Test Pit No. 3:

- Located 20' in woods beyond drainage ditch/30' SE of test pit #2
- 3' of cover soil
- MSW/C&D debris found in test pit
- Water Table 4'
- Depth of waste 14'

Test Pit No. 4:

- 150' from slope/edge of the west tree line
- Limit of waste on west side
- 12' of cover soil
- MSW/C&D debris found in test pit
- Water Table 8'
- Depth of waste 15'

Test Pit No. 5:

- 180' from slope / 40' east of #4
- 4' - 5' cover soil
- MSW/C&D found in test pit
- Water Table 4'
- Depth of waste 11'

Test Pit No. 6:

- Between #4 & #5 / 185' from slope
- 10' cover soil
- MSW/C&D debris in test pit / strong odor
- Water Table 4'
- Depth of waste 13'

Test Pit No. 7:

- 134' from slope / 50' north of #2 & #3
- 3' - 4' cover soil
- Water Table 8'
- MSW/C&D debris found in test pit
- Depth of waste >20' / limit of excavator

Test Pit No. 8:

- 150' from slope
- 3' - 4' cover soil
- MSW/C&D debris found in test pit
- Water Table 5'
- Depth of waste >20' / limit of excavator

Test Pit No. 9:

- 50' south of #8 / edge of tree line
- 2' cover soil
- MSW/C&D debris found in test pit
- Water Table 4'
- Depth of waste >20' / limit of excavator

Test Pit No. 10:

- 100' west of leachate tank along edge of access road
- 4' cover soil
- MSW/C&D debris found in test pit
- Water Table 5'
- Depth of waste >20' / limit of excavator











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Boring Log

Boring/Well No.:
 SB-1

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	36/60			
		0-3'	N/A			Grey Fine Sand	
			N/A				
5		3'-5'	N/A			Dark Brown/Black Coarse Fill	
			N/A				
		5'-7'	N/A	48/60		Coarse Fill	
			N/A				
			N/A				
10		7'-10'	N/A			Light Brown and Grey Packed Fine Sands	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-2

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	24/60			
			N/A				
		0-4'	N/A			Light Brown Medium Sand	
5		4'-5'	N/A			Dark Brown/Black Fill with Liquid Coal Tar	
			N/A				
		5'-7'	N/A	36/60		Liquid Coal Tar Mixed with Light Brown Fill	
			N/A				
			N/A				
10		7'-10'	N/A			Light Brown and Grey Medium Sand	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-3

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	24/60			
			N/A				
		0-4'	N/A			Light Brown Fine Sand	
5		4'-5'	N/A			Dark Brown/Black Fill with Liquid Coal Tar	
			N/A				
			N/A	36/60			
			N/A				
			N/A				
10		5'-10'	N/A			Light Brown Fine Sand Fill	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 < > Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-4

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	36/60			
		0-3'	N/A			Light Brown Fine Sand	
			N/A				
5		3'-5'	N/A			Dark Brown Fines with Organics (i.e. roots, leaves)	
			N/A				
		5'-7.5'	N/A	48/60		Dark Brown Fines with Organics	
			N/A				
			N/A				
10		7.5'-10'	N/A			Light Brown Fine Sand	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-5

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
		0-2'	N/A	24/60		Light Brown Fine Sand	
			N/A				
			N/A				
5		2'-5'	N/A			Dark Brown Fines with Staining (Odor Present)	
			N/A				
		5'-7.5'	N/A	50/60		Dark Brown Fines with Staining (Odor Present)	
			N/A				
			N/A				
10		7.5'-10'	N/A			Light Brown Fine Sand	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-6

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	48/60			
		0-3'	N/A			Light Brown Fine Sand	
		3'-3.5'	N/A			Woodchips	
5		3.5'-5'	N/A			Brown Fine Sand with Gravel	
			N/A				
		5'-7'	N/A	12/60		Brown Fine Sand	
			N/A				
			N/A				
10		7'-10'	N/A			Glass, Plastic, Wood, MSW	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-7

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	36/60			
			N/A				
		0'-4'	N/A			Light Brown and Grey Fine Sand	
5		4'-5'	N/A			Brown Medium Sand with Gravel (Odor Present)	
			N/A				
			N/A	36/60			
			N/A				
			N/A				
10		5'-10'	N/A			Silty Brown Fines	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-8

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	36/60			
		0'-3'	N/A			Grey Fine Sand	
			N/A				
5		3'-5'	N/A			Light Brown Medium Sand with Gravel	
			N/A				
			N/A	18/60			
		5'-8'	N/A			Grey Fine Sand	
			N/A				
10		8'-10'	N/A			Stained Fines with Woodchips and Plastic	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-9

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
		0-2.5'	N/A	42/60		Light Brown and Grey Fine Sand	
			N/A				
			N/A				
5		2.5'-5'	N/A			Dark Brown Fill with Woodchips, Plastic, & Woven Cloth	
			N/A				
			N/A	36/60			
			N/A				
			N/A				
10		5'-10'	N/A			Light Brown and Grey Hydric Fines with Boulders	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-10

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
		0-2.5'	N/A	36/60		Light Brown Fine Sand	
			N/A				
			N/A				
5		2.5'-5'	N/A			Dark Brown Fines with Staining, Woodchips, and Glass	
			N/A				
			N/A	36/60			
		5'-7'	N/A			Dark Brown Hydric Fines with Staining and Boulders	
			N/A				
10		7'-10'	N/A			Grey Hydric Fines with Boulders & Gravel	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-11

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	30/60			
		0-3'	N/A			Light Brown Fine Sand	
			N/A				
5		3'-5'	N/A			Dark Brown Fines with 1 Woodchip	
			N/A				
			N/A	36/60			
			N/A				
			N/A				
10		5'-10'	N/A			Grey Hydric Fines	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-12

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	30/60			
		0-3'	N/A			Light Brown & Grey Fines	
			N/A				
5		3'-5'	N/A			Dark Brown Fines with Glass, Woodchips, Roots, Plastic, Rope, & Boulders	
			N/A				
			N/A	55/60			
			N/A				
			N/A				
10		5'-10'	N/A			Light Brown and Grey Fines with Boulders	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-13

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction	
							Pipe	Fill
0			N/A					
			N/A					
			N/A	36/60				
		0-3'	N/A			Light Brown & Red-Orange Fine Sand with Gravel		
			N/A					
5		3'-5'	N/A			Grey Silty Fines with Plastic		
		5'-6'	N/A			Dark Brown Fine Sand with Gravel		
			N/A	48/60				
			N/A					
			N/A					
10		6'-10'	N/A			Grey Fines with Gravel		
15								
20								
25								
30								

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

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Boring Log

Boring/Well No.:
 SB-14

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	30/60			
		0-3'	N/A			Dark Brown Fine Sand with Roots & Gravel	
			N/A				
5		3'-5'	N/A			Orange and Grey Fines with Boulders	
			N/A				
			N/A	28/60			
		5'-8'	N/A			Light Brown Fine Sand with Boulders	
			N/A				
10		8'-10'	N/A			Grey Fines with Boulders	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-15

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
		0-2.5'	N/A	24/60		Light Brown Fines with Boulders	
			N/A				
			N/A				
5		2.5'-5'	N/A			Dark Brown Fines with Boulders & Plastic	
			N/A				
		5'-7'	N/A	18/60		Light Brown Medium Sand	
			N/A				
			N/A				
10		7'-10'	N/A			Grey Fines with Gravel, Staining, and Woodchips	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-16

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
		0-2'	N/A	28/60		Grey Fines with Gravel	
			N/A				
		2'-4'	N/A			Dark Brown and Red Fines with Gravel	
5		4'-5'	N/A			Grey Fines with Gravel and Boulders	
		5'-6.5'	N/A			Dark Brown and Red Fines with 1 Plastic Piece	
			N/A	30/60			
			N/A				
			N/A				
10		6.5'-10'	N/A			Grey Fines with Boulders	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-17

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	45/60			
		0-3'	N/A			Light Brown Fines with Gravel	
		3'-3.5'	N/A			Dark Brown Fines with Gravel	
5		3.5'-5'	N/A			Grey Fines with Boulders	
			N/A				
			N/A	45/60			
		5'-8'	N/A			Brown and red Fines with Gravel	
			N/A				
10		8'-10'	N/A			Grey Fines with Gravel	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-18

Project No: SE98-341

Project Name: Soil Borings for Investigation

City, State: Fall River, MA

Field Technician: Hilary Baker

Drilling Contractor: New England Geotech

Drilling Method: Remote Control 6620 DT Rig

Borehole Depth: 10'

Borehole Diameter: 2"

Soil Sampling Method:

Soil Sampling Device:

Monitoring Well(MW):

MW Construction:

Depth to Groundwater:

Field Screening:

Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
		0-2'	N/A	38/60		Dark Brown Fine Sand	
			N/A				
5		2'-5'	N/A			Light Brown/Grey Fine Sand	
			N/A				
			N/A	30/60			
		5'-7'	N/A			Light Brown Fines	
			N/A				
10		7'-10'	N/A			Grey Fines with Gravel	
15							
20							
25							
30							



Native soil/backfill



Bentonite



Well Screen



Filter Sand



Solid Well Pipe/Riser



Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-19

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 9'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
		0-0.5'	N/A			Grey Fines with Woodchips and Roots	
			N/A	16/60			
			N/A				
		0.5'-4'	N/A			Reddish Brown Fines with Gravel	
5		4'-5'	N/A			Black Stained Fines with Gravel (Odor Present)	
			N/A				
			N/A	14/60			
			N/A				
		5'-9'	N/A			Black Fines with MSW, Netting, Woodchips, & Plastic (Strong Odor Present)	
10							
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-20

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 14'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
		0-0.5'	N/A			Woodchips	
		0.5'-2.5'	N/A	18/60		Reddish Brown Fines with Gravel	
		2.5'-3.5'	N/A			Brown Fines with Gravel	
			N/A				
5		3.5'-5'	N/A			Dark Brown Fines with Gravel	
			N/A				
			N/A	6/60			
			N/A				
			N/A				
10		5'-10'	N/A			Black Silty Fine Sand with Gravel	
			N/A				
		10'-12'	N/A	18/60		Black Fines with Boulder Chards	
			N/A				
		12'-14'	N/A			Grey Fines with 1 Hard Plastic Piece	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-21

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
		0'-2'	N/A	36/60		Light Brown & Grey Fines with Roots & Gravel	
		2'-3'	N/A			Reddish Brown Fines with Gravel	
			N/A				
5		3'-5'	N/A			Dark Brown Fines with Gravel	
			N/A				
			N/A	24/60			
		5'-7.5'	N/A			Dark Brown Fines with Plastic and Woodchips	
			N/A				
10		7.5'-10'	N/A			Grey Fines with Boulders and Plastic Pieces	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-22

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	30/60			
			N/A				
			N/A				
5		0-5'	N/A			Light Brown and Grey Fines with Boulders & Woodchips	
			N/A				
			N/A	30/60			
			N/A				
			N/A				
10		5'-10'	N/A			Black Fines with Woodchips, Plastic, and MSW	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-23

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	48/60			
			N/A				
		0-4'	N/A			Reddish Grey Fines with Gravel	
5		4'-5'	N/A			Dark Brown and Black Fines	
			N/A				
			N/A	30/60			
			N/A				
			N/A				
10		5'-10'	N/A			Black Fines with Newspaper, Woodchips, & Plastic	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-24

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 7'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction	
							Pipe	Fill
0			N/A					
			N/A					
			N/A	48/60				
		0-3'	N/A			Light Brown and Grey Fines with Boulders		
			N/A					
5		3'-5'	N/A			Dark Brown and Black Fines with Woodchips		
			N/A	6/60				
		5'-7'	N/A			Dark Brown and Black Fines with Paper		
10								
15								
20								
25								
30								

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-25

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well (MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 14'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	36/60			
			N/A				
			N/A				
5		0-5'	N/A			Brown and Dark Brown Fines	
			N/A				
			N/A	3/60			
			N/A				
			N/A				
10		5'-10'	N/A			Dark Brown Fines with Woodchips	
			N/A				
			N/A	24/60			
			N/A				
		10'-14'	N/A			Light Brown and Grey Fines	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-26

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
		0-1'	N/A			Light Brown Fine Sand	
			N/A	24/60			
			N/A				
			N/A				
5		1'-5'	N/A			Brown Fines with Metal Coil and Plastic	
			N/A				
		5'-7'	N/A	24/60		Brown Fines	
			N/A				
			N/A				
10		7'-10'	N/A			Black and Grey Fines with Gravel	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-27

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
		0-2'	N/A	36/60		Light Brown and Grey Fine Sand with Boulders	
		2'-3'	N/A			Black Fines with Boulders	
			N/A				
5		3'-5'	N/A			Grey Fines	
			N/A				
			N/A	60/60		Brown Fines	
			N/A				
			N/A				
10		5'-10'	N/A			Light Brown and Grey Fine Sand with Boulders	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-28

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	48/60			
		0-3'	N/A			Light Brown Fine Sand	
			N/A				
5		3'-5'	N/A			Black and Grey Fines with Carpet Pieces	
			N/A				
		5'-7'	N/A	24/60		Light Brown and Black Fines	
			N/A				
			N/A				
10		7'-10'	N/A			Grey Fines with Gravel	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-29

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				Pipe Fill
			N/A				
			N/A	18/60			
		0-3'	N/A			Light Brown Fines with Gravel and Boulders	
			N/A				
5		3'-5'	N/A			Black Fines with Gravel and Carpet Pieces	
			N/A				
		5'-7'	N/A	30/60		Black Fines with Gravel	
			N/A				
			N/A				
10		7'-10'	N/A			Grey and Black Fines	
15							
20							
25							
30							



Native soil/backfill



Bentonite



Well Screen



Filter Sand



Solid Well Pipe/Riser



Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-30

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	18/60			
			N/A				
			N/A				
5		0-5'	N/A			Light Brown Fines with Gravel and Paper	
			N/A				
			N/A	18/60			
			N/A				
			N/A				
10		5'-10'	N/A			Black Silty Fines with Gravel	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-31

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 7.5'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	24/60			
			N/A				
			N/A				
5		0-5'	N/A			Light Brown Fine Sand	
			N/A				
			N/A	6/60			
		5'-7.5'	N/A			Carpet Pieces	
10							
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-32

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	30/60			
			N/A				
			N/A				
5		0-5'	N/A			Light Brown and Black Fines with 1 Piece of MSW	
			N/A				
			N/A	4/60			
			N/A				
			N/A				
10		5'-10'	N/A			Liquid with Black Silty Fines	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-33

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
		0-2'	N/A	30/60		Light Brown Fines with Gravel	
			N/A				
			N/A				
5		2'-5'	N/A			Black and Grey Fines with Gravel	
			N/A				
		5'-7'	N/A	24/60		Brown Fines with Netting Piece	
			N/A				
			N/A				
10		7'-10'	N/A			Grey Fines with Boulders	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-34

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	36/60			
			N/A				
		0-4'	N/A			Light Brown Fine Sand	
5		4'-5'	N/A			Black Fines with Woodchips	
			N/A				
		5'-7'	N/A	24/60		Light Brown Fines with Cloth Pieces	
			N/A				
			N/A				
10		7'-10'	N/A			Dark Grey Silty Fines with Boulders	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-35

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
		0-2'	N/A	24/60		Light Brown Fines	
			N/A				
			N/A				
5		2'-5'	N/A			Dark Grey Fines with Carpet Pieces	
			N/A				
			N/A	18/60			
			N/A				
			N/A				
10		5'-10'	N/A			Dark Grey Fines with Carpet Pieces	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-36

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
		0-2'	N/A	24/60		Light Brown Fines	
			N/A				
			N/A				
5		2'-5'	N/A			Brown Fines with Woodchips and Plastic	
			N/A				
			N/A	24/60			
			N/A				
			N/A				
10		5'-10'	N/A			Dark Grey Silty Fines	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-37

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well (MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	24/60			
			N/A				
			N/A				
5		0'-5'	N/A			Light Brown Fines with Woodchips, Plastic Pieces, & Boulders	
			N/A				
		5'-7'	N/A	36/60		Dark Grey Silty Fines with Boulders	
			N/A				
			N/A				
10		7'-10'	N/A			Black Fines with Woodchips	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-38

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				Pipe Fill
			N/A				
		0-2'	N/A	24/60		Light Grey Fines	
			N/A				
			N/A				
5		2'-5'	N/A			Dark Brown Fines with Gravel & Carpet	
			N/A				
			N/A	30/60			
		5'-8'	N/A			Grey Fines with Carpet	
			N/A				
10		8'-10'	N/A			Dark Grey Silty Fines with Plastic Pieces	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-39

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well (MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
		0-2'	N/A	48/60		Light Brown Fines	
			N/A				
			N/A				
5		2'-5'	N/A			Light Grey Fines with Gravel	
			N/A				
			N/A	24/60			
		5'-8'	N/A			Gravel with Plastic (MSW at 8')	
			N/A				
10		8'-10'	N/A			Light Grey Fines with Gravel	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-40

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 16, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
		0-1'	N/A			Light Grey Fines with Gravel	
			N/A	24/60			
			N/A				
			N/A				
5		1'-5'	N/A			Black Fines with Woodchips	
			N/A				
			N/A	38/60			
			N/A				
			N/A				
10		5'-10'	N/A			Grey Fines with Gravel	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-41

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well (MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 17, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
		0-2'	N/A	20/60		Dark Reddish Brown Fines with Boulders	
			N/A				
			N/A				
5		2'-5'	N/A			Light Brown Fines with Boulders	
		5'-6.5'	N/A			Brown Fines with Boulders	
			N/A	60/60			
			N/A				
			N/A				
10		6.5'-10'	N/A			Grey Fines with Boulders	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-42

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 17, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
		0-1'	N/A			Dark Brown Fines	
			N/A	50/60			
			N/A				
		1'-4.5'	N/A			Light Brown Fines	
5		4.5'-5'	N/A			Grey Fines with Boulders	
			N/A				
		5'-7'	N/A	50/60		Light Brown and Grey Fines with Boulders	
			N/A				
			N/A				
10		7'-10'	N/A			Grey Fines with Boulders	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-43

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well (MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 17, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0		0-0.5'	N/A			Dark Brown Fines	Pipe Fill
			N/A				
		0.5'-2'	N/A	30/60		Light Brown Fines with Boulders	
			N/A				
			N/A				
5		2'-5'	N/A			Grey Fines with Gravel	
			N/A				
			N/A	40/60			
			N/A				
			N/A				
10		5'-10'	N/A			Grey Fines with Boulders (Groundwater Table at 10')	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-44

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 17, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction	
							Pipe	Fill
0			N/A					
		0-1'	N/A			Dark Brown Fines		
			N/A	36/60				
		1'-3.5'	N/A			Light Brown Fines with Boulders		
			N/A					
5		3.5'-5'	N/A			Grey Fines with Gravel		
			N/A					
			N/A	60/60				
			N/A					
			N/A					
10		5'-10'	N/A			Grey Fines with Boulders and Gravel		
15								
20								
25								
30								

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-45

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well (MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 17, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				Pipe Fill
			N/A				
		0-2.5'	N/A	42/60		Light Brown Fines with Gravel	
			N/A				
			N/A				
5		2.5'-5'	N/A			Grey Fines with Boulders	
			N/A				
			N/A	60/60			
			N/A				
			N/A				
10		5'-10'	N/A			Grey Fines with Boulders	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes:

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Boring Log

Boring/Well No.:
 SB-46

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 17, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	12/60			
			N/A				
		0-4'	N/A			Light Brown Fine Sand	
5		4'-5'	N/A			Brown Fines with Rubber Pieces	
			N/A				
		5'-7'	N/A	18/60		Brown Fines with Black Staining, Woodchips, & Plastic	
			N/A				
			N/A				
10		7'-10'	N/A			Hydric Grey Fines with Gravel	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes: Boring was located near tires 60' past the ditch laying on ground surface.

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Boring Log

Boring/Well No.:
 SB-47

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well (MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 17, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
			N/A	40/60			
			N/A				
			N/A				
5		0-5'	N/A			Light Brown & Grey Fines with Gravel	
			N/A				
		5'-7'	N/A	50/60		Light Brown Fines	
		7'-8'	N/A			White Chipped Boulders	
			N/A				
10		8'-10'	N/A			Grey Fines with Boulders	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes: Boring was located near tires that were on the ground surface 30' past the ditch.

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Boring Log

Boring/Well No.:
 SB-48

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well (MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 17, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
		0-2'	N/A	24/60		Light Brown Fine Sand	
		2'-3'	N/A			Grey Fines with Gravel	
		3'-4'	N/A			Dark Brown Fines	
5		4'-5'	N/A			C&D: Glass, Plastic, Woodchips, & Crushed Brick Pieces	
			N/A				
			N/A	26/60			
			N/A				
10		5'-10'	N/A			Grey Fines with Boulders	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes: Located near clusters of trash and tires on the ground surface.

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Boring Log

Boring/Well No.:
 SB-49

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 17, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
		0-2'	N/A	36/60		Light Brown Fine Sand	
			N/A				
			N/A				
5		2'-5'	N/A			Light Brown and Grey Fines	
		5'-6'	N/A			Brown Fine Sand	
			N/A	48/60			
			N/A				
			N/A				
10		6'-10'	N/A			Hydric Grey Fines and Glacial Till	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes: Located near clusters of trash and tires on the ground surface.

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Boring Log

Boring/Well No.:
 SB-50

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well (MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 17, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
		0-1'	N/A			Brown Fine Sand	
		1'-2'	N/A	36/60		Red Fines with Boulders	
			N/A				
			N/A				
5		2'-5'	N/A			Light Brown Fines with 1 Woodchip and Boulders	
			N/A				
		5'-7'	N/A	48/60		Light Brown Fine Sand	
		7'-8'	N/A			Dark Brown Fines	
			N/A				
10		8'-10'	N/A			Grey Fines with Boulders	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes: Located near clusters of trash and tires on the ground surface.

SITEC Environmental, Inc.

769 Plain Street, Unit C
 Marshfield, MA 02050
 Phone: (781) 319-0100
 FAX: (781) 834-4783

Boring Log

Boring/Well No.:
 SB-51

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 17, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				Pipe Fill
			N/A				
			N/A	25/60			
		0-3'	N/A			Dark Brown Fines with Gravel	
			N/A				
5		3'-5'	N/A			Grey Fines with Plastic & MSW	
			N/A				
			N/A	20/60		Light Brown Fine Sand	
			N/A			Dark Brown Fines	
			N/A				
10		5'-10'	N/A			Black Staining, Woodchips, and Boulders	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes: Located near clusters of trash and tires on the ground surface.

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Boring Log

Boring/Well No.:
 SB-52

Project No: SE98-341	Soil Sampling Method:
Project Name: Soil Borings for Investigation	Soil Sampling Device:
City, State: Fall River, MA	Monitoring Well(MW):
Field Technician: Hilary Baker	MW Construction:
Drilling Contractor: New England Geotech	Depth to Groundwater:
Drilling Method: Remote Control 6620 DT Rig	Field Screening:
Borehole Depth: 10'	
Borehole Diameter: 2"	Date: August 17, 2010

Depth (feet)	Sample ID	Sample Interval (feet)	Penetration (blows/6 inches)	Sample Recovery Rec/Pen	PID (ppm)	Sample Description	MW Construction
0			N/A				
			N/A				
		0-2'	N/A	30/60		Dark Brown Fines	
			N/A				
			N/A				
5		2'-5'	N/A			Grey Fines	
			N/A				
		5'-7'	N/A	24/60		Black Fines with Plastic and Glass	
			N/A				
			N/A				
10		7'-10'	N/A			Grey Fines	
15							
20							
25							
30							

 Native soil/backfill
  Bentonite
  Well Screen
 Filter Sand
  Solid Well Pipe/Riser
 >< Groundwater Elevation

Notes: Located near clusters of trash and tires on the ground surface.