

April 25, 2012  
File No. 1753-03-01



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**Phase II Environmental Site Assessment**

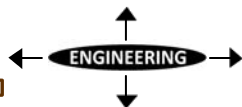
**Former Lunt Silversmiths, Inc.  
298 Federal Street  
Greenfield, Massachusetts**

**Prepared For:**

Town of Greenfield  
114 Main Street  
Greenfield, Massachusetts 01301

**Prepared By:**

O'Reilly, Talbot & Okun Associates, Inc.  
293 Bridge Street, Suite 500  
Springfield, Massachusetts 01103



File No. 1753-03-01  
April 25, 2012

Mr. Robert Pyers  
Director of Economic Development and Marketing  
Town of Greenfield  
114 Main Street  
Greenfield, MA 01301

Re: Brownfield Phase II Environmental Site Assessment Report  
Lunt Silversmith Site  
298 Federal Street  
Greenfield, Massachusetts

Dear Mr. Pyers:

O'Reilly, Talbot & Okun Associates, Inc. (OTO) is pleased to present this Phase II environmental site assessment of the former Lunt Silversmith site. This report presents our assessment of site soil, groundwater, soil gas, and indoor air conditions, and provides preliminary cost estimates for remediation.

We appreciate the opportunity to work with you on this project. Should you have any questions regarding the report, please do not hesitate to contact us.

Sincerely,  
O'Reilly, Talbot & Okun Associates, Inc.

*DRAFT*

Valerie D. Tillinghast; LSP  
Associate

*DRAFT*

Kevin J. O'Reilly; LSP  
Principal

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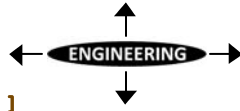
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## 1.0 INTRODUCTION

This report presents the results of a Phase II Environmental Site Assessment performed at the former Lunt Silversmiths site at 298 Federal Street in Greenfield, Massachusetts. A Site locus is attached as Figure 1. A site plan showing the property subject to this assessment is provided as Figure 2. The term “Site” as used in this document refers to the study area at 298 Federal Street, including the baseball fields west of the former manufacturing area, but not the northeastern portion of the building (parcel 95-1-UTA).

Our assessment was conducted in accordance with the scope of work identified in our December 6, 2011 proposal to the Town of Greenfield, and follows guidance provided in ASTM’s “Standard Guide for Environmental Site Assessment: Phase II Environmental Site Assessment Process”, Standard E1903-11. The objectives of our assessment were to:

- evaluate the Recognized Environmental Conditions (RECs) identified in the October 19, 2011 Phase I Environmental Site Assessment (ESA) prepared by Weston & Sampson Engineers, Inc. (W&S, 2011);
- render an opinion as to the potential presence of oil or hazardous materials in the soil and groundwater at the Site; and
- develop preliminary remedial cost estimates.

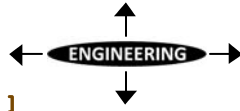
Our study included the assessment of soil, groundwater, soil gas, and indoor air conditions at the Site. Two conditions were identified which require assessment under the Massachusetts Contingency Plan (MCP). These are metals in Site soil, and chlorinated volatile organic compounds (CVOCs), primarily trichloroethylene (TCE), in Site soil and groundwater. The primary exposure route of concern for the CVOCs is inhalation of vapors in indoor air inside Site buildings. CVOC-impacted groundwater has migrated from the Site into the municipal storm drain system. This migration route may require further assessment.

Background information on the Site is provided in Section 2.0, and includes a description of the Site and discussion of the previously identified RECs at the property. Section 3.0 describes the Phase II activities conducted by OTO, and presents analytical results. A conceptual site model and discussion of conditions to address is provided in Section 4.0. Section 5.0 provides preliminary cost estimates. Section 6.0 provides a summary of the Phase II assessment and conclusions.

This report is subject to the limitations in Appendix A.

## 2.0 BACKGROUND

This section provides a description of the Site and the RECs identified at the Site by the Phase I ESA.



## 2.1 SITE DESCRIPTION / SITE SETTING

### 2.1.1 General Description

The Site is an industrially-zoned property located at 298 Federal Street in Greenfield Massachusetts. The property is identified in Town of Greenfield assessor's records as parcel 95-1-UTB, and includes approximately 10.6 acres of land. The attached parcel 95-1-UTA on the northeast has different ownership and was not included in this assessment. Assessor's records indicate the original Site building was constructed in 1850. Multiple additions were made to the building over time. The Site building is listed as having a finished area of approximately 74,280 square feet. The series of interconnected buildings include one- and two-story portions constructed primarily of brick.

The property is bounded by Norwood Street on the north, Federal Street on the east, Kenwood Street on the south, and Davis Street on the west. Residential neighborhoods are located to the north, south, and west. Development to the east, across Federal Street, is primarily commercial.

The Site buildings are serviced by municipal water and sewer systems, and are heated by fuel oil. Heating oil is stored in a 30,000 gallon above-ground tank constructed on the northwest corner of the Site building. The tank is enclosed in a concrete and cinder block building.

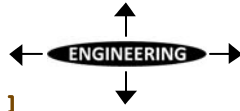
Exterior portions of the Site include paved parking areas on the east and west sides of the building. A landscaped garden is located on the east side of the building, near the main entrance. A grassed courtyard is present in the center of the Site building, and is accessible only by passing through the building. Three grassed baseball fields and associated recreational structures are located on the western end of the property. The fields are reportedly used by the Greenfield Minor League.

Local topography is generally flat at an approximate elevation of 260 feet above mean sea level. Site topography slopes gently downward to the west, toward the Green River, which is located approximately 5,500 feet to the west. The nearest surface water body is the Connecticut River, which is located approximately 4,000 feet to the east of the Site.

Soils in this area are mapped as fine glaciolacustrine deposits over thin till. Mapped bedrock outcrops are located approximately 500 feet southeast of the Site. Shallow bedrock has also been reported at the gasoline station across Federal Street, immediately east of the Site. Bedrock in the area is mapped as arkose interbedded with shaley siltstone and arkosic sandstone.

### 2.1.2 MCP Reporting Categories

The Massachusetts Contingency Plan (MCP) identifies different categories for soil and groundwater which are applicable when a reportable release condition is identified at a site. We reviewed applicable groundwater and soil reporting categories for this Site.



For groundwater, the MCP RCGW-1 category is applicable to groundwater within current or potential drinking water source areas. Current and potential drinking water source areas are defined as areas:

1. Within a Potentially Productive Aquifer (PPA);
2. Within a Zone II, or Interim Wellhead Protection Area for a public water supply;
3. Within the Zone A of a Class A surface water body used as a public water supply;
4. Within 500 feet of a private water supply well or greater than 500 feet from a public water supply distribution pipeline; or
5. Within a municipality designated aquifer protection area.

A copy of the MassGIS priority resource mapping for the area is provided as Figure 4. None of these features was identified at the Site. Additionally, the area is not within an aquifer protection district identified by the Town of Greenfield. The Site and vicinity are serviced by the municipal drinking water supply. Based on criteria outlined in the MCP, the Site groundwater classification is therefore RCGW-2 for release reporting purposes.

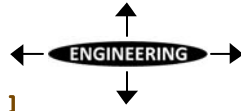
For soil, the MCP indicates that soils located within 500 feet of a residential dwelling and/or within an RCGW-1 groundwater area are classified as RCS-1. Based on the presence of residential properties to the north, south, and west of the Site, Site soils are classified as RCS-1 for release reporting purposes.

### 2.1.3 Goly's Garage

Goly's Garage (Goly's) is located across Kenwood Street to the south of the Site. Goly's street address is 286 Federal Street. The location of this facility is shown on Figure 2. In February 2010, a Class C Response Action Outcome report prepared on behalf of Goly's (ECS, 2010) was submitted to the MassDEP. That report included a Downgradient Property Status (DPS) opinion that suggested TCE detected in groundwater at Goly's was the result of migration from the Lunt property.

Two groundwater monitoring wells, MW-6 and MW-7, were installed near the southeastern Lunt property line as part of that assessment. Selected figures and data tables from the DPS report are attached in Appendix B. As shown on Table 5 from that report, the TCE concentration reported at MW-6 was 80.8 milligrams per liter (mg/l). TCE was also detected on Goly's property, west of the garage, at monitoring wells MW-9 and MW-10. Concentrations in the wells on Goly's property ranged from 0.001 to 0.005 mg/l, and are below the MCP GW-2 groundwater standard (0.03 mg/l).

Goly's Garage is a Conditionally Exempt Small Quantity Generator listed as generating several spent chlorinated solvents.



#### 2.1.4 Phase I ESA Findings

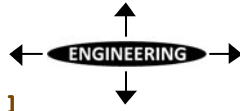
A Phase I ESA dated October 19, 2011 was prepared by Weston & Sampson Engineers, Inc. (W&S, 2011). The ESA indicates the Site was used for industrial purposes for over 100 years, but is currently vacant. Past use of the facility was identified primarily as silverware manufacturing, but over the years included other products such as bicycle, car and airplane parts, surgical equipment, and military supplies.

The Phase I report identified the following Recognized Environmental Conditions (RECs) at the Site:

- REC-1: Historic use of the Site for manufacturing. Past industrial processes identified at the Site include cutting, stamping, degreasing, smelting, annealing, electroplating, buffing, and polishing. The use of TCE and petroleum products occurred at the Site. MassDEP records indicate up to five degreasing units and eleven cyclonic dust collectors previously operated at the Site. The locations of the degreasers are not known, with the exception of one unit which remains in the southeastern building (see Figure 2). Five cyclonic dust collectors also remain on Site and are shown on Figure 2.
- REC-2: The presence of abandoned chemical containers throughout the building.
- REC-3: The detection of TCE in groundwater at monitoring well MW-6, which was the basis of a Downgradient Property Status (DPS) filing made by a neighbor to the south, Goly's Garage (see Section 2.1.4).
- REC-4: The presence of a 30,000 gallon above-ground heating oil storage tank. Minor staining of the ground was present along the northern exterior wall of the tank building, near the fill hoses. According to the Phase I report, a permit dated September 20, 1979 was identified for construction of an oil storage tank at the Site. This is likely the existing AST on the northwestern side of the building.
- REC-5: The presence of four exterior cyclones which were utilized to remove silver and other particulates.
- REC-6: The western portion of the Site was identified as a REC due to the industrial nature of the property. Historic Sanborn mapping indicates the ballfields on the western site of the Site were previously developed with approximately 50 units of temporary housing for veterans after World War II. Prior to that, a small industrial building was present near the center of the fields in 1914. The nature of the fill materials in the western end of the Site is unknown.
- REC-7: The suspected presence of asbestos-containing building materials, lead-based paint, and PCBs associated with the building and other exterior structures (such as the cyclones).

Section 3.0 identifies the Phase II activities performed to assess these RECs.





### 3.0 PHASE II ACTIVITIES

To evaluate whether released oil or hazardous materials may be present in Site media, OTO's Phase II assessment included the following:

- performance of 26 soil borings;
- installation of seven groundwater monitoring wells;
- collection and analysis of soil samples from each boring;
- collection and analysis of eleven groundwater samples;
- collection and analysis of two water samples from catch basins in Kenwood Street;
- collection and analysis of two water samples from the storm drain outfall area;
- collection and analysis of six soil gas samples; and
- collection and analysis of four indoor air samples.

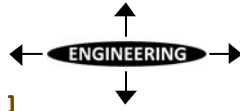
These activities and the associated results are described in the following sections. Exploration locations are depicted on Figures 3 and 6.

#### 3.1 SOIL BORINGS AND MONITORING WELL INSTALLATION

OTO conducted a total of 26 soil borings at the Site during two rounds of drilling. On January 11, 2012, 20 borings (LS-1 through LS-20) were performed. On February 21, 2012, six additional soil borings (LS-21 through LS-24, LS-27 and LS-30) were performed. Seven of the borings (LS-10, LS-19, and LS-20 through LS-24) were completed as groundwater monitoring wells. The water table was encountered at depths of 2.5 to 6.5 feet below ground surface during drilling. The water table was shallowest on the western side of the Site, in the ball fields. The monitoring wells were each set to span the water table. Soil boring and monitoring well installation logs are provided in Appendix C.

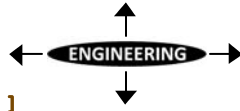
The rationale for soil boring and monitoring well locations is summarized below:

1. Borings LS-1 through LS-6 were placed in the ballfields, with a focus on the approximate location of an historic industrial building in the center of the field, as depicted on the 1914 Sanborn Fire Insurance Map;
2. Borings LS-7 and LS-8 were placed at the western end of the building, in the vicinity of former waste storage areas and the 30,000 gallon fuel oil AST;
3. Borings LS-9, LS-10 and LS-11 were placed on the north side of the AST to assess possible fuel oil release conditions. LS-10 was completed as a monitoring well, and was placed within an area of stressed vegetation where a surficial release of petroleum appeared to have occurred from the AST fill hose.
4. Boring LS-12 was placed further north of the AST, which was interpreted as a possible downgradient location from the AST if utility lines in Norwood Street intercept the water table.



5. Boring LS-13 was placed near the southwest corner of the manufacturing portion of the site, in a location inferred to likely be downgradient of the facility.
6. Borings LS-14 through LS-17 were placed in central to southern portions of the manufacturing area.
7. Boring LS-18 was placed near the Federal Street entrance to the facility. This location was intended to provide assessment of potential gasoline impacts that could be migrating onto the property from a known release at the filling station to the east. However, shallow drilling refusal was encountered at multiple locations, and the water table was not encountered.
8. Borings LS-19, LS-20, and LS-21 were placed near the southern property line, along Kenwood Street. These borings were completed as monitoring wells to assess the extent of a previously reported TCE condition at monitoring well MW-6, north of Goly's Garage.
9. Borings LS-22 and LS-23 were placed on the south side of Kenwood Street to assess the potential migration of impacted groundwater to the residential area.
10. Borings LS-24 and LS-27 were placed inside the fenced area on the west end of the industrial building, near loading docks and waste storage areas. LS-24 was placed within the estimated footprint of a former dumpster, to assess potential historic leakage from waste materials. LS-27 was placed in an area with a wooden canopy which appears to have been used for drum storage. These locations are also immediately downgradient/south of the 30,000 gallon fuel oil AST.
11. Boring LS-29 was manually performed using a shovel to collect soil from below a pair of cyclonic dust collectors on the south side of the building. The drill rig could not access this area due to the presence of the cyclones overhead. Soil samples were collected from 0-1 and 1-2 foot depth intervals below the cyclones to assess potential releases of metals from these units.
12. LS-30 was placed on the northeast side of the manufacturing building, in the general vicinity of an underground gasoline storage tank depicted on the 1914 Sanborn map, and adjacent to an area believed to have previously housed a degreaser.
13. One additional soil sample, identified as "Transformer" was collected manually using a shovel in the vicinity of the transformer in the courtyard. Historic Sanborn mapping indicates a transformer field was located in this area in the 1950s, at a time when oils containing PCBs may have been used. The sample was a composite of three subsamples from around the transformer pad, each collected from the zero to one foot depth interval.

The borings were performed by Seaboard Environmental Drilling of Chicopee, Massachusetts. A Geoprobe direct push drill rig was used at most locations. The Geoprobe uses direct push technology to collect continuous soil samples in plastic sleeves to the depth of exploration. Several of the monitoring well borings were advanced using hollow stem



augers so that a standard two-inch diameter well could be installed. Locations of the borings and monitoring wells are shown on Figure 3.

OTO was present to observe and document the borings, and to screen soil samples for volatile organic compounds (VOCs) using a photoionization detector (PID). Soil boring logs are provided in Appendix C, and include a description of the subsurface materials encountered, the results of soil headspace PID screening, and monitoring well construction details.

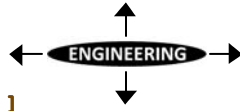
Materials encountered in the borings generally consisted of fine to medium sand interpreted as fill in the upper two to seven feet. Debris encountered in the fill included brick fragments and ash. The fill was underlain by fine to medium sand and silt, with clayey silt present at some locations. Auger refusal was encountered at locations LS-18 (5 feet) and LS-20 (10 feet). Based on the reported presence of shallow bedrock at the filling station across Federal Street to the east, the auger refusal was interpreted as bedrock.

### 3.2 SOIL SCREENING AND ANALYSIS

Soil samples from the borings were screened in the field for volatile organic compounds (VOCs) with a TEI 580B Photoionization Detector (PID). The PID provides a general indication of the presence of volatile organic compounds, which are commonly associated with light petroleum hydrocarbons and solvents. A positive PID reading can be an indicator of impacted soil at the exploration location. Soil headspace PID measurements made during the January 2012 drilling program were performed using a instrument equipped with an 11.7 eV (electronvolt) lamp. This is a higher energy lamp than the standard 10.6 detector. It is sensitive to certain chlorinated VOCs, such as 1,1,1-trichloroethane, which give a poor response on the standard instrument. This instrument was selected based on the reported past use of 1,1,1-trichloroethane at the Site. Results of the soil headspace screening are shown on the boring logs attached in Appendix C.

Positive PID readings were recorded for soil samples collected in the vicinity of the fuel oil AST (borings LS-7, LS-9, LS-24, and LS-27), as well as along the north side of Kenwood Street (borings LS-13, LS-17, LS-19, and LS-20). The highest PID readings recorded at the Site were at LS-9, north of the AST, where a PID reading of 159 parts per million by volume (ppmv) was measured in the headspace of a sample collected from 5 to 6 feet below grade, near the water table. This sample was selected for chemical analysis.

Based on field screening and observations, and on information about historic industrial activities, selected soil samples from the borings were submitted for laboratory analysis. The samples were submitted to Spectrum Analytical Laboratory (Spectrum) of Agawam, Massachusetts for analysis of VOCs, volatile petroleum hydrocarbons (VPH), extractable petroleum hydrocarbons (EPH), polychlorinated biphenyls (PCBs), and/or metals. Additionally, two of the samples which contained elevated metals concentrations (LS-20, 1-3 feet and LS-29, 0-1 foot) were analyzed for leachable metals levels using the toxicity characteristic leaching procedure (TCLP). The results of this analysis were used to assess



whether the soils would be classified as characteristically hazardous under RCRA if they were excavated. Laboratory reports are attached in Appendix D. Soil analytical results are summarized on Table 1 (VOCs), Table 2 (VPH/EPH), Table 3 (PCBs), Table 4 (metals in the manufacturing area) and Table 5 (metals in the ball fields), and are discussed below. The areas of concern are depicted on Figures 7 and 8.

### 3.2.1 VOCs in Soil

As shown in Table 1, three chlorinated VOCs were detected at concentrations exceeding the applicable RCS-1 reporting standards for soil: cis-1,2-dichloroethylene (DCE); trichloroethylene (TCE); and tetrachloroethylene (also known as perchloroethylene, or PCE).

The highest concentrations were reported at location LS-24, where the zero to four foot depth sample contained 167 mg/kg TCE. The four-foot long Geoprobe sleeve from this sample location contained only 24 inches of recovered soil, so the depth of this material could not be determined more precisely. The water table was encountered at six feet below grade at this location, therefore the soil is identified as unsaturated. The RCS-1 Reportable Concentration for TCE in soil is 0.3 mg/kg. Boring LS-24 was placed within the estimated footprint of a former dumpster. The shallow soil impacts are consistent with a surficial release of material.

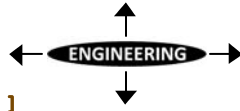
Similar high TCE levels were present at boring LS-20, where the TCE concentration was 128 mg/kg in the soil sample collected from one to three feet below grade. This location is on the south side of the building, near the entry to a portion of the building where drums were stored, and where a degreaser is located.

### 3.2.2 Petroleum Hydrocarbons in Soil

Fifteen soil samples were tested for petroleum hydrocarbons (EPH and/or VPH). Analytical results are summarized on Table 2. Petroleum hydrocarbons were not detected in Site soil at concentrations exceeding the applicable RCS-1 Reportable Concentrations.

The 30,000 gallon AST on the northwest side of the building was identified as a REC in the Phase I report. The age and construction of the AST are unknown, although a construction permit suggests it may date to 1979. Evidence of an oil release to the ground surface had been observed near the fill hose. Based on the observed presence of petroleum in soil near the fill lines, shallow soil in that area is presumed to contain fuel oil at concentrations above reportable levels. Soil that was visually impacted was not tested. A monitoring well was placed at location LS-10 to assess the migration of oil to the water table.

Multiple soil borings were performed on the north, west, and south sides of the AST. A petroleum odor was observed at only one location, LS-8, on the west side of the AST. PID readings for samples from the boring were zero. Soil from approximately five feet below grade (at or near the water table) in LS-8 exhibited a grey black color and petroleum odor. That sample was analyzed for EPH. As shown on Table 2, EPH was not detected.



Sample LS-9, 5-6 feet collected from the north side of the AST exhibited a PID reading of 159 ppmv. That sample was analyzed for EPH and VPH. Both were detected, but at concentrations below reportable levels.

Sample LS-30, collected from the northeast side of the building near the historic location of a gasoline UST, was analyzed for VPH and EPH. EPH was not detected. Each of the three VPH fractions was detected, but at concentrations below RCS-1 reportable concentrations. The detection of VPH is consistent with traces of gasoline.

Surficial soil (from 0 to 2 foot depths) was tested for EPH at two locations on the west side of the building, in a former loading dock/storage area. At location LS-24, where the dumpster was formerly located, EPH was detected but at levels below Reportable Concentrations.

Petroleum was not detected in surface soil near the transformer in the courtyard.

Based on these results, petroleum impacts of concern at the Site appear to be limited to shallow stained soils in the vicinity of the AST fill hoses.

### 3.2.3 PCBs in Soil

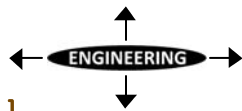
Three shallow soil samples (zero to one or two foot depth) were analyzed for PCBs. Each of these was located in the vicinity of current and/or historic transformers. As shown on Table 3, PCBs were not detected in these samples.

### 3.2.4 Metals in Soil

Testing for metals was conducted primarily on shallow soils, as the presumed manner in which they would have become located in Site media would be either direct placement of fill or deposition of airborne particles. Shallow soils also have a greater potential for human contact than subsurface soils and are therefore of greater interest in evaluating site risks. Table 4 provides a summary of metals data in the manufacturing portion of the Site, and Table 5 summarizes metals results for soil in the ballfields.

The only exceedence of reportable concentrations in the ballfields was cadmium at location LS-1. That sample contained 2.38 mg/kg cadmium, slightly exceeding the 2 mg/kg RCS-1. The natural background level for cadmium is also 2 mg/kg. This condition would not pose a risk to casual users of the ball fields.

Multiple metals exceeded Reportable Concentrations in shallow (0 to 2 foot) soil samples collected from the manufacturing portion of the Site. Metals present above Reportable Concentrations in one or more soil sample were: antimony, arsenic, cadmium, chromium, copper, lead, nickel, and silver. Concentrations did not exceed the Imminent Hazard levels identified in Section 40.0321 of the MCP.



The most substantial metals exceedences were at location LS-20, on the south side of the building, at a depth of one to three feet. This soil sample also exhibited an elevated TCE concentration, as discussed in Section 3.2.1. The material encountered at this location was brown to black fill containing ash and brick. Soil at this location contained 3,760 mg/kg total lead and 15.5 mg/l of TCLP leachable lead. TCLP analysis indicates the material could be considered a characteristically hazardous waste if it was excavated. This material is currently located below asphalt pavement, and is not accessible by casual users of the Site.

Silver levels were significantly above background levels in all but one of the Site soil samples, and exceeded the Reportable Concentration in three samples. The highest silver concentrations were at location LS-29, directly below the cyclones on the south side of the building. The elevated silver concentrations extended to a depth of at least two feet in shallow soil immediately below the cyclones. Metals conditions in soil are conservatively presumed to be similar below the other cyclone locations on Site.

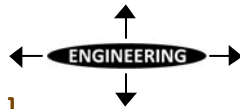
### 3.3 GROUNDWATER ASSESSMENT

Our groundwater assessment program included the collection and analysis of samples from the seven newly installed monitoring wells (LS-series) and from two wells previously installed as part of the Goly's Garage assessment (MW-6 and MW-7). OTO collected groundwater samples from monitoring wells MW-6, MW-7, LS-10, LS-19 and LS-20 on January 19, 2012, and from monitoring wells LS-21 through LS-24 and MW-6 on February 21, 2012. In each case, the wells installed by OTO were sampled approximately one week after installation. An additional sample was collected from monitoring well LS-19 on March 15, 2012 for RCRA 8 metals analysis based on the presence of elevated metals concentrations detected in Site soil.

Low-flow pumping techniques were used to purge the wells and obtain the groundwater samples. During low flow sampling, a peristaltic pump was used to remove water at a rate low enough to minimize drawdown in the well, while monitoring groundwater chemistry through the use of portable pH, specific conductance, temperature, dissolved oxygen, and oxidation-reduction potential (ORP) meters. A groundwater sample was collected when field measurements had stabilized, indicating a sample representative of the aquifer was being withdrawn. This method limits disturbance of the aquifer and is supported by MassDEP and EPA. Copies of groundwater sampling records are provided in Appendix E.

OTO collected groundwater samples from the previously existing monitoring MW-6 on two dates. This monitoring well was installed as part of the downgradient property assessment conducted for Goly's Garage, and had been reported to contain an elevated level of TCE. During our first round of groundwater monitoring, the well was found to be in poor condition. The cap was missing, and a substantial amount of silt or sand was present at the bottom of the well, likely blocking a portion of the screen. We collected a groundwater sample from the well for comparative purposes, however, the results are considered to be of limited usability due to the missing cap, the potential for rainwater intrusion from the





surrounding paved area, and the partially blocked screen. The total depth of the well measured on January 19, 2012 was 7.8 feet below grade. The boring log prepared by ECS for this monitoring well (provided in Appendix B) indicates MW-6 is screened from 5 to 15 feet below grade. Following collection of our first sample from this well, we placed an expandable cap on the well to prevent the intrusion of water and debris. Prior to collection of our second sample from this location, we aggressively purged the well with a bailer to remove stagnant water and materials settled within the screened zone.

In addition to the samples collected from monitoring wells, a water sample was collected from the sump in the basement of the north-central portion of the building. The location of the sump is shown on Figure 3. Based on our observations during this sampling program, the basement appears to regularly experience groundwater intrusion. A grab sample of water from the sump was collected on February 28, 2012. The sump water sample was analyzed for VOCs due to its location in the industrial portion of the building where solvents may have been used, and for VPH due to its location proximate to a gasoline UST depicted on historic Sanborn map.

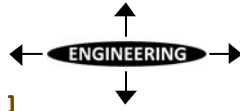
The samples were stored on ice, and were transported to Spectrum Analytical Laboratory under chain-of-custody procedures. Each of the groundwater samples was analyzed for volatile organic compounds (VOCs) by EPA Method 8260. Based on their locations proximate to potential source areas, selected samples were also analyzed for EPH (LS-10, LS-20 and LS-24), volatile petroleum hydrocarbons (LS-10, LS-24 and the sump), metals (MW-6, MW-7, LS-20) and/or total cyanide (MW-6, MW-7 and LS-20). The samples collected for dissolved metals analysis were filtered at the laboratory, with the exception of LS-19. That sample was filtered in the field using a 500 milliliter Nalgene filter unit with a pore size of 0.45 microns.

Laboratory reports are provided in Appendix D. Analytical results are summarized on Table 6 (VOCs), Table 7 (petroleum), Table 8 (metals and cyanide), and are discussed in the following sections.

### 3.3.1 VOCs in Groundwater

As shown on Table 6, four VOCs were detected in Site groundwater at concentrations exceeding RCGW-2 Reportable Concentrations: DCE; TCE; PCE; and vinyl chloride. Each of these is a chlorinated VOC. These compounds also have a “parent-daughter” relationship that arises from sequential loss of chlorine atoms. When released to the environment, PCE will often naturally degrade to TCE, which will degrade to cis-1,2-dichloroethylene, then vinyl chloride.

The TCE concentration at monitoring well MW-6, north of Goly’s Garage, was confirmed to exceed the Reportable Concentration. The detected concentrations were not as high as those reported by ECS in the DPS report prepared for Goly’s Garage. However, as discussed above, the well condition has been compromised, and reported groundwater concentrations may be low-biased. Additionally, the testing by ECS was performed in 2007.



Some degree of natural degradation of these constituents would be expected over a five year period.

VOC concentrations in groundwater were highest at LS-19, where TCE was detected at 107 milligrams per liter (mg/l) on the southwest of the Site building. The RCGW-2 for TCE is 0.3 mg/l, and is based on the potential for this compound to migrate from groundwater into overlying buildings. Based on the groundwater contour plan developed during this study (see Section 3.4), monitoring well LS-19 is downgradient of the former dumpster location (boring LS-24) where substantial TCE concentrations were detected in soil. Location LS-24 also had significant TCE impacts in groundwater. These results indicate a separate source of VOCs on the west side of the building.

Monitoring wells LS-22 and LS-23 were placed on the south side of Kenwood Street to assess whether VOC impacts had migrated to the residential neighborhood. Chlorinated VOCs were not detected in groundwater samples from the south side of Kenwood Street. Traces of three non-chlorinated VOCs were detected in those samples, but at levels below Reportable Concentrations. Based on their absence in groundwater on the north side of Kenwood Street, those VOCs are not considered Site-related.

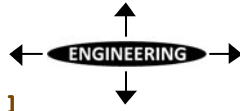
### 3.3.2 Petroleum in Groundwater

Our assessment did not identify significant petroleum impacts in Site groundwater, as shown on Table 7.

EPH was not detected in groundwater from monitoring well LS-10, which was set within the area of surficial staining near the AST fill hoses, or in LS-24 which is located downgradient of the AST. Based on this information, the surficial staining has affected a localized area of shallow soil, but has not migrated into groundwater.

The only reported detection of petroleum constituents in groundwater was VPH hydrocarbon fractions at LS-24, the dumpster location. The reported C5-C8 aliphatic concentration in LS-24 groundwater exceeds the RCGW-2 reporting standard. However, the laboratory report indicates the C5-C8 aliphatic detection in that sample was the result of one peak, which is not typical of petroleum constituents. Target VPH analytes were not detected. The reported C5-C8 aliphatic hydrocarbon result is likely an analytical artifact resulting from the presence of a an individual compound. Chlorinated VOCs are known to interfere with VPH analysis, which is a gas chromatography method not capable of definitive peak identification. Based on the laboratory note regarding the single peak, and on the presence of TCE and PCE in groundwater sample LS-24, we conclude the VPH is a false positive, and does not constitute a reportable condition.





### 3.3.3 Metals and Cyanide in Groundwater

Samples selected for metals analysis included LS-24 (within the former dumpster footprint) and wells installed along the downgradient side of the property (LS-19, LS-20, MW-6 and MW-7). Cyanide analysis was performed on samples collected from locations near the southeastern Site building, where Mr. Lunt informed us cyanide had been used in the manufacturing process. Cyanide was not detected in Site groundwater. As shown on Table 8, several dissolved metals were detected in the groundwater samples, but at levels below Reportable Concentrations. These results indicate that the metals impacts detected in Site soil are generally not mobile.

### 3.4 GROUNDWATER FLOW DIRECTION

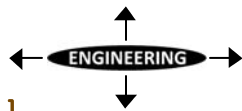
The groundwater flow direction was assessed using depth to water table measurements in groundwater monitoring wells combined with elevation survey data. The relative elevations of the Site monitoring wells were surveyed using rod and transit techniques. Depth to water table measurements were made on January 19, 2012 (five wells, prior to the installation of wells LS-21 through LS-24) and on March 15, 2012 (nine wells). The depth to groundwater during our assessment ranged from approximately two to five feet below grade. These measurements were used to determine relative water table elevations, as shown on Table 9.

The relative water table elevations from January 19, 2012 are also depicted on Figure 5, and were used to estimate the groundwater flow direction. As shown, the groundwater flow direction was estimated to be to the southwest. These results are consistent with the flow direction estimated by ECS for the Goly's Garage site south of Kenwood Street. A copy of the ECS groundwater contour plan is provided in Appendix B.

As discussed in Section 3.5 below, a storm drain line on the north side of Kenwood Street appears to intercept the water table. The infiltration of groundwater into this line likely creates an artificial depression of the water table and influences local groundwater flow direction. This is supported by the detection of TCE in the storm water drain line, as discussed below.

### 3.5 CATCH BASIN SAMPLING

Numerous utility lines are present along Kenwood Street, as shown on the mapping provided in Appendix F. Based on the shallow water table (two to five feet below grade) and on the observed distribution of groundwater impacts (elevated VOC concentrations on the north side of Kenwood Street; nondetectable levels on the south side of the street), the utility lines were suspected of intercepting groundwater. We therefore conducted an assessment of water in the storm drain located on the north side of Kenwood Street, proximate to the Lunt facility.



On March 15, 2012 we collected water samples from two storm drains along the north side of Kenwood Street. The catch basin locations are shown on Figure 3. Catch basin CB-1 is located directly south of the Lunt facility. CB-2 is located south of the playing fields, near the eastern baseball diamond, and is downstream of CB-1. Location CB-2 is estimated to be downgradient of the former dumpster location on the west side of the Site building.

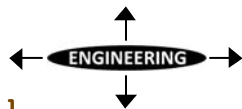
These catch basins and two others in the vicinity were screened with a PID to assess total VOC concentrations in the catch basin air space. PID readings at each location were zero. Water samples were collected from the catch basins by lowering a length of rigid polyethylene tubing through an opening in the grate, and withdrawing the sample using a peristaltic pump at the ground surface. The pump was set to a low flow rate to minimize agitation of the water, and to maintain a continuous stream of water without air bubbles in the tubing. The samples were collected directly into pre-preserved 40-milliliter septum vials and stored on ice.

The samples were delivered to Spectrum Analytical Laboratory for analysis of VOCs. The laboratory report is attached in Appendix D. Analytical results are summarized on Table 10. Three chlorinated VOCs were detected in the water samples: DCE; TCE; and PCE. The higher concentrations were at downstream location CB-2, near the playing fields, where the TCE concentration in the catch basin water was 0.58 mg/l.

As shown on Table 10, the TCE concentration measured in catch basin water near the Lunt facility exceeded the MassDEP surface water benchmark for TCE. The storm sewer discharge point was therefore located and sampled. A plan showing the discharge point for these catch basins was obtained from the Greenfield DPW, and is provided in Appendix F. The plan indicates the line drains to the west, eventually discharging to the Green River. The outfall is located approximately 1.3 miles southwest of the Site, southwest of the intersection of Colrain and Solon Streets.

A copy of the MassDEP priority resource mapping for the outfall area is provided in Appendix F. There are no Zone A, Zone II, or IWPA drinking water supplies mapped in the outfall area. The primary receptors of concern would therefore be aquatic organisms in the river.

On April 11, 2012, we collected two water samples from the vicinity of the outfall. Sample OF-1 was collected directly from the outfall stream, prior to mixing with surface water. Sample OF-2 was collected from the first surface water body which the outfall discharges to, a small ponded area which drains to the Green River. Photographs of the sample locations are included in Appendix F. The samples were analyzed for VOCs; results are summarized on Table 10. VOCs were not detected in the outfall samples.



### 3.6 SUBSLAB SOIL GAS ASSESSMENT

Based on the presence of elevated concentrations of volatile constituents in Site soil and groundwater, OTO performed a soil gas survey to assess the potential for vapors below the building slab to migrate into indoor air. The soil gas assessment was performed on January 26, January 27, and March 15, 2012. Soil gas sampling logs are provided in Appendix G, and document the soil gas field screening, helium shroud leak checking results, and weather conditions at the time of our survey. The following sections provide additional detail on the installation of the soil gas sample points, collection of the samples, and analytical results.

#### 3.6.1 Soil Gas Point Installation

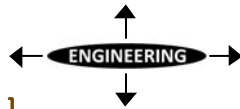
Our assessment included the installation of 13 permanent soil gas points, shown on Figure 6 as SG-1 through SG-13. As shown, five of the points (SG-1 through SG-5) were placed in the southeastern Site building, in the vicinity of a degreaser remaining in that building.

At each location, Witch Enterprises, Inc. of Agawam, Massachusetts cored a ½-inch diameter hole through the concrete slab to the underlying soil. The floor slab was approximately 6 inches thick at these locations with the exception of SG-12, which had a thickness of 12 inches. The soil gas point was installed by drilling a ½ inch diameter hole through the full thickness of the concrete floor slab. A two-inch diameter concrete core approximately two inches thick and centered over the ½ inch diameter hole was then advanced into the top of the slab. The upper core was then removed by chipping it free from the slab, to create a recess in the slab to receive the soil gas probe assembly.

The soil gas probe assembly was constructed using a ¼ inch diameter copper tube slightly longer than the thickness of the concrete slab, a tight fitting rubber washer and stopper, a rubber plug and a removable flush-mounted cap. A two-inch section of one-half inch diameter PVC casing was placed around the copper sampling point. The PVC casing was capped flush with the basement floor surface. To seal the air exchange between the top and bottom of the floor slab the sampling points were secured in place using a fast-setting sulfoaluminate cement that expands upon curing to provide for an air tight seal with the concrete slab and restrict ambient air intrusion. Images showing construction materials and soil gas point assembly are provided in Appendix G.

#### 3.6.2 Soil Gas Sample Collection

Prior to sampling, each soil gas point was purged with a PID. The PID used in January was equipped with a high energy 11.8 eV detector. In March, a standard 10.6 eV detector was used. The PID was attached to each soil gas point and was allowed to run for five minutes to purge ambient air from the assembly. Results of VOC screening are included on the Table 11. As shown, soil gas probes located in the vicinity of the degreaser (SG-1 through SG-5)



exhibited PID readings ranging from 0.4 to 21.6 part per million by volume (ppmv). Total VOC readings were 1 ppmv or lower at the remaining soil gas probe locations.

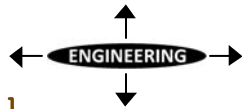
Based on screening results and the locations of soil gas probes relative to features of interest (such as the former degreaser in the southeastern building), six soil gas samples (SG-4, SG-6, SG-7, SG-9, SG-10 and SG-11) were selected for laboratory analysis. The soil gas samples were collected over a 30 minute sampling interval into 3 liter stainless steel vacuum canisters at a flow rate of approximately 0.2 liters per minute. During the January event, the soil gas samples were collected with the soil gas sampling point, the sample collection canister, the flow regulator and the sample tubing located inside a helium-filled shroud. To sample, the flow controller was opened, the sampling shroud was placed over the sampling equipment and helium was introduced into the shroud at a concentration of approximately 40 to 49%. The soil gas being withdrawn was then monitored continuously with a MGD-2002 multi-gas leak detector calibrated to helium, which is capable of detecting helium at a concentration as low as 25 parts per million by volume (ppmv). The purpose of the shroud was to monitor for leakage and/or short circuiting of air above the concrete slab into the soil gas sampling point, and if leakage is present, to assess what impact any potential leakage may have on soil gas concentrations. Helium concentrations in the soil gas sample were recorded on a sampling log at 10-minute intervals. Shroud helium concentrations were also monitored at approximately ten minute intervals and recorded on the sampling logs, which are attached in Appendix G.

Since helium was detected in the soil gas influent to the sampling canister, a leakage rate was estimated by dividing the helium influent concentration by the helium shroud concentration and multiplying the quotient by 100 to provide a result in percent. Monitoring of the soil gas sampling indicates that a leakage rate of less than 1% was observed in the sample. Leakage rates of less than 1% are not considered significant enough to measurably affect the soil gas analytical results. For these soil gas samples, observed leakage rates were less than 0.6%. Based on the nominal intrusion rates, shrouding was not used during the March 2012 sampling event.

### 3.6.3 Soil Gas Analysis and Results

The soil gas samples were submitted to Spectrum, where they were analyzed for volatile organic compounds by Method TO-15. The laboratory report is provided in Appendix D. Analytical results are summarized on Table 12.

The soil gas results were evaluated using current vapor intrusion guidance (MassDEP, 2011). That document provides soil gas screening values for residential and commercial/industrial settings. Soil gas concentrations below the published values can generally be interpreted as unlikely to result in indoor air concentrations at levels of concern for the specified receptors. As shown on Table 12, TCE concentrations in soil gas exceeded the MassDEP commercial/industrial values at locations SG-4, SG-9 and SG-10. The highest levels were at SG-4 and SG-9, where concentrations were 30 to 100 times the threshold values. SG-4 is



adjacent to a degreaser. Soil gas concentrations from soil gas probe locations SG-6 and SG-7 were below screening values.

These results indicate vapor intrusion is a significant concern throughout much of the site building, but particularly in the vicinity of the degreasing unit.

### 3.7 INDOOR AIR ASSESSMENT

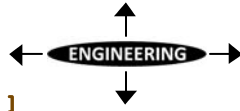
On January 26, 2012, OTO collected indoor air samples from four locations (IA-1 through IA-4) within the Site building, as shown on Figure 6. Three of the locations were in basement areas. The water table at the Site is high, and some of the basement areas periodically flood. Due to the high water table (therefore absence of unsaturated soil), soil gas points in this area were not considered viable. Current vapor intrusion guidance (MassDEP 2011) indicates basement space should be considered occupied space if the ceiling height is at least seven feet. In these basements, the presence of offices indicates portions of the basement have been used for offices in the past.

Indoor air sample locations were selected as follows:

- IA-1 was placed within the office area on the east side of the building. There is no basement below this space.
- IA-2 was placed in the northern basement, which has a sump that may serve as a migration pathway. The floor in this space periodically floods.
- IA-3 was placed in the southwest basement, near the metal spiral staircase to the first floor.
- IA-4 was placed in the north-central basement to assess conditions in the middle of the building, in the general vicinity of a former degreaser. The exact former location of the degreaser is unknown.

At each location, a six-liter Summa air sampling canister was placed with the intake in the typical breathing zone (three to five feet above floor grade, assuming workers may be either sitting or standing). The canisters were equipped with regulators set for a two-hour fill time. The two-hour fill time is shorter than would typically be conducted in an active facility. However, it was deemed appropriate in this facility, as the building has been vacant for months, and there are no daily activities within the building which might affect indoor air conditions.

The air samples were analyzed by Method TO-15 at Spectrum Analytical Laboratory. A copy of the laboratory report is provided in Appendix D. Analytical results are summarized on Table 13. The results were compared to residential and commercial/industrial indoor air threshold values published in current guidance (MassDEP, 2011). As shown on Table 13, concentrations of chlorinated VOCs above residential and commercial/industrial threshold values were detected at IA-2, IA-3 and IA-4. The constituents of concern at these locations were DCE, TCE, and PCE. In the office on the east side of the building, the indoor air



sample (IA-1) contained PCE, but at a concentration below the commercial/industrial threshold value.

Additionally, indoor air concentrations are presumed to exceed threshold values in the vicinity of elevated soil gas results, SG-4 (near the degreaser) and SG-9.

The soil gas and indoor air results indicate indoor air conditions within manufacturing portions of the Site building have been impacted by chlorinated VOCs at levels of potential concern with respect to future Site use.

#### **4.0 CONCEPTUAL SITE MODEL**

This section provides our Conceptual Site Model and summarizes the release conditions identified. Suggested remedial response actions and preliminary cost estimates for these conditions are provided in Section 5.0.

A Conceptual Site Model is a framework of understanding that is used to assist in the evaluation and prediction of contamination migration through the environment to where potential contact with receptors may occur. The Site has been used for industrial purposes for approximately 100 years. Based on the current zoning of the property for industrial use, future occupants of the Site are likely to be workers, not residents.

Multiple conditions which exceed MCP reportable levels were identified at the Site. These include:

- Chlorinated VOCs (primarily TCE) in soil and groundwater;
- Petroleum in shallow soil near the AST fill lines; and
- Metals in shallow soil, primarily near the cyclonic dust collectors.

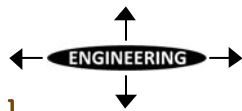
From both a remedial cost and a potential human health perspective, the most significant of these is the CVOCs.

##### **4.1 CVOCS IN SOIL AND GROUNDWATER**

Significant concentrations of CVOCs were detected in Site soil and groundwater, particularly along the southern property boundary and in the vicinity of a former dumpster at the west end of the building. The CVOC present at the highest concentrations is trichloroethylene (TCE). CVOCs present at lower concentrations in groundwater included PCE, DCE, and vinyl chloride.

There are likely multiple sources of CVOCs at the Site, including the dumpster footprint at the west end of the building, the degreaser in the southeastern building, and possibly other former degreaser or solvent storage locations within the manufacturing area. The presence of CVOCs in unsaturated soils (above the water table) at locations LS-20 and LS-24 suggests the CVOCs were released to the ground surface in the vicinity of the dumpster and the





degreaser. The elevated TCE concentrations in soil gas at location SG-4 supports the theory that solvents were released to the ground surface in the immediate vicinity of the degreaser.

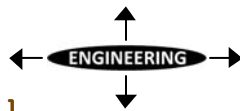
CVOCs are volatile, and can migrate from soil or groundwater into soil gas, and eventually into ambient air or indoor air in overlying buildings. The primary potential exposure route to CVOCs identified at this Site is inhalation of CVOC vapors that have migrated into buildings. Multiple lines of evidence indicate that vapor intrusion into the Site building is a concern. Chlorinated VOC concentrations in groundwater exceed MCP GW-2 standards, which were developed based on a vapor intrusion model. Soil gas concentrations exceed commercial/industrial screening values at locations SG-4, SG-9 and SG-10. Measured indoor air results exceed published indoor air threshold values for commercial/industrial receptors. In the office space on the east side of the Site building soil gas and indoor air concentrations exceed residential standards, but are within acceptable limits for commercial/industrial use.

CVOCs are also somewhat soluble water, therefore they can migrate from the original point of release in water. At this Site, CVOCs have come to be present in groundwater across the width of the industrial portion of the property, along the southern property line. Groundwater analytical results indicate the VOC impacts have not migrated across Kenwood Street to the south. VOCs were not detected in groundwater at locations LS-22 and LS-23, likely due to interception of the overburden groundwater by a storm drain beneath Kenwood Street. These wells were placed to be downgradient of highest measured impacts in groundwater on the north side of Kenwood Street. CVOC migration into residences on the south side of Kenwood Street is therefore not a concern.

Chlorinated VOCs were reported in groundwater at Goly's Garage (ECS, 2010). We note that the CVOC detected in the highest concentration in groundwater at Goly's was PCE, at a concentration of 4.9 ug/l. By far the primary constituent of concern at the Lunt property is TCE. Comparing the pattern of constituents present in groundwater at Lunt and Goly's does not indicate a consistent source. Goly's is listed as a small quantity generator of chlorinated VOC waste. The VOCs in groundwater at that facility may be associated with garage operations, and not with the impacts measured at Lunt. Regardless of the source, the CVOC concentrations detected at Goly's were well below GW-2 standards, indicating vapor migration into their buildings does not appear to be a pathway of concern.

Groundwater at this Site is not a current or potential drinking water supply, therefore ingestion of the impacted groundwater is not an exposure route of concern.

The impacted groundwater plume appears to be intercepted by a storm drain on the north side of Kenwood Street. There is the potential for Site-related CVOCs to be discharged to a surface water body (the Green River), at the storm drain outfall. The linear distance from the Site to the discharge point is approximately 1.3 miles. The storm drain lines make multiple turns, rather than flowing directly to the outfall, therefore the water flows through over 1.5 miles of pipe prior to discharge. We did not detect CVOCs in water at the outfall. However, our assessment represents a snapshot in time. Conditions at the outfall may vary



depending on the amount of rainfall and on the water table elevation. The TCE concentration measured in catch basin CB-2 exceeds the MassDEP benchmark used for protection of aquatic organisms in surface water. However, in our opinion, resulting concentrations in the Green River are unlikely to exceed the benchmark, due to dilution and volatile losses along the length of the drain line.

There are other possible migration pathways associated with the drain line. These may include loss of impacted groundwater in locations where the water table is lower than the pipe, and migration of CVOCs into homes via sump drain lines that are connected to municipal system. These pathways may warrant further assessment.

#### 4.2 PETROLEUM IN SOIL NEAR AST

The only reported petroleum result above applicable Reportable Concentrations in Site soil or groundwater is believed to be a false positive. That result, VPH C5-C8 aliphatic hydrocarbons in groundwater sample LS-24, was due to a single peak, which is likely TCE. Petroleum hydrocarbons occur in multi-peak patterns, not as individual peaks in chromatographic analysis. TCE is known to interfere with VPH analysis when present, and was detected in groundwater sample LS-24. This C5-C8 aliphatic result is therefore not considered reportable, and does not warrant further VPH testing.

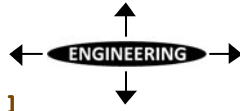
Vegetative stress and soil staining on the north side of the 30,000 gallon AST indicate oil has been released to the ground surface in that area. The release appears to be associated with the fill hoses, which are located near the staining. The oil-stained area is presumed to contain oil above Reportable Concentrations. However, if less than two cubic yards of soil are impacted, the notification requirements of the MCP are not triggered. A soil boring (LS-10) was performed in the stained area, and did not encounter material with an oily appearance or positive PID headspace screening results. Soil samples with elevated PID screening values (such as LS-9, 5-6") did not contain reportable concentrations of petroleum. The available data do not indicate a reportable release condition associated with petroleum at the Site. However, we assume a small volume of oil-impacted soil may warrant removal from this area.

#### 4.3 METALS IN SOIL NEAR CYCLONES

Soil samples were collected from two depths in hand boring LS-29, beneath the cyclones on the south side of the building. As shown on Table 4, metals concentrations in soil beneath the cyclones exceeded Reportable Concentrations for lead, copper, nickel, and silver. Concentrations were higher in the surficial sample (0-1 foot), and lower with depth (1-2 foot) with the exception of lead.

The cadmium result in one ball field sample (LS-1) slightly exceeded the reporting standard. While this condition is reportable, it is not likely to be significant from a human health or remedial cost perspective, relative to other conditions on Site.





During manufacturing operations, the cyclones were used to collect dust from buffing and polishing operations. A 55-gallon drum would be placed on the ground surface beneath each cyclone to accumulate the dust. The metals in surface soil in the area are likely to be the result of dust leakage or overflow from the barrels, which would have resulted in surficial deposition of manufacturing dust. The dust may also have become airborne and been deposited on the ground surface in the surrounding manufacturing area, such as at sample locations LS-14 and LS-15, which also exhibited elevated metals levels.

The available data do not identify the full lateral and vertical extent of the metals impacts in soil. Based on the available data, and on the historic presence of eleven cyclonic dust collectors at the Site, metals impacts are likely to extend across most of the manufacturing portion of the property in surface soil. In the immediate vicinity of the cyclones, impacts may extend to depths of three feet or more.

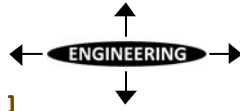
#### 4.4 METALS IN FILL SOUTH OF BUILDING

Boring LS-20 was performed on the south side of the building, beneath pavement. Approximately three feet of fill materials, including ash and brick, were present at this location. As shown on Table 4, concentrations of lead, arsenic, and antimony were elevated in the fill materials. Coal ash is known to be associated with elevated metals levels, and likely contributes to conditions at this location. However, the silver concentration at this location (33 mg/kg) is also elevated above background, at levels higher than would typically be expected from coal ash. MassDEP has published values for natural background (0.6 mg/kg) and ash-impacted fill (5 mg/kg). The elevated silver result suggests the conditions at location LS-20 may be associated with historic silversmithing activities. Prior manufacturing operations at the property are known to have included the use of lead pots for melting metals.

Based on the elevated lead level, to evaluate potential costs associated with disposal of this material, the soil sample from LS-20 was also analyzed for TCLP leachable lead. The leachable lead concentration (15.5 mg/l) exceeded the RCRA regulatory limit (5 mg/l). If excavated, this material would therefore be classified as a characteristically hazardous waste.

#### 4.5 WASTE MATERIALS REMAINING IN BUILDING

Containerized waste materials remain at multiple locations inside the Site building. While this condition is not reportable to MassDEP, removal and proper disposal of these materials will be required prior to redevelopment. Materials remaining in the building include paints, lacquers, acids, machine lubricants, buffing compounds, and unlabelled containers. These range in size from spray cans to 55-gallon drums. Wastes are primarily accumulated in certain areas near loading docks, but individual containers are also present throughout the building. We recommend the completion of a chemical container inventory to develop estimates of waste volumes and types remaining in the building. An inventory was not included in the Request for Proposals for this project, and was not part of our scope of



work. Accurate cost estimates to dispose of these waste materials cannot be determined until such an inventory is complete.

## 5.0 PRELIMINARY REMEDIAL COST ESTIMATES

As stated in our proposal, we have evaluated potential remedial alternatives to the extent feasible with the data now available.

As documented in the Section 4, the Site has been impacted above reportable concentrations by metals and by chlorinated volatile organic compounds (primarily trichloroethylene or TCE). For metals, the contamination is likely associated with former cyclone structures that drew metal contaminated dusts from former cutlery manufacturing in the building. Metals are not volatile and are typically of low mobility. As such, they can typically be addressed through cover or capping technologies at relatively low cost. On the other hand, TCE impacts at the Site are of substantially higher concern with respect to potential remediation costs due to:

- 1) TCE mobility in groundwater;
- 2) TCE volatility and vapor migration pathways;
- 3) TCE is a toxic compound and a suspected human carcinogen;
- 4) TCE has been detected over most of the developed portion of the Site in soil, groundwater, soil gas, indoor air, and the storm drain line beneath the adjacent street; and
- 5) The pattern of TCE detections indicates multiple source of the TCE which will have to be identified, further assessed, and remediated as needed.

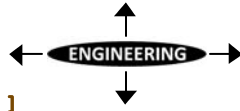
Table 14 provides our preliminary estimate of potential remediation costs, primarily to address the TCE issue. The costs are based on the assumptions provided below.

### Further Site Investigations

MassDEP regulations (310 CMR 40.0000) requires a full delineation of the source, nature and extent of oil or hazardous material (OHM) releases. Given the identification of multiple OHM sources, extensive further characterization of soil, groundwater, soil gas and indoor air quality will be required. Such work should be conducted in a phased manner and the final estimates will be determined as each phase is completed. However, based on our experience at similar site, we believe the ultimate cost of such work, including required MassDEP submittal will likely exceed \$100,000. For our cost table, we recommend an initial budget of \$200,000.

### Future Use

The widespread detections of TCE in indoor air at elevated concentrations relative to MassDEP commercial standards indicates that the Site buildings are not likely suitable for residential re-development or use as a school or day care center. For purposes of potential remediation costs, we have therefore assumed the site will remain in commercial or industrial



use. We have also assumed no use of basements for offices or other commercial use, other than for occasional access by maintenance personnel. We also assume that as additional soil gas and indoor air testing is conducted, the owner will be open to demolishing certain buildings or portions of building that may be found to overlie heavily impacted areas.

#### Remediation Goals and AULs

Given the high TCE concentrations in groundwater, it may not be economically feasible to achieve a Permanent Solution (Class A) Response Action Outcome. We assume that the owner will be open to explore Temporary Solution (Class C) alternatives, with MassDEP input, that control current exposure pathways but do not eliminate all foreseeable future exposure pathways. We also assume that the owner will agree to AULs (Activity and Use Limitations) as needed to limit remediation costs to the extent feasible.

#### TCE Soil Excavation and Disposal

Based on soil and groundwater data, we expect some highly concentrated areas of TCE contamination will need to be excavated. Because the shallow depth to bedrock will limit excavation depth, we expect the volume to be less than 200 tons.

#### TCE Groundwater Plume Interception

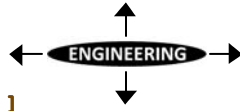
A several hundred foot wide TCE plume was identified on the north side of Kenwood Street and is intercepted by a storm drain line. While initial testing indicates no discharge of TCE at the drain outfall over a mile away, it is not clear if this is due to off-gassing or infiltration. Regardless, we do not think that MassDEP will be comfortable with on-going discharge of this nature. We have therefore assumed groundwater interception and treatment will likely be required and have included a cost for installation of such a system. The system will require multiple well points, manifolded to an air stripping tower. We assume air emission controls will be required during start up and the first few months of operation but can then be eliminated.

#### TCE Vapor Intrusion

While it is hoped that further testing, removal of source material and AULs will limit vapor migration remediation costs, the multiple TCE sources and initial vapor reading indicate multiple sub-slab vapor depressurization systems may be required. Based on our experience, our Table 1 costs assume four separate systems will need to be installed and operated to cover approximately 40,000 square feet of building footprint.

#### Metals Capping

We assume that the shallow metals contaminated soils in the area of the former cyclones can be left in place and capped with clean fill or pavement, and safely maintained long term with an AUL.



### Long Term Operation and Maintenance (O&M)

The groundwater and vapor intrusion interception approaches outlined above will need to operate indefinitely. Costs for required monitoring, reporting, electricity and routine maintenance are likely on the order of \$30,000/year. Assuming a 20 year time frame, and a 6 percent interest rate, the present worth value of the O&M program is estimated at \$200,000.

### Contingency

Given the extensive further testing which will be required to fully assess the source and extent of the releases, we recommend at least a 20 percent contingency be applied.

## **6.0 SUMMARY AND CONCLUSIONS**

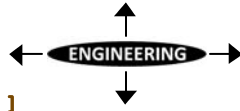
A Phase II Environmental Site Assessment was performed at the former Lunt Silversmiths site at 298 Federal Street in Greenfield, Massachusetts. The assessment was conducted in accordance with the scope of work in our December 6, 2011 proposal.

Our study included the assessment of soil, groundwater, soil gas, and indoor air conditions at the Site. In addition, water samples were collected from two storm water catch basins adjacent to the Site. A significant release of trichloroethylene (TCE) to Site soil and groundwater was identified. There appear to be at least two sources of TCE at the Site: one near a former degreasing unit on the south side of the building, and one outside the western end of the building.

Several of the conditions identified at the Site are reportable to MassDEP within 120 days of owner knowledge. If you acquired the property, you would have an obligation to notify MassDEP of these conditions within 120 days, if they had not previously been reported. The TCE has migrated into the municipal storm drain system. If the TCE discharges to a surface water body, this could constitute a Condition of Substantial Release Migration (SRM) under 310 CMR 40.0313(5) of the Massachusetts Contingency Plan (MCP), which would be reportable to the MassDEP within 72 hours of owner knowledge. Substantial additional assessment will be required to delineate Site impacts as required by the MCP.

Metals in Site soil were also identified as conditions requiring response actions under the MCP. On-site management with capping and implementation of an AUL are the most cost-effective means of addressing this condition.

Remedial alternatives to address the TCE impacts include excavation of source area soils, interception and treatment of the impacted groundwater, and sub-slab ventilation systems to limit indoor air impacts. Preliminary remedial cost estimates to achieve a Response Action Outcome (RAO) under the MCP are on the order of \$1,000,000. This cost estimate does not include removal and disposal of waste materials remaining inside the building.



## 7.0 LIMITATIONS

Our Site Assessment was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same geographic area. Our findings and conclusions must not be considered as scientific certainties, but rather as our professional opinion concerning the potential significance of the limited data obtained during the course of our study. We do not and cannot represent that the site contains no hazardous material or oil, or that the site is free from latent conditions not observed in our assessment. Our report is subject to the additional Limitations contained in Appendix A.

This assessment and report was prepared on behalf of and for the exclusive use of the Town of Greenfield solely for the purpose of rendering an opinion as to the presence of oil or hazardous materials in site soil and groundwater subject to requirements of M.G.L. Chapter 21E. This report shall not, in whole or in part, be disseminated or conveyed to any other party, or used or relied upon by any other party without the prior written consent of O'Reilly, Talbot & Okun Associates, Inc.

## 8.0 REFERENCES

Environmental Compliance Services, Inc. (ECS). 2010. *Phase IV Completion Report, Downgradient Property Status, Class C-1 Response Action Outcome Statement, and Method 3 Risk Characterization, 286 Federal Street, Greenfield MA, RTN 1-01047.* February 8, 2010.

Massachusetts Department of Environmental Protection (MassDEP). 2011. *Interim Final Vapor Intrusion Guidance, WSC#-11-435.* December 2011.

Weston & Sampson Engineers, Inc. (W&S). 2011. *Phase I Environmental Site Assessment Report, Town of Greenfield, MA, Former Lunt Silversmiths Property, 298 Federal Street, Greenfield MA.* October 19, 2011.

## **TABLES**

**Table 1**  
**Soil Analytical Results**  
**Volatile Organic Compounds (VOCs)**  
**Concentrations in mg/kg**  
**298 Federal Street**  
**Greenfield, MA**

Sample No.:	LS-14	LS-17	LS-19	LS-20	LS-24		LS-27	LS-30	Reportable Conc. RCS-1	Method 1 Standards		
	Depth (feet):	6-8	6-8	7-9	1-3	0-4	6-8	0-2		6-8	S-1 / GW-2	S-1 / GW-3
Date Collected:	1/11/12	1/11/12	1/12/12	1/12/12	2/21/12	2/21/12	2/21/12	2/21/12	2/21/12			
PID Reading (ppmv):	53	24	55	1.3	24	55	11	4.6	NS	NS	NS	
Acetone	< 0.069	0.092	< 0.086	< 24.5	< 30	< 0.92	< 0.93	< 0.86	6	50	400	
cis-1,2-Dichloroethylene	< 0.007	<b>0.301</b>	<b>8.81</b>	<b>15.3</b>	< 3	< 0.092	< 0.093	< 0.086	0.3	0.4	100	
trans-1,2-Dichloroethylene	< 0.007	< 0.009	0.052	< 2.45	< 3	< 0.092	< 0.093	< 0.086	1	1	500	
Tetrachloroethylene	0.278	0.203	<b>3.57</b>	< 2.45	<b>29.4</b>	<b>2.02</b>	< 0.093	< 0.086	1	10	30	
Trichloroethylene	<b>2.18</b>	<b>4.36</b>	<b>43.1</b>	<b>128</b>	<b>167</b>	<b>7.74</b>	< 0.093	< 0.086	0.3	2	90	
Vinyl Chloride	< 0.007	0.038	< 0.009	< 2.45	< 3	< 0.092	< 0.093	< 0.086	0.6	0.6	0.6	

NOTES:

1. Concentrations in milligrams per kilogram (mg/kg, or parts per million) on a dry weight basis.
2. "<" indicates not detected; value is sample-specific quantitation limit.
3. "RCS" = Reportable concentration from 310 CMR 40.1600.
4. "NS" = No standard.
5. Values shown in **bold** exceed Method 1 standards.
6. "PID"=Photoionization detector soil headspace measurement in parts per million by volume.
7. Only analytes detected in at least one sample are shown; refer to laboratory reports for full analyte listing.
8. Shading indicates result exceeds the reportable concentration.

**Table 2**  
**Soil Analytical Results**  
**Volatile and Extractable Petroleum Hydrocarbons (VPH/EPH)**  
**Concentrations in mg/kg**  
**298 Federal Street**  
**Greenfield, MA**

Sample No.:	LS-6	LS-7	LS-8	LS-9	LS-11	LS-14	LS-15	LS-17	LS-19	LS-24		LS-27		LS-30	Transformer	Reportable Conc. RCS-1	Method 1 Standards	
Depth (feet):	4-6	2-4	4-6	5-6	4-6	6-8	4-6	6-8	7-9	0-4	6-8	0-2	6-8	6-8	0-1		S-1 / GW-2	S-1 / GW-3
Date Collected:	1/11/12	1/11/12	1/11/12	1/11/12	1/11/12	1/11/12	1/11/12	1/11/12	1/12/12	2/21/12	2/21/12	2/21/12	2/21/12	2/21/12	3/15/12			
<b>PID Reading (ppmv):</b>	0	7.2	0	159	0	53	0	24	55	24	55	11	0.4	4.6	4.6	NA	NA	NA
<b>VPH Fractions</b>																		
C5-C8 Aliphatics	---	---	---	21.6	---	< 1.5	---	2.41	16.4	---	---	---	---	4.87	---	100	100	100
C9-C12 Aliphatics	---	---	---	153	---	< 0.5	---	< 0.59	< 0.74	---	---	---	---	19.5	---	1,000	1,000	1,000
C9-C10 Aromatics	---	---	---	54	---	< 0.5	---	< 0.59	< 0.74	---	---	---	---	5.82	---	100	100	100
<b>VPH Target Compounds</b>																		
Benzene	---	---	---	< 0.5	---	< 0.1	---	< 0.1	< 0.1	---	---	---	---	< 0.09	---	2	30	30
Ethylbenzene	---	---	---	< 0.5	---	< 0.1	---	< 0.1	< 0.1	---	---	---	---	< 0.09	---	40	500	500
Methyl tert-butyl ether	---	---	---	< 0.5	---	< 0.1	---	< 0.1	< 0.1	---	---	---	---	< 0.09	---	0.1	100	100
Naphthalene	---	---	---	< 0.5	---	< 0.1	---	< 0.1	< 0.1	---	---	---	---	< 0.09	---	4	40	500
Toluene	---	---	---	< 0.5	---	< 0.1	---	< 0.1	< 0.1	---	---	---	---	< 0.09	---	30	500	500
Xylenes (total)	---	---	---	< 1.5	---	< 0.3	---	< 0.3	< 0.3	---	---	---	---	< 0.29	---	300	300	500
<b>EPH Fractions</b>																		
C9-C18 Aliphatics	< 13	< 12	< 12	981	< 12	< 12	< 12	< 13	< 13	38	< 12	< 11	< 13	< 11	< 12	1,000	1,000	1,000
C19-C36 Aliphatics	< 13	< 12	< 12	< 13	< 12	< 12	< 12	< 13	< 13	44	< 12	< 11	< 13	< 11	< 12	3,000	3,000	3,000
C11-C22 Aromatics	< 13	< 12	< 12	104	< 12	< 12	< 12	< 13	< 13	48	< 12	< 11	< 13	< 11	< 12	1,000	1,000	1,000
<b>EPH Target Compounds</b>																		
Naphthalene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	< 0.38	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	4	40	500
2-Methylnaphthalene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	< 0.38	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	0.7	80	300
Acenaphthylene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	< 0.38	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	1	600	10
Acenaphthene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	< 0.38	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	4	1,000	1,000
Fluorene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	< 0.38	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	1,000	1,000	1,000
Phenanthrene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	< 0.38	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	10	500	500
Anthracene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	< 0.38	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	1,000	1,000	1,000
Fluoranthene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	0.48	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	1,000	1,000	1,000
Pyrene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	0.38	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	1,000	1,000	1,000
Benzo(a)anthracene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	< 0.38	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	7	7	7
Chrysene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	0.54	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	70	70	70
Benzo(b)fluoranthene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	0.49	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	7	7	7
Benzo(k)fluoranthene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	< 0.38	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	70	70	70
Benzo(a)pyrene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	< 0.38	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	2	2	2
Indeno(1,2,3-cd)pyrene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	< 0.38	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	7	7	7
Dibenzo(a,h)anthracene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	< 0.38	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	0.7	0.7	0.7
Benzo(g,h,i)perylene	< 0.42	< 0.38	< 0.40	< 0.42	< 0.39	< 0.40	< 0.40	< 0.42	< 0.43	0.38	< 0.41	< 0.38	< 0.43	< 0.38	< 0.39	1,000	1,000	1,000

NOTES:

1. Concentrations in mg/kg (parts per million) on a dry weight basis.
2. "<" indicates not detected; value is sample-specific quantitation limit.
3. "RCS" = Reportable concentration from 310 CMR 40.1600.
4. "PID"=Photoionization detector soil headspace measurement in parts per million by volume.
5. "---" indicates not analyzed for this parameter.



**Table 3**  
**Soil Analytical Results**  
**Polychlorinated Biphenyls (PCBs)**  
**Concentrations in mg/kg**  
**298 Federal Street**  
**Greenfield, MA**

<b>Sample No.:</b>	<b>LS-14</b>	<b>LS-15</b>	<b>Transformer</b>	<b>Reportable Conc. RCS-1</b>
<b>Depth (feet):</b>	0-2	0-2	0-1	
<b>Date Collected:</b>	1/11/12	1/11/12	3/15/12	
<b>PCBs (total)</b>	< 0.022	< 0.023	< 0.024	

NOTES:

1. Concentrations in mg/kg (parts per million) on a dry weight basis.
2. "<" indicates not detected; value is sample-specific quantitation limit.
3. "RCS" = Reportable concentration from 310 CMR 40.1600.

**Table 4**  
**Soil Analytical Results: Manufacturing Area**  
**Inorganic Analytes**  
**Concentrations in mg/kg**  
**298 Federal Street**  
**Greenfield, MA**

Sample No.:	LS-14	LS-15	LS-20	LS-24	LS-27	LS-29		MassDEP Natural Soil Background	MassDEP Ash Fill Background	Reportable Conc. RCS-1	S-1 / GW-2,3 Standard
Depth (feet):	0-2	0-2	1-3	0-4	0-2	0-1	1-2				
Date Collected:	1/11/12	1/11/12	1/12/12	2/21/12	2/21/12	2/21/12	2/21/12				
Aluminum	8,220	9,410	4,700	6,180	8,120	12,900	5,290	10,000	10,000	NS	NS
Antimony	< 4.9	< 5.5	<b>113</b>	5.28	< 5.4	10.5	9.3	1	7	20	20
Arsenic	3.16	6.02	<b>37.5</b>	16.5	3.0	7.6	6.03	20	20	20	20
Barium	18.2	34.8	83.9	50.7	7.1	179	42.6	50	50	1,000	1,000
Beryllium	< 0.49	< 0.55	< 0.54	< 0.49	< 0.54	< 0.56	< 0.54	0.4	0.9	100	100
Cadmium	1.26	<b>6.96</b>	< 0.54	1.03	< 0.54	1.28	< 0.54	2	3	2	2
Calcium	323	931	2,250	1,240	767	1,200	737	NA	NA	NS	NS
Chromium (VI or total)*	13	15.9	12.5	<b>46.4</b>	11.2	22.3	8.65	30	40	30	30
Cobalt	3.97	4.63	4.86	6.24	3.2	9.9	3.55	4	4	500	NS
Copper	85	97.7	344	139	5.2	<b>1,770</b>	321	40	200	1,000	NS
Iron	14,400	16,400	25,700	33,400	14,700	24,300	9,750	20,000	20,000	NS	NS
Lead	25.8	50.7	<b>3,760</b>	272	4.9	<b>494</b>	<b>512</b>	100	600	300	300
Magnesium	1,960	2,330	2,000	2,170	2,190	4,510	1,590	5,000	5,000	NS	NS
Manganese	126	191	239	145	89	373	139	300	300	NS	NS
Mercury	0.18	0.22	0.33	1.43	< 0.03	0.26	0.11	0.3	1	20	20
Nickel	<b>77.8</b>	<b>53.2</b>	14.8	<b>20.6</b>	9.6	<b>29.3</b>	11	20	30	20	20
Potassium	422	424	842	470	375	2,090	844	NA	NA	NS	NS
Selenium	< 1.5	< 1.6	< 2.7	< 1.5	< 1.6	< 1.7	< 1.6	0.5	1	400	400
Silver	36	<b>101</b>	33.4	91.7	< 1.6	<b>195</b>	<b>109</b>	0.6	5	100	100
Sodium	25	28.5	152	53	57	72.5	48.8	NA	NA	NS	NS
Thallium	< 2.9	< 3.3	< 3.2	< 3.7	< 3.2	< 3.4	< 3.2	0.6	5	8	8
Vanadium	18	36	28	24	15	51	19	30	30	600	600
Zinc	47	83	57	73	22	1,810	166	100	300	2,500	2,500
<b>TCLP Metals (mg/l)</b>										<b>TCLP limit (mg/l)</b>	
TCLP-Lead	---	---	<b>15.5</b>	---	---	0.99	---			5	
TCLP-Silver	---	---	---	---	---	0.23	---			5	

NOTES:

1. Concentrations in milligrams per kilogram (mg/kg, or parts per million) on a dry weight basis.
2. "<" indicates not detected; value is sample-specific quantitation limit.
3. "RCS" = Reportable concentration from 310 CMR 40.1600.
4. Background values from MassDEP "Technical Update: Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil", May 23, 2002.
5. Shading indicates result exceeds the reportable concentration.

\* Per the 4/06 MCP, chromium is assumed to be hexavalent unless testing is done to prove otherwise.

**Table 5**  
**Soil Analytical Results: Ball Fields**  
**Inorganic Analytes**  
**Concentrations in mg/kg**  
**298 Federal Street**  
**Greenfield, MA**

<b>Sample No.:</b>	<b>LS-1</b>	<b>LS-1</b>	<b>LS-5</b>	<b>LS-5</b>	<b>MassDEP Natural Soil Background</b>	<b>MassDEP Ash Fill Background</b>	<b>Reportable Conc. RCS-1</b>
<b>Depth (feet):</b>	0-2	2-4	0-2	2-4			
<b>Date Collected:</b>	1/11/12	1/11/12	1/11/12	1/11/12			
Arsenic	2.93	< 1.6	2.77	< 1.8	20	20	20
Barium	61.5	15.2	36.4	23.8	50	50	1,000
Cadmium	<b>2.38</b>	< 0.54	0.74	0.61	2	3	2
Chromium (VI or total)*	9.37	11.2	13.1	16.7	30	40	30
Lead	23.1	4.07	45.6	6.97	100	600	300
Mercury	0.044	< 0.034	0.088	< 0.033	0.3	1	20
Selenium	< 1.6	< 1.6	< 1.5	< 1.8	0.5	1	400
Silver	3.57	< 1.6	2.2	< 1.8	0.6	5	100

NOTES:

1. Concentrations in milligrams per kilogram (mg/kg, or parts per million) on a dry weight basis.
  2. "<" indicates not detected; value is sample-specific quantitation limit.
  3. "RCS" = Reportable concentration from 310 CMR 40.1600.
  4. Background values from MassDEP "Technical Update: Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil", May 23, 2002.
- \* Per the 4/06 MCP, chromium is assumed to be hexavalent unless testing is done to prove otherwise.

**Table 6**  
**Groundwater Analytical Results**  
**Volatile Organic Compounds (VOCs)**  
**Concentrations in mg/l**  
**298 Federal Street**  
**Greenfield, MA**

Well No.:	LS-10	LS-19	LS-20	LS-21	LS-22	LS-23	LS-24	MW-6*		MW-7	Sump	RCGW-2	GW-2 Standard	GW-3 Standard	UCLs
Sample Date:	1/19/12	1/19/12	1/19/12	2/28/12	2/28/12	2/28/12	2/28/12	1/19/12	2/28/12	1/19/12	2/28/12				
Acetone	< 0.010	< 20	< 0.050	< 0.010	0.035	0.072	< 0.010	< 0.010	< 0.050	< 0.010	< 0.010	50	50	50	100
2-Butanone (MEK)	< 0.010	< 20	< 0.050	0.025	0.12	0.30	< 0.010	< 0.010	< 0.050	< 0.010	< 0.010	50	50	50	100
n-Butylbenzene	< 0.001	< 2	< 0.005	< 0.001	< 0.001	< 0.001	0.0034	< 0.001	< 0.005	< 0.001	< 0.001	NS	NS	NS	10*
sec-Butylbenzene	< 0.001	< 2	< 0.005	< 0.001	< 0.001	< 0.001	0.0056	< 0.001	< 0.005	< 0.001	< 0.001	NS	NS	NS	10*
1,1-Dichloroethane	< 0.001	< 2	< 0.005	< 0.001	< 0.001	< 0.001	0.0012	< 0.001	< 0.005	< 0.001	< 0.001	1	1	20	100
1,1-Dichloroethylene	< 0.001	< 2	< 0.005	< 0.001	< 0.001	< 0.001	0.0036	< 0.001	< 0.005	< 0.001	< 0.001	0.08	0.08	30	100
cis-1,2-Dichloroethylene	< 0.001	<b>6.34</b>	0.024	< 0.001	< 0.001	< 0.001	0.018	0.023	<b>0.17</b>	< 0.001	< 0.001	0.1	0.1	50	100
trans-1,2-Dichloroethylene	< 0.001	< 2	< 0.005	< 0.001	< 0.001	< 0.001	0.001	0.002	0.0067	< 0.001	< 0.001	0.09	0.09	50	100
Naphthalene	< 0.001	< 2	< 0.005	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.005	< 0.001	< 0.001	1	1	20	100
Tetrachloroethylene	< 0.001	<b>6.4</b>	< 0.005	< 0.001	< 0.001	< 0.001	<b>1.63</b>	< 0.001	0.019	< 0.001	< 0.001	0.05	0.05	30	100
Tetrahydrofuran	< 0.002	< 4	< 0.010	0.033	0.15	0.40	< 0.002	< 0.002	< 0.010	< 0.002	< 0.002	50	NS	NS	10*
1,1,1-Trichloroethane	< 0.001	< 2	< 0.005	< 0.001	< 0.001	< 0.001	0.081	< 0.001	< 0.005	< 0.001	< 0.001	4	4	20	100
Trichloroethylene	< 0.001	<b>107</b>	<b>0.199</b>	< 0.001	< 0.001	< 0.001	<b>17.2</b>	<b>0.088</b>	<b>0.23</b>	< 0.001	0.0016	0.03	0.03	5	50
1,2,4-Trimethylbenzene	< 0.001	< 2	< 0.005	< 0.001	< 0.001	< 0.001	0.0022	< 0.001	< 0.005	< 0.001	< 0.001	100	NS	NS	10*
1,3,5-Trimethylbenzene	< 0.001	< 2	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.001	< 0.001	1	NS	NS	10*
Vinyl Chloride	< 0.001	< 2	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	0.0014	<b>0.047</b>	< 0.001	< 0.001	0.002	0.002	50	100

NOTES:

1. Concentrations in milligrams per liter (mg/l, or parts per million).
  2. "<" indicates not detected; value is quantitation limit.
  3. RCGW = Reportable concentration for groundwater, from 310 CMR 40.1600.
  4. MCP Method 1 groundwater standards from 310 CMR 40.0974(2).
  5. UCLs = Upper Concentration Limits, from 310 CMR 40.0996(7). "\*" indicates a default UCL, not a chemical specific value, per 310 CMR 40.0996(8)(a).
  6. Shading indicates values exceeds applicable Reportable Concentration.
  6. "--" = Not analyzed for this parameter.
  7. "NS" = No standard available.
- \* MW-6 results should be used with caution, as they may be low biased due to well condition (no cap; open to water intrusion; material settled around screen) at start of project.

**Table 7**  
**Groundwater Analytical Results**  
**Volatile and Extractable Petroleum Hydrocarbons (VPH/EPH)**  
**Concentrations in mg/l**  
**298 Federal Street**  
**Greenfield, MA**

Well No.:	LS-10	LS-20	LS-24	Sump		RCGW-2	GW-2 Standard	GW-3 Standard
Sample Date:	1/19/12	1/19/12	2/28/12	2/28/12				
<b>VPH Fractions</b>								
C5-C8 Aliphatics	< 0.075	---	3.65*	< 0.075		3	3	50
C9-C12 Aliphatics	< 0.025	---	0.20	< 0.025		5	5	50
C9-C10 Aromatics	< 0.025	---	0.082	< 0.025		7	7	50
<b>VPH Target Compounds</b>								
Benzene	< 0.005	---	< 0.005	< 0.005		2	2	10
Ethylbenzene	< 0.005	---	< 0.005	< 0.005		5	20	5
Methyl tert-butyl ether	< 0.005	---	< 0.005	< 0.005		5	50	50
Naphthalene	< 0.005	---	< 0.005	< 0.005		1	1	20
Toluene	< 0.005	---	< 0.005	< 0.005		40	50	40
Xylenes (total)	< 0.015	---	< 0.015	< 0.015		5	9	5
<b>EPH Fractions</b>								
C9-C18 Aliphatics	< 0.11	< 0.11	< 0.12	---		5	5	50
C19-C36 Aliphatics	< 0.11	< 0.11	< 0.12	---		50	NA	50
C11-C22 Aromatics	< 0.11	< 0.11	< 0.12	---		5	50	5
<b>EPH Target Compounds</b>								
Naphthalene	< 0.005	< 0.005	< 0.006	---		1	1	20
2-Methylnaphthalene	< 0.005	< 0.005	< 0.006	---		2	2	20
Acenaphthylene	< 0.005	< 0.005	< 0.006	---		0.04	10	0.04
Acenaphthene	< 0.005	< 0.005	< 0.006	---		6	NA	6
Fluorene	< 0.005	< 0.005	< 0.006	---		0.04	NA	0.04
Phenanthrene	< 0.005	< 0.005	< 0.006	---		10	NA	10
Anthracene	< 0.005	< 0.005	< 0.006	---		0.03	NA	0.03
Fluoranthene	< 0.005	< 0.005	< 0.006	---		0.2	NA	0.2
Pyrene	< 0.005	< 0.005	< 0.006	---		0.02	NA	0.02
Benzo(a)anthracene	< 0.005	< 0.005	< 0.006	---		1	NA	1
Chrysene	< 0.005	< 0.005	< 0.006	---		0.07	NA	0.07
Benzo(b)fluoranthene	< 0.005	< 0.005	< 0.006	---		0.4	NA	0.4
Benzo(k)fluoranthene	< 0.005	< 0.005	< 0.006	---		0.1	NA	0.1
Benzo(a)pyrene	< 0.005	< 0.005	< 0.006	---		0.5	NA	0.5
Indeno(1,2,3-cd)pyrene	< 0.005	< 0.005	< 0.006	---		0.1	NA	0.1
Dibenzo(a,h)anthracene	< 0.005	< 0.005	< 0.006	---		0.04	NA	0.04
Benzo(g,h,i)perylene	< 0.005	< 0.005	< 0.006	---		0.02	NA	0.02

NOTES:

1. Concentrations in milligrams per liter (mg/l, or parts per million).
  2. "<" indicates not detected; value is quantitation limit.
  3. RCGW = Reportable concentration for groundwater, from 310 CMR 40.1600.
  4. MCP Method 1 groundwater standards from 310 CMR 40.0974(2).
  5. "--" = Not analyzed for this parameter.
  6. Shading indicates values exceeds applicable Reportable Concentration.
  7. "NA" = Not applicable.
- \* Likely false positive due to chlorinated VOCs; lab noted single peak in quantitation range.

**Table 8**  
**Groundwater Analytical Results**  
**Inorganic Analytes**  
**Concentrations in mg/l**  
**298 Federal Street**  
**Greenfield, MA**

Well No.:	LS-19	LS-20	LS-24	MW-6		MW-7	RCGW-2	GW-2 Standard	GW-3 Standard
Sample Date:	3/15/12	1/19/12	2/28/12	1/19/12	2/28/12	1/19/12			
<b>Metals</b>									
Antimony	---	---	< 0.006	---	0.026	---	8	NA	8
Arsenic	0.025	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	0.9	NA	0.9
Barium	0.088	0.080	0.031	0.056	0.020	0.048	50	NA	50
Beryllium	---	---	< 0.002	---	< 0.002	---	0.2	NA	0.2
Cadmium	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	< 0.0025	0.004	NA	0.004
Chromium (VI or total)*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.3	NA	0.3
Copper	---	---	< 0.005	---	0.010	---	100	NA	NS
Lead	< 0.0075	< 0.0075	< 0.0075	< 0.0075	0.0075	< 0.0075	0.01	NA	0.01
Mercury	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.02	NA	0.02
Nickel	---	---	< 0.005	---	< 0.005	---	0.2	NA	0.2
Selenium	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	0.1	NA	0.1
Silver	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007	NA	0.007
Thallium	---	---	< 0.005	---	< 0.005	---	3	NA	3
Zinc	---	---	0.0061	---	0.040	---	0.9	NA	0.9
<b>Cyanide (total)</b>	---	< 0.005	---	< 0.005	0.017	< 0.005	0.03	NA	0.03

NOTES:

1. Concentrations in milligrams per liter (mg/l, or parts per million).
  2. "<" indicates not detected; value is quantitation limit.
  3. RCGW = Reportable Concentration for groundwater, from 310 CMR 40.1600.
- \* Per the 4/06 MCP, chromium is assumed to be hexavalent unless testing is done to prove otherwise.

**Table 9**  
**Monitoring Well Survey and Groundwater Elevation Data**  
**298 Federal Street**  
**Greenfield, MA**

Well No.	Reference Elevation (feet)	January 19, 2012		March 15, 2012	
		Depth to water (feet)	Water Table Elevation (feet)	Depth to water (feet)	Water Table Elevation (feet)
LS-10	100.00	5.06	94.9	4.76	95.2
LS-19	93.47	4.53	88.9	4.31	89.2
LS-20	93.94	3.40	90.5	3.91	90.0
LS-21	92.93	NI	NI	2.25	90.7
LS-22	93.38	NI	NI	3.30	90.1
LS-23	93.66	NI	NI	3.70	90.0
LS-24	99.47	NI	NI	5.02	94.5
MW-6	94.74	2.06	92.7	2.90	91.8
MW-7	94.86	2.68	92.2	2.78	92.1

NOTES:

1. Elevations relative to an arbitrary datum assigned elevation 100.00 feet.
2. Measurements made from top of PVC using an electronic water level indicator.
3. NI = Not installed by this date.

**Table 10**  
**Catch Basin and Outfall Water Analytical Results**  
**Volatle Organic Compounds (VOCs)**  
**Concentrations in mg/l**  
**298 Federal Street**  
**Greenfield, MA**

Well No.:	CB-1	CB-2	OF-1	OF-2	GW-2	GW-3	Surface Water
Sample Date:	3/15/12	3/15/12	4/11/12	4/11/12	Standard	Standard	Benchmark
cis-1,2-Dichloroethylene	0.031	0.16	< 0.001	< 0.001	0.1	50	14
Tetrachloroethylene	< 0.005	0.017	< 0.001	< 0.001	0.05	30	1.1
Trichloroethylene	0.12	0.58	< 0.001	< 0.001	0.03	5	0.19

NOTES:

1. Concentrations in milligrams per liter (mg/l, or parts per million).
2. "<" indicates not detected; value is quantitation limit.
3. Groundwater standards (GW-2/GW-3) are not strictly applicable to water in catch basin; shown for comparative purposes.
4. The surface water benchmarks are toxicity-based surface water concentrations used by MassDEP in developing GW-3 groundwater standards. These values are based on toxicity to aquatic life.
5. Shading indicates result exceeds surface water benchmark value.



**Table 11**  
**Soil Gas Photoionization Detector Screening Results**  
**298 Federal Street**  
**Greenfield, Massachusetts**

Sample Location	PID Reading (ppmv)	Selected for Lab Analysis
SG-1	16.7	
SG-2	11.3	
SG-3	0.4	
SG-4	21.6	*
SG-5	0.8	
SG-6	0.0	*
SG-7	0.0	*
SG-8	0.0	
SG-9	0.4	*
SG-10	0.0	*
SG-11	0.0	*
SG-12	0.0	
SG-13	0.0	

NOTES:

1. "PID" = Photoionization detector screening reading from PID equipped with 11.8 eV lamp, calibrated to read in benzene equivalents in parts per million by volume (ppmv).
2. Measurements performed by OTO on January 26-27, 2012.
3. Minimum detection limit approximately 0.1 ppmv.

**Table 12**  
**Soil Gas Analytical Results**  
**Concentrations in ug/m<sup>3</sup>**  
**298 Federal Street**  
**Greenfield, Massachusetts**

Sample ID:	SG-4	SG-6	SG-7	SG-9	SG-10	SG-11	Commercial/ Industrial Sub-Slab Screening Values
PID (ppmv):	21.6	0	0	0.4	0	0	
Sample Date:	1/26/12	3/15/12	3/15/12	1/26/12	1/27/12	1/27/12	
<b>Volatile Organic Compounds</b>							
Acetone	390	34	26	120	40	55	16,000
Benzene	< 31	< 3.2	< 3.2	< 5.1	1.1	0.61	770
Carbon Disulfide	< 69	< 3.1	< 3.1	< 12	1.2	< 1.2	NA
Dichlorodifluoromethane (Freon 12)	< 97	< 4.9	< 4.9	< 16	3.0	2.8	NA
cis-1,2-Dichloroethylene	< 38	< 4.0	< 4.0	12	< 0.65	< 0.65	700
Ethanol	< 45	480	490	< 7.6	15	9.5	NA
Ethylbenzene	< 50	< 4.3	< 4.3	< 8.4	< 0.85	1.0	20,000
4-Ethyltoluene	< 69	< 4.9	< 4.9	13	2.5	3.0	NA
Hexane	< 45	14	10	< 7.7	1.1	< 0.77	NA
Isopropanol	58	89	104	13	27	9.7	NA
Methyl ethyl ketone (MEK)	< 63	12	21	< 11	2.1	1.8	100,000
Methylene Chloride	< 92	6.2	< 3.5	< 15	< 1.5	< 1.5	770
Tetrachloroethylene	< 81	< 6.8	< 6.8	20	5.5	3.5	290
Tetrahydrofuran	< 39	< 3.0	5.5	< 6.5	< 0.65	< 0.65	NA
Toluene	< 42	< 3.8	7.2	< 7.1	7.4	4.3	100,000
1,1,1-Trichloroethane	<b>280</b>	< 5.5	< 5.5	41	7.9	6.7	100,000
Trichloroethylene	<b>20,000</b>	< 5.4	< 5.4	<b>4,100</b>	<b>170</b>	<b>66</b>	140
Trichlorofluoromethane (Freon 11)	< 150	< 5.6	< 5.6	< 25	16	21	NA
1,2,4-Trimethylbenzene	< 49	< 4.9	< 4.9	35	8.1	3.9	NA
1,3,5-Trimethylbenzene	< 86	< 4.9	< 4.9	15	3.2	2.1	NA
total Xylenes	< 206	< 8.6	< 8.6	< 34	4.4	5.6	2,000

**NOTES:**

1. Only analytes detected are shown on the table. Refer to laboratory reports for full listing of analytical parameters.
2. Concentrations in micrograms per cubic meter (ug/m<sup>3</sup>).
3. "PID" = Photoionization detector screening reading from PID equipped with 11.8 eV lamp (January) or 10.6 eV lamp (March), calibrated to read in benzene equivalents.
4. "<" = Not detected; value is quantitation limit.
5. Sub-Slab Soil Gas Screening Values from MassDEP Interim Final Vapor Intrusion Guidance, WSC#-11-435, December 2011.
6. "NA" indicates no value available.
7. Shading indicates measured concentration exceeds the commercial/industrial soil gas screening value.

**Table 13**  
**Indoor Air Analytical Results**  
**Concentrations in ug/m<sup>3</sup>**  
**298 Federal Street**  
**Greenfield, Massachusetts**

Sample ID	IA-1	IA-2	IA-3	IA-4	Commercial/ Industrial Indoor Air Threshold Values (TV <sub>c/i</sub> )
Sample Location	Office	Basement near settling tanks	Basement SW corner	Basement north central	
Sample Date	1/26/12	1/26/12	1/26/12	1/26/12	
<b>Volatile Organic Compounds</b>					
Acetone	8.2	5.8	8.3	< 1.1	700
Benzene	1.8	0.89	< 0.51	1.4	11
Chloromethane	< 0.77	< 0.77	1.3	1.8	NA
Dichlorodifluoromethane (Freon 12)	3.2	3.2	3.4	3.5	NA
cis-1,2-Dichloroethylene	< 0.65	< 0.65	<b>2.6</b>	< 0.65	31
Ethanol	9.5	2.5	7.0	7.8	NA
Hexane	1.5	1.7	< 0.77	1.6	NA
Isopropanol	1.9	1.5	2.0	3.0	NA
Tetrachloroethylene	<b>1.6</b>	<b>2.2</b>	<b>4.4</b>	< 1.4	4.1
Toluene	3.0	1.2	< 0.71	2.1	4,400
Trichloroethylene	< 0.96	<b>5.6</b>	<b>2.3</b>	<b>8.1</b>	1.8
Trichlorofluoromethane (Freon 11)	13	7.9	4.7	9.8	NA

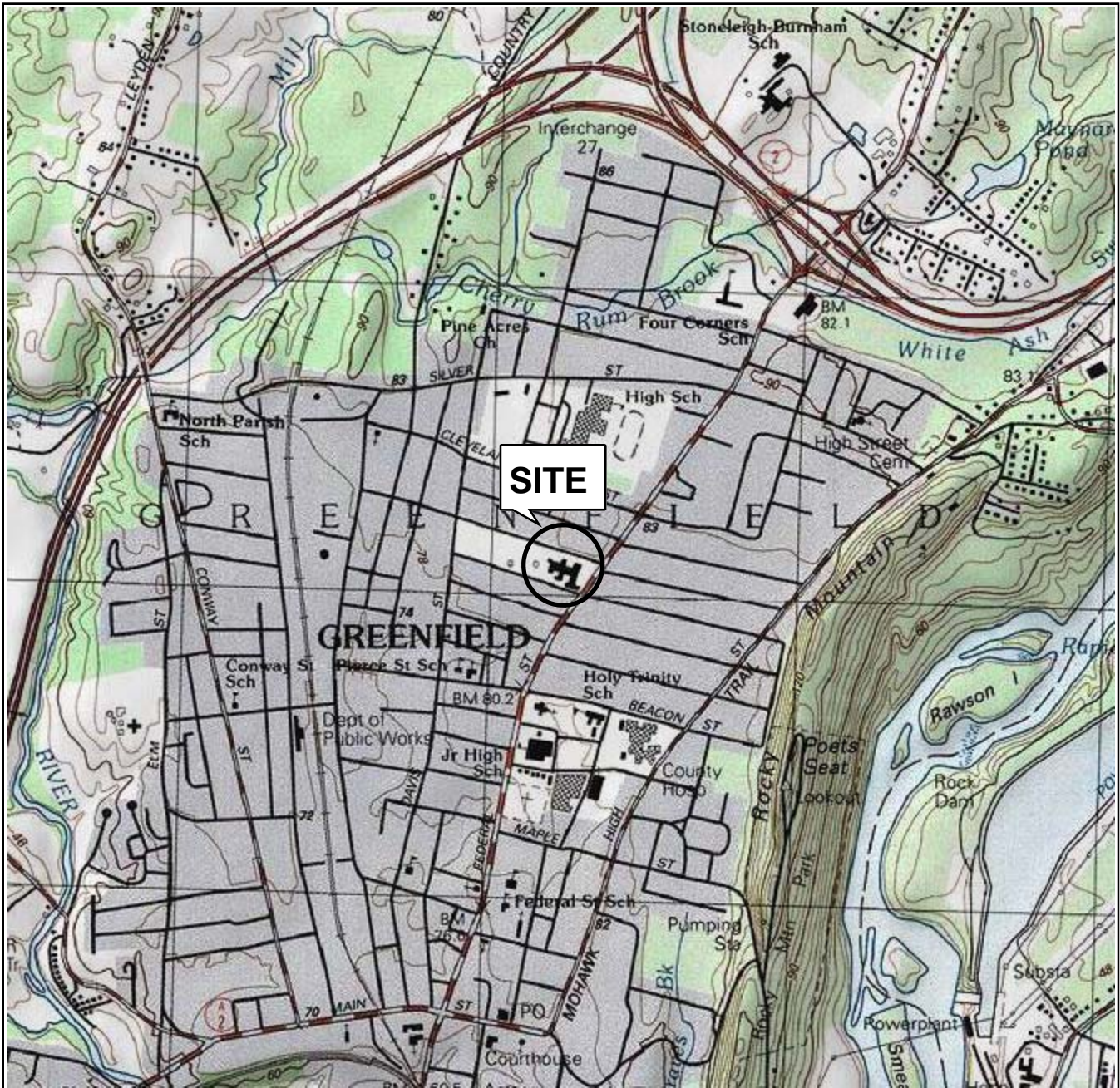
**NOTES:**

1. Only analytes detected are shown on the table. Refer to laboratory reports for full listing of analytical parameters.
2. Concentrations in micrograms per cubic meter (ug/m<sup>3</sup>).
3. "<" = Not detected; value is quantitation limit.
4. Indoor Air Threshold Values from MassDEP Interim Final Vapor Intrusion Guidance, WSC#-11-435, December 2011.
5. "NA" indicates no threshold value available.
6. Shading indicates measured concentration exceeds the commercial/industrial indoor air Threshold Value.

**Table 14**  
**Preliminary Remedial Cost Estimates**  
**Former Lunt Silversmiths Site**  
**298 Federal Street**  
**Greenfield, Massachusetts**

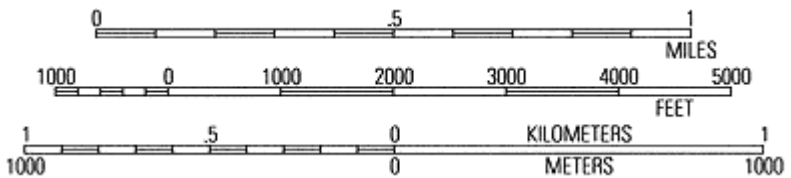
<b>Task</b>	<b>Cost Projection</b>
1. Further assessment and reporting to support MCP obligations	\$200,000
2. Activity and Use Limitation (AUL)	\$20,000
3. TCE source area soil excavation and off-site disposal	\$100,000
4. Groundwater interception and treatment installation and start-up	\$125,000
5. Sub-slab depressurization installation and start-up	\$150,000
6. Cyclone area soil capping	\$75,000
7. Long term O&M	\$200,000
Subtotal:	\$870,000
Contingency (20%):	\$174,000
Total:	\$1,044,000

## FIGURES

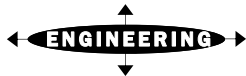


Topographic Map Quadrant: Greenfield, MA  
Map Version: 1998  
Current as of: 1990

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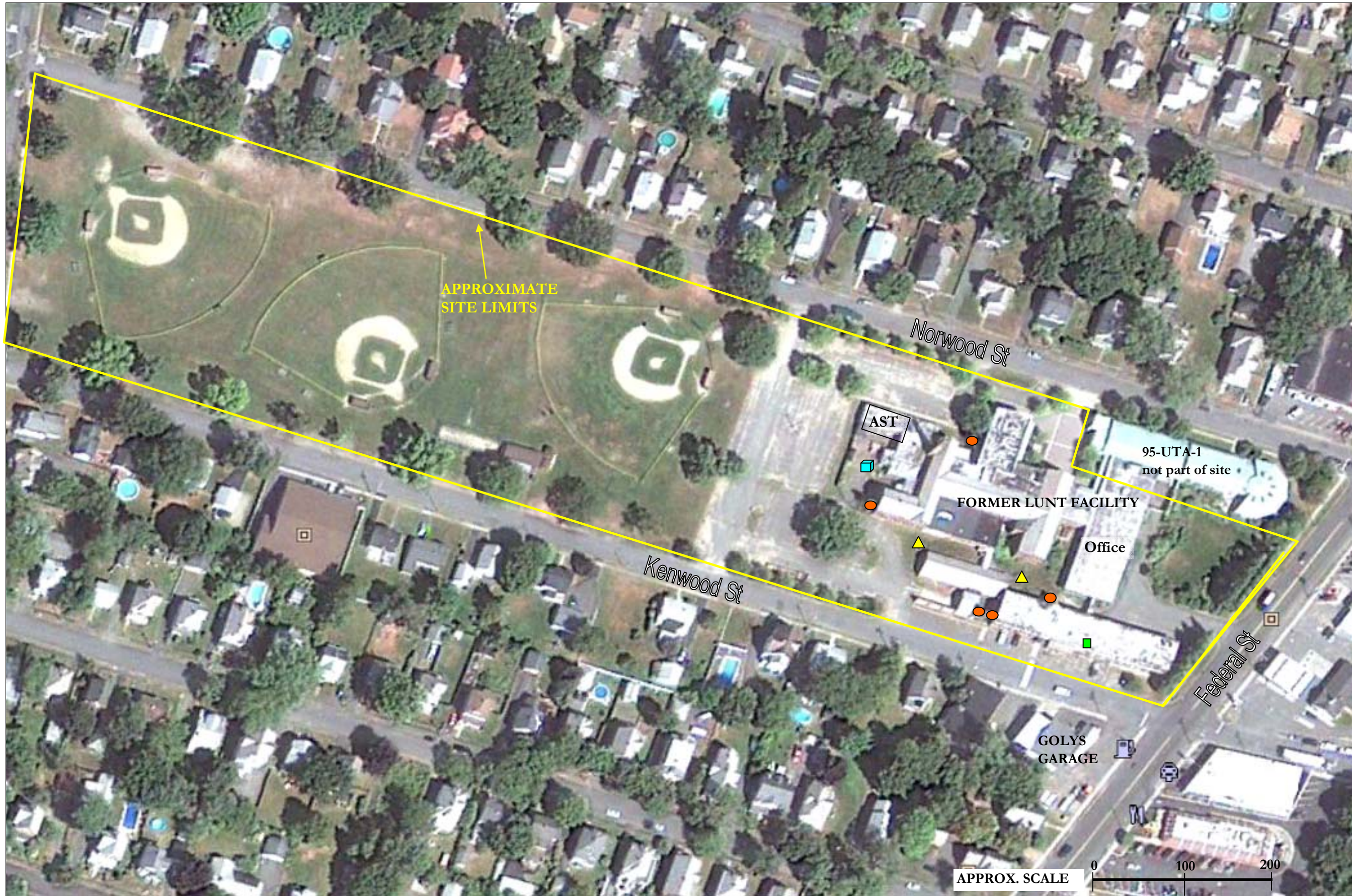
298 Federal Street  
Greenfield, Massachusetts

## SITE LOCUS

March, 2012

Figure 1





*O'Reilly, Talbot &  
Okun Associates, Inc.*  
*Springfield, MA*

LEGEND

- Cyclonic dust collector
- ▲ Electrical Transformer
- Degreaser
- Former Dumpster Location

FIGURE 2

**SITE PLAN**

**FORMER LUNT  
SILVERSMITH  
PROPERTY**

**GREENFIELD,  
MASSACHUSETTS**

File No. 1753-03-01

*April 2012*





*O'Reilly, Talbot &  
Okun Associates, Inc.*  
*Springfield, MA*

**LEGEND**

- LS-1  
● Soil Boring Location
- LS-10  
○ OTO Monitoring Well Location
- MW-6  
○ Previously Existing Monitoring Well Location
- Storm water catch basin
- Sump in basement

**FIGURE 3**

**SOIL BORING AND MONITORING WELL LOCATIONS**

**FORMER LUNT SILVERSMITH PROPERTY**

**GREENFIELD, MASSACHUSETTS**

File No. 1753-03-01

April 2012



# MassDEP - Bureau of Waste Site Cleanup

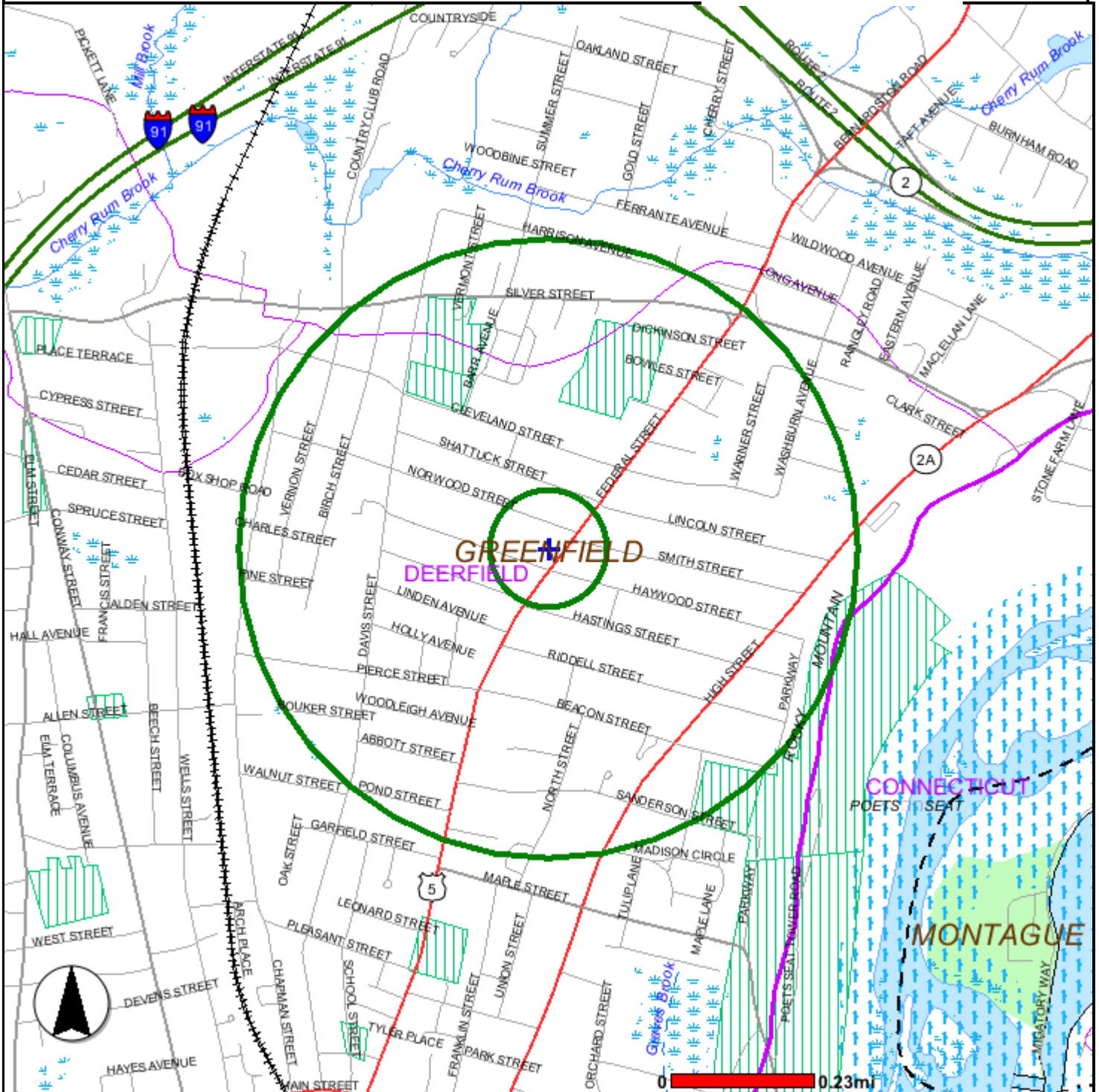
## MCP Numerical Ranking System Map: 500 feet & 0.5 Mile Radii

Site Name:  
RTN  
NAD83 MA Coordinates:  
110168mE, 928372mN

April 6, 2011

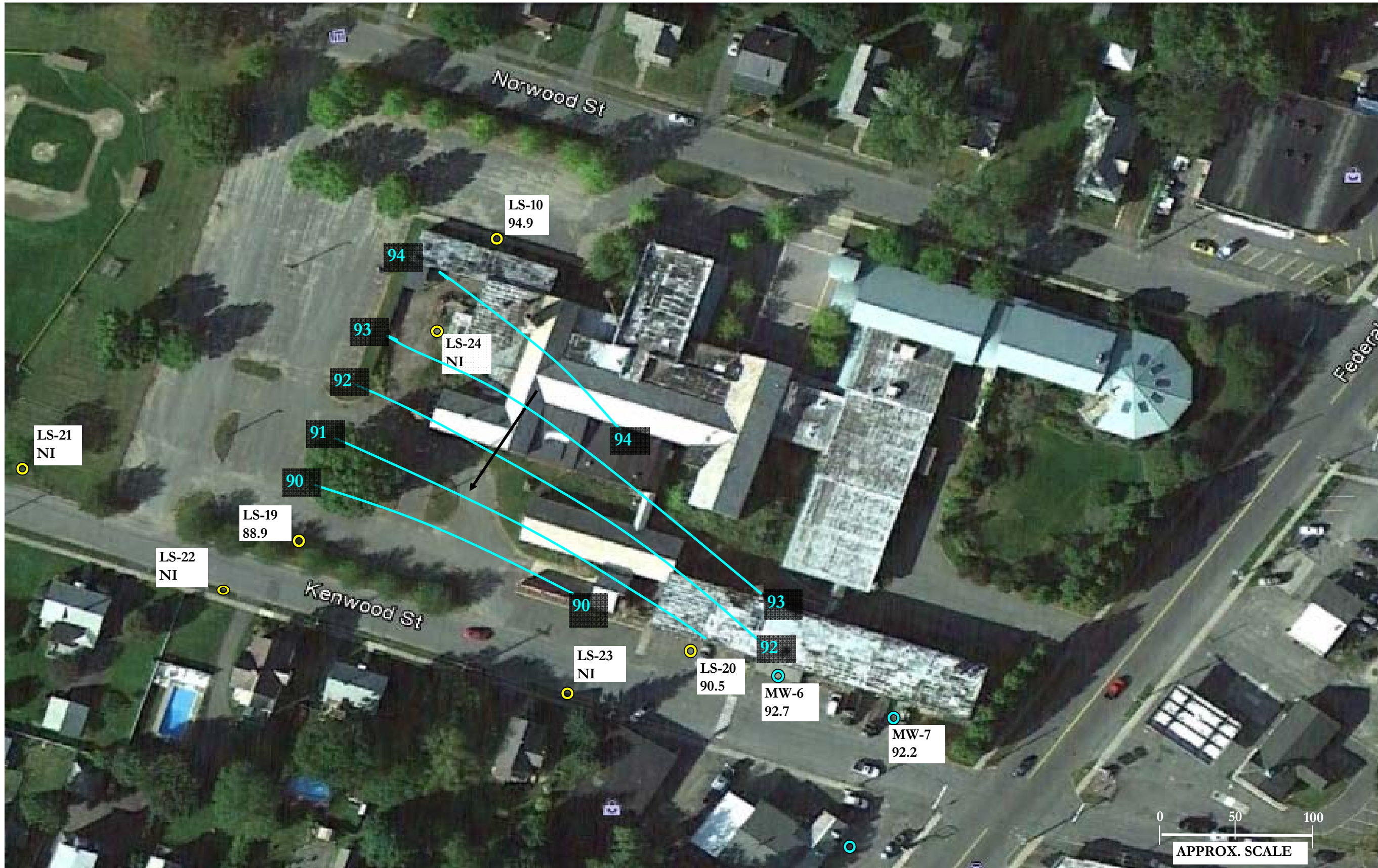


The information shown on this map is the best available at the date of printing. For more information please refer to [www.mass.gov/mqls/massgis.htm](http://www.mass.gov/mqls/massgis.htm)



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail	PWS Protection Areas: Zone II, IWPA, Zone A			
Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct	Hydrography: Open Water, PWS Reservoir, Tidal Flat			
Basins: Major, Sub; Streams: Perennial, Intermittent, Man Made Shore, Dam	Wetlands: Freshwater, Saltwater, Cranberry Bog			
Aquifers: Medium Yield, High Yield, EPA Sole Source	FEMA 100yr Floodplain; Protected Open Space; ACEC			
Non Potential Drinking Water Source Area: Medium, High (Yield)	NHESP: Est Rare Wetland Habitat, Certified Vernal Pool			
	DEP Permitted Solid Waste Landfill			

Figure 4  
MassDEP Priority Resource Map  
298 Federal Street, Greenfield



*O'Reilly, Talbot & Okun Associates, Inc.*  
 Springfield, MA

- LEGEND**
- 99 Relative Water Table Elevation (1/19/2012)
  - OTO Monitoring Well Location
  - ⊙ Previously Existing Monitoring Well Location
  - ↓ Estimated Groundwater Flow Direction

**FIGURE 5**

**GROUNDWATER CONTOUR PLAN**

**FORMER LUNT SILVERSMITH PROPERTY**

**GREENFIELD, MASSACHUSETTS**

File No. 1753-03-01

April 2012





*O'Reilly, Talbot & Okun Associates, Inc.*

*Springfield, MA*

**LEGEND**

- ▲ Indoor Air Sample Location
- ◆ Soil Gas Sample Location

**FIGURE 6**

**SOIL GAS AND INDOOR AIR SAMPLE LOCATIONS**

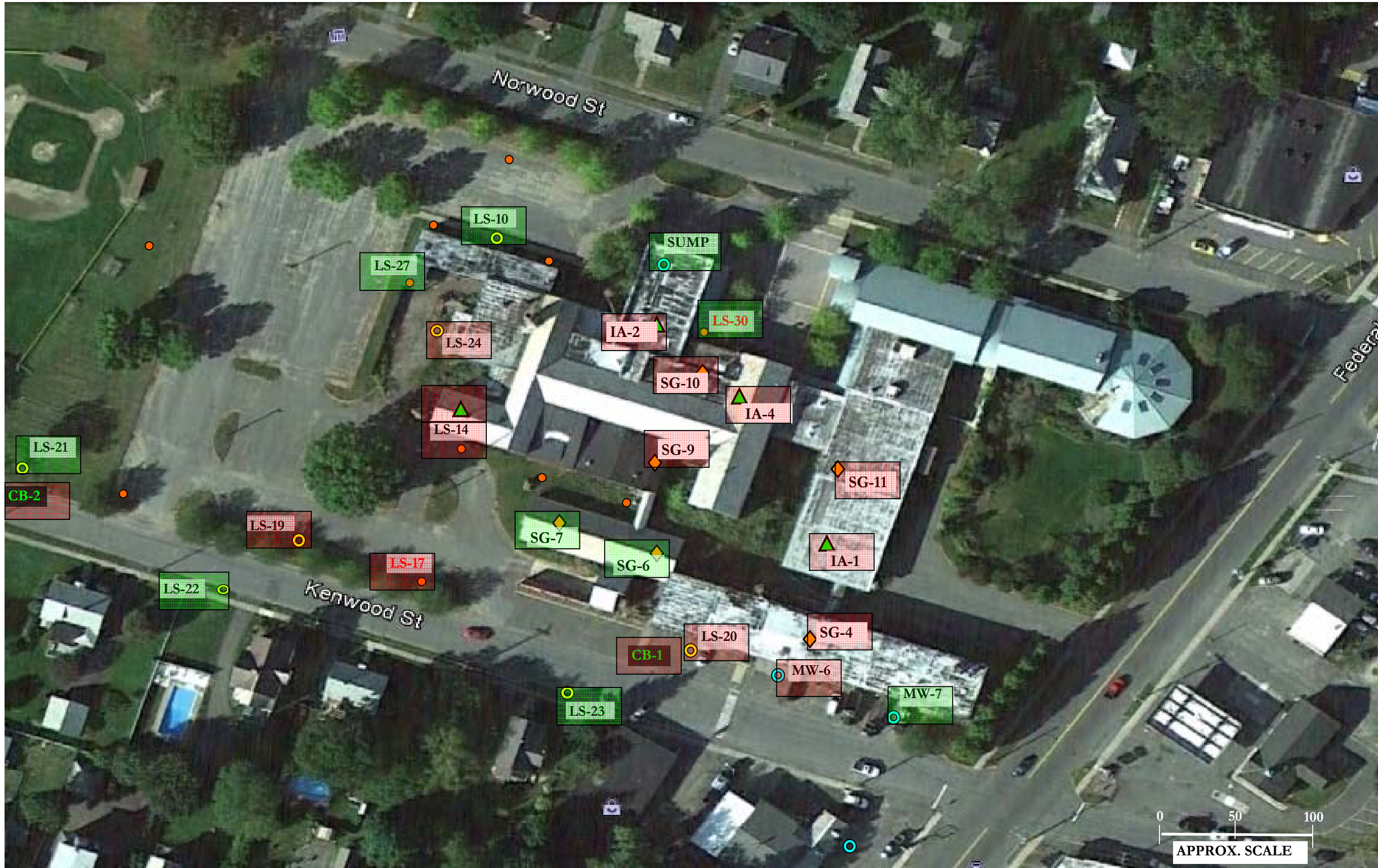
**FORMER LUNT SILVERSMITH PROPERTY**

**GREENFIELD, MASSACHUSETTS**

File No. 1753-03-01

*April 2012*

0 50 100  
APPROX. SCALE



*O'Reilly, Talbot & Okun Associates, Inc.*  
*Springfield, MA*

- LEGEND**
- Chlorinated VOCs in soil, groundwater +/- or soil gas above standards
  - Chlorinated VOCs in soil, groundwater +/- or soil gas below standards
  - Soil Boring Location
  - OTO Monitoring Well Location
  - Previously Existing Monitoring Well Location
  - ▲ Indoor Air Sample Location
  - ◆ Soil Gas Sample Location

**FIGURE 7**

**AREAS OF CONCERN: CVOCs**

**FORMER LUNT SILVERSMITH PROPERTY**

**GREENFIELD, MASSACHUSETTS**

File No. 1753-03-01

*April 2012*

0 50 100  
**APPROX. SCALE**





Metals in soil

*O'Reilly, Talbot & Okun Associates, Inc.*

*Springfield, MA*

**LEGEND**

Metals measured in soil above reportable levels

Metals levels measured are below reportable concentrations

- Soil Boring Location
- OTO Monitoring Well Location
- Previously Existing Monitoring Well Location

**FIGURE 8**

**AREAS OF CONCERN:  
METALS IN SOIL**

**FORMER LUNT  
SILVERSMITH  
PROPERTY**

**GREENFIELD,  
MASSACHUSETTS**

File No. 1753-03-01

*April 2012*

0 50 100  
**APPROX. SCALE**

**APPENDIX A  
LIMITATIONS**

## LIMITATIONS

1. Our report does not present scientific certainties, but rather our professional opinions on the data obtained through our assessment. Our report was prepared for the exclusive benefit of our client. Reliance upon the report and its conclusions is not made to third parties or future property owners. We would be pleased to discuss extension of reliance to third parties through execution of a written contract with such parties.
2. The observations presented in this report were made under the conditions described herein. The conclusions presented in this report were based solely upon the services described in the report and not on scientific tasks or procedures beyond the scope of the project or the time and budgetary constraints imposed by the client. The work described in this report was carried out in accordance with the contract Terms and Conditions.
3. In preparing the report O'Reilly, Talbot & Okun Associates, Inc. relied on certain information provided by state and local officials and other parties referenced herein, and on information contained in prior site reports. Although there may have been some degree of overlap in the information provided by these sources, O'Reilly, Talbot, & Okun Associates, Inc. did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this assessment.
4. Limited observations were made of the site and of the structures on the site, as indicated within the report. Where access to portions of the site or to structures on the site was unavailable or limited, we render no opinion as to the presence of hazardous materials/oil or asbestos containing materials, or to the presence of indirect information relating to hazardous materials/oil in that portion of the site. No destructive sampling was conducted to expose hidden potentially asbestos containing materials, and significant amounts of asbestos could be located in these areas, which would not be observed during our visit. In addition, we render no opinion as to the presence of hazardous materials/oil or asbestos containing materials, where direct observations of portions of the site were obstructed by objects or coverings on or over these surfaces.
5. Unless otherwise specified in the Report, we did not perform testing or analyses to determine the presence or concentration of asbestos at the site or in the environment at the site.
6. The purpose of this Report was to assess the physical characteristics of the subject site with respect to the presence of hazardous material or oil in soil or groundwater at the site. No specific attempt was made to check on the compliance of present or past owners or operators of the site with federal, state, or local laws and regulations, environmental or otherwise.

**APPENDIX B**  
**INFORMATION FROM GOLY'S GARAGE SITE**





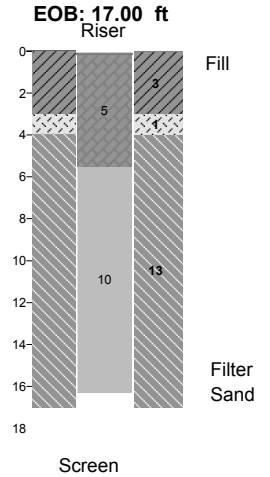
588 Silver Street  
Agawam, MA 01001

**SOIL BORING & MONITORING WELL  
INSTALLATION LOG**

<b>Boring Name: MW-6</b>		<b>Job Number: 14685.00</b>	
<b>Boring Company:</b>	Environmental Compliance Services , Inc	<b>Site Name:</b>	Golys Garage
<b>Address:</b>	588 Silver Street	<b>Address:</b>	286 Federal Street
<b>Town:</b>	Agawam	<b>Town:</b>	Greenfield
<b>State/Zip:</b>	MA 01001	<b>State/Zip:</b>	MA 01301
<b>Foreman:</b>	Stanley Werbicki	<b>Client:</b>	Goly's Garage Inc.

**Installed/Finished:** 09/08/2006 - 09/08/2006

**Location of Boring:**



Depth (feet)	Penetration/Recovery (inches)	Blow Count (per 6 in.)	Strata	Soil Descriptions	Field Testing
0 - 1	12/0				
1 - 2	12/0				
2 - 3	12/0				
3 - 4	12/0				
4 - 5	12/0				
5 - 6	12/9	3-4	Clay	damp gray CLAY, silt, fine sand	356
6 - 7	12/12	3-4	Clay	damp gray CLAY, silt, fine sand	356
7 - 8	12/0				
8 - 9	12/0				
9 - 10	12/0				
10 - 11	12/12	3-2	Clay	wet gray CLAY, trace of silt, fine sand	2187

**Depth(s), Analyte(s), Time(s) Sampled:** Sampled

11 - 12	12/12	3-5	Clay	wet gray CLAY, trace of silt, fine sand	2187
12 - 13	12/0				
13 - 14	12/0				
14 - 15	12/0				
15 - 16	12/12	2-1	Clay	wet gray CLAY, trace of silt, fine sand	1112
16 - 17	12/12	2-2	Clay	wet gray CLAY, trace of silt, fine sand	1112

**Boring Type:** Hollow Stem Auger 1

**Auger Inside Diameter (in):** 4.25

**Hammer Weight (lbs):** 140

**Hammer Fall (in):** 30

**Sampler Inside Diameter (in):** 1.375

**Sampler Type:** S.S. Split Spoon 1

**Sampler Length (in.):** 24

**ECS Inspector:** Anita Hansen

**Well Construction Data:**

A 2.00 inch monitoring well was installed at 15.00 ft below grade using 10.00 ft of 0.01 slotted screen and 5.00 ft of solid riser, sand packed to 4.00 ft below grade, bentonite sealed to 3.00 ft below grade; native fill.

Notes: Field Testing values represent total volatile organic vapors (referenced to a benzene standard) measured in the headspace of sealed soil sample jars with an OVM 580B photoionization meter with a Detection Limit of 0.1 ppm. Results reported in Parts Per Million (ppm), BDL=Below Detection Limit

**Notes:**



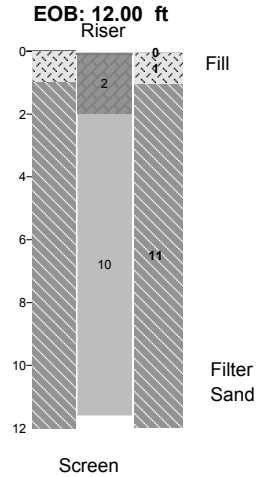
588 Silver Street  
Agawam, MA 01001

# SOIL BORING & MONITORING WELL INSTALLATION LOG

<b>Boring Name: MW-7</b>		<b>Job Number: 14685.00</b>	
<b>Boring Company:</b>	Environmental Compliance Services , Inc	<b>Site Name:</b>	Golys Garage
<b>Address:</b>	588 Silver Street	<b>Address:</b>	286 Federal Street
<b>Town:</b>	Agawam	<b>Town:</b>	Greenfield
<b>State/Zip:</b>	MA 01001	<b>State/Zip:</b>	MA 01301
<b>Foreman:</b>	Stanley Werbicki	<b>Client:</b>	Goly's Garage Inc.

**Installed/Finished:** 09/08/2006 - 09/08/2006

**Location of Boring:**



Depth (feet)	Penetration/Recovery (inches)	Blow Count (per 6 in.)	Strata	Soil Descriptions	Field Testing
0 - 1	12/0				
1 - 2	12/0				
2 - 3	12/0				
3 - 4	12/0				
4 - 5	12/0				
5 - 6	12/10	1-2	Clay	damp light brown CLAY, trace of fine sand, silt	0
6 - 7	12/12	3-5	Clay	damp light brown CLAY, trace of fine sand, silt	0
7 - 8	12/0				
8 - 9	12/0				
9 - 10	12/0				
10 - 11	12/12	2-1	Clay	moist 22" gray CLAY, over 2" red med sand, clay	0

**Depth(s), Analyte(s), Time(s) Sampled:** Sampled

11 - 12	12/12	2-refusal	Clay	moist 22" gray CLAY, over 2" red med sand, clay	0
---------	-------	-----------	------	---	---

**Boring Type:** Hollow Stem Auger 1  
**Auger Inside Diameter (in):** 4.25  
**Hammer Weight (lbs):** 140  
**Hammer Fall (in):** 30  
**Sampler Inside Diameter (in):** 1.375  
**Sampler Type:** S.S. Split Spoon 1  
**Sampler Length (in.):** 24  
**ECS Inspector:** Anita Hansen

**Well Construction Data:**

A 2.00 inch monitoring well was installed at 12.00 ft below grade using 10.00 ft of 0.01 slotted screen and 2.00 ft of solid riser, sand packed to 1.00 ft below grade, bentonite sealed to 0.00 ft below grade; native fill.

Notes: Field Testing values represent total volatile organic vapors (referenced to a benzene standard) measured in the headspace of sealed soil sample jars with an OVM 580B photoionization meter with a Detection Limit of 0.1 ppm. Results reported in Parts Per Million (ppm), BDL=Below Detection Limit

**Notes:**

**TABLE 2**  
**SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES**

Goly's Garage, 286 Federal Street, Greenfield, MA  
MADEP RTN 1-001047

(MassDEP Methods VPH 97-12 and 5/2004R, EPH 98-1 and 5/2004R, and USEPA 200.7)  
Results and standards reported in milligrams per kilogram (mg/Kg) or micrograms per kilogram (µg/Kg), as indicated

Sample Location	S-2 (Northern Wall) <sup>1</sup>	S-3 (East Wall) <sup>1</sup>	S-4 (South Wall) <sup>1</sup>	S-1 (West Wall) <sup>1</sup>	MW-3	EP-3	MW-4	EP-4	MW-5	EP-5	EP-5	EP-1	EP-2	EP-2	MW-6	MW-7
Sampling Date	4/23/1993	4/23/1993	4/23/1993	4/23/1993	8/23/2002	8/26/2009	8/23/2002	8/26/2009	8/23/2002	8/26/2009	8/26/2009	8/26/2009	8/26/2009	8/26/2009	9/8/2006	9/8/2006
Sample Depth	<5'	<5'	<5'	<5'	5-7'	8-9'	5-7'	8-10'	5-7'	0-3'	4-8'	4-8'	0-3'	8-9'	10-12'	10-12'
TOV (ppm)	207	<1	3	6	420	2,800	235	2,570	434	12.6	3,220	3,400	18.7	983	2,187	ND
<b>VPH (mg/Kg)</b>																
C <sub>5</sub> -C <sub>8</sub> Aliphatics	NT	NT	NT	NT	33	86.0	NT	18.2	<b>380</b>	<0.825	<b>568</b>	<b>691</b>	<3.97	<b>284</b>	15.4	<1.39
C <sub>9</sub> -C <sub>12</sub> Aliphatics	NT	NT	NT	NT	11	179	NT	15.4	93	0.453	652	672	<1.32	182	<0.493	<0.465
C <sub>9</sub> -C <sub>10</sub> Aromatics	NT	NT	NT	NT	41	<b>123</b>	NT	11.1	<b>470</b>	0.416	<b>430</b>	<b>517</b>	<1.32	92.3	<0.493	<0.465
<b>VPH Analytes (µg/Kg)</b>																
Benzene	<1,000	<5.0	<5.0	<5.0	<230	<665	NT	78.9	<1,200	<55.0	1,600	<6,710	<265	<1,170	<98.7	<92.9
Toluene	<1,500	<7.5	<7.5	<7.5	320	1,520	NT	284	<1,200	<55.0	9,830	11,100	<265	6,970	<98.7	<92.9
Ethylbenzene	<1,000	<5.0	<5.0	<5.0	3,800	3,770	NT	217	11,600	<55.0	8,220	8,210	<265	<1,170	<98.7	<92.9
Total Xylenes	68,000	<5.0	<5.0	<5.0	25,500	32,890	NT	4,128	175,500	<110	89,820	179,500	<530	3,940	<197	<186
Naphthalene	NT	NT	NT	NT	2,500	13,100	NT	870	<1,200	<55.0	34,440	35,200	<265	9,170	<98.7	<92.9
Methyl tert-butyl ether	<10,000	<50	<50	<50	<230	<665	NT	<64.0	<1,200	<55.0	<2,820	<6,710	<265	<1,170	<98.7	<92.9
<b>EPH (mg/kg)</b>																
C <sub>9</sub> -C <sub>18</sub> Aliphatics	180	56	44	92	<40	NT	NT	NT	880	NT	NT	NT	NT	NT	NT	NT
C <sub>19</sub> -C <sub>36</sub> Aliphatics	NA	NA	NA	NA	<40	NT	NT	NT	330	NT	NT	NT	NT	NT	NT	NT
C <sub>11</sub> -C <sub>22</sub> Aromatics	270	84	66	138	<40	NT	NT	NT	669	NT	NT	NT	NT	NT	NT	NT
<b>PAH<sup>4)</sup> (µg/Kg)</b>																
Naphthalene	NT	NT	NT	NT	670	NT	NT	NT	6,500	NT	NT	NT	NT	NT	NT	NT
2-Methylnaphthalene	NT	NT	NT	NT	600	NT	NT	NT	11,000	NT	NT	NT	NT	NT	NT	NT
Acenaphthene	NT	NT	NT	NT	<180	NT	NT	NT	530	NT	NT	NT	NT	NT	NT	NT
Acenaphthylene	NT	NT	NT	NT	<180	NT	NT	NT	<230	NT	NT	NT	NT	NT	NT	NT
Fluorene	NT	NT	NT	NT	<180	NT	NT	NT	730	NT	NT	NT	NT	NT	NT	NT
Phenanthrene	NT	NT	NT	NT	<180	NT	NT	NT	1,500	NT	NT	NT	NT	NT	NT	NT
Anthracene	NT	NT	NT	NT	<180	NT	NT	NT	<230	NT	NT	NT	NT	NT	NT	NT
Fluoranthene	NT	NT	NT	NT	<180	NT	NT	NT	<230	NT	NT	NT	NT	NT	NT	NT
Pyrene	NT	NT	NT	NT	<180	NT	NT	NT	260	NT	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene	NT	NT	NT	NT	<180	NT	NT	NT	<230	NT	NT	NT	NT	NT	NT	NT
Chrysene	NT	NT	NT	NT	<180	NT	NT	NT	<230	NT	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene	NT	NT	NT	NT	<180	NT	NT	NT	<230	NT	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene	NT	NT	NT	NT	<180	NT	NT	NT	<230	NT	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene	NT	NT	NT	NT	<180	NT	NT	NT	<230	NT	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	NT	NT	NT	NT	<180	NT	NT	NT	<230	NT	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	NT	NT	NT	NT	<180	NT	NT	NT	<230	NT	NT	NT	NT	NT	NT	NT
Benzo(g,h,i)perylene	NT	NT	NT	NT	<180	NT	NT	NT	<230	NT	NT	NT	NT	NT	NT	NT
<b>VOC'S by 8260/8240 (µg/Kg)</b>																
1,2-Dibromoethane (EDB)	NT	NT	NT	NT	NT	NT	NT	NT	<1,200	NT	NT	NT	NT	NT	<97.3	<93.4
cis-1,2-Dichloroethene	<1,000	<5.0	<5.0	<5.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<b>10,100</b>	<93.4
trans-1,2-Dichloroethene	<1,500	<7.5	<7.5	<7.5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<b>1,440</b>	<93.4
Tetrachloroethene	<1,500	<7.5	<7.5	<7.5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	406	<93.4
Trichloroethene	<1,000	<5.0	<5.0	<5.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<b>85,400</b>	<93.4
Total Xylenes	68,000	<5.0	<5.0	<5.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<195	<187
<b>Metals (mg/kg)</b>																
Total Lead	NT	NT	NT	NT	NT	NT	NT	NT	38.5	NT	NT	NT	NT	NT	NT	NT

NOTES: ND = Not detected at the method detection limits. NA = Not applicable. NT = sample not tested for this analyte  
**Bold** = Concentrations Above Method 2 Standard.

<sup>1</sup> This sample was analyzed via USEPA TPH Method 418.1 and USEPA Method 8240. In order to compare these results to current standards, EPH fraction concentrations were calculated from the TPH concentration reported as described in WCS-02-411, *Implementation of the MADEP VPH/EPH Approach, Final Policy* (October 31, 2002).

<sup>2</sup> MCP Method 1 Standards pursuant to 310 CMR 40.0975(6)(a),(b), and (c).

<sup>3</sup> Standard for Total Xylenes.

<sup>4</sup> Polycyclic Aromatic Hydrocarbons.

**TABLE 3  
SUMMARY OF RESULTS OF ANALYSIS OF GROUNDWATER SAMPLES**

Goly's Garage, 286 Federal Street, Greenfield, MA  
MassDEP RTN 1-1047

MassDEP VPH Methods 97-12 and 5/2004R and USEPA Methods 6010B and 6020A  
Results reported in milligrams per liter (mg/L) or micrograms per liter (µg/L) as noted

Well ID/ Elevation	Sampling Date	Depth to Water	GW Elevation	Sampling Method	C <sub>3</sub> -C <sub>8</sub> Aliphatic Hydrocarbons	C <sub>9</sub> -C <sub>12</sub> Aliphatic Hydrocarbons	C <sub>9</sub> -C <sub>10</sub> Aromatic Hydrocarbons	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	Naphthalene	MtBE	Dissolved Lead
					mg/L			µg/L							
				MCP Method 2 GW-2 Standards <sup>(2)</sup>	3	5	7	2,000	50,000	20,000	9,000 <sup>(3)</sup>	NA	1,000	50,000	NA
				MCP Method 2 GW-3 Standards <sup>(2)</sup>	50	50	50	10,000	40,000	5,000	5,000 <sup>(3)</sup>	NA	20,000	50,000	0.01
MW-1 100.22	8/30/02 4/26/07 5/31/07	5.71 4.82 5.26	94.51 95.40 94.96	Bailer Low-flow NA	<0.075 <0.075 NS	<0.025 <0.025 NS	<0.025 <0.025 NS	<5.0 <5.0 NS	<5.0 <5.0 NS	<5.0 <5.0 NS	<10.0 <10.0 NS	ND ND NS	<5.0 <5.0 NS	8.00 8.30 NS	NT NT NS
MW-2 100.61	4/26/07 5/31/07	DRY DRY	DRY DRY	NA NA	NS NS	NS NS	NS NS	NS NS	NS NS	NS NS	NS NS	NS NS	NS NS	NS NS	NS NS
MW-3 100.00	8/30/02 4/26/07 5/31/07 8/26/09	2.98 2.95 3.36 3.10	97.02 97.05 96.64 96.90	Bailer Low-flow Low-flow Low-flow	<b>5.1</b> 0.98 NT NT	2.0 0.73 NT NT	<b>18.0</b> 1.67 NT NT	<50 <5.0 NT NT	900 36.4 NT NT	2,800 272 NT NT	23,700 1,930 NT NT	27,400 2,238 NT NT	1,200 120 NT NT	<50 <5.0 NT NT	0.0222 NT 0.0166 0.0059
MW-5 99.41	8/30/02 4/26/07 5/31/07	3.34 2.73 3.14	96.07 96.68 96.27	Bailer Low-flow* Low-flow*	0.53 0.21 NT	0.17 0.19 NT	<b>8.0</b> 0.45 NT	410 15.4 NT	85 <5.0 NT	680 21.5 NT	9,393 180.1 NT	10,568 217 NT	690 23.0 NT	30 <5.0 NT	<0.0075 0.0114 <0.0075
MW-6 98.30	4/26/07 5/31/07	4.80 3.09	93.50 95.21	Low-flow Low-flow	<b>51.9</b> NT	<0.250 NT	0.26 NT	<50 NT	<50 NT	<50 NT	<100 NT	ND NT	<50 NT	<50 NT	NT NT
MW-7 98.87	4/26/07 5/31/07	2.67 2.89	96.20 95.98	Low-flow NA	<0.0750 NS	<0.0250 NS	<0.0250 NS	<5.0 NS	<5.0 NS	<5.0 NS	<10.0 NS	ND NS	<5.0 NS	<5.0 NS	NT NS
MW-9 98.86	4/26/07 5/31/07	3.69 3.87	95.17 94.99	Low-flow NA	<0.0750 NS	<0.0250 NS	<0.0250 NS	<5.0 NS	<5.0 NS	<5.0 NS	<10.0 NS	ND NS	<5.0 NS	7.10 NS	NT NS
MW-10 99.21	4/26/07 5/31/07	5.15 6.06	94.06 93.15	Low-flow NA	0.12 NS	<0.250 NS	<0.250 NS	<5.0 NS	<5.0 NS	<5.0 NS	<10.0 NS	ND NS	<5.0 NS	<5.0 NS	<0.0075 NS
MW-11 99.79	4/26/07 5/31/07	4.36 5.57	95.43 94.22	Low-flow NA	<0.0750 NS	<0.0250 NS	<0.0250 NS	<5.0 NS	<5.0 NS	<5.0 NS	<10.0 NS	ND NS	<5.0 NS	<5.0 NS	NT NS
MW-13 99.25	4/26/07 5/31/07	3.64 4.82	95.61 94.43	Low-flow NA	<0.0750 NS	<0.0250 NS	<0.0250 NS	<5.0 NS	<5.0 NS	<5.0 NS	<10.0 NS	ND NS	<5.0 NS	<5.0 NS	NT NS
				<b>No. Analyses</b>	12	12	12	12	12	12	12	NA	12	12	7
				<b>No. Detections</b>	6	4	5	2	3	4	4	NA	4	3	4
				<b>Frequency of Detection</b>	50%	33%	42%	17%	25%	33%	33%	NA	33%	25%	57%
				<b>Maximum Detection</b>	51.9	2.0	18.0	410	900	2,800	23,700	NA	1,200	30.0	0.0222
				<b>Location of Maximum Detection</b>	MW-6	MW-3	MW-3	MW-5	MW-3	MW-3	MW-3	NA	MW-3	MW-5	MW-3
				<b>COC for Site GW (Y/N)</b>	Y	Y	Y	Y	Y	Y	Y	NA	Y	Y	N

<sup>1</sup> MCP Method 1 Standards as documented in 310 CMR 40.0974(2)

<sup>2</sup> Published Method 2 MCP Standards prior to effective date per 310 CMR 40.0982(7)

<sup>3</sup> Standard for Total Xylenes

NA is Not Applicable

NS is No Sample collected at this well on this date

NT is sample not analyzed for this compound

MtBE is methyl tert butyl ether

**TABLE 4  
SUMMARY OF RESULTS OF ANALYSIS OF GROUNDWATER SAMPLES**

**Goly's Garage, 286 Federal Street, Greenfield, MA  
MassDEP RTN 1-1047**

MassDEP EPH Methods 98-1 and 5/2004R

Results reported in milligrams per liter (mg/L) or micrograms per liter (µg/L) as noted

Well ID/ Elevation	Sampling Date	Depth to Water	GW Elevation	Sampling Method	C <sub>7</sub> -C <sub>14</sub> Aliphatic Hydrocarbons	C <sub>15</sub> -C <sub>36</sub> Aliphatic Hydrocarbons	C <sub>11</sub> -C <sub>22</sub> Aromatic Hydrocarbons	µg/L																		
					mg/L			Naphthalene	2-Methyl naphthalene	Acenaphthene	Acenaphthylene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a) anthracene	Chrysene	Benzo(b) fluoranthene	Benzo (k) fluoranthene	Benzo (a) pyrene	Indeno (1,2,3-cd) pyrene	Dibenzo (a,h) anthracene	Benzo (g,h,i) perylene		
				MCP Method 1 GW-2 Standards <sup>(1)</sup>	5	NA	50	1,000	2,000	NA	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				MCP Method 1 GW-3 Standards <sup>(1)</sup>	50	50	5	20,000	20,000	6,000	40	40	10,000	30	200	20	1,000	70	400	100	500	100	40	20		
MW-1	8/30/02	5.71	94.51	Bailer	<0.2	<0.2	<0.2	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
100.22	4/26/07	4.82	95.40	Low-flow	<0.2	<0.2	<0.2	<1.0	<1.0	1.25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.200	<0.500	<0.500	<1.0	<1.0	
MW-2	4/26/07	DRY	DRY	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
100.61																										
MW-3	8/30/02	2.98	97.02	Bailer	2.8	<0.2	<b>6.7</b>	270	130	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
100.00	4/26/07	2.95	97.05	Low-flow	0.3	<0.2	0.4	58.9	15.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.200	<0.500	<0.500	<1.0	<1.0	
MW-5	8/30/02	3.34	96.07	Bailer	1.6	0.66	<b>5.9</b>	210	120	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
99.41	4/26/07	2.73	96.68	Low-flow	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
	5/31/07	3.14	96.27	Low-flow	<0.2	<0.2	<0.2	21.5	7.11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.200	<0.500	<0.500	<1.0	<1.0	
MW-6	4/26/07	4.80	93.50	Low-flow	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
98.30	5/31/07	3.09	95.21	Low-flow	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
MW-7	4/26/07	2.67	96.20	Low-flow	<0.2	<0.2	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.200	<0.500	<0.500	<1.0	<1.0	
98.87																										
MW-9	4/26/07	3.69	95.17	Low-flow	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
98.86																										
MW-10	4/26/07	5.15	94.06	Low-flow	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
99.21																										
MW-11	4/26/07	4.36	95.43	Low-flow	<0.2	<0.2	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.200	<0.500	<0.500	<1.0	<1.0	
99.79																										
MW-13	4/26/07	3.64	95.61	Low-flow	<0.2	<0.2	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.200	<0.500	<0.500	<1.0	<1.0	
99.25																										
				No. Analyses	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	
				No. Detections	3	1	3	4	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
				Frequency of Detection	33%	11%	33%	44%	44%	0%	11%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
				Maximum Detection	2.8	0.66	6.7	270	130	NA	1.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
				Location of Maximum Detection	MW-3	MW-5	MW-3	MW-5	MW-5	NA	MW-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
				COC for Site GW (Y/N)	Y	Y	Y	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	

<sup>1</sup> MCP Method 1 Standards as documented in 310 CMR 40.0974(2)

NA is Not Applicable

NS is No Sample collected at this well on this date

NT is sample not analyzed for this compound

**TABLE 5  
SUMMARY OF RESULTS OF ANALYSIS OF GROUNDWATER SAMPLES**

**Goly's Garage, 286 Federal Street, Greenfield, MA**  
MassDEP RTN 1-1047

USEPA Methods 8260B and 504.1

Results reported in milligrams per liter (mg/L) or micrograms per liter (µg/L) as noted

Well ID/ Elevation	Sampling Date	Depth to Water	GW Elevation	Sampling Method	EDB	cis-1,2- Dichloroethene	trans-1,2- Dichloroethene	Tetrachloroethene	Trichloroethene
				MCP Method 1 GW-2 Standards <sup>(1)</sup>	2	100	90	50	30
				MCP Method 1 GW-3 Standards <sup>(1)</sup>	50,000	50,000	50,000	30,000	5,000
MW-1 100.22	8/30/02 4/26/07 5/31/07	5.71 4.82 5.26	94.51 95.40 94.96	Bailer Low-flow Low-flow	NT NT NS	NT NT NS	NT NT NS	NT NT NS	NT NT NS
MW-2 100.61	4/26/07 5/31/07	DRY DRY	DRY DRY	NA NA	NS NS	NS NS	NS NS	NS NS	NS NS
MW-3 100.00	8/30/02 4/26/07 5/31/07	2.98 2.95 3.36	97.02 97.05 96.64	Bailer Low-flow Low-flow	<50.0 NT NT	NT NT NT	NT NT NT	NT NT NT	NT NT NT
MW-5 99.41	8/30/02 4/26/07 5/31/07	3.34 2.73 3.14	96.07 96.68 96.27	Bailer Low-flow* Low-flow*	<10.0 <0.0100 NT	NT NT NT	NT NT NT	NT NT NT	NT NT NT
MW-6 98.30	4/26/07 5/31/07	4.80 3.09	93.50 95.21	Low-flow Low-flow	NT NT	<b>11,300</b> NT	<b>1,480</b> NT	<b>&lt;500</b> NT	<b>80,800</b> NT
MW-7 98.87	4/26/07 5/31/07	2.67 2.89	96.20 95.98	Low-flow NA	NT NS	NT NS	NT NS	NT NS	NT NS
MW-9 98.86	4/26/07 5/31/07	3.69 3.87	95.17 94.99	Low-flow NA	NT NS	<1.0 NS	<1.0 NS	4.9 NS	2.5 NS
MW-10 99.21	4/26/07 5/31/07	5.15 6.06	94.06 93.15	Low-flow NA	<0.0100 NS	<1.0 NS	<1.0 NS	1.0 NS	<1.0 NS
MW-11 99.79	4/26/07 5/31/07	4.36 5.57	95.43 94.22	Low-flow NA	NT NS	NT NS	NT NS	NT NS	NT NS
MW-13 99.25	4/26/07 5/31/07	3.64 4.82	95.61 94.43	Low-flow NA	NT NS	NT NS	NT NS	NT NS	NT NS
				<b>No. Analyses</b>	4	3	3	3	3
				<b>No. Detections</b>	0	1	1	2	2
				<b>Frequency of Detection</b>	0%	33%	33%	67%	67%
				<b>Maximum Detection</b>	NA	11,300	1,480	4.9	80,800
				<b>Location of Maximum Detection</b>	NA	MW-6	MW-6	MW-9	MW-6
				<b>COC for Site GW (Y/N)</b>	N	N	N	Y	Y

<sup>1</sup> MCP Method 1 Standards as documented in 310 CMR 40.0974(2)

NA is Not Applicable

NS is No Sample collected at this well on this date

NT is sample not analyzed for this compound





- ### Legend
- Approximate Property Line
  - SS Sanitary Sewer Line
  - SW Storm Sewer Line
  - W Water Line
  - NG Natural Gas Line
  - OE Overhead Electric Line
  - Manhole
  - Catchbasin
  - Water Gate
  - Fire Hydrant
  - Utility Pole
  - Soil Sample
  - Soil Boring
  - Monitoring Well
  - ECS-1 Well I.D.

**General Notes:**  
 All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

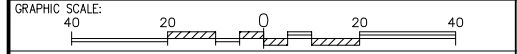


588 Silver Street • Agawam, MA 01001  
 Phone: 1-800-789-3530 Fax: 413-789-2776

PROJECT:  
**Goly's Garage**  
 286 Federal Street  
 Greenfield, Massachusetts

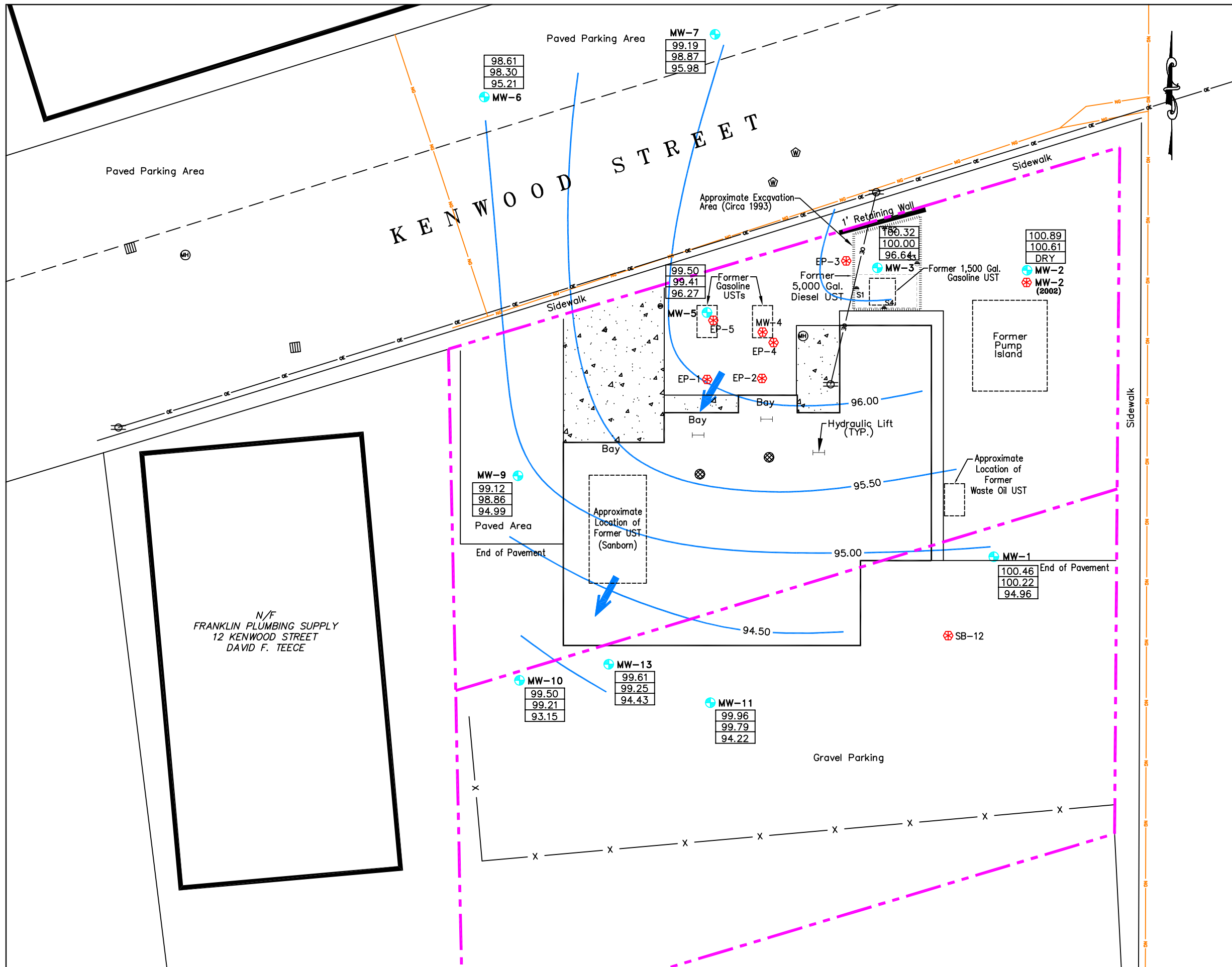
TITLE:  
**Site Plan with Abutting Properties**

CLIENT:  
**Goly's Garage, Inc.**



COMPUTER CADFILE : 14685SP.DWG

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
RRW		LAG	LAG
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1" = 40'	Feb. 2010	14685	2



### Legend

- Approximate Property Line
- Sanitary Sewer Line
- Storm Sewer Line
- Water Line
- Natural Gas Line
- Overhead Electric Line
- Manhole
- Catchbasin
- Water Gate
- Fire Hydrant
- Utility Pole
- Soil Sample
- Soil Boring
- Monitoring Well

**MW-1 Data:**

Well I.D.	100.46
Rim Elevation	100.22
PVC Elevation	100.61
Water Table Elevation	94.96

**90.0** — Water Table Contour (Dashed where inferred)

Flow Direction Indicator

### General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

Horizontal, and vertical locations of wells, and selected site features determined through measurements made by representatives of ECS.

Water table elevations are based on an assumed benchmark of 100.00 feet located on the PVC of monitoring well MW-3.

Water table elevations are based on measurements made on May 31, 2007.

Water table contours, and flow directions assume homogenous, isotropic aquifer conditions, and horizontal flow.

Fluctuations in the level of the water table may occur due to factors not accounted for at the time of measurement.

Water table contours are interpolated between data points, and inferred in other areas.



588 Silver Street • Agawam, MA 01001  
 Phone: 1-800-789-3530 Fax: 413-789-2776

PROJECT: **Goly's Garage**  
 286 Federal Street  
 Greenfield, Massachusetts

TITLE: **Site Plan with Groundwater Contours (5/31/07)**

CLIENT: **Goly's Garage, Inc.**

GRAPHIC SCALE:

COMPUTER CADFILE : 14685SP.DWG

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
RRW		LAG	LAG
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1" = 20'	Feb. 2010	14685	3

**APPENDIX C  
BORING LOGS**

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-1**

PROJECT : Lunt Silversmith			LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/11/2012		DATE FINISHED 01/11/2012
DRILLING EQUIPMENT Geoprobe			COMPLETION DEPTH 8'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL Rod		No. Samples 2		UNDIST.
CASING		CASING HAMM.		WATER LEVEL (FT.)		FIRST 2.5'
SAMPLER:		WEIGHT		DROP		COMPL.
SAMPLER HAMMER		WEIGHT		DROP		HR.
			BORING Western baseball diamond, southeast corner of site			
			LOCATION N42° 36.104' W72° 35.970'			
			ENGINEER/GEOLOGIST Brin Warenda			

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
			42/48	S-1 0-4'	Top 6": Topsoil, brown, fine SAND and SILT (frost) Middle 14": Brown, fine SAND and SILT, little medium sand, moist Bottom 22": Grey, fine to medium SAND, some silt, wet at 2.5'	0.0 (0-2)	TOPSOIL ↓ FILL	
	5		38/48	S-2 4-8'	Grey, fine to medium SAND, some silt, little clay, wet	0.0 (2-4)	↓ SAND AND SILT	
						0.0 (4-6')	↓	
						0.0 (6-8')	↓ 8'	
					End of Exploration at 8'			
	10							
	15							
	20							
	25							

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-2**

PROJECT : Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/11/2012 DATE FINISHED 01/11/2012	
DRILLING EQUIPMENT Geoprobe		COMPLETION DEPTH 8'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL Rod		No. Samples 2 UNDIST.	
CASING		CASING HAMM.		WATER LEVEL (FT.)	
WEIGHT		DROP		4'	
SAMPLER: SAMPLER HAMMER		BORING		Center baseball diamond, northcentral of fields	
WEIGHT		DROP		LOCATION N42° 36.120' W72° 35.880'	
		ENGINEER/GEOLOGIST		Brin Warenda	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5		44/48	S-1 0-4'	Top 8": Topsoil, brown, fine to medium SAND and SILT (frost) Middle 12": Brown, fine SAND and SILT, some medium sand, trace coarse sand Bottom 24": Light brown, fine to medium SAND, little silt, moist	0.0 (0-2)	TOPSOIL ↓ FILL ↓ SAND	
			40/48	S-2 4-8'	Brown, fine to medium SAND, little silt, wet	0.0 (2-4)		
						0.0 (4-6')		
						0.0 (6-8')	8'	
	10				End of Exploration at 8'			
	15							
	20							
	25							

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-3**

PROJECT : Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/11/2012	
DRILLING EQUIPMENT Geoprobe		COMPLETION DEPTH 8'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL Rod		No. Samples 2	
CASING		CASING HAMM.		UNDIST.	
WEIGHT		DROP		FIRST	
SAMPLER:		SAMPLER HAMMER		COMPL.	
WEIGHT		DROP		HR.	
SAMPLER HAMMER		BORING		WATER LEVEL (FT.) 4'	
		LOCATION		Center baseball diamond, first base side bull pen	
		ENGINEER/GEOLOGIST		N42° 36.110' W72° 35.868'	
				Brin Warenda	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
			46/48	S-1 0-4'	Top 12": Topsoil, brown, fine SAND and SILT, little medium sand (frost) Middle 12": Brown, fine SAND and SILT, dry Bottom 22": Grey, fine SAND and SILT, dry	0.0 (0-2)	TOPSOIL 1' FILL 2'	
	5		42/48	S-2 4-8'	Brown to grey, fine SAND and SILT, trace medium sand, wet at 4'	0.0 (2-4)  0.0 (4-6)  0.0 (6-8)	SAND AND SILT ↓ 8'	
						End of Exploration at 8'		
	10							
	15							
	20							
	25							

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp referenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-4**

PROJECT : Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/11/2012 DATE FINISHED 01/11/2012	
DRILLING EQUIPMENT Geoprobe		COMPLETION DEPTH 8'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL Rod		No. Samples 2	
CASING		CASING HAMM.		TIME	
WEIGHT		DROP		WATER LEVEL (FT.)	
SAMPLER:		SAMPLER HAMMER		BORING	
WEIGHT		DROP		LOCATION	
				ENGINEER/GEOLOGIST	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
			44/48	S-1 0-4'	Top 12": Topsoil, brown, fine SAND and SILT, trace medium sand (frost) Middle 16": Brown, fine to medium SAND, some silt, trace gravel, dry Bottom 16": Brown-grey, fine to medium SAND, little silt, wet at 3.5'	0.0 (0-2')	1' ↓ FILL ↓ 2.5' ↓ SAND AND SILT	
	5		40/48	S-2 4-8'	Grey, fine SAND and SILT, trace clay, wet	0.0 (4-6')	↓	
						0.0 (6-8')	8' ↓	
					End of Exploration at 8'			

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-5**

PROJECT : Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/11/2012 DATE FINISHED 01/11/2012	
DRILLING EQUIPMENT Geoprobe		COMPLETION DEPTH 8'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL Rod		No. Samples 2 UNDIST.	
CASING		CASING HAMM.		TIME	
WEIGHT		DROP		WATER LEVEL (FT.)	
SAMPLER:		SAMPLER HAMMER		BORING	
WEIGHT		DROP		LOCATION	
				ENGINEER/GEOLOGIST	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
X	5		44/48	S-1 0-4'	Top 12": Topsoil, brown, fine SAND and SILT, trace medium sand (frost) Middle 16": Brown, fine to medium SAND, some silt, moist Bottom 16": Grey, fine to medium SAND and SILT, moist	0.0 (0-2)	TOPSOIL ↓ FILL ↓ 2.5' SAND AND SILT	
			48/48	S-2 4-8'	Top 30": Grey, fine to medium SAND and SILT, wet at 4' Bottom 18": Brown, fine to medium SAND and SILT, wet	0.0 (4-6)  0.0 (6-8')	↓  ↓ 8'	
								End of Exploration at 8'

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected



**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-6**

PROJECT : Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/11/2012	
DATE FINISHED 01/11/2012		COMPLETION DEPTH 8'		GROUND SURFACE ELEV. DATUM	
DRILLING EQUIPMENT Geoprobe		SIZE & TYPE OF CORE BARREL Rod		No. Samples 2	
TYPE BIT		CASING		UNDIST.	
CASING HAMM.		WEIGHT		DROP	
SAMPLER:		WEIGHT		DROP	
SAMPLER HAMMER		BORING		Eastern baseball diamond, adjacent to bleachers	
		LOCATION		N42° 36.076' W72° 35.800'	
		ENGINEER/GEOLOGIST		Brin Warenda	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5		44/48	S-1 0-4'	Top 12": Topsoil, brown, fine SAND and SILT, trace medium sand (frost) Bottom 32": Brown-grey, fine SAND and SILT, trace clay, moist	0.0 (0-2)	1' TOPSOIL ↓ SAND AND SILT	
			46/48	S-2 4-8'	Top 22": Brown-grey, fine SAND and SILT, trace clay, wet at 4' Bottom 24": Grey, silty clay, wet	0.0 (2-4)	4' ↓ SILTY CLAY	
					0.0 (4-6)	8' ↓		
					0.0 (6-8')			
					End of Exploration at 8'			

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp referenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-7**

PROJECT : Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/11/2012 DATE FINISHED 01/11/2012	
DRILLING EQUIPMENT Geoprobe		COMPLETION DEPTH 8'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL Rod		No. Samples 2	
CASING		CASING HAMM.		UNDIST.	
CASING HAMM.		WEIGHT		DROP	
SAMPLER:		WEIGHT		DROP	
SAMPLER HAMMER		WEIGHT		DROP	
		BORING		Western end of building, southwest corner	
		LOCATION		N42° 36.068' W72° 35.767'	
		ENGINEER/GEOLOGIST		Brin Warenda	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5		30/48	S-1 0-4'	Top 4": Topsoil, brown, fine SAND and SILT, trace medium sand (frost) Middle 12": Brown-black, fine to medium SAND, some ash, trace red rock, dry Bottom 14": Brown(iron stained), fine to medium SAND, trace coarse sand, moist	2.4 (0-2)	TOPSOIL FILL ↓ 2'	
			40/48	S-2 4-8'		7.2 (2-4)	SAND AND SILT ↓	
					1.3 (4-6)	0.8 (6-8)	8' ↓	
					End of Exploration at 8'			
	10							
	15							
	20							
	25							

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-8**

PROJECT : Lunt Silversmith			LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/11/2012		DATE FINISHED 01/11/2012
DRILLING EQUIPMENT Geoprobe			COMPLETION DEPTH 8'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL Rod		No. Samples 2		UNDIST.
CASING		CASING HAMM.		WATER LEVEL (FT.) 4'		FIRST
SAMPLER: SAMPLER HAMMER		WEIGHT		DROP		COMPL.
				BORING LOCATION Western end of building, northwest corner N42° 36.080' W72° 35.761'		HR.
				ENGINEER/GEOLOGIST Brin Warenda		

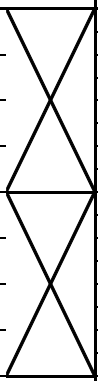
SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5		36/48	S-1	Top 4": Topsoil, brown, fine SAND and SILT (frost) Bottom 32": Brown, fine to medium SAND, little silt, trace fine gravel, moist	0.0 (0-2)	TOPSOIL FILL	
			42/48	S-2	Top 12": Brown, fine to medium SAND, little silt, trace fine gravel, wet at 4'	0.0 (2-4')	5'	
				4-8'	Middle 12": Grey-black, SILTY CLAY, trace fine sand, wet (petroleum odor)	0.0 (4-6')	SAND AND SILT	
					Bottom 18": Grey-brown, fine SAND and SILT, little clay, wet	0.0 (6-8')	8'	
					End of Exploration at 8'			

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp referenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-9**

PROJECT : Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/11/2012	
DATE FINISHED 01/11/2012		COMPLETION DEPTH 8'		GROUND SURFACE ELEV. DATUM	
DRILLING EQUIPMENT Geoprobe		SIZE & TYPE OF CORE BARREL Rod		No. Samples 2	
TYPE BIT		CASING		UNDIST.	
CASING HAMM.		WEIGHT		DROP	
SAMPLER:		WEIGHT		DROP	
SAMPLER HAMMER		BORING		Northwest portion of building, west corner	
		LOCATION		N42° 36.082' W72° 35.760'	
		ENGINEER/GEOLOGIST		Brin Warenda	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5		46/48	S-1 0-4'	Top 12": Topsoil, brown, fine SAND and SILT, trace fine gravel, dry Middle 16": Brown, fine to medium SAND, some silt, little medium sand, trace debris (brick), dry Bottom 18": Brown, fine to medium SAND, some silt, moist	0.0 (0-2)	1' TOPSOIL ↓ FILL ↓ 3' SAND AND SILT ↓ 8'	
			40/48	S-2 4-8'	Top 14": Brown, fine to medium SAND, some silt, wet at 4.5' Bottom 26": Brown-grey, fine SAND and SILT, little clay, wet	0.0 (2-4)	4.3 (4-5) 159.0 (5-6) 2.3 (6-8')	
					End of Exploration at 8'			

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-10**

PROJECT : Lunt Silversmith			LOCATION: Greenfield, MA			PROJECT NO. : 1753-03-01		
DRILLING CONTRACTOR Seaboard Environmental Drilling			FOREMAN Mike HELPER Doug			DATE STARTED 01/11/2012		
DRILLING EQUIPMENT Geoprobe			COMPLETION DEPTH 8'			GROUND SURFACE ELEV. DATUM		
TYPE BIT			SIZE &TYPE OF CORE BARREL			No. Samples 2		
CASING			Rod			TIME		
CASING HAMM.			WEIGHT			DROP		
SAMPLER:			BORING			UNDIST.		
SAMPLER HAMMER			WEIGHT			DROP		
			BORING			Northwest portion of building, adjacent to AST fill line		
			LOCATION			N42° 36.080' W72° 35.755'		
			ENGINEER/GEOLOGIST			Brin Warendra		

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
X	5		35/48	S-1 0-4'	Top 5": Topsoil, brown, fine SAND and SILT, dry Bottom 30": Brown, fine to medium SAND, some silt, little fine gravel, trace coarse sand, trace debris (brick), moist	0.0 (0-2)	TOPSOIL ↓ FILL	1' 2'
			34/48	S-2 4-8'	Top 14": Brown, fine to medium SAND, some silt, wet at 4' Bottom 20": Grey, fine SAND and SILT, trace clay, wet	0.0 (2-4)  0.0 (4-6)  0.0 (6-8')	4' ↓ SAND ↓ SAND AND SILT  8' ↓	
								End of Exploration at 8'
	10							
	15							
	20							
	25							

Remarks:

- Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected
- Well installed using B-53 Drill Rig with hollow stem augers on 1/12/12, straight drilled to 12'
- 2" well screen from 12'-2', riser from 2'-grade, sand pack from 12'-1', bentonite from 1'-0.5', sand to grade, curb box cemented in place

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-11**

PROJECT : Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/11/2012 DATE FINISHED 01/11/2012	
DRILLING EQUIPMENT Geoprobe		COMPLETION DEPTH 8'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL Rod		No. Samples 2 UNDIST.	
CASING		WATER LEVEL (FT.) 5'		FIRST COMPL. HR.	
CASING HAMM.		WEIGHT		DROP	
SAMPLER:		BORING Northwest portion of building, east corner			
SAMPLER HAMMER		WEIGHT		DROP	
		LOCATION N42° 36.079' W72° 35.748'			
		ENGINEER/GEOLOGIST Brin Warenda			

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS	
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.					
			40/48	S-1 0-4'	Top 5": Topsoil, brown, fine SAND and SILT, frost Middle 16": Brown-black, medium SAND, little debris(ash), trace fine sand, trace silt, dry Bottom 19": Brown, fine to medium SAND, some silt, dry	0.0 (0-2)	TOPSOIL ↓ FILL ↓ SAND AND SILT		
	5		45/48	S-2 4-8'	Top 30": Brown, fine to medium SAND, some silt, wet at 5' Bottom 15": Brown-grey, fine SAND and SILT, wet	0.0 (2-4)			
						0.0 (4-6)			
						0.0 (6-8)			
					End of Exploration at 8'				

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-12**

PROJECT : Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/11/2012 DATE FINISHED 01/11/2012	
DRILLING EQUIPMENT Geoprobe		COMPLETION DEPTH 8'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL Rod		No. Samples 2 UNDIST.	
CASING		CASING HAMM.		WATER LEVEL (FT.) 3.5'	
SAMPLER: SAMPLER HAMMER		WEIGHT DROP		BORING LOCATION ENGINEER/GEOLOGIST	
				Northwest portion of building, northcentral portion of parking area N42° 36.089' W72° 35.751' Brin Warenda	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5		33/48	S-1 0-4'	2" Asphalt Top 23": Brown, fine to medium SAND, some fine gravel, trace silt trace coarse sand, dry Bottom 10": Brown, fine to medium sand, little silt, wet at 3.5'	0.0 (0-2)	ASPHALT FILL ↓	
			36/48	S-2 4-8'	Top 18": Brown-grey, fine SAND and SILT, wet Bottom 18": Grey, fine SAND and SILT, wet	0.0 (2-4)	4' SAND AND SILT ↓	
						0.0 (4-6)		
						0.0 (6-8')		
					End of Exploration at 8'			

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-13**

PROJECT : Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/11/2012	
DRILLING EQUIPMENT Geoprobe		COMPLETION DEPTH 8'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL Rod		No. Samples 2	
CASING		CASING HAMM.		UNDIST.	
WEIGHT		DROP		TIME	
SAMPLER:		SAMPLER HAMMER		WATER LEVEL (FT.)	
WEIGHT		DROP		BORING	
SAMPLER HAMMER		SAMPLER HAMMER		LOCATION	
				Southwest corner of parking area	
				N42° 36.049' W72° 35.801'	
				ENGINEER/GEOLOGIST	
				Brin Warenda	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5		27/48	S-1 0-4'	3" Asphalt Top 12": Brown, fine to medium SAND, some fine gravel, trace silt dry Bottom 12": Brown-grey, fine SAND and SILT, little clay, wet at 3'	0.0 (0-2)	ASPHALT FILL 1.5' SILTY CLAY	
			48/48	S-2 4-8'	Grey, SILTY CLAY, wet	0.3 (2-4)  4.1 (4-6)  0.0 (6-8')	8' ↓	
					End of Exploration at 8'			

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected



**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-14**

PROJECT : Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/11/2012 DATE FINISHED 01/11/2012	
DRILLING EQUIPMENT Geoprobe		COMPLETION DEPTH 12'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL Rod		No. Samples 3 UNDIST.	
CASING		CASING HAMM.		TIME	
CASING HAMM.		WEIGHT		DROP	
SAMPLER:		WEIGHT		DROP	
SAMPLER HAMMER		WEIGHT		DROP	
		BORING		Western portion of building, southwest end	
		LOCATION		N42° 36.056' W72° 35.751'	
		ENGINEER/GEOLOGIST		Brin Warena	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5		46/48	S-1 0-4'	Top 6": Topsoil, brown, fine SAND and SILT, dry Bottom 40": Brown, fine to medium SAND, some silt, trace coarse sand, wet at 4'	0.0 (0-2)  0.0 (2-4)	TOPSOIL SAND AND SILT	
			46/48	S-2 4-8'	Brown, fine to medium SAND, some silt, trace coarse sand, wet	1.2 (4-6)  53.1 (6-8')	9'	
			46/48	S-3 8-12'	Top 14": Brown, fine to medium SAND, some silt, trace coarse sand, wet Bottom 32": Grey, CLAYEY SILT, trace fine sand, wet	50.1 (8-10)  11.2 (10-12')	CLAYEY SILT 12'	
					End of Exploration at 12'			

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-15**

PROJECT : Lunt Silversmith			LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike		DATE STARTED 01/11/2012		DATE FINISHED 01/11/2012
		HELPER Doug				
DRILLING EQUIPMENT Geoprobe			COMPLETION DEPTH 8'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL		No. Samples 2		UNDIST.
CASING		Rod		TIME		FIRST COMPL. HR.
CASING HAMM.		WEIGHT		DROP		WATER LEVEL (FT.)
SAMPLER:				BORING		Western end of building, southwest end near transformer pad
SAMPLER HAMMER		WEIGHT		DROP		LOCATION N42° 36.053' W72° 35.744'
				ENGINEER/GEOLOGIST		Brin Warenda

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5		48/48	S-1 0-4'	Top 6": Topsoil, brown, fine SAND and SILT, trace medium sand Bottom 42": Brown, fine to medium SAND, some silt, trace debris (brick), moist	0.0 (0-2)	TOPSOIL FILL ↓	
			44/48	S-2 4-8'	Top 30": Brown, fine to medium SAND, some silt, wet at 5' Bottom 14": Grey, medium-coarse SAND, trace fine sand, trace silt, wet	0.0 (2-4)	4' ↓	
					0.0 (4-6)	SAND AND SILT ↓		
					0.0 (6-8')			
					End of Exploration at 8'			

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-16**

PROJECT : Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/11/2012 DATE FINISHED 01/11/2012	
DRILLING EQUIPMENT Geoprobe		COMPLETION DEPTH 8'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL Rod		No. Samples 2 UNDIST.	
CASING		WATER LEVEL (FT.) 5'		FIRST COMPL. HR.	
CASING HAMM.		WEIGHT		DROP	
SAMPLER:		BORING Western portion of building, southeastern end inside gated area			
SAMPLER HAMMER		WEIGHT		DROP	
		LOCATION N42° 36.050' W72° 35.734'			
		ENGINEER/GEOLOGIST Brin Warenda			

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5		36/48	S-1 0-4'	Top 6": Topsoil, brown, fine SAND and SILT, dry Bottom 30": Brown-grey, fine SAND and SILT, some medium sand, trace fine gravel, wet at 4'	0.0 (0-2)	TOPSOIL SAND AND SILT	
			42/48	S-2 4-8'	Top 28": Brown-grey, fine SAND and SILT, some medium sand, trace fine gravel, bottom 30" wet Bottom 14": Grey, fine-medium SAND, some silt, wet	0.0 (2-4')  0.0 (4-6')  0.0 (6-8')	↓	
					End of Exploration at 8'			

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-17**

PROJECT : Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/11/2012	
DRILLING EQUIPMENT Geoprobe		COMPLETION DEPTH 12'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL Rod		No. Samples 3	
CASING		WATER LEVEL (FT.) 4'		UNDIST.	
CASING HAMM.		WEIGHT		DROP	
SAMPLER:		BORING		Southeast corner of parking lot	
SAMPLER HAMMER		WEIGHT		DROP	
		LOCATION		N42° 36.040' W72° 35.759'	
		ENGINEER/GEOLOGIST		Brin Warend	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5		34/48	S-1 0-4'	2" Asphalt Brown, fine to medium SAND, some fine gravel, trace silt, dry	0.8 (0-2)	ASPHALT FILL	
			46/48	S-2 4-8'	Top 6": Grey, fine to medium SAND, little silt, wet at 4' Bottom 40": Grey, CLAYEY SILT, trace fine sand, wet	8.0 (2-4')	↓ 4' CLAYEY SILT	
			48/48	S-3 8-12'	Top 24": Grey, fine SAND and SILT, some gravel, wet Bottom 24": Grey, CLAYEY SILT, trace fine sand, wet	14.7 (4-6')	↓	
	10					24.4 (6-8')		
	15					2.4 (8-10')		
	20					5.3 (10-12')		
	25							
					End of Exploration at 12'			

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-18**

PROJECT : Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/12/2012 DATE FINISHED 01/12/2012	
DRILLING EQUIPMENT B-53 Truck Mounted Rig		COMPLETION DEPTH 5'		GROUND SURFACE ELEV. DATUM	
TYPE BIT Hollow Stem Auger		SIZE &TYPE OF CORE BARREL Rod		No. Samples 2	
CASING		WATER LEVEL (FT.)		UNDIST.	
CASING HAMM.		WEIGHT		DROP	
SAMPLER: 2" O.D. Split Spoon		BORING		Southeast portion of site, northeast corner of building visitor parking area	
SAMPLER Safety		WEIGHT 140 lbs.		DROP 30" (Wire Line)	
HAMMER		LOCATION		N42° 36.034' W72° 35.677'	
		ENGINEER/GEOLOGIST		Brin Warenda	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	5	17/41/ 50 for 1"	12/24	S-1 1-3'	1" ASPHALT 8" BRICK Brown-grey, fine SAND and SILT, moist	0.0	ASPHALT FILL SAND AND SILT ↓	
			14/24	S-2 3-5'	Top 12": Very dense, brown-grey, fine SAND and SILT, moist Bottom 2": Very dense, brown-red, fine SAND and SILT, some fine gravel, dry	0.0		
					Auger refusal at 5'			Off-set two times and could not advance past 3 feet. No well installed at this location due to shallow refusal.

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-19**

PROJECT : Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/12/2012 DATE FINISHED 01/12/2012	
DRILLING EQUIPMENT B-53 Truck Mounted Rig		COMPLETION DEPTH 12'		GROUND SURFACE ELEV. DATUM	
TYPE BIT Hollow Stem Auger		SIZE &TYPE OF CORE BARREL Rod		No. Samples 5 UNDIST.	
CASING		WATER LEVEL (FT.) 4'		FIRST COMPL. HR.	
CASING HAMM.		WEIGHT		DROP	
SAMPLER: 2" O.D. Split Spoon		BORING Southcentral of parking lot		LOCATION N42° 36.043' W72° 35.774'	
SAMPLER Safety		WEIGHT 140 lbs.		DROP 30" (Wire Line)	
HAMMER		ENGINEER/GEOLOGIST Brin Warena			

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	WELL CONSTRUCTION	
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.					
					2" ASPHAL 6" FROST LAYER		ASPHALT FILL		
X			16/24	S-1 1-3'	Top 4": Brown, fine SAND and SILT, some medium sand, dry Middle 6": Grey, fine GRAVEL, dry Bottom 4": Brown-grey, fine SAND and SILT, moist	0.3	2' ↓ SAND AND SILT		
X	5		18/24	S-2 3-5'	Brown-grey, fine SAND and SILT, wet at 4'	1.0	↓ 5' CLAYEY SILT		
X			15/24	S-3 5-7'	Grey, CLAYEY SILT, trace fine sand, wet	0.8	↓		
X			16/24	S-4 7-9'	Grey, CLAYEY SILT, trace fine sand, wet	54.8	↓		
X	10		16/24	S-5 9-11'	Grey, CLAYEY SILT, trace fine sand, wet	9.7	↓		
					End of Exploration at 12'				
	15								
	20								
	25								

Remarks:  
 1. Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected  
 2. 2" well screened from 12'-2', riser from 2'-grade, sand pack from 10'-1', bentonite seal from 1'-0.5', sand to grade, curb box cemented in place

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-20**

PROJECT : Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. : 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN Mike HELPER Doug		DATE STARTED 01/12/2012 DATE FINISHED 01/12/2012	
DRILLING EQUIPMENT B-53 Truck Mounted Rig		COMPLETION DEPTH 10'		GROUND SURFACE ELEV. DATUM	
TYPE BIT Hollow Stem Auger		SIZE & TYPE OF CORE BARREL Rod		No. Samples 4 UNDIST.	
CASING		WATER LEVEL (FT.) 4.5'		FIRST COMPL. HR.	
CASING HAMM.		WEIGHT		DROP	
SAMPLER: 2" O.D. Split Spoon		BORING		Southcentral portion of building, in parking spaces	
SAMPLER Safety		WEIGHT 140 lbs.		LOCATION N42° 36.026' W72° 35.708'	
HAMMER		DROP 30" (Wire Line)		ENGINEER/GEOLOGIST Brin Warena	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	WELL CONSTRUCTION	
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.					
	1.3	15/24/17/15	22/24	S-1 1-3'	2" ASPHALT 4" FROST LAYER Dense brown-black, fine SAND and SILT, some ash, trace debris (brick), dry	1.3	ASPHALT FILL	1'	2'
	0.0	20/20/20/10	20/24	S-2 3-5'	Dense brown-grey, fine to medium SAND, some silt, moist- wet at 4.5'	0.0	SAND AND SILT	3'	
	0.0	7/1/1/1	20/24	S-3 5-7'	Very soft, grey, SILTY CLAY, wet	0.0	SILTY CLAY	5'	
	0.0	24/50 for 5"	14/24	S-4 7-9'	Top 12": Grey, SILTY CLAY, wet Bottom 2": Brown-red, fine to medium SAND, some gravel, wet	0.0	BEDROCK	9'	
	10				Auger refusal at 10'				
	15								
	20								
	25								

Remarks:

- Soil screened in field using TEI Model 580B photoionization detector (PID) with 11.7eV lamp eferenced to benzene in air. Readings in parts per million by volume. "ND" indicates none detected
- 2" well screened from 10'-2', riser from 2'-grade, sand pack from 10'-1', bentonite seal from 1'-0.5', sand to grade, curb box cemented in place

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-21**

Page 1 OF 1

PROJECT: Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. 1753-03-01	
DRILLING CONTRACTOR: Seaboard Environmental Drilling		FOREMAN: David		DATE STARTED: 2/21/2012	
		HELPER: Jeff		DATE FINISHED: 2/21/2012	
DRILLING EQUIPMENT: Geoprobe 5340DT		COMPLETION DEPTH: 12'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL		No. of samples collected: 3	
CASING				TIME	
CASING HAMM. WEIGHT		DROP		WATER LEVEL (FT.): 5.5'	
SAMPLER: Split Spoon		WEIGHT		DROP	
SAMPLER HAMMER				BORING LOCATION: Southeastern corner of fields	
				ENGINEER/GEOL: Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	WELL CONSTRUCTION
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	0		46/48	S-1 0'-4'	Top 12": Brown, fine to medium SAND and SILT, trace fine gravel, dry (TOPSOIL) Bottom 34": Brown to gray, fine SAND and SILT, dry	0.0 (0'-2') 0.0 (2'-4')	TOPSOIL ↓ 1' SAND AND SILT ↓ 7.5' CLAYEY SILT	1' 2'
	5		40/48	S-2 4'-8'	Top 36": Gray, fine SAND and SILT, wet at 5.5' Bottom 4": Gray, CLAYEY SILT, trace fine sand, wet	0.0 (4'-6') 0.0 (6'-8')		
	10		42/48	S-3 8'-12'	Gray, CLAYEY SILT, trace fine sand, wet	0.0 (8'-10') 0.0 (10'-12')		
	15				End of exploration at 12'			
	20							
	25							

Remarks:

1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
2. 1" PVC well at 12' below ground surface, screen 12'-2', riser from 2' to ground surface. Sand pack 12'-1', bentonite clay seal 1'-0.5', sand to grade, curb box cemented in place



**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-22**

PROJECT: Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. 1753-03-01	
DRILLING CONTRACTOR: Seaboard Environmental Drilling		FOREMAN: David		DATE STARTED: 2/21/2012	
		HELPER: Jeff		DATE FINISHED: 2/21/2012	
DRILLING EQUIPMENT: Geoprobe 5340DT		COMPLETION DEPTH: 12'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL		No. of samples collected: 3	
CASING				TIME	
CASING HAMM.:		WEIGHT		DROP	
SAMPLER:				WATER LEVEL (FT.): 4'	
SAMPLER: Split Spoon		WEIGHT		DROP	
HAMMER				BORING LOCATION: South side of street, between 22 and 28 Kendall St.	
				ENGINEER/GEOL: Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	WELL CONSTRUCTION
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	0		22/48	S-1 0'-4'	Top 4": Brown, fine SAND and SILT, dry (TOPSOIL) Bottom 18": Brown to gray, fine to medium SAND, some silt, moist	0.0 (0'-2') 0.0 (2'-4')	TOPSOIL FILL	1'
	5		48/48	S-2 4'-8'	Top 12": Brown to gray, fine to medium SAND, some silt, wet at 4" Bottom 36": Gray, CLAYEY SILT, trace fine sand, wet	0.0 (4'-6') 0.0 (6'-8')	5' CLAYEY SILT	2'
	10		44/48	S-3 8'-12'	Gray, CLAYEY SILT, trace fine sand, wet	0.0 (8'-10') 0.0 (10'-12')		
	15				End of exploration at 12'			
	20							
	25							

Remarks:

1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
2. 1" PVC well at 12' below ground surface, screen 12'-2', riser from 2' to ground surface. Sand pack 12'-1', bentonite clay seal 1'-0.5', sand to grade, curb box cemented in place

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-23**

PROJECT: Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. 1753-03-01	
DRILLING CONTRACTOR: Seaboard Environmental Drilling		FOREMAN: David		DATE STARTED: 2/21/2012	
		HELPER: Jeff		DATE FINISHED: 2/21/2012	
DRILLING EQUIPMENT: Geoprobe 5340DT		COMPLETION DEPTH: 12'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL		No. of samples collected: 3	
CASING		DROP		TIME	
CASING HAMM.		WEIGHT		WATER LEVEL (FT.): 4.5'	
SAMPLER:		DROP		UNDIST.	
SAMPLER: Split Spoon		WEIGHT		BORING: South side of Kenwood St between #14 and Plumbing Supply	
HAMMER		DROP		LOCATION	
				ENGINEER/GEOL: Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	WELL CONSTRUCTION
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
			40/48	S-1 0'-4'	Top 4": Brown, fine to medium SAND and SILT, dry (TOPSOIL) Next 6": CONCRETE Bottom 30": Brown, fine to medium SAND, little silt, moist	0.0 (0'-2') 0.0 (2'-4')	TOPSOIL FILL	1' 2'
	5		38/48	S-2 4'-8'	Top 6": Brown, fine to medium SAND, little silt, moist Bottom 32": Brown to gray, CLAYEY SILT, little fine sand, wet at 4.5'	0.0 (4'-6') 0.0 (6'-8')	4.5' CLAYEY SILT	
	10		30/48	S-3 8'-12'	Gray, CLAYEY SILT, little fine sand, wet	0.0 (8'-10') 0.0 (10'-12')		
					End of exploration at 12'			
	15							
	20							
	25							

Remarks:

1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
2. 1" PVC well at 12' below ground surface, screen 12'-2', riser from 2' to ground surface. Sand pack 12'-1', bentonite clay seal 1'-0.5', sand to grade, curb box cemented in place

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-24**

PROJECT: Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. 1753-03-01	
DRILLING CONTRACTOR: Seaboard Environmental Drilling		FOREMAN: David		DATE STARTED: 2/21/2012	
		HELPER: Jeff		DATE FINISHED: 2/21/2012	
DRILLING EQUIPMENT: Geoprobe 5340DT		COMPLETION DEPTH: 12'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL		No. of samples collected: 3	
CASING		DROP		TIME	
CASING HAMM.		WEIGHT		WATER LEVEL (FT.): 6'	
SAMPLER: Split Spoon		WEIGHT		DROP	
HAMMER				BORING: Gated area, under former dumpster area, west of building	
				LOCATION	
				ENGINEER/GEOL: Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	WELL CONSTRUCTION
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
	0-4'		24/48	S-1 0'-4'	Brown, fine to medium SAND and SILT, trace fine gravel, moist	24.1 (0'-4')	FILL	1'
	4-8'		36/48	S-2 4'-8'	Top 18": Brown, fine to medium SAND and SILT, trace fine gravel, moist Bottom 18": Brown, fine to medium SAND, some silt, wet at 6'	31.9 (4'-6') 54.6 (6'-8')	4.5' SAND AND SILT	2'
	8-12'			S-3 8'-12'	Top 24": Brown, fine to medium SAND, some silt, wet Bottom 24": Gray, CLAYEY SILT, trace fine sand, wet	17.9 (8'-10') 1.2 (10'-12')	10' CLAYEY SILT	
					End of exploration at 12'			

Remarks:

1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)
2. 1" PVC well at 12' below ground surface, screen 12'-2', riser from 2' to ground surface. Sand pack 12'-1', bentonite clay seal 1'-0.5', sand to grade, curb box cemented in place

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-27**

PROJECT: Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. 1753-03-01	
DRILLING CONTRACTOR Seaboard Environmental Drilling		FOREMAN David		DATE STARTED 2/21/2012	
		HELPER Jeff		DATE FINISHED 2/21/2012	
DRILLING EQUIPMENT Geoprobe 5340DT		COMPLETION DEPTH 12'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL		No. of samples collected 3	
CASING				TIME	
CASING HAMM.		WEIGHT		WATER LEVEL (FT.)	
		DROP		6.5'	
SAMPLER:		BORING Northwest side of building, south side of AST location			
SAMPLER		WEIGHT		LOCATION	
HAMMER		DROP		ENGINEER/GEOL Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
			30/48	S-1 0'-4'	Brown, fine to medium SAND and SILT, trace(-) fine gravel, moist	10.7 (0'-2') 0.4 (2'-4')	FILL	
	5		30/48	S-2 4'-8'	Top 18": Brown, fine to medium SAND and SILT, trace (-) fine gravel, moist to wet at 6.5' Bottom 12": Gray, CLAYEY SILT, trace fine sand, wet	0.3 (4'-6') 0.4 (6'-8')	7' CLAYEY SILT	
	10		18/48	S-3 8'-12'	Gray, CLAYEY SILT, trace fine sand, wet	0.0 (8'-10') 0.0 (10'-12')		
					End of exploration at 12'			
	15							
	20							
	25							

Remarks:  
 1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-29**

PROJECT: Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. 1753-03-01	
DRILLING CONTRACTOR: Seaboard Environmental Drilling		FOREMAN: David		DATE STARTED: 2/21/2012	
		HELPER: Jeff		DATE FINISHED: 2/21/2012	
DRILLING EQUIPMENT: Shovel		COMPLETION DEPTH: 2'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL		No. of samples collected: 2	
CASING				TIME	
CASING HAMM. WEIGHT		DROP		WATER LEVEL (FT.): NE	
SAMPLER:		BORING: Directly beneath two cyclones, south side of building			
SAMPLER HAMMER		WEIGHT		DROP	
				LOCATION	
				ENGINEER/GEOL: Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
				S-1 0'-1'	Dark brown, fine to medium sand, some silt, little coarse sand, dry	0.0	FILL ↓ 2'	
				S-2 1'-2'	Brown, fine to medium sand, little silt, dry	0.0		
					End exploration at 2'			
	5							
	10							
	15							
	20							
	25							

Remarks:  
 1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
 ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS

**LOG OF BORING LS-30**

PROJECT: Lunt Silversmith		LOCATION: Greenfield, MA		PROJECT NO. 1753-03-01	
DRILLING CONTRACTOR: Seaboard Environmental Drilling		FOREMAN: David		DATE STARTED: 2/21/2012	
		HELPER: Jeff		DATE FINISHED: 2/21/2012	
DRILLING EQUIPMENT: Geoprobe 5340DT		COMPLETION DEPTH: 12'		GROUND SURFACE ELEV. DATUM	
TYPE BIT		SIZE & TYPE OF CORE BARREL		No. of samples collected: 3	
CASING		DROP		TIME	
CASING HAMM.		WEIGHT		WATER LEVEL (FT.): 6'	
SAMPLER:		DROP		UNDIST.	
SAMPLER: Split Spoon		WEIGHT		BORING: Northeast side of property, near loading dock	
HAMMER		DROP		LOCATION	
				ENGINEER/GEOL: Brin Thompson	

SAMPLES	DEPTH FT.	SAMPLES			DESCRIPTION	FIELD MEASUREMENTS	SOIL DESCRIPTION	REMARKS
		PENETR. RESIST. BL/6 IN.	REC. IN.	TYPE/ NO.				
			28/48	S-1 0'-4'	Brown, fine to medium SAND, some silt, little fine gravel, trace debris (brick), dry	0.0 (0'-2') 0.0 (2'-4')	FILL ↓ 4'	
	5		14/48	S-2 4'-8'	Brown to gray, fine to medium SAND, some silt, wet at 6' (petroleum odor)	4.6 (4'-8')	SAND AND SILT ↓ 8'	
	10		36/48	S-3 8'-12'	Gray, CLAYEY SILT, trace fine sand, wet	0.0 (8'-10') 0.0 (10'-12')	CLAYEY SILT ↓	
					End of exploration at 12'			
	15							
	20							
	25							

Remarks:  
 1. Soil headspace screened in field using TEI model 580B photoionization detector (PID) referenced to benzene in air. Readings shown in parts per million (ppm)

**APPENDIX D**  
**LABORATORY REPORTS**

**APPENDIX E**  
**GROUNDWATER SAMPLING LOGS**



**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
**ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS**

**GROUNDWATER SAMPLING RECORD**

**PROJECT:** Lunt Silver Smith **PROJECT NO.:** 1753-03-01  
**CITY/STATE:** Greenfield, MA  
**SAMPLING PERSONNEL:** B. Thompson  
**DATE:** 1/19/12 **WEATHER:** Sunny

**SAMPLE DESIGNATION:** LS-10 **SAMPLING SEQUENCE No.** 1 of 5  
**PURGE METHOD:** BAILER / PUMP - LOW or HIGH FLOW ? / OTHER \_\_\_\_\_  
**SAMPLE METHOD:** BAILER / PERISTALTIC PUMP / OTHER \_\_\_\_\_

**WELL DATA**

**MEASURING POINT:** Top of: PVC / Curb box / Protective pipe / Other: \_\_\_\_\_  
 Vertical distance from measuring point to ground surface: \_\_\_\_\_ above / below grade  
**WELL DIAMETER:** 2" **DEPTH TO WATER:** 5.06 **TOTAL DEPTH:** 11.84  
**STANDING WATER(ft):** \_\_\_\_\_ **ONE VOLUME = (gal):** \_\_\_\_\_  
**CONDITION OF WELL:** Good / unlocked / standing water in annulus / other: \_\_\_\_\_  
**RECHARGE RATE:** Slow / Moderate / Fast \_\_\_\_\_

**WATER DATA**

**APPEARANCE:** Clear / cloudy / silty / sheen / floating product / other: \_\_\_\_\_  
**ODOR:** None / Petroleum / Other (describe): \_\_\_\_\_

Time	1148	1153	1158	1203	1208	1213	1218
Depth to water	5.24	5.45	5.52	5.74	—	—	—
Cum. purge volume	—	—	—	—	—	—	—
pH (S.U.)	<u>6.09</u>	6.08	<u>5.94</u>	5.97	—	—	—
Cond'y (umho/cm)	281	282	279	276	—	—	—
Temp (°C)	5.63	<u>5.99</u>	6.52	6.68	—	—	—
Turbidity	—	—	—	—	—	—	—
Dissolved O <sub>2</sub> (mg/l)	8.98	6.95	6.68	6.48	—	—	—
ORP/other:	232.8	199.8	193.9	183.3	—	—	—

**SAMPLE BOTTLES:** FILTRATION?: YES (NO) If yes, pore size: 0.45 micron / other \_\_\_\_\_

ANALYSIS	BOTTLES (number & type)	PRESERVATIVE (type&amount)
EPH	2 x 9000 mL Amber	HCl
VPH	3 x 90 mL VOA's	HCl
VOLs	3 x 90 mL VOA's	HCl

**NOTES AND OBSERVATIONS:**  
Sampled @ 1203

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
**ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS**

**GROUNDWATER SAMPLING RECORD**

**PROJECT:** Lunt Silver Smith **PROJECT NO.:** 1753-07-01  
**CITY/STATE:** Greenfield, MA  
**SAMPLING PERSONNEL:** B. Thompson  
**DATE:** 1/19/12 **WEATHER:** Sunny

**SAMPLE DESIGNATION:** MW-7 **SAMPLING SEQUENCE No.** 2 of 5  
**PURGE METHOD:** BAILER / PUMP - LOW or HIGH FLOW ? / OTHER \_\_\_\_\_  
**SAMPLE METHOD:** BAILER / PERISTALTIC PUMP / OTHER \_\_\_\_\_

**WELL DATA**

**MEASURING POINT:** Top of: PVC / Curb box / Protective pipe / Other: \_\_\_\_\_  
**Vertical distance from measuring point to ground surface:** \_\_\_\_\_ above / below grade  
**WELL DIAMETER:** 2" **DEPTH TO WATER:** 2.68 **TOTAL DEPTH:** 10.94  
**STANDING WATER (ft):** \_\_\_\_\_ **ONE VOLUME = (gal):** \_\_\_\_\_  
**CONDITION OF WELL:** Good / unlocked / standing water in annulus / other: no PVC cap  
**RECHARGE RATE:** Slow / Moderate / Fast \_\_\_\_\_

**WATER DATA**

**APPEARANCE:** Clear / cloudy / silty / sheen / floating product / other: \_\_\_\_\_  
**ODOR:** None / Petroleum / Other (describe): \_\_\_\_\_

Time	1242	1247	1252	1257	1302	1307	1312
Depth to water	3.93	4.15	4.32	4.54	4.76	-	-
Cum. purge volume	-	-	-	-	-	-	-
pH (S.U.)	5.97	6.25	6.25	6.21	6.06	-	-
Cond'y (umho/cm)	1150	1159	1159	1145	1133	-	-
Temp (°C)	8.60	8.27	7.95	7.95	7.98	-	-
Turbidity	-	-	-	-	-	-	-
Dissolved O <sub>2</sub> (mg/l)	3.03	3.00	2.46	2.32	2.25	-	-
ORP/other:	137.5	110.7	103.6	102.2	105.9	-	-

**SAMPLE BOTTLES:**

**FILTRATION?:** YES / NO If yes, pore size: 0.45 micron / other \_\_\_\_\_

ANALYSIS	BOTTLES (number & type)	PRESERVATIVE (type & amount)
VOCs by 8260	3 x 40 mL vials	HCl
RLRA & Metals	1 x 500 mL plastic	- last to filter
Total Cyanide	1 x 500 mL Plastic	NaOH

**NOTES AND OBSERVATIONS:**

Sampled @ 1302

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
**ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS**

**GROUNDWATER SAMPLING RECORD**

**PROJECT:** Lunt Silver Smith **PROJECT NO.:** 1753-03-01  
**CITY/STATE:** Greenfield, MA  
**SAMPLING PERSONNEL:** B. Thompson  
**DATE:** 1/19/12 **WEATHER:** Sunny

**SAMPLE DESIGNATION:** MW-6 **SAMPLING SEQUENCE No.** 3 of 5  
**PURGE METHOD:** BAILER / PUMP - LOW or HIGH FLOW ? / OTHER  
**SAMPLE METHOD:** BAILER / PERISTALTIC PUMP / OTHER

**WELL DATA**

**MEASURING POINT:** Top of: PVC / Curb box / Protective pipe / Other:  
 Vertical distance from measuring point to ground surface: \_\_\_\_\_ above / below grade  
**WELL DIAMETER:** 2" **DEPTH TO WATER:** 2.06 **TOTAL DEPTH:** 7.85  
**STANDING WATER(ft):** \_\_\_\_\_ **ONE VOLUME = (gal):** \_\_\_\_\_  
**CONDITION OF WELL:** Good / unlocked / standing water in annulus / other:  
**RECHARGE RATE:** Slow / Moderate / Fast no annular cap - PVC cap installed during drilling activities

**WATER DATA**

**APPEARANCE:** Clear / cloudy / silty / sheen / floating product / other:  
**ODOR:** None / Petroleum / Other (describe):

Time	1325	1330	1335	1340	1345	1350	1355
Depth to water	3.26	3.83	4.15	4.46	-	-	-
Cum. purge volume	-	-	-	-	-	-	-
pH (S.U.)	7.13	6.17	5.93	5.91	-	-	-
Cond'y (umho/cm)	1008	992	980	943	-	-	-
Temp (°C)	4.83	4.77	4.69	4.26	-	-	-
Turbidity	-	-	-	-	-	-	-
Dissolved O <sub>2</sub> (mg/l)	8.95	8.72	8.56	8.19	-	-	-
ORP/other:	96.8	119.9	125.0	127.8	-	-	-

**SAMPLE BOTTLES:**

**FILTRATION?:** YES NO If yes, pore size: 0.45 micron / other \_\_\_\_\_

ANALYSIS	BOTTLES (number & type)	PRESERVATIVE (type&amount)
VOCS by 8260	3 x 40 mL VOA's	HCl
RLCA & metals	1 x 500 mL Plastic	- Lab to filter
Total Cyanide	1 x 500 mL Plastic	NaOH

**NOTES AND OBSERVATIONS:**

Sampled @ 1340

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
**ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS**

**GROUNDWATER SAMPLING RECORD**

**PROJECT:** Lunt Silver sm. #4 **PROJECT NO.:** 1753-03-01  
**CITY/STATE:** Greenfield, MA  
**SAMPLING PERSONNEL:** B. Thompson  
**DATE:** 1/19/12 **WEATHER:** \_\_\_\_\_

**SAMPLE DESIGNATION:** LS-20 **SAMPLING SEQUENCE No.** 4 of 5  
**PURGE METHOD:** BAILER / PUMP - LOW or HIGH FLOW ? / OTHER \_\_\_\_\_  
**SAMPLE METHOD:** BAILER / PERISTALTIC PUMP / OTHER \_\_\_\_\_

**WELL DATA**

**MEASURING POINT:** Top of: PVC / Curb box / Protective pipe / Other: \_\_\_\_\_  
 Vertical distance from measuring point to ground surface: \_\_\_\_\_ above / below grade  
**WELL DIAMETER:** 2" **DEPTH TO WATER:** 3.90 **TOTAL DEPTH:** 9.63  
**STANDING WATER (ft):** \_\_\_\_\_ **ONE VOLUME = (gal):** \_\_\_\_\_  
**CONDITION OF WELL:** Good / unlocked / standing water in annulus / other: \_\_\_\_\_  
**RECHARGE RATE:** Slow / Moderate / Fast \_\_\_\_\_

**WATER DATA**

**APPEARANCE:** Clear / cloudy / silty / sheen / floating product / other: \_\_\_\_\_  
**ODOR:** None / Petroleum / Other (describe): \_\_\_\_\_

Time	1355	1400	1405	1410	1415	1420	1425
Depth to water	3.56	3.68	3.78	3.84	-	-	-
Cum. purge volume	-	-	-	-	-	-	-
pH (S.U.)	5.33	5.37	5.28	5.32	-	-	-
Cond'y (umho/cm)	230	231	228	220	-	-	-
Temp (°C)	8.30	8.40	8.23	8.12	-	-	-
Turbidity	-	-	-	-	-	-	-
Dissolved O <sub>2</sub> (mg/l)	8.99	6.18	6.24	6.05	-	-	-
ORP/other:	176.0	132.5	127.0	126.1	-	-	-

**SAMPLE BOTTLES:**

**FILTRATION?:** YES  NO If yes, pore size: 0.45 micron / other \_\_\_\_\_

ANALYSIS	BOTTLES (number & type)	PRESERVATIVE (type & amount)
Vols by 8260	3 x 40 mL vials	HCl
EPH	2 x 1000 mL Amber	HCl
Leach & Metals	1 x 500 mL Plastic	-
Total Cyanide	1 x 500 mL Plastic	NaOH

**NOTES AND OBSERVATIONS:**

Sampled @ 1410

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
**ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS**

**GROUNDWATER SAMPLING RECORD**

**PROJECT:** Lunt Silver Smith **PROJECT NO.:** 1753-07-01  
**CITY/STATE:** Greenfield, MA  
**SAMPLING PERSONNEL:** B. Thompson  
**DATE:** 1/19/12 **WEATHER:** Sunny

**SAMPLE DESIGNATION:** LS-19 **SAMPLING SEQUENCE No.** 5 of 5  
**PURGE METHOD:** BAILER / PUMP - LOW or HIGH FLOW ? / OTHER \_\_\_\_\_  
**SAMPLE METHOD:** BAILER / PERISTALTIC PUMP / OTHER \_\_\_\_\_

**WELL DATA**

**MEASURING POINT:** Top of: PVC / Curb box / Protective pipe / Other: \_\_\_\_\_  
 Vertical distance from measuring point to ground surface: \_\_\_\_\_ above / below grade  
**WELL DIAMETER:** 2" **DEPTH TO WATER:** 4.53 **TOTAL DEPTH:** 11.85  
**STANDING WATER (ft):** \_\_\_\_\_ **ONE VOLUME = (gal):** \_\_\_\_\_  
**CONDITION OF WELL:** Good / unlocked / standing water in annulus / other: \_\_\_\_\_  
**RECHARGE RATE:** Slow / Moderate / Fast \_\_\_\_\_

**WATER DATA**

**APPEARANCE:** Clear / cloudy / silty / sheen / floating product / other: \_\_\_\_\_  
**ODOR:** None / Petroleum / Other (describe): \_\_\_\_\_

Time	1521	1526	1511	1516	1521	1526	1531
Depth to water	4.69	4.71	4.74	4.76	—	—	—
Cum. purge volume	—	—	—	—	—	—	—
pH (S.U.)	5.80	5.98	6.03	6.06	—	—	—
Cond'y (umho/cm)	699	712	711	713	—	—	—
Temp (°C)	6.89	6.74	7.09	7.01	—	—	—
Turbidity	—	—	—	—	—	—	—
Dissolved O <sub>2</sub> (mg/l)	1.91	0.80	0.63	0.67	—	—	—
ORP/other:	143.5	134.0	134.1	134.3	—	—	—

**SAMPLE BOTTLES:**

**FILTRATION?:** YES  NO If yes, pore size: 0.45 micron / other \_\_\_\_\_

ANALYSIS	BOTTLES (number & type)	PRESERVATIVE (type & amount)
VOCs by 8260	3 x 40 mL VOA	HCl

**NOTES AND OBSERVATIONS:**

Sample @ 1516

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
**ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS**

**GROUNDWATER SAMPLING RECORD**

**PROJECT:** Lunt Silversmith **PROJECT NO.:** 1753-03-01  
**CITY/STATE:** Greenfield, MA  
**SAMPLING PERSONNEL:** B. Warenda  
**DATE:** 2/28/12 **WEATHER:** P. Sunny, 40°F, Windy

**SAMPLE DESIGNATION:** LS-21 **SAMPLING SEQUENCE No.** 1 of 5  
**PURGE METHOD:** BAILER / PUMP - LOW / HIGH FLOW ? / OTHER \_\_\_\_\_  
**SAMPLE METHOD:** BAILER / PERISTALTIC PUMP / OTHER \_\_\_\_\_

**WELL DATA**

**MEASURING POINT:** Top of: PVC Curb box / Protective pipe / Other: \_\_\_\_\_  
**Vertical distance from measuring point to ground surface:** \_\_\_\_\_ above / below grade  
**WELL DIAMETER:** 1" **DEPTH TO WATER:** 1.60 **TOTAL DEPTH:** \_\_\_\_\_  
**STANDING WATER(ft):** \_\_\_\_\_ **ONE VOLUME = (gal):** \_\_\_\_\_  
**CONDITION OF WELL:** Good / unlocked / standing water in annulus / other: \_\_\_\_\_  
**RECHARGE RATE:** Slow / Moderate / Fast \_\_\_\_\_

**WATER DATA**

**APPEARANCE:** Clear / cloudy / silty / sheen / floating product / other: \_\_\_\_\_  
**ODOR:** None / Petroleum / Other (describe): \_\_\_\_\_

Time	0930	0935	0940	0945	0950	0955	1000
Depth to water	—	—	—	—	—	—	—
Cum. purge volume	~1/8 gal	~1/4 gal	~3/8 gal	~1/2 gal	—	—	—
pH (S.U.)	5.60	5.63	5.59	5.58	—	—	—
Cond'y (umho/cm)	179.2	156.8	152.7	147.3	—	—	—
Temp (°C)	7.3	6.8	6.7	6.6	—	—	—
Turbidity	—	—	—	—	—	—	—
Dissolved O <sub>2</sub> (mg/l)	1.68	1.73	1.72	1.60	—	—	—
ORP/other:	—	—	—	—	—	—	—

**SAMPLE BOTTLES:**

**FILTRATION?:** YES / NO If yes, pore size: 0.45 micron / other \_\_\_\_\_

ANALYSIS	BOTTLES (number & type)	PRESERVATIVE (type&amount)
VOCs by 8260	3 x 40 mL VVAs	HCl

**NOTES AND OBSERVATIONS:**

Sampled @ 0945

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
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**GROUNDWATER SAMPLING RECORD**

**PROJECT:** Lunt Silversmith **PROJECT NO.:** 1753-03-01  
**CITY/STATE:** Greenfield, MA  
**SAMPLING PERSONNEL:** B. Warena  
**DATE:** 2/28/12 **WEATHER:** P. Sunny, 40°F, Windy

**SAMPLE DESIGNATION:** LS-22 **SAMPLING SEQUENCE No.** 2 of 5  
**PURGE METHOD:** BAILER / PUMP - LOW or HIGH FLOW ? / OTHER \_\_\_\_\_  
**SAMPLE METHOD:** BAILER / PERISTALTIC PUMP / OTHER \_\_\_\_\_

**WELL DATA**

**MEASURING POINT:** Top of: PVC Curb box / Protective pipe / Other: \_\_\_\_\_  
**Vertical distance from measuring point to ground surface:** \_\_\_\_\_ above / below grade  
**WELL DIAMETER:** 1" **DEPTH TO WATER:** 3.66 **TOTAL DEPTH:** \_\_\_\_\_  
**STANDING WATER(ft):** \_\_\_\_\_ **ONE VOLUME = (gal):** \_\_\_\_\_  
**CONDITION OF WELL:** Good / unlocked / standing water in annulus / other: \_\_\_\_\_  
**RECHARGE RATE:** Slow / Moderate / Fast \_\_\_\_\_

**WATER DATA**

**APPEARANCE:** Clear / cloudy / silty / sheen / floating product / other: \_\_\_\_\_  
**ODOR:** None / Petroleum / Other (describe): \_\_\_\_\_

Time	1005	1010	1015	1020	1025	1030	1035
Depth to water	—	—	—	—	—	—	—
Cum. purge volume	~1/8 gal	~1/4 gal	~3/8 gal	~1/2 gal	—	—	—
pH (S.U.)	6.48	6.50	6.53	6.53	—	—	—
Cond'y (umho/cm)	137.3	128.9	130.2	126.8	—	—	—
Temp (°C)	6.6	6.7	6.1	6.1	—	—	—
Turbidity	—	—	—	—	—	—	—
Dissolved O <sub>2</sub> (mg/l)	6.01	5.98	5.99	5.82	—	—	—
ORP/other:	—	—	—	—	—	—	—

**SAMPLE BOTTLES:** **FILTRATION?:** YES / NO If yes, pore size: 0.45 micron / other \_\_\_\_\_

ANALYSIS	BOTTLES (number & type)	PRESERVATIVE (type&amount)
VOCs by 8260	3 x 40 mL VOA's	HCl

**NOTES AND OBSERVATIONS:**

Sampled @ 1020

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
**ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS**

**GROUNDWATER SAMPLING RECORD**

**PROJECT:** Lunt Silversmith **PROJECT NO.:** 1753-03-01  
**CITY/STATE:** Greenfield, MA  
**SAMPLING PERSONNEL:** B. Wacenda  
**DATE:** 2/28/12 **WEATHER:** P. Sunny, 40°F, Windy

**SAMPLE DESIGNATION:** LS-23 **SAMPLING SEQUENCE No.** 3 of 5  
**PURGE METHOD:** BAILER / PUMP - LOW / HIGH FLOW ? / OTHER \_\_\_\_\_  
**SAMPLE METHOD:** BAILER / PERISTALTIC PUMP / OTHER \_\_\_\_\_

**WELL DATA**

**MEASURING POINT:** Top of: PVC Curb box / Protective pipe / Other: \_\_\_\_\_  
**Vertical distance from measuring point to ground surface:** \_\_\_\_\_ above / below grade  
**WELL DIAMETER:** 1" **DEPTH TO WATER:** 3.81 **TOTAL DEPTH:** \_\_\_\_\_  
**STANDING WATER (ft):** \_\_\_\_\_ **ONE VOLUME = (gal):** \_\_\_\_\_  
**CONDITION OF WELL:** Good / unlocked / standing water in annulus / other: \_\_\_\_\_  
**RECHARGE RATE:** Slow / Moderate / Fast \_\_\_\_\_

**WATER DATA**

**APPEARANCE:** Clear / cloudy / silty / sheen / floating product / other: \_\_\_\_\_  
**ODOR:** None / Petroleum / Other (describe): \_\_\_\_\_

Time	1036	1041	1046	1051	1056	1101	1106
Depth to water	—	—	—	—	—	—	—
Cum. purge volume	~1.8 gal	~1.2 gal	~3/4 gal	—	—	—	—
pH (S.U.)	7.01	6.91	6.89	—	—	—	—
Cond'y (umho/cm)	606	588	548	—	—	—	—
Temp (°C)	8.0	8.8	9.3	—	—	—	—
Turbidity	—	—	—	—	—	—	—
Dissolved O <sub>2</sub> (mg/l)	2.70	2.71	2.93	—	—	—	—
ORP/other:	—	—	—	—	—	—	—

**SAMPLE BOTTLES:**

**FILTRATION?:** YES / NO If yes, pore size: 0.45 micron / other \_\_\_\_\_

ANALYSIS	BOTTLES (number & type)	PRESERVATIVE (type&amount)
VOCs by 8260	3 x 40 mL VOA's	HCl

**NOTES AND OBSERVATIONS:**

Sampled @ 1055  
↳ well ran dry @ 1048, let recharge then sampled



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**ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS**

**GROUNDWATER SAMPLING RECORD**

**PROJECT:** Lunt Silversmith **PROJECT NO.:** 1753-03-01  
**CITY/STATE:** Greenfield, MA  
**SAMPLING PERSONNEL:** B. Warena  
**DATE:** 2/28/12 **WEATHER:** P. Sunny, 40°F, Windy

**SAMPLE DESIGNATION:** LS-24 **SAMPLING SEQUENCE No.** 4 of 5  
**PURGE METHOD:** BAILER / PUMP - LOW or HIGH FLOW ? / OTHER \_\_\_\_\_  
**SAMPLE METHOD:** BAILER / PERISTALTIC PUMP / OTHER \_\_\_\_\_

**WELL DATA**

**MEASURING POINT:** Top of: PVC Curb box / Protective pipe / Other: \_\_\_\_\_  
**Vertical distance from measuring point to ground surface:** \_\_\_\_\_ above / below grade  
**WELL DIAMETER:** 1" **DEPTH TO WATER:** 8.40 **TOTAL DEPTH:** \_\_\_\_\_  
**STANDING WATER(ft):** \_\_\_\_\_ **ONE VOLUME = (gal):** \_\_\_\_\_  
**CONDITION OF WELL:** Good / unlocked / standing water in annulus / other: \_\_\_\_\_  
**RECHARGE RATE:** Slow / Moderate / Fast \_\_\_\_\_

**WATER DATA**

**APPEARANCE:** Clear / cloudy / silty / sheen / floating product / other: \_\_\_\_\_  
**ODOR:** None / Petroleum / Other (describe): \_\_\_\_\_

Time	1110	1115	1120	1125	1130	1135	1140
Depth to water	—	—	—	—	—	—	—
Cum. purge volume	~1/8 gal	~1/4 gal	~3/8 gal	~1/2 gal	—	—	—
pH (S.U.)	7.20	7.21	7.22	7.22	—	—	—
Cond'y (umho/cm)	304	297	303	308	—	—	—
Temp (°C)	11.2	12.5	12.6	12.5	—	—	—
Turbidity	—	—	—	—	—	—	—
Dissolved O <sub>2</sub> (mg/l)	1.55	1.24	1.17	1.10	—	—	—
ORP/other:	—	—	—	—	—	—	—

**SAMPLE BOTTLES:** **FILTRATION?:** YES / NO If yes, pore size: 0.45 micron / other \_\_\_\_\_

ANALYSIS	BOTTLES (number & type)	PRESERVATIVE (type&amount)
VOCs by 8260	3 x 40 mL VVAs	HCl
EPH	1 x 1 L Amber	HCl
TAL-23	1 x 500 mL Plastic	As Is (45 filter)

**NOTES AND OBSERVATIONS:**

Sampled @ 1125

**O'REILLY, TALBOT & OKUN ASSOCIATES, INC.**  
**ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING CONSULTANTS**

**GROUNDWATER SAMPLING RECORD**

**PROJECT:** Lunt Silversmith **PROJECT NO.:** 1753-03-01  
**CITY/STATE:** Greenfield, MA  
**SAMPLING PERSONNEL:** B. Warend  
**DATE:** 2/28/12 **WEATHER:** P. Sunny, 40°F, Windy

**SAMPLE DESIGNATION:** MW-6 **SAMPLING SEQUENCE No.** 5 of 5  
**PURGE METHOD:** BAILER / PUMP - LOW or HIGH FLOW ? / OTHER \_\_\_\_\_  
**SAMPLE METHOD:** BAILER / PERISTALTIC PUMP / OTHER \_\_\_\_\_

**WELL DATA**

**MEASURING POINT:** Top of: PVC Curb box / Protective pipe / Other: \_\_\_\_\_  
**Vertical distance from measuring point to ground surface:** \_\_\_\_\_ above / below grade  
**WELL DIAMETER:** 2" **DEPTH TO WATER:** 2.97 **TOTAL DEPTH:** \_\_\_\_\_  
**STANDING WATER(ft):** \_\_\_\_\_ **ONE VOLUME = (gal):** \_\_\_\_\_  
**CONDITION OF WELL:** Good / unlocked / standing water in annulus / other: \_\_\_\_\_  
**RECHARGE RATE:** Slow / Moderate / Fast \_\_\_\_\_

**WATER DATA**

**APPEARANCE:** Clear / cloudy / silty / sheen / floating product / other: \_\_\_\_\_  
**ODOR:** None / Petroleum / Other (describe): \_\_\_\_\_

Time							
Depth to water	-	-	-	-	-	-	-
Cum. purge volume	See Notes						
pH (S.U.)							
Cond'y (umho/cm)	Below						
Temp (°C)							
Turbidity	-	-	-	-	-	-	-
Dissolved O <sub>2</sub> (mg/l)							
ORP/other:							

**SAMPLE BOTTLES:** **FILTRATION?:** YES / NO If yes, pore size: 0.45 micron / other \_\_\_\_\_

ANALYSIS	BOTTLES (number & type)	PRESERVATIVE (type&amount)
VOCs by 8260	3 x 40 mL VVAs	HCl

**NOTES AND OBSERVATIONS:**  
Sampled @  
Bailed ~ 2 gallons of water from well before it ran dry. Sampled once recharged. Parameters not taken.

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**GROUNDWATER SAMPLING RECORD**

**PROJECT:** Lunt Silvermith **PROJECT NO.:** 1753-03-01  
**CITY/STATE:** Greenfield, MA  
**SAMPLING PERSONNEL:** B. Warenda  
**DATE:** 3/15/12 **WEATHER:** P. Cloudy, 40°F, Windy

**SAMPLE DESIGNATION:** LS-19 **SAMPLING SEQUENCE No.** 1 of 1  
**PURGE METHOD:** BAILER (PUMP - LOW) or HIGH FLOW ? / OTHER \_\_\_\_\_  
**SAMPLE METHOD:** BAILER / (PERISTALTIC PUMP) / OTHER \_\_\_\_\_

**WELL DATA**

**MEASURING POINT:** Top of: (PVC) Curb box / Protective pipe / Other: \_\_\_\_\_  
**Vertical distance from measuring point to ground surface:** \_\_\_\_\_ above / below grade  
**WELL DIAMETER:** 2" **DEPTH TO WATER:** 4.31 **TOTAL DEPTH:** \_\_\_\_\_  
**STANDING WATER(ft):** \_\_\_\_\_ **ONE VOLUME = (gal):** \_\_\_\_\_  
**CONDITION OF WELL:** (Good) / unlocked / standing water in annulus / other: \_\_\_\_\_  
**RECHARGE RATE:** Slow (Moderate) / Fast \_\_\_\_\_

**WATER DATA**

**APPEARANCE:** (Clear) / cloudy / silty / sheen / floating product / other: \_\_\_\_\_  
**ODOR:** (None) / Petroleum / Other (describe): \_\_\_\_\_

Time	1035	1040	1045	1050	1055	1100	1100
Depth to water	4.75	4.54	4.61	4.69	-	-	-
Cum. purge volume	~1/8 gallon	~1/4 gallon	~1/2 gallon	~3/4 gallon	-	-	-
pH (S.U.)	6.80	6.38	6.13	6.02	-	-	-
Cond'y (umho/cm)	699	704	705	708	-	-	-
Temp (°C)	8.66	8.36	8.11	8.00	-	-	-
Turbidity	-	-	-	-	-	-	-
Dissolved O <sub>2</sub> (mg/l)	1.17	0.75	0.63	0.60	-	-	-
ORP/other:	109.6	108.5	107.3	99.6	-	-	-

**SAMPLE BOTTLES:** **FILTRATION:** (YES) / NO. If yes, pore size: (0.45 micron) / other \_\_\_\_\_

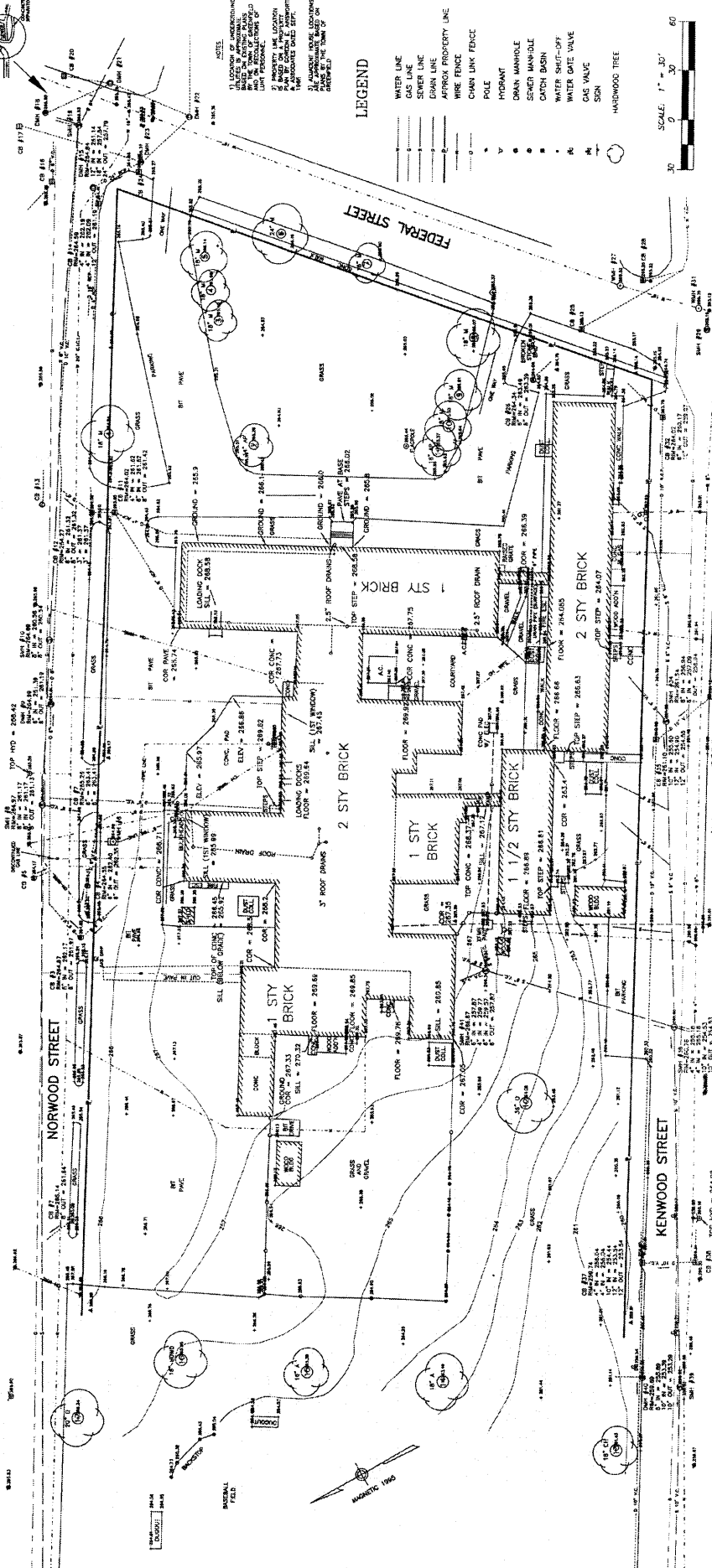
ANALYSIS	BOTTLES (number & type)	PRESERVATIVE (type&amount)
PCPA 8	1 x 500 mL Plastic	HNO <sub>3</sub>

**NOTES AND OBSERVATIONS:**

Sampled @ 1100 (field filtered, time poured into sampling jar)

**APPENDIX F**  
**UTILITY LINE MAPPING AND OUTFALL SAMPLE INFORMATION**

RECONSTRUCT DRAINAGE TOWN OF GREENFIELD  
TOP OF FEDERAL ST. = 257.25  
TOP OF FEDERAL ST. = 257.25



- NOTES**
1. LOCATION OF UNDERGROUND UTILITY LINES SHOWN ON THIS PLAN ARE BASED ON RECORD DRAWINGS AND FIELD SURVEY DATA.
  2. PROPERTY LINE LOCATION IS SHOWN BY A DASHED LINE.
  3. ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE NOTED.
  4. ALL ELEVATIONS ARE IN FEET UNLESS OTHERWISE NOTED.

**LEGEND**

- WATER LINE
- GAS LINE
- SEWER LINE
- EDMAN LINE
- AFFRICK PROPERTY LINE
- WIRE FENCE
- CHAIN LINK FENCE
- POLE
- HYDRANT
- DRAIN MANHOLE
- SEWER MANHOLE
- CATCH BASIN
- WATER SHUT-OFF
- WATER DATE VALVE
- GAS VALVE
- SDA
- HANDWOOD TREE



TOPOGRAPHIC PLAN  
**LUNT SILVERSMITHS**  
LOCATED IN  
**GREENFIELD, MASS.**

JOB NO: 100	DATE: AUG 14, 1995
SCALE: 1" = 30'	FILE: LUNDW

SARA CAMPBELL, P.E.  
48 WEST MAIN STREET, WALLING FALLS, MA  
413-659-0250

*FINAL PRINTED FROM PDF FEB 2012*

# 317 FEDERAL ST.

# 8

# 13

# 17

# 19

# 23

# 27

# 29

# 31

# 33

# 286 FEDERAL ST.

# 12

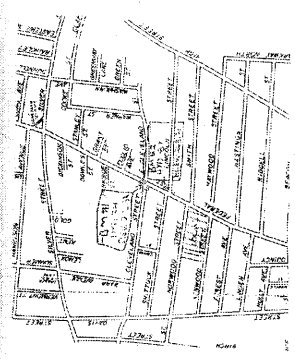
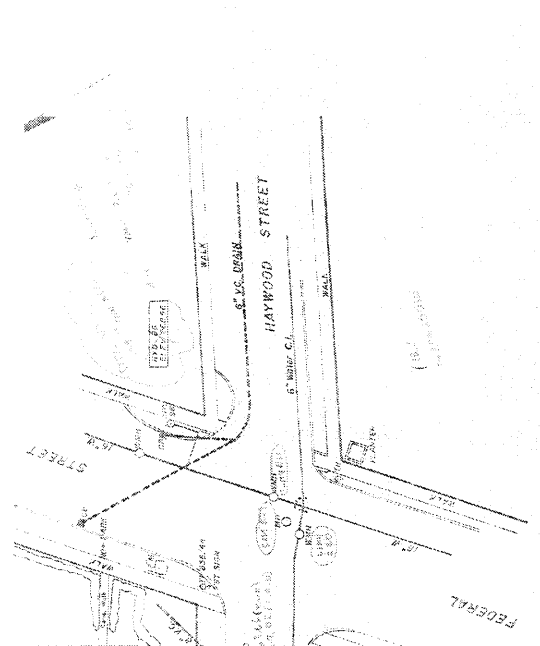
# 14

# 20

# 22

# 26

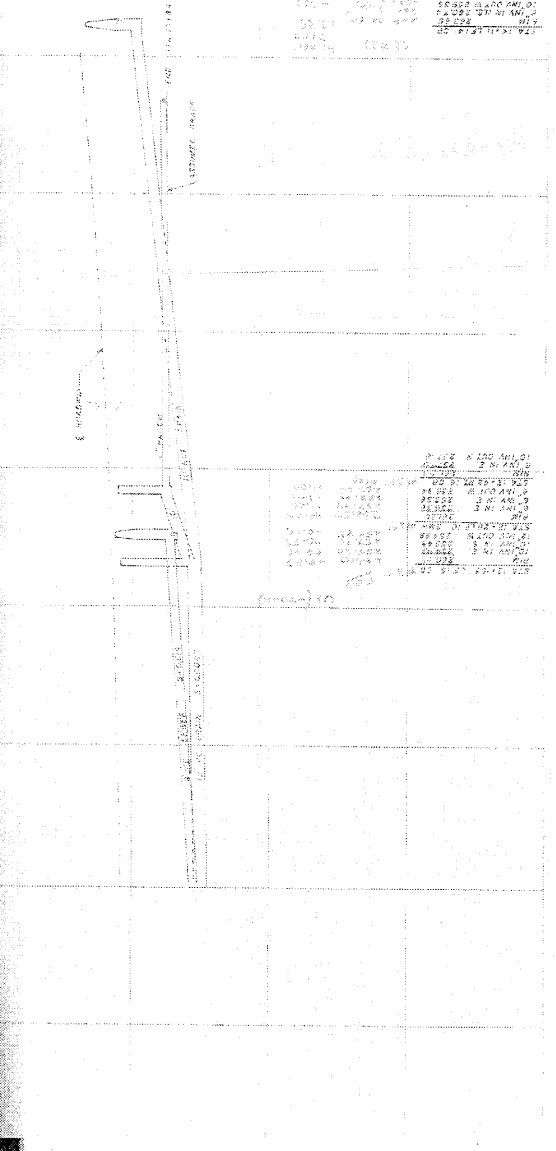
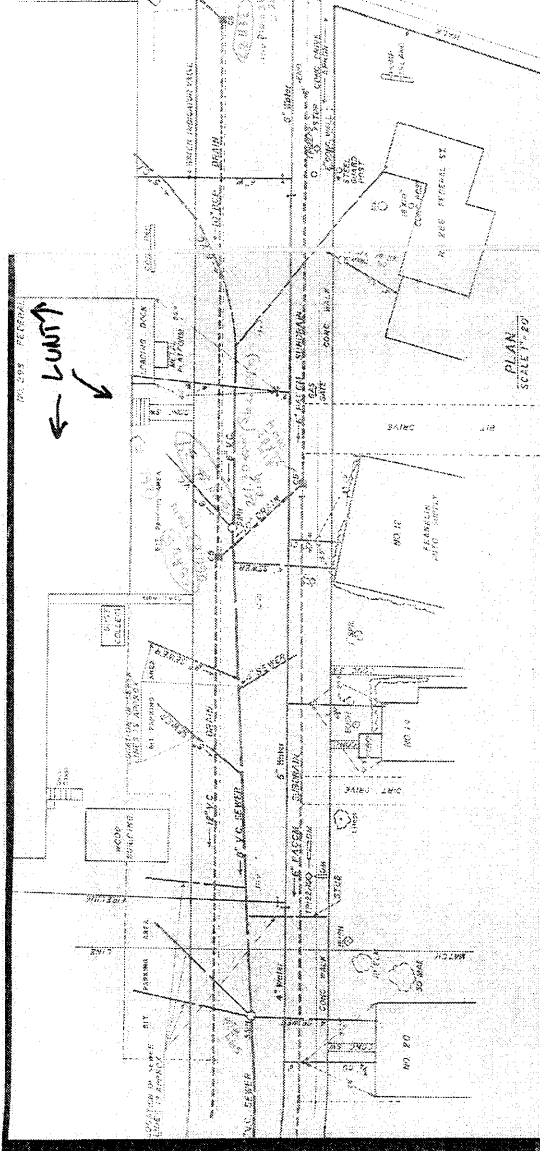




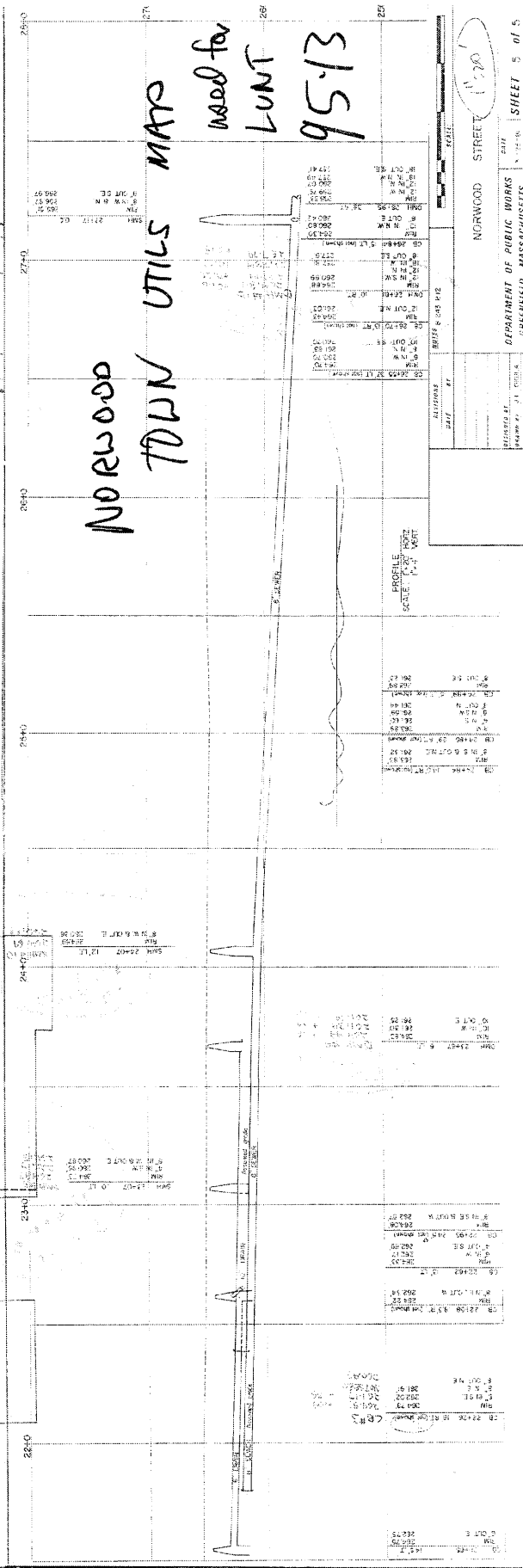
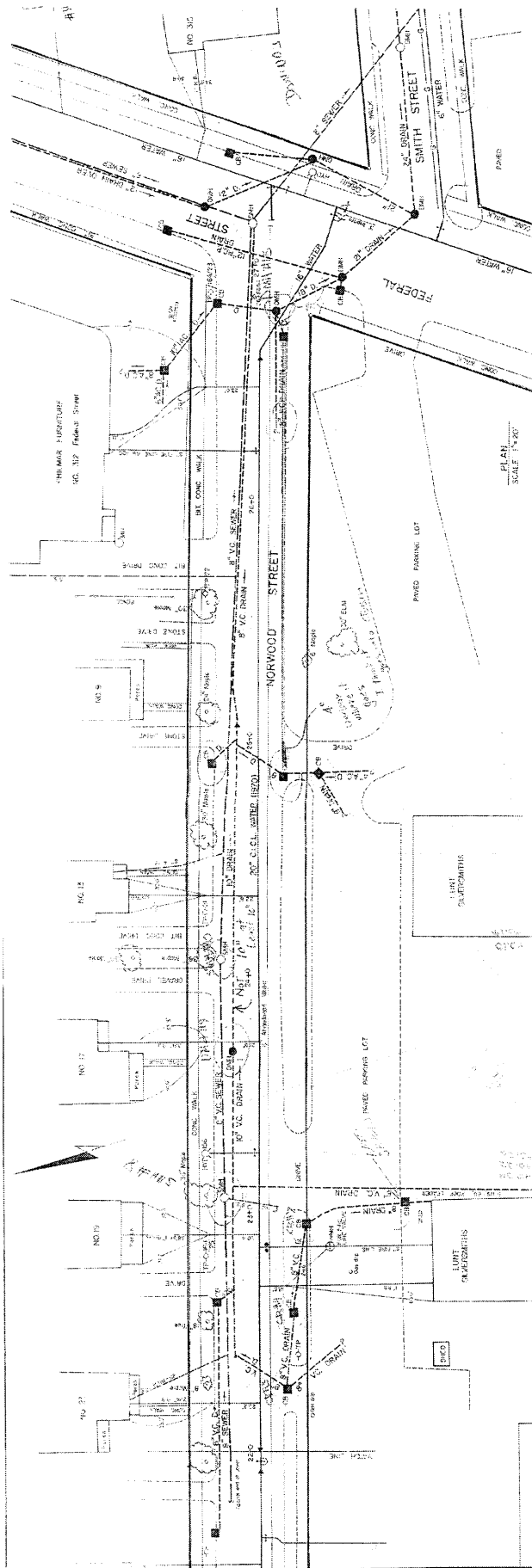
PROFILE  
SCALE HORZ 1" = 50'  
VER 1" = 10'

TOWN UTILITY MAP  
KENWOOD

PROJECT NO.	DATE	BY	CHECKED BY
NO. 100	11-1-20	J. W. MOY	J. W. MOY
KENWOOD STREET FEDERAL ST. TO HOUSE NO. 20 TOWN OF KENWOOD GREENFIELD, MASSACHUSETTS			
SHEET 3 OF 3			



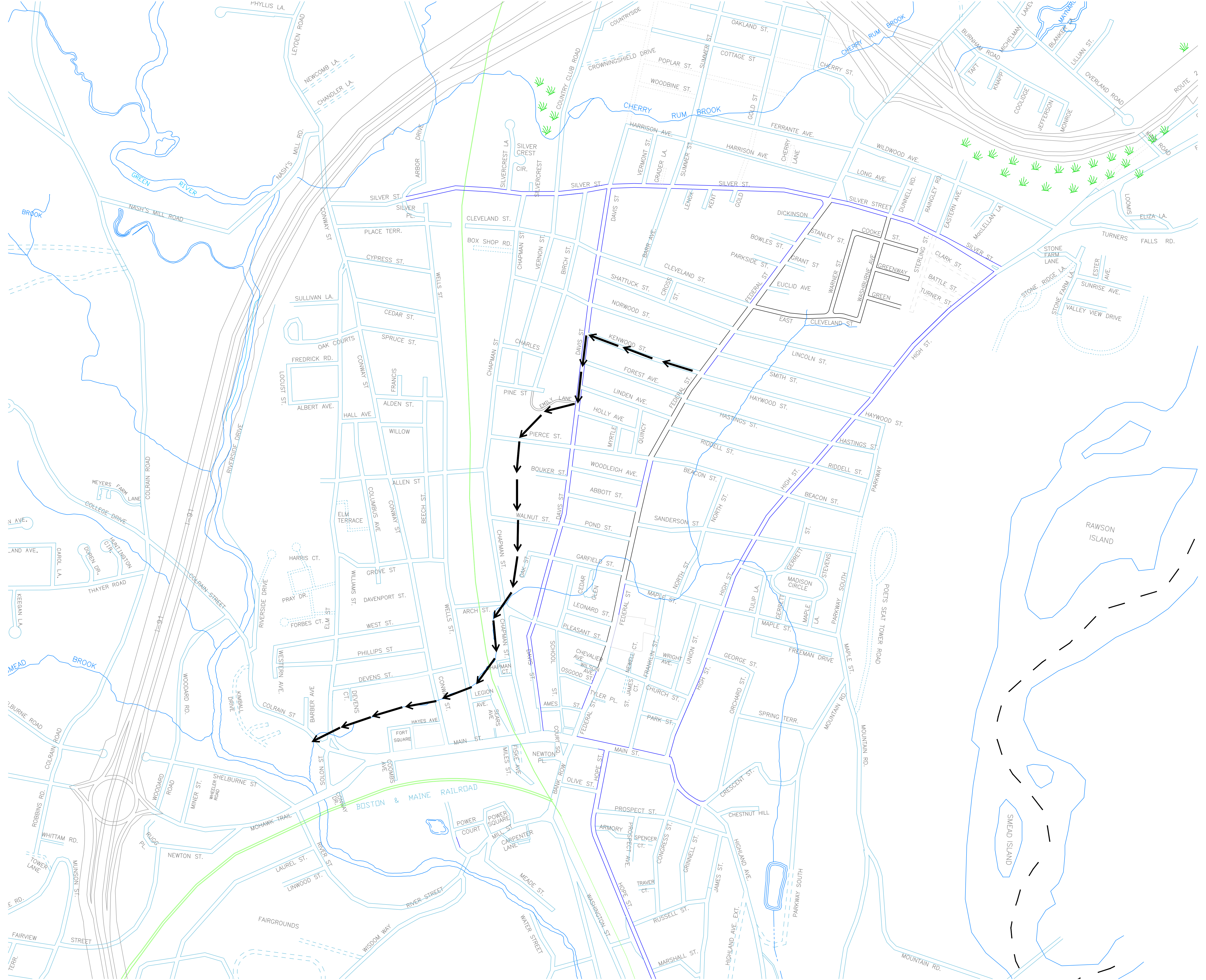




NORWOOD  
TOWN UTILS MAP  
used for  
LUNT  
95.13

STATION	ELEVATION	UTILITY	DEPTH
280.0	280.0	WATER	1.0
280.5	280.5	SEWER	1.5
281.0	281.0	GAS	2.0
281.5	281.5	WATER	1.0
282.0	282.0	SEWER	1.5
282.5	282.5	GAS	2.0
283.0	283.0	WATER	1.0
283.5	283.5	SEWER	1.5
284.0	284.0	GAS	2.0
284.5	284.5	WATER	1.0
285.0	285.0	SEWER	1.5
285.5	285.5	GAS	2.0
286.0	286.0	WATER	1.0
286.5	286.5	SEWER	1.5
287.0	287.0	GAS	2.0
287.5	287.5	WATER	1.0
288.0	288.0	SEWER	1.5
288.5	288.5	GAS	2.0
289.0	289.0	WATER	1.0
289.5	289.5	SEWER	1.5
290.0	290.0	GAS	2.0



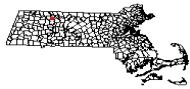




# MassDEP - Bureau of Waste Site Cleanup

## MCP Numerical Ranking System Map: 500 feet & 0.5 Mile Radii

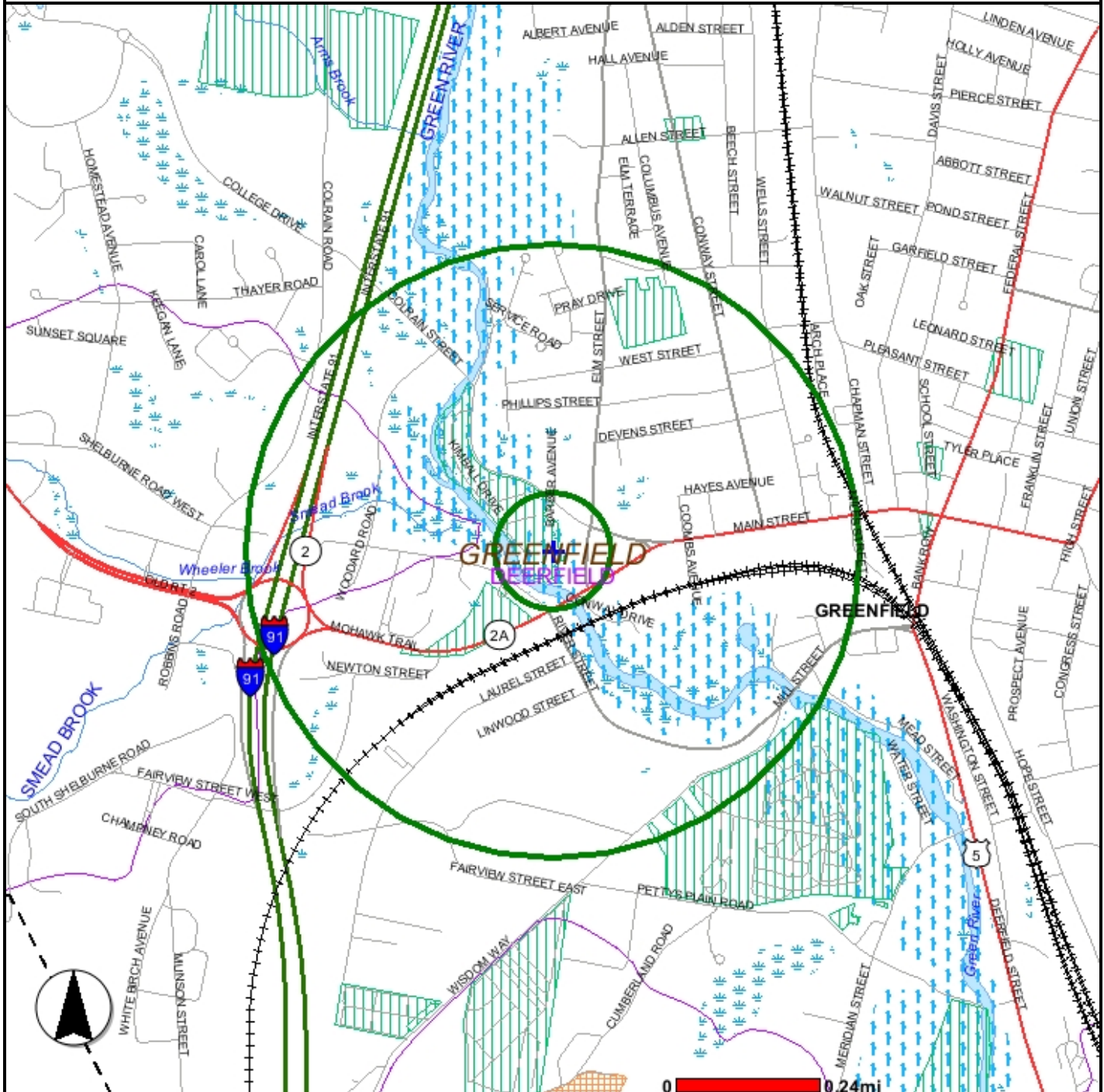
**Site Name:**  
 Catch Basin Outfall Area  
 Greenfield, MA  
**RTN:**  
 NAD83 MA Coordinates:  
 108674mE, 926856mN



The information shown on this map is the best available at the date of printing. For more information please refer to [www.mass.gov/mgis/massgjs.htm](http://www.mass.gov/mgis/massgjs.htm)



April 4, 2012



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail	PWS Protection Areas: Zone II, IWPA, Zone A			
Boundaries: Town, County, DEP Region; Train, Powerline, Pipeline, Aqueduct	Hydrography: Open Water, PWS Reservoir, Tidal Flat			
Basins: Major, Sub; Streams: Perennial, Intermittent, Man Made Shore, Dam	Wetlands: Freshwater, Saltwater, Cranberry Bog			
Aquifers: Medium Yield, High Yield, EPA Sole Source	FEMA 100yr Floodplain, Protected Open Space, ACEC			
Non Potential Drinking Water Source Area: Medium, High (Yield)	NHESP: Est Rare Wetland Habitat, Certified Vernal Pool			
	DEP Permitted Solid Waste Landfill			



**PHOTOGRAPHS OF OUTFALL SAMPLE LOCATIONS NEAR SOLON STREET, GREENFIELD, MA, TAKEN ON APRIL 11, 2012**



Photo 1. Storm drain daylight location.



Photo 2. View of outfall and ponding area below.

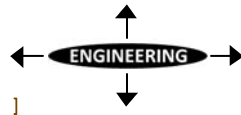


Photo 3. Sample location OF-1.



Photo 4. Sample location OF-2.

**APPENDIX G**  
**SOIL GAS POINT CONSTRUCTION DETAILS AND SAMPLING LOGS**

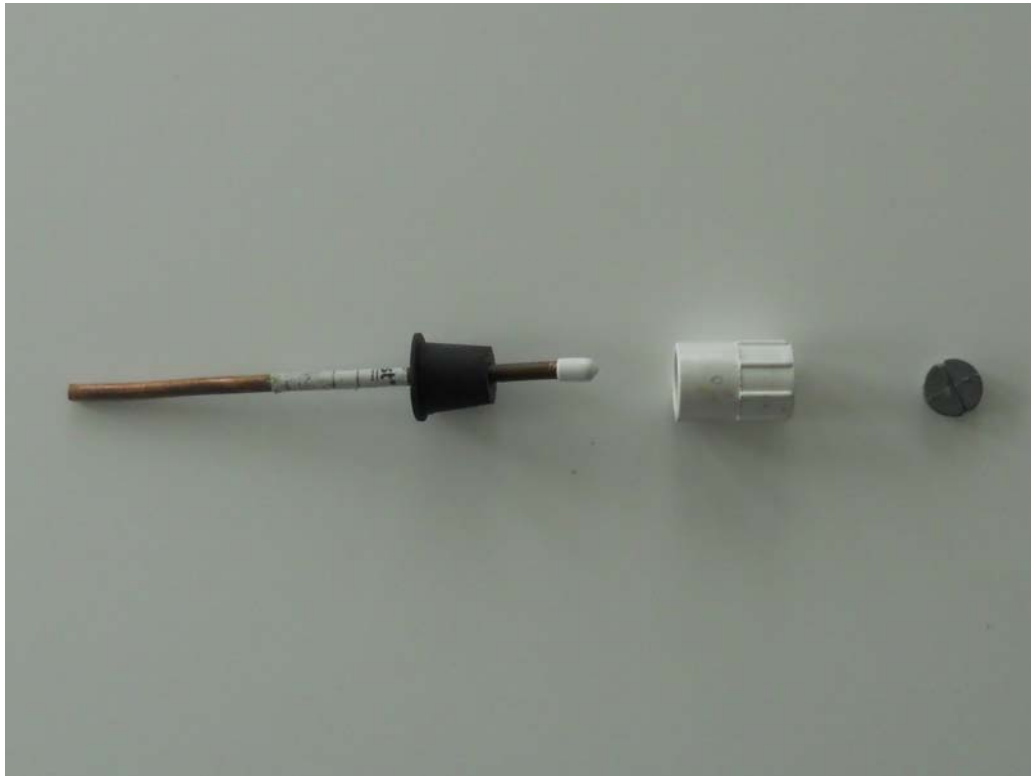
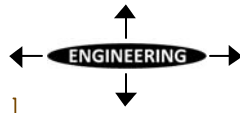


Sample Soil Gas Probe Assembly



Sample Soil Gas Probe Assembly – Exploded View





Sample Soil Gas Probe Assembly – Partly Assembled



Sample Soil Gas Probe Assembly

# Summa Canister Soil Gas Sampling Log

Project Name: Lunt Silversmith Project Number: 1753-03-01 Date: 1/26/12  
 Location: Greenfield, MA  
 Weather: Cloudy / Rain Sampler: BMW

SAMPLE DESIGNATION: SG-4 SAMPLING SEQUENCE NUMBER: 1 of 4  
 Lab Canister Number: 0164  
 Lab Regulator Number: 826

### ADDITIONAL DATA

### SAMPLING DATA

Time	1535	1545	1555	1605	
He in Shroud (%)	49.8%	44.2%	39.7%	34.5%	
He in line (ppm)	0.0	1225	1025	1350	
Ambient He (ppm)	0	0	0	0	
PID in line (ppmv)	21.6	13.3	7.7	8.0	
Ambient PID (ppmv)	0.0	0.0	0.0	0.0	

Time Initial: 1535  
 Time Final: 1605  
 Pressure Initial: 30" Hg  
 Pressure Final: 0" Hg  
 Temperature Initial: 50°F  
 Temperature Final: 50°F  
 Can size: 3 L  
 Fill time: 30 minute  
 (based on regulator setting)

Laboratory: Spectrum  
 Analysis: TD-15

Notes and Observations (Odors, etc): \_\_\_\_\_  
 Describe soil gas point location: Adjacent to degreaser, western side of building  
 Soil gas point construction/depth: Copper tubing = 6" Washer, stepper, PVC cap cemented in-place  
 PID used: Thermo 580B w/ 11.8 eV lamp

# Summa Canister Soil Gas Sampling Log

Project Name: Lunt Silversmith Project Number: 1753-03-01 Date: 1/26/12  
 Location: Greenfield, MA Sampler: BMW  
 Weather: Cloudy / Rain

SAMPLE DESIGNATION: SG-9 SAMPLING SEQUENCE NUMBER: 2 of 4  
 Lab Canister Number: 0134  
 Lab Regulator Number: 1316

### ADDITIONAL DATA

Time Initial: 1615  
 Time Final: 1645  
 Pressure Initial: 29 "Hg  
 Pressure Final: 0 "Hg  
 Temperature Initial: 50 °F  
 Temperature Final: 50 °F  
 Can size: 3 L  
 Fill time: 30 minute  
 (based on regulator setting)

### SAMPLING DATA

Time	1615	1625	1635	1645	
He in Shroud (%)	39.5%	31.7%	24.4%	19.1%	
He in line (ppm)	0	725	1075	850	
Ambient He (ppm)	0	0	0	0	
PID in line (ppmv)	0	1.9	1.3	0.4	
Ambient PID (ppmv)	0	0	0	0	

Laboratory: Spectrum  
 Analysis: TD-15

Notes and Observations (Odors, etc): \_\_\_\_\_

Describe soil gas point location: \_\_\_\_\_

Soil gas point construction/depth: Copper length = 6" Washer, stopper, PVC <sup>cap</sup> cemented in - place

PID used: Thermo 580B w/ 11.8 eV lamp

# Summa Canister Soil Gas Sampling Log

Project Name: Lunt Silversmith Project Number: 1753-03-01 Date: 1/27/12  
 Location: Greenfield, MA Sampler: BMW  
 Weather: Cloudy / Rain

SAMPLE DESIGNATION: SG-10 SAMPLING SEQUENCE NUMBER: 3 of 4  
 Lab Canister Number: 1078  
 Lab Regulator Number: 0059

### ADDITIONAL DATA

Time Initial: 0840  
 Time Final: 0910  
 Pressure Initial: 29" Hg  
 Pressure Final: 0" Hg  
 Temperature Initial: 50° F  
 Temperature Final: 50° F  
 Can size: 3 L  
 Fill time: 30 minute  
 (based on regulator setting)

### SAMPLING DATA

Time	0840	0850	0900	0910	
He in Shroud (%)	40.6%	29.5%	18.5%	15.7%	
He in line (ppm)	0	1825	750	800	
Ambient He (ppm)	0	0	0	0	
PID in line (ppmv)	0.0	0.0	0.0	0.0	
Ambient PID (ppmv)	0.0	0.0	0.0	0.0	

Laboratory: Spectrum  
 Analysis: TD-15

Notes and Observations (Odors, etc): between 0850 and 0900, accidentally hit the shroud i.e. loss of helium  
 Describe soil gas point location: loading dock area  
 Soil gas point construction/depth: Copper tubing = 6" washer, stripper, PVC cap cemented in place  
 PID used: Thermo 580B w/ 11.8 eV lamp

# Summa Canister Soil Gas Sampling Log

Project Name: Lunt Silversmith Project Number: 1753-03-01 Date: 1/27/12  
 Location: Greenfield, MA Sampler: BMW  
 Weather: Cloudy / Rain

SAMPLE DESIGNATION: SG-11 SAMPLING SEQUENCE NUMBER: 4 of 4  
 Lab Canister Number: 0131  
 Lab Regulator Number: 0040

### ADDITIONAL DATA

Time Initial: 0914  
 Time Final: 0924  
 Pressure Initial: 29" Hg  
 Pressure Final: 0" Hg  
 Temperature Initial: 50°F  
 Temperature Final: 50°F  
 Can size: 3 L  
 Fill time: 30 minute  
 (based on regulator setting)

### SAMPLING DATA

Time	0914	0924	0934	0944	
He in Shroud (%)	45.3%	39.8%	33.3%	29.4%	
He in line (ppm)	0	125	350	175	
Ambient He (ppm)	0	0	0	0	
PID in line (ppmv)	0.0	0.0	0.0	0.0	
Ambient PID (ppmv)	0.0	0.0	0.0	0.0	

Laboratory: Spectrum  
 Analysis: TD-15

Notes and Observations (Odors, etc): \_\_\_\_\_  
 Describe soil gas point location: Office area => southwestern office  
 Soil gas point construction/depth: Copper tubing = 6" Washer, stopper, PVC cap cemented in-place  
 PID used: Thermo 580B w/ 11.8 eV lamp