

RESPONSE ACTION OUTCOME (RAO) STATEMENT

Pursuant to 310 CMR 40.1000 (Subpart J)

Release Tracking Number

3 - 31100

For sites with multiple RTNs, enter the Primary RTN above.

A. SITE LOCATION:

- 1. Site Name/Location Aid: **NO LOCATION AID**
- 2. Street Address: **18 TEMPLE STREET**
- 3. City/Town: **SOMERVILLE** 4. ZIP Code: **021450000**
- 5. Check here if a Tier Classification Submittal has been provided to DEP for this disposal site. **4695441**
 - a. Tier IA b. Tier IB c. Tier IC d. Tier II **327718**
- 6. If a Tier I Permit has been issued, provide Permit Number: _____

B. THIS FORM IS BEING USED TO: (check all that apply)

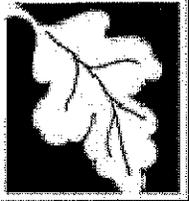
- 1. List Submittal Date of RAO Statement (if previously submitted): _____ mm/dd/yyyy
- 2. Submit a **Response Action Outcome (RAO) Statement**
 - a. Check here if this RAO Statement covers additional Release Tracking Numbers (RTNs). RTNs that have been previously linked to a Tier Classified Primary RTN do not need to be listed here.
 - b. Provide additional Release Tracking Number(s) covered by this RAO Statement. - -
- 3. Submit a **Revised Response Action Outcome Statement**
 - a. Check here if this Revised RAO Statement covers additional Release Tracking Numbers (RTNs), not listed on the RAO Statement or previously submitted Revised RAO Statements. RTNs that have been previously linked to a Tier Classified Primary RTN do not need to be listed here.
 - b. Provide additional Release Tracking Number(s) covered by this RAO Statement. - -
- 4. Submit a **Response Action Outcome Partial (RAO-P) Statement**

Check above box, if any Response Actions remain to be taken to address conditions associated with this disposal site having the Primary RTN listed in the header section of this transmittal form. This RAO Statement will record only an RAO-Partial Statement for that RTN. A final RAO Statement will need to be submitted that references all RAO-Partial Statements and, if applicable, covers any remaining conditions not covered by the RAO-Partial Statements.

Also, specify if you are an Eligible Person or Tenant pursuant to M.G.L. c. 21E s.2, and have no further obligation to conduct response actions on the remaining portion(s) of the disposal site:

 - a. Eligible Person b. Eligible Tenant
- 5. Submit an optional **Phase I Completion Statement** supporting an RAO Statement
- 6. Submit a **Periodic Review Opinion evaluating the status of a Temporary Solution** for a Class C-1 RAO Statement, as specified in 310 CMR 40.1051 (Section F is optional)
- 7. Submit a **Retraction** of a previously submitted **Response Action Outcome Statement** (Sections E & F are not required)

(All sections of this transmittal form must be filled out unless otherwise noted above)



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C. DESCRIPTION OF RESPONSE ACTIONS: (check all that apply; for volumes, list cumulative amounts)

- 1. Assessment and/or Monitoring Only
- 2. Temporary Covers or Caps
- 3. Deployment of Absorbent or Containment Materials
- 4. Treatment of Water Supplies
- 5. Structure Venting System
- 6. Engineered Barrier
- 7. Product or NAPL Recovery
- 8. Fencing and Sign Posting
- 9. Groundwater Treatment Systems
- 10. Soil Vapor Extraction
- 11. Bioremediation
- 12. Air Sparging
- 13. Monitored Natural Attenuation
- 14. In-situ Chemical Oxidation

15. Removal of Contaminated Soils

a. Re-use, Recycling or Treatment i. On Site Estimated volume in cubic yards _____

ii. Off Site Estimated volume in cubic yards 7

ii.a. Facility Name: AGGREGATE RECYCLING COR Town: ELIOT State: ME

ii.b. Facility Name: _____ Town: _____ State: _____

iii. Describe: ASPHALT BATCHING FACILITY

b. Landfill

i. Cover Estimated volume in cubic yards _____

Facility Name: _____ Town: _____ State: _____

ii. Disposal Estimated volume in cubic yards _____

Facility Name: _____ Town: _____ State: _____

16. Removal of Drums, Tanks or Containers:

a. Describe Quantity and Amount: ONE 55-GALLON DRUM OF TANK WATER

b. Facility Name: OIL RECOVERY CORP Town: WEST SPRINGFIELD State: MA

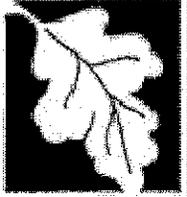
c. Facility Name: _____ Town: _____ State: _____

17. Removal of Other Contaminated Media:

a. Specify Type and Volume: _____

b. Facility Name: _____ Town: _____ State: _____

c. Facility Name: _____ Town: _____ State: _____



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C. DESCRIPTION OF RESPONSE ACTIONS (cont.): (check all that apply; for volumes, list cumulative amounts)

18. Other Response Actions:

Describe: _____

19. Use of Innovative Technologies:

Describe: _____

D. SITE USE:

1. Are the response actions that are the subject of this submittal associated with the *redevelopment, reuse* or the *major expansion of the current use* of property(ies) impacted by the presence of oil and/or hazardous materials?

a. Yes b. No c. Don't know

2. Is the property a *vacant or under-utilized commercial or industrial* property ("a brownfield property")?

a. Yes b. No c. Don't know

3. Will funds from a state or federal brownfield incentive program be used on one or more of the property(ies) within the disposal site?

a. Yes b. No c. Don't know If Yes, identify program(s): _____

4. Has a Covenant Not to Sue been obtained or sought?

a. Yes b. No c. Don't know

5. Check all applicable categories that apply to the person making this submittal: a. Redevelopment Agency or Authority

b. Community Development Corporation c. Economic Development and Industrial Corporation

d. Private Developer e. Fiduciary f. Secured Lender g. Municipality

h. Potential Buyer (non-owner) i. Other, describe: **OWNER**

This data will be used by MassDEP for information purposes only, and does not represent or create any legal commitment, obligation or liability on the part of the party or person providing this data to MassDEP.

E. RESPONSE ACTION OUTCOME CLASS:

Specify the Class of Response Action Outcome that applies to the disposal site, or site of the Threat of Release. Select **ONLY** one Class.

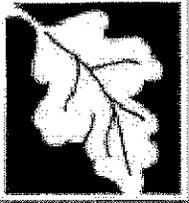
1. **Class A-1 RAO:** Specify one of the following:

a. Contamination has been reduced to background levels. b. A Threat of Release has been eliminated.

2. **Class A-2 RAO:** You **MUST** provide justification that reducing contamination to or approaching background levels is infeasible.

3. **Class A-3 RAO:** You **MUST** provide an implemented Activity and Use Limitation (AUL) and justification that reducing contamination to or approaching background levels is infeasible.

4. **Class A-4 RAO:** You **MUST** provide an implemented AUL, justification that reducing contamination to or approaching background levels is infeasible, and justification that reducing contamination to less than Upper Concentration Limits (UCLs) 15 feet below ground surface or below an Engineered Barrier is infeasible. If the Permanent Solution relies upon an Engineered Barrier, you must provide or have previously provided a Phase III Remedial Action Plan that justifies the selection of the Engineered Barrier.



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E. RESPONSE ACTION OUTCOME CLASS (cont.):

- 5. Class B-1 RAO: Specify one of the following:
 - a. Contamination is consistent with background levels
 - b. Contamination is **NOT** consistent with background levels.
- 6. Class B-2 RAO: You **MUST** provide an implemented AUL.
- 7. Class B-3 RAO: You **MUST** provide an implemented AUL and justification that reducing contamination to less than Upper Concentration Limits (UCLs) 15 feet below ground surface is infeasible.
- 8. Class C-1 RAO: You must submit a plan as specified at 310 CMR 40.0861(2)(h). Indicate type of ongoing response actions.
 - a. Active Remedial System
 - b. Active Remedial Monitoring Program
 - c. None
 - d. Other Specify: _____
- 9. Class C-2 RAO: You must hold a valid Tier I Permit or Tier II Classification to continue response actions toward a Permanent Solution.

F. RESPONSE ACTION OUTCOME INFORMATION:

1. Specify the Risk Characterization Method(s) used to achieve the RAO described above:
 - a. Method 1
 - b. Method 2
 - c. Method 3
 - d. Method Not Applicable-Contamination reduced to or consistent with background, or Threat of Release abated
2. Specify all Soil Category(ies) applicable. More than one Soil Category may apply at a Site. Be sure to check off all **APPLICABLE** categories:

<input type="checkbox"/> a. S-1/GW-1	<input type="checkbox"/> d. S-2/GW-1	<input type="checkbox"/> g. S-3/GW-1
<input type="checkbox"/> b. S-1/GW-2	<input type="checkbox"/> e. S-2/GW-2	<input type="checkbox"/> h. S-3/GW-2
<input checked="" type="checkbox"/> c. S-1/GW-3	<input type="checkbox"/> f. S-2/GW-3	<input type="checkbox"/> i. S-3/GW-3
3. Specify all Groundwater Category(ies) impacted. A site may impact more than one Groundwater Category. Be sure to check off all **IMPACTED** categories:
 - a. GW-1
 - b. GW-2
 - c. GW-3
 - d. No Groundwater Impacted
4. Specify remediation conducted:
 - a. Check here if soil remediation was conducted.
 - b. Check here if groundwater remediation was conducted.
5. Specify whether the analytical data used to support the Response Action Outcome was generated pursuant to the Department's Compendium of Analytical Methods (CAM) and 310 CMR 40.1056:
 - a. CAM used to support all analytical data.
 - b. CAM used to support some of the analytical data.
 - c. CAM not used.
6. Check here to certify that the Class A, B or C Response Action Outcome includes a Data Usability Assessment and Data Representativeness Evaluation pursuant to 310 CMR 40.1056.
7. Estimate the number of acres this RAO Statement applies to:



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Pursuant to 310 CMR 40.1000 (Subpart J)

G. LSP SIGNATURE AND STAMP:

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and 309 CMR 4.03(2), and (iii) the provisions of 309 CMR 4.03(3), to the best of my knowledge, information and belief,

> if Section B indicates that either an RAO Statement, Phase I Completion Statement and/or Periodic Review Opinion is being provided, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal.

I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

1. LSP #: 2974

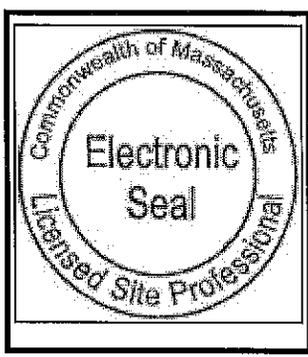
2. First Name: GLENN A 3. Last Name: CARLSON

4. Telephone: 7818939922 5. Ext.: 6. FAX: 7818936622

7. Signature: GLENN A CARLSON

8. Date: 10/29/2012
mm/dd/yyyy

9. LSP Stamp:



H. PERSON MAKING SUBMITTAL:

1. Check all that apply: a. change in contact name b. change of address c. change in the person undertaking response actions

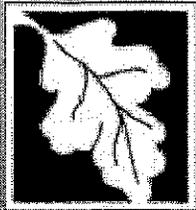
2. Name of Organization:

3. Contact First Name: RICHARD 4. Last Name: BLUMSACK

5. Street: 323 BROADWAY 6. Title:

7. City/Town: SOMERVILLE 8. State: MA 9. ZIP Code: 021450000

10. Telephone: 7818595241 11. Ext.: 12. FAX:



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I. RELATIONSHIP TO RELEASE OR THREAT OF RELEASE OF PERSON MAKING SUBMITTAL:

- 1. RP or PRP a. Owner b. Operator c. Generator d. Transporter

e. Other RP or PRP Specify: **NON-SPECIFIED PRP**

2. Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)

3. Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))

4. Any Other Person Making Submittal Specify Relationship: _____

J. REQUIRED ATTACHMENT AND SUBMITTALS:

1. Check here if the Response Action(s) on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approval(s) issued by DEP or EPA. If the box is checked, you MUST attach a statement identifying the applicable provisions thereof.

2. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the submittal of an RAO Statement that relies on the public way/rail right-of-way exemption from the requirements of an AUL.

3. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the submittal of a RAO Statement with instructions on how to obtain a full copy of the report.

4. Check here to certify that documentation is attached specifying the location of the Site, or the location and boundaries of the Disposal Site subject to this RAO Statement. If submitting an RAO Statement for a PORTION of a Disposal Site, you must document the location and boundaries for both the portion subject to this submittal and, to the extent defined, the entire Disposal Site.

5. Check here to certify that, pursuant to 310 CMR 40.1406, notice was provided to the owner(s) of each property within the disposal site boundaries, or notice was not required because the disposal site boundaries are limited to property owned by the party conducting response actions. (check all that apply)

a. Notice was provided prior to, or concurrent with the submittal of a Phase II Completion Statement to the Department.

b. Notice was provided prior to, or concurrent with the submittal of this RAO Statement to the Department.

c. Notice not required. d. Total number of property owners notified, if applicable: _____

6. Check here if required to submit one or more AULs. You must submit an AUL Transmittal Form (BWSC113) and a copy of each implemented AUL related to this RAO Statement. Specify the type of AUL(s) below: (required for Class A-3, A-4, B-2, B-3 RAO Statements)

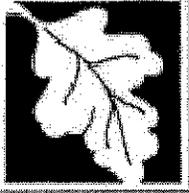
a. Notice of Activity and Use Limitation b. Number of Notices submitted: _____

c. Grant of Environmental Restriction d. Number of Grants submitted: _____

7. If an RAO Compliance Fee is required for any of the RTNs listed on this transmittal form, check here to certify that an RAO Compliance Fee was submitted to DEP, P. O. Box 4062, Boston, MA 02211.

8. Check here if any non-updatable information provided on this form is incorrect, e.g. Site Address/Location Aid. Send corrections to the DEP Regional Office.

9. Check here to certify that the LSP Opinion containing the material facts, data, and other information is attached.



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K. CERTIFICATION OF PERSON MAKING SUBMITTAL:

1. I, **Richard E Blumsack**, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

2. By: **Richard E Blumsack** 3. Title: _____
Signature

4. For: **RICHARD BLUMSACK** 5. Date: **10/29/2012**
(Name of person or entity recorded in Section H) mm/dd/yyyy

6. Check here if the address of the person providing certification is different from address recorded in Section H.

7. Street: _____

8. City/Town: _____ 9. State: _____ 10. ZIP Code: _____

11. Telephone: _____ 12. Ext.: _____ 13. FAX: _____

YOU ARE SUBJECT TO AN ANNUAL COMPLIANCE ASSURANCE FEE OF UP TO \$10,000 PER BILLABLE YEAR FOR THIS DISPOSAL SITE. YOU MUST LEGIBLY COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.

Date Stamp (DEP USE ONLY:)

**Received by DEP on
10/29/2012 11:02:58 AM**

RESPONSE ACTION OUTCOME REPORT

**18 Temple Street
Somerville, Massachusetts
Release Tracking Number: 3-31100**

October 26, 2012

Party Assuming Responsibility for the RAO:

**Richard Blumsack
323 Broadway
Somerville, MA 02145**

Licensed Site Professional for the RAO:

**Mr. Glenn A. Carlson LSP# 2974
Action Environmental Boston
184 Riverview Avenue
Waltham, MA 02453**

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FIGURES

- Figure 1: Locus Map
- Figure 2: Site Plan
- Figure 3: BWSC Priority Resources Map
- Figure 4: Excavation Plan
- Figure 5: Cross Section

TABLES

- Table 1: Summary of Pre-excavation Volatile Petroleum Hydrocarbons Detected in Soil
- Table 2: Summary of Post-excavation Volatile Petroleum Hydrocarbons Detected in Soil
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APPENDICES

- Appendix A: UST Field Inspection Report
- Appendix B: Laboratory Reports
- Appendix C: Copy of Bill of Lading
- Appendix D: Copies of Public Notice letters

1.0 INTRODUCTION

Action Environmental Solutions PLLC, Dba Action Environmental Boston (Action), was retained by Richard Blumsack, the Owner and a potential responsible party (PRP), to conduct an Immediate Response Action (IRA) to address a release to the environment of gasoline at 18 Temple Street, in the City of Somerville, in Middlesex County, Massachusetts (Subject Property). The gasoline was released from a corroded 1,000-gallon-capacity underground storage tank (UST) located on the Subject Property, which is a parking lot. According to the Massachusetts Department of Environmental Protection (MassDEP) Bureau of Waste Site Cleanup Release Log Form BWSC-101, a UST petroleum release at the Subject Property meeting the criteria set forth in the Massachusetts Contingency Plan (MCP), 310 CMR 40.0313 (2), was reported to the MassDEP on September 13, 2012. The MassDEP assigned Release Tracking Number (RTN) 3-311000 to the site of the gasoline release (the Site) and verbally approved an IRA including management of disposal of petroleum-impacted soil, the excavation and disposal of up to 50 cubic yards of petroleum-impacted soil, assessment of post excavation soil and groundwater contamination, and screening of adjacent utilities. Refer to *Figure 1*, Site Locus, for the regional location of the Site and *Figure 2*, Site Map, for the details of the Site and Subject Property.

This Class A-1 Response Action Outcome (RAO) report documents the response actions completed under the IRA, and the characterization of risk to sensitive receptors in support of a Class A-1 RAO Opinion for the Site. Specifically, concentrations of petroleum hydrocarbons have been reduced to background levels such that the Site no longer poses a Significant Risk to human health, public safety, public welfare, or the environment. Therefore, Action submits this RAO Report along with the RAO Statement Form (BWSC-104) to the MassDEP via eDEP. An IRA Plan or Completion Report is not required because the RAO Statement is being submitted to the MassDEP within 60 days of the initial notification of the need to conduct an IRA at the Site.

2.0 CONTACT INFORMATION

The Potentially Responsible Party for the Site is:

Richard Blumsack, Owner
323 Broadway
Somerville, MA 02145

The Licensed Site Professional (LSP) of record overseeing the IRA response actions is:

Glenn A. Carlson (LSP # 2974)
Action Environmental Boston
184 Riverview Ave.
Waltham, MA 02453
Tel. No. 781-893-9922

3.0 RELEASE DESCRIPTION AND ORAL IRA PLAN APPROVAL

According to a September 13, 2012, MassDEP Release Log Form BWSC-101 prepared for the Site, on September 11, 2012, a headspace reading of 2,050 parts per million by volume (ppmv) was measured in a soil sample collected during the removal of the 1,000-gallon gasoline UST from the Subject Property. Subsequently, on September 13, 2012, the gasoline release was reported to the MassDEP.

Following removal of the UST, inspection of the UST revealed several corrosion holes along the seam at the southern end of the UST. The Jar Headspace screening result for the soil sample collected six feet below surface grade (BSG) beneath the southern end of the UST (Sample S-5) was 2,050 ppmv. Volatile organic compounds (VOCs) were not detected in soil samples collected from other locations around the UST (see *Appendix A*: Tank Field Inspection Report). Another soil sample collected at the S-5 location was submitted to New England Testing Laboratory (NET) of North Providence, RI, for laboratory analysis by the MassDEP Volatile Petroleum Hydrocarbon (VPH) Method for gasoline constituents. The laboratory report is included in *Appendix B*. As indicated in *Table 1*, several gasoline associated compounds in the soil sample exceeded the MCP S-1 Reportable Concentrations, confirming the reportable screening concentration of 2,050.

The dimensions of the UST were four feet by 12 feet long. The UST was reportedly abandoned in the 1920s. Prior to removal of the UST, the UST was emptied and cleaned. Approximately 55 gallons of petroleum-impacted water was removed from the UST and stored in a 55-gallon steel drum. The drum was later collected by Oil recovery Corp. Of West Springfield, MA for disposal.

On September 13, 2012, MassDEP granted Oral IRA Approval for the following response actions:

1. Remove, manage and properly dispose of up to 50 cubic yards of petroleum impacted soil;
2. Assessment of soil and groundwater; and
3. Screen utilities for VOCs.

4.0 SITE INFORMATION

4.1 Disposal Site Details

The Subject Property is located at 18 Temples Street in the City of Somerville, in Middlesex County, Massachusetts (Subject Property). The Subject Property is 7,415 square feet (0.17 acres) in size and is an asphalt-paved parking lot for the building located at 315-325 Broadway. The approximate extent of the Site on the Subject Property is depicted in *Figure 2*. According to the Owner, historically, a parking garage was located on the Subject Property and that the former tank was associated with this historic use.

4.2 Geographical Location

The location of the Site is shown in an extract from the USGS Boston South Quadrangle in *Figure 1*. The Site is at an approximate elevation of 44 feet above mean sea level. The topography at the Site slopes down to the southeast. The Universal Transverse Mercator System geographical coordinates of the Site are: 19T 327718 meters East, and 4,695,441 meters North.

4.3 Hydrogeologic Setting

According to *Figure 1*, the topography at the Site slopes down to the southeast. The Site is located on the southeast side of a glacial hill (drumlin) called Winter Hill and more generally on a glacial outwash plain which slopes to the southeast toward the Mystic River, approximately 5,000 feet southeast of the Site. According to *Figure 3*, the Site is within a surface water drainage basin of the Mystic River, which flows into Boston Harbor in Boston, Massachusetts.

Sub-surface soils encountered at the Subject Property were identified as fill composed of poorly sorted, loose, brown silty fine- to coarse-grain size sand to a depth of 5.0 feet BSG. From 5.0 feet to 8.0 feet BSG angular cobbles of bedrock were located in the fill material. At 8.0 feet BSG bedrock was encountered. Bedrock underlying the Site is a dark gray slightly metamorphosed mudstone identified and mapped by Zen (1983) as the Cambridge Argillite.

A section of well screen was installed to a depth of 11.0 feet BSG and no groundwater entered the well, hence, depth to groundwater during the investigation was greater than 11.0 feet BSG.

4.4 Land Use

As indicated in *Figure 2*, the Subject Property is located in an area of Somerville zoned for residential and commercial use and is abutted by properties containing commercial and multi-residence buildings.

4.5 Surrounding Receptors

The human population within 0.5 miles of the Site is approximately 9,000. As indicated in *Figure 3*, no surface waters, vernal pools, lakes, rivers, reservoirs, wetlands, streams, or ponds are located within 500 feet of the Site. The topography at the Site slopes down to the southeast. It is assumed that the groundwater flow is toward the southeast following the topography. The nearest hydrogeologically downgradient surface water body is the Mystic River located approximately 5,000 feet southeast of the Site.

The natural resource information for the vicinity of the Site is displayed in *Figure 3*. The Site is not within a Zone II area, Interim Wellhead Protection Areas, Zone A area or a potential drinking water

source area. There are no areas of critical environmental concern, protected open space, sole source aquifers, local, fish habitats, or habitats of threatened or endangered species within 500 feet of the Site.

5.0 IMMEDIATE RESPONSE ACTIONS

The following activities were performed under the Orally Approved IRA detailed in **Section 3.0**:

1. On September 14, 2012, the three stormwater catch basins near the Site were screened for VOCs and explosive vapors (See *Figure 2* for locations). No VOCs or explosive vapors were detected in air in the catch basins and no petroleum sheens were observed in the catch basins. The screening was performed using a photoionization detector (PID) with a 10.6 electron volt lamp, calibrated with 250 ppmv isobutylene and a explosimeter calibrated with methane.
2. On October 4, 2012, 10.92 tons (approximately 7 cubic yards) of petroleum-impacted soil were removed from the Site and recycled at the Aggregate Recycling Corporation asphalt batching facility in Elliot, Maine, under an MCP Bill of Lading (copy included in *Appendix C*). The extent of the excavation was seven feet wide by 15 feet long and 8 to 12 feet deep. Immediately following the excavation, soil samples were collected from the side walls and floor of the excavation at the locations shown in *Figure 4 and Figure 5*. Each of the eight soil samples were split into two representative portions; one portion packed into laboratory supplied sampling containers and shipped to NET for laboratory analysis by the VPH Method for gasoline constituents. The other portion of each split sample was field headspace screened in accordance the MassDEP headspace screening method in MassDEP Policy #WSC-402-96. The screening results for all the soil samples were no detected VOCs. The laboratory results report is included in *Appendix B*. The VPH data for the excavation closure soil samples are summarized in *Table 2*. No gasoline constituents were detected in any of the soil samples. As indicated in *Figure 5*, Soil Sample S-4 was collected directly below the gasoline-impacted Sample S-5 that was collected before soil excavation. The excavation was backfilled with clean fill on the same day (October 4, 2012).
3. On October 4, 2012, prior to backfilling of the excavation, monitoring well screen (5 ft.) and casing (5 ft.) were installed in the excavation pit where the highest petroleum concentrations were detected in removed soil (*S-4 in Figure 4*). Three feet of weathered bedrock was removed to install the well. The well could not be installed deeper than approximately 11 feet BSG due to the integrity of the bedrock. During the installation of the well, no groundwater was observed. Seven days (October 11, 2012) after the monitoring well was installed, Action inspected the monitoring well and no groundwater was detected in it. The monitoring well was subsequently removed.

6.0 CONCEPTUAL SITE MODEL

On September 11, 2012, a release of gasoline was identified during removal of an abandoned 1,000-gallon UST located on the Subject Property. The gasoline release was indicated by an elevated soil headspace reading of 2,050 ppmv and elevated gasoline compound concentrations by laboratory analysis of soil from the bottom of the UST pit, six feet BSG (*Table 1*). Screening of catch basins near the Subject Property did not detect gasoline vapors or sheens in the catch basins indicating no migration of gasoline to utility conduits.

As part of an IRA, on October 4, 2012, 10.92 tons of gasoline-impacted soil was excavated from the UST excavation pit. *Figure 5* is a cross section of the excavation pit. Soil was excavated to a depth of eight to 12 feet BSG where the headspace screening values for soil were less than one ppmv. Laboratory analysis of soil samples collected from the extent of the excavation pit (see *Figure 4* for locations and *Table 2* for test results) did not detect gasoline constituents in any of the eight soil samples. Therefore, there is no indication of gasoline impact to soil following the soil excavation.

Since no groundwater was detected in the monitoring well installed to a depth of 11 feet BSG in the excavation pit and no gasoline constituents were detected in remaining soil down to the bedrock surface at eight feet BSG, it can be inferred that groundwater beneath the Site has not been impacted by the gasoline release.

In summary, a limited amount of gasoline-impacted soil associated with a gasoline release from a former UST has been removed from the Site, no detectable gasoline constituents are located in remaining soil, and the gasoline release did not penetrate deep enough to impact groundwater at the Site. Since there is no longer a source of gasoline at the Site, there is no potential for future migration of petroleum from the gasoline release. Therefore, Site contaminants have been reduced to at or below background concentrations.

7.0 RISK CHARACTERIZATION

7.1 Identification of MCP Soil and Groundwater Categories

Soil Categories

Three soil categories (S-1, S-2, and S-3) are used to define the potential for human exposure to soil. Category S-1 is associated with the highest potential for exposure, while S-3 is associated with the lowest potential for exposure. Only one soil category can be determined for a specific volume of soil, however, multiple volumes of soil may be found on an individual site. Intensity and frequency of use by human receptors, and accessibility of soil, must be characterized according to 310 CMR 40.0933 when identifying soil categories for the Site.

1. Maximum frequency and intensity of use for the Site are defined below:

CHILD (possible future resident at Site or surrounding environment)

Frequency of Use: High (reside at Site or in surrounding environment)
Intensity of Use: High (for activities including: gardening, digging, and sports).

ADULT ((possible future resident at Site or surrounding environment)

Frequency of Use: High (reside at Site or in surrounding environment)
Intensity of Use: High (for activities including: gardening, digging, and sports).

ADULT (construction or utility worker at Site)

Frequency of Use: Low (exposure for approximately three to six months)
Intensity of Use: High (excavating soil).

ADULT (worker at Site)

Frequency of Use: High (full-time work at site)
Intensity of Use: High (mowing of lawns, grounds maintenance and active gardening)

Accessibility of soils is defined below (Site extends from 0 to 8 feet BSG):

Using the above frequencies and intensities of use and accessibility, the following soil category(s) are assigned to soils at the Site pursuant to 310 CMR 40.0933(9): **Soil Category S-1: Soils at the Site from 0 to 8 feet BSG.**

Groundwater Categories

Groundwater conditions under the MCP are divided into three categories (GW-1, GW-2, and GW-3) depending on the potential for exposure. The MCP indicates that groundwater can be classified as more than one category. The categories are defined by the MCP (310 CMR 40.0904[3]) as:

Category GW-1: Groundwater shall be considered to be in Category GW-1 if it is a current or potential source of drinking water. Groundwater is considered an existing source of drinking water when it is in a Zone II public water supply, in an interim wellhead protection area, in a Zone A of a Class A surface water body that is used as a public water supply, within a community with no current access to public drinking water, or within a community with public drinking water but within an area where private drinking water is possible and where consolidated and unconsolidated aquifer materials have sufficient transmissivity and are of sufficient areal extent to be considered a medium and high yield aquifer. For groundwater meeting these criteria, Groundwater Category GW-1 shall be selected.

Category GW-2: Groundwater shall be classified as Category GW-2 if it may be likely to act as a source of vapor infiltration to occupied structures. Specifically, groundwater is defined to be GW-2 if it is located within 30 feet of an existing occupied building or structure and the average annual depth to groundwater in that area is less than 15 feet BG.

Category GW-3: Groundwater shall be classified as Category GW-3 if it discharges to surface waters. The MassDEP considers all groundwater in the State to be a potential discharge source to surface water, so Category GW-3 is applicable everywhere.

Based on information gathered regarding the Site, groundwater at the Site is not classified as GW-1 because none of the GW-1 Category conditions detailed above are met. Groundwater at the Site is not classified as Category GW-2 because there are no existing or planned buildings within 30 feet of the Site. Groundwater at the Site is Classified as Category GW-3 because it discharges to surface waters.

7.2 Determination of No Significant Risk and RAO Class

Pursuant to 310 CMR 40.0902(3), if the concentration of an oil and/or hazardous material at the disposal site is at or below background levels, then that oil and/or hazardous material shall be considered to pose **No Significant Risk**. Disposal sites at which all oil and hazardous material have been reduced to background levels are eligible for a Class A-1 Response Action Outcome, as described in 310 CMR 40.1036(1).

Since gasoline constituents were not detected in Site soil following soil excavation and, by inference, groundwater at the Site was not impacted by the gasoline release, the remaining concentrations of gasoline at the Site are at or below background concentrations and pose No Significant Risk. No additional risk assessment is necessary.

Pursuant to 310 CMR 40.0006, a Permanent Solution has been achieved at the Site because measures were implemented that attained a level of control of contaminants at the Site such that they don't present a significant risk of damage to health, safety, public welfare, or the environment during any foreseeable period of time.

8.0 FEASIBILITY OF REDUCING COC CONCENTRATIONS TO LEVELS THAT ACHIEVE OR APPROACH BACKGROUND

Pursuant to 310 CMR 40.1020, since background levels of gasoline constituents were achieved at the Site, a feasibility evaluation of reducing gasoline concentrations in soil and groundwater at the Site to levels that achieve or approach background is not necessary.

9.0 DATA USABILITY ASSESSMENT AND DATA REPRESENTATIVENESS EVALUATION

Pursuant to 310 CMR 40.1056(2)(k), all Class A, B, or C Response Action Outcomes are required to provide a Data Usability Assessment documenting that the data relied upon are scientifically valid and defensible and of sufficient level of precision, accuracy, and completeness to support the RAO and to provide a Data Representativeness Evaluation, documenting the adequacy of the spatial and temporal data sets to support the RAO.

9.1 Data Usability Assessment

This Data Usability Assessment documents that the data relied upon are scientifically valid and defensible, and of sufficient level of precision, accuracy, and completeness to support the RAO.

Table 3 summarizes data usability of the laboratory analytical data used in the documentation of the RAO. As indicated, the laboratory analytical data is CAM Compliant Data because MassDEP VPH analytical methods were complied with and no significant data qualifications were raised in the laboratory reports.

Regarding field techniques for collection of soil samples for laboratory analyses, MassDEP guidelines (MDEP, 2002) were followed in collecting and preserving soil samples for laboratory analyses.

Laboratory detection limits were all below limits required to ensure calculation of concentrations for risk assessment.

9.2 Data Representativeness Evaluation

The Data Representativeness Evaluation documents the adequacy of the spatial and temporal data sets to support the RAO. The Conceptual Site Model that was developed from collected subsurface data is included in *Section 6.0*.

9.2.1 Field Screening Data

Soil field screening data collected at the Site by jar headspace screening for gasoline VOCs by PID was obtained from soil samples collected from grab soil samples. The jar headspace screening was performed in accordance with MassDEP headspace screening procedures including calibration of the PID with 250 parts per million isobutylene and using a PID Response Factor setting of 0.5 to approximate the concentration of benzene in air. MassDEP guidance considers a response equivalent to benzene to be appropriate for petroleum vapor screening. Field screening results and laboratory analytical results for duplicate soil samples correlated well. The field screening results should be relied on for gross assessment of area screening of the Site for volatile oil constituents. Jar headspace field screening was used to locate areas of possible gasoline impact, however, in

support of this RAO, quantitative measurement of gasoline concentrations in soil was accomplished by laboratory analysis.

The results of the field screening of the nearest storm drains ruled out a likely pathway of gasoline migration from the Site to utility conduits.

9.2.2 Sampling Rationale

The following discussion justifies that the media and locations sampled are appropriate to support the conclusions of the RAO.

Regarding sampling of post excavation soil for gasoline impact, soil samples were collected from the four walls and two bottom locations in the excavation pit at an approximate depth of 6 to 8 feet BSG. A soil sample from each of these locations was evaluated by VPH laboratory analysis.

The spacing of soil samples collected for headspace screening was approximately five feet which is sufficient to detect variations in remaining gasoline concentrations. One of the soil samples (S-4) was collected directly below the location where gasoline-impacted soil was detected prior to soil excavation.

Groundwater at the Site is not considered to be gasoline impacted because no gasoline constituents were detected either by jar headspace screening or laboratory analysis in soils above the bedrock surface at eight feet BSG and no groundwater was detected to a depth of 10 feet BSG so there was no migration path for the gasoline to groundwater.

There was no potential migration path to indoor air because there nearest building to the Site is approximately 55 feet away.

In Summary, sufficient environmental sampling was performed at the Site to support the conclusions of the RAO.

10.0 LSP OPINION REGARDING RESPONSE ACTION OUTCOME

In the opinion of the LSP of Record, Glenn A. Carlson, LSP # 2974, the requirements of a Class A-1 RAO have been met at the Site as detailed below.

Pursuant to 310 CMR 40.1003 and as detailed below, all necessary and required response actions have been completed at the Site because a Class A-1 RAO has been achieved at the Site and a level of No Significant Risk has been achieved at the Site.

Pursuant to 310 CMR 40.1035, a Class A RAO applies to the Site because:

1. A Permanent Solution has been achieved at the Site as indicated in *Section 7.0*.
2. Response Actions have been conducted at the Site to (a) achieve a level of No Significant Risk as indicated in *Section 7.0*, (b) eliminate or control any source of oil and/or hazardous material, and (c) as detailed in *Section 6.0*, the level of oil and/or hazardous material concentrations in the environment have been reduced to background.

Pursuant to 310 CMR 40.1036(2), a Class A-1 RAO has been achieved at the Site because:

1. A Permanent Solution has been achieved;
2. The level of oil and hazardous material in the environment has been reduced to background;
and
3. One or more Activity and Use Limitations are not required to maintain a level of No Significant Risk.

11.0 PUBLIC NOTIFICATION

Public involvement activities related to the RAO were conducted to satisfy the MCP requirements (note: the Site is not a "Public Involvement Plan Site"). Specifically, the Mayor and Board of Health in the City of Somerville were notified of the availability of the RAO and how they may obtain a copy of the RAO. Refer to *Appendix D* for copies of public involvement notices.

12.0 LIMITATIONS

1. This Action Environmental Solutions PLLC., (Action) study was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same geographical area, and Action observed that degree of care and skill generally exercised by other consultants under similar circumstances and conditions. Action's findings and conclusions must be considered not as scientific certainties, but rather as our professional opinion concerning the significance of the limited data gathered during the course of the study. No other warranty, express or implied is made. Specifically, Action does not and cannot represent that the Site contains no hazardous materials, oil, or other latent condition beyond that observed by Action during its study. Additionally, Action makes no warranty that any response action or recommended action will achieve all of its objectives or that the findings of this study will be upheld by a Massachusetts Department of Environmental Protection (MassDEP) audit.
2. This study and report have been prepared on behalf of and for the exclusive use of Richard Blumsack (The Client), solely for the use of environmental evaluation of the petroleum release at 18 Temple Street, Somerville, Massachusetts ("Site" RTN 3-311000) under the Massachusetts Contingence Plan (MCP - 310 CMR 40.0000). This report and the findings contained herein shall not, in whole or in part, be disseminated or conveyed to any other party, nor used by any other party in whole or in part, without the prior written consent of Action. However, Action acknowledges and agrees that the report may be conveyed to the MassDEP in support of a Response Action Outcome for the Site.
3. The observations described in this report were made under the conditions stated therein. The conclusions presented in the report were based solely upon the services described therein, and not on scientific tasks or procedures beyond the scope of described services or the time and budgetary constraints imposed by the Client. The work described in this report was carried out in accordance with the Terms and Conditions referenced in our standing agreement with the Client.
4. In preparing this report, Action has relied on certain information provided by state and local officials and other parties referenced therein, and on information contained in the files of state and/or local agencies available to Action at the time of the study. Although there may have been some degree of overlap in the information provided by these various sources, Action did not attempt to independently verify the accuracy or completeness of all the information reviewed or received during the course of this evaluation.
5. In the event that the Client or others authorized to use this report obtain information on environmental or hazardous waste issues at the Site not contained in this report, such information shall be brought to Action's attention forthwith. Action will evaluate such

information and, on the basis of this evaluation, may modify the conclusions stated in this report.

6. Unless otherwise specified in the report, Action did not perform testing or analyses to determine the presence or concentration of asbestos at the Site or in the environment at the Site.
7. The purpose of this report was to assess the Site with respect to the requirements of the MCP. 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.
8. The conclusions and recommendations contained in this report are based in part upon the data obtained from a limited number of soil and/or groundwater samples obtained from spaced subsurface explorations. The nature and extent of variations between these explorations may not become evident until further exploration. If variations or other latent conditions then appear evident, it will be necessary to reevaluate the conclusions and recommendations of this report.
9. Where quantitative laboratory analyses have been conducted by an outside laboratory, Action has relied upon the data provided, and has not conducted an independent evaluation of the reliability of these data.
10. The conclusions and recommendations contained in this report are based in part upon various types of chemical data and are contingent upon their validity. These data have been reviewed and interpretations made in the report. As may be indicated within the report, some of these data may be preliminary "screening" level data, and should be confirmed with quantitative analyses if more specific information is necessary. Moreover, it should be noted that variations in the types and concentration of contaminants and variations in their flow paths may occur due to seasonal water table fluctuations, past disposal practices, the passage of time, and other factors. Should additional chemical data become available in the future, these data should be reviewed by Action and conclusions and recommendations presented herein modified accordingly.
11. Chemical analyses have been performed for specific parameters during the course of this Site assessment, as described in the text. However, it should be noted that additional chemical constituents not searched for during the current study may be present at the Site.
12. Action's risk characterization was performed in accordance with generally accepted practices of the MassDEP and other consultants undertaking similar studies. The findings of the risk characterization are dependant on numerous assumptions and uncertainties inherent in the risk characterization process. Sources of uncertainty may include the description of Site

Conditions and the nature and extent of chemical distribution and the use of toxicity information. Consequently, the findings of the risk characterization are not an absolute characterization of actual risks, but rather serve to highlight potential sources of risk at the Site. Although the range of uncertainties has not been quantified, the use of conservative assumptions and parameters throughout the characterization would be expected to err on the side of protection of human health and the environment.