



RELEASE ABATEMENT MEASURE (RAM)
TRANSMITTAL FORM

Release Tracking Number

3.0 - 13232

Pursuant to 310 CMR 40.0444 - 0446 (Subpart D)

A. SITE LOCATION:

1. Site Name/Location Aid: Former Mass Avenue Firestone Store and Gasoline Station

2. Street Address: 2472-2484 Massachusetts Avenue

3. City/Town: Cambridge 4. ZIP Code: 02139-0000

5. Check here if a Tier Classification Submittal has been provided to DEP for this disposal site.

a. Tier IA b. Tier IB c. Tier IC d. Tier II

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 Initial RAM Written Plan (if previously submitted): _____
(mm/dd/yyyy)

2. Submit an Initial Release Abatement Measure (RAM) Plan.

a. Check here if this RAM Plan received previous oral approval from DEP as a continuation of a Limited Removal Action (LRA).

b. List Date of Oral Approval: _____
(mm/dd/yyyy)

3. Submit a Modified RAM Plan of a previously submitted written RAM Plan.

4. Submit a RAM Status Report.

5. Submit a RAM Completion Statement.

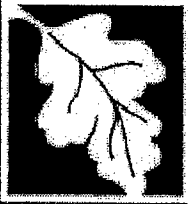
6. Submit a Revised RAM Completion Statement.

7. Provide Additional RTNs:

a. Check here if this RAM Submittal covers additional Release Tracking Numbers (RTNs). RTNs that have been previously linked to a Primary Tier Classified RTN do not need to be listed here. This section is intended to allow a RAM to cover more than one unclassified RTN and not show permanent linkage to a Primary Tier Classified RTN.

b. Provide the additional Release Tracking Number(s) covered by this RAM Submittal. - -

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



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C. RELEASE OR THREAT OF RELEASE CONDITIONS THAT WARRANT RAM:

1. Identify Media Impacted and Receptors Affected: (check all that apply)

- a. Air b. Basement c. Critical Exposure Pathway d. Groundwater e. Residence
- f. Paved Surface g. Private Well h. Public Water Supply i. School j. Sediments
- k. Soil l. Storm Drain m. Surface Water n. Unknown o. Wetland p. Zone 2
- q. Others Specify: _____

2. Identify all sources of the Release or Threat of Release, if known: (check all that apply)

- a. Above-ground Storage Tank (AST) b. Boat/Vessel c. Drums d. Fuel Tank
- e. Pipe/Hose/Line f. Tanker Truck g. Transformer h. Under-ground Storage Tank (UST)
- i. Vehicle j. Others Specify: _____

3. Identify Oils and Hazardous Materials Released: (check all that apply)

- a. Oils b. Chlorinated Solvents c. Heavy Metals
- d. Others Specify: Gasoline residuals

D. 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. Temporary Water Supplies
- 5. Structure Venting System
- 6. Temporary Evacuation or Relocation of Residents
- 7. Product or NAPL Recovery
- 8. Fencing and Sign Posting
- 9. Groundwater Treatment Systems
- 10. Soil Vapor Extraction
- 11. Bioremediation
- 12. Air Sparging
- 13. Excavation 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 <1,500 cy + < 20%

ii.a. Receiving Facility: ARC Town: Eliot State: ME

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

iii. Describe: _____



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

- b. Store
 - i. On Site Estimated volume in cubic yards _____
 - ii. Off Site Estimated volume in cubic yards _____

 iia. Receiving Facility: _____ Town: _____ State: _____

 iib. Receiving Facility: _____ Town: _____ State: _____

- c. Landfill
 - i. Cover Estimated volume in cubic yards _____
Receiving Facility: _____ Town: _____ State: _____

- ii. Disposal Estimated volume in cubic yards _____
Receiving Facility: _____ Town: _____ State: _____

14. Removal of Drums, Tanks or Containers:

a. Describe Quantity and Amount: (3) 6,000 gallon USTs

b. Receiving Facility: Grants Town: Readville State: MA

c. Receiving Facility: _____ Town: _____ State: _____

15. Removal of Other Contaminated Media:

a. Specify Type and Volume: _____

b. Receiving Facility: _____ Town: _____ State: _____

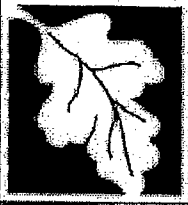
c. Receiving Facility: _____ Town: _____ State: _____

16. Other Response Actions:

Describe: _____

17. Use of Innovative Technologies:

Describe: _____



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E. 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 of this form indicates that a **Release Abatement Measure Plan** is being submitted, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed 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;

> if Section B of this form indicates that a **Release Abatement Measure Status Report** is being submitted, the response action(s) that is (are) the subject of this submittal (i) is (are) being 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;

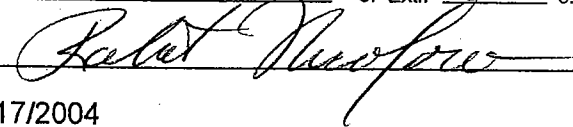
> if Section B of this form indicates that a **Release Abatement Measure Completion Statement** is being submitted, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 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 #: 4290

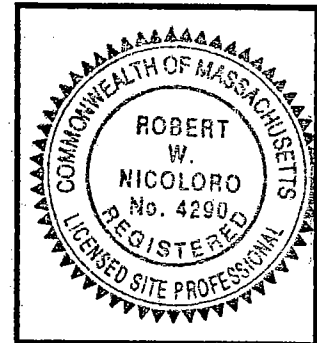
2. First Name: Robert 3. Last Name: Nicoloro

4. Telephone: (781) 245-6606 5. Ext.: 5632 6. FAX: (780) 246-5060

7. Signature: 

8. Date: 09/17/2004
(mm/dd/yyyy)

9. LSP Stamp:





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Pursuant to 310 CMR 40.0444 - 0446 (Subpart D)

F. PERSON UNDERTAKING RAM:

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: VLW Realty Trust
3. Contact First Name: Brandon 4. Last Name: Woolkalis
5. Street: 12 Chatham Street 6. Title: _____
7. City/Town: Cambridge 8. State: MA 9. ZIP Code: 02139-1605
10. Telephone: (617) 216-2000 11. Ext.: _____ 12. FAX: (617) 497-1285

G. RELATIONSHIP TO RELEASE OR THREAT OF RELEASE OF PERSON UNDERTAKING RAM:

1. RP or PRP a. Owner b. Operator c. Generator d. Transporter
 e. Other RP or PRP Specify: _____
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 Undertaking RAM Specify Relationship: _____

H. REQUIRED ATTACHMENT AND SUBMITTALS:

1. Check here if any Remediation Waste, generated as a result of this RAM, will be stored, treated, managed, recycled or reused at the site following submission of the RAM Completion Statement. You must submit a Phase IV Remedy Implementation Plan along with the appropriate transmittal form (BWSC108).
2. 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.
3. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the implementation of a Release Abatement Measure.
4. Check here if any non-updatable information provided on this form is incorrect, e.g. Release Address/Location Aid. Send corrections to the DEP Regional Office.
5. If a RAM Compliance Fee is required for this RAM, check here to certify that a RAM Compliance Fee was submitted to DEP, P. O. Box 4062, Boston, MA 02211.
6. Check here to certify that the LSP Opinion containing the material facts, data, and other information is attached.



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Pursuant to 310 CMR 40.0444 - 0446 (Subpart D)

I. CERTIFICATION OF PERSON UNDERTAKING RAM:

1. I, Brandon Woolkalis, 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: Brandon Woolkalis Signature
3. Title: Owner/Manager

4. For: VLW Realty Trust
(Name of person or entity recorded in Section F)
5. Date: 9/14/04
(mm/dd/yyyy)

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

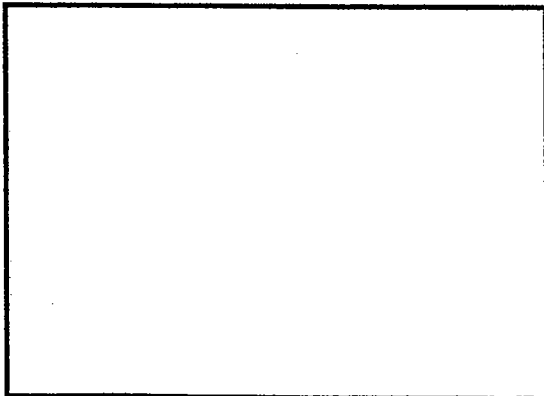
7. Street: _____

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

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

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:)



RELEASE ABATEMENT MEASURE PLAN

**UNDERGROUND STORAGE TANK REMOVAL
2472-2484 MASSACHUSETTS AVENUE
CAMBRIDGE, MASSACHUSETTS
RTN 3-0013232**

SEPTEMBER 2004

RELEASE ABATEMENT MEASURES PLAN
UNDERGROUND STORAGE TANK REMOVAL
2472-2484 MASSACHUSETTS AVENUE
CAMBRIDGE, MASSACHUSETTS
RTN 3-0013232

Prepared for:

VLW Realty Trust
10 Chatham Street
Cambridge, Massachusetts

Prepared by:

MACTEC Engineering and Consulting, Inc.
107 Audubon Road
Wakefield, Massachusetts

Project Number: 3650040007.05

September 2004

RELEASE ABATEMENT MEASURE PLAN
 UNDERGROUND STORAGE TANK REMOVAL
 2472-2484 MASSACHUSETTS AVENUE
 CAMBRIDGE, MASSACHUSETTS

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RELEASE ABATEMENT MEASURE PLAN
UNDERGROUND STORAGE TANK REMOVAL
2472-2484 MASSACHUSETTS AVENUE
CAMBRIDGE, MASSACHUSETTS

LIST OF FIGURES

Figure No.	Title
Figure 1	Site Location Map
Figure 2	Site Plan

1.0 GENERAL INFORMATION

VLW Realty Trust (VLW) has requested that MACTEC Engineering and Consulting, Inc. (MACTEC), perform Licensed Site Professional (LSP) services during the removal of three underground storage tanks (USTs) and associated piping at the property located at 2472-2484 Massachusetts Avenue in Cambridge, Massachusetts (hereafter referred to as the Site). The USTs were used to store gasoline for a service station that formerly occupied the Site.

On behalf of VLW, MACTEC has prepared this Release Abatement Measures (RAM) Plan in accordance with the MCP (310 CMR 40.0444) and will oversee the tank removal activities. The Licensed Site Professional (LSP) is:

Mr. Robert Nicoloro (License Number 4290)
MACTEC Engineering and Consulting, Inc.
107 Audubon Road, Suite 301
Wakefield, Massachusetts 01880
Phone: (781) 245-6606
Fax: (781) 246-5060

1.1 PARTY CONDUCTING RAM

The party conducting the RAM and the current owner of the Site is:

VLW Realty Trust
10 Chatham Street
Cambridge, Massachusetts 02142
Contact: Mr. Brandon Woolkalis
Phone: 617-216-2000

1.2 PROPERTY DESCRIPTION

The property is located at 2472-2484 (2480) Massachusetts Avenue in Cambridge, Massachusetts and is situated on an 11,507 square foot parcel of land identified in a commercial and residential zoned urban neighborhood (Figure 1). Until recently, the property was used as a gasoline service station. Former use of the property included a Firestone Tire store in addition to the gasoline station operations. Currently, the majority of the property is partially bare ground as recent decommissioning and demolition activities razed the building that until recently occupied a portion of the property. Concrete slabs are present above the USTs and surrounding the former gasoline pump islands. The pump islands are still present; however, the pumps and the canopy that covered the islands have been removed. There are currently no structures on the property.

At the current stage of the on-going Supplemental Phase II and Phase III pre-design assessment, the Disposal Site is identified as the area of the USTs, a portion of the pump island and the west and southwest portion of the property. The Disposal Site does not include the location of the former gasoline station building based on history of operations and field screening of soil.

MACTEC Engineering and Consulting, Inc.

1.3 DISPOSAL SITE HISTORY

The property was used as a gasoline service station from the 1930s until August 2004 when the property was sold to VLW Realty Trust. There are currently three cathodically protected, 6,000-gallon, steel USTs with leak-detection systems present on site that were formerly used to store gasoline (GES, 1995). These tanks reportedly have functioning leak-detection systems. The USTs are no longer in commission and are awaiting closure as addressed in this RAM Plan. The tanks, which were installed circa 1984, replaced three gasoline USTs. No documentation of the removal of these pre-1984 tanks is known to exist. In addition, two 510-gallon USTs, one used to store diesel and the other waste oil, have been removed from the site through past owner activities. Documentation from the removal of these tanks is not available.

The subject property is currently undergoing Phase II Supplemental Comprehensive Site Assessment (Phase II) and Phase III Identification, and Selection of Comprehensive Remedial Action Alternatives (Phase III). The Phase III is in its initial conception pending completion of Phase II actions associated with the decommissioning of the referenced USTs. The Supplemental Phase II is being conducted to evaluate temporal and seasonal variation of the extent of groundwater contamination and the possible presence of a soil contamination source area in the location of the referenced USTs.

The referenced Phase II activities are being conducted in compliance with MCP as a result of oil and hazardous materials (OHM) present in environmental media discovered during a site assessment conducted by Groundwater & Environmental Services, Inc., in 1995. This 1995 assessment led to the notification and designation of the Site as a Disposal Site (RTN # 3-0013232) by the Massachusetts Department of Environmental Protection (DEP). In 1997 Eklund Associates classified the Site as a Tier II Disposal Site (Eklund, 1997). The results of site assessments conducted to this point have identified degradable OHM in groundwater at concentrations that have decreased over time but exceed appropriate MCP standards (risk-based Method 1 standards for GW-2/GW-3 groundwater category). There are ten groundwater monitoring wells located on the property and five monitoring wells located down gradient and off site adjacent to residential property located to the west and southwest of the property. There have been 21 borings conducted on site. Other groundwater investigation wells and borings have been installed in the area of the subject property resulting from investigations of other Disposal Sites and releases not associated with the subject Site. Currently, there are three monitoring well locations, two at the west boundary of the Site (BE-7, BE-8) and one near the former diesel underground storage tank (EW-1) located on Site where the presence of petroleum hydrocarbons has been identified in groundwater at concentrations slightly above the MCP risk-based Method 1 standards for the S-2/GW-2, and S-2/GW-3 soil and groundwater categories. A groundwater sample from monitoring well BE-4, located at the southeast corner of the pump island traffic pad, detected the presence of petroleum hydrocarbons in groundwater at concentrations slightly above the MCP risk-based Method 1 standards for the S-2/GW-2. As a result, continued assessment and compliance with the MCP is necessary for this Site (Figure 2).

1.4 PURPOSE OF RAM PLAN

The RAM is being implemented to decommission the three out-of-service USTs and two pump islands associated with the former gasoline service station. Although there is no evidence to suggest one or all of these USTs and/or associated piping have leaked, as the tanks were equipped with leak detection

SECTION 1

equipment, the potential exists for encountering soil impacted with OHM during the tank removal activities either from a release from the existing USTs/piping or an historic release.

This RAM includes a Focused Risk Assessment (FRA) to address potential exposure that the remediation workers may encounter during UST removal, and a Focused Feasibility Study to determine the feasible remedial action alternative for UST closure.

2.0 BACKGROUND

2.1 DESCRIPTION OF RELEASE OR THREAT OF RELEASE

Because all product, except for residual sludge, has been removed from the USTs and the gasoline pump dispensers have been removed from the Site, neither feature currently poses a threat of a release. However, consideration is given in this RAM Plan of the potential for either the USTs or the associated piping from the UST to have historically contributed OHM to soil and groundwater. The assessment activities to date have not confirmed if such a release has occurred at these property features. Previous investigations have identified residual OHM in soil and groundwater at the Site, possibly from the area of these USTs, an on-site historic release from former USTs, from an off-site source of which there are several nearby candidates, or a co-mingling of all or some of these likely sources.

2.2 SITE CONDITIONS

2.2.1 Soil

During May 2004, five soil borings (B1 through B5) were advanced on-site at locations in and around the former diesel UST area and dispensing pump area as well as locations assumed to be down-gradient of the former diesel UST, the existing gasoline USTs and dispensing islands (Figure 2). Soil samples were collected from each boring. Based on the analytical results from the samples collected, there are no data that would indicate that soil in the area of the former diesel UST or south of the existing fuel dispensing island is significantly impacted above the depth of 12 feet below ground surface (bgs) to warrant further Response Actions. A soil smear zone appears to exist on-site deeper than 12 feet (bgs) where OHM, primarily in the form of Volatile Organic Compounds (VOCs) or Volatile Petroleum Hydrocarbons (VPH), have been captured in the pore zone between the fine to coarse grain sands in contact with the water table. The smear zone occurs with the seasonal fluctuation of groundwater.

2.2.2 Groundwater

Several investigations completed as Supplemental Phase II and Phase III pre-evaluation sampling have been conducted by MACTEC during 2004. The first sampling event occurred on March 10, 2004, during which wells EW-1, EW-2, BE-11, and BE-9 were sampled (Figure 2). The results indicated that the levels of oil and hazardous materials present in past groundwater sampling events have decreased both on- and off-site since previous sampling events conducted by others. The March 2004 groundwater results indicate that, of the four locations sampled, three locations, BE-9, BE-11 (both off-site locations) and EW-2 did not exceed the MCP Risk-based Method 1 standards for GW-2/GW-3. On-site location EW-1, located near the former diesel UST, exceeded Risk-based Method 1 standards of groundwater category GW-2 for C₅-C₈ Aliphatic Volatile Petroleum Hydrocarbons (VPH) at 1520 micrograms per liter (ug/l) as compared to the RCGW-2 of 1000 ug/l.

Groundwater from wells MW-1, MW-2, MW-3, BE-3, BE-7, BE-8, BE-10R, and BE-12 (Figure 2) was sampled during a May 2004 event. Petroleum Hydrocarbons (EPH) and VPH were detected in all of the monitoring wells. Only two wells, BE-3 and BE-10R showed detections of VOCs. Groundwater concentrations in the on-site perimeter wells show exceedences slightly over the GW-2 Method 1 risk

based standards. There are no exceedences of such standards off-site (BE-10R and BE-12). These well locations remain within the boundaries of the Disposal Site pending continued monitoring results and evaluation.

During August 2004, MACTEC sampled wells BE-3, BE-4, and BE-14. EPH and VPH compounds were detected in wells BE-4 and BE-14. The location of BE-14 is within the building maintenance bay. This well location was discovered recently and not shown on any figures. Concentrations of EPH and VPH compounds in well BE-4 were the highest of any well. VPH fractions in the groundwater samples collected from well BE-4, exceed GW-2 Method 1 risk based standards.

Interpretation of groundwater flow gradient from these groundwater elevations taken during the three sampling events indicates groundwater flow direction to be somewhat radially trending slightly toward the west and southwest.

2.3 SURROUNDING POTENTIAL RECEPTORS

2.3.1 Human Receptors

Soils in the area of the subject USTs are expected to be sand and gravel urban fill with finer sands deeper in the soil column based on soil boring results. The surrounding area is urban and densely populated with residential and commercial land use. Because a temporary chain-link fence currently restricts access to the Site, no exposures to site soils are anticipated for pedestrians passing by the Site. However, there is a potential for trespassers to access the Site.

Based on current use of the Site as a vacant lot, and that groundwater is not used at the site or surrounding immediate area, the applicable soil category that currently applies during this RAM is S-3. The rationale for this soil categorization is as follows:

- On-site current land use - Soil is considered accessible given that soil is located less than three feet from the surface in an area partially paved;
- Children are not present at the Disposal Site; and
- An adult's frequency and intensity of use are both considered to be low.

However, given the planned response actions and the potential for contaminated subsurface soil at or near the USTs, the S-2 soil category may apply during the RAM. During the RAM activities, an adult's frequency and intensive other than trained Remediation workers conducting the work will be low.

Based on current and future use of soils beneath pavement of Edmunds Street, the applicable soil category for current and future use is S-3, assuming that Edmunds Street will remain paved. During a limited time in the future when a small portion of the pavement on Edmunds Street may be removed for construction, the applicable soil category will be S-2 until the disturbed portion of Edmunds Street is repaved. Soil category S-2 may apply to all soil beneath Edmunds Street depending on the number of children living on that street. A demonstration of frequency and intensity of children [310 CMR 40.0933 (7)(b)(2)] at the Edmunds Street portion of the Disposal Site has not been conducted.

SECTION 2

As established by the MCP, groundwater at all Disposal Sites shall be considered a potential source of discharge to surface water and shall be categorized, at a minimum, as category GW-3 (310 CMR 40.0932). Based on current use of the Site as a vacant lot, the applicable additional groundwater category is GW-2 given that the groundwater is located within 30 feet of an existing occupied structure, to include three (3) residential properties, and the average annual depth to groundwater is 15 feet or less. Category GW-2 groundwater is considered to be a potential source of vapors of oil and hazardous materials to indoor air.

The Site is not within an Interim Wellhead Protection Area, a Potential Drinking Water Source Area, nor is there any groundwater wells used for potable water source at or in the area of the Site. Therefore, a groundwater category of GW-1 does not apply to this Site, and is not expected to apply to this Site in the foreseeable future.

Based on the results of investigations conducted by MACTEC at the Site, groundwater is anticipated to be at a depth of approximately 12 to 14 feet below the ground surface. The USTs, assumed to be eight feet in diameter, are expected to be buried two to three feet below the ground surface. Based on this information the proposed remedial activities are not anticipated to encounter groundwater.

2.3.2 Ecological Receptors

The Site is located in an urban area and buildings or asphalt pavement with small areas of landscaping covers the surrounding areas.

The Site is located within the Mystic River Basin. The closest surface water body is Alewife Brook, located approximately 1,300 feet to the northwest. According to the Massachusetts Surface Water Quality Standards (314 CMR 4.00), this water is classified as Class B surface water. Class B waters are designated as a habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. Where designated, they shall be suitable as a source of public water supply with appropriate treatment. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value. Based on the distance of the Site from the Alewife Brook and detected concentrations of OHM are below the GW-3 Method 1 standards at the boundary of the Site, the Alewife Brook is not considered to be a potential point of ecological exposure in regards to this Site.

According to the Massachusetts Natural Heritage Atlas, 2000-2001 Edition there are no Priority Habitats of Rare Species, Estimated Habitats of Rare Wildlife, or Certified Vernal Pools on the Site within the City of Cambridge or within the nearby Cities of Somerville and Arlington.

3.0 RAM IMPLEMENTATION

3.1 OBJECTIVES

The objective of this RAM is to decommission and remove three out-of-use USTs and contaminated soil, if encountered, that have resulted from a release of OHM. The removal of the USTs and any impacted soil associated with the USTs or as a result of another release source will support the overall solution for the Site. Furthermore, it is anticipated that following the completion of the RAM activities, the information acquired during confirmatory sampling conducted to assess the effectiveness of the remedial action will assist in determining if additional Response Actions are necessary to achieve a condition of No Significant Risk in support of a Response Action Outcome Statement.

3.2 RAM ACTIVITIES

Response Actions likely for this property warranted by the detected presence of OHM include the following:

- Removal and off-site disposal as demolition debris of the UST top concrete slab and pump island traffic pad;
- Evacuation, containerization, and off-site disposal of any residual liquid or sediment from inside the USTs;
- Excavation, removal, cleaning, and off-site disposal of three 6,000 gallon gasoline USTs in accordance with National Fire Protection Association and American Petroleum Institute guidelines and federal, state, and local regulations;
- Removal and off-site disposal of the concrete pump island and associated piping;
- UST closure sampling in accordance with the Commonwealth of Massachusetts Underground Storage Tank Closure Assessment Manual;
- Contaminated soil removal from the UST areas, if encountered; and
- Backfill of resulting voids from UST and contaminated soil removal with clean fill imported from off-site.

If contaminated soil is encountered as a result of the UST removals, either from a release from the USTs or an historic release, excavation will be conducted in a limited area proximate to the UST area. If contaminated soil appears to extend to groundwater (estimated to be at approximately 12-14 feet below ground surface) or if contamination appears, from visual observations and field sampling, to be wide spread, removal activities will involve soil removal limited to the immediate area of the UST excavation followed by an investigation to determine the extent of the release.

Future response actions may include:

- Immediate Response Actions (IRA);
- An additional RAM;
- Phase II Comprehensive Site Assessment (CSA) to be completed during the site re-development in the form of sampling and continued groundwater monitoring;
- Phase II CSA Completion Report, preparation of a Risk Characterization, Phase III Identification of a Selected Remedial Action Alternative for residual OHM in soil and groundwater;
- Passive vapor barrier installation designed for and installed with any new building slab construction;
- Source area removal actions;
- In-situ treatment such as soil gas venting, enhanced biological treatment;
- Engineered barrier construction; and/or
- Combinations of the above.

3.2.1 Environmental Monitoring Plan

During tank removal, an assessment for the presence of OHM will be conducted on the soils surrounding the tanks, within the pipe trenches, and beneath the former dispensers pump island. This assessment will be accomplished using visual and olfactory observations, as well as jar headspace screening of soil samples for VOCs using a photoionization detector (PID). The collection of samples for laboratory analysis will be based on the results of these evaluations. Screening frequency and locations will be based on guidance presented in the Commonwealth of Massachusetts Underground Storage Tank Closure Assessment Manual.

3.2.2 Soil Management

If contaminated soil is excavated as part of the UST removal activities, the soil will be staged on 6-mil polyethylene sheeting within a constructed bermed area. MACTEC will oversee the excavation activities and will collect confirmatory samples following the removal of the impacted material. Waste characterization samples will also be collected from the temporary stockpiled soil to determine waste characterization and disposal requirements. The stockpile will be covered with 6-mil polyethylene sheeting at the end of each workday, and the cover will be secured with tires, hay bales, or other appropriate methods. The stockpile will be staged on-site within the fence enclosure until the disposal facility approves the material for shipment and treatment/disposal. Once approved, the material will be transported to the selected treatment/disposal facility and tracked under an appropriate shipping document in accordance with the MCP (310 CMR 40.0000 and 310 CMR 30.0000).

As stated in the MCP (310 CMR 40.0442(4)), Release Abatement Measures shall not involve the excavation and disposal of greater than 500 cubic yards or the excavation and off-site treatment,

recycling, or re-use of greater than 1,500 cubic yards (cumulative, for the disposal site in question) of soil contaminated by OHM at concentrations equal to or greater than applicable Reportable Concentrations, unless a statement is provided in the RAM Plan by the RP, PRP or Other Person conducting the response actions certifying that, based on information and opinions provided by an LSP, such persons have sufficient financial resources to manage excavated materials in the manner and time frames specified in 310 CMR 40.0030. It is assumed that soil contaminated with OHM, if encountered, will be suitable for acceptance at a treatment, recycling, or re-use facility and it is not anticipated that greater than 1,500 cubic yards of soil contaminated by OHM will require removal. A 20% margin of error in calculating the anticipated volume of soil applies to this number. If contamination is widespread, soil excavation will stop above the water table in the immediate area of the UST excavation. A remedial alternatives analysis will then be conducted to determine the most appropriate course of action.

3.2.3 Dewatering

No dewatering activities are anticipated in association with the planned remedial activities.

3.2.4 Remediation Wastes

The USTs and appurtenances will be drained, cleaned and disposed of at an approved tank scrap yard. Materials generated during tank cleaning will be containerized, manifested, and transported to an approved disposal/treatment or recycling facility under a hazardous waste manifest (MA01Waste) or Bill of Lading. Drums containing gasoline sediment residuals may be generated (estimated at 10 to 15 drums) during tank vacating. These drums will likely be hazardous waste flammable soils or liquids including one drum for personal protective equipment and will be transported to the appropriate off-site disposal facility. Contaminated soil will be stockpiled on site and covered by 6-mil polyethylene sheeting until results of characterization analysis are received. In the unlikely event that gasoline saturated soils are discovered, such soil will be removed from the Site to an approved facility for temporary staging pending final disposal/treatment facility approval.

3.3 FOCUSED RISK CHARACTERIZATION

This RAM Plan does not include a focused risk characterization due to the lack of data specific to the UST area. The decommissioning of the USTs involves the use of 40 hour OSHA trained remediation contractor to excavate the USTs, remove the UST from the ground and backfill the excavation with clean fill.

In the event that soil along side or below the USTs is contaminated by OHM above Reportable Concentrations, this soil will be excavated to the extent feasible during the UST removal actions. The decision to excavate and the extent of excavation will be based on field observations, and field screening using headspace analysis. Confirmation samples will be collected of soil identified by the field activities to confirm the presence or absence OHM at significant concentration. The results of laboratory analyses will be used to evaluate the potential risk of harm to human health, safety, public welfare and the environment from soil remaining in the excavation and where additional Response Actions are warranted.

3.4 RISK REDUCTION MEASURES

The removal of the USTs and soils significantly impacted by OHM, if any are encountered, and to the extent removal is feasible under this RAM, will only improve site conditions. A determination will be made during the UST removal actions whether or not the UST area and a specific tank or tanks and/or associated piping are responsible for a release of OHM to soil in the area. Emptying of the gasoline from these USTs by the previous property owner has resulted in the removal of any potential continued release, assuming a scenario that the USTs are responsible for a release of OHM. The removal of the USTs will complete the removal of the potential source. The remaining consideration is the presence of OHM at concentrations above the Method 1 Standards in soil surrounding the USTs and any impact to groundwater. Removal of contaminated soil as determined by field sampling and analysis to the extent it is feasible is also considered a risk reduction action that will improve the condition of the site.

The potential for volatilization of gasoline constituents will be monitored during the excavation/and exposure of the USTs, associated piping and soil. Action levels will be established in the site health and safety plan for the VOCs at the excavation work area. Monitoring for VOCs at the excavation will be conducted periodically using a photoionization instrument. Stop-work orders will be implemented in the event monitoring readings indicate a sustained exceedence of the action level. In this scenario, soils generating the VOC vapors in excess of the action level will be isolated by a filter fabric and clean fill will be placed in the excavation to eliminate the volatilizing. Remedial action alternatives will be evaluated at this point. For a scenario where the monitoring of VOCs at the excavation identifies intermittent exceedences, the rate of excavation of contaminated soil, if present, will be varied to keep volatilizing controlled and monitoring readings averaged below the action level.

3.5 FOCUSED FEASIBILITY STUDY

This RAM Plan includes a focused feasibility study associated with the tank removal and, if encountered, the removal of soil from the UST area that has been impacted by a release of OHM. The focused feasibility study is conducted to determine the feasibility of removing the tanks and reducing concentrations of OHM to levels that achieve a condition of No Significant Risk. This focused feasibility study does not address residual OHM in groundwater at the Site or in soil resulting from another release source other than from the USTs that are undergoing decommissioning under this RAM Plan.

3.5.1 Remedial Action Objectives

The objective of remedial actions to be conducted under this RAM are to remove out-of-service USTs eliminating a potential source of soil and groundwater contamination at the Site and to prevent or control off-site migration of residuals resulting from a release of OHM from the USTs being removed, if such a release has occurred.

3.5.2 UST Closure

Removal of the USTs is feasible because access to the tanks is not impeded by any structures or underground utilities. Because the excavation of the USTs is feasible, the alternative of leaving the USTs in their current condition or abandoning the USTs in place is not permitted under Massachusetts Fire Prevention Regulations (527 CMR 9.00) for this particular Site. Therefore, the only option available for decommissioning is excavation and removal of the USTs.

3.5.3 Soil Remediation

This section evaluates options to reduce OHM in Site soil resulting from a release from the USTs to levels that achieve a Condition of No Significant Risk if a release from the USTs is discovered during removal activities. This evaluation assumes that soil contaminated with OHM as a result of a release from the USTs, if any, is limited to soil above the groundwater table and is not widespread. If it is discovered that a release from the USTs has impacted soil below the groundwater table or is widespread, removal actions will cease with limited soil excavation up to 1,800 cubic yards (1,500 cubic yards plus a margin of growth of 20%) as determined feasible. Remedial action alternatives will be evaluated either as a Phase III evaluation, RAM Modification or IRA. Alternatives evaluated include no action, excavation and off-site disposal or treatment, on-site treatment, or isolation and containment.

- No Action – This remedial action alternative would involve no action to address OHM in soil resulting from a release from the USTs. To determine if this alternative would meet the remedial objectives for the Site, a risk characterization would be performed. However, for a scenario where the volume of impacted soil is limited to the immediate UST area, and since the excavation would already be open as a result of UST removal and the equipment on site, the incremental cost of removing a limited amount of soil would not be prohibitive. If the presence of OHM in soil is widespread and/or involves groundwater contamination above Method 1 Standards or risk-based cleanup goals, then a no-action alternative would not achieve a condition of No Significant Risk and therefore would not meet the site closure objectives.
- Limited excavation and off-site disposal – This alternative would involve the excavation and removal of up to 500 cubic yards of soil requiring off-site disposal or up to 1,800 cubic yards (1,500 cubic yards plus a margin of growth of 20%) of soil that could be accepted at a treatment, recycling, or re-use facility. Excavation of soil would be limited to soil that is above the groundwater table. Excavation below the groundwater table would not be feasible under this RAM given the complexities associated with treating groundwater and controlling/removing OHM from the saturated zone. Furthermore, since it is known that groundwater at the Site is impacted with residual OHM, replacement soil at the UST excavation at or below the groundwater table would likely be re-contaminated by OHM residuals in the groundwater from the area surrounding the UST excavation. The additional cost of excavating below the groundwater table would be substantial and disproportionate to the scope of the RAM and would involve a comprehensive remedial action for a permanent solution.
- On-site treatment – This alternative would involve treating the soil on site to reduce levels of OHM below applicable standards or fixate/stabilize OHM residual in a manner that will reduce or eliminate mobility and physiological availability. Although several options exist for on-site treatment of soils contaminated with gasoline residuals, these options are most cost-effective at sites where contamination is wide-spread and not limited to the UST excavation area soils. If during UST removal activities it is discovered that contamination is wide-spread, these options would be evaluated as a potentially feasible remedial action alternative for a comprehensive response action.
- Isolation and containment – This alternative would involve the construction of an engineered barrier to isolate and contain soil impacted by OHM. Under MADEP guidelines, the use of an

engineered barrier shall be limited to disposal sites where there are no other feasible alternatives to reduce concentrations of OHM in soil to levels below Upper Concentration Limits and/or fixate contaminants present in soil in a manner that will eliminate environmental mobility and physiological. As discussed above, a feasible alternative exists to reduce levels of OHM in soil through excavation during the implementation of this RAM if residual OHM in soil is not widespread. If contamination is widespread, and it is determined that excavation and off-site disposal or on- or off-site treatment are not feasible, this alternative would be evaluated as a Permanent or Temporary Solution.

Based on the above descriptions, the most feasible approach in this RAM is the excavation of USTs and contaminated soil in the immediate area of the UST excavation. These excavation activities will be continuously assessed as to the nature and extent of contamination, the degree of volatilization during excavation, and the feasibility of excavating all of the contaminated soil during this RAM. The planned excavation will remove contaminated soil, if encountered, to a depth that is below the tanks but above the water table, and horizontally within the excavation to a point where it is no longer feasible and cost-effective to continue, or the extent of the contaminated soil has attenuated.

3.6 PERMIT REQUIREMENTS

The contractor selected for the work (EQ Northeast, Inc., of Wrentham, Massachusetts) will be responsible for contacting Dig Safe and obtaining all necessary local permits for the work. These permits include but may not be limited to a permit from the Cambridge Fire Department, a street and sidewalk construction bond, and a construction permit to conduct the excavation.

3.7 SCHEDULE

The RAM is expected to commence on or about September 20, 2004. Work is expected to take 4-5 days.

