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June 22, 2010

Massachusetts Department of Environmental Protection
Southeast Regional Office
20 Riverside Drive
Lakeville, Massachusetts 02347

RE: Response Action Outcome Statement Report
Former Keith Junior High School
70 Hathaway Boulevard, New Bedford, Massachusetts
Release Tracking Number (RTN) 4-15824

To Whom It May Concern:

TRC Environmental Corporation (TRC) is submitting the attached Response Action Outcome (RAO) Statement to the Massachusetts Department of Environmental Protection (MassDEP), on behalf of the City of New Bedford for a portion of the Former Keith Junior High School (KJHS) property. The RAO Statement was prepared per the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000).

This RAO Statement is associated with an underground storage tank (UST) and is tracked under RTN 4-15824, assigned to a UST-related reporting condition and Immediate Response Action (IRA) under 310 CMR 40.0412 and 310 CMR 40.0313(2) of the MCP. The attached RAO Statement documents the achievement of a Class A-1 RAO per 310 CMR 40.1036(1) of the MCP.

If you have any questions regarding this submittal, please contact the undersigned at (978) 970-5600.

Sincerely,

TRC Environmental Corporation

David M. Sullivan, LSP, CHMM
Senior Project Manager

Attachment

cc: S. Alfonse, City of New Bedford – Dept. of Environmental Stewardship
L. Oliveira, City of New Bedford – School Department



RESPONSE ACTION OUTCOME STATEMENT REPORT

Former Keith Junior High School UST

**70 Hathaway Boulevard
New Bedford, Massachusetts
Release Tracking Number (RTN) 4-15824**

Submitted to:

Massachusetts Department of Environmental Protection
Southeast Region Main Office
20 Riverside Drive
Lakeville, Massachusetts 02347

Prepared by:

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On behalf of:

City of New Bedford – School Department
c/o Department of Environmental Stewardship
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June 2010

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1.0 INTRODUCTION

TRC Environmental Corporation (TRC) completed the following Response Action Outcome (RAO) Statement for submittal to the Massachusetts Department of Environmental Protection (MassDEP), on behalf of the City of New Bedford (City) under the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000). The RAO Statement documents the completion of the activities taken to address soil impacts associated with a former underground storage tank (UST) tracked under Release Tracking Number (RTN) 4-15824. The Site is located on the grounds of the Former Keith Junior High School (KJHS) at 70 Hathaway Boulevard in New Bedford, Massachusetts. A Site Location Map is included as Figure 1.

This report is subject to the limitations included in Appendix A.

1.1 Release Background

RTN 4-15824 tracks a 72-hour notification associated with the detection of soil headspace readings in excess of 100 parts per million by volume (ppmv) within ten feet of a UST (MassDEP, 2000).

1.1.1 Sequence of Events Leading to the Identification of the Reporting Condition

In October 2000, a geotechnical investigation was conducted at KJHS by Miller Engineering and Testing, Incorporated (Miller) of Manchester, New Hampshire (VHB, 2000), as part of a new school facility siting investigation (VHB, 2001). Personnel from Vanasse Hangen Brustlin, Incorporated (VHB) provided environmental oversight during the geotechnical investigation. On October 11, 2000, during the advancement of a soil boring in the vicinity of an existing 10,000-gallon No. 2 fuel oil UST, VHB observed odors in soil from a soil boring advanced within 10 feet of the UST. A soil headspace reading from a subsequent test pit in the area exceeded 100 ppmv (specifically 295 ppmv). Verbal notification of the observed condition was provided to MassDEP on October 13, 2000 at 2:47 PM within 72 hours of discovery. RTN 4-15824 was assigned to the reported condition by MassDEP (VHB, 2000).

1.1.2 Initial Response Actions Undertaken by Others

Vanasse Hangen Brustlin

VHB subsequently submitted a written Immediate Response Action (IRA) Plan to MassDEP on November 20, 2000 detailing the following actions (VHB, 2000):

- Excavation, stockpiling, analysis and off-site disposal of up to 500 cubic yards of impacted soil;
- UST tightness testing; and
- Soil and groundwater sampling and analysis.

VHB's November 2000 IRA plan included surface and subsurface soil sample analytical results, most of which were unrelated to the fuel oil UST-related reporting condition tracked under RTN 4-15824. For example, analyses of soil samples were conducted for lead and other heavy metals, which are not components of fuel oil and which were not collected from locations proximate to the UST. The metals analyses of the soil samples collected by VHB are therefore unrelated to RTN 4-15824 and are not otherwise addressed by this RAO statement.

Based on the tightness test, VHB reported that a leak had occurred from a prior UST that was replaced in 1989 (i.e., the results of testing on the then current [replacement] UST showed no indication of leakage). VHB further reported that the results of soil and groundwater sampling indicated no Imminent Hazard and that no other IRA conditions were present (VHB, 2000 and 2001).

In February 2002, VHB conducted additional site investigation work. VHB concluded that concentrations detected in soil were within background levels typically observed in urban areas at the time of the investigation. An IRA Completion Statement was submitted to MassDEP on February 19, 2002.

1.1.3 Initial Activities Undertaken by TRC

TRC's Licensed Site Professional (LSP) performed an initial site reconnaissance of the KJHS property in October 2008.

TRC conducted soil sampling on November 14, 2008 in the vicinity of the UST.

TRC utilized New England Geotech of Jamestown, Rhode Island to perform drilling activities under TRC field supervision. The borings were advanced using Geoprobe® direct push methods. The samples were visually examined in the field and field screened using the MassDEP jar headspace methodology and a photoionization detector (PID). Samples were collected from each boring at various depths to evaluate the extent of potential impacts.

TRC advanced 11 soil borings to various depths. The 11 soil borings included six in the vicinity of the former UST (UST-1S, UST-2N, UST-3E, UST-4E, UST-4W, and UST-5C). The soil analytical data collected by TRC in the vicinity of the former UST only are summarized in Table 1.

Soil headspace readings for the borings where field screening was performed ranged from 0.0 ppmv to 29.1 ppmv with the highest detection located in the vicinity of the former UST. Soil samples collected in the vicinity of the former UST were submitted for laboratory analysis of Extractable Petroleum Hydrocarbons (EPH) including target PAHs and total lead. Groundwater sampling was not conducted since soil impacts were not observed below the bottom elevation of the UST (non-detect headspace readings were observed in soil samples collected from depths below the bottom elevation of the former UST).

1.2 Objective

TRC completed this RAO Statement per 310 CMR 40.1056 (Content of Response Action Outcome Statements) to document the achievement of No Significant Risk and a Class A-1 RAO.

1.3 RAO Minimum Content Information – 310 CMR 40.1056(1)

1.3.1 Disposal Site Information – 310 CMR 40.1056(1)(a)

Consistent with 310 CMR 40.1056(1)(a) of the MCP, the following table summarizes Disposal Site Information.

Site/Disposal Site Name	Former Keith Junior High School
Address	70 Hathaway Boulevard
City	New Bedford
Release Tracking Number (RTN)	4-15824

The City submitted a Special Project Application for RTN 4-15685 (associated with the Parker Street Waste Site; PSWS), which includes RTN 4-15824.

1.3.2 Class of Response Action Outcome – 310 CMR 40.1056(1)(b)

As described herein, the response actions conducted at the Site by TRC succeeded in achieving a Class A-1 RAO consistent with 310 CMR 40.1036(1) of the MCP.

1.3.3 Risk Characterization Method Employed – 310 CMR 40.1056(1)(c)

The response action has successfully reduced concentrations to background levels per 310 CMR 40.0901(3). As described herein, a condition of No Significant Risk has been achieved.

1.3.4 Relationship to Other RAO Statements – 310 CMR 40.1056(1)(d)

No other RAO statements have been filed for the RTN 4-15824 site. There are no other response actions for the RTN 4-15824 site.

1.3.5 Class C RAO/Post-RAO Active Operation and Maintenance – 310 CMR 40.1056(1)(e)

Not applicable. A Class A-1 RAO applies to this Site.

1.3.6 Activity and Use Limitation Summary – 310 CMR 40.1056(1)(f)

A Class A-1 RAO applies to this Site. An Activity and Use Limitation (AUL) is not required to achieve a condition of No Significant Risk for the RTN 4-15824 site.

1.3.7 Licensed Site Professional (LSP) Opinion – 310 CMR 40.1056(1)(g)

The LSP Opinion provided on Form BWSC-104, the RAO Statement Transmittal Form, accompanies this RAO Statement in Appendix B.

1.3.8 Certification of Submittal – 310 CMR 40.1056(1)(h)

The Certification of Submittal on Form BWSC-104, the RAO Statement Transmittal Form, accompanies this RAO Statement in Appendix B.

1.3.9 Upper Concentration Limits – 310 CMR 40.1056(1)(i)

None of the oil or hazardous material (OHM) constituents detected at the RTN 4-15824 site exceed corresponding Upper Concentration Limits (UCLs).

1.3.10 Related to Compendium of Analytical Methods – 310 CMR 40.1056(1)(j)

The analytical data supporting this RAO statement were generated pursuant to the MassDEP Compendium of Analytical Methods.

2.0 RESPONSE ACTION OUTCOME SUPPORTING DOCUMENTATION

2.1 Site Location Description – 310 CMR 40.1056(2)(a)

The Site is located at the property of the former Keith Junior High School, an 11.3-acre parcel at 70 Hathaway Boulevard in New Bedford, Massachusetts. The property where the Site is located is bordered by residences across Hathaway Boulevard to the west, residences on adjacent parcels to the south, Carabiner's Climbing Gym to the North, and athletic fields across Hunter Street to the east.

The former UST at the Site, which was installed in December 1989, replaced a previous tank installed in 1955 that was removed from the same location (VHB, 2000). The UST was formerly located beneath a concrete pad approximately 10 feet from the southeast corner of the KJHS building (VHB, 2001).

The approximate coordinates of the Site are 41.6404 north, 70.9473 west. The Universal Transverse Mercator (UTM) coordinates for the Site are 4611686.23 meters north and 337822.54 meters east. The KJHS building was demolished in 2008.

Site Boundary. The Site Boundary is illustrated in Figure 2.

Proximity to Environmental Resources. The Site's proximity to environmental resources is illustrated in Figure 3, which presents a MassDEP Site Scoring Map with five hundred foot and one half-mile radii as measured from the Site.

Property Owner. The Site property is owned by the City of New Bedford School Department.

Site Use and Area Land Use. The Site property is a former junior high school redeveloped into an athletic complex. Surrounding land use is predominantly residential, recreational, with some commercial land use (rock climbing gym).

Institutions. No institutions are known to be present at or near the Site. The Site lies within 975 feet of New Bedford High School (NBHS).

Residential Population. An estimated 2,500 people reside within a ½-mile radius of the Site. This estimate is based on the proportion of the City of New Bedford found within a ½-mile radius of the Site and community profile population data obtained from the official Commonwealth of Massachusetts website (DHCD, 2007).

Drinking Water Source Areas. Based on review of the MassDEP Site Scoring Map (see Figure 3), the Site is not located within a Zone II or Zone A of a drinking water supply area, an Interim Wellhead Protection Area (IWPA), or a potentially productive aquifer (PPA). The property where this Site is located was formerly serviced by the City municipal water supply, which has since been disconnected as part of the demolition of the KJHS building in the summer of 2008.

Public/Private Wells. No private or non-municipal public wells are located within 500 feet of the Site. There are no municipal wells located within 1,000 feet of the Site.

Environmental Concerns/Receptors. The Site is located in New Bedford in a residential/urbanized area. There is no surface water or wetland habitat at, or impacted by, the KJHS Site. The nearest water bodies are the New Bedford Harbor, which is located approximately 1.3 miles to the east of the Site; the Keith Middle School (KMS) wetland located approximately 1,540 feet northwest of the Site; and an associated outfall/stream located 2,850 feet northwest of the Site. There are no endangered species habitats, Areas of Critical Environmental Concern (ACECs) and/or certified vernal pools within 500 feet of the Site.

2.2 Elimination or Control of Uncontrolled Sources – 310 CMR 40.1056(2)(b)

The following describes the work undertaken and completed by TRC and others to address the RTN 4-15824 Site. Copies of soil boring logs and laboratory data reports were previously submitted in the RAM Plan dated April 2009.

2.2.1 Prior Work Undertaken by Others

Vanasse Hagen Brustlin (VHB)

On August 30, 2000 representatives of VHB collected surface soil samples for analysis as part of an assessment of the site for location of a new school. The samples were analyzed for EPH and target PAHs, PCBs, and RCRA 8 metals. Lead was detected in one of the soil samples (SS-4) in excess of reportable concentrations, in an area unrelated to the UST.

On October 11 and 12, 2000 representatives of VHB observed the installation of geotechnical borings and test pits by Miller. Odors were noted in a soil boring approximately 10 feet from an active 10,000-gallon underground fuel oil storage tank and near the former location of a previously removed UST. Test pit excavation activities encountered soil with headspace readings in excess of 100 ppmv, specifically, a headspace of 295 ppmv as benzene was observed on one of the soil samples collected adjacent to the UST. The condition was reported to MassDEP per 310 CMR 40.0313.

VHB suggested that the headspace reading was either from impacted soil remaining after closure of a UST formerly located in the vicinity or from the then active fuel oil UST. The UST formerly located in the area was reported to be a 10,000-gallon fuel oil tank installed in the 1950s, removed in August 1989, and replaced in December 1989. VHB indicated that a temporary above ground storage tank was in use until the replacement UST was installed in December 1989.

In November 2000, Tanknology performed a tightness test on the UST on behalf of VHB. VHB indicated that the test results showed no sign of leakage, and suggested that soil impacts were due to the former UST that was removed in August 1989.

A summary of VHB soil and groundwater analytical results for the UST Site are included in Appendix C.

VHB's 2001 IRA Completion Report indicated that the soil headspace reading of 295 ppmv did not warrant a 72 hour reporting condition under 310 CMR 40.0313 because the headspace readings were not obtained as part of a removal or closure action associated with the UST. According to VHB, a 120-day reporting condition was appropriate.

In August 2001, the City submitted a Special Project Application for the PSWS (then known as the McCoy Field Site), located at the nearby Keith Middle School (RTN 4-15685). The City amended the Special Project Application in December 2001 to include the UST reporting condition (RTN 4-15824) at KJHS. MassDEP's web site currently categorizes the site as "72-hour" and also notes "SPECPR" (i.e., Special Project) for the "release type."

Enviro-Safe Corporation

In 2007 and 2008 the KJHS building and appurtenant structures were demolished by North American Site Developers, Incorporated (NASDI) of Waltham, Massachusetts. Enviro-Safe Corporation (Enviro-Safe) was contracted to remove the 10,000-gallon fuel oil UST.

On January 25, 2008, Enviro-Safe cleaned, removed, and disposed of one 10,000-gallon steel UST from the rear of the Site, adjacent to the KJHS building. An application and permit for the removal and transport of a UST was secured from the New Bedford Fire Department. The UST was uncovered and cut open to facilitate cleaning. Free liquid was pumped using a vacuum truck. Approximately 391 gallons of waste were generated during the cleaning of the UST. Confined space entry trained personnel entered the interior UST and removed residual oil and tank bottom sludge. The waste was transported under hazardous waste manifest to Olsen's Greenhouse in Raynham, Massachusetts.

Lieutenant Peter Mello of the New Bedford Fire Department inspected the UST and removal activities, and authorized the transport and disposal of the UST. During removal activities, the UST and ancillary piping were inspected for corrosion, pitting, holes, and leaks. The UST and the removed piping appeared to be sound with no corrosion. Stained soil was observed around the UST. Groundwater was encountered at approximately ten feet below grade during the UST closure activities. The UST was disposed of at Mid-City Scrap and Salvage, in Westport, Massachusetts.

During the UST closure, four sidewall (SW) and two bottom-of-hole (BOH) soil samples were collected from the excavation by Enviro-Safe. Each soil sample was screened in the field for the presence of total volatile organic compounds (TVOC) using a PID calibrated to read in ppmv as benzene. The headspace screening results of the soil samples collected in the UST area revealed TVOC concentrations ranging from 0.4 ppmv to 14.2 ppmv. Three soil samples collected by Enviro-Safe personnel were submitted to Geo-Labs, Incorporated of Braintree, Massachusetts for laboratory analysis of EPH (carbon range fractions only). Enviro-Safe reported that all EPH fractions were reported below the Massachusetts Reportable Concentrations for the S-1 soil

category (RCS-1) set forth in 310 CMR 40.1600. However, the post-excavation soil analytical data collected by Enviro-Safe consisted of EPH carbon ranges only without the target PAH data. A summary of Enviro-Safe’s soil results is provided in Appendix C.

2.2.2 Work Undertaken by TRC

TRC mobilized to the Site on November 14, 2008 to conduct a direct-push soil investigation to evaluate potential residual soil impacts in the area of the UST excavation and to further evaluate lead in soil. Direct push soil borings were the primary investigative technique employed.

The following table provides a synopsis of TRC’s investigative activities for potential UST related soil impacts.

Summary of TRC UST Related Soil Investigation Activities				
Location	Soil Borings	Approximate Number Lab. Samples	Analyses¹	
			EPH²	Lead
KJHS	6	14	14	5

Notes:

¹Does not include quality control (QC) samples.

²EPH – Extractable Petroleum Hydrocarbons (carbon ranges and target PAHs).

PAHs – polyaromatic hydrocarbons

A summary of soil analytical results are included in Table 1.

On April 23, 2009, TRC submitted a Release Abatement Measure (RAM) Plan to support athletic field construction activities in impacted areas and to support risk reduction through excavation and removal of impacted soil identified as part of prior environmental site investigation activities across the KJHS site. The RAM Plan included the removal of petroleum impacted soil associated with the UST (RTN 4-15824) and described below.

On June 1, 2009, approximately 416 tons of petroleum impacted soils were excavated as part of the RAM activities. Some of the petroleum impacted soils were live loaded for immediate off-site disposal at the Upton Landfill in Upton, Massachusetts. The remainder of the petroleum impacted soil was temporarily stockpiled on polyethylene sheeting and securely covered pending off-site disposal. On June 4, 2009, the stockpiled soils were loaded and disposed of off-site at the Upton Landfill. Copies of the bills of lading (BOLs) were previously submitted in the RAM Status Report dated August 11, 2009.

On August 11, 2009, TRC submitted a RAM Status Report to the MassDEP. The RAM Status Report summarized the excavation and disposal activities that had been performed at the Former KJHS Site, which includes the UST (RTN 4-15824) Area. Post-excavation soil analytical results are included in Table 2.

2.2.3 Imminent Hazards

An Imminent Hazard is not present at this Site. This determination was based on a review of the criteria provided under 310 CMR 40.0321(1) and 310 CMR 40.0321(2).

2.3 Achievement of Level of No Significant Risk – 310 CMR 40.1056(2)(c)

As discussed in Section 3, the response action has successfully reduced concentrations to background, resulting in the achievement of a condition of No Significant Risk.

2.4 Elimination of Substantial Hazards – 310 CMR 40.1056(2)(d)

Not applicable. A Class A-1 RAO has been achieved for RTN 4-15824.

2.5 Achievement of Background – 310 CMR 40.1056(2)(e)

A Class A-1 RAO has been achieved for the Site, a Permanent Solution has been achieved, the concentrations of OHM in the environment potentially associated with the UST associated with RTN 4-15824 have been reduced below applicable Method 1 soil cleanup standards and the concentrations in the environment have been reduced to background levels. Background is defined by 310 CMR 40.0006 of the MCP as those levels of OHM that would exist in the absence of impact from a disposal site of concern that are:

- Ubiquitous and consistently present in the environment at and in the vicinity of the disposal site of concern and attributable to geologic or ecological conditions, or atmospheric deposition of industrial process or engine emissions;
- Attributable to coal ash or wood ash associated with fill material;
- Releases to groundwater from a public water supply system; or
- Petroleum residues that are incidental to the normal operation of motor vehicles.

The available soil sampling results described herein document the absence of a source (the former UST has been removed). Post excavation soil concentrations show that the detections in soil are below applicable Method 1 soil cleanup standards and reduced to below background levels. Additional remedial activity is not warranted. Background has been achieved. A Class A-1 RAO has been achieved for the closeout of RTN 4-15824.

2.6 Upper Concentration Limits – 310 CMR 40.1056(2)(f)

Not applicable. No exposure point concentrations associated with RTN 4-15824 exceed UCLs because soil concentrations are below applicable Method 1 soil cleanup standards. A Class A-1 RAO has been achieved for RTN 4-15824.

2.7 Activity and Use Limitation Documentation – 310 CMR 40.1056(2)(g)

Not applicable. A Class A-1 RAO has been achieved for RTN 4-15824.

2.8 Activity and Use Limitation Opinion – 310 CMR 40.1056(2)(h)

Not applicable. A Class A-1 RAO has been achieved for RTN 4-15824.

2.9 Operation, Maintenance, and Monitoring – 310 CMR 40.1056(2)(i)

Not applicable. A Class A-1 RAO has been achieved for RTN 4-15824.

2.10 Definitive/Enterprising Steps to a Permanent Solution – 310 CMR 40.1056(2)(j)

Not applicable. A Class A-1 RAO has been achieved for RTN 4-15824.

2.11 Data Usability Assessment – 310 CMR 40.1056(2)(k)

The Data Usability Assessment is provided in Section 4.

3.0 HUMAN HEALTH RISK CHARACTERIZATION AND EXPOSURE ASSESSMENT [310 CMR 40.1056(1)(c)]

3.1 Introduction [310 CMR 40.0900]

This section was prepared consistent with 310 CMR 40.0900 of the MCP. A characterization of risk to harm, safety, public welfare, and the environment is not needed since the response actions have reduced impacts below background levels per 310 CMR 40.0901(3).

3.2 Adequacy of Site Characterization

3.2.1 Impacted Media

Potentially impacted media at the Site includes soil. As described in Sections 1 and 2, soil impacts have been evaluated by environmental investigations conducted by VHB, Enviro-Safe, and TRC. Soil impacts were not detected below the bottom elevation of the UST. Remedial activities have removed impacted soils and reduced concentrations below applicable MCP Method 1 soil cleanup standards and below background levels.

3.2.2 Extent of Media Impacts

The nature and extent of media impacts have been analyzed and are discussed in Section 2. The nature and extent have been sufficiently delineated to support this RAO and risk characterization.

3.2.2.1 Horizontal and Vertical Extent

The horizontal and vertical media impacts are discussed in Section 2.

Groundwater impacts were not evaluated at the Site because groundwater was not encountered during the excavation/UST removal effort conducted by Enviro-Safe and soil boring activities by TRC. Soil samples from the bottom of the UST excavation did not contain detectable petroleum impacts, indicating that groundwater was not impacted by the UST. TRC conducted additional screening of soil and conducted soil sampling verifying these observations, as described herein.

3.2.2.2 Background Concentrations

The post-excavation soil analytical results (Table 2) for petroleum constituents show that the post-excavation soil results achieve background.

3.2.2.3 Existing or Potential Migration Pathways

Consistent with 310 CMR 40.1003(5), the potential source (i.e., the UST) was eliminated by the removal work undertaken by Enviro-Safe. Impacted soils were removed from the Site and disposed of off-site at the Upton Landfill. The potential for intermedia transfer of OHM has also

been eliminated at the Site through the removal of the petroleum impacted soil. All on-site soil impacts have been reduced to below Method 1 S-1 soil cleanup standards and background (see Table 2).

3.2.3 Compounds of Concern

The post-excavation soil analytical results (Table 2) for EPH and target PAHs, and lead indicate that the concentrations are well below MCP Method 1 soil cleanup standards and background.

3.3 Conclusions

The RTN 4-15824 presents No Significant Risk.

Post-excavation soil analytical results for petroleum constituents show that the post-excavation soil concentrations achieve background at this Site for “natural soil” as established in MassDEP guidance (MassDEP, 2002a).

A characterization of risk to harm, safety, public welfare, and the environment is not needed for this Site. Response actions have reduced the impacts to background consistent with 310 CMR 40.0901(3).

4.0 DATA USABILITY AND REPRESENTATIVENESS

4.1 Data Usability Assessment

Please refer to Appendix D for a summary of the data usability assessment associated with TRC's investigation of the Site.

4.1.1 Analytical Data Usability Assessment

In general, the analytical data are usable for MCP decisions and a Representativeness Evaluation based on the review of accuracy, precision, and sensitivity of the data. The data usability assessment did not include data collected by prior consultants, as the LSP opinion to support closure of the Site was rendered based on analytical data obtained only by TRC. The data are valid as reported and may be used for decision-making purposes with no cautions and/or limitations.

4.1.1.1 Rejection of Analytical Data

Appendix IV of the MCP Representative Evaluations and Data usability Assessment document (September 2007, Policy # WSC-07-350) was used to determine if gross failures of quality control existed in the TRC Site data set. There were no gross failures of quality control in the sampling or analytical procedures. Therefore, none of the data points were judged to be unusable for the Representativeness Evaluation.

4.1.2 Field Quality Control Data Usability Assessment

Quality control (QC) in the field was assessed in the data usability assessments provided in Appendix D. One field duplicate was collected for both EPH and lead analyses. Matrix spike/matrix spike duplicate (MS/MSD) analyses were performed on one sample for EPH and lead.

Holding times were achieved for all analyses performed. Sampling procedures and sample preservation techniques were conducted in accordance with TRC Standard Operating Procedures (SOPs) and method requirements.

4.1.3 Achievement of Data Quality Objectives

Data Quality Objectives (DQOs) for the Site program were as follows:

- To assess the nature and extent of soil impacts at the Site;
- To evaluate the potential risks posed by Site soil impacts to human health, safety, public welfare and the environment; and
- To evaluate the success of the response actions in achieving a condition of No Significant Risk.

The data usability assessment evaluated whether the data were usable to achieve project objectives, and whether or not there were any limitations on the use of the data. As per Appendix D, no cautions or limitations on the data were noted.

4.2 Representativeness Evaluation

TRC prepared this Representativeness Evaluation to describe the extent to which site data provide an accurate representation of Site environmental characteristics pursuant to 310 CMR 40.1056(2)(k) of the MCP, and the MCP Representativeness Evaluations and Data Usability Assessment document issued by MassDEP in September 2007 (Policy #WSC-07-350). The precision, accuracy and sensitivity of the site data used in this Representativeness Evaluation were discussed in the Data Usability Assessment section (Section 4.1) of this RAO. As stated in the Data Usability Assessment, the data are valid as reported and may be used for decision-making purposes with no cautions and/or limitations.

4.2.1 Conceptual Site Model

The subject Site is associated with a former UST that supplied heating oil to a former junior high school building.

The concentrations detected in Site soils are summarized in Tables 1 and 2.

No petroleum impacts were detected beneath the former UST by Enviro-Safe following the tank removal. TRC sample results for samples taken in saturated soils below the tank excavation also indicated no impact. Consequently, there are no Site-related groundwater impacts.

Based on the post-UST removal soil borings and sampling program undertaken by TRC, a Class A-1 RAO has been achieved for the Site, which implies that a Permanent Solution has been achieved and the soil impacts have been reduced to background.

4.2.2 Work Plan, Data Quality Objectives and Data Collection Approach

4.2.2.1 Site Testing

TRC was retained by the City to assist them in the evaluation of potential soil impacts in the vicinity of the former UST (RTN 4-15824) identified previously by VHB.

TRC collected soil samples for EPH and target PAHs and total lead analysis from the Site to evaluate the nature and extent of impacts. The samples were collected to evaluate soil in the former location of the UST. The locations identified for soil sampling targeting areas in the vicinity of the former UST location are summarized in the following table. The UST-related soil sampling locations are illustrated on Figure 2.

TRC Site Soil Boring Summary		
Sample Identification	Area Targeted	Analytes
UST-1S	Area surrounding the former UST to the south.	EPH
UST-2N	Area surrounding the former UST to the north.	EPH, lead
UST-3E	Area surrounding the former UST to the east	EPH, lead
UST-4E	Area to the east of UST-3E given elevated PID readings at UST-3E	EPH
UST-4W	Area surrounding the former UST to the west.	EPH, lead
UST-5C	Area in the center of the former UST location.	EPH

The borings were installed using Geoprobe® direct push method and soil samples were collected from each boring consistent with TRC SOPs and generally accepted good industry practice.

Soil samples collected during boring activities were analyzed for EPH and target PAHs, and total lead as indicated above. The use of EPH analysis for an aged fuel oil is consistent with MassDEP Policy #WSC-02-411, *Characterizing Risks Posed by Petroleum Contaminated Sites: Implementation of the MassDEP VPH/EPH Approach – Final Policy*, dated October 31, 2002. TRC conducted jar headspace screening in the field to help evaluate which samples should be submitted to the laboratory for analysis. All laboratory analyses were conducted by Con-test Analytical Laboratories, Incorporated of East Longmeadow, Massachusetts.

The DQOs for TRC’s Site testing programs were to collect data that could be used to assess the nature and extent of soil impacts, evaluate the potential risks, and support Site closure.

4.2.3 Use of Field/Screening Data

During the field investigations, TRC used field screening data to aid in the collection of soil samples for laboratory analyses. Field screening for soil samples included use of a PID and the MassDEP Jar Headspace Analytical Screening Procedure to evaluate relative levels of VOCs at various depths at each soil boring location. PID readings were recorded on the field boring logs.

No PID readings above background were encountered during any of the field investigations with the exception of soil boring UST-3E at 11-12 feet. Field screening also included visual observations by TRC field scientists. TRC soil boring logs document the presence of fill in one boring location, UST-5C, near the former UST.

4.2.4 Selection of Sampling Locations and Depths

Summaries of the sampling locations, depths, chemical analyses and rationale for the investigative samples collected at the Site are provided in Section 2.0 (Response Action Outcome

Supporting Documentation). A summary of TRC's soil boring analytical results are provided in Tables 1 and 2.

4.2.5 Number and Spatial Distribution of Sampling Locations

The soil samples collected to evaluate potential soil impacts near the former UST are summarized in Table 1. The locations selected for soil sampling are discussed herein. The soil analytical results for all samples were utilized to evaluate the nature and extent of potential soil impacts near the former UST. The number and spatial distribution of samples at the Site is sufficiently representative of site conditions.

4.2.6 Temporal Distribution of Samples

The reporting condition at this Site does not warrant monitoring over time. All post-excavation soil analytical results are below MCP Method 1 S-1 soil cleanup standards and are below background. Based on this information, temporal sampling at the Site is not required to support an RAO.

4.2.7 Critical Samples

Critical soil samples are identified as those samples necessary to support the conclusion that the RAO has been met. Critical samples utilized to determine that post-excavation soil results are below MCP Method 1 S-1 soil cleanup standards and below background are discussed in Section 3.0 and summarized in Table 2.

4.2.8 Completeness

No Site data were rejected as a result of the Data Usability Assessment presented in Section 4.1 of this RAO. Therefore, 100-percent completeness was achieved for all Site data.

4.2.9 Uncertainty and Inconsistency

None.

4.2.10 Conclusions from Representativeness Evaluation

TRC has developed the following conclusions with respect to the representativeness of the site data to actual site conditions:

- As indicated by the Data Usability Assessment presented in Section 4.1 of this RAO, the Site data used in this RAO to demonstrate a condition of No Significant Risk are consistent with current MassDEP CAM requirements.
- The number of samples, sample depths, spatial and temporal distribution of the samples is sufficient to identify and evaluate the nature and extent of potential soil impacts.

- The Site history information, field screening results, and/or laboratory sample results support the conclusions of this RAO.

Based on the above conditions, TRC has determined that the Site data are sufficiently representative of actual Site conditions and may be used to support this RAO.

5.0 RESPONSE ACTION OUTCOME

A Class A-1 Response Action Outcome has been achieved at the RTN 4-15824 Site, based on, and in accordance with, the following (310 CMR 40.1035 & 40.1036(1)):

- The source of soil impacts has been eliminated;
- A Permanent Solution has been achieved; and
- The soil impacts have been reduced below MCP Method 1 S-1 soil cleanup standards and background levels.

6.0 PUBLIC INVOLVEMENT

The public involvement and/or notification activities to which the City of New Bedford is obligated with regard to this Site under 310 CMR 40.1403(3)(f) include notification regarding the availability of the RAO Statement filed for this Site, which must be submitted to the Chief Municipal Officer and Board of Health in the City of New Bedford. This notification will be made in writing concurrently with the filing of the RAO Statement with the MassDEP.

Copies of the public notification letters are provided in Appendix E.

7.0 REFERENCES

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- DHCD, 2007. Commonwealth of Massachusetts Department of Housing and Community Development. Community Profile for the City of New Bedford. <http://www.mass.gov/dhcd/iprofile/205.pdf>
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- MassDEP, 2000. Notice of Responsibility. Issued to New Bedford School Department. Keith Middle School, 70 Hathaway Blvd., RTN #4-15824. October 17, 2000.
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- MassDEP, 2002a. Technical Update: Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil – In Support of the Massachusetts Contingency Plan, May 2002.
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- VHB, 2001. IRA Completion Report, RTN 4-15824, Keith Middle School UST Release, New Bedford, Massachusetts. Prepared by VHB/Vanasse Hangen Brustlin, Inc. November 8, 2001.

TABLES

TABLE 1
Summary of Pre-Excavation Analytical Results for Soil Samples
Former Keith Junior High School
New Bedford, Massachusetts

Analysis	Analyte	Sample ID: Sample Depth (ft.): Sample Date:						UST-1S		UST-2N		UST-3E				UST-4E		UST-4W		UST-5C			
		S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	RC S-1	Background*	5-7 11/14/2008	11-12 11/14/2008	5-7 11/14/2008	11-12 11/14/2008	1-3 11/14/2008	5-7 11/14/2008	11-12 11/14/2008	11-12 11/14/2008	5-7 11/14/2008	11-12 11/14/2008	1-3 11/14/2008	5-7 11/14/2008	11-12 11/14/2008	5-7 11/14/2008	11-12 11/14/2008	
												Field Dup											
EPH (mg/kg)	C9-C18 Aliphatics	1,000	1,000	3,000	3,000	1,000	**	33.3 U	34.1 U	36.4 U	67.5 U	67.6 U	5,630	32.9 U	66.5 U	192 U	35.9 U	35.4 U	33.6 U	33.6 U	36.0 U	34.7 U	
	C19-C36 Aliphatics	3,000	3,000	5,000	5,000	3,000	**	33.3 U	34.1 U	36.4 U	67.5 U	67.6 U	1,250	32.9 U	66.5 U	192 U	35.9 U	35.4 U	33.6 U	33.6 U	36.0 U	34.7 U	
	C11-C22 Aromatics	1,000	1,000	3,000	3,000	1,000	**	33.3 U	34.1 U	36.4 U	67.5 U	67.6 U	1,740	32.9 U	66.5 U	192 U	35.9 U	35.4 U	33.6 U	33.6 U	36.0 U	34.7 U	
	Acenaphthene	1,000	1,000	3,000	3,000	4	0.5	0.20 U	0.20 U	0.20 U	0.30 U	0.30 U	6.6	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Acenaphthylene	600	10	600	10	1	0.5	0.20 U	0.20 U	0.20 U	0.30 U	0.30 U	14.8	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Anthracene	1,000	1,000	3,000	3,000	1,000	1	0.20 U	0.20 U	0.20 U	0.30 U	0.30 U	5.3	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Benzo(a)anthracene	7	7	40	40	7	2	0.20 U	0.20 U	0.20 U	0.30 U	0.40	0.60 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Benzo(a)pyrene	2	2	4	4	2	2	0.20 U	0.20 U	0.20 U	0.30 U	0.40	0.60 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Benzo(b)fluoranthene	7	7	40	40	7	2	0.20 U	0.20 U	0.20 U	0.30 U	0.50	0.60 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Benzo(g,h,i)perylene	1,000	1,000	3,000	3,000	1,000	1	0.20 U	0.20 U	0.20 U	0.30 U	0.30 U	0.60 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Benzo(k)fluoranthene	70	70	400	400	70	1	0.20 U	0.20 U	0.20 U	0.30 U	0.30 U	0.60 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Chrysene	70	70	400	400	70	2	0.20 U	0.20 U	0.20 U	0.30 U	0.50	0.60 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Dibenz(a,h)anthracene	0.7	0.7	4	4	0.7	0.5	0.20 U	0.20 U	0.20 U	0.30 U	0.30 U	0.60 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Fluoranthene	1,000	1,000	3,000	3,000	1,000	4	0.20 U	0.20 U	0.20 U	0.30 U	1.1	0.60 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Fluorene	1,000	1,000	3,000	3,000	1,000	1	0.20 U	0.20 U	0.20 U	0.30 U	0.30 U	20.6	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Indeno(1,2,3-cd)pyrene	7	7	40	40	7	1	0.20 U	0.20 U	0.20 U	0.30 U	0.30 U	0.60 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	2-Methylnaphthalene	80	300	80	500	0.7	0.5	0.20 U	0.20 U	0.20 U	0.30 U	0.30	65.7	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Naphthalene	40	500	40	1,000	4	0.5	0.20 U	0.20 U	0.20 U	0.30 U	0.30 U	16.4	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Phenanthrene	500	500	1,000	1,000	10	3	0.20 U	0.20 U	0.20 U	0.30 U	1.2	12.3	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Pyrene	1,000	1,000	3,000	3,000	1,000	4	0.20 U	0.20 U	0.20 U	0.30 U	1.1	0.60 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Metals, total (mg/kg)	Lead	300	300	300	300	300	100	NA	NA	21.9	NA	27.5	NA	8.98	22.1	NA	NA	39.5	NA	2.25	NA	NA	

Notes:
All units in mg/kg unless otherwise specified.
mg/kg - milligrams per kilogram (dry weight) or parts per million (ppm).
NA - Sample not analyzed for the listed analyte.
U - Compound was not detected at specified quantitation limit.
Values in **Bold** indicate the compound was detected.
Values shown in Bold and shaded type exceed one or more of the listed Method 1 standards.
EPH - Extractable Petroleum Hydrocarbons.
* - Background Concentration for natural soil.
** - No associated MassDEP background Soil Concentration

TABLE 2
Summary of Post-Excavation Analytical Results for Soil Samples
Former Keith Junior High School
New Bedford, Massachusetts

Analysis	Analyte	Sample ID: Sample Depth (ft.): Sample Date:						UST-1S (South Sidewall of Excavation)		UST-2N (North Sidewall of Excavation)		UST-3E (Bottom of Excavation)		UST-4E (East Sidewall of Excavation)		UST-4W (West Sidewall of Excavation)			
		S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	RC S-1	Background*	5-7 11/14/2008	11-12 11/14/2008	5-7 11/14/2008	11-12 11/14/2008	11-12 11/14/2008	11-12 11/14/2008 Field Dup	5-7 11/14/2008	11-12 11/14/2008	1-3 11/14/2008	5-7 11/14/2008	11-12 11/14/2008	
EPH (mg/kg)	C9-C18 Aliphatics	1,000	1,000	3,000	3,000	1,000	**	33.3 U	34.1 U	36.4 U	67.5 U	32.9 U	66.5 U	192 U	35.9 U	35.4 U	33.6 U	33.6 U	
	C19-C36 Aliphatics	3,000	3,000	5,000	5,000	3,000	**	33.3 U	34.1 U	36.4 U	67.5 U	32.9 U	66.5 U	192 U	35.9 U	35.4 U	33.6 U	33.6 U	
	C11-C22 Aromatics	1,000	1,000	3,000	3,000	1,000	**	33.3 U	34.1 U	36.4 U	67.5 U	32.9 U	66.5 U	192 U	35.9 U	35.4 U	33.6 U	33.6 U	
	Acenaphthene	1,000	1,000	3,000	3,000	4	0.5	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Acenaphthylene	600	10	600	10	1	0.5	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Anthracene	1,000	1,000	3,000	3,000	1,000	1	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Benzo(a)anthracene	7	7	40	40	7	2	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Benzo(a)pyrene	2	2	4	4	2	2	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Benzo(b)fluoranthene	7	7	40	40	7	2	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Benzo(g,h,i)perylene	1,000	1,000	3,000	3,000	1,000	1	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Benzo(k)fluoranthene	70	70	400	400	70	1	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Chrysene	70	70	400	400	70	2	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Dibenz(a,h)anthracene	0.7	0.7	4	4	0.7	0.5	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Fluoranthene	1,000	1,000	3,000	3,000	1,000	4	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Fluorene	1,000	1,000	3,000	3,000	1,000	1	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Indeno(1,2,3-cd)pyrene	7	7	40	40	7	1	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	2-Methylnaphthalene	80	300	80	500	0.7	0.5	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
	Naphthalene	40	500	40	1,000	4	0.5	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Phenanthrene	500	500	1,000	1,000	10	3	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	
Pyrene	1,000	1,000	3,000	3,000	1,000	4	0.20 U	0.20 U	0.20 U	0.30 U	0.20 U	0.30 U	0.70 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	
Metals, total (mg/kg)	Lead	300	300	300	300	300	100	NA	NA	21.9	NA	8.98	22.1	NA	NA	39.5	NA	2.25	

Notes:

All units in mg/kg unless otherwise specified.
mg/kg - milligrams per kilogram (dry weight) or parts per million (ppm).
NA - Sample not analyzed for the listed analyte.
U - Compound was not detected at specified quantitation limit.
Values in **Bold** indicate the compound was detected.

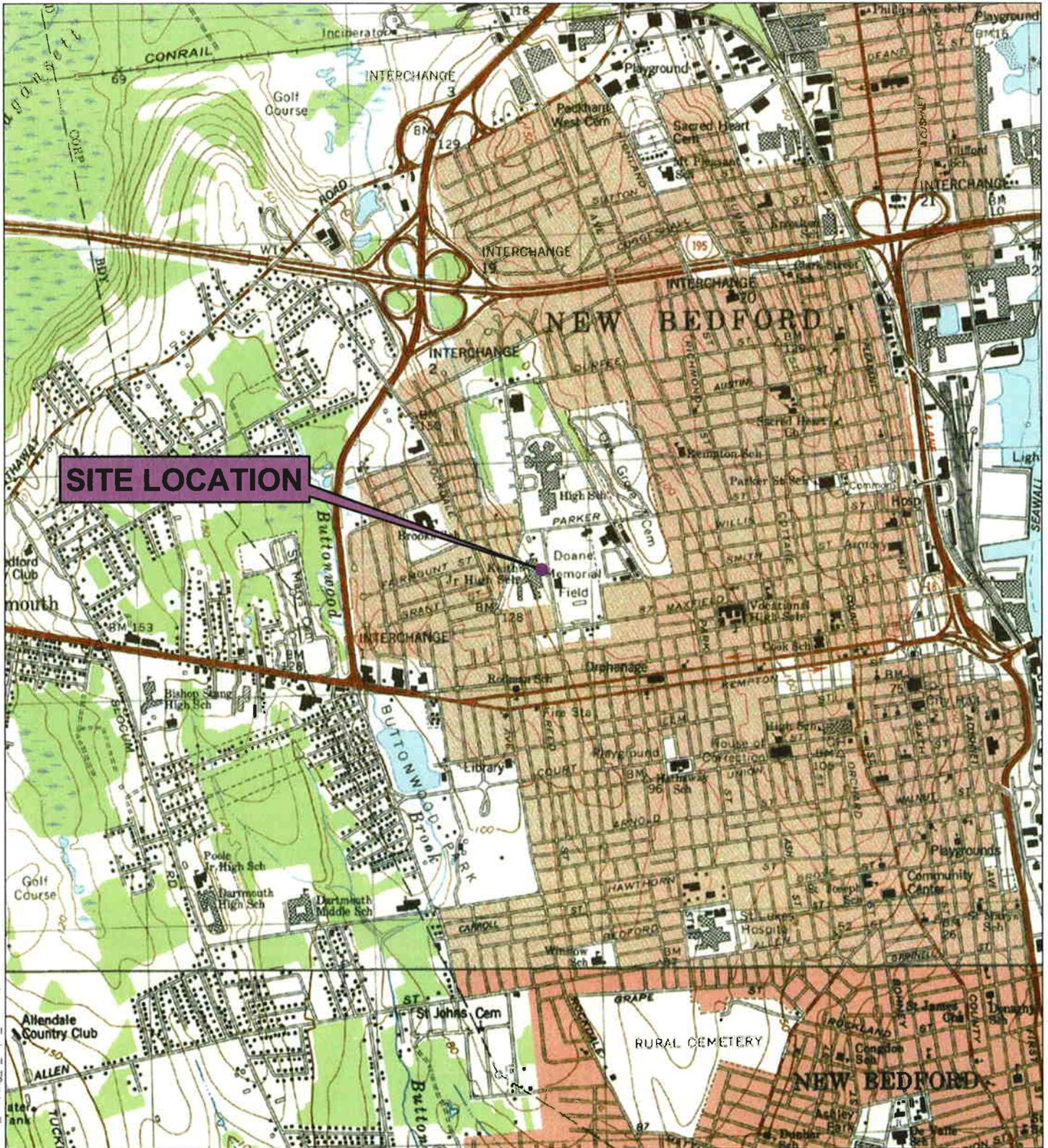
Values shown in Bold and shaded type exceed one or more of the listed Method 1 standards.

EPH - Extractable Petroleum Hydrocarbons.

* - Background Concentration for natural soil.

** - No associated MassDEP background soil concentration.

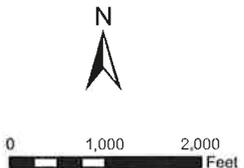
FIGURES



SITE LOCATION

R:\Projects\GIS_2007\54634_NBedford\MXD_S_KJHS_UST\Fig_1_Topo_092409.mxd

Base map: USGS 7.5 Minute Topographic Quadrangles
 New Bedford South (1977) New Bedford North (1979)



MASSACHUSETTS



SITE LOCATION



Wannalancit Mills
 650 Suffolk Street
 Lowell, MA 01854
 978-970-5600

SITE LOCATION MAP

**FORMER KEITH JUNIOR HIGH SCHOOL
 UNDERGROUND STORAGE TANK RAO**

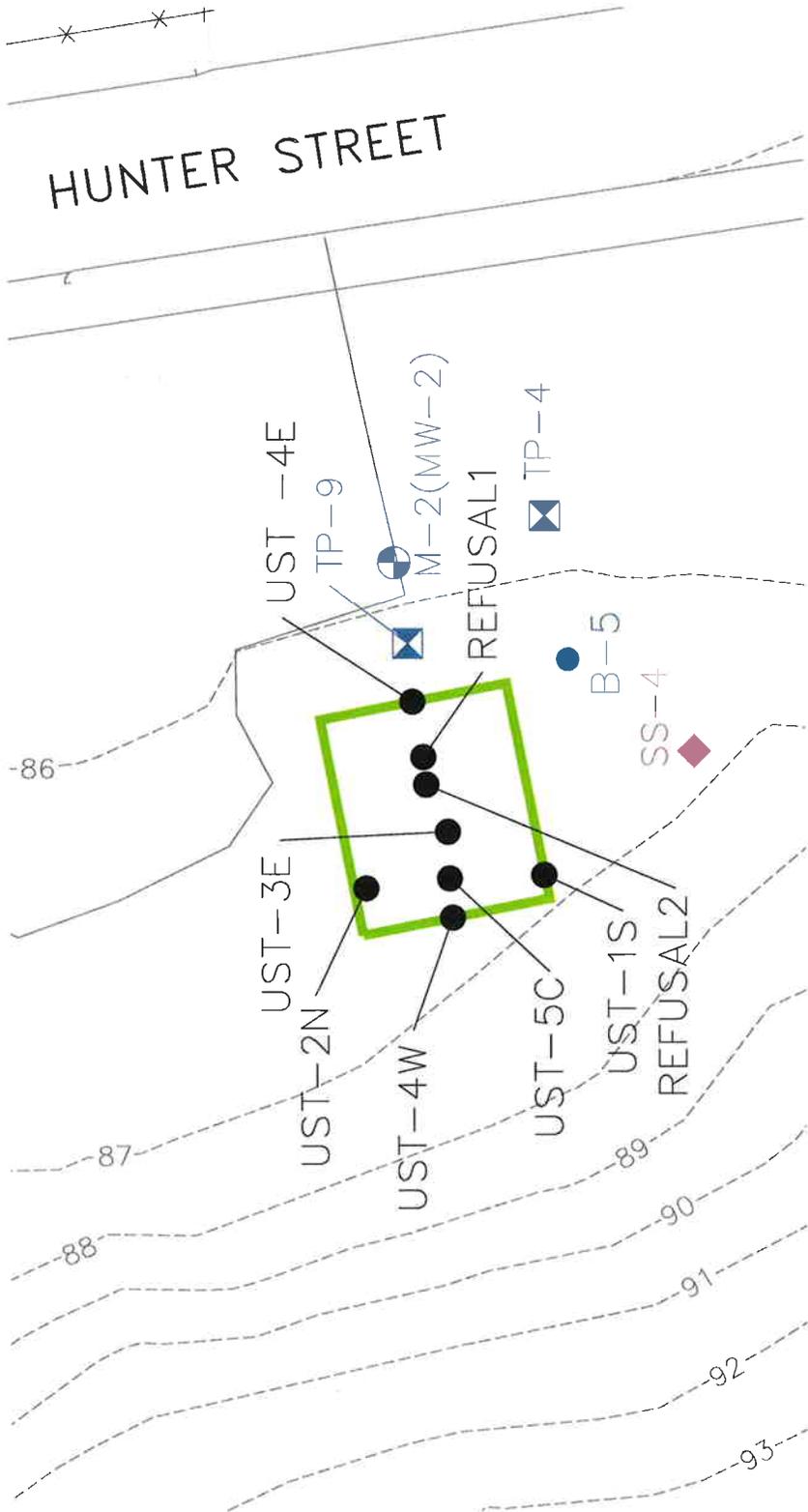
NEW BEDFORD, MA

FIGURE 1

SEPTEMBER 2009

LEGEND:

- TRC BORINGS
- MILLER ENGINEERING BORING
- ⊠ TEST PIT LOCATIONS (BY OTHERS)
- ⊕ MILLER ENGINEERING MONITORING WELL
- ◆ SURFACE SOIL SAMPLE LOCATION (APPROX.)
- ▬ DISPOSAL SITE BOUNDARY



FORMER KJHS UST RAO
NEW BEDFORD, MASSACHUSETTS

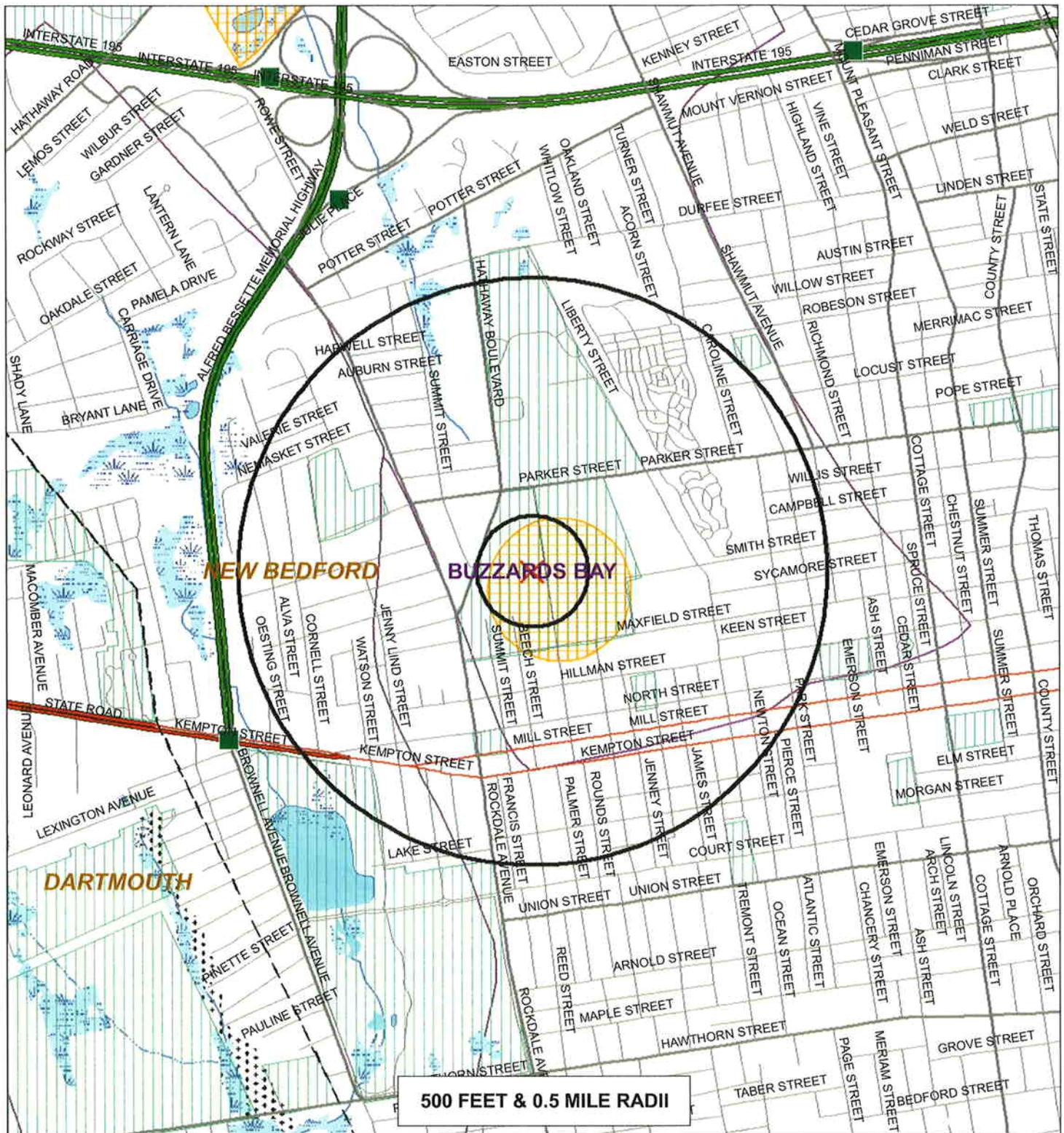
SITE PLAN

TRC
 Wampanoach Mills
 650 Suffolk Street
 Lowell, MA 01854
 (978) 970-5600

FIGURE
2

DRAWN BY: HWB **DATE:** APRIL 2010
CHECKED BY: DMS





500 FEET & 0.5 MILE RADII

- Roads: Limited Access, Multi-Lane, Major/Minor, Track, Trail — — — —
- Railroad, Pipeline, Powerline
- Major Basin, Sub Basin, Perennial Stream, Intermittent Stream, — —
- Shoreline, Man made Shore, Dam, Aqueduct — —
- Wetland, Salt Wetland, Submerged Wetland, Open Water, Reservoir, Tidal Flat/Shoal
- Potentially Productive Aquifers: Medium, High Yield
- Non-Potential Drinking Water Source Area: Medium, High Yield
- EPA Sole Source Aquifer, FEMA 100 Yr. Floodplain, DEP Solid Waste Facility
- Approved Zone II, IWPA, Surface Water Supply Zone A
- Protected Open Space, ACEC
- Estimated Habitat 2007, Certified Vernal Pool 2008 ● ● ● ●
- Boundaries: County and Town
- Public Water Supplies: Ground, Surface, Non-Community (NTNC, TNC) ● ● ● ● Source: MassGIS/EOEA

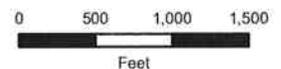


Wannalancit Mills
650 Suffolk Street
Lowell, MA 01854
978-970-5600

FIGURE 3

MA DEP SITE SCORING MAP

FORMER KEITH JUNIOR HIGH SCHOOL
UNDERGROUND STORAGE TANK RAO
NEW BEDFORD, MA



APPENDIX A

LIMITATIONS

LIMITATIONS

1. TRC Environmental Corporation's (TRC's) 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 TRC observed that degree of care and skill generally exercised by other consultants under similar circumstances and conditions. TRC'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, TRC does not and cannot represent that the Site contains no hazardous material, oil, or other latent condition beyond that observed by TRC during its study. Additionally, TRC makes no warranty that any response action or recommended action achieve all 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 the MassDEP and the City of New Bedford, solely for use in an environmental response action at the RTN 4-15824 Site in New Bedford, Massachusetts ("Site") under the Massachusetts Contingency 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 TRC.
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 proposal.
4. In preparing this report, TRC 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 TRC at the time of the study. Although there may have been some degree of overlap in the information provided by these various sources, TRC did not attempt to independently verify the accuracy or completeness of all 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 TRC's attention forthwith. TRC will evaluate such information and, on the basis of that evaluation, may modify the conclusions stated in this report.
6. The purpose of this report was to assess the Site with respect to 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.

7. The conclusions and recommendations contained in this report are based in part upon the data obtained from a limited number of soil samples obtained from widely spread 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.
8. Where quantitative laboratory analyses have been conducted by an outside laboratory, TRC has relied upon the data provided, and has not conducted an independent evaluation of the reliability of these data.
9. 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 concentrations of impacts 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 TRC and the conclusions and recommendations presented herein modified accordingly.
10. 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.
11. TRC's risk evaluation was performed in accordance with generally accepted practices of the Massachusetts Department of Environmental Protection and other consultants undertaking similar studies. The findings of the risk evaluation are dependent on numerous assumptions and uncertainties inherent in the risk assessment 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 assessment 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 assessment would be expected to err on the side of protection of human health and the environment.

APPENDIX B

COPY OF RAO TRANSMITTAL FORM

SUMMITTED IN HARD COPY ONLY

APPENDIX C

**SUMMARY OF HISTORICAL SOIL AND
GROUNDWATER DATA**

**Summary of KJHS UST Related Historical Analytical Results for Soil Samples
2000 and 2008
New Bedford, Massachusetts**

Analysis	Analyte	Sample ID:					BOH-N	EW Sidewall	M-2	NW Sidewall	TP-4	TP-9
		Sample Depth (ft.):					8-10	6-8	4-6	6-8	10	9
		S-1/GW-2	S-1/GW-3	S-2/GW-2	S-2/GW-3	RC S-1*	1/25/2008	1/25/2008	10/11/2000	1/25/2008	10/11/2000	10/11/2000
VPH (mg/kg)	C5-C8 Aliphatics	100	100	500	500	100	NA	NA	NA	NA	2.9 U	14 U
	C9-C12 Aliphatics	1,000	1,000	3,000	3,000	1,000	NA	NA	NA	NA	2.9 U	14 U
	C9-C10 Aromatics	100	100	500	500	100	NA	NA	NA	NA	2.9 U	35
	Benzene	30	30	200	200	2	NA	NA	NA	NA	0.29 U	1.4 U
	Ethylbenzene	500	500	1,000	1,000	40	NA	NA	NA	NA	0.29 U	1.4 U
	MTBE	100	100	100	500	0.1	NA	NA	NA	NA	0.29 U	1.4 U
	Naphthalene	40	500	40	1,000	4	NA	NA	NA	NA	0.29 U	1.4 U
	Toluene	500	500	1,000	1,000	30	NA	NA	NA	NA	0.29 U	1.4 U
	m/p-Xylene	300	500	300	1,000	300	NA	NA	NA	NA	0.29 U	1.4 U
o-Xylene	300	500	300	1,000	300	NA	NA	NA	NA	0.29 U	1.4 U	
EPH/PAHs (mg/kg)	C9-C18 Aliphatics	1,000	1,000	3,000	3,000	1,000	25 U	45	NA	18	12 U	260
	C19-C36 Aliphatics	3,000	3,000	5,000	5,000	3,000	25 U	33	NA	14.3 U	12 U	140
	C11-C22 Aromatics	1,000	1,000	3,000	3,000	1,000	25 U	29	NA	14.3 U	12 U	440
	Acenaphthene	1,000	1,000	3,000	3,000	4	NA	NA	NA	NA	0.12 U	0.31
	Acenaphthylene	600	10	600	10	1	NA	NA	NA	NA	0.12 U	0.11 U
	Anthracene	1,000	1,000	3,000	3,000	1,000	NA	NA	NA	NA	0.12 U	0.20
	Benzo(a)anthracene	7	7	40	40	7	NA	NA	NA	NA	0.12 U	0.20
	Benzo(a)pyrene	2	2	4	4	2	NA	NA	NA	NA	0.12 U	0.16
	Benzo(b)fluoranthene	7	7	40	40	7	NA	NA	NA	NA	0.12 U	0.22
	Benzo(g,h,i)perylene	1,000	1,000	3,000	3,000	1,000	NA	NA	NA	NA	0.12 U	0.11 U
	Benzo(k)fluoranthene	70	70	400	400	70	NA	NA	NA	NA	0.12 U	0.11 U
	Chrysene	70	70	400	400	70	NA	NA	NA	NA	0.12 U	0.24
	Dibenzo(a,h)anthracene	0.7	0.7	4	4	0.7	NA	NA	NA	NA	0.12 U	0.11 U
	Fluoranthene	1,000	1,000	3,000	3,000	1,000	NA	NA	NA	NA	0.12 U	0.42
	Fluorene	1,000	1,000	3,000	3,000	1,000	NA	NA	NA	NA	0.12 U	0.53
	Indeno(1,2,3-cd)pyrene	7	7	40	40	7	NA	NA	NA	NA	0.12 U	0.11 U
	2-Methylnaphthalene	80	300	80	500	0.7	NA	NA	NA	NA	0.12 U	0.41
	Naphthalene	40	500	40	1,000	4	NA	NA	NA	NA	0.12 U	0.43
	Phenanthrene	500	500	1,000	1,000	10	NA	NA	NA	NA	0.12 U	1.3
	Pyrene	1,000	1,000	3,000	3,000	1,000	NA	NA	NA	NA	0.12 U	0.58
Pesticides (mg/kg)	Aldrin	0.04	0.04	0.4	0.4	0.04	NA	NA	0.00071 U	NA	NA	NA
	alpha-BHC	NS	NS	NS	NS	50	NA	NA	0.00071 U	NA	NA	NA
	beta-BHC	NS	NS	NS	NS	10	NA	NA	0.00071 U	NA	NA	NA
	delta-BHC	NS	NS	NS	NS	10	NA	NA	0.00071 U	NA	NA	NA
	gamma-BHC (Lindane)	0.7	0.5	2	0.5	0.003	NA	NA	0.00071 U	NA	NA	NA
	alpha-Chlordane	NS	NS	NS	NS	0.7	NA	NA	0.00071 U	NA	NA	NA
	gamma-Chlordane	NS	NS	NS	NS	0.7	NA	NA	0.00071 U	NA	NA	NA
	Chlordane	0.7	0.7	30	30	0.7	NA	NA	0.00071 U	NA	NA	NA
	4,4-DDD	4	4	30	30	4	NA	NA	0.00071 U	NA	NA	NA
	4,4-DDE	3	3	20	20	3	NA	NA	0.00071 U	NA	NA	NA
	4,4-DDT	3	3	20	20	3	NA	NA	0.00071 U	NA	NA	NA
	Dieldrin	0.05	0.05	0.4	0.4	0.05	NA	NA	0.00071 U	NA	NA	NA
	Endosulfan I	NS	NS	NS	NS	0.5	NA	NA	0.00071 U	NA	NA	NA
	Endosulfan II	NS	NS	NS	NS	0.5	NA	NA	0.00071 U	NA	NA	NA
	Endosulfan Sulfate	NS	NS	NS	NS	0.5	NA	NA	0.00071 U	NA	NA	NA
	Endrin	8	8	10	10	8	NA	NA	0.00071 U	NA	NA	NA
	Endrin Aldehyde	NS	NS	NS	NS	10	NA	NA	0.00071 U	NA	NA	NA
	Endrin Ketone	NS	NS	NS	NS	NS	NA	NA	0.00071 U	NA	NA	NA
	Heptachlor	0.2	0.2	2	2	0.2	NA	NA	0.00071 U	NA	NA	NA
	Heptachlor Epoxide	0.09	0.09	0.7	0.7	0.09	NA	NA	0.00071 U	NA	NA	NA
Methoxychlor	200	200	300	300	200	NA	NA	0.00071 U	NA	NA	NA	
Toxaphene	NS	NS	NS	NS	10	NA	NA	0.036 U	NA	NA	NA	
PCBs (mg/kg)	PCB 1016	2	2	3	3	2	NA	NA	NA	NA	NA	0.015 U
	PCB-1221	2	2	3	3	2	NA	NA	NA	NA	NA	0.015 U
	PCB-1232	2	2	3	3	2	NA	NA	NA	NA	NA	0.015 U
	PCB-1242	2	2	3	3	2	NA	NA	NA	NA	NA	1.0
	PCB-1248	2	2	3	3	2	NA	NA	NA	NA	NA	0.015 U
	PCB-1254	2	2	3	3	2	NA	NA	NA	NA	NA	0.015 U
	PCB-1260	2	2	3	3	2	NA	NA	NA	NA	NA	0.045
	PCB 1262	2	2	3	3	2	NA	NA	NA	NA	NA	NA
	PCB 1268	2	2	3	3	2	NA	NA	NA	NA	NA	NA
Total PCBs	2	2	3	3	2	NA	NA	NA	NA	NA	1.045	
Metals, total (mg/kg)	Arsenic	20	20	20	20	20	NA	NA	0.48 U	NA	NA	NA
	Barium	1,000	1,000	3,000	3,000	1,000	NA	NA	12	NA	NA	NA
	Cadmium	2	2	30	30	2	NA	NA	0.097 U	NA	NA	NA
	Chromium	30	30	200	200	30	NA	NA	3.3	NA	NA	NA
	Lead	300	300	300	300	300	NA	NA	23	NA	NA	NA
	Mercury	20	20	30	30	20	NA	NA	0.086	NA	NA	NA
	Selenium	400	400	800	800	400	NA	NA	1.8	NA	NA	NA
	Silver	100	100	200	200	100	NA	NA	0.097 U	NA	NA	NA

Notes:

All units in mg/kg unless otherwise specified.

mg/kg - milligrams per kilogram (dry weight) or parts per million (ppm).

NA - Sample not analyzed for the listed analyte.

NS - No MassDEP standards exist for this compound.

U - Compound was not detected at specified quantitation limit.

Values in **Bold** indicate the compound was detected.

Values shown in **Bold and shaded type** exceed one or more of the listed Method 1 standards.

EPH - Extractable Petroleum Hydrocarbons.

PAHs - Polycyclic Aromatic Hydrocarbons.

PCBs - Polychlorinated Biphenyls.

VPH - Volatile Petroleum Hydrocarbons.

RC - Reportable Concentration.

* - For reference purposes only.

**Summary of KJHS UST Related Analytical Results for Groundwater Samples
November 2000
New Bedford, Massachusetts**

Analysis	Analyte	Sample ID:		MW-2
		Sample Date:		11/1/2000
		GW-2	GW-3	
VPH (ug/L)	C5-C8 Aliphatics	3,000	50,000	50 U
	C9-C12 Aliphatics	5,000	50,000	50 U
	C9-C10 Aromatics	7,000	50,000	50 U
	Benzene	2,000	10,000	5 U
	Ethylbenzene	20,000	5,000	5 U
	MTBE	50,000	50,000	10 U
	Naphthalene	1,000	20,000	10 U
	Toluene	50,000	40,000	5 U
	m/p-Xylene	9,000	5,000	10 U
	o-Xylene	9,000	5,000	10 U
EPH (ug/L)	C9-C18 Aliphatics	5,000	50,000	50 U
	C19-C36 Aliphatics	NS	50,000	50 U
	C11-C22 Aromatics	50,000	5,000	50 U
	Naphthalene	1,000	20,000	1 U
	2-Methylnaphthalene	2,000	20,000	1 U
	Phenanthrene	NS	10,000	1 U
	Acenaphthylene	10,000	40	1 U
	Acenaphthene	NS	6,000	5 U
	Fluorene	NS	40	5 U
	Anthracene	NS	30	5 U
	Fluoranthene	NS	200	5 U
	Pyrene	NS	20	5 U
	Benzo(a)anthracene	NS	1,000	1 U
	Chrysene	NS	70	2 U
	Benzo(b)fluoranthene	NS	400	1 U
	Benzo(k)fluoranthene	NS	100	1 U
	Benzo(a)pyrene	NS	500	0.2 U
	Indeno(1,2,3-cd)pyrene	NS	100	0.5 U
	Dibenz(a,h)anthracene	NS	40	0.5 U
Benzo(g,h,i)perylene	NS	20	5 U	

Note:

ug/L - micrograms per liter.

NS - No MassDEP standards exist for this analyte.

U - Compound was not detected at specified quantitation limit.

VPH - Volatile Petroleum Hydrocarbons.

EPH - Extractable Petroleum Hydrocarbons.

APPENDIX D

DATA USABILITY ASSESSMENT

TRC Data Usability Assessment: Former Keith Junior High School UST, New Bedford, MA

<p>D-1: Discuss appropriateness of selected analytical methods to quantitatively support disposal site's RAO. Discuss any impacts to the data used to support the RAO if generated with non-CAM methods. Justify that the data used to support the RAO is adequate in spite of the use of non-CAM methods.</p>	<p>Appropriateness of Analytical Methods Used</p> <ul style="list-style-type: none">• The following methods were utilized to respond to all contaminants of concern in soil: EPH and lead.• Table D-1 summarizes all samples used for the RAO and included in this data usability assessment.• All soil sample analyses were performed using the CAM.
<p>D-2: Discuss appropriateness of selected analytical methods' Reporting Limits (RL) to quantitatively support the disposal site's RAO.</p>	<p>Analytical reporting limits, as documented by the laboratory, meet or exceed sensitivity requirements required to assess level of risk and cleanup standards for contaminants of concern previously identified for this response action for soil, with the following exception:</p> <p><u>Exception #1:</u> In soil sample UST-4E/5-7, the nondetect results for acenaphthene, acenaphthylene, dibenz(a,h)anthracene, 2-methylnaphthalene, and naphthalene slightly exceed the background concentrations in natural soils. The nondetect results were reported as 0.70 U and the natural soil background concentration is 0.5 mg/Kg for each analyte.</p> <p>Dibenz(a,h)anthracene was not detected in other soil samples at the Site and so this compound is not considered a compound of potential concern, Thus this exception has no adverse effect on the outcome or conclusion of this RAO.</p> <p>Acenaphthene, acenaphthylene, 2-methylnaphthalene, and naphthalene were detected in other soil samples, so these PAHs are considered compounds of potential concern. However, the results for these PAHs were reported as nondetects (0.20 – 0.30 U) in eight of the nine samples utilized to verify that background concentrations have been achieved; thus, the use of one non-detect result that slightly exceeds the natural soil background concentration will not significantly affect the outcome or conclusion of this RAO. Consequently, this exception has no adverse effect on the outcome or conclusions of this RAO.</p>

TRC Data Usability Assessment: Former Keith Junior High School UST, New Bedford, MA

<p>D-3: Discuss laboratory performance criteria and data quality indicators utilized to assess overall <u>Analytical Accuracy</u> (continuing calibration, laboratory control spikes, etc.) and <u>Analytical Precision</u> (laboratory duplicates, laboratory control spike duplicates, etc.)</p> <p><u>CAM Data:</u> Review Certification Form and discuss data quality issues noted in narrative.</p> <p><u>Non-CAM Data:</u> Discuss data quality indicators used to assess data and any data quality issues noted.</p>	<p>(√) <i>Meets all CAM requirements and performance standards without qualification.</i> () <i>Does not meet all CAM requirements and performance standards without qualification. If NO, discuss data usability implications</i></p> <p>All accuracy and precision criteria were met.</p>
<p>D-4: Discuss laboratory performance criteria and data quality indicators utilized to assess overall Field Data Usability (sample preservation compliance, sample subsampling/compositing, field QC samples, etc.)</p>	<p>Sample Preservation:</p> <p>Sample preservation procedures performed as per required methods for all soil sampling.</p> <p>Field QC:</p> <p><u>Accuracy:</u> soil assessed using MS/MSD analyses and cooler temperature blanks for all coolers.</p> <p><u>Precision:</u> soil assessed using field duplicates and MS/MSD analyses.</p> <ul style="list-style-type: none"> ◆ <u>Soil Field Duplicates:</u> UST-3E/11-12 (EPH, lead). ◆ <u>Soil MS/MSDs:</u> UST-2N/11-12 (EPH, lead) <p>Data usability not adversely affected for the issues listed below as these would not cause a significant bias to the reported values.</p> <p>Accuracy of Field QC:</p> <p><i>Low Biases:</i></p> <ul style="list-style-type: none"> • Low recovery of lead in MS/MSD: all soil samples. <p><i>High Biases:</i></p> <p>No issues noted.</p> <p>Precision of Field QC (Field duplicate criteria: RPD ≤30 for aqueous and ≤50 for soils):</p> <ul style="list-style-type: none"> • High variability of lead in field duplicate samples: all soil samples.

TRC Data Usability Assessment: Former Keith Junior High School UST, New Bedford, MA

D-5: Analytical Completeness of Data Used to Support the RAO: Discuss any data rejected pursuant to Appendix II, Rejection Criteria – Analytical Data Usability Assessments

- >90% analytical completeness achieved for all site data.
- No gross failures of quality control in the analytical procedures.

Table D-1

**Summary of Soil Samples and Parameters Included in RAO and Data Usability Assessment
Former Keith Junior High School UST, New Bedford, MA**

Sample Location	EPH	Lead
UST-1S/5-7	X	
UST-1S/11-12	X	
UST-2N/5-7	X	X
UST-2N/11-12	X	
UST-3E/1-3	X	X
UST-3E/5-7	X	
UST-3E/11-12	X	X
UST-4E/5-7	X	
UST-4E/11-12	X	
UST-4W/1-3	X	X
UST-4W/5-7	X	
UST-4W/11-12	X	X
UST-5C/5-7	X	
UST-5C/11-12	X	

APPENDIX E

PUBLIC NOTIFICATION LETTERS



Wannalancit Mills
650 Suffolk Street
Lowell, MA 01854

978.970.5600 PHONE
978.453.1995 FAX

www.TRCSolutions.com

TRC Reference Number: 115058

June 22, 2010

Board of Health
City of New Bedford
133 William Street
New Bedford, Massachusetts 02740

Re: Notice of Availability
Response Action Outcome Report
Former Keith Junior High School UST
70 Hathaway Boulevard
New Bedford, Massachusetts

Release Tracking Number (RTN) 4-15824

To Whom It May Concern:

TRC has prepared this notification letter on behalf of the City of New Bedford (the City), to inform you of the availability of a Response Action Outcome (RAO) Statement Report for the above-referenced Site in New Bedford, Massachusetts. This notification is being submitted to you in accordance with the Massachusetts Contingency Plan, 310 CMR 40.1403(3)(f).

The RAO Report for the above-referenced property can be reviewed at the Massachusetts Department of Environmental Protection, Southeast Regional Office, located at 20 Riverside Drive in Lakeville, Massachusetts.

Sincerely,

TRC Environmental Corporation

David M. Sullivan, LSP, CHMM
Sr. Project Manager

cc: MassDEP Southeast Regional Office
Mayor, City of New Bedford



Wannalancit Mills
650 Suffolk Street
Lowell, MA 01854

978.970.5600 PHONE
978.453.1995 FAX

www.TRCSolutions.com

TRC Reference Number: 115058

June 22, 2010

Mayor Scott W. Lang
City of New Bedford
133 William Street
New Bedford, Massachusetts 02740

Re: Notice of Availability
Response Action Outcome Report
Former Keith Junior High School UST
70 Hathaway Boulevard
New Bedford, Massachusetts

Release Tracking Number (RTN) 4-15824

Dear Mayor Lang:

TRC has prepared this notification letter on behalf of the City of New Bedford (the City), to inform you of the availability of a Response Action Outcome (RAO) Statement Report for the above-referenced Site in New Bedford, Massachusetts. This notification is being submitted to you in accordance with the Massachusetts Contingency Plan, 310 CMR 40.1403(3)(f).

The RAO Report for the above-referenced property can be reviewed at the Massachusetts Department of Environmental Protection, Southeast Regional Office, located at 20 Riverside Drive in Lakeville, Massachusetts.

Sincerely,

TRC Environmental Corporation

David M. Sullivan, LSP, CHMM
Sr. Project Manager

cc: MassDEP Southeast Regional Office
Board of Health, City of New Bedford