

Report

Phase I and Phase II Environmental Site Assessment (ESA)

478 - 480 Union Street
New Bedford, MA

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EXECUTIVE SUMMARY

Weston & Sampson, on behalf of the City of New Bedford, performed a Phase I and Phase II Environmental Site Assessment (ESA) at 478 - 480 Union Street in New Bedford, Massachusetts (the "Site"). The Phase II ESA was part of a Brownfields Assessment Grant funded by the United States Environmental Protection Agency to evaluate the environmental conditions prior to redevelopment of the Site. Weston & Sampson was not acting as the Licensed Site Professional (LSP) of record for this Site during this investigation; however, all fieldwork was performed in accordance with Massachusetts Contingency Plan (MCP) performance standards and compared to MCP Reportable and Method 1 soil standards. The major findings of the Phase I and Phase II ESA are as follows:

Phase I ESA

- The Site consists of an undeveloped 0.42 acre parcel of land. An automobile service garage existed at the Site between 1915 and the late 1970's.
- Numerous underground storage tanks (USTs) were historically located at the Site. Information regarding the assessment and closure of the USTs is very limited.
- Previous investigations identified petroleum impacted soil and groundwater at the Site above applicable DEP standards. The DEP issued Release Tracking Number (RTN) 4-1265 to the release, which was closed with a Class B-1 Response action Outcome (RAO) in October 1997. However, soil and groundwater sampling performed in support of regulatory closure did not include sampling in the area of many of the historic UST locations.

A Phase II ESA was performed to assess potential impacts from historic use as an automobile service garage with multiple USTs and previously identified impacted soil and groundwater at the Site.

Phase II ESA

- The Phase II ESA included the performance of a geophysical survey, excavation of 9 test pits, advancement of 11 soil borings, installation of 8 groundwater monitoring wells, and soil/groundwater sampling and analysis.
- Results of the geophysical and test pit investigation did not identify any abandoned USTs.
- Soil sample analysis identified petroleum and/or lead impacted soil on the northern and western portions of the Site above applicable DEP reportable soil standards. Analysis of groundwater samples did not identify concentration above applicable standards.

Findings

The Phase I and II ESA identified the following recognized environmental condition (REC):

- Impacted soil at the Site above applicable DEP reportable standards.

The conditions identified are not consistent with those identified in the previous investigations and RAO, and appear to be separate release conditions. Therefore, new 120 day reportable conditions have been identified. The City of New Bedford should report the conditions within 120-days of obtaining knowledge of the release conditions.

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1.0 INTRODUCTION

Weston & Sampson, on behalf of the City of New Bedford, performed a Phase I and Phase II Environmental Site Assessment (ESA) at a 0.42 acre vacant parcel of land located 478 – 480 Union Street in New Bedford, Massachusetts (the “Site”). This ESA was funded through a Brownfields Assessment Grant provided by the United States Environmental Protection Agency (EPA) to the City to evaluate selected properties in the New Bedford region. Please see Figure 1 and 2 for a depiction of the Site and surrounding properties.

The ESA was performed in August and September 2010 in general accordance with the Phase I ESA Process (Standard Practice E 1527-05), as developed by the American Society for Testing and Materials (ASTM), the Oil and Hazardous Material Release Prevention and Response Act, Massachusetts General Law Chapter 21E (MGL c. 21E) and in general accordance with EPA’s All Appropriate Inquiry (AAI) standard. The ESA included an environmental database search, review of local, state, and federal regulatory agency files, and a limited reconnaissance of the Site and vicinity for potential off-Site contamination sources. A user questionnaire is included in Appendix A, a regulatory database search in Appendix B, municipal records in Appendix C, historical information in Appendix D, and Site photos in Appendix E.

Based on the findings of the Phase I, a Phase II ESA was performed at the Site in April and May 2011. This Phase I and Phase II ESA were performed in accordance with the limitations and exceptions identified in Section 11.0 of this report and included the following tasks:

- Review of an environmental database search report for Sites identified on databases including National Priorities List (NPL); Comprehensive Environmental Response Compensation and Liability Act (CERCLA); Resource Conservation and Recovery Act (RCRA); emergency response notification sites; and state spill, release, and landfill sites.
- Review of files at the City of New Bedford Assessor’s Office, Inspectional Services Department, Fire Department, Health Department, and Public Library.
- Site reconnaissance to observe conditions exposed at ground surface for evidence of previous and current property usage, and indications of environmental impact (e.g., stressed vegetation, staining, etc.).
- Curbside reconnaissance of surrounding properties to identify potential off-Site sources of contamination.
- The Phase I ESA did not include a property title search.

The Phase II ESA was performed to assess potential concerns identified in the Phase I and included the following tasks:

- A geophysical survey was performed at the Site an attempt to locate any historic USTs. The survey was performed utilizing ground penetrating radar (GPR) and magnetometer instruments.
- Nine (9) test pits (TP-1 through TP-9) were excavated at the Site utilizing a track mounted excavator.
- Eleven (11) soil borings (WS-1 through WS-11) were advanced at the Site utilizing Geoprobe drilling techniques. Eight of the borings were completed as a groundwater monitoring well (MWS-1 through MWS-8).
- Soil samples collected from the test pits and borings were field screened with a photoionization detector (PID).
- Soil samples selected from the test pits and/or borings and groundwater samples collected from the monitoring wells were analyzed for varying analysis including EPH, PAHs, VPH, VOCs, 8 RCRA Metals, and/or PCBs.
- A groundwater flow survey was performed.

1.1 Purpose

The purpose of the ESA was to evaluate business environmental risk, defined as a risk which can have an impact on the business associated with the current or planned use of a parcel of commercial real estate.

This assessment utilized the general quality principals and practices towards the preparation of this report that incorporated suggested methods under the ASTM. The term “recognized environmental condition” (REC) referenced in the ASTM refers to “the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.” The ASTM definition does not include “de minimis” conditions, which generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of the appropriate government agencies. Therefore, de minimis conditions are not considered RECs.

2.0 SITE DESCRIPTION

2.1 Site Ownership and Location

Site Owner:	City of New Bedford
Site Occupants:	Vacant
Site Location:	478 - 480 Union Street
County:	Bristol County
Parcel ID:	Map 45 Lot 9
Latitude/Longitude:	41° 37' 57" North 70° 56' 21" West
UTM Coordinates:	338,481 meters East 4,610,806 meters North
Size:	~0.42 Acres

2.2 Current Use of the Property

The Site is an unoccupied 0.42 acre parcel of vacant land located at 478 - 480 Union Street in New Bedford, Massachusetts.

2.3 Description of Structures, Roads, Other Improvements on the Site

The Site is a vacant parcel of land. Asphalt and concrete surfaces remain on the northern portion of the Site. Topography of the Site is generally flat. At the time of the initial Phase I Site visit the Site included a vacant one-story building. The building appeared to be a former auto body repair facility. The City demolished the building, leaving a level Site, prior to the Phase II.

2.4 Current Uses of Adjoining Properties

The Site is located on the south side of Union Street southeast of the intersection of Union Street and Newton Street. The Site is located in a residential and commercial area. Union Street is located north of the Site, across which are a residence, a church and a medical supply office. Residential properties border the Site to the east, south and west. A school is located northwest of the Site across Union Street.

3.0 USER PROVIDED INFORMATION

A User Questionnaire was completed by Mr. Scott Alfonse, Director of the City of New Bedford Department of Environmental Stewardship. A summary of the information obtained by Mr. Alfonse is provided below. A copy of the completed User Questionnaire is provided in Appendix A. Information in this section was based primarily on the information collected from Mr. Alfonse.

3.1 Environmental Liens

The user reported that he is unaware of any environmental cleanup liens against the property (the Site) filed or recorded under federal, tribal, state or local law.

3.2 Activity and Use Limitations

The user reported that he is unaware of any Activity and Use Limitations on the property.

3.3 Specialized Knowledge

The user reported no specialized knowledge related to the property or nearby properties other than knowledge of the previous environmental investigations detailed in Section 5.3 of this report.

3.4 Commonly Known or Reasonable Ascertainable Information

The user reported that he is aware of no commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases other than knowledge of the previous environmental investigations detailed in Section 5.3 of this report.

3.5 Valuation Reduction for Environmental Issues

This task was beyond the scope of the Phase I.

3.6 Degree of Obviousness of Contamination

The user indicated that he has no knowledge of any obvious indicators that point to the presence or likely presence of contamination at the property other than knowledge of the previous environmental investigations detailed in Section 5.3 of this report.

4.0 DATABASE SEARCH REPORT AND MUNICIPAL RECORDS

At the City's request, Weston & Sampson contracted Common Sense Environmental, Inc. of New Bedford, Massachusetts to perform a regulatory database search (based on ASTM standards) of applicable State and Federal environmental databases and to conduct local research for the ESA.

4.1 Standard Environmental Record Sources

Common Sense Environmental obtained a regulatory database report from First Search Technology Corporation. A complete database report is included as Appendix B. A summary of the database information is provided below.

EDR REGULATORY DATABASE SEARCH SUMMARY			
Database	Radius	Target Property	Surrounding Facilities
National Priorities List (NPL)/De-listed NPL	1 Mile	-	1
Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Sites	½ Mile	-	1
CERCLIS No Further Remedial Action Planned (NFRAP) Sites	½ Mile	-	1
Corrective Action Report (CORRACTS)	1 Mile	-	0
Resource Conservation and Recovery Act (RCRA) Corrective Action Treatment, Storage, and Disposal (TSD) Facilities	½ Mile	-	0
Federal Brownfields	½ Mile	-	2
RCRA Waste Quantity Generators	¼ Mile	-	5
Emergency Response Notification System (ERNS) Sites	.12 Mile	-	2
State Hazardous Waste Sites	1 Mile	-	69
State Spills 90	.12 Mile	-	5
Solid Waste Facilities/Landfills (SWF/LF)	½ Mile	-	1
Leaking Underground Storage Tank (LUST)	½ Mile	-	5
Underground Storage Tank (UST)/ Above Ground Storage Tank (AST) Sites	¼ Mile	-	0
Institutional Control	½ Mile	-	0

In general terms, surrounding properties identified in the above table were evaluated to determine if they might pose a risk to the Site based on characteristics such as proximity, elevation, type of contaminant, and regulatory status. Whether or not an off-Site source has the potential to impact the Site depends on the distance of the source from the Site, its direction from

the Site, relative to groundwater flow direction, magnitude of release, contaminant type, and location. Based on topography, the assumed direction of groundwater flow at the Site is to the northeast. This general flow direction was also confirmed via a groundwater flow survey as detailed in Section 9.0.

4.1.1 On-Site Listings from Database Search

The Site was listed as a SHWS and Spills Site in the data base report. As discussed in Section 5.3, the listings are relative to a release of petroleum hydrocarbons to soil and groundwater identified at the Site during a previous investigation performed by Harborline Engineering in 1992. The release was reported to the Massachusetts Department of Environmental Protection (DEP) in 1993 and Release Tracking Number (RTN) 4-1265 was assigned to the Site. Prime Engineering performed additional assessment of the Site and submitted a Class B-1 Response Action Outcome (RAO) Statement to the DEP for the release in support of regulatory closure in 1997. A Class B-1 RAO means that no remediation was performed and that the Site was closed via a Risk Characterization and no Activity and Use Limitation (AUL) was required. Please see Section 5.3 for additional details regarding the previous assessment activities at the Site.

The Site was not listed in any other database searched by First Search.

4.1.2 Off-Site Listings from EDR Database Search

As indicated in the table above, a review of regulatory records identified 1 NPL site, 2 CERCLIS sites, 2 Federal Brownfield sites, 5 RCRA sites, 2 ERNS sites, 69 SHWS sites, 5 State Spill sites, 1 SWL/LF site, and 5 LUST sites within ASTM-standard search distances of the Site. Of these, only 1 facility is located within 1,800 feet of the subject Site. This facility is discussed below.

Baker Manufacturing, a commercial printing business located at 204 Courts Street, is located approximately 400 feet northeast of the Site. This facility is listed as a RCRA Small Quantity Generator (SQG) with no listed violations. There are no listed releases for this facility in the database report. Based on regulatory status and groundwater flow direction (northeast) this facility is not considered a concern.

Based on factors such as distance from the Site (greater than 1,800 feet), assumed groundwater flow direction in the Site vicinity, and/or regulatory status, Weston & Sampson considers the remaining facilities to have a low potential to adversely impact the Site.

4.2 Municipal Records

As part of this ESA, file reviews were conducted at City of New Bedford municipal offices by Common Sense Environmental. Files were reviewed for the street address of 478 - 480 Union Street. Significant information pertaining to the Site are included in Appendix C and discussed below.

4.2.1 Assessor's Office

The assessor's office provided a field card, an assessor map, and property parcel information for the Site. The assessor's records indicate that the Site parcel occupies 0.42 acres and is owned by

the City of New Bedford. The City acquired the property through non-payment of taxes in 2009. The field card and assessor map are included in Appendix C of this report.

4.2.2 Fire Department

The City of New Bedford Fire Department had the following records for USTs at the Site:

City of New Bedford Fire Department –Records			
Date	Tank	Document	Potential Location
1919	Five 1,000-gallon gasoline.	License.	See 1924 atlas map - Section 4.3.I.
1924	Five 1,000-gallon gasoline.	Certificate of registration.	See 1924 atlas map.
1925	One 1,000-gallon gasoline.	Permit for removal.	See 1924 atlas map.
1929	One 1,000-gallon gasoline. One 500-gallon gasoline.	Permit for removal.	See 1924 atlas map. Location of 500-gallon not identified in atlas maps.
1941	One 1,000-gallon fuel oil.	Permit to install.	Location not identified.
1949	Three 1,000-gallon gasoline.	Application for removal.	See 1924 and 1950 atlas map - Section 4.3.I.
1949	One 3,000-gallon gasoline.	Application for install.	See 1950 atlas map.
1958	One 3,000-gallon gasoline. One 2,000-gallon gasoline. One 550-gallon waste oil.	Permit to remove.	See 1950 atlas map. Location of 500-gallon not identified in atlas maps.
1970	One 1,000-gallon fuel oil	Permit for use.	Location not identified.
1984	One 1,000-gallon fuel oil.	Permit to remove.	Location not identified.
1989	One 550-gallon waste oil.	Permit to remove.	Location not identified.
1992	One 1,000-gallon fuel oil.	Permit to remove.	Location not identified.

See Section 4.4 for a discussion of the summary of the UST history for the Site.

4.2.3 Inspectional Services Department

The City of New Bedford Inspectional Services Department had no records on file for the Site.

4.2.4 Department of Health / Environmental Division

The Department of Health Department had no records on file for the Site relative to any historic septic tanks, water quality issues, or environmental releases.

4.3 Site and Area History

4.3.1 Prior Ownership and Usage

The City of New Bedford Assessor's Department and Bristol County Registry of Deeds were visited to review historical ownership information for the Site. The information was reviewed for the purposes of land use determination. A summary of the information obtained during this review is provided in the table below.

Prior Ownership Records	
Date	Owner
1916	Florence Chamberlain
1918	Beachler Motor Company
1919	The Maples Motor Sales
1940	Furnan's Auto Company, Inc.
1958	Hawes Electric Company
1983	Colonial Restaurant Supply
1986	Alan Cohen
1992	Alan S. Cohen Trust
2008	Luis Martins
2009	City of New Bedford

No environmental liens or Activity and Use Limitations (AULs) were identified. Previous owners of the Site were not available to be interviewed.

4.3.1 Sanborn® Maps

Weston & Sampson obtained Sanborn® Fire Insurance Maps from EDR in order to gain knowledge of the Site and area history. Sanborn® Fire Insurance Maps were available for the years 1906, 1924, 1950, 1992, 1993, and 1995. Copies of the Sanborn® Fire Insurance Map are provided in Appendix D. The following table summarizes information obtained from the atlas maps:

Sanborn Atlas Maps			
Year	Summary On-Site	Summary Off-Site	Concerns
1906	The Site is developed with two residential dwellings.	Union Street is depicted north of the Site, across which is undeveloped land. Residential properties are shown to the east, south and west of the Site.	None
1924	The Site is developed with the central and southern portion of the existing garage building. Five (5) gasoline tanks area shown on the northern portion of the Site.	The surrounding area is depicted as in the 1906 map with the following exception: north of the Site, across Union Street is developed with additional residential properties and an auto garage.	Former use of the Site as a garage with 5 gasoline tanks.
1950	The Site is developed with the existing garage building. The 5 gasoline tanks depicted in the 1924 atlas map are not depicted. Three gasoline tanks are depicted on the northwestern portion of the Site.	The surrounding area is depicted as in the 1924 map.	Former use of the Site as a garage with 3 additional gasoline tanks on-Site.
1992 through 1995	The Site is developed with the existing garage building. No gasoline tanks are depicted.	The surrounding area is depicted as in the 1950 map.	None.

4.3.2 City Directories

Historic city directories for the Site were reviewed at the City of New Bedford Public Library. The following is a summary of the City Directory research.

City Directories			
Year	Summary On-Site	Summary Off-Site	Concerns
1925	Clinton Street Garage and Fisk Tire Agency	No properties off concern noted.	None
1936	Furnan's Auto Company	No properties off concern noted.	Former Site use as a garage.
1945	Furnan's Auto Company	No properties off concern noted.	Former Site use as a garage.
1955	Furnan's Auto Company	475 Union Street: Leeds Cleaners & Dyers	Former Site use as a garage.
1960	Hawes Electric Co.	475 Union Street: Leeds Cleaners & Dyers	None
1969	Royal Lincoln Mercury	475 Union Street: Leeds Cleaners & Tailors	Former Site use as a garage.
1975	Not Listed.	475 Union Street: Leeds Cleaners & Tailors	None
2000	Action Delivery Service	No properties off concern noted.	None

As indicated in the table above, the former use of the Site as an automotive service garage was considered a potential REC to the Phase I and was assessed as part of the Phase II ESA as detailed in Section 9.0.

Leeds Cleaners was located at 475 Union Street, across Union Street to the northeast of the Site. Based on the northeasterly groundwater flow direction at the Site, this former facility is located hydrogeologically downgradient of the Site. Therefore, this former facility is not considered a concern.

4.3.3 Aerial Photographs

Historical aerial photographs depicting the Site from 1992 to 2005 were reviewed. The photographs depict the former Site building. The photographs depict the surrounding area as it exists today.

4.3.4 Topographic Maps

A historical topographic map from 1941 was reviewed. No structures were depicted on-Site in the map. No issues of environmental concern were identified.

4.3.5 Flood Insurance Rate Map Information

According to a Flood Insurance Rate Map (Panel #25005C0389F) the Site is located in an area in flood Zone X, an area of minimal flooding.

4.4 Summary of Site History and USTs

The following is a summary of the Site history as obtained from municipal records and historic document review.

Historical atlas maps indicate that the Site was developed with two residential structures in 1906. A gasoline filling station and automobile service garage existed at the Site between 1915 and the late 1970's. Five gasoline tanks are depicted in the 1924 atlas map on the northern portion of the Site. A 1950 atlas map indicates three additional gasoline tanks were located on the northwestern portion of the Site. The Site was reportedly utilized by a restaurant supply company in the 1980s and a dance studio in the 1990's. The former use of the Site as a gasoline filling station and automotive service garage with gasoline tanks was considered a potential REC to the Phase I and was assessed as part of the Phase II ESA as detailed in Section 9.0.

Municipal records and historic atlas maps indicated that numerous USTs were historically located at the Site. As indicated above, historic atlas maps indicate that 8 separate gasoline tanks were located on the northern portion of the Site. Municipal records indicate that two 1,000-gallon #2 fuel oil USTs were removed from the Site in 1984 and 1992 and a 550-gallon waste oil UST was removed from the Site in 1989. Tank installation and/or removal permits also exist for numerous other USTs including one 3,000-gallon gasoline UST and one 2,000-gallon gasoline UST. Figure 2 (attached) depicts the location of some of the historic on-Site USTs. However, additional UST information including reports detailing the removal of the historic USTs at the Site was not identified during the ESA. Based on the lack of information concerning historic USTs and removals, the former use of numerous USTs at the Site was considered a potential REC to the Phase I and was assessed as part of the Phase II ESA as detailed in Section 9.0.

5.0 EXISTING ENVIRONMENTAL INFORMATION

5.1 State Records

The Site is listed with DEP as a SHWS and a Spills Site for RTN 4-1265. See Section 5.3 for further details.

5.2 Off-Site Data Review

Based on groundwater flow direction, nature of contamination, regulatory status, and proximity of the properties to the Site, the sites listed in the First Search regulatory database report are not expected to adverse impact to the Site. A DEP file review was not conducted.

5.3 Previous Environmental Investigations

Weston & Sampson was provided with a report previous Phase I Site Investigation prepared by Harborline Engineering dated September 10, 1992. According to the report, Harborline's investigation included the installation of three monitoring wells (MW-1, MW-2 and MW-3) on the northwestern and northern portion of the Site. Field screening of soil samples collected from the borings identified concentrations of total volatile organics (TVOCs) ranging from 1.2 to 65 parts per million by volume (ppmv). However, soil samples were not submitted for laboratory analysis. Laboratory analysis of groundwater samples collected from the monitoring wells identified a concentration of Total Petroleum Hydrocarbons (TPH) at 679 mg/l in the sample obtained from MW-1 (west of the Site building) and 1,2 Dichlorobenzene (13.6 ug/l) in the sample obtained from MW-3 (northeast of the Site building). Harborline determined that results indicated that a release of oil or hazardous material was identified at the Site. The release was subsequently reported to the DEP and RTN 4-1265 was assigned to the Site.

Weston & Sampson was also provided with a copy of a RAO Statement report for RTN 4-1265, prepared by Prime Engineering, Inc. dated October 13, 1997. The report indicates that Prime installed two additional soil borings (P-1 and P2) on the northern portion of the Site in 1997. Field screening of soil samples collected from the borings identified concentrations of TVOCs ranging from 3.5 to 121 ppmv. A single composite soil sample was submitted for laboratory analysis from each of the borings. Analysis did not identify concentrations of petroleum hydrocarbons above applicable DEP Method 1 S-1 soil standards. Prime also collected groundwater samples from MW-1, MW-2, and MW-3. Analysis of the groundwater samples did not identify concentrations of petroleum hydrocarbons above applicable DEP Method 1 GW-2/3 groundwater standards. Prime concluded that based on the results of their investigation a condition of No Significant Risk existed at the Site.

Although, a RAO has been issued to the DEP in support of regulatory closure, the soil and groundwater sampling performed in support of the RAO did not include sampling in the area many of the historic UST locations at the Site, therefore the detection of impacted soil and groundwater at the Site during the previous investigation was considered a potential REC to the Phase I and was assessed as part of the Phase II ESA as detailed in Section 9.0.

6.0 SITE RECONNAISSANCE

On August 2, 2010, Common Sense Environmental personnel, hired as a subconsultant at the request of the City, performed a visual reconnaissance of the Site. Weston & Sampson performed additional Site reconnaissance on September 16, 2010. The Site was observed by walking around the property and observing the surrounding properties. In addition, the purpose of the Phase I ESA Site reconnaissance was to determine Site accessibility and to evaluate potential sources of contamination to be assessed during a Phase II ESA. Photographs taken at the Site are provided in Appendix E.

Weston & Sampson performed additional Site visits during the Phase II ESA activities in April and May 2011.

6.1 Physical Setting

6.1.1 Site Setting and Topography

The physical setting of the Site is discussed in Section 2.0 of this report and is shown in Figures 1, 2 and 3. Topography of the Site is generally flat. The elevation of the Site is approximately 50-52 feet above mean sea level. The Site is an undeveloped, vacant parcel of land.

6.1.2 Hydrogeologic Characteristics

Previous investigations performed at the Site identified soils consisting of brown and grey fine to coarse sand with trace silt to the maximum depth of investigation of 20 feet below grade surface (bgs). Groundwater was identified at 11 to 12 feet bgs in the soil borings. A groundwater elevation survey previously performed by Haborline Engineering calculated groundwater flow to the northeastern direction at the Site. As detailed in Section 9.0, Weston & Sampson identified similar subsurface conditions during subsurface investigation activities.

There are no wetlands or water bodies located on the Site. The closest surface water body and associated wetlands to the Site is the Acushnet River which is located approximately 1 mile east of the Site.

6.1.3 Potential Environmental Receptors

According to the Area Receptors Map (Figure 3) prepared using the MassGIS Environmental Receptors Database, the Site is not located within an Interim Well Protection Area (IWPA), Potentially Productive Aquifer, or within a Current or Potential Drinking Water Source Area. There are no wetlands or water bodies located on the Site.

6.2 Physical Characteristics

The following is a list of observations made during the reconnaissance of the Site. Photographs of the Site visit can be found in Appendix E.

6.2.1 Land Area

The Site is currently a vacant parcel of land. Concrete and asphalt paved areas exist on the northern portion of the Site.

At the time of the initial Phase I ESA Site visits in August and September 2010, the Site was developed with a vacant single story building that occupied the majority of the area of Site. The southern portion of the building had been partially demolished and contained a concrete slab and portions of concrete block walls. The building was in disrepair and was demolished and removed in April 2011 prior to the performance of the Phase II ESA.

6.2.2 Buildings

There are currently no buildings constructed at the Site.

6.3 OHM Storage and Use

The Site is currently vacant. There is no current OHM storage or usage at the Site.

7.0 INTERVIEWS

7.1 User

As part of this ESA and interview was conducted with Mr. Scott Alfonse, Director of the Department of Environmental Stewardship for the City of New Bedford. With the exception of the information obtained during previous investigations as detailed in this report, Mr. Alfonse indicated that he has no knowledge of any other obvious indicators that point to the presence or likely presence of contamination at the Site.

7.2 Owner

The City of New Bedford is the owner of the Site. Please see above for information provided by Mr. Scott Alfonse.

7.3 State Government Officials

As part of this ESA, interviews were conducted with the City of New Bedford Fire Department, Inspectional Services Department, Environmental Health Department, and Assessor's Office. Information provided by these officials is presented in Section 4.2.

7.4 Others

No other interviews were performed as part of the assessment. Previous owners of the Site were not available for interview.

8.0 DATA GAPS

Weston & Sampson identified the following data gaps during Site reconnaissance and records review:

- There was limited information available relative to removal records for historic USTs at the Site. However, the area of the former USTs was assessed as part of the Phase II ESA detailed in Section 9.0.
- A Site property chain of title search was not conducted as part of this ESA. However, numerous additional historic sources were consulted to establish the historical use of the property.

Due to the significant volume of information obtained relative to the historic and current use of the Site, and the information obtained during Phase II activities (detailed in Section 9.0) these data gaps, as defined by ASTM 1527-05, are not considered to have significantly affected the ability of Weston & Sampson to identify recognized environmental conditions in connection with the Site and do not alter the conclusion of this report.

9.0 PHASE II ENVIRONMENTAL SITE ASSESSMENT

Weston & Sampson performed a Phase II ESA at the in order to assess potential RECs identified during the Phase I ESA which included the following:

- The former use of the Site an automotive service garage.
- The former use of numerous historic USTs at the Site.
- The previous detection of impacted soil and groundwater at the Site.

The Phase II ESA was performed in April and May 2011, as detailed below. The assessment included the performance of a geophysical survey, excavation of test pits, and the advancement of soil borings and installation of monitoring wells to further assess soil and groundwater conditions at the Site. Please see Figure 2 for all sampling locations.

9.1.1 Geophysical Survey

On March 17, 2011, a geophysical survey was performed at the Site by Hager Geoscience, Inc. The survey was performed using ground penetrating radar (GPR) and was supplemented with a Schonstedt metal detector. Weston & Sampson was present during the survey and specified the survey location. The survey was performed on the northern and northwestern portions of the Site. A report detailing the results of the survey is provided in Appendix F.

As detailed in the attached report, the survey identified two GPR anomalies interpreted as possible USTs, as well as two areas of potential past excavation on the northern portion of the Site. Three areas of high magnetic response were also identified on the northern portion of the Site. Each of these areas were investigated during test pit activities detailed below.

9.1.2 Test Pit Excavation

On April 14 and 15, 2011, Weston & Sampson observed and documented test pit excavation activities by JM Environmental Corp. Nine (9) test pits (TP-1 through TP-9) were advanced throughout the Site utilizing a track mounted excavator. Test pit locations are depicted in Figure 2. The test pits were advanced in strategic locations to assess historic UST area and the two areas of possible USTs identified during the geophysical survey. The test pits were advanced to depths between 9-13 feet bgs. Test pit logs are included in Appendix G.

No USTs were identified during the test pit activities. In addition to the test pits, shallow excavations were performed in four areas where potential buried metal was identified during the geophysical survey. The excavations did not identify any USTs at the Site.

9.1.3 Soil Boring / Monitoring Well Installation

On April 21 and 22, 2011, Weston & Sampson observed and documented drilling activities by New England Geotech, Inc.. Eleven (11) soil borings (WS-1 though WS-11) were advanced at the Site via Geoprobe drilling techniques. Permanent monitoring wells were installed in 8 of the borings locations (WS-1/MWS-1 through WS-8/MWS-8) to depths of approximately 15 feet bgs.

Each monitoring well was constructed of a 10 foot length of 2-inch diameter PVC well screen followed by a length of 2-inch diameter PVC riser to grade level. Number 2 washed sand was packed to approximately 1-2 foot above the screen followed by a 1-2 foot thick bentonite grout packing. The remainder of the boring was backfilled with native soil and then sealed to grade with concrete and completed with a flush mount road box. Soil boring and monitoring well construction logs are included in Appendix G.

9.1.4 Geology

According to the USGS Bedrock Geologic Map of Massachusetts (Zen et al., 1983) the Site is underlain by Alaskite (Proterozoic Z), part of the Milford-Dedham Zone, which consists of light-gray, pinkish-gray to tan, mafic-poor granite commonly containing muscovite.

In general, soils encountered at the Site during the excavation of the test pits and advancement of the soil boring borings consisted of fine to medium sand and gravel with some cobbles to depths of approximately 10-13 feet bgs; followed by silty sand from approximately 10 to 18 feet bgs; and fine to coarse sand and gravel from 18-20 feet bgs, the maximum depth of investigation.

Fill material was identified on the northern portion of the Site in the area of test pit TP-4. The fill material consisted of fine to medium sand and silt with pieces of metal pipe, bricks, wood and ash to a depth of 6 feet bgs. TP-4 was installed in the northern portion of the Site in an area where historic gasoline USTs.

Fill material was also identified in the area of TP-5 and consisted of fine to medium sand and gravel with concrete, brick and wood to a depth of 3 feet bgs. TP-5 was installed north of TP-4 in another historic gasoline UST area.

Fill was also identified in the area of TP-8 and consisted of fine to medium sand with pieces of concrete block, pea stone, asphalt, metal pipe and wood to a depth of 3 feet bgs. TP-8 was installed in the location of former fuel oil USTs on the western portion of the Site. Bedrock was not encountered during our investigation, nor observed in the vicinity of the Site.

9.1.5 Hydrogeology

Regional groundwater in the vicinity of the Site is presumed to flow to the east-northeast toward New Bedford Harbor which is located approximately 1 mile east-northeast of the Site.

9.1.6 Groundwater Flow Survey

On May 26, 2011, Weston & Sampson performed a field survey to locate all groundwater monitoring wells at the Site. As part of the survey, the elevations of the top of casing and the top of PVC riser were recorded for Site monitoring wells. A groundwater gauging event was performed and groundwater depths were recorded at each monitoring well location. Groundwater was identified between 8 and 12 feet bgs in the monitoring wells. Results of the survey and gauging event indicate that groundwater flows in the northeastern direction at the Site.

9.1.7 Soil Sampling

Soil samples were collected at continuous intervals during the excavation of the test pits and the advancement of the soil borings. The soil samples were screened in the field for total volatile organic compounds (TVOCs) using a PID via the DEP jar headspace method. Soils were classified in the field using the Burnister Soil Classification system by a Weston & Sampson geologist. Soil samples were selected for laboratory analysis based on PID screening data as well as visual and olfactory evidence of contamination.

Field screening identified the following soil samples which exhibited evidence of petroleum impacts:

Table 1 - Field Screening Results – Soil Sampling			
Location	Sample ID	TVOCs (ppmv)	Visual /Olfactory Observations
Area of Former Gasoline USTs - Northwestern Portion of Site (1950 Sanborn).	TP-1 (6-9')	31.9	Petroleum odor.
	TP-1 (10-12')	360	
Area of Former 3K Gasoline USTs - Northern Portion of Site.	TP-3 (9-12')	440	Petroleum odor.
	WS-1 (13-15')	516	Petroleum odor.
	WS-1 (15-20')	40	
Area of Former Gasoline USTs - Northern Portion of Site (1924 Sanborn).	TP-4 (11.5-12.5')	249	Strong petroleum odor.
	WS-2 (10-15')	518	Petroleum odor.
	WS-2 (15-19')	564	
	WS-2 (19-20')	25	
Area of Former 2K Fuel Oil USTs - Western Portion of Site.	TP-8 (7-9')	78	Petroleum odor.
	WS-6 (8-10')	248	Petroleum odor.
	WS-6 (10-15')	155	

Additionally, field screening of soil samples collected from soil borings WS-9 through WS-11 identified concentrations of TVOCs ranging from 8.6 to 29 ppmv; however, visual and olfactory evidence of impact was not identified in any of the soil samples. Field screening of the remaining soil samples collected during the investigation did not identify concentrations of TVOCs.

Soil samples collected from the test pits and/or borings were selected for laboratory analysis based on sample depth and location in order to assess potential impacts from former Site uses and also based on field screening results. The soil samples were placed in pre-labeled laboratory supplied containers, preserved on ice in a cooler and transported to Groundwater Analytical Laboratories in Buzzards Bay, Massachusetts for varying laboratory analysis including EPH, PAHs, VPH, targeted VOCs, 8 RCRA Metals, and/or PCBs.

See Table 1 (attached) for a summary table of the soil laboratory analytical results. Laboratory analytical reports are attached as Appendix H.

9.1.8 Soil Analytical Results

As shown in Table 1, analysis of the soil samples identified the following exceedances of RCS-1 standards:

Area of Former Gasoline USTs -Northwestern Portion of Site (1950 Sanborn)

- Analysis of sample TP-1 10-12' identified VPH fraction C9-C10 Aromatics at 480 mg/kg above the RCS-1 standard of 100 mg/kg.

Area of Former Gasoline USTs -Northern Portion of Site (1924 Sanborn)

- Analysis of sample WS-2 15-19' identified VPH fraction C5-C8 Aliphatics at 240 mg/kg and C9-C10 Aliphatics a 220 mg/kg above the RCS-1 standards of 100 mg/kg.
- Lead was detected in soil sample TP-4 2-5' at 370 mg/kg above the RCS-1 standard of 300 mg/kg).

Area of Former 2K Fuel Oil USTs -Western Portion of Site

- Analysis of sample TP-8 7-9' identified EPH fractions C9-C18 at 1,800 mg/kg and C11-C22 Aliphatics at 1,400 mg/kg above the RCS-1 standards of 1,000 mg/kg and VPH fraction C9-C10 Aliphatics at 180 mg/kg above the RCS-1 standard of 100 mg/kg. PAH compound 2-Methynaphthalene was detected at 2.2 mg/kg above the RSC-1 standard of 0.7 mg/kg in sample TP-8 7-9'.
- Analysis of sample WS-6 8-10' identified EPH fractions C9-C18 Aliphatics at 4,300 mg/kg and C11-C2 Aliphatics at 3,900 mg/kg above the RCS-1 standards of 1,000 mg/kg, and VPH fraction C9-C10 Aliphatics (510 mg/kg) above the RCS-1 standard of 100 mg/kg. Concentrations of various PAHs were also detected above S-1 standards in soil sample WS-6 8-10'.

9.1.9 Groundwater Sampling

On April 28 and 29 2011, Weston & Sampson performed groundwater sampling at the Site. Samples were obtained from newly installed monitoring wells MWS-1 through MWS-8 and previously installed monitoring wells MW-1 and MW-2 via EPA-approved low-flow sampling

procedures. Parameters including pH, temperature, specific conductivity, dissolved oxygen, oxidation reduction potential (ORP) and turbidity were recorded using a groundwater quality meter. Groundwater samples were collected from the monitoring wells upon parameter stabilization.

The groundwater samples were placed in pre-labeled laboratory supplied containers, preserved on ice in a cooler and transported to Groundwater Analytical Laboratories for varying analysis including EPH, PAHs, VPH, targeted VOCs, and/or 8 RCRA Metals - Dissolved.

See Table 2 (attached) for a summary table of the groundwater laboratory analytical results. Laboratory analytical reports are attached as Appendix H.

9.1.10 Groundwater Analytical Results

As shown in Table 2, analysis of the groundwater samples identified the following:

- Analysis of the sample collected from MW-1 identified concentrations of EPH, PAHs, and targeted VOCs below applicable RCGW-2 groundwater standards
- Analysis of the samples collected from MWS-1 and MWS-2 identified concentrations of VPH and targeted VOCs below RCGW-2 groundwater standards.
- Analysis of the sample collected from MWS-5 identified a concentration of barium below the RCGW-2 groundwater standard.
- Analysis of the sample collected from MWS-6 identified concentrations of EPH, PAHs, VPH and targeted VOCs below RCGW-2 groundwater standards.
- Analysis of the sample collected from MWS-8 identified concentrations of barium and mercury below RCGW-2 groundwater standards.

10.0 CONCLUSIONS AND RECOMMENDATIONS

Weston & Sampson has performed a Phase I ESA in general accordance with ASTM E 1527-05 of a 0.42 acre vacant parcel of land located at 478 - 480 Union Street in New Bedford, Massachusetts (the "Site"). A Phase II ESA was performed to assess concerns identified as part of the Phase I. The Phase II ESA included the performance of a geophysical survey, the excavation of 9 test pits, the advancement of 11 soil borings, the installation of 8 monitoring wells, and associated soil and groundwater sampling. Based on the results of the Phase I and II ESA the following recognized environmental condition (REC) was identified:

- The identification of impacted soil and groundwater at the Site above applicable DEP reportable standards.

The Phase II ESA investigation has identified impacted soil in exceedance of RCS-1 standards in three separate areas at the Site: on the northwestern portion of the Site in the area of former gasoline USTs (TP-1); on the northern portion Site in the area of other former gasoline USTs (TP-4 and WS-2); and on the western portion of the Site in the area of former fuel oil USTs (WS-6 and TP-8).

The conditions identified are not consistent with those identified in the previous investigations and RAO for the Site. Therefore, pursuant to the Massachusetts Contingency Plan (MCP) CMR 40.0000, the identification of soil impacted above applicable reportable standards represents a reportable release condition that requires reporting to the DEP within 120 days of the owner/operator of the Site obtaining knowledge of the release.

The impacted soil and groundwater identified at the Site should be managed by the City in accordance with the Massachusetts Contingency Plan (MCP) 310 CMR 40.000.

11.0 LIMITATIONS

This report was prepared exclusively for the use of the City of New Bedford. The findings provided by Weston & Sampson in this report are based solely on the information reported in this document. Future investigations, and/or information that were not available to Weston & Sampson at the time of the investigation, may result in a modification of the findings stated in this report.

Should additional information become available concerning this Site, or neighboring properties that could directly impact the Site in the future, that information should be made available to Weston & Sampson for review so that, if necessary, conclusions presented in this report may be modified. The conclusions of this report are based on Site conditions observed by Weston & Sampson personnel at the time of the investigation and information provided by federal, state and local agencies. This report has been prepared in accordance with generally accepted engineering and geological practices. No other warranty, express or implied, is made.

12.0 REFERENCES

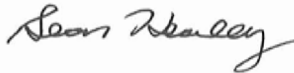
ASTM. 2000, E 1527-05. Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

Massachusetts Department of Environmental Protection (MADEP). June 26, 2009, *Massachusetts Contingency Plan*. 310 CMR 40.0000, Bureau of Waste Site Cleanup.

USGS Bedrock Geologic Map of Massachusetts (Zen et al., 1983).

**13.0 SIGNATURE AND QUALIFICATIONS OF ENVIRONMENTAL
PROFESSIONAL**

This ESA was prepared by a Qualified Environmental Professional (EP) as defined in ASTM E1527-05 and EPA's proposed AAI. The EP is a Licensed Site Professional (LSP) in Massachusetts and has over 10 years of environmental experience with degrees in relevant disciplines.



Sean F. Healey

8/11/11

Date

FIGURES

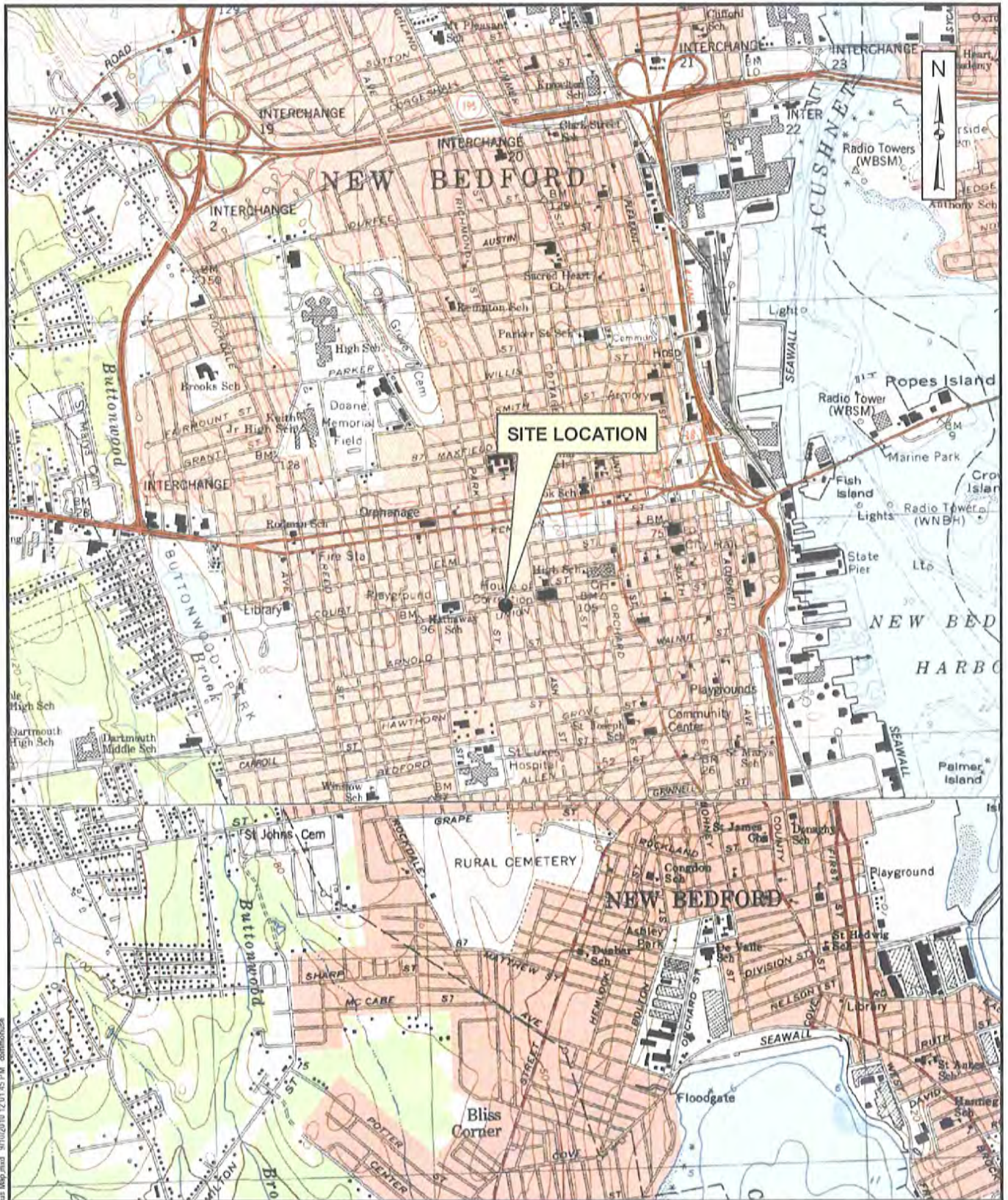
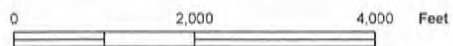


FIGURE 1
 NEW BEDFORD, MASSACHUSETTS
 478-480 UNION STREET

LOCUS MAP



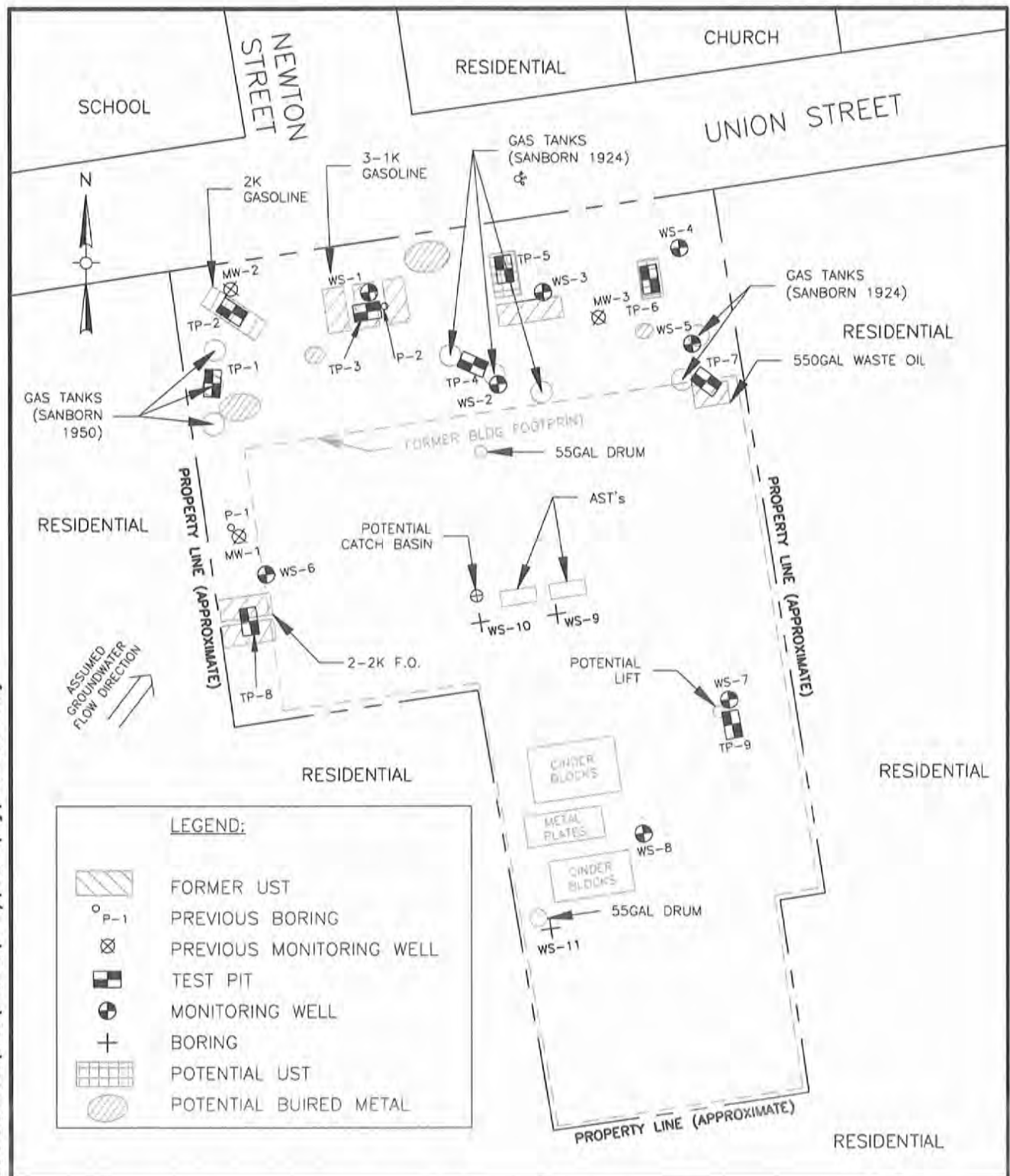
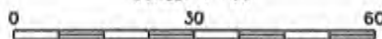


FIGURE 2
478-480 UNION STREET
NEW BEDFORD, MASSACHUSETTS

SITE PLAN

SCALE: 1"=30'



TABLES

Table 1 - Field Screening Results – Soil Sampling

Location	Sample ID	TVOCs (ppmv)	Visual /Olfactory Observations
Area of Former Gasoline USTs - Northwestern Portion of Site (1950 Sanborn).	TP-1 (6-9')	31.9	Petroleum odor.
	TP-1 (10-12')	360	
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	WS-1 (13-15')	516	Petroleum odor.
	WS-1 (15-20')	40	
Area of Former Gasoline USTs - Northern Portion of Site (1924 Sanborn).	TP-4 (11.5-12.5')	249	Strong petroleum odor.
	WS-2 (10-15')	518	Petroleum odor.
	WS-2 (15-19')	564	
	WS-2 (19-20')	25	
Area of Former 2K Fuel Oil USTs - Western Portion of Site.	TP-8 (7-9')	78	Petroleum odor.
	WS-6 (8-10')	248	Petroleum odor.
	WS-6 (10-15')	155	

Table 2b
Weston & Sampson
Summary of Soil Analytical Results
478-480 Union Street
New Bedford, MA

Sample ID	WS-2	WS-6	WS-8	WS-9	WS-10	DUP-1	WS-11	Trip Blank	RCS-1	Method 1 Soil Standards	
	(15-19')	(8-10')	(9')	(6-10')	(10-15')	(WS-10 10 15')	(0.5-2')			S1/GW2	S1/GW3
Date Sampled	4/21/2011	4/21/2011	4/22/11	4/22/11	4/22/11	4/22/11	4/22/11	4/22/11	mg/kg	mg/kg	mg/kg
Parameters (mg/kg)											
EPH											
C9-C18 Aliphatics	--	4,300	<34	<34	<32	<33	<31	--	1,000	1,000	1,000
C19-C36 Aliphatics	--	700	<34	<34	<32	<33	<31	--	3,000	3,000	3,000
C11-C22 Aromatics	--	3,900	<34	<34	<32	<33	33	--	1,000	1,000	1,000
PAH's											
Acenaphthene	--	9.4	<0.57	<0.57	<0.53	<0.54	<0.52	--	4	1,000	1,000
Benzo(a)anthracene	--	<3.0	<0.57	<0.57	<0.53	<0.54	<0.52	--	7	7	7
Benzo(a)pyrene	--	<3.0	<0.57	<0.57	<0.53	<0.54	<0.52	--	2	2	2
Benzo(b)fluoranthene	--	<3.0	<0.57	<0.57	<0.53	<0.54	<0.52	--	7	7	7
Chrysene	--	<3.0	<0.57	<0.57	<0.53	<0.54	0.57	--	70	70	70
Fluoranthene	--	<3.0	<0.57	<0.57	<0.53	<0.54	0.81	--	1,000	1,000	1,000
Fluorene	--	8.6	<0.57	<0.57	<0.53	<0.54	<0.52	--	1,000	1,000	1,000
2-Methylnaphthalene	--	69	<0.57	<0.57	<0.53	<0.54	<0.52	--	0.7	80	300
Naphthalene	--	9.6	<0.57	<0.57	<0.53	<0.54	<0.52	--	4	40	500
Phenanthrene	--	10	<0.57	<0.57	<0.53	<0.54	<0.52	--	10	500	500
Pyrene	--	<3.0	<0.57	<0.57	<0.53	<0.54	0.98	--	1,000	1,000	1,000
VPH											
C5-C8 Aliphatics	240	61	<1.0	<1.1	<1.3	<1.2	<1.1	--	100	100	100
C9-C12 Aliphatics	230	340	<1.0	<1.1	1.6	2.3	<1.1	--	1,000	1,000	1,000
C9-C10 Aromatics	220	510	<1.0	<1.1	<1.3	2.1	<1.1	--	100	100	100
Targeted VOCs											
Benzene	0.54	<0.66	--	<0.06	--	--	--	--	2	7	7
Ethylbenzene	9.5	3.4	--	<0.11	--	--	--	--	40	500	500
Naphthalene	<1.3	32	--	<0.28	--	--	--	--	4	40	500
Toluene	1.8	<0.66	--	<0.11	--	--	--	--	30	500	500
Total Xylenes	4.1	5.4	--	<0.33	--	--	--	--	300	300	500
VOCs 8260B											
	--	--	ND	--	ND	ND	ND	ND	**	**	**
Trace Metals											
Barium	--	--	10	--	15	18	50	--	1,000	1,000	1,000
Chromium	--	--	9.4	--	14	8.3	11	--	30	30	30
PCBs											
	--	--	<0.092	--	<0.089	<0.086	<0.087	--	2	2	2

Notes:

-- = Not Analyzed
 NS = No Standard
 ND = Not Detected. Detection Limit Varies
 EPH = Extractable Petroleum Hydrocarbons
 PAH = Polycyclic Aromatic Hydrocarbons

VPH = Volatile Petroleum Hydrocarbons
 VOCs = Volatile Organic Compounds
 SVOCs = Semi-Volatile Organic Compounds
 PCBs = Polychlorinated Biphenyls

** Standard Varies with Compound
BOLD = Parameter detected above laboratory detection limit

Parameter exceeds applicable standard
 Standards obtained from 310 CMR 40.0000, revised February 14, 2008

