

REQUEST FOR DETERMINATION OF APPLICABILITY

Prepared for
AVX Corporation
Fountain Inn, South Carolina
May 23, 2016

1 Tech Drive, Suite 310
Andover, MA 01810

T: 978.794.0336
F: 978.794.0534



May 23, 2016

Ms. Sarah Porter, Conservation Agent
New Bedford Conservation Commission
City Hall, Room 314
133 William Street
New Bedford, Massachusetts 02740

149279.001.002

Subject: Request for Determination of Applicability
AVX Corporation
Former Aerovox Facility, New Bedford, Massachusetts

Dear Ms. Porter:

On behalf of AVX Corporation (AVX), Brown and Caldwell is pleased to submit this Request for Determination of Applicability (RDA) for tasks associated with the preconstruction design and implementation of the April 2016 Immediate Response Action (IRA) Plan Modification at the former Aerovox property located at 740 Belleville Avenue (RTN 4-601) to address the presence of dense non-aqueous phase liquid (DNAPL). Remediation activities will take place within the following resource areas regulated by the Wetlands Protection Act (310 CMR 10.00), Riverfront Area and Land Subject to Flooding.

IRA preconstruction design activities will include the completion of soil borings to further delineate limits of impacted soil excavation in two areas of the Disposal Site based on visual and olfactory evidence of DNAPL. IRA implementation activities will include soil excavation in the two DNAPL hot spot areas, dewatering and transport of excavated soils for offsite disposal, backfilling with clean material, and paving to re-establish the preconstruction ground surface. Remediation activities will also include the installation and operation of recovery systems to remove DNAPL from groundwater.

Based on the minor activities planned at the Disposal Site, such as soil borings, the previously developed nature of the Disposal Site, and the objective of the work to generally improve site conditions, Brown and Caldwell does not believe that the IRA activities described in the RDA will alter the Property resource areas in a material way. Therefore, we request the Commission issue a Negative Determination of Applicability for the proposed activities under the Wetlands Protection Act.

The Conservation Commission will be notified of the dates that the proposed work will be conducted.

Ms. Sarah Porter
New Bedford Conservation Commission
May 23, 2016
Page 2

We trust that the enclosed supporting information is sufficient in determining the project's regulatory applicability. Should you have any questions concerning this request, please do not hesitate to contact me at (978) 794-0336.

Very truly yours,

Brown and Caldwell



Marilyn Wade, LSP
Managing Engineer

cc: Mr. Evan Slavitt, AVX Corporation
Massachusetts Department of Environmental Protection, SERO
Michele Paul, New Bedford Office of Environmental Stewardship

Attachments (1)

1. Request for Determination of Applicability

REQUEST FOR DETERMINATION OF APPLICABILITY

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AVX Corporation, Fountain Inn, South Carolina
May 23, 2016



1 Tech Drive, Suite 310
Andover, MA 01810

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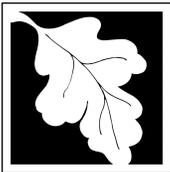
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Figure 1. Resource Area Map



Request for Determination of Applicability Forms



Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

New Bedford

City/Town

WPA Form 1- Request for Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

A. General Information

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. Applicant:

AVX Corporation

Name

E-Mail Address

One AVX Boulevard

Mailing Address

Fountain Inn

City/Town

SC

29644

State

Zip Code

864 228 8863

Phone Number

Fax Number (if applicable)

2. Representative (if any):

Brown and Caldwell

Firm

Marilyn Wade

Contact Name

mwade@brwncald.com

E-Mail Address

1 Tech Drive, Suite 310

Mailing Address

Andover

City/Town

MA

01810

State

Zip Code

978-983-2055

Phone Number

978-794-0534

Fax Number (if applicable)

B. Determinations

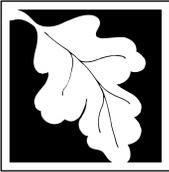
1. I request the New Bedford Conservation Commission make the following determination(s). Check any that apply:

- a. whether the area depicted on plan(s) and/or map(s) referenced below is an area subject to jurisdiction of the Wetlands Protection Act.
b. whether the boundaries of resource area(s) depicted on plan(s) and/or map(s) referenced below are accurately delineated.
c. whether the work depicted on plan(s) referenced below is subject to the Wetlands Protection Act.
d. whether the area and/or work depicted on plan(s) referenced below is subject to the jurisdiction of any municipal wetlands ordinance or bylaw of:

New Bedford

Name of Municipality

- e. whether the following scope of alternatives is adequate for work in the Riverfront Area as depicted on referenced plan(s).



WPA Form 1- Request for Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

C. Project Description (cont.)

b. Identify provisions of the Wetlands Protection Act or regulations which may exempt the applicant from having to file a Notice of Intent for all or part of the described work (use additional paper, if necessary).

See Narrative Sections 5.2 and 5.3.

3. a. If this application is a Request for Determination of Scope of Alternatives for work in the Riverfront Area, indicate the one classification below that best describes the project.

- Single family house on a lot recorded on or before 8/1/96
- Single family house on a lot recorded after 8/1/96
- Expansion of an existing structure on a lot recorded after 8/1/96
- Project, other than a single family house or public project, where the applicant owned the lot before 8/7/96
- New agriculture or aquaculture project
- Public project where funds were appropriated prior to 8/7/96
- Project on a lot shown on an approved, definitive subdivision plan where there is a recorded deed restriction limiting total alteration of the Riverfront Area for the entire subdivision
- Residential subdivision; institutional, industrial, or commercial project
- Municipal project
- District, county, state, or federal government project
- Project required to evaluate off-site alternatives in more than one municipality in an Environmental Impact Report under MEPA or in an alternatives analysis pursuant to an application for a 404 permit from the U.S. Army Corps of Engineers or 401 Water Quality Certification from the Department of Environmental Protection.

b. Provide evidence (e.g., record of date subdivision lot was recorded) supporting the classification above (use additional paper and/or attach appropriate documents, if necessary.)

N/A



WPA Form 1- Request for Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

D. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Request for Determination of Applicability and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge.

I further certify that the property owner, if different from the applicant, and the appropriate DEP Regional Office were sent a complete copy of this Request (including all appropriate documentation) simultaneously with the submittal of this Request to the Conservation Commission.

Failure by the applicant to send copies in a timely manner may result in dismissal of the Request for Determination of Applicability.

Name and address of the property owner:

City of New Bedford
Name

133 William Street
Mailing Address

New Bedford
City/Town

MA 02740
State Zip Code

Signatures:

I also understand that notification of this Request will be placed in a local newspaper at my expense in accordance with Section 10.05(3)(b)(1) of the Wetlands Protection Act regulations.

Erin Slawik May 23, 2016
Signature of Applicant Date

Shirley Wade 23 MAY 2016
Signature of Representative (if any) Date

Section 1

Introduction

This Request for Determination of Applicability (RDA) is submitted on behalf of AVX Corporation to the New Bedford Conservation Commission (the Commission) and the Massachusetts Department of Environmental Protection pursuant to the Massachusetts Wetland Protection Act, MGL Chapter 131, Section 40. The purpose of this application to determine the extent to which the work proposed herein is subject to the Wetlands Protection Act. Based on the information provided herein, AVX respectfully requests a Negative Determination of Applicability.

This RDA is filed in association with the proposed design and implementation of an April 2016 Immediate Response Action (IRA) Plan Modification for the former Aerovox facility located at 740 Belleville Avenue in New Bedford (RTN 4-0601). The 10.3-acre Disposal Site is currently a vacant, asphalt parking lot within an industrially and residentially developed area. It is the applicant's intent to conduct soil borings within the Disposal Site as part of preconstruction design in support of IRA Plan implementation. After the limits of soil excavation are delineated, IRA implementation will include soil excavation and dewatering, backfilling, and restoring the ground surface to existing conditions. IRA implementation will also include the installation and operation of recovery systems to remove Dense Non Aqueous Liquid (DNAPL) from groundwater.

Section 2

Existing Site Conditions

The Disposal Site is located at 740 Belleville Avenue, Bristol County, New Bedford, Massachusetts. The Property is currently a vacant, asphalt paved parking lot in an area of industrial and residential development owned by the City of New Bedford (Appendix A). A Site Location Plan, included in the attached IRA Plan Modification (Appendix B), shows the Site location with respect to the surrounding topography and features. The coordinates of the Site (referenced to the corner of Belleville Avenue and Hadley Street) are latitude 41° 40' 25.12" N and longitude 70° 55' 13.84" W (UTM coordinates 340135.53m E and 4615326.34m N).

The Property encompasses approximately 10.3 acres and has the following boundaries:

- The northern boundary of the Property is the existing Aerovox northern property line which is located approximately in the middle of Graham Street, a private alley that lies between Aerovox and a factory operated by Precix, Inc. (Precix). Beyond Precix to the north is the Coyne Industrial Laundry property.
- The southern boundary of the Property is the existing Aerovox southern property line which is located approximately in the middle of Hadley Street, a private street that lies between Aerovox and a factory operated by Acushnet Company (Titleist).
- The western boundary of the Property is the existing Aerovox western property line along Belleville Avenue, and
- The eastern boundary of the Property is the existing sheet pile wall (inclusive of the wall itself) running generally in a north-south orientation along the Acushnet River, and the line formed by the elevation of Mean High Water (MHW) where the sheet pile wall is not present.

A Phase II Comprehensive Site Assessment (Phase II) redefined the Disposal Site (in accordance with the MCP definition in 310 CMR 40.0006) as the area where hazardous material has come to be located, including the Property, a portion of the Titleist property to the south, and a portion of the Precix and Coyne properties to the north. The Acushnet River is immediately east of the Site. The Acushnet River and the area below MHW east of the Site is by definition the New Bedford Harbor Superfund Site, which is separate and distinct from the Disposal Site.

The property and Disposal Site boundaries are depicted on site plans included in Appendix B as part of the April 2016 IRA Plan Modification as well as on Figure 1, Resource Area Map, of this RDA.

Section 3

Site History

3.1 Site History

The Site formerly contained an approximately 450,000 square foot manufacturing building and associated ancillary buildings along with a parking lot located on industrially-zoned land. Ancillary structures included a brick sewer pump station and a brick boiler house that were located along the south side of the main manufacturing building, and a brick structure that housed electrical switching equipment that was located at the southwest corner of the main building. All above ground infrastructure on the Site was demolished and removed in 2011. All subsurface utilities were disconnected and filled in place, with the exception of the storm sewer system which remains and drains the paved area, and the former septic sewer system which included a pump house vault and connecting line running to the City sewer system in Belleville Avenue. The pump house and mechanical equipment were removed, but the vault was temporarily filled and covered, and the line capped and left in place for possible future use. The Property has been capped with asphalt, and a portion of the property is secured by perimeter fencing.

Electrical component manufacturing began at the Site in approximately 1938. Starting in the 1940s, the facility began using dielectric fluid containing polychlorinated biphenyls (PCBs) in the capacitor manufacturing process. During a 1981 EPA compliance inspection of the Facility, “oil impregnated soil was observed in the culverts leading to and at both outfalls.” In addition to the oily soils observed in the drainage trenches, stained soil was observed in the “backyard power substation” located between the former Aerovox building and the Acushnet River. Samples collected from the soils within the drainage ditches and in the former backyard power substation contained PCB concentrations of up to 24,000 parts per million (ppm). The backyard power substation was reportedly used for drum storage within the month prior to EPA’s collection of the samples.

In addition to the use of PCBs, Aerovox also utilized a trichloroethene (TCE) capacitor degreasing operation. Degreasing residues from the degreasing operation were stored in 55- gallon drums on a concrete floor with no secondary containment. A TCE aboveground storage tank (AST) was formerly located in the second floor of the building, just outside of the impregnation room. In addition, the TCE recovery system ASTs were located in the first floor of the building.

3.2 Release Summary and Immediate Response Actions to Date

As detailed further in Sections 3 and 4 of the IRA Plan Modification included in Appendix B, operations and disposal practices involving the use of PCBs and solvents resulted in the release of hazardous substances which contributed to the contamination of soils, building materials and equipment, storm water runoff and groundwater at the Site. Inspections, assessments and sampling programs from the 1980s forward, undertaken by the former owner and operator Aerovox, Inc. as well as EPA, confirmed the presence of PCBs in soils under the concrete foundation, in soils outside the building and mixed into the asphalt parking lot, in groundwater, and throughout the interior of the former building.

Phase II activities taking place between September 2013 and September 2015 further defined the limits and character of PCB and chlorinated solvent releases at the Disposal Site and indicated that the originally released contaminants have either migrated down to and into fractured bedrock,

dissolved and migrated with groundwater, or collected in the subsurface as Dense Non-Aqueous Phase Liquid (DNAPL). Chlorinated volatile organic compounds (CVOCs) have attenuated into daughter products, and PCBs remain absorbed to shallow soils along the riverfront and in deep soils and groundwater at the overburden and bedrock interface.

In accordance with 310 CMR 40.0313(1), MassDEP was notified of the presence of DNAPL at a thickness of greater than 0.5 inches in April 2014. Assessment actions were initiated including utilizing low-energy (bailing) to remove DNAPL from monitoring well MW-15D and from any newly installed monitoring wells that exhibit DNAPL thickness greater than 0.5 inches. Since recover efforts began in May 2014, DNAPL has been recovered from monitoring wells MW-15D and MW-15B. DNAPL samples collected from these wells indicate the presence of five CVOCs (1,2,4-trichlorobenzene, 1,4-dichlorobenzene, cis-1,2-dichloroethene, tetrachloroethene and trichloroethene) and two PCBs (Aroclor 1242 and Aroclor 1254).

In July 2014, a membrane interface probe was mobilized to the Disposal Site for additional investigation in the northeast corner of the Site (in the vicinity of MW-15B/MW-15D as depicted on IRA Plan figures in Appendix B) with the objective of delineating potential CVOC DNAPL in this area and to aid in the advancement of additional soil borings for collection of soil samples for analysis. Subsequent resistivity surveys were also completed to identify the lateral extent of groundwater contamination associated with DNAPL identified in monitoring well MW-15D. In addition, an ultraviolet optical screening tool was utilized to identify subsurface DNAPL on the eastern side of the Disposal Site based on the site-specific DNAPL signature. These IRA assessment activities identified a potential DNAPL zone in deep overburden approximately 60 feet in diameter at the location of MW-15D/15B, and two small shallow (< 9 feet bgs) potential DNAPL zones at boring locations UV-17 and MIP-23.

Section 4

Resource Areas

The Disposal Site is located along the Acushnet River and separated from the river by an existing sheet pile wall. As indicated in the IRA Plan Modification, potential off-site receptors are limited to those species that may come in contact with constituents of concern through the Acushnet River. However, potential off-site receptors related to the Acushnet River, including resources such as shellfish grounds, wildlife habitat, and fisheries, are being addressed under the separate New Bedford Harbor Superfund Site and are not part of response actions at the Disposal Site.

A portion of the proposed IRA activities will take place within the regulated Riverfront, defined in 310 CMR 10.58(2)(a)(3) as extending 25 feet from the river's annual high-water line in municipalities such as New Bedford, with large populations and in densely developed areas on each side of perennial rivers and streams.

Based on the Federal Emergency Management Agency (FEMA) Flood Rate Insurance Map, most recently revised in July 2014, the subject property is located within flood zone AE, a special flood hazard area that is subject to flooding during a 100-year flood event. Given the extent of the 100-year flood plain, a portion of the Disposal Site is characterized as Land Subject to Flooding as defined by 310 CMR 10.57(2). Note that GIS data available on the Massachusetts Department of Environmental Protection MassGIS website indicate that the Disposal Site is also located in an area of reduced flood risk due to the presence of levees (the harbor hurricane barrier). Resource Areas are depicted on Figure 1.

The site is not located within Natural Heritage and Endangered Species Program (NHESP) Priority Habitats of Rare Species, NHESP Estimated Habitats of Rare Wildlife, or within Areas of Critical Environmental Concern.

Proposed IRA activities, as discussed in the attached IRA Plan Modification, will take place in the eastern portion of the Disposal Site behind (west of) the existing sheet pile wall and will not extend into the Acushnet River. As detailed further in Section 5.0, proposed minor IRA activities taking place within resource areas will not impact the role of the riverfront to protect private or public water supply, protect groundwater, provide flood control, prevent storm damage, prevent pollution, protect land containing shellfish, protect wildlife habitat, and protect fisheries. Rather, the proposed work serves to improve soil and groundwater conditions by removing sources of contamination.

Section 5

IRA Design and Implementation

5.1 Introduction

As summarized in Section 3, multiple phases of field investigation in response to the March 2014 discovery of DNAPL have identified the following areas within the Disposal Site that are subject to additional response actions under the April 2016 IRA Plan Modification and shown on Figure 4 of the Plan:

- MIP-23 Area: This potential DNAPL source zone is confined to a shallow (<6' bgs) area roughly 25' by 35' isolated above an identified subsurface peat layer and behind the existing sheet pile;
- UV-17 Area: This potential DNAPL source zone is roughly 25 by 25 feet extending to the top of an identified peat layer (approximately 8 to 9 feet bgs); and
- MW-15 Area: The northeast corner of the Site is a confirmed source zone and is confined to an area approximately 60 feet in diameter, extending roughly from MIP-53/MIP-54 to the north, south to MIP-55S and east to the existing sheet pile wall as shown on the IRA Plan figures in Appendix B. The shallow soils (fill material above the peat), deep overburden and upper bedrock zone in this location contain or suggest the presence of pooled or residual DNAPL.

The objective of the response actions is to remove recoverable DNAPL from soil and groundwater in the vicinity of these areas. Preconstruction and IRA implementation activities as they relate to regulation under the Wetlands Protection Act are discussed further below.

5.2 Preconstruction Activities

5.2.1 Additional Subsurface Investigation

Preconstruction activities are anticipated, but will be completed in late May 2016 to facilitate IRA implementation under the Massachusetts Contingency Plan (MCP). Additional soil borings in the UV-17 and MIP-23 areas will be advanced to further delineate the limits of soil excavation based on visual and olfactory evidence of DNAPL in soil above the peat layer. Samples will also be collected for waste characterization at this time. Soil borings will be completed using Geoprobe equipment, and disturbed areas of the asphalt cap will be repaired after completion. Soil boring and sampling activity will take place prior to the applicant's presentation of this request to the Commission and the Commission's response to this request. However, this minor work is for assessment purposes under the MCP and are not subject to regulation under M.G.L. c. 131 § 40.

5.2.2 Wetland Protection Act applicability

In accordance with 310 CMR 10.02(2)(b)(2)(g), these borings are temporary in nature, have negligible impacts, and are necessary for IRA planning and design. Therefore, this minor activity is not subject to regulation under M.G.L. c. 131 § 40.

5.3 IRA Implementation

5.3.1 MW-15 Area

Recoverable DNAPL removal from deep overburden groundwater will be undertaken in the MW-15 Area in the northeast corner of the Disposal Site through the installation of recovery systems for shallow (above the peat) and deep (top of rock) overburden and for shallow bedrock. Due to the inability to locate contiguous DNAPL bodies or pools of sufficient size to mobilize DNAPL at existing site gradients, groundwater extraction will be incorporated into the DNAPL recovery design in order to create gradients that will facilitate DNAPL mobility and recovery for the deep overburden (MW-15D) horizon. As groundwater and DNAPL are recovered from the recovery wells, DNAPL will settle via gravity to well sumps.

For the shallow overburden and bedrock horizon recovery wells, passive recovery systems will be used. The skimmer system will be designed to include a continuous belt that will remove DNAPL from the recovery well water column as well as DNAPL that accumulates within the well sumps. Removed NAPL will be securely stored on site in drums and removed after no more than 90 days.

The installation and operation of recovery systems (shallow overburden and bedrock passive systems and deep overburden active system) and associated equipment will not involve earth disturbance. Passive and active recovery system equipment will be housed within a remediation shed and are anticipated to incorporate the use of a solar-powered system if feasible.

Wastes generated during recovery activities will be properly disposed offsite within 90 days of the accumulation start date.

5.3.2 UV-17 and MIP-23 Areas

DNAPL removal will be undertaken in these discrete shallow areas through excavation, removal and offsite disposal of impacted soils. Following removal of the existing paved surface, excavation will be limited to areas delineated by soil borings and will not extend deeper than the peat layer. Odor/emissions control equipment will also be mobilized for use as necessary. Following removal of impacted soils, a marker layer will be placed at the bottom of the excavation where practicable. The excavations will then be backfilled with clean fill and topped with an asphalt mix equivalent to the original hydraulic asphalt cap.

Excavated soils will be drained and stored on site out of the floodplain in lined roll-off containers, with subsequent disposal offsite in accordance with applicable federal and state hazardous materials shipping and disposal requirements. Roll off containers will be covered when not in active use. Dewatering liquid from the excavation will be minimized, and will be collected and stored in fractionation tanks, characterized for proper offsite disposal. Soil, dewatering liquid, and PPE wastes will be disposed offsite within 90 days of the accumulation start date.

5.3.3 Wetland Protection Act Applicability

The proposed Immediate Response Actions will take place within a previously developed riverfront area and will be designed to improve existing site conditions noted above by removing soil and groundwater contamination and re-establishing the pre-construction, paved ground surface.

The Wetland Protection Act presumes a riverfront area and land subject to flooding to be significant based on their respective abilities to protect water supplies and ground water quality, provide flood control, prevent storm damage, prevent pollution, and protect shellfish grounds, wildlife habitat, and fisheries. However, the Disposal Site does not display the characteristics of a significant resource area as it has been so extensively altered by human activity over the course of several decades that wildlife habitat functions have effectively been eliminated. In addition, the presence of the sheet pile

wall and the existing area levee system provide reduced flood risk and flood control to the Property, and proposed response actions will have no impact on these features. Given that response actions will take place behind of the sheet pile wall, potential fishing or shellfish grounds located in the Acushnet River will not be exposed to the temporary activities taking place at the Disposal Site. Rather, removal of contaminants from soil and groundwater will reduce the potential for contaminant migration into the Acushnet River via groundwater or stormwater flow.

In accordance with 310 CMR 10.02(2)(b)(2)(g), installation of the proposed recovery systems can be considered to be a similar, minor activity as performing soil borings and monitoring well installation that are not subject to regulation under M.G.L. c. 131 § 40. In addition and as noted above, the proposed limited excavation and temporary mobilization of equipment to handle and store recovered remediation wastes support the improvement previously developed and impacted Disposal Site and involve limited earth disturbance.

Control measures and best management practices will be used to prevent impacts from temporary excavation, material and waste storage, operating equipment activities to the resource areas. Control measures and best management practices may include the following:

- Weather Monitoring. Response actions will be timed to minimize the potential for stormwater contact with material and waste storage, excavation activities, and operating equipment;
- Project Phasing. Though the areas of excavation are relatively small, excavation activities will be phased to limit the area of disturbance at any one time to the least extent practicable and to prioritize excavation activities to occur during periods of low tide;
- Minimize Exposure. Waste soils, wastewaters, equipment, and PPE will be stored and handled in a manner that minimizes potential for stormwater to contact contaminants and runoff from the Disposal Site;
- Stormwater Controls: If necessary, stormwater controls, such as storm drain inlet inserts may be used to minimize the potential for potential pollutants from excavation, waste storage, or equipment operation from entering the drain system via stormwater flow. See also weather monitoring.

5.4 Summary

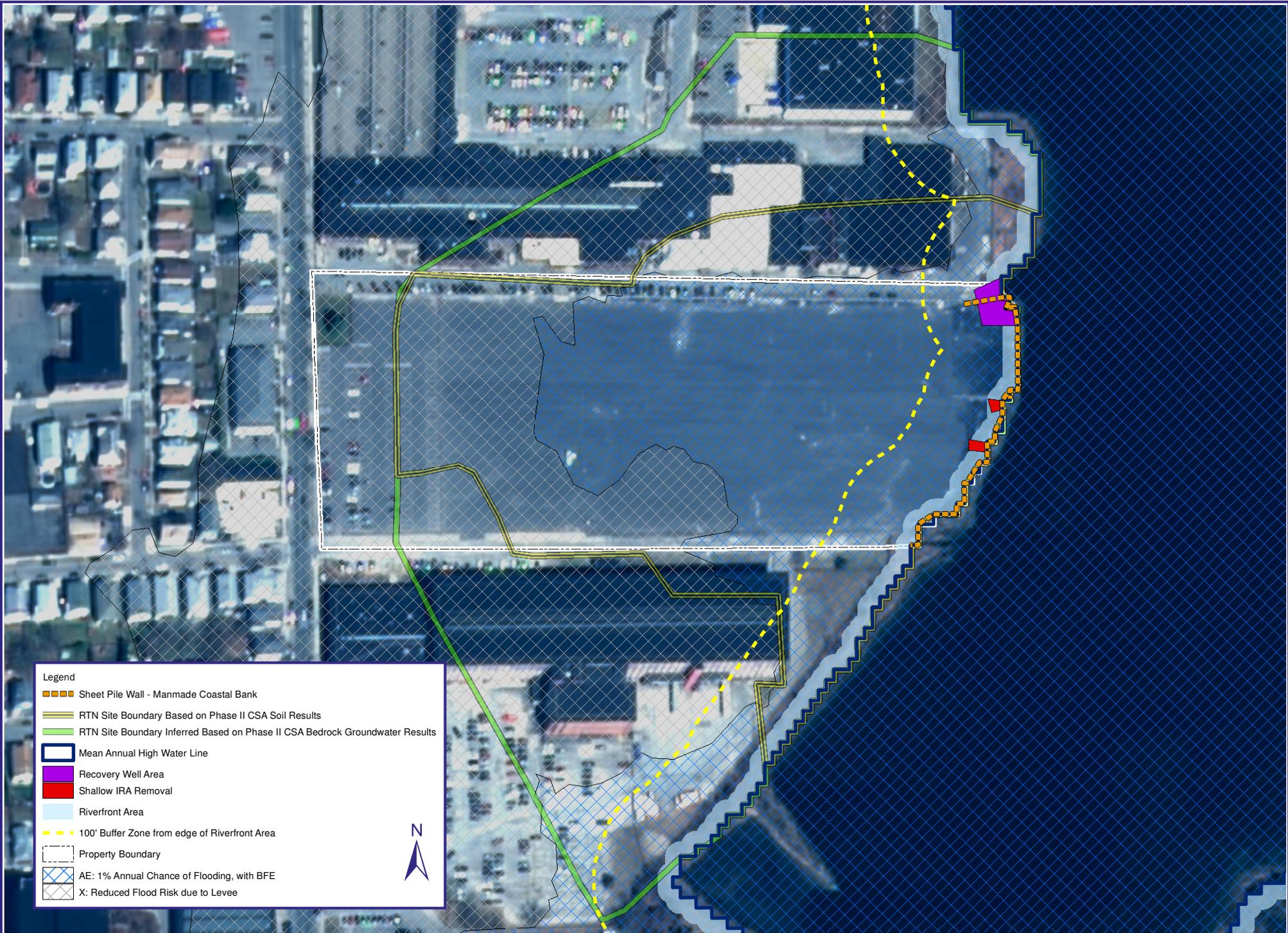
Based on the activities described above and the objective to generally improve existing site conditions, preconstruction and IRA implementation activities will not alter the Property resource areas in a material way. Therefore, AVX requests that the Commission issue a Negative Determination of Applicability for the proposed activities under the Wetlands Protection Act.

Section 6

Limitations

This document was prepared for AVX Corporation in accordance with professional standards at the time the services were performed. This document is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work.

Figures



Legend

- Sheet Pile Wall - Manmade Coastal Bank
- RTN Site Boundary Based on Phase II CSA Soil Results
- RTN Site Boundary Inferred Based on Phase II CSA Bedrock Groundwater Results
- Mean Annual High Water Line
- Recovery Well Area
- Shallow IRA Removal
- Riverfront Area
- 100' Buffer Zone from edge of Riverfront Area
- Property Boundary
- AE: 1% Annual Chance of Flooding, with BFE
- X: Reduced Flood Risk due to Levee



Project No: 149279.001.001

Date: May 2016

Initials: EW/GA

Figure 1 - Resource Area Map
Prepared For: AVX Corporation





Appendix A: Abutters List and Notice to Abutters



City of New Bedford
REQUEST for a CERTIFIED ABUTTERS LIST

This information is needed so that an official abutters list as required by MA General Law may be created and used in notifying abutters. You, as applicant, are responsible for picking up and paying for the certified abutters list from the assessor's office (city hall, room #109).

SUBJECT PROPERTY			
MAP #	112	LOT(S)#	88 and 252
ADDRESS: 740 Belleville Avenue			
OWNER INFORMATION			
NAME: City of New Bedford			
MAILING ADDRESS: 133 William Street, New Bedford, MA 02740			
APPLICANT/CONTACT PERSON INFORMATION			
NAME (IF DIFFERENT): Elizabeth Wilson, Brown and Caldwell (Contact)			
MAILING ADDRESS (IF DIFFERENT): 1 Tech Drive, Andover, MA 01810			
TELEPHONE #	978-983-2056		
EMAIL ADDRESS:	ewilson@brwncald.com		
REASON FOR THIS REQUEST: <i>Check appropriate</i>			
<input type="checkbox"/>	ZONING BOARD OF APPEALS APPLICATION		
<input type="checkbox"/>	PLANNING BOARD APPLICATION		
<input checked="" type="checkbox"/>	CONSERVATION COMMISSION APPLICATION		
<input type="checkbox"/>	LICENSING BOARD APPLICATION		
<input type="checkbox"/>	OTHER (<i>Please explain</i>):		

PLANNING
MAY 11 2016
DEPARTMENT

Once obtained, the Certified List of Abutters must be attached to this Certification Letter.

Submit this form to the Planning Division Room 303 in City Hall, 133 William Street. You, as applicant, are responsible for picking up and paying for the certified abutters list from the assessor's office (city hall, room #109).

Official Use Only:

As Administrative Assistant to the City of New Bedford's Board of Assessors, I do hereby certify that the names and addresses as identified on the attached "abutters list" are duly recorded and appear on the most recent tax.

Carlos Amado

Printed Name

Signature

5/16/2016

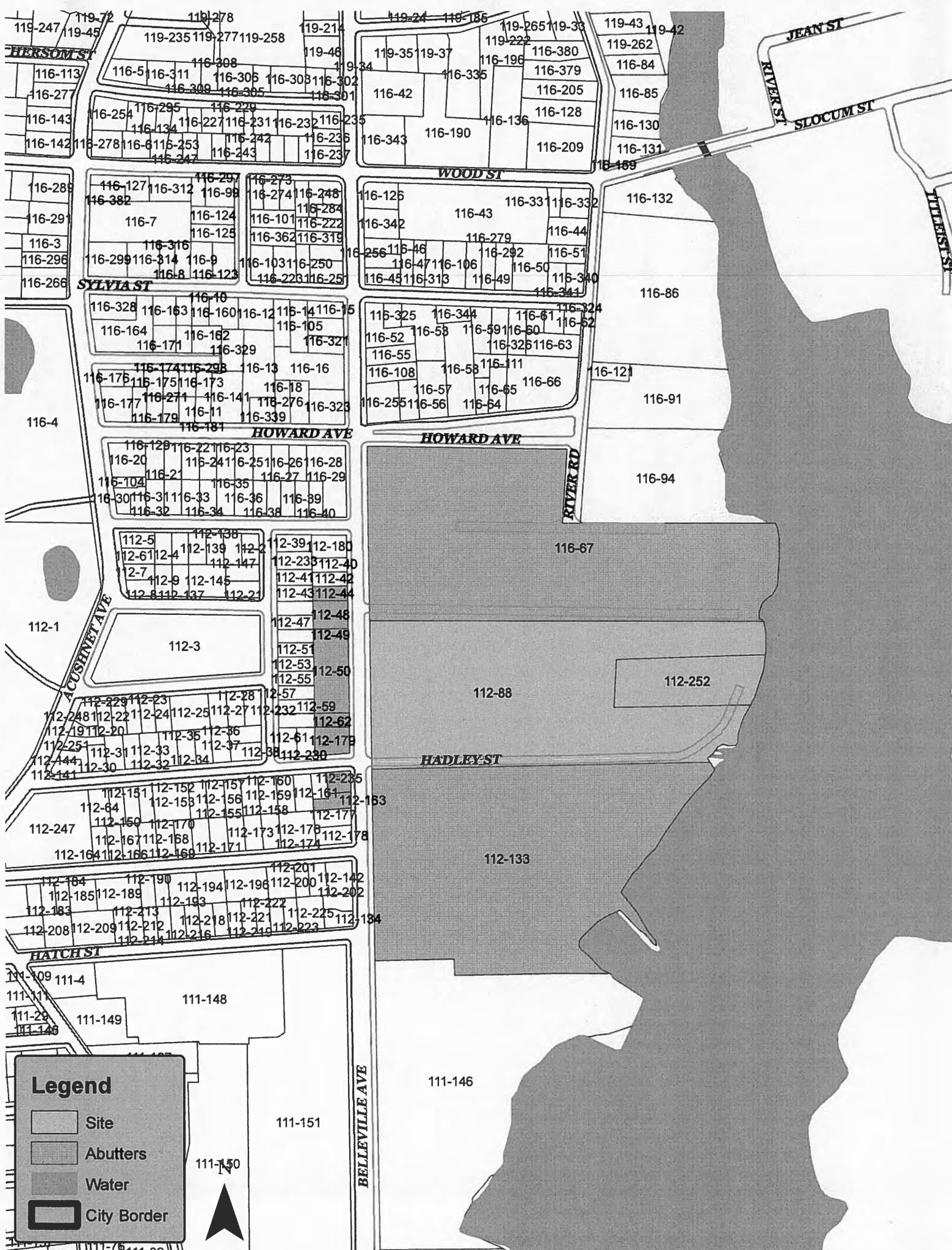
Date

May 12, 2016
Dear Applicant,

Please find below the List of Abutters within 100 feet of the property known as 740 Belleville Avenue (112-88 & 252). The current ownership listed herein must be checked and verified by the City of New Bedford Assessor's Office. Following said verification, the list shall be considered a Certified List of Abutters.

Please note that multiple listed properties with identical owner name and mailing address shall be considered duplicates, and shall require only 1 mailing. Additionally, City of New Bedford-Owned properties shall not require mailed notice.

Parcel	Location	Owner and Mailing Address
112-62	727 BELLEVILLE AVE	OLIVEIRA RONALD "TRUSTEE", OLIVEIRA SISTERS REALTY TRUST 5 ARCHER'S WAY ACUSHNET, MA 02743
112-163	713 BELLEVILLE AVE	VIEIRA MANUEL, VIEIRA MARIA C 102 COLONIAL DRIVE NEW BEDFORD, MA 02746
112-44	755 BELLEVILLE AVE	NOBLE IGNACIO, NOBLE ELENA 755 BELLEVILLE AVENUE NEW BEDFORD, MA 02745
112-252 <i>ES</i>	BELLEVILLE AVE	CITY OF NEW BEDFORD, 133 WILLIAM STREET NEW BEDFORD, MA 02740
112-235	106 HADLEY ST	PELLETIER DAVID A "TRUSTEE", PELLETIER ROCHELLE L "TRUSTEE" 5 RENEE STREET ACUSHNET, MA 02743
112-133	700 BELLEVILLE AVE	ACUSHNET COMPANY, C/O SUE BRENNER P.O.BOX 965 FAIRHAVEN, MA 02719-0965
112-179 <i>WS</i>	BELLEVILLE AVE	OLIVEIRA RONALD "TRUSTEE", OLIVEIRA SISTERS REALTY TRUST 5 ARCHER'S WAY ACUSHNET, MA 02743
112-50	735 BELLEVILLE AVE - <i>739</i>	PHILLIPS ROAD, INC, 867 MIDDLE ROAD ACUSHNET, MA 02743
112-88	740 BELLEVILLE AVE	740 BELLEVILLE AVENUE LLC, C/O CITY OF NEW BEDFORD 133 WILLIAM STREET NEW BEDFORD, MA 02740
112-48	751 BELLEVILLE AVE	VAZ ANNA V, 751 BELLEVILLE AVE NEW BEDFORD, MA 02745
116-67	74 HOWARD AVE	ACUSHNET RUBBER COMPANY INC, 744 BELLEVILLE AVENUE NEW BEDFORD, MA 02745-6010



Legend

- Site
- Abutters
- Water
- City Border



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111-150

111-146

112-133

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112-252

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116-262

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**Notification to Abutters under the City of New Bedford
Wetlands Ordinance**

In accordance with the City of New Bedford Wetlands Ordinance (New Bedford Code of Ordinances Sections 15-101 through 15-112) you are hereby notified of the following.

The name of the applicant is: AVX Corporation

The applicant has filed a Request for Determination of Applicability for the municipality of New Bedford, Massachusetts seeking permission to remove, fill, dredge or alter an area subject to protection under the City of New Bedford Wetlands Ordinance (New Bedford Code of Ordinances Sections 15-101 through 15-112).

The address of the lot where the activity is proposed is: 740 Belleville Avenue
Assessor's Map 112; Lot 88 and 252

Copies of the Request for Determination of Applicability may be examined at the New Bedford Conservation Commission, City Hall, 133 William St., Room 304, New Bedford, MA 02740 between the hours of 8:00AM and 4:00PM, Monday through Friday. For more information call (508) 991-6188.

Copies of the Request for Determination of Applicability may be obtained from either (check one) the applicant _____ or the applicant's representative Brown and Caldwell by calling this telephone number (978) 794-0336 between the hours of 8:00 AM and 4:00 PM on the following days of the week: Monday through Friday.

Information regarding the date, time and place of the public hearing may be obtained from New Bedford Conservation Commission by calling (508) 991-6188 between the hours of 8:00 AM and 4:00 PM Monday through Friday.

Note: Notice of the Public Hearing including its date, time and place, will be posted in the City all not less than forty eight (48) hours in advance of the meeting.

Note: Notice of the Public Hearing including its date, time and place, will be published at least five (5) days in advance in the Standard Times.

Note: You may also contact the New Bedford Conservation Commission at (508) 991-6188 for more information about this publication or the City of New Bedford Wetlands Ordinance.



Appendix B: Immediate Response Action Plan Modification (April 2016)

IMMEDIATE RESPONSE
ACTION PLAN
MODIFICATION

FORMER AEROVOX
FACILITY
740 BELLEVILLE AVENUE
NEW BEDFORD, MA
RTN 4-0601

Prepared for

AVX Corporation
801 17th Avenue South
Myrtle Beach, SC 29578

April 2016

AECOM
AECOM
1155 Elm Street, Suite 401
Manchester, New Hampshire 03101

PN: 60422003

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Acronyms and Abbreviations

List of Acronyms & Abbreviations

ACO	Administrative Consent Order (MassDEP-AVX Agreement)
AECOM	AECOM (formerly URS Corporation)
AOC	Administrative Order on Consent (EPA-AVX Agreement)
AST	Aboveground Storage Tank
AVX	AVX Corporation
bgs	below ground surface
COCs	Constituents of Concern
CVOC	Chlorinated Volatile Organic Compound
DNAPL	Dense Non-Aqueous Phase Liquid
EPA	United States. Environmental Protection Agency
IRA	Immediate Response Action
LSP	Licensed Site Professional
MassDEP	Massachusetts Department of Environmental Protection
MCP	Massachusetts Contingency Plan
MHW	Mean High Water
MIP	Membrane Interface Probe
MM	Monitoring and Maintenance
OHM	Oil and Hazardous Material
PCBs	Polychlorinated Biphenyls
PCE	Tetrachloroethene or Perchloroethene
PID	Photoionization Detector
ppm	parts per million
RTN	Release Tracking Number
TCE	Trichloroethene
TSS	Total suspended solids
UCL	Upper Concentration Limit
URS	URS Corporation (now AECOM)

Immediate Response Action Plan Modification

1.0 INTRODUCTION

On behalf of AVX Corporation (AVX), AECOM (formerly URS Corporation) has prepared this *Immediate Response Action Plan Modification* (IRA Plan Mod) for the disposal site known as the former Aerovox Facility (Site) located at 740 Belleville Avenue in New Bedford, Massachusetts. The Release Tracking Number (RTN) for the Site and for the IRA is 4-0601. This IRA Plan Mod is being submitted to further address the reported presence of dense non-aqueous phase liquid (DNAPL) at a measured thickness greater than ½-inch in monitoring well MW-15D, a site condition that requires implementation of an IRA in accordance with the Massachusetts Contingency Plan (MCP), 310 CMR 40.0412.

The Site assessment and remediation under Massachusetts General Law Chapter 21E and the MCP is subject to the Administrative Consent Order and Notice of Responsibility (ACO) between AVX and the Massachusetts Department of Environmental Protection (MassDEP) and the Massachusetts Office of the Attorney General, effective as of June 3, 2010 (ACO-SE-09-3P-016).

Immediate Response Action Plan Modification

2.0 RELEVANT CONTACTS (310 CMR 40.0424(1)(a))

The property is owned by the City of New Bedford, Massachusetts (the City). Contact information for the City's representative is as follows:

Ms. Michelle Paul
Director of Environmental Stewardship
City of New Bedford
133 Williams Street, Room 304
New Bedford, MA 02740
Phone Number: 508-991-6188

The person assuming responsibility for conducting IRA activities is:

Mr. Evan Slavitt
AVX Corporation
801 17th Avenue South, P.O. Box 867
Myrtle Beach, SC 29578
Phone Number: 843-946-0614

The Licensed Site Professional (LSP) for the site is:

Ms. Marilyn Wade, LSP No. 4315
AECOM Corporation
1155 Elm Street, Suite 401
Manchester, NH 03101
Phone Number: 603-606-4824

Immediate Response Action Plan Modification

3.0 DISPOSAL SITE DESCRIPTION

3.1 Site Information

The Disposal Site is located at 740 Belleville Avenue, Bristol County, New Bedford, Massachusetts. **Figure 1**, Site Location Plan, shows the Site location with respect to the surrounding topography and features. The coordinates of the Site (referenced to the corner of Belleville Avenue and Hadley Street) are latitude 41° 40' 25.12" N and longitude 70° 55' 13.84" W (UTM coordinates 340135.53m E and 4615326.34m N).

The Disposal Site at the time it was tier classified (and at the time the ACO became effective) was defined as the Aerovox property (Property) which encompasses approximately 10.3 acres and has the following boundaries:

- The northern boundary of the Property is the existing Aerovox northern property line which is located approximately in the middle of Graham Street, a private alley that lies between Aerovox and a factory operated by Precix, Inc.
- The southern boundary of the Property is the existing Aerovox southern property line which is located approximately in the middle of Hadley Street, a private street that lies between Aerovox and a factory operated by Acushnet Company (Titleist).
- The western boundary of the Property is the existing Aerovox western property line along Belleville Avenue, and
- The eastern boundary of the Property is the existing sheet pile wall (inclusive of the wall itself) running generally in a north-south orientation along the Acushnet River, and the line formed by the elevation of Mean High Water (MHW) where the sheet pile wall is not present.

The Property is currently a vacant, asphalt paved parking lot. The land surrounding the Property is used industrially to the south (Titleist) and north (Precix, Coyne), and residentially to the west. Subsequent to tier classification, the Phase II Comprehensive Site Assessment (Phase II) has redefined the Site (in accordance with the MCP definition in 310 CMR 40.0006) as the area where hazardous material has come to be located, including the Property, a portion of the Titleist property to the south, and a portion of the Precix and Coyne properties to the north. The Acushnet River is immediately east of the Site. The Acushnet River and the area below MHW east of the Site is by definition the New Bedford Harbor Superfund Site, which is separate and distinct from the Disposal Site that is the subject of this IRA Plan.

3.2 Site History

The Site formerly contained an approximately 450,000 square foot manufacturing building and associated ancillary buildings along with a parking lot located on industrially-zoned land. Originally constructed as a mill, the main building included a two story wing along Belleville Avenue and a three story wing across the north side of the Property adjacent to Graham Street. Ancillary structures included a brick sewer pump station and a brick boiler house that were located along the south side of the main manufacturing building, and a brick structure that housed electrical switching equipment that was located at the southwest corner of the main

Immediate Response Action Plan Modification

building. All above ground infrastructure on the Site was demolished and removed in 2011. All subsurface utilities were disconnected and filled in place, with the exception of the storm sewer system which remains and drains the paved area, and the former septic sewer system which included a pump house vault and connecting line running to the City sewer system in Belleville Avenue. The pump house and mechanical equipment were removed, but the vault was temporarily filled and covered, and the line capped and left in place for possible future use. The Property has been capped with asphalt and the area that is not part of Hadley or Graham Street is secured by perimeter fencing.

Electrical component manufacturing began at the Site in approximately 1938. Beginning in the 1940s, use of dielectric fluid containing polychlorinated biphenyls (PCBs) in capacitor manufacturing started. It has been estimated that up to 100,000,000 pounds of PCBs were used at the Facility during Aerovox operations (EPA, 1997).

During a 1981 EPA compliance inspection of the Facility, “oil impregnated soil was observed in the culverts leading to and at both outfalls.” Culvert, as used here is believed to refer to the open drainage trenches that were formerly adjacent to the north and south sides of the building. In addition to the oily soils observed in the drainage trenches, stained soil was observed in the “backyard power substation” located between the former Aerovox building and the Acushnet River. Samples collected from the soils within the drainage ditches and in the former backyard power substation contained PCB concentrations of up to 24,000 parts per million (ppm). The backyard power substation was reportedly used for drum storage within the month prior to EPA’s collection of the samples.

In addition to the use of PCBs, Aerovox also utilized a trichloroethene (TCE) capacitor degreasing operation. Degreasing residues from the degreasing operation were stored in 55-gallon drums on a concrete floor with no secondary containment. A TCE aboveground storage tank (AST) was formerly located in the second floor of the building, just outside of the impregnation room. In addition, the TCE recovery system ASTs were located in the first floor of the building.

Operations and disposal practices involving the use of PCBs and solvents resulted in the release of hazardous substances which contributed to the contamination of soils, building materials and equipment, storm water runoff and groundwater at the Site. Inspections, assessments and sampling programs from the 1980s forward, undertaken by the former owner and operator Aerovox, Inc. as well as EPA, confirmed the presence of PCBs in soils under the concrete foundation, in soils outside the building and mixed into the asphalt parking lot, in groundwater, and throughout the interior of the former building.

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3.3 Description of the Release, Site Conditions, and Surrounding Receptors (310 CMR 40.0424(1)(b))

3.3.1 Site Conditions: Phase II Comprehensive Site Assessment Summary

Between September 2013 and September 2015, AECOM completed Phase II activities as part of the site investigation and cleanup under the MCP. A summary of the Phase II findings is provided below.

Summary of Phase II Findings and Conclusions

Based on the results of investigations and evaluations undertaken as part of the Phase II, and concurrently as part of the implementation of the IRA for DNAPL found in the northeast corner of the Property, the following findings and conclusions are presented:

1. The primary source of the release of oil and hazardous materials to the environment that is the subject of RTN 4-601 is the historic discharge and spillage of chlorinated solvents and PCB oil used in the manufacture of liquid filled capacitors. These spills occurred at the surface and in the subsurface, in unknown quantities over the course of decades. The evidence suggests that the locations of these releases centered around the previously unpaved area along the shoreline, particularly between the former building and the river, the previously unpaved area along the north side of the building, the two drainage culverts on the north and south sides of the former building and a discrete area within the parking lot between the former boiler house and main building entrance. Additionally, the NPDES permitted discharge from the two drainage culverts, and disposal of waste materials from shore into the river along the bank resulted in direct impacts to the New Bedford Harbor Site immediately adjacent to the MCP site that is the subject of RTN 4-601.
2. These historic spills have resulted in the classification of the Site as a late-stage release (e.g., environmental impacts). The original released constituents have either migrated down to and into fractured bedrock, dissolved and migrated with groundwater, or collected as DNAPL in one limited area around monitoring well MW-15D. In the case of chlorinated VOCs, the analytical results show that the constituents have also attenuated and degraded into daughter products. Released PCBs remain adsorbed to shallow soils along the riverfront and in deep soils and groundwater at the overburden and bedrock interface.
3. The nature of the hazardous materials found at the Site include PCBs, specifically Aroclors 1232, 1242, 1248, 1254 and 1260. The most frequently detected were Aroclors 1254 and 1242. The highest concentrations found were of Aroclor 1254. Chlorinated benzenes, common components of the PCB carrier oil were also found with 1,2,4-Trichlorobenzene, 1,4-Dichlorobenzene and Chlorobenzene found most frequently. Finally, the nature of hazardous materials found at the Site included chlorinated ethenes, from tetrachloroethene (PCE) and trichloroethene (TCE) down through cis-1,2-dichloroethene and vinyl chloride. TCE and cis-1,2-dichloroethene were found most frequently and at the highest concentrations.
4. The extent of soil impacted by PCBs is relatively ubiquitous across the Property and across the riverfront portion of the Titleist property. Shallow soil above the identified peat layer was found to be impacted with PCBs along the riverfront on the Precix and Titleist properties at levels that exceed UCLs. Deep soils in the vicinity of the identified DNAPL (MW-15D) and a limited area of soils centered on boring B04B also exceeded UCL levels. While the soil sample collected beneath the building slab former pump room location also had significant levels of PCBs, the soil samples collected from beneath the

Immediate Response Action Plan Modification

remainder of the former building slab did not. Significant PCB impacts were not identified north or east of the Precix building, on the western portion of the Property or the north side of the western portion of the Titleist building. The chlorinated benzene detections generally coincided with the PCB impacted locations, but chlorinated benzenes were not found at significant concentration levels or levels approaching the UCLs.

5. There are no concentrations of TCE, cis-1,2-dichloroethene and PCE detected in shallow surface soils (< 3 feet bgs) on the Property. Within the soil profile from 3 feet bgs down to 15 feet, chlorinated ethenes are present below the former Aerovox building foundation, in the south central area of the Property near B04B and B04C, at B08B (near MW-10D and MW-27B), at MIP-43, in the UV-17 area, and within the northeast corner of the Property. Inaccessible soils below 15 feet bgs are present more pervasively across the eastern two-thirds of the Property. The soil interval between 15 feet bgs down to the bedrock surface has a higher concentrations of TCE detections in the eastern half of the Property. TCE is the only chlorinated ethene exceeding its UCL, and such exceedances occur both in the northeast corner of the Property and in the vicinity of UV-17.
6. The extent of PCB impacts to shallow overburden groundwater is limited to a small (approximately 1,500 sf or less) area along the waterfront centered near where the southern culvert discharge was located. The remaining shallow groundwater results across the Property and the Titleist and Precix properties indicate low or non-detect levels of PCBs. The extent of PCB impacts in deep overburden groundwater extends from midway within the Property out to the shoreline with increasing levels of PCBs closer to the river. PCB impacts in deep overburden groundwater extend partially onto the northeast corner of the Titleist property, and low levels of PCBs in deep overburden groundwater were also found in two wells on the south side of the Precix property. PCB impacts to bedrock groundwater were found in wells across the eastern two thirds of the Property, with the highest concentrations centered around the central (B04B) primary release area and along the waterfront. Bedrock groundwater concentrations in the northeast corner, in the area of identified DNAPL, exceeded the groundwater UCL for PCBs. Bedrock concentrations of PCBs on the Titleist and Precix properties were found only in a single well each, close to the river, and only at low levels.
7. The extent of chlorinated ethenes in shallow overburden groundwater extends across all but the western quarter of the Property, the southern and eastern half of the Precix property and in one location along the north side of the Titleist building. Because TCE is the dominant detected chlorinated ethene and has a heightened potential for impacting receptors via indoor air, the presence of TCE in the shallow groundwater gave rise to a vapor intrusion evaluation for the Precix and Titleist properties. The highest levels of TCE in shallow groundwater were found along Graham Street and at the discrete central (B04B) area on the Property. TCE was not found in shallow groundwater along the Aerovox waterfront. The extent of chlorinated ethenes in deep overburden groundwater covers all but the westernmost portion of the Property, the eastern half of the Precix property and the northeastern quarter of the Titleist property. Deep overburden concentrations on average are one to two orders of magnitude higher than shallow overburden concentrations. The highest levels of chlorinated ethenes in deep overburden groundwater are centered around the Aerovox waterfront and the location of the deeper bedrock trough just inland from the waterfront. Neither shallow nor deep overburden groundwater concentrations for TCE exceed UCL levels.
8. The extent of chlorinated ethenes in bedrock groundwater measured to the north of the Site extends onto the Coyne property (north of the Precix property). A single well sampling location on the Coyne property confirms that the extent of TCE impacts, based on concentration and bedrock fracture trends reaches beyond the northern Precix

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property line and into the Coyne property in shallow bedrock. Otherwise, the extent of chlorinated ethene impacts in bedrock extends across all but the westernmost portion of the Property and extends along the waterfront to the southern end of the Titleist property. The highest levels of TCE impacts to bedrock groundwater, above UCL concentrations, were found in the deepest fracture zone encountered at the Site in the center of the Property (MW-26B), in the deep fracture zone of MW-34B in the northeast corner of the Property, and in the shallow bedrock groundwater associated with the DNAPL area (MW-15B).

9. A peat layer of varying thickness is present across much of the eastern portions of the Site. The sheet pile wall that defines the edge of the Property and is keyed into this peat impedes the flow of contaminants with shallow groundwater and from shallow soils into the river, but constituents in deep groundwater and at the overburden bedrock interface can migrate with tidal flow both toward and away from the river.
10. The identified (measured) DNAPL area is limited in extent at the northeast corner of the Property. It is present only at depth and likely originated both from the northern culvert discharges and from near shore dumping of capacitors. The DNAPL contains both PCBs and chlorinated solvents. Based on soil concentrations and UVOST screening results, DNAPL may also be present in shallow soil above the peat layer near the south culvert at location UV17, but it has not accumulated to measureable amounts in a well. Similarly, based on MIP screening and subsequent soil sampling, a third possible DNAPL area may also be present in the vicinity of sample location MIP23. If mobile DNAPL is present in these two shallow soil locations (UV17 and MIP23), its migration potential is mitigated by the underlying peat, the HAC cap and sheet pile wall.
11. Groundwater flow in deep overburden and in bedrock is strongly influenced by the tides, and flow direction reverses in response to tidal changes. There is strong interconnection between the shallow overburden, deep overburden and shallow bedrock aquifers and between groundwater and surface water. Vertical groundwater gradients exist at the Site between the three aquifer types, and vary between positive (upward) and negative (downward) across the Site. In portions of the Site where tidal influence on groundwater levels is greatest, reversals in vertical gradient from positive to negative are observed with changing tides. Further inland, vertical gradients are largely upward, with the magnitude of the gradient also changing with the tides. Based on data collected for the multi-level bedrock sampling devices (Water FLUTes), a positive vertical gradient is observed in shallow bedrock, while negative vertical gradients are observed in deeper bedrock sampling intervals.
12. A vapor intrusion assessment was completed for both the Titleist and Precix properties. The weight of evidence indicated that vapor intrusion was not a pathway of concern for Titleist. For Precix, the vapor intrusion pathway is complete but does not present a risk under current site uses. If foreseeable future uses were to include residential use, the vapor intrusion pathway would need to be mitigated.

3.3.2 Release Mechanisms and Updated Conceptual Site Model

The Phase II confirmed that the COCs for the Site are PCBs (used as dielectric fluid in the manufacture of liquid filled capacitors) and chlorinated VOCs, including chlorinated benzenes (which were part of the dielectric fluids used in the manufacturing of capacitors) and chlorinated ethenes (PCE and TCE, used as solvents in the capacitor manufacturing process, and daughter products of these due to reductive dechlorination). Results of the Phase II investigation are consistent with these presumed primary release scenarios:

Immediate Response Action Plan Modification

- Waste solvents and PCB oils reportedly spilled at the eastern end of the Property between the former building and the River in an area that was previously unpaved.
- Waste solvents and PCB oils reportedly discharged in the previously unpaved ditch along the northern side of the former building and to the north and south drainage culverts that ran along the sides of the building and discharged to the River under an NPDES permit.
- Solvent and PCB oil products spilled as these materials were delivered to both Aerovox and Precix ASTs with fill ports along the northern side of the Aerovox building.
- PCBs stabilized by mixing with asphalt and placement of this asphalt on the parking lot surface.
- PCB capacitors and wastes discarded directly to the river just outside the Site boundary in the northeast corner of the Property along the shoreline.
- The release or spilling of product and waste solvents and PCB oils inside the building during manufacturing that infiltrated the subsurface through cracks, sumps and penetrations in the floor slab was only partially confirmed by a limited area of sub-slab soil impacts beneath the pump room; soil impacts across the remainder of the building footprint were not confirmed.
- Erosion and deposition of PCB-containing sediment within the catch basin/surface water runoff system was confirmed only to the extent that where sediment was present in catch basins it was found to be impacted.
- An additional undefined subsurface release was also identified by the Phase II in the central area of the Site surrounding boring B04B. Both PCBs and CVOCs appear to have been released in this vicinity, which is characterized by relatively shallow depth to bedrock. This location lies between what was the former boiler house and the main entrance to the former three story portion of the building and could possibly be related to an earlier release not related to RTN 3-601, which provided response actions for a fuel oil release in this area. No history or prior investigations indicated what the nature of this release may have been.

Secondary release mechanisms/contaminant transport mechanisms were confirmed or modified by the Phase II results as follows:

- Dissolution of hazardous materials from source area soils into groundwater. The primary soil source areas were confirmed to be the eastern third of the Property particularly along the shoreline, and along the north side of the former building along the south side of Graham Street. A significant soil source area was not confirmed beneath the former building slab, but an additional soil source area was identified in the central B04B area. Additional impacted soils were confirmed beneath the rest of the capped site, but below MCP UCLs.
- Dissolved contaminant migration with shallow and deep overburden groundwater. General migration with groundwater was confirmed to be generally from west to east, but a tidal groundwater divide develops approximately 300 feet, and 500 to 600 feet from shore for the shallow overburden and deep overburden aquifers, respectively. East of this divide water flows both inland (west) and outward (east) depending upon the tide stage, and a northerly/southerly reversing flow component is also indicated in bedrock. Preferential migration along the overburden/bedrock contact was confirmed as the highest deep overburden impacts were identified in the deepest

Immediate Response Action Plan Modification

- bedrock area. In addition, significant shallow bedrock and deep bedrock fractures were found to be significantly impacted, at levels well above the overburden impacts.
- Tidal flow provides for migration of released contaminants both into and out from the Site.
 - The Phase II results confirm the likelihood that to some extent contaminated storm water and sediment may discharge to the Acushnet River directly via the subsurface storm sewer system within the Property, and via the storm sewer line in Hadley Street.
 - The potential for storm water surface runoff to have historically carried PCB impacts onto the adjacent unpaved portions of the Titleist property to the south was confirmed.
 - Phase II results provided additional evidence that VOC impacts in the shallow overburden groundwater in proximity to the Precix building to the north could potentially impact indoor air. The vapor intrusion pathway was confirmed to be complete on the Precix property, but measured indoor air concentrations were not significant. In addition, VOC impacts on the Titleist property in groundwater prompted a vapor intrusion evaluation; however, the vapor intrusion pathway on Titleist was not found to be a pathway of concern.

The Phase II also confirmed that there are no ongoing uncontrolled releases at the Site.

3.3.3 Potential Surrounding Receptors

Relative to the Site as a whole, under current conditions, potential human exposure to Site related COCs is limited to the potential for direct contact with unpaved surface soils south of the Property on the adjacent Acushnet (Titleist) owned area, and the potential for vapor intrusion of COCs present beneath the Precix building north of the Property. Direct contact by employees and trespassers on the Titleist property is presently controlled by security fencing and temporary gravel access roads. Exposure by Precix employees through vapor intrusion was assessed, and indoor air sampling to date has not shown impacts to indoor air above MassDEP commercial/industrial indoor air screening levels. Direct contact by human or ecological receptors with impacted soils and groundwater within the Property itself is eliminated by the presence of the asphalt cap. The small area of the Property in the northwest corner that is not paved is outside the fence and has been converted to a small park. However, sampling in this area has not identified COCs above laboratory detection limits. The Site is served by municipal water and sewer, and groundwater is not a drinking water source. A deed restriction is in place that prohibits the use of Site groundwater. Relative to the DNAPL that is the subject of this IRA Plan Mod, there is no complete pathway for human receptors to be exposed to the DNAPL which is present more than 35 feet below the ground surface (at location MW15) and beneath the HAC cap at MW15, UV17 and MIP23.

Potential off-site ecological receptors are limited to those species that may come in contact with COCs through the Acushnet River. Potential off-site receptors related to the Acushnet River are being addressed under the separate New Bedford Harbor Superfund Site and are not part of the MCP response actions. However, source control and/or management of migration of COCs from the Site to the river will be part of the comprehensive MCP response actions. A Method 3 Risk Assessment was completed based on the data collected during the Phase II, and additional details regarding Site receptors and potential risks can be found in that document.

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3.4 MassDEP IRA Notification

On April 10, 2014, AECOM notified MassDEP of the presence of DNAPL at a thickness of greater than 0.5-inch per 310 CMR 40.0313(1). MassDEP provided AECOM with oral authorization to conduct an IRA consisting of assessment actions pursuant to the MCP, 310 CMR 40.0414(1) including assessment of the extent and recoverability of DNAPL in the vicinity of MW-15D, and removal actions pursuant to the MCP 310 CMR 40.0414(2) including utilizing low-energy methods (bailing) to remove DNAPL from MW-15D and from any newly installed monitoring wells that exhibit DNAPL thickness greater than ½ inch.

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4.0 IMMEDIATE RESPONSE ACTIONS UNDERTAKEN TO DATE (310 CMR 40.0424(c))

Since MassDEP was notified of the IRA condition, an original IRA Plan and six IRA Status reports have been submitted. The IRA included assessment activities, including additional MIP and Geoprobe™ explorations in the northeast corner of the Property and north onto the Precix property to delineate the DNAPL extent, bi-weekly gauging of MW-15B/MW-15D and removal of accumulated DNAPL from MW-15D. Since submittal of the IRA Plan, AECOM has provided the required IRA Status Reports submitted in accordance with the schedule in the MCP, and two additional Interim IRA Status Reports provided at the request of MassDEP. The original IRA Plan was amended in these subsequent submittals to include additional data collection and analysis to evaluate the dimensions of the DNAPL plume, if any, and the potential for the DNAPL to migrate or be recoverable. The results of these DNAPL removal and assessment activities to date were provided in IRA Status Reports and in the Phase II. These results are summarized below.

4.1 DNAPL Gauging and Recovery

Beginning on May 19, 2014, AECOM conducted bi-weekly DNAPL recovery from monitoring well MW-15D. On September 29, 2014, DNAPL was identified in monitoring well MW-15B for the first time. Prior to this measurement, only a trace of DNAPL had been observed in this well. Since October 6, 2014, bi-weekly DNAPL recovery was conducted at monitoring well MW-15B in addition to MW-15D. As of IRA Status Report #6 (February 2016), the measured DNAPL thickness in MW-15D has ranged from trace levels to 7 inches and averaged approximately 3.6 inches. The total DNAPL recovered from MW-15D since initiation of recovery efforts in May 2014 is 3,178 ml (0.84 gallons). The measured DNAPL thickness in MW-15B has ranged from one inch to 5.5 inches and averaged approximately 2.9 inches. The total DNAPL recovered from MW-15B since initiation of recovery efforts in September 2014 is 1,490 ml (0.39 gallons).

In general, both DNAPL thickness and recovery volume have decreased over time. Tidal cycle variations do not appear to correlate with DNAPL thickness or recovery volume. Refer to **Appendix A** for a tabulation of the data and graphs of DNAPL thickness and recovery over time for these two wells individually, as well as the cumulative volume recovered from each of these wells. Since submittal of IRA Status Report #6, the DNAPL gauging and recovery events have been reduced to once per month given the diminished recovery in both wells.

4.2 DNAPL Sampling

A sample of DNAPL was collected from MW-15D when it was initially identified. A subsequent composite DNAPL sample was collected on September 30, 2014 from the top of bedrock at monitoring well MW-15D and from within bedrock at monitoring well MW-15B and submitted for laboratory analysis for CVOCs, PCBs, and physical parameters including specific gravity, viscosity, surface tension and interfacial tension. The MW-15 well cluster is the only well location across the entire Site where DNAPL has accumulated and pooled to the extent that it is measurable. The DNAPL CVOC and PCB analyses indicate that five CVOCs (1,2,4-trichlorobenzene, 1,4-dichlorobenzene, cis-1,2-dichloroethene, tetrachloroethene and TCE) and two Aroclors (1242 and 1254) are present in the DNAPL. The site-specific DNAPL collected

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from the MW-15 monitoring well cluster was reported to be comprised of approximately 55% by mass of chlorinated organics and PCBs, with the remaining composition estimated to be comprised of carrier oils. The normalized distribution of chlorinated-only compound, i.e., not including carrier oil, is as follows:

Table 2.15

Constituent	Normalized Percentage (%) By Weight
cis-1,2-Dichloroethene	0.2
1,4-Dichlorobenzene	0.4
Tetrachloroethene (PCE)	1.5
1,2,4-Trichlorobenzene	2.4
Trichloroethene (TCE)	3.6
Aroclor 1254	22.6
Aroclor 1242	69.3

Physical properties (dynamic viscosity, fluid density, surface tension and interfacial tension) of the site-specific DNAPL sample were also obtained through laboratory analysis. Based upon the make-up of the mixed DNAPL (chlorinated organics, carrier oils and PCBs), as well as site-specific DNAPL physical property testing, baseline DNAPL physical property data were established. The anticipated range of DNAPL physical property values are summarized in the following table, along with the range of values for each physical property parameter employed in various sensitivity analyses.

Table 2.16

DNAPL Physical Properties Summary

DNAPL	Density (g/cc)	Viscosity (cp)	Interfacial Tension (dynes/cm)	Contact Angle (°)
Site-specific MW-15 DNAPL Sample	1.22	27.8	15	NA
Baseline DNAPL Parameters	1.22	27.8	15	37.5
Sensitivity Analysis for Baseline Values	1.18-1.44	25-40	5-25	20-75

NA = Not analyzed

4.3 MiHpt

In July 2014, as part of the IRA, the MiHpt was remobilized to the Site for additional investigation in the northeast corner of the Site (vicinity of MW-15B/MW-15D) with the objective of delineating potential CVOC DNAPL in this area and to aid in advancement of additional soil borings for collection of soil samples for analysis. The MiHpt tooling was advanced at 11 locations designated MIP45 through MIP-55, and re-advanced at prior MIP location MIP-15. Based on the relative response of the July MIP, locations for subsequent Geoprobe™™ boring installation and soil sampling were selected.

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Geoprobe™ soil borings were advanced at/near selected MiHpt locations to aid in delineation of DNAPL in the vicinity of monitoring wells MW-15B/MW-15D. These soil borings were identified as MIP45 through MIP49, MIP-50e, MIP53, MIP54 and MIP55s. Soil samples were collected from multiple depth intervals according to the PID screening procedure previously discussed in Section 2.1.3 of this report. Based upon the initial sample results, additional samples originally submitted to the laboratory on hold were analyzed. These samples were also compared to UCLs and Method 1 S-3/GW-2 and S-3/GW-3 standards. The UCLs are directly applicable standards for the Site. The Method 1 soil standards were included as a comparison criteria for or informational purposes only. PCB concentrations in both shallow soils and deep soils exceeded the UCL, including MIP45 (3-5), MIP46 (5-7), MIP46 (20-22), MIP4 (3-5), MKP47 (23-25), MIP48 (22.5), MIP48 (30-31), MIP49 (5-7), MIP50e (30-31), MIP-53 (10-12), MIP54 (3-5), MIP54 (7), MIP55S (5-7). PCB concentrations in two of these soil samples exceeded the Method 1 S-3/GW-3 standard (MIP50e (5-7) and MIP54 (25-27)). Additionally, 15 samples contained PCB concentrations above the UCL. The TCE concentration in the sample collected at MIP48 (30-31) exceeded the UCL of 600,000 ug/kg. There were no July 2014 MiHpt soil samples exceeding the Method 1 S-2/GW-3 or S-3/GW-3 standard.

The MiHpt termination depths were based on Geoprobe™ refusal. It is understood that the Geoprobe™ cannot reliably identify the presence of bedrock. Refer to **Figure 2**, Subsurface Investigation Plan, for the MiHpt locations. The original MiHpt reports were submitted previously with the IRA Status reports and with the Phase II and are not included here.

4.4 Electrical Resistivity

AECOM subcontracted Hager-Richter Geoscience, Inc. to perform an electrical resistivity survey of the eastern end of the Site. The objective of the electrical resistivity survey was to confirm the depth to bedrock and identify and delineate bedrock discontinuities that may serve as preferential pathways for migration of impacted groundwater. Due to the presence of metal utilities, the electrical resistivity survey was unable to reliably predict the depth of the bedrock surface or location of bedrock fractures at the planned transects.

4.5 Resistivity Mise-a-la-Masse Survey

Hager-Richter also conducted a mise-a-la-masse (MALM) survey in the northeast corner of the Site. The MALM method is also called the "charged body potential method." The objective of the MALM survey at the Site was to identify the lateral extent of contaminated groundwater associated with the DNAPL present in MW-15D. The MALM survey does this by mapping the distribution and magnitude of self-potentials caused in an electrically conducting body due to the injection of electrical current in the body.

The MALM survey was conducted over a 100-foot by 100-foot area divided into a 10-point by 10-point grid in the northeast corner of the Property. A current electrode was placed at the bottom of monitoring well MW-15D, within the DNAPL present at the bottom of the well. A second current electrode was placed approximately 775 feet south-southwest of MW-15D on the Titleist property. Two additional electrodes were used; one was placed approximately 300 feet north of MW-15D, and the second was placed at each of the 100 grid points.

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Hager-Richter's interpretation of the MALM survey indicates that there is a conductive body associated with the DNAPL present in MW-15D. This area extends approximately 60 feet to 70 feet south and west from MW-15D. Due to the sheet pile wall presence north and east of MW-15D, the extent of the conductive body in those directions could not be determined. Note that the MALM survey indicates only lateral extent of the conducting body, and inferences on vertical extent cannot be made. Refer to **Figure 3** for an illustration of the MALM results. The original MALM report was submitted previously with the IRA Status reports and with the Phase II and are not included here.

4.6 Ultraviolet Optical Screening Tool (UVOST)

Given the relative proportion of chlorinated ethenes, chlorinated benzenes and PCBs found in the site DNAPL sample collected from the MW-15 monitoring well cluster, AECOM collected a sample of the DNAPL to evaluate a similar subsurface detailed assessment tool, based on a Geoprobe™ platform, which uses laser induced fluorescence to identify the presence of polynuclear aromatic hydrocarbons found in petroleum based non-aqueous phase liquid (NAPL). This sample of DNAPL was submitted to ZEBRA Technical Services (ZEBRA) to calibrate the UVOST equipment to detect the PCB carrier oil from the Site. A fluorescence waveform specific to the site DNAPL was obtained prior to field mobilization to serve as an aid in identification of site DNAPL by the UVOST equipment. The UVOST percent response for this pure DNAPL sample was 333.3%.

The objective of the UVOST investigation was to identify subsurface DNAPL on the eastern side of the Site based on the site-specific DNAPL signature. Refer to **Figure 2** for the UVOST locations. In general, AECOM used the signature waveform and associated color, and the percent reference emitter (%RE) to evaluate the UVOST data. As a rule of thumb, since the pure DNAPL %RE was 333.3%, AECOM used a conservative cutoff of 30%RE (corresponding to 10% of the pure DNAPL %RE) to identify probable DNAPL in the subsurface. Of the 48 UVOST locations, ten were identified with %RE values greater than 30% (UV-08, UV-09, UV-17, UV-34, UV-35, UV-38, UV-39, UV-40, UV-42 and UV-44), and three of those locations had %RE values greater than 100% (UV-8, UV-9 and UV-17). Of the ten locations with %RE values above 30%, seven of the detections (UV-17, UV-35, UV-38, UV-39, UV-40, UV-42 and UV-44) were shallow (less than 15 feet below the ground surface [bgs] and above the inferred top of peat), two (UV-08 and UV-09) were located greater than 15 feet bgs and one location (UV-34) had %RE values above 30% at both shallow and deep depth intervals.

The locations with greater than 30%RE are concentrated in two areas of the Site. The first area is the northeast corner, near the former northern drainage ditch terminus and MW-15D/-15B (UV-8 [~23.5-24.5 feet bgs], UV-9 [~18-19 feet bgs], UV-34 [~5-6 feet bgs and ~21-22 feet bgs], UV-35 [5.5-6.5 feet bgs], and UV-42 [~6-6.5 feet bgs]) where DNAPL is currently confirmed to be present as measured in MW-15D and MW-15B. The second area is near the center of the eastern Property boundary, near the former southern drainage ditch discharge point (UV-17 [~7-8 feet bgs] UV-38 [~4-5.5 feet bgs], UV-39 [~7.5-8 feet bgs], UV-40 [~2.5-4 feet bgs], and UV-44 [~5.25 – 6.25 feet bgs]). Note that only the northeast corner %REs (UV-08, UV-09 and UV-34) indicate the presence of DNAPL in deep overburden, which is consistent with the physical findings.

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A 137%RE was the highest %RE measured at the Site. This measurement was collected from UVOST location UV-17, which was advanced just south of where the former southern drainage ditch discharged to the Acushnet River. This value was detected at a depth of 8.22 feet bgs. A Geoprobe™ boring was advanced at this location for the purpose of soil collection, observation, and classification through the five foot to 10 foot depth interval. Samples were submitted for laboratory analysis of CVOCs and PCBs from each one-foot interval from five feet bgs to 10 feet bgs. PCB concentrations in four of the one-foot depth intervals exceeded the UCL, ranging from 2,240 mg/kg in the estimated five foot to six foot interval to a maximum of 5,130 mg/kg in the estimated seven foot to eight foot interval. Soil samples collected from four of the depth intervals from boring UV-17 exceeded the TCE UCL and one depth interval exceeded the cis-1,2-dichloroethene UCL. Samples collected from four depth intervals exceeded the cis-1,2-dichloroethene Method 1 S-3/GW-3 standard, and all five soil samples exceeded the vinyl chloride Method 1 S-3/GW-3 Standard. The five foot to six foot interval was classified as very fine to fine sand, with deeper intervals classified as peat. Subsequent UVOST points were advanced around UV-17 to delineate the extent of the impact (high %RE signal) in this vicinity.

4.7 Lines of Evidence for Shoreline NAPL

Multiple phases of field investigation have been completed as part of the Phase II and IRA to delineate the extent of DNAPL discovered on March 17, 2014, i.e., DNAPL present along the waterfront at the Site. The lines of evidence supporting the probable existence of DNAPL at a given shoreline location range, from strongest to weakest weight as follows:

- Measurement of DNAPL in monitoring wells (deep @ MW-15D; Bedrock @ MW-15B).
- Observation of DNAPL blebs in soil cores (shallow @ MIP-55S, UV-17; deep @ MIP-47, MIP-48, MIP50E and MW-15D).
- Observation of a sheen, odor or oily stain in boring logs (shallow @ MIP-23, MIP-55S, UV-17; deep @ MIP-47, MIP-48, MIP50E and MW-15D).
- UVOST readings taken every 25' along shoreline where %RE Values were >30% (shallow @ UV-17, UV-34, UV-35, UV-38, UV-39, UV-40, UV-42 and UV-44; deep @ UV-08, UV-09 and UV-34).
- Soil analytical results with significant (>1,000 mg/kg) levels of PCBs including MIP-15, MW-15D, MIP-23, MIP-47, MIP-48, MIP-49, MIP-50E, MIP-53, MIP-54, MIP-55S, PCUV-02, UV-17 or of TCE including MIP-15, MIP-48, MW-15D, UV-17.
- MALM resistivity readings (see **Figure 3**).

Based on the above lines of evidence, the following shoreline areas should be subject to additional response actions under the IRA and are the subject of this IRA Plan Mod:

- Boring location MIP-23 did indicate soil concentrations above the UCL from the surface down to the peat layer, and NAPL blebs were observed in the soil interval from 4 to 6 feet bgs, but the explorations surrounding this boring, including the MIP and UVOST borings, did not indicate a widespread or contiguous NAPL area. This DNAPL source zone is confined to a shallow (<6' bgs) area roughly 25' by 35' isolated above the peat and behind the existing sheet pile wall in the vicinity of MIP-23.
- The northeast corner of the Site is a confirmed source zone. The MIP work, UVOST, MALM, soil borings and wells MW-15D and MW-15B confirm that this source area is confined to a zone approximately 60 to 70 feet in diameter, extending roughly from MIP-

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53/MIP-54 to the north, south to MIP-55S and east to the existing sheet pile wall. The shallow soils (fill material above the peat), deep overburden and upper bedrock zone in this location contain or suggest the presence of pooled or residual DNAPL.

- Based on the UVOST response at location UV-17 and subsequent sampling at this location, near where the southern building ditch discharged to the river, an area of roughly 25 by 25 feet extending to the top of the peat layer (approximately 8 to 9 feet bgs) indicates a probable DNAPL source zone.

These areas are illustrated in **Figure 4**.

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5.0 OBJECTIVES, SCOPE AND SCHEDULE OF IMMEDIATE RESPONSE ACTION (310 CMR 40.0424(1.)(e.))

The objectives of the original June 10, 2014 IRA Plan were to remove DNAPL from MW-15D in the short term, to delineate the extent the DNAPL in the subsurface, and to design, install and operate a DNAPL recovery system until implementation of the final remedy for the Site. Since 2014, based on assessment work at the Site and reviews, meetings, correspondence and collaboration with MassDEP, the following steps have been taken relative to implementation of the IRA:

- MassDEP asserted that in addition to the DNAPL > ½ inch triggering the IRA, a condition of Substantial Release Migration (SRM) also exists at the Site which is also an IRA trigger under the MCP.
- Based on the SRM condition, MassDEP requested an IRA Plan Modification to contain or remove the DNAPL to prevent further migration to the river.
- AVX invoked the IRA rebuttal provision of the MCP citing the lack of an Imminent Hazard condition and providing empirical and Site evidence showing that the DNAPL was not mobile. AVX also challenged the assertion that present conditions pose a condition of SRM, noting that the detections of PCBs and TCE in concentrations indicative of DNAPL in the river sediments are more likely the result of these contaminants having been directly dumped from shore and discharged through the site culverts directly into the river over decades of operational history, rather than the result of releases to groundwater.
- Subsequently, MassDEP deemed the rebuttal invalid and in March 11, 2016 correspondence, stated “MassDEP hereby requests the submittal of an IRA Plan Modification to MassDEP by April 15, 2016 that includes measures to contain or remove the DNAPL to prevent further migration to the Acushnet River and otherwise meets the requirements of 310 CMR 40.0424, including a detailed schedule for the proposed response actions.”

Accordingly, this IRA Plan Mod has been prepared to provide a plan for the requested measures. The objectives of this IRA Plan Mod are to:

- Remove recoverable DNAPL in the vicinity of MW-15, from shallow and deep overburden and from shallow bedrock.
- Remove recoverable DNAPL in the vicinity of UV-17 from shallow soils above the peat layer, and
- Remove recoverable DNAPL in the vicinity of MIP-23 from shallow soils above the peat layer.

5.1 Specific plans for DNAPL removal

5.1.1 MW-15 Area

Recoverable DNAPL removal will be undertaken in the MW-15 area in the northeast corner of the Property through installation of recovery systems for shallow (above the peat) and deep (top of rock) overburden and for shallow bedrock.

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Based upon the DNAPL Mobility Assessment completed and documented in IRA Status Report #4, June 2015, the primary design criteria for the Free Product Recovery Systems (FPRS) included consideration of the following site-specific information:

- DNAPL has significant propensity to migrate vertically downward at Site. Existing vertical gradients are 25 (within deep overburden) to 53 times (bedrock) lower than required for upward DNAPL migration. Contiguous DNAPL bodies of 11 ft (shallow overburden) and 200 ft (deep overburden) have the potential to migrate under existing hydraulic gradients at the Site. Since DNAPL bodies of these sizes have not been encountered in the MW-15 area, it may not be possible to mobilize DNAPL without artificially creating hydraulic gradients to encourage DNAPL migration toward a recovery well. Accordingly, groundwater extraction will be incorporated into the FPRS for the deep overburden.
 - DNAPL recovery will be implemented as separate phase recovery.
 - Recovered groundwater will be circulated into the aquifer to serve as a water flood.
- Insufficient water column and groundwater extraction potential exist for the shallow overburden materials, therefore a passive FPRS is planned.
- Limited presence of DNAPL within shallow bedrock fractures warrants passive recovery methods.

Deep Overburden FPRS Description / Preliminary Design

The deep overburden FPRS will incorporate aggressive design techniques in order to maximize the potential for DNAPL recovery. Due to the inability to locate contiguous DNAPL bodies or pools of sufficient size to mobilize potential DNAPL in the MW-15 area at existing site gradients, groundwater extraction will be incorporated into the DNAPL recovery design. The incorporation of groundwater extraction is intended to generate gradients potentially capable of initiating migration of mobile subsurface DNAPL to the recovery well for ultimate extraction. Specifically, operation of this FPRS will include groundwater pumping and circulation into the overburden materials at a shallower depth in order to generate the gradients to facilitate DNAPL mobility to the extraction well, based upon previously established modified circulation well technology conceptual design (IRA Status Report #4). The recovery well will be fitted with a solid-bottom sump to serve as a collection point for the DNAPL to settle via gravity and be recovered from as a separate phase. Both groundwater and DNAPL will be recovered from the recovery well component of the FPRS and the engineered design of the recovery well will permit the gravity settling of recovered DNAPL into the recovery well sump. As the deep overburden FPRS incorporates groundwater circulation, the circulation line will be fitted with a sample port to verify that phase separation is accomplished as designed. No sampling is planned or deemed necessary as the circulation is being accomplished within areas of known and existing dissolved phase impacts.

Stainless steel well materials are planned and are anticipated to include the installation of 6- to 8-inch inside diameter (ID), Schedule 40, Type 304 stainless steel, flush-threaded or welded well materials. The recovery well screen is anticipated as a 40- to 60-slot size in order to maximize the potential for DNAPL recovery and will be positioned at the base of the overburden materials, extending to the top of bedrock. A solid stainless steel sump will be affixed to the

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bottom of the recovery well screen and is anticipated to be between 3 to 5 feet in length and socketed into bedrock.

The circulation well component of the deep overburden FPRS is anticipated to include the installation of 4-inch ID, Schedule 40, Type 304 stainless steel, flush-threaded well materials. The circulation well screened interval, planned to be 10-15 feet in length, will be positioned within the overburden materials at the bottom of the peat layer and extend downward in an effort to further aid in the mobilization of potential DNAPL that may be present in the deep overburden materials to the recovery well. The circulation well will either be installed within the recovery well borehole or immediately adjacent to the recovery well. For the installation option within the recovery well borehole, a bentonite seal will be installed between the screened intervals of the recovery well and the circulation well to prevent short-circuiting.

Based upon the success of the deep overburden FPRS, operations are anticipated to continue until diminished recoveries are realized. As noted previously, the diminutive quantity of DNAPL recovered over a long period of recovery effort suggests that the deep overburden FPRS will not likely recover appreciable amounts of DNAPL. The point of diminishing returns will be dynamically evaluated using empirical data, and compared to objectives of effectiveness and sustainability. At that time, the aggressive deep overburden FPRS will be converted to a passive FPRS, similar to those planned for the shallow overburden and shallow bedrock and as described below. Conversion of the circulation well component of the deep overburden FPRS to a passive FPRS may also be completed, depending on the presence of DNAPL within this interval.

Shallow Overburden and Shallow Bedrock FPRS Description / Preliminary Design

For the shallow overburden and deep bedrock recovery wells, passive FRPSs are prescribed based upon the limited aerial extent of known DNAPL presence and geologic factors. Specifically, for the shallow overburden, potentially recoverable DNAPL is present at the top of and/or within the peat layer. Therefore, the target interval of the shallow passive FRPS will be the overburden materials immediately above the peat layer as well as the peat layer. The shallow overburden FPRS is anticipated to include 6- to 8-inch ID, Schedule 40, Type 304 stainless steel well materials and will be fitted with a 1 to 2 ft solid bottom sump. The targeted screen interval for the shallow overburden FPRS is 10-15 feet bgs.

For the uppermost bedrock zone, DNAPL presence was limited to monitoring well MW-15B and is likely present in a fracture(s) network(s) that is(are) in communication with the deep overburden materials. Therefore, the shallow bedrock FPRS will target the uppermost bedrock zone between approximately 30 and 50 ft-msl, corresponding to the interval of existing monitoring well MW-15B. Similarly, the shallow bedrock FPRS is anticipated to include 4- to 6-inch ID, Schedule 40, Type 304 stainless steel well materials and will be fitted with a 1 to 2 ft solid bottom sump.

Both passive FPRSs (shallow overburden and shallow bedrock) are anticipated to incorporate the use of a skimmer system. The skimmer system will be designed will incorporate a continuous belt that will remove DNAPL from the recovery well water column as well as DNAPL

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that accumulates within the incorporated bottom sumps. The belt skimmer will be designed to make use of the differences in specific gravity and surface tension between the DNAPL and groundwater, permitting the skimmer belt to attract and retain free phase product that accumulates in the water column or sump of the respective recovery wells.

Additionally, both passive FPRSs are anticipated to incorporate solar-powered oil skimmers in the design. Specifically, the solar powered skimmers will employ the use of a 12-volt oil skimming system that includes a motor, a solar panel, a timer, a battery, and other control components. The FPRSs will be designed to operate self-contained with high-level shut-offs and therefore require minimal oversight. Both passive FPRSs are anticipated to be housed in a remediation shed and incorporate requirements associated with the 100-yr floodplain and/or other associated engineering and permitting requirements.

General Notations on the FPRSs

Sonic drilling methods are anticipated for the installation of the FPRSs in the shallow and deep overburden as well as shallow bedrock. Aggressive well development techniques will be employed and development waters will be directed to temporary frac tanks for subsequent management and disposal. Performance monitoring of the FPRSs is anticipated to include monthly gauging and tallying of recovered DNAPL. Additionally O&M activities will include belt inspections and replacements, as necessary, as well as periodic DNAPL recovery drum removal, should sufficient DNAPL be removed.

As noted, the operation of the deep overburden FPRS is anticipated to be limited, and temporary electrical power will be installed. Following modification to a passive FPRS within the deep overburden materials, the use of solar powered belt skimmers will be employed.

Appendix B includes preliminary and conceptual schematics for the FPRSs described herein.

5.1.2 UV-17 and MIP-23 areas

DNAPL removal will be undertaken in these discrete shallow areas through excavation, removal and off site disposal of the DNAPL impacted soils. This removal effort is limited spatially to those areas where the soil sampling, MIP and UVOST results indicated that DNAPL may be present above the peat layer. These efforts will also provide the opportunity for visual spot inspection of the shore side of the existing sheet pile wall. In addition, as these two limited locations are within the City of New Bedford's proposed greenway, removal of these hot spots will help facilitate future greenway development.

The following tasks will comprise the DNAPL removal activity at UV-17 and MIP-23:

- Assessment activities to confirm limits of highly impacted areas and depth of peat layer will be completed with Geoprobe[®] drilling, soil screening and sampling. Soil sampling for waste characterization will also be completed.
- Roll-off containers and frac tanks will be mobilized to the site along with required excavation, dewatering and odor/emissions control equipment.
- Dewatering facilities will be installed.

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- Existing asphalt will be saw cut, removed and disposed as PCB impacted material.
- Soil will be excavated within the confirmed hot spot/potential DNAPL areas. Excavation will extend only to the top of the peat layer. While the peat is not considered an aquiclude, the material has inhibited downward migration, and DNAPL is not currently found at deep elevations below the peat in these two locations.
- Excavated soils will be loaded in roll-off containers, transported under manifest and disposed in accordance with federal and state requirements. Levels of TCE and PCBs in these soils are anticipated to require disposal at a licensed RCRA/TSCA incinerator.
- Dewatering liquids will be collected in a frac tank, sampled for waste characterization, and transported and disposed offsite in accordance with federal and state requirements.
- Where the excavation abuts the existing sheet pile wall, if feasible, a visual inspection of the condition of the wall will be completed by a structural engineer.
- Where practicable, a marker layer will be placed prior to backfilling. The excavations will be backfilled to grade with clean backfill material and compacted.
- The asphalt will be replaced to pre-existing grade with asphalt mix equivalent to the original hydraulic asphalt cap.
- Equipment utilized during the removal will be decontaminated prior to demobilizing offsite.

5.2 Anticipated Schedule

In accordance with the provisions of the MCP regarding IRA Plan Approval (310 CMR 40.0420(9)), it is assumed that approval of this modification will be received from MassDEP no later than May 6, 2016. The following anticipated schedule is proposed based on a May 6, 2016 start date.

TASK	ON OR BEFORE:
Submit Request for Determination of Applicability to New Bedford Conservation Commission	May 16, 2016
Complete soil assessment work	May 27, 2016
Complete IRA design package	June 15, 2016
Select Contractor and mobilize to the Site (assumes NOI and Order of Conditions not required)	July 18, 2016
Complete Implementation of IRA response actions	August 19, 2016.
Operate MW-15 area DNAPL Recovery System (System will be operated until recovery is negligible or until comprehensive response actions are installed under Phase IV.)	TBD

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6.0 REMEDIATION WASTE MANAGEMENT (310 CMR 40.0424(1)(f))

DNAPL, contaminated water, contaminated soil, and contaminated personal protective equipment (PPE) are anticipated to be generated during the IRA activities described above. Since these materials are considered remediation waste (310 CMR 40.0006), they will be properly disposed offsite within 90 days of the accumulation start date. Excavated soil materials will be collected and stored in lined roll-off containers, packaged and transported offsite to a licensed facility. Well development water, decontamination fluids and dewatering water will be collected in an onsite frac tank. These liquids will be sampled for waste characterization, and disposed offsite in accordance with federal and state regulations and the requirements of the receiving facility. Contaminated PPE will be drummed and disposed offsite or included in the soil roll-off containers. Recovered DNAPL from operation of the MW-15 area recovery systems will be collected in secured pails or drums as volume dictates, and packaged, transported and disposed offsite in accordance with federal and state requirements.

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7.0 ENVIRONMENTAL MONITORING PLAN (310 CMR 40.0424(g))

Thickness of DNAPL and monitoring of collected NAPL for disposal will be the only monitoring conducted in association with the IRA during post-implementation operation of the recovery systems. All other continuing environmental monitoring will be provided as part of the comprehensive response actions as part of Phase IV.

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8.0 FEDERAL, STATE AND LOCAL PERMITS REQUIRED FOR IMMEDIATE RESPONSE ACTIONS (310 CMR 40.0424(h))

The proposed IRA activities are within the Property and inside mean high water, so federal and state coastal permitting requirements will not apply. The activities are within the riverfront and Massachusetts Wetlands Protection Act (310 CMR 10.00) requirements may be applicable. Upon approval of this IRA Plan Mod, a Request for Determination of Applicability will be submitted to the New Bedford Conservation Commission to confirm applicability. If WPA requirements do apply, a Notice of Intent will be prepared and filed to obtain an Order of Conditions. If an NOI and Order of Conditions are required, the timeframes depicted in Section 5.2 above will be extended an estimated two to three months until an Order of Conditions is received.

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9.0 OTHER RELATED INFORMATION

This IRA Plan Mod has been prepared as part of an integrated remediation approach to the Site.

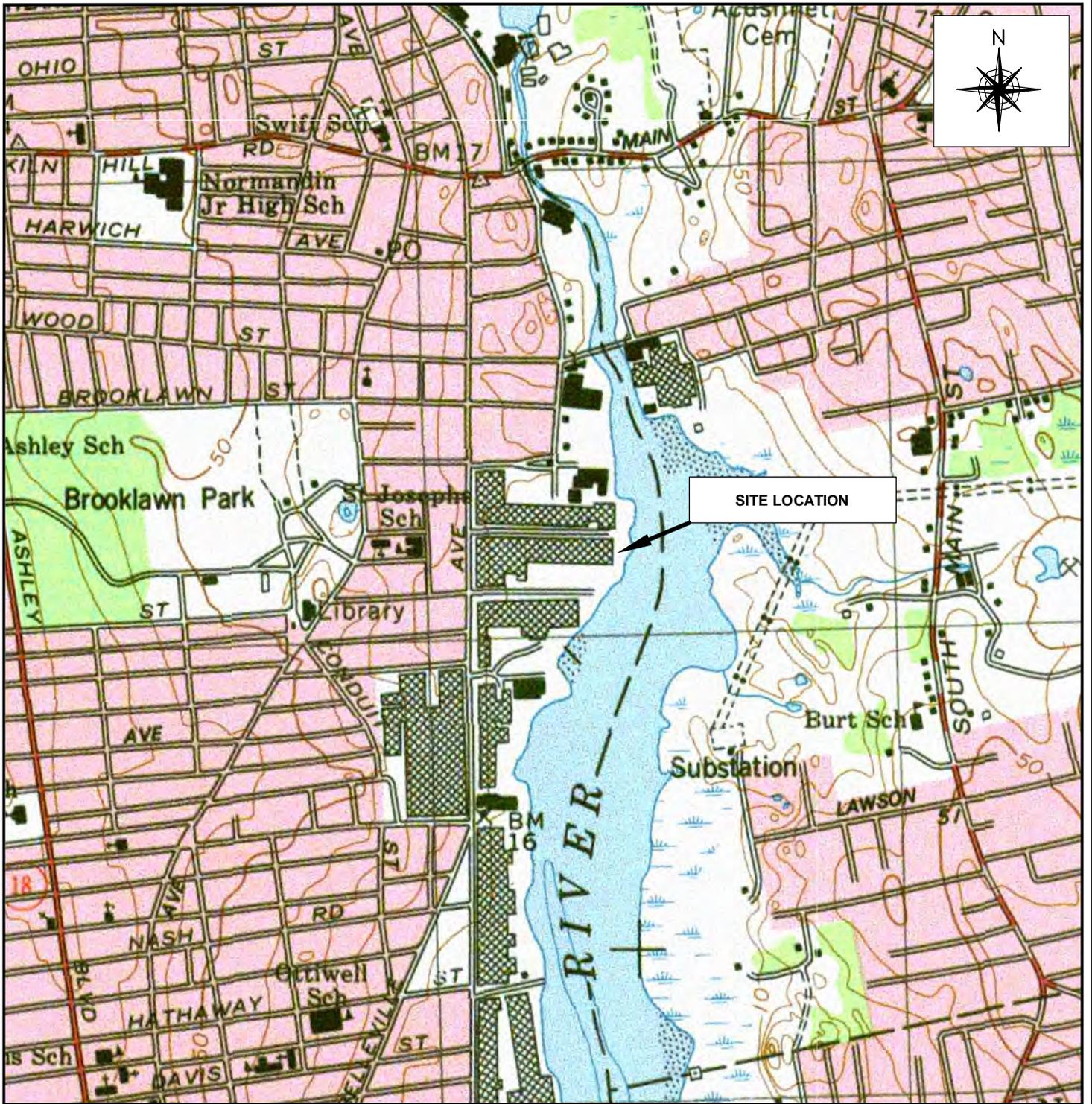
This IRA Plan Mod is anticipated to be implemented adaptively to optimize the recovery, as practicable, of DNAPL, while providing an interim level of response actions that do not restrict, or otherwise interfere with potentially applicable Phase III feasibility studies. Phase III will be conducted and potentially applicable treatment technologies will be evaluated prior to the design and installation of physical containment structures that, if prematurely installed as part of the IRA, may otherwise interfere with, or limit the effective application of a timely and integrated, holistic and sustainable remedial response. In summary, the IRA is a relatively short-term action that should be implemented in a manner that facilitates the design of efficient and effective longer-term removal and containment options.

Under the current schedule prescribed by the ACO, Phase III feasibility studies will be conducted coincidentally to the IRA, and may include the use of elements of the IRA. For example, pumping and circulation systems may be used to circulate dyes or other compounds to evaluate a range of potentially complementary treatment options that may include the delivery and/or recirculation of remediation compounds (e.g., cosolvents, chemical oxidants, biostimulation agents, etc). Similarly, for example, hot spot excavation may provide sample material for use in bench scale studies of the effectiveness of potential in situ treatment options. Iteratively, the following sequence of actions will be conducted:

- Identify opportunities to utilize elements of the modified IRA to complement feasibility studies as applicable to holistic site remediation.
- Integrate feasibility study options into design elements of the IRA, particularly those that are better evaluated prior to the installation of physical barriers.
- Implement the modified IRA and the Phase III.
- Evaluate the modified IRA and Phase III results.
- Design adaptive elements of IRA and supplemental feasibility study components, as necessary.

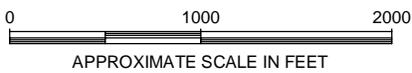
Once these actions are conducted, a comprehensive remedial action plan will be prepared, integrating the results of the IRA and Phase III.

FIGURES



SITE LOCATION PLAN

AEROVOX FACILITY
 740 BELLEVILLE AVENUE
 NEW BEDFORD, MASSACHUSETTS

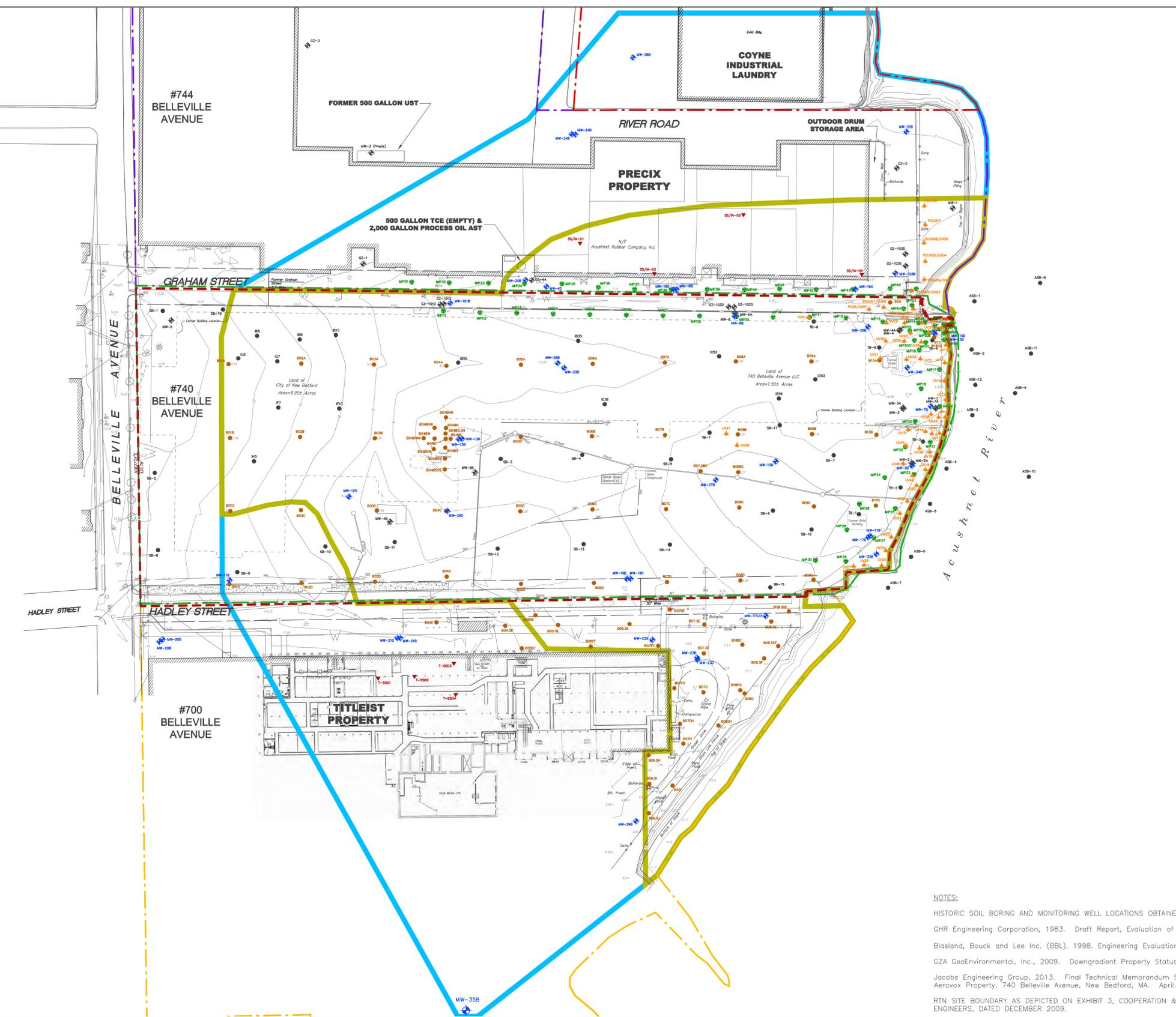


BASEMAP SOURCE:
 Office of Geographic Information (MassGIS), Commonwealth of
 Massachusetts, Information Technology Division. Scanned USGS
 Quadrangle Images December 1995. (249822, 249826, 253826, 253822)



115 Elm Street, Suite 401
 Manchester, New Hampshire 03101
 TEL: (603) 606-4800
 www.aecom.com

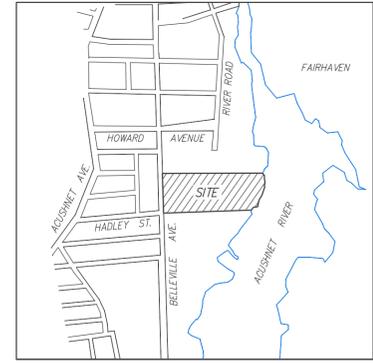
SCALE: AS SHOWN	DRAWN BY: KP	JOB NO.: 60422003
DATE: 04/16	APPR. BY: JU	FIGURE 1



LEGEND

- MONITORING WELL (AECOM)
- SOIL BORING (AECOM)
- MIP BORING (AECOM)
- INDOOR AIR/SUB SLAB VAPOR POINT (AECOM)
- UVOST BORING (AECOM)
- HISTORIC SOIL BORING INSTALLED BY OTHERS*
- HISTORIC MONITORING WELL INSTALLED BY OTHERS*
- AEROVOX PROPERTY LINE
- RTN SITE BOUNDARY
- CURRENT RTN SITE BOUNDARY BASED ON SOIL RESULTS FROM PHASE II CSA
- INFERRED SITE BOUNDARY BASED ON GROUNDWATER PLUME CONCENTRATIONS
- PRECIX PROPERTY LINE
- TITLEIST PROPERTY LINE
- COYNE INDUSTRIAL LAUNDRY PROPERTY LINE

LOCATION MAP (NOT TO SCALE)



NOTES:

HISTORIC SOIL BORING AND MONITORING WELL LOCATIONS OBTAINED FROM THE FOLLOWING REPORTS:

GHR Engineering Corporation, 1983. Draft Report, Evaluation of Remedial Alternatives for the Aerovox Property, New Bedford, MA. January 11.

Biosland, Bouck and Lee Inc. (BBL). 1998. Engineering Evaluation/Cost Analysis, Aerovox Inc. New Bedford, Massachusetts. August.

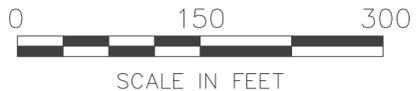
GZA GeoEnvironmental, Inc., 2009. Downgradient Property Status Opinion, 744 Belleville Avenue, New Bedford, Massachusetts, RTN 4-21348. June.

Jacobs Engineering Group, 2013. Final Technical Memorandum Summary of Findings, New Bedford Harbor Superfund Site, 2012 Near-Shore Boring Program Adjacent to the Former Aerovox Property, 740 Belleville Avenue, New Bedford, MA. April.

RTN SITE BOUNDARY AS DEPICTED ON EXHIBIT 3, COOPERATION & SETTLEMENT AGREEMENT, AEROVOX PROPERTY, DEPARTMENT OF THE ARMY NEW ENGLAND DISTRICT CORPS OF ENGINEERS, DATED DECEMBER 2009.



AECOM
1155 ELM ST, SUITE 401
MANCHESTER, NH 03101-1508
Tel: 603.606.4800
Fax: 603.606.4801
www.aecom.com



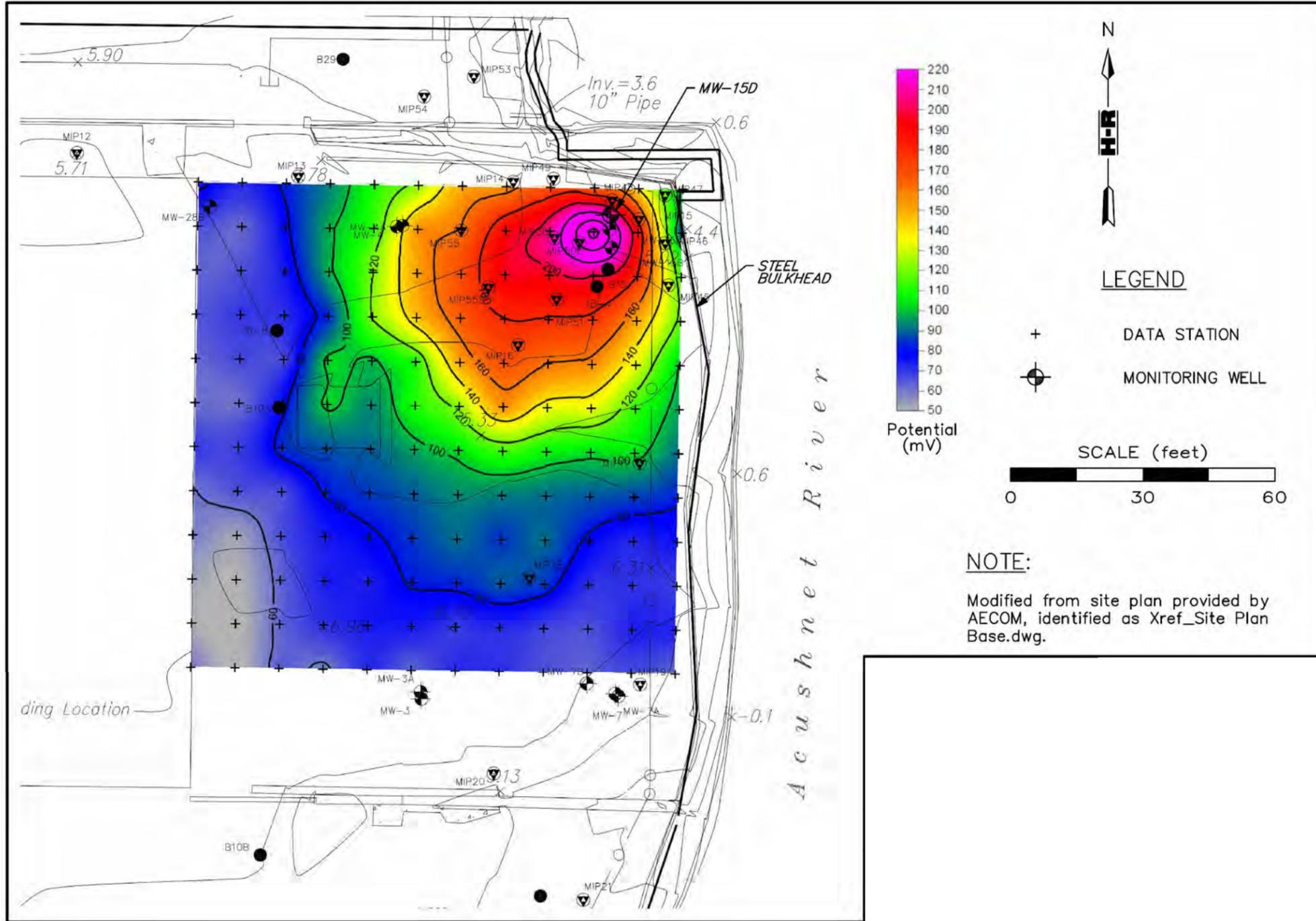
PROJECT NO:	60422003
DESIGN:	JL
APPROVED:	MW
DRAWN:	FS
SCALE:	AS SHOWN
DATE:	APR 2016
FILE NO:	Site Plan and Explorations

CLIENT:	AVX CORPORATION
PROJECT:	IRA PLAN MODIFICATION 740 BELLEVILLE AVENUE NEW BEDFORD, MA

TITLE:	SITE PLAN WITH EXPLORATIONS
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FIGURE NO.:	2
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P:\local\2006\AVX\Phase II\CSA\Report\Site Plan and Explorations.dwg, ITR, Mod - Figure 2, 4/20/16 2:47:05 PM

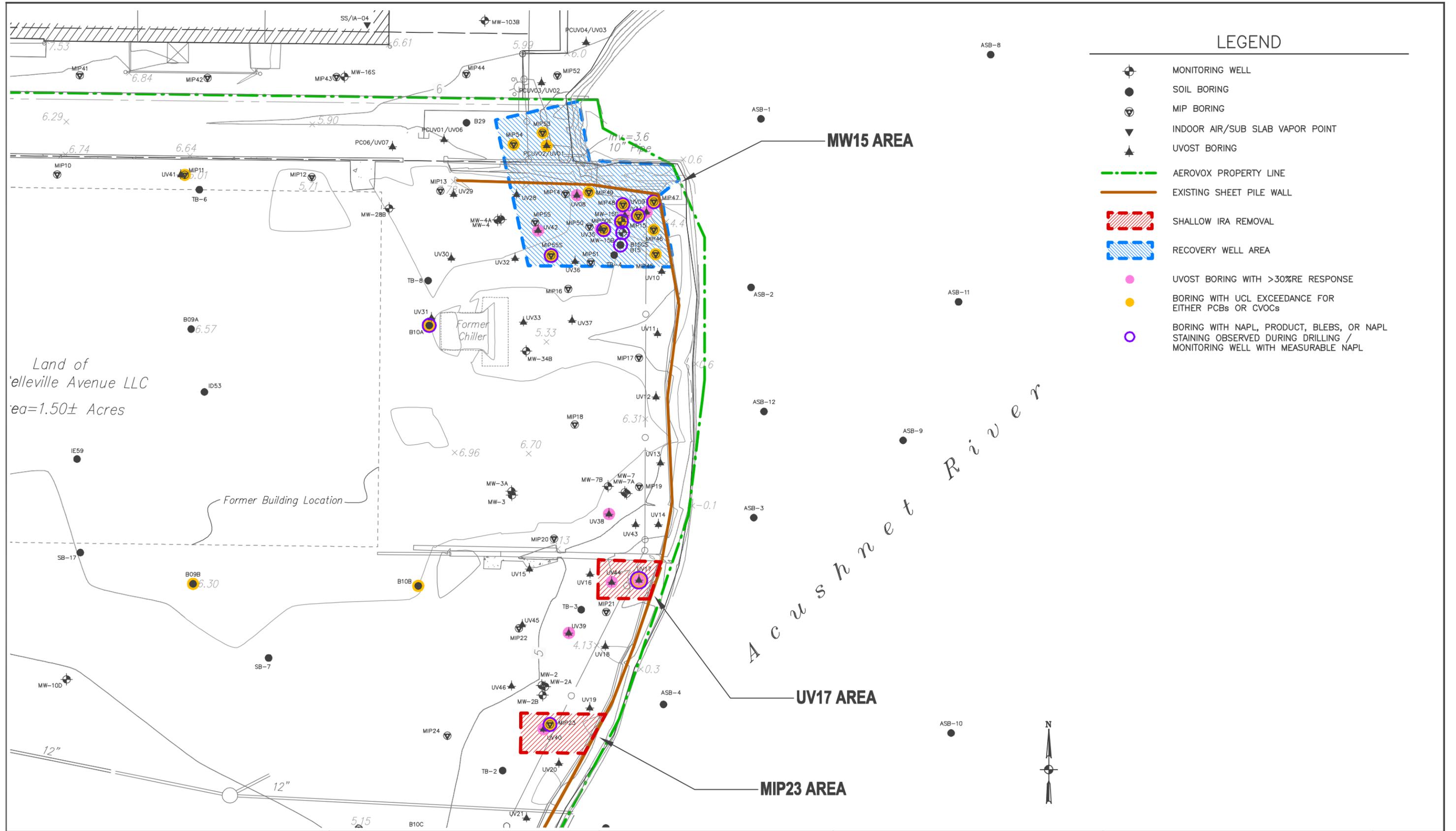


NOTE:
 Modified from site plan provided by AECOM, identified as Xref_Site Plan Base.dwg.

SOURCE:
 FIGURE 5, MALM SURVEY-POTENTIAL DISTRIBUTION, FROM GEOPHYSICAL SURVEY REPORT FOR THE FORMER AEROVOX PROPERTY BY HAGER-RICHTER GEOSCIENCE, INC., APRIL 2015.

P:\acad-2008\AVX\dwg\AVX - IRA Plan Modification.dwg - IRA Mod - Figure 3, 4/8/2016 3:56:38 PM

 <p>AECOM 1155 ELM ST, SUITE 401 MANCHESTER, NH 03101-1508 Tel: 603.606.4800 Fax: 603.606.4801 www.aecom.com</p>	PROJECT NO: 60422003		CLIENT: AVX CORPORATION		TITLE: MALM AREA	FIGURE NO.: 3
	DESIGN: JL	SCALE: AS SHOWN	PROJECT: IRA PLAN MODIFICATION 740 BELLEVILLE AVENUE NEW BEDFORD, MA			
	APPROVED: MW	DATE: APR 2016				
	DRAWN: FS	FILE NO: AVX - IRA Plan Modification				



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Tel: 603.606.4800
Fax: 603.606.4801
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DESIGN:	JL
APPROVED:	MW
DRAWN:	FS
SCALE:	AS SHOWN
DATE:	APR 2016
FILE NO:	AVX - IRA Plan Modification

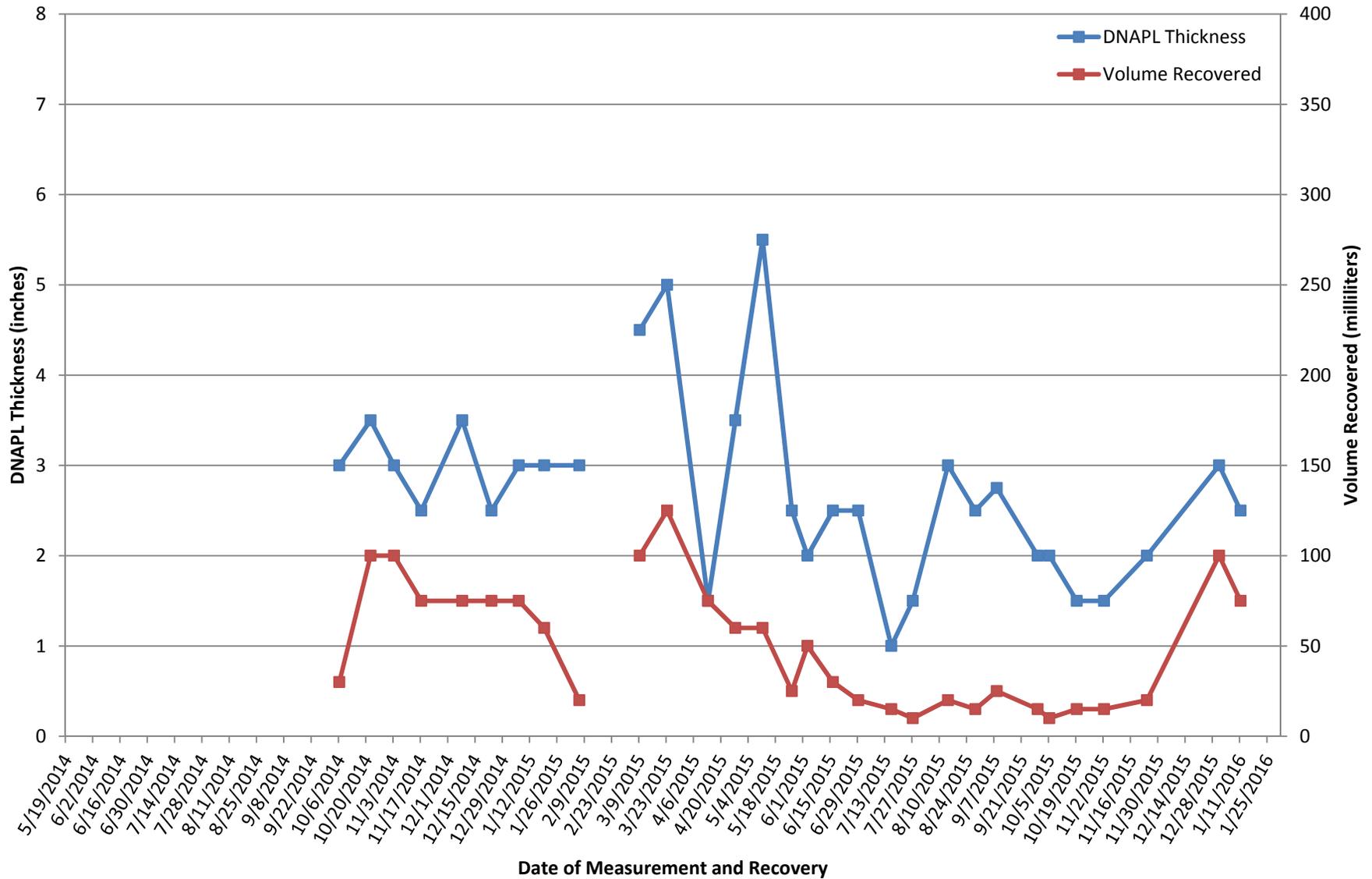
CIENT:	AVX CORPORATION
PROJECT:	IRA PLAN MODIFICATION 740 BELLEVILLE AVENUE NEW BEDFORD, MA

TITLE:	IRA AREAS
FIGURE NO.:	4

APPENDICES

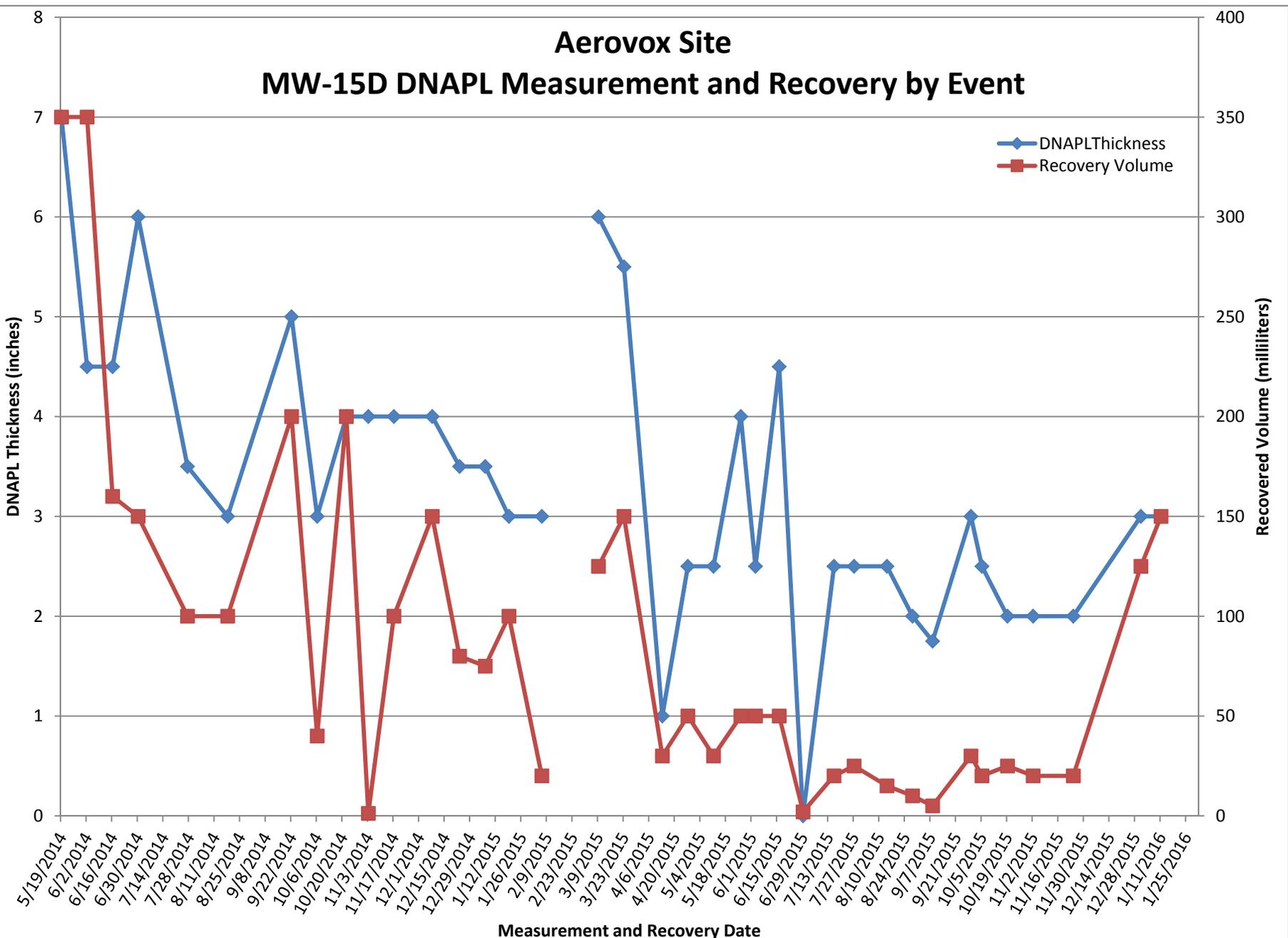
Appendix A

Aerovox Site MW-15B DNAPL Thickness and Recovery by Event

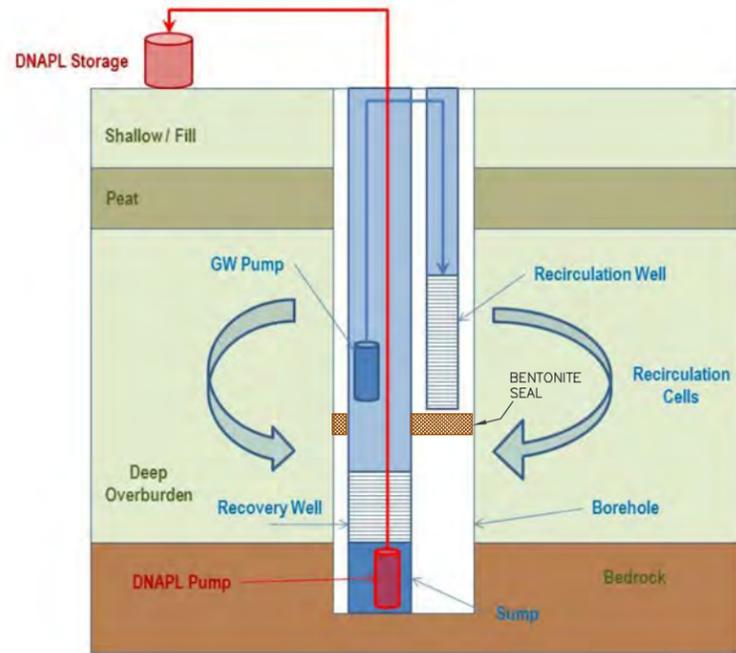


Aerovox Site

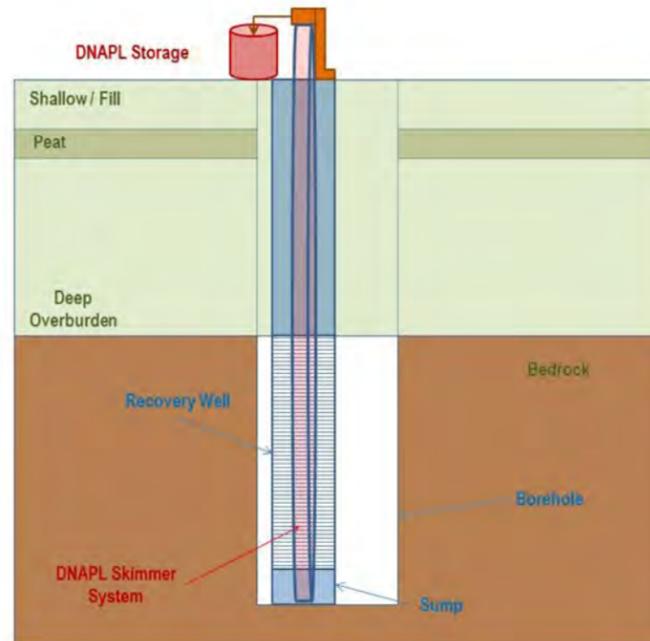
MW-15D DNAPL Measurement and Recovery by Event



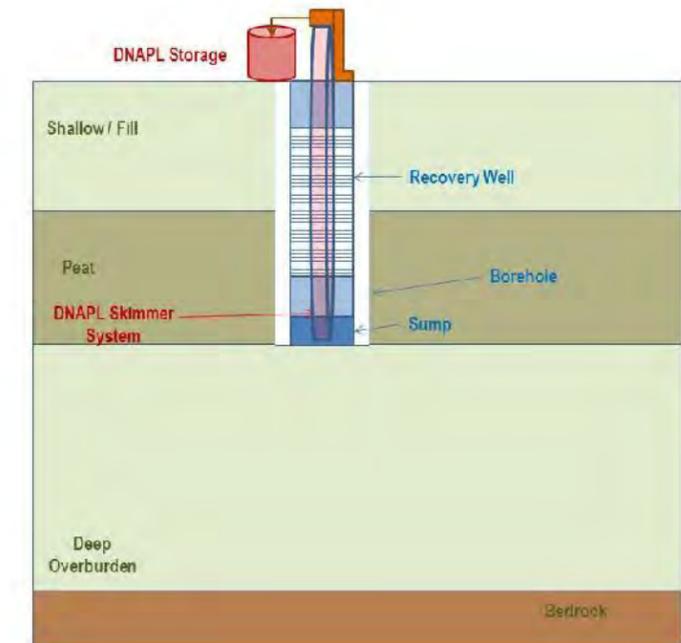
Appendix B



DEEP OVERBURDEN RECOVERY WELL WITH CIRCULATION AND SUMP



BEDROCK RECOVERY WELL WITH SKIMMER AND SUMP



SHALLOW OVERBURDEN WELL WITH SKIMMER AND SUMP

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Fax: 603.606.4801
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PROJECT NO:	60422003	CLIENT:	AVX CORPORATION
DESIGN:	JL	SCALE:	NOT TO SCALE
APPROVED:	MW	DATE:	APR 2016
DRAWN:	FS	FILE NO:	AVX - IRA Plan Modification

PROJECT:	IRA PLAN MODIFICATION 740 BELLEVILLE AVENUE NEW BEDFORD, MA
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TITLE:	RECOVERY WELL SCHEMATICS
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FIGURE NO.:	--
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