

## Notice of Intent

**For Remedial Actions in Bordering  
Vegetated Wetland and the 100-Foot Buffer  
Zone**

**Raytheon Company**

**Former Raytheon Facility  
430 Boston Post Road  
Wayland, MA**

26 April 2006

*NOTICE OF INTENT*

*WPA FORM 3 AND WAYLAND WETLANDS AND WATER RESOURCES BYLAW  
APPLICATION*

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# WPA Form 3 – Notice of Intent

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

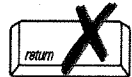
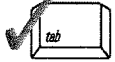
DEP File Number

Document Transaction Number

Wayland

City/Town

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



Note:  
Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

## A. General Information

1. Project Location (**Note:** electronic filers will click on button for GIS locator):

<u>430 Boston Post Road</u> a. Street Address	<u>Wayland</u> b. City/Town	<u>01776</u> c. Zip Code
<u>Latitude and Longitude:</u>	<u>42 21' 57"</u> d. Latitude	<u>71 22' 12"</u> e. Longitude
<u>23</u> f. Assessors Map/Plat Number	<u>23-52C and 23-52D</u> g. Parcel /Lot Number	

2. Applicant:

<u>Edwin</u> a. First Name	<u>Madera</u> b. Last Name	<u>Raytheon Company</u> c. Company
<u>528 Boston Post Road, Mailstop 1880</u> d. Mailing Address		
<u>Sudbury</u> e. City/Town	<u>MA</u> f. State	<u>01776</u> g. Zip Code
<u>978.440.1813</u> h. Phone Number	<u>978.440.1800</u> i. Fax Number	<u>edwin_p_madera@raytheon.com</u> j. Email address

3. Property owner (if different from applicant):

Check if more than one owner

<u>See App. A</u> a. First Name	<u></u> b. Last Name	<u></u> c. Company
<u></u> d. Mailing Address		
<u></u> e. City/Town	<u></u> f. State	<u></u> g. Zip Code
<u></u> h. Phone Number	<u></u> i. Fax Number	<u></u> j. Email address

4. Representative (if any):

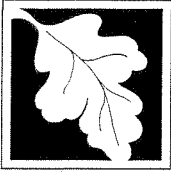
<u>Environmental Resources Management</u> a. Firm		
<u>Ann</u> b. Contact Person First Name	<u>McMenemy</u> c. Contact Person Last Name	
<u>399 Boylston Street, 6<sup>th</sup> Floor</u> d. Mailing Address		
<u>Boston</u> e. City/Town	<u>MA</u> f. State	<u>02116</u> g. Zip Code
<u>617.646.7800</u> h. Phone Number	<u>617.267.6447</u> i. Fax Number	<u>ann.mcmemy@erm.com</u> j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

<u>1450</u> a. Total Fee Paid	<u>712.50</u> b. State Fee Paid	<u>737.50</u> c. City/Town Fee Paid
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6. General Project Description:

For remedial actions, temporary work is necessary in BVW and Buffer Zone to excavate soils. Restoration of the work zone will be completed immediately following the excavation.



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## A. General Information (continued)

7. Project Type Checklist:

- a.  Single Family Home
- b.  Residential Subdivision
- c.  Limited Project Driveway Crossing
- d.  Commercial/Industrial
- e.  Dock/Pier
- f.  Utilities
- g.  Coastal Engineering Structure
- h.  Agriculture – cranberries, forestry
- i.  Transportation
- j.  Other

8. Property recorded at the Registry of Deeds for:

Middlesex

a. County

52

c. Book

22 and 23

b. Page Number

d. Certificate # (if registered land)

9. Has work been performed on the property under an Order of Resource Area Delineation involving Simplified Review within 3 years of the date of this application?

- a.  Yes
- b.  No

10. Buffer Zone Only - Is the project located only in the Buffer Zone of a bordering vegetated wetland, inland bank, or coastal resource area?

- a.  Yes - answer 11 below, then skip to Section C.
- b.  No - skip to Section B.

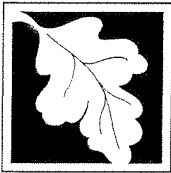
If yes, no Notice of Intent or Request for Determination of Applicability may be filed for work within the 50-foot-wide area in the Buffer Zone along the resource area during the three-year term of an Order of Resource Area Delineation, or any Extended Order, or until the applicant receives a Certificate of Compliance, whichever is later.

11. Buffer Zone Setback – For projects that involve work only in the buffer zone, select the applicable adjacent resource area (check one):

- a.  BVW
- b.  inland bank
- c.  coastal resource area

The distance between the closest project disturbance and the associated resource area is:

d. linear feet



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## B. Resource Area Effects

### 1. Inland Resource Areas

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

#### Online Users:

Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. <input type="checkbox"/> Bank	1. linear feet	2. linear feet
b. <input checked="" type="checkbox"/> Bordering Vegetated Wetland	543 1. square feet	2. square feet
c. <input type="checkbox"/> Land Under Waterbodies and Waterways	1. square feet 3. cubic yards dredged	2. square feet
d. <input type="checkbox"/> Bordering Land Subject to Flooding	1. square feet 3. cubic feet of flood storage lost	2. square feet 4. cubic feet of flood storage replaced
e. <input type="checkbox"/> Isolated Land Subject to Flooding	1. square feet 2. cubic feet of flood storage lost	3. cubic feet of flood storage replaced
f. <input type="checkbox"/> Riverfront area	1. Name of Waterway (if available)	

1. Width of Riverfront Area (check one):

- 25 ft. - Designated Densely Developed Areas only
- 100 ft. - New agricultural projects only
- 200 ft. - All other projects

2. Total area of Riverfront Area on the site of the proposed project:

\_\_\_\_\_ Square Feet

3. Proposed alteration of the Riverfront Area:

a. Total Square Feet \_\_\_\_\_

b. Square Feet within 100 ft. \_\_\_\_\_

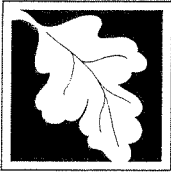
c. Square Feet between 100 ft. and 200 ft. \_\_\_\_\_

4. Has an alternatives analysis been done and is it attached to this NOI?

Yes  No

5. Was the lot where the activity is proposed created prior to August 1, 1996?

Yes  No



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## B. Resource Area Effects

### 2. Coastal Resource Areas:

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

#### Online Users:

Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

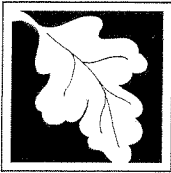
Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. <input type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. <input type="checkbox"/> Land Under the Ocean	1. Square feet 2. Cubic yards dredged	
c. <input type="checkbox"/> Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. <input type="checkbox"/> Coastal Beaches	1. Square feet	2. Cubic yards beach nourishment
e. <input type="checkbox"/> Coastal Dunes	1. Square feet	2. Cubic yards dune nourishment
f. <input type="checkbox"/> Coastal Banks	1. Linear feet	
g. <input type="checkbox"/> Rocky Intertidal Shores	1. Square feet	
h. <input type="checkbox"/> Salt Marshes	1. Square feet	2. Sq ft restoration, rehab., or creation
i. <input type="checkbox"/> Land Under Salt Ponds	1. Square feet 2. Cubic yards dredged	
j. <input type="checkbox"/> Land Containing Shellfish	1. Square feet	2. Square feet restoration, rehab.
k. <input type="checkbox"/> Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above 1. Cubic yards dredged	
l. <input type="checkbox"/> Land Subject to Coastal Storm Flowage	1. Square feet	

### 3. Limited Project:

Is any portion of the proposed activity eligible to be treated as a limited project subject to 310 CMR 10.24 or 310 CMR 10.53?

a.  Yes  No If yes, describe which limited project applies to this project:

b. Limited Project



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## C. Bordering Vegetated Wetland Delineation Methodology

Check all methods used to delineate the Bordering Vegetated Wetland (BVW) boundary:

**Online Users:**  
Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

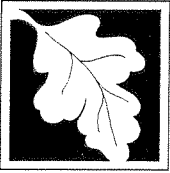
1.  Final Order of Resource Area Delineation issued by Conservation Commission or DEP (attached)
2.  DEP BVW Field Data Form (attached)
3.  Final Determination of Applicability issued by Conservation Commission or DEP (attached)
4.  Other Methods for Determining the BVW Boundary (attach documentation):
  - a.  50% or more wetland indicator plants
  - b.  Saturated/inundated conditions exist
  - c.  Groundwater indicators
  - d.  Direct observation
  - e.  Hydric soil indicators
  - f.  Credible evidence of conditions prior to disturbance
5. Other resource areas delineated: \_\_\_\_\_

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

## D. Other Applicable Standards and Requirements

1. Is any portion of the proposed project located in estimated habitat as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program?
  - a.  Yes  No      If yes, include proof of mailing or hand delivery of NOI to:  
 Natural Heritage and Endangered Species Program  
 Division of Fisheries and Wildlife  
 Route 135, North Drive  
 Westborough, MA 01581  
 \_\_\_\_\_  
 2005  
 b. Date of Map
2. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?
  - a.  Yes  No      If yes, include proof of mailing or hand delivery of NOI to:  
 Division of Marine Fisheries - Southeast Marine Fisheries Station  
 50A Portside Drive  
 Pocasset, MA 02559
  - b.  Not applicable – project is in inland resource area only
3. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?
  - a.  Yes  No      If yes, provide name of ACEC (see instructions to WPA Form 3 or DEP Website for ACEC locations). **Note:** electronic filers click on Website.
  - b. ACEC \_\_\_\_\_





# WPA Form 3 – Notice of Intent

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

Provided by DEP:

DEP File Number

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City/Town

## D. Other Applicable Standards and Requirements

**Online Users:** Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

4. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?

a.  Yes  No

5. Is any activity within any Resource Area or Buffer Zone exempt from performance standards of the wetlands regulations, 310 CMR 10.00.

a.  Yes  No If yes, describe which exemption applies to this project:

b. Exemption

6. Is this project subject to the DEP Stormwater Policy? a.  Yes  No

If yes, stormwater management measures are required. Applicants should complete the Stormwater Management Form and submit it with this form.

b. If no, explain why the project is exempt:

No new impervious surfaces

## E. Additional Information

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

**Online Users:** Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1.  USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)
2.  Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.
3.  Other material identifying and explaining the determination of resource area boundaries shown on plans (e.g., a DEP BVW Field Data Form).
4.  List the titles and dates for all plans and other materials submitted with this NOI.
5.  If there is more than one property owner, please attach a list of these property owners not listed on this form.
6.  Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.
7.  Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.
8.  Attach NOI Wetland Fee Transmittal Form
9.  Attach Stormwater Management Form, if needed.



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands

Provided by DEP:

**WPA Form 3 – Notice of Intent**

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

DEP File Number

Document Transaction Number

Wayland

City/Town

**F. Fees**

The fees for work proposed under each Notice of Intent must be calculated and submitted to the Conservation Commission and the Department (see Instructions and NOI Wetland Fee Transmittal Form).

No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

034354	4/17/06
1. Municipal Check Number	2. Check date
034353	4/17/06
3. State Check Number	4. Check date
Environmental Resources Management	
5. Payor name on check: First Name	6. Payor name on check: Last Name

**G. Signatures and Submittal Requirements**

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

<i>Edwin B. M...</i>	4/26/06
Signature of Applicant	Date
Signature of Property Owner (if different)	Date
<i>Edwin B. M... Environmental Resources Management</i>	4/26/06
Signature of Representative (if any)	Date

**For Conservation Commission:**

Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents; two copies of pages 1 and 2 of the NOI Wetland Fee Transmittal Form; and the city/town fee payment must be sent to the Conservation Commission by certified mail or hand delivery.

**For DEP:**

One copy of the completed Notice of Intent (Form 3), including supporting plans and documents; one copy of pages 1 and 2 of the NOI Wetland Fee Transmittal Form; and a copy of the state fee payment must be sent to the DEP Regional Office (see Instructions) by certified mail or hand delivery. (E-filers may submit these electronically.)

**Other:**

If the applicant has checked the "yes" box in any part of Section D, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

**Wayland Wetlands and Water Resources Bylaw, Chapter 194 Application**

**1. Applicant:**

Raytheon Company

Attn: Edwin Madera

Name (PLEASE PRINT) 528 Boston Post Road	Sudbury	Email Address (if applicable) MA 01776	
Mailing Address 973-440-1813	City/Town	State	Zip Code
Phone Number	Fax Number (if applicable)		

**2. Representative:**

Environmental Resources Management

Firm/Business Name 399 Boylston Street	Boston	Contact Name MA 02116	
Mailing Address 617-646-7800	City/Town	State	Zip Code
Phone Number	Fax Number (if applicable)		

**3. Property Owner(s)**

See Attached List

Property Owner (PLEASE PRINT)	Email Address (if applicable)		
Address	City/Town	State	Zip Code
Phone Number	Fax Number (if applicable)		

**4. Type of Application**

- |   |  |
|---|--|
| <input type="checkbox"/> Request for a Determination of Applicability (RDA) | <input checked="" type="checkbox"/> Notice of Intent (NOI) |
| <input type="checkbox"/> Abbreviated NOI                                    | <input type="checkbox"/> Extension of O.O.C.               |
| <input type="checkbox"/> Notice of Resource Area Delineation                | <input type="checkbox"/> Certificate of Compliance         |
| <input type="checkbox"/> After the Fact Amendment (AFA)                     | <input type="checkbox"/> After the Fact Filing (AFF)       |
| <input type="checkbox"/> Amendment to Order of Conditions                   |  |

**5. Project**

430 Boston Post Road

23

23-52C and 23-52D

Location Address	Assessors Map(s)	Parcel(s)
------------------	------------------	-----------

Project Description (PLEASE PRINT): Remedial actions to excavate soil in BMW and Buffer Zone and restore in place

**6. Title/Date of Plan(s)**

"Site Features and Proposed Work Areas," ERM 4/26/06

**7. Bylaw Application Fee:**

\$ 3335.75

**8. Application filed pursuant to MGL Chapter 131, Section 40**  Yes  No

**9. Signature of Applicant**

*Edwin B. Madera*

Date 4/26/06

**Signature of Property Owner** Refer to MWTA Form

Date

(NOTE: This application shall be signed by the property owner as well as the applicant. Signature of the property owner on this application shall be deemed permission granted to the Conservation Commission and their agents to go upon the subject property.)

*APPENDIX A*

*PROPERTY OWNER AND ABUTTER NOTIFICATION INFORMATION*

*Abutter Notification Letter*

**NOTICE OF INTENT  
ABUTTER NOTIFICATION LETTER**

DATE: April 26, 2006

**RE: Wayland Conservation Commission Public Hearing**

To Whom It May Concern,

As an abutter of a proposed project, please be advised that a Notice of Intent has been filed with the Wayland Conservation Commission under the Massachusetts Wetlands Protection Act and Regulations and the Wayland Wetlands and Water Resources Bylaw, Chapter 194 and Regulations.

**APPLICANT:** Raytheon Company

**PROJECT ADDRESS OR LOCATION:** 430 Boston Post Road

**PROJECT DESCRIPTION:** For remedial actions, temporary work is necessary to excavate soils. Restoration of areas will be undertaken.

**APPLICANT'S AGENT:** Environmental Resource Management  
399 Boylston Street  
Boston, MA 02116  
(617) 646-7800

**PUBLIC HEARING:** Wayland Town Building  
41 Cochituate Road  
Wayland, MA 01778

DATE: May 10, 2006  
TIME: Contact Commission for start time.

**NOTE:** You may consult a copy of the *Wayland Town Crier* or contact the Wayland Conservation Commission at 508-358-3669 for information on the Public Hearing.

**NOTE:** Plans and application describing the proposed activity are on file with and can be obtained from the Wayland Conservation Commission at 508-358-3669.

**NOTE:** You also may contact the Department of Environmental Protection, Northeast Regional Office for more information about this application or the Wetlands Protection Act at (978) 694-3200.

*Abutters List*

List of Abutters  
Town of Wayland, MA

Prepared for Raytheon Company for Activities to be conducted on the following parcels:

Plot #	Address	Owner	Mailing Address
23-052C	400 Boston Post Road	Twenty Wayland, LLC	33 Arch Street, Boston, Suite 2100, MA 02110
23-052D	400 Boston Post Road	Wayland Meadows Limited Partnership C/O Levco Inc.	145 Rosemary Street, Needham, MA 02494

Abutters subject to activities to be conducted on the above properties is as follows:

Plot #	Address	Owner	Mailing Address
22-001	0 Boston Post Road	Town of Wayland Disposal Area	41 Cochituate Road, Wayland, MA 01778
22-008A	464 Boston Post Road	United States of America Fish and Wildlife Service	300 Westgate Center Drive, Hadley, MA 01035-9589
22-010	444 Boston Post Road	Raytheon Company C/O Edwin Madera	528 Boston Post Road, Sudbury, MA 01776
22-011	0 Old Sudbury Road	United States of America Fish and Wildlife Service	300 Westgate Center Drive, Hadley, MA 01035-9589
23-052A	0 Old Sudbury Road	Town of Wayland Conservation Commission	41 Cochituate Road, Wayland, MA 01778
23-052E	Quail Lane	Wayland Meadows Limited Partnership C/O Levco Inc.	145 Rosemary Street, Needham, MA 02494
23-052F	400 Boston Post Road	GRM Properties LLC	11 Madison Avenue, New York, NY 10010
23-052G	Quail Lane	Wayland Meadows Limited Partnership C/O Levco Inc.	145 Rosemary Street, Needham, MA 02494
23-052K	Quail Lane	Wayland Meadows Limited Partnership C/O Levco Inc.	145 Rosemary Street, Needham, MA 02494
23-052L	Quail Lane	Wayland Meadows Limited Partnership C/O Levco Inc.	145 Rosemary Street, Needham, MA 02494
99-001	Across Town	Commonwealth of Massachusetts, MWRA	100 First Ave. Charlestown Navy Yard, Boston MA 02129

Contact Rachel Leary at 617.646.7841 or [rachel.leary@erm.com](mailto:rachel.leary@erm.com)



*Affidavit of Service*

**AFFIDAVIT OF SERVICE**

Under the Massachusetts Wetland Protection Act, I, Ann B. McMenemy, hereby certify under pains and penalties of perjury that on April 26, 2006, I mailed a "Notification to Abutters" in compliance with the second paragraph of the Massachusetts General Laws, Chapter 131, s. 40, the DEP Guide to Abutter Notification dated April 8, 1994 in connection with the following matter:

A Notice of Intent was filed under the Massachusetts Wetland Protection Act and Wayland Wetlands and Water Resources Bylaw with the Wayland Conservation Commission on April 26, 2006 for the property located at 430 Boston Post Road.

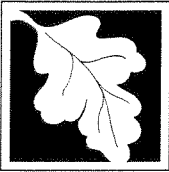
The Abutter Notification Letter is attached to this Affidavit of Service.

Ann B McMenemy  
Name

4/26/06  
Date

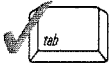
*APPENDIX B*  
*FILING FEE MATERIALS*

*Wetland Fee Transmittal - Form WPA Appendix A*



Massachusetts Department of Environmental Protection  
 Bureau of Resource Protection - Wetlands  
**NOI Wetland Fee Transmittal Form**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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



**A. Applicant Information**

1. Applicant:

Edwin Madera Raytheon  
 a. First Name b. Last Name c. Company  
 528 Boston Post Road, Mailstop 1880  
 d. Mailing Address  
 Sudbury MA 01776  
 e. City/Town f. State g. Zip Code  
 978.440.1813  
 h. Phone Number

2. Property Owner (if different):

a. First Name b. Last Name c. Company  
 d. Mailing Address  
 e. City/Town f. State g. Zip Code  
 h. Phone Number

3. Project Location:

430 Boston Post Road Wayland  
 a. Street Address b. City/Town

**B. Fees**

**Notice of Intent (Form 3) or Abbreviated Notice of Intent (Form 4):**

The fee should be calculated using the following six-step process and worksheet. **Please see Instructions before filling out worksheet.**

**Step 1/Type of Activity:** Describe each type of activity that will occur in wetland resource area and buffer zone.

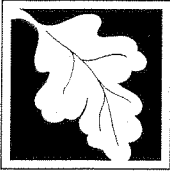
**Step 2/Number of Activities:** Identify the number of each type of activity.

**Step 3/Individual Activity Fee:** Identify each activity fee from the six project categories listed in the instructions.

**Step 4/Subtotal Activity Fee:** Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

**Step 5/Total Project Fee:** Determine the total project fee by adding the subtotal amounts from Step 4.

**Step 6/Fee Payments:** To calculate the state share of the fee, divide the total fee in half and subtract \$12.50. To calculate the city/town share of the fee, divide the total fee in half and add \$12.50.



Massachusetts Department of Environmental Protection  
 Bureau of Resource Protection - Wetlands  
**NOI Wetland Fee Transmittal Form**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

**B. Fees** (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Category 3d	1	\$1050	\$1050

**Step 5/Total Project Fee:** \$1050

**Step 6/Fee Payments:**

Total Project Fee:	\$1050
State share of filing fee:	a. Total fee from Step 5 512.50
City/Town share of filling fee:	b. 1/2 total fee less \$12.50 537.50
	c. 1/2 total fee plus \$12.50

**C. Submittal Requirements**

- a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection  
 Box 4062  
 Boston, MA 02211

- b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.
- c.) **To DEP Regional Office** (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

*Copy of Filing Fee Checks*

034353  
04/17/06  
000692

VENDOR

CHECK NUMBER

M Account Number:

PLEASE DETACH AND RETAIN FOR YOUR RECORDS

INVOICE NUMBER	DATE	VOUCHER NO	AMOUNT
CHECKREQ	04/11/06	35590	512.50

TOTAL:

Total:

512.50

THE FACE OF THIS CHECK HAS A SECURITY VOID BACKGROUND PATTERN - DO NOT CASH IF THE WORD VOID IS VISIBLE

ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116  
(617) 646-7800

WACHOVIA  
3-50  
310

DATE: 04/17/06

NO. 034353

\*\*\*\*\*50/100 \*\*\*\*\*512.50

PAY FIVE HUNDRED TWELVE \$

Commonwealth of Massachusetts  
Department of Environmental Protection  
PO BOX 3982  
Boston, MA 02241-3982 US

AUTHORIZED SIGNATURE

ORIGINAL CHECK HAS AN ARTIFICIAL WATERMARK ON REVERSE SIDE - HOLD AT AN ANGLE TO VIEW

034353 031000503 2000017966708

M



VENDOR

CHECK NUMBER

034354  
04/17/06  
003474

M. Account Number:

PLEASE DETACH AND RETAIN FOR YOUR RECORDS

INVOICE NUMBER	DATE	VOUCHER NO.	AMOUNT
CHECKREQ	04/11/06	35591	537.50

TOTAL:

Total:

537.50

THE FACE OF THIS CHECK HAS A SECURITY VOID BACKGROUND PATTERN - DO NOT CASH IF THE WORD VOID IS VISIBLE

ERM  
 399 Boylston Street, 6th Floor  
 Boston, MA 02116  
 (617) 646-7800

  
 WACHOVIA  
 3-50  
 310

04/17/06

034354

DATE:

NO. 034354

PAY FIVE HUNDRED THIRTY-SEVEN

\*\*\*\*\*50/100

\*\*\*\*\*537.50

\$

TO THE  
 ORDER  
 OF  
 Town of Wayland  
 Wayland Town Building  
 41 Cochituate Rd  
 Wayland, MA 01778 US

  
 AUTHORIZED SIGNATURE

ORIGINAL CHECK HAS AN ARTIFICIAL WATERMARK ON REVERSE SIDE - HOLD AT AN ANGLE TO VIEW

⑈034354⑈ ⑆031000503⑆ 2000017966708⑈

M.

VENDOR

CHECK NUMBER

M Account Number:

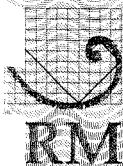
PLEASE DETACH AND RETAIN FOR YOUR RECORDS

INVOICE NUMBER	DATE	VOUCHER NO.	AMOUNT
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for Wetlands. NOI Application Fee.

TOTAL:

THE FACE OF THIS CHECK HAS A SECURITY VOID BACKGROUND PATTERN - DO NOT CASH IF THE WORD VOID IS VISIBLE



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116  
(617) 646-7800



WACHOVIA  
3-50  
310

DATE: April 26, 2006

NO. 034471

PAY Three hundred Thirty-five and  $\frac{75}{100}$

\$ 335.75

TO THE ORDER OF

Town of Wayland  
Town Building  
41 Cochituate Road  
Wayland, MA 01778

AUTHORIZED SIGNATURE

ORIGINAL CHECK HAS AN ARTIFICIAL WATERMARK ON REVERSE SIDE - HOLD AT AN ANGLE TO VIEW

⑈034471⑈ ⑆031000503⑆ 2000017966708⑈

M

*APPENDIX C*

*NOTICE OF INTENT NARRATIVE*

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On behalf of Raytheon Company (Raytheon), Environmental Resources Management (ERM) submits this Notice of Intent (NOI) for a portion of the land at the former Raytheon facility, located at 430 Boston Post Road in Wayland, Massachusetts (Site, Figure 1). This NOI is filed pursuant to the Massachusetts Wetlands Protection Act and the Wayland Wetlands and Water Resources Bylaw, Chapter 194.

The proposed activities of excavation of soils impacted by oil and/or hazardous materials will require temporary disturbance of a portion of the 100-foot Buffer Zone to Bordering Vegetated Wetland and a limited amount of work in the upgradient extent of a swale determined in previous Orders of Condition to be the resource area, Bordering Vegetated Wetland (BVW). This NOI describes the wetland jurisdiction, proposed activities, construction procedures to protect wetland resource areas, and mitigation measures.

The Site, surrounding properties and physical features as well as the proposed work area, are displayed in Figure 2a. Raytheon utilized the Site from 1955 to 1995 for electronic testing and chemical process research to support in-house prototype manufacturing. In 1995, Raytheon ceased operations and decommissioned the facility.

Assessment of the potential for past release(s) of oil and/or hazardous materials (OHM) to soil and/or groundwater associated with Raytheon's historic operations was initiated in 1995. Identification of OHM in Site soil and groundwater required filing a release notification with the Massachusetts Department of Environmental Protection (DEP) in January 1996. Subsequent assessment and remedial response actions have been conducted in accordance with the requirements of the Massachusetts Contingency Plan (MCP, 310 CMR 40.0000). The site is being assessed and remediated under two different Release Tracking Numbers (RTNs), RTN 3-22408 and Tier IB Permit Number W045278 (the "Northern Area") and RTN 3-13302 Tier IB Permit (No. 133939) (the "Southern and Western Areas"). This NOI pertains to only activities conducted in the Northern Area of the Site.

ERM completed the Phase II - Comprehensive Site Assessment (Phase II) and Phase III - Remedial Action Plan (Phase III) reports for the Site on 16 December 2005. The Phase II describes the nature and extent of residual OHM impact in affected media and characterizes the potential risk posed by the Site to human health, safety, public welfare, and the environment. The Phase III describes and documents the information, reasoning and results used to identify and evaluate remedial action alternatives in sufficient detail to support selection of the proposed remedial action alternative.

Phase IV is the fourth part of a five-phase process required under the MCP for assessment and remediation of a release(s) of oil and/or hazardous materials (OHM) to the environment. Cleanup will be initiated under Phase IV to abate OHM impacts to Site soil and groundwater that pose a potential risk to human health and the environment, as identified in the Phase II (ERM, 2005A). The technologies utilized as part of Phase IV are those selected in the Phase III (ERM, 2005B). The Phase IV includes design, construction and implementation of the Comprehensive Remedial Response Action identified in the Phase III. A Phase IV study is being prepared to document the proposed remediation and restoration process and will be submitted to the DEP to fulfill the MCP requirements.

Data from assessment activities, presented in the Phase II report, suggest the presence of residual, sorbed and/or dissolved phase volatile organic compounds (VOCs) in the Northern Area soils represents the source of dissolved phase impacts to groundwater in the Northern Area. The Phase III report identified "Excavation of Source Area Saturated Soils" and "Bioremediation in Groundwater" as the preferred remedial approaches for abatement of Site impacts. The Phase III report also indicated that pre-remedial characterization activities would need to be conducted to identify chlorinated VOC (CVOC) concentrations in the source area saturated soil.

On 31 January and 1 February 2006, ERM conducted a soil investigation to further evaluate the feasibility of Excavation of Source Area Saturated Soils. Thirteen soil borings were advanced to a maximum depth of 30-feet below ground surface (bgs). Samples were collected and submitted for analytical analysis. These results of this investigation are presented in Section 5.2.1.



The remedial actions proposed in this NOI are limited to a minor portion of the property in primarily an upland setting adjacent to the parking areas. This NOI utilizes the extent and types of wetland jurisdiction established under previous Orders of Conditions for work subject to the local and state wetland regulations on the Raytheon property. Figure 2a depicts the wetland jurisdictions in and near the proposed temporary work zone. Table 1 provides a summary of the historic local and state wetland permitting for the Raytheon property.

Wetland jurisdiction within the proposed work zone consists of a narrow swale considered BVW and its associated 100-foot Buffer Zone. The 200-foot Riverfront Area to the Sudbury River does not encompass the proposed work area. The proposed excavation area and supporting layout areas are not located within the 100-year floodplain as shown on Figure 2a.

The remedial activities are proposed at the most upgradient portion this BVW finger where a shallow swale is discernible; however, no signs of flow or surface water are present. This narrow wetland is a linear feature that slopes slightly to the west but no apparent inlets or outlet are in place. The BVW finger lacks a tree canopy in the work area. Occasional shrubs such as multiflora rose (*Rosa multiflora*), European buckthorn (*Rhamnus frangula*), and silky dogwood (*Cornus amomum*) dot the BVW and adjacent areas. The herbaceous layer is comprised of several grasses including reed canary grass (*Phalaris arundinacea*), sensitive fern (*Onoclea sensibilis*), and purple loosestrife (*Lythrum salicaria*).

An existing single-lane gravel access road parallels the north side of the BVW finger. Very little change in grade is present between the BVW and adjacent access road. The remainder of the land in the 100-foot Buffer Zone is a level, successional field where shrubs and saplings are colonizing the previously maintained field. Typical vegetative cover includes occasional woody clumps of quaking aspen saplings (*Populus tremula*), pussy willows (*Salix discolor*), European buckthorn, crabapple (*Malus* spp.) and honeysuckle (*Lonicera tatarica*). The groundcover consists of a variety of grasses and forbs such as evening primrose (*Oenothera biennis*), Queen Anne's lace (*Daucus carota*), bush clover (*Lespedeza capitata*) and poison ivy (*Toxicodendron radicans*).

The Phase II was conducted under the requirements of the MCP and included a series of field investigations to assess the source(s), nature and extent of OHM impacts to the environment associated with historic release(s). Historical equipment testing activities were conducted in the Northern Area (Figure 2a) of the Site prior to 1995, when Raytheon ceased operations at the facility. An apparent release of trichloroethene (TCE) occurred, resulting in impacts to groundwater at concentrations exceeding applicable MCP Reportable Concentrations (RCs). An extensive source area investigation identified the location of the release area and defined the horizontal and vertical extents of the source zone. The nature of CVOC impacts in groundwater is defined as primarily TCE and its degradation products, cis 1,2-dichloroethene (cDCE) and vinyl chloride (VC), with some tetrachloroethene (PCE), and locally, toluene.

CVOCs were identified in the Northern Area source area within saturated zone soils to a maximum depth of approximately 25 feet. A dissolved phase CVOC plume continues to emanate from this source area following the initial release, suggesting that CVOCs remain in the source area as residual mass, sorbed to soil, and/or diffused into fine-grained soil horizons.

Groundwater in the Northern Area flows to the west toward the Sudbury River and associated wetlands, which represent the regional hydrologic discharge boundary. The Northern Area CVOC plume migrates from east to west toward the Sudbury River and associated wetlands. The western boundary of the CVOC plume was delineated to levels below applicable RCs within the wetlands east of the Sudbury River. The northern boundary of the CVOC plume was delineated to levels below applicable RCs.

OHM in Site groundwater (i.e., PCE, TCE, cDCE, 1,1-dichloroethene (1,1-DCE), VC, and toluene) poses a condition of "significant risk" to human health, as the Site is located within a Zone II aquifer protection area. This condition is also based on the potential for future exposure by hypothetical receptors (receptors that maintain a potential for future exposure in the absence of institutional controls or remediation). However, risks to human health posed by the Site under current conditions are considered negligible, because there is currently no complete exposure pathway (i.e., groundwater is not a current source of drinking water).

## 5.0 PROPOSED REMEDIAL ACTION

### 5.1 OVERVIEW

The Phase III was conducted under the requirements of the MCP and submitted to the DEP in December 2005. Based on the results of the Phase III comparative analysis, excavation of source area saturated soils and bioremediation in groundwater are the preferred remedies for abatement of Site impacts. These remedies were selected based of the following criteria: effectiveness, reliability, feasibility to implement, cost-effectiveness, posing minimal risk, and timeliness.

ERM anticipates that the sequence of remedial activities will be as follows:

- excavation and off-site disposal or treatment of saturated source area soils;
- backfill the excavation with clean fill;
- monitor the effects of source area abatement on near-source groundwater quality;
- initiate carbon substrate amendments to abate CVOC impacts to groundwater, as appropriate; and
- Continue monitoring groundwater quality over time.

### 5.2 DESIGN AND CONSTRUCTION

#### 5.2.1 *Pre-Construction Activities*

##### *Methods*

A total of 13 soil borings were advanced using a Geoprobe to maximum depth of 30-feet bgs in the source area in the Northern Area of the Site in an effort to characterize soil quality to support Phase IV remedial design activities. Soil boring locations were collocated with previously advanced Membrane Interface Probe (MIP) borings and Waterloo Profiler borings. The soil boring locations are shown on Figure 2, inset.

Soil samples were collected and screened in the field for total VOCs using a photo-ionization detector (PID) and the DEP jar headspace method. Twelve soil samples were submitted for analysis of VOCs by EPA Method 8260. Additionally, two samples (one grab and one composite) were

submitted for analyses of additional miscellaneous analytical parameters, which included:

- Semi-volatile organic compounds (SVOCs) by EPA Method 8270;
- Polychlorinated biphenyls (PCBs) by EPA Method 8082;
- Priority Pollutant 13 Metals (PP13) by EPA Method 6010B/7471; and
- Extractable Petroleum Hydrocarbons (EPH) by MADEP-EPH-98-1.

One sample was submitted for analysis of waste characterization parameters using the toxicity characteristic leaching procedure (TCLP) and included:

- TCLP Resource Conservation Recovery Act (RCRA) 8 Metals by EPA Method SW 1311/6010/7000;
- TCLP VOCs by EPA Method SW1311/8260;
- TCLP SVOCs by EPA Method SW1311/8270;
- TCLP Pesticides by EPA Method SW1311/8081; and
- TCLP Herbicides by EPA Method SW1311/8150.

### *Results*

All twelve of the soil samples submitted for analysis of VOCs contained detectable concentrations of various VOCs. PCE, TCE, and/or cis-1,2-dichloroethene (cDCE) were detected in eight of these soil samples at concentrations greater than the applicable Method 1 GW-1/S-1 criteria (Table 2).

No PCBs, SVOCs, or EPHs were detected above analytical laboratory method detection limits for either the grab or composite soil sample (Table 3). Various metals were detected in both the grab and composite sample, none above the applicable RCS-1 criteria (Table 3).

Tetrachloroethene (PCE), trichloroethene (TCE), and 2,4,5-trichlorophenol were detected by the analysis of waste characterization parameters under TCLP (Table 4). None of these compounds were detected at concentrations above the regulatory criteria presented in 310 CMR 30.125B, Hazardous Waste Regulations.

### 5.2.2 *Design of Cofferdam*

Hartman Engineering of Clarence, New York has completed a design of a coffer dam system to enable the excavation of an 80-foot diameter area to

a depth of approximately 25 feet. Sheet pile will be driven with a 100-ton crane with a 100-foot boom or equivalent, to a depth of approximately 60 feet holding the coffer dam in place with a sophisticated system of concrete walers acting as compression rings, holding open the circular sheet pile configuration (Figure 3a, b, and c). The coffer dam system will eliminate the need for traditional sheet pile and cross bracing, which can restrict accessibility and equipment movement within the excavation.

The depth to water at the site is approximately 10 to 12 feet bgs. The design of the system also takes into account pressure from 20 to 25 feet of water and soils above the bottom of the excavation.

The concrete walers will be spaced seven to eight feet apart by design. concrete 4,000 pounds per square inch (psi) will be poured to form the concrete walers. Hanger bars will be installed as concrete dries to hang walers from the driven pile. Electrical strain gauges will be installed on the concrete walers to provide information for computing levels of stress due to load changes. Data from strain gauges will be collected to verify actual loads in the concrete rings do not exceed design loads. Bending of walers are indicators of failure.

Aboveground and below ground utilities in the vicinity of the excavation, will be confirmed to be deactivated prior to construction.

### 5.2.3 *Excavation and Staging*

#### *Erosion Control*

Erosion control practices will be implemented to protect the resource area from sediment entering the BVW adjacent to the area to be excavated. Figure 2b shows the location the erosion controls to be installed and maintained in function condition until stabilization by vegetation occurs following the excavation. Standard erosion control methods, using a staked silt fence and entrenched straw bales will be deployed to protect against runoff into the adjacent BVW (Figure 4).

#### *Dewatering*

Groundwater and precipitation entering the excavation will require dewatering including pumping, collection and discharge. Suspended solids will be removed by directing withdrawn water to a settling tank. Sediments and water will be analyzed prior to off-site disposal, or discharge. Water treatment will include OHM removal via activated carbon. A typical flow diagram of the water treatment train is attached as Figure 5. The discharge will be to the site stormwater conveyance system

and eventually to the Sudbury River. It is anticipated flow will be discharged at a rate less than 20 gallons per minute (gpm) or 0.045 cubic feet per second (cfs) to the storm drain and will not be discharge during significant rain events, in order to minimize impacts to the stormwater outfall. The outfall was designed to handle a 100-year storm event and velocities of 19 cfs, therefore this discharge is within the capacity of the stormwater system. To minimize silt entering the wetland, a "dirt bag" will be placed on the discharge pipe to the storm drain in addition to filtration by the water treatment unit.

Under the National Pollution Discharge Elimination System (NPDES) regulations, all water discharge associated with a remedial activities require a Remediation General Permit (RGP). Raytheon will apply for a RGP for site activities prior to discharge of treated water to the stormwater system.

At a minimum, influent, intermediate and effluent water will be analyzed for VOCs, Total Suspended Solids (TSS) and pH. Any other analytical parameters required by the RGP will be added to the analytical schedule. Water will be analyzed on Days 1, 3, and 6 and then weekly thereafter. The Commission will receive copies of all analytical data. Under the Paper Work Reduction Act, the EPA will not receive discharge monitoring reports, but Raytheon will retain these records in accordance with the RGP. Raytheon will provide copies of RGP monitoring reports to the commission upon request. In addition, if a violation of RGP occurs, the Commission will be notified immediately by phone, and followed up with letter, which will include any corrective actions taken.

### *Excavation*

The top five feet of soil in the targeted 80-foot diameter remedial area will be removed and screened and staged as "clean soil", for re-use as backfill in later stages of the project. The sheet piling for the coffer dam will be installed at five feet bgs to a total depth of 25 feet bgs. The sheets will be installed using traditional pile driving equipment.

Following the installation of the coffer dam sheets, the excavation within the coffer dam will continue in seven to eight foot lifts. Soils will be screened and segregated by contaminant levels and staged in appropriate areas. At the end of each lift, a concrete waler will be installed prior to continuing to the next lift. A total of four lifts will be excavated to a total depth of 25 feet bgs.

Heavy equipment such as cranes, excavators, front-end loaders and bulldozers will access the remedial area via temporary roadways shown

in Figure 2a. Based on the delineation of the impacts to source area, it is anticipated that approximately 453 feet of the identified BVW will be temporarily impacted by the excavation and by supporting activities.

Removal is estimated to be approximately 6,500 yd<sup>3</sup> of material from both coffer dams, of up to 5,500 yd<sup>3</sup> of remediation waste will be generated. Dump trucks will be loaded on these roadways to transport impacted material to the staging area. The top five feet of soils from each excavation area has been field screened and is considered to be "clean" material. This top 1,200 yd<sup>3</sup> will be staged in the "Clean Soil Staging Area" next to the excavation areas. The remaining material will be field screened with a PID and segregated in the parking lot staging areas (Figure 2a and c).

### *Staging*

The staging area for management of remedial waste will be located outside the Buffer Zone in the parking area; 300 feet landward of the wetland edge to meet state and local Buffer Zone setbacks (See Figure 2a and b). The remedial waste staging will consist of two areas approximately 150 feet by 150 feet. Concrete jersey barriers and/or straws bales will be placed around the perimeter of each area and lined with a heavy-duty poly-liner. A minimum of one water collection trench, approximately 1 foot wide, on the downgradient edge, will be excavated in each area, to collect water runoff from the contaminated soil. Piles will be covered in plastic at the end of each work day.

Water will be collected in a sump, and pumped to a settling tank. Water samples will be collected and analyzed for VOCs by EPA Method 8260. Collected (and treated, if necessary) water will be discharged to the stormwater conveyance system under a Remediation General Permit, if it meets appropriate discharge criteria. If water treated on-site cannot meet discharge criteria, it will be contained and shipped off-site for disposal. Workers in this area will be required to follow the Site-specific Health and Safety Plan (Attachment A).

New soil will be placed at approximate final grade (Figure 3a) as soon as excavation is completed.

### *Cleaning and Decontamination of Equipment and Sampling Equipment*

Any non-dedicated manual sampling equipment used to collect soil samples will be cleaned and decontaminated prior to its initial use, between each sampling location and after the final use. Samples collected using the mechanical coring device will be collected in dedicated new

PVC liner tubes. The following general procedures will be followed concerning decontamination efforts:

- 1) If visual signs (i.e., discoloration) suggest that decontamination was insufficient, the equipment will again be decontaminated. If the situation persists, the equipment will be taken out of service until the situation can be corrected.
- 2) Verification of the non-dedicated sampling equipment cleaning procedures will be documented by the collection of field blanks (equipment rinseate).
- 3) All properly decontaminated equipment will be stored in aluminum foil and plastic bags during storage and transport.

The following step-by-step decontamination procedure will be followed for all non-dedicated sampling tools:

- i) Non-phosphate detergent wash
- ii) Tap water rinse
- iii) Methanol rinse
- iv) Triple deionized/distilled water rinse
- v) Air dry

Heavy equipment will be decontaminated inside the Contamination Reduction Zone and in the parking lot, as necessary. Heavy equipment will be parked on a decontamination pad, which will collect liquids generated during cleaning, and steamed clean. Liquids generated during any decontamination process will be collected, contained and appropriately labeled for disposal or discharged in accordance with the RGP permit.

Decontamination protocols will be strictly adhered to in order to minimize the potential for cross-contamination between sampling locations and contamination of off-site areas. More specific decontamination procedures are addressed in the Health & Safety Plan (Attachment A).



## 5.2.4

### *Management of Remedial Waste*

#### *Transportation and Disposal*

Stockpiled material will be shipped to the designated disposal facility via truck and/or rail. When segregated material has been released from the stockpile area, it will be loaded into dump trailers or roll-offs utilizing front-end loaders and other earth moving equipment as needed. Trucks will transport this material to the destination facility or to a rail facility. If the material is transported via rail, the excavated soil will be transferred to rail containers at the rail facility prior to shipment.

All hazardous material shipped from the Site will be properly manifested or shipped under a bill of lading if the material is non-hazardous. A log will be maintained to track all shipments that leave the Site. The following information will be tracked:

- Container ID, Date, Time container left Site
- Hauler
- Approximate volume
- Weight (when measured)
- Waste Classification
- Manifest Number
- Date of Receipt of Manifest Copy

All excavated material from the main excavation area will be disposed of at the appropriate regulated disposal facility. Any treated water that does not meet discharge requirements will be containerized and shipped off-site for treatment and disposal.

## 5.3

### *OPERATION PARAMETERS*

#### 5.3.1

##### *Sampling*

Soil sampling will be conducted for the purposes of establishing residual concentrations of VOCs. Grab samples will be taken from the bottom of the excavation using a crane and clamshell bucket. Perimeter samples will be taken around the circumference of each coffer dam, approximately every 25 feet. All soil samples will be analyzed for VOCs by EPA Method 8260.

### 5.3.2

#### *Structural Monitoring*

Electrical strain gauges on the concrete walers will provide information for computing levels of stress due to load changes. Data from strain gauges will be collected to verify actual loads in the concrete rings do not exceed design loads. Bending of walers are indicators of failure.

Detailed soil and groundwater investigations of the proposed excavation area were undertaken to accurately define the extent of anticipated excavation. Areas have been identified for supporting activities to the excavation, and the work zone to access the excavation delineated as shown on Figure 2a. The activities in wetland jurisdictions are temporary. The land will be restored to pre-existing grades and stabilized with native plant species.

A No Action scenario would not allow necessary remedial actions to proceed in accordance with the preferred remedial approaches identified in the Phase III Remedial Action Plan in fulfillment of the MCP requirements.

To mitigate for the temporary disturbance to the BVW finger and 100-foot Buffer Zone, the approximate pre-existing grades will be reestablished and vegetative cover accelerated by broadcasting seed mixes such as New England Conservation/Wildlife Mix or equivalent.

Raytheon is aware that the mitigation requirements of 1:1.5 ratio of disturbed to restored areas. Raytheon wishes to solicit input from the Commission to determine an appropriate mitigation project, as there maybe more value to improving other areas of the site than this isolated BVW finger. Pending the Commission's input regarding the mitigation, Raytheon will prepare a proposal including a monitoring program to present to the Commission for its approval.

*SCHEDULE OF EVENTS*

The following table is a summary of the schedule of construction activities to complete this remedial action

*Schedule of Construction Activities*

<i>Approximate Date</i>	<i>Event</i>
1 August 2006	Prepare Site and Install Cofferdam
15 August 2006	Begin Excavation
15 September 2006	Complete Excavation and Commence Backfill
16 October 2006	Restoration Activities
January 2007	Submit Phase IV Completion Report

ERM, December 2005, "Phase II - Comprehensive Site Assessment, Former Raytheon Facility, 430 Boston Post Road, Wayland, Massachusetts, RTN 3-22408," report submitted to Raytheon Company.

ERM-New England, Inc., April 2005, "Phase III - Remedial Action Plan, Former Raytheon Facility, 430 Boston Post Road, Wayland, Massachusetts, RTN 3-22408," report submitted to MA DEP.

**Table 1**  
**Summary of Wetland Permitting**  
**Former Raytheon Facility**  
**Wayland, Massachusetts**

Document	DEP #	Date Submitted	Date Issued	Activities Ongoing	Certificate of Compliance (COC) Issued	Activity	Actions
NOI	332-0532	27-Jun-02	13-Aug-02	Completed	Pending ERM Submittal	Well Installation, Soil Borings, Sampling	Submit WPA Form 8A for COC
NOI	322-0553	15-May-03	26-Sep-03	Monitoring	Pending ERM Submittal	Wetland Excavation	May be Required to submit for an Extension, need to confer w Con Com. Apply for COC; \$100 K bond
NOI	322-0564	25-Sep-03	20-Nov-03	Completed	Pending ERM Submittal	Well Installation, Vertical Profiling Borings, Well Installation	Apply for COC; \$30 K bond
NOI	322-0350	6-Sep-96	unknown	Completed	Not Received	Northern Area Excavation	Edwin Madera was to review Raytheon files and determine whether COC was received. E-mail from ERM to Madera on 11 August 2004.
RDA	D-503	unknown	8-Dec-00	Completed	Not Received	Fence Installation	ERM submitted a letter on 19 August 2004, requesting COC and Site walk.
RDA	D-586	13-Jun-03	12-Aug-03	Completed	Not Received	Geophysical Survey	ERM submitted a letter on 12 October 2005, requesting COC and Site walk.
RDA	D-651	23-Mar-05	14-Apr-05	Completed	Pending ERM Submittal	Northern Area MIP and VP	ERM to submit final data package and request COC.
RDA	D-633	20-Apr-05	17-May-05	Completed	Not Received	Fence Removal	ERM submitted a letter on 16 June 2005, requesting COC and Site walk.

**Table 2**  
**Summary of Soil Analytical Results - VOC**  
**Former Raytheon Facility**  
**Wayland, Massachusetts**

Parameter	MCP Criteria Method 1 S-1/GW-1	MCP Criteria New Method 1 S-1/GW-1 Effective 4/3/2006	Sample I.D. Date Sampled Depth	SB-515 01-Feb-06 15' - 20'	SB-522 01-Feb-06 10' - 15'	SB-522A 01-Feb-06 10' - 15'
<b>Volatile Organic Compounds (VOCs) (8260) ug/kg</b>						
Tetrachloroethene	500	1,000		490	<b>1,800</b>	-
Trichloroethene	400	300		<b>16,000</b>	<b>26,000</b>	1.4
cis-1,2-Dichloroethene	2,000	300		240	1,700	-
Vinyl Chloride	300	600		-	-	-
Toluene	90,000	30,000		-	-	-
p-Isopropyltoluene	NS	NS		-	-	-
N-Butylbenzene	NS	NS		-	-	-
Acetone	3,000	3,000		-	-	-

Notes:

Only compounds with detectable results are tabulated  
ug/kg = micrograms per kilogram (parts per billion (ppb))  
- = Analytical result below the method detection limit.  
NS = No Standard  
**Bold and shaded cells exceed regulatory criteria.**



**Table 2**  
**Summary of Soil Analytical Results - VOC**  
**Former Raytheon Facility**  
**Wayland, Massachusetts**

Parameter	MCP Criteria Method 1 S-1/GW-1	MCP Criteria New Method 1 S-1/GW-1 Effective 4/3/2006	Sample I.D. Date Sampled Depth	SB-529 31-Jan-06 15' - 20'	SB-529 31-Jan-06 5' - 10'
<b>Volatile Organic Compounds (VOCs) (8260) ug/kg</b>					
Tetrachloroethene	500	1,000		6.3	<b>17,000</b>
Trichloroethene	400	300		30	<b>57,000</b>
cis-1,2-Dichloroethene	2,000	300		3.5	<b>2,500</b>
Vinyl Chloride	300	600		-	-
Toluene	90,000	30,000		-	5,400
p-Isopropyltoluene	NS	NS		-	-
N-Butylbenzene	NS	NS		-	-
Acetone	3,000	3,000		-	-

Notes:

Only compounds with detectable results are tabulated  
ug/kg = micrograms per kilogram (parts per billion (ppb))  
- = Analytical result below the method detection limit.  
NS = No Standard  
**Bold and shaded cells exceed regulatory criteria.**

**Table 2**  
**Summary of Soil Analytical Results - VOC**  
**Former Raytheon Facility**  
**Wayland, Massachusetts**

Parameter	MCP Criteria Method 1 S-1/GW-1	MCP Criteria New Method 1 S-1/GW-1 Effective 4/3/2006	Sample I.D. Date Sampled Depth	SB-530 31-Jan-06 5' - 10'	SB-530A 01-Feb-06 10' - 15'	SB-531A 31-Jan-06 15' - 20'	SB-531B 31-Jan-06 10' - 15'
<b>Volatile Organic Compounds (VOCs) (8260) ug/kg</b>							
Tetrachloroethene	500	1,000		<b>2,900</b>	160	63	250
Trichloroethene	400	300		<b>3,900</b>	<b>520</b>	<b>440</b>	<b>1,300</b>
cis-1,2-Dichloroethene	2,000	300		<b>2,200</b>	150	53	380
Vinyl Chloride	300	600		-	-	-	-
Toluene	90,000	30,000		-	-	-	-
p-Isopropyltoluene	NS	NS		-	0.91	-	-
N-Butylbenzene	NS	NS		-	0.91	-	-
Acetone	3,000	3,000		-	-	-	-

Notes:

Only compounds with detectable results are tabulated  
ug/kg = micrograms per kilogram (parts per billion (ppb))  
- = Analytical result below the method detection limit.  
NS = No Standard  
Bold and shaded cells exceed regulatory criteria.

**Table 2**  
**Summary of Soil Analytical Results - VOC**  
**Former Raytheon Facility**  
**Wayland, Massachusetts**

Parameter	MCP Criteria Method 1 S-1/GW-1	MCP Criteria New Method 1 S-1/GW-1 Effective 4/3/2006	Sample I.D. Date Sampled Depth	SB-534 31-Jan-06 15' - 20'	SB-534A 31-Jan-06 20' - 25'	SB-534B 01-Feb-06 15' - 20'
<b>Volatile Organic Compounds (VOCs) (8260) ug/kg</b>						
Tetrachloroethene	500	1,000		230	1.2	-
Trichloroethene	400	300		<b>6,000</b>	14	3.6
cis-1,2-Dichloroethene	2,000	300		-	1.4	-
Vinyl Chloride	300	600		-	-	-
Toluene	90,000	30,000		-	-	-
p-Isopropyltoluene	NS	NS		-	-	-
N-Butylbenzene	NS	NS		-	-	-
Acetone	3,000	3,000		-	10	10

Notes:

Only compounds with detectable results are tabulated  
ug/kg = micrograms per kilogram (parts per billion (ppb))  
- = Analytical result below the method detection limit.  
NS = No Standard  
**Bold and shaded cells exceed regulatory criteria.**

**Table 3**  
**Summary of Soil Analytical Results - Miscellaneous Parameters**  
**Former Raytheon Facility**  
**Wayland, Massachusetts**

Parameter	Action Level Method 1 S-1/GW-1	Action Level New Method 1 S-1/GW-1 Effective 4/3/2006	Sample I.D. Date Sampled Depth	Composite Soil Boring 01-Feb-06	SB-522 01-Feb-06 10' - 15'
Semivolatile Organic Compounds (SVOCs) (8270) ug/kg				-	-
Extractable Petroleum Hydrocarbons (EPH) (EPH-04-1) mg/kg				-	-
Polychlorinated Biphenyls (PCBs) (8082) ug/kg				-	-
Total Metals (6010) & (7471) mg/kg					
Antimony	10	20		-	-
Arsenic	30	20		5.6	4.9
Beryllium	0.7	0.7		-	-
Cadmium	30	2		-	-
Chromium	1000	30		15	17
Copper	NS	NS		13	16
Lead	300	300		5.4	5.5
Mercury	20	20		-	-
Nickel	300	20		13	16
Selenium	400	400		-	-
Silver	100	100		-	-
Thallium	8	8		-	-
Zinc	2500	2500		30	32

Notes:

- = Analytical result below the method detection limit.

NA = Not Analyzed

ug/kg = micrograms per kilogram (parts per billion (ppb))

mg/kg = milligrams per kilogram (parts per million (ppm))

NS = No Standard

**Table 4**  
**Summary of Soil TCLP Analytical Results**  
**Former Raytheon Facility**  
**Wayland, Massachusetts**

Parameter	Regulatory Level ug/L	Sample I.D. Date Sampled	SB-529 31-Jan-06
TCLP Volatile Organic Compounds (VOCs) (8260) ug/l			
Tetrachloroethene	700		82
Trichloroethene	500		260
TCLP Semivolatile Organic Compounds (SVOCs) (8270) ug/l			
2,4,5-Trichlorophenol	400,000		28
TCLP Pesticides and Herbicides			-
TCLP Metals (6010)			-

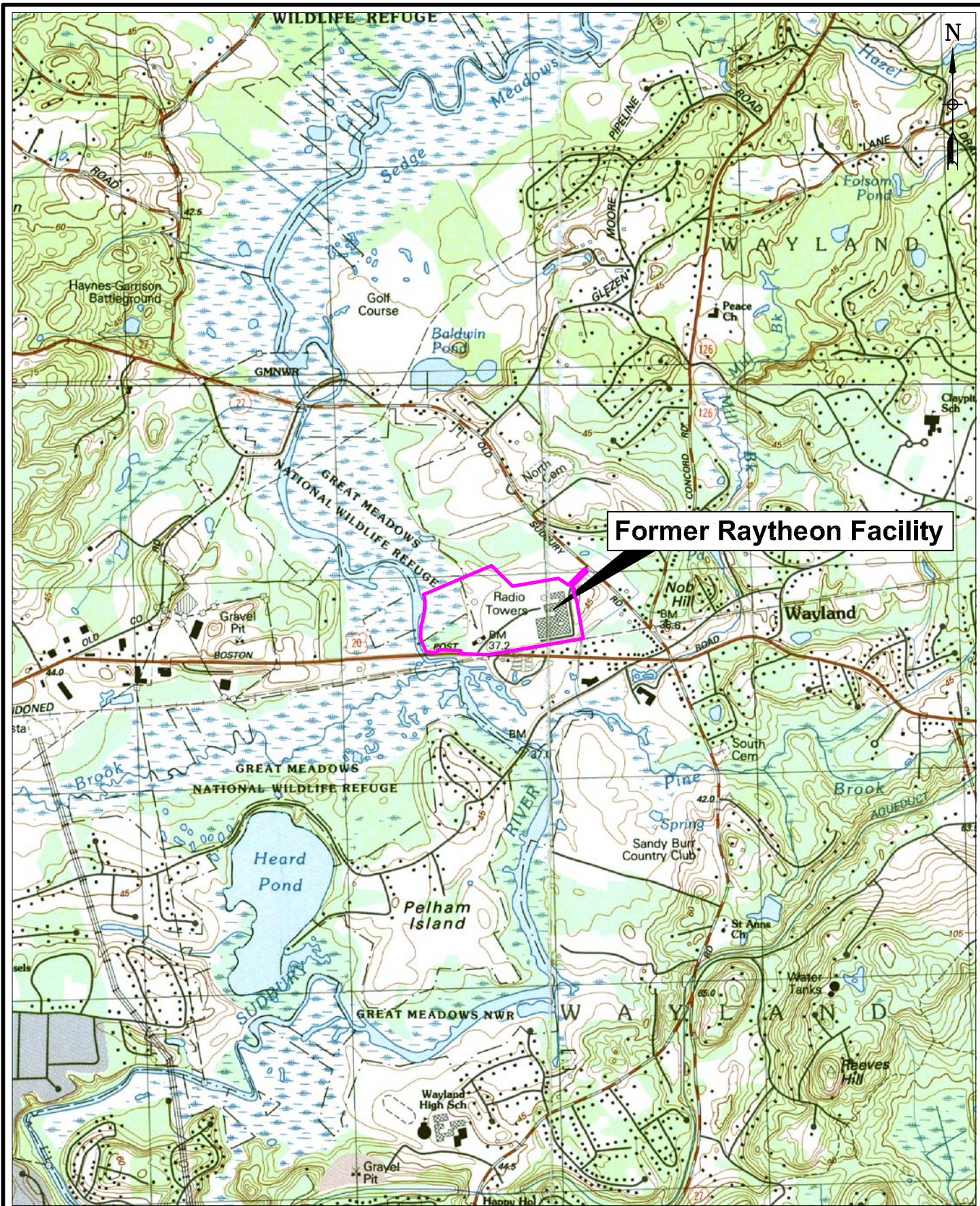
Notes:

- = Analytical result below the method detection limit.

NA = Not Analyzed

ug/l = micrograms per liter (parts per billion (ppb))

Regulatory Level = Maximum Concentration for Toxicity Characteristic (310 CMR 30.125B)




**Former Raytheon Facility**

Scale 1:25,000

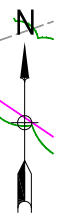
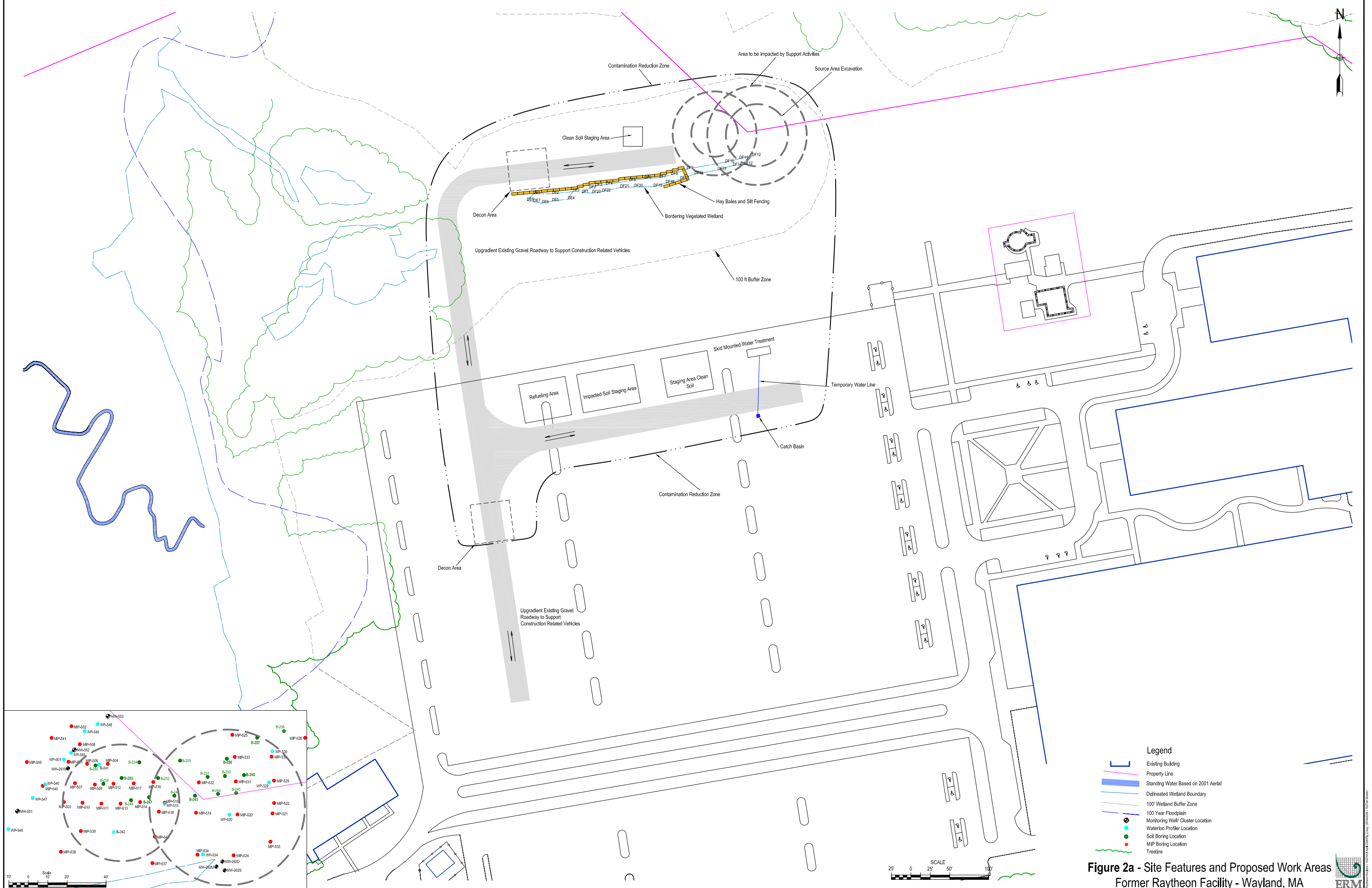
0.5 km 0 500 m

0.5 mi 0 1,000 ft

Legend	
	Subject Property Line

**Figure 1 - Site Locus Map**  
Former Raytheon Facility - Wayland, MA

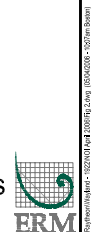


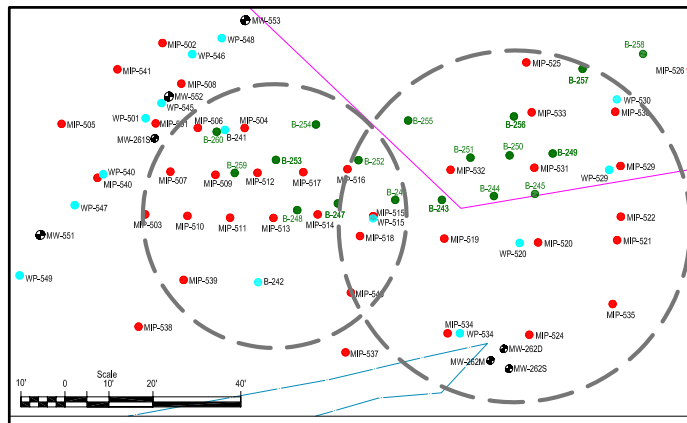


- Legend**
- Existing Building
  - Property Line
  - Standing Water Based on 2001 Aerial
  - Delineated Wetland Boundary
  - 100' Wetland Buffer Zone
  - 100 Year Floodplain
  - Monitoring Well/ Cluster Location
  - Waterloo Profiler Location
  - Soil Boring Location
  - MIP Boring Location
  - Treeline

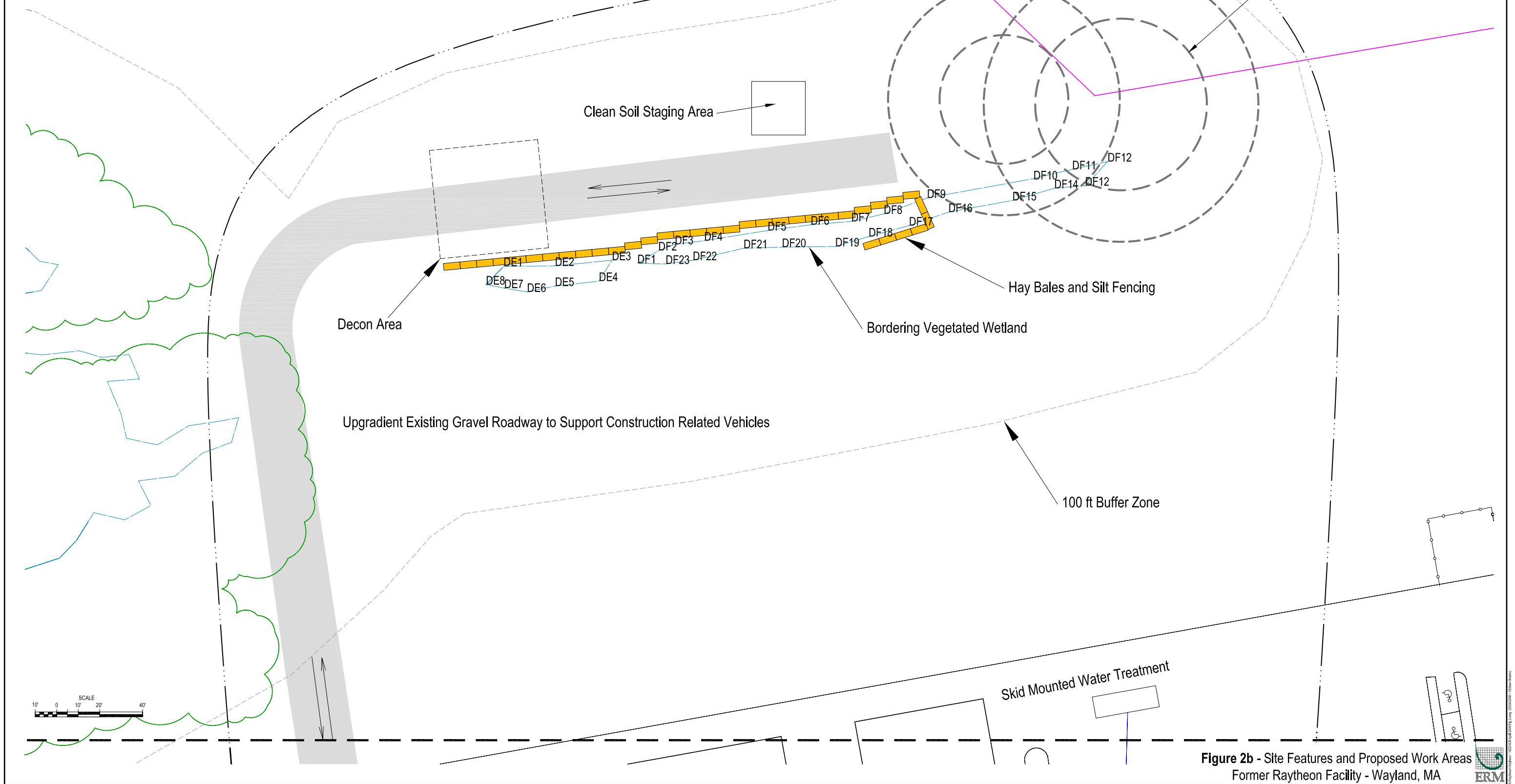
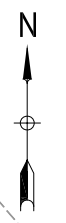
SCALE  
25' 0' 25' 50' 100'

**Figure 2a - Site Features and Proposed Work Areas**  
Former Raytheon Facility - Wayland, MA





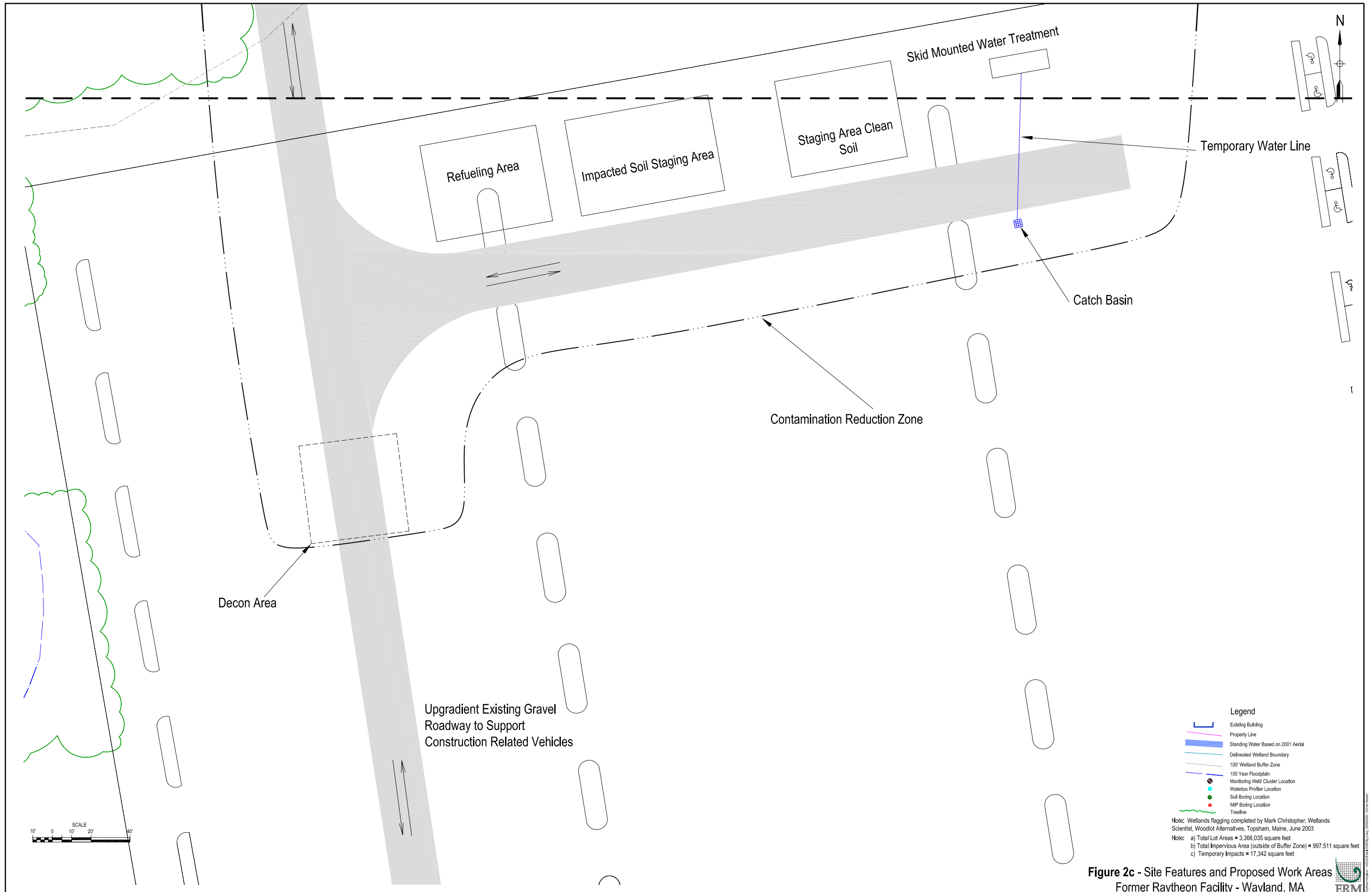
- Legend**
- Existing Building
  - Property Line
  - Standing Water Based on 2001 Aerial
  - Delineated Wetland Boundary
  - 100' Wetland Buffer Zone
  - 100 Year Floodplain
  - Monitoring Well Cluster Location
  - Waterloo Profiler Location
  - Soil Boring Location
  - MIP Boring Location
  - Treeline
- Note: Wetlands flagging completed by Mark Christopher, Wetlands Scientist, Woodlot Alternatives, Topsham, Maine, June 2003
- Note: a) Total Lot Areas = 3,366,035 square feet  
 b) Total Impervious Area (outside of Buffer Zone) = 997,511 square feet  
 c) Temporary Impacts = 17,342 square feet



**Figure 2b - Site Features and Proposed Work Areas**  
 Former Raytheon Facility - Wayland, MA







**Legend**

- Existing Building
- Property Line
- Standing Water Based on 2001 Aerial
- Delineated Wetland Boundary
- 100' Wetland Buffer Zone
- 100 Year Floodplain
- Monitoring Well Cluster Location
- Waterloo Profiler Location
- Soil Boring Location
- MIP Boring Location
- Treeline

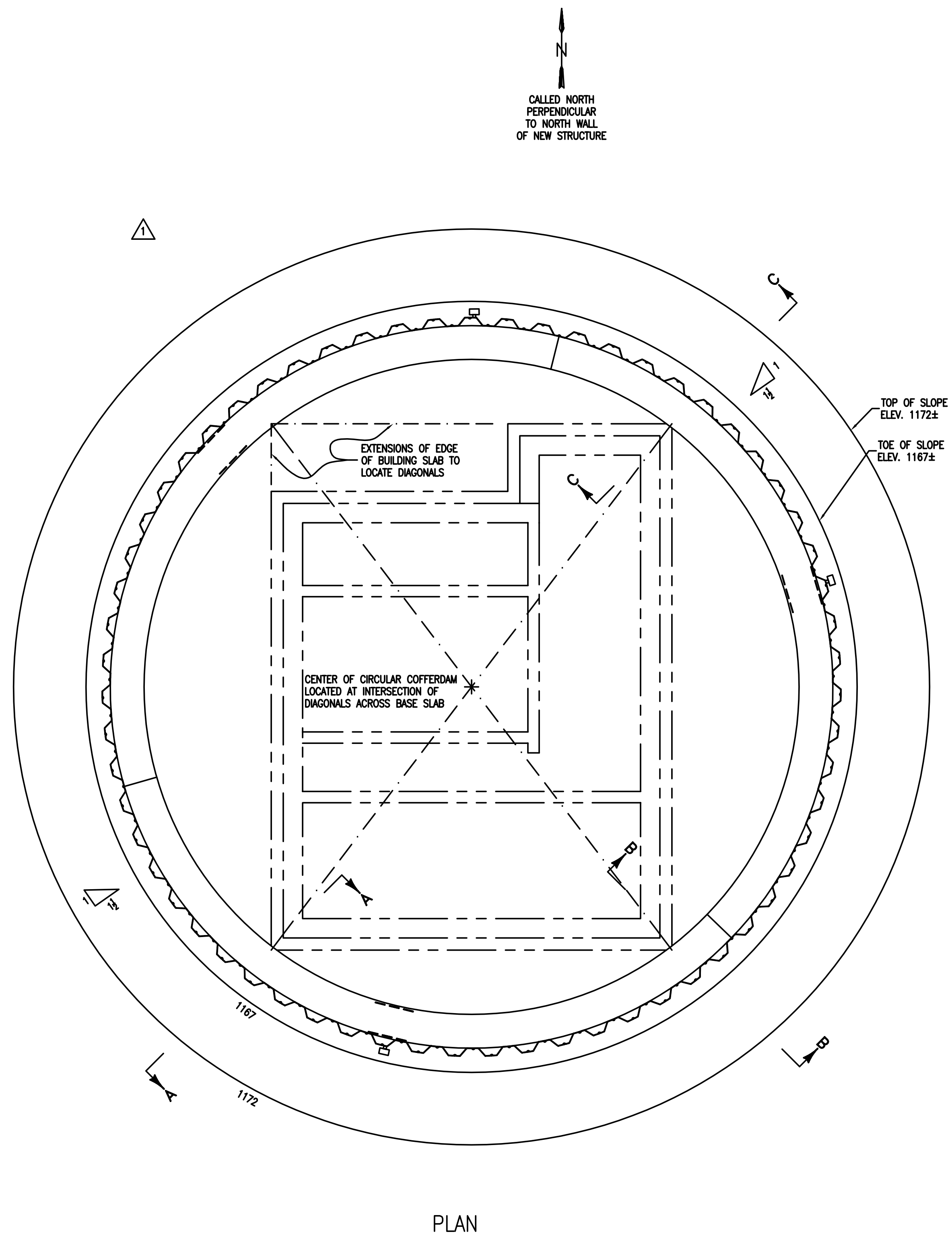
Note: Wetlands flagging completed by Mark Christopher, Wetlands Scientist, Woodlot Alternatives, Topsham, Maine, June 2003

Note:

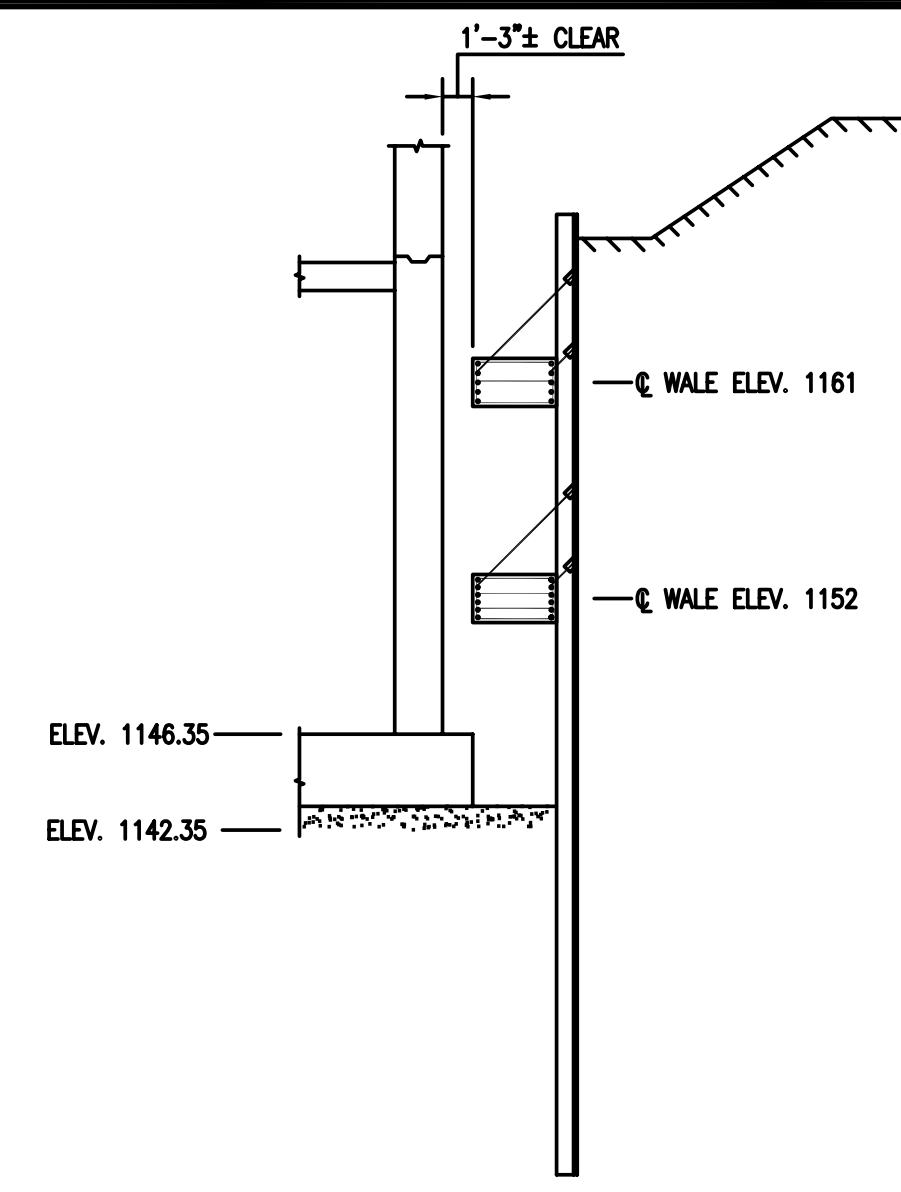
- a) Total Lot Areas = 3,366,035 square feet
- b) Total Impervious Area (outside of Buffer Zone) = 997,511 square feet
- c) Temporary Impacts = 17,342 square feet

**Figure 2c - Site Features and Proposed Work Areas**  
Former Raytheon Facility - Wayland, MA

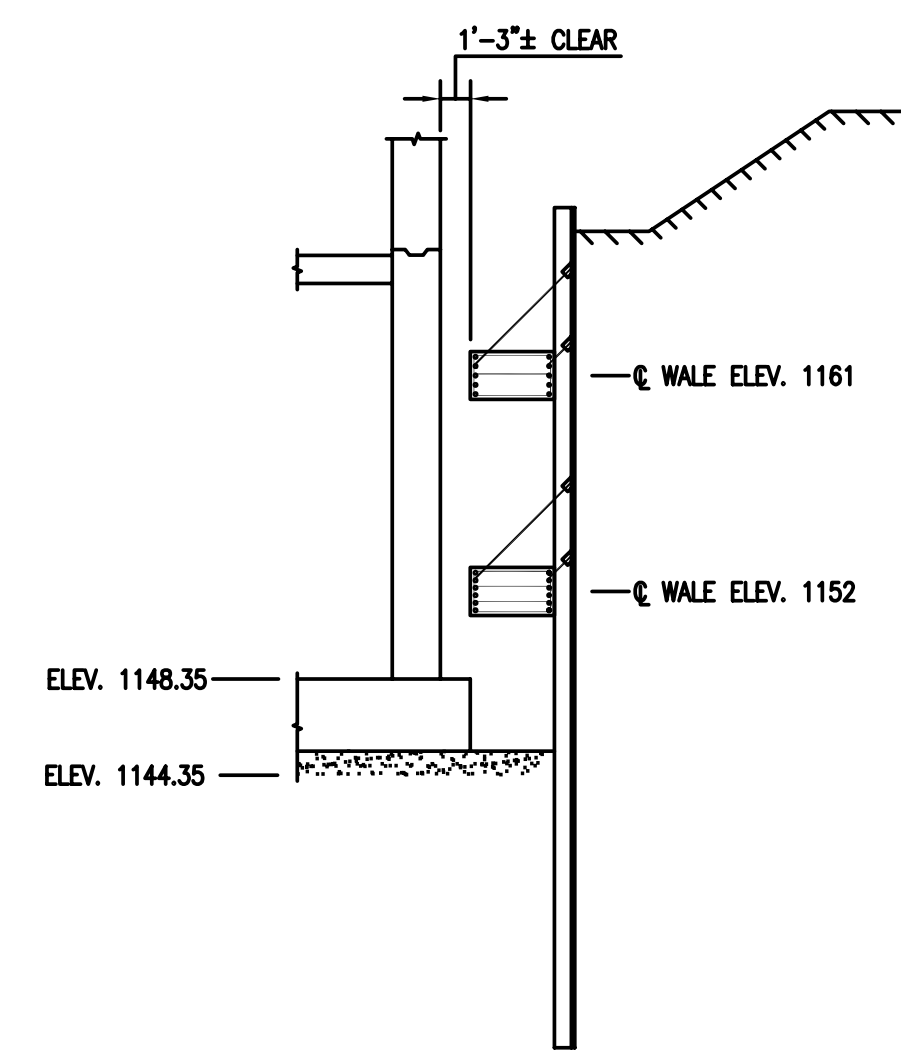




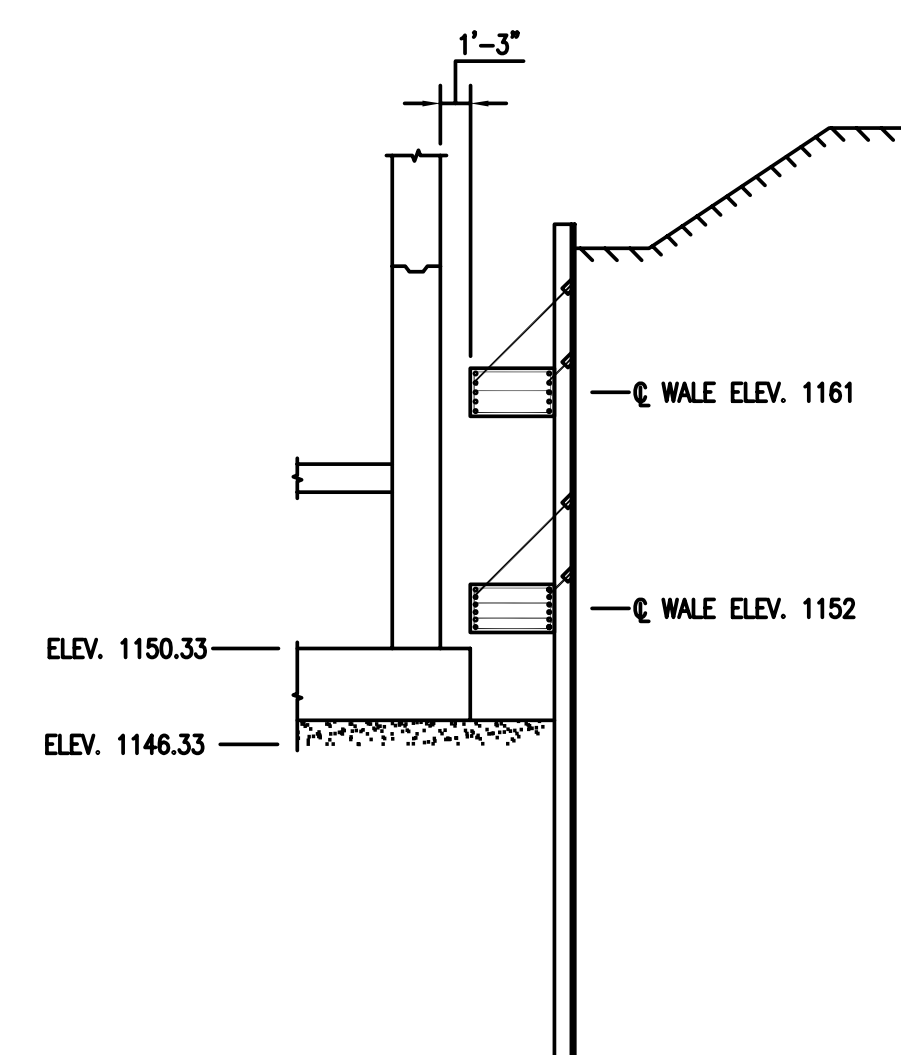
PLAN



SECTION A-A



SECTION B-B



SECTION C-C

**GENERAL NOTES**

- 1) The purpose of the cofferdam is to allow construction of the headworks building structure. The cofferdam consists of steel sheet piling walls and circular reinforced concrete wales. It is anticipated that the steel sheet piling will be extracted after the cofferdam is backfilled. It is anticipated that the reinforced concrete wales will be left in place and covered with backfill.
- 2) Available geotechnical information was obtained from a report prepared by \_\_\_\_\_, dated February 2003. The report provided soil parameters for use in designing temporary excavation support; these parameters were used in formulating the cofferdam design. The soil is anticipated to be granular and consist of silt, sand, gravel, cobbles, and rock fragments. The soil borings indicated groundwater at the headworks location at Elevation 1163; the cofferdam design used groundwater Elevation 1165. In the event that the soil actually encountered differs significantly from the descriptions above, or if unanticipated obstructions are encountered, Hartman Engineering will be notified immediately and construction operations in the vicinity of the differing soil or obstruction will cease until the situation is evaluated.
- 3) Groundwater will enter the cofferdam through interlock seepage and through the soil at the bottom of the excavation. It is anticipated that pumps located inside the cofferdam will maintain the water at an acceptable level. Special attention must be directed toward examining the excavation bottom for indications of piping (rapid upward water flow at a specific location) or heave (swelling or uplift of a portion of the excavation bottom). Either of these conditions is an indication of an unanticipated subsurface condition which may cause damage to the cofferdam. If piping or heave is detected or suspected, Hartman Engineering will be notified immediately and dewatering operations will be suspended until the condition is evaluated.
- 4) The Contractor will measure and record the length of each sheet pile prior to driving and will keep a record of all trimming, cutting, etc., such that the bottom elevation of individual sheet piles can be determined at any time. Refer to Monitoring Procedure Item 1A.
- 5) To prevent flotation of the permanent structure in the event the dewatering system fails during construction, it is recommended the Contractor provide temporary openings in the walls to allow the structure to flood.
- 6) If, at any time, the bracing system is damaged by construction operations, Hartman Engineering will be notified immediately. Until the severity of the damage can be evaluated, construction operations will cease and construction personnel will be evacuated from the excavation.
- 7) In the event that the cofferdam cannot be constructed as designed and detailed, the Contractor will not proceed with the construction of the cofferdam until the data for this determination has been reviewed and incorporated into the design by Hartman Engineering.
- 8) Standard construction site safety measures (construction of stairways, provision of barricades to stop rolling objects, provision of ladders, fences, etc.) are the responsibility of the Contractor and are not shown on these drawings.
- 9) The concrete wales are not to be used for storage of materials.
- 10) All work shall be performed in a manner consistent with industry standards established by AISC (American Institute of Steel Construction), ACI (American Concrete Institute), and AWS (American Welding Society).
- 11) Test cylinders will be used to evaluate concrete wale strength. It is recommended that sufficient cylinders be made so that strength can be evaluated 2 days, 3 days, 4 days, 7 days, and 28 days after installation of the concrete.
- 12) It is intended that a representative of Hartman Engineering will be present at the jobsite at the time the strain gauge instrumentation is installed into the upper concrete wale in order to instruct and assist the Contractor's field personnel in the installation and use of the strain gauge monitoring system. The schedule of the visit will be coordinated by the Contractor's personnel and Hartman Engineering.
- 13) For additional information related to the cofferdam, see Drawings No. LS-1 and DE-1.

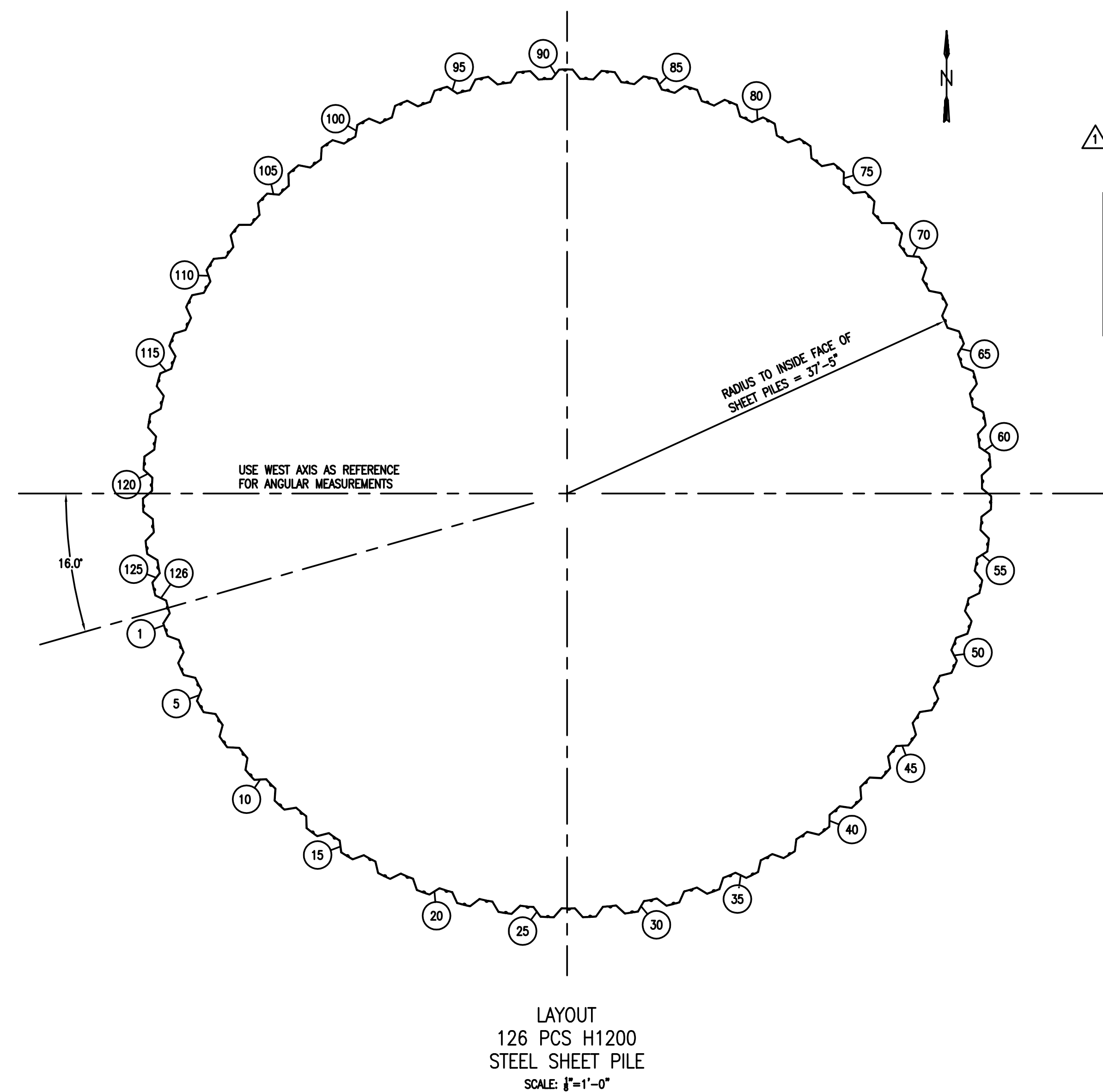
**MATERIAL SPECIFICATIONS**

- 1) Sheet Piling: Hoesch 1200 Section, ASTM A572 Grade 50 Steel.
- 2) Concrete: Use concrete meeting Project Specifications for Structural Concrete; additionally, concrete must develop 4000 psi ultimate strength after 7 days.
- 3) Concrete Reinforcement: Steel reinforcing bars for concrete will be ASTM A615 Grade 60 bars detailed in accordance with current ACI Specifications. Splices in the longitudinal reinforcement must be capable of developing the full tensile capacity of the reinforcement.
- 4) Structural Steel:
  - (A) H-piles, angle, and plate: ASTM Grade A36 Steel.
  - (B) Welding Electrodes: E70XX
  - (C) Welder Qualifications: Each Welder, Welding Operator or Tacker who performs work on the cofferdam must be qualified for each process and position used for the construction. Qualification standards required are those stipulated in the Project documents.

**SAMPLE CIRCULAR COFFERDAM DESIGN**

© 2003 UNPUBLISHED, ALL RIGHTS REMAIN THE PROPERTY OF HARTMAN ENGINEERING.

12-03-03	ELIMINATED WORK AREA RAMP	<b>HARTMAN ENGINEERING</b> 4910 RANSOM ROAD CLARENCE, NEW YORK 14031	
DATE: NOVEMBER 7, 2003	DRAWN BY: DAM		
COFFERDAM FOR CONSTRUCTION OF HEADWORKS STRUCTURE OF WASTEWATER TREATMENT PLANT			
PLAN, SECTIONS, GENERAL NOTES, MATERIAL SPECIFICATIONS, AND SECTIONS A-A, B-B, AND C-C			
SCALE: 1/8"=1'-0"	DRAWING NUMBER GP-1	SHEET 1 OF 3	



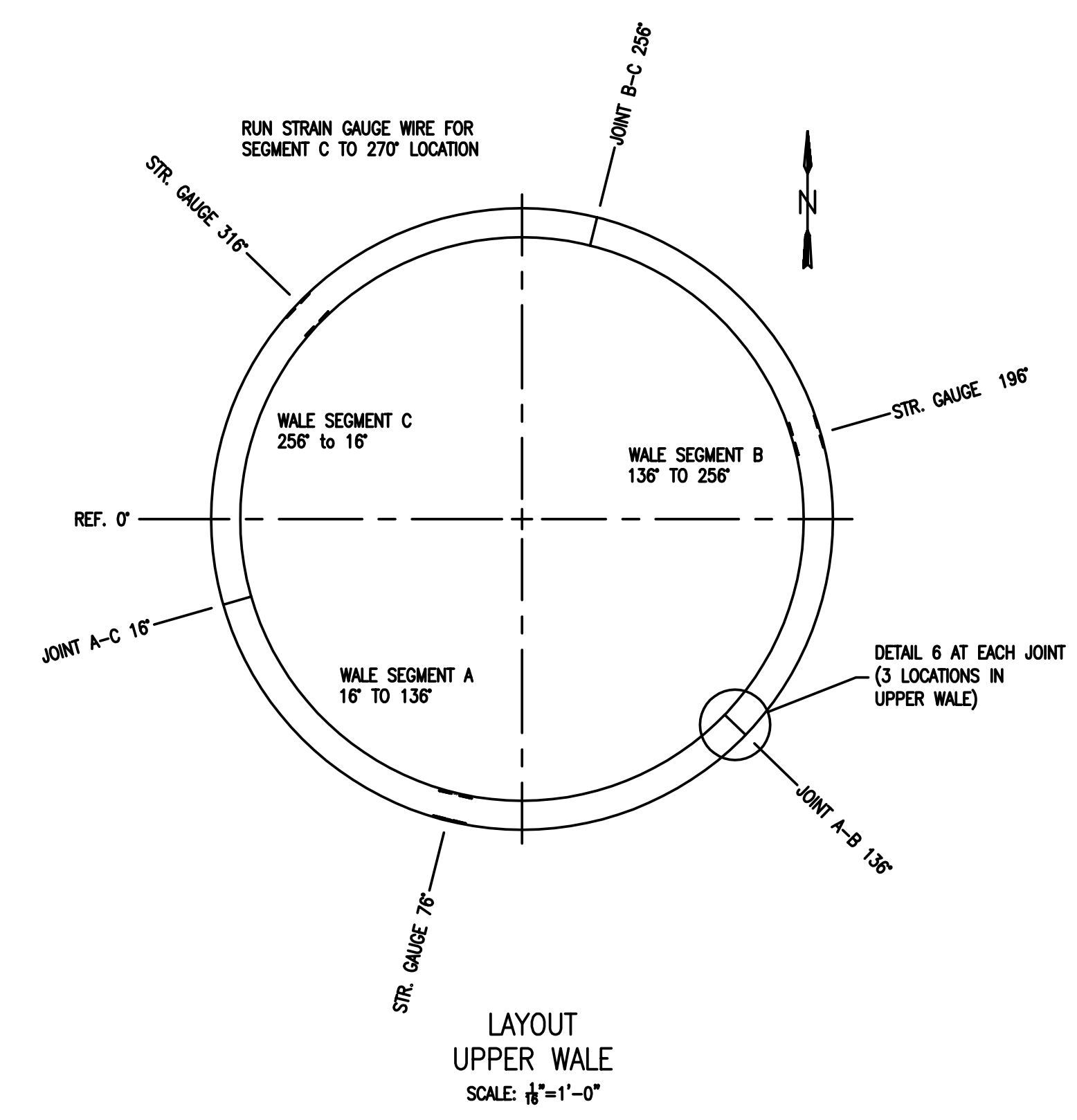
SHEET PILE SCHEDULE

Sheet Pile No.	Length	Top Elevation	Bottom Elevation
1 to 4	40 ft.	1173 ft.	1133 ft.
5 to 20	45 ft.	1173 ft.	1128 ft.
21 to 98	35 ft.	1168 ft.	1133 ft.
99 to 126	40 ft.	1173 ft.	1133 ft.

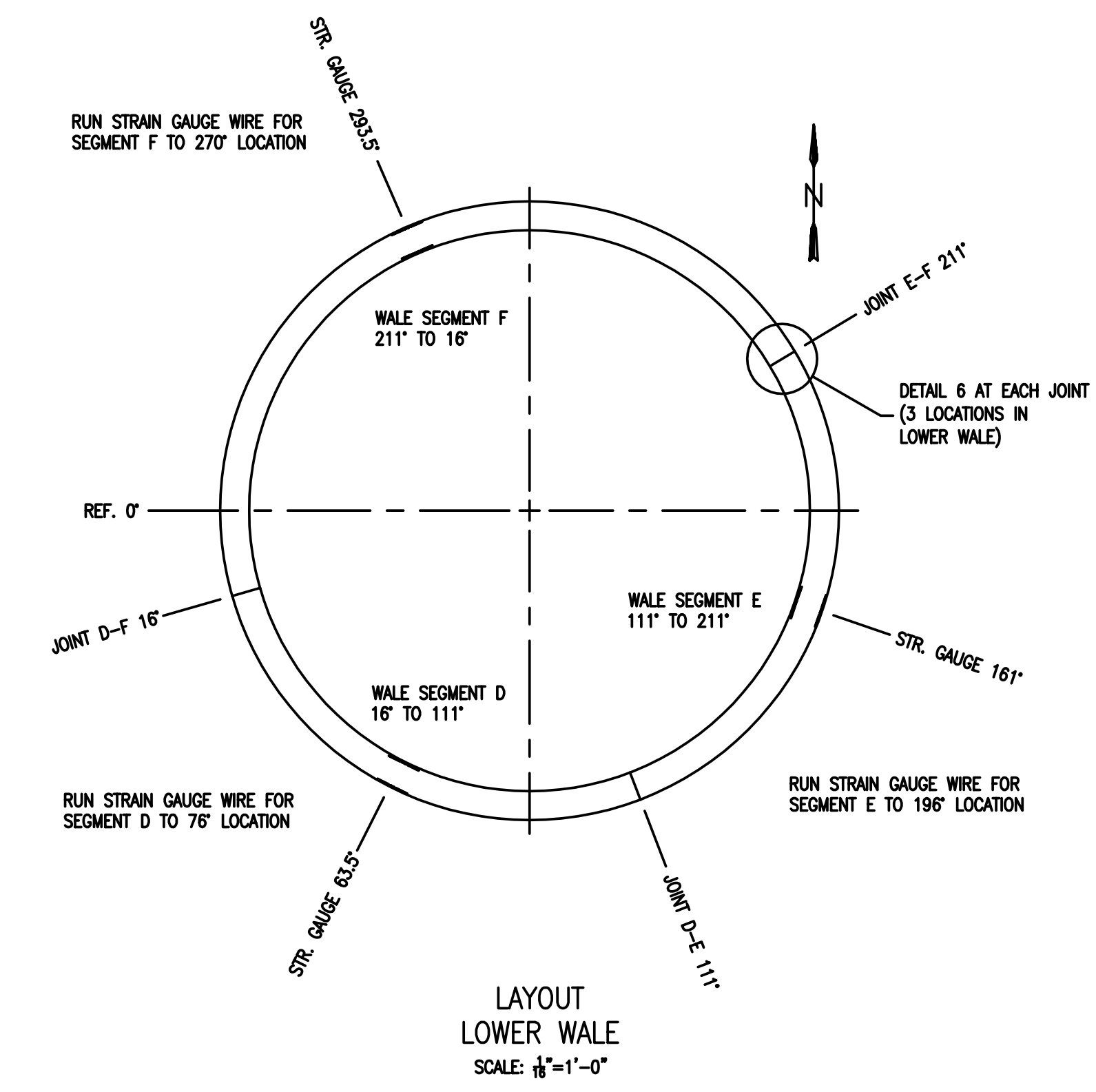
LAYOUT  
126 PCS H1200  
STEEL SHEET PILE  
SCALE: 1/8"=1'-0"

CONSTRUCTION PROCEDURE

- 1) Locate existing facilities at the site and confirm that there is no interference between the cofferdam and the existing facilities.
- 2) ~~Excavate for the work platform and related access ramp.~~ Perform the pre-excavation to lower the soil inside the cofferdam and adjacent to the cofferdam to Elevation 1167.
- 3) Set and drive the sheet piling. Refer to Monitoring Procedure Items 1A and 1B.
- 4) Excavate inside the cofferdam to Elevation 1160± as necessary to construct the concrete wale at Elevation 1161. Refer to Monitoring Procedure Item 1C. ~~Excavate locally as necessary to install the two wale support brackets adjacent to the work platform. Install the brackets then backfill the local excavation to Elevation 1160±.~~
- 5) Set the steel reinforcement and formwork for the upper concrete wale. Set the hanger bars in place and tack weld the upper end to the sheet piling. Install the instrumented monitoring rods in the wale as instructed by Hartman Engineering. Refer to General Note No. 11.
- 6) Place the concrete for the wale taking care to protect the instrumentation and the leads.
- 7) While the concrete is curing, finish installation of the hanger rods, and the monitoring instrumentation protective fixtures.
- 8) After notification from Hartman Engineering that excavation can progress, excavate inside the cofferdam to Elevation 1151± as necessary to construct the concrete wale at Elevation 1152. Refer to Monitoring Procedure Item 1C.
- 9) Set the steel reinforcement and formwork for the lower concrete wale. Set the hanger bars in place and tack weld the upper end to the sheet piling. Install the instrumented monitoring rods in the wale.
- 10) Place the concrete for the wale taking care to protect the instrumentation and the leads.
- 11) While the concrete is curing, finish installation of the hanger rods and the monitoring instrumentation.
- 12) After notification from Hartman Engineering that excavation can progress, excavate inside the cofferdam to the elevations necessary to construct the permanent structure.
- 13) When the structure is completed to the point where it can resist soil and water loads, backfill between the structure and the cofferdam to Elevation 1151±. Use the spaces between the wale and sheet piling to place flowable fill as necessary to ensure voids beneath the wale are filled.
- 14) Cut and remove the hanger bars and plates for the lower wale. Break and remove 24"± of concrete and reinforcement at each of the three joints in the lower wale. Break and remove any portion of the lower wale that will interfere with future installations of structure, pipe, conduit, etc.
- 15) ~~Remove the two wale support brackets beneath the upper wale at the location of the work platform and access ramp. During removal of the brackets, carefully monitor the wale and adjacent hanger bars to confirm that the wale is secure without the support brackets.~~
- 16) Backfill between the structure and the cofferdam to Elevation 1160±. Use the spaces between the wale and sheet piling to place flowable fill as necessary to ensure voids beneath the wale are filled.
- 17) Cut and remove the hanger bars and plates for the upper wale. Break and remove 24"± of concrete and reinforcement at each of the three joints in the upper wale. Break and remove any portion of the upper wale that will interfere with future installations of structure, pipe, conduit, etc.
- 18) Backfill between the structure and the cofferdam to Elevation 1167±.
- 19) Extract the sheet piling.



LAYOUT  
UPPER WALE  
SCALE: 1/8"=1'-0"

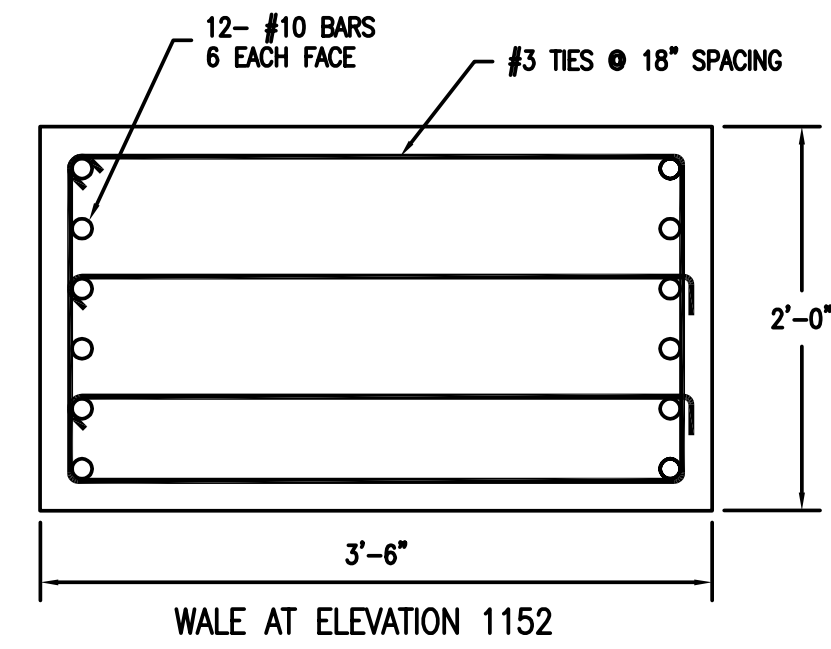
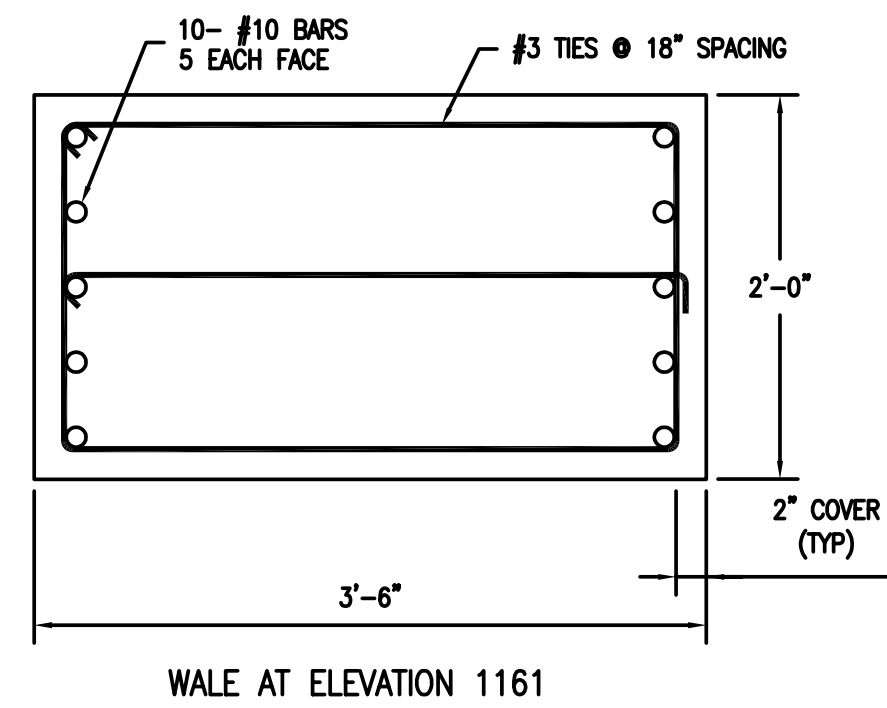


LAYOUT  
LOWER WALE  
SCALE: 1/8"=1'-0"

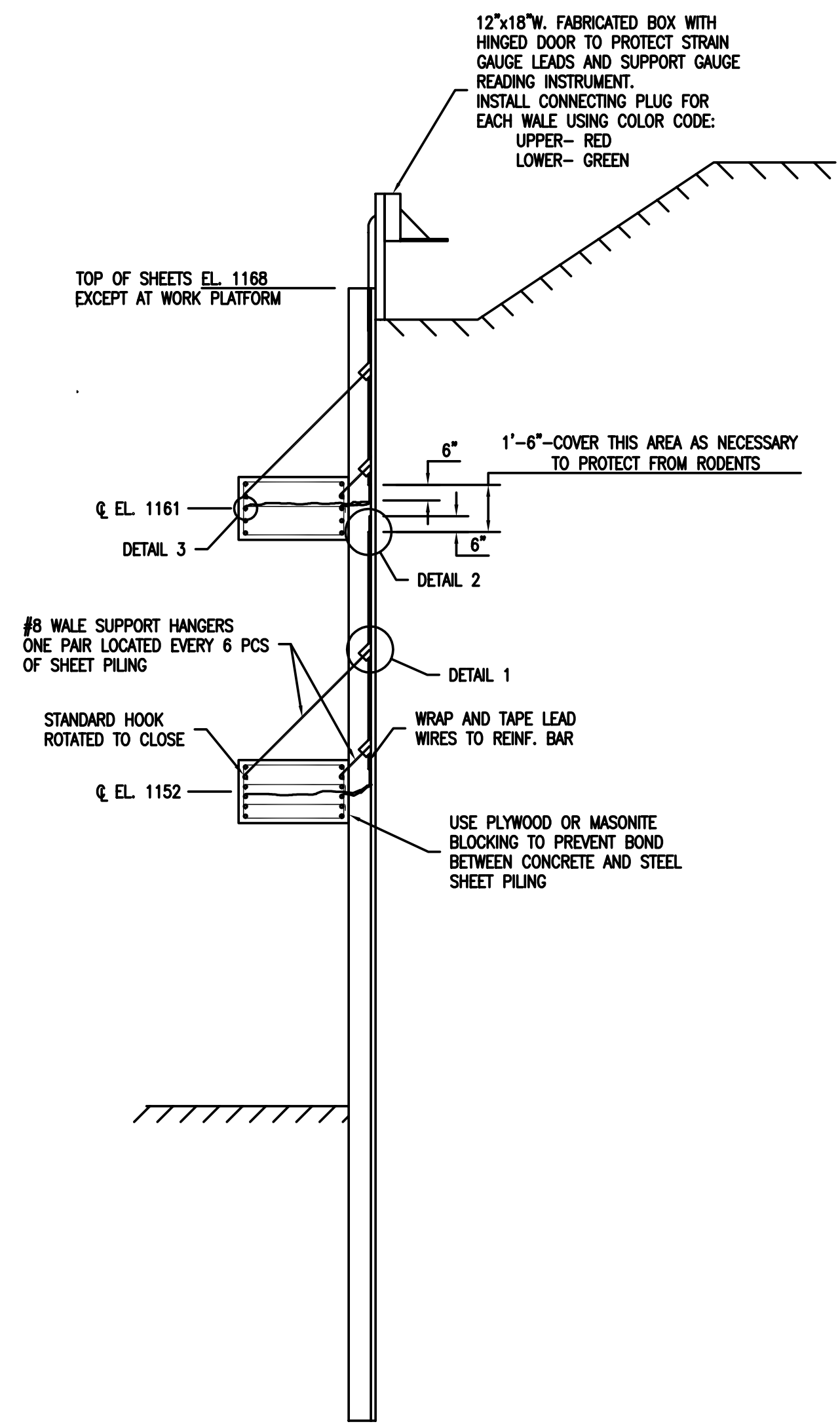
**SAMPLE CIRCULAR  
COFFERDAM DESIGN**

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REMAIN THE PROPERTY OF  
HARTMAN ENGINEERING.

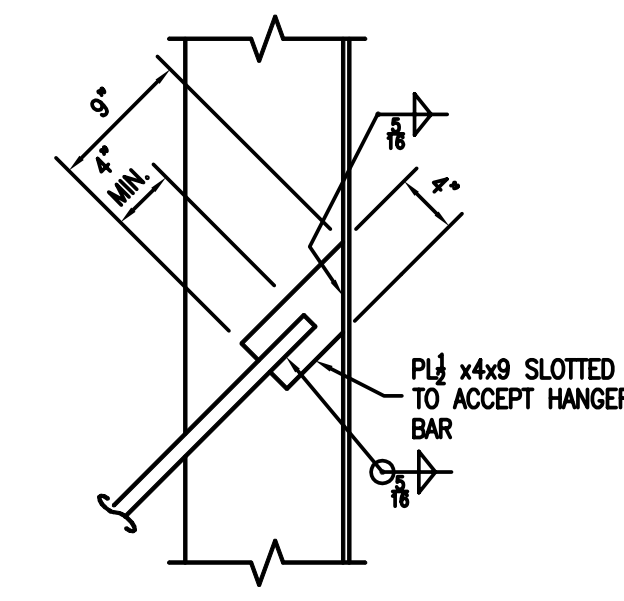
12-03-03		REVISED LENGTHS OF SHEET PILING	
<b>HARTMAN ENGINEERING</b>			
4910 RANSOM ROAD		CLARENCE, NEW YORK 14031	
DATE: NOVEMBER 7, 2003	DRAWN BY: DAM	CHECKED BY: RJH	
COFFERDAM FOR CONSTRUCTION OF HEADWORKS STRUCTURE OF WASTEWATER TREATMENT PLANT			
SHEET PILE LAYOUT, WALE LAYOUTS AND CONSTRUCTION PROCEDURE			
SCALE: AS NOTED	DRAWING NUMBER LS-1	SHEET 2 OF 3	



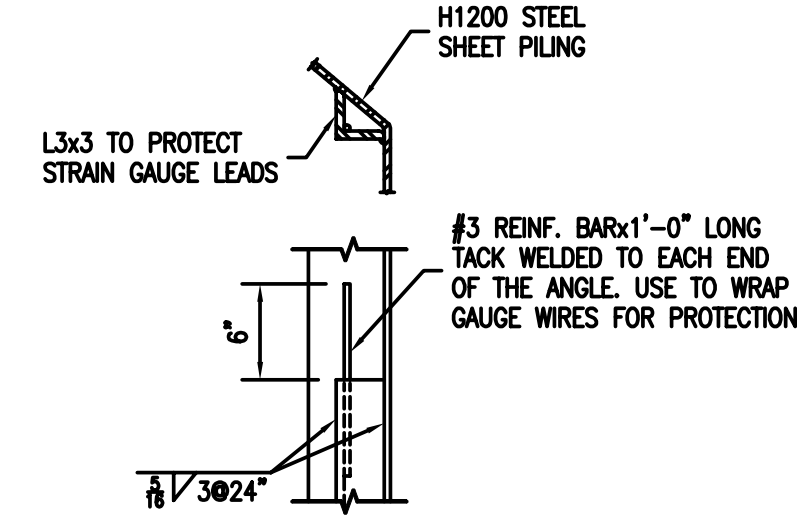
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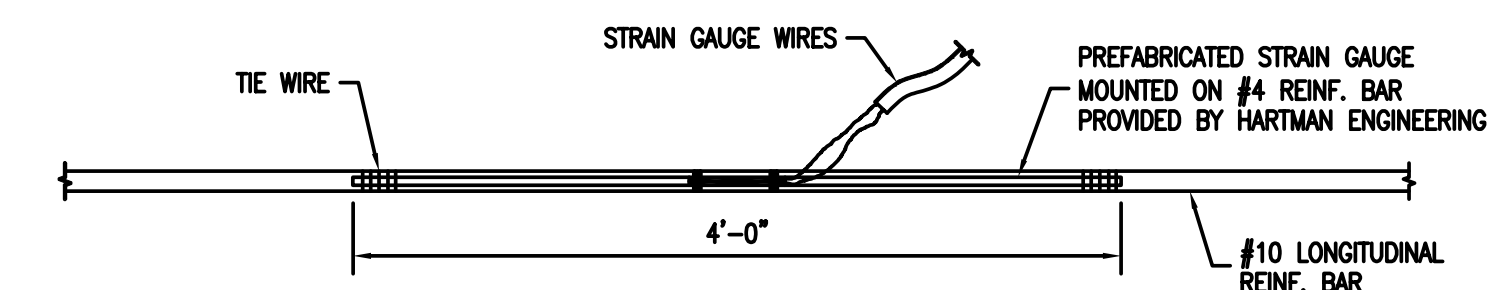
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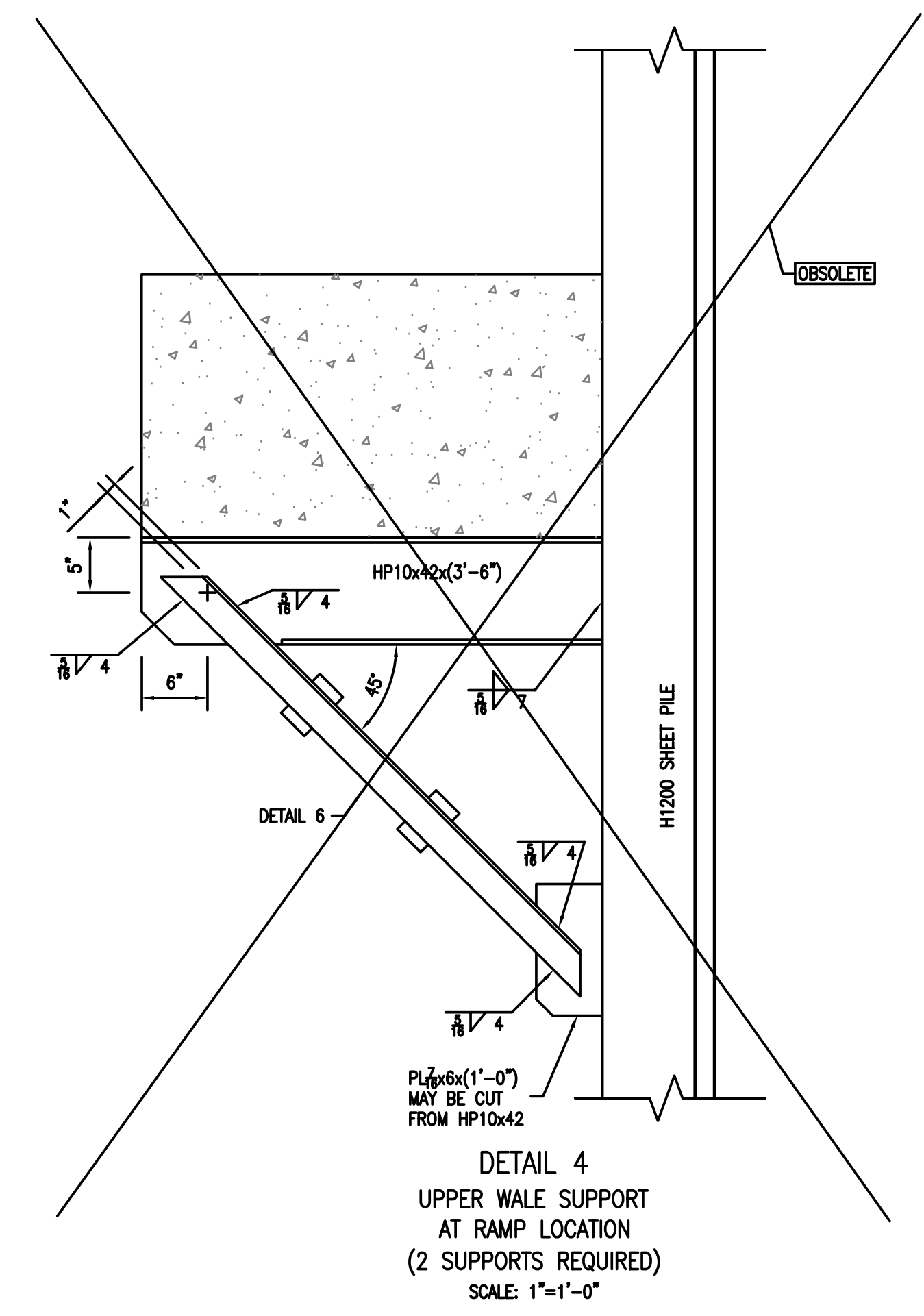
DETAIL 1  
WALE HANGER ATTACHMENT  
SCALE: 1"=1'-0"



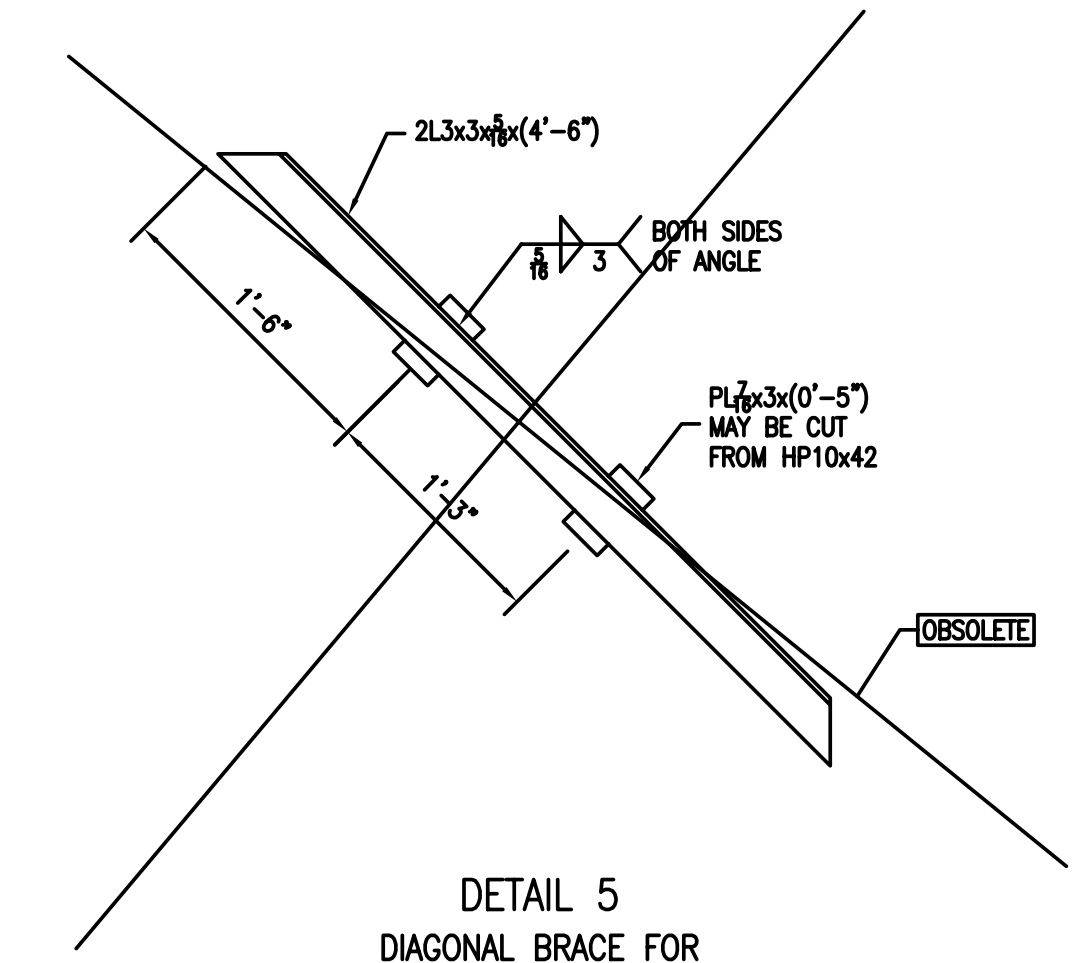
DETAIL 2  
GAUGE WIRE PROTECTION  
SCALE: 1"=1'-0"



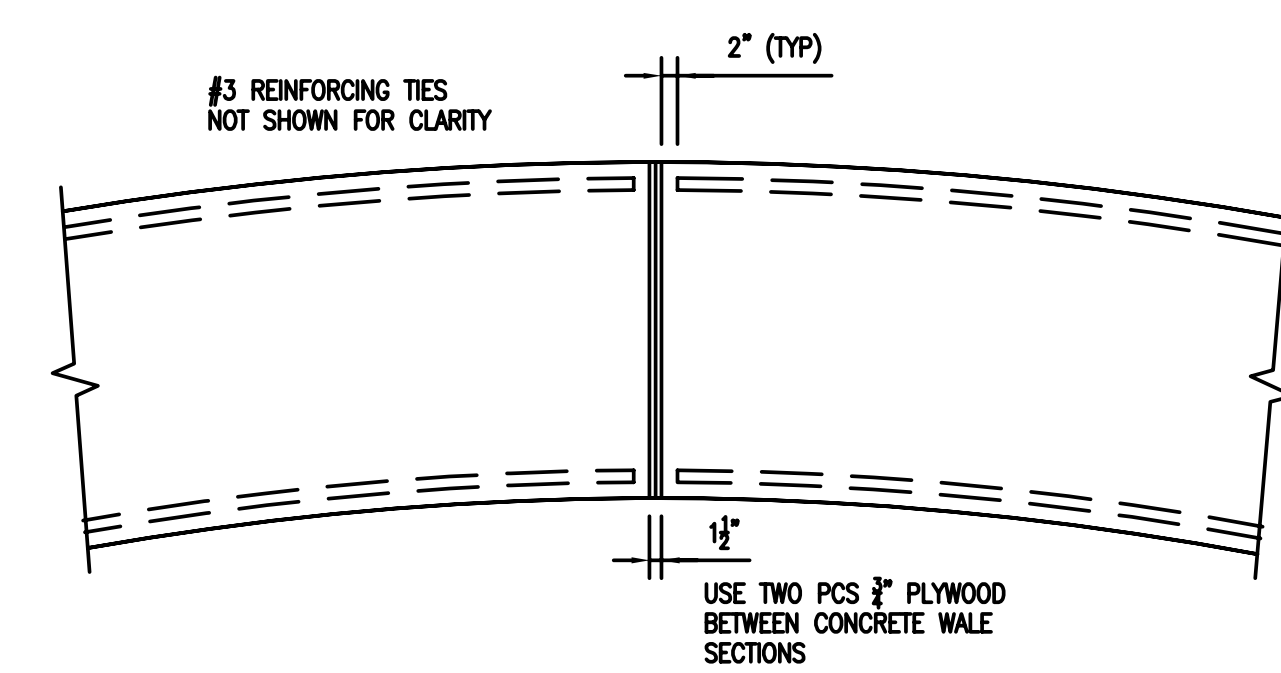
DETAIL 3  
INSTALLATION OF STRAIN GAUGE INSTRUMENTATION  
SCALE: 1"=1'-0"



DETAIL 4  
UPPER WALE SUPPORT AT RAMP LOCATION  
(2 SUPPORTS REQUIRED)  
SCALE: 1"=1'-0"



DETAIL 5  
DIAGONAL BRACE FOR UPPER WALE SUPPORT AT RAMP LOCATION  
SCALE: 1"=1'-0"



DETAIL 6  
JOINT AT ENDS OF WALE SEGMENTS  
SCALE: 1"=1'-0"

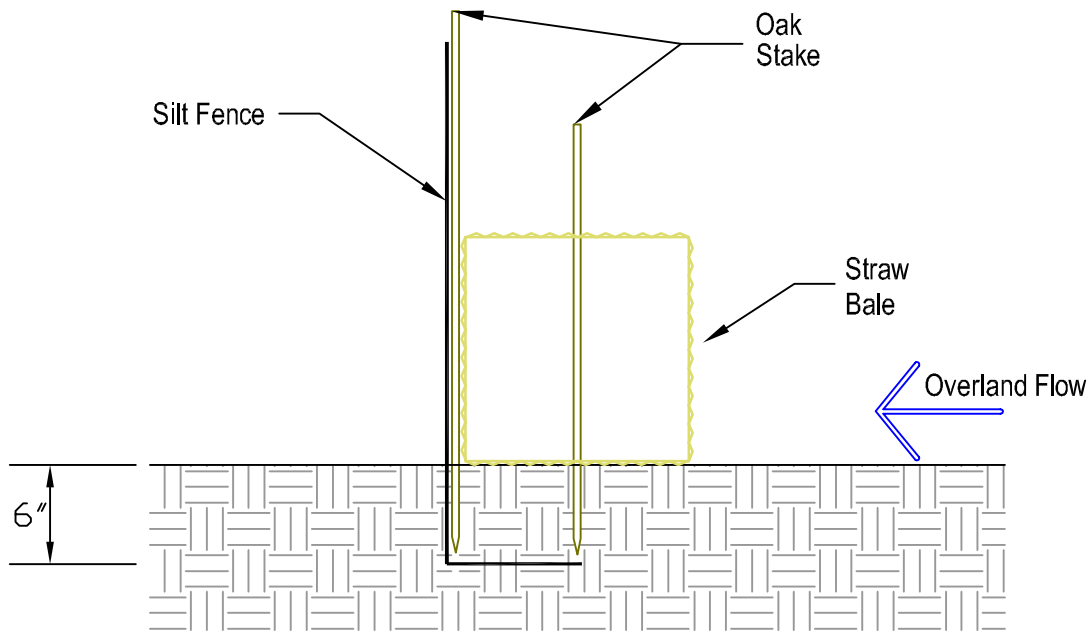
**MONITORING PROCEDURE**

- 1) General Monitoring Procedure During Construction of the Circular Cofferdam
  - (A) Prior to driving the sheet piling, check the length of the sheet piling to verify all sheets are the anticipated length. If under-length sheets are detected, they shall not be used without approval of Hartman Engineering. If over-length sheets are detected, they may be used provided:
    - (1) They are permanently identified,
    - (2) A permanent record of the length and exact location is established.
  - (B) Immediately after the sheet piling is driven, the location of the sheet pile line will be verified by survey and the results of the survey will be immediately forwarded to Hartman Engineering. In the event that sheet piles are located either:
    - (1) More than 3 inches off location toward the inside of the cofferdam, or
    - (2) More than 6 inches off location toward the outside of the cofferdam, Hartman Engineering will be contacted immediately.
  - (C) As construction of the cofferdam progresses, the location of the sheet pile will be determined by survey at the elevation of each wale and the results of the survey will be immediately forwarded to Hartman Engineering. If the deviation of any sheet piles from the intended location exceeds the limits in part (B) above, Hartman Engineering will be contacted immediately.
- 2) Strain Gauge Monitoring Procedure
  - (A) Electrical resistance type strain gauges will be incorporated into the concrete wales as shown on Drawing No. LS-1. See General Note Number 12.
  - (B) The gauges will be read by the Contractor in accordance with the following schedule:
    - (1) After the strain gauge rods are in place and before the concrete wale is poured,
    - (2) One day after the concrete is poured,
    - (3) Every working day from the start of construction of the cofferdam until the base slab is poured, then
    - (4) Twice weekly until the backfill operation is complete.
  - (C) If any strain gauge readings exceed the ranges of strain reading specified on the data recording sheet, the contractor will immediately contact Hartman Engineering. Otherwise, the data will be transmitted weekly by telephone facsimile to Hartman Engineering at 716-759-2668.

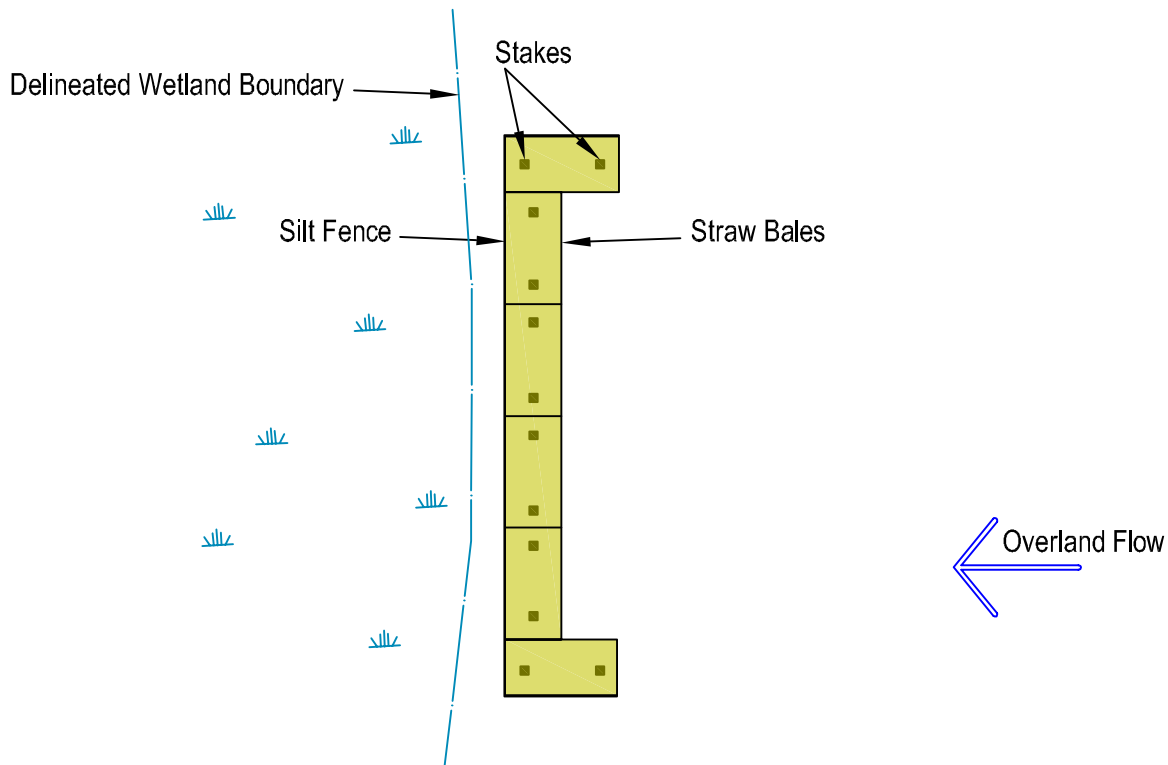
**SAMPLE CIRCULAR COFFERDAM DESIGN**

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12-03-03	ELIMINATED DETAILS 4 AND 5
<b>HARTMAN ENGINEERING</b>	
4910 RANSOM ROAD CLARENCE, NEW YORK 14031	
DATE: NOVEMBER 7, 2003	DRAWN BY: DAM CHECKED BY: RJH
COFFERDAM FOR CONSTRUCTION OF HEADWORKS STRUCTURE OF WASTEWATER TREATMENT PLANT	
DETAILS AND MONITORING INSTRUMENTATION	
SCALE: AS NOTED	DRAWING NUMBER: DE-1 SHEET 3 OF 3



TYP. BARRIER DETAIL



TYP. SILT FENCE AND STRAW BALE ARRANGEMENT

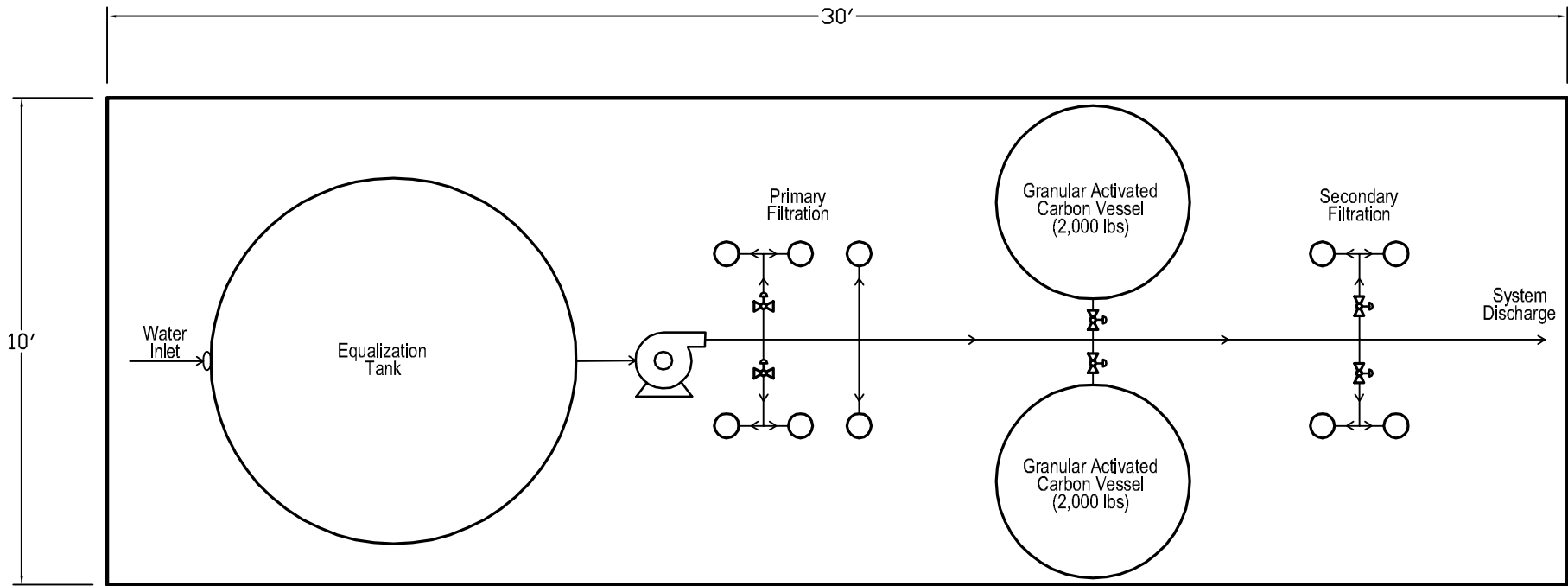
NOTE:

- 1) Erosion check to be bales of hay secured to the ground with two (2) 4'-long stakes for each bale.
- 2) Stakes to be imbedded to a depth of 1', spaced no more than 1.5' apart.
- 3) All silt fences to be landward of Wetland.

Scale = Not To Scale

Figure 4 - Straw Bale and Silt Fence Detail  
Former Raytheon Facility - Wayland, MA





Not to Scale

**Figure 5** - Typical Skid-Mounted Water Treatment Unit  
Former Raytheon Facility - Wayland, MA



Raytheon Company

Health & Safety Plan  
*Former Raytheon Facility*  
*430 Boston Post Road*  
*Wayland, Massachusetts*

26 April 2006

0043602

ERM-EnviroClean New England, Inc.  
399 Boylston Street, 6<sup>th</sup> Floor  
Boston, Massachusetts 02116

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*Table 1: Summary Statistics for Soil*

## 1.0 INTRODUCTION

### 1.1 OVERVIEW

This Health and Safety Plan (HASP) has been developed to establish the procedures necessary for protecting personnel, the general public and off-site receptors from potential hazards resulting from activities associated with Phase IV remedial activities at the former Raytheon facility located at 430 Boston Post Road, in Wayland, Massachusetts (Figure 1).

### 1.2 PURPOSE AND SCOPE

The purpose of this HASP is to address the hazards associated with the presence of hazardous materials in soil and groundwater, as well as related remedial activities. This plan was intended to address activities, which will consist of disturbance, movement, handling of remedial wastes, or similar site-invasive activities, which may result in the potential contact with oil and/or hazardous material (OHM). This HASP is intended for use by ERM EnviroClean employees only. Other subcontractors and parties entering the Site will be required to read and acknowledge this HASP, but must follow their own health and safety protocols and procedures.

The following activities will be carried out as part of the Comprehensive Remedial Action:

- Excavation of impacted soils and restoration of disturbed areas;  
and
- Implementation of bioremediation to treat impacted groundwater.

1.3

**PROJECT TEAM**

A list of key project personnel and site personnel is provided below:

Company	Name	Project Title /Assigned Role	Phone Numbers
Raytheon	Ron Slager	PRP Manager	(508) 490-1707 (617) 675-0377 pager
	Louis Burchart	Sr. Environmental Engineer	(508) 490-1351 (508) 727-6593 pager
ERM EC	John Drobinski	Licensed-Site- Professional Site Manager	617-646-7850  617-833-3583 cell
	Rachel Leary	Task Supervisor Competent Person	617-646-7841 617-285-5314 cell
	Jeremy Picard	Task Supervisor Competent Person	617-646-7815 617-519-3267 cell
	Ann McMenemy	Wetlands Specialist	617-646-7812 978-500-6907 cell
To Be Named		General Contractor	
	To be Named	Site Safety and Health Supervisor	
	To be Named	First Aid	

The control of site hazards is dependent upon the degree to which management enforces compliance and employees cooperate with the specified health and safety requirements. Therefore, personnel at all levels of the organization must recognize their individual responsibility to comply. All activities covered by this HASP must be conducted in compliance with this HASP and with applicable federal, state and local health and safety regulations, including 29 CFR 1910.120 and 29 CFR 1926. Personnel covered by this HASP who cannot or will not comply must be excluded from site activities.

**1.3.1 Site Managers and Task Supervisors**

Site Managers and Task Supervisors are responsible for compliance with company health and safety programs, policies, procedures and applicable laws and regulations. This includes the need for effective oversight and supervision of project staff necessary to control the health and safety aspects of daily operations.

### 1.3.2 *Site Safety and Health Supervisor (SSHS)*

SSHS are appointed on a per-project basis, by the Project Manager and/or other management representatives. The SSHS is defined by the Occupational Health and Safety Administration (OSHA) 1910.120 as "...the individual located on a hazardous waste site who is responsible to the employer and has the authority and knowledge necessary to implement the site safety and health plan and verify compliance with applicable safety and health requirements."

The SSHS is responsible to both project management and the designated local/regional health and safety representative with regard to the completion of these assigned duties.

### 1.3.3 *Competent Person*

A "Competent Person", as defined by OSHA 1926.20(b)-Accident Prevention Responsibilities, is the individual "who is capable of identifying existing and predictable hazards in surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them." The competent person may also be the site safety and health supervisor. A competent person must be designated on a site-by-site basis based on the site conditions, scope-of-work, and the individual's ability to recognize site-specific hazards and take appropriate corrective actions. Please note that Rachel Leary and Jeremy Picard are competent persons on behalf of ERM EC only.

### 1.3.4 *First Aid Personnel*

At least one individual must be present during all on-site activities who has a current (Red Cross or equivalent) training and certification in basic first aid and cardiopulmonary resuscitation (CPR). This person must also have received training and information regarding the company's bloodborne pathogen control program including the required use of "universal precautions" and the availability of Hepatitis B vaccinations (HBV) during yearly physicals.

### 1.3.5 *Staff*

Ultimate control of health safety is in the hands of each individual employee. Therefore, each employee must become familiar with and comply with all health and safety requirements associated with their position and daily operations. Employees also have the responsibility to notify the appropriate management and/or health and safety



representative of unsafe conditions and accidents/injuries immediately. When employees are issued respirators or any other personal protective equipment (PPE), they are responsible for ensuring that said items are used properly, cleaned as required and maintained in good working order.

### 1.3.6

#### *(Sub) contractors*

(Sub) contractors must develop their own HASP related to their specific on-site activities. This HASP has been developed with the intent that all individual contractors/subcontractors will review the contents of this plan, and agree to incorporate the basic practices as a minimum for site operations in their own HASP.

The Site, surrounding properties and physical features as well as the proposed work area are displayed in Figure 2. Raytheon utilized the Site from 1955 to 1995 for electronic testing and chemical process research to support in-house prototype manufacturing. In 1995, Raytheon ceased operations and decommissioned the facility.

Assessment of the potential for past release(s) of oil OHM to soil and/or groundwater associated with Raytheon's historic operations was initiated in 1995. Identification of OHM in Site soil and groundwater required filing a release notification with the Massachusetts Department of Environmental Protection (DEP) in January 1996. Subsequent assessment and remedial response actions have been conducted in accordance with the requirements of the Massachusetts Contingency Plan (MCP, 310 CMR 40.0000). The site is being assessed and remediated under two different Release Tracking Numbers (RTNs), RTN 3-22408 and Tier IB Permit Number W045278 (the "Northern Area") and RTN 3-13302 Tier IB Permit (No. 133939) (the "Southern and Western Areas").

Data from assessment activities, presented in the Phase II, suggest the presence of residual, sorbed and/or dissolved phase volatile organic compounds (VOCs) located in the Northern Area soils that represent the source of dissolved phase impacts to groundwater in the Northern Area. The Phase III - Remedial Action Plan (Phase III) dated 16 December 2005, identified "Excavation of Source Area Saturated Soils" and "Bioremediation in Groundwater" as the preferred remedial approaches for abatement of Site impacts. The Phase III also indicated that pre-remedial characterization activities would need to be conducted to identify chlorinated VOC (CVOC) concentrations in the source area saturated soil.

## 3.0 HAZARD ASSESSMENT

### 3.1 CHEMICAL HAZARDS

This chemical hazard assessment is based on site-specific data from previous investigations (*Phase II Comprehensive Site Assessment, 16 December 2005*).

VOCs are the anticipated soil and/or groundwater contaminants. It is not anticipated that inhalation hazards will be present. It is unlikely that soil will be dry enough to generate any impacted dust however the exclusion zone will be monitored for dust as a precaution. A summary of observed contaminant concentrations in soil is provided in Table 1.

Finally, any chemicals brought onto the site by contractors are subject to the contractor's own safety procedures, including Hazard Communication requirements, as discussed below.

#### 3.1.1 *Chemicals Subject to OSHA Hazard Communication*

All chemicals brought on site such as solvents, reagents, and decontamination solutions, or any other hazardous chemical must be accompanied by the required labels, Material Safety Data Sheets (MSDSs), and employee training documentation as required by OSHA 1910.1200.

#### 3.1.2 *VOC Compounds*

Exposure to the VOC vapors above their respective permissible exposure limits (PELs), as defined by OSHA, may produce irritation of the mucous membranes of the upper respiratory tract, nose and mouth. Overexposure may also result in the depression of the central nervous system. Symptoms of such exposure include drowsiness, headache, fatigue and drunken-like behavior. Trichloroethene (TCE) and tetrachloroethene (PCE) have been determined to be carcinogenic, targeting eyes, skin, liver, kidneys and respiratory system.

The vapor pressures of these compounds are high enough to generate significant quantities of airborne vapor. On sites where low concentrations of these compounds are present in groundwater, the potential inhalation hazard to the field team during chemical oxidation activities is low. Groundwater that will be pumped to the surface to be treated, will be contained in piping and closed top tanks.

## 3.2

### *PHYSICAL HAZARDS*

Potential physical hazards include injury from the operation of heavy equipment, confined space entry, excavation hazards, trip hazards, fire and explosion, vehicle traffic and noise exposure. No significant biological hazards are expected other than those associated with indigenous plants and insects.

A "Competent Person" must perform frequent and regular inspections of the Site, materials and equipment in accordance with 29 CFR 1926.20 to identify site hazards. All personnel on site should be provided with the information and training necessary to avoid accidental injury, including assuring that the site is maintained in such a way that slip, trip and fall hazards are recognized and eliminated or controlled. Basic PPE (steel-toed boots, hardhats and safety eyewear) must be available and its use enforced.

### 3.2.1

#### *Heavy Equipment/Construction Hazards*

The use of backhoes, front-end loaders, dump trucks, cranes and other heavy equipment represent potentially serious construction hazards. Whenever such equipment is used, personnel in the vicinity should be limited to those who must be there to complete their assigned duties. All personnel must avoid standing, within the turning radius of the equipment or below any suspended load. Job sites must be kept as clean, orderly and sanitary as possible. When water is used, care must be taken to avoid creating muddy or slippery conditions. If slippery conditions are unavoidable, barriers and warning signs must be used to warn of these dangers.

Never turn your back to operating machinery. Never wear loose clothing jewelry, hair or other personal items around rotating equipment or other equipment that could may catch or ensnare. Always stand far enough away from operating machinery to prevent accidental contact resulting from mechanical or human error.

Additionally, the following basic personal protective measures must be observed: hard-hats must be worn to protect against bumps or falling objects. Goggles, face shields or other forms of eye protection must be worn when necessary to protect against chemicals or other hazards. Steel-toed safety shoes or boots are also required. The shoes must be chemically resistant or protected with appropriately selected boots/coverings where necessary. Unless otherwise specified, normal work clothes must be worn. Long sleeves and gloves are also required whenever necessary to protect against hazardous contact, cuts, abrasions

or other possible skin hazards. During pile driving activities double hearing protection is required (i.e. ear plugs and ear muffs)

### 3.2.2

#### *Excavations*

All provisions of the OSHA trenching and excavation standard (29 CFR 1926.650-52) must be followed during excavation activities. The estimated location of utility installations, such as sewer, telephone, electric, water lines and other underground installations that may reasonably be expected to be encountered during excavation work, must be determined prior to opening an excavation.

Excavations in contaminated or potentially contaminated areas must be tested for confined spaces atmospheric hazards prior to entry. Excavations should not be entered if other means are available to perform the task requiring entry. If entry into an excavation is required, the atmosphere within the space must be monitored by a trained person to assure that oxygen concentrations are greater than 19.5 percent and less than 23 percent, that combustible gas levels are less than 10 percent of the lower explosive limit (LEL), and that vapor levels are within applicable safe exposure (PEL) and Threshold Limit Values [TLV] limits.

A ladder or similar means of egress must be located in excavations greater than 4 feet in depth so as to require no more than 25 feet of lateral travel for employees. No person should be allowed to enter an excavation greater than 5 feet in depth unless the following conditions have been met:

- the walls of the excavation have been protected using an approved shield (trench box), an approved shoring system, or the walls have been sloped back to an angle of 34 degrees;
- the excavation is free of accumulated water; and
- the excavation has been tested for hazardous atmospheres as noted previously.

At all times the spoils pile and all materials must be placed at least 2 feet from the edge of the excavation to prevent the materials from rolling into the excavation. Personnel must remain at least 2 feet away from the edge of the excavation at all times. Upon completion of a test pit exploration, the excavation should be backfilled and graded. Excavations should never be left open unless absolutely necessary, and then only with proper barricading and controls to prevent accidental injury.

### 3.2.3 *Confined Space Entry*

Confined spaces may be encountered during the utility survey. If a confined space is encountered and entry is absolutely necessary, appropriate safety precautions must be taken in accordance with the company's safety and health program. Only confined space entry trained personnel will be allowed to perform such activities. Confined space entries should be avoided whenever possible. Trenches (greater than 4 feet in depth) and other excavations will require the air monitoring specified elsewhere in this plan.

Confined space entry means the potentially hazardous entry into any space which, by design, has limited openings for entry and exit, unfavorable natural ventilation which could contain or produce dangerous air contaminants, and which is not intended for continuous employee occupancy. Confined spaces include, but are not limited to, storage vessels, sewers, tunnels, underground utility vaults, and pipelines. Other environments, which must be treated as confined spaces, include pits, basements, garages, warehouses and other indoor areas where mechanical (i.e. diesel, propane, gasoline or similarly powered) equipment must be operated for construction purposes. Excavations are considered confined spaces.

### 3.2.4 *Underground Utilities and Hazards*

The identification of underground storage tanks (USTs), pipes, utilities and other underground hazards is critically important prior to all excavating and other intrusive activities. In accordance with OSHA 29 CFR 1926.650, the estimated location of utility installations, such as sewer, telephone, electric, water lines and other underground installations that may reasonably be expected to be encountered during excavation work, must be determined prior to opening an excavation. Where public utilities may exist, the utility agencies or operators must be contacted directly or through a utility-sponsored service such as Dig Safe. Where other underground hazards may exist, reasonable attempts must be made to identify their locations as well. Failure to identify underground hazards can lead to fire, explosion, flooding, electrocution or other life threatening accidents. ERM will adhere its subsurface utility clearance policies.

### 3.2.5 *Overhead-Utilities and Hazards*

Overhead hazards can include low hanging structures, which can cause injury due to bumping into them. Other overhead hazards include falling objects, suspended loads, swinging loads and rotating equipment. Hard-

hats must be worn by personnel in areas where these types of physical hazards are encountered. Barriers or other methods must also be used to exclude personnel from these areas where appropriate. Electrical wires are another significant overhead hazard. According to OSHA (29 CFR 1926.550), the minimum clearance, which must be maintained from overhead electrical wires, is 10 feet from an electrical source rated less than 50 kilovolts (kV). Sources rated greater than 50 kV require a minimum clearance of 10 feet plus 0.4 inches per kV above 50 kV.

### 3.2.6 *Pedestrian Traffic*

The uncontrolled presence of pedestrians on a drilling or excavation site can be hazardous to both pedestrians and site workers. Prior to the initiation of site activities, the site should be surveyed to determine if, when and where pedestrian may gain access. This includes walkways, parking lots, gates and doorways. Barriers or caution tape should be used to exclude all pedestrian traffic.

### 3.2.7 *Vehicle Traffic*

All vehicular traffic routes, which could impact worker safety, must be identified and communicated. Barriers will be established to prevent injury from moving vehicles and all workers will be reminded daily and must be aware of on-site vehicular traffic. OSHA (29 CFR 1926.201) specifies that when signs, signals or barricades do not provide adequate protection from highway or street traffic, flag persons must be utilized. Flag persons must wear red or orange garments. Garments worn at night must be reflective. Provisions must be made for pedestrian and traffic control.

### 3.2.8 *Noise*

Noise exposure can be affected by many factors, including the number and types of noise sources (continuous versus intermittent or impact), and the proximity to noise intensifying structures such as walls or building which cause noise to bounce back or echo. The single most important factor effecting total noise exposure is distance from the source. The closer one is to the source the louder the noise will be. The operation of a drill rig, pile driving equipment, backhoe or other mechanical equipment can be sources of significant noise exposure. In order to reduce the exposure to this noise, personnel working in areas of excessive noise must use hearing protection (earplugs or earmuffs).

### 3.2.9

#### *Heat and Cold Stress*

Overexposure to temperature extremes can present significant risks to personnel if simple precautions are not observed. Typical control measures designed to prevent heat stress include dressing properly, drinking plenty of the correct types of fluids, and establishing an appropriate work/break regimen. Typical control measures designed to prevent cold stress also include dressing properly, and establishing an appropriate work/break regimen. The SSHS and Site Superintendent must assure that the appropriate heat and cold stress control measures are implemented.

### 3.2.10

#### *Fire and Explosion*

The possibility of flammable materials being encountered during field activities must be recognized and the appropriate steps necessary to minimize fire and explosion must be observed. This includes situations where excessive organic vapors or free product are encountered. When this occurs, monitoring with a combustible gas indicator (CGI) is required.

Excessive organic vapors, for the purposes of initiating the use of a CGI, are defined as sustained readings (i.e., continuous for at least 5 minutes) at or above 250 units or as an instantaneous reading at or above 1,000 units on the PID, in close proximity (i.e. within 1 foot or less) of the excavation or other area of potential exposure.

In situations where flammable materials (e.g. gasoline, acetylene cylinders, hexane, and methanol) are used on site, the following precautions must be observed:

- keep flammable and combustible materials away from heat, sparks and open flames;
- do not smoke around flammable or combustible materials;
- keep all flammable and combustible liquids in approved and properly labeled safety containers and segregate all flammable materials from other incompatible materials such as oxidizers.

### 3.2.11

#### *Fire Protection*

Contractors must comply with the following requirements as applicable:

- Fire Prevention, 29 CFR 1926.15 1: Electrical wiring and equipment for light, heat or power purposes are to be installed in compliance with the



National Electrical Code. Portable battery-powered lighting equipment used in connection with the storage, handling or use of flammable gases or liquids are to be the type approved for the hazardous location.

- Fire Extinguishers, 29 CFR 1926.150(c): Contractors are to ensure that at least one ten-pound-capacity type ABC fire extinguisher is provided within 100 feet of each work areas. Fire fighting equipment is to be periodically inspected and maintained in operating condition. Extinguishers subject to freezing are to be protected from freezing.
- Fuel Cans, 29 CFR 1926.351: Approved self-closing safety cans with flame arrest protection are to be used when necessary for dispensing small quantities of fuel.

### 3.3 *BIOLOGICAL HAZARDS*

Potential biological hazards for all sites include poisonous plants, insects or other animals that carry disease (i.e. Lyme disease, rabies) or venom (i.e. bees, snakes, spiders).

#### 3.3.1 *Insects*

Insects represent significant sources (vectors) of disease transmission. Therefore, precautions to avoid or minimize potential contact should be considered prior to all field activities. Disease or harmful effects can be transmitted through bites, stings or through direct contact with insects or through ingestion of foods contaminated by certain insects. Examples of disease transmitted by insect bites include encephalitis and malaria from contaminated mosquitoes, Lyme disease and spotted fever from contaminated ticks. Stinging insects, such as bees and wasps, are prevalent throughout the country, particularly during the warmer months. The stings of these insects can be painful, and cause serious allergic reactions to some individuals.

#### 3.3.2 *Lyme Disease*

Lyme disease is an infection caused by the bite of certain ticks, primarily deer, dog and wood ticks. The symptoms of Lyme disease usually start out as a skin rash then progress to more serious symptoms. The more serious symptoms can include lesions, headaches, arthritis and permanent damage to the neurological system. If detected early the disease can be treated successfully with antibiotics. The following steps are

recommended for prevention of Lyme disease and other diseases transmitted by ticks:

- Beware of tall grass, bushes, woods and other areas where ticks may live;
- Wear good shoes, long pants tucked into socks, a shirt with a snug collar, good cuffs around the wrists and tails tucked into the pants. Insect/tick repellents may also be useful; and
- Carefully monitor for the presence of ticks. Carefully inspect clothes and skin when undressing. If a tick is attached to the skin it should be removed with fine-tipped tweezers. You should be alert for early symptoms over the next month or so. If you suspect that a tick has bitten you, you should contact a physician for medical advice.

### 3.3.3 *Poisonous Plants*

The possible presence of poisonous plants should be anticipated for field activities in wooded or heavily vegetated areas. Contact with poison ivy, poison oak and sumac result in an intensely itching skin rash and characteristic blister-like lesions. Contact with these plants should be avoided.

### 3.3.4 *Rats, Snakes and Other Vermin*

Certain animals, particularly those that feed on garbage and other wastes, can represent significant vectors of disease transmission. Therefore, precautions to aid and/or minimize potential contact with (biting) animals (such as rats) or animal waste (such as pigeon droppings) should be considered prior to all field activities. Rats, snakes and other wild animals can inflict painful bites. The bites can be poisonous (as in the case of some snakes), or disease causing (as in the case of rabid animals). Avoidance of these animals is the best protection.

## 4.0

## *MONITORING*

Air monitoring falls into two separate categories:

- direct reading/exclusion zone monitoring.
- and personal exposure monitoring.

Exclusion zone monitoring is conducted in order to evaluate potential airborne hazards on a "real time" basis so that action levels specified in this HASP can be implemented. Personal exposure monitoring is conducted as part of a company's own HASP in order to establish a database of occupational exposure for OSHA compliance purposes. This HASP addresses only exclusion zone monitoring.

### 4.1

#### *EXCLUSION ZONE MONITORING*

The exclusion zone monitoring required for the site will be conducted using the direct reading instruments as indicated in the table below. The data provided by these instruments can be used to determine the appropriate control actions and personal protective equipment requirements.

Equipment calibration must be performed in accordance with the manufacturer's instructions. Field checks using the appropriate reference standards must be made on site at the minimum frequency of twice per shift (pre and post sampling). A daily log of all instrument readings, as well as all field reference checks and calibration information must be maintained.

The following table summarizes the types of environmental monitoring, the required frequencies and the appropriate response actions applicable to this site:

Chemical Identification	Instrument Type	Monitoring Frequency	Instrument Reading	Response Action
Total VOCs	PID	Continuously during intrusive activities or confined space entries.	0- 10 units 10-100 units >100 units	Level D Level C Level B
Dust	MIE Real-time Aerosol Monitor	Upwind and downwind during excavation activities	0.0004mg/ m <sup>3</sup> 0.15 mg/ m <sup>3</sup>	Implement dust controls and potential use respirators
<b>Confined Space Entry</b>				
LEL	CGI or LEL/O <sub>2</sub> meter	Continuously during intrusive activities or confined space entries.	>10% LEL	Entry prohibited. Determine source of elevated LEL and implement controls prior to entry.
Oxygen	O <sub>2</sub> meter	Continuously during intrusive activities or confined space entries.	<20.9% (O <sub>2</sub> deficient) or >23% (O <sub>2</sub> rich)	Entry prohibited. Determine source of elevated LEL and implement controls prior to entry.

#### 4.1.1 *Total VOCs*

A photoionization detector (PID), equipped with a 10.2 eV or an 11.7 eV lamp, calibrated with isobutylene and referenced to benzene in air, will be used to monitor the general area and the breathing zone of workers during intrusive activities and to assess the potential presence of organic vapors.

#### 4.1.2 *Confined Space Entry*

Air monitoring for excavations and confined space entries must be conducted in accordance with the information provided below. If a confined space is encountered and entry is absolutely necessary, the SHSC must be notified to coordinate the entry. Only confined space entry trained personnel will be allowed to perform such activities. Confined

space entries should be avoided whenever possible. Trenches (greater than 4 feet in depth) and other excavations will require the air monitoring specified in the table in Section 4.1.

Monitoring of confined spaces must be conducted in the following order only:

1. oxygen (O<sub>2</sub> meter)
2. explosive/combustible atmospheres (CGI/LEL meter)
3. other toxics (VOCs, H<sub>2</sub>S)

Confined space entry monitoring must be continuous during the entire entry. Action levels for confined space entry monitoring are provided in the table in Section 4.1.

#### **4.1.3 Dust Monitoring**

Dust (PM-10) monitoring with an MIE Real-time Aerosol Monitor will be performed during all excavation and soil movement activities (e.g. loading, backfilling, etc.). Upwind and downwind dust monitoring locations will be determined on a daily basis. Since wind directions can change daily, the upwind and downwind locations will coincide with the excavation area, as applicable. Additionally, dust monitoring will be performed next to the excavation area. Personal exposure monitoring will be implemented if PM-10 levels are detected in the excavation area above action levels during site cleanup or other remedial activities.

Background values will be established prior to commencement of work. An increase of dust concentration, measured in mg dust/cubic meter, of approximately 25% above background levels, for a period of 15 minutes, is the action level.

Exceedance of the action levels may trigger one or more of the following actions:

- a work stoppage or change in intrusive activities
- use of water to suppress dust
- the use of respirators by construction personnel
- public notification to the Town of Wayland Board of Health

## 4.2

### *MITIGATIVE MEASURES FOR CONTROL OF EMISSIONS*

Based on odors and/or results of air monitoring, vapor emissions resulting from site operations may need to be suppressed. Appropriate mitigative measures would include ceasing operations until the cause of the emissions is identified and controlled. Vapor control measures may include immediate backfilling of the excavation, use of vapor suppression foams, and covering of exposed soil piles with polyethylene or tarps. Dust emissions control actions may consist of applying a water spray to the source area.

## 4.3

### *PERSONAL EXPOSURE MONITORING*

Personal exposure monitoring for the purpose of determining individual time-weighted average exposures may be required for specific operations or activities. Although the data provided by the real-time instruments specified above can be used to determine the appropriate control actions and personal protective equipment requirements, the data may be inappropriate for use in determining employee time-weighted average exposures as required by specific OSHA regulations.

According to 29 CFR 1910.120 personal exposure monitoring for the purpose of determining individual time-weighted average exposures is required only during site cleanup or other remedial activities. However, there are other compound-specific OSHA regulations requiring personal exposure monitoring. Contractors must assess the need for conducting personal exposure monitoring based specifically for their individual employees operations and anticipated exposures.

**PERSONAL PROTECTIVE EQUIPMENT**

The following table specifies the initial level of protection required for each task. The table is arranged according to major project tasks. The personal protection requirements are based on the anticipated chemical and physical hazards, past uses of the site and potential exposure routes (i.e., inhalation, skin contact, and ingestion). **Personnel will be required to upgrade levels of protection based on the air monitoring results.** The SSHS and the Site Manager will determine the level of protection and will inform all other personnel.

Task	Initial Level of Protection
General site work - <b>No contact hazards</b> (utility survey, contractor oversight, traffic/pedestrian control).	Level D
General site work - <b>Contact hazards</b> (all intrusive activities, dewatering activities, soil and groundwater sampling and all other tasks involving potential contact with soil or groundwater).	Modified Level D
Chemical Oxidation Activities - Personnel Protective Equipment will be donned to address hazards associated with the injection of oxidant.	Modified Level D
Excavation Activities - Equipment Operators (provided that the operators remain inside of the equipment). Operators would be required to don Level C PPE if required based on air monitoring results.	Modified Level D

Personal protective equipment will be donned as described below for the activities described in the table above. Based on available analytical data and anticipated activities, it is assumed that most activities will require Level D or Modified Level D PPE with contingencies for Level C PPE. Levels of protection for the tasks not included in the table above will be determined by the SSHS in consultation company safety and health officials.

**5.1 LEVEL D**

Level D PPE is defined as the following, or similar, equipment:

- Hard-hat;

- Work clothes;
- Steeled-toed work boots;
- Hearing protection (if necessary);
- Eye protection; and
- Reflective orange vest if working on or near public roadways.

## 5.2

### ***MODIFIED LEVEL D***

Modified Level D is specified where there is a contact hazard but not an inhalation hazard. Modified Level D PPE is defined as the following, or similar:

- Hard-hat;
- Tyvek coveralls over work clothes;
- Steel-toed work boots;
- Nitrile gloves (or equivalent);
- Hearing protection (if necessary);
- Eye protection; and
- Reflective orange vest if working on or near public roadways.

If the potential exists for contact with liquids, personnel will be required to wear a coated chemical protective suit (e.g., polycoated tyvek, Saranex, etc.).

## 5.3

### ***LEVEL C***

Based on specific activities, air monitoring results and/or the presence of unanticipated dusty conditions, Level C respiratory protection may be required. Level C PPE is defined as the following, or similar:

- Hard-hat;
- Tyvek coveralls over work clothes;



- Steel-toed work boots with **disposable boot covers**;
- Nitrile gloves (or equivalent);
- Hearing protection (if necessary);
- Eye protection;
- Reflective orange vest if working on or near public roadways; and
- **Full-face air purifying respirator with combination High Efficiency Particulate (HEPA)/organic vapor/acid gas cartridges.**

If the potential exists for contact with liquids, personnel will be required to wear a coated chemical protective suit (e.g., polycoated tyvek, Saranex, etc.).

All personnel who will be required to wear air-purifying respirators must have been qualitatively or quantitatively fit-tested for the particular brand and size respirator he/she will be wearing on-site. Normal eyeglasses cannot be worn under full-face respirators because the temple bars interfere with the face seal. As a result, special spectacle inserts designed for use with respirators must be available for workers requiring corrective lenses. Each contractor required to wear respirators must have procedures for selecting, using and maintaining said respirators.

#### 5.4

#### **LEVEL B**

If air monitoring results indicate the need to go to Level B protection, the SSHS must be notified in order to evaluate the situation. Engineering controls may be implemented in lieu of Level B PPE; however, additional air monitoring must be conducted after the implementation of the engineering control and prior to the re-entry of site personnel to determine the effectiveness of the control.

Site-specific training in the use and limitations of Level B protection must be conducted prior to the use of Level B on site. Training will also include a review of the revised emergency procedures. Level B PPE will consist of the Modified Level D PPE, plus:

- A full-face, positive-pressure, demand-mode, supplied air breathing apparatus or equivalent

**LEVEL A**

In situations where the type of chemical, concentration and potential exposure route are not known, the SSHS must be notified in order to evaluate the situation for upgrade for Level A PPE. Engineering controls may be implemented in lieu of Level A PPE; however, additional air monitoring must be conducted after the implementation of the engineering control and prior to the re-entry of site personnel to determine the effectiveness of the control.

Site-specific training in the use and limitations of Level A protection must be conducted prior to the use of Level A on site. Training will also include a review of the revised emergency procedures. Level A PPE will consist of the Modified Level D PPE, plus:

- A full-face, positive-pressure, demand-mode, supplied air breathing apparatus or equivalent; and
- Fully encapsulating chemical-resistant suit.

## *SITE CONTROL*

To minimize both exposure of unprotected personnel and migration of contamination due to tracking by personnel or equipment, work areas where intrusive site activities will be conducted be clearly identified with appropriate equipment such as caution tape, fencing, or similar equipment. Work areas or zones will be established as suggested in the "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," NIOSH/OSHA/USCG/EPA, November, 1985. This document recommends the area surrounding each of the work areas to be divided into three zones whenever possible and plausible:

- the exclusion zone or "Hot" zone;
- contamination reduction zone (CRZ);
- and the support zone.

### 6.1

#### *EXCLUSION ZONE*

Each exclusion zone will consist of the active work areas where site activities are taking place. A 15-foot radius will be established as the typical perimeter of the zone; however, this may be modified as necessary in order to protect unprotected personnel from chemical or physical hazards that may occur as a result of site operations. The perimeter of the zone will be marked with brightly colored hazard tape. All personnel entering these areas must wear the prescribed level of protective equipment.

### 6.2

#### *CONTAMINATION REDUCTION ZONE*

Each contamination reduction zone (CRZ) will be a passageway between the exclusion and support zones. The CRZ is where personnel will begin the sequential decontamination process when exiting the exclusion zone. To prevent cross contamination and for accountability purposes, all personnel must enter and leave the exclusion zone through the CRZ.

### 6.3

#### *SUPPORT ZONE*

The support zone will coincide with the project site trailer (if applicable) and/or equipment staging area, and will consist of an area outside the exclusion zone and CRZ where support vehicles and equipment will be staged, and other general site activities will be conducted.

### 6.4

#### *OTHER SITE CONTROL AND SAFETY MEASURES*

The following measures are designed to augment the specific health and safety guidelines provided in this plan:

- The "buddy system" will be used at all times by all personnel. No one is to perform exclusion zone work alone. The standby team member must be intimately familiar with the procedures for initiating an emergency response.
- Avoidance of contamination is of the utmost importance. Whenever possible, avoid contact with contaminated (or potentially contaminated) surfaces or materials. Walk around (not through) puddles and discolored surfaces. Do not kneel on the ground or set equipment on the ground. Protect air-monitoring instruments from water by either using either the instrument in the provided case or by wrapping the instrument in plastic if a case is not provided. If the instrument is wrapped in plastic, openings are made in the bag for sample intake and exhaust.
- Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking or any other activities.
- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited except in the support zone after proper decontamination.
- Beards or other facial hair that interfere with respirator fit are prohibited for anyone who is required to wear a respirator.
- The use of alcohol or drugs is prohibited during the conduct of field operations. Working under the influence of prescription drugs or over-the-counter medication that may cause drowsiness or loss of alertness is also prohibited.

- All equipment must be decontaminated or discarded, as designated by the SSHS before leaving the site.
- Safety equipment (PPE) described in Section 5.0 will be required for all field personnel unless otherwise approved by the SSHS.

## 6.5

### *SITE SECURITY*

The Site Manager is responsible for identifying the presence of all employees on site. A Sign-in/Sign-out log will be maintained for this purpose or the information will be kept in the SSHS's field book.

Equipment left on site during off-hours must be locked, immobilized and/or otherwise secured to prevent theft or unauthorized use or access.

## 7.0

## DECONTAMINATION

Proper decontamination is required of **all personnel and equipment** before leaving the site. All materials and equipment used for decontamination must be disposed of properly. Clothing, tools, buckets, brushes, and all other equipment that is contaminated must be secured in drums or other containers and labeled. Clothing not completely decontaminated on site should be secured in plastic bags before being removed from the site.

## 7.1

### PERSONNEL DECONTAMINATION

Personnel decontamination will be accomplished by following a systematic procedure of cleaning and removal of PPE. Contaminated PPE such as boots and face shields will be rinsed free of gross contamination, scrubbed clean in a detergent solution and then rinsed clean. To facilitate this, a three-basin wash system will be set up on site. The wastewater will be transferred to drums, which will be labeled and left on site for disposal.

Disposable PPE, such as Tyvek coveralls, gloves, outer boots, etc. will be disposed of as general refuse. Respirators will be cleaned after each use with respirator wipe pads and will be stored in plastic bags after cleaning. Alternative chemical decontamination procedures, such as steam-cleaning field boots, may be used if available.

### 7.1.1

#### *Decontamination Sequence*

Steps required will depend on the level of protection worn in accordance with Section 5.0:

1. Remove and wipe clean hard hat
2. Rinse boots and gloves of gross contamination
3. Scrub boots and gloves clean
4. Rinse boots and gloves
5. Remove outer boots
6. Remove outer gloves

7. Remove Tyvek coveralls
8. Remove respirator, wipe clean and store
9. Remove inner gloves
10. Boots that have been decontaminated can be worn into the support zone.

## 7.2

### *EQUIPMENT DECONTAMINATION*

Measures should be taken to prevent contamination of sampling and monitoring equipment. Sampling devices become contaminated, but monitoring instruments, unless they are splashed, usually do not. Once contaminated, instruments are difficult to clean without damaging them. Any delicate instrument that cannot be easily decontaminated should be protected while it is being used. Protect air-monitoring instruments from water by either using the instrument in the provided case or by wrapping the instrument in plastic if a case is not provided. If the instrument is wrapped in plastic, openings are made in the bag for sample intake and exhaust.

If solvents are used for decontamination of equipment all safety precautions specified on the manufacturer's warning label and MSDS must be observed. Solvents or rinsate generated during the decontamination process will be drummed, labeled, and disposed of with other substances from the site.

Wooden tools are difficult to decontaminate because they absorb chemicals. Wooden hand tools will be kept on site for the project duration and handled only by protected workers. At the end of the site activities, wooden tools will be discarded if they can not be decontaminated properly.

The method generally used to decontaminate heavy equipment is to wash them with water under high pressure or to scrub accessible parts with detergent/water solution under pressure. Washwater from decontamination of backhoe buckets and related equipment will be collected for disposal.

Personnel conducting the decontamination must be adequately protected contaminated mists and aerosols can be generated. PPE, as specified in Section 5.0, must be worn, including Level C respiratory protection.

## 8.0 *MEDICAL MONITORING AND TRAINING REQUIREMENTS*

### 8.1 *MEDICAL*

All personnel covered by this HASP must be active participants in a medical monitoring program that complies with 29 CFR 1910.120(f). Each individual must have completed an annual surveillance examination and/or an initial baseline examination within the last year prior to performing any work on this site covered by this HASP. Each contractor is responsible for implementing and maintaining the medical monitoring program for its employees.

### 8.2 *TRAINING*

All personnel covered by this HASP must have completed the appropriate training requirements specified in 29 CFR 1910.1200 Hazard Communication and 29 CFR 1910.120(e). This requirement applies to individuals who may conduct work within and exclusion zone. Each individual must have completed an annual 8-hour refresher training course and/or initial 40-hour training course within the last year prior to performing any work on this site covered by this HASP. Also, at least one employee must be on site during all invasive site activities to act as the site manager and SSHS. This individual must have documentation of at least three days of supervised field experience as well as completion of the specified 8-hour training course for managers and supervisors.

### 8.3 *SUBCONTRACTORS*

Subcontractors will be required to provide specific written documentation prior to their performing any work on site that each individual assigned to this project has completed the medical monitoring and training requirements specified above.

### 8.4 *SITE SAFETY MEETINGS*

Prior to the commencement of on-site activities, a site safety meeting will be held to review the specific requirements of this HASP. Short safety refresher meetings will be conducted by the SSHS weekly or as needed throughout the duration of site activities. In addition, the SSHS will



ensure that site visitors have had the required training in accordance with 29 CFR 19 10.120 and will provide pre-entry safety briefings.

## 9.0 EMERGENCY ACTION PLAN

### 9.1 GENERAL REQUIREMENTS

OSHA defines emergency response as any "response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual-aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result in an uncontrolled release of a hazardous substance." Personnel covered by this HASP may not participate in any emergency response where there are potential safety or health hazards (i.e., fire, explosion, or chemical exposure). The company's response actions will be limited to evacuation and medical/first aid as described within this section below.

The basic elements of an emergency evacuation plan include employee training, alarm systems, escape routes, escape procedures, critical operations or equipment, rescue and medical duty assignments, designation of responsible parties, emergency reporting procedures, and methods to account for all employees after evacuation.

#### 9.1.1 *Employee Information*

Employees must be instructed in the specific aspects of emergency evacuation applicable to the site as part of the site safety meeting prior to the commencement of all on-site activities. On-site refresher or update training is required anytime escape routes or procedures are modified or personnel assignments are changed.

#### 9.1.2 *Emergency Signal and Alarm Systems*

An emergency communication system must be in effect at all sites. The most simple and effective emergency communication system in many situations will be direct verbal communications. Each site must be assessed at the time of initial site activity and periodically as the work progresses. Verbal communications must be supplemented anytime voices can not be clearly perceived above ambient noise levels (i.e., noise from heavy equipment, backhoes, etc.) and anytime a clear line-of-sight can not be easlily maintained between all project personnel because of distance, terrain or other obstructions.

When verbal communications must be supplemented, emergency signals (using handheld airhorns or other devices) must be implemented. All site personnel are authorized to initiate an emergency evacuation.

The SSHS and the Site Manager will be responsible for accounting for all personnel onsite after an emergency evacuation has been conducted.

### 9.1.3 *Emergency Information*

Emergency Numbers:      Police: 911  
   Fire: 911  
   Ambulance: 911

Hospital:      Metro West Medical Center  
                         67 Union Street  
                         Natick, Massachusetts  
                         (508) 650-7000 (main number)

Directions to Hospital:

**Travel time - Approximately 7.5 miles, 20 minutes.**

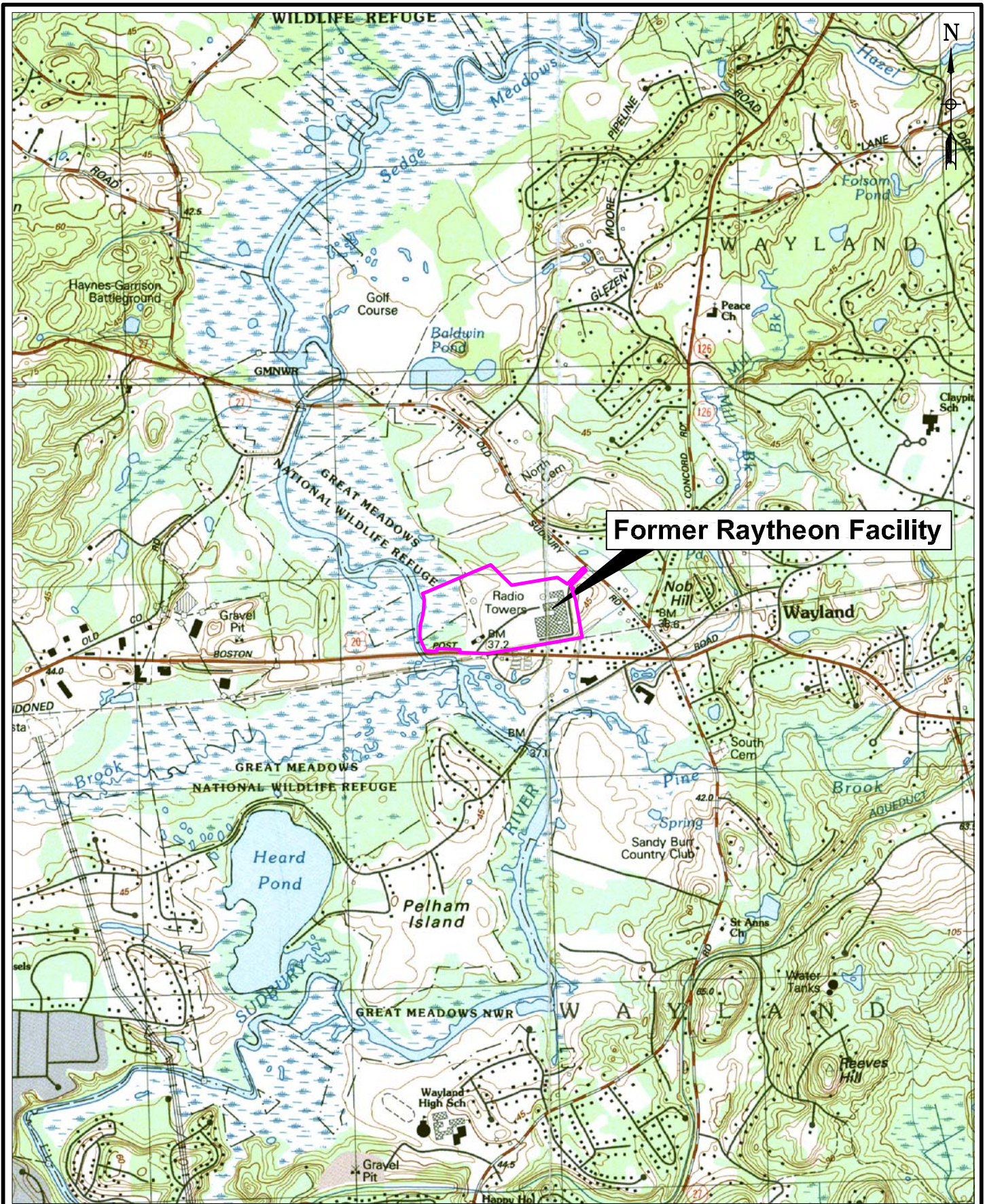
	Total Miles	Directions
1.	0.8	Turn left onto BOSTON POST ROAD heading east.
2.	1.0	Turn right onto Cochituate Rd/MA-126/MA-27
3.	1.2	Stay on Cochituate Rd/MA-27
4.	3.7	Cochituate Rd/MA-27 turns into Main Street/MA-27
5.	0.3	Turn left onto E. Central St./MA-135
6.	0.4	Turn right onto Union Street

### 9.1.4 *Incident Reporting Procedures*

Any incident (other than minor first aid treatment) resulting in injury, illness or property damage requires an accident investigation and report. The investigation should be initiated as soon as emergency conditions are under control. The purpose of this investigation is not to attribute blame, but to determine the pertinent facts so that repeat or similar occurrences can be avoided.

The investigation should begin while details are still fresh in the mind of anyone involved. The person administering first aid may be able to start the fact gathering process if the injured are able to speak. Pertinent facts must be determined. Questions beginning with who, what, when, where,

and how are usually most effective to discover ways to improve job performance in terms of efficiency and quality of work, as well as safety and health concerns.




**Former Raytheon Facility**

Scale 1:25,000

0.5 km 0 500 m

0.5 mi 0 1,000 ft

Legend	
	Subject Property Line

**Figure 1 - Site Locus Map**  
Former Raytheon Facility - Wayland, MA

