



Onsite Engineering, Inc.

*Water, Wastewater and Stormwater Specialists*

# *Notice of Intent WPA Form 3*

*for*

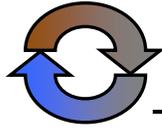
*Nagog Park Sewage Pump Station  
North Acton Treatment Corporation  
Acton, Massachusetts*

*Prepared by:*

Onsite Engineering, Inc.  
279 West Central Street  
PMB 241  
Franklin, MA 02038

February 2013

*Project Number: 01183*



# Onsite Engineering, Inc.

*Water, Wastewater and Stormwater Specialist*

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February 21, 2013

Mr. Tom Tidman, Director  
Acton Conservation Commission  
472 Main Street  
Acton, MA 01720

Re: Nagog Park Sewage Pump Station  
Proposed Pump Station Replacement  
Project No: 01183

Dear Mr. Tidman:

On behalf of the owner, North Acton Treatment Corporation, we are pleased to submit this Notice of Intent, along with the required attachments, for the replacement of the Nagog Park sewage pump station located off Westford Lane. The existing sewage pump station services Nagog Park and additional parcels within a designated service area.

Per a MassDEP Administrative Consent Order, the North Acton Treatment Corporation is replacing the pump station as the station is approaching the end of its design life. The new station will be below grade, with minimal above-grade features, commensurate to the existing sub-grade station.

Included within the Notice of Intent application is a request for a waiver for installation of a structure within the Town of Acton 75-foot no building setback.

We trust that the enclosed information satisfies the submittal requirements, however should you have any questions or require any additional information, please feel free to contact me at (508) 440-5470.

Sincerely,

Onsite Engineering, Inc.

Raymond L. Willis, III, P.E.  
Vice President

Enclosures

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**Section 1**  
**WPA Form**



# WPA Form 3 – Notice of Intent

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

Provided by MassDEP:
MassDEP File Number
Document Transaction Number
Acton
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 to locate project site):

<u>44 Nagog Park (off Westford Lane, parcel B4-1)</u> a. Street Address	<u>Acton</u> b. City/Town	<u>01752</u> c. Zip Code
Latitude and Longitude:	<u>42°31'38.27"N</u> d. Latitude	<u>-71°25'46.97"W</u> e. Longitude
<u>B4</u> f. Assessors Map/Plat Number	<u>1</u> g. Parcel /Lot Number	

2. Applicant:

<u>Kirk</u> a. First Name	<u>Ware</u> b. Last Name	
<u>North Acton Treatment Corporation</u> c. Organization		
<u>530 Great Road</u> d. Street Address		
<u>Acton</u> e. City/Town	<u>MA</u> f. State	<u>01720</u> g. Zip Code
<u>(978) 263-6191</u> h. Phone Number	<u>tkware3@aol.com</u> j. Email Address	 i. Fax Number

3. Property owner (required if different from applicant):  Check if more than one owner

 a. First Name	 b. Last Name	
 c. Organization		
 d. Street Address		
 e. City/Town	 f. State	 g. Zip Code
 h. Phone Number	 j. Email address	 i. Fax Number

4. Representative (if any):

<u>Raymond</u> a. First Name	<u>Willis, III, P.E.</u> b. Last Name	
<u>Onsite Engineering, Inc.</u> c. Company		
<u>279 East Central Street, #241</u> d. Street Address		
<u>Franklin</u> e. City/Town	<u>MA</u> f. State	<u>02038</u> g. Zip Code
<u>(508) 440-5470</u> h. Phone Number	<u>rwillis@onsite-eng.com</u> j. Email address	<u>(508) 553-0617</u> i. Fax Number

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

<u>\$500</u> a. Total Fee Paid	<u>\$237.50</u> b. State Fee Paid	<u>\$262.50</u> c. City/Town Fee Paid
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# WPA Form 3 – Notice of Intent

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

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## A. General Information (continued)

6. General Project Description:

The North Acton Treatment Corporation (NATC) proposes to replace their existing sewage pump station. Per a MassDEP Administrative Consent Order, NATC is replacing and upgrading this pump station as the station is approaching its design life.

7a. Project Type Checklist:

- |   |   |
|---|---|
| 1. <input type="checkbox"/> Single Family Home                | 2. <input type="checkbox"/> Residential Subdivision                   |
| 3. <input type="checkbox"/> Limited Project Driveway Crossing | 4. <input type="checkbox"/> Commercial/Industrial                     |
| 5. <input type="checkbox"/> Dock/Pier                         | 6. <input checked="" type="checkbox"/> Utilities                      |
| 7. <input type="checkbox"/> Coastal Engineering Structure     | 8. <input type="checkbox"/> Agriculture (e.g., cranberries, forestry) |
| 9. <input type="checkbox"/> Transportation                    | 10. <input type="checkbox"/> Other                                    |

7b. Is any portion of the proposed activity eligible to be treated as a limited project subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

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

Utility Work

2. Limited Project

8. Property recorded at the Registry of Deeds for:

Middlesex

a. County

17516

c. Book

b. Certificate # (if registered land)

563

d. Page Number

## B. Buffer Zone & Resource Area Impacts (temporary & permanent)

- Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
- Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal 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.

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

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. <input type="checkbox"/> Bank	1. linear feet	2. linear feet
b. <input type="checkbox"/> Bordering Vegetated Wetland	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



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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Resource Area, Size of Proposed Alteration, Proposed Replacement (if any)
d. Bordering Land Subject to Flooding
e. Isolated Land Subject to Flooding
f. Riverfront Area
2. Width of Riverfront Area (check one):
3. Total area of Riverfront Area on the site of the proposed project:
4. Proposed alteration of the Riverfront Area:
5. Has an alternatives analysis been done and is it attached to this NOI?
6. Was the lot where the activity is proposed created prior to August 1, 1996?

3. Coastal Resource Areas: (See 310 CMR 10.25-10.35)

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. Designated Port Areas
b. Land Under the Ocean
c. Barrier Beach
d. Coastal Beaches
e. Coastal Dunes



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## B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
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., 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	
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	
4. <input type="checkbox"/> Restoration/Enhancement	If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.	
	_____	_____
	a. square feet of BVW	b. square feet of Salt Marsh
5. <input type="checkbox"/> Project Involves Stream Crossings		
	_____	_____
	a. number of new stream crossings	b. number of replacement stream crossings

## C. Other Applicable Standards and Requirements

### Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to [http://www.mass.gov/dfwele/dfw/nhosp/regulatory\\_review/priority\\_habitat/online\\_viewer.htm](http://www.mass.gov/dfwele/dfw/nhosp/regulatory_review/priority_habitat/online_viewer.htm).

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  
100 Hartwell Street, Suite 230  
West Boylston, MA 01583**

2008 \_\_\_\_\_  
b. Date of map



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## C. Other Applicable Standards and Requirements (cont'd)

If yes, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.C, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.1.d, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

### 1. c. Submit Supplemental Information for Endangered Species Review:

1.  Percentage/acreage of property to be altered:
 

(a) within wetland Resource Area	
	percentage/acreage
(b) outside Resource Area	Approximately 5%
	percentage/acreage
2.  Assessor's Map or right-of-way plan of site
3.  Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work \*\*.
  - (a)  Project description (including description of impacts outside of wetland resource area & buffer zone)
  - (b)  Photographs representative of the site
  - (c)  MESA filing fee (fee information available at: [http://www.mass.gov/dfwele/dfw/nhosp/regulatory\\_review/ mesa/ mesa\\_fee\\_schedule.htm](http://www.mass.gov/dfwele/dfw/nhosp/regulatory_review/ mesa/ mesa_fee_schedule.htm)).  
Make check payable to "Commonwealth of Massachusetts - NHESP" and **mail to NHESP** at above address  
  
*Projects altering 10 or more acres of land, also submit:*
  - (d)  Vegetation cover type map of site
  - (e)  Project plans showing Priority & Estimated Habitat boundaries

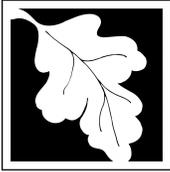
### d. OR Check One of the Following

1.  Project is exempt from MESA review.  
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, [http://www.mass.gov/dfwele/dfw/nhosp/regulatory\\_review/ mesa/ mesa\\_exemptions.htm](http://www.mass.gov/dfwele/dfw/nhosp/regulatory_review/ mesa/ mesa_exemptions.htm); the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)
2.  Separate MESA review ongoing.
 

a. NHESP Tracking #	b. Date submitted to NHESP

· Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see <http://www.mass.gov/dfwele/dfw/nhosp/nhosp.htm>, regulatory review tab). Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

· MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.



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## C. Other Applicable Standards and Requirements (cont'd)

3.  Separate MESA review completed.  
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

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.  Not applicable – project is in inland resource area only

b.  Yes  No If yes, include proof of mailing or hand delivery of NOI to either:

South Shore - Cohasset to Rhode Island, and the Cape & Islands:

North Shore - Hull to New Hampshire:

Division of Marine Fisheries -  
Southeast Marine Fisheries Station  
Attn: Environmental Reviewer  
1213 Purchase Street – 3rd Floor  
New Bedford, MA 02740-6694

Division of Marine Fisheries -  
North Shore Office  
Attn: Environmental Reviewer  
30 Emerson Avenue  
Gloucester, MA 01930

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.

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 MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.

b. ACEC

4. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?

a.  Yes  No

5. 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

6. Is this project subject to provisions of the MassDEP Stormwater Management Standards?

a.  Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:

1.  Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)
2.  A portion of the site constitutes redevelopment
3.  Proprietary BMPs are included in the Stormwater Management System.

b.  No. Check why the project is exempt:

1.  Single-family house

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



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## C. Other Applicable Standards and Requirements (cont'd)

- 2.  Emergency road repair
- 3.  Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

## D. 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.  Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.
- 4.  List the titles and dates for all plans and other materials submitted with this NOI.

North Acton Treatment Corporation, Acton MA - Influent Pump Station (Sheets C-1 and C-2)

a. Plan Title

Onsite Engineering, Inc.

b. Prepared By

Raymond Willis, P.E.

c. Signed and Stamped by

1"=20'

d. Final Revision Date

e. Scale

f. Additional Plan or Document Title

February 2013

g. Date

- 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 Report, if needed.



**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands

Provided by MassDEP:

**WPA Form 3 – Notice of Intent**

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

MassDEP File Number \_\_\_\_\_

Document Transaction Number \_\_\_\_\_

Acton \_\_\_\_\_

City/Town \_\_\_\_\_

**E. Fees**

1.  Fee Exempt: 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:

2. Municipal Check Number \_\_\_\_\_

3. Check date \_\_\_\_\_

4. State Check Number \_\_\_\_\_

5. Check date \_\_\_\_\_

6. Payor name on check: First Name \_\_\_\_\_

7. Payor name on check: Last Name \_\_\_\_\_

**F. 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 by Certificate of Mailing or 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.

*NORTH ATTON TREATMENT COND*  
*BY: [Signature] Treasurer*

1. Signature of Applicant

2. Date 2/19/13

3. Signature of Property Owner (if different)

4. Date

5. Signature of Representative (if any)

6. Date 2/21/13

**For Conservation Commission:**

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

**For MassDEP:**

One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a copy of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

**Other:**

If the applicant has checked the "yes" box in any part of Section C, 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.

# DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: \_\_\_\_\_ Prepared by: B & C Associates Inc. Project location: Westford Lane, Acton DEP File #: \_\_\_\_\_

Check all that apply:

- Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only  
 Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II  
 Method other than dominance test used (attach additional information)

**Section I. Vegetation** Observation Plot Number: 1 Transect Number: A Date of Delineation: 9/12/12

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category *	
Herbaceous:	Wild Sarsaparilla	<i>Aralia nudicaulis</i>	10.5	64%	Yes	FACU
	Spinulose Woodfern	<i>Dryopteris spinulosa</i>	3.0	18%	No	FAC+ *
	Poison Ivy	<i>Toxicodendron radicans</i>	3.0/16.5	18%	No	FAC *
Shrubs:	Black Cherry	<i>Prunus serotina</i>	10.5	28%	Yes	FACU
	White Pine	<i>Pinus strobus</i>	10.5	28%	Yes	FACU
	American Hazelnut	<i>Corylus americana</i>	10.5	28%	Yes	FACU-
	White Oak	<i>Quercus alba</i>	3.0	8%	No	FACU-
	European Buckthorn	<i>Rhamnus frangula</i>	3.0/37.5	8%	No	FAC *
Saplings:	White Ash	<i>Fraxinus americana</i>	10.5	50%	Yes	FACU
	White Pine	<i>Pinus strobus</i>	10.5/21.0	50%	Yes	FACU
Lianas:	Oriental Bittersweet	<i>Celastrus orbiculatus</i>	3.0/3.0	100%	No	UPL
Overstory:	Red Oak	<i>Quercus rubra</i>	530.8	55%	Yes	FACU-
	White Oak	<i>Quercus alba</i>	346.6	36%	Yes	FACU-
	White Ash	<i>Fraxinus americana</i>	95.9/973.3	10%	No	FACU

\* Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

**Vegetation conclusion:**

Number of dominant wetland indicator plants: 0 Number of dominant non-wetland Indicator plant: 8

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? NO

**Section II. Indicators of Hydrology  
Hydric Soil Interpretation**

**1. Soil Survey**

Is there a published soil survey for this site? **YES**

title/date: Middlesex County 2/26/10

map number: 1

soil type mapped: Urban land

hydric soil inclusions:

Are field observations consistent with soil survey? **YES**

Remarks:

**2. Soil Description**

Horizon	Depth	Matrix Color	Mottles Color
A	0-5"	10 YR 2/2	
B	5-13"	10 YR 4/4	

Remarks: Refusal @ 13"

3. Other: 12' 8" to Wetland Flag # 6  
10' 10" to Wetland Flag # 7

Conclusion: Is soil hydric? **NO**

**Other Indicators of Hydrology: (check all that apply and describe)**

- Site inundated: \_\_\_\_\_
- Depth to free water in observation hole: \_\_\_\_\_
- Depth to soil saturation in observation hole: \_\_\_\_\_
- Water marks: \_\_\_\_\_
- Drift lines: \_\_\_\_\_
- Sediment deposits: \_\_\_\_\_
- Drainage patterns in BVW: \_\_\_\_\_
- Oxidized rhizospheres: \_\_\_\_\_
- Water-stained leaves: \_\_\_\_\_
- Recorded data (stream, lake, or tidal gauge; aerial photo; other):  
\_\_\_\_\_
- Other: \_\_\_\_\_

**Vegetation and Hydrology Conclusion**

	Yes	No
Number of wetland indicator plants ≥ number of non-wetland indicator plants	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Wetland hydrology present: hydric soil present	<input type="checkbox"/>	<input checked="" type="checkbox"/>
other indicators of hydrology present	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Sample location is in a BVW</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Submit this form with the Request for Determination of Applicability or Notice of Intent**

# DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: \_\_\_\_\_ Prepared by: B & C Associates Inc. Project location: Westford Lane, Acton DEP File #: \_\_\_\_\_

Check all that apply:

- Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only  
 Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II  
 Method other than dominance test used (attach additional information)

**Section I. Vegetation** Observation Plot Number: 2 Transect Number: A Date of Delineation: 9/12/12

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category *	
Herbaceous:	Jewelweed	<i>Impatiens capensis</i>	38.0	42%	Yes	FACW *
	Poison Ivy	<i>Toxicodendron radicans</i>	38.0	42%	Yes	FAC *
	Giant Goldenrod	<i>Solidago gigantea</i>	10.5	12%	No	FACW *
	Spinulose Woodfern	<i>Dryopteris spinulosa</i>	3.0/89.5	3%	No	FAC+ *
Shrubs:	European Buckthorn	<i>Rhamnus frangula</i>	20.5	41%	Yes	FAC *
	American Hazelnut	<i>Corylus americana</i>	10.5	21%	Yes	FACU-
	Black Cherry	<i>Prunus serotina</i>	10.5	21%	Yes	FACU
	White Ash	<i>Fraxinus americana</i>	3.0	6%	No	FACU
	Red Oak	<i>Quercus rubra</i>	3.0	6%	No	FACU-
	White Pine	<i>Pinus strobus</i>	3.0/50.5	6%	No	FACU
Saplings:	White Pine	<i>Pinus strobus</i>	10.5	50%	Yes	FACU
	Red Maple	<i>Acer rubrum</i>	10.5/21.0	50%	Yes	FAC *
Lianas:	Oriental Bittersweet	<i>Celastrus orbiculatus</i>	3.0/3.0	100%	No	UPL
Overstory:	Red Maple	<i>Acer rubrum</i>	103.1	78%	Yes	FAC *
	White Ash	<i>Fraxinus americana</i>	28.7/131.8	22%	Yes	FACU

\* Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

**Vegetation conclusion:**

Number of dominant wetland indicator plants: 5 Number of dominant non-wetland Indicator plant: 4

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? YES

**Section II. Indicators of Hydrology  
Hydric Soil Interpretation**

**1. Soil Survey**

Is there a published soil survey for this site? **YES**

title/date: Middlesex County 2/26/10

map number: 1

soil type mapped: Scarboro mucky fine sandy loam

hydric soil inclusions:

Are field observations consistent with soil survey? **YES**

Remarks:

**2. Soil Description**

Horizon	Depth	Matrix Color	Mottles Color
A	0-13"	10 YR 2/2	

Remarks: Refusal @ 13"

3. Other: 8' 5" to Wetland Flag # 6  
18' 0" to Wetland Flag # 7  
14' 0" Downgradient from A1

Conclusion: Is soil hydric? **YES**

**Other Indicators of Hydrology: (check all that apply and describe)**

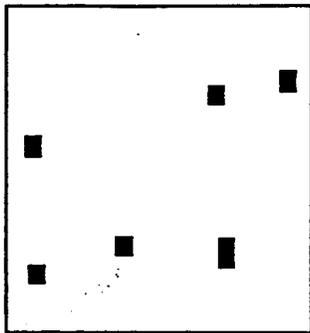
- Site inundated: \_\_\_\_\_
- Depth to free water in observation hole: \_\_\_\_\_
- Depth to soil saturation in observation hole: \_\_\_\_\_
- Water marks: \_\_\_\_\_
- Drift lines: \_\_\_\_\_
- Sediment deposits: \_\_\_\_\_
- Drainage patterns in BVW: \_\_\_\_\_
- Oxidized rhizospheres: \_\_\_\_\_
- Water-stained leaves: \_\_\_\_\_
- Recorded data (stream, lake, or tidal gauge; aerial photo; other):  
\_\_\_\_\_
- Other: \_\_\_\_\_

**Vegetation and Hydrology Conclusion**

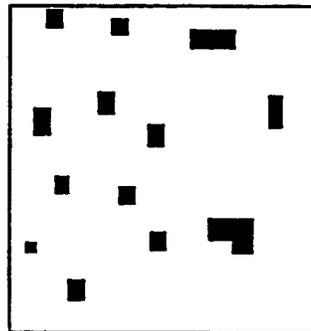
	Yes	No
Number of wetland indicator plants ≥ number of non-wetland indicator plants	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Wetland hydrology present: hydric soil present	<input checked="" type="checkbox"/>	<input type="checkbox"/>
other indicators of hydrology present	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Sample location is in a BVW</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Submit this form with the Request for Determination of Applicability or Notice of Intent**

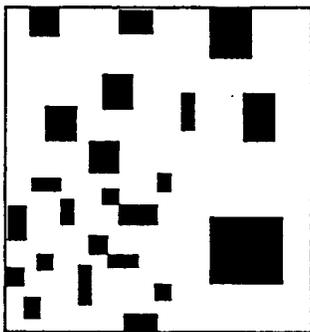
# Charts for Estimating Percent Redoximorphic Features



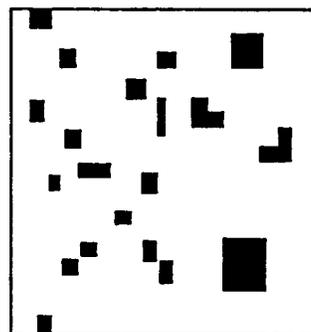
2%



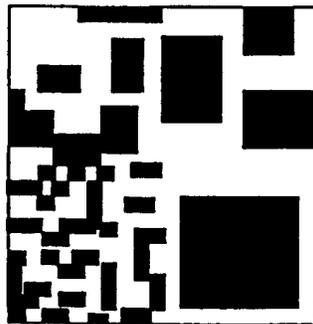
5%



20%



10%



50%

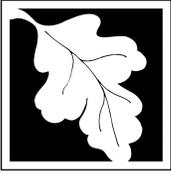
AGONIZANT  
10-20 FFW  
20-20 common  
20+ 100%

### Hydric Soil Indicators

Most hydric soils have a soil horizon with a chroma of 0, 1, or 2 below the A-horizon. These are referred to as low-chroma colors. (Reminder: the Munsell Soil Color Charts are used to determine soil colors.) Generally, when evaluating mineral soils for low-chroma colors or other evidence of saturation, look for indicators directly below the A-horizon and within the top 12 inches of the soil surface. In areas where the O-horizon is less than 8 inches thick, soil depths are measured from the bottom of the O-horizon. When the O-horizon is 8 inches or greater (for histosols and soils with histic epipedons), such depths are measured from the soil surface. The soil surface is the top of the mineral soil; or, for soils with an O-horizon, the soil surface is measured from the top of the O-horizon. Fresh leaf or needle fall that has not undergone observable decomposition (the litter layer) is excluded from soil and may be separately described.

The following is a list of some hydric soil indicators - any of which can be used to identify the presence of wetland hydrology:

- ◆ Histosols (organic soils). Histosols are soils with at least 16 inches of organic material measured from the soil surface.
- ◆ Histic epipedons. These are soils with 8 to 16 inches of organic material measured from the soil surface.
- ◆ Sulfidic material. A strong "rotten egg" smell generally is noticed immediately after the soil test hole is dug.
- ◆ Gleyed soils. Soils that are predominantly neutral gray, or occasionally greenish or bluish gray in color within 12 inches from the bottom of the O-horizon. (The Munsell Soil Color Charts have special pages for gleyed soils.)
- ◆ Soils with a matrix chroma of 0 or 1 and values of 4 or higher within 12 inches from the bottom of the O-horizon.
- ◆ Within 12 inches from the bottom of the O-horizon, soils with a chroma of 2 or less and values of 4 or higher in the matrix, and mottles with a chroma of 3 or higher.
- ◆ Within 12 inches from the bottom of the O-horizon, soils with a matrix chroma of 3 and values of 4 or higher, with 10 percent or more low-chroma mottles, as well as indicators of saturation (i.e., mottles, oxidized rhizospheres, concretions, nodules) within 6 inches of the soil surface.



**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. Location of Project:

44 Nagog Park (off Westford Lane, parcel B4-1)      Acton  
 a. Street Address      b. City/Town  
 \_\_\_\_\_  
 c. Check number      \$500  
 \_\_\_\_\_      d. Fee amount

2. Applicant Mailing Address:

Kirk      Ware  
 a. First Name      b. Last Name  
North Acton Treatment Corporation  
 c. Organization  
530 Great Road  
 d. Mailing Address  
Acton      MA      01720  
 e. City/Town      f. State      g. Zip Code  
978-263-6191      \_\_\_\_\_      tkware3@aol.com  
 h. Phone Number      i. Fax Number      j. Email Address

3. Property Owner (if different):

\_\_\_\_\_  
 a. First Name      b. Last Name  
 \_\_\_\_\_  
 c. Organization  
 \_\_\_\_\_  
 d. Mailing Address  
 \_\_\_\_\_  
 e. City/Town      \_\_\_\_\_      f. State      g. Zip Code  
 \_\_\_\_\_  
 h. Phone Number      i. Fax Number      j. Email Address

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).

**B. Fees**

Fee should be calculated using the following process & 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  
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 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
Inland Limited Project	1	\$500	\$500
Additional Local Fee		\$47.50	

**Step 5/Total Project Fee:** \_\_\_\_\_

**Step 6/Fee Payments:**

Total Project Fee:	\$500
State share of filing Fee:	\$237.50
City/Town share of filing Fee:	\$310.00
	a. Total Fee from Step 5
	b. 1/2 Total Fee <b>less</b> \$12.50
	c. 1/2 Total Fee <b>plus</b> \$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.

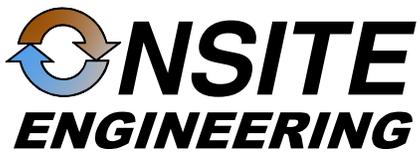
Department of Environmental Protection  
 Box 4062  
 Boston, MA 02211

- 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.

**To MassDEP 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.)

## **Section 2**

### **Figures**



Water, Wastewater and Stormwater Specialists

279 East Central Street  
Franklin, MA 02038

508-553-0616  
www.onsite-eng.com

**Aerial Locus Map**  
Nagog Park Sewage Pump Station  
Acton, Massachusetts  
North Acton Treatment Corporation

**FIGURE NO. 1**

Project No.: 01183  
Date: February 2013  
Approx. Scale: 1"=200'



### **Section 3**

#### **Narrative, Performance Standards & Waiver Request**

## *NARRATIVE*

The following narrative presents a brief background on the existing pump station, and introduces the purpose for and details of the proposed project. Following the narrative we discuss performance standards for protection of the resource areas and rare species in the vicinity of the project as well as providing an alternatives analysis for the project.

### *Background*

The existing Nagog Park sewage pump station is located along the north side of Westford Lane within the confines of the Nagog Park Development; see Figure No. 1, Aerial Locus Map. The pump station is situated in a previously disturbed area adjacent to the Nagog Park effluent disposal system (open sand beds). According to record property information, the pump station is located on the same parcel as the effluent disposal system, which is owned by the North Acton Treatment Corporation (NATC).

The existing pump station consists of a wet well in addition to a dry pit that houses the sewage pumps. The wet well accepts sewage flows via an 18-inch gravity sewer pipe. According to the manufacturer's records, the pump station dates back to June 1971. The station was originally provided with 20 horsepower pumps capable of delivering 400 gpm at 47 feet total dynamic head. The pumps are connected to a common 8-inch diameter force main that delivers sewage to the Nagog Park wastewater treatment facility.

In November 2007, MassDEP issued the NATC an Administrative Consent Order (ACO) requiring upgrades to its facility, repair of its pump stations, and removal of inflow and infiltration (non-sewage flows) entering the sewer system. NATC has been working to make the required upgrades, repairs, and removal of inflow and infiltration from its system. The replacement of the aging Nagog Park sewage pump station is the next project proposed to address the issues identified by MassDEP.

### *Proposed Replacement Pump Station*

The existing pump station is over 40 years old and lacks many of the control and operational features provided with new state of the art pump stations. The pump station is approaching the upper limit of its design life, and as such, has a greater relative possibility of failure and warrants replacement.

The proposed replacement pump station will consist of two below-grade pre-cast concrete chambers, the wet well and the valve chamber. The wet well will have exterior dimensions of 17 feet long, by 10 feet wide, by 13 feet tall; and the valve chamber will have exterior dimensions of 13 feet long, by 9 feet wide, by 7 feet tall. Both precast concrete chambers, shown on Drawing C-2, will be installed on a 6-inch bed of crushed stone.

Two sewer manholes and additional lengths of 18-inch diameter PVC gravity main, and 8-inch diameter PVC force main and appurtenances will also be installed. The pipe and manholes will connect the new pump station to the existing system. The existing pump station will be abandoned in place in accordance with MassDEP requirements.

In addition to the pump station components, an electrical enclosure with concrete pad, vent pipe, pipe bollards, and a swing gate are also being proposed. See Drawings C-1 and C-2 for locations and construction details. Specifications regarding excavation, earthwork, environmental protection, and required procedures specific and to this project have been included in Section 4 of this application.

### *Proposed Work within Areas Subject to the Act*

The wetland resource area depicted on the Drawing C-1 was delineated by B&C Associates and located on the survey by Stamski and McNary on October 23, 2012. The limits of the Bordering Vegetated Wetland (BVW) were delineated by flagging in the field and the flag locations are located on the site plan. The 100-foot buffer zone as well as the Town of Acton 50-foot natural vegetative area, and 75-foot no-build setback, are shown based on the surveyed flag locations.

The proposed work of this project is located almost entirely within the 100-foot buffer zone of a delineated Bordering Vegetated Wetland (BVW). Approximately 870 square feet of disturbance is proposed between the 100-foot buffer zone and the 75-foot no-build setback, with approximately 930 square feet of disturbance proposed between the 75-foot no-build setback and the 50-foot natural vegetative area. There is no work proposed within the 50-foot natural vegetative area, as well as no tree clearing or paving is proposed as part of this project.

While this site is not located within an Area of Critical Environmental Concern (ACEC) Outstanding Resource Water (ORW), or FEMA Flood Zone, and there are no potential or certified vernal pools in the vicinity of the project based on latest MassGIS information, 2008 Natural Heritage Endangered Species Program (NHESP) mapping shows that this site is located on the edge of both an Estimated Habitat of Rare Wildlife, and Priority Habitat of Rare Species as shown on Figure 2. We have contacted NHESP for information regarding the species of concern, which has not been confirmed at the time of this submission. Once received, the information provided by NHESP will be forwarded to the Conservation Commission and MassDEP to amend to this Notice of Intent. This Notice of Intent will be submitted to MESA concurrent to its submission to the Conservation Commission and MassDEP for a streamlined MESA review.

The Performance Standards following this narrative describe the measures proposed to protect the wetland resource area and the NHESP habitat areas. The construction materials and methods are also detailed in Environmental Protection (Section 01140) and Earthwork (Section 02200) of the specifications provided in Section 4 of this report. Should any additional measures be required by NHESP for the protection of the rare species, those requirements would be added to the Special Project Procedures (Section 01100) of the specifications. Additionally, the Order of Conditions

issued by the Acton Conservation Commission for this project will be appended to the specifications, and thereby will be required of the Contractor for fulfillment of his contract.



## *PERFORMANCE STANDARDS*

The proposed project will include work within 100-foot buffer zone to a BVW and identified NHESP habitat areas. The following discusses proposed measures to protect these environmentally sensitive areas.

### *Proposed Activities*

During construction, an area of approximately 1,800 square feet (s.f.) will be disturbed within the previously disturbed area. Dewatering activities are anticipated for this project during the installation of the proposed pump station and valve chamber. Included on the drawings and specifications are requirements that the contractor will adhere to during the course of the project.

In order to avoid impacts to the resource areas, we have considered avoidance of impacts, minimization of disturbances, and mitigation measures, in that order of priority.

Avoidance: No alteration of the bordering vegetated wetland is proposed as part of this project. All work is proposed to occur either within or outside the Town of Acton resource area and the buffer zone to the bordering vegetated wetland, with no work occurring within 50-foot natural vegetative area, as recognized by the Town of Acton. No appreciable increase in stormwater runoff is anticipated as a result of this project due to a majority of the proposed structures being buried, with no tree clearing or bituminous pavement being proposed.

Minimization: The work within the buffer zone and the NHESP habitat will be in areas that were previously disturbed and are currently maintained. Due to the nature of the pump station, much of the disturbance resulting from this project will be temporary, and the areas of disturbance will be returned to their pre-existing condition or better, upon completion of the project. The footprint of the disturbance will be limited to that which is required to install all components shown on Drawings C-1 and C-2. As stated in the project specifications, the Contractor will also be directed to stockpile excavated material and construction materials outside of the 100-foot buffer zone, and up-gradient of the installed silt fence.

Mitigation: Prior to commencing work, the Contractor will be required to install environmental controls as shown on the Drawings. Silt fence will be installed on the downslope side of the project area, as shown on Drawing C-1, to mitigate sediment flow into the wetland resource area. The project specifications and drawings detail the requirements for installation and maintenance of the silt fence. Excavation activities will be backfilled daily whenever practicable, and stockpiles will be required to be maintained in good order. After the work is completed, all areas will be restored to their pre-existing condition or better.

Dewatering activities will also be required as part of this project. The Contractor will be directed to use an acceptable sedimentation discharge control basin, such as that shown on Drawing C-1, or as directed by the Acton Conservation Commission. Requirements for installation and



maintenance of the sedimentation basin are detailed on the drawings, in the specification provided in Section 4, herein, and as required by the Acton Conservation Commission Order of Conditions.

Protection of Rare Species: The project as proposed will occur within a rare species habitat in existing areas of disturbance. As this is primarily a horizontal construction project (below grade), the rare species habitat will be occupied for a short period of time and minimal permanent structures will remain following construction. This site is also located on the boundary of the habitat areas, and does not propose removal of existing trees or a change in land use from the existing. The areas of disturbance will be returned to their pre-existing condition or better and the site maintenance and traffic will not change from existing. While the review of NHESP has not been completed at the time of this filing, given the nature, scope, and size, it is not anticipated that this project will result in a "take" of the species.

No Significant Adverse Impact: The project as proposed will be constructed in a previously disturbed upland area adjacent to a bordering vegetated wetland and on the border of NHESP habitat areas. Impacts to the buffer zone and habitat areas will be temporary and are not anticipated to adversely impact the resource areas or species in these habitats. The project will not result in an appreciable increase in stormwater runoff or change in land use.

## WAIVER REQUEST

In accordance with the Chapter F, Sub-Section F8.3 of the Town of Acton Bylaw, the 75-foot no-build setback requires that no driveways, roadways or structures be located closer than 75 feet from a wetland resource area without a waiver from the Conservation Commission. The site limitations have required that a portion of this project be located within the 75-foot no build setback, however outside the 50-foot natural vegetative setback. As a result, we are requesting a waiver for the work of this project located within the 75-foot no build setback, which is within the previously disturbed and maintained area previously described and shown on Drawing C-1.

In support of this waiver, we have prepared the following analysis of alternatives considered for this project to avoid construction within the 75-foot no-build setback.

### Option 1 – Forego Project

This project is being undertaken by the NATC to comply with an ACO issued by MassDEP. The proposed project addresses identified violations, and will bring the Nagog Park Development wastewater collection and treatment system closer to compliance. Taking no action to address MassDEP's requirements is not a viable opinion.

### Option 2 – Replace Components of the Existing Pump Station

The existing Nagog Park sewage pump station is over 40 years and old lacks many features of new pump stations and is close to its design life, thereby warranting that the station be replaced in its entirety. In addition, this style of pump station, with the pumps located in a subsurface structure with limited access, presents a confined space that requires special techniques by personnel when entering subsurface pit to access the pumps. Also, due to the overall lack of access, this presents difficulties in performing regular maintenance on the pumping equipment and obstacles if the pumps need to be replaced given the overall size of the existing pumps. Given this, the replacement of the pump station components is not a viable option.

### Option 3 – Install New Pump Station Elsewhere

The location of the new pump station was predicated upon being capable of constructing the new pump station while keeping the existing pump station in service in order to maintain flow conditions, meanwhile locating the pump station on land under the ownership of NATC. The existing pump station collects all sewage flows from the NATC service area via an 18 gravity sewer and directs the sewage to the WWTF. Due to the property boundary directly west of the existing pump station, the existing pump station's force main being located to the south of the existing pump station, and the NATC effluent disposal system being located to the east of the existing pump station, the new pump station must be located to the north of the pump station. While the area to the north is within the 75-foot no-build setback, this area of the site is previously disturbed and lacks woodland vegetation, thereby not requiring the removal of trees and mature vegetation within other areas. It

is anticipated that 890 square feet of the 75-foot no-build setback area will be disturbed temporarily and restored to its pre-existing condition.

The design of the pump station and its appurtenances was done as to minimize construction within the 75-foot no-build setback. However, due to the required configuration of the pump station, accessibility requirements, and required setbacks, avoidance of the 75-foot no-build setback in its entirety was not possible. Therefore, we request a waiver from the Conservation Commission for the work required within the 75-foot no-build setback.



## **Section 4**

### **Selected Specifications**

SECTION 01100  
SPECIAL PROJECT PROCEDURES

PART 1 GENERAL

1.01 SCOPE

- A. The work of this section includes the furnishing of all labor, materials, tools and equipment required by the Contractor to perform special requirements as specified herein.

1.02 VISIT TO THE SITE

- A. Before submitting a bid, the Contractor shall visit the site(s), examine existing conditions and thoroughly acquaint himself with the work effort required to perform the work.
- B. The Contractor shall study the drawings and compare the same with the information gathered during his examination of the sites, as no extra compensation will be authorized for extra work caused by his unfamiliarity with the site(s) and/or drawings or the conditions peculiar to this job.

1.03 GENERAL REQUIREMENTS

- A. The following general requirements shall be applicable to this project.
  - 1. All costs associated with locating, maintaining location marks, excavation, refilling, compaction, repairing utilities broken due to the Contractor's operations, time delays relative to existing utilities and all other work associated with utilities shall be included for payment under the applicable division of Item 1 in the DOCUMENT 00410, BID FORM.
  - 2. All costs associated with the legal disposal of excess materials shall be borne by the Contractor.
  - 3. Unauthorized excavations in rock or excavations made beyond or below the indicated or directed limits shall be refilled and compacted with common fill at no additional cost to the Owner.
  - 4. No additional payment will be made to the Contractor for corrective work associated with furnishing and installing bedding materials for refill of excavations carried to grades lower than specified. If inadequate dewatering methods employed by the Contractor cause softening of subgrade areas then the Contractor shall remove the unsuitable material and replace with appropriate backfill material at no additional cost to the Owner.
  - 5. No payment will be made for temporary shoring of trench walls utilizing trench boxes and/or steel plates.
  - 6. The Contractor shall carefully protect all trees marked to be saved. If error or negligence of the Contractor destroys such trees, the Contractor shall reimburse the Owner of the property, damages of Six Hundred Dollars (\$600.00) per inch of diameter measured four (4) feet from the ground surface.
  - 7. No additional payment will be made for the relocation or support of any obstruction encountered along the line of work unless otherwise specified.

8. The Contractor at his own expense shall provide water used for puddling and/or jetting, if allowed by the Engineer.
9. All costs associated with repairing settlement of trenches shall be borne by the Contractor.

#### 1.04 CHANGE IN AMOUNT OF WORK

- A. The Owner reserves the right to increase or decrease the amount of any item of the work listed as may be found desirable or necessary during the carrying out of this contract and the unit prices quoted shall apply without change to such variation in the quantity of each of the bid items to the extent provided by law.

#### 1.05 PROGRESS OF WORK

- A. The Contractor shall promptly start and continue actual construction work under this contract with the necessary equipment to properly execute and complete this contract in the specified time. No cessation of Contractor's operations will be allowed without the written approval of the Owner.
- B. The Contractor shall furnish to the Engineer a progress schedule for the work prior to the start of construction.

#### 1.06 WORK SEQUENCE AND COORDINATION

- A. The Contractor is directed to the fact that the Pump Station is an active sewage pump station. The intent of the design is to install, test and place the new sewage pump station into service prior to discontinuing/abandoning the existing pump station. As such, the Contractor shall consider in the preparation of their Bid and in their means and methods this design intent and the ability to maintain flow conditions afforded by the existing pump station throughout the project.
- B. Prior to ordering any materials and equipment for this project, the Contractor shall perform the proposed test pits, as shown on the Drawings, for the purpose of verifying the sewage collection system and force main locations and elevations.
- C. The Contractor shall be responsible for maintaining flow conditions throughout the project. The Contractor shall include in their Bid the services of a septage hauler, portable by-pass pump systems and all required appurtenances and connections to make a complete system, etc., as required to maintain flow conditions.
- D. The Contractor, after acceptance and placing the new pump station into service, shall be responsible for abandoning the existing pump station and components designated to be abandoned. This work shall include, but not necessarily limited to, cutting and sealing of gravity sewer to existing wet well and existing force mains, disconnection and removal of existing electrical service wiring, removal of salvageable equipment from pump station dry pit, pumping of wet well, and filling of wet well and dry pit with sand/soil.
- E. For the protection of life and property all backfill operations shall follow closely behind pipe laying and structure installation. The Contractor shall ensure that no excavation is left open, unguarded, or water filled during any period of time when work is not actually in progress. It is the purpose and intent that all excavations and backfill, including consolidation operations, and temporary surfacing within an area be accomplished expeditiously before proceeding to other work areas.

- F. Prior to initiating the work, the Contractor shall provide notice, in writing, to the Engineer notifying the Engineer of the Contractor's intent to begin the work. Prior to initiating the work, the Contractor shall provide a work schedule detailing the progression of the work. This work plan shall be reviewed and approved by the Engineer and Owner.
- G. The Owner reserves the right to schedule the Contractor to construct at any locations within the project area. At the same time the Owner may schedule the suspension of construction at any location.
- H. The Contractor's attention is directed to the fact that cleanup/restoration of all disturbed areas shall be completed each and every week throughout the duration of the project.
- I. The Contractor shall take all precautions necessary, including having spill kits available in sufficient numbers, to address any spill/leakage of fluids that would adversely affect water quality of the surrounding area. Additionally, the Contractor and their sub-contractors shall not utilize any materials, chemicals, etc. that could contaminate the groundwater and surrounding aquifer.
- J. The Contractor's attention is directed to the fact that blasting of ledge is NOT allowed on this project.
- K. Contractor shall coordinate location of material staging area with Owner prior to commencing the work.

#### 1.07 UNDERGROUND FACILITIES

- A. The location and size of the existing sewers, drains, culverts, water mains, gas mains, cables, service pipes, and other utilities shown on the Drawings, were obtained from the results of surveys and existing records and are shown as approximate only, to guide the Contractor in the preparation of his Bid. The various utility companies will determine the location and depth of existing utilities by marking them out upon the ground and by experimental excavations by the Contractor prior to and as the work progresses. The drawings do not show the exact location and depth of all utilities, nor do they show all utilities or the number of lines for each utility that may be encountered.
- B. The Contractor shall assume that there are existing utility connections to each and every building or structure along the line of work, whether they appear on the Drawings or not. The Contractor shall notify the proper utility companies and obtain and preserve the location as marked for all existing utilities that may be encountered along the line of work, until such time as such markings are no longer required.
- C. Experimental trench excavations are to be made prior to commencing pipe laying operations. The Contractor shall dig by hand in advance of the trenching machinery to determine the exact location and depth of each utility to be encountered. Excavating machinery shall be stopped prior to each side of the utility to be crossed and the Contractor shall tunnel by hand around these utilities after he has ascertained their exact location and depth.
- D. All utilities interfered with or damaged shall be properly restored immediately, by the Contractor. The Contractor shall carefully bed, tamp and fully consolidate refill material around and under all existing utilities encountered or crossed unless otherwise shown on the Drawings.

- E. The Contractor is advised that protection of all existing utilities in the vicinity of the project, and the assurance of uninterrupted service during the construction period are imperative.
- F. In the event that operations undertaken by the Contractor under this contract result in damages to existing utilities, all necessary repairs to damaged utilities shall be executed by the Contractor. The Contractor shall provide all necessary materials, equipment and labor necessary to satisfactorily repair damaged utilities.

#### 1.08 MATERIAL AND EQUIPMENT STORAGE

- A. The area designated for storage of materials and equipment shall be approved by the Engineer, Owner and Acton and Littleton Conservation Commissions during the Pre-Construction Meeting. Preliminary areas have been shown on the Drawings for the Contractor's benefit in preparation of their Bid.

#### 1.09 DISPOSAL OF EXCESS MATERIAL

- A. All surplus suitable material removed from the excavations not required for re-use in the work and all unsuitable material removed from the excavations shall be legally disposed of by the Contractor.

#### 1.10 PERMITS, FEES AND BONDS

- A. The Contractor, and their sub-contractors, shall obtain and comply with all required permits, pay all fees and provide all bonds necessary to complete the work as specified. The Contractor shall be solely responsible for performing any necessary acts and providing any materials required in order to comply with any and all terms and conditions set forth in any permits and licenses.
- B. The Contractor's attention is directed to the fact that the following permits have been obtained for this project. The Contractor is responsible for obtaining, reviewing, and complying with all requirements of said permits.

1. Order of Conditions, Town of Acton Conservation Commission

#### 1.11 HOURS OF OPERATION

- A. The Contractor including all subcontractors, material, workers, and all other relating to this project shall conform to the following work schedule.
  1. No outdoor activity on or adjacent to the site will be permitted before 7:00 a.m. or after 3:30 p.m., unless other arrangements are made with the Owner.
  2. All outdoor activity shall be confined to Monday through Friday except for emergency conditions which, if practical, shall be reviewed and approved by the Owner.

#### 1.12 TWENTY-FOUR HOUR EMERGENCY SERVICE

- A. The Contractor shall maintain a 24-hour, 7-day a week telephone service. The Contractor's emergency personnel and equipment shall be within 30 minutes travel time to the project site(s) in order to handle emergency requirements such as, but not limited to, settled trenches, clogged drains, and rain damage and/or any other emergency situation. A list of the personnel and their telephone numbers, and cell phone numbers, shall be submitted to the Engineer, the Owner and to the local Police and Fire Departments.

- B. This requirement shall apply during the entire length of the project. This list shall be submitted on the Contractor's letterhead and shall state that should an emergency arise during the implementation of this project, these people are to be contacted. The Contractor shall submit this letter to the Engineer prior to initiating construction.

#### 1.13 PRE-CONSTRUCTION VIDEO

##### A. Video Taping

1. Prior to the start of construction in any given area, the Contractor shall, at his own cost, videotape, in color, the project site(s). Video shall be digital MPEG format, as determined by the Engineer. Particular attention shall be made to the existing condition of road surfaces, curbing, berms, sidewalks, driveways, survey bounds, landscaped areas, and any other items which might be affected by his work.
2. The video shall be of good quality and audio descriptions of existing conditions clear and concise. A copy of completed video shall be furnished to the Engineer prior to the start of construction to check for visual and audio quality. Two copies of each video shall be submitted to the Engineer in electronic format on a DVD-CD. Any video furnished which, in the opinion of the Engineer, are of poor quality or incomplete, shall be redone at no additional cost to the Owner.

#### 1.14 DISPOSAL OF DEBRIS

- A. During the prosecution of the work, the Contractor shall maintain the work site and adjoining areas in a neat and orderly manner and shall not allow the accumulation of construction debris. A rubbish container shall be kept at the site at all times and be emptied as required to prevent odors and vermin.
- B. The Contractor shall remove all debris from the site and legally dispose of the debris in accordance with Federal/State/Local Regulations. Should the Contractor neglect or refuse to maintain the site free of accumulated debris, the Owner reserves the right to have the service performed by others and cost thereof deducted from monthly progress payment requests.
- C. At the conclusion of the work, the Contractor shall remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures, and any other refuse remaining from the construction operations, and shall leave the entire site of the work in a neat and orderly condition.

#### 1.15 RECORD DRAWINGS

- A. During the course of the work, the Contractor and applicable subcontractors shall continually maintain a set of legibly marked up prints, drawings and sketches showing any changes made during the construction process. The Contractor, following completion of work, shall incorporate this set of prints into one complete set of Mylar drawings. The Contractor shall make any revisions required by the Engineer in order to make the drawings complete. After acceptance by the Engineer, the reproducible Mylars shall be given to the Engineer.
- B. These record drawings shall be completed in every way and shall show the full extent of the executed work. Special attention shall be given to concealed work, which would be difficult to measure at a later date. Change orders, addenda items and field changes should be noted where applicable. Additional specific

requirements relative to record drawings may be called for in the individual sections of these specifications.

#### 1.16 DETOURS AND ROAD ACCESSIBILITY

- A. During the course of the work, it is reasonably anticipated that the installation of the wet well and new pump station will require a crane, which may require the closing and/or limited access along Westford Lane. Prior to initiating this work, the Contractor shall contact the responsible heads of the Fire, Police, and other appropriate governing bodies, in order to obtain all necessary permits and determine the requirements of these governing bodies, with regards to traffic control and environmental safety.
- B. Wherever detours are permitted, the size, construction and location of signs shall conform to local and state requirements and/or standards. Detour routes shall be adequately posted to assist the motorist to return to his route of travel. Where the roadway under construction is the only means of vehicular access to a particular area, the Contractor shall provide continual access to the area for residents and emergency vehicles.
- C. The Contractor shall maintain accessibility to the existing residential and commercial parcels along Westford Lane throughout the duration of the project.

#### 1.17 UNIFORMED POLICE OFFICERS

- A. Payment of uniformed police officers used for pedestrian and vehicle control on this project will be paid for directly by the Contractor. All requests for police details shall be made by the Contractor. The Contractor's involvement shall include Contractor's input as to traffic control requirements and canceling of planned details.
- B. The Contractor is advised that uniformed traffic police be paid a four hour minimum. If arrangements have been made for uniformed traffic police and inclement weather or other factors prohibit work, the Contractor will be responsible for contacting the Police Department no later than 5:30 a.m. of the day of scheduled work to cancel the police detail.
- C. Should the Contractor fail to notify the Police Department as required, the Contractor shall assume all costs for the four hour minimum police details not canceled in time.

#### 1.18 INITIAL OPERATION OF NEW FACILITIES

- A. Initial start-up of new facilities shall not commence until all of the manufacturers services, checkout, and training have been completed.
- B. The Contractor shall provide the initial fill all tanks with potable water which shall be utilized for start up of the facility.
- C. The Contractor shall perform a one-hour simulated run of all equipment and all defects shall be corrected by the Contractor prior to placing equipment into initial operation.
- D. The Contractor shall be responsible for purchasing and providing all labor, power, operations, and maintenance during initial start-up until the Owner has accepted the equipment as substantially complete at no additional cost to the Owner.

## 1.19 ORDER OF CONDITIONS

- A. The Contractor's attention is directed to the fact that the project is subject to Orders of Conditions from the Towns of Acton Conservation Commission for work within the Wetland Buffer Zones, and resource areas protected under the Wetlands Protection Act. The Contractor shall be responsible for reviewing and complying with all aspects of the Orders.
- B. The Contractor's attention is directed to the fact that the Orders of Conditions detail construction schedule, project requirements, and notification requirements for performing the work. The Contractor shall take the requirements of the Order of Conditions into consideration upon producing the construction schedule and preparation of their Bid.
- C. The Contractor shall maintain at the project site throughout the duration of the Project a Universal Spill Kit (30 gallon minimum) to address spills associated with sewage and petroleum based products.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

SECTION 01140  
ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.01 SCOPE

- A. The work covered by this section includes the furnishing of all labor, tools, equipment and materials necessary to perform all work necessary or as may be required to prevent environmental damage and/or pollution to wetland resource areas during and as a result of construction operations under this Contract.
- B. All work shall conform to the requirements stated herein and to the requirements of the regulatory agencies having jurisdiction over the areas of work.

1.02 MEASUREMENT AND PAYMENT

- A. Measurement and payment for work described in this section will be made in accordance with the provisions of SECTION 01025, MEASUREMENT AND PAYMENT.
- B. The Contractor shall comply with all requirements of the Notice of Intent and/or as specified by the Conservation Commission in the Order of Conditions at no additional cost to the Owner.

1.03 SUBMITTALS

- A. Shop Drawings and brochures shall be submitted for all items to be furnished in accordance with the provisions of the General Conditions and the Supplementary Conditions of the Contract Documents.
- B. Submittals required under this section include, but are not limited to the following:
  - 1. Grass seed.
  - 2. Siltation fence.
  - 3. Woven netting.
  - 4. Geotextile material.
  - 5. Erosion control blanket.
  - 6. Catch basin inserts.
  - 7. Sedimentation bags.
  - 8. Compost Socks.

1.04 IMPLEMENTATION AND COMPLIANCE

- A. The Contractor shall meet with the Conservation Commissions, if required, regarding requirements of the execution of, and compliance with the Orders of Conditions. The Contractor shall familiarize himself with the nature of work to be performed and the extent and peculiarities of the wetland resource areas in the project area as shown or described in the Notice of Intent and/or specifications.

- B. All work shall be done in compliance with the Notice of Intent or as specified by the Conservation Commissions in the Orders of Conditions. Failure to comply with these provisions shall constitute grounds for the Conservation Commission ordering work to cease until such provisions are met.
- C. Any work conducted in violation of the Orders of Conditions shall cease upon receipt of an Enforcement Order issued by the Conservation Commission(s). Failure to comply with the Orders of Conditions may constitute grounds for legal action.
- D. The requirements specified hereinbefore and in the Orders of Conditions, shall be considered as minimum, and may be supplemented, altered or deleted in whole or in part by the appropriate regulatory agencies based on actual site conditions. The Contractor is advised that control devices may be required outside of the limits of designated buffer zones to protect wetlands and/or water resource areas, if the proposed construction will tend to alter or be detrimental to these areas. The Contractor shall maintain additional hay bales and sedimentation control devices on the site throughout the duration of the Project.

#### 1.05 AREAS OF WORK

- A. The Contractor shall confine his construction operations to those areas designated or defined by the Drawings. The Contractor shall not occupy adjacent public or private property without the express written approval of the Owner, abutters, or the appropriate regulatory agencies having jurisdiction.

#### 1.06 LOCATION AND STORAGE OF MATERIALS

- A. No earthen materials shall be dispersed or stockpiled in any wetland resource area unless specifically allowed in the Orders of Conditions. No excavated materials, except that which is to be reused for backfilling, shall be deposited within 100 feet of any watercourse, wetlands area or drainage facility without the express written approval of the Conservation Commission(s).
- B. Materials rejected by the Engineer for use in the backfilling operation shall be removed and legally disposed of.
- C. Adequate protective measures shall be taken to prevent the erosion of stockpiled material and resultant sedimentation of adjacent watercourses, wetland areas or drainage facilities, during the course of constructing the work.

#### 1.07 CLEARING, GRUBBING AND STRIPPING

- A. The Contractor shall limit his clearing, grubbing and stripping operations to the minimum necessary to facilitate work. Specific limits of work in wetland resource areas may be individually defined within the Notice of Intent, Orders of Conditions and/or as specified by the Conservation Commission or their designee.
- B. It is the intent under this Contract to minimize the land area, which is to be exposed and free from vegetation during construction, and the Contractor shall schedule his operations accordingly. In areas where topographical and/or drainage conditions require their use, temporary vegetation, siltation control measures as approved by the Conservation Commission(s) (silt fence, compost socks, hay bales), or other protective devices shall be used to prevent erosion.
- C. Prior to the start of any work in defined wetland resources or their buffer zones, the Contractor shall install siltation barriers. Unless otherwise recommended by the Conservation Commission(s) or their designee, compost socks shall be used

wherever the Drawings require a siltation barrier. In cases where field conditions necessitate, a siltation fence may be required and/or the use of siltation fence with hay bales, if approved in writing by the Conservation Commission(s).

## 1.08 PROTECTION OF WATER RESOURCES

- A. The Contractor shall not discharge fuel oil, sewage, septic waste or other deleterious substances into streams, groundwater supplies or wetlands areas. The storage of fuel oil, refueling of equipment and lubrication of equipment shall be restricted to designated areas outside of all wetland resource areas and their buffer zones or areas approved by the Conservation Commission(s). The Contractor shall report any spillage of deleterious substance (fuel oil, lubricants, septic waste, etc.) to the Owner and appropriate regulatory agency and appropriate measures taken, as determined by the regulatory agency, to contain and to clean up the affected areas.
- B. Any water that is pumped or bailed from the excavations shall be conveyed by conduit or hose to points of discharge. Water shall be filtered through sedimentation barriers/bags, constructed in such a manner so as to minimize velocities of discharge and to contain silt. Sedimentation barriers/bags shall be cleaned and/or replaced periodically to ensure effective control and protection of wetlands and water resource areas.

## PART 2 PRODUCTS

### 2.01 MATERIALS

- A. Grass seed for temporary erosion control shall be Annual Ryegrass, unless otherwise specified by the Conservation Commission.
- B. Hay bales for mulching, slope protection, and for use as sedimentation traps in borrow areas and as barriers in drainage swales shall conform to the details shown on the Drawings.
- C. Siltation fence shall be made of 15 mil reinforced polypropylene (3.5 ounce per square yard). It shall have a water flow rate of 7 gallons per minute per square foot. The apparent opening size shall be 36-50 (U.S. Standard Sieve). Fabric shall be stable against ultraviolet radiation. Fabric width shall be 3 feet with netting and tension cord on 1-1/2 inch by 1-1/2 inch by 48-inch posts. Siltation fence shall be Geotex 914SC as manufactured by Synthetic Industries, or equal.
- D. Woven netting or "jute mesh" shall be "Ludlow Soil Saver", as manufactured by the Ludlow Corp., or similar product as manufactured by Advanced Netting Co., or "Jute-Net" as manufactured by Bemis, Inc.
- E. Geotextile material for sedimentation basin shall consist of a woven or non-woven fabric made from polypropylene. The fabric shall be non-rotting, acid- and alkali-resistant and inert to organic chemicals commonly encountered in soils.
- F. Erosion control blanket shall be SC150 as manufactured by North American Green or equal.
- G. Catch basin inserts shall be a Siltsack as manufactured by ACF Environmental or approved equal. Siltsack shall be provided with lifting straps and shall adequately fit the catch basin. Siltsack shall have a flow rate of 40 gpm/sf, grab tensile strength of 300 lbs., elongation of 20%, Mullen burst of 800 psi, apparent opening of 40 US sieve, and puncture strength of 120 lbs.

- H. Sedimentation bags shall be as manufactured by SI Geosolutions or approved equal. Sedimentation bag shall be manufactured of polypropylene nonwoven geotextile and shall accommodate a 6 inch discharge hose with straps to secure the discharge hose.
- I. Compost socks shall be 100% organic burlap or other approved biodegradable material, and will become incorporated with the organic interior material. Organic matter content shall be between 20-100% (dry weight basis) as determined by ASTM D2974 (method A) Standard Test Methods for Moisture, Ash and Organic Matter of Peat and Other Organic Soils. Moisture content shall be <150% by dry weight (<60% by wet weight) as measured by ASTM D2216 Standard Test Method for Laboratory Determination of Water Content of Soil and Rock and ASTM D2974 (cited above). Soluble salts in the organic interior material shall be <5.0 mmhos/cm, and the pH of same shall be between 5.5 and 8.0.

Particle size as measured by sieving shall be as follows:

Sieve Size	% Passing
75 mm	100%
19 mm	70-100%
#4	30-75%
#20	20-40%

### PART 3 EXECUTION

#### 3.01 RESOURCE AREA WORK

- A. Protective measures shall be used around catch basins (i.e., Siltsacks). After project completion, accrued silt shall be removed from the roadway and legally disposed of and catch basin sumps shall be cleaned.
- B. Erosion control barriers adjacent to wetland resources as delineated on the Drawings shall be used as previously specified herein.
- C. Any water that is pumped or bailed from excavations shall be discharged to the ground without the direct unfiltered reentry to a wetland resource area. If this is not possible, dewatering fluids shall be filtered through sedimentation bags, or other filtering device as approved by the local Conservation Commission(s), placed in such a manner so as to minimize velocities and to minimize the silt content of discharge to streams or other wetland resource areas. Discharges from sedimentation bags to a wetland resource area shall have sheet flow. Contractor shall be responsible for the legal disposal of sedimentation bags.

#### 3.02 DEWATERING CONTROL FACILITIES

- A. The Contractor shall be responsible for constructing and maintaining all necessary channels or other protective works; shall furnish all materials required therefore; and shall furnish, install, maintain, and operate all necessary pumping facilities for dewatering the various parts of the work and for bypassing stream flows and for maintaining other parts of the work free from water as required for construction. After having served their purpose, all control facilities and other temporary protective works shall be removed and or leveled so as not to present an unsightly appearance and interfere in any way with the watercourse or resource areas.
- B. No direct discharge into any wetland and/or resource area shall be allowed. Where required, discharge water shall be piped to a sedimentation bag or as

otherwise approved by the local Conservation Commission(s). Such installations shall ensure the inviolability of all natural waterways or other wetland resource areas and shall not cause excessive siltation or negative impacts on wetlands or water resource areas.

- C. Upon completion of work, trapped sediment shall be removed from the project and shall be legally disposed of. Sedimentation bags shall then be legally removed from the construction site. The area previously covered by the bag shall be re-graded and re-vegetated.

### 3.03 EROSION AND TURBIDITY CONTROL

- A. The Contractor shall take every precaution to minimize and control erosion and turbidity within the project area. These precautions shall be subject to approval by the Conservation Commission(s) and shall include, but not necessarily be limited to, the following:
  - 1. Stockpiles of excavated materials in buffer zones as well as exposed cut and fill slopes shall be kept to minimum gradients whenever possible. During the construction period, these areas shall be protected with mulch, netting, grass seed or combination of the above to slow down the rate of surface run-off and to reduce the volume of suspended solids in the run off water.
  - 2. Siltation barriers shall be staked in place down gradient from all exposed borrow areas or material storage areas in order to reduce the amount of suspended solids in runoff water. The exact location of the siltation barriers may vary from that shown on the Drawings or in the Notice of Intent and may require adjustment in the field as work progresses. The Contractor shall promptly remove any sedimentation buildup over six inches in depth that accumulates behind the siltation barriers. Barriers shall be checked after every storm and at regular weekly intervals.
  - 3. Siltation barrier shall be installed with wooden stakes in accordance with manufacturer directions. Bottom 6 inches of fabric shall be toed in or backfilled so that top of fabric shall be 2 feet 6 inches above finish grade.

### 3.04 FLOOD FLOWS

- A. The Contractor is advised that stream flows and water levels of wetland and water resource areas may vary substantially due to climatic and seasonal conditions. The Contractor shall be responsible for controlling and handling ground and/or surface water regardless of the volume of water and regardless of whether this flow is due to floodwaters from storms.

END OF SECTION

SECTION 02160  
SHEETING, BRACING AND DEWATERING

PART 1 GENERAL

1.01 DESCRIPTION

- A. The work of this Section includes all labor, materials, tools, equipment, accessories and appurtenances necessary to satisfactorily complete all excavation sheeting, bracing and dewatering not specified elsewhere, and all incidental and appurtenant work pertaining thereto, as specified herein, as shown on the Drawings, or as directed by the Engineer.

1.02 RELATED WORK SPECIFIED ELSEWHERE

Section 01140	Environmental Protection
Section 02200	Earthwork
Section 02625	Polyvinyl Chloride Sewer Pipe
Section 02631	Polyvinyl Chloride Force Main
Section 02725	Sewer Manholes
Section 11307	Sewage Pump Station

1.03 MEASUREMENT AND PAYMENT

- A. Payment for work described in this section will be made in accordance with the provisions of Section 01025, General Requirements.

1.04 DESIGN CRITERIA-NOT USED

1.05 PRODUCT HANDLING-NOT USED

1.06 SUBMITTALS-NOT USED

1.07 SPECIAL REQUIREMENTS

A. General

1. It is expected that structure and/or utility excavation may require dewatering by well point systems, pumping from sumps or deep wells and may require the installation of sheeting and bracing. At least 30 days prior to an anticipated date of starting work in the area of these structures, the Contractor shall submit to the Engineer certification that plans, specifications and computations for this work have been prepared by a Geotechnical Engineer (experienced in this type of work and a registered professional engineer in the State in which the work is to be performed).
2. The Contractor shall pay special attention to areas where difficult soil and groundwater conditions are anticipated and may evaluate the subsoil conditions in these areas from the subsoil data provided within this document or by other means.

3. The Contractor and his consultant shall be responsible for the sufficiency of excavated support and dewatering. The Contractor and his consultant shall make any and all necessary changes and/or modifications to both the plan and actual in-the-field procedures should field conditions change or prove to be different from those anticipated prior to construction.
4. All risks of error or omission shall be assumed by the Contractor.

B. Excavation Support System

1. The Contractor shall furnish, put in place, and maintain sheeting and bracing or other means, required to support the sides of the excavation and prevent loss of ground which could endanger lives, damage or delay the work or endanger adjacent ground, structures, or utilities. Sheeting and bracing shall be of adequate size and strength for the conditions encountered and the work being done, and shall conform to all local State and Federal requirements. The Contractor shall be fully responsible for the sufficiency of such sheeting and bracing.
2. The Contractor shall be responsible for the installation of the sheeting and bracing.
3. All sheeting and bracing not left in place shall be removed in such manner as not to endanger the construction of other structures, utilities or property.

C. Dewatering

1. The Contractor shall provide, operate, and maintain all pumps, piping, wellpoints, deep wells and whatever other equipment as may be required to control and collect groundwater and surface water to complete the proposed installation. The Contractor shall demonstrate compliance with this requirement by means of groundwater observation wells, when requested by the Engineer. The pumping and dewatering operations shall be carried out in such a manner that no loss of ground or disturbance to foundation bearing soils will result from the dewatering operations. Dewatering shall continue and be maintained until such time as the structure is stable against hydrostatic uplift.
2. Contractor shall, if required, submit certification (as detailed in Paragraph A-1 above) that dewatering operations have been coordinated with sheeting and bracing operations.
3. No discharge directly into any water body will be allowed; discharge water shall be piped to an area approved by the Engineer. Such an area shall ensure the inviolability of all natural waterways, and shall not cause siltation or other negative impact on such.

1.08 PROTECTION

- A. The Contractor's attention is directed to the fact that they shall prevent siltation of any water bodies from run-off and/or pumping operations associated with his construction operations, through the use of hay bales, siltation fences or other methods approved by the Engineer. Specific requirements on erosion and siltation control are outlined in Section 01140, Environmental Protection.

END OF SECTION

## SECTION 02200

### EARTHWORK

#### PART 1 GENERAL

##### 1.01 SCOPE

- A. The work of this Section includes the furnishing of all labor, materials, tools, equipment, accessories and appurtenances necessary to satisfactorily complete all stripping of topsoil, excavation of earth and rock, stockpiling, removal of unsatisfactory materials, backfilling, filling, compaction, and grading not specified elsewhere, and all incidental work pertaining thereto within the limits of the work indicated or required as specified herein.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

Section 02625	Polyvinyl Chloride Sewer Pipe
Section 02631	Polyvinyl Chloride Force Main
Section 02725	Sewer Manholes
Section 03400	Precast Concrete Structures
Section 11307	Sewage Pump Station

##### 1.03 MEASUREMENT AND PAYMENT

- A. Measurement and payment for the work described in this section will be made in accordance with the provisions of SECTION 01025, MEASUREMENT AND PAYMENT.

##### 1.04 DESIGN CRITERIA – NOT USED

##### 1.05 PRODUCT HANDLING - NOT USED

##### 1.06 SUBMITTALS

- A. Submit six complete sets of shop drawings to the Engineer in accordance with the General Conditions and the Supplementary Conditions of the Contract Documents.
- B. Submittals required under this section include, but are not limited to, the following:
  - 1. Materials Testing Results
  - 2. Materials Brochures
  - 3. Temporary Earth Support Certification Letter
  - 4. Control of Water Certification Letter
  - 5. Soil Testing Reports

##### 1.07 PROTECTION OF WORK

- A. The Contractor shall be responsible for complying with all aspects MGL. 82A – Excavation and Trench Safety (a.k.a, Jackie’s Law) and 520 CMR 14.00. Prior to any excavation, the Contractor shall apply for and obtain a Trench Excavation Permit from the Local Approving Authority.

- B. The Contractor shall prosecute the work so that no damage occurs to adjacent utilities, structures, property, or any other installation located in or adjacent to work areas. Damaged utilities shall be repaired with similar or better materials of the same size and to the requirements of the utility owner. The Contractor shall have on site the necessary manpower, materials and equipment such as pumps, piping, and the like as required to protect and maintain uninterrupted flows in existing utilities during construction.
- C. The finished subgrade shall not be disturbed by traffic or other operations and shall be maintained by the Contractor in a satisfactory condition until the finished surfaces are placed. Until the subgrade has been observed by the Engineer, no pavement materials shall be installed thereon.
- D. The Contractor shall take whatever steps necessary to prevent catch basins and drain lines from receiving silt and sediment washed from project work areas. The Contractor shall clean out catch basins and drain lines that have not been successfully protected.
- E. Excavating equipment shall be of such size and type, and used in a manner, that will not damage existing items such as but not limited to paved surfaces, utilities, structures, trees.
- F. Excavations shall be kept free from water, snow and ice during construction. Bedding and backfill material shall not be placed in water. Water shall not be allowed to rise upon or flow over bedding and backfill material.
- G. The Contractor shall maintain all benchmarks, monuments and other reference points and, if disturbed, shall replace them at no additional cost to the Owner.

## PART 2 PRODUCTS

### 2.01 MATERIALS

- A. Fill materials, meeting the following requirements, shall be used in the areas shown on the Drawings or where specified herein. Fill materials may be obtained from either on-site excavations or from off-site sources as appropriate.

### 2.02 COMMON FILL

- A. Common fill shall be granular material, consisting of hard, sand and gravel with less than thirty-five (35) percent passing the No. 200 sieve, when tested in accordance with ASTM C136 and ASTM C117 and shall be free of organic matter, trash, roots or other deleterious material.
- B. Common fill material shall contain no stone measuring greater in any dimension than two-thirds of the loose lift thickness or eight (8) inches whichever is smaller. Common fill material shall be capable of forming a firm, stable base when spread and compacted. In addition, the common fill shall be non-plastic (plasticity index zero, defined as liquid limit minus plastic limit). Any materials, excavated from the site, not conforming to this common fill specification, shall be legally disposed of by the Contractor and replaced with approved material, as required, at no additional cost to the Owner.

### 2.03 GRAVEL FILL/BORROW

- A. Gravel fill shall consist of hard, durable gravel and sand, free from trash, organic matter and clay, surface coatings, and other deleterious materials.
- B. Gravel fill shall have a maximum stone size of eight (8) inches. Gravel fill used for pipe installation shall have a maximum stone size of 2 inches for pipes larger than 6 inches and a have a maximum stone size of  $\frac{3}{4}$ " for pipes 6 inches and smaller. That portion passing four (4) inch sieve shall meet the following gradation requirements, as determined by ASTM C136 and ASTM C117:

U.S. Sieve Size	Percent Passing
4 inch	100
1/2 inch	50-85
No. 4	40-75
No. 50	8-28
No. 200	0-10

### 2.04 CRUSHED STONE

- A. Crushed stone shall consist of clean, crushed, non-porous rock, or crushed gravel, uniformly blended.
- B. Crushed stone shall meet the following gradation requirement as determined by ASTM C136 and ASTM C117.

U.S. Sieve Size	Percent Passing
1 inch	100
3/4 inch	90-100
1/2 inch	10-50
3/8 inch	0-20
No. 4	0-5

### 2.05 STRUCTURAL FILL

- A. All fills under a structural concrete slab, under concrete footings and foundations, under precast concrete where fills are required, and for backfill around concrete structures up to the elevation of adjacent mats, floor slabs and spring lines of pipe penetrations in a structure wall shall be structural fill.
- B. On site materials are generally not suitable for use as structural fill. Structural fill shall be obtained from an approved off-site source.
- C. Structural fill shall consist of hard, durable sand and gravel, free of organic matter, surface coatings, and other deleterious materials. Soil finer than the No. 200 sieve shall be non-plastic. Structural fill shall meet the following gradation requirements:

U.S. Sieve Size	Percent Passing
3 inch	100
½ inch	50-100
No. 4	35-90
No. 16	20-70
No. 50	5-45
No. 200	0-8

2.06 DENSE GRADED CRUSHED STONE (Gravel Drive Restoration)

- A. Dense graded crushed stone shall consist of crusher-run coarse aggregates of crushed stone or gravel and fine aggregates of natural sand or stone screenings uniformly premixed.
  - 1. Coarse aggregate shall consist of hard, durable particles or fragments of stone. The percentage of wear by the Los Angeles test shall not be more than 45.
  - 2. Fine aggregate shall consist of natural or crushed sand.
- B. The composite material shall be free from clay, loam or plastic material and shall have the following gradation:

U.S. Sieve Size	Percent Passing
2 inch	100
1-1/2 inch	70-100
¾ inch	50-85
No. 4	30-55
No. 50	8-24
No. 200	3-10

2.07 FILTER CLOTH AND STABILIZATION FABRIC

- A. Filter cloth shall be Mirafi 140N, Carthage Mills FX-40HS, Amoco 4545 or equal.
- B. Stabilization fabric shall be Polyfelt TS700, SUPAC 9NP or equal.

PART 3 EXECUTION

3.01 PREPARATION

- A. Stripping
  - 1. Prior to any excavation, filling, or grading operations, all topsoil and subsoil or similar organic soils found within the Limit of Work line shall be stripped to their full depth in the area of all structures and in all areas required to be filled, excavated or graded.
  - 2. Stripped materials suitable for re-use as loam shall be stockpiled. Stockpiles shall be kept separate and not mixed with other materials. Excess stripped materials and unacceptable materials shall be legally disposed of off-site by the Contractor unless otherwise specified.

## B. Pavement Cutting

1. Where excavations are to be made in paved or surface treated areas, the pavement shall be cut with a pavement saw or wheel cutter prior to excavation unless otherwise noted.
2. In areas where the trench width is greater than the original cut, the pavement shall be re-cut prior to paving.

## C. Clearing and Grubbing

1. After all easements have been staked out, the Contractor shall clear and grub all trees, shrubs, brush, stumps, roots and other objectionable material within the minimum area required for construction. In no case shall clearing and grubbing be extended beyond the easement or limit of work lines.
2. Any tree marked to be saved shall be carefully protected and if such a tree is destroyed by error or negligence, the Contractor shall reimburse the Owner of the property, damages of Six Hundred Dollars (\$600.00) per inch of diameter measured four (4) feet from the ground surface or replaced in kind. Trees shall be pruned whenever possible. All tree material four inches and greater in diameter shall be cut in eighteen (18) inch lengths and stockpiled on each property of the individual landowner unless rights to the material are given to the Contractor in writing by the landowner.
3. The Contractor shall legally dispose of all other materials, rubbish and debris generated by the clearing and grubbing operation.

## 3.02 EXCAVATION

### A. General

1. Excavation shall consist of the removal of soil, rock, and other materials to the limits shown on the Drawings, specified herein, and as required to provide firm bearing. No structures, pavements, utilities or fill materials of any kind shall be placed in, or upon excavated areas until such areas have been observed by the Engineer.
2. Rippable rock shall be considered earth excavation. Rippable rock is defined as rock which can be excavated using a single tooth hydraulic ripper pulled by a D8 Dozer or equivalent equipment.
3. Excavated materials meeting the requirements for the various fill materials specified herein shall be stockpiled for reuse. Unsuitable or Excess suitable materials shall be legally disposed of off-site by the Contractor unless otherwise specified.
4. Excavation shall be to the limits as necessary to install foundations, utilities, pavement or other facilities unless otherwise specified. Excavation of unsuitable material beyond the limits necessary shall only be performed as authorized by the Engineer.
5. The proposed contour lines and spot grades shown on the Drawings are finish elevations. Excavation to subgrade shall be the distance below these elevations as may be required by the size and thickness of pavements, structures, utilities and surface treatments as shown on the Drawings, details and sections, or as specified herein.

6. Over-excavation beyond the specified or detailed limits shall be backfilled and properly compacted by the Contractor and at no additional cost to the Owner.
7. No spread foundations shall be founded partially on rock and partially on soil. In this event the rock shall be excavated to a minimum depth of twelve (12) inches below the bottom of foundation and compacted gravel fill placed to the bottom of foundation unless otherwise shown on the Drawings.
8. Excavating equipment shall be of such size and type, and operated in a manner, that will not damage items such as, but not limited to, existing paved surfaces, utilities, structures and trees. Rubber tired equipment shall be used for work in all paved areas in order to minimize damage to pavement. This is a requirement of the Owner and should not be construed as dictation of the Contractor's means and methods of construction.
9. The Contractor shall, at his own expense, be responsible to make excavations under guy wires, along side of poles, buildings, and other objects as necessary to complete the work. This may require the Contractor to perform hand excavation. The Contractor has the full responsibility for this work for which there shall be no special compensation unless otherwise noted herein. The relocation of utility poles, and the like, shall be done at the Contractor's expense.

#### B. Trench Excavation

1. Trench excavation shall consist of the removal of all materials encountered. Excavations shall be made to accommodate the elevation, depth of cover, or detail shown on the Drawings or specified. Trench widths shall be kept to the minimum practicable but shall be at least three (3) feet wide or two (2) feet plus the diameter of the pipe, whichever is greater. The bottom of the trenches shall be firm and free of water and shall be accurately graded and shaped to allow placement of required bedding beneath the bottom of all barrels, bells or couplings of all pipes installed.
2. Design criteria require that pipe be laid in trench conditions, therefore trenches for utilities in fill areas shall be excavated after all fill materials have been placed, spread and compacted to an elevation at least twelve (12) inches above the top of the proposed utility. This requirement is necessary to fulfill design criteria and should not be construed as a dictation of the Contractor's means and methods of construction.
3. If, through the Contractor's error, the excavations are carried beyond the specified limits, or if inadequate dewatering causes softening of the subgrade which necessitates removal, backfill shall be with gravel fill, placed and compacted as specified hereinafter under Trench Backfilling. Backfill shall be performed at no additional cost to the Owner.
4. When trenching occurs around trees to remain, the tree roots shall not be cut but rather, the trench shall be tunneled under or around the roots by careful hand digging and without injury to the roots.

#### C. Foundation Excavation

1. Excavations shall be carried to the grade lines as indicated or as may be required to permit the finished floors or surfaces to be constructed at the proper elevations and on firm bearing materials. This includes excavation for all pipe channels, sumps, or other features which extend below the bottom of the foundation or slabs.

#### D. Excavation in Graded Areas

1. Excavation in graded areas shall be performed as necessary to bring such areas to proper subgrade or finish grade. Subgrade for grass areas shall be a minimum of six (6) inches below finish grade unless otherwise specified.

#### E. Rock and Boulder Excavation

1. Rock excavation shall include the excavation, removal and disposal of solid rock and all boulders one (1) cubic yard or more in volume which require blasting or drilling and splitting. Boulders of less than one (1) cubic yard in volume or other materials found in the excavations, however stiff, heavy and compact, including rippable rock, which, in the opinion of the Engineer, can be removed without blasting or drilling and wedging, shall not be considered as rock excavation.
2. Where boulders are on the sides of or in the bottom of excavations, they shall be wholly or partially removed at a minimum to the limits as specified and/or as determined by the Engineer. In removing boulders lodged in the sides of the excavations, the Contractor shall not disturb or undermine adjacent pavement or structures. Pavement surfaces damaged beyond reasonable limits as determined by the Engineer, shall be repaired by the Contractor at no additional cost to the Owner. In general, boulders or rock fragments which extend under paved surfaces shall be removed by blasting or mechanical splitting.
3. Unauthorized excavations in rock, or excavations made beyond or below the indicated limits shall be refilled and compacted with approved gravel fill at no additional cost to the Owner.
4. Depressions below the required grade resulting from the removal of boulders and rock fragments shall be refilled with compacted gravel fill at no additional cost to the Owner.
5. Pre-drilling through overburden is an acceptable method, however, blasting rock through overburden will not be allowed unless otherwise authorized by the Engineer. The Contractor shall remove the overburden from the rock surface to determine the true configuration of the formation. The Contractor will not be allowed to commence blasting operations until the Engineer has verified the Contractor's measurement of the rock surface.
6. Whenever provisions for a future connection are placed in pipelines in rock areas, the rock shall be removed for a distance of at least three feet, horizontally from the end or face of the pipe and in the direction of the future connection and full vertical height.
7. Rock encountered in areas where blasting is not allowed shall be removed by drilling and splitting using rock splitters, feathers and wedges, jackhammers, or by hand.

#### F. Excavation of Unsuitable Foundation Materials Below Trench Grade and/or Subgrade

1. Existing soils, which are considered unsuitable foundation materials by the Engineer, shall be removed to the limits directed by the Engineer. The lateral limit for the excavation of unsuitable material beneath structures shall be defined as the intersection point, with suitable subgrade material, of an imaginary line drawn downward at a 45 degree angle from the outside edge of the foundation. For pipelines, the horizontal limits are defined as two feet plus the diameter of the pipe or a minimum total width of three feet whichever

is larger unless otherwise directed or shown. The horizontal limits are defined as two feet outside the outside face of the manhole or catch basin base.

2. The exposed subgrade shall be compacted and the area backfilled with gravel fill. The Engineer shall be present during the excavation of all unsuitable soils in order to permit verification of the limits of and volume of material removed.

#### G. Experimental Excavation

1. The Contractor shall make excavations at locations authorized by the Engineer, for the purpose of confirming the location and depth of existing utilities or structures.
2. Additional experimental excavations shall be requested by the Contractor to precisely locate utilities and underground structures which may be affected by his work. The Contractor shall backfill the experimental excavations with materials meeting the specification for common fill, unless directed otherwise by the Engineer. Backfill of experimental excavation shall be compacted in accordance with the requirements for Trench Backfilling.

### 3.03 TEMPORARY EARTH SUPPORT

- A. The Contractor shall design, furnish, install and maintain temporary earth support systems, as required, to prevent injury to persons, collapse of the sides of the excavation, and damage, disturbance and settlement of adjacent property. Sheeting and bracing shall be of adequate type, size and strength for the conditions encountered and shall be driven to true alignment in a workmanlike manner.
- B. Timber sheeting shall be straight and sound and shall be tongue and grooved where groundwater is encountered. Minimum thickness of timber sheeting shall be a nominal three inches.
- C. Steel sheeting shall have a minimum thickness of 3/8 inch. Steel sheeting shall be designed for the conditions encountered and shall be driven tight.
- D. The Contractor has the option of leaving sheeting in place or removing the sheeting. Sheeting left in place shall be cut off at least one (1) foot above the crown of the pipe. In no case shall the top of sheeting be left in place within five (5) feet of the finished grade.
- E. Excavated slopes in rock shall be appropriately laid back or be stabilized by rock bolts or other means deemed appropriate by the Contractor. Loose or semi-detached rock shall be scaled from the rock surface. When necessary, wire mesh or other suitable means deemed appropriate by the Contractor shall be installed to prevent injury to workers from falling rock.
- F. The Contractor shall engage an independent Registered Professional Engineer (in the state where the project is located) with experience in the design of temporary earth support to evaluate his methods of excavation and provide guidance regarding proper slopes and to design or provide guidance of temporary earth support during construction. The Contractor shall submit a notarized letter to the Engineer certifying conformance to the above requirements, before the start of any construction (Refer to attached sample form).

### 3.04 CONTROL OF WATER

- A. The Contractor shall evaluate the impact of the anticipated subsurface soil and groundwater conditions on his proposed method of excavation and dewatering and other operations. If subsurface conditions so dictate, the Contractor shall provide wells, wellpoints, pumps, or any other facilities to control groundwater and surface water in order to permit work to be performed under dry and stable conditions. The Contractor shall provide any facilities required to remove subsurface water from the construction area in advance of excavation.

Dewatering shall continue and be maintained until all work below groundwater level has been completed or otherwise stabilized against uplift or other disturbance. Pumping shall be continuous where required to protect the work and to maintain satisfactory progress. All dewatering wells shall be backfilled upon completion of the work.

- B. The Contractor shall control all surface water within the work area. Excavations shall be protected from flooding by surface water by use of berms, ditches or other suitable means deemed appropriate by the Contractor.
- C. The Contractor shall pay special attention to areas where difficult soil and groundwater conditions are anticipated and shall evaluate the subsurface conditions in these areas from the geotechnical data provided within this document or by other means. Contractor shall be responsible for requesting such data if not included within this document.
- D. All pipelines and structures not stable against uplift during construction or prior to completion of installation shall be thoroughly braced or otherwise protected.
- E. The Contractor shall dewater in a manner which does not cause loss of ground or disturbance to the bearing soil or soil supporting adjacent structures.
- F. The Contractor shall engage an independent Registered Professional Engineer (in the state where the project is located) with experience in the design of temporary dewatering systems to evaluate his methods for control of water and to design dewatering systems or provide guidance during construction. The Contractor shall submit a notarized letter to the Engineer certifying conformance to the above requirements, before the start of any construction (Refer to attached sample form).

### 3.05 STRUCTURAL AND EMBANKMENT FILLS

#### A. General

1. Unless otherwise specified or shown, all fill placed beneath structures shall meet the material, placement, and compaction specifications for Gravel Fill. In fill areas, the "limits of a structure" are defined by the same criteria used for the excavation of unsuitable foundation material below subgrade included under the excavation paragraphs of these specifications.
2. Unless otherwise specified or shown, all embankment fill material obtained from on-site sources shall meet the material, placement, and compaction requirements for Common Fill. When embankment fill material is obtained from off-site borrow sources, it shall meet the material, placement, and compaction requirements for Select Fill.

## B. Subgrade Preparation

1. After completion of the necessary excavation and/or stripping operations, the surface shall be smoothed to present a surface free of ruts, holes, sharp ridges, or other uneven features. The surface shall be graded to prevent ponding of surface waters within the subgrade area, and shall include the installation of suitable ditches and sumps where necessary.
2. The entire subgrade shall be compacted to reconsolidate to its original density all soil material loosened during the excavation, stripping, and smoothing operations.
3. Should any area of the subgrade become disturbed by the Contractor's operation, the disturbed soil shall be removed and replaced with gravel fill and compacted as specified herein.
4. No fill or concrete shall be placed until the surface against which it is to be placed has been observed by the Engineer.

## C. Fill Placement

1. Fill shall be placed to the lines and grades for each class of material shown on the Drawings or specified herein. In general, the deepest fills shall be made first.
2. Fill materials shall be spread in approximately flat layers (horizontal or sloped as required) in such a manner as to obtain layers of relatively uniform thickness without spaces between successively deposited loads. Placing and spreading shall be done in such a manner as to prevent segregation.
3. Fill shall be placed in lifts and in a systematic manner which will provide uniformity throughout the full fill thickness. The maximum loose lift thickness shall be consistent with the size and type of compaction equipment being used.
4. If the surface becomes rutted or uneven subsequent to compaction, it shall be flattened and leveled before placing the next layer of material. Hauling equipment shall be routed across the fill in such a way as to prevent the formation of ruts or lanes in the compacted fill.
5. No fill shall be placed on a frozen subgrade, nor shall any frozen fill material be used.

## D. Compaction

1. Each lift shall be compacted to achieve a minimum of ninety-nine (95) percent of the maximum density as defined by ASTM D1557 for Gravel Fill and ninety (90) percent for Select Fill and Common Fill.
2. Common fill shall be placed at a water content between three (3) percentage points below and two (2) percentage points above the optimum water content determined by ASTM D1557.

## E. Maintenance of Fill Surface

1. The surface of the fill shall at all times be kept reasonably smooth and free from humps or hollows. The fill surface shall be pitched in order to ensure drainage during periods of wet weather.

2. Upon suspension of filling operations for any period in excess of twenty-four (24) hours or in wet weather, the surface of the fill shall be rolled smooth to seal it against excessive absorption of moisture and to facilitate runoff. During the suspension of fill operations, every effort shall be made to protect the compacted fill surface to minimize erosion.
3. If placement of fill material is suspended in a freezing weather conditions or anticipated frost conditions, the compacted fill surface shall receive, before suspending operation, at least four inches of fill material (loose measure). The four inches of loose material shall be removed prior to placing a new lift and compaction.
4. Fill operations shall be suspended during periods of extended wet weather if the material is too wet to be compacted properly. Upon resuming operations, all fill materials which are excessively wet or soft shall be removed from the fill and either stockpiled for reprocessing or disposed of off site. The removal of wet or soft material shall be carried to such depth as is necessary to expose firm materials.
5. Under no circumstances shall ice, snow, or frozen material be incorporated in the fill. In the event that the fill surface becomes frozen during construction, all frozen materials shall be excavated from the fill and wasted before additional material is placed.

### 3.06 PIPE BEDDING AND TRENCH BACKFILLING

#### A. General

1. The requirements for pipe bedding and trench backfilling are described herein and are shown in the Drawings.
2. Pipe and/or structures shall be placed on specified bedding materials, to provide uniform support and a stable foundation for the pipeline or structure and backfill material. No bedding shall be placed on unstable subgrade soils. An unstable subgrade is defined as a condition of running sand, running silt, quick bottom, or otherwise soft or spongy bottom. If an unstable condition exists, or develops during the excavation, the Contractor shall excavate, dewater and stabilize the subgrade to the extent necessary to provide a firm stable foundation prior to placing bedding, pipe and/or structures.
3. The height of fill adjacent to structures and pipelines shall be increased at approximately the same rate on all sides to prevent displacement.

#### B. Trench Bedding

1. Pipelines and appurtenant items of work shall be laid in the bedding material, from the bottom of the excavation to the mid-diameter of the pipe, for the full width of trench. Bedding material shall be compacted to a minimum density of ninety-five (95) percent of the maximum density as determined by ASTM D1557 (Modified Proctor) and shall meet the requirements for gravel fill or crushed stone.
2. The type and thickness of bedding material shall be adjusted based on field conditions, as follows:
  - a. Where the bottom of trench is stable and the existing material at trench grade meets the requirements for Gravel Fill, as determined by the Engineer, the Contractor will not be required to excavate six (6) inches below the pipeline for placement of bedding material. Crushed stone

bedding material shall be placed and compacted to the mid-diameter of the pipe as specified hereinbefore.

- b. When the subgrade material does not meet the specification for Gravel Fill, the excavation shall be made to a depth of six (6) inches below the bottom of pipe for placement of bedding material.
  - c. Where the bottom of the trench excavation is below the groundwater level and pumping of water is done from within the excavation, the Contractor shall use a bedding system which provides a stable working surface which limits the disturbance of the subgrade and prevents migration or washing of fine soils from the subgrade due to the flow of water into the trench. If the subgrade is stable and meets the requirements of gravel fill, excavation for six (6) inches of bedding material is not required.
  - d. Where the subgrade soil type is a low or non-plastic silt (ML), silty or clayey sand (SM, SC), fine to medium sand (SP), or silty or clayey gravel (GM, GC), as defined by the soil classification system described in ASTM Standard Method D2487 (Unified System), a two (2) layer bedding system shall be utilized, with an approved filter cloth to prevent migration of silt into the bedding material. The lower layer of this two (2) layer system, from the mid-diameter of the pipe to six (6) inches below the bottom of pipe, shall consist of crushed stone. The upper layer shall consist of at least six (6) inches of gravel fill placed on top of the filter cloth. The filter cloth shall be continuous along the trench bottom, and shall wrap up the sides of the trench, to above the mid-diameter of the pipe and laid on top of the crushed stone from the trench wall to the pipe to prevent downward migration of fines. All joints and ends in the filter cloth shall lap at least twelve (12) inches to form a closure.
3. If the Contractor excavates beyond the required limits, the Contractor shall backfill this unauthorized excavation with compacted gravel fill at no additional cost to the Owner. Gravel Fill used to replace unsuitable material or unauthorized excavation shall be compacted to a minimum density of ninety-two (92) percent of the maximum density determined by ASTM D1557, (Modified Proctor).
  4. When crushed stone is used as bedding material, a twelve (12) inch wide impermeable clay cutoff barrier shall be installed across the trench from the bottom of the excavation to the mid-diameter of the pipe every three hundred (300) feet, or as otherwise directed by the Engineer, to prevent groundwater from flowing unimpeded along the pipe trench, through the crushed stone. No more than six (6) inches of crushed stone bedding shall be placed beneath the bottom of any pipe and/or structure. Refer to the detail shown on the Drawings.

#### C. Trench Backfilling

1. Backfill materials, meeting the requirements for Gravel Fill, shall be installed above the mid diameter of the pipe to twelve (12) inches above the pipe. The Select Fill backfill shall be compacted to a density of at least ninety-two (92) percent of the maximum density as determined by ASTM D1557 (Modified Proctor).
2. Backfill materials placed from twelve (12) inches above the pipe to the bottom of the roadway base course in paved areas shall be Control Density Fill or for landscaped areas to the bottom of loam shall meet the requirements for Common Backfill. Fill shall be placed and compacted so that a density of at least ninety five (95) percent of the maximum density is

achieved as determined by ASTM D1557 (Modified Proctor). The Contractor shall select his equipment and establish his procedures consistent with the backfill materials being used to achieve the required density. Backfill materials with more than fifteen (15) percent passing the No. 200 sieve shall be placed at a moisture content between two (2) percent dry and three (3) percent wet of the optimum moisture content as determined by ASTM D1557.

3. Puddling or jetting of the backfill materials shall be first approved by the Engineer. Any water used for puddling or jetting shall be secured in sufficient quantity and pressure to obtain the required result and shall be provided by the Contractor at no additional cost to the Owner.
4. All settlement of trench backfill shall be repaired by the Contractor at no additional cost to the Owner. All repairs shall be made with materials meeting the requirements and compacted to the requirements of this section.
5. All surplus material shall be removed and disposed of by the Contractor after trenches have been backfilled. The removal of surplus material, cleaning up of trench surfaces shall closely follow the pipe laying.
6. Where hardened surfaces or roadways, driveways, or walls are dug up or interfered with, special attention shall be given to the backfilling operations before resurfacing.
7. The Contractor shall continually provide street sweeping on roadways, used by his vehicles, in order to reduce dust, siltation, nuisance problems, and to provide safe passage for vehicular and pedestrian traffic.

#### D. Against Structures

1. Unless otherwise specified, backfill against structures shall meet the material requirements for Common Fill. No backfill whatever shall be placed on or against masonry, or other cast-in-place structures until the masonry has been in place a minimum of seven (7) days, or has been suitably braced.
2. Backfill shall be uniformly distributed, and compacted to a minimum density of ninety (90) percent of the maximum density determined by ASTM D1557, (Modified Proctor). All piping into structures shall have a joint within two (2) feet of the exterior face of the wall.
3. The type and size of compaction equipment used shall not cause excessive surcharge loads on any walls or other structures.

### 3.07 TESTING

#### A. General

1. Three (3) types of soil tests shall be performed by an approved soil testing laboratory furnished by the Contractor. The type of tests, timing and frequency are described below.
2. The performance of these tests does not relieve the Contractor of his responsibility to control his operations and perform tests as necessary to assure that the work performed meets the requirements of the specifications.

#### B. Sieve Analysis Tests

1. Sieve analysis tests shall be performed on soil samples obtained by the Contractor for acceptance of material from off site borrow sources or from

on-site excavations. As a minimum, one (1) test shall be performed on at least one (1) random sample obtained from each type of fill being placed on site. Additional tests shall be performed on samples obtained from the fill when it is suspected by the Engineer that the material does not meet specifications. Tests shall also be performed when it is noted that the gradation of material actually being placed differs significantly from the documented gradation from a particular source.

2. Sieve analysis shall be performed in accordance with ASTM C136 and ASTM C117.

#### C. In-Place Density Tests

1. The Engineer will determine the location, number and timing of In Place Density tests. The Engineer will coordinate the testing with the Contractor's schedule to minimize impact to the Contractor's operations.
2. In general, at least one (1) test shall be performed for each three hundred (300) feet of pipeline installed. Structural and embankment fills shall be tested at least once for each five hundred (500) cubic yards of fill placed. For structures and embankments, a minimum of four (4) tests shall be performed during each of two (2) separate visits by the testing laboratory.
3. Tests shall be performed in accordance with ASTM D1556, ASTM D2167, or ASTM D2922.

#### D. Moisture Density Relationship Test

1. Moisture Density Relationship Tests (Proctor Tests) shall be performed in conjunction with In-Place Density Tests for each different fill material tested.
2. Tests shall be performed in accordance with ASTM D1557.

### 3.08 GRADING

#### A. General

1. The areas to be graded shall be raked or machine-graded to remove stones and other unsatisfactory material and then shall be compacted as specified. Any depressions that occur during the compaction operation shall be filled with additional suitable material and the surface then re-graded and compacted until true to line and grade as required.
2. The work includes all grading required including shaping, trimming, compacting and finishing of the surfaces. The grading of shoulders and sloped areas may be done by machine methods. Up to two (2) inches in ten (10) foot tolerance will be permitted on slopes over two (2) percent, and one (1) inch in ten (10) foot on slopes under two (2) percent provided the slopes are uniform in appearance and without abrupt changes. All ruts shall be eliminated. The maximum deviation from finished grade shall be plus or minus 0.10 feet.
3. Grading of subgrades for paved areas shall be finished at the required depth below and parallel to the proposed surface with one-half (1/2) inch in ten (10) foot tolerance.
4. Stones larger than four (4) inches in largest dimension shall not be present in the upper six (6) inches of fill. Grading operations shall be completed after the buildings have been finished, the utilities installed, the site improvements constructed, and all materials, rubbish and debris removed from the site.

## B. Finish Grades

1. Finish grades shall be as indicated, and unless otherwise specified, excavations and fills shall be carried to proper subgrade levels below finish grades and contours shown, to allow for finish work.
2. The subgrade for areas on which pavement is to be placed shall be finished to the required depth below and parallel to the proposed pavement surface, after any pipes in the paved area are in place and tested.
3. The grading of the slopes and other areas to be loamed may be done by machine methods and a tolerance will be permitted in slopes as specified above, provided the slopes are uniform in appearance and without abrupt changes.

## C. Grading Around Trees

1. Where excavating, filling or grading is required within the branch spread of trees that are to remain, the work shall be performed as noted below:
  - a. When the existing grade at the tree is below the new finished grade, and fill not exceeding sixteen (16) inches is required, crushed stone shall be placed directly around the tree trunk. The stone shall extend out from the trunk on all sides a minimum of eighteen (18) inches and finish approximately two (2) inches above the finished grade at tree. New earth shall not be left in contact with the trunks of any trees requiring fill.
  - b. Existing trees in areas where the new finished grade is to be lowered, shall have re-grading work done by hand to elevation as indicated. Roots as required shall be cut cleanly three (3) inches below finished grade and scars covered with tree paint.

## 3.09 CLEAN-UP

- A. Where hardened surfaces or roadways, driveways, or walls are dug up or interfered with, special attention shall be given to the refill and the consolidation before its resurfacing and it shall be done and redone as may be required to make the premises safe at all times and to give the required result.
- B. The Contractor shall continually provide street sweeping on roadways used by his vehicles in order to reduce dust, siltation and nuisance problems.

END OF TEXT

SEE ATTACHED FORMS

1. Temporary Earth Support Certification
2. Control of Water Certification

Date: \_\_\_\_\_

To: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Subject: **Owner Name** \_\_\_\_\_  
**Project Name** \_\_\_\_\_  
**Contract No.** \_\_\_\_\_  
**Temporary Earth Support Certification**

Dear \_\_\_\_\_:

I hereby certify that I have reviewed the methods for Temporary Earth Support proposed by the following contractor for the above referenced project:

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I have experience in the design of temporary earth support and have evaluated the proposed methods of excavation and have provided guidance regarding proper slopes. The following is a description of the proposed methods to be used during construction:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If you have any questions or comments concerning the information provided, please contact our office.

Very truly yours,

\_\_\_\_\_  
SIGNATURE of REGISTERED PROFESSIONAL  
ENGINEER

\_\_\_\_\_  
NAME of REGISTERED PROFESSIONAL ENGINEER

\_\_\_\_\_  
ENGINEER'S STAMP  
(Signed and Dated)

Date: \_\_\_\_\_

To: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Subject: **Owner Name** \_\_\_\_\_  
**Project Name** \_\_\_\_\_  
**Contract No.** \_\_\_\_\_  
**Control of Water Certification**

Dear \_\_\_\_\_:

I hereby certify that I have reviewed the methods for control of water and dewatering systems proposed by the following contractor for the above referenced project:

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I have experience in the design of temporary dewatering systems and have evaluated the proposed methods for control of water. I shall design the dewatering systems and/or shall provide guidance during construction. The following is a description of the proposed methods to be used during construction:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If you have any questions or comments concerning the information provided, please contact our office.

Very truly yours,

\_\_\_\_\_  
SIGNATURE of REGISTERED PROFESSIONAL ENGINEER

\_\_\_\_\_  
NAME of REGISTERED PROFESSIONAL ENGINEER ENGINEER'S STAMP  
(Signed and Dated)

**Section 5**  
**Photographs**

**Nagog Park Sewage Pump Station**  
**Site Photographs**



Existing wet well riser, electrical enclosure, and vent pipe (facing south)



Electrical enclosure (facing east)



Existing wet well riser, electrical enclosure (facing west)



Existing wet well riser, electrical enclosure (facing northwest)



Existing wet well riser, electrical enclosure (facing north)



Existing wet well riser, electrical enclosure (facing northeast)

**Section 6**

**Certified Abutters List & Notification**

**NOTIFICATION TO ABUTTERS  
UNDER THE MASSACHUSETTS WETLANDS PROTECTION ACT  
AND THE TOWN OF ACTON WETLANDS BYLAW**

In accordance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40 and the Town of Acton Bylaws, you are hereby notified of the following:

The Applicant: \_\_\_\_\_

Address \_\_\_\_\_ Phone \_\_\_\_\_

has filed a Notice of Intent with the Acton Conservation Commission seeking permission to remove, fill, dredge or alter an Area Subject to Protection under the Wetlands Protection Act.

Applicant's Representative: \_\_\_\_\_

Address \_\_\_\_\_ Phone \_\_\_\_\_

The address of the property where the activity is proposed \_\_\_\_\_

Town Atlas Plate/Map \_\_\_\_\_ Parcel/Lot \_\_\_\_\_

Project Description \_\_\_\_\_

Copies of the Notice of Intent may be examined at the Conservation Office, Acton Town Hall, 472 Main Street, Acton between the hours of 9:00 A.M. and 4:30 P.M. Monday through Friday. For more information please call the Conservation Office at 978-264-9631.

A Public Hearing will be held at the Acton Town Hall, 472 Main Street, on Wednesday,  
\_\_\_\_\_ at \_\_\_\_\_ P.M.  
(date)

The notice of the public hearing will be published at least five (5) days in advance in the Acton edition of the *Beacon* newspaper or *Metrowest Daily News*.

NOTE: You may also contact your local conservation commission or the nearest Department of Environmental Protection Regional Office\* for the information about this application or, the Wetlands Protection Act. Acton is in the Central Region. To contact DEP, call:

**\*DEP Central Region: 508-792-7650  
627 Main Street, Worcester MA 01608**



**Town of Acton**  
472 Main Street  
Acton, MA 01720  
Telephone (978) 929-6621  
Fax (978) 264-9630

Brian McMullen  
Assessor

Locus: 44 Nagog Pk Rear  
Parcel I.D.: B4-1

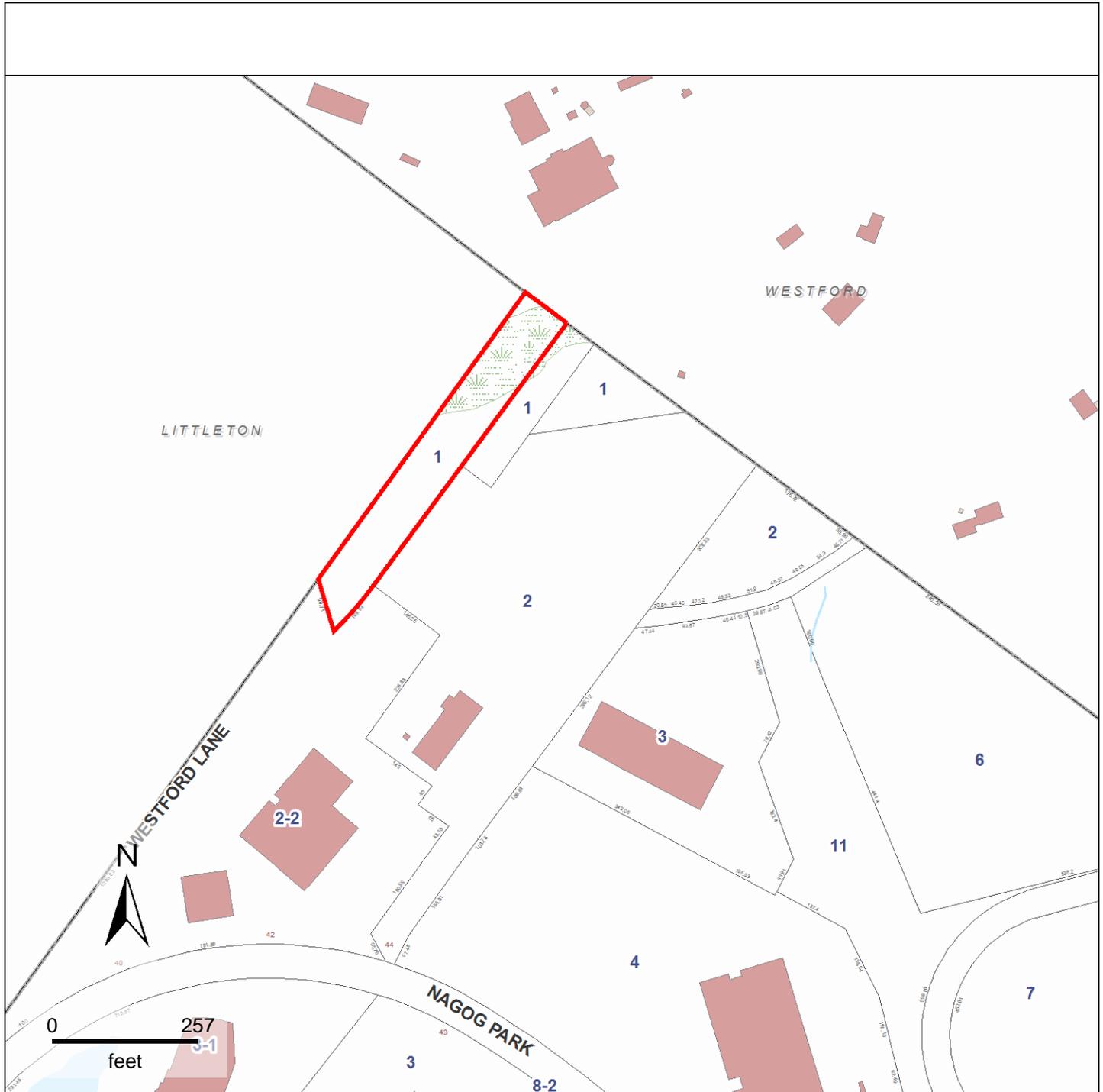
Location	Parcel ID	Owner	Co-Owner	Mailing Address	City	ST Zip
44 NAGOG PK REAR	B4-1	NORTH ACTON TREATMENT CORP		530 GREAT RD	ACTON	MA 01720
50 NAGOG PK	B4-4	SEACHANGE INTERNATIONAL INC		50 NAGOG PK	ACTON	MA 01720
551 GREAT RD REAR	B5-2	AVALON ACTON		671 N GLEBE RD SUITE 800	ARLINGTON	VA 22203
44 NAGOG PK REAR	A4-1	NORTH ACTON TREATMENT CORP		530 GREAT RD	ACTON	MA 01720
42 NAGOG PK	B4-2-2	ND/WINROCK ACTON LLC		2310 WASHINGTON ST	NEWTON	MA 02462
44 NAGOG PK REAR	A5-1	NORTH ACTON TREATMENT CORP		530 GREAT RD	ACTON	MA 01720
25 WESTFORD LN	B5-3	SHAMUS FENTON		PO BOX 985	ACTON	MA 01720

The owner of land sharing a common boundary or corner with the site of the proposed activity in any direction, including land located directly across a street, way, creek, river, stream, brook or canal. The above are as they appear on the most recent applicable taxes.

Marty Abbott

2/20/2013

Acton Assessors Office



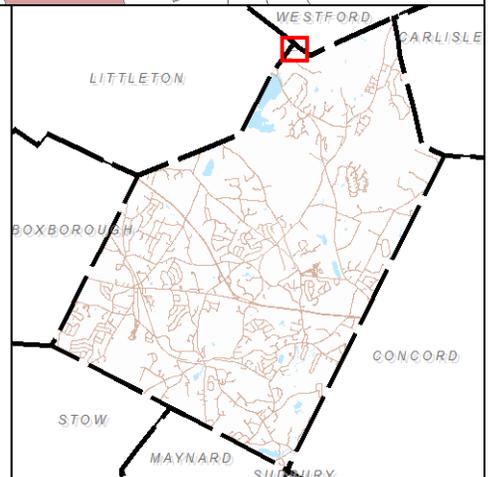
**Property Information**

Property ID B4-1  
Location 44 NAGOG PK REAR



**MAP FOR REFERENCE ONLY  
NOT A LEGAL DOCUMENT**

This data set/map is for planning purposes only and should not be used for larger scale analysis. The Town of Acton shall not be held liable for any use of the data or images shown on this map, nor is any warranty of accuracy expressed. All uses of this data set/map are subject to field verification.



**From:** [CERO\\_NOI@MassMail.state.ma.us](mailto:CERO_NOI@MassMail.state.ma.us)  
**To:** [tkware3@aol.com](mailto:tkware3@aol.com)  
**Cc:** [ceronoi@state.ma.us](mailto:ceronoi@state.ma.us); [Conservation Commission](#); [ceronoi@state.ma.us](mailto:ceronoi@state.ma.us)  
**Subject:** MassDEP NOI File Number  
**Date:** Thursday, February 28, 2013 10:50:04 AM

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COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
CENTRAL REGIONAL OFFICE  
627 MAIN STREET, WORCESTER, MA 01608 508-792-7650

Date: 02/28/2013

Municipality ACTON

RE: **NOTIFICATION OF WETLANDS PROTECTION ACT FILE NUMBER**

The Department of Environmental Protection has received a Notice of Intent filed in accordance with the Wetlands Protection Act (M.G.L. c. 131, §40):

<b>Applicant</b> NORTH ACTION TREATMENT CORP	<b>Owner Address</b>
<b>Address</b> 530 GREAT RD,ACTON MA 01720	
<b>Locus</b> 44 NAGOG PARK , ACTON MA 01720	

This project has been assigned the following file # : **CE 085-1111**

ISSUANCE OF A FILE NUMBER INDICATES ONLY COMPLETENESS OF  
SUBMITTAL, NOT APPROVAL OF APPLICATION

Although a file # is being issued, please note the following:

NONE NOTED

Regards,  
for MassDEP,

(508)-767-2711  
[Maryann.Dipinto@State.MA.US](mailto:Maryann.Dipinto@State.MA.US)