



**Public Service Company of New Hampshire
Seacoast Reliability Project**

Madbury, Durham, Newington & Portsmouth, NH

**New Hampshire Department of Environmental Services
Alteration of Terrain Permit Application**

Prepared For:
Public Service Company of New Hampshire
d/b/a Eversource Energy
780 North Commercial Street
Manchester, NH 03101

Submitted:
April 12, 2016

Prepared By:
Normandeau Associates, Inc.
25 Nashua Road
Bedford, NH 03110

www.normandeau.com

Application Attachments (Loose)



ALTERATION OF TERRAIN PERMIT APPLICATION

Water Division/ Alteration of Terrain Bureau/ Land Resources Management
Check the Status of your Application: www.des.nh.gov/onestop



RSA/ Rule: RSA 485-A:17, Env-Wq 1500

Administrative Use Only	Administrative Use Only	Administrative Use Only	File Number:
			Check No.
			Amount:
			Initials:

1. PROJECT LOCATION				
PROJECT NAME: Seacoast Reliability Project				
ADDRESS: Multiple - Linear Transmission Line ROW - See USGS Map				
TOWN/CITY: Multiple - See Map		COUNTY: Rockingham, Strafford	STATE: NH	ZIPCODE:
TAX MAP: Multiple - Attached	BLOCK:	LOT NUMBER:	UNIT:	
LOCATION COORDINATES: 43 6'29.33" N, 70 52'35.96" W			<input checked="" type="checkbox"/> LATITUDE/LONGITUDE <input type="checkbox"/> UTM <input type="checkbox"/> STATE PLANE	
2. APPLICANT INFORMATION (DESIRED PERMIT HOLDER)				
APPLICANT NAME: PSNH d/b/a Eversource Energy, Inc			CONTACT NAME: Kurt Nelson	
EMAIL: kurt.nelson@eversource.com		FAX:	PHONE: 603 634-3256	
ADDRESS: 13 Legends Drive.				
TOWN/CITY: Hooksett			STATE: NH	ZIPCODE: 03106
3. PROPERTY OWNER INFORMATION (IF DIFFERENT FROM APPLICANT)				
PROPERTY OWNER: ROW - easements and fee ownerships			CONTACT NAME:	
EMAIL:		FAX:	PHONE:	
ADDRESS:				
TOWN/CITY:			STATE:	ZIPCODE:
4. AGENT INFORMATION				
ENGINEERING FIRM: Normandeau Associates, Inc.			CONTACT NAME: Sarah Allen	
EMAIL: sallen@normandeau.com		FAX:	PHONE: 603 637-1158	
ADDRESS: 25 Nashua Road				
TOWN/CITY: Bedford			STATE: NH	ZIPCODE: 03110
5. PROJECT TYPE				
<input type="checkbox"/> EXCAVATION	<input type="checkbox"/> COMMERCIAL	<input type="checkbox"/> SCHOOL	<input type="checkbox"/> AGRICULTURAL	<input type="checkbox"/> LANDFILL
<input type="checkbox"/> RESIDENTIAL	<input type="checkbox"/> GOLF COURSE	<input type="checkbox"/> MUNICIPAL	<input type="checkbox"/> LAND CONVERSION	<input checked="" type="checkbox"/> OTHER

Ridge.Mauck@des.nh.gov or (603) 271-2147

NHDES Alteration of Terrain Bureau, PO Box 95, Concord, NH 03303-0095
www.des.nh.gov

6. BRIEF PROJECT DESCRIPTION (PLEASE DO NOT REPLY "SEE ATTACHED")	
The Seacoast Reliability Project (SRP) will include construction of a new 12.9-mile long 115-kilovolt (kV) transmission line within an existing distribution line ROW between the existing PSNH Madbury and Portsmouth substations. The project includes new overhead and underground/submarine segments in Madbury, Durham, Newington and Portsmouth.	
7. IF APPLICABLE, DESCRIBE ANY WORK STARTED PRIOR TO RECEIVING PERMIT	
Not applicable	
8. REQUIRED QUESTIONS (PLEASE DO NOT LEAVE FIELDS BLANK. IF NOT APPLICABLE, STATE "N/A")	
A. Date a copy of the <i>complete</i> application was sent to the municipality ¹ : <u> </u> / <u> </u> / <u> </u> . (Attach proof of delivery)	
B. Total area of disturbance: <u>1,580,392</u> square feet	
C. Additional impervious cover as a result of the project: <u>7,234</u> square feet (use the "-" symbol to indicate a net reduction in impervious coverage). Total impervious cover: <u>7,234</u> square feet.	
D. Total undisturbed cover: <u>3,142,400</u> square feet	
E. Number of lots proposed: <u>0</u>	
F. Total length of roadway: <u>0</u> linear feet	
G. Select plan type submitted: <input type="checkbox"/> Land Conversion <input checked="" type="checkbox"/> Detailed Development <input type="checkbox"/> Excavation, Grading & Reclamation <input type="checkbox"/> Steep Slope	
H. Name of receiving waters: <u>SEVERAL, SEE APPLICATION NARRATIVE</u>	
Using NHDES's Web GIS OneStop program (www2.des.state.nh.us/gis/onestop/), with the Surface Water Impairment layer turned on, list the impairments identified: <u>SEVERAL, SEE APPLICATION NARRATIVE</u> (enter "NA" if no pollutants are listed). For more guidance see: http://des.nh.gov/organization/divisions/water/wmb/tmdl/documents/onestop_gis_wgc_ref_guide.pdf	
I. <input checked="" type="checkbox"/> This project is within ¼ mi of a <u>designated river</u> (River name: <u>Oyster River</u>) AND I have notified the <u>Local River Management Advisory Committee</u> by providing them with a copy of the complete application ¹ , including all supporting materials, on Month: <u> </u> Day: <u> </u> Year: <u> </u> (Attach proof of delivery) <input type="checkbox"/> This project is not within ¼ mi of a designated river.	
J. Name of species identified by the Natural Heritage Bureau as threatened or endangered or of concern: <u>Several - See Attachment G</u>	
K. Cut volume <u>0</u> cubic feet and fill volume <u>40</u> cubic feet within the 100-year floodplain (enter "NA" if not within the floodplain)	
L. Is the project within a Water Supply Intake Protection Area (WSIPA)? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Is the project within a Groundwater Protection Area (GPA)? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Are the well setbacks outlined in Env-Wq 1508.02 being met? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> Note: Guidance document titled " Using NHDES's OneStop WebGIS to Locate Protection Areas " is available online. For more details on the restrictions in these areas, read Chapter 3.1 in Volume 2 of the NH Stormwater Manual.	

¹ In accordance with Env-Wq 1503.05 (c)(4), *provide proof* that a completed application form, checklist, plans and all other supporting materials have been sent or delivered to the governing body of each municipality in which the project is proposed. Env-Wq 1503.05 (c)(4) also requires the applicant to provide proof that a completed application form, checklist, plans and all other supporting materials have been sent or delivered to the Local River Advisory Committee, if the project is within 1/4 mi of a designated river.

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8. REQUIRED QUESTIONS CONTINUED

M. Is the project a High Load area in accordance with Env-Wq 1502.26? YES NO

If yes, specify type of high load land use or activity? _____

N. For each type of approval or permit, check "Yes" if the permit or approval type is required for your project and indicate the permit number / approval date. Indicate "Pending" if the application has been filed, but the permit has not yet been issued. Check "No" to indicate that the permit type is required, but not yet been filed with the Department. Check "N/A" if the permit or approval type is not required for your project.

1. Water Supply Approval	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A	Permit number:	Pending <input type="checkbox"/>
2. Wetlands Permit	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> N/A	Permit number:	Pending <input type="checkbox"/>
3. Shoreland Permit	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> N/A	Permit number:	Pending <input type="checkbox"/>
4. UIC Registration	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A	Registration date:	Pending <input type="checkbox"/>
5. Large/Small Community Well Approval	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A	Approval letter date:	Pending <input type="checkbox"/>
6. Large Groundwater Withdrawal Permit	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A	Permit number:	Pending <input type="checkbox"/>
7. Other:	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A	Permit number:	Pending <input type="checkbox"/>

9. ADDITIONAL INFORMATION

A. If you have had a pre-application meeting with AoT staff, state his or her name(s): RIDGELY MAUCK
 Attach a copy of the meeting minutes.

B. Will blasting of bedrock be required? YES NO If yes, estimated quantity of blast rock: 1,100 cubic yards.
 If yes, standard blasting BMP notes must be placed on the plans, available at:
<http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-10-12.pdf>

If greater than 5,000 cubic yards of blast rock will be generated, a groundwater monitoring program must be developed and submitted to NHDES. Contact the AoT Bureau for additional detail.

C. Indicate if the project will withdraw from, or directly discharge to, any of the following water sources *post-development* and, if "Yes", indicate its purpose:

1. Stream or Wetland Purpose:	YES <input type="checkbox"/> Withdrawal <input type="checkbox"/> Discharge <input type="checkbox"/> NO <input checked="" type="checkbox"/>
2. Man-made pond created by impounding a stream or wetland Purpose:	YES <input type="checkbox"/> Withdrawal <input type="checkbox"/> Discharge <input type="checkbox"/> NO <input checked="" type="checkbox"/>
3. Unlined pond dug into the water table Purpose:	YES <input type="checkbox"/> Withdrawal <input type="checkbox"/> Discharge <input type="checkbox"/> NO <input checked="" type="checkbox"/>

10. CHECK ALL APPLICATION ATTACHMENTS THAT APPLY (SUBMIT WITH APPLICATION IN ORDER LISTED)**LOOSE:**

- Signed application form: des.nh.gov/organization/divisions/water/aot/index.htm (with attached proof(s) of delivery)
- Check for the application fee: des.nh.gov/organization/divisions/water/aot/fees.htm
- Color copy of a USGS map with the property boundaries outlined (1" = 2,000' scale)
- A copy of the pre-application meeting minutes, if you had a pre-application meeting with AoT staff.

BIND IN A REPORT IN THE FOLLOWING ORDER:

- Copy of the signed application form & application checklist (des.nh.gov/organization/divisions/water/aot/index.htm)
- Copy of the check
- Copy of the USGS map with the property boundaries outlined (1" = 2,000' scale)
- Narrative of the project with a summary table of the peak discharge rate for the off-site discharge points
- Web GIS printout with the "Surface Water Impairments" layer turned on - www2.des.state.nh.us/gis/onestop/
- Web GIS printouts with the AoT screening layers turned on - www2.des.state.nh.us/gis/onestop/
- NHB letter using DataCheck Tool – www.nhdfi.org/about-forests-and-lands/bureaus/natural-heritage-bureau/
- The Web Soil Survey Map with project's watershed outlined – websoilsurvey.nrcs.usda.gov
- Aerial photograph (1" = 2,000' scale with the site boundaries outlined)
- Photographs representative of the site

Groundwater Recharge Volume calculations (one worksheet for each permit application):

des.nh.gov/organization/divisions/water/aot/documents/bmp_worksh.xls

BMP worksheets (one worksheet for each treatment system):

des.nh.gov/organization/divisions/water/aot/documents/bmp_worksh.xls

SEE DRAINAGE ANALYSIS WAIVER REQUEST

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10. CHECK ALL APPLICATION ATTACHMENTS THAT APPLY (SUBMIT WITH APPLICATION IN ORDER LISTED)

- Drainage analysis, stamped by a professional engineer (see Application Checklist for details)
- Riprap apron or other energy dissipation or stability calculations
- Site Specific Soil Survey report, stamped and with a certification note prepared by the soil scientist that the survey was done in accordance with the Site Specific Soil Mapping standards, *Site-Specific Soil Mapping Standards for NH & VT, SSSNNE Special Publication No. 3.*
- Infiltration Feasibility Report (example online)
- Registration and Notification Form for Storm Water Infiltration to Groundwater (UIC Registration-for underground systems only, including drywells and trenches):
(http://des.nh.gov/organization/divisions/water/dwqb/dwspp/gw_discharge)
- Inspection and maintenance manual with, if applicable, long term maintenance agreements
- Source control plan

PLANS:

PROJECT PLANS ARE 11X17

- One set of design plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details)
- Pre & post-development color coded soil plans on 11" x 17" (see Application Checklist for details)
- Pre & post-development drainage area plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details)

SEE DRAINAGE ANALYSIS WAIVER REQUEST


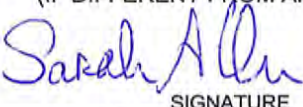
100-YEAR FLOODPLAIN REPORT:

SEE FLOODPLAIN REPORT WAIVER REQUEST

- All information required in Env-Wq 1503.09, submitted as a separate report.

- REVIEW APPLICATION FOR COMPLETENESS & CONFIRM INFORMATION LISTED ON THE APPLICATION IS INCLUDED WITH SUBMITTAL.

11. REQUIRED SIGNATURES

<input checked="" type="checkbox"/> APPLICANT OR <input type="checkbox"/> AGENT:		
 SIGNATURE	<p>KURT I. NELSON</p> PRINT NAME LEGIBLY	<p>4 15 2016</p> DATE
OWNER OR OWNER'S AGENT (IF DIFFERENT FROM APPLICANT):		
 SIGNATURE	<p>SARAH ALLEN</p> PRINT NAME LEGIBLY	<p>4 15 2016</p> DATE
By initialing here, I understand that in accordance with Env-Wq 1503.20(e), within one week after permit approval, the applicant shall submit a copy of all approved documents to the department in PDF format on a CD.		<p><u>KIN</u></p>

ATTACHMENT A: ALTERATION OF TERRAIN PERMIT APPLICATION CHECKLIST

Check the box to indicate the item has been provided or provide an explanation why the item does not apply.

DESIGN PLANS

- Plans printed on 34 - 36" by 22 - 24" white paper PROJECT PLANS ARE 11" X 17"
- PE stamp
- Wetland delineation
- Temporary erosion control measures
- Treatment for all stormwater runoff from impervious surfaces such as roadways (including gravel roadways), parking areas, and non-residential roof runoff. Guidance on treatment BMPs can be found in Volume 2, Chapter 4 of the NH Stormwater Management Manual. SEE DRAINAGE ANALYSIS WAIVER REQUEST
- Pre-existing 2-foot contours
- Proposed 2-foot contours NA
- Drainage easements protecting the drainage/treatment structures NA
- Compliance with the Wetlands Bureau, RSA 482- A <http://des.nh.gov/organization/divisions/water/wetlands/index.htm>.
Note that artificial detention in wetlands is not allowed.
- Compliance with the Comprehensive Shoreland Protection Act, RSA 483-B.
<http://des.nh.gov/organization/divisions/water/wetlands/cspa>
- Benches. Benching is needed if you have more than 20 feet change in elevation on a 2:1 slope, 30 feet change in elevation on a 3:1 slope, 40 feet change in elevation on a 4:1 slope. NA
- Check to see if any proposed ponds need state Dam permits.
<http://des.nh.gov/organization/divisions/water/dam/documents/damdef.pdf> NA

DETAILS

- Typical roadway x-section DESCRIBED IN SECTION 2.4 OF PROJECT NARRATIVE
- Detention basin with inverts noted on the outlet structure NA
- Stone berm level spreader NA
- Outlet protection – riprap aprons NA
- A general installation detail for an erosion control blanket
- Silt fences or mulch berm
- Storm drain inlet protection. Note that since hay bales must be embedded 4 inches into the ground, they are not to be used on hard surfaces such as pavement. NA
- Hay bale barriers

- Stone check dams NA
- Gravel construction exit NA
- The treatment BMP's proposed NA
- Any innovative BMP's proposed NA

CONSTRUCTION SEQUENCE/EROSION CONTROL

- Note that the project is to be managed in a manner that meets the requirements and intent of RSA 430:53 and Chapter Agr 3800 relative to invasive species.
- Note that perimeter controls shall be installed prior to earth moving operations
- Note that ponds and swales shall be installed early on in the construction sequence (before rough grading the site)
- Note that all ditches and swales shall be stabilized prior to directing runoff to them
- Note that all roadways and parking lots shall be stabilized within 72 hours of achieving finished grade
- Note that all cut and fill slopes shall be seeded/loamed within 72 hours of achieving finished grade
- Note that all erosion controls shall be inspected weekly AND after every half-inch of rainfall
- Note the limits on the open area allowed, see Env-Wq 1505.02 for detailed information

Example note: The smallest practical area shall be disturbed during construction, but in no case shall exceed 5 acres at any one time before disturbed areas are stabilized

- Note the definition of the word "stable"

Example note: An area shall be considered stable if one of the following has occurred:

- Base course gravels have been installed in areas to be paved
- A minimum of 85 percent vegetated growth has been established
- A minimum of 3 inches of non-erosive material such stone or riprap has been installed
- Or, erosion control blankets have been properly installed.

- Note the limit of time an area may be exposed
Example note: All areas shall be stabilized within 45 days of initial disturbance

- Provide temporary and permanent seeding specifications. (Reed canary grass is listed in the Green Book; however, this is a problematic species according to the Wetlands Bureau and therefore should not be specified)

- Provide winter construction notes that meet or exceed our standards.

Standard Winter Notes:

- All proposed vegetated areas that do not exhibit a minimum of 85 percent vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting, elsewhere. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events.
- All ditches or swales which do not exhibit a minimum of 85 percent vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions.

- After November 15, incomplete road or parking surfaces, where work has stopped for the winter season, shall be protected with a minimum of 3 inches of crushed gravel per NHDOT item 304.3.
- Note at the end of the construction sequence that “Lot disturbance, other than that shown on the approved plans, shall not commence until after the roadway has the base course to design elevation and the associated drainage is complete and stable”. – This note is applicable to single/duplex family subdivisions, when lot development is not part of the permit.

DRAINAGE ANALYSES SEE DRAINAGE ANALYSIS WAIVER REQUEST

Please double-side 8 ½” x 11” sheets where possible but, **do not** reduce the text such that more than one page fits on one side.

- PE stamp
- Rainfall amount obtained from the Northeast Regional Climate Center- <http://precip.eas.cornell.edu/>. Include extreme precipitation table as obtained from the above referenced website.
- Drainage analyses, in the following order:
 - Pre-development analysis: Drainage diagram
 - Pre-development analysis: Area Listing and Soil Listing
 - Pre-development analysis: Node listing 1-year (if applicable), 2-year, 10-year and 50-year
 - Pre-development analysis: Full summary of the 10-year storm
 - Post-development analysis: Drainage diagram
 - Post-development analysis: Area Listing and Soil Listing
 - Post-development analysis: Node listing for the 2-year, 10-year and 50-year
 - Post-development analysis: Full summary of the 10-year storm
- Review the Area Listing and Soil Listing reports
 - Hydrologic soil groups (HSG) match the HSGs on the soil maps provided
 - There is the same or less HSG A soil area after development (check for each HSG)
 - There is the same or less “woods” cover in the post-development
 - Undeveloped land was assumed to be in “good” condition
 - The amount of impervious cover in the analyses is correct

Note: A good check is to subtract the total impervious area used in the pre analysis from the total impervious area used in the post-analysis. For residential projects without demolition occurring, a good check is to take this change in impervious area, subtract out the roadway and divide the remaining by the number of houses/units proposed. Do these numbers make sense?

- Check the storage input used to model the ponds
- Check to see if the artificial berms pass the 50-year storm, i.e., make sure the constructed berms on ponds are not overtopped
- Check the outlet structure proposed and make sure it matches that modeled
- Check to see if the total areas in the pre and post analyses are same
- Confirm the correct NRCS storm type was modeled (Coos, Carroll & Grafton counties are Type II, all others Type III)

PRE AND POST-DEVELOPMENT DRAINAGE AREA PLANS

- Plans printed on 34 - 36" by 22 - 24" on white paper
- Submit these plans separate from the soil plans
- A north arrow
- A scale
- Labeled subcatchments, reaches and ponds
- Tc lines
- A clear delineation of the subcatchment boundaries
- Roadway station numbers
- Culverts and other conveyance structures

PRE AND POST-DEVELOPMENT COLOR-CODED SOIL PLANS

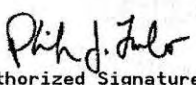

- 11" x 17" sheets suitable, as long as it is readable
- Submit these plans separate from the drainage area plans
- A north arrow
- A scale
- Name of the soil scientist who performed the survey and date the soil survey took place
- 2-foot contours (5-foot contours if application is for a gravel pit) as well as other surveyed features
- Delineation of the soil boundaries and wetland boundaries
- Delineation of the subcatchment boundaries
- Soil series symbols (e.g., 26)
- A key or legend which identifies each soil series symbol and its associated soil series name (e.g., 26 = Windsor)
- The hydrologic soil group color coding (A = Green, B = yellow, C= orange, D=red, Water=blue, & Impervious = gray)

Please note that excavation projects (e.g., gravel pits) have similar requirements to that above, however the following are common exceptions/additions:

- Drainage report is not needed if site does not have off-site flow.
- 5 foot contours allowed rather than 2 foot.
- No PE stamp needed on the plans
- Add a note to the plans that the applicant must submit to the Department of Environmental Services a written update of the project and revised plans documenting the project status every five years from the date of the Alteration of Terrain permit.
- Add reclamation notes.

See NRCS publication titled: *Vegetating New Hampshire Sand and Gravel Pits* for a good resource, it is posted online at: <http://des.nh.gov/organization/divisions/water/aot/categories/publications> .

**PSNH SEACOAST RELIABILITY PROJECT
NHDES ALTERATION OF TERRAIN PERMIT APPLICATION**

PSNH DBA EVERSOURCE ENERGY			51-44 119
	Check No.	Date	Payment Amt
	0000317327	02/11/16	\$8,250.00 USD
PAY	EIGHT THOUSAND TWO HUNDRED FIFTY & 00/100***** DOLLAR		
TO THE ORDER OF	STATE OF NEW HAMPSHIRE TREASURER NH DEPT OF ENVIRONMENTAL SVCS 29 HAZEN DR PO BOX 95 CONCORD NH 03302-0095		
Bank of America	 Authorized Signature		
THIS CHECK HAS A PRISMATIC BLUE, RED, BLUE BACKGROUND VOID AFTER 6 MONTHS			

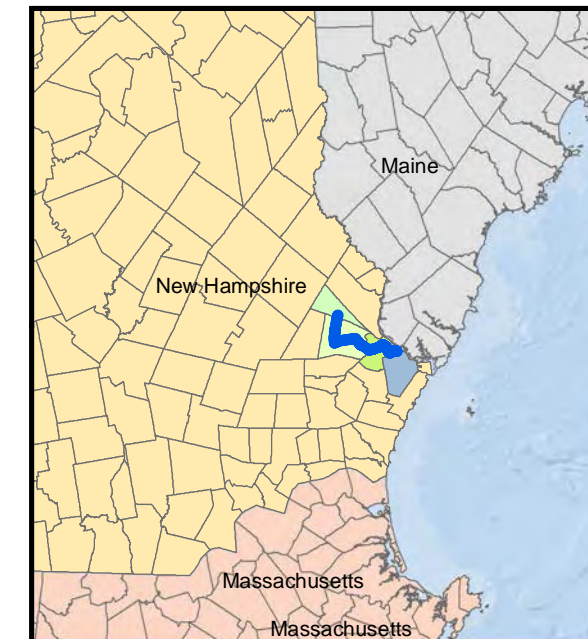
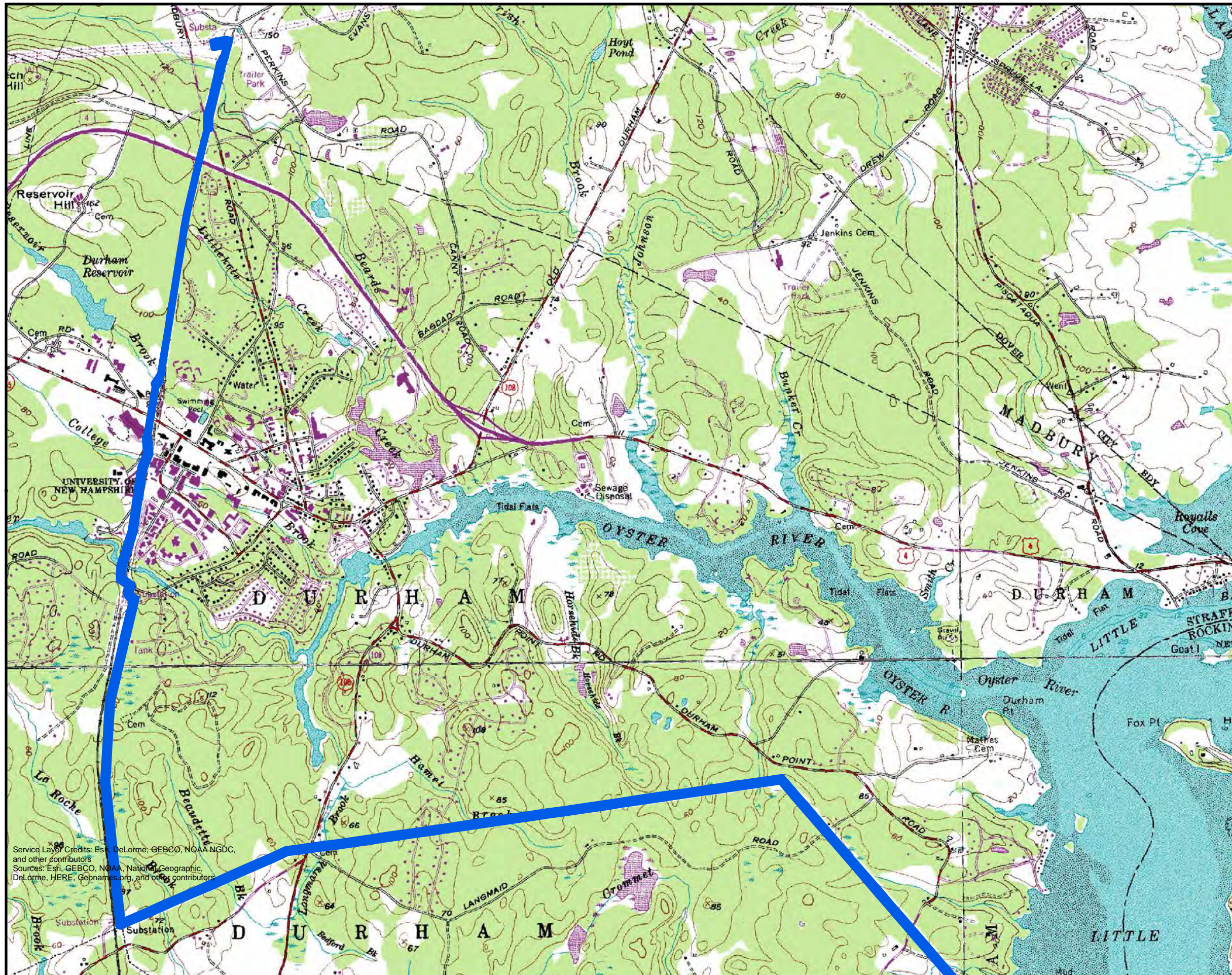
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AD6266-8 REV. 2-15

ATTACHED CHECK ISSUED AS FULL PAYMENT OF ITEMS BELOW. PLEASE DETACH STUB AND DEPOSIT CHECK PROMPTLY.

Vendor ID	Personnel ID	Check No.	Date
SONH	13	0000317327	02/11/16
Payor: PSNH DBA EVERSOURCE ENERGY			

Date	Invoice No.	PO/Cntrct	Rel	Payment Amount	Cur
02/05/16	02082016A			\$8,250.00	USD



**US Geological Survey Map
Scale 1:24,000**

Seacoast Reliability Project
Attachment C
Map 1 of 2

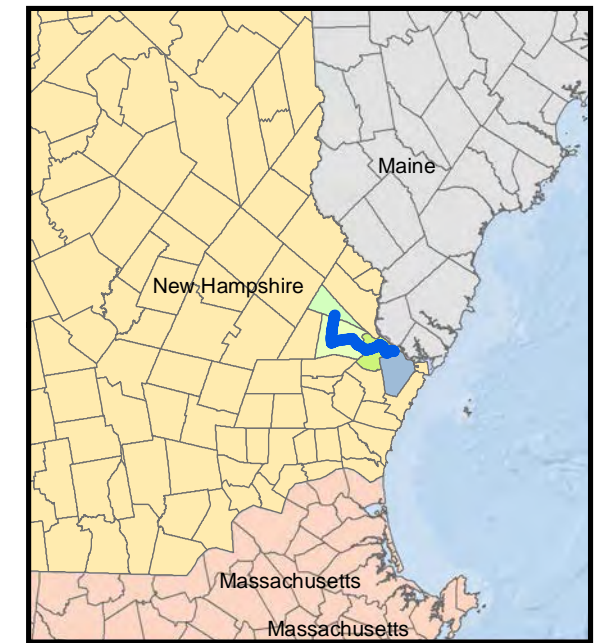
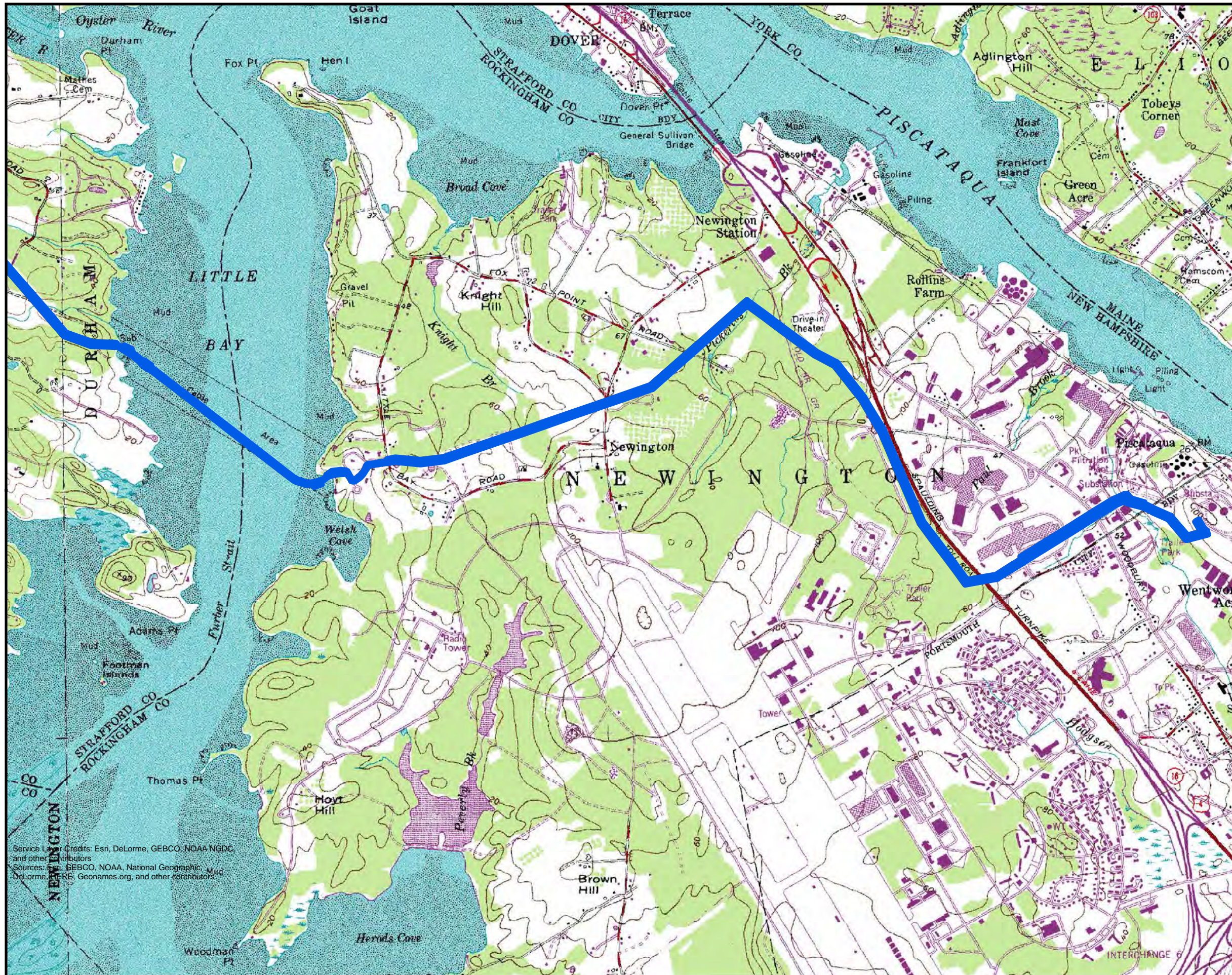
 Project Area



0 0.4 0.8 Miles

EVERSOURCE
ENERGY

Service Layer Credits: Esri, DeLorme, GEBCO, NOAA NGDC, and other contributors
Sources: Esri, GEBCO, NOAA, National Geographic, DeLorme, HERE, Geonames.org, and other contributors



**US Geological Survey Map
Scale 1:24,000**

Seacoast Reliability Project
Attachment C
Map 2 of 2

 Project Area



0 0.4 0.8
Miles

EVERSOURCE
ENERGY

Service Layer Credits: Esri, DeLorme, GEBCO, NOAA, NGDC, and other contributors
Sources: Esri, GEBCO, NOAA, National Geographic, DeLorme, HERE, Geonames.org, and other contributors

SRP Interagency meeting

January 12, 2016

Attendees:

Dave Price, NHDES Proj Mgr	Dave Keddell, USACE	Jim Jiottis, Eversource Site Eng
Lori Sommer, NHDES Mit	Rick Kristoff, USACE	Joe Sperry, Eversource Line Eng
Ridgely Mauk, NHDES AoT	Mike Johnson, NOAA	Kurt Nelson, Eversource Environ.
Owen David, NHDES 401	Phil Colarusso, USEPA	Ann Pembroke, Normandeau, Marine (recording)
Amy Lamb, NHHNB	Mark Kerns, USEPA	Sarah Allen, Normandeau, PM, Terrestrial
	Maria Tur, USFWS	

Sarah Allen (SA) and Ann Pembroke (AP) provided a power point presentation summarizing the project including recent revisions on locations of buried sections, status of agreements with towns and landowners, water quality modeling results, updated resource impact areas, status of mitigation discussions, and revised filing schedule.

Ensuing discussions covered these topics:

Alternatives

- Mike Johnson (MJ) asked whether the Little Bay crossing could be done using HDD. SA and Jim Jiottis (JJ) provided an explanation of why the project determined this was infeasible (length of bore at upper limit of technology; would require a 42" bore; subsurface entirely bedrock (hard and slow) and there are several faults in the middle of Little Bay increasing risk of "frac out"; both ends are in neighborhoods; installation would take about 10 months, with 24 hr/day activity; lay down area would be about 1 mile long; access for heavy equipment challenging with existing roadways in Durham)
- MJ asked whether the project considered crossing at Adams Point (through Furber Strait) where the crossing would be much shorter. SA and JJ pointed to the fact that there is no existing utility corridor in this area so that would require construction in a virgin corridor, something that Eversource tries to avoid.
- Maria Tur asked if we were able to avoid the wildlife refuge on Pease. Response was yes.

Installation

- Mark Kern (MK) asked if on-shore burial of the cable is an issue. JJ responded that Eversource rights are for overhead facilities so (at least in some cases) they will have to acquire the underground rights in order to bury the cable
- MJ asked for further explanation of the jet plow process, specifically whether the cable is laid during the passage of the plow or if an additional pass is required. Ann & Sarah provided more detail on the process. Installation of cable is simultaneous with jet plow passage.
- MJ asked whether we would need to go back to rework the sediment to restore bathymetry after installation. We responded that we did not expect to have to do so. Experience has shown that the

opening created by the jet plow substantially fills back in immediately. While there may be a depression over the cable initially, the water quality model results suggest that there will not be mounds of sediment adjacent to the cables. It is also expected that Eversource will require the marine contractor to demonstrate that they have achieved the required burial depth.

- Dave Price (DP) asked if the marine contractor we've been working with is going to be the contractor actually doing the work? How much experience do they have? JJ & SA responded that the contracting process at Eversource probably doesn't allow them to hire this contractor without competitive bid (not stated, but it is likely that Eversource will contract the production of the cable and it is the cable manufacturer who will hire the installer). The marine contractor we've been consulting does have substantial experience installing cables using jet plows in many different environmental conditions (sediment types, current velocities, environmentally sensitive areas).

Impacts

- MK asked that we provide maps of forested wetland clearing within the ROW. SA said they are included in our mapping.
- MJ noted that the impacts table had about 273,000 sq ft of tidal impact and asked if that included all the trenching in Little Bay. Does it include the side-cast area? Is it cumulative for the three cables, including a total width of about 100 ft (accounting for the 30-ft separation between cables)? SA responded that the number is cumulative taking all these factors into account.
- MJ asked how does the aquaculture lease on the eastern end of the cable route feel about the project? AP responded that we have had discussions with him and he has not raised any objections. We tried to make very clear that the expected sediment plume behavior in the vicinity of his project is based on a model and may not be completely accurate.
- AL asked how the Project will avoid the *Carex* habitat during construction. Sarah indicated that the project would actually "touch" the edge of only one area of *Carex* habitat. It may actually allow the habitat to expand as this species prefers open areas.

Resources

- Phil Colarusso confirmed that there was no eelgrass observed in Little Bay during the 2015 PREP survey.
- Amy asked whether there will be a pre-installation survey for eelgrass. We responded that Eversource plans to survey the project area in summer 2017 prior to in-water installation.

Mitigation

- Lori Sommer (LS) - were the in-lieu fee amounts calculated based on a percentage of secondary impacts? SA confirmed the project used 15%.
- LS asked what Durham is proposing to do in the Wagon Hill Farm shoreline restoration proposal. How much money are they looking for? SA explained that Durham would like to stabilize the shoreline, restore salt marsh and a small amount of freshwater habitat, and create barriers to human and dog access. SA said that the project would require additional engineering study to identify and solve the shoreline erosion.

- LS commented that the Aquatic Resources Conservation Fund has recently provided funding to the Powder Major project. Would Eversource consider contributing to that project? She acknowledged that the timing of the SRP may not coincide with the funding campaign. Other thoughts include an oyster restoration grant in Greenland and the Spruce Woods forest in Durham (New England cottontail habitat restoration).

Permits

- MK asked whether there has been a decision regarding need for a 401 Water Quality Certificate; Owen David indicated that since this project is going to the SEC and there is not an individual Corps permit there will not be a stand-alone Water Quality Certificate. However, he will be providing conditions to be included in the overall permit for the project.

Monitoring

- Salt marsh
 - o MJ asked how long we proposed to monitor salt marsh recovery – 3 to 5 years?; usually requires a 3 year minimum
 - o LS said the state would allow cessation of monitoring after 3 years if it has been demonstrated that there are no issues
- Water quality
 - o DP asked whether we would do turbidity monitoring and establish threshold exceedances
 - o MJ recommended there be a discussion of turbidity monitoring. He felt it may or may not involve a stop work clause but there is value to having data confirming how well the model works. AP said that the model was run on suspended sediments, not turbidity, which cannot be measured directly in the field so that complicates trying to validate the model in the field. AP also indicated that including a stop work clause for a specific cable run would be onerous because stopping the jet plow in the middle of a run is technically very difficult. AP also indicated that Eversource can put conditions in their contract with the installer controlling aspects of their operations (e.g., jet plow advancement rate as the model showed that a substantially faster rate results in higher plume concentrations, although for a shorter duration). The consensus of the agencies was that Eversource should propose water quality monitoring for the filing.
 - o Ridge Mauck suggested that since Eversource is installing three cables about a week apart that the Project should look at a process where the results from water quality monitoring of a single cable could be evaluated prior to the next installation and used to make adjustments for the subsequent installations.
- Re-deposition
 - o MJ made the point that SSFATE was not really developed to predict deposition of sediments and doesn't necessarily function very well for that. Can we do something to validate those predictions?
 - o AL – will we be monitoring bathymetry after installation? AP – in general, the marine contractor will likely be required to do that.

- AL – since we will be affecting “exemplary habitats” in Little Bay, will we be doing any monitoring to confirm impacts are as predicted (not worse)?

Other

- MK asked how controversial the project is. SA indicated that there is certainly local “interest” and that project is meeting regularly with all municipalities and interested residents. Newington is still withholding support and trying to find alternative routes.
- Consensus that the confidential data for NHB, USFWS and other resources should be summarized in the public portion of the application, with locations and other details provided under separate cover.

Follow-up

- Develop proposed turbidity monitoring survey and follow up with agency discussion
- Develop proposed post-construction bathymetric surveys and follow up with agency discussion

Develop post-construction monitoring program for *Carex cristatella* impact area. Date



CONFIDENTIAL

January 12, 2015

TO: Seacoast Reliability Project Team
FROM: Sarah Allen
SUBJECT: Summary of Agency Pre-Application Meeting

Meeting Location & Date: DES, Concord, NH, January 6, 2015

Attendees: Dave Keddell (Corps), Mark Kern (EPA), Maria Tur (FWS), Sue Tuxbury (NMFS), Ridgely Mauck (DES AoT), Collis Adams (DES Wetlands), Chris Williams (DES Coastal Program), Tim Drew (DES Info/SEC), Cheri Patterson (NHF&G), Melissa Coppola (DRED-NHB), Michael Pacy, Joe Sperry, Laura Games (all PSNH), Ann Pembroke and Sarah Allen (Normandeau, recording)

Sarah and Ann gave an overview of the project using the attached slides.

Comments/questions about land-based discussions

1. Melissa – is this project under the 5 year maintenance (clearing) plan? *Response:* we described the existing narrow (60') corridor clearing and that the remainder of the ROW will be cleared to 100' or limit of easement, if less than 100'.
2. Maria – northern long-eared bat is currently being evaluated for ESA listing with a decision likely in April. This species is thought to be more abundant along the coast. Tree clearing is a potential concern for this species. She wants to know the extent of upland and wetland tree clearing. *Response:* the project will provide in permit application.
3. Melissa – the slide described some vegetation communities as “not confirmed” – is that because they were outside the corridor? *Response:* a search did not find them in the corridor.
 - a. When were surveys done for the plants? *Response:* surveys for most species were conducted during the season when the plants were in identifiable condition; we missed the appropriate season for small

whorled pogonia and will be going back out in 2015. Melissa recommended that we search for it in late May-early June.

- b. How did the project eliminate habitat potential for various plants?

Department considers that if habitat is identified in one spot, the potential is there for the habitat to occur in nearby locations. *Response:*

Normandeau will clarify with botanist and describe in report.

4. Maria – will we be able to provide total acreages of clearing, etc.? Is it all within the ROW? *Response:* Yes to both.
5. Cheri – can the project leave thermal buffers for perennial streams? *Response:* PSNH can leave tall shrubs along stream banks, but no trees within cleared corridor
6. Maria – monarch butterfly is currently a species of interest for habitat enhancement along utility ROWs. FWS could be interested in partnering with the project on this. *Response:* the project team will discuss but sounds reasonable.
7. Collis – vernal pool survey – it seems unusual for the length of the project to have no vernal pools. Are you confident in your survey? *Response:* yes.
8. Collis – conversion of forested to open land is probably a good candidate for in-lieu fee mitigation. *Response:* Yes, except that the towns of Durham and Newington (largest impacts) may want to pursue local mitigation. Collis agreed.

Comments/questions regarding Oyster River crossing

1. Dave – is the Oyster River crossing overhead? *Response:* the wires will cross the Oyster River, but the project is also proposing a construction crossing that will consist of timber mats on the banks and as pilings in the shallow river. Explained RR crossing constraints and that the Oyster River crossing is a secondary plan should the RR deny crossing rights.
2. Cheri – time of year for construction will make a difference in NHF&G opinion. Probably prefer fall so the timber mats aren't placed in the river after reptiles & amphibians have burrowed into the mud for the winter. She will confer with inland and non-game staff. The inland fisheries staff may want to conduct some site surveys (electrofishing).

Comments/questions regarding Little Bay crossing

1. Several regulators asked how many cables will there be. How many active cables are there now? What is the spacing between cables? *Response:* 6 new cables, 3" diameter, spaced 30' apart. Joe explained the 30' spacing was necessary protection during installation. Laura described 1990's removal effort of old cables, and I explained that marine divers examined the old cables this year and found them to be sound enough for removal.
2. Cheri – what contaminants are associated with the old cables? Are they buried? *Response:* Lead wrap with paper and mineral oil insulation. They are mostly visible on the surface.
3. Sue – plan to survey for eelgrass within the corridor during peak growth in the season of construction
4. Cheri – should include sea lamprey among the diadromous fishes. She will check records to make sure that is appropriate.
5. Cheri – western tidal flat is feeding and spawning habitat for horseshoe crabs. *Response:* Ann concurred, and later said that the fall timing of the cable installation will protect the crabs and eggs from impacts.
6. Maria - should we be considering red knot (recently listed)? She will check in the office for its potential presence in the project area.
7. General interest in jet plow process – Ann described the process and the RPA-ASA water quality modeling.
8. Collis – what types of debris need to be removed from Little Bay? *Response:* minimal, video and diver surveys indicated most was related to the cables and debris (trees, anchors) caught on the cable.
9. Collis – would like a link to a jet plow video. *Response:* the project team will locate one.
10. Melissa – will any of the trenches be permanent? *Response:* No, all impacts will be temporary.
11. Cheri – concerned about timing of jet plow relative to tide – feels that plowing at high tide would create the largest plume. *Response:* the project team will evaluate, but reminded her of the work limitations due to shallow water in the tidal flats.
12. Ridgely – how wide are the trenches? *Response:* 4' at the surface.
13. Tim – do we know that we won't run into ledge with the jet plow? *Response:* yes, the subbottom profiling indicates no ledge at the proposed depths.

14. Dave – jet plow generally considered to be temporary impacts.
15. Cheri, Sue – why was jet plow chosen over HDD? *Response:* PSNH team described the general constraints of HDD for this project – length and risk of drilling, need for large staging areas on both sides of bay, equipment transport on small roads, risk of frac out.
16. Cheri – have we interacted with the aquaculture lease? *Response:* we recognize that will be necessary.
17. Melissa – will there be monitoring to look at recovery of benthic community after jet plowing? *Response:* Probably, the benthic samples were collected with post-construction monitoring in mind.
18. Sarah – suggestions for mitigation for jet plowing
19. Mark – suggests that marine specialists get together and discuss magnitude of temporary impacts in Little Bay and whether mitigation should be provided. Perhaps Phil Colarusso, Ed Reiner, state folks, NMFS; Great Bay Partnership should be included
20. Cheri – water quality modeling should evaluate whether jet plowing on neap tides would be better than on spring tides. Suggests trying to avoid the most dramatic tides. *Response:* the project will evaluate the feasibility of this approach but the necessary duration of the installation process will make this difficult.
21. Cheri – from where is the water withdrawn for the jet plow? What measures are taken to minimize entrainment? What is the inflow rate? *Response:* Joe described the process. The report will describe the specifics of the operation where possible. Joe emphasized that different contractors have different equipment specifications.
22. Dave stated Corps may not require mitigation because impacts are temporary. He will talk with Ruth Ladd (mitigation specialist at Corps).

Comments/questions regarding permitting approach

1. Dave – need to check on the Section 10 areas/activities to determine if Corps permit will be an IP or a GP
2. Mark – will there be a 401 Certificate regardless of whether the Corps permit is IP or GP? The general regulatory response was yes, that it would be evaluated by either the State or the Corps.
3. Collis – can't really discuss Water Quality Cert without having a good idea of full extent of the impacts.

4. Ridgely – may not trigger AoT if the land-based work does not reach the ground disturbance threshold for an AoT. The Little Bay impacts will be covered by Wetlands, therefore would be redundant in AoT.
5. Collis – Wetland department will probably take the lead in permitting with AOT providing comments
6. Chris (after the general meeting) – coastal zone consistency requirements will depend on status of federal review. If the Corps permit is an IP, then a consistency review will be necessary. If the Corps goes GP, DES has the prerogative to still require it, but typically does not. May confer with NOAA.

General Wrap Up Actions

1. Cheri – circulate the meeting summary so the agencies can review and annotate if needed
2. Sue requested the slide presentation, and was seconded by most other agencies.
3. Cheri – requested a detail slide of the Oyster River crossing for internal discussion.
4. I will talk to Lori Sommer to bring her up to speed regarding mitigation.

SEACOAST RELIABILITY PROJECT
ALTERATION OF TERRAIN PERMIT APPLICATION

**Seacoast Reliability Project Proof of Submittals to Towns and River
Advisory Committees**

7015 1520 0002 9696 2928

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Attachment A - Signed Application Form



ALTERATION OF TERRAIN PERMIT APPLICATION

Water Division/ Alteration of Terrain Bureau/ Land Resources Management
Check the Status of your Application: www.des.nh.gov/onestop



RSA/ Rule: RSA 485-A:17, Env-Wq 1500

Administrative Use Only	Administrative Use Only	Administrative Use Only	File Number:
			Check No.
			Amount:
			Initials:

1. PROJECT LOCATION				
PROJECT NAME: Seacoast Reliability Project				
ADDRESS: Multiple - Linear Transmission Line ROW - See USGS Map				
TOWN/CITY: Multiple - See Map		COUNTY: Rockingham, Strafford	STATE: NH	ZIPCODE:
TAX MAP: Multiple - Attached	BLOCK:	LOT NUMBER:	UNIT:	
LOCATION COORDINATES: 43 6'29.33" N, 70 52'35.96" W			<input checked="" type="checkbox"/> LATITUDE/LONGITUDE <input type="checkbox"/> UTM <input type="checkbox"/> STATE PLANE	
2. APPLICANT INFORMATION (DESIRED PERMIT HOLDER)				
APPLICANT NAME: PSNH d/b/a Eversource Energy, Inc			CONTACT NAME: Kurt Nelson	
EMAIL: kurt.nelson@eversource.com	FAX:	PHONE: 603 634-3256		
ADDRESS: 13 Legends Drive.				
TOWN/CITY: Hooksett			STATE: NH	ZIPCODE: 03106
3. PROPERTY OWNER INFORMATION (IF DIFFERENT FROM APPLICANT)				
PROPERTY OWNER: ROW - easements and fee ownerships			CONTACT NAME:	
EMAIL:	FAX:	PHONE:		
ADDRESS:				
TOWN/CITY:			STATE:	ZIPCODE:
4. AGENT INFORMATION				
ENGINEERING FIRM: Normandeau Associates, Inc.			CONTACT NAME: Sarah Allen	
EMAIL: sallen@normandeau.com	FAX:	PHONE: 603 637-1158		
ADDRESS: 25 Nashua Road				
TOWN/CITY: Bedford			STATE: NH	ZIPCODE: 03110
5. PROJECT TYPE				
<input type="checkbox"/> EXCAVATION	<input type="checkbox"/> COMMERCIAL	<input type="checkbox"/> SCHOOL	<input type="checkbox"/> AGRICULTURAL	<input type="checkbox"/> LANDFILL
<input type="checkbox"/> RESIDENTIAL	<input type="checkbox"/> GOLF COURSE	<input type="checkbox"/> MUNICIPAL	<input type="checkbox"/> LAND CONVERSION	<input checked="" type="checkbox"/> OTHER

Ridge.Mauck@des.nh.gov or (603) 271-2147

NHDES Alteration of Terrain Bureau, PO Box 95, Concord, NH 03303-0095
www.des.nh.gov

6. BRIEF PROJECT DESCRIPTION (PLEASE DO NOT REPLY "SEE ATTACHED")	
The Seacoast Reliability Project (SRP) will include construction of a new 12.9-mile long 115-kilovolt (kV) transmission line within an existing distribution line ROW between the existing PSNH Madbury and Portsmouth substations. The project includes new overhead and underground/submarine segments in Madbury, Durham, Newington and Portsmouth.	
7. IF APPLICABLE, DESCRIBE ANY WORK STARTED PRIOR TO RECEIVING PERMIT	
Not applicable	
8. REQUIRED QUESTIONS (PLEASE DO NOT LEAVE FIELDS BLANK. IF NOT APPLICABLE, STATE "N/A")	
A. Date a copy of the <i>complete</i> application was sent to the municipality ¹ : <u> </u> / <u> </u> / <u> </u> . (Attach proof of delivery)	
B. Total area of disturbance: <u>1,580,392</u> square feet	
C. Additional impervious cover as a result of the project: <u>7,234</u> square feet (use the "-" symbol to indicate a net reduction in impervious coverage). Total impervious cover: <u>7,234</u> square feet.	
D. Total undisturbed cover: <u>3,142,400</u> square feet	
E. Number of lots proposed: <u>0</u>	
F. Total length of roadway: <u>0</u> linear feet	
G. Select plan type submitted: <input type="checkbox"/> Land Conversion <input checked="" type="checkbox"/> Detailed Development <input type="checkbox"/> Excavation, Grading & Reclamation <input type="checkbox"/> Steep Slope	
H. Name of receiving waters: <u>SEVERAL, SEE APPLICATION NARRATIVE</u>	
Using NHDES's Web GIS OneStop program (www2.des.state.nh.us/gis/onestop/), with the Surface Water Impairment layer turned on, list the impairments identified: <u>SEVERAL, SEE APPLICATION NARRATIVE</u> (enter "NA" if no pollutants are listed). For more guidance see: http://des.nh.gov/organization/divisions/water/wmb/tmdl/documents/onestop_gis_wgc_ref_guide.pdf	
I. <input checked="" type="checkbox"/> This project is within ¼ mi of a <u>designated river</u> (River name: <u>Oyster River</u>) AND I have notified the <u>Local River Management Advisory Committee</u> by providing them with a copy of the complete application ¹ , including all supporting materials, on Month: <u> </u> Day: <u> </u> Year: <u> </u> (Attach proof of delivery) <input type="checkbox"/> This project is not within ¼ mi of a designated river.	
J. Name of species identified by the Natural Heritage Bureau as threatened or endangered or of concern: <u>Several - See Attachment G</u>	
K. Cut volume <u>0</u> cubic feet and fill volume <u>40</u> cubic feet within the 100-year floodplain (enter "NA" if not within the floodplain)	
L. Is the project within a Water Supply Intake Protection Area (WSIPA)? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Is the project within a Groundwater Protection Area (GPA)? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Are the well setbacks outlined in Env-Wq 1508.02 being met? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> Note: Guidance document titled " Using NHDES's OneStop WebGIS to Locate Protection Areas " is available online. For more details on the restrictions in these areas, read Chapter 3.1 in Volume 2 of the NH Stormwater Manual.	

¹ In accordance with Env-Wq 1503.05 (c)(4), *provide proof* that a completed application form, checklist, plans and all other supporting materials have been sent or delivered to the governing body of each municipality in which the project is proposed. Env-Wq 1503.05 (c)(4) also requires the applicant to provide proof that a completed application form, checklist, plans and all other supporting materials have been sent or delivered to the Local River Advisory Committee, if the project is within 1/4 mi of a designated river.

Ridge.Mauck@des.nh.gov or (603) 271-2147

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8. REQUIRED QUESTIONS CONTINUED

M. Is the project a High Load area in accordance with Env-Wq 1502.26? YES NO

If yes, specify type of high load land use or activity? _____

N. For each type of approval or permit, check "Yes" if the permit or approval type is required for your project and indicate the permit number / approval date. Indicate "Pending" if the application has been filed, but the permit has not yet been issued. Check "No" to indicate that the permit type is required, but not yet been filed with the Department. Check "N/A" if the permit or approval type is not required for your project.

1. Water Supply Approval	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A	Permit number:	Pending <input type="checkbox"/>
2. Wetlands Permit	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> N/A	Permit number:	Pending <input type="checkbox"/>
3. Shoreland Permit	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> N/A	Permit number:	Pending <input type="checkbox"/>
4. UIC Registration	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A	Registration date:	Pending <input type="checkbox"/>
5. Large/Small Community Well Approval	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A	Approval letter date:	Pending <input type="checkbox"/>
6. Large Groundwater Withdrawal Permit	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A	Permit number:	Pending <input type="checkbox"/>
7. Other:	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A	Permit number:	Pending <input type="checkbox"/>

9. ADDITIONAL INFORMATION

A. If you have had a pre-application meeting with AoT staff, state his or her name(s): RIDGELY MAUCK
 Attach a copy of the meeting minutes.

B. Will blasting of bedrock be required? YES NO If yes, estimated quantity of blast rock: 1,100 cubic yards.
 If yes, standard blasting BMP notes must be placed on the plans, available at:
<http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-10-12.pdf>

If greater than 5,000 cubic yards of blast rock will be generated, a groundwater monitoring program must be developed and submitted to NHDES. Contact the AoT Bureau for additional detail.

C. Indicate if the project will withdraw from, or directly discharge to, any of the following water sources *post-development* and, if "Yes", indicate its purpose:

1. Stream or Wetland Purpose:	YES <input type="checkbox"/> Withdrawal <input type="checkbox"/> Discharge <input type="checkbox"/> NO <input checked="" type="checkbox"/>
2. Man-made pond created by impounding a stream or wetland Purpose:	YES <input type="checkbox"/> Withdrawal <input type="checkbox"/> Discharge <input type="checkbox"/> NO <input checked="" type="checkbox"/>
3. Unlined pond dug into the water table Purpose:	YES <input type="checkbox"/> Withdrawal <input type="checkbox"/> Discharge <input type="checkbox"/> NO <input checked="" type="checkbox"/>

10. CHECK ALL APPLICATION ATTACHMENTS THAT APPLY (SUBMIT WITH APPLICATION IN ORDER LISTED)**LOOSE:**

- Signed application form: des.nh.gov/organization/divisions/water/aot/index.htm (with attached proof(s) of delivery)
- Check for the application fee: des.nh.gov/organization/divisions/water/aot/fees.htm
- Color copy of a USGS map with the property boundaries outlined (1" = 2,000' scale)
- A copy of the pre-application meeting minutes, if you had a pre-application meeting with AoT staff.

BIND IN A REPORT IN THE FOLLOWING ORDER:

- Copy of the signed application form & application checklist (des.nh.gov/organization/divisions/water/aot/index.htm)
- Copy of the check
- Copy of the USGS map with the property boundaries outlined (1" = 2,000' scale)
- Narrative of the project with a summary table of the peak discharge rate for the off-site discharge points
- Web GIS printout with the "Surface Water Impairments" layer turned on - www2.des.state.nh.us/gis/onestop/
- Web GIS printouts with the AoT screening layers turned on - www2.des.state.nh.us/gis/onestop/
- NHB letter using DataCheck Tool - www.nhdfi.org/about-forests-and-lands/bureaus/natural-heritage-bureau/
- The Web Soil Survey Map with project's watershed outlined - websoilsurvey.nrcs.usda.gov
- Aerial photograph (1" = 2,000' scale with the site boundaries outlined)
- Photographs representative of the site

Groundwater Recharge Volume calculations (one worksheet for each permit application):

des.nh.gov/organization/divisions/water/aot/documents/bmp_worksh.xls

BMP worksheets (one worksheet for each treatment system):

des.nh.gov/organization/divisions/water/aot/documents/bmp_worksh.xls

SEE DRAINAGE ANALYSIS WAIVER REQUEST

Ridge.Mauck@des.nh.gov or (603) 271-2147

NHDES Alteration of Terrain Bureau, PO Box 95, Concord, NH 03303-0095

www.des.nh.gov

10. CHECK ALL APPLICATION ATTACHMENTS THAT APPLY (SUBMIT WITH APPLICATION IN ORDER LISTED)

- Drainage analysis, stamped by a professional engineer (see Application Checklist for details)
- Riprap apron or other energy dissipation or stability calculations
- Site Specific Soil Survey report, stamped and with a certification note prepared by the soil scientist that the survey was done in accordance with the Site Specific Soil Mapping standards, *Site-Specific Soil Mapping Standards for NH & VT, SSSNNE Special Publication No. 3.*
- Infiltration Feasibility Report (example online)
- Registration and Notification Form for Storm Water Infiltration to Groundwater (UIC Registration-for underground systems only, including drywells and trenches):
(http://des.nh.gov/organization/divisions/water/dwqb/dwspp/gw_discharge)
- Inspection and maintenance manual with, if applicable, long term maintenance agreements
- Source control plan

PLANS:

PROJECT PLANS ARE 11X17

- One set of design plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details)
- Pre & post-development color coded soil plans on 11" x 17" (see Application Checklist for details)
- Pre & post-development drainage area plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details)

SEE DRAINAGE ANALYSIS WAIVER REQUEST



100-YEAR FLOODPLAIN REPORT:

SEE FLOODPLAIN REPORT WAIVER REQUEST

- All information required in Env-Wq 1503.09, submitted as a separate report.

- REVIEW APPLICATION FOR COMPLETENESS & CONFIRM INFORMATION LISTED ON THE APPLICATION IS INCLUDED WITH SUBMITTAL.

11. REQUIRED SIGNATURES

<input checked="" type="checkbox"/> APPLICANT OR <input type="checkbox"/> AGENT:		
 SIGNATURE	<p>KURT I. NELSON</p> PRINT NAME LEGIBLY	<p>4 15 2016</p> DATE
OWNER OR OWNER'S AGENT (IF DIFFERENT FROM APPLICANT):		
 SIGNATURE	<p>SARAH ALLEN</p> PRINT NAME LEGIBLY	<p>4 15 2016</p> DATE
By initialing here, I understand that in accordance with Env-Wq 1503.20(e), within one week after permit approval, the applicant shall submit a copy of all approved documents to the department in PDF format on a CD.		<p><u>KIN</u></p>

ATTACHMENT A: ALTERATION OF TERRAIN PERMIT APPLICATION CHECKLIST

Check the box to indicate the item has been provided or provide an explanation why the item does not apply.

DESIGN PLANS

- Plans printed on 34 - 36" by 22 - 24" white paper PROJECT PLANS ARE 11" X 17"
- PE stamp
- Wetland delineation
- Temporary erosion control measures
- Treatment for all stormwater runoff from impervious surfaces such as roadways (including gravel roadways), parking areas, and non-residential roof runoff. Guidance on treatment BMPs can be found in Volume 2, Chapter 4 of the NH Stormwater Management Manual. SEE DRAINAGE ANALYSIS WAIVER REQUEST
- Pre-existing 2-foot contours
- Proposed 2-foot contours NA
- Drainage easements protecting the drainage/treatment structures NA
- Compliance with the Wetlands Bureau, RSA 482- A <http://des.nh.gov/organization/divisions/water/wetlands/index.htm>.
Note that artificial detention in wetlands is not allowed.
- Compliance with the Comprehensive Shoreland Protection Act, RSA 483-B.
<http://des.nh.gov/organization/divisions/water/wetlands/cspa>
- Benches. Benching is needed if you have more than 20 feet change in elevation on a 2:1 slope, 30 feet change in elevation on a 3:1 slope, 40 feet change in elevation on a 4:1 slope. NA
- Check to see if any proposed ponds need state Dam permits.
<http://des.nh.gov/organization/divisions/water/dam/documents/damdef.pdf> NA

DETAILS

- Typical roadway x-section DESCRIBED IN SECTION 2.4 OF PROJECT NARRATIVE
- Detention basin with inverts noted on the outlet structure NA
- Stone berm level spreader NA
- Outlet protection – riprap aprons NA
- A general installation detail for an erosion control blanket
- Silt fences or mulch berm
- Storm drain inlet protection. Note that since hay bales must be embedded 4 inches into the ground, they are not to be used on hard surfaces such as pavement. NA
- Hay bale barriers

- Stone check dams NA
- Gravel construction exit NA
- The treatment BMP's proposed NA
- Any innovative BMP's proposed NA

CONSTRUCTION SEQUENCE/EROSION CONTROL

- Note that the project is to be managed in a manner that meets the requirements and intent of RSA 430:53 and Chapter Agr 3800 relative to invasive species.
- Note that perimeter controls shall be installed prior to earth moving operations
- Note that ponds and swales shall be installed early on in the construction sequence (before rough grading the site)
- Note that all ditches and swales shall be stabilized prior to directing runoff to them
- Note that all roadways and parking lots shall be stabilized within 72 hours of achieving finished grade
- Note that all cut and fill slopes shall be seeded/loamed within 72 hours of achieving finished grade
- Note that all erosion controls shall be inspected weekly AND after every half-inch of rainfall
- Note the limits on the open area allowed, see Env-Wq 1505.02 for detailed information

Example note: The smallest practical area shall be disturbed during construction, but in no case shall exceed 5 acres at any one time before disturbed areas are stabilized

- Note the definition of the word "stable"

Example note: An area shall be considered stable if one of the following has occurred:

- Base course gravels have been installed in areas to be paved
- A minimum of 85 percent vegetated growth has been established
- A minimum of 3 inches of non-erosive material such stone or riprap has been installed
- Or, erosion control blankets have been properly installed.

- Note the limit of time an area may be exposed
Example note: All areas shall be stabilized within 45 days of initial disturbance

- Provide temporary and permanent seeding specifications. (Reed canary grass is listed in the Green Book; however, this is a problematic species according to the Wetlands Bureau and therefore should not be specified)

- Provide winter construction notes that meet or exceed our standards.

Standard Winter Notes:

- All proposed vegetated areas that do not exhibit a minimum of 85 percent vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting, elsewhere. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events.
- All ditches or swales which do not exhibit a minimum of 85 percent vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions.

- After November 15, incomplete road or parking surfaces, where work has stopped for the winter season, shall be protected with a minimum of 3 inches of crushed gravel per NHDOT item 304.3.
- Note at the end of the construction sequence that "Lot disturbance, other than that shown on the approved plans, shall not commence until after the roadway has the base course to design elevation and the associated drainage is complete and stable". – This note is applicable to single/duplex family subdivisions, when lot development is not part of the permit.

DRAINAGE ANALYSES SEE DRAINAGE ANALYSIS WAIVER REQUEST

Please double-side 8 ½" x 11" sheets where possible but, **do not** reduce the text such that more than one page fits on one side.

- PE stamp
- Rainfall amount obtained from the Northeast Regional Climate Center- <http://precip.eas.cornell.edu/>. Include extreme precipitation table as obtained from the above referenced website.
- Drainage analyses, in the following order:
 - Pre-development analysis: Drainage diagram
 - Pre-development analysis: Area Listing and Soil Listing
 - Pre-development analysis: Node listing 1-year (if applicable), 2-year, 10-year and 50-year
 - Pre-development analysis: Full summary of the 10-year storm
 - Post-development analysis: Drainage diagram
 - Post-development analysis: Area Listing and Soil Listing
 - Post-development analysis: Node listing for the 2-year, 10-year and 50-year
 - Post-development analysis: Full summary of the 10-year storm
- Review the Area Listing and Soil Listing reports
 - Hydrologic soil groups (HSG) match the HSGs on the soil maps provided
 - There is the same or less HSG A soil area after development (check for each HSG)
 - There is the same or less "woods" cover in the post-development
 - Undeveloped land was assumed to be in "good" condition
 - The amount of impervious cover in the analyses is correct

Note: A good check is to subtract the total impervious area used in the pre analysis from the total impervious area used in the post-analysis. For residential projects without demolition occurring, a good check is to take this change in impervious area, subtract out the roadway and divide the remaining by the number of houses/units proposed. Do these numbers make sense?

- Check the storage input used to model the ponds
- Check to see if the artificial berms pass the 50-year storm, i.e., make sure the constructed berms on ponds are not overtopped
- Check the outlet structure proposed and make sure it matches that modeled
- Check to see if the total areas in the pre and post analyses are same
- Confirm the correct NRCS storm type was modeled (Coos, Carroll & Grafton counties are Type II, all others Type III)

PRE AND POST-DEVELOPMENT DRAINAGE AREA PLANS

- Plans printed on 34 - 36" by 22 - 24" on white paper
- Submit these plans separate from the soil plans
- A north arrow
- A scale
- Labeled subcatchments, reaches and ponds
- Tc lines
- A clear delineation of the subcatchment boundaries
- Roadway station numbers
- Culverts and other conveyance structures

PRE AND POST-DEVELOPMENT COLOR-CODED SOIL PLANS

- 11" x 17" sheets suitable, as long as it is readable
- Submit these plans separate from the drainage area plans
- A north arrow
- A scale
- Name of the soil scientist who performed the survey and date the soil survey took place
- 2-foot contours (5-foot contours if application is for a gravel pit) as well as other surveyed features
- Delineation of the soil boundaries and wetland boundaries
- Delineation of the subcatchment boundaries
- Soil series symbols (e.g., 26)
- A key or legend which identifies each soil series symbol and its associated soil series name (e.g., 26 = Windsor)
- The hydrologic soil group color coding (A = Green, B = yellow, C= orange, D=red, Water=blue, & Impervious = gray)

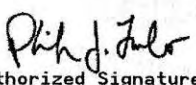

Please note that excavation projects (e.g., gravel pits) have similar requirements to that above, however the following are common exceptions/additions:

- Drainage report is not needed if site does not have off-site flow.
- 5 foot contours allowed rather than 2 foot.
- No PE stamp needed on the plans
- Add a note to the plans that the applicant must submit to the Department of Environmental Services a written update of the project and revised plans documenting the project status every five years from the date of the Alteration of Terrain permit.
- Add reclamation notes.

See NRCS publication titled: *Vegetating New Hampshire Sand and Gravel Pits* for a good resource, it is posted online at: <http://des.nh.gov/organization/divisions/water/aot/categories/publications> .

Attachment B - Copy of Application Fee Check

**PSNH SEACOAST RELIABILITY PROJECT
NHDES ALTERATION OF TERRAIN PERMIT APPLICATION**

PSNH DBA EVERSOURCE ENERGY			51-44 119
	Check No.	Date	Payment Amt
	0000317327	02/11/16	\$8,250.00 USD
PAY	EIGHT THOUSAND TWO HUNDRED FIFTY & 00/100***** DOLLAR		
TO THE ORDER OF	STATE OF NEW HAMPSHIRE TREASURER NH DEPT OF ENVIRONMENTAL SVCS 29 HAZEN DR PO BOX 95 CONCORD NH 03302-0095		
Bank of America	 Authorized Signature		
THIS CHECK HAS A PRISMATIC BLUE, RED, BLUE BACKGROUND VOID AFTER 6 MONTHS			

⑈ 3 1 7 3 2 7 ⑈ ⑆ 0 1 1 9 0 0 4 4 5 ⑆ 0 0 0 0 0 0 0 7 0 6 8 1 ⑈

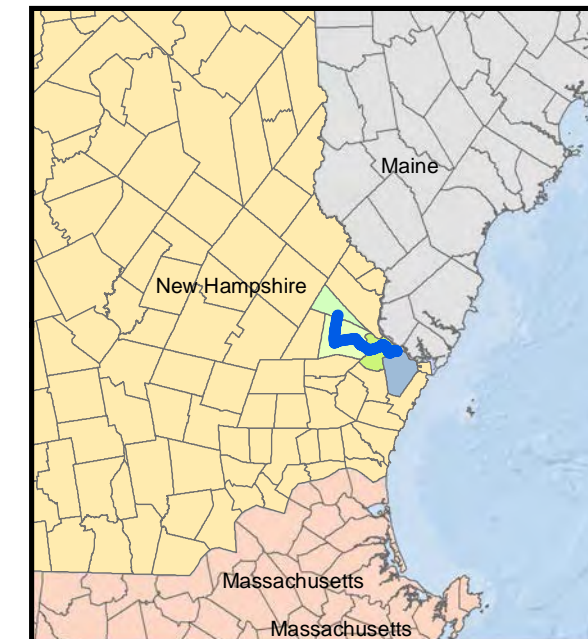
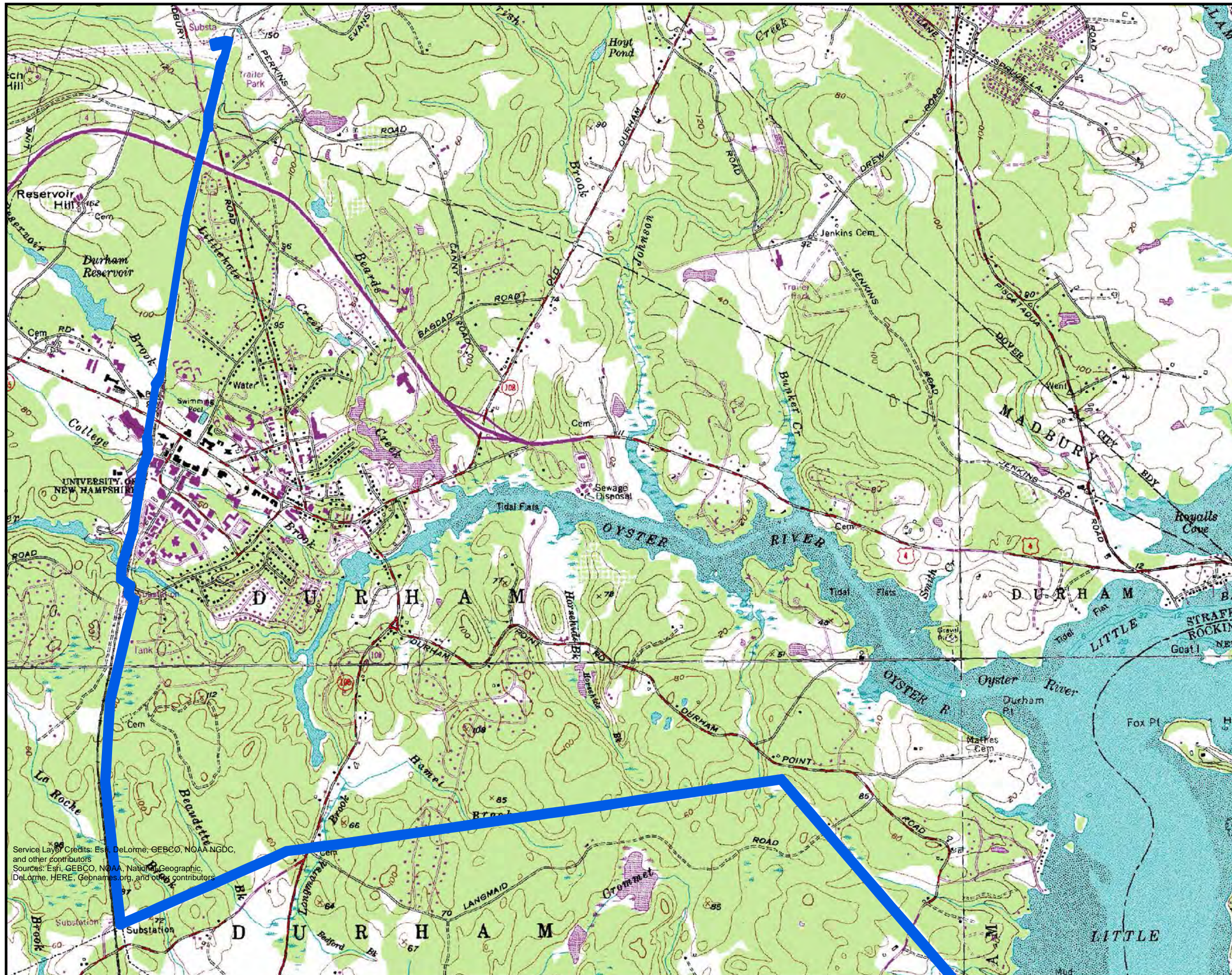
AD6266-8 REV. 2-15

ATTACHED CHECK ISSUED AS FULL PAYMENT OF ITEMS BELOW. PLEASE DETACH STUB AND DEPOSIT CHECK PROMPTLY.

Vendor ID	Personnel ID	Check No.	Date
SONH	13	0000317327	02/11/16
Payor: PSNH DBA EVERSOURCE ENERGY			

Date	Invoice No.	PO/Cntrct	Rel	Payment Amount	Cur
02/05/16	02082016A			\$8,250.00	USD

Attachment C - USGS Location Map



**US Geological Survey Map
Scale 1:24,000**

Seacoast Reliability Project
Attachment C
Map 1 of 2

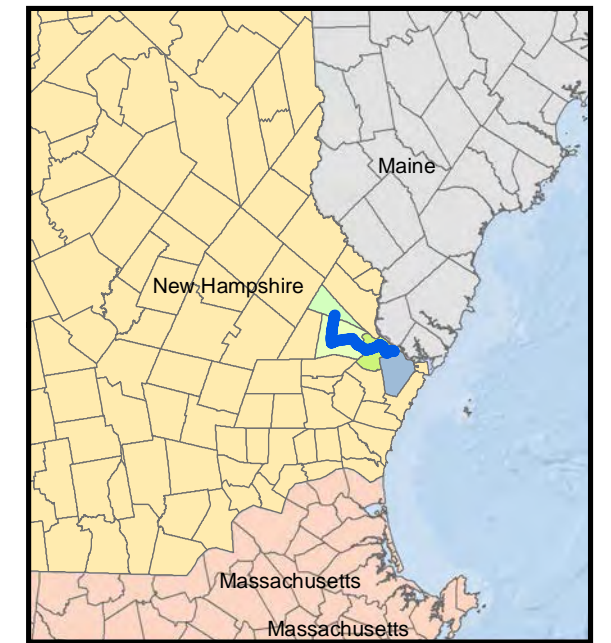
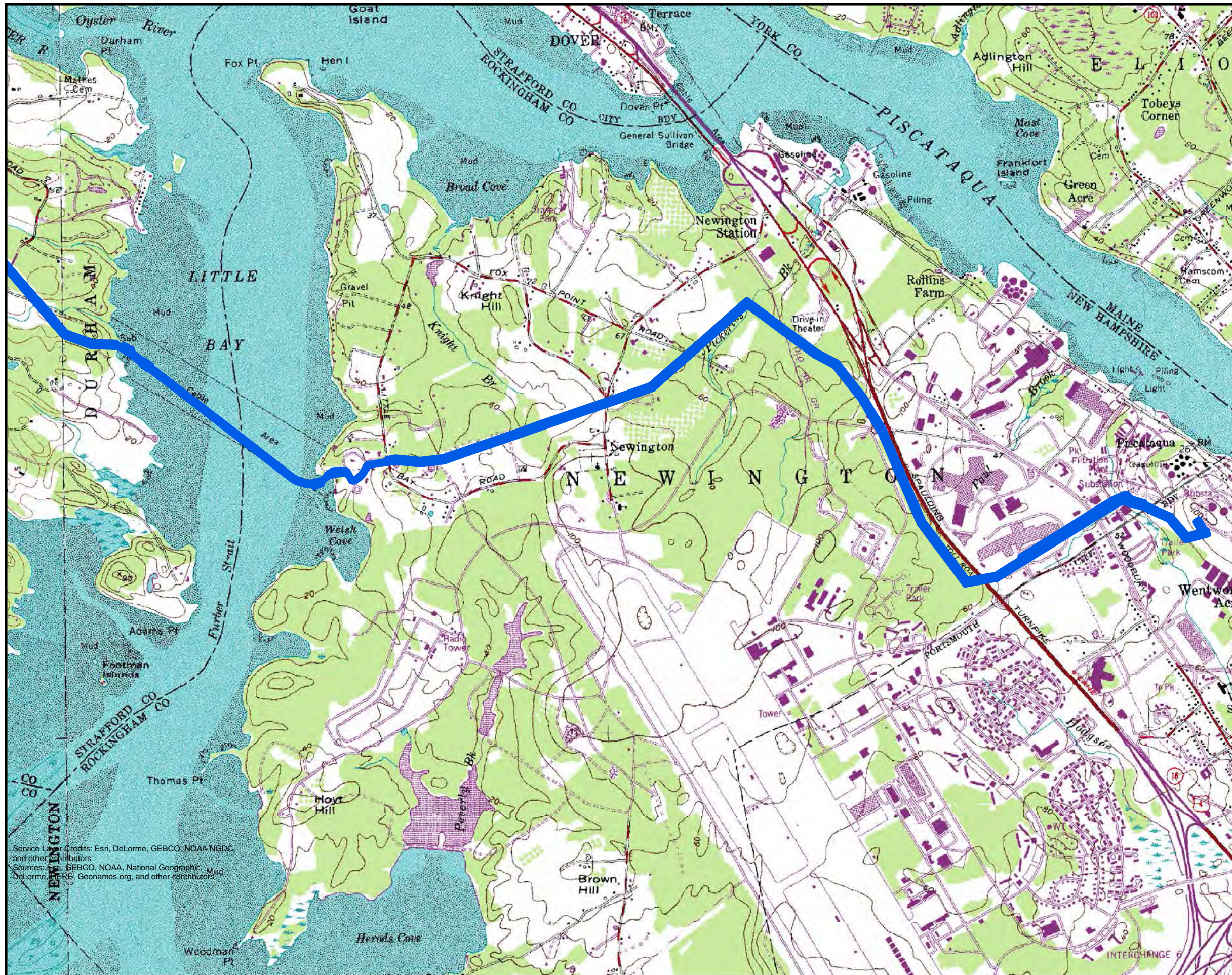
 Project Area



0 0.4 0.8
Miles

EVERSOURCE
ENERGY

Service Layer Credits: Esri, DeLorme, GEBCO, NOAA NGDC,
and other contributors
Sources: Esri, GEBCO, NOAA, National Geographic,
DeLorme, HERE, Geonames.org, and other contributors



**US Geological Survey Map
Scale 1:24,000**

Seacoast Reliability Project
Attachment C
Map 2 of 2

 Project Area



0 0.4 0.8 Miles

EVERSOURCE
ENERGY

Service Layer Credits: Esri, DeLorme, GEBCO, NOAA, NGDC, and other contributors
Sources: Esri, GEBCO, NOAA, National Geographic, DeLorme, HERE, Geonames.org, and other contributors

Attachment D - Project Narrative

PSNH Seacoast Reliability Project
Madbury to Portsmouth, New Hampshire
Project Description

1.0 Introduction

The proposed energy facility is a new, 115 kilovolt (115 kV) AC electric power transmission line to be owned and operated by Public Service Company of New Hampshire d/b/a Eversource Energy (“PSNH”), running a total of approximately 12.9 miles from PSNH’s Madbury Substation in Madbury, New Hampshire, through the Towns of Durham and Newington, New Hampshire, to PSNH’s Portsmouth Substation in Portsmouth, New Hampshire. The proposed energy facility, referred to hereafter as the Seacoast Reliability Project (“SRP” or “Project”) will also include new line terminal additions at each of these PSNH substations, which will also be owned and operated by PSNH. The new transmission line will be designated Line F107. The new 12.9 mile circuit will be primarily located in an existing electric right-of-way (ROW) corridor.

1.1 Proposed Transmission Line Route

The new line leaving the Madbury Substation will be located overhead on PSNH fee property and easements then in a portion of a Pan Am Railroad active railway corridor under a license agreement with the Railroad for approximately 1.4 miles. The line will then transition to underground within the UNH campus in Durham. The line will pass under Main Street and continue underground through the UNH campus for a total distance of 0.4 miles. The line will then be located overhead in existing right of way (“ROW”) corridor owned either in fee or under permanent easements by PSNH for approximately 1.8 miles to the Packers Falls Substation. The line then turns east and runs approximately 4.1 miles to the westerly shore of the Little Bay portion of Great Bay in Durham, where it will transition to underground.

After transitioning to underground, the line will continue via buried submarine cable across Little Bay within a designated cable corridor, to the easterly shoreline of Little Bay in Newington, a distance of approximately 0.9 miles. After crossing the bay, the Project will make landfall within an existing utility corridor owned in fee or under permanent easement by PSNH. The line will leave the ROW at Gundalow Landing and continue underground in the street.

The Project will travel underground for approximately 0.3 miles from Little Bay to a riser structure and then transition back to overhead east of Little Bay Road. The Project will continue overhead in existing utility corridor owned either in fee or under permanent easements by PSNH to the Portsmouth Substation, a distance of approximately 4.1 miles.

The Project will require work at each of the terminal substations, including structural bracing modification to the existing terminal structure, installation of a new circuit breaker and new coupling capacitor voltage transformers (“CCVT”) at Madbury Substation and a

new terminal structure, control enclosure expansion, bus extension, circuit breaker, and new CCVTs at Portsmouth Substation. The work conducted at both substations will be constructed within the substation fence line.

2.0 Project Elements

The installation of the proposed transmission line will involve several construction elements, including the construction of temporary access roads¹ and work pads, the use of previously disturbed and non-previously disturbed areas for marshalling yards and lay-down areas, vegetation removal (including equipment access), excavation of trenches in upland to install underground portions of the line, and construction of concrete footings for new transmission structures. Descriptions of each proposed types of land disturbance and measures to minimize impacts follow.

2.1 Marshalling Yard and Lay Down Area Locations

Marshalling yards, as the term applies to the Project, are defined as off-ROW locations generally consisting of existing open areas approximately three to five acres in size. Marshalling yards will be selectively located off-ROW along the length of the Project and utilized for material and equipment storage, work force parking and field offices. PSNH will seek to establish marshalling yards in previously disturbed areas which will be selected, in part, because they will have little to no environmental or community impacts. Marshalling yards will typically be located away from residential areas and will be of sufficient size to accommodate necessary vehicles and equipment and will have a means to restrict access. Typically, marshalling yards will not require tree clearing or extensive grading, will not require any disturbance to wetlands or waterbodies, and are often located on land under control of PSNH or their contractors, by lease agreement or otherwise. Sites typically chosen include parking lots, gravel pits, and industrial sites.

As necessary, construction BMPs will be implemented at the marshalling yards in accordance with the *New Hampshire Department of Resources and Economic Development Best Management Practices Manual for Utility Maintenance in and Adjacent to Wetlands and Waterbodies in New Hampshire*² issued by New Hampshire Department of Resources and Economic Development in 2010 (NHDRED BMPs) to ensure no sediment or erosion from the marshalling yards extends onto public ways or into any jurisdictional wetlands or water bodies.

The location of marshalling yards will be determined by PSNH or their contractors prior to construction, and therefore, are not specifically identified in the Application. As part of the Certificate of Site and Facility, to be applied to and issued by the NH Site Evaluation

¹ In the context of this permit application, "roads" include minimally improved surfaces that provide maintenance access to facilities for the project.

² Available at <http://www.nhdfl.org/library/pdf/Publications/DESUtilityBMPprev3.pdf>.

Committee (SEC), and to the extent any other post-decision authorizations are necessary, PSNH requests that the SEC delegate authority to NHDES to issue such approvals. As the need for such post-decision approvals arise, PSNH will submit the necessary information to NHDES and will identify the appropriate BMPs to be utilized at an individual marshalling yard location and how any potential environmental impacts will be mitigated.

Laydown areas, as this term applies to the Project, may be located within the Project corridor and are utilized for the temporary staging of materials and construction matting prior to installation. Laydown areas may also be used for equipment staging when the equipment is not in use. In most cases, the potential laydown areas will be previously disturbed and have exposed soils or modified vegetation such as a maintained field. If minor grading is required or if soil disturbance occurs in any proposed laydown areas, the laydown area will be restored to pre-existing topography and seeded, as appropriate. Laydown areas may be identified, as necessary, during the course of construction. To the extent any other environmental approvals are necessary, PSNH has requested that the SEC delegate authority to NHDES to issue such approvals.

2.2 Removal of Vegetation and Corridor Mowing in Advance of Construction

In most Project locations, tree removal, tree pruning, brush cutting or mowing or other vegetation removal will be required prior to construction. These activities will be limited to what is necessary to provide access to proposed structure locations, to facilitate safe equipment passage, to provide safe work sites for personnel within the corridor, and to maintain safe clearances between vegetation and transmission line conductors for reliable operation of the transmission facilities. Vegetation management-related activities will be carried out in accordance with the NHDRED BMPs.

Prior to vegetation removal and mowing, the boundaries of wetlands will be clearly flagged to prevent unpermitted encroachment into wetland areas. Access road improvements for tree clearing equipment will be limited to that necessary to facilitate sufficient access while minimizing overall disturbance. Tree clearing equipment will be operated from uplands wherever possible. Where necessary, trees within wetlands and streams that are inaccessible by equipment staged in upland areas will be accessed on timber mats within the area to be cleared. Historic, archaeological and rare plant resources will be marked and protected during vegetation removal operations as well as all other phases of construction. Access roads over confirmed archaeological resources will use temporary timber mats.

Tree removal operations, where required, will include the removal of tall-growing woody species within the utility corridor. Tall-growing trees outside of the ROW will be assessed for their potential to damage the transmission lines and may be pruned or removed to ensure reliability. Generally, trees to be removed will be cut close to the ground leaving the stumps and roots in place to minimize ground disturbance. Stumps will only be removed where required to facilitate structure installations, access, or a safe working environment. Woody material will be either chipped or diced and windrowed in uplands or removed from the ROW. Chips generated from the tree clearing may be utilized for erosion control

purposes. At the discretion of the environmental monitor, some woody material may be left in wetlands to avoid physical impacts to the wetland that would result from removing the wood. Where possible, for landowners who request to retain timber or firewood that is cleared during the construction process, the timber/firewood will be placed on the landowner's property in upland areas in locations that do not interfere with the project.

Small trees and shrubs within the ROW will be mowed, as necessary, with the intent of preserving roots and low-growing native vegetation to the extent practical. Where the ROW crosses streams and brooks, low-growing vegetation along the stream bank will be selectively cut to preserve a riparian buffer that will minimize the disturbance of stream bank soils and reduce the potential for erosion and sedimentation. In addition, PSNH will preserve low-growing vegetation in accordance with regulatory guidance or permit conditions, as necessary, to protect rare, threatened, and endangered (RTE) species or habitats. This Project will span more than one growing season; therefore, additional mowing of access ways and work pads may be required as vegetation regenerates in these locations.

2.3 Installation of Soil Erosion and Sedimentation Controls

Soil erosion and sedimentation controls will be implemented as depicted on the attached Environmental Maps, and in accordance with NHDRED BMPs. The environmental controls shown on the Environmental Maps may need to be supplemented due to seasonal work, the work methods proposed and to comply with any additional permit requirements. Any change to established environmental controls in a particular work area would require the approval of the Project's environmental monitor(s).

Some construction access roads will require additional BMPs for areas that have a higher potential to impact water quality, due mostly to steep slopes and proximity to water resources. Temporary erosion and sedimentation controls will be installed to prevent impacts to water quality resulting from land disturbance. In general, the installation of these controls will proceed in parallel with the construction of access road improvements.

Stormwater management controls will be described in the Project Stormwater Pollution Prevention Plan, to be completed prior to construction in accordance with the National Pollutant Discharge Elimination System Construction General Permit (CGP). Stormwater controls will be installed, inspected, and maintained.

2.4 Construction of Access Road Improvements and Work Pads

Access roads are required within the Project corridor to access work pads, pulling sites, and laydown areas during construction. Construction contractors will establish new temporary access roads where necessary. Where available, existing access roads will be used. Access roads and work pads for the Project are depicted on the attached Environmental Maps. These Environmental Maps also show additional BMPs that will be employed in areas with steep slopes adjacent to water resources.

Trap rock aprons will be used at access road entrances to public roadways to mitigate the potential for construction vehicles to track soil onto public streets and to minimize the migration of soils off-site. Aprons placed at the intersection of an access road with a public road will remain in place except in agricultural areas, lawns and on private property if the property owner wishes to have the stone apron removed. Gates will be installed to prevent un-authorized access as needed, and with permission of the landowner. Exposed soils on access roads will be wetted and stabilized as necessary during construction to suppress fugitive dust.

2.4.1 Temporary Access Roads to Work Pads and Laydown Areas

In most locations, access roads will be temporary. For temporary construction access to work pads, required work will be limited and will mostly consist of vegetation maintenance (e.g. mowing), limited grading and use of trap rock to facilitate access. Temporary access roads to structures will follow the contour of the existing land formation and will be designed to avoid environmentally sensitive areas to the greatest extent practicable. Temporary construction access roads will be restored to pre-construction condition. Project environmental monitors will oversee restoration activities.

2.4.2 Temporary Access Roads across Wetlands and Streams, and Sensitive Resource Areas

Where alternative access is not available, access across wetlands, streams, rare plant sites, and archeologic resource areas confirmed during the Phase 1B surveys will be accomplished by the temporary placement of timber mats. Timber mats typically consist of timbers that are bolted together and placed over wetland areas so as to distribute equipment loads and minimize disturbance to the wetland and soil substrates. The majority of streams will be crossed using temporary mat bridges, with matting placed parallel to, but outside of each bank, to serve as bridge supports, and additional matting placed perpendicularly on top to bridge the stream. Erosion controls such as silt socks, bark mulch berms, hay bales, silt fencing and other environmental controls are also used to stabilize the soil and protect wetlands and streams during construction. Temporary timber mat access roads will be removed following completion of construction. Care will be taken to avoid any deposition of soil and other debris into wetlands. If rutting, compaction, or other impacts to the wetland substrate occur during construction, these areas may require minor grading to restore preexisting topography prior to stabilization. Disturbed areas will be seeded with a native wetland seed mix, if necessary. Exposed soils at risk of erosion will be stabilized with straw, tackifier or erosion control blankets as necessary. The use of timber matting may be reduced during specific ground conditions where the risk of soil disturbance would be minimal (dry or frozen ground).

2.4.3 Existing Access Roads

In limited areas there are existing access roads that may require maintenance or upgrading to support the proposed construction activities. For example, widening of existing access roads, grading, and placement of clean gravel or trap rock may be necessary to stabilize and

level the roads for construction vehicles. Exposed soils will be stabilized with gravel, bark mulch or other erosion control measures to prevent runoff into protected resources. Access road improvements and/or maintenance will be carried out in compliance with the permit approvals and conditions of the appropriate regulatory agencies.

2.4.4 Additional Off-ROW Access Roads

Proposed off-ROW access roads are shown on the Environmental Maps. If additional accessways are needed, PSNH will select locations that have been previously disturbed, to the extent practicable. As part of this Application, PSNH requests that the SEC delegate the authority to NHDES to issue such approvals. Once the off-ROW access roads are identified, PSNH will submit the necessary information to NHDES seeking authorization for these additional access roads.

2.4.5 Construction of Work Pads and Pull Pads

Upland work pads and pull pads will be created through minor grading or the addition of gravel or crushed stone to provide a level work surface for crews, equipment, and materials. Work pads are generally 100 feet by 100 feet for drilled pier foundations and 64 feet by 80 feet for direct embed structures. In the majority of cases, the location of work pads is centered at the structure location. Pull pads are typically rectangular areas located 300 feet ahead and back of structure locations and are approximately 100 feet in width. Most pull pads are located at angle structures and dead ends. Pulling equipment will generally be set up at a 1:3 distance or greater from the highest wire attachment point on the pulling structure as called for in the Institute of Electrical and Electronics Engineers (IEEE) Standard 524.

In certain locations for the Project, work pads were designed off center or pull pad sites were shifted to avoid potential impacts to environmentally sensitive areas. In other locations, the size of work pads and pull pads were reduced to avoid or minimize impacts to wetlands. In locations where wetlands and environmentally sensitive areas cannot be avoided, work pads and pull pads will be created through the temporary placement of timber mats.

Once construction is complete, the work pad and pull pads will be restored most nearly to their preconstruction condition. Restoration efforts, including removal of construction debris and materials, minor grading to match adjacent contours, and stabilization of disturbed soil, will be completed following the construction operations. All disturbed areas around structures and other graded locations will be seeded with an appropriate seed mixture and/or mulched to stabilize the soils in accordance with applicable regulations. In wetlands, timber mats installed for work pads and pull pads will be removed in their entirety, including pieces that may have broken off during construction. Disturbed areas will be immediately restored and stabilized with oversight by the Environmental Monitor. Care will be taken to avoid any deposition of soil and other debris into wetlands. If rutting, compaction, or other impacts to the wetland substrate have occurred during construction, these areas may require minor grading to restore preexisting topography prior to

stabilization. In disturbed areas, seeding with a native wetland seed mix may be necessary. Exposed soils at risk of erosion will be stabilized with straw, tackifier or erosion control blankets as necessary, and according to the BMPs. Temporary erosion and sediment controls will be removed following the stabilization of disturbed areas.

2.5 Relocation of Existing Utility Infrastructure

There are four structures in the existing PSNH corridor easement that are part of the E194 Line in Newington, in the area of the Crossings at Fox Run, that will need to be relocated in order for the new 115 kV line to be installed. In addition, certain segments of the existing distribution infrastructure in the Towns of Durham and Newington will have to be upgraded and/or relocated.

Structures and components not re-used for the Project will be removed or salvaged and as much of the removed material as possible will be recycled. Those components not salvaged and any debris that cannot be recycled will be removed from the ROW to a PSNH-approved off-site disposal facility. Handling of such materials will be performed in compliance with applicable laws and regulations.

The removal of wood pole structures will involve disassembling the cross-arm, insulator, and hardware structure elements first. Once those elements have been removed, the wood poles will be removed completely. The full length of the wood pole will be removed, inclusive of the embedded section in upland areas only and the remaining hole will be backfilled with common backfill. The removal of wood poles in wetland areas will be reviewed on a case-by-case basis to determine if greater disturbance can be avoided by allowing embedded sections of the pole to remain in the wetland. In the majority of locations, the existing wood pole will be cut flush with the existing grade.

2.6 Foundation Installation

The Project will utilize two types of foundations for the transmission structures; drilled/poured concrete and direct-imbed/drilled pier. The type of foundation to be constructed depends on structure type and soil conditions. Several structures, including deadend, running angle and certain tangent structures in which guying is restricted by corridor restraints will require reinforced concrete caisson foundations. The foundation drilling work will be performed with conventional excavating equipment and will begin by mobilizing a drilling rig/apparatus set up over the structure location. The drilling will utilize earth/rock augers to drill the required vertical shafts. The foundation drilling process involves drilling holes that vary in diameter and depth dependent on the design, structure type and results of the geotechnical report and presence of rock. Generally these foundations will typically be 20 to 30 feet deep, with diameters of between 6 and 10 feet. Once drilling is complete, a steel rebar cage and anchor bolt assembly is placed in each hole and concrete is poured and any required backfilling is completed. Concrete trucks are used to deliver the concrete mix for the foundations. Typically drilling operations occur for 2-3 days at each new structure location, however, they may be shortened or extended based on

soil conditions. Should soil conditions, structure loads, or a combination of those considerations warrant, the review of alternate foundations types will be undertaken to ensure that the most appropriate and cost efficient foundation type is being utilized.

Most structures will utilize the direct embedment foundation design, where the foundation hole is excavated to the required depth using conventional methods such as an excavator to dig the hole, the structure is placed in the hole and then filled with a suitable backfill material rather than concrete. Most poles set using this type of foundation will be installed in corrugated, galvanized steel culvert pipes placed vertically in the hole to provide additional foundation support. The pipe is either screwed into the ground and the center is excavated with an auger, or the hole is excavated and the culvert placed in the hole vertically. The pole is then set inside the culvert and backfilled with select material.

Excavated material will be temporarily stockpiled next to the excavation; however, this material will be managed to prevent run off into any resource areas. If the stockpile is in close proximity to wetlands, it will be enclosed by staked straw bales or other erosion and sedimentation controls. Additional controls, such as watertight mud boxes may be used for saturated stockpile management in work areas in wetlands (i.e., swamp mat platforms) where sediment-laden runoff would pose an issue for an adjacent wetland. Following the backfilling operations, excess soil will be spread over upland areas or removed from the site in accordance with PSNH's policy. In locations where rock is encountered, the foundation hole will be excavated to the rock depth and the contractor will use approved methods to remove the rock including drilling, blasting, ripping and hoe ramming to achieve the required depth.

Blasting may be employed only where shallow-to-bedrock soil depths and subsurface boulders are encountered that cannot be removed by mechanical means. No blasting will occur in, or on the shoreline of, Little Bay. For transmission line construction any blasting activity, where required, will be limited to the small volume of material needed to be removed to set and plumb the pole structures. No adverse effects from blasting activity upon either sensitive natural resources or adjacent property owners are anticipated due to the small charges required for this activity. Additional details regarding blasting Best Management Practices to be employed are provided in Section 9 "*Additional Information*" of this application and in the "*Seacoast Reliability Project Construction Notes*" attached to this application.

Dewatering may be necessary while excavating or placing concrete for foundations. At all times, dewatering will be performed in accordance with PSNH's guidance documents as well as Project permits and approvals.

2.7 Installation of the New Structures

Once the foundations have been installed, transmission structure installation will begin. The crews begin framing, erecting and setting the structures. The new steel structures often come in sections that are assembled on or near the foundation. For those structures with

bolted flange connections, the assembly of the uppermost section will vary by structure type. Generally speaking, for a single pole structure, the second and third (if necessary) vertical segments of the steel pole will be bolted to the lowest steel pole element, the appropriate structure arms will be installed and lastly the insulators and hardware to connect the conductors to the structure will be attached. In the case of H-Frame structures, a similar process will occur with two vertical poles being erected followed by the installation of the interior cross-arm and outboard arms, then the insulators and associated hardware will be affixed to the cross-arms at the appropriate attachment points.

For those steel pole structures featuring slip joint connections, the assembly of the uppermost sections will involve fitting the second and possibly third and fourth steel pole segments over the smaller diameter top of the lower steel pole element. The appropriate structure arms will be installed and lastly the insulators and hardware will be attached. Cranes and/or bucket trucks are used to lift the structures and set them into position on the foundations.

Deadend and angle structures that are not self-supporting require the use of structural guying. This is consistent with other similar existing structures within the ROW. These guys will be affixed to the steel pole structure and anchored to the ground via the use of excavated block anchors (aka dead-men) in upland areas. In wetlands and other environmentally sensitive areas, screw anchors will be utilized to minimize ground disturbance.

2.8 WirePulling: Installation of Conductor and Shield Wire

Following the erection of transmission structures and installation of the insulator assemblies, conductors, shield wire, and fiber optic ground wire (OPGW) will then be installed using stringing blocks, wire pulling ropes, and wire stringing equipment. Once the stringing blocks are in place, pulling ropes will be installed by: driving the ropes from structure to structure, walking the ropes from structure to structure or via helicopter.

Once installed, the pulling rope is attached to wire stringing equipment and used to pull the conductors from a wire reel on the ground through stringing blocks attached to the structure. Once the conductor or shield wire has been installed, the wire pulling equipment is then used to sag the wire to obtain the specified conductor tension. After the wire has been sagged it is clipped onto all structures with the permanent connection hardware.

During the stringing operation, temporary guard structures or boom trucks will be placed at road and highway crossings and at crossings of existing utility lines. These guard structures are used to ensure public safety and uninterrupted operation of other utility equipment by keeping the wire off the traveled way and away from other utility wires at these crossing locations. Shield wires and OPGW will be installed on top of the structure in a similar manner. Helicopters may be used for certain activities during the installation operation including wire stringing, clipping, and other activities as required. Timber mats will be used when temporary guard structures must be located within wetlands.

2.9 Installation of Underground Cable

Generally, there are three principle phases of construction for an underground cable project: (1) manhole installation, (2) duct bank installation and pavement patching, and (3) cable installation including, cable pulling and splicing. Each of these phases is described in more detail below. The phases will be conducted in sequence at each location so that several phases of construction will be ongoing simultaneously in different sections of the route. After in-street construction is completed, the pavement will be temporarily patched. Subsequently, the pavement will be repaired or replaced as required by the Town's Public Works to restore the street surface.

Similar to the overhead transmission construction, the underground work will be sequenced and will begin with survey for the transition structures, and marking the underground route. Access to the work sites will then be established and the required safety and erosion and sediment (E&S) controls will be implemented prior to beginning construction. Environmental control measures will be monitored throughout the process until the site is restored and stabilized. A traffic control plan will also be implemented using traffic control devices to ensure safety and unimpeded movement of the traveling public. If the need arises to utilize blasting during installation of utility facilities, PSNH will follow all laws, ordinances and regulations in the use, handling, loading, transporting and storage of explosives and blasting agents.

2.9.1 Manhole Installation

Manholes facilitate cable installation and splicing and allow access for maintenance requirements and future repairs. The final placement of the manhole is based on the calculated pulling tensions and sidewall pressure on the cable as it goes around a bend, the maximum length of cable that can be transported on a reel based on the reel's width, height and weight, and accessibility. For the proposed project, one manhole will be required at the transition between the submarine cable, which will be approximately 10 feet wide by 30 feet long, and the remaining underground cable to be installed in conduit.

The location of the manhole will be excavated and shored to the required dimensions for the setting of the manhole. The manhole will be manufactured at a remote location in two or more parts and delivered to the site on a tractor trailer. A crane is then used to set the manhole into the pit. The area around the manhole is then backfilled and compacted. Two covers will be set on the top of the manhole to provide future access to the manhole. The covers are set flush with the final grade and are the only portions of the manhole that are visible at the completion of the project.

2.9.2 Duct Bank Installation

The basic method for constructing an underground duct bank is by open-cut trenching. In open-cut trenching, the width of the trench is marked, dig-safe is contacted, and the location of existing utilities is marked.

In areas where the trench crosses or parallels pavement the pavement is saw cut. The saw cutting provides a clean break in the pavement and defines the trench for the next activity. Saw cutting is a relatively fast operation and is not performed every day so as not to proceed too far ahead of the crew that follows. Following saw cutting, the existing pavement is removed by pneumatic hammers and loaded into a dump truck with a backhoe. Pavement is handled separately from the soil because the pavement is recycled at an asphalt batching plant.

The trench is then excavated to the required depth by a backhoe. In pre-determined areas, some of the excavation will be done by hand so as to avoid disturbing existing utility lines and/or service connections. A "clean trench" method will be used where soil is loaded directly into a dump truck for off-site recycling or disposal. The soil will not be stockpiled on site. Removal of the soil, rather than stockpiling at the site, reduces the size of the required work area and reduces the potential for sedimentation and nuisance dust. Any rock encountered during excavation will be removed by mechanical means.

The trench is sheeted and shored as required by soil conditions and Occupational Safety & Health Administration safety rules. The shoring is designed to permit the passage of traffic adjacent to the trench and will allow for the trench to be covered with a steel plate to permit traffic over the trench during non-working hours. Under typical conditions, a crew can excavate and shore approximately 100 to 200 feet of trench per day.

Once a portion of the trench is dug, PE conduit is assembled and lowered into the trench. The area around the conduit is filled with thermal sand and/or concrete. Thermal sand or concrete are mixtures that have been engineered to provide adequate thermal heat dissipation. The remainder of the trench is then backfilled with either native soil or more thermal sand or concrete. A red warning tape is buried above the conduit to alert anyone that could potentially excavate over the transmission line that an electric line is buried there.

Where open trench is not possible to cross roadways or other obstacles, a pipe jacking method will be used. During this operation two pits are excavated on either side of the obstacle. A casing is advanced beneath the obstacle using hydraulic jacks installed in one of the pits until it intersects the second pit. The casing is installed to keep the bore hole from collapsing. Once complete the PE conduit is pulled through the casing and the annulus of the casing is filled with a non-shrinking grout. The pits are backfilled similar to the open trench method.

2.10 Cable Installation, Including Cable Pulling and Splicing

Following the installation of the manholes and duct bank, the cable is installed. Prior to the installation of the cable, the conduit will be tested and cleaned by pulling a mandrel (a close fitting cylinder designed to prove a conduit's shape and size) and swab through each of the ducts. When the mandrel has been pulled successfully, the conduit is ready for installation of the cable.

Cable is installed between the manhole and/or the transition pole. To install the cable, the cable reel is set at the “pull-in” location and the cable puller is set up at the “pulling-out” location. The complete pulling process typically takes a full 8-hour shift with 4 hours required to set up, 2 hours to pull the cable, and 2 hours to clear the work zone. This process is repeated until all the cable has been installed. After all of the cable is installed, the cables are spliced or terminated at the manhole or transition pole. Splicing or terminating high-voltage solid dielectric transmission cable is a complex operation. It typically requires four to five, 10-to-12 hour work days per manhole to complete the splicing of all three cables. The splicing operation requires a splicing van and a generator. The splicing van contains all of the equipment and material to make a complete splice. Sometimes an air conditioning unit is used to control the moisture content in the manhole. The generator provides the electrical power for the splicing van and air conditioning unit. The generator is specifically designed to minimize noise and has been successfully used in residential areas.

2.11 Submarine Cable Installation

Three submarine cables will be laid and buried beneath the soft sediments of the bay floor using three methods. The primary installation method uses a jet plow in the subtidal and most of the intertidal zone. Other cable installation methods will include diver burial in the shallow intertidal zone and excavation for cable trenches in the transition zone from marine to the terrestrial structures. The cable will be buried eight (8) feet in the subtidal zone and forty two inches (42) in the intertidal zone and on land.

The submarine cables will be transported to the site individually on a specially outfitted cable laying barge. Beginning on the west shore, the cable laying barge will be positioned approximately 250 feet seaward of the trench and the cable will be “pulled” into position on shore by a wire rope and winch located on shore. Once the cable has been secured at the landing site, the cable lay barge will slowly move forward under anchor winches. While the barge is moving forward, the cable will be paid out as necessary until the jet plow starts to move.

The jet plow utilizes high-volume water pressure to temporarily liquefy the soft sediments immediately ahead of the plow blade. The water is sprayed out in specially designed nozzles located along the leading edge of the jet plow’s blade. The submarine cable will feed from the barge, pass through the back of the blade, and into the liquefied sediments. The majority of the sediment will settle into the trench leaving the cable installed at the desired depth.

The jet plow will reach within approximately 600 feet of the east shore. The cable will be pulled ashore and fed into the vault. This process will be repeated until all three submarine cables are laid. The last step will be burial of the cable sections between the jet plow and cable trenches using diver burial and nearshore excavation. The intertidal sections of the diver burial zones will be enclosed within silt curtains.

2.12 Substation Construction

The construction activities for the existing substations modifications are generally the same for both the Madbury Substation and the Portsmouth Substation. It is expected that work at multiple sites will occur simultaneously in order to meet the project milestones for energization. The existing substation modifications will include connecting the new 115 kV AC line from the Madbury Substation to the Portsmouth Substation.

This will require the addition of a new terminal structure, 115 kV switches, breakers, bus work and associated protection and control devices inside the existing Portsmouth Substation. At Portsmouth Substation, the existing control enclosure will also be expanded to accommodate new protection, control and communication devices that will be required to support the new line. At the other end of the new 115 kV transmission line, Madbury Substation will require the modification of an existing 115 kV bay position, which will be done within the existing substation yard. This will include the addition of new 115 kV circuit breakers, switches, and some minor modification to the existing bus work and associated protection and control devices. There is an existing terminal structure at Madbury that will be modified with some minor bracing to support the new line loads.

The work at each station work site will include excavating and installing foundations, ground grid and underground conduits within the station footprint. Station materials, structures and equipment will begin delivery to the site for installation. The steel structures and equipment will be installed on the foundations, buildings will be erected, control cables and conductors will be installed and terminated. When construction is complete, final restoration of any disturbed areas will be restored. Environmental controls are removed, though some may remain until the area is completely stabilized.

2.12.1 Project Corridor Restoration

After construction activities are completed, all disturbed areas within the Project corridor shall be stabilized/restored as described below. Temporary work areas and pre-construction drainage patterns will generally be restored to their pre-existing condition. Restoration efforts, including removal of construction debris, minor grading, and stabilization of disturbed soil, will be completed following the construction operations. Ditches, roads, walls, and fences will generally be restored to their former condition. Project environmental monitors shall oversee restoration activities, particularly in wetlands and other sensitive areas.

Timber mats installed for access and work pads in wetlands and over streams will be removed in their entirety. Disturbed areas will be restored and stabilized in a timely manner. Care shall be taken to avoid any deposition of soil and other debris into wetlands or streams. If rutting, compaction, or other impacts to the wetland substrate or stream banks have occurred during construction, these areas may require minor grading to restore preexisting topography prior to stabilization. In disturbed areas, seeding with a native seed mix may be necessary. Exposed soils at risk of erosion will be stabilized with straw,

tackifier, or erosion control blankets as necessary, and according to road construction Best Management Practices.

All access roads and work pads will be stabilized and top-seeded with a native seed mix. Construction entrance crushed stone aprons will remain in place except in agricultural areas, and lawns, where the property owner wishes to have the stone apron removed. Grades will be restored and disturbed areas loamed and seeded if the stone apron is removed. Gates and boulders may be installed, with permission or at the request of the landowner, to prevent un-authorized access as needed.

In the paved underground cable areas, after the duct bank is installed, the duct bank will be backfilled with a concrete cover or approved thermal backfill. The Project will work with the Towns and their Public Works Departments to ensure compliance with town requirements and will ensure that all trench excavations are returned to the same or better condition than existed prior to construction. The paved surface will be restored per the local town ordinances. Temporary pavement placed during the in-street construction will be removed, and final paving will be installed.

2.13 Testing and Commissioning

Following the installation and prior to the energization an extensive electrical testing process begins to confirm that each piece of equipment and circuit is installed and operating in accordance with the specifications. As with the construction the energization is a sequential process that energizes the equipment and facilities in a logical order to coordinate with the equipment and system requirements to meet the project milestones. Transmission line or equipment outages will be necessary and will require coordination with local control centers and ISO-NE. The project team will implement an outage and schedule process to confirm that all new or modified transmission and station facilities are sequenced into service in accordance with ISO-NE Operational procedures with no interruption of service to the distribution customers.

2.14 Impact Minimization Measures

2.14.1 Surveying and Flagging of Boundaries and Resources

Survey is required to clearly mark the edge of the Project corridor, and flag the proposed structure locations. Environmental and cultural resource areas will also be marked/flagged by qualified environmental staff.

2.14.2 Installation of Soil Erosion and Sedimentation Controls

The installation of soil E&S controls will proceed in parallel with the construction of Project work areas and access roads and will be installed and maintained in accordance with the requirements of all governing regulatory agencies, including the NHDRED BMPs, and in accordance with PSNH procedures and practices. The Project will also comply with all additional best management practices (BMP) to deal with steep slopes adjacent to water and wetland resources.

The potential for inadvertent discharges of stormwater and sediment into wetlands and waterbodies from Project work areas will be managed in accordance to the above-referenced BMPs and addressed in detail in the Stormwater Pollution Prevention Plan (SWPPP) to be developed as part of the US EPA Construction General Permit.

Application Supplement

8. Required Questions

D. Total Undisturbed Cover

Total undisturbed cover was calculated by subtracting the total disturbed upland cover from the total upland project area, as below:

Total Upland Project Area (Right of Way and areas held in fee)	4,722,792 Sq. Ft.
Total Upland Disturbed:	1,580,392 Sq. Ft.
Total Upland Undisturbed:	3,142,400 Sq. Ft.

H. Name of Receiving Waters

Env-Wq 1502.46 defines “receiving waters” as “a river, stream, lake, pond, wetland, or any other surface water into which runoff is discharged.” This project does not propose to discharge stormwater at any location. However, the proposed project falls within the watersheds of several stream channels and waterbodies. HUC 12 watersheds that fall within the project area are:

Bellamy River (HUC 12 010600030904)
Oyster River (HUC 12 010600030904)
Lower Lamprey River (HUC 12 010600030904)
Great Bay (HUC 12 010600031001)
Portsmouth Harbor (HUC 12 010600031001)

Each watershed has several smaller contributing streams and rivers as depicted on Exhibit E, Impaired Waters.

Water Quality Impairments

Nearly the entire project corridor is located within one mile of an impaired freshwater waterbody, according to the NHDES OneStop GIS database and the 2012 Surface Water Impairments listing. The most common impairments are dissolved oxygen, total nitrogen, fecal coliform, *Escherichia coli*, enterococcus, and dissolved oxygen saturation. Other impairments include Chlorophyll-a, chloride, Benthic-Macroinvertebrate Bioassessments and aluminum. In addition, in 2012, the NHDES categorized all surface waters as Category 5 as a result of a statewide fish consumption advisory for mercury in freshwater fish (Edwardson, 2012).

K. Cut volume 0 cubic feet and fill volume 42 cubic feet within the 100-year floodplain.

Floodplain fill is limited to structure foundations proposed to be constructed within the floodplain.

Table 1. Floodplain Fill

Pole number	Pole Elevation (NAVD88)	Waterbody	Floodplain Elevation (NAVD88)	Floodplain Fill Volume – cubic feet
29	35	Oyster River	35.3	6
45	49	La Roche Brook	NO BFE	34
61	37	Longmarsh Brook	30.3	0
62	41	Longmarsh Brook	30.3	0

As shown in Table 1, several poles appear to fall within the floodplain as depicted on the Project plans using the FEMA mapped floodplain lines, but the mapped elevations of the ground where poles are proposed are actually higher than the Base Flood Elevations (BFE) in most locations. The mapped floodplain for La Roche Brook has no BFE determined. The pole foundation falls partially within the footprint of the mapped floodplain. For this pole foundation, it is assumed that a portion of the foundation falls within the floodplain (17 square feet), and further assumed that the foundation will be two feet high, and therefore constitutes 34 cubic feet of floodplain fill.

9. Additional Information

B. Blasting

Blasting may be necessary to achieve the engineered specifications associated with all aspects of the Project, especially where shallow bedrock is present.

Blasting Procedures

Blasting contractors will be required to adhere to all conditions specified in the PSNH construction documents for this Project, and will also be required to observe local (municipal) blasting-related ordinances. BMPs to protect water quality before and during blasting activities are outlined in the NHDES technical publication *WD 10-12 Rock Blasting and Water Quality Measures That Can Be Taken to Protect Water Quality and Mitigate Impacts*.

In some cases, controlled blasting to remove rock will be less impactful than “hoe-ramming” because the blasting will occur over a shorter duration. Blasting will be performed in compliance with the State and Local Fire Marshal regulations. Pre-blast surveys will be conducted at nearby properties.

All blasting will be performed by licensed blasting contractor(s), pursuant to the regulations of State and Local Fire Marshals. In addition, blasting near existing transmission and distribution lines will be performed in accordance with PSNH minimum specifications. Blasting will be conducted in a manner that will maintain safe working conditions and avoid damage to adjacent areas and structures. The precautions that will be taken during blasting include:

- Obtaining applicable state and/or local blasting permits;
- Installing blasting mats as required;
- Posting warning signals, signage and barricades;
- Following procedures for safe storage, handling, loading, firing, and disposal of explosive materials; and
- Conducting blasting between 7 am and 7 pm.

Blasting will be performed to meet all applicable federal, state, and local requirements covering the use of explosives. Excessive vibration will be controlled by limiting the size of charges and by using charge delays, which stagger each charge in a series of blasts. Post-blast inspections will be performed as necessary. All damage complaints alleged to be associated with construction activities will be investigated by the blasting contractor.

All activities related to blasting shall follow BMPs to prevent contamination of groundwater including preparing, reviewing and following an approved blasting plan; proper drilling, explosive handing and loading procedures; observing the entire blasting procedures; evaluating blasting performance; and handling and storage of blasted rock. BMPs are detailed in the "Seacoast Reliability Project Construction Notes" attached to this application.

Waiver Request - Env-Wq 1503.09 Floodplain Requirements

PSNH seeks a waiver from all requirements of Env-Wq 1503.09, Information Required for Projects within the 100-Year Floodplain. The following information is provided in accordance with Env-Wq 1509 WAIVERS AND DEADLINE EXTENSIONS.

Requestor

PSNH d/b/a Eversource Energy
Energy Park, 780 N. Commercial Street
Manchester, NH 03101

Property Location

The location of the property is depicted on plans submitted with this project, and runs through Madbury, Durham, Newington, and Portsmouth.

Reason for Waiver Request

Compliance with the rule as written would result in unnecessary costs for the project and would not result in additional pertinent information to guide the design of the Seacoast Reliability Project. The project proposes work within the 100-year floodplain in several discrete locations for the installation of work pads or pole foundations and the excavation of some area to install underground lines. A total of 42 cubic feet is proposed to be filled within the 100-year floodplain. The loss of floodplain storage is insignificant and is not anticipated to have any effect on abutting properties.

Env-Wq 1509.04 Criteria

Granting this waiver request will not result in an adverse impact on the environment, public health, public safety, or abutting properties. Strict compliance with this rule will provide no benefit to the public or the environment, as it would not provide any useful data or information and would not result in a determination of any proposed increase in flood stages to abutting properties.

Signature


[signatory]

By this signature, the applicant certifies that the information provided is true, complete, and not misleading to the knowledge and belief of the signer. The signer understands that any waiver granted based on false, incomplete, or misleading information shall be subject to revocation.

Waiver Request - Env-Wq 1504.09 Stormwater Drainage Report; Drainage Area Plans; Hydrologic Soil Group Plans.

PSNH seeks a waiver from all requirements of Env-Wq 1504.08 Stormwater Drainage Report, Drainage Area Plans, and Hydrologic Soil Group Plans. The following information is provided in accordance with Env-Wq 1509 WAIVERS AND DEADLINE EXTENSIONS.

Requestor

PSNH d/b/a Eversource Energy
Energy Park, 780 N. Commercial Street
Manchester, NH 03101

Property Location

The location of the property is depicted on plans submitted with this project, and runs through Madbury, Durham, Newington, and Portsmouth.

Reason for Waiver Request

The Seacoast reliability project proposes 1,580,392 square feet of disturbance in several hundred discrete locations over a 12.9-mile long corridor. As the typical area of temporary disturbance totals no more than a few hundred square feet, and the total permanent increase in impervious surface is 7,234 square feet, a stormwater drainage report would not provide any additional relevant information. Pre and post discharge rates throughout the project corridor are anticipated to be the same. PSNH will use methods Best Management Practices documented in the *"Best Management Practices Manual for Utility Maintenance in and Adjacent to Wetlands and Waterbodies in New Hampshire"* (NH Department of Resources and Economic Development, 2010) and as documented on the Environmental Maps during construction to ensure that erosion and sedimentation are minimized during construction. A site specific soil survey would not provide any additional insight in designing the BMPs for this project.

Env-Wq 1509.04 Criteria

Granting this waiver request will not result in an adverse impact on the environment, public health, public safety, or abutting properties. Strict compliance with this rule will provide no benefit to the public or the environment, as it would not alter the design or water quality protection BMPs proposed to be employed for this project.

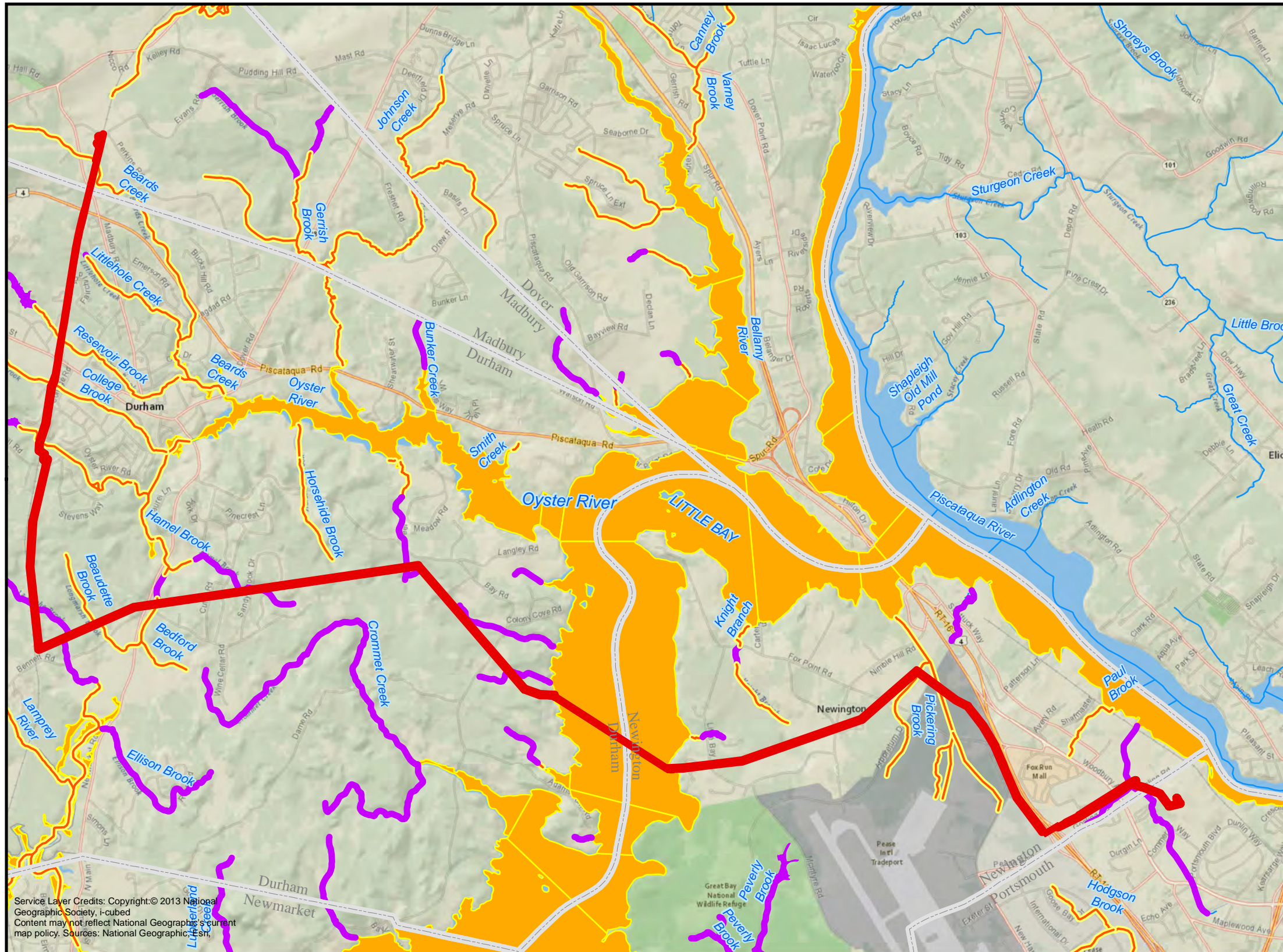
Signature



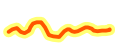




[signatory]

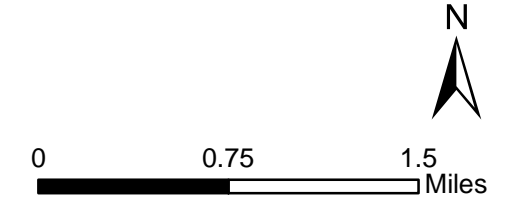
By this signature, the applicant certifies that the information provided is true, complete, and not misleading to the knowledge and belief of the signer. The signer understands that any waiver granted based on false, incomplete, or misleading information shall be subject to revocation.

Attachment E - Surface Water Impairments



Impaired Waters in NH
Attachment E
Seacoast Reliability Project

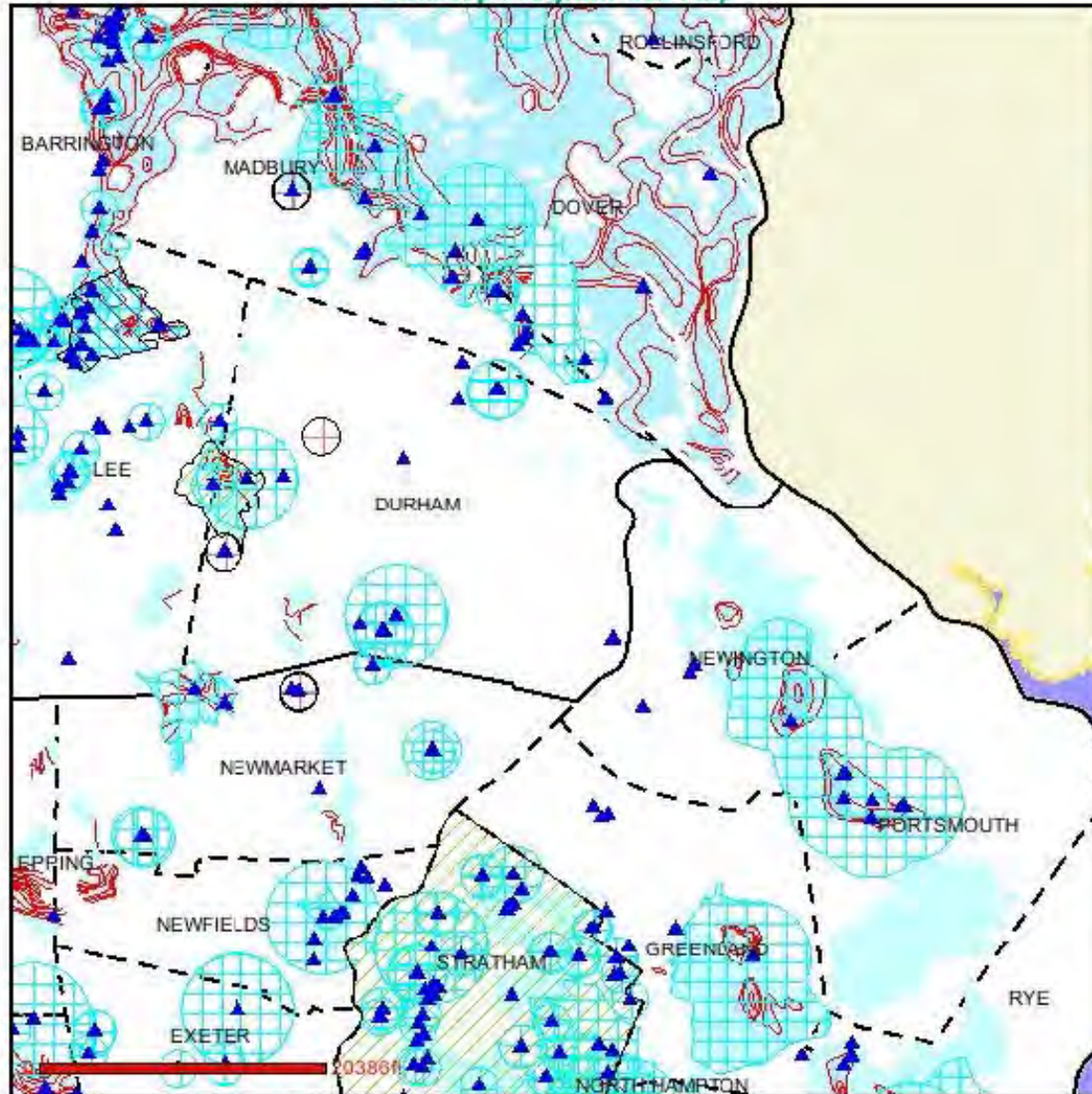
-  Impaired Stream or River
-  Non-Impaired Stream or River
-  Impaired Waterbody
-  Non-Impaired Waterbody
-  Seacoast Reliability Project Right of way



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Attachment F - NHDES OneStop AoT Screening Layers

OneStop Program GIS Map



Map Scale = 1 : 179792 (1" = 2.8 miles or 14983 feet)

The information contained in the OneStop Program GIS is the best available according to the procedures and standards of each of the contributing programs and of the GIS. The different programs are regularly maintaining the information in their databases. As a result, the GIS may not always provide access to all existing information, and it may occasionally contain unintentional inaccuracies. The Department can not be responsible for the misuse or misinterpretation of the information presented by this system.

Map prepared 7/31/2015 10:06:07 AM

Attachment G - NHB Datacheck

Memo



NH NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

To: Susan Hegarty, Normandeau Associates, Inc.
25 Nashua Road
Bedford, NH 03110

From: Amy Lamb, NH Natural Heritage Bureau

Date: 11/9/2015 (valid for one year from this date)

Re: Review by NH Natural Heritage Bureau

NHB File ID: NHB15-3561

Town: Madbury, Durham, Newington,
Portsmouth Location:

Description: Eversource is proposing to construct a new 13-mile 115kV transmission line between their Madbury and Portsmouth substations. It will predominantly follow existing ROW. It will consist primarily of overhead structures, but will have an underground section at UNH in Durham and will have a submarine segment under Little Bay. This is an update request. Our previously requested data expired on 10/2/2015. NHB file ID: NHB14-3618.

cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments: This review is a follow-up to NHB14-3618 (9/24/2014) and the NHB14-3618 Addendum (10/2/2014). Continued coordination with NHB and NH Fish & Game is needed as this project progresses through permitting.

Invertebrate Species

Ringed Boghaunter (*Williamsonia lintneri*)

State¹ Federal Notes

E -- Contact the NH Fish & Game Dept (see below).

Natural Community

Hemlock - beech - oak - pine forest

State¹ Federal Notes

-- -- Threats include logging, introduction of invasive species, and direct destruction due to development.

High salt marsh

-- -- Threats to these communities are primarily alterations to the hydrology of the wetland (such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat) and increased input of nutrients and pollutants in storm runoff.

Red maple - sensitive fern swamp

-- -- These swamps are influenced by groundwater seepage and springs which moderate water fluctuations and maintain conditions favorable for the accumulation of organic matter. The primary threats are changes to the hydrology of the wetland complex, particularly raising or lowering the water levels, and increased nutrient and pollutant input carried in by stormwater runoff.

Memo



NH NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

Salt marsh system	--	--	Threats are primarily changes to the hydrology of the system, introduction of invasive species, and increased input of nutrients and pollutants.
Sparsely vegetated intertidal system	--	--	Threats to these communities are primarily alterations to the hydrology of the wetland (such as alterations that might affect the sheet flow of tidal waters across the intertidal flat) and increased input of nutrients and pollutants in storm runoff.
Subtidal system	--	--	Threats to these communities are primarily alterations to the hydrology of the wetland (such as alterations that might affect the sheet flow of tidal waters across the intertidal flat) and increased input of nutrients and pollutants in storm runoff.

Plant species

	State ¹	Federal	Notes
Black Maple (<i>Acer nigrum</i>)	T	--	Threats are primarily damage to its floodplain or riverbank habitat, including changes to local hydrology, land conversion and fragmentation, introduction of invasive species, and increased input of nutrients and pollutants.
bulbous bitter-cress (<i>Cardamine bulbosa</i>)	E	--	This species occurs in forested swamps, low floodplain forest, and moist thickets..
crested sedge (<i>Carex cristatella</i>)*	E	--	Threats to the plants include canopy removal and destruction (draining) of its habitat.
Engelmann's Quillwort (<i>Isoetes engelmannii</i>)*	E	--	This wetland species, which occurs in bogs, fens, seeps, and wet meadows, would be threatened by changes to local hydrology, including increased nutrient input from stormwater runoff, and sedimentation from nearby disturbance.
great bur-reed (<i>Sparganium eurycarpum</i>)	T	--	Primarily vulnerable to changes to the hydrology of its wetland habitat, especially alterations that change water levels. It may also be susceptible to increased pollutants and nutrients carried in stormwater runoff.
greater fringed-gentian (<i>Gentianopsis crinita</i>)*	T	--	Threats to aquatic species include changes in water quality, e.g., due to pollution and stormwater runoff, and significant changes in water level.
Marsh Elder (<i>Iva frutescens</i>)	T	--	Vulnerable to shading by invading trees and to disturbances that destroy plants or impede their ability to reproduce (such as mowing in the mid-summer while the plants are in bloom).
Rigid Sedge (<i>Carex tetanica</i>)*	--	--	Threats are primarily alterations to the hydrology of the wetland, such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat, activities that eliminate plants, and increased input of nutrients and pollutants in storm runoff.
Sensitive species	T	T	This plant relies on open habitat, and maintenance of the hydrology of any wetland where it occurs. Please contact NH Natural Heritage (271-2215 x 323) if project impacts could occur

Memo



in the area shown on the map.

Vertebrate species

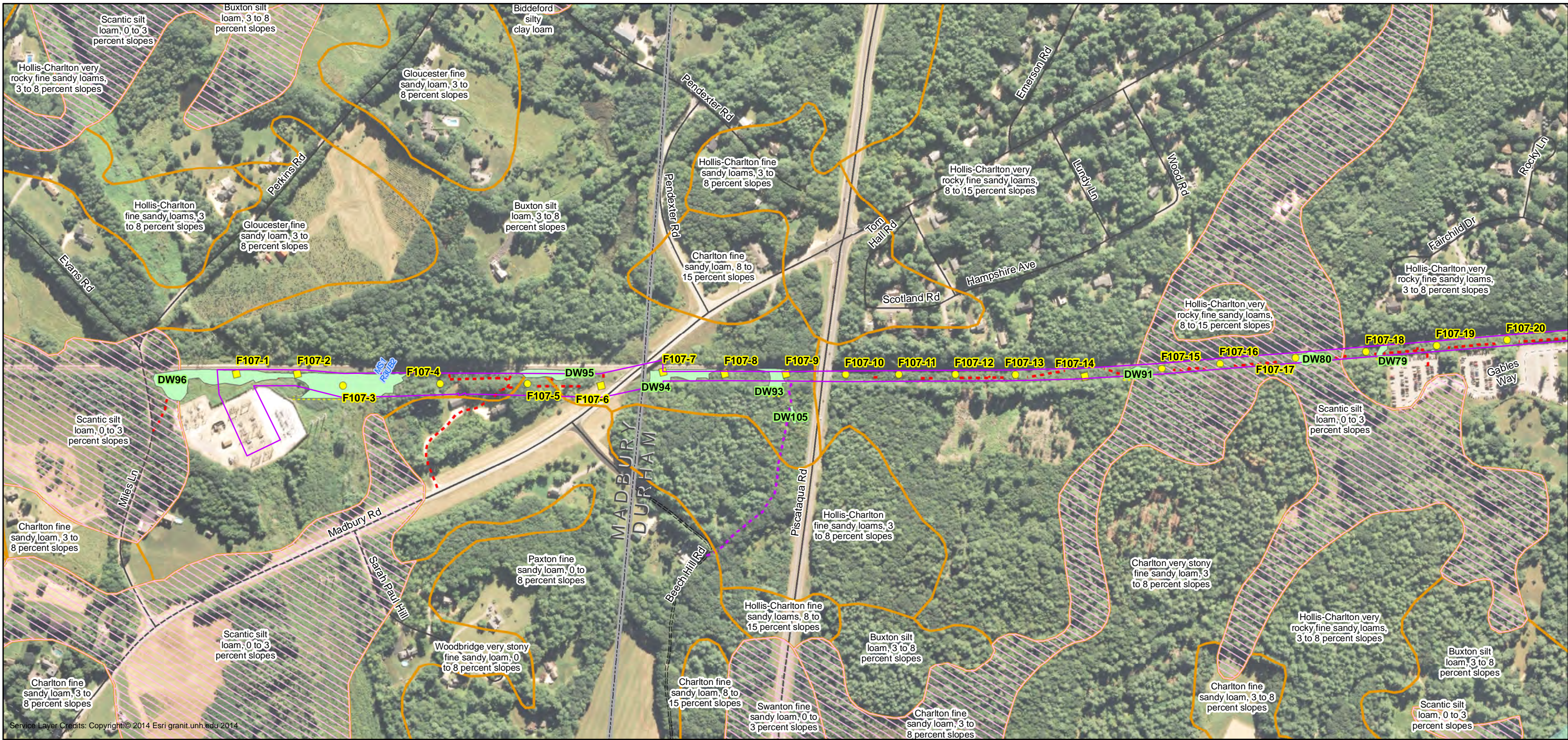
	State ¹	Federal	Notes
American Eel (<i>Anguilla rostrata</i>)	SC	--	Contact the NH Fish & Game Dept (see below).
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	T	--	Contact the NH Fish & Game Dept (see below).
Banded Sunfish (<i>Enneacanthus obesus</i>)	SC	--	Contact the NH Fish & Game Dept (see below).
Blanding's Turtle (<i>Emydoidea blandingii</i>)	E	--	Contact the NH Fish & Game Dept (see below).
Eastern Hognose Snake (<i>Heterodon platirhinos</i>)*	E	--	Contact the NH Fish & Game Dept (see below).
Grasshopper Sparrow (<i>Ammodramus savannarum</i>)	T	--	Contact the NH Fish & Game Dept (see below).
Least Bittern (<i>Ixobrychus exilis</i>)	SC	--	Contact the NH Fish & Game Dept (see below).
Northern Black Racer (<i>Coluber constrictor constrictor</i>)	T	--	Contact the NH Fish & Game Dept (see below).
Osprey (<i>Pandion haliaetus</i>)	SC	--	Contact the NH Fish & Game Dept (see below).
Sea Lamprey (<i>Petromyzon marinus</i>)	SC	--	Contact the NH Fish & Game Dept (see below).
Sedge Wren (<i>Cistothorus platensis</i>)	E	--	Contact the NH Fish & Game Dept (see below).
Spotted Turtle (<i>Clemmys guttata</i>)	T	--	Contact the NH Fish & Game Dept (see below).
Swamp Darter (<i>Etheostoma fusiforme</i>)	SC	--	Contact the NH Fish & Game Dept (see below).
Upland Sandpiper (<i>Bartramia longicauda</i>)	E	--	Contact the NH Fish & Game Dept (see below).

¹Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

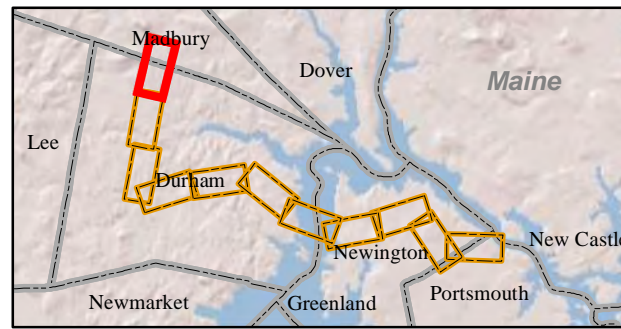
Attachment H - NRCS Soil Survey



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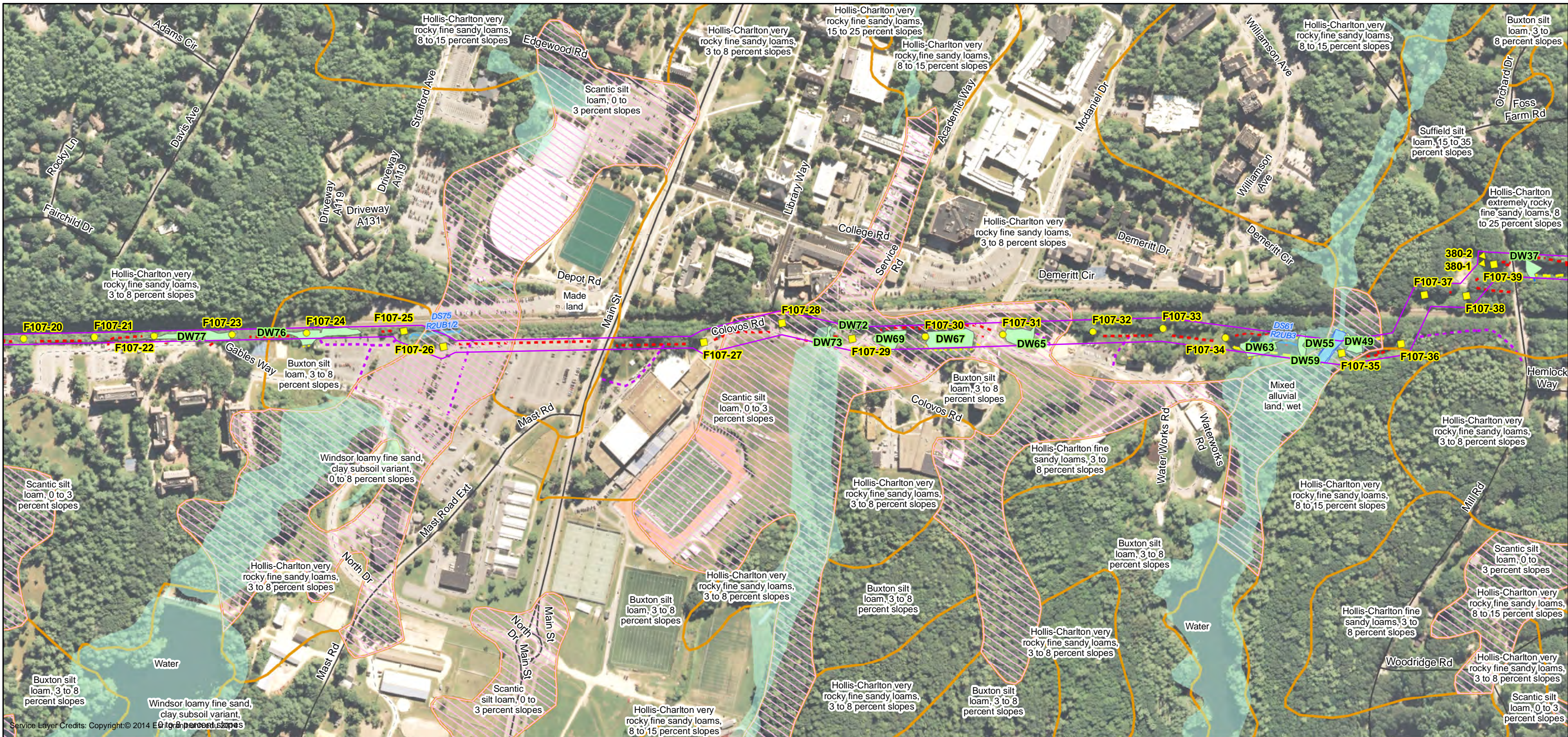
Drawn By: athompson
Date: 8/5/2015
Project No: 22860.003

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<ul style="list-style-type: none"> Roads Local Not Maintained Private State 	<ul style="list-style-type: none"> Access Paths Tree Clearing Only Primary Proposed 		



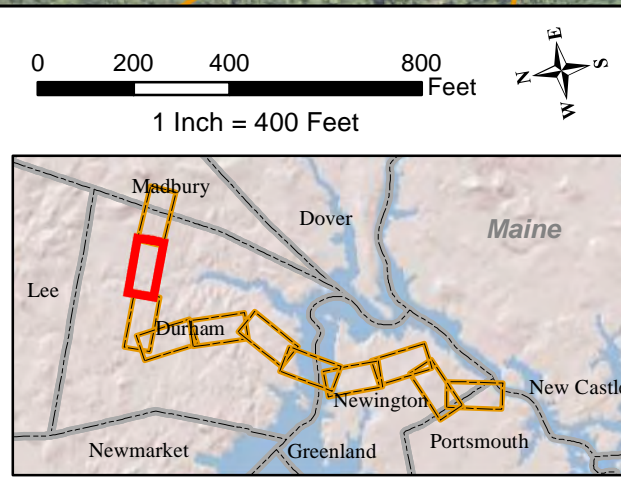
Seacoast Reliability Project
NRCS Soil Survey

Attachment H
Map 1 of 11



Date : 8/5/2015
 Project No: 22860.003

<p>Town Boundary</p> <p>SRP Project Area</p> <p>Roads</p> <p>— Local</p> <p>==== Not Maintained</p> <p>----- Private</p> <p>— State</p>	<p>FEMA 100-yr Floodplain</p> <p>Hydic Soil</p> <p>NRCS Soil Boundary</p>	<p>Structures</p> <p>● Direct Embed</p> <p>■ Drilled Pier</p> <p>▲ Relocated Distribution</p> <p>Access Paths</p> <p>--- Tree Clearing Only</p> <p>--- Primary</p> <p>--- Proposed</p>	<p>Wetland Boundary</p> <p>--- Wetland Extends</p> <p>— Stream Centerline</p> <p>— Stream Top of Bank</p>
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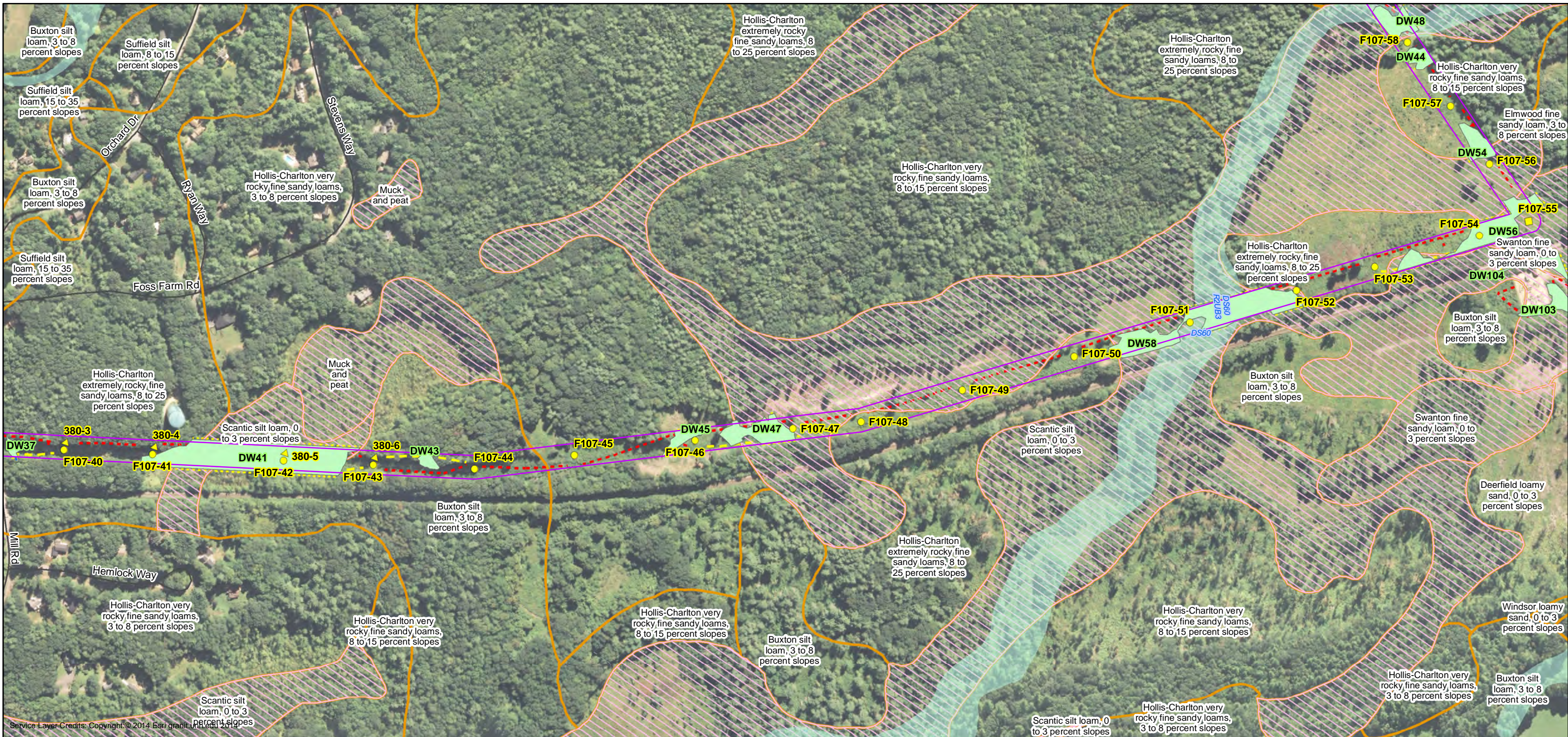
NORMANDEAU environmental consultants

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NRCS Soil Survey

Attachment H

Map 2 of 11



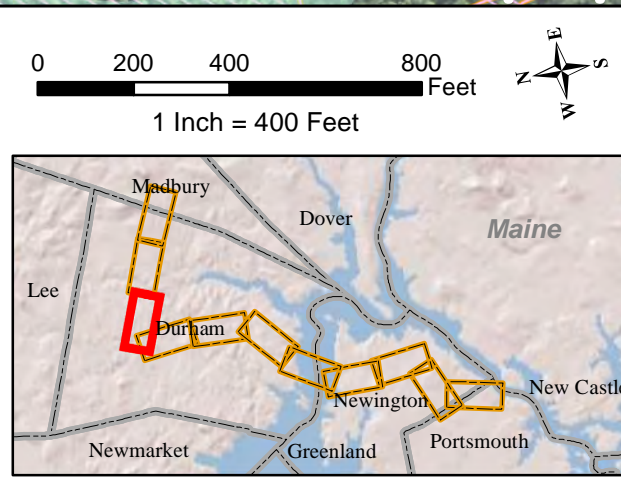
Date : 8/5/2015

Project No: 22860.003

- Drawn By: athompson
- Town Boundary
 - SRP Project Area
 - Roads**
 - Local
 - Not Maintained
 - Private
 - State

- FEMA 100-yr Floodplain
- Hydic Soil
- NRCS Soil Boundary

- Structures**
- Direct Embed
 - Drilled Pier
 - ▲ Relocated Distribution
- Access Paths**
- Tree Clearing Only
 - Primary
 - Proposed
- Wetland Boundary**
- Wetland Extends
 - Stream Centerline
 - Stream Top of Bank





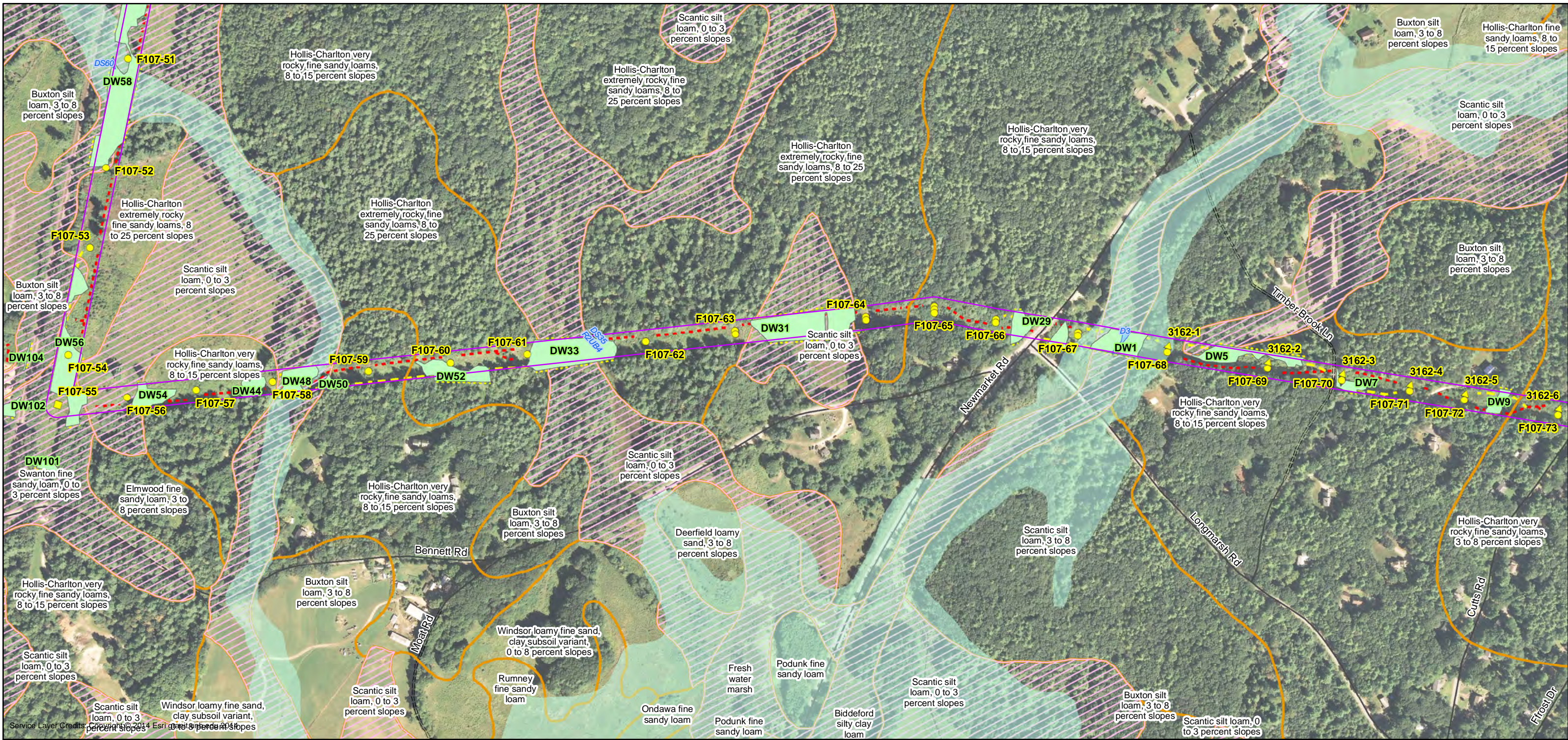


Seacoast Reliability Project

NRCS Soil Survey

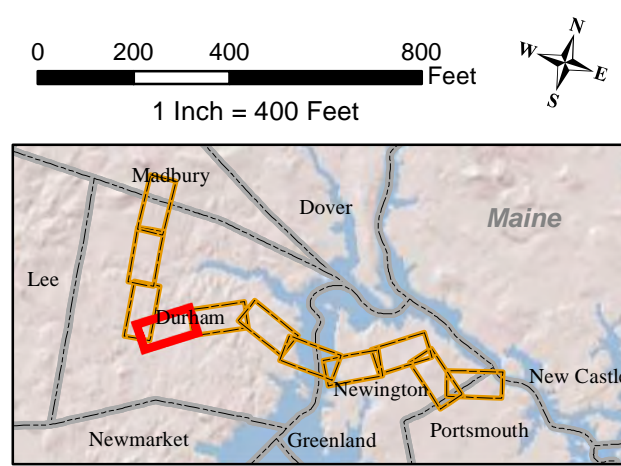
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Map 3 of 11



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Date: 8/5/2015
Project No: 22860.003

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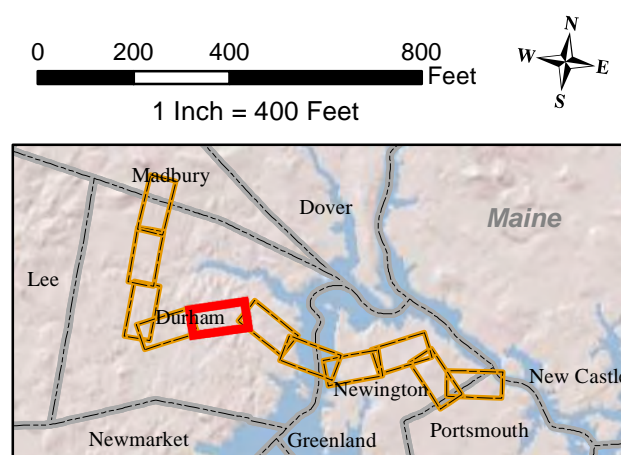
NRCS Soil Survey

Attachment H
Map 4 of 11



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 Project No: 22860.003

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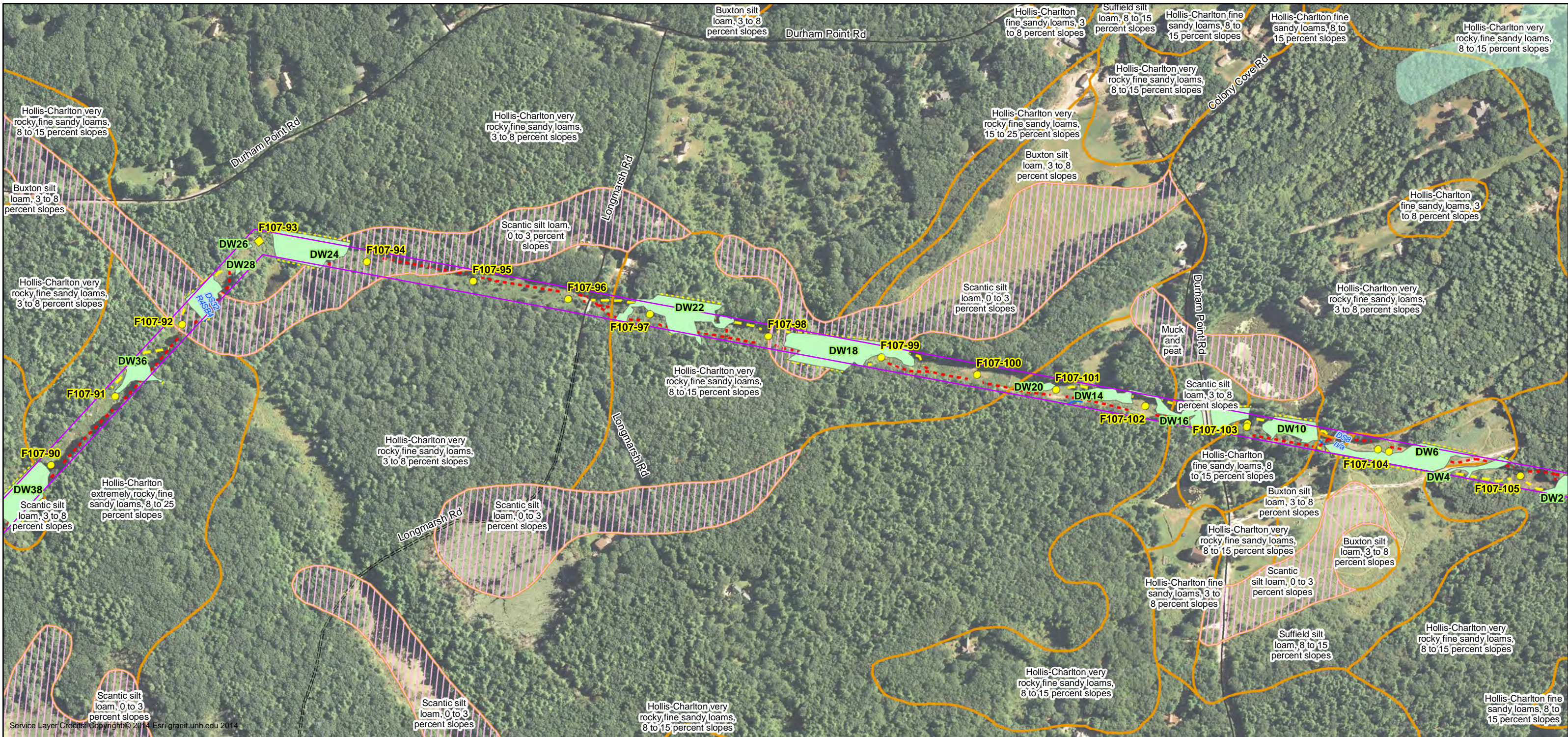






Seacoast Reliability Project
NRCS Soil Survey

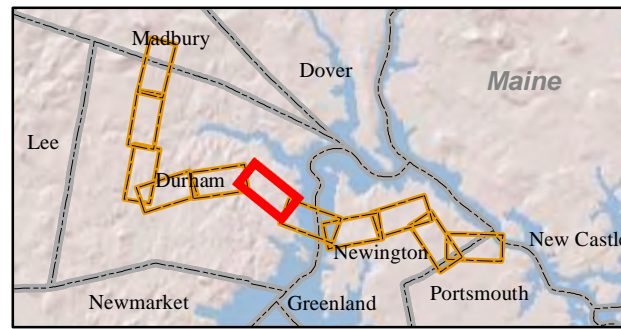
Attachment H
Map 5 of 11



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Date: 8/5/2015
Project No: 22860.003

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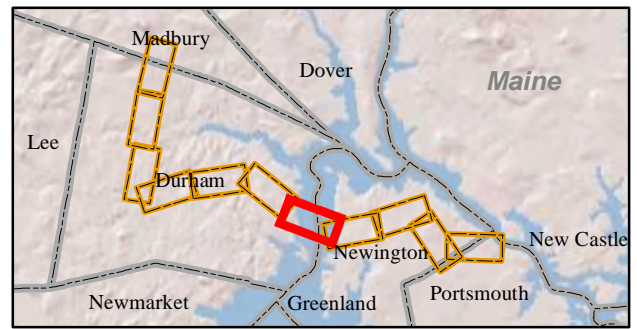
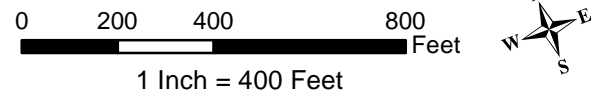
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	<p>Attachment H</p> <p>Map 6 of 11</p>



Biddford silt clay loam
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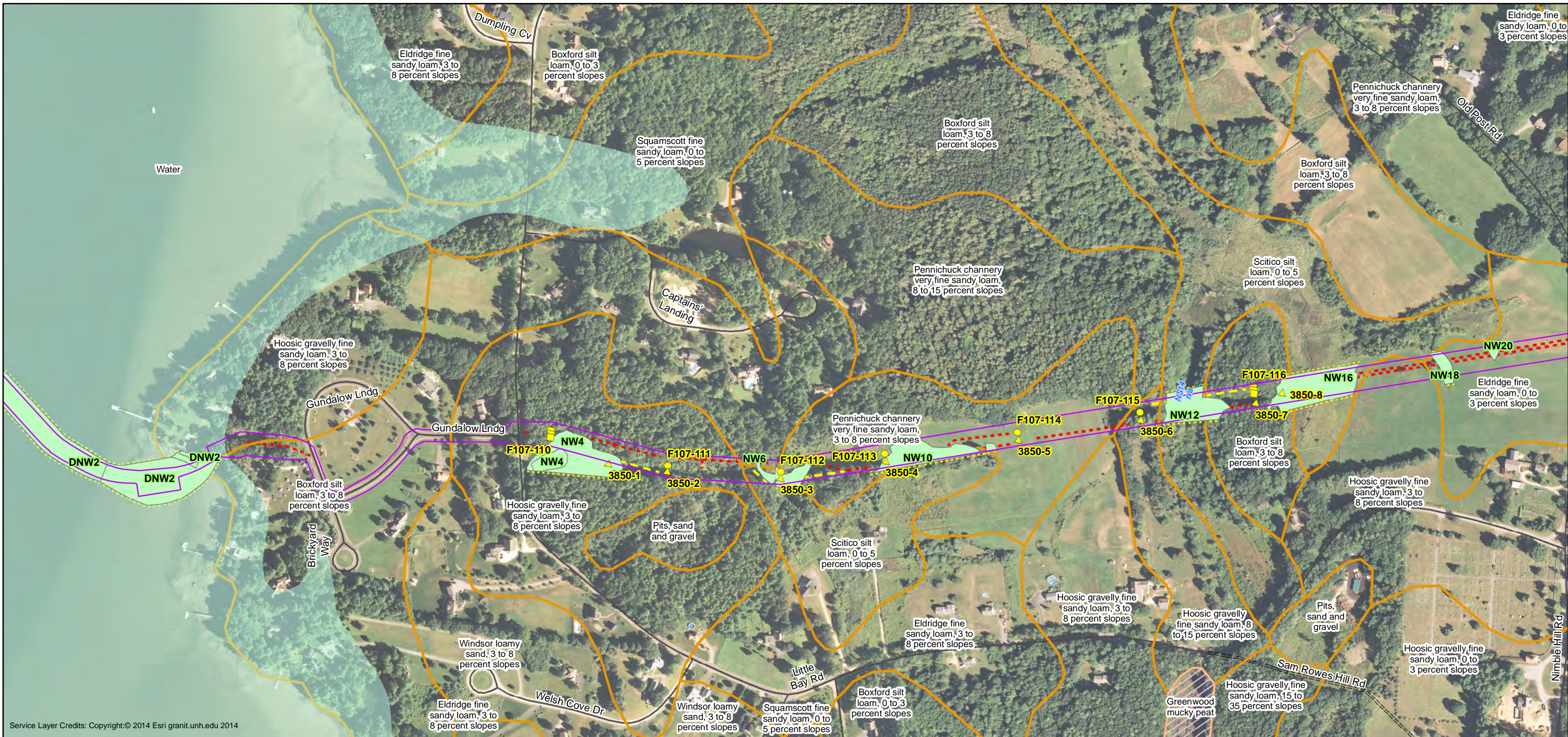
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Seacoast Reliability Project
NRCS Soil Survey

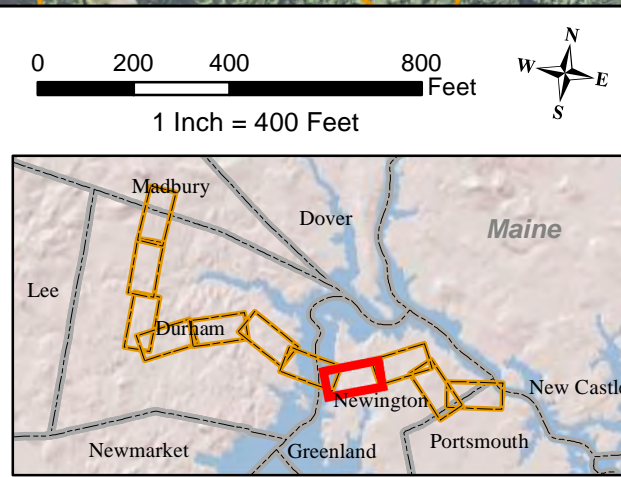
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Map 7 of 11



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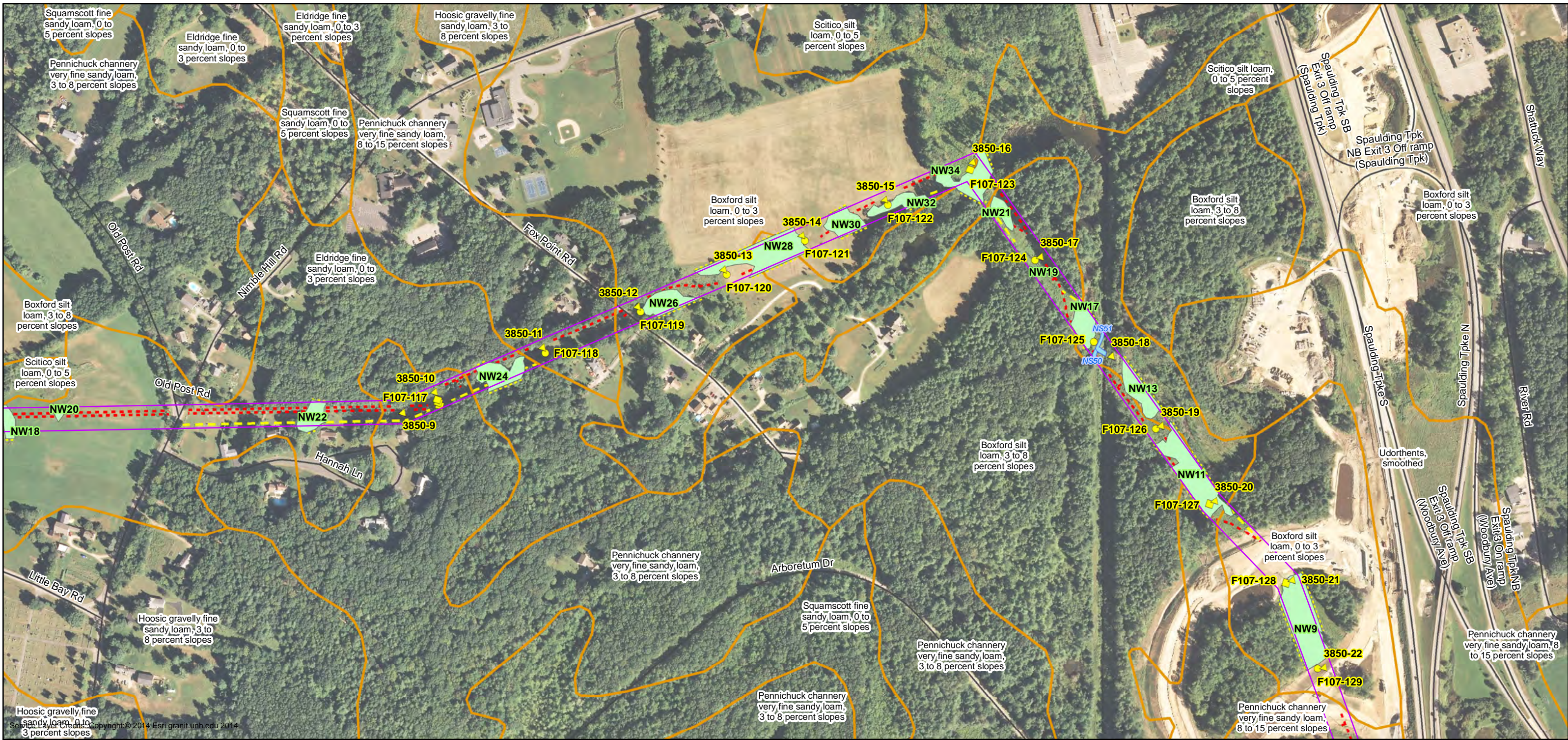
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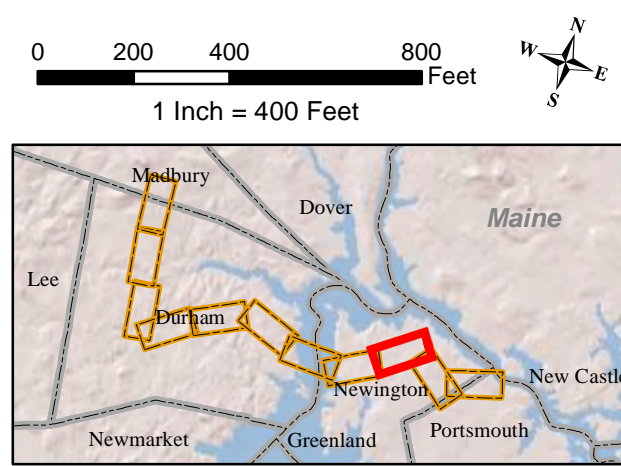
Seacoast Reliability Project
NRCS Soil Survey

Attachment H
Map 8 of 11

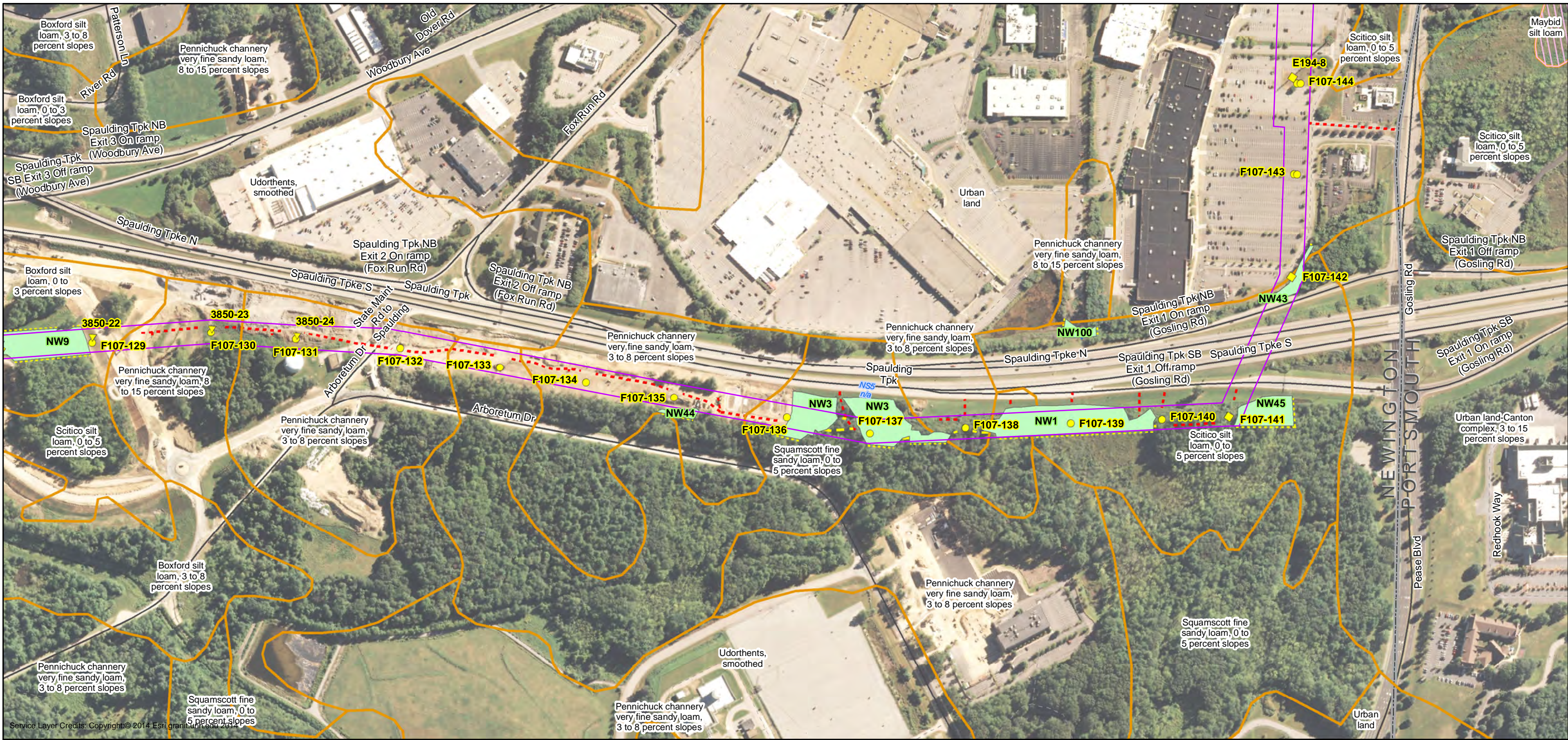


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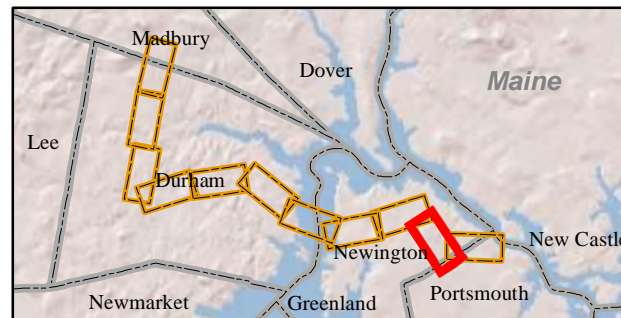
	Seacoast Reliability Project NRCS Soil Survey
	Attachment H Map 9 of 11



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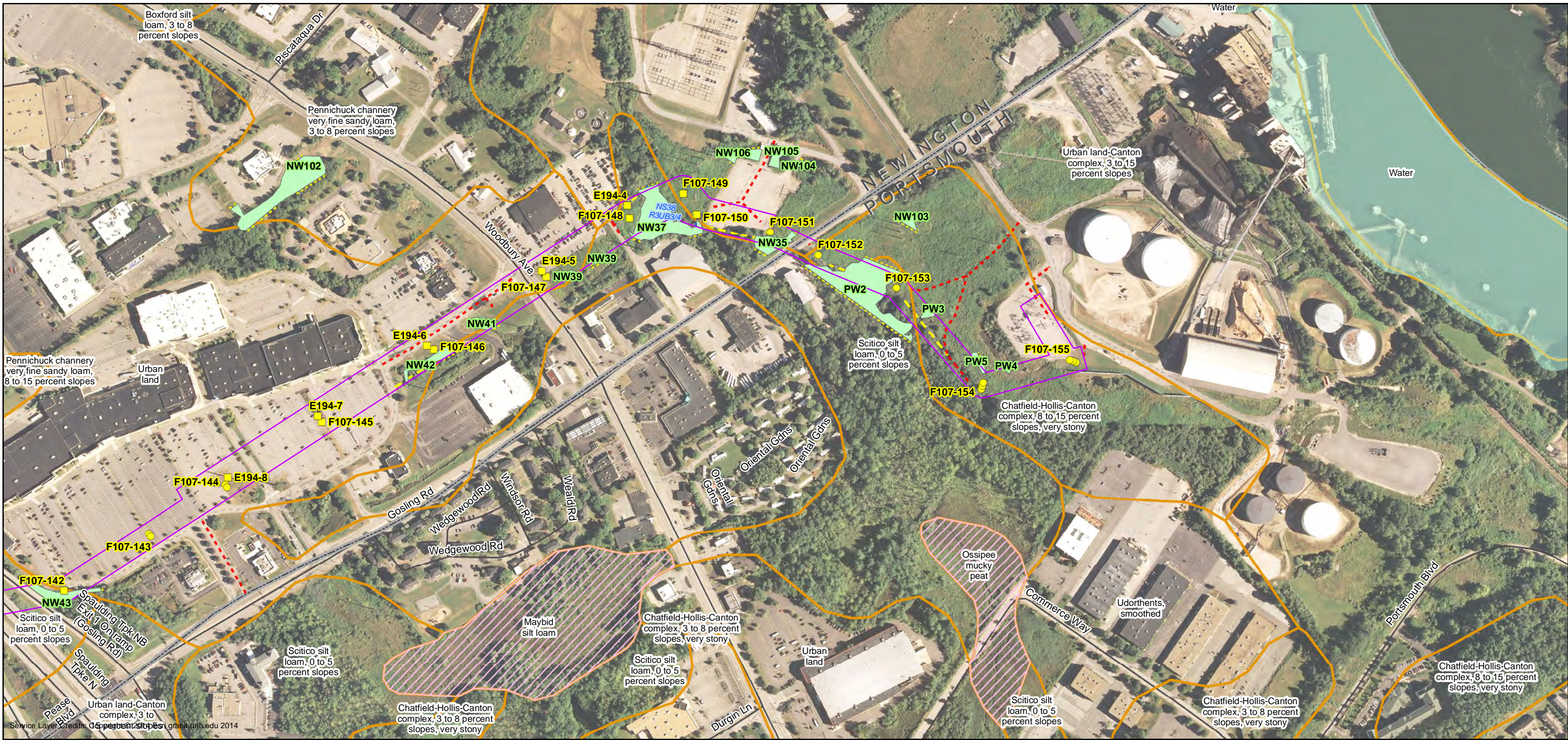
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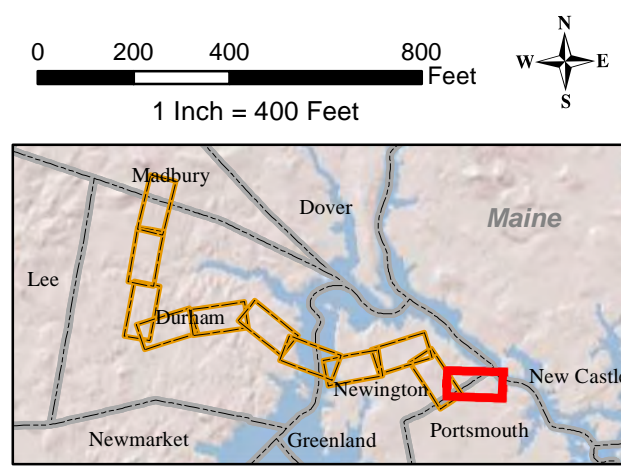
Seacoast Reliability Project
NRCS Soil Survey

Attachment H
Map 10 of 11



Date : 8/5/2015
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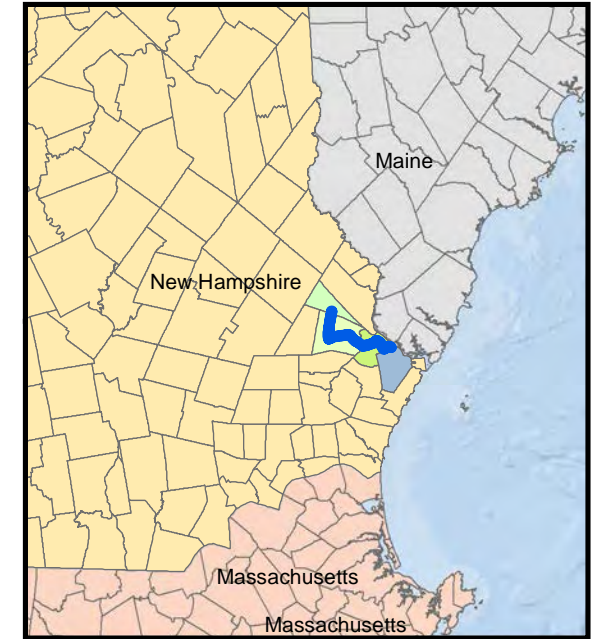
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NRCS Soil Survey

Attachment H
Map 11 of 11

Attachment I - Aerial Photograph with Site Boundaries



**Aerial Map
Scale 1:24,000**

Seacoast Reliability Project
Attachment I
Map 1 of 2

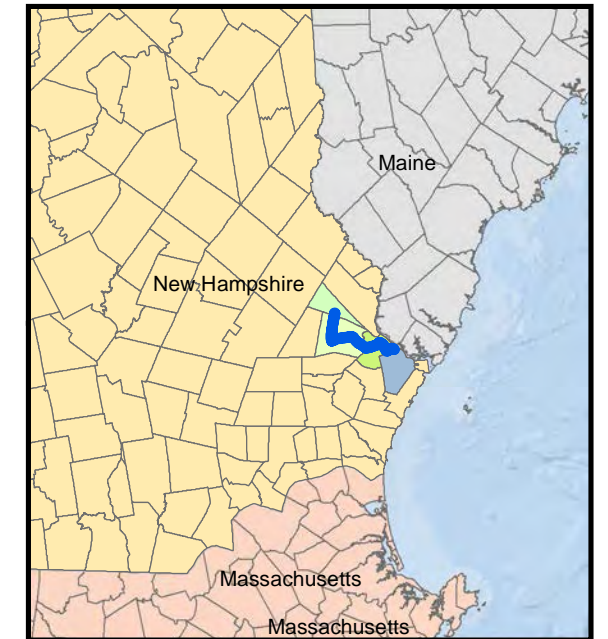
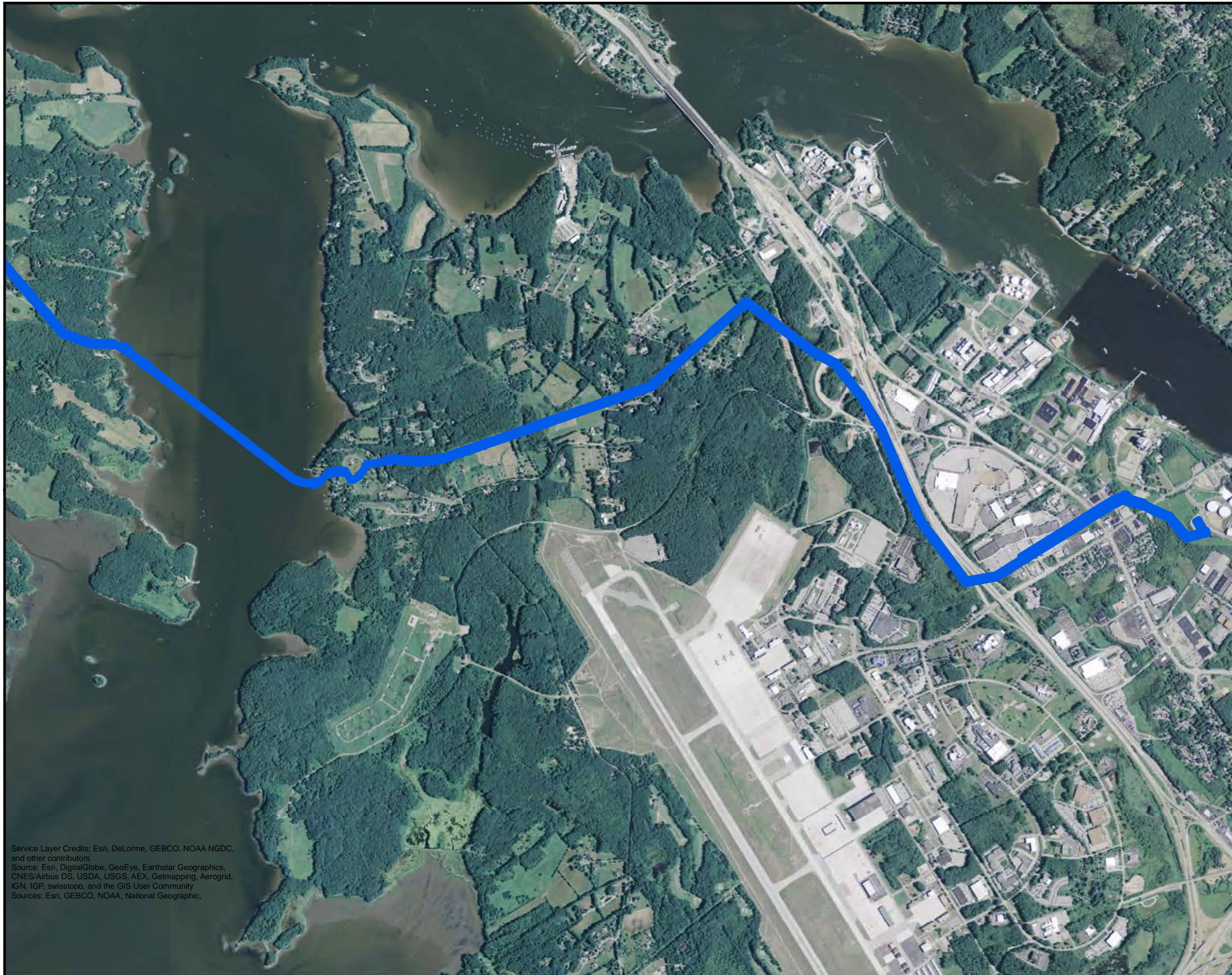
 Project Area



0 0.4 0.8 Miles

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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Geomatics, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Sources: Esri, GEBCO, NOAA, National Geographic



Aerial Map
Scale 1:24,000

Seacoast Reliability Project
Attachment I
Map 2 of 2

 Project Area



0 0.4 0.8 Miles

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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Sources: Esri, GEBCO, NOAA, National Geographic.

Attachment J - Photographs

PSNH SEACOAST RELIABILITY PROJECT
NHDES ALTERATION OF TERRAIN PERMIT APPLICATION



Photo 1 Frost Road, Durham



Photo 2 Frost Road Durham, View West

**PSNH SEACOAST RELIABILITY PROJECT
NHDES ALTERATION OF TERRAIN PERMIT APPLICATION**



Photo 3 Packers Falls Road, Durham



Photo 4 Madbury Road, Madbury, view north

PSNH SEACOAST RELIABILITY PROJECT
NHDES ALTERATION OF TERRAIN PERMIT APPLICATION



Photo 5 View from railroad facing west, Newington



Photo 6 Old Post Road and Nimble Hill, Newington

**PSNH SEACOAST RELIABILITY PROJECT
NHDES ALTERATION OF TERRAIN PERMIT APPLICATION**



Photo 7 Gregg Hall, University of New Hampshire, Durham



Photo 8 Sandy Brook Drive, Durham, view west.



Photo 9 Spaulding Turnpike detention basin next to NW 003



Photo 10 Spaulding Turnpike, facing south along new corridor

**PSNH SEACOAST RELIABILITY PROJECT
NHDES ALTERATION OF TERRAIN PERMIT APPLICATION**



Photo 11 "The Gables", University of New Hampshire, Durham



Photo 12 Pettee Hall, University of New Hampshire, Durham



Photo 13 Mall, facing east

**Attachment K - Best Management Practices Manual for Utility
Maintenance in and Adjacent to Wetlands and Waterbodies in
New Hampshire (Selected Pages)**

SILT FENCE

BMP #1

A silt fence is a temporary geotextile fabric sediment barrier intended to intercept sediment-laden water. A silt fence is designed to trap water from small watersheds of less than 2 acres and is not a filter.

Appropriate Applications:

Silt fences are placed:

- Around temporary stockpiles.
- Up slope of wetlands and streams as a barrier.
- Along the edge of access ways and along the perimeter of work zones adjacent to wetlands or waterbodies.
 - Along streams and channels.
 - Below the toe of exposed and erodible slopes.
 - Down slope of exposed soil areas.

Limitations:

- Improperly installed, (i.e. not trenched and keyed) will cause problems by concentrating flows and directing storm water to undesirable areas.
- Must be removed and disposed of when work is complete.
- Cannot be installed across streams, ditches, channels or areas of concentrated flow.
- Cannot be used to divert flow. Silt fence must be placed along the contour to allow the water to spread out.

Standards and Specifications:

- The maximum slope length above a silt fence should comply with the following table:

Slope (Horizontal Distance for 1 foot change vertically)	Maximum Slope Distance above silt fence
2:1	50
3:1	75
4:1	125
5:1	175
Greater than 5:1	200

- Silt fences work by ponding water and allowing sediment to settle out behind it. Ensure that the location is suitable for temporary ponding or deposition of sediment. (E.g. do not place silt fence in a wetland and have the water pond within the wetland, instead place the silt fence above the edge of the wetland.)
- Silt fences deteriorate over time and have a typical lifespan of less than 1 year. Longer periods of use will require silt fences to be replaced.
- Silt fences shall not be used in areas of concentrated flow.

Materials:

- Silt fence fabric shall be woven polypropylene with a minimum width of 900 mm (36 inches) and a minimum tensile strength of 0.45-kN. The fabric shall conform to the requirements in ASTM designation D4632 and shall have an integral reinforcement layer. The reinforcement layer shall be a polypropylene, or equivalent, net provided by the manufacturer. The permittivity of the fabric shall be between 0.1 sec^{-1} and 0.15 sec^{-1} in conformance with the requirements in ASTM designation D4491.
- Wood stakes shall be commercial quality lumber of adequate size and shape. Stakes shall either be pre-applied to the fence or spaced no further than 6 feet apart during installation.

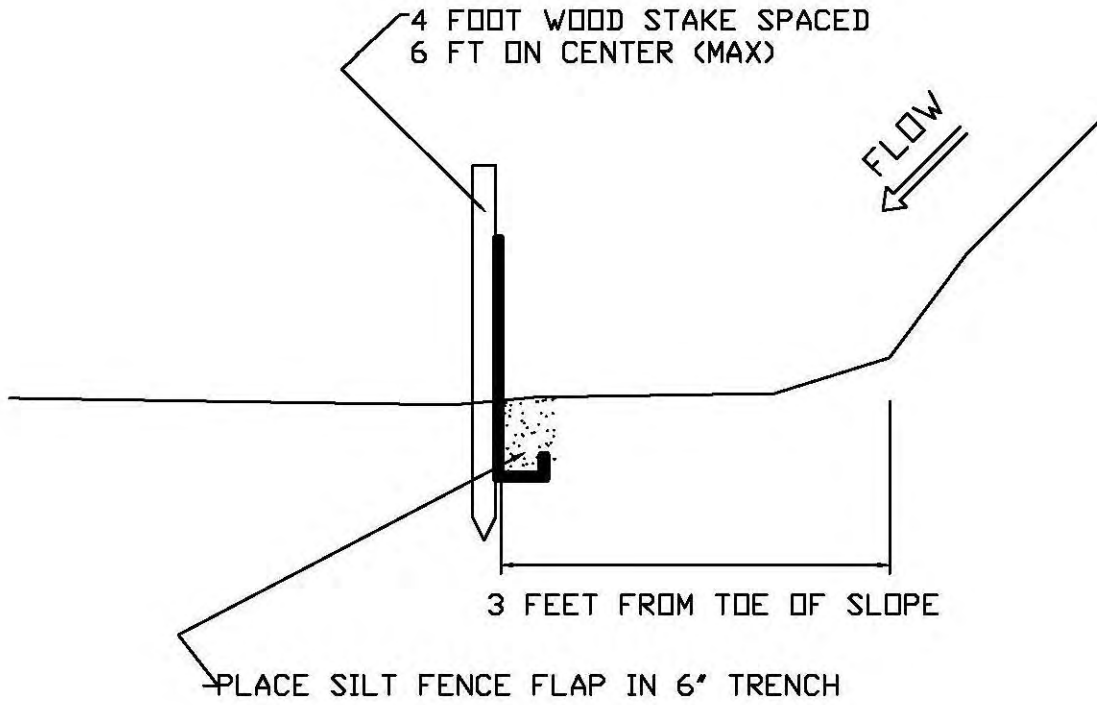
Installation:

- Bottom of the silt fence shall be keyed in a minimum of 6 inches.
- Trenches shall not be excavated wider and deeper than necessary for proper installation of the temporary linear sediment barriers.
- Silt fences shall be placed at least 3 feet off the top of slope where appropriate.

Maintenance and Inspection:

In addition to Section 5.11 of this manual, perform maintenance and inspection as follows:

- Repair or replace split, torn, slumping, or weathered fabric.
- Maintain silt fences to provide an adequate sediment holding capacity. Sediment shall be removed when the sediment accumulation reaches one-third of the barrier height, typically 8 inches.
- Remove silt fence when no longer needed. With native soil, fill and compact post holes and anchorage trench, remove sediment accumulation, and grade fence alignment to blend with adjacent ground.



WEED FREE BALE BARRIER

BMP#2

A weed free bale barrier (bale barrier) is a temporary perimeter sediment barrier consisting of a trench and staked bales. The bale barrier is designed to intercept and trap sediment present in surface water run-off. Bale barriers allow sediment to settle from runoff before water leaves the construction site. It's important to use weed free bales (straw, weed free hay or chip bales) because regular hay bales have a high potential of containing invasive species.

Appropriate Applications:

This perimeter control is an alternative to silt fence. Appropriate applications include:

- Along the edge of access ways and along the perimeter of work zones adjacent to wetlands or waterbodies.
 - Along streams and channels.
 - Below the toe of exposed and erodible slopes.
 - Down slope of exposed soil areas.

Limitations:

- Bale barriers are maintenance intensive. These measures have a short useful life and must be replaced about every 2 months to be effective.
- Degraded bales may fall apart when removed or left in place for extended periods.
- Bale barriers shall not be used in areas of concentrated flow.

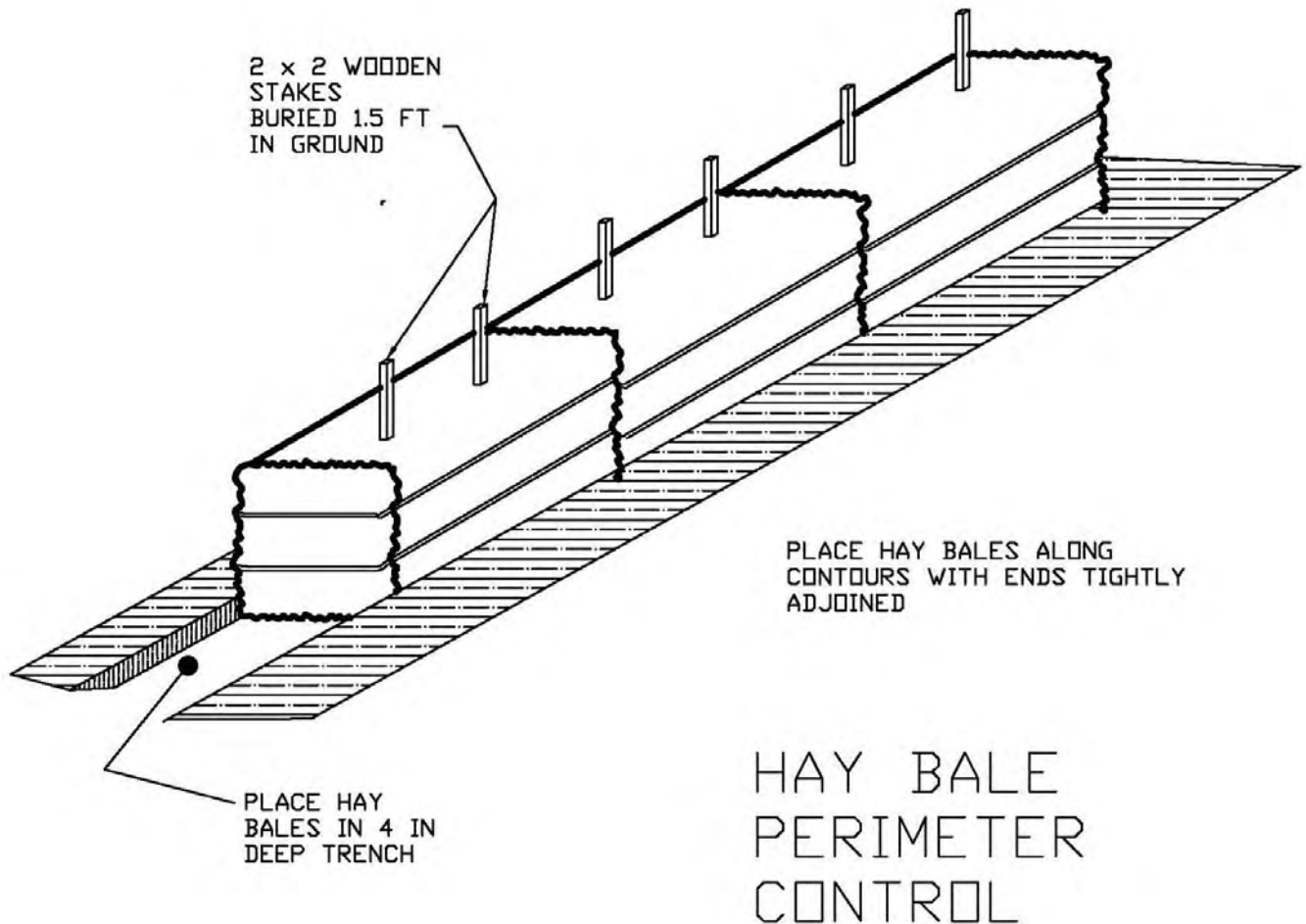
Installation:

- Bales must be installed in a shallow trench
- Bales must tightly abut adjacent bales
- Bales must be staked
- Construct bale barriers with a setback of at least 3 ft from wetlands and waterbodies where practical.

Maintenance and Inspection:

In addition to Section 5.11 of this manual, perform maintenance and inspection as follows:

- If sediment has built up more than 8", remove sediment and dispose of outside of wetlands or waterbodies.
- Replace or repair bales as needed (e.g. washouts, damaged bales, etc.).
- Remove bales when no longer needed. Remove sediment accumulation, and clean, regrade, and stabilize the area. Removed bales can be used as mulch for restoration efforts (see BMP #5).



SILT FENCE / WEED FREE BALE BARRIER

BMP#3

A silt fence bale barrier is a temporary perimeter sediment barrier consisting of a trenched silt fence and staked bales. The double barrier is designed to intercept and trap sediment in critical areas where normal BMP measures may not suffice. It's important to use weed free bales (straw or weed free hay) because regular hay bales have a high potential of containing invasive species.

Appropriate Applications:

This perimeter control is an alternative to either silt fence or bales alone. Appropriate applications include:

- Along the edge of access ways and along the perimeter of work zones adjacent to wetlands or waterbodies.
 - Along streams and channels.
 - Below the toe of exposed and erodible slopes.
 - Down slope of exposed soil areas.
- In areas where there is a higher amount of concentrated flow and a typical silt fence installation would not effectively contain storm water runoff.
- In areas where the barrier must be placed at the immediate toe of a steep slope with no other options for diverting or containing storm water.

Limitations:

- In order to work properly, this measure must be properly trenched. Failure to do so will cause sediment-laden water to run under or around the measure.
- Bale barriers are maintenance intensive. These measures have a short useful life and must be replaced about every 2 months to be effective.
- Degraded bales may fall apart when removed or left in place for extended periods.

Installation:

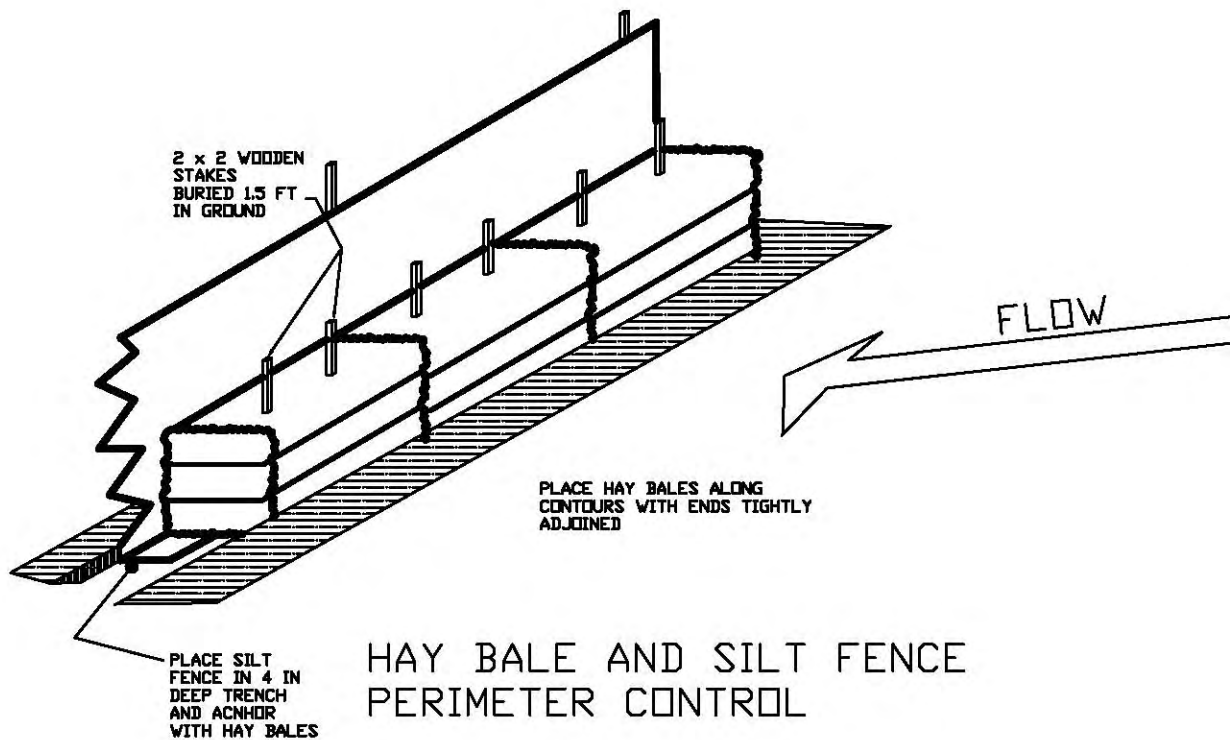
- A shallow trench must be constructed prior to installation.
- Place the silt fence at the down-slope side of the trench with the flap extending into the trench.
- Bales must tightly abut adjacent bales
- Bales must be staked
- Construct bale barriers with a setback of at least 3 ft from wetlands and water bodies where practical.

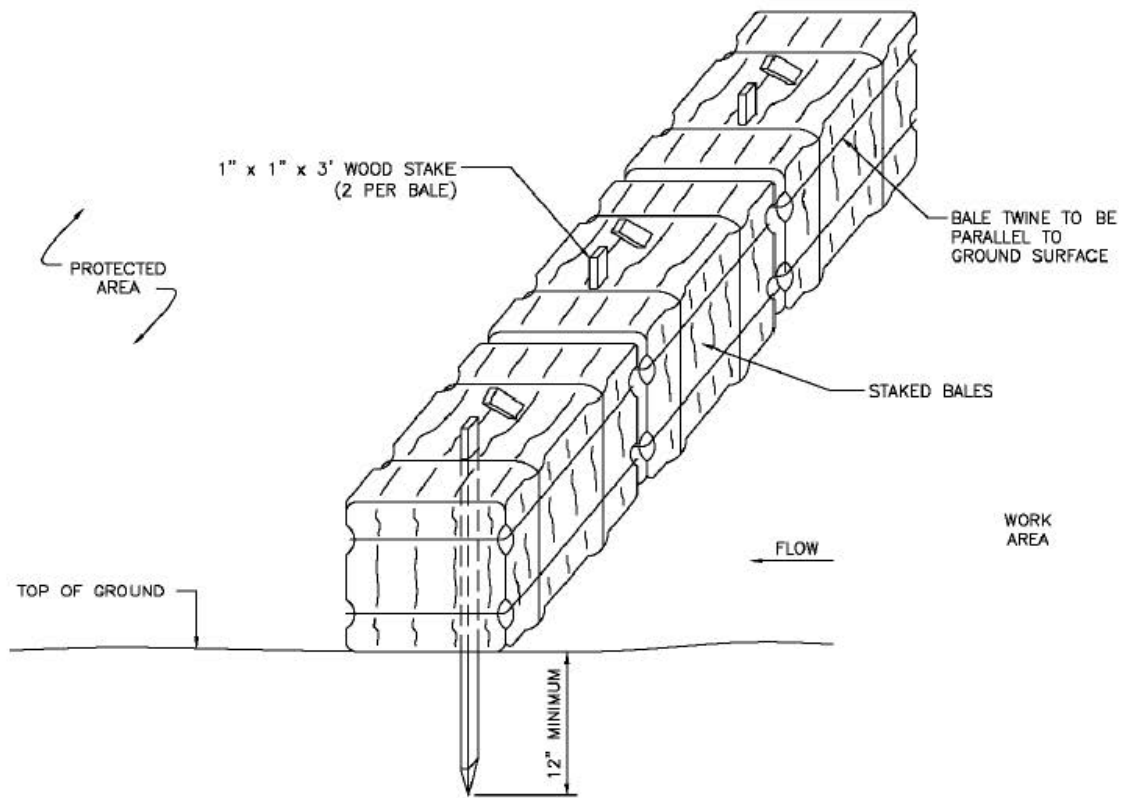
- Extend silt fence for at least 10 feet beyond the bales and curve the ends up slope to allow storm water to be trapped by the measure

Maintenance and Inspection:

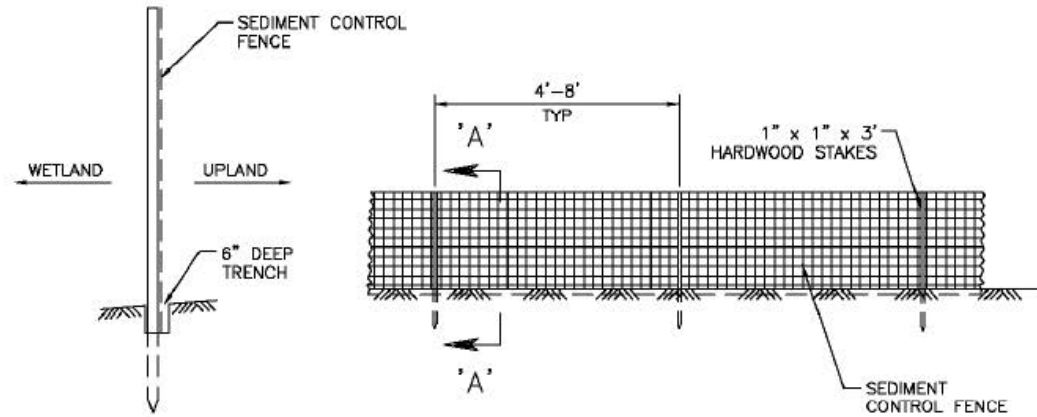
In addition to Section 5.11 of this manual, perform maintenance and inspection as follows:

- If sediment has built up more than 8", remove sediment and dispose of outside of wetlands or waterbodies.
- Replace or repair silt fence and bales as needed (e.g. washouts, damaged bales, etc.).
- Remove BMP when no longer needed. Remove sediment accumulation, and clean, regrade, and stabilize the area. Removed bales can be used as mulch for restoration efforts (see BMP #5).





TYPICAL NONEMBEDDED SEDIMENT
BARRIER INSTALLATION



SECTION A-A

TYPICAL SEDIMENT
CONTROL FENCE

ACCESS WAY STABILIZATION

BMP #9

In order to prevent erosion or sedimentation issues when working adjacent to wetlands or waterbodies, it is essential that upland soils are stabilized. Planting vegetation such as grasses and legumes on exposed mineral soil and erodible access ways will ensure proper stabilization.

Appropriate Application:

- This measure is intended to be used where exposed soils are subject to erosion and where a permanent vegetative cover is needed.

Installation:

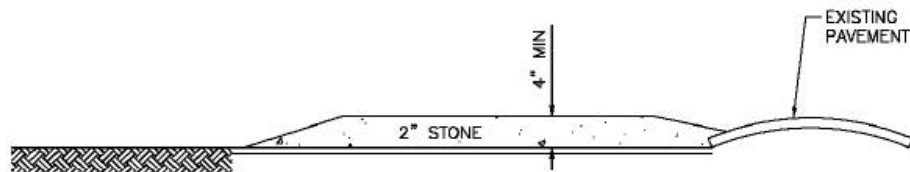
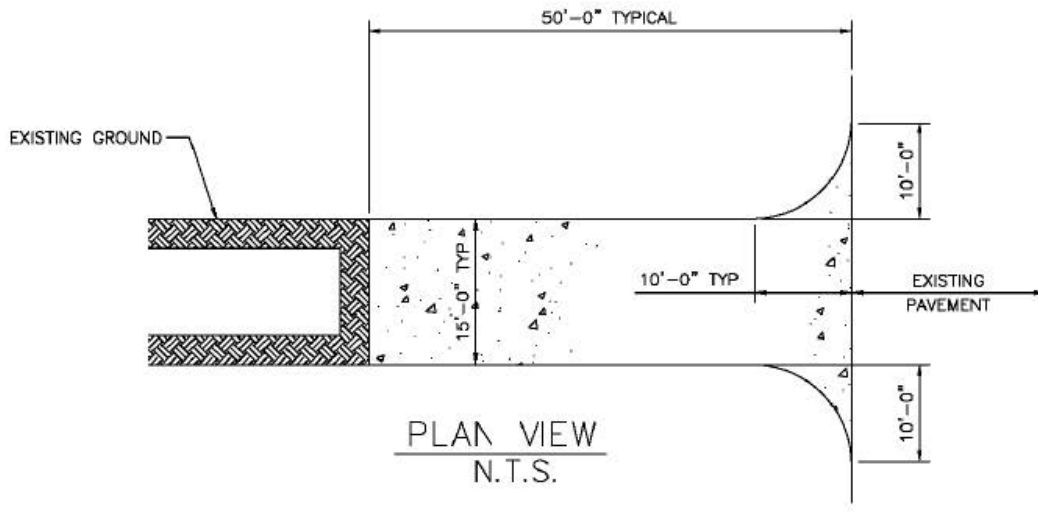
- Where feasible, prepare a seedbed by grading, removing debris, and scarifying the soil to a minimum depth of 3 inches. When the area to be seeded has been recently loosened to the extent that an adequate seedbed exists, no additional treatment is required.
- Seed should be applied as indicated in BMP #4 (Seeding Options).
- Track in seed with a dozer whenever possible to improve germination and establishment, especially when seeding on sandy, droughty sites.
- Mulch shall be applied over all newly seeded areas at a rate of 2 tons per acre. Mulch will retain soil moisture essential to seed germination, and additionally will protect the soil surface from erosion. See BMP#5.
- Inspect all seeded areas in accordance with Section 5.11 of this manual.

Appropriate Application:

- **This measure is intended for access to a public road from a ROW where sediment may be tracked onto the public road.**

Installation:

- **Install rock apron located from ROW to public road as shown below:**



CONSTRUCTION SPECIFICATIONS

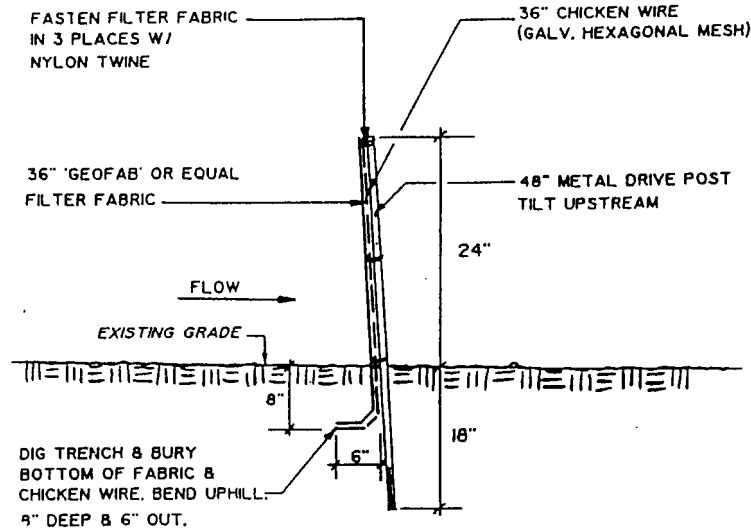
1. STONE SIZE - USE 2" STONE (MINIMUM) TO 6" STONE (MAXIMUM)
2. LENGTH - GREATER THAN OR EQUAL TO 50 FEET
3. THICKNESS - 4"
4. WIDTH - FIFTEEN (15) FOOT TYP., BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
5. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM SHALL BE PERMITTED.
6. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
7. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED.
8. DEPENDING UPON SITE CONDITIONS, THIS ENTRANCE MAY OR MAY NOT BE PERMANENT

REINFORCED SILT FENCE

BMP#10

The Reinforced Silt Fence is designed to work in severe conditions such as the toe of steep slopes, severe grades and stream protection. It is intended for areas with larger drainage areas than typically appropriate for normal silt fence installation and can add extra siltation protection.

The Recommended maximum spacing between the metal drive posts is 10'.



REINFORCED SILT FENCE

NOT TO SCALE

**Public Service Company of New Hampshire
Seacoast Reliability Project**

Madbury, Durham, Newington & Portsmouth, NH

**New Hampshire Department of Environmental Services
Alteration of Terrain Permit Application**

Environmental Maps

Prepared for:

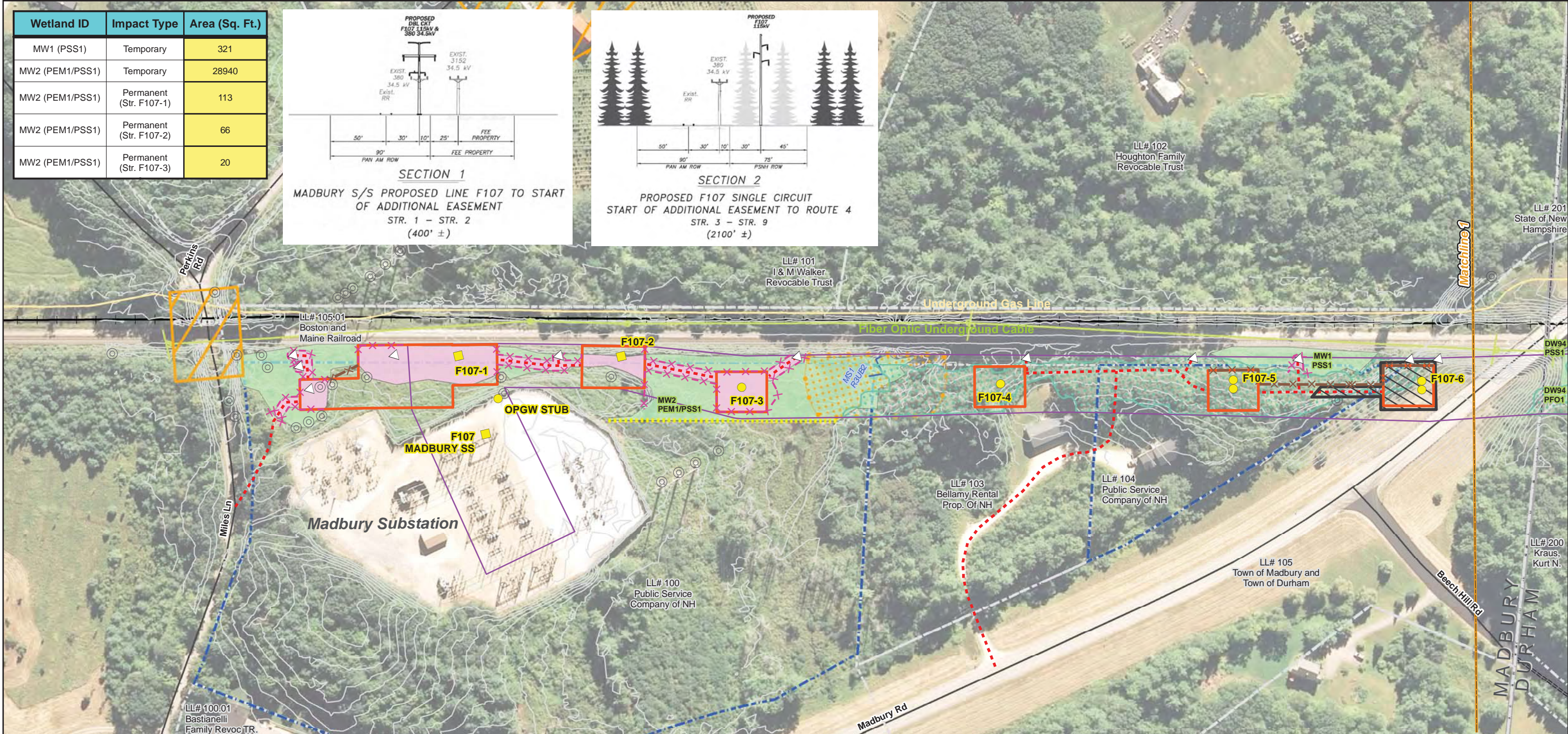
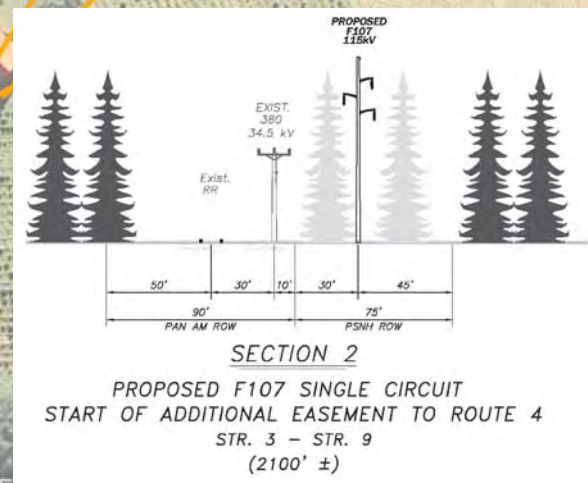
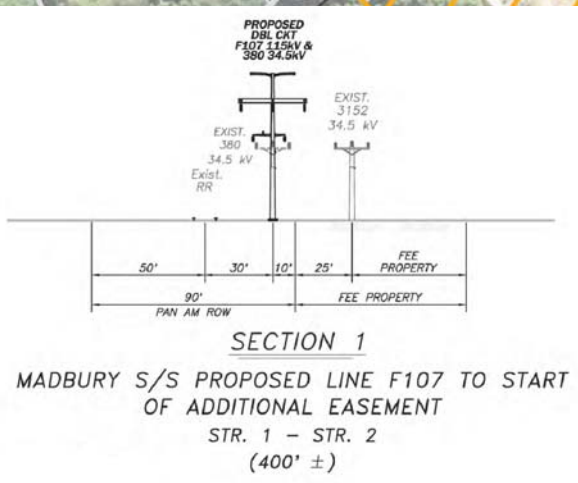
**Public Service Company of New Hampshire
d/b/a/ Eversource Energy
780 North Commercial Street
Manchester, NH 03101**

Prepared by:

**Normandeau Associates, Inc.
25 Nashua Road
Bedford, NH 03110**

March 2016

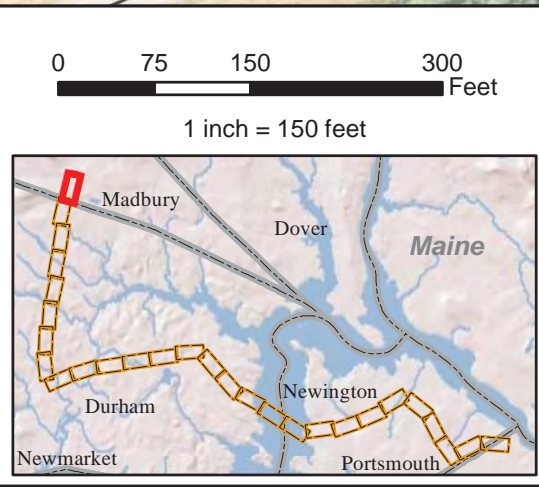
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MW2 (PEM1/PSS1)	Temporary	28940
MW2 (PEM1/PSS1)	Permanent (Str. F107-1)	113
MW2 (PEM1/PSS1)	Permanent (Str. F107-2)	66
MW2 (PEM1/PSS1)	Permanent (Str. F107-3)	20



Drawn By: athompson
Date: 2/25/2016
Project No: 22860.003

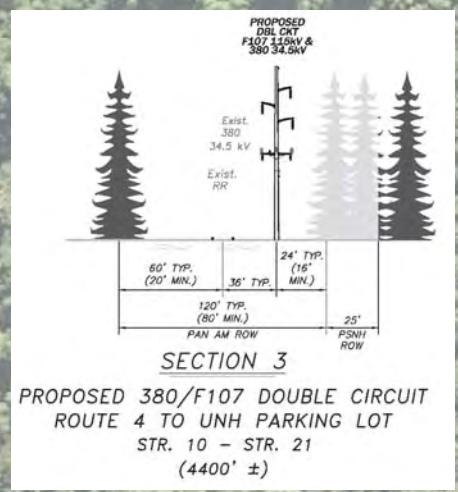
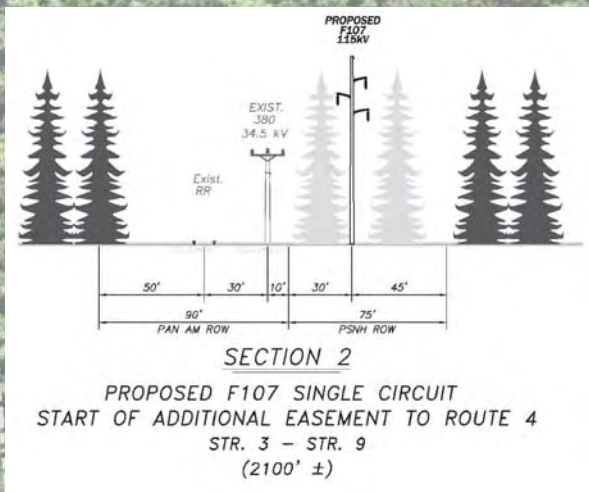
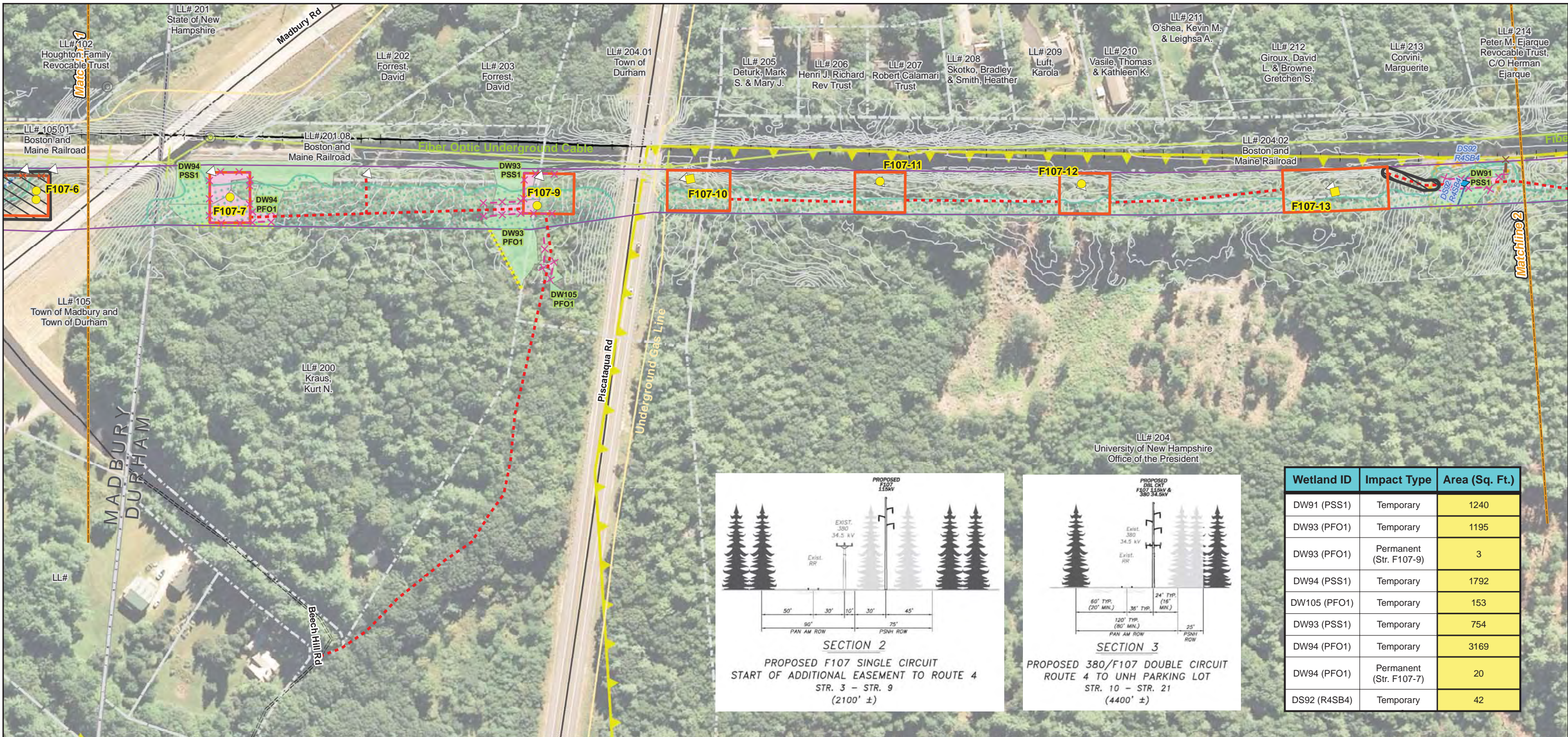
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Seacoast Reliability Project

Environmental Maps

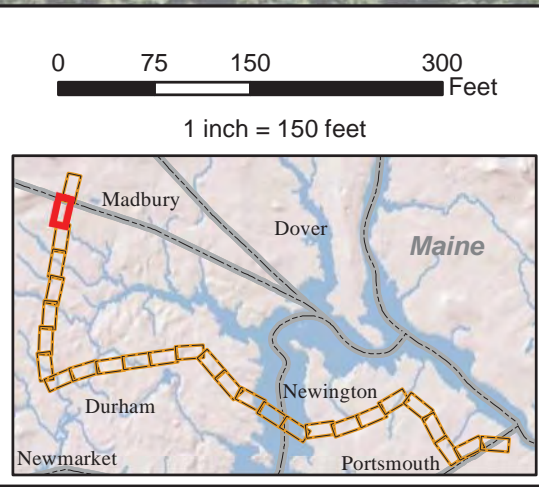


Wetland ID	Impact Type	Area (Sq. Ft.)
DW91 (PSS1)	Temporary	1240
DW93 (PFO1)	Temporary	1195
DW93 (PFO1)	Permanent (Str. F107-9)	3
DW94 (PSS1)	Temporary	1792
DW105 (PFO1)	Temporary	153
DW93 (PSS1)	Temporary	754
DW94 (PFO1)	Temporary	3169
DW94 (PFO1)	Permanent (Str. F107-7)	20
DS92 (R4SB4)	Temporary	42

Drawn By: athompson
Date: 2/25/2016
Project No: 22860.003

<ul style="list-style-type: none"> Town Boundary Approximate Parcel Boundary PSNH Fee Area Project Corridor Work Pad Roads <ul style="list-style-type: none"> Local Not Maintained Private State Railroad 	<ul style="list-style-type: none"> Existing Str (Remain) Existing Str (Removed/Modified) Structures <ul style="list-style-type: none"> Direct Embed Drilled Pier Relocated Distribution Access Roads Underground Cable Silt Curtain Silt Fence, Hay Bale, Erosion Control Mix Berm Straw Wattle 	<ul style="list-style-type: none"> Wetland Prime Wetland Wetland Extends Wetlands Impact Stream Centerline Stream Top of Bank Temporary Culvert Temporary Mat Bridge Historical Sites 	<ul style="list-style-type: none"> Designated River Buffer 250' Conservation Lands 100 Year Floodplain Steep Slope BMPs Tree Clearing Stream Buffer 2ft Contour
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EVERSOURCE ENERGY

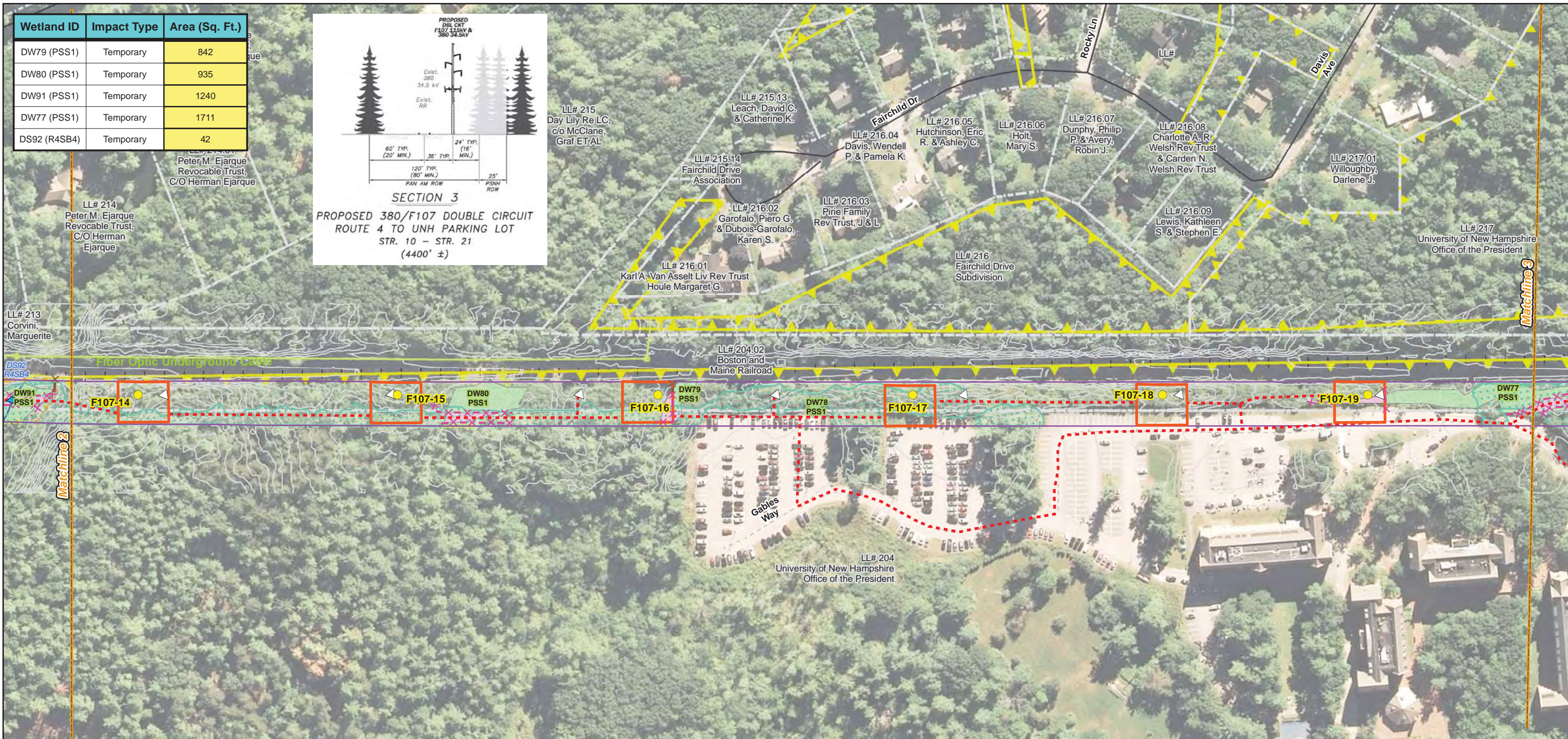
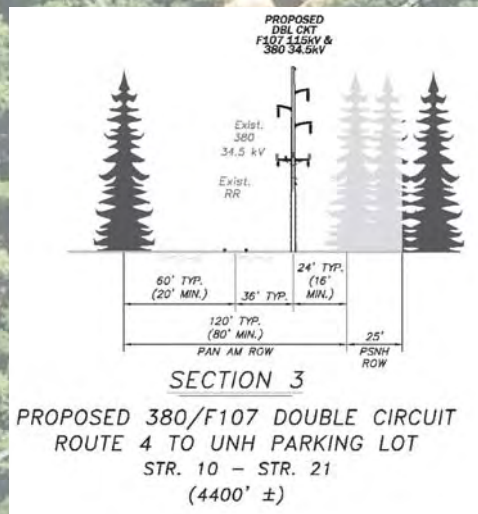
NORMANDEAU ASSOCIATES
Environmental Consultants

Seacoast Reliability Project

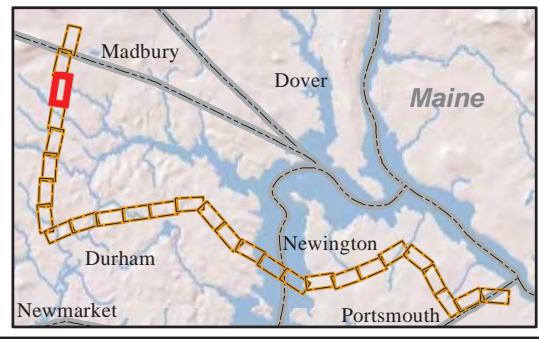
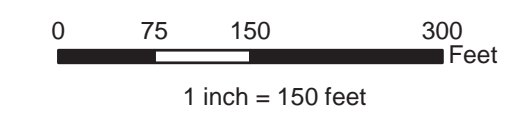
Environmental Maps

1/28/16

Wetland ID	Impact Type	Area (Sq. Ft.)
DW79 (PSS1)	Temporary	842
DW80 (PSS1)	Temporary	935
DW91 (PSS1)	Temporary	1240
DW77 (PSS1)	Temporary	1711
DS92 (R4SB4)	Temporary	42



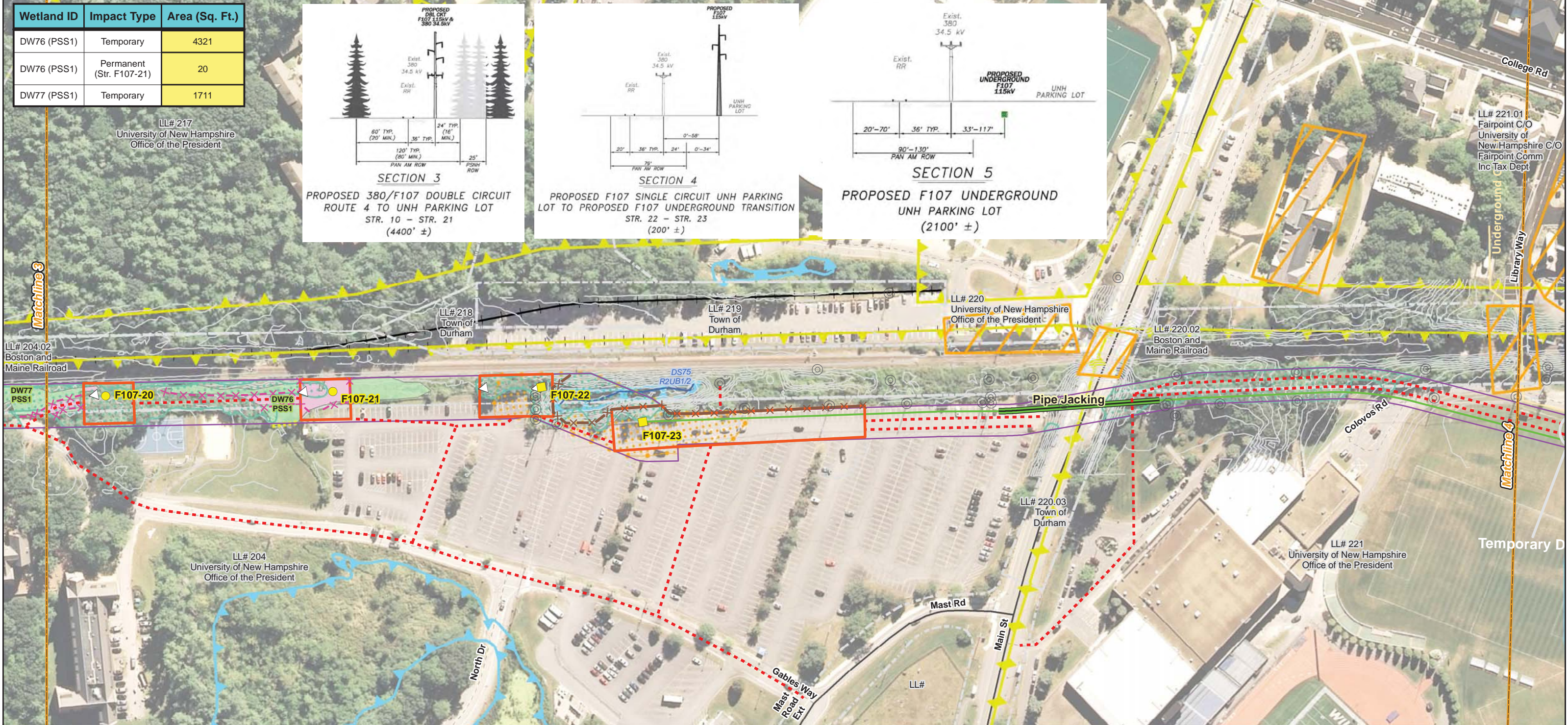
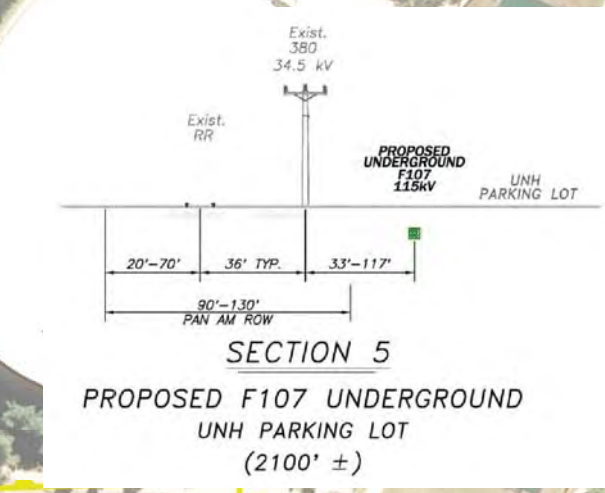
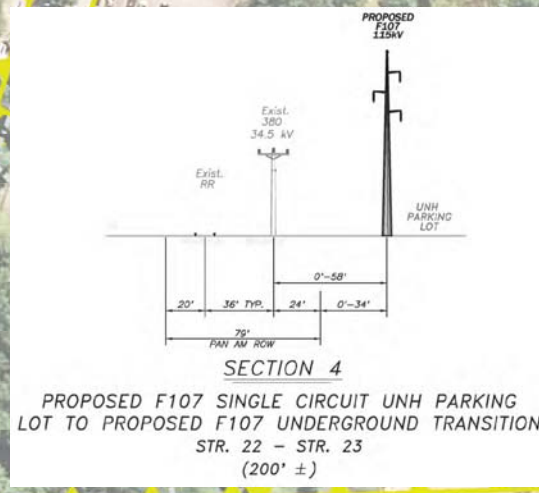
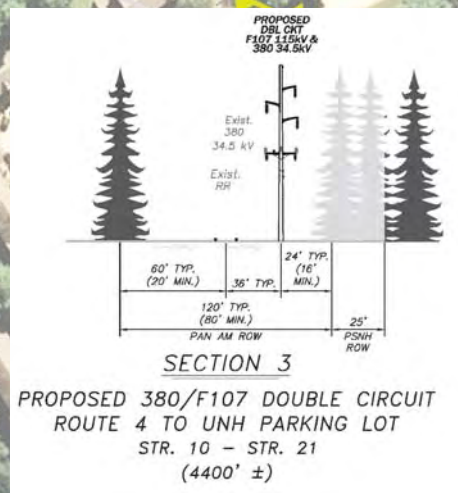
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	<h2>Seacoast Reliability Project</h2> <h3>Environmental Maps</h3>

Wetland ID	Impact Type	Area (Sq. Ft.)
DW76 (PSS1)	Temporary	4321
DW76 (PSS1)	Permanent (Str. F107-21)	20
DW77 (PSS1)	Temporary	1711

LL# 217
University of New Hampshire
Office of the President



Date : 2/25/2016
Project No: 22860.003

Drawn By: athompson

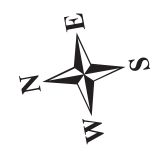
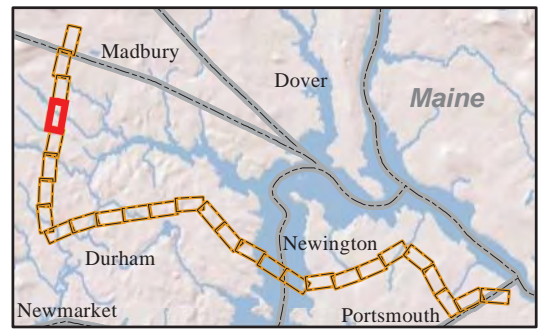
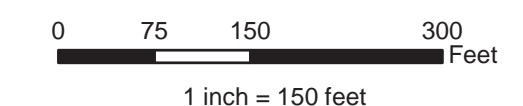
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- Approximate Parcel Boundary
- PSNH Fee Area
- Project Corridor
- Work Pad
- Roads
 - Local
 - Not Maintained
 - Private
 - State
 - Railroad

- Existing Str (Remain)
- Existing Str (Removed/Modified)
- Structures
 - Direct Embed
 - Drilled Pier
 - Relocated Distribution
 - Access Roads
 - Underground Cable
 - Silt Curtain
 - Silt Fence, Hay Bale, Erosion Control Mix Berm
 - Straw Wattle

- Wetland
- Prime Wetland
- Wetland Extends
- Wetlands Impact
- Stream Centerline
- Stream Top of Bank
- Temporary Culvert
- Temporary Mat Bridge
- Historical Sites

- Designated River Buffer 250'
- Conservation Lands
- 100 Year Floodplain
- Steep Slope BMPs
- Tree Clearing
- Stream Buffer
- 2ft Contour

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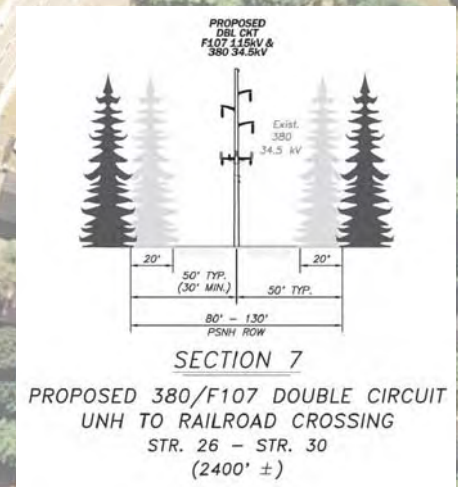
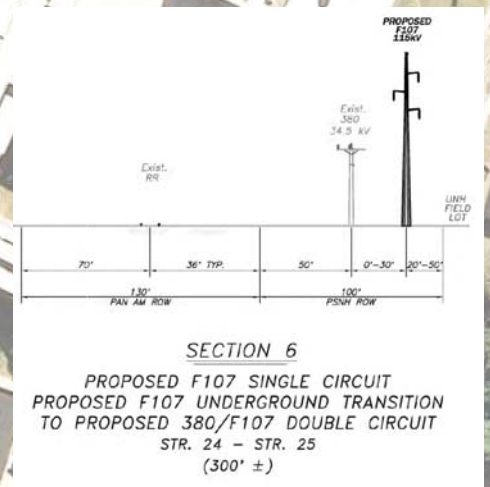
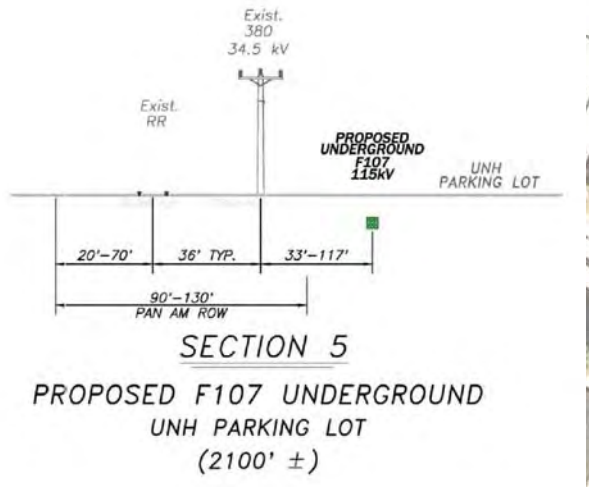


Seacoast Reliability Project
Environmental Maps



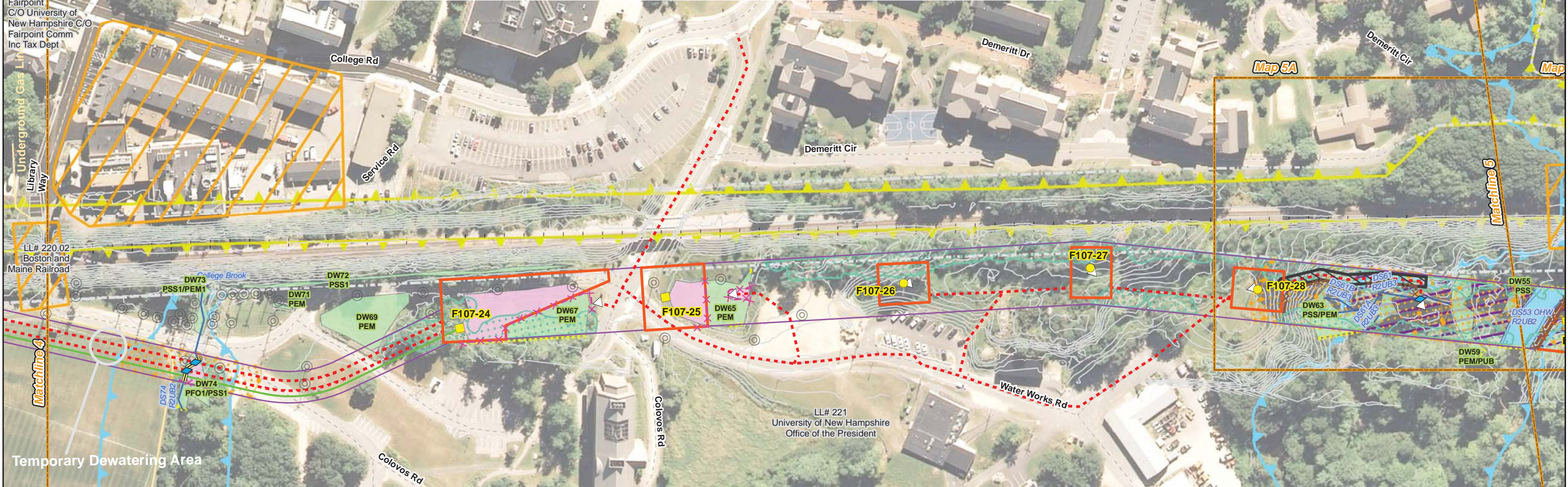
1/28/16

Wetland ID	Impact Type	Area (Sq. Ft.)
DW65 (PEM)	Temporary	3917
DW65 (PEM)	Permanent (Str. F107-25)	7
DW67 (PEM)	Temporary	8972
DW67 (PEM)	Permanent (Str. F107-24)	14
DW69 (PEM)	Temporary	53
DW74 (PFO1/PSS1)	Temporary	1166
DS61 (R2UB3)	Temporary	33
DS74 (R2UB2)	Temporary	146



LL# 221.01
Fairpoint
C/O University of
New Hampshire C/O
Fairpoint Comm
Inc Tax Dept

LL# 220.02
Boston and
Maine Railroad



Drawn By: athompson
Date: 2/25/2016
Project No: 22860.003

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0 75 150 300 Feet
1 inch = 150 feet

EVERSOURCE
ENERGY

NORMANDEAU ASSOCIATES
Environmental Consultants

Seacoast Reliability Project

Environmental Maps

STATE OF NEW HAMPSHIRE
SARAH D. ALLEN
No. 083
CERTIFIED WETLAND SCIENTIST

1/28/16

Wetland ID	Impact Type	Area (Sq. Ft.)
DW49 (PEM/PSS)	Temporary	3172
DS61 (R2UB3)	Temporary	33
DS51 (R2UB2)	Temporary	20

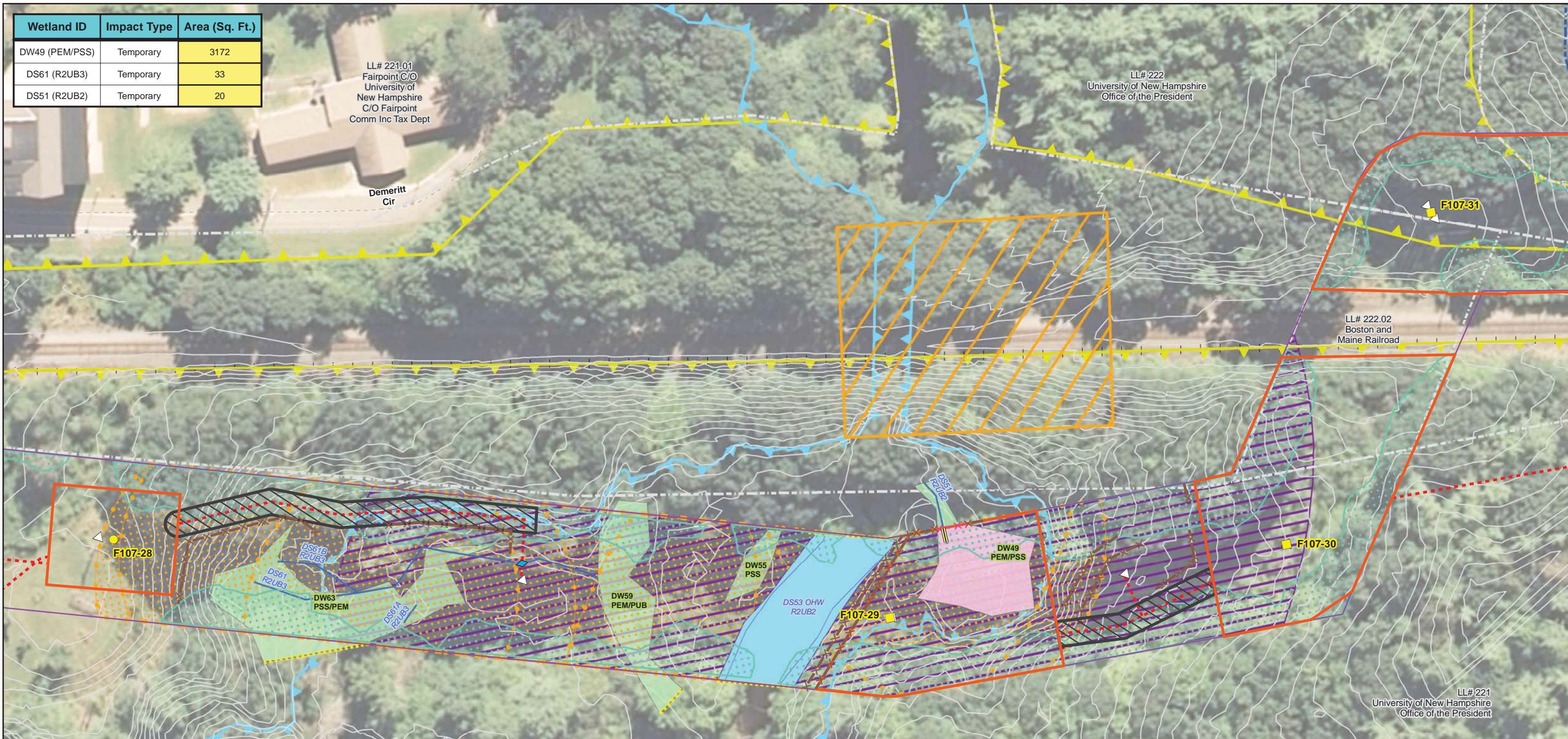
LL# 221.01
Fairpoint C/O
University of
New Hampshire
C/O Fairpoint
Comm Inc Tax Dept

LL# 222
University of New Hampshire
Office of the President

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Cir

LL# 222.02
Boston and
Maine Railroad

LL# 221
University of New Hampshire
Office of the President



Date : 2/25/2016
Project No: 22860.003

Drawn By: athompson

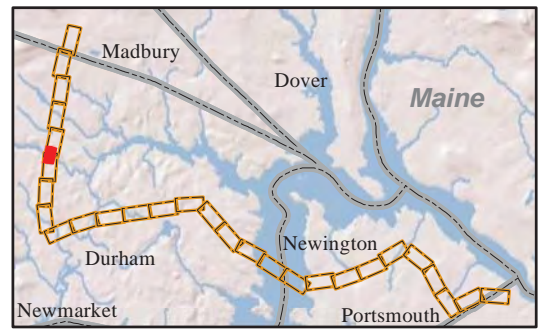
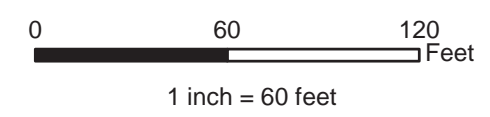
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- Approximate Parcel Boundary
- PSNH Fee Area
- Project Corridor
- Work Pad
- Roads**
- Local
- Not Maintained
- Private
- State
- Railroad

- Existing Str (Remain)
- Existing Str (Removed/Modified)
- Structures**
- Direct Embed
- Drilled Pier
- Relocated Distribution
- Access Roads
- Underground Cable
- Silt Curtain
- Silt Fence, Hay Bale, Erosion Control Mix Berm
- Straw Wattle

- Wetland
- Prime Wetland
- Wetland Extends
- Wetlands Impact
- Stream Centerline
- Stream Top of Bank
- Temporary Culvert
- Temporary Mat Bridge
- Historical Sites

- Designated River Buffer 250'
- Conservation Lands
- 100 Year Floodplain
- Steep Slope BMPs
- Tree Clearing
- Stream Buffer
- 2ft Contour

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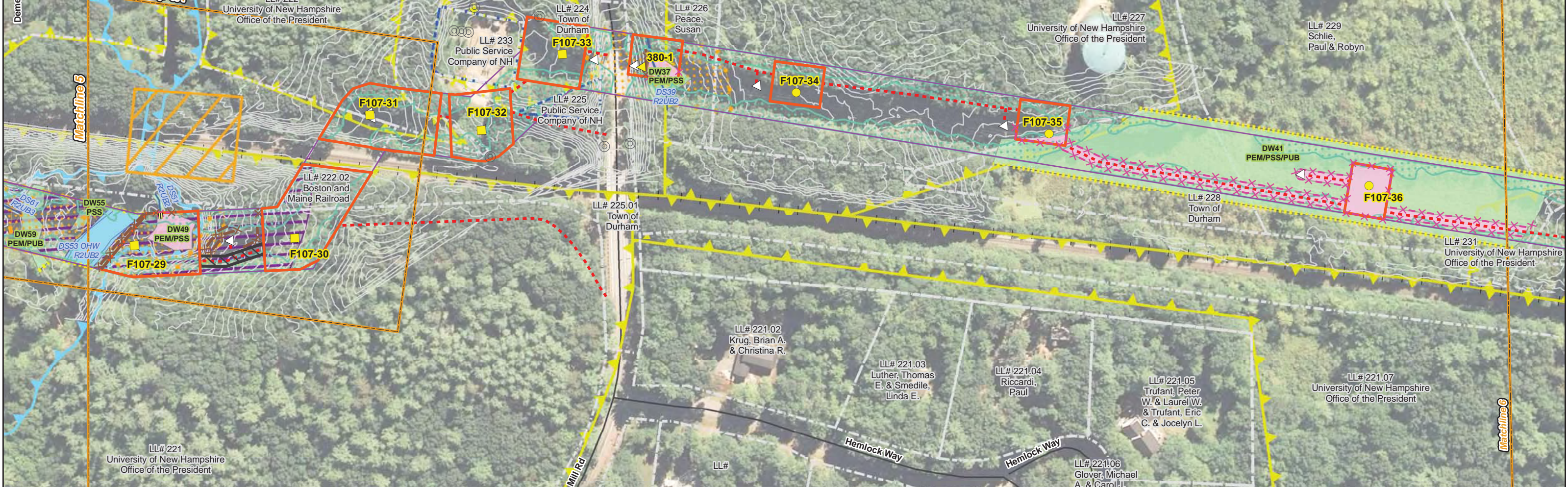
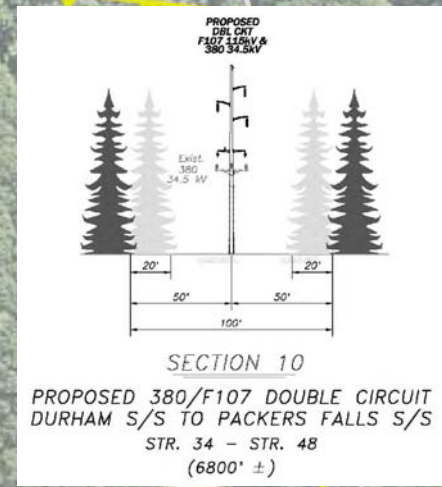
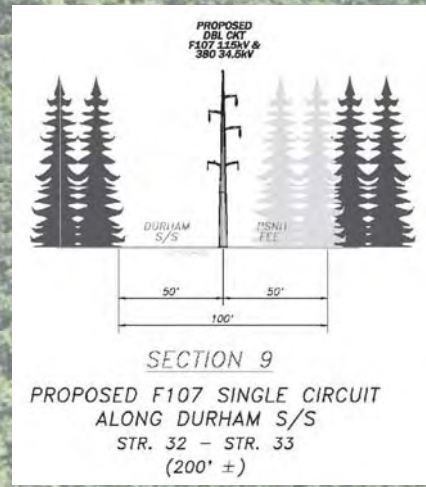
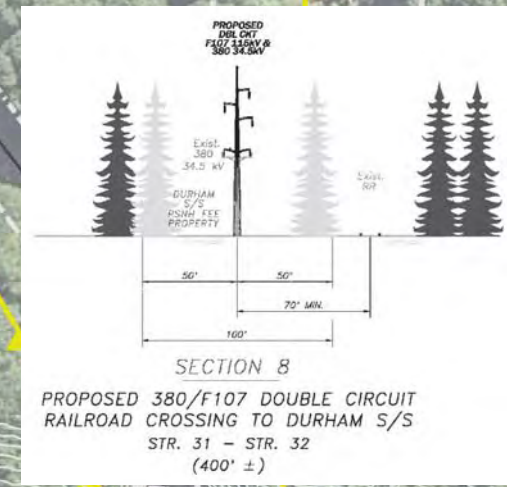
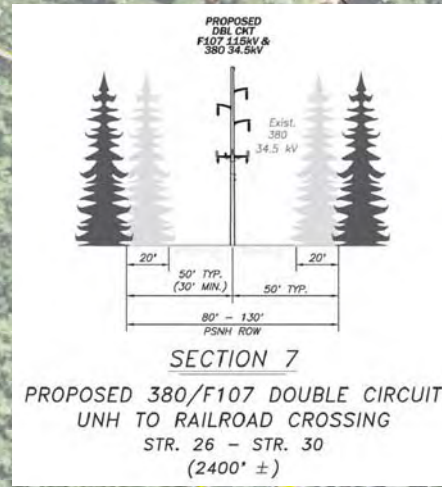


Seacoast Reliability Project Environmental Maps



1/28/16

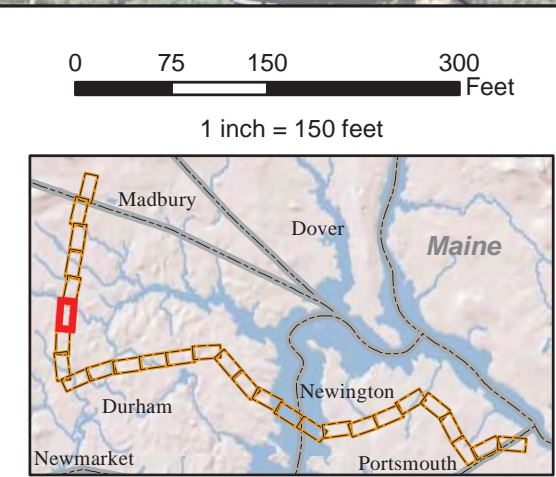
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DW37 (PEM/PSS)	Temporary	1420
DW49 (PEM/PSS)	Temporary	3172
DS39 (R2UB2)	Temporary	207
DS51 (R2UB2)	Temporary	20



Drawn By: athompson
Date: 2/25/2016
Project No: 22860.003

<ul style="list-style-type: none"> Town Boundary Approximate Parcel Boundary PSNH Fee Area Project Corridor Work Pad Roads <ul style="list-style-type: none"> Local Not Maintained Private State Railroad 	<ul style="list-style-type: none"> Existing Str (Remain) Existing Str (Removed/Modified) Structures <ul style="list-style-type: none"> Direct Embed Drilled Pier Relocated Distribution Access Roads Underground Cable Silt Curtain Silt Fence, Hay Bale, Erosion Control Mix Berm Straw Wattle 	<ul style="list-style-type: none"> Wetland Prime Wetland Wetland Extends Wetlands Impact Stream Centerline Stream Top of Bank Temporary Culvert Temporary Mat Bridge Historical Sites 	<ul style="list-style-type: none"> Designated River Buffer 250' Conservation Lands 100 Year Floodplain Steep Slope BMPs Tree Clearing Stream Buffer 2ft Contour
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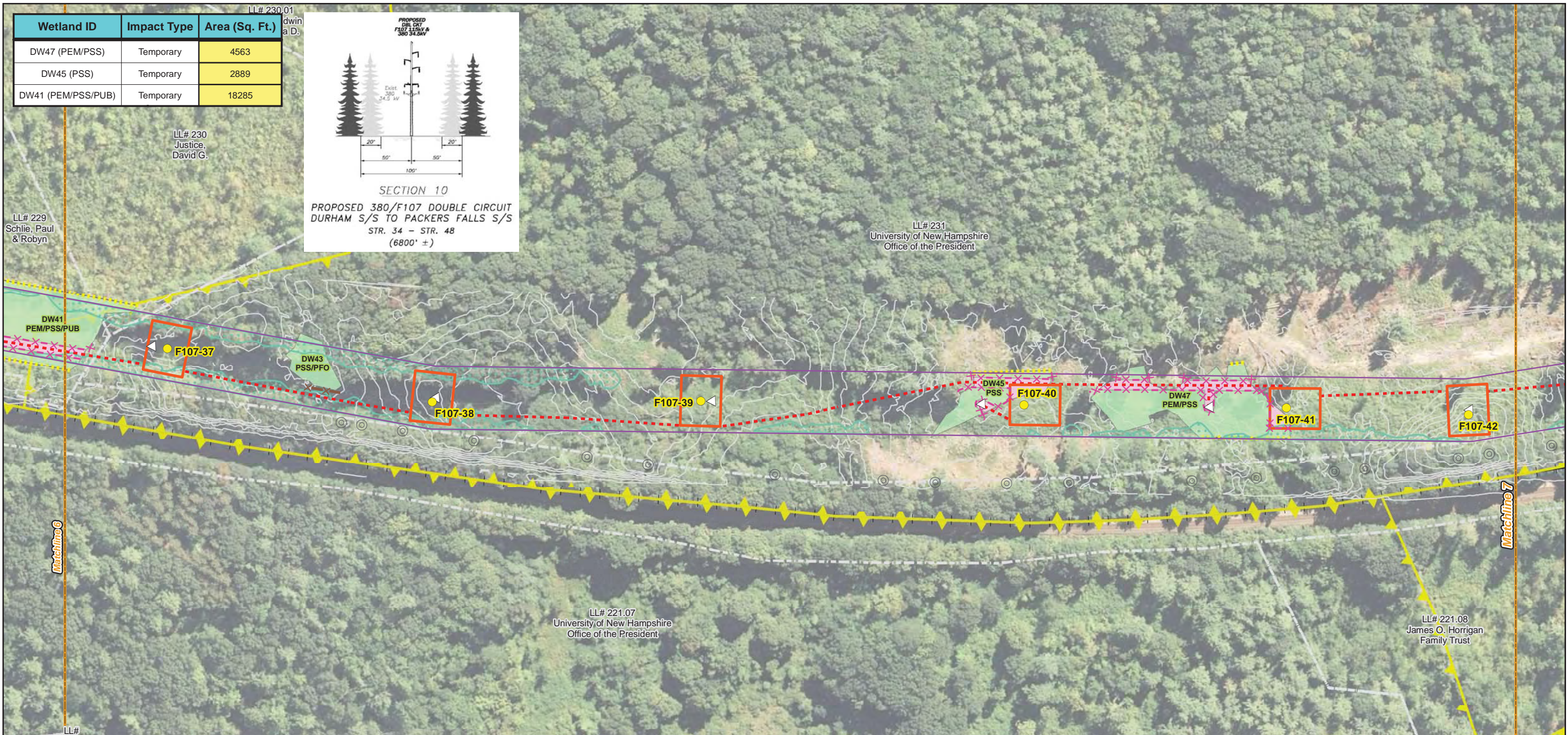
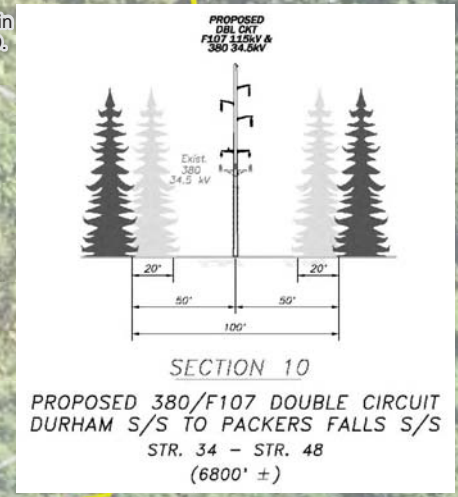
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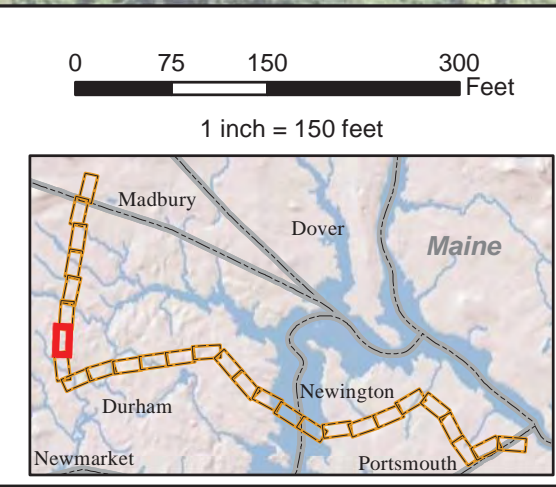
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DW47 (PEM/PSS)	Temporary	4563
DW45 (PSS)	Temporary	2889
DW41 (PEM/PSS/PUB)	Temporary	18285



Drawn By: athompson
Date: 2/25/2016
Project No: 22860.003

<ul style="list-style-type: none"> Town Boundary Approximate Parcel Boundary PSNH Fee Area Project Corridor Work Pad Roads Local Not Maintained Private State Railroad 	<ul style="list-style-type: none"> Existing Str (Remain) Existing Str (Removed/Modified) Structures Direct Embed Drilled Pier Relocated Distribution Access Roads Underground Cable Silt Curtain Silt Fence, Hay Bale, Erosion Control Mix Berm Straw Wattle 	<ul style="list-style-type: none"> Wetland Prime Wetland Wetland Extends Wetlands Impact Stream Centerline Stream Top of Bank Temporary Culvert Temporary Mat Bridge Historical Sites 	<ul style="list-style-type: none"> Designated River Buffer 250' Conservation Lands 100 Year Floodplain Steep Slope BMPs Tree Clearing Stream Buffer 2ft Contour
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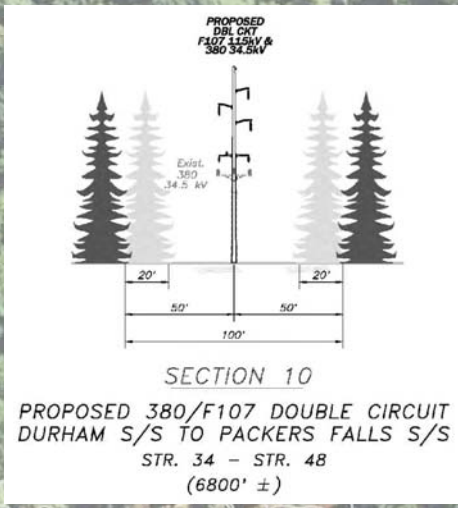
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Environmental Maps

STATE OF NEW HAMPSHIRE
SARAH D. ALLEN
CERTIFIED WETLAND SCIENTIST
No. 083
1/28/16

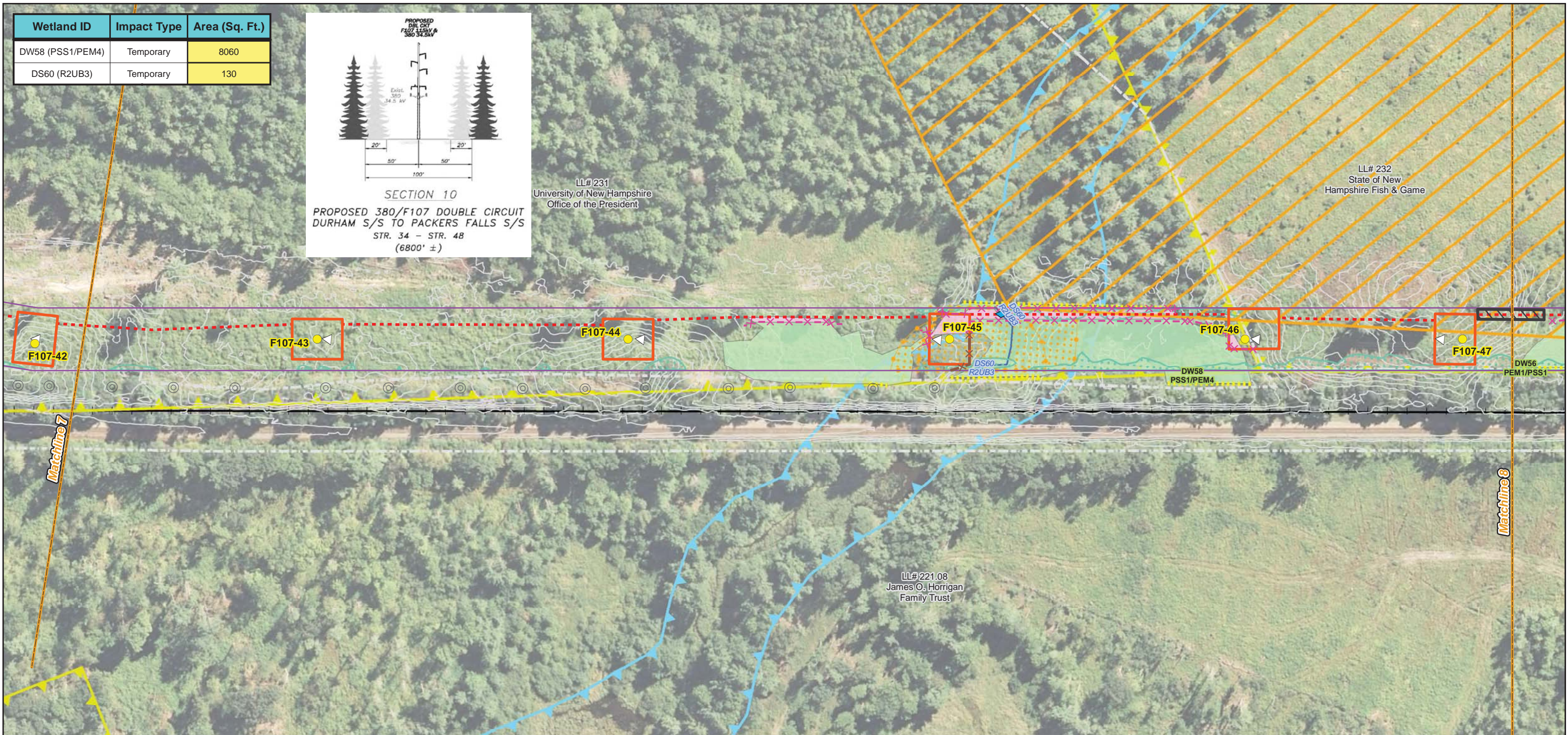
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DW58 (PSS1/PEM4)	Temporary	8060
DS60 (R2UB3)	Temporary	130



LL# 231
University of New Hampshire
Office of the President

LL# 232
State of New Hampshire
Fish & Game

LL# 221.08
James O. Horrigan
Family Trust

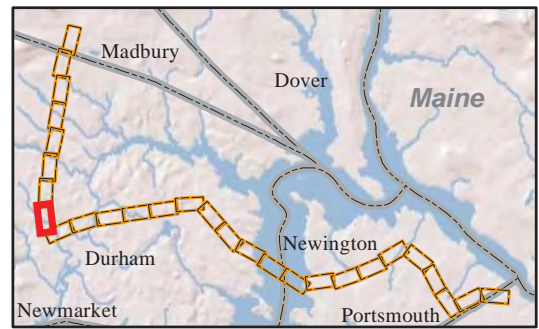
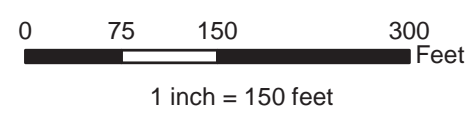


Date : 2/25/2016
Project No: 22860.003

Drawn By: athompson

<ul style="list-style-type: none"> Town Boundary Approximate Parcel Boundary PSNH Fee Area Project Corridor Work Pad Roads Local Not Maintained Private State Railroad 	<ul style="list-style-type: none"> Existing Str (Remain) Existing Str (Removed/Modified) Structures Direct Embed Drilled Pier Relocated Distribution Access Roads Underground Cable Silt Curtain Silt Fence, Hay Bale, Erosion Control Mix Berm Straw Wattle 	<ul style="list-style-type: none"> Wetland Prime Wetland Wetland Extends Wetlands Impact Stream Centerline Stream Top of Bank Temporary Culvert Temporary Mat Bridge Historical Sites 	<ul style="list-style-type: none"> Designated River Buffer 250' Conservation Lands 100 Year Floodplain Steep Slope BMPs Tree Clearing Stream Buffer 2ft Contour
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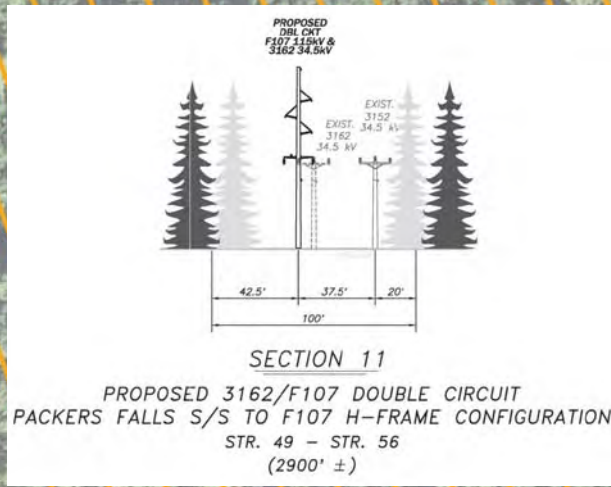
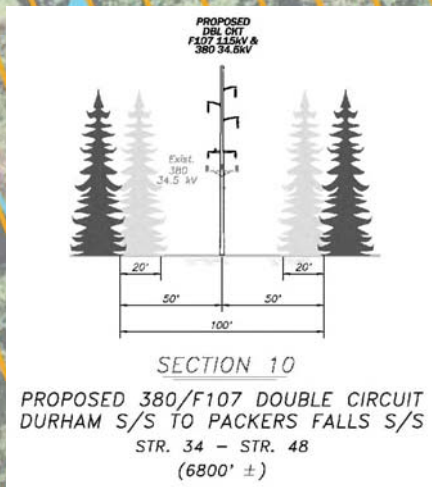
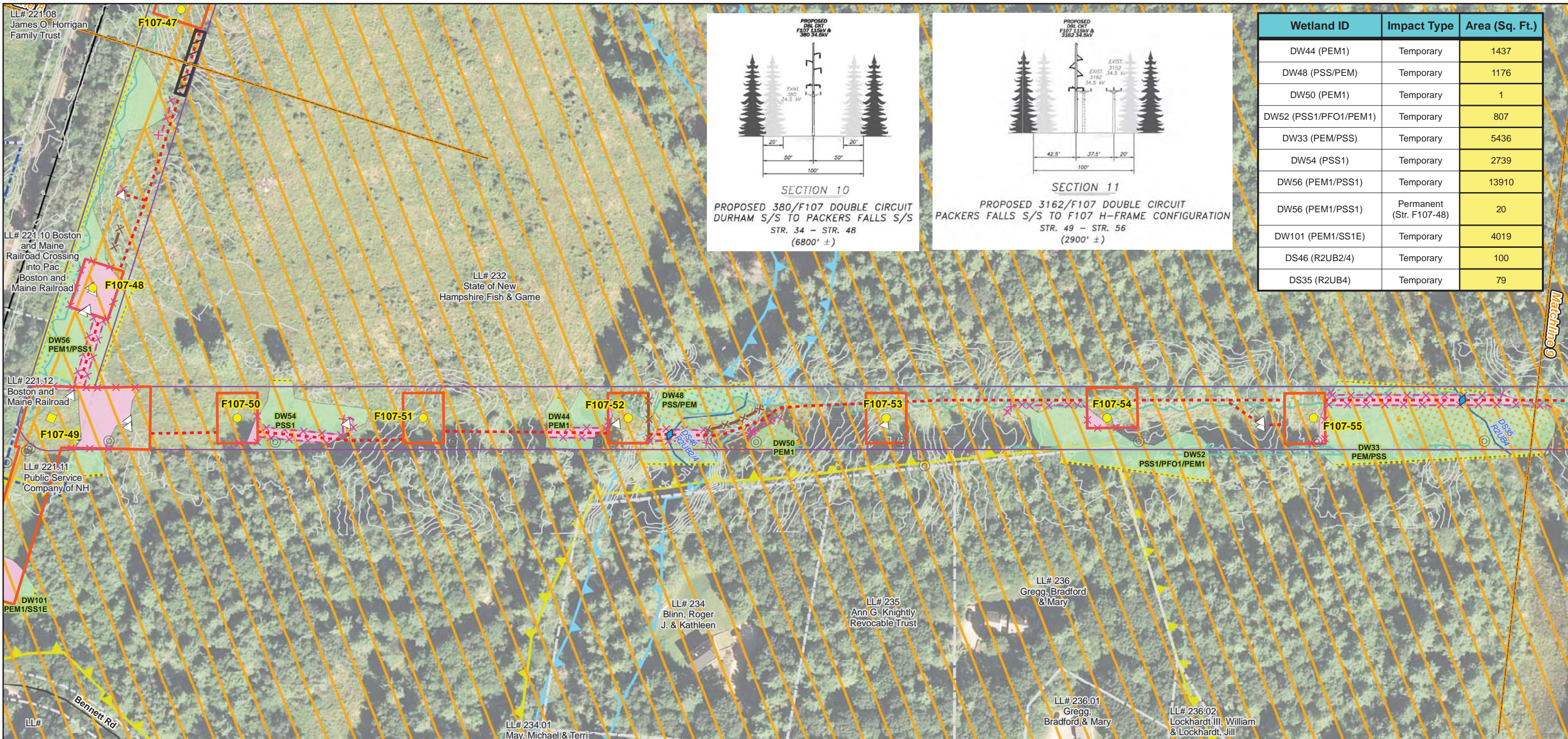
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Seacoast Reliability Project Environmental Maps



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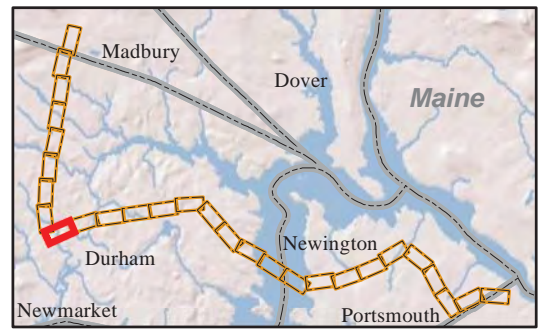
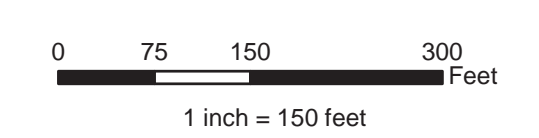


Wetland ID	Impact Type	Area (Sq. Ft.)
DW44 (PEM1)	Temporary	1437
DW48 (PSS/PEM)	Temporary	1176
DW50 (PEM1)	Temporary	1
DW52 (PSS1/PFO1/PEM1)	Temporary	807
DW33 (PEM/PSS)	Temporary	5436
DW54 (PSS1)	Temporary	2739
DW56 (PEM1/PSS1)	Temporary	13910
DW56 (PEM1/PSS1)	Permanent (Str. F107-48)	20
DW101 (PEM1/SS1E)	Temporary	4019
DS46 (R2UB2/4)	Temporary	100
DS35 (R2UB4)	Temporary	79

Drawn By: athompson
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<ul style="list-style-type: none"> Town Boundary Approximate Parcel Boundary PSNH Fee Area Project Corridor Work Pad Roads <ul style="list-style-type: none"> Local Not Maintained Private State Railroad 	<ul style="list-style-type: none"> Existing Str (Remain) Existing Str (Removed/Modified) Structures <ul style="list-style-type: none"> Direct Embed Drilled Pier Relocated Distribution Access Roads Underground Cable Silt Curtain Silt Fence, Hay Bale, Erosion Control Mix Berm Straw Wattle 	<ul style="list-style-type: none"> Wetland Prime Wetland Wetland Extends Wetlands Impact Stream Centerline Stream Top of Bank Temporary Culvert Temporary Mat Bridge Historical Sites 	<ul style="list-style-type: none"> Designated River Buffer 250' Conservation Lands 100 Year Floodplain Steep Slope BMPs Tree Clearing Stream Buffer 2ft Contour
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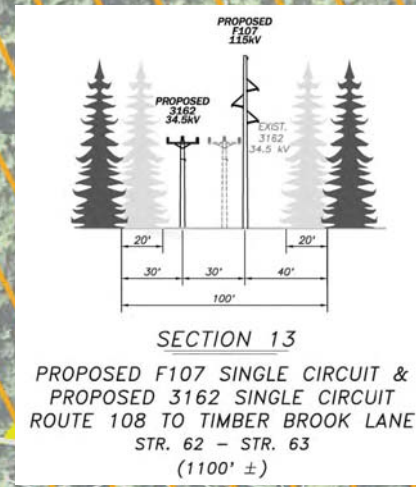
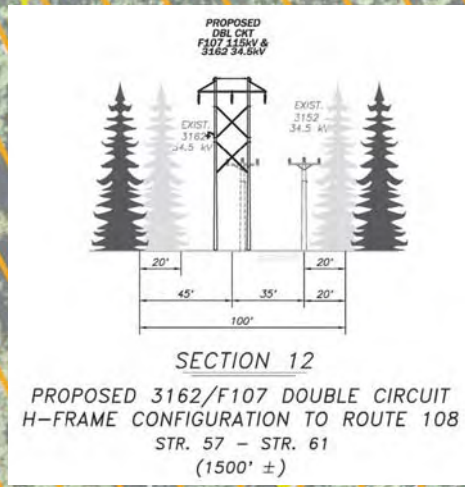
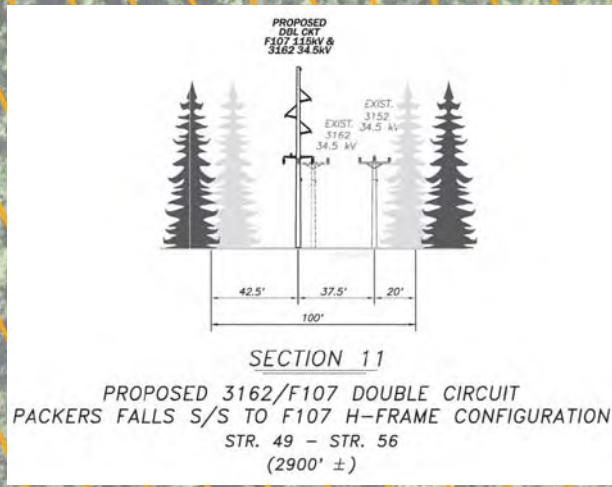
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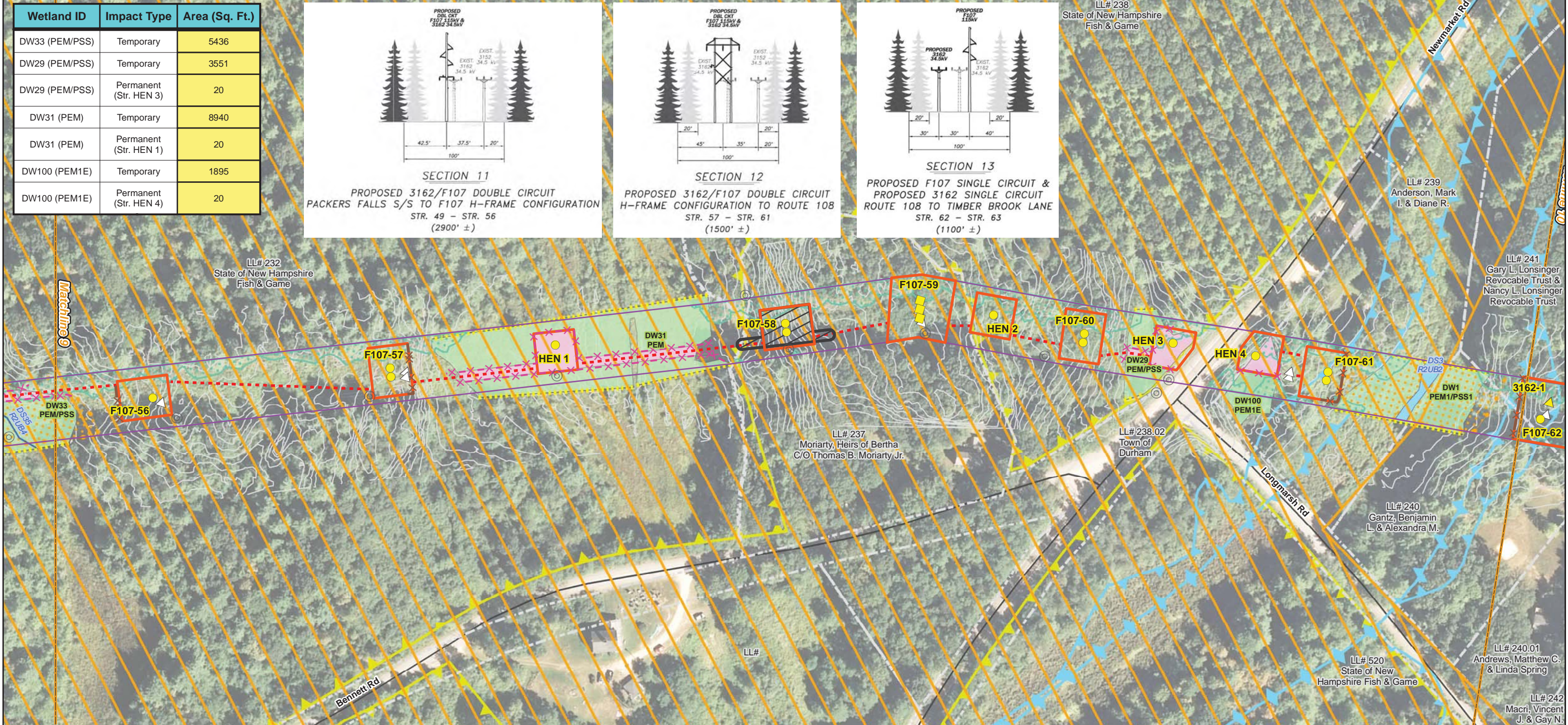
STATE OF NEW HAMPSHIRE
 SARAH D. ALLEN
 No. 083
 CERTIFIED WETLAND SCIENTIST

1/28/16

Wetland ID	Impact Type	Area (Sq. Ft.)
DW33 (PEM/PSS)	Temporary	5436
DW29 (PEM/PSS)	Temporary	3551
DW29 (PEM/PSS)	Permanent (Str. HEN 3)	20
DW31 (PEM)	Temporary	8940
DW31 (PEM)	Permanent (Str. HEN 1)	20
DW100 (PEM1E)	Temporary	1895
DW100 (PEM1E)	Permanent (Str. HEN 4)	20



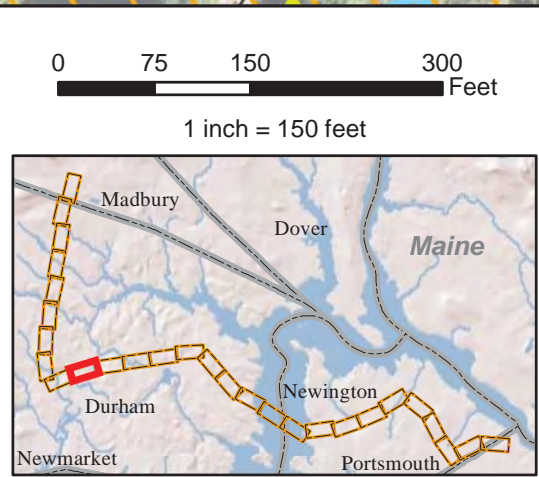
LL# 238
State of New Hampshire
Fish & Game



Drawn By: athompson
Date: 2/25/2016
Project No: 22860.003

<ul style="list-style-type: none"> Town Boundary Approximate Parcel Boundary PSNH Fee Area Project Corridor Work Pad Roads <ul style="list-style-type: none"> Local Not Maintained Private State Railroad 	<ul style="list-style-type: none"> Existing Str (Remain) Existing Str (Removed/Modified) Structures <ul style="list-style-type: none"> Direct Embed Drilled Pier Relocated Distribution Access Roads Underground Cable Silt Curtain Silt Fence, Hay Bale, Erosion Control Mix Berm Straw Wattle 	<ul style="list-style-type: none"> Wetland Prime Wetland Wetland Extends Wetlands Impact Stream Centerline Stream Top of Bank Temporary Culvert Temporary Mat Bridge Historical Sites 	<ul style="list-style-type: none"> Designated River Buffer 250' Conservation Lands 100 Year Floodplain Steep Slope BMPs Tree Clearing Stream Buffer 2ft Contour
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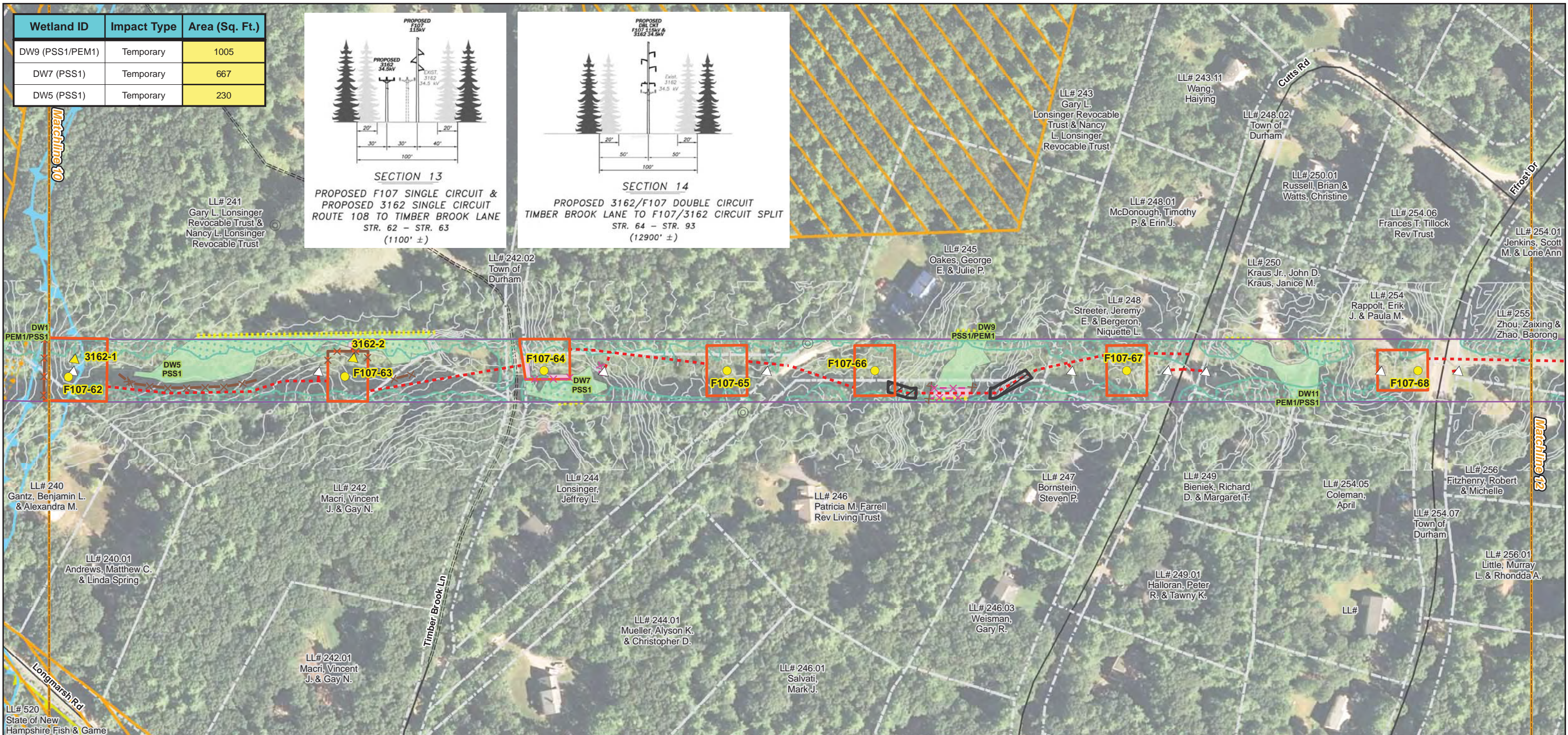
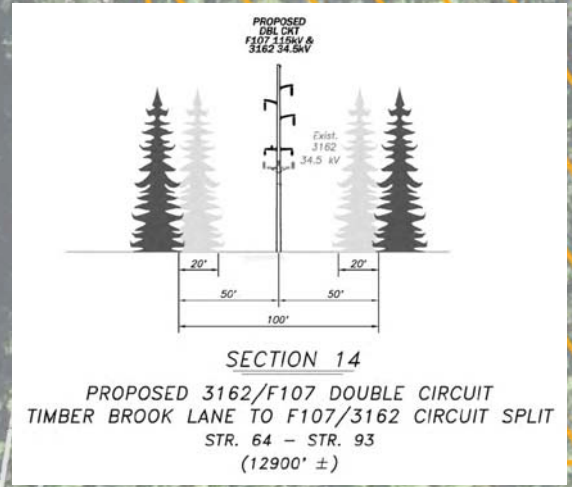
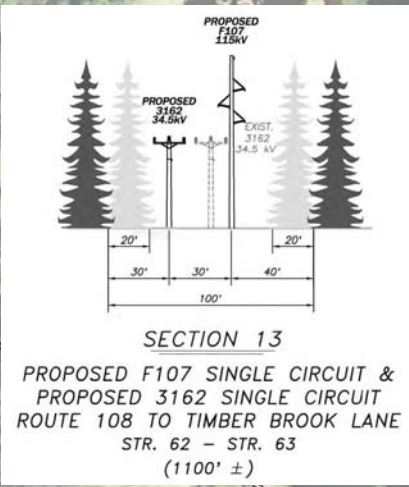
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Environmental Maps

STATE OF NEW HAMPSHIRE
SARAH D. ALLEN
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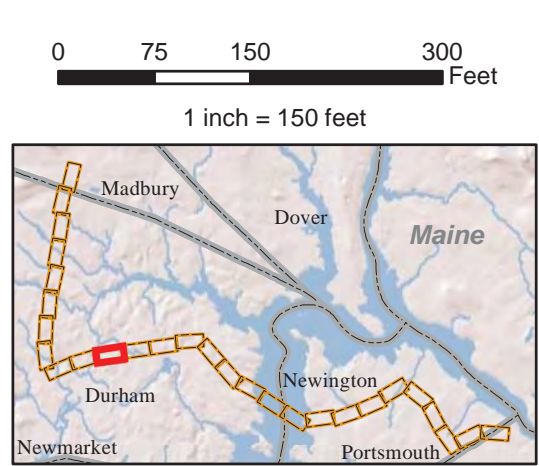
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DW9 (PSS1/PEM1)	Temporary	1005
DW7 (PSS1)	Temporary	667
DW5 (PSS1)	Temporary	230



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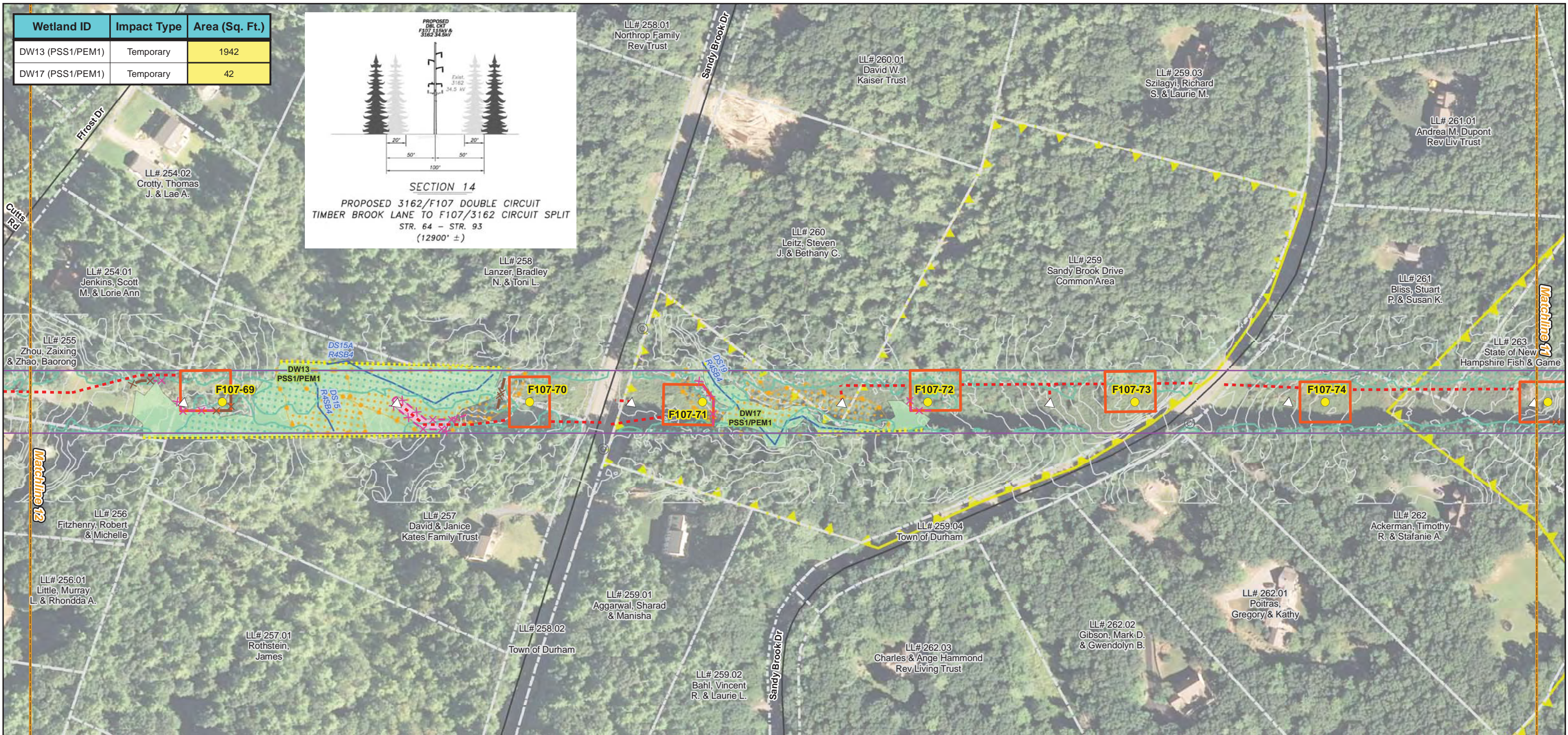
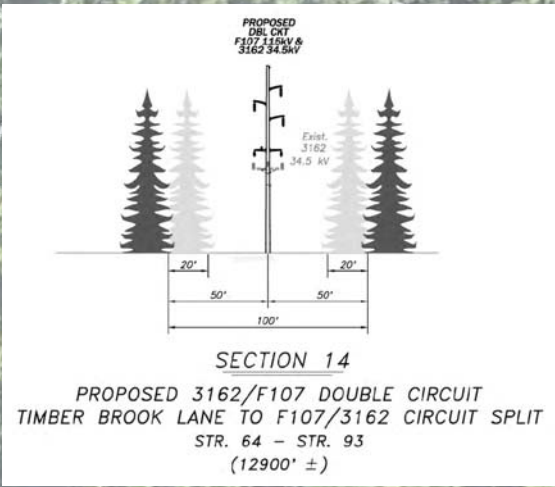
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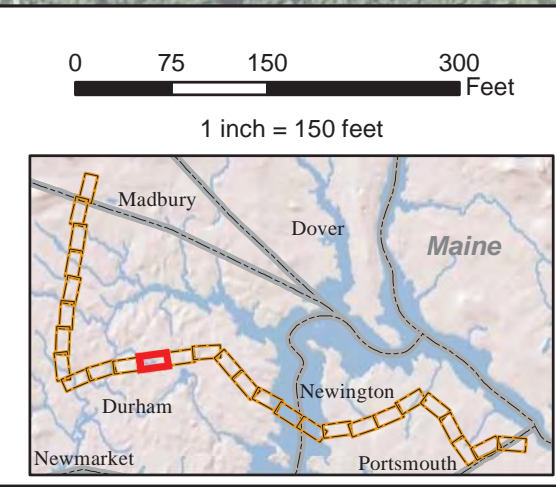
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DW13 (PSS1/PEM1)	Temporary	1942
DW17 (PSS1/PEM1)	Temporary	42



Drawn By: athompson
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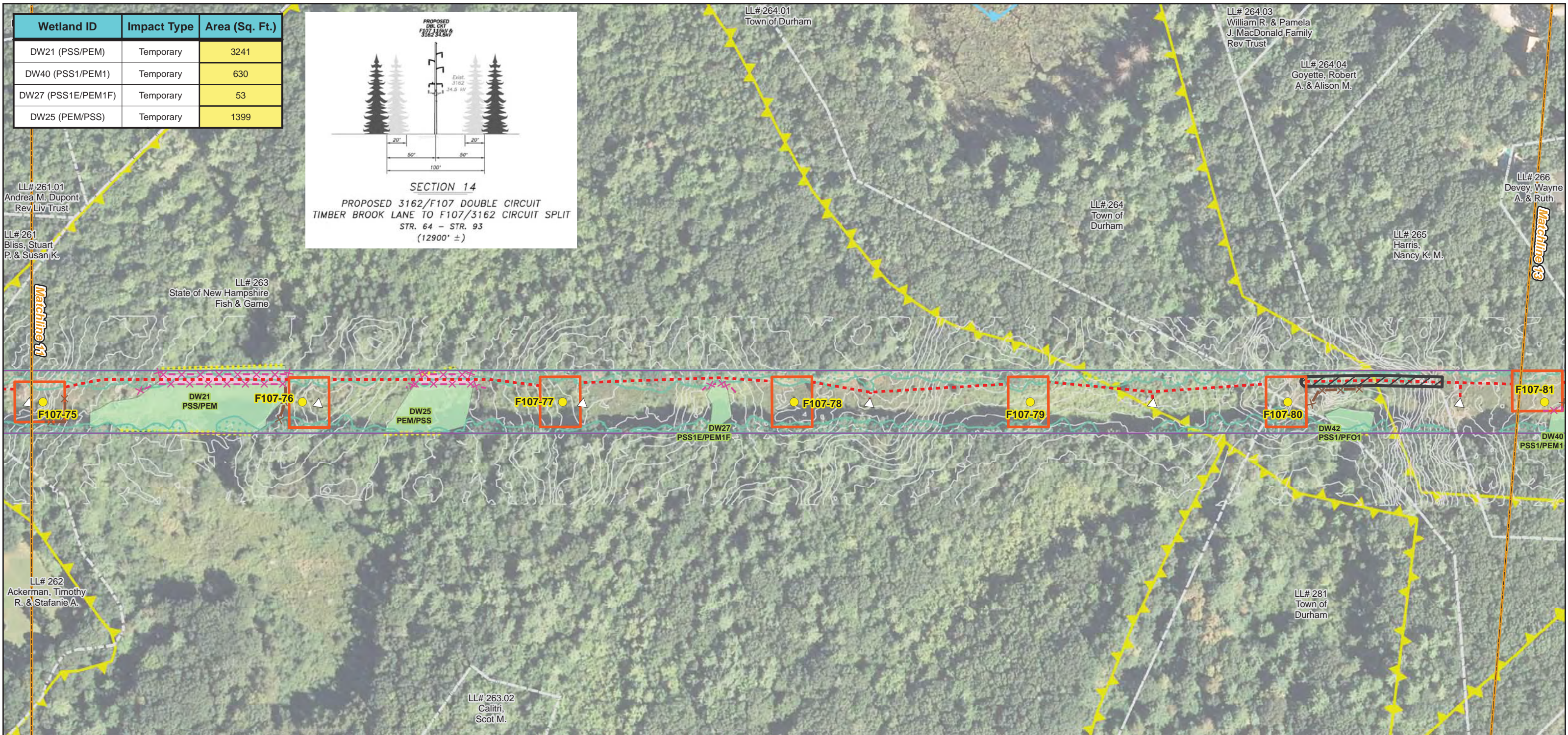
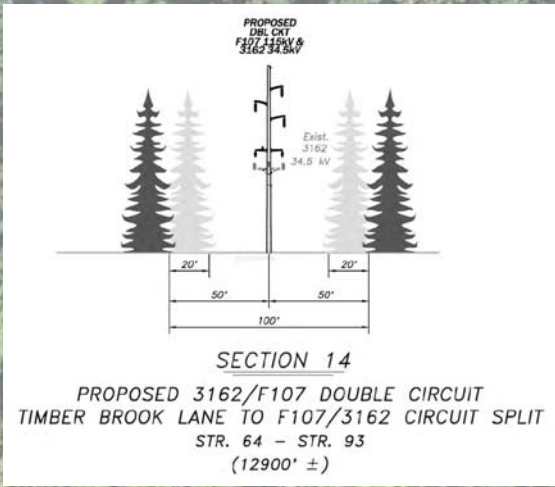
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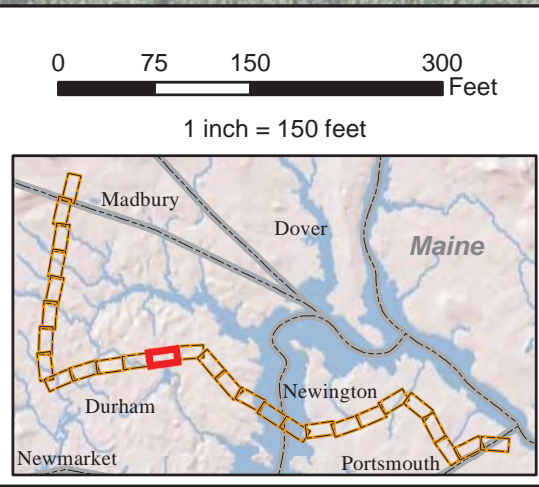
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DW21 (PSS/PEM)	Temporary	3241
DW40 (PSS1/PEM1)	Temporary	630
DW27 (PSS1E/PEM1F)	Temporary	53
DW25 (PEM/PSS)	Temporary	1399



Drawn By: athompson
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<ul style="list-style-type: none"> Town Boundary Approximate Parcel Boundary PSNH Fee Area Project Corridor Work Pad Roads <ul style="list-style-type: none"> Local Not Maintained Private State Railroad 	<ul style="list-style-type: none"> Existing Str (Remain) Existing Str (Removed/Modified) Structures <ul style="list-style-type: none"> Direct Embed Drilled Pier Relocated Distribution Access Roads Underground Cable Silt Curtain Silt Fence, Hay Bale, Erosion Control Mix Berm Straw Wattle 	<ul style="list-style-type: none"> Wetland Prime Wetland Wetland Extends Wetlands Impact Stream Centerline Stream Top of Bank Temporary Culvert Temporary Mat Bridge Historical Sites 	<ul style="list-style-type: none"> Designated River Buffer 250' Conservation Lands 100 Year Floodplain Steep Slope BMPs Tree Clearing Stream Buffer 2ft Contour
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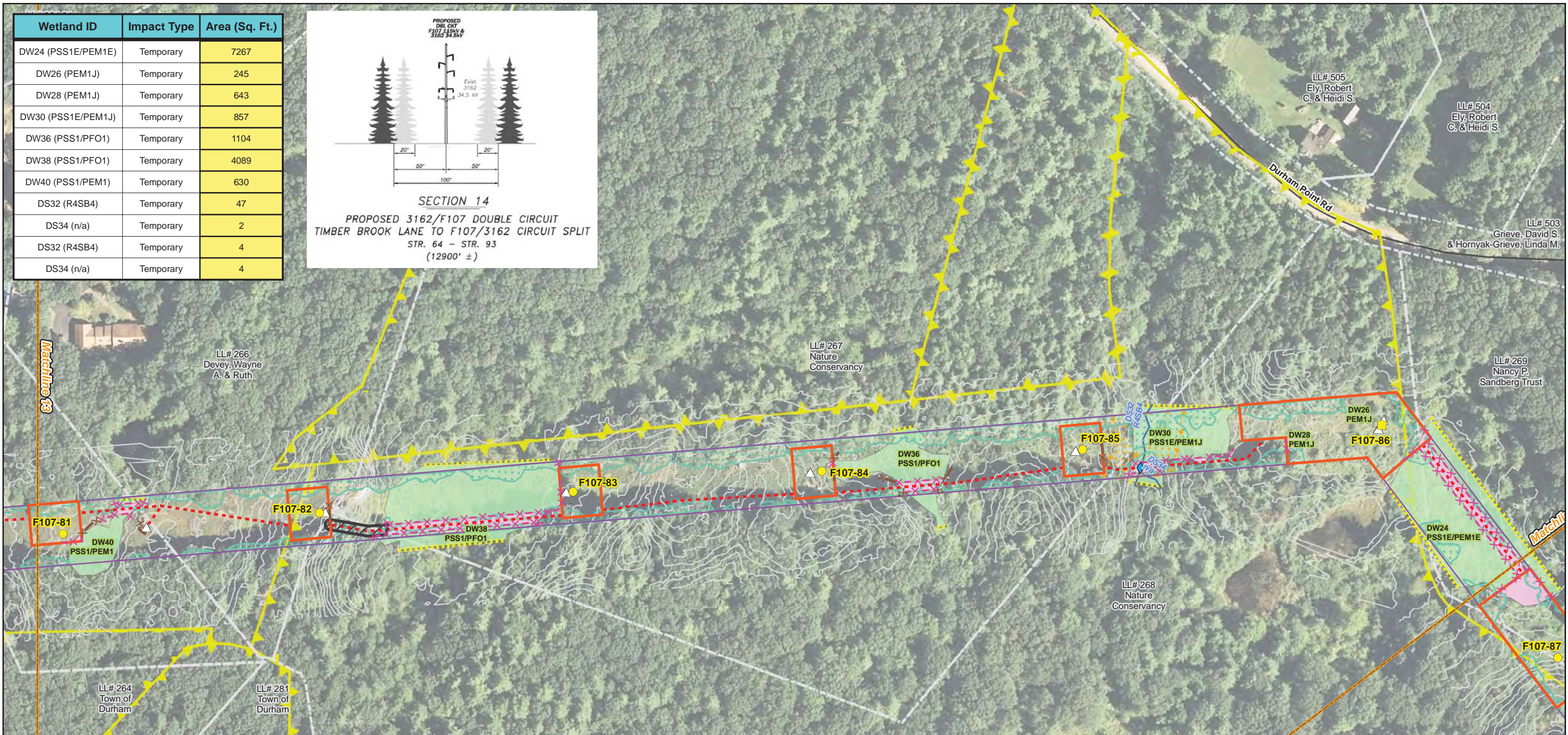
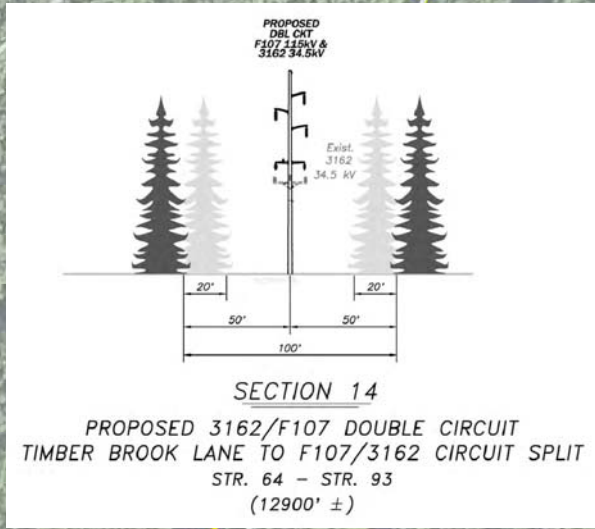
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STATE OF NEW HAMPSHIRE
SARAH D. ALLEN
CERTIFIED WETLAND SCIENTIST
No. 083
1/28/16

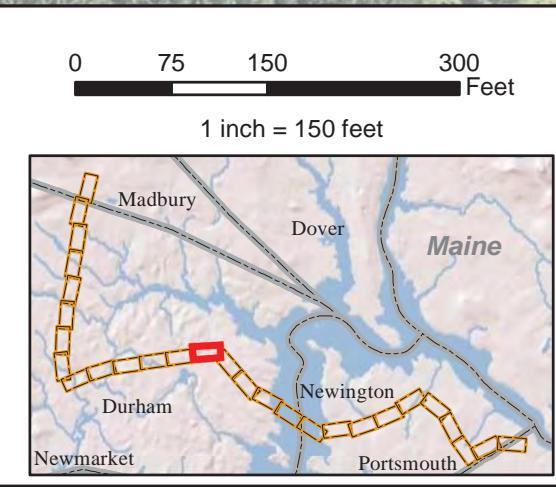
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DW26 (PEM1J)	Temporary	245
DW28 (PEM1J)	Temporary	643
DW30 (PSS1E/PEM1J)	Temporary	857
DW36 (PSS1/PFO1)	Temporary	1104
DW38 (PSS1/PFO1)	Temporary	4089
DW40 (PSS1/PEM1)	Temporary	630
DS32 (R4SB4)	Temporary	47
DS34 (n/a)	Temporary	2
DS32 (R4SB4)	Temporary	4
DS34 (n/a)	Temporary	4



Drawn By: athompson
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Project No: 22860.003

<ul style="list-style-type: none"> Town Boundary Approximate Parcel Boundary PSNH Fee Area Project Corridor Work Pad Roads <ul style="list-style-type: none"> Local Not Maintained Private State Railroad 	<ul style="list-style-type: none"> Existing Str (Remain) Existing Str (Removed/Modified) Structures <ul style="list-style-type: none"> Direct Embed Drilled Pier Relocated Distribution Access Roads Underground Cable Silt Curtain Silt Fence, Hay Bale, Erosion Control Mix Berm Straw Wattle 	<ul style="list-style-type: none"> Wetland Prime Wetland Wetland Extends Wetlands Impact Stream Centerline Stream Top of Bank Temporary Culvert Temporary Mat Bridge Historical Sites 	<ul style="list-style-type: none"> Designated River Buffer 250' Conservation Lands 100 Year Floodplain Steep Slope BMPs Tree Clearing Stream Buffer 2ft Contour
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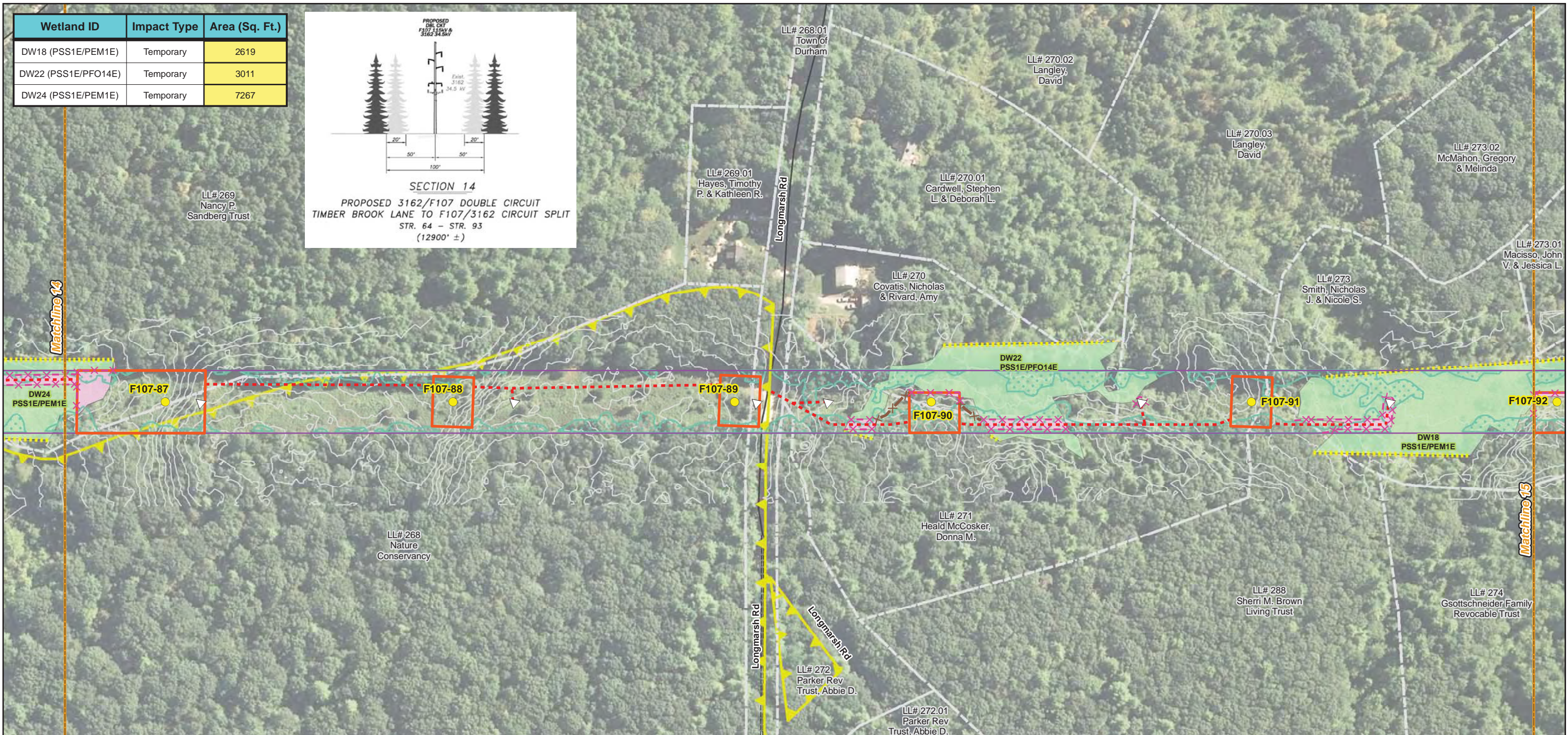
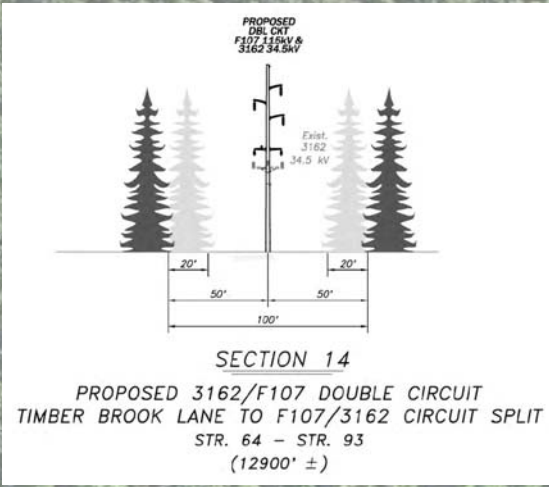
Seacoast Reliability Project

Environmental Maps

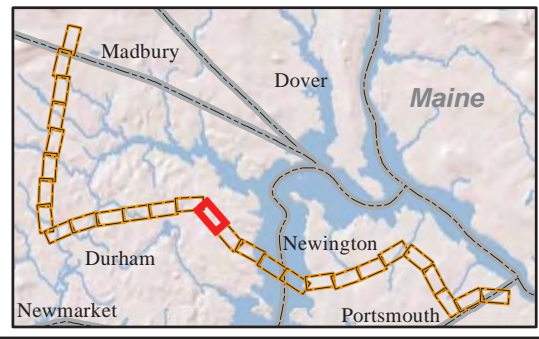
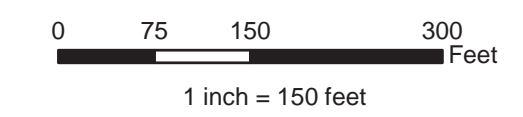
STATE OF NEW HAMPSHIRE
SARAH D. ALLEN
No. 083
CERTIFIED WETLAND SCIENTIST

1/28/16

Wetland ID	Impact Type	Area (Sq. Ft.)
DW18 (PSS1E/PEM1E)	Temporary	2619
DW22 (PSS1E/PFO14E)	Temporary	3011
DW24 (PSS1E/PEM1E)	Temporary	7267

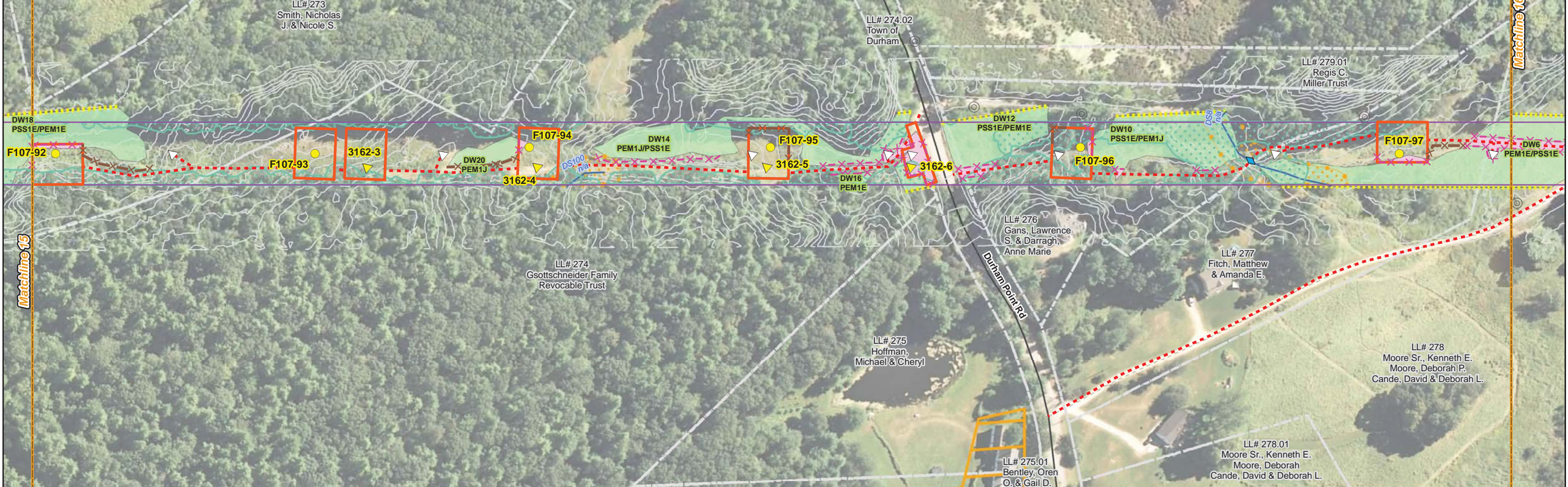
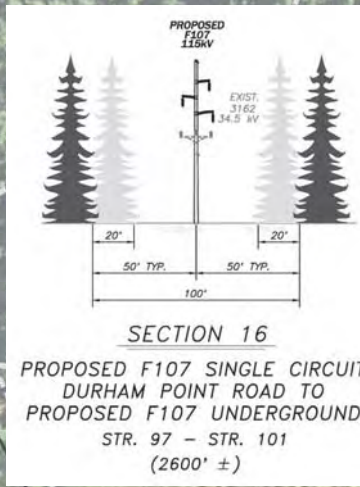
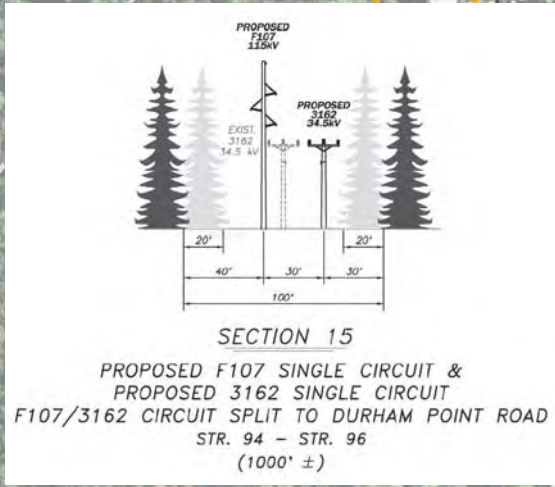
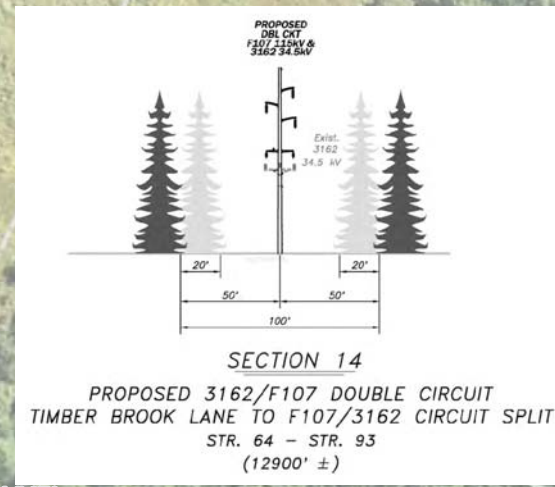


<p>Drawn By: athompson Date: 2/25/2016 Project No: 22860.003</p>	<ul style="list-style-type: none"> Town Boundary Approximate Parcel Boundary PSNH Fee Area Project Corridor Work Pad Roads Local Not Maintained Private State Railroad 	<ul style="list-style-type: none"> Existing Str (Remain) Existing Str (Removed/Modified) Structures Direct Embed Drilled Pier Relocated Distribution Access Roads Underground Cable Silt Curtain Silt Fence, Hay Bale, Erosion Control Mix Berm Straw Wattle 	<ul style="list-style-type: none"> Wetland Prime Wetland Wetland Extends Wetlands Impact Stream Centerline Stream Top of Bank Temporary Culvert Temporary Mat Bridge Historical Sites Designated River Buffer 250' Conservation Lands 100 Year Floodplain Steep Slope BMPs Tree Clearing Stream Buffer 2ft Contour 	<p>Service Layer Credits: Copyright © 2014 Esri, granit.edu.</p>
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	<h2>Seacoast Reliability Project</h2> <h3>Environmental Maps</h3>

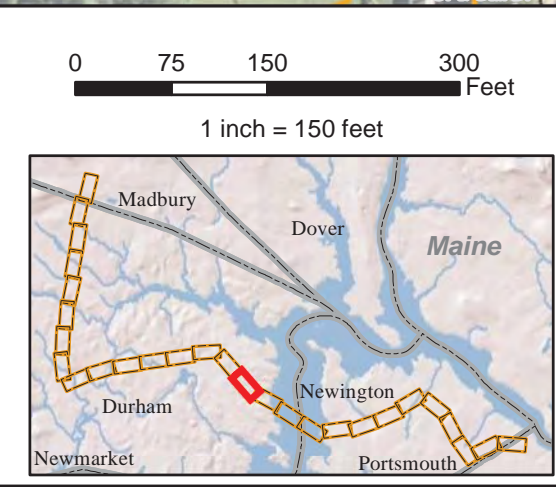
Wetland ID	Impact Type	Area (Sq. Ft.)
DW6 (PEM1E/PSS1E)	Temporary	3857
DW10 (PSS1E/PEM1J)	Temporary	376
DW12 (PSS1E/PEM1E)	Temporary	822
DW14 (PEM1J/PSS1E)	Temporary	3246
DW14 (PEM1J/PSS1E)	Permanent (Str. 3162-6)	20
DW16 (PEM1E)	Temporary	64
DW20 (PEM1J)	Temporary	169
DW18 (PSS1E/PEM1E)	Temporary	2619
DS8 (n/a)	Temporary	16



Drawn By: athompson
Date: 2/25/2016
Project No: 22860.003

<ul style="list-style-type: none"> Town Boundary Approximate Parcel Boundary PSNH Fee Area Project Corridor Work Pad Roads <ul style="list-style-type: none"> Local Not Maintained Private State Railroad 	<ul style="list-style-type: none"> Existing Str (Remain) Existing Str (Removed/Modified) Structures <ul style="list-style-type: none"> Direct Embed Drilled Pier Relocated Distribution Access Roads Underground Cable Silt Curtain Silt Fence, Hay Bale, Erosion Control Mix Berm Straw Wattle 	<ul style="list-style-type: none"> Wetland Prime Wetland Wetland Extends Wetlands Impact Stream Centerline Stream Top of Bank Temporary Culvert Temporary Mat Bridge Historical Sites 	<ul style="list-style-type: none"> Designated River Buffer 250' Conservation Lands 100 Year Floodplain Steep Slope BMPs Tree Clearing Stream Buffer 2ft Contour
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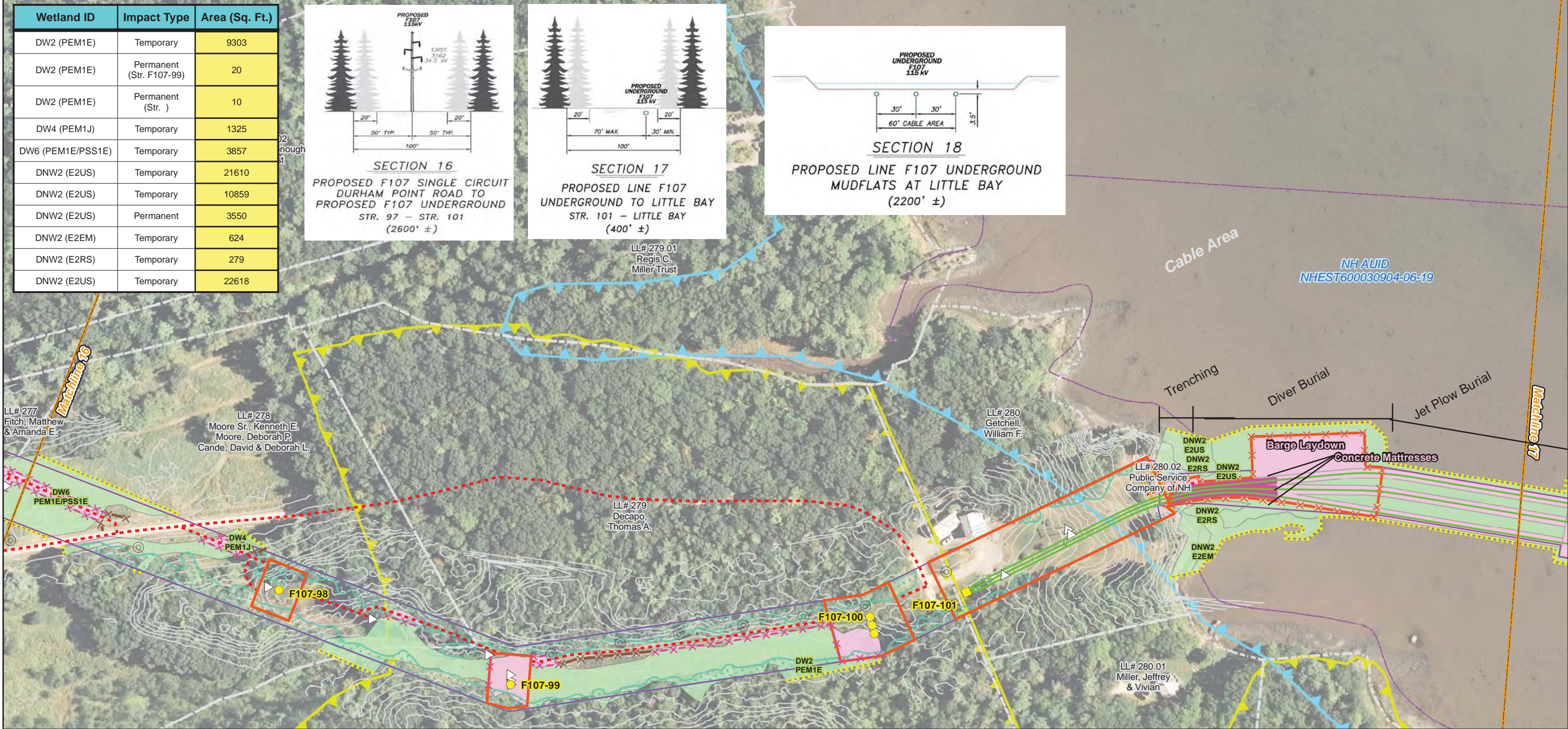
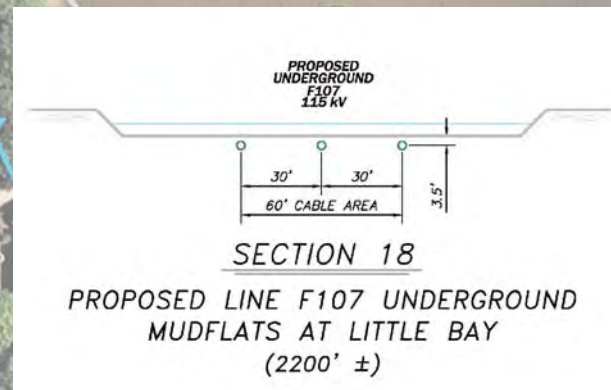
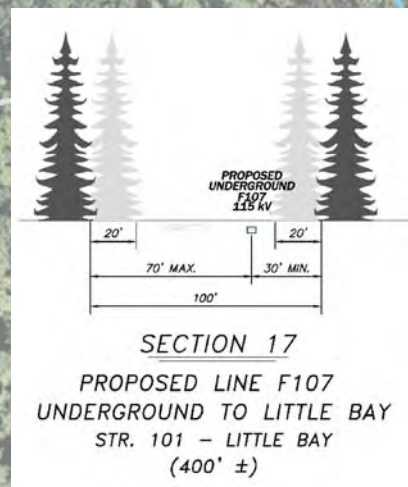
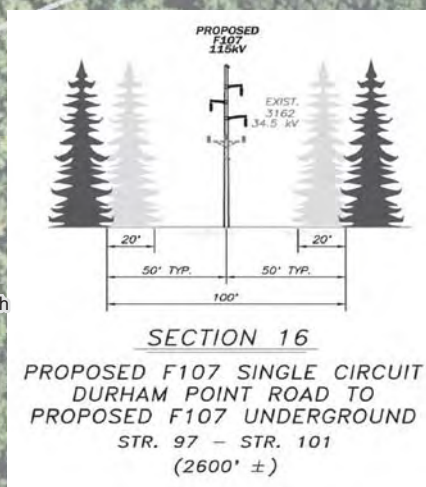
Seacoast Reliability Project

Environmental Maps

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CERTIFIED WETLAND SCIENTIST

1/28/16

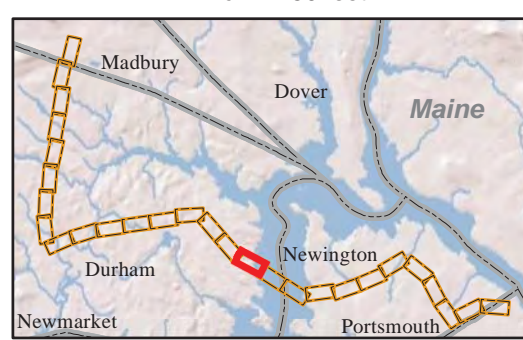
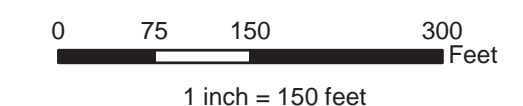
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DW2 (PEM1E)	Permanent (Str.)	10
DW4 (PEM1J)	Temporary	1325
DW6 (PEM1E/PSS1E)	Temporary	3857
DNW2 (E2US)	Temporary	21610
DNW2 (E2US)	Temporary	10859
DNW2 (E2US)	Permanent	3550
DNW2 (E2EM)	Temporary	624
DNW2 (E2RS)	Temporary	279
DNW2 (E2US)	Temporary	22618



Drawn By: athompson
Date: 2/25/2016
Project No: 22860.003

- Town Boundary
- Approximate Parcel Boundary
- PSNH Fee Area
- Project Corridor
- Work Pad
- Roads**
- Local
- Not Maintained
- Private
- State
- Railroad
- Existing Str (Remain)
- Existing Str (Removed/Modified)
- Structures**
- Direct Embed
- Drilled Pier
- Relocated Distribution
- Access Roads
- Underground Cable
- Silt Curtain
- Silt Fence, Hay Bale, Erosion Control Mix Berm
- Straw Wattle
- Wetland
- Prime Wetland
- Wetland Extends
- Wetlands Impact
- Stream Centerline
- Stream Top of Bank
- Temporary Culvert
- Temporary Mat Bridge
- Historical Sites
- Designated River Buffer 250'
- Conservation Lands
- 100 Year Floodplain
- Steep Slope BMPs
- Tree Clearing
- Stream Buffer
- 2ft Contour

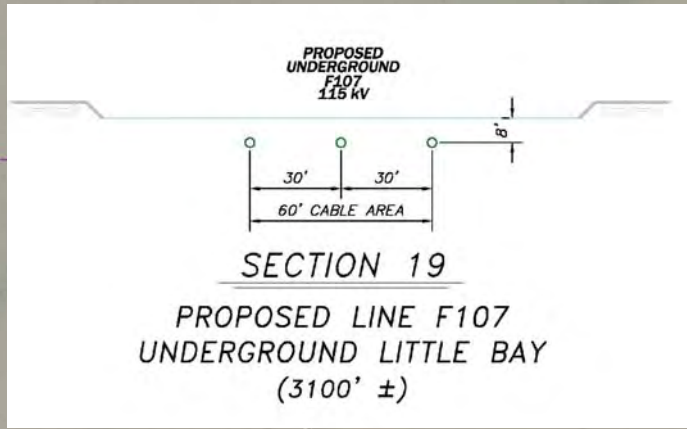
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Seacoast Reliability Project

Environmental Maps

Wetland ID	Impact Type	Area (Sq. Ft.)
DNW2 (E2US)	Temporary	21610
DNW2 (E1UB)	Temporary	49832
DNW2 (E2US)	Temporary	19965
DNW2 (E2US)	Temporary	22618
DNW2 (E2US)	Temporary	19684
DNW2 (E2US)	Temporary	19430



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NH AUID
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Jet Plow Burial

Cable Area

Cable Area

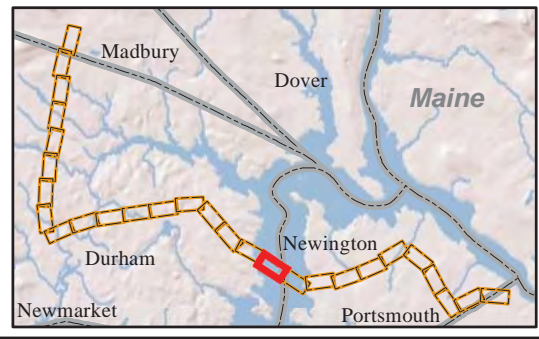
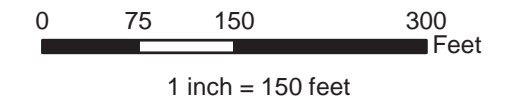
Matchline 17

Matchline 18

Drawn By: athompson
Date: 2/25/2016
Project No: 22860.003

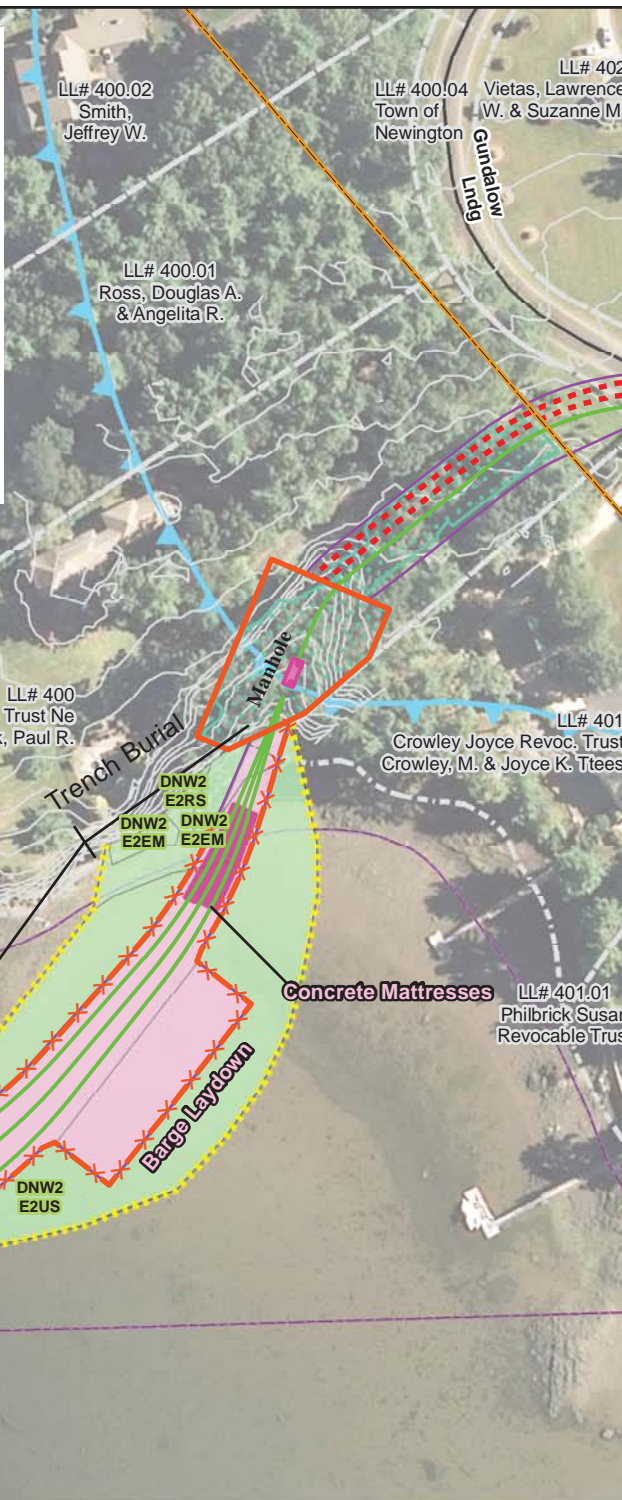
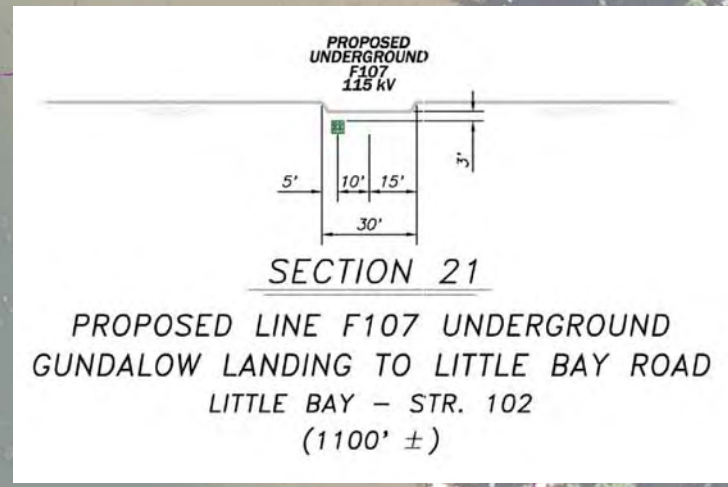
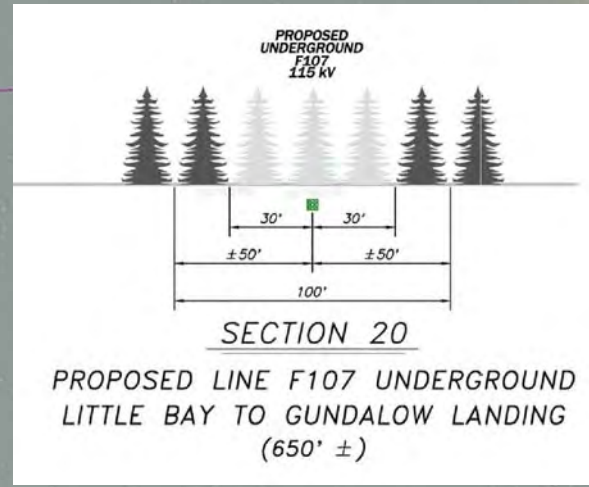
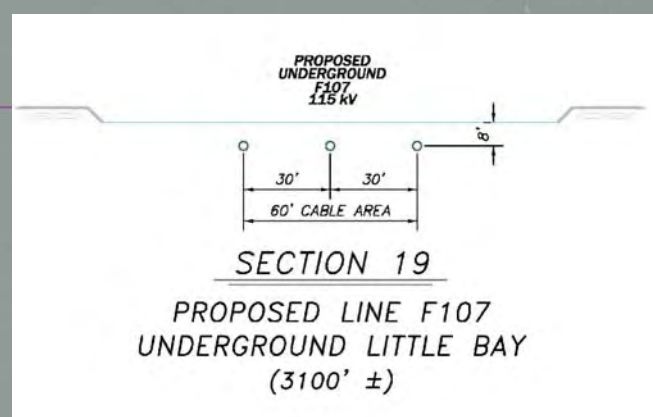
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	<p>Seacoast Reliability Project</p> <p>Environmental Maps</p>

Wetland ID	Impact Type	Area (Sq. Ft.)
DNW2 (E2US)	Temporary	20205
DNW2 (E1UB)	Temporary	49832
DNW2 (E2US)	Permanent	1484
DNW2 (E2US)	Temporary	9720
DNW2 (E2EM)	Temporary	598
DNW2 (E2RS)	Permanent	302
DNW2 (E1UB)	Temporary	77565
DNW2 (E2RS)	Temporary	217



Date : 2/25/2016
Project No: 22860.003

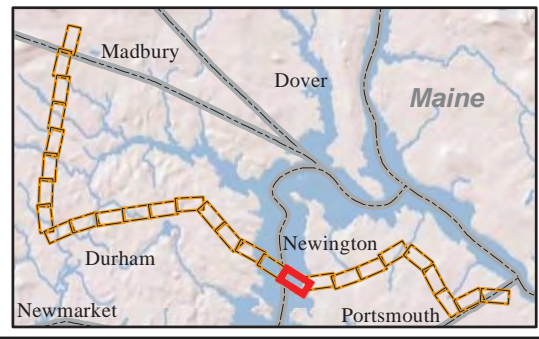
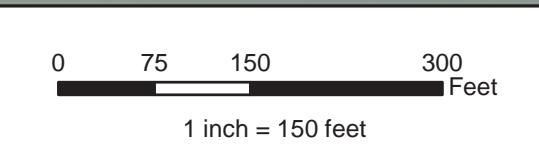
- Town Boundary
- Approximate Parcel Boundary
- PSNH Fee Area
- Project Corridor
- Work Pad
- Roads
 - Local
 - Not Maintained
 - Private
 - State
 - Railroad

- Existing Str (Remain)
- Existing Str (Removed/Modified)
- Structures
 - Direct Embed
 - Drilled Pier
 - Relocated Distribution
 - Access Roads
 - Underground Cable
 - Silt Curtain
 - Silt Fence, Hay Bale, Erosion Control Mix Berm
 - Straw Wattle

- Wetland
- Prime Wetland
- Wetland Extends
- Wetlands Impact
- Stream Centerline
- Stream Top of Bank
- Temporary Culvert
- Temporary Mat Bridge
- Historical Sites

- Designated River Buffer 250'
- Conservation Lands
- 100 Year Floodplain
- Steep Slope BMPs
- Tree Clearing
- Stream Buffer
- 2ft Contour

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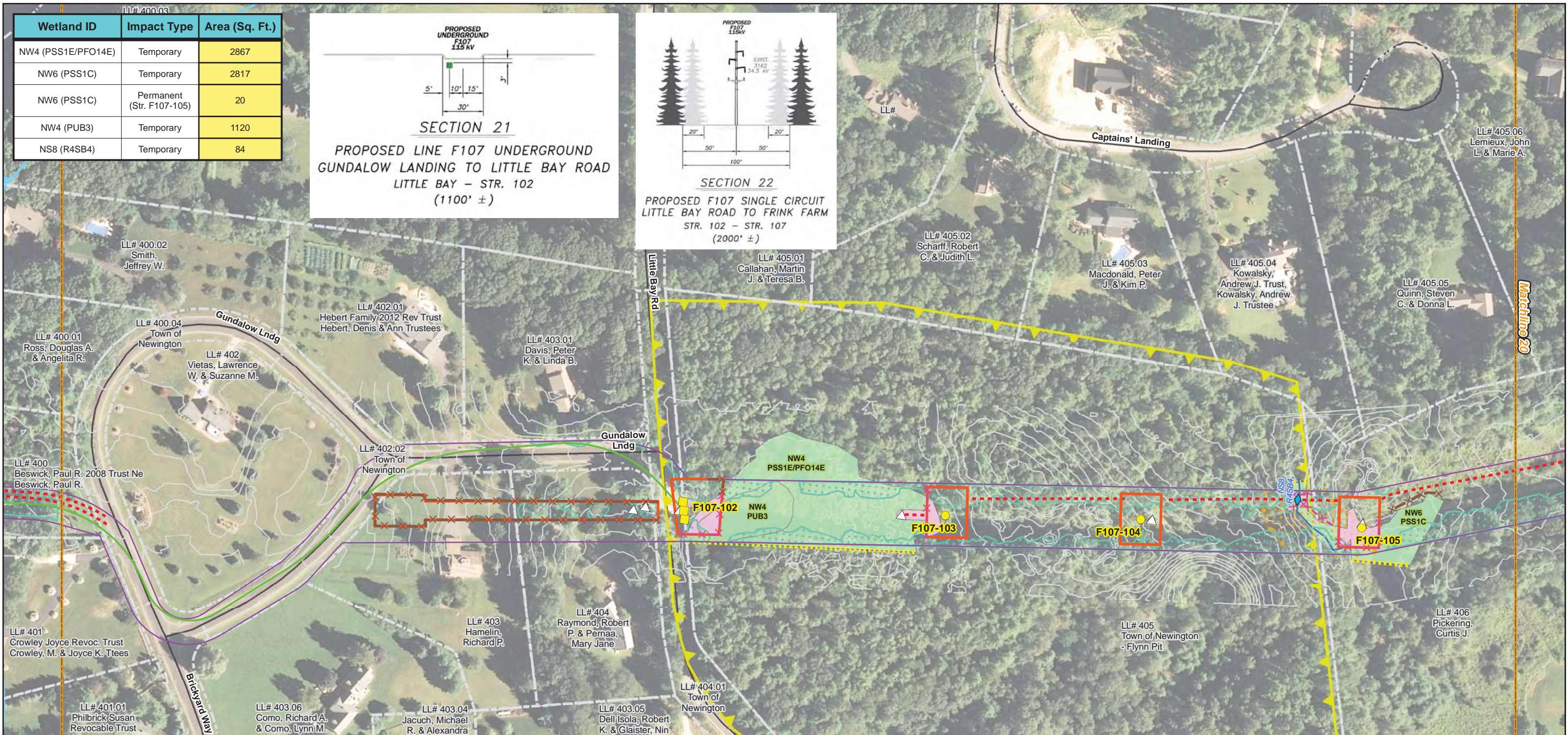
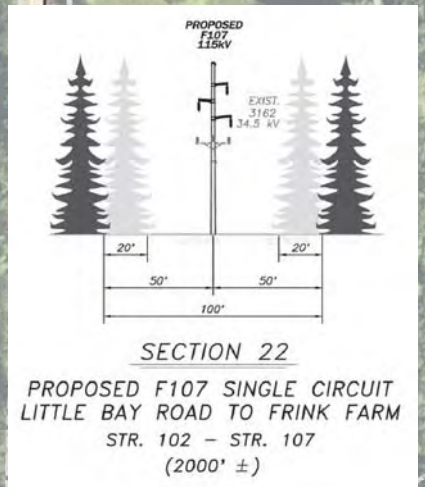
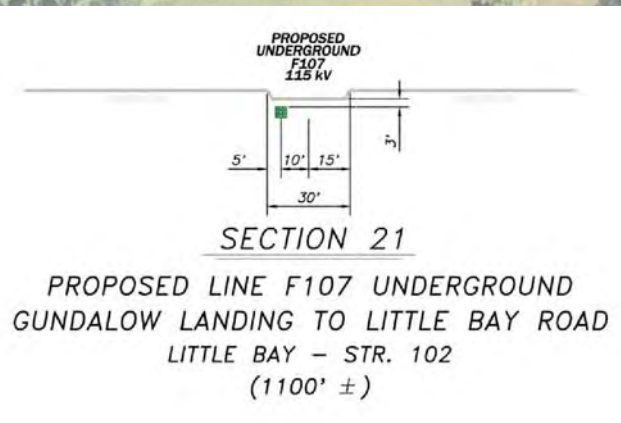
Seacoast Reliability Project

Environmental Maps

STATE OF NEW HAMPSHIRE
SARAH D. ALLEN
No. 083
CERTIFIED WETLAND SCIENTIST

1/28/16

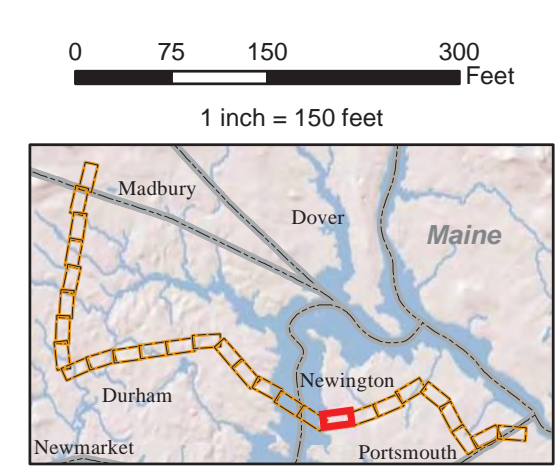
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NW6 (PSS1C)	Temporary	2817
NW6 (PSS1C)	Permanent (Str. F107-105)	20
NW4 (PUB3)	Temporary	1120
NS8 (R4SB4)	Temporary	84



Date : 2/25/2016
 Drawn By: athompson
 Project No: 22860.003

<ul style="list-style-type: none"> Town Boundary Approximate Parcel Boundary PSNH Fee Area Project Corridor Work Pad Roads <ul style="list-style-type: none"> Local Not Maintained Private State Railroad 	<ul style="list-style-type: none"> Existing Str (Remain) Existing Str (Removed/Modified) Structures <ul style="list-style-type: none"> Direct Embed Drilled Pier Relocated Distribution Access Roads Underground Cable Silt Curtain Silt Fence, Hay Bale, Erosion Control Mix Berm Straw Wattle 	<ul style="list-style-type: none"> Wetland Prime Wetland Wetland Extends Wetlands Impact Stream Centerline Stream Top of Bank Temporary Culvert Temporary Mat Bridge Historical Sites 	<ul style="list-style-type: none"> Designated River Buffer 250' Conservation Lands 100 Year Floodplain Steep Slope BMPs Tree Clearing Stream Buffer 2ft Contour
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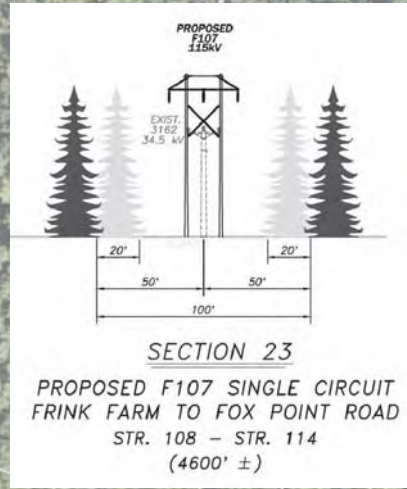
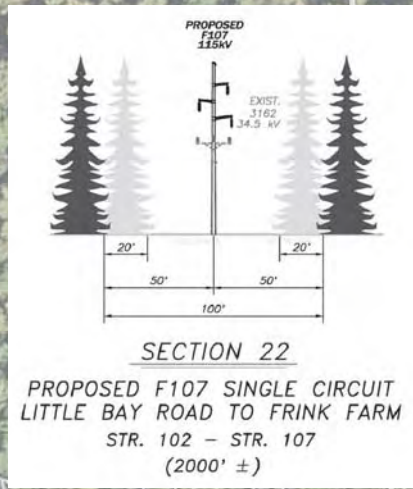
NORMANDEAU ASSOCIATES
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Seacoast Reliability Project

Environmental Maps

1/28/16

Wetland ID	Impact Type	Area (Sq. Ft.)
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NW12 (PSS1E/PEM1E)	Temporary	3332
NW16 (PEM1F/PSS1E)	Temporary	8145
NS14 (n/a)	Temporary	43
NS107 (R2UB3)	Temporary	64

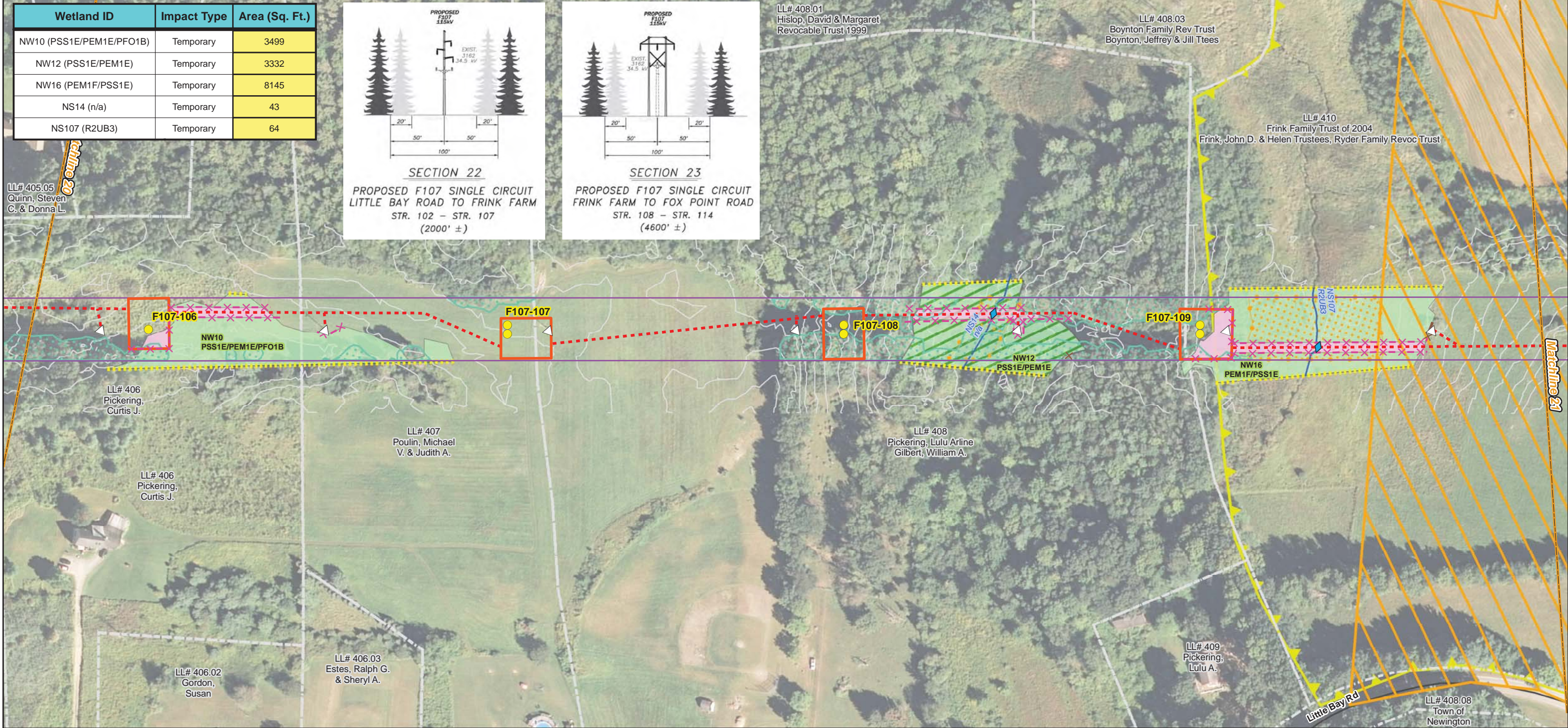


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Boynton Family Rev Trust
Boynton, Jeffrey & Jill Tees

LL# 410
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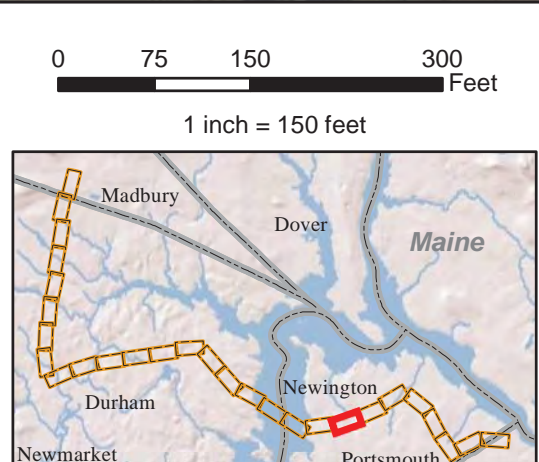
LL# 405.05
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C. & Donna L.



Drawn By: athompson
Date: 2/25/2016
Project No: 22860.003

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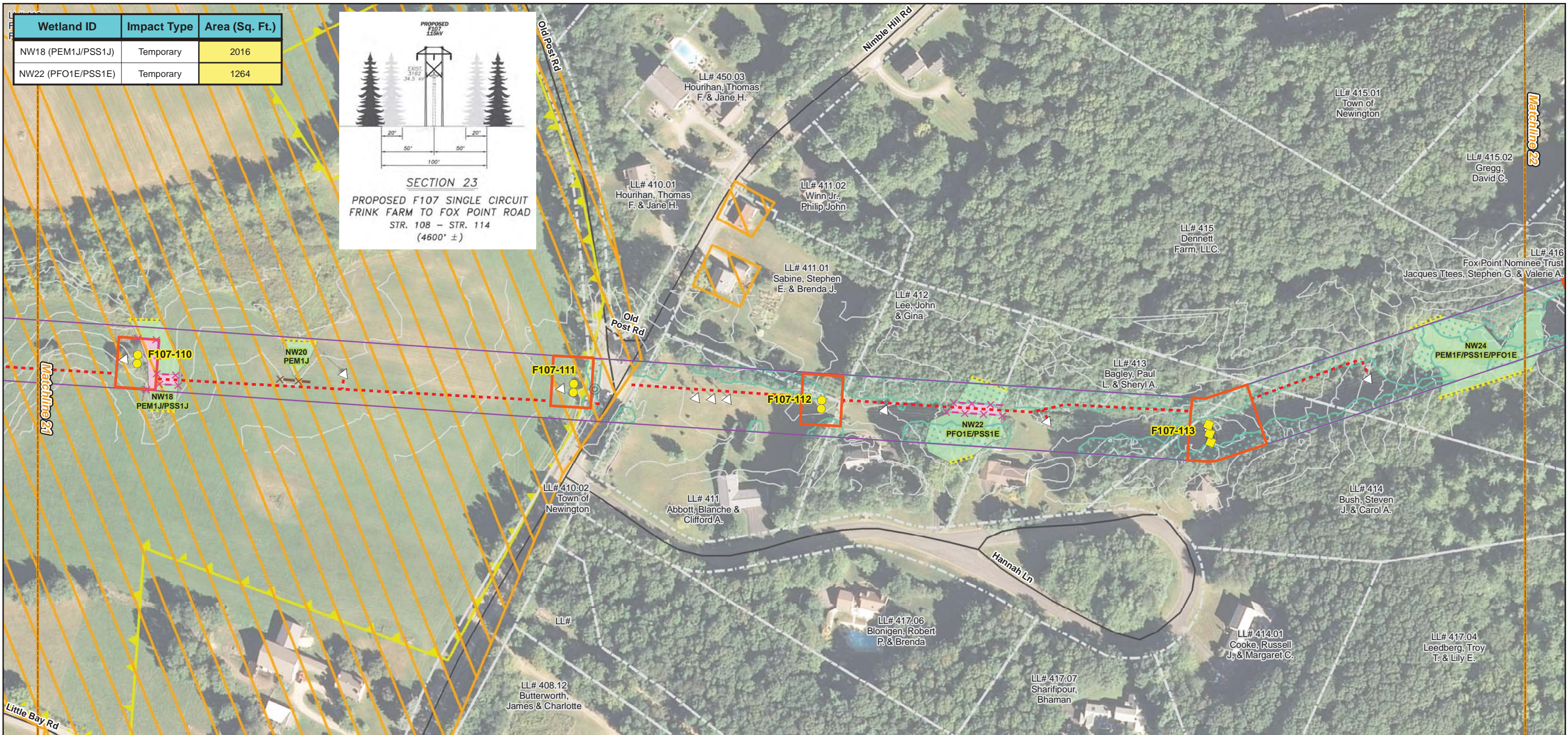
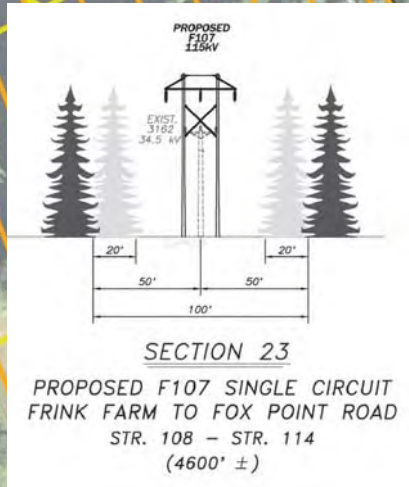
Seacoast Reliability Project

Environmental Maps

STATE OF NEW HAMPSHIRE
SARAH D. ALLEN
No. 083
CERTIFIED WETLAND SCIENTIST

1/28/16

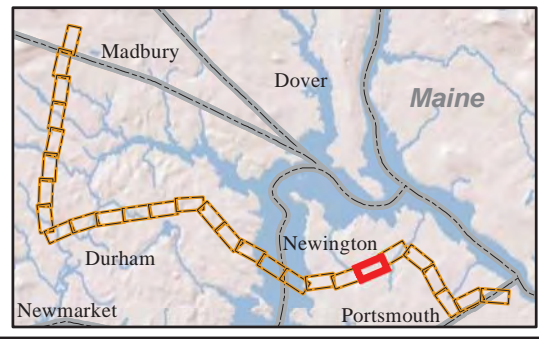
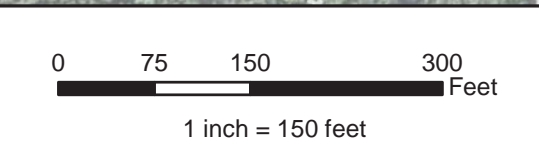
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Drawn By: athompson
Date: 2/25/2016
Project No: 22860.003

<ul style="list-style-type: none"> Town Boundary Approximate Parcel Boundary PSNH Fee Area Project Corridor Work Pad Roads Local Not Maintained Private State Railroad 	<ul style="list-style-type: none"> Existing Str (Remain) Existing Str (Removed/Modified) Structures Direct Embed Drilled Pier Relocated Distribution Access Roads Underground Cable Silt Curtain Silt Fence, Hay Bale, Erosion Control Mix Berm Straw Wattle 	<ul style="list-style-type: none"> Wetland Prime Wetland Wetland Extends Wetlands Impact Stream Centerline Stream Top of Bank Temporary Culvert Temporary Mat Bridge Historical Sites 	<ul style="list-style-type: none"> Designated River Buffer 250' Conservation Lands 100 Year Floodplain Steep Slope BMPs Tree Clearing Stream Buffer 2ft Contour
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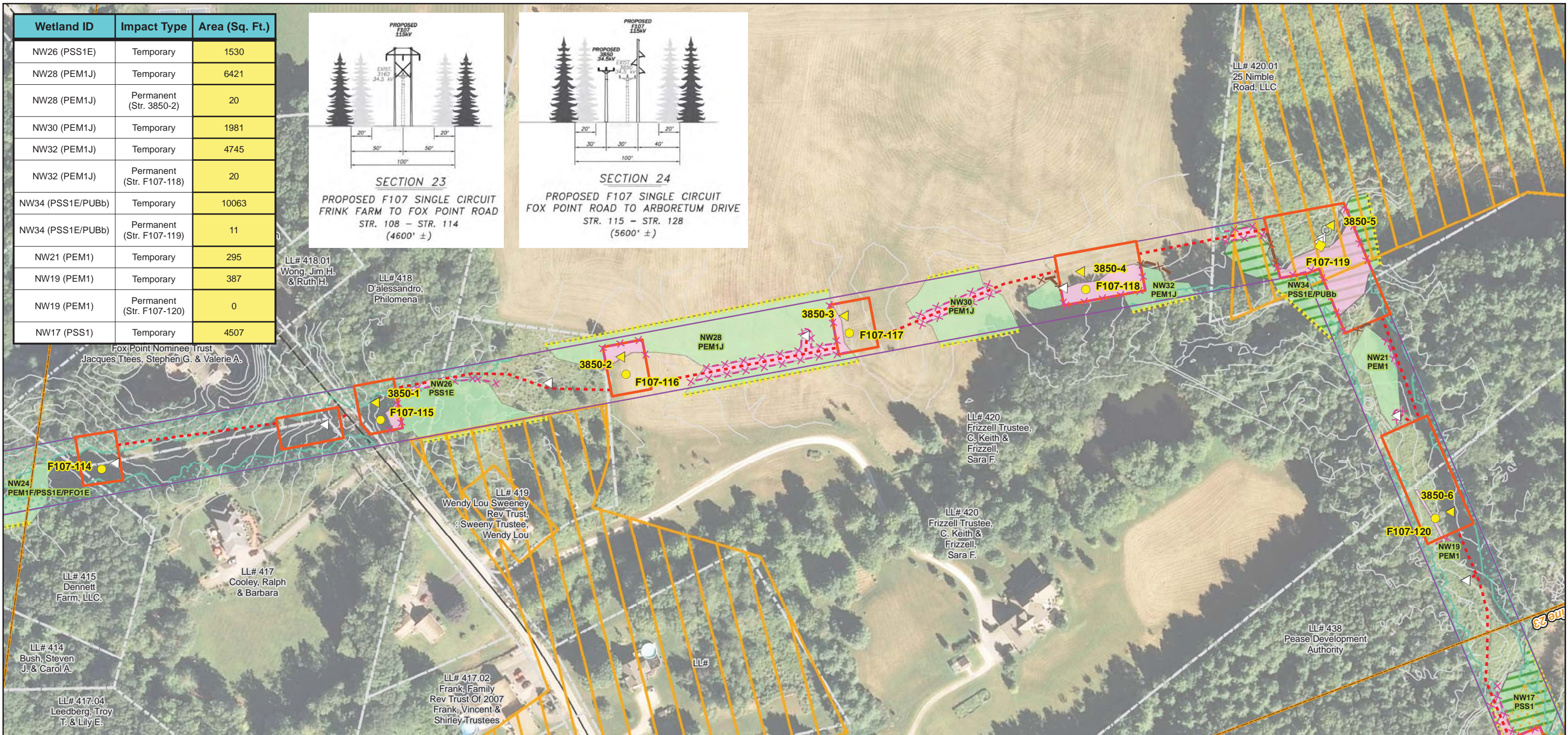
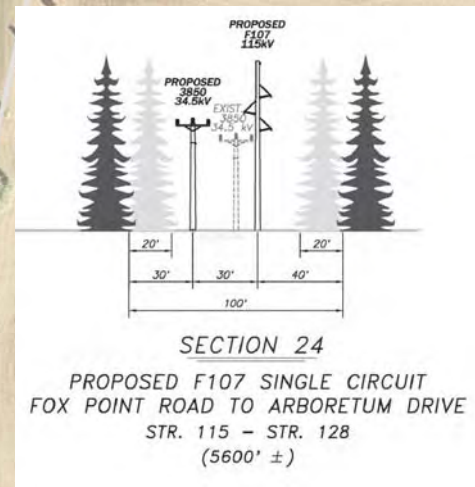
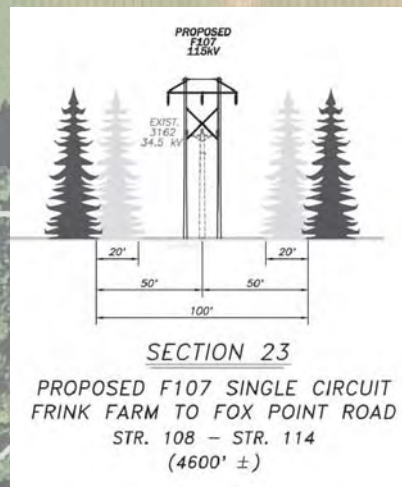


Seacoast Reliability Project

Environmental Maps

1/28/16

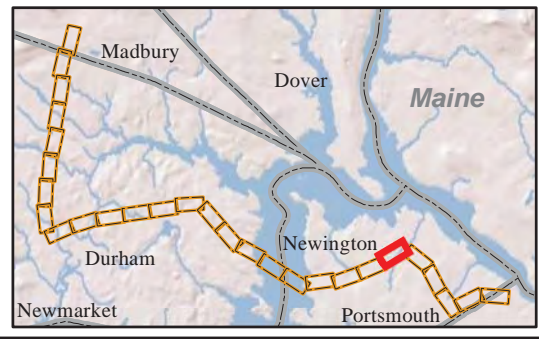
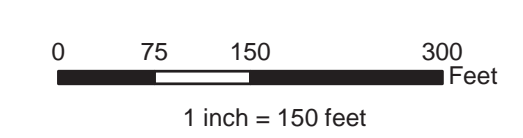
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NW30 (PEM1J)	Temporary	1981
NW32 (PEM1J)	Temporary	4745
NW32 (PEM1J)	Permanent (Str. F107-118)	20
NW34 (PSS1E/PUBb)	Temporary	10063
NW34 (PSS1E/PUBb)	Permanent (Str. F107-119)	11
NW21 (PEM1)	Temporary	295
NW19 (PEM1)	Temporary	387
NW19 (PEM1)	Permanent (Str. F107-120)	0
NW17 (PSS1)	Temporary	4507



Legend

- Town Boundary
- Approximate Parcel Boundary
- PSNH Fee Area
- Project Corridor
- Work Pad
- Roads**
- Local
- Not Maintained
- Private
- State
- Railroad
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- Temporary Mat Bridge
- Historical Sites
- Designated River Buffer 250'
- Conservation Lands
- 100 Year Floodplain
- Steep Slope BMPs
- Tree Clearing
- Stream Buffer
- 2ft Contour

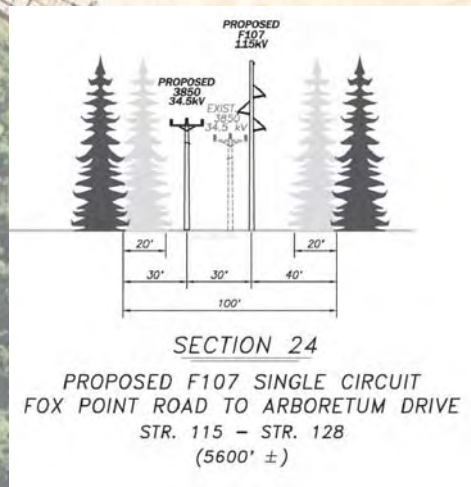
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Seacoast Reliability Project

Environmental Maps

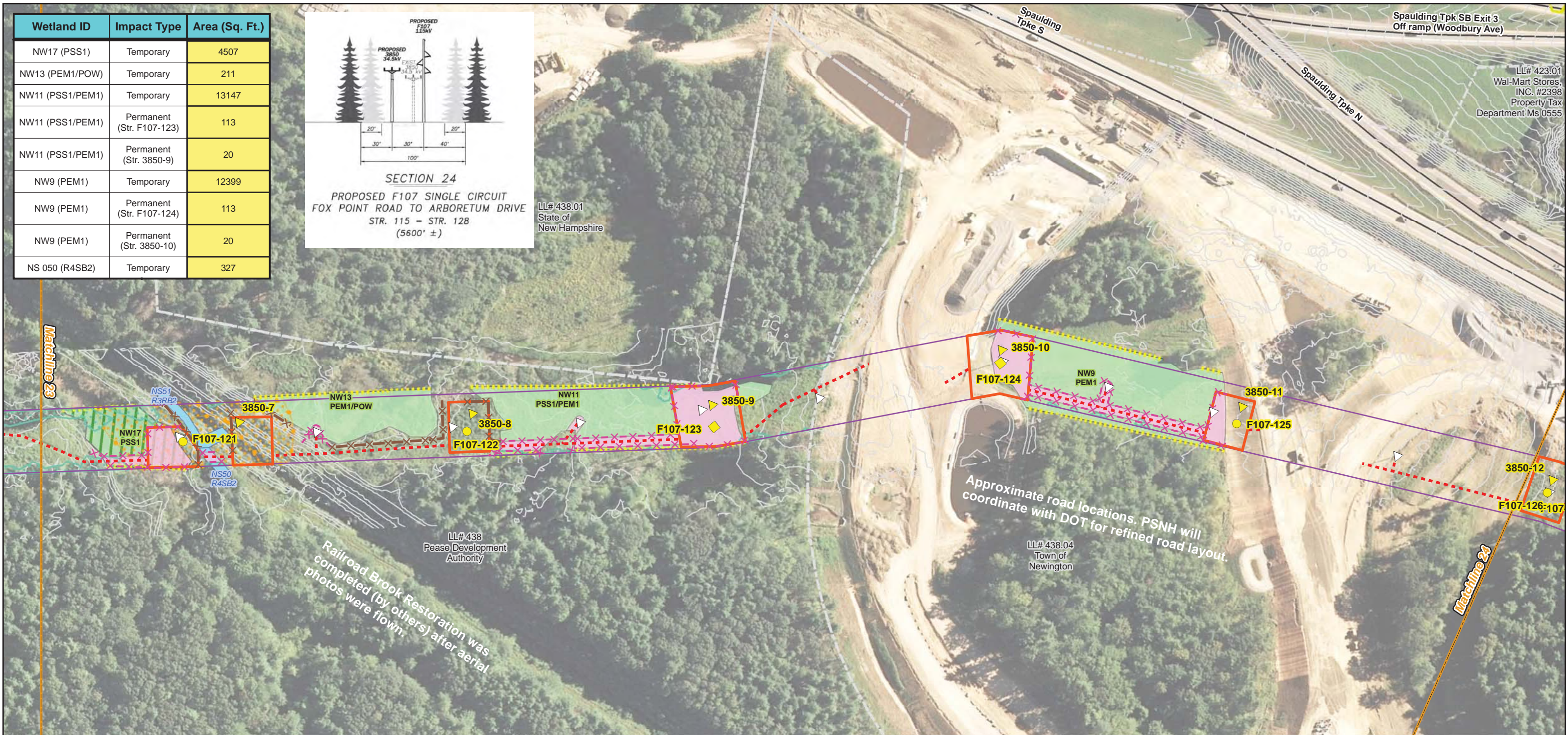
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NW13 (PEM1/POW)	Temporary	211
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NW11 (PSS1/PEM1)	Permanent (Str. F107-123)	113
NW11 (PSS1/PEM1)	Permanent (Str. 3850-9)	20
NW9 (PEM1)	Temporary	12399
NW9 (PEM1)	Permanent (Str. F107-124)	113
NW9 (PEM1)	Permanent (Str. 3850-10)	20
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LL# 438.01
State of
New Hampshire

Spaulding Tpk SB Exit 3
Off ramp (Woodbury Ave)

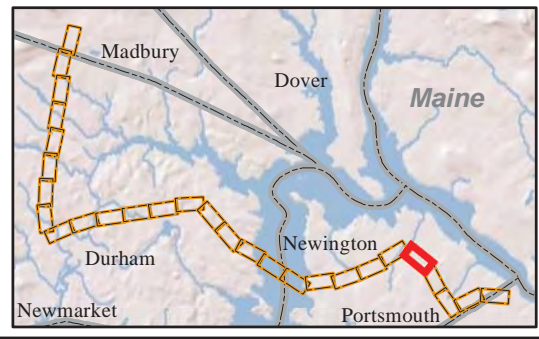
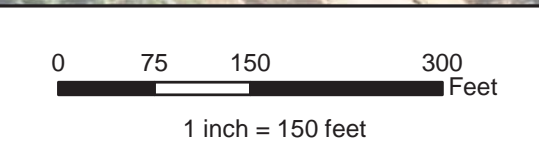
LL# 423.01
Wal-Mart Stores,
INC. #2398
Property Tax
Department Ms 0555



Date : 2/25/2016
Project No: 22860.003

<ul style="list-style-type: none"> Town Boundary Approximate Parcel Boundary PSNH Fee Area Project Corridor Work Pad Roads <ul style="list-style-type: none"> Local Not Maintained Private State Railroad 	<ul style="list-style-type: none"> Existing Str (Remain) Existing Str (Removed/Modified) Structures <ul style="list-style-type: none"> Direct Embed Drilled Pier Relocated Distribution Access Roads Underground Cable Silt Curtain Silt Fence, Hay Bale, Erosion Control Mix Berm Straw Wattle 	<ul style="list-style-type: none"> Wetland Prime Wetland Wetland Extends Wetlands Impact Stream Centerline Stream Top of Bank Temporary Culvert Temporary Mat Bridge Historical Sites 	<ul style="list-style-type: none"> Designated River Buffer 250' Conservation Lands 100 Year Floodplain Steep Slope BMPs Tree Clearing Stream Buffer 2ft Contour
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Seacoast Reliability Project

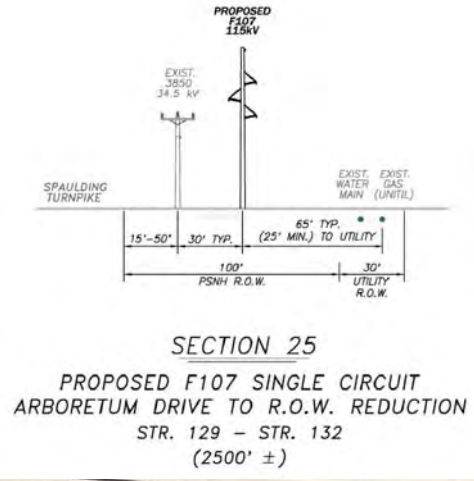
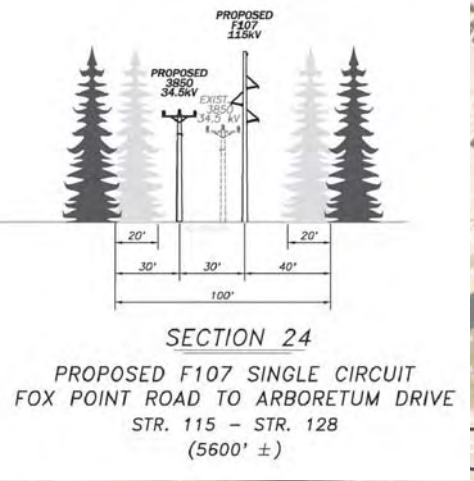
Environmental Maps

STATE OF NEW HAMPSHIRE
SARAH D. ALLEN
CERTIFIED WETLAND SCIENTIST
No. 083

1/28/16

Wetland ID Impact Type Area (Sq. Ft.)

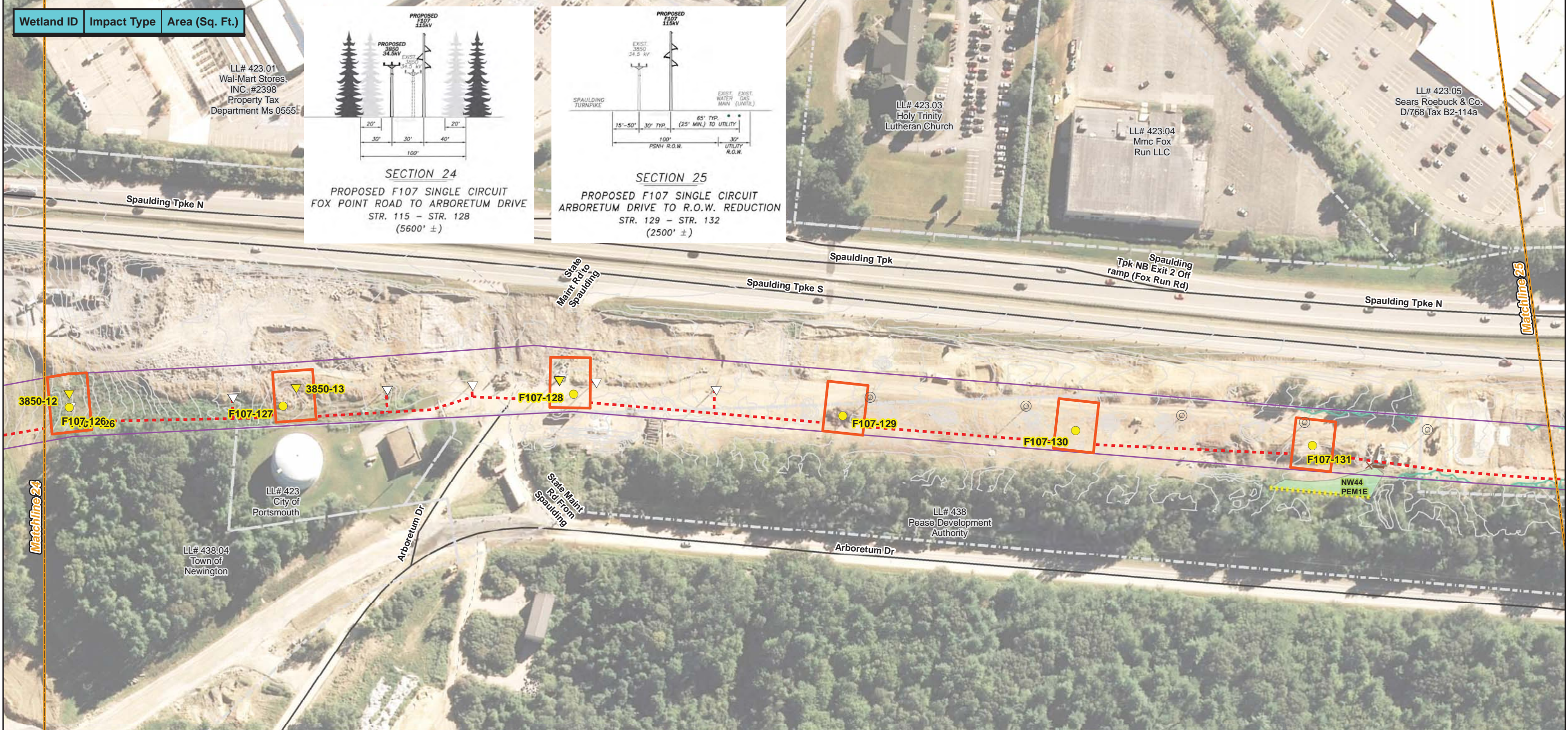
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Property Tax
Department Ms 0555



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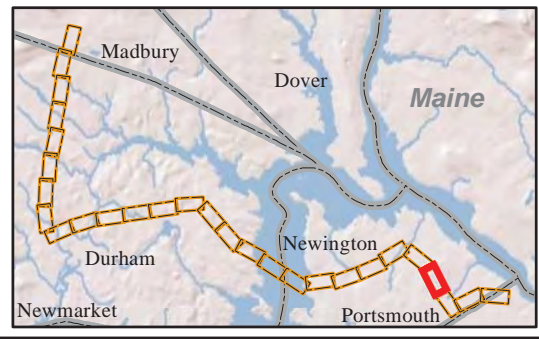
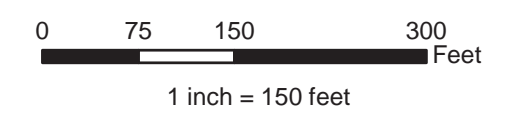
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Sears Roebuck & Co.
D/768 Tax B2-114a



Drawn By: athompson
Date: 2/25/2016
Project No: 22860.003

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> Town Boundary Approximate Parcel Boundary PSNH Fee Area Project Corridor Work Pad Roads Local Not Maintained Private State Railroad | <ul style="list-style-type: none"> Existing Str (Remain) Existing Str (Removed/Modified) Structures Direct Embed Drilled Pier Relocated Distribution Access Roads Underground Cable Silt Curtain Silt Fence, Hay Bale, Erosion Control Mix Berm Straw Wattle | <ul style="list-style-type: none"> Wetland Prime Wetland Wetland Extends Wetlands Impact Stream Centerline Stream Top of Bank Temporary Culvert Temporary Mat Bridge Historical Sites Designated River Buffer 250' Conservation Lands 100 Year Floodplain Steep Slope BMPs Tree Clearing Stream Buffer 2ft Contour |
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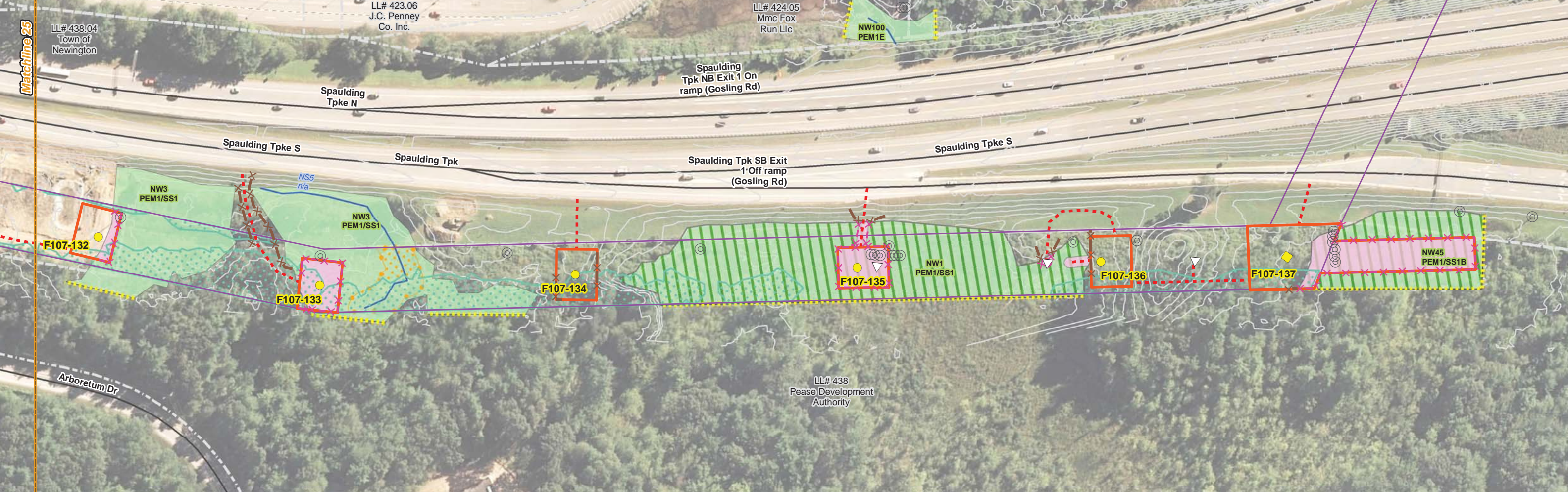
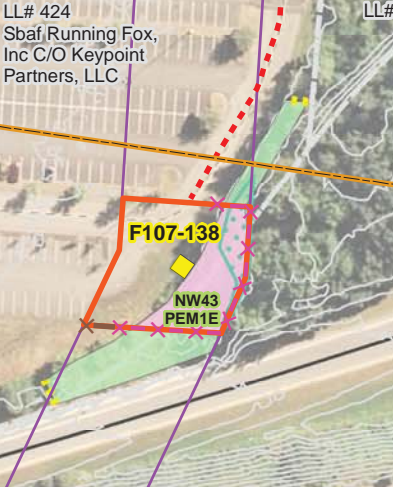
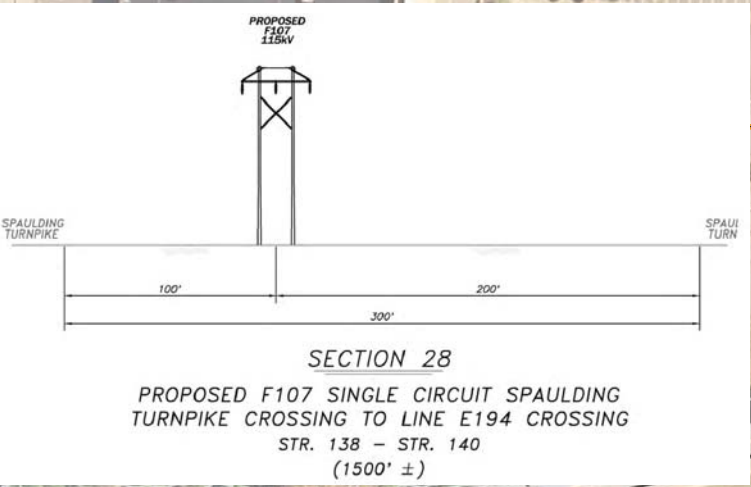
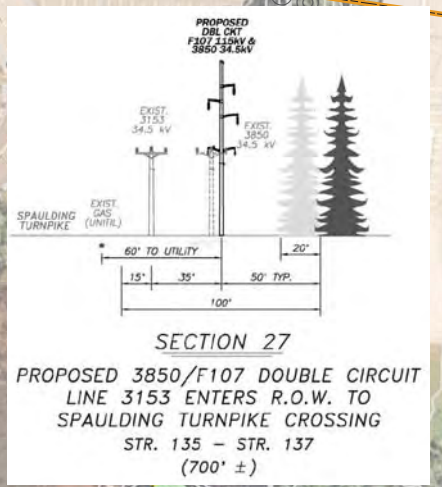
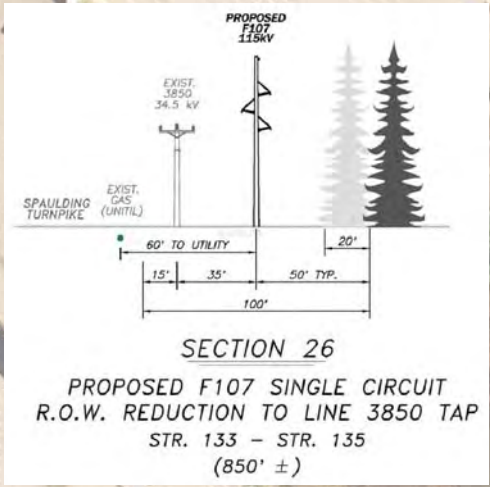
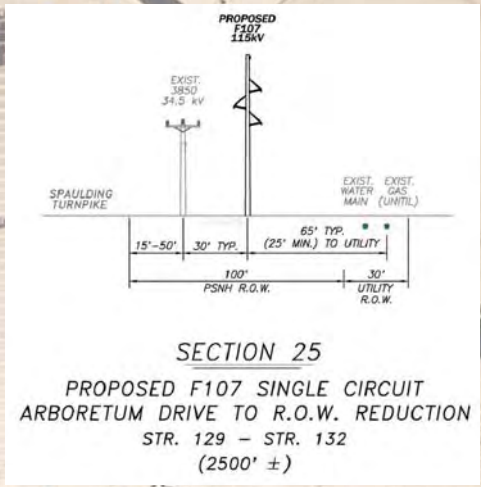


Seacoast Reliability Project
Environmental Maps



1/28/16

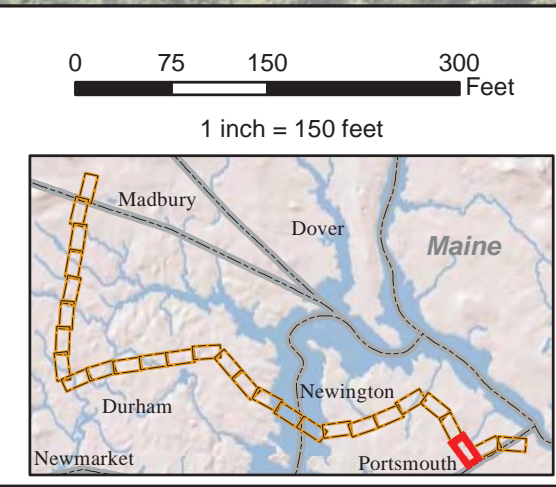
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NW1 (PEM1/SS1)	Permanent (Str. F107-135)	20
NW45 (PEM1/SS1B)	Temporary	14112
NW43 (PEM1E)	Temporary	4101
NW43 (PEM1E)	Permanent (Str. F107-138)	0
NW3 (PEM1/SS1)	Temporary	4885
NW3 (PEM1/SS1)	Permanent (Str. F107-133)	20



Drawn By: athompson
Date: 2/25/2016
Project No: 22860.003

<ul style="list-style-type: none"> Town Boundary Approximate Parcel Boundary PSNH Fee Area Project Corridor Work Pad Roads <ul style="list-style-type: none"> Local Not Maintained Private State Railroad 	<ul style="list-style-type: none"> Existing Str (Remain) Existing Str (Removed/Modified) Structures <ul style="list-style-type: none"> Direct Embed Drilled Pier Relocated Distribution Access Roads Underground Cable Silt Curtain Silt Fence, Hay Bale, Erosion Control Mix Berm Straw Wattle 	<ul style="list-style-type: none"> Wetland Prime Wetland Wetland Extends Wetlands Impact Stream Centerline Stream Top of Bank Temporary Culvert Temporary Mat Bridge Historical Sites 	<ul style="list-style-type: none"> Designated River Buffer 250' Conservation Lands 100 Year Floodplain Steep Slope BMPs Tree Clearing Stream Buffer 2ft Contour
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EVERSOURCE ENERGY

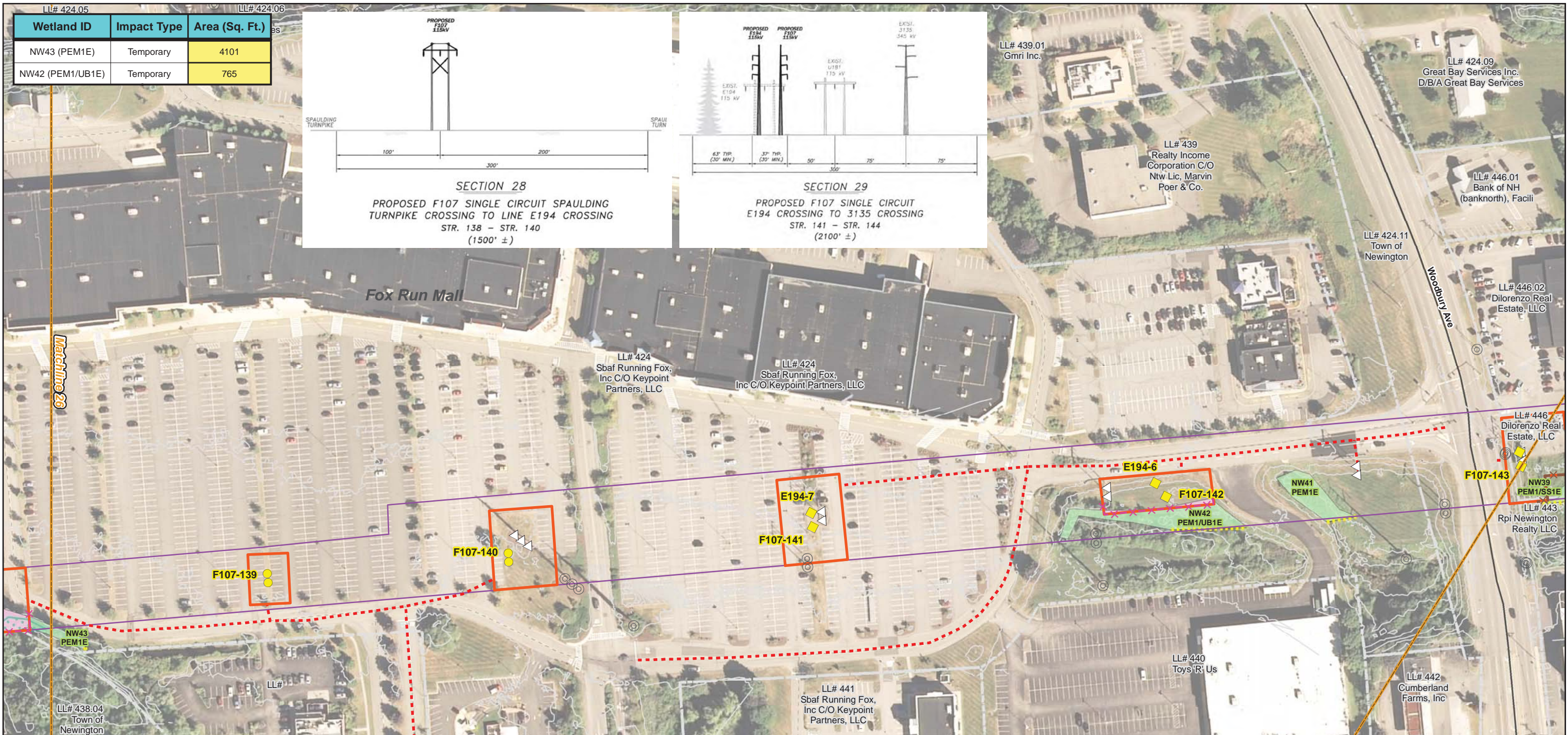
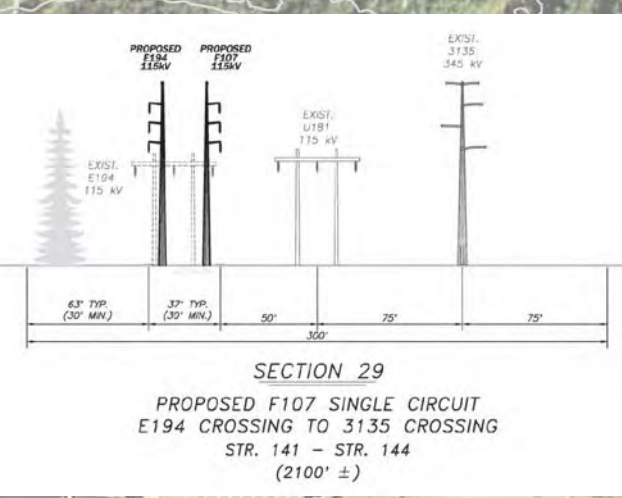
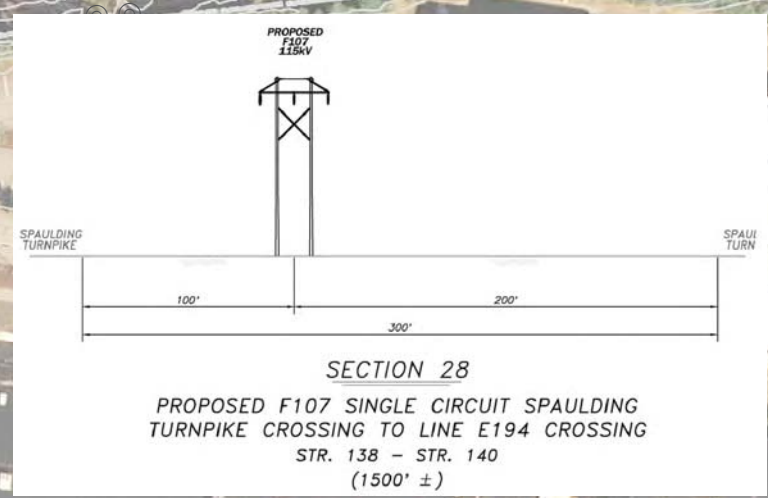
NORMANDEAU ASSOCIATES
Environmental Consultants

Seacoast Reliability Project

Environmental Maps

1/28/16

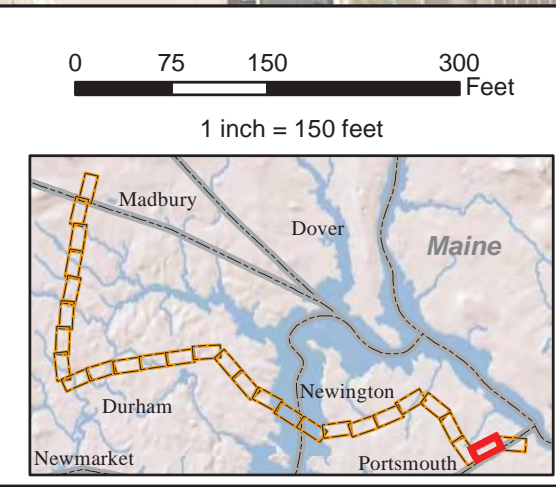
Wetland ID	Impact Type	Area (Sq. Ft.)
NW43 (PEM1E)	Temporary	4101
NW42 (PEM1/UB1E)	Temporary	765



Drawn By: athompson
Date: 2/25/2016
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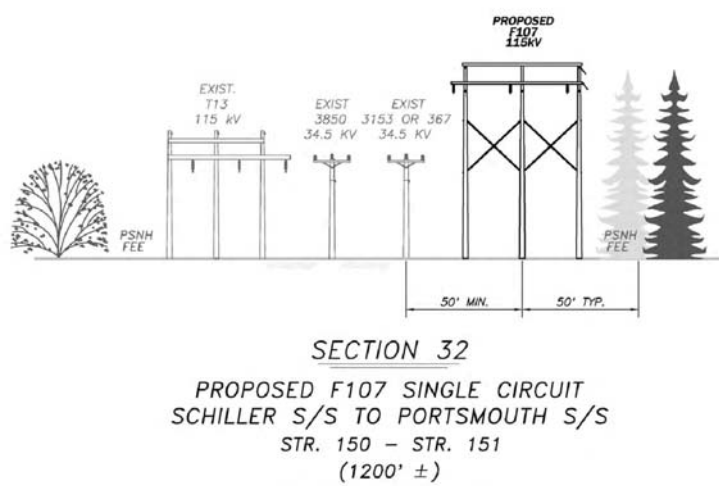
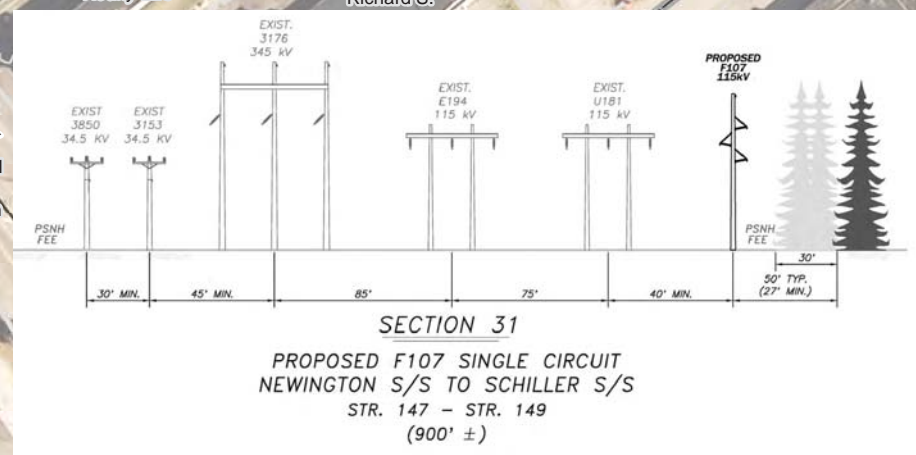
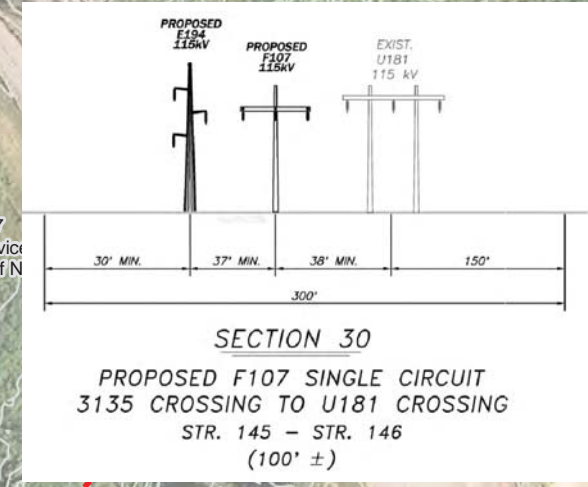
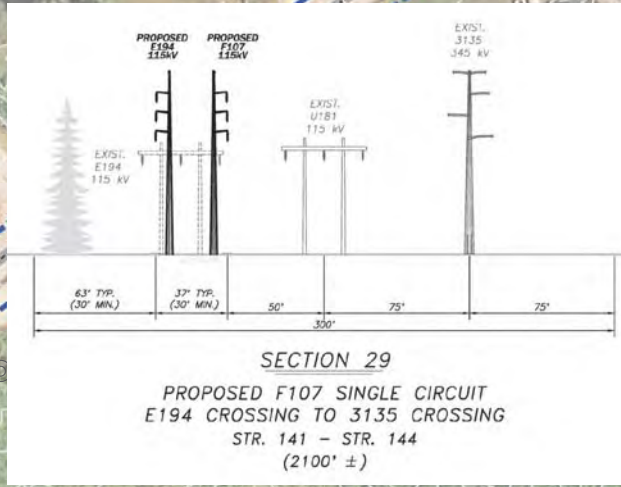
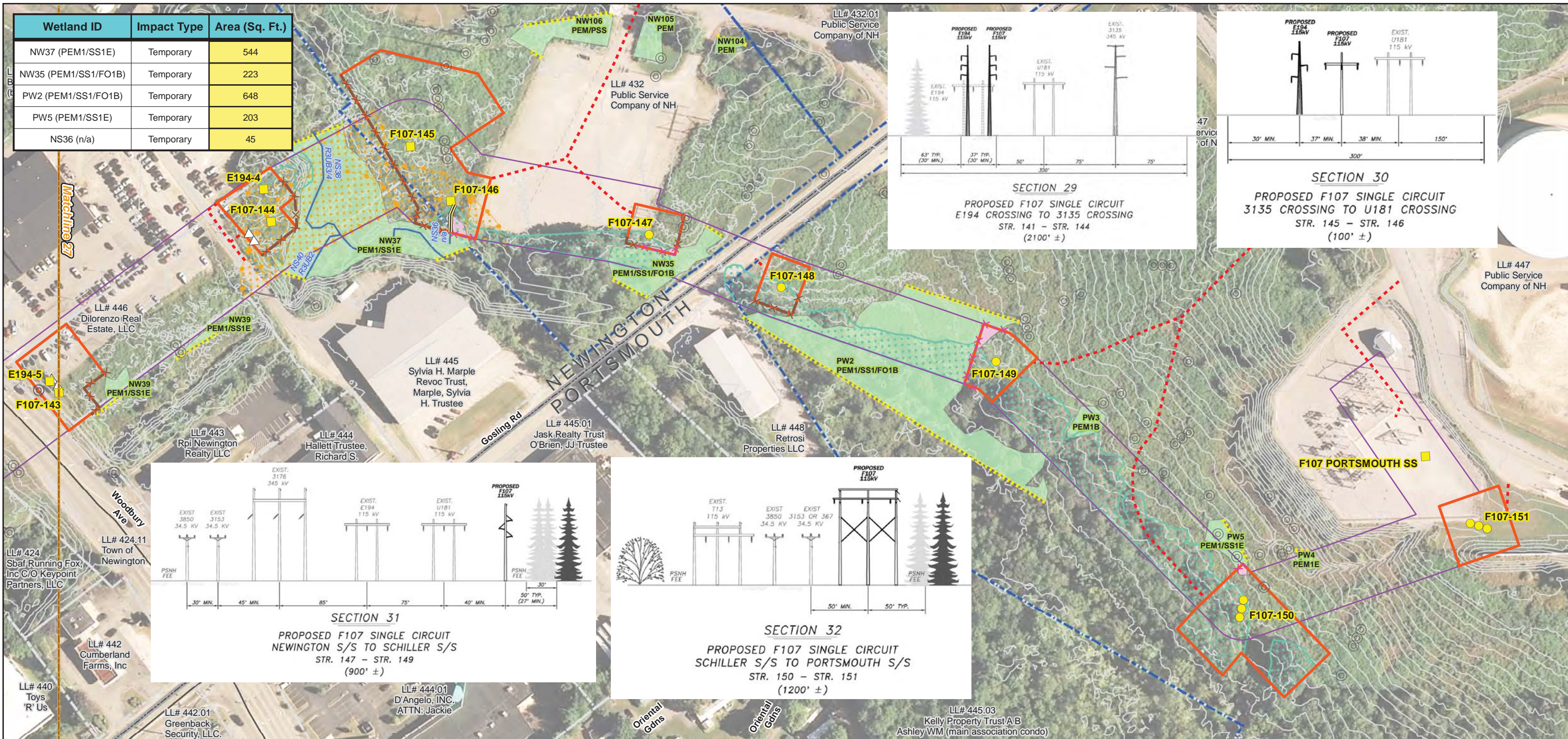
Seacoast Reliability Project

Environmental Maps

STATE OF NEW HAMPSHIRE
SARAH D. ALLEN
No. 083
CERTIFIED WETLAND SCIENTIST

1/28/16

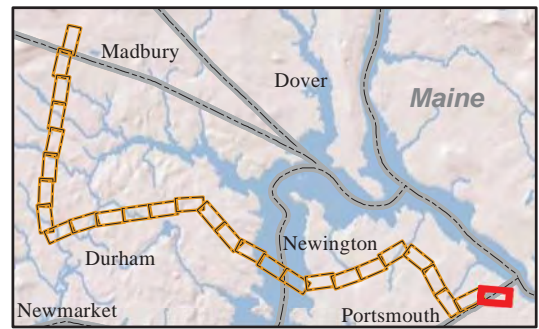
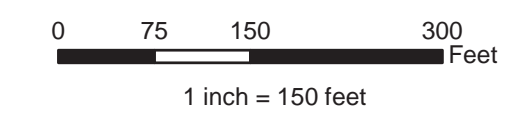
Wetland ID	Impact Type	Area (Sq. Ft.)
NW37 (PEM1/SS1E)	Temporary	544
NW35 (PEM1/SS1/FO1B)	Temporary	223
PW2 (PEM1/SS1/FO1B)	Temporary	648
PW5 (PEM1/SS1E)	Temporary	203
NS36 (n/a)	Temporary	45



Date : 2/25/2016
 Drawn By: athompson
 Project No: 22860.003

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Seacoast Reliability Project Environmental Maps



1/28/16

**Public Service Company of New Hampshire
Seacoast Reliability Project**

Madbury, Durham, Newington & Portsmouth, NH

**New Hampshire Department of Environmental Services
Alteration of Terrain Permit Application**

Design Plans - Power Engineering

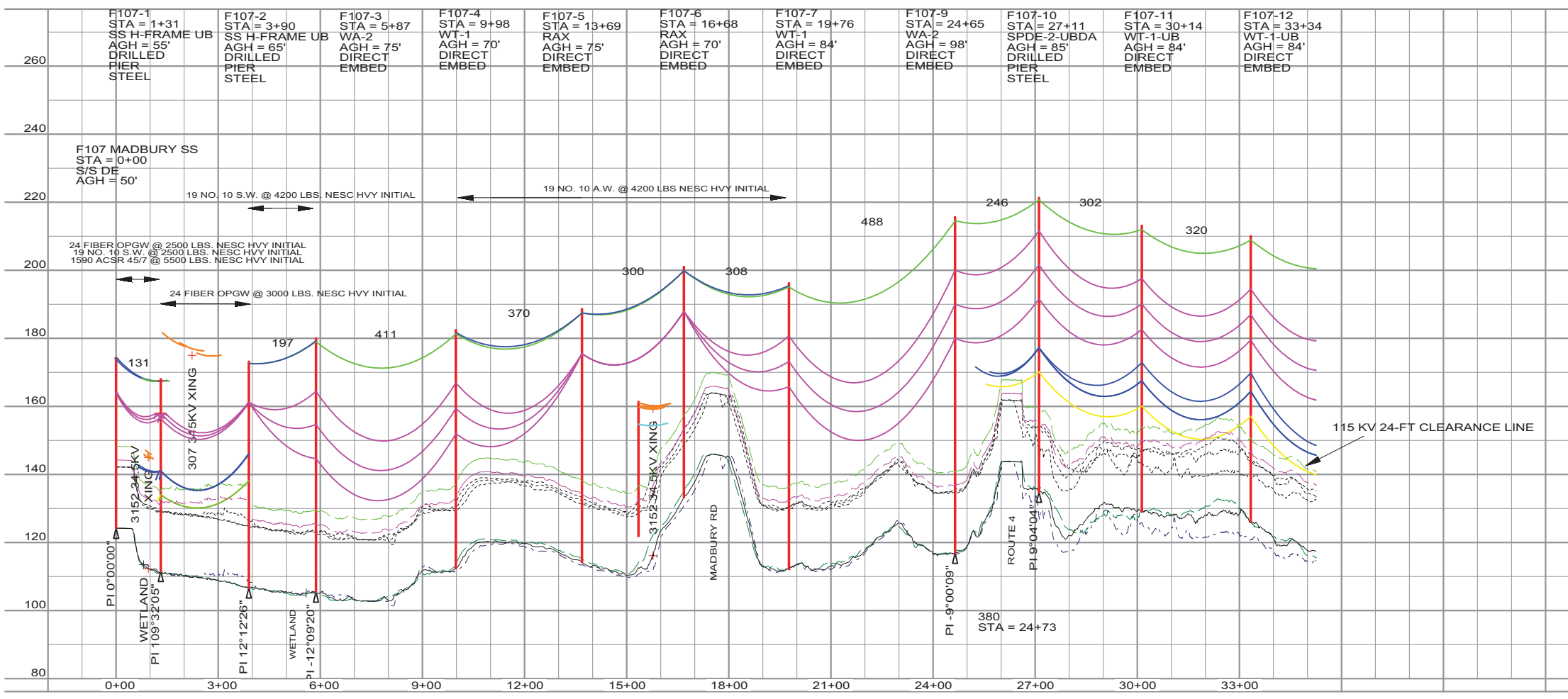
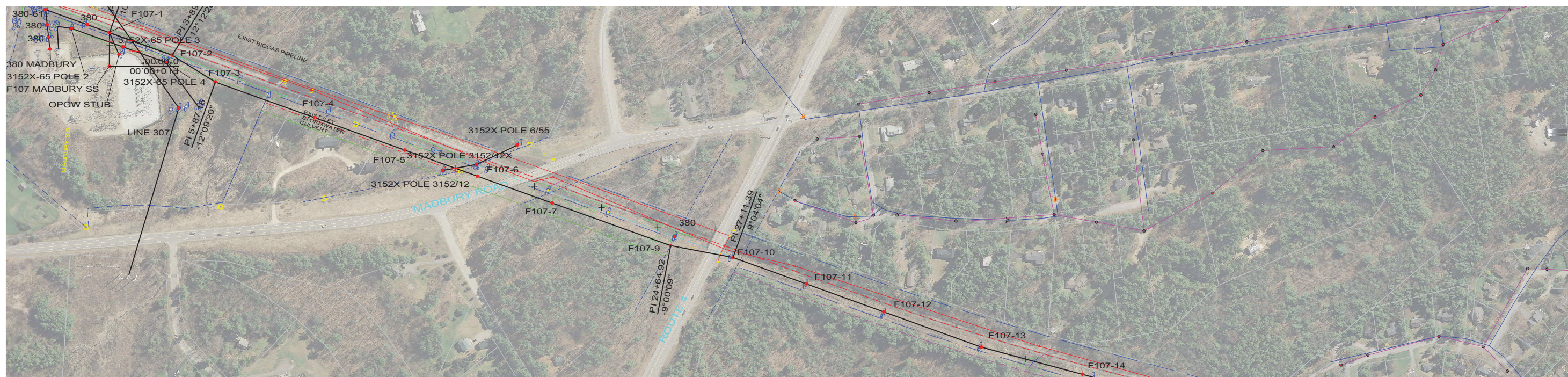
Prepared for:

**Public Service Company of New Hampshire
d/b/a/ Eversource Energy
780 North Commercial Street
Manchester, NH 03101**

Prepared by:

**Normandeau Associates, Inc.
25 Nashua Road
Bedford, NH 03110**

March 2016



NOTES:

- 1) PROPERTY BOUNDARIES SHOWN ARE APPROXIMATE AND FOR REPRESENTATION ONLY. RIGHT OF WAY LOCATION HAS BEEN SURVEYED AND PROVIDED BY DOUCET SURVEY, INC.
- 2) DISTRIBUTION UPGRADES TO STRUCTURES AND EQUIPMENT ARE NOT DETAILED IN THIS DRAWING SET. DETAILED ANALYSIS AND INSTALLATION OF EQUIPMENT, OR MODIFICATIONS TO EXISTING STRUCTURES, WILL BE PERFORMED BY OTHERS.

LEGEND

UNDERGROUND UTILITIES:

- DURHAM WATER LINE
- SEWER LINE
- UNH WATER LINE
- FIBER OPTIC
- WATER LINE
- GAS LINE
- GAS LINE

CONDUCTOR/SHIELD WIRES:

- 115KV 1590 ACSR 45/7 "LAPWING"
- 34.5KV 477 ACSR 18/1 "PELICAN"
- 0KV 24 FIBER OPGW OR OKV UNDERBUILD ADSS
- 0KV 4/0 ACSR 6/1 INSTALLED @ 2,500 LBS. NESC HVY. INITIAL (DISPLAYED @ 120 DEG. F)
- HENDRIX MESSENGER & SPACER CABLE @ 9,000 LBS. NESC HVY. INITIAL (DISPLAYED @ 120 DEG. F)
- 115KV UNDERGROUND

ROW

- PAN-AM RAILROAD ROW
- PSNH ROW

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REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
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I	ISSUED FOR REVIEW	8/21/2015	KMS	KMS	APJ		
H	ISSUED FOR REVIEW	7/24/2015	KMS	KMS	APJ		
G	RE-ISSUED FOR PERMITTING	4/24/2015	KMS	KMS	APJ		

DSGN	KMS	4/4/2014
DRN	KMS	4/4/2014
CKD	APJ	4/4/2014

SCALE: 1" = 200' HORIZ.
20' VERT.
FOR 22X34 DWG ONLY

POWER ENGINEERS

PUBLIC SERVICE OF NEW HAMPSHIRE

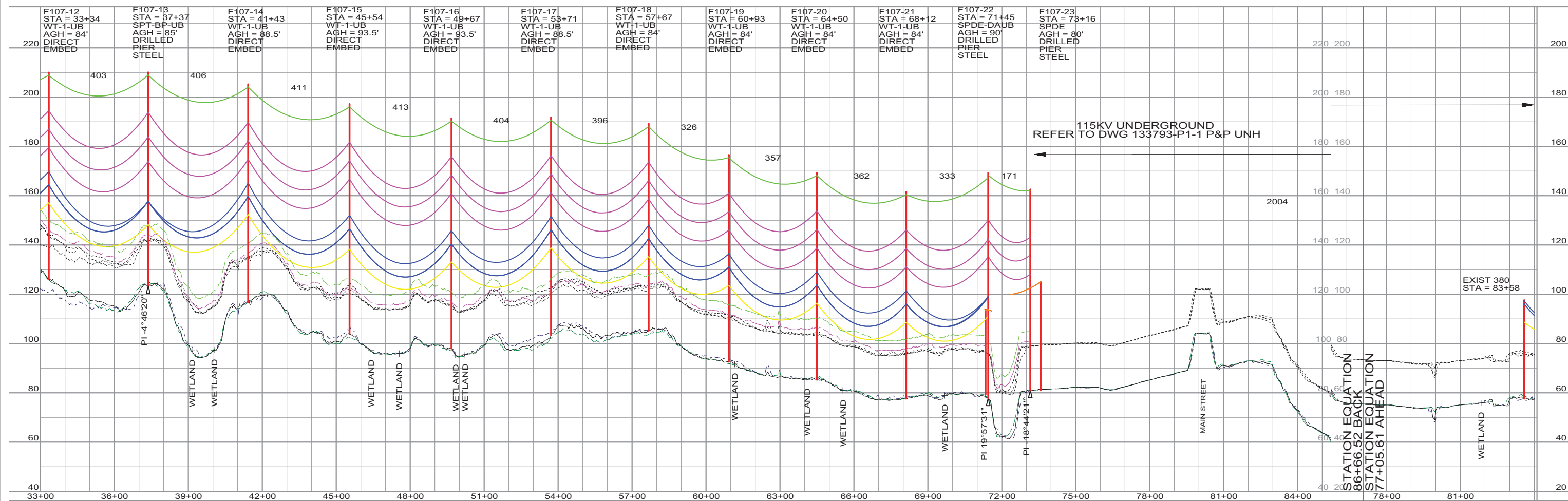
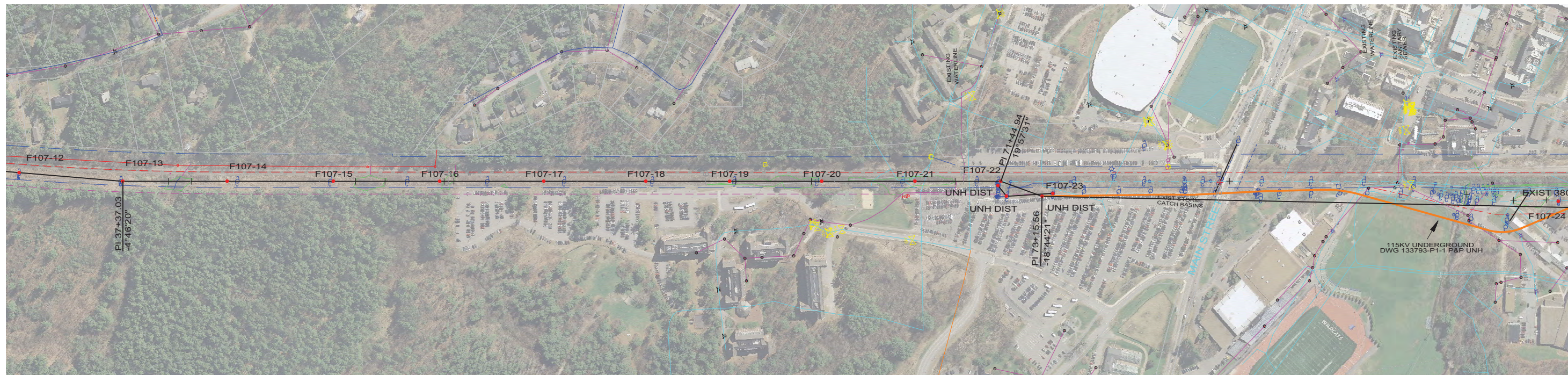
SEACOAST RELIABILITY PROJECT

F107 LINE & STRUCTURE LOCATIONS

JOB NUMBER: 133005

DRAWING NUMBER: F10743001

REV: K



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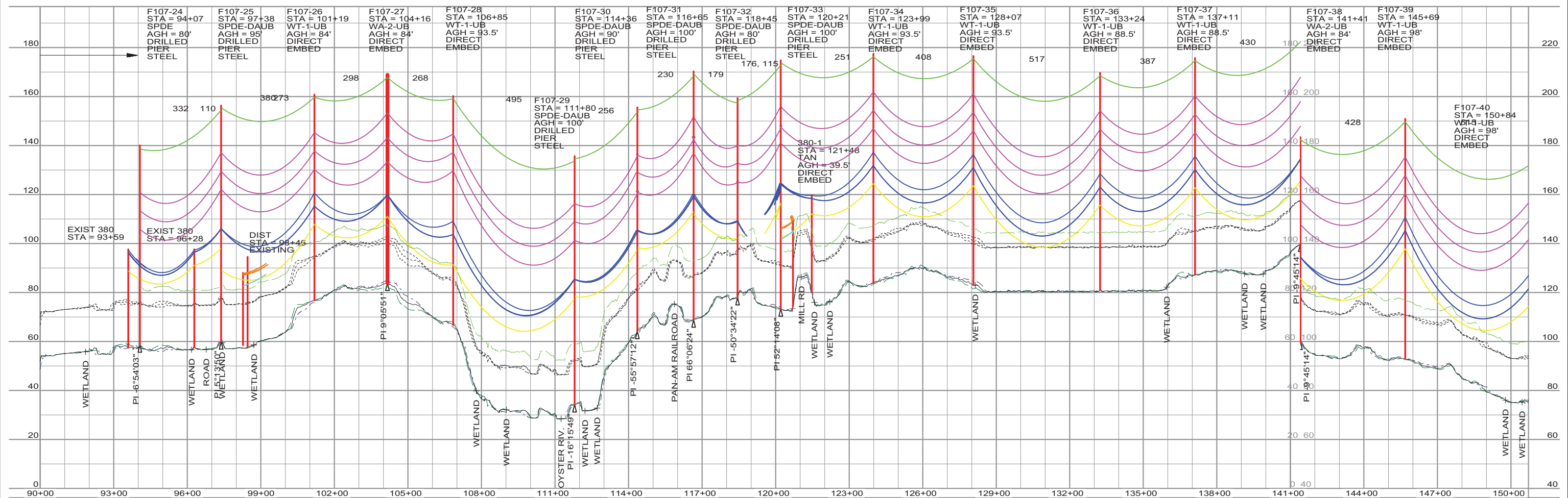
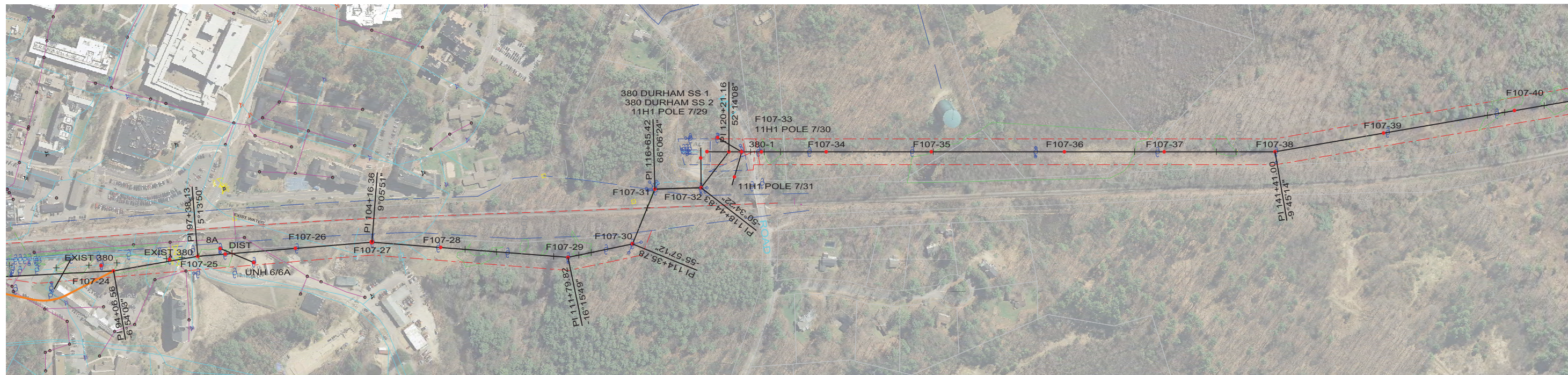
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I	ISSUED FOR REVIEW	8/21/2015	KMS	KMS	APJ		
H	ISSUED FOR REVIEW	7/24/2015	KMS	KMS	APJ		
G	RE-ISSUED FOR PERMITTING	4/24/2015	KMS	KMS	APJ		

DSGN	KMS	4/4/2014
DRN	KMS	4/4/2014
CKD	APJ	4/4/2014

SCALE: 1" = 200' HORIZ.
20' VERT.
FOR 22X34 DWG ONLY



PUBLIC SERVICE OF NEW HAMPSHIRE		JOB NUMBER	REV
SEACOAST RELIABILITY PROJECT		133005	K
F107 LINE & STRUCTURE LOCATIONS		DRAWING NUMBER	
		F10743002	



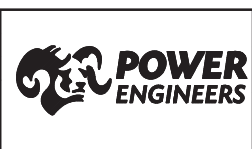
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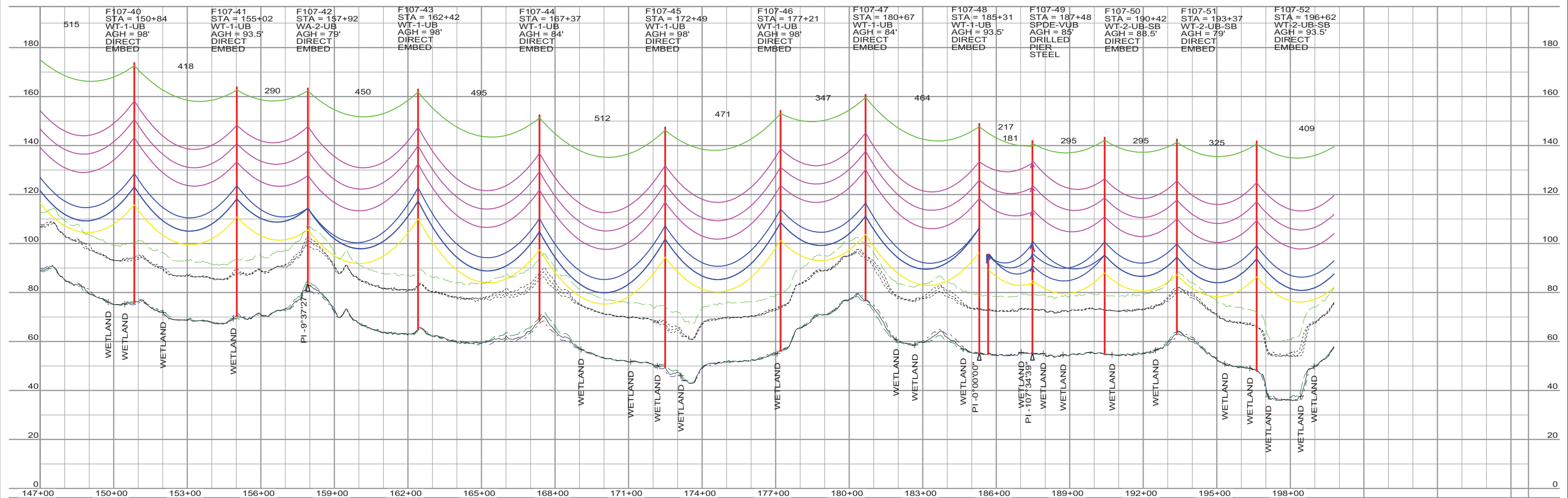
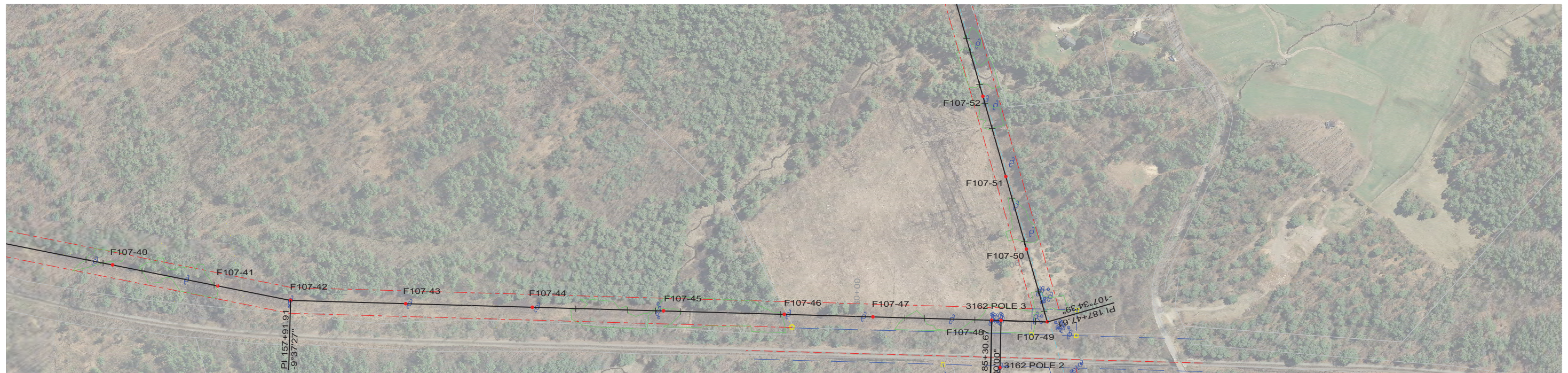
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DSGN	KMS	4/4/2014
DRN	KMS	4/4/2014
CKD	APJ	4/4/2014

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PUBLIC SERVICE OF NEW HAMPSHIRE		JOB NUMBER	REV
SEACOAST RELIABILITY PROJECT		133005	△
F107 LINE & STRUCTURE LOCATIONS		DRAWING NUMBER	
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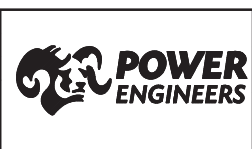
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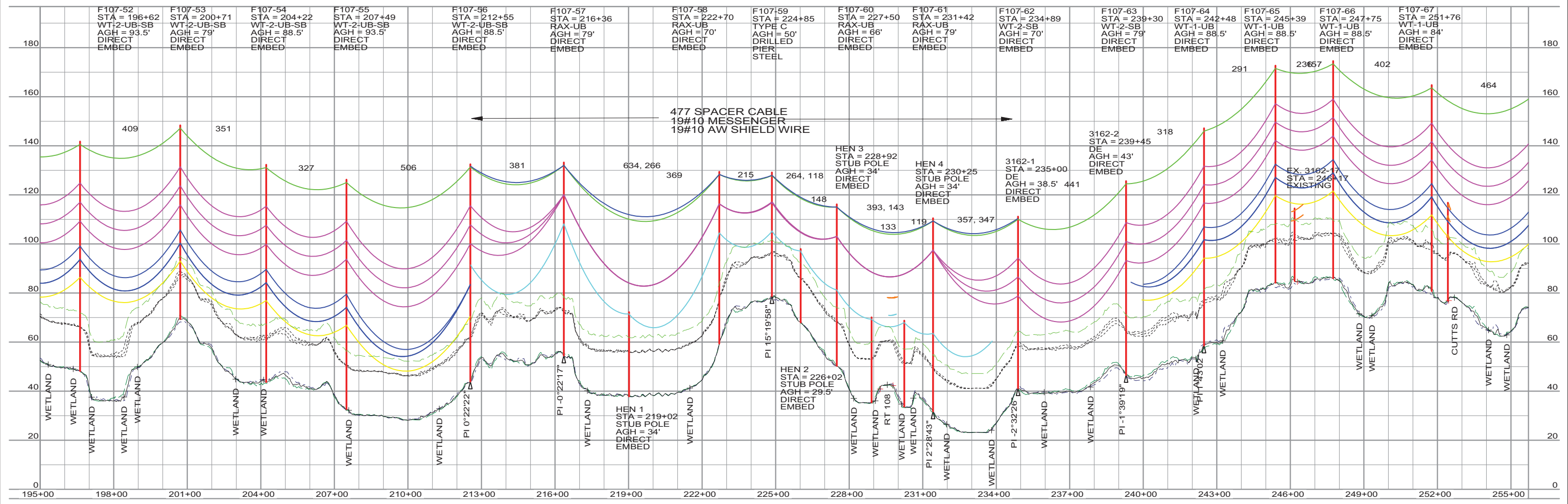
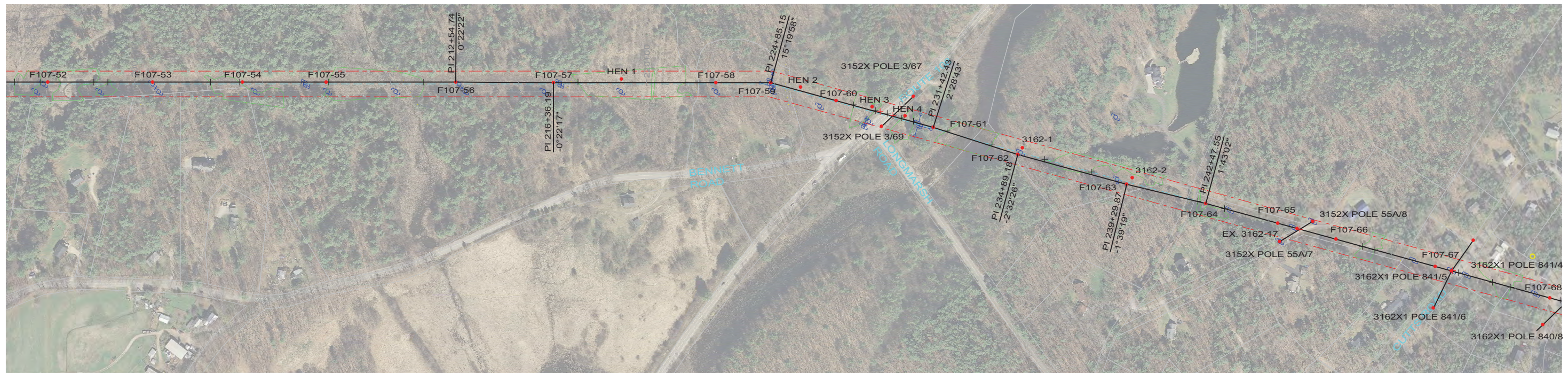
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H	ISSUED FOR REVIEW	7/24/2015	KMS	KMS	APJ		

DSGN	KMS	4/4/2014
DRN	KMS	4/4/2014
CKD	APJ	4/4/2014

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PUBLIC SERVICE OF NEW HAMPSHIRE		JOB NUMBER	REV
SEACOAST RELIABILITY PROJECT		133005	L
F107 LINE & STRUCTURE LOCATIONS		DRAWING NUMBER	F10743004



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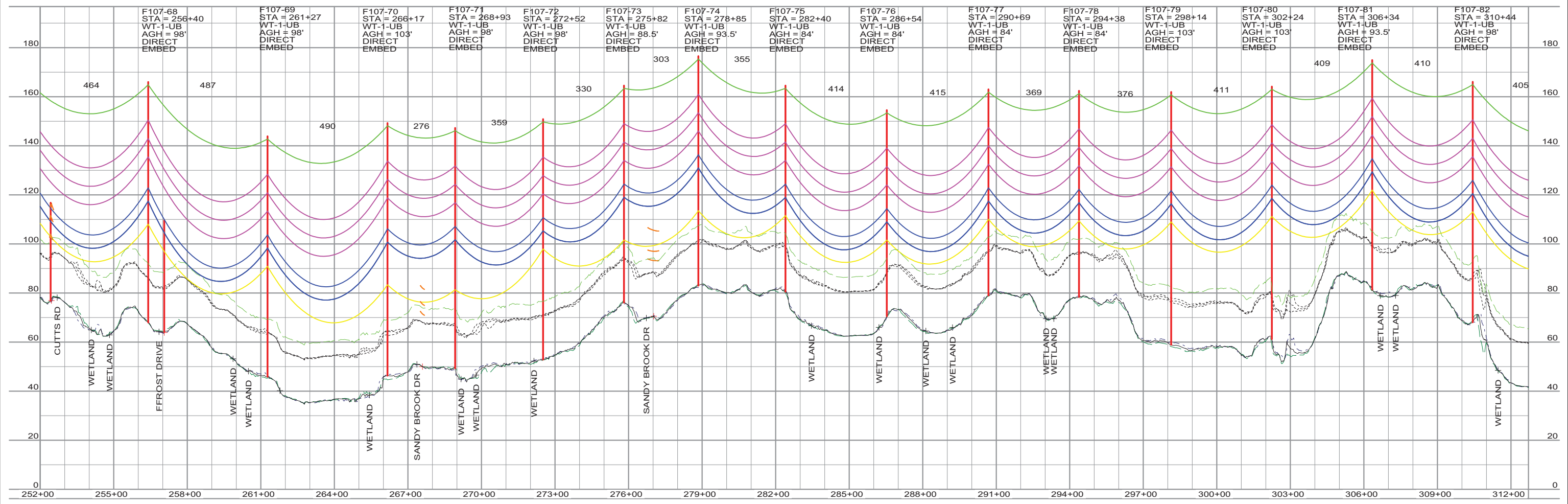
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POWER ENGINEERS

PUBLIC SERVICE OF NEW HAMPSHIRE
 SEACOAST RELIABILITY PROJECT
 F107 LINE & STRUCTURE LOCATIONS

JOB NUMBER 133005
 DRAWING NUMBER F10743005

REV Δ



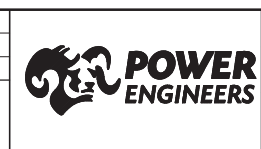
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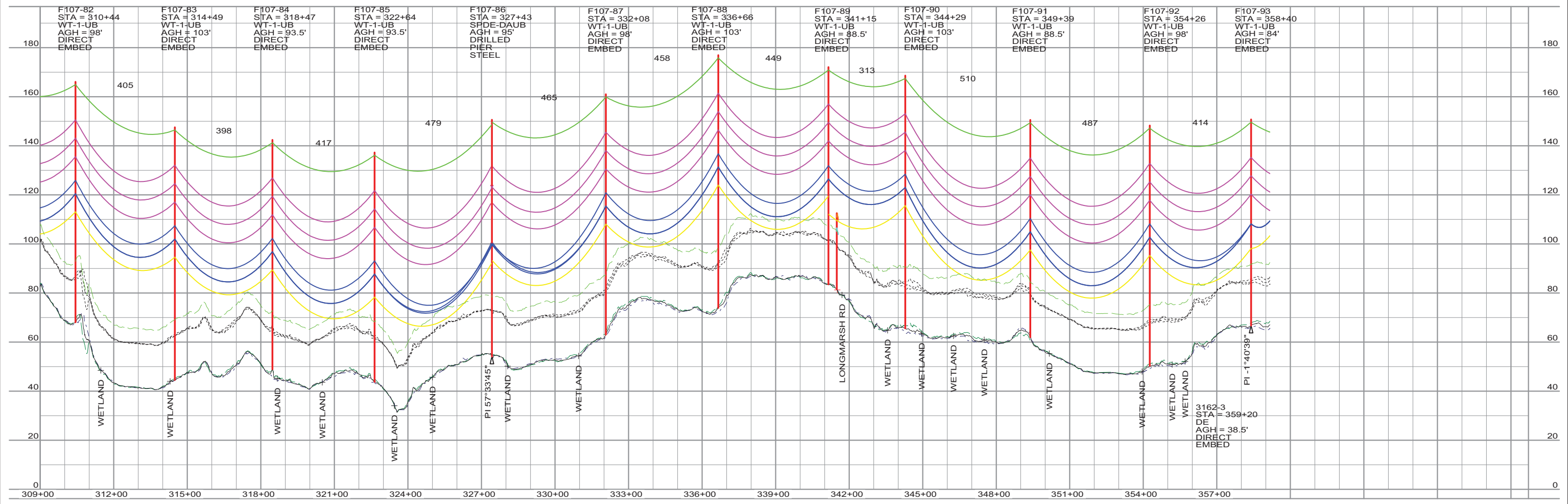
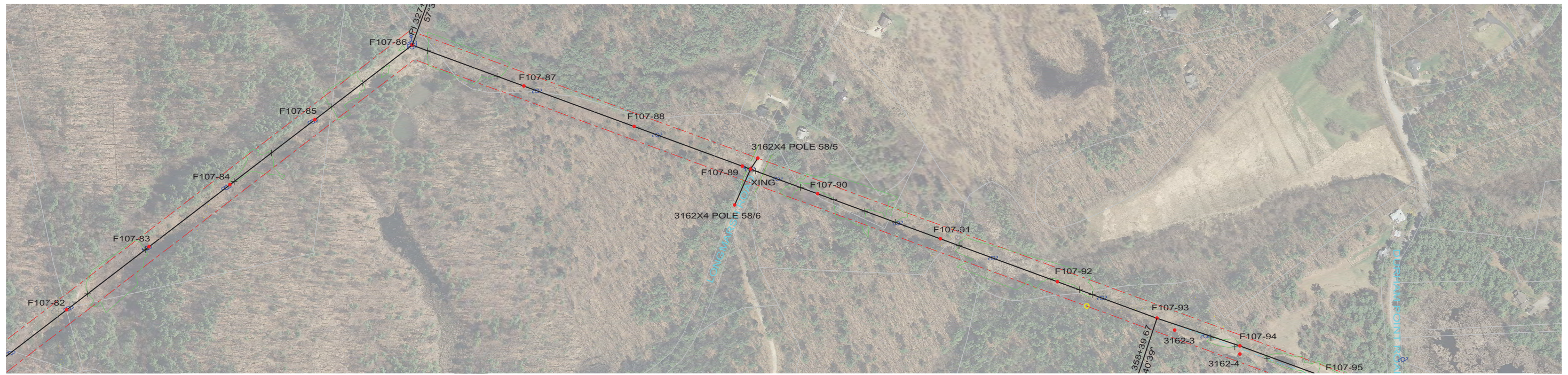
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DSGN	KMS	4/4/2014
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PUBLIC SERVICE OF NEW HAMPSHIRE		JOB NUMBER	REV
SEACOAST RELIABILITY PROJECT		133005	△
F107 LINE & STRUCTURE LOCATIONS		DRAWING NUMBER	
		F10743006	

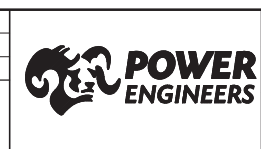


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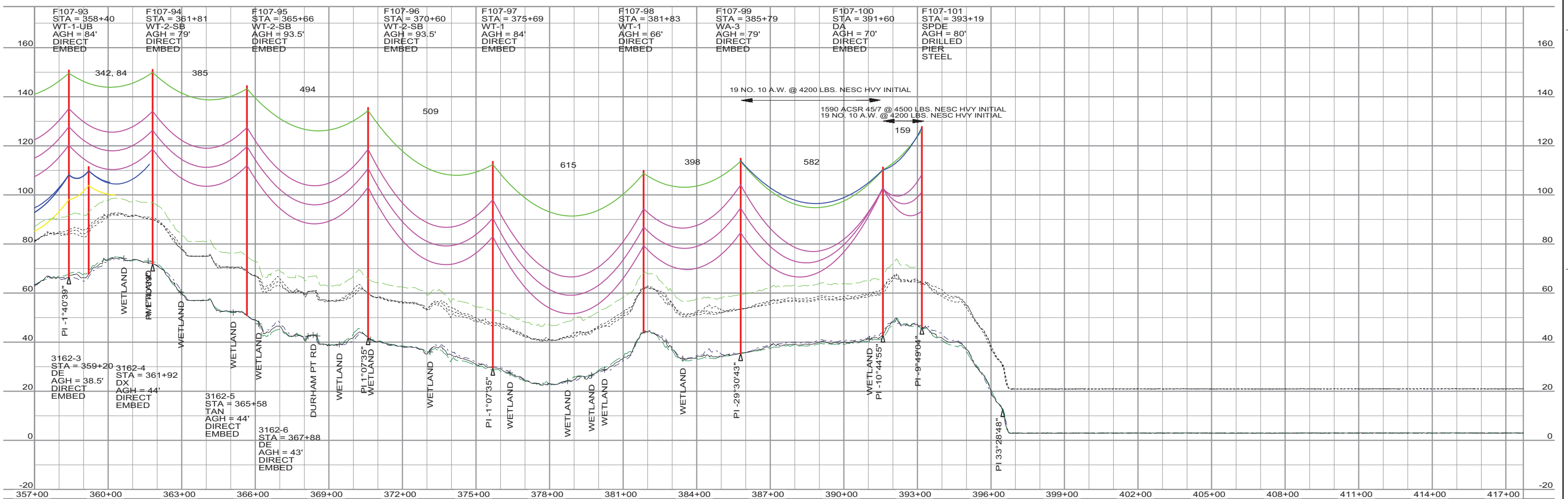
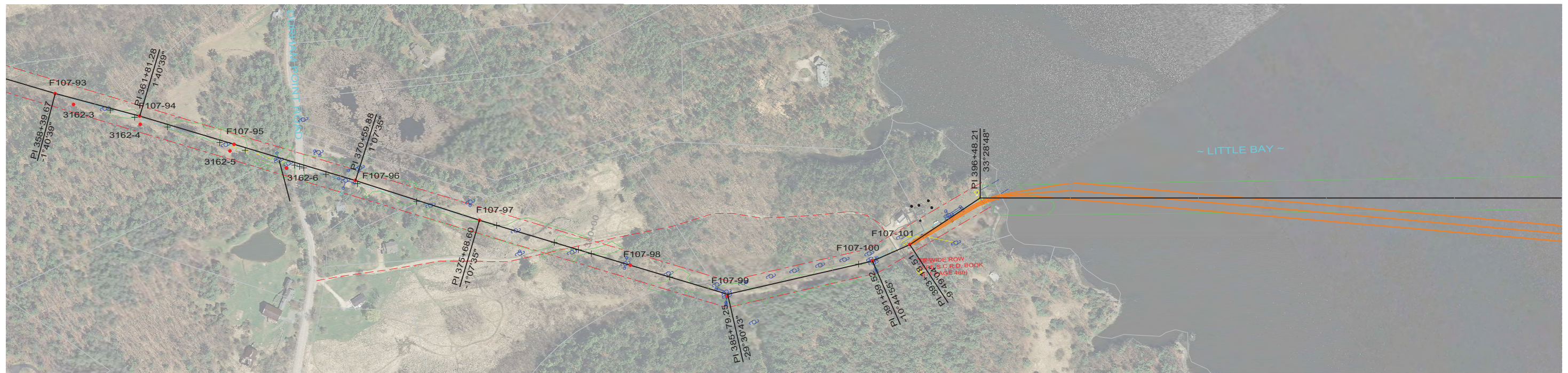
TYPICAL WIRE INFORMATION:
 0KV 24 FIBER OPGW INSTALLED @ 4,500 LBS. NESC HVY. INITIAL (DISPLAYED @ 120 DEG. F)
 115KV 1590 ACSR 45/7 INSTALLED @ 11,400 LBS. NESC HVY. INITIAL (DISPLAYED @ 285 DEG. F)
 34.5KV 477 ACSR 18/1 INSTALLED @ 3,500 LBS. NESC HVY. INITIAL (DISPLAYED @ 212 DEG. F)
 0KV 4/0 ACSR 6/1 INSTALLED @ 2,500 LBS. NESC HVY. INITIAL (DISPLAYED @ 120 DEG. F)
 0KV 19 NO. 10 AW @ 4,200 LBS. NESC HVY. INITIAL (DISPLAYED @ 120 DEG. F)
 HENDRIX MESSENGER & 477 KCMIL SPACER CABLE @ 9,000 LBS. NESC HVY. INITIAL (DISPLAYED @ 120 DEG. F)

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
L	RE-ISSUED FOR PERMITTING	1/21/2016	KMS	KMS	APJ		
K	RE-ISSUED FOR PERMITTING	12/23/2015	KMS	KMS	APJ		
J	RE-ISSUED FOR PERMITTING	11/13/2015	KMS	KMS	APJ		
I	ISSUED FOR REVIEW	8/21/2015	KMS	KMS	APJ		
H	ISSUED FOR REVIEW	7/24/2015	KMS	KMS	APJ		

DSGN KMS 4/4/2014
 DRN KMS 4/4/2014
 CKD APJ 4/4/2014
 SCALE: 1" = 200' HORIZ.
 20' VERT.
 FOR 22X34 DWG ONLY



PUBLIC SERVICE OF NEW HAMPSHIRE		JOB NUMBER	REV
SEACOAST RELIABILITY PROJECT		133005	L
F107 LINE & STRUCTURE LOCATIONS		DRAWING NUMBER	
		F10743007	



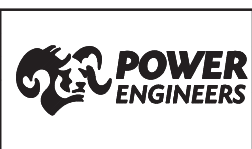
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 HENDRIX MESSENGER & 477 KCMIL SPACER CABLE @ 9,000 LBS. NESC HVY. INITIAL (DISPLAYED @ 120 DEG. F)

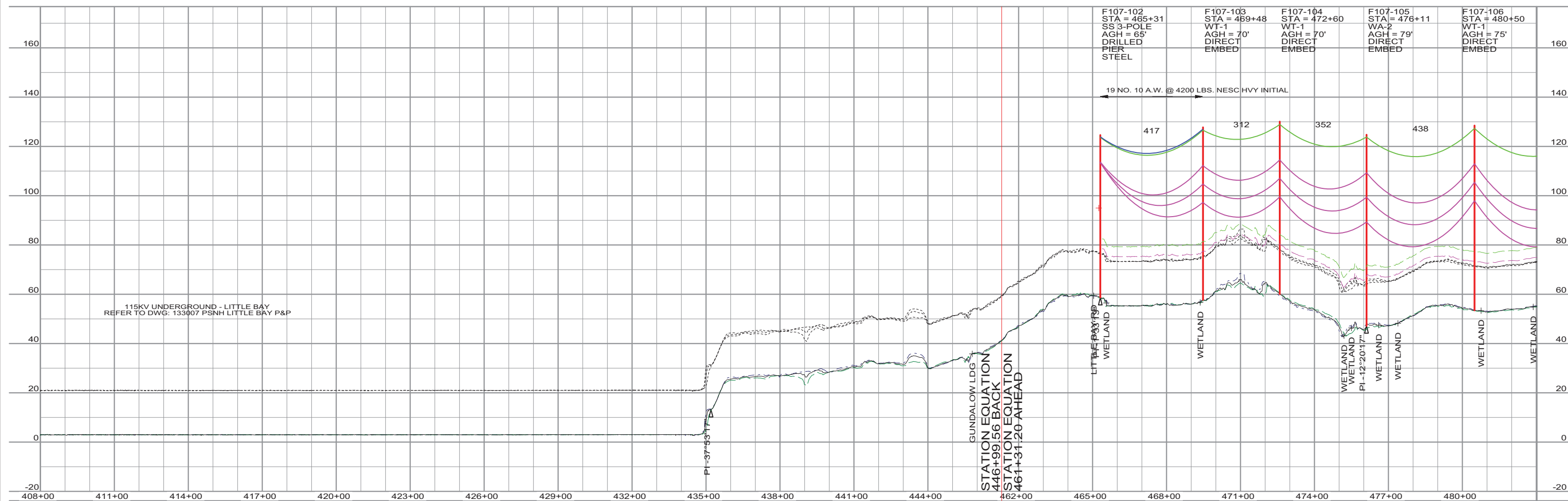
REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
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K	RE-ISSUED FOR PERMITTING	12/23/2015	KMS	KMS	APJ		
J	RE-ISSUED FOR PERMITTING	11/13/2015	KMS	KMS	APJ		
I	ISSUED FOR REVIEW	8/21/2015	KMS	KMS	APJ		
H	ISSUED FOR REVIEW	7/24/2015	KMS	KMS	APJ		

DSGN	KMS	4/4/2014
DRN	KMS	4/4/2014
CKD	APJ	4/4/2014

SCALE: 1" = 200' HORIZ.
20' VERT.
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PUBLIC SERVICE OF NEW HAMPSHIRE		JOB NUMBER	REV
SEACOAST RELIABILITY PROJECT		133005	△
DRAWING NUMBER		F10743008	



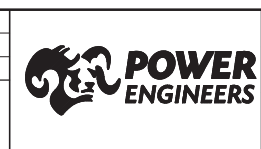
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 HENDRIX MESSENGER & 477 KCMIL SPACER CABLE @ 9,000 LBS. NESC HVY. INITIAL (DISPLAYED @ 120 DEG. F)

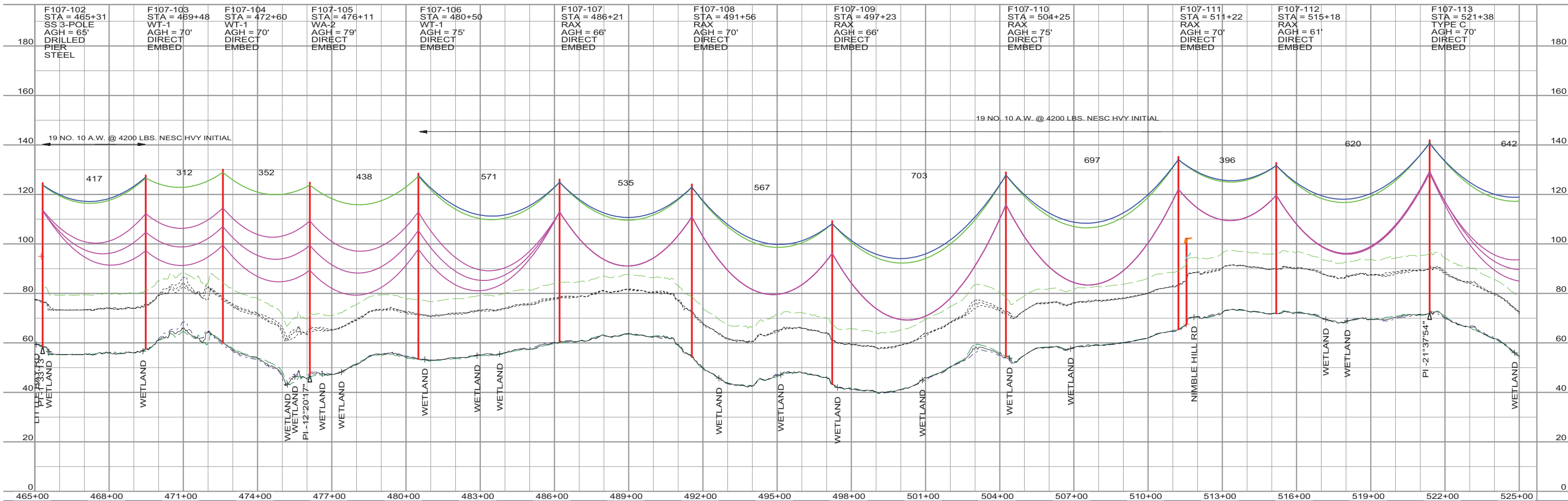
REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
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J	RE-ISSUED FOR PERMITTING	11/13/2015	KMS	KMS	APJ		
I	ISSUED FOR REVIEW	8/21/2015	KMS	KMS	APJ		
H	ISSUED FOR REVIEW	7/24/2015	KMS	KMS	APJ		
G	RE-ISSUED FOR PERMITTING	4/24/2015	KMS	KMS	APJ		

DSGN	KMS	4/4/2014
DRN	KMS	4/4/2014
CKD	APJ	4/4/2014

SCALE: 1" = 200' HORIZ.
20' VERT.
FOR 22X34 DWG ONLY



PUBLIC SERVICE OF NEW HAMPSHIRE		JOB NUMBER	REV
SEACOAST RELIABILITY PROJECT		133005	K
F107 LINE & STRUCTURE LOCATIONS		DRAWING NUMBER	
		F10743009	



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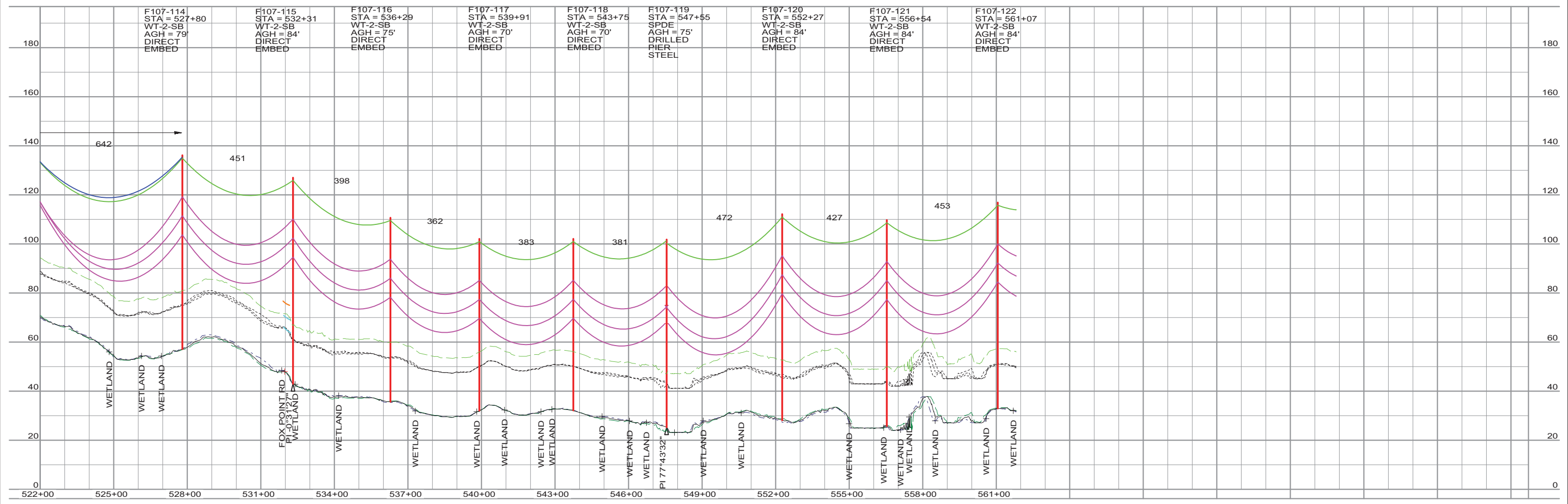
REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
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K	RE-ISSUED FOR PERMITTING	12/23/2015	KMS	KMS	APJ		
J	RE-ISSUED FOR PERMITTING	11/13/2015	KMS	KMS	APJ		
I	ISSUED FOR REVIEW	8/21/2015	KMS	KMS	APJ		
H	ISSUED FOR REVIEW	7/24/2015	KMS	KMS	APJ		

DSGN	KMS	4/4/2014
DRN	KMS	4/4/2014
CKD	APJ	4/4/2014

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20' VERT.
FOR 22X34 DWG ONLY



PUBLIC SERVICE OF NEW HAMPSHIRE		JOB NUMBER	REV
SEACOAST RELIABILITY PROJECT		133005	△
F107 LINE & STRUCTURE LOCATIONS		DRAWING NUMBER	
		F10743010	



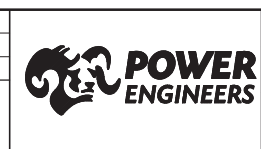
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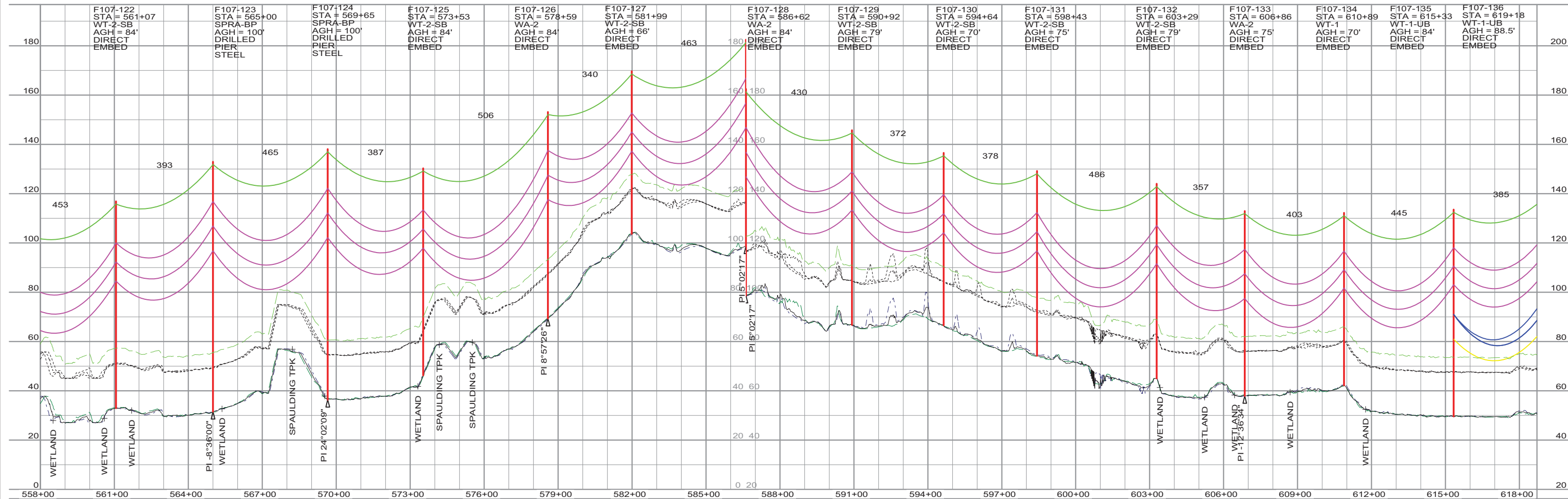
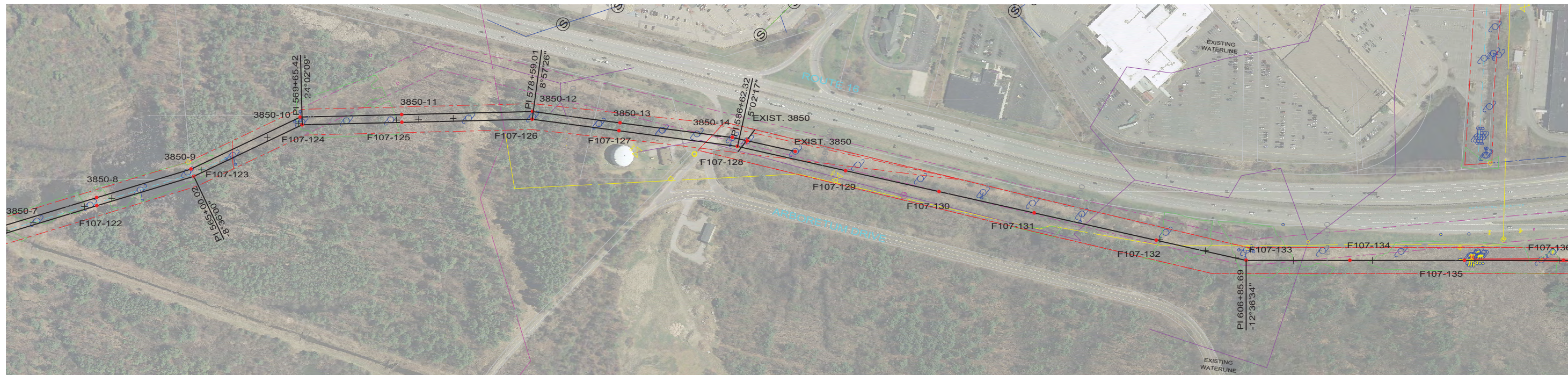
REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
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J	RE-ISSUED FOR PERMITTING	11/13/2015	KMS	KMS	APJ		
I	ISSUED FOR REVIEW	8/21/2015	KMS	KMS	APJ		
H	ISSUED FOR REVIEW	7/24/2015	KMS	KMS	APJ		

DSGN	KMS	4/4/2014
DRN	KMS	4/4/2014
CKD	APJ	4/4/2014

SCALE: 1" = 200' HORIZ.
20' VERT.
FOR 22X34 DWG ONLY



PUBLIC SERVICE OF NEW HAMPSHIRE		JOB NUMBER	REV
SEACOAST RELIABILITY PROJECT		133005	L
F107 LINE & STRUCTURE LOCATIONS		DRAWING NUMBER	
		F10743011	



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 HENDRIX MESSENGER & 477 KCMIL SPACER CABLE @ 9,000 LBS. NESC HVY. INITIAL (DISPLAYED @ 120 DEG. F)

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
L	RE-ISSUED FOR PERMITTING	1/21/2016	KMS	KMS	APJ		
K	RE-ISSUED FOR PERMITTING	12/23/2015	KMS	KMS	APJ		
J	RE-ISSUED FOR PERMITTING	11/13/2015	KMS	KMS	APJ		
I	ISSUED FOR REVIEW	8/21/2015	KMS	KMS	APJ		
H	ISSUED FOR REVIEW	7/24/2015	KMS	KMS	APJ		

DSGN	KMS	4/4/2014
DRN	KMS	4/4/2014
CKD	APJ	4/4/2014

SCALE: 1" = 200' HORIZ.
20' VERT.
FOR 22X34 DWG ONLY

PUBLIC SERVICE OF NEW HAMPSHIRE

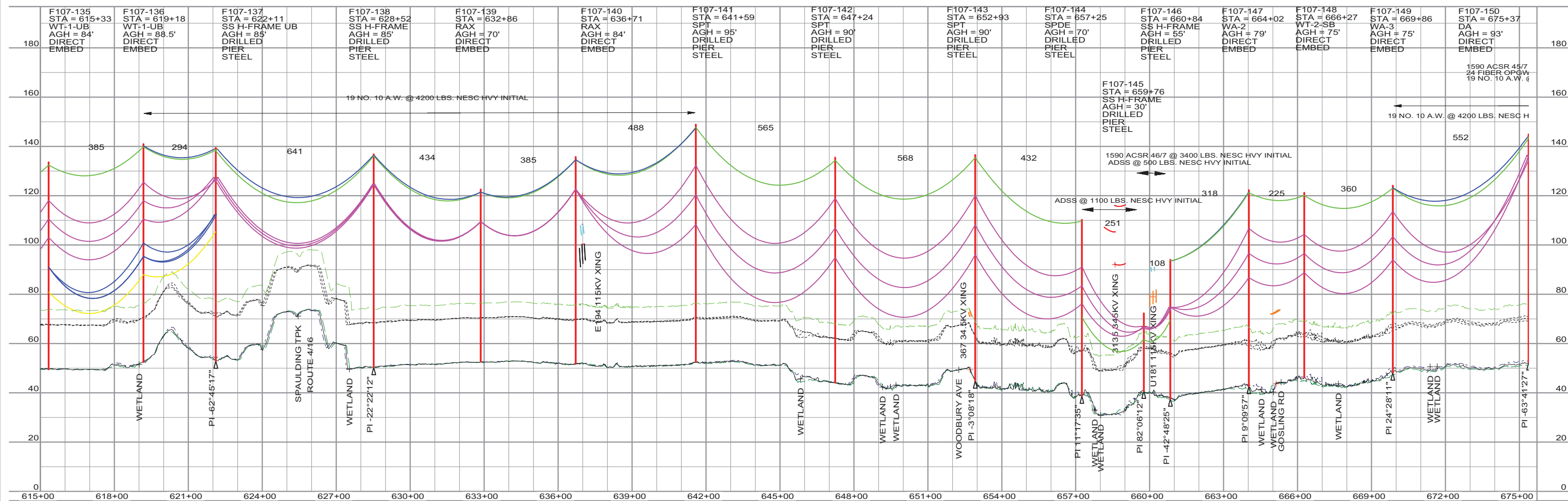
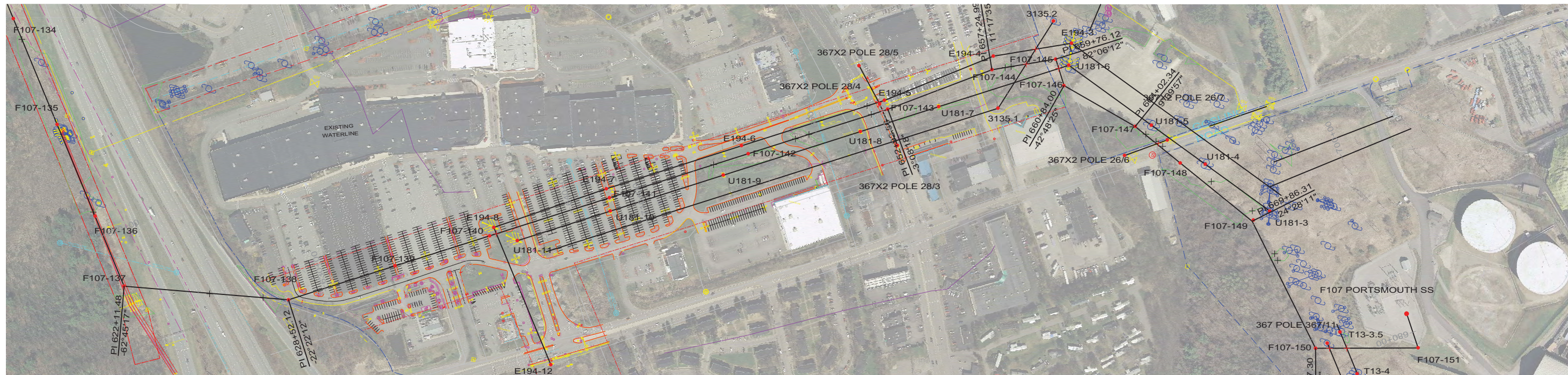
SEACOAST RELIABILITY PROJECT

F107 LINE & STRUCTURE LOCATIONS

JOB NUMBER
133005

DRAWING NUMBER
F10743012

REV
L



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L	RE-ISSUED FOR PERMITTING	1/21/2016	KMS	KMS	APJ		
K	RE-ISSUED FOR PERMITTING	12/23/2015	KMS	KMS	APJ		
J	RE-ISSUED FOR PERMITTING	11/13/2015	KMS	KMS	APJ		
I	ISSUED FOR REVIEW	8/21/2015	KMS	KMS	APJ		
H	ISSUED FOR REVIEW	7/24/2015	KMS	KMS	APJ		
REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS

DSGN	KMS	4/4/2014
DRN	KMS	4/4/2014
CKD	APJ	4/4/2014
SCALE: 1" = 200' HORIZ. 20' VERT.		
FOR 22X34 DWG ONLY		

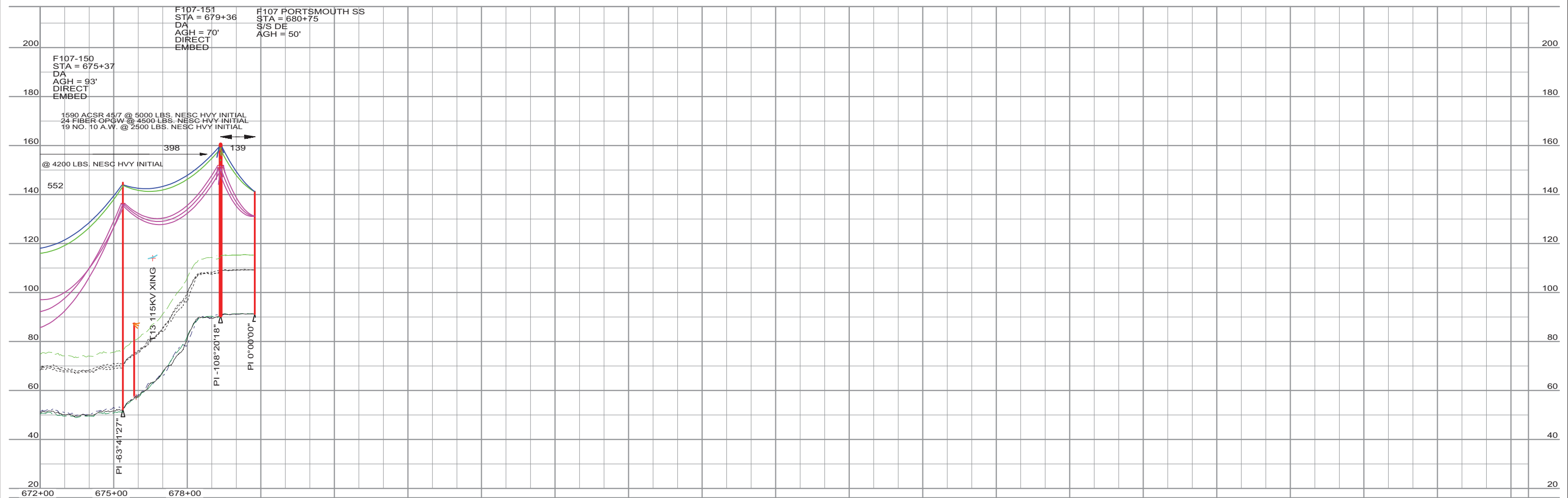
POWER ENGINEERS

PUBLIC SERVICE OF NEW HAMPSHIRE
 SEACOAST RELIABILITY PROJECT
 F107 LINE & STRUCTURE LOCATIONS

JOB NUMBER
 133005

DRAWING NUMBER
 F10743013

REV
 L



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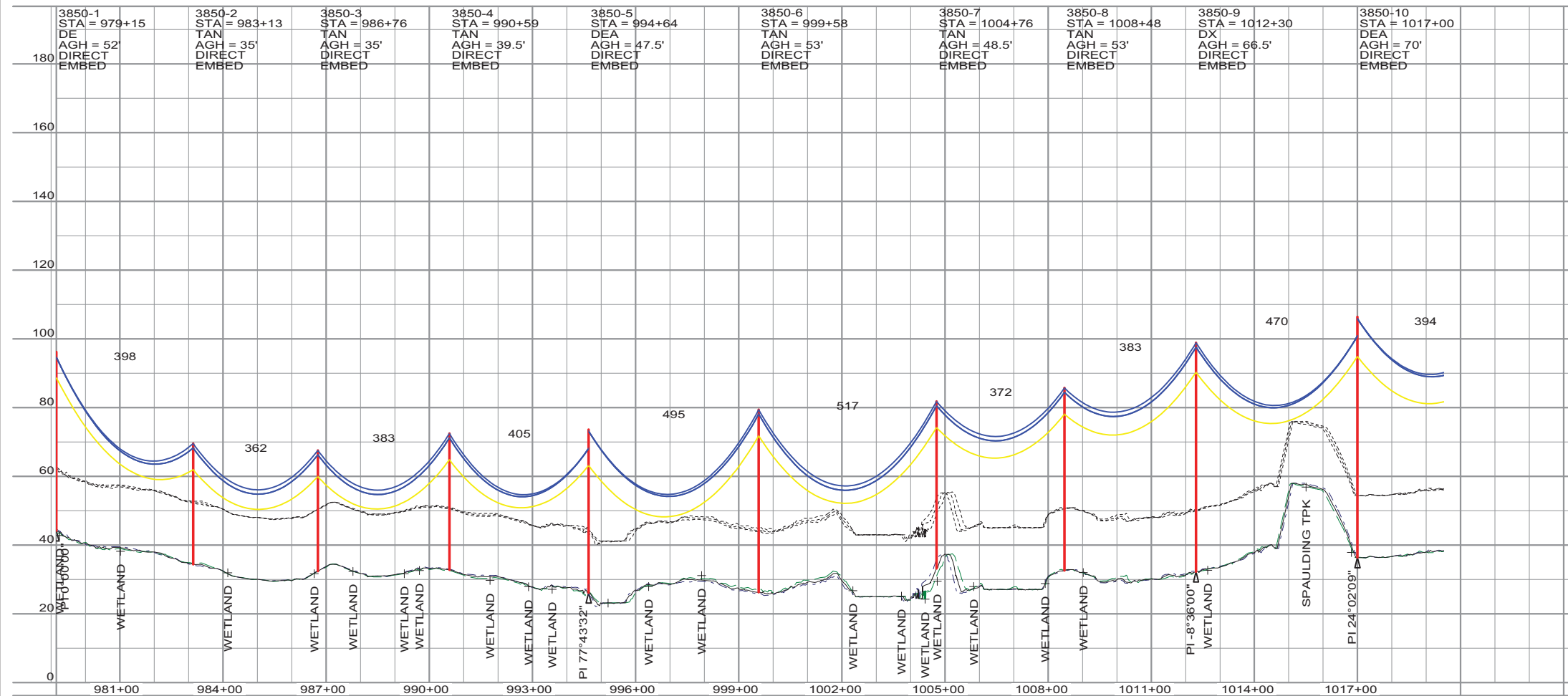
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J	RE-ISSUED FOR PERMITTING	11/13/2015	KMS	KMS	APJ		
I	ISSUED FOR REVIEW	8/21/2015	KMS	KMS	APJ		
H	ISSUED FOR REVIEW	7/24/2015	KMS	KMS	APJ		

DSGN	KMS	4/4/2014
DRN	KMS	4/4/2014
CKD	APJ	4/4/2014

SCALE: 1" = 200' HORIZ.
20' VERT.
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PUBLIC SERVICE OF NEW HAMPSHIRE		JOB NUMBER	REV
SEACOAST RELIABILITY PROJECT		133005	L
F107 LINE & STRUCTURE LOCATIONS		DRAWING NUMBER	
		F10743014	



NOTES:

- 1) PROPERTY BOUNDARIES SHOWN ARE APPROXIMATE AND FOR REPRESENTATION ONLY. RIGHT OF WAY LOCATION HAS BEEN SURVEYED AND PROVIDED BY DOUCET SURVEY, INC.
- 2) DISTRIBUTION UPGRADES TO STRUCTURES AND EQUIPMENT ARE NOT DETAILED IN THIS DRAWING SET. DETAILED ANALYSIS AND INSTALLATION OF EQUIPMENT, OR MODIFICATIONS TO EXISTING STRUCTURES, WILL BE PERFORMED BY OTHERS.

LEGEND

UNDERGROUND UTILITIES:

- DURHAM WATER LINE
- SEWER LINE
- UNH WATER LINE
- FIBER OPTIC
- WATER LINE
- G— GAS LINE
- GAS LINE

CONDUCTOR/SHIELD WIRES:

- 34.5KV 477 ACSR 18/1 "PELICAN"
- 0KV 4/0 AWG ACSR 6/1 "PENGUIN"

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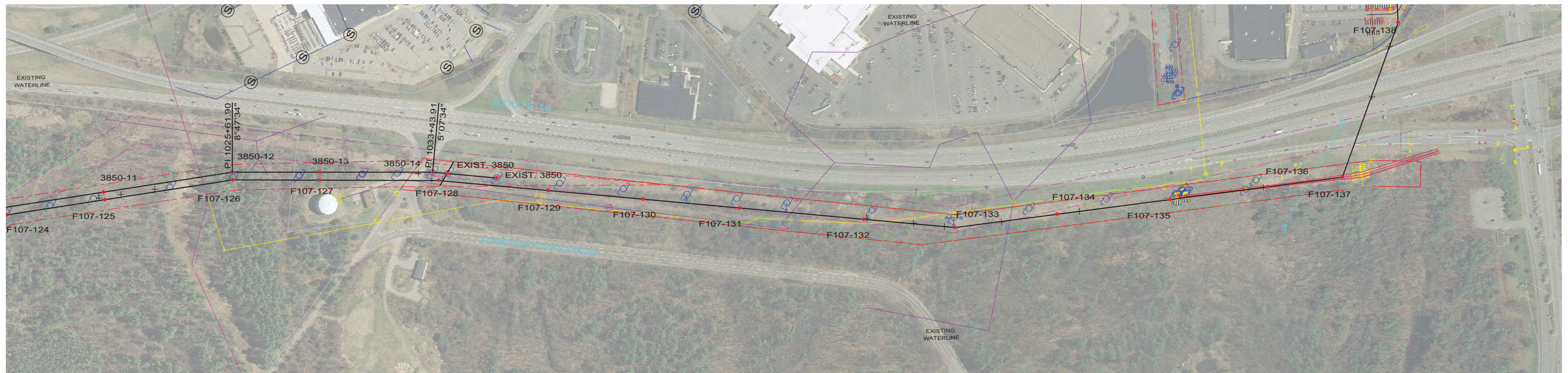
REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
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A	ISSUED FOR REVIEW	8/21/2015	KMS	KMS	APJ		

DSGN	KMS	4/4/2014
DRN	KMS	4/4/2014
CKD	APJ	4/4/2014

SCALE: 1" = 200' HORIZ.
20' VERT.

FOR 22X34 DWG ONLY

PUBLIC SERVICE OF NEW HAMPSHIRE		JOB NUMBER	REV
SEACOAST RELIABILITY PROJECT		133005	B
3850 LINE & STRUCTURE LOCATIONS		DRAWING NUMBER	385044001



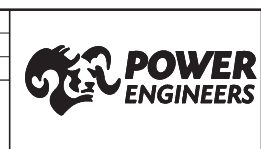
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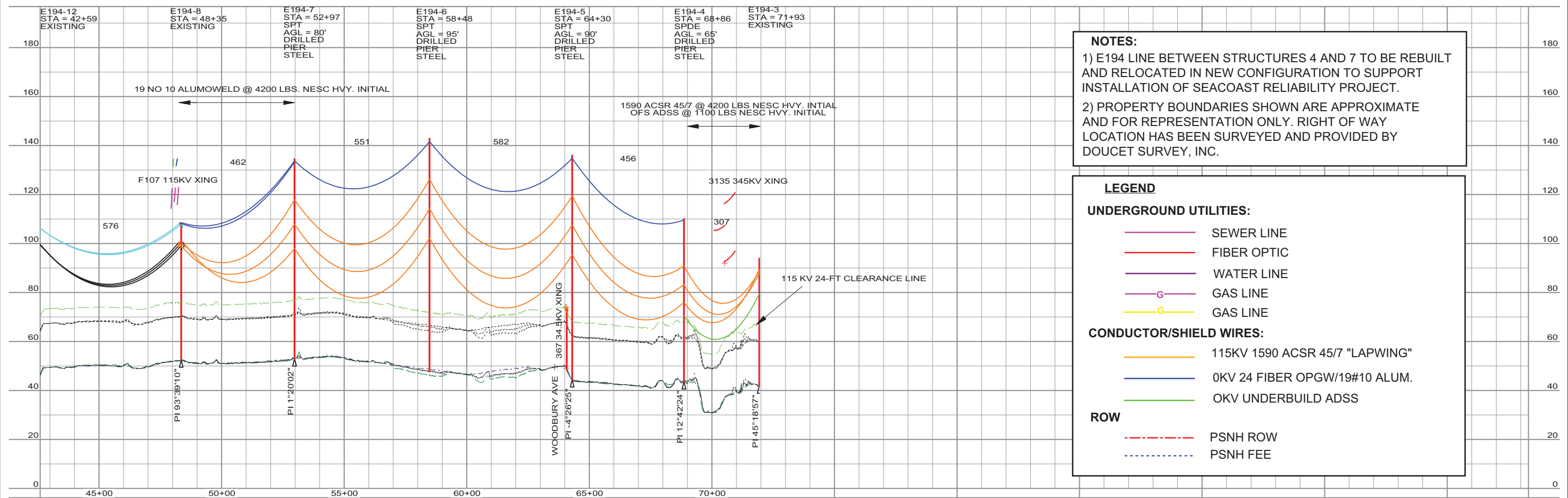
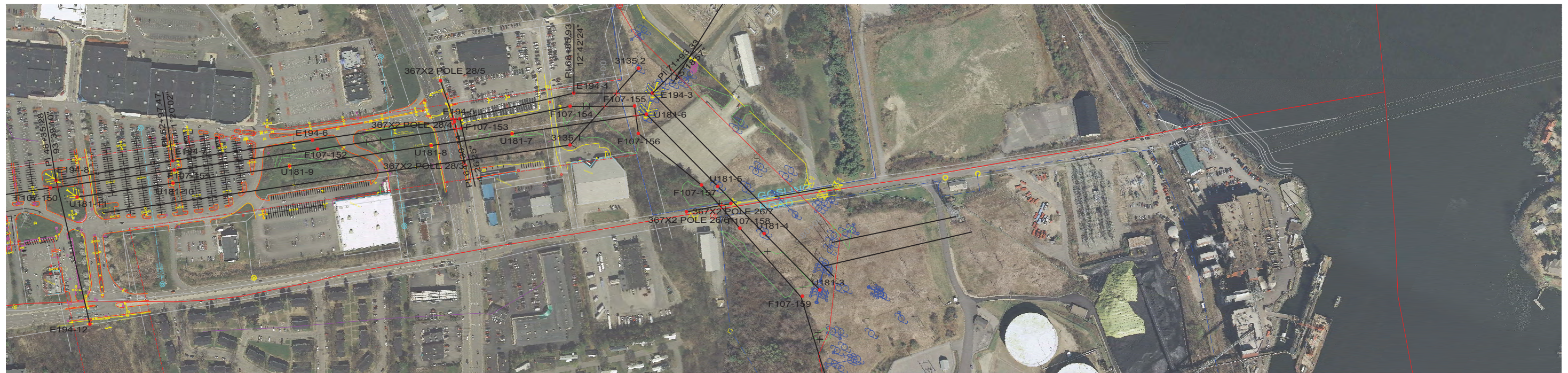
REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
C	RE-ISSUED FOR PERMITTING	1/21/2016	KMS	KMS	APJ		
B	ISSUED FOR PERMITTING	11/16/2015	KMS	KMS	APJ		
A	ISSUED FOR REVIEW	8/21/2015	KMS	KMS	APJ		

DSGN	KMS	4/4/2014
DRN	KMS	4/4/2014
CKD	APJ	4/4/2014

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PUBLIC SERVICE OF NEW HAMPSHIRE		JOB NUMBER	REV
SEACOAST RELIABILITY PROJECT		133005	△
3850 LINE & STRUCTURE LOCATIONS		DRAWING NUMBER	
		385044002	



NOTES:
 1) E194 LINE BETWEEN STRUCTURES 4 AND 7 TO BE REBUILT AND RELOCATED IN NEW CONFIGURATION TO SUPPORT INSTALLATION OF SEACOAST RELIABILITY PROJECT.
 2) PROPERTY BOUNDARIES SHOWN ARE APPROXIMATE AND FOR REPRESENTATION ONLY. RIGHT OF WAY LOCATION HAS BEEN SURVEYED AND PROVIDED BY DOUCET SURVEY, INC.

LEGEND

UNDERGROUND UTILITIES:

- SEWER LINE
- FIBER OPTIC
- WATER LINE
- GAS LINE
- GAS LINE

CONDUCTOR/SHIELD WIRES:

- 115KV 1590 ACSR 45/7 "LAPWING"
- 0KV 24 FIBER OPGW/19#10 ALUM.
- OKV UNDERBUILD ADSS

ROW

- PSNH ROW
- PSNH FEE

THIS DRAWING WAS PREPARED BY POWER ENGINEERS, INC. FOR A SPECIFIC PROJECT, TAKING INTO CONSIDERATION THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING OR ANY INFORMATION CONTAINED IN THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH POWER AND POWERS CLIENT IS GRANTED.

TYPICAL WIRE INFORMATION:
 0KV 24 FIBER OPGW INSTALLED @ 4,500 LBS. NESC HVY. INITIAL (DISPLAYED @ 120 DEG. F)
 115KV 1590 ACSR 45/7 INSTALLED @ 11,400 LBS. NESC HVY. INITIAL (DISPLAYED @ 285 DEG. F)

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
C	ISSUED FOR PERMITTING	4/10/2015	KMS	KMS	APJ		
B	ISSUED FOR REVIEW	3/19/2015	KMS	KMS	APJ		
A	E194 STRUCTURE LOCATIONS	2/27/2015	KMS	KMS	APJ		

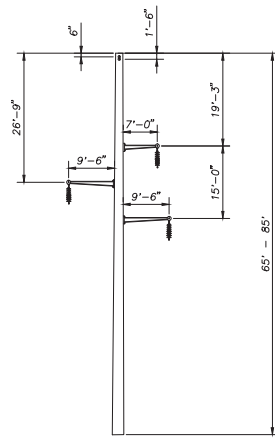
DSGN	KMS	4/4/2014
DRN	KMS	4/4/2014
CKD	APJ	4/4/2014

SCALE: 1" = 200' HORIZ.
 20' VERT.
 FOR 22X34 DWG ONLY

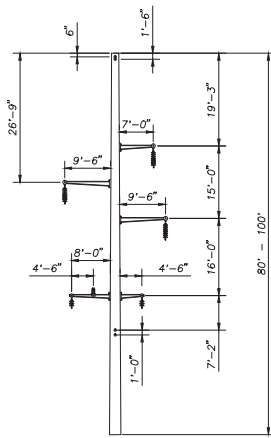
POWER ENGINEERS

PUBLIC SERVICE OF NEW HAMPSHIRE
 SEACOAST RELIABILITY PROJECT
 E194 LINE & STRUCTURE LOCATIONS

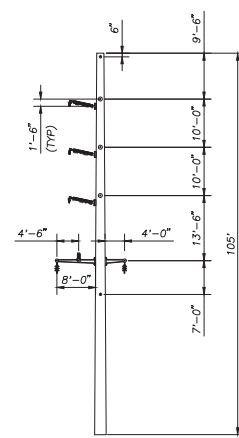
JOB NUMBER 133005
 DRAWING NUMBER 1 OF 1



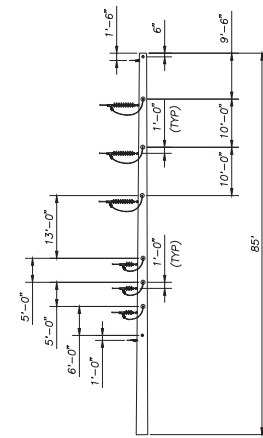
TYPE SPDE
 SELF SUPPORTING STEEL
 DEADEND
 115 KV
 DRILLED PIER FOUNDATION



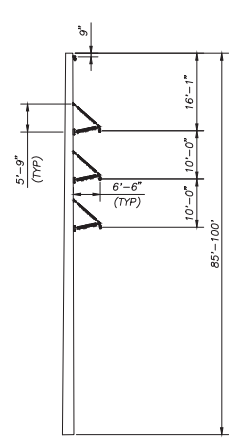
TYPE SPDE-DAUB
 SELF SUPPORTING STEEL
 DEADEND
 115 KV WITH 34.5 KV UNDERBUILD
 DRILLED PIER FOUNDATION



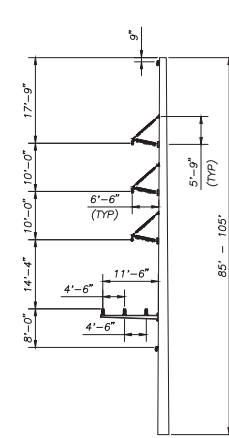
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 SELF SUPPORTING STEEL
 DEADEND
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 DRILLED PIER FOUNDATION



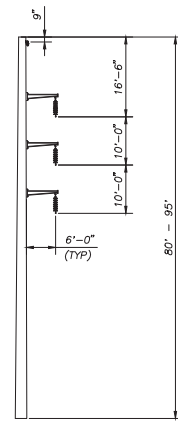
TYPE SPDE-VUB
 SELF SUPPORTING STEEL
 DEADEND
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 DRILLED PIER FOUNDATION



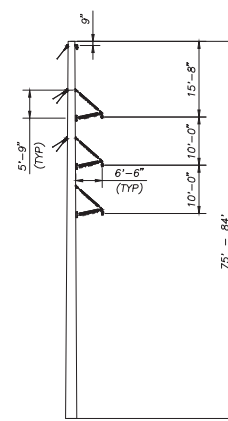
TYPE SPRA-BP
 SELF SUPPORTING STEEL
 2' - 12' ANGLE
 115 KV
 DRILLED PIER FOUNDATION



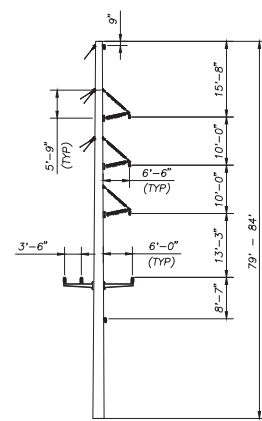
TYPE SPT-BP-UB
 SELF SUPPORTING STEEL
 0' - 10' BRACED POST TANGENT/ANGLE
 115 KV WITH 34.5 KV UNDERBUILD
 DRILLED PIER FOUNDATION



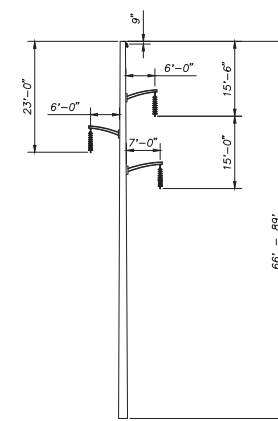
TYPE SPT
 SELF SUPPORTING STEEL
 TANGENT
 115 KV
 DRILLED PIER FOUNDATION



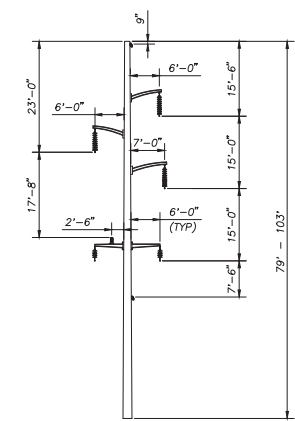
TYPE WA-2
 LAMINATED WOOD OR
 STEEL GUYED SINGLE POLE
 2' - 12' ANGLE
 115 KV
 DIRECT EMBED FOUNDATION



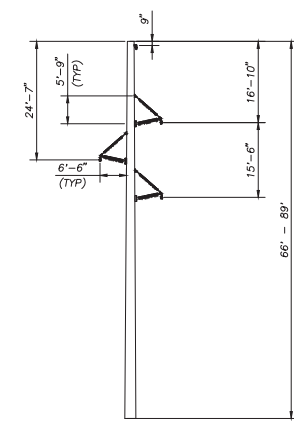
TYPE WA-2-UB
 LAMINATED WOOD OR
 STEEL GUYED SINGLE POLE
 2' - 12' ANGLE
 115 KV WITH 34.5 KV UNDERBUILD
 DIRECT EMBED FOUNDATION



TYPE WT-1
 LAMINATED WOOD OR STEEL SINGLE POLE
 TANGENT
 115 KV
 DIRECT EMBED FOUNDATION



TYPE WT-1-UB
 LAMINATED WOOD OR STEEL SINGLE POLE
 TANGENT
 115 KV WITH 34.5 KV UNDERBUILD
 DIRECT EMBED FOUNDATION



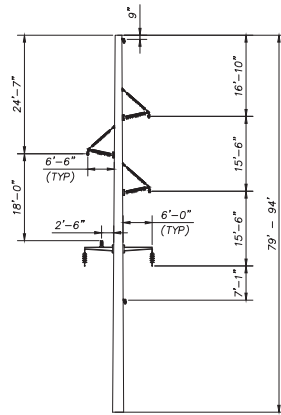
TYPE WT-2-SB
 LAMINATED WOOD OR STEEL SINGLE POLE
 BRACED POST TANGENT
 115 KV
 DIRECT EMBED FOUNDATION

NOTE:
 STRUCTURE GEOMETRIES SUBJECT TO
 CHANGE WITH DETAILED ENGINEERING.

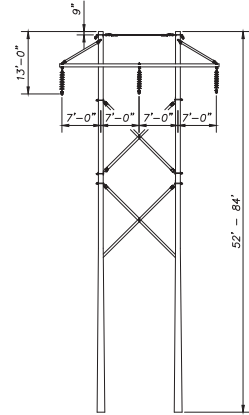
PRELIMINARY

REV	DESCRIPTION	ENG/PE#	DATE	DRN	CHKD	APPR
D	ISSUED FOR REVIEW		7/31/15	SCF	KMS	
C	RE-ISSUED FOR PERMITTING		4/10/15	SCF	KMS	
B	ISSUED FOR PERMITTING		3/13/15	SCF	KMS	
A	ISSUED FOR REVIEW		9/9/14	SCF	KMS	
DWG REV	EPN/DESCRIPTION	CONT/PE#	DATE	DRN	CHKD	APPR

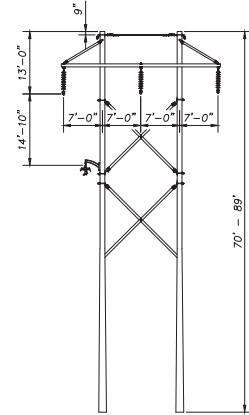
<p>Public Service of New Hampshire A Northeast Utilities Company</p>	T	D
	DRAWN	SCF
	ENGINEER	KMS
	CHECKED	APJ
TYPE 115 KV STANDARD SECTION F107 STRUCTURE INDEX		APPROVED
SCALE: NTS FILE: F10705SK03.DWG IMAGE:		DATE 9/2/14
DRAWING NO. F10705SK03		



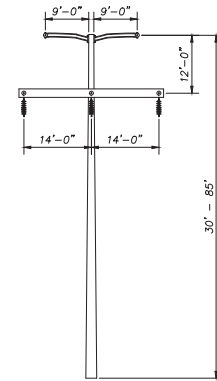
TYPE WT-2-UB-SB
 LAMINATED WOOD OR STEEL SINGLE POLE
 BRACED POST TANGENT
 115 KV WITH 34.5 KV UNDERBUILD
 DIRECT EMBED FOUNDATION



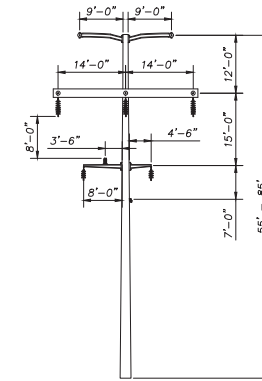
TYPE RAX
 ROUNDWOOD H-FRAME
 TANGENT
 115 KV
 DIRECT EMBED FOUNDATION



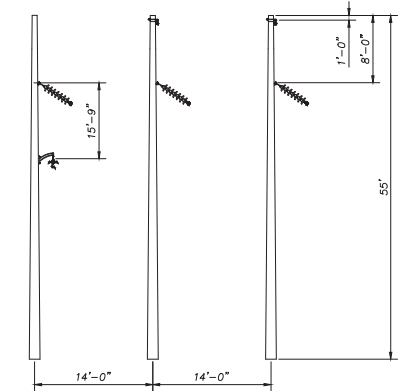
TYPE RAX-UB
 LAMINATED WOOD H-FRAME
 TANGENT
 115 KV W/ 34.5 KV UB
 DIRECT EMBED FOUNDATION



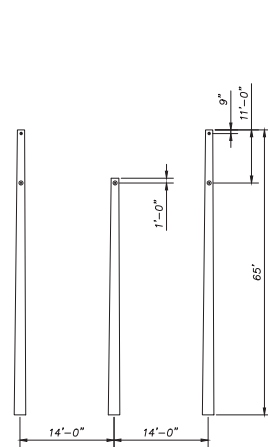
TYPE SS-H-FRAME
 SELF SUPPORTING STEEL
 DEADEND
 115 KV
 DRILLED PIER FOUNDATION
 NOTE: 16' CONDUCTOR
 DAVIT ARMS & 11' SW
 DAVIT ARMS FOR LINE
 ANGLES > 50°



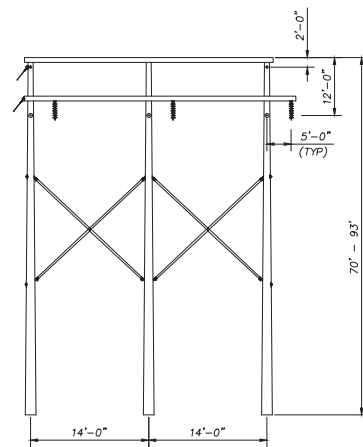
TYPE SS-H-FRAME-UB
 SELF SUPPORTING STEEL
 DEADEND
 115 KV WITH 34.5 KV UNDERBUILD
 DRILLED PIER FOUNDATION
 NOTE: 16' CONDUCTOR
 DAVIT ARMS & 11' SW
 DAVIT ARMS FOR LINE
 ANGLES > 50°



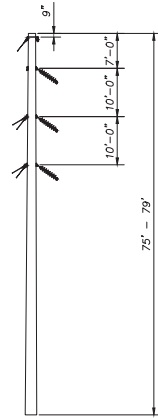
TYPE C-UB
 STEEL H-FRAME
 12° - 50° ANGLE
 115 KV W/ 34.5 KV UB
 DRILLED PIER FOUNDATION



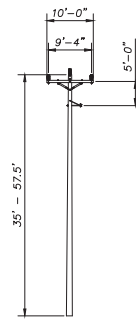
TYPE SS 3-POLE
 SELF SUPPORTING STEEL
 DEADEND
 115 KV
 DRILLED PIER FOUNDATION



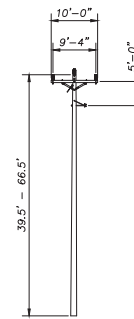
TYPE DA
 ROUNDWOOD 3 POLE
 DEADEND
 115 KV
 DIRECT EMBED FOUNDATION



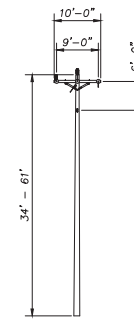
TYPE WA-3
 LAMINATED WOOD OR STEEL GUYED
 SINGLE POLE
 20° - 30° ANGLE
 115 KV
 DIRECT EMBED FOUNDATION



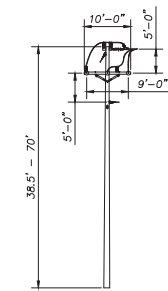
TYPE TAN
 ROUNDWOOD SINGLE POLE
 TANGENT
 34.5 KV
 DIRECT EMBED FOUNDATION



TYPE DX
 ROUNDWOOD SINGLE POLE
 0° - 12° ANGLE
 34.5 KV
 DIRECT EMBED FOUNDATION



TYPE DE
 ROUNDWOOD SINGLE POLE
 0° - 15° DEADEND ANGLE
 34.5 KV
 DIRECT EMBED FOUNDATION




TYPE DEA
 ROUNDWOOD SINGLE POLE
 15° - 90° DEADEND ANGLE
 34.5 KV
 DIRECT EMBED FOUNDATION

NOTE:
 STRUCTURE GEOMETRIES SUBJECT TO
 CHANGE WITH DETAILED ENGINEERING.

PRELIMINARY

CONTRACT SERVICES	REV	DESCRIPTION	ENG/PE#	DATE	DRN	CHKD	APPR	
D		ISSUED FOR REVIEW		7/31/15	SCF	KMS		
C		RE-ISSUED FOR PERMITTING		4/24/15	SCF	KMS		
B		RE-ISSUED FOR PERMITTING		4/10/15	SCF	KMS		
A		ISSUED FOR PERMITTING		3/13/15	SCF	KMS		
DWG REV		EPN/DESCRIPTION		CONT/PE#	DATE	DRN	CHKD	APPR



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A Northeast Utilities Company

T	D
DRAWN	SCF
ENGINEER	KMS
CHECKED	APJ
APPROVED	
DATE	9/2/14

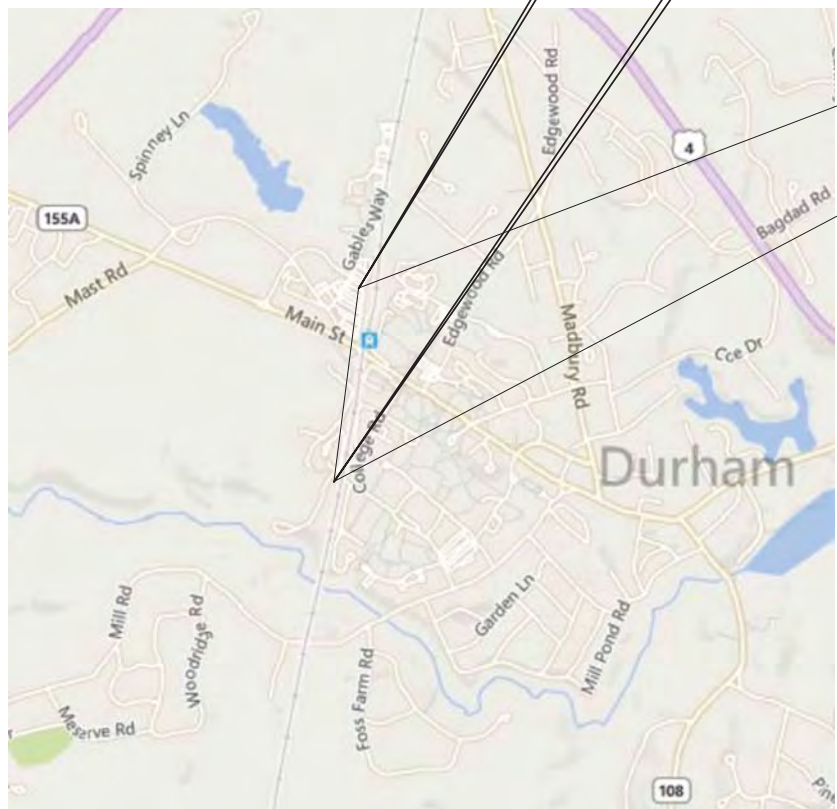
TYPE 34.5 KV & 115 KV STANDARD
SECTION F107 STRUCTURE INDEX

SCALE: NTS

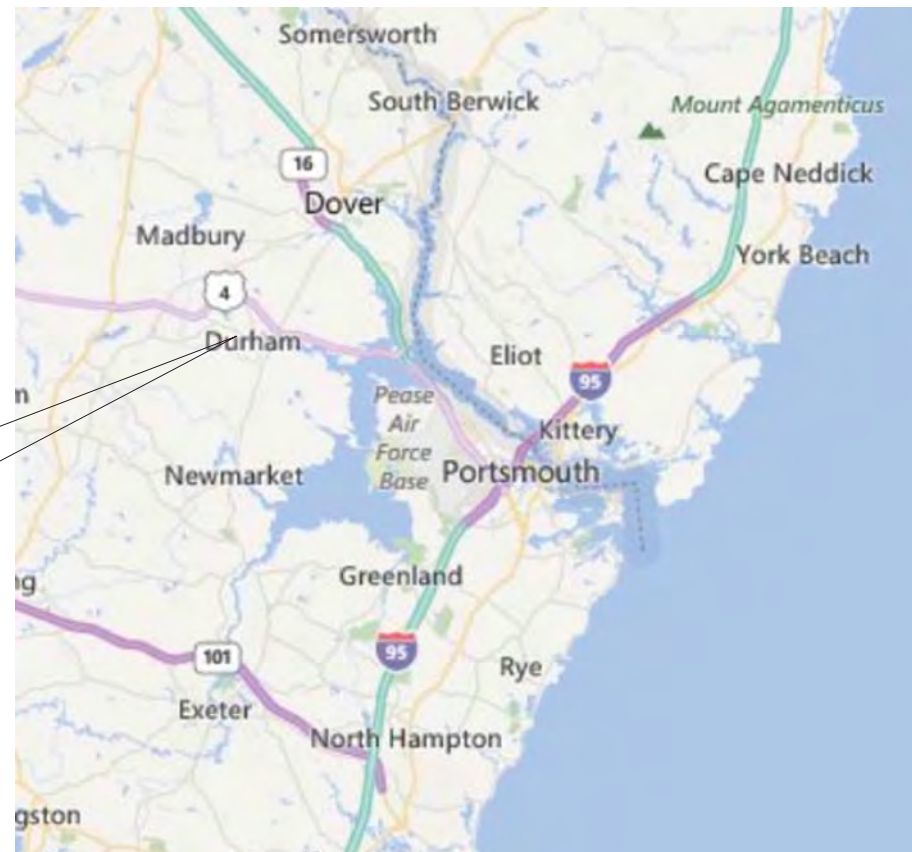
FILE: F10705SK03.DWG

DRAWING NO: F10705SK03A

PUBLIC SERVICE OF NEW HAMPSHIRE
 F-107
 UNH, DURHAM
 115 kV UNDERGROUND TRANSMISSION LINE



VICINITY MAP
 NOT TO SCALE



AREA MAP
 NOT TO SCALE

PROPOSED RISER 23

PROPOSED RISER 24

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 Call before you dig.

THREE BUSINESS DAYS BEFORE YOU DIG CALL
 NEW HAMPSHIRE DIG SAFE SYSTEM, INC.
 TOLL FREE
 1-888-344-7233

NOTES:

- EXISTING DEPTH OF UTILITY CROSSINGS ASSUMED.
- THE UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG #811 OR #1-888-344-7233
- ALL VERTICAL CURVES TO BE 400' UNLESS OTHERWISE NOTED.

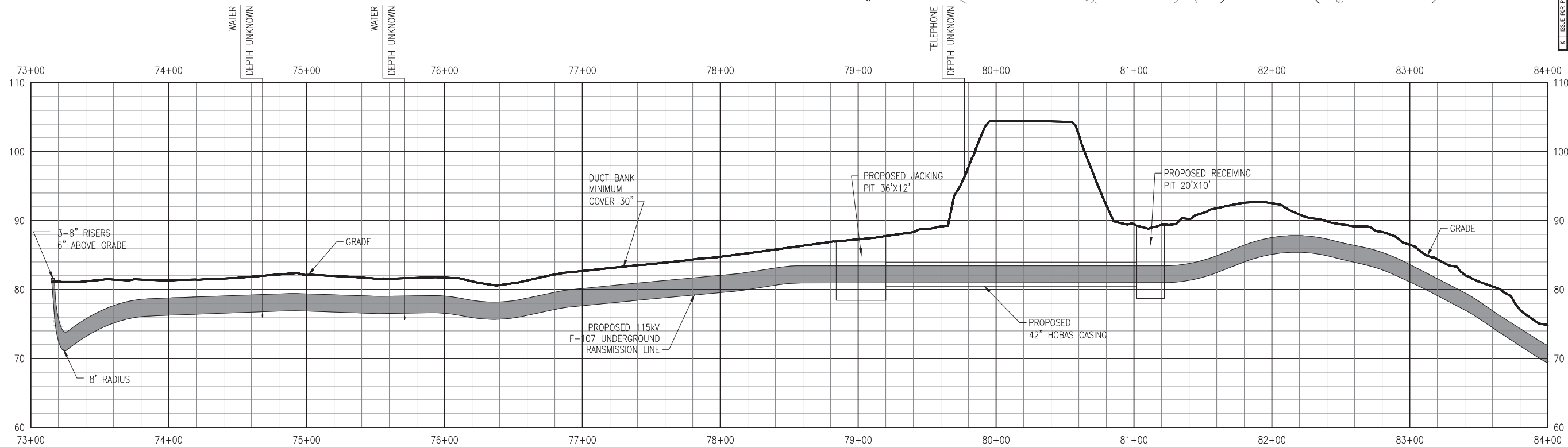
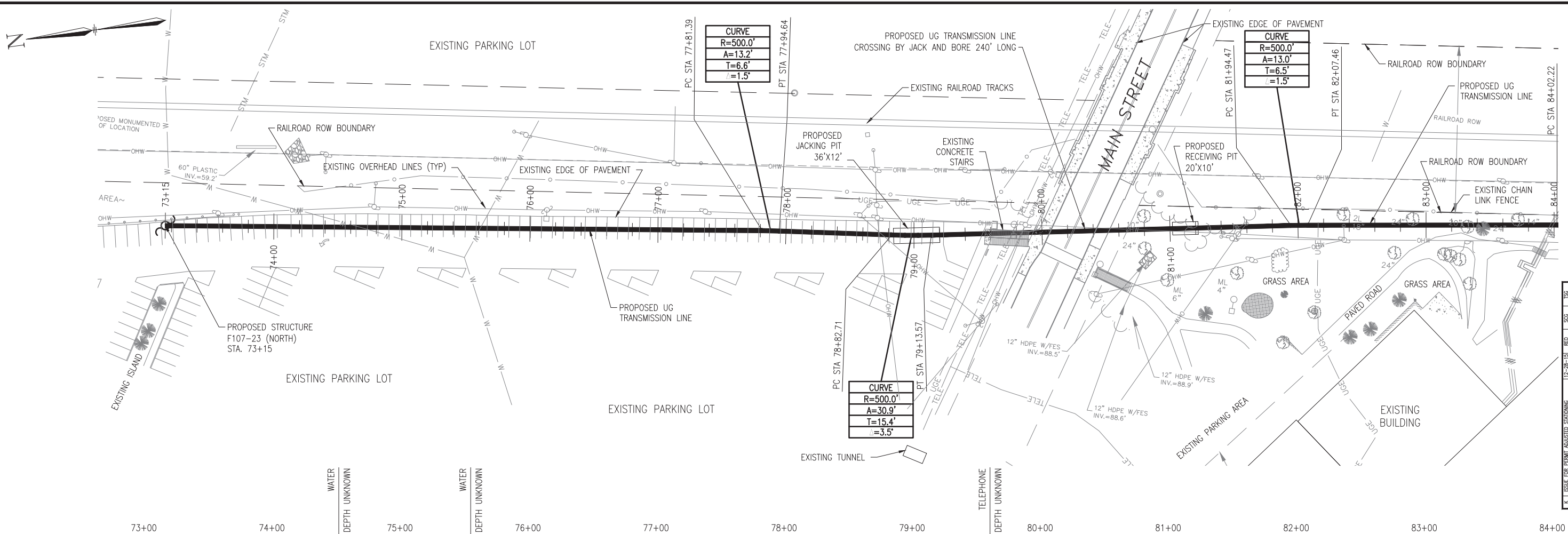
NO.	REVISION	DATE	BY	CHKD	APPRV.
K	ISSUE FOR PERMIT ADJUSTED STATIONING	12-28-15	REO	SCG	TSO
J	ISSUE FOR PERMIT	12-1-15	REO	SCG	TSO
I	REVISED PER PSMT SURVEY PLAN	10-7-15	REO	SCG	TSO
H	REVISED EXTENDED LAYOUT PER UNH	9-25-15	REO	SCG	TSO
G	EXTENDED ALIGNMENT	9-9-15	REO	SCG	TSO
F	REVISED UG. REVERT RISER LOCATION	9-4-15	REO	SCG	TSO
E	REVISED UG. REVERT RISER LOCATION	8-31-15	REO	SCG	TSO
D	REVISED UG. REVERT RISER LOCATION	8-31-15	REO	SCG	TSO
C	REVISED UG. REVERT RISER LOCATION	7/31/15	REO	SCG	TSO
B	PROFILE ADDED	7/31/15	REO	SCG	TSO
A	ISSUED FOR REVIEW	7/13/15	BWF	TSO	TSO

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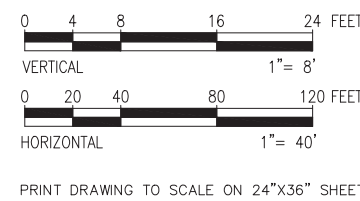
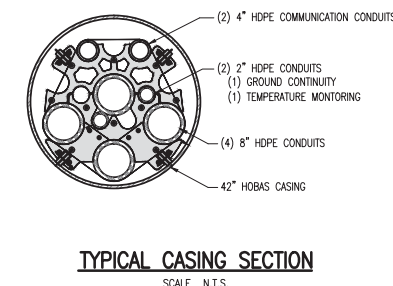
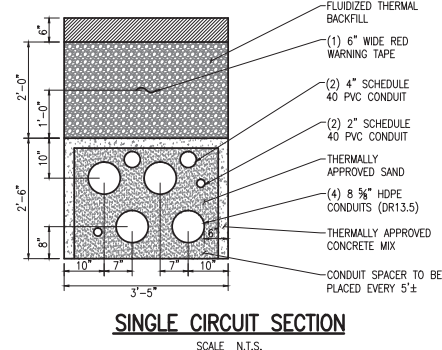
Transmission
 Business

115KV F107 UNDERGROUND
 TRANSMISSION LINE
 PLAN AND PROFILE VIEW
 DATE: 07/13/2015
 SCALE: H: 1"=40', V: 1"=8'

TOWN:
 DURHAM
 TRANSMISSION LINE:
 F107
 MILE NO.: 2
 DISCIPLINE/SHOT NO.
 SHEET 1 OF 3
 F10740705



- General Notes**
1. THE UTILITIES HAVE NOT BEEN IDENTIFIED AND WILL IMPACT THE DESIGN OF THE UNDERGROUND TRANSMISSION LINE AT THE LOCATION OF ANY CROSSINGS.
 2. ALL PROPERTY LINE INFORMATION IS SHOWN APPROXIMATE AND BASED ON TOWN ASSESSOR'S PLATS ONLY. THE AERIAL TRANSMISSION EASEMENT HAS BEEN ESTABLISHED BY SURVEY.
 3. TOPOGRAPHY IS BASED ON AN AERIAL LIDAR SURVEY AND SATELLITE IMAGERY, THEREFORE GRADES ARE APPROXIMATE. AN ON THE GROUND DETAIL SURVEY WILL BE REQUIRED FOR DESIGN.
 4. DETAIL DESIGN MAY BE OPTIMIZED TO REFLECT ACTUAL CONDITIONS.
 5. ALL EXISTING ROAD MARKINGS ARE ESTIMATED.
 6. CONTRACTOR IS RESPONSIBLE FOR PLACING SILT FENCE OR OTHER APPROVED EROSION CONTROL DEVICES. WETLANDS HAVE NOT BEEN DELINEATED AND HAVE NOT BEEN CONSIDERED FOR DESIGN.
 7. CONTRACTOR SHALL INSTALL SILT SACK OR APPROVED EQUAL TO ALL CATCH BASINS OR CURB INLETS WITHIN THE DEFINED WORK ZONE.
 8. CONTRACTOR SHALL ENSURE PROPER CONTROLS ARE IN PLACE SO WORKERS DO NOT TRACK SEDIMENT PAST THE LIMITS OF WORK.
 9. ALL VERTICAL RADII ARE 500' UNLESS OTHERWISE NOTED



**CONCEPTUAL ONLY
NOT FOR CONSTRUCTION**

NO.	DATE	REVISION
K	12-28-15	REV. SCG
J	12-1-15	REV. SCG
I	10-7-15	REV. SCG
H	9-25-15	REV. SCG
G	9-25-15	REV. SCG
F	9-9-15	REV. SCG
E	9-4-15	REV. SCG
D	8-31-15	REV. SCG
C	7/31/15	REV. SCG
B	7/31/15	REV. SCG
A	7/13/15	REV. SCG
		DATE
		DRWN
		CHKD
		APPRV.

Public Service of New Hampshire
Transmission Business

115kV F107 UNDERGROUND TRANSMISSION LINE
PLAN AND PROFILE VIEW

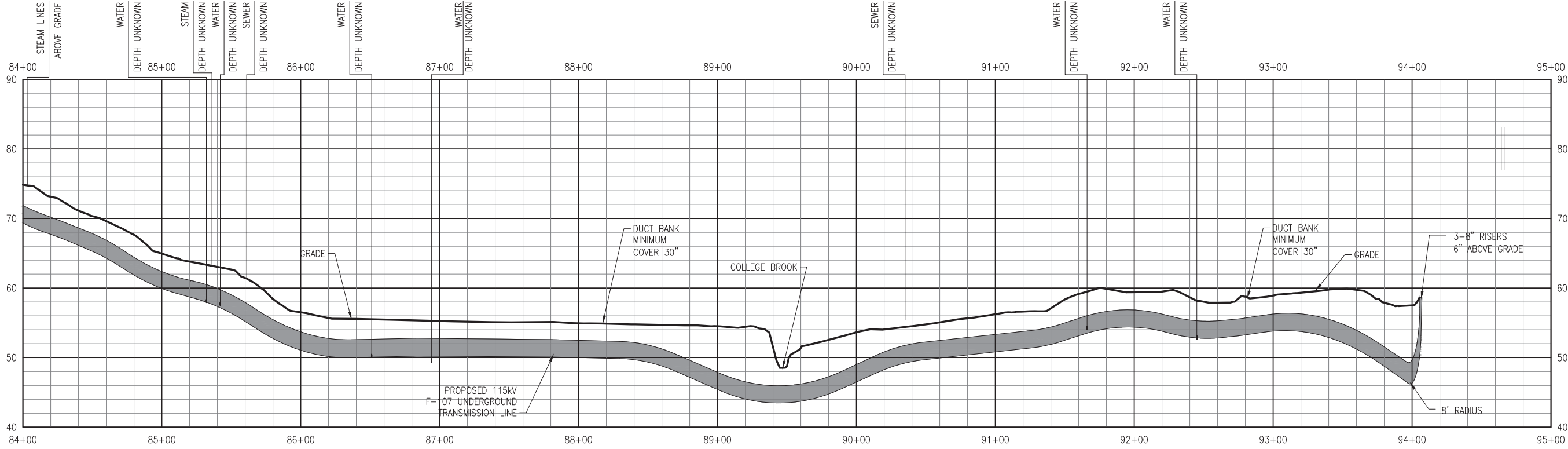
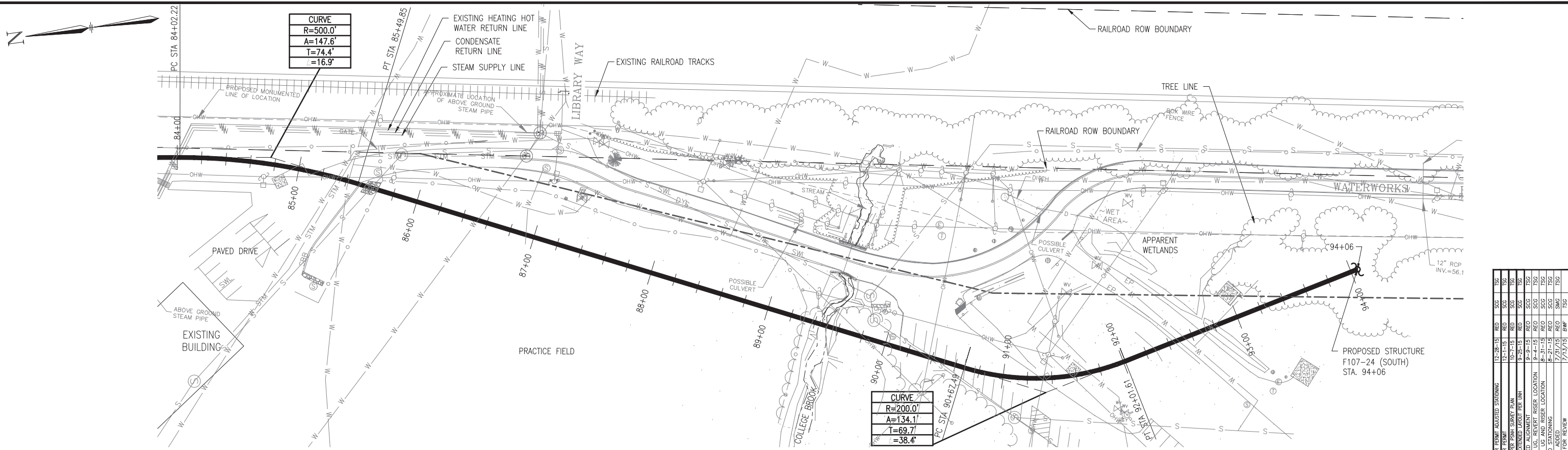
DATE: 07/13/2015
SCALE: H=1"=40', V=1"=8'

DES: TSG
CHKD: TSG
DRW: BWF
APR: [Signature]

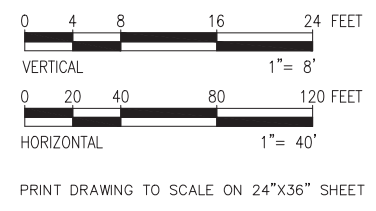
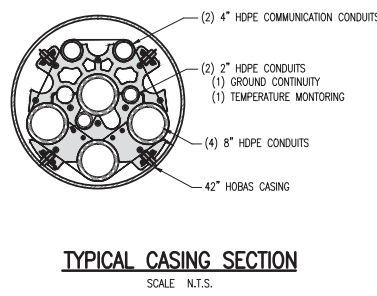
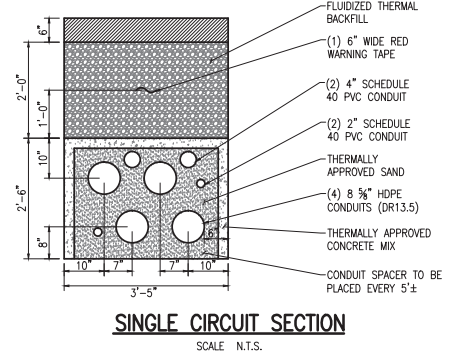
TOWN: DURHAM
TRANSMISSION LINE: F107
MILE NO: 2
DISCIPLINE/SHT NO. [Blank]

SHEET 2 OF 3
F10740705

REVISION: 01/23/2014



- General Notes**
1. THE UTILITIES HAVE NOT BEEN IDENTIFIED AND WILL IMPACT THE DESIGN OF THE UNDERGROUND TRANSMISSION LINE AT THE LOCATION OF ANY CROSSINGS.
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 9. ALL VERTICAL RADII ARE 500' UNLESS OTHERWISE NOTED



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 NOT FOR CONSTRUCTION**

NO.	REVISION	DATE	BY	CHKD.	APPRV.
A	ISSUED FOR REVIEW	7/13/15	BWF	TSO	
B	PROFILE ADDED	7/31/15	REG	SWG	
C	REVISIONS AND RISING LOCATION	8-31-15	REG	TSO	
D	REVISED UG RISER LOCATION	9-4-15	REG	TSO	
E	REVISED UG RISER LOCATION	9-9-15	REG	TSO	
F	EXTENDED ALIGNMENT	9-25-15	REG	TSO	
G	REVISED EXTENDED LAYOUT PER UH	10-7-15	REG	TSO	
H	REVISED PER PSMT SURVEY PLAN	12-1-15	REG	TSO	
I	ISSUE FOR PERMIT	12-28-15	REG	TSO	
K	ISSUE FOR PERMIT ADJUSTED STATIONS	12-28-15	REG	TSO	

Public Service
of New Hampshire
A New England Utilities Company

Transmission
Business

115kV F107 UNDERGROUND
TRANSMISSION LINE
PLAN AND PROFILE VIEW

SCALE: H: 1"=40', V: 1"=8'

DATE: 07/13/2015

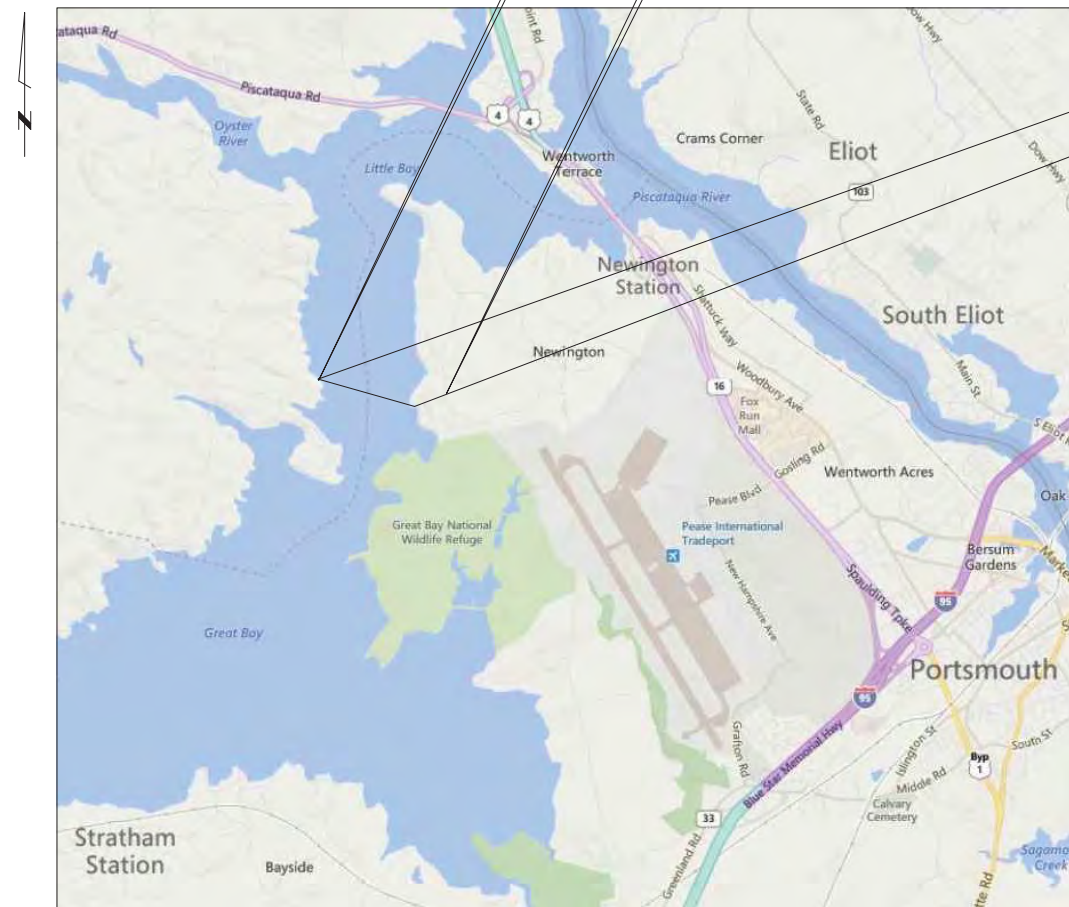
DESIGN: TSO
CHECKED: BWF
DRAWN: BWF
APPROVED: [Signature]

TOWN: DURHAM
TRANSMISSION LINE: F107
MILE NO: 2
DISCIPLINE/SHT NO.

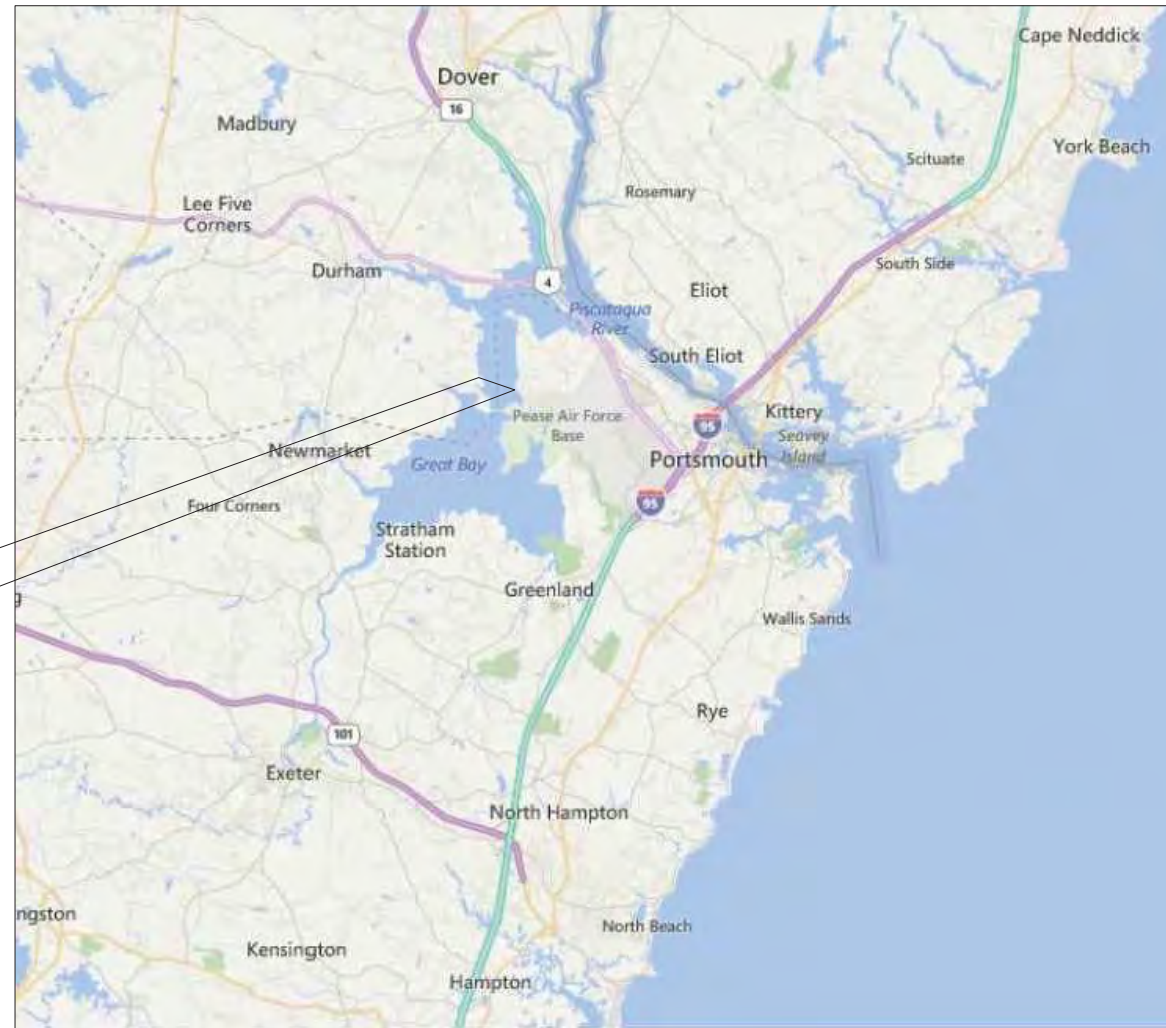
SHEET 3 OF 3
F10740705

REVISION: 01/23/2014

PUBLIC SERVICE OF NEW HAMPSHIRE
 F-107
 LITTLE BAY, PORTSMOUTH
 115 kV UNDERGROUND TRANSMISSION LINE



VICINITY MAP
 NOT TO SCALE



AREA MAP
 NOT TO SCALE

WESTERN LANDING

LITTLE BAY ROAD



Know what's below.
 Call before you dig.



NOTES:

1. EXISTING DEPTH OF UTILITY CROSSINGS ASSUMED.
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3. ALL VERTICAL CURVES TO BE 400' UNLESS OTHERWISE NOTED.

NO.	REVISION	DATE	BY	CHKD	APPRV.
7	ISSUE FOR PERMIT RELOCATE RISER	12/28/15	REC	SCG	TSO
6	ISSUE FOR PERMIT	12/14/15	REC	SCG	TSO
5	ISSUE FOR PERMIT	11/19/15	REC	SCG	TSO
4	ISSUE FOR PERMIT - ALIGNMENT ADJ.	5-18-15	REC	SCG	TSO
3	ISSUE FOR PERMIT - ALIGNMENT ADJ.	9-8-15	REC	SCG	TSO
2	ISSUE FOR PERMIT - ALIGNMENT ADJ.	10/14/14	SCG	SCG	TSO
1	ISSUE FOR PERMIT	8-25-14	JRD	TSO	CS
0	ISSUE FOR PERMIT				

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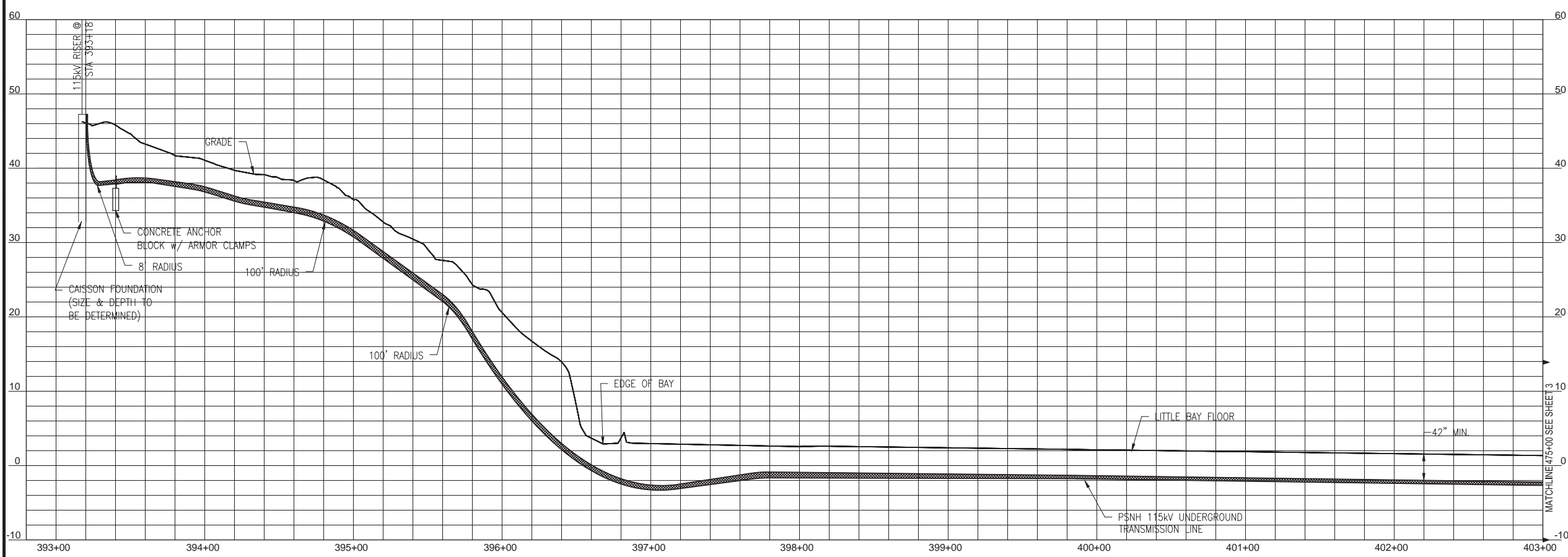
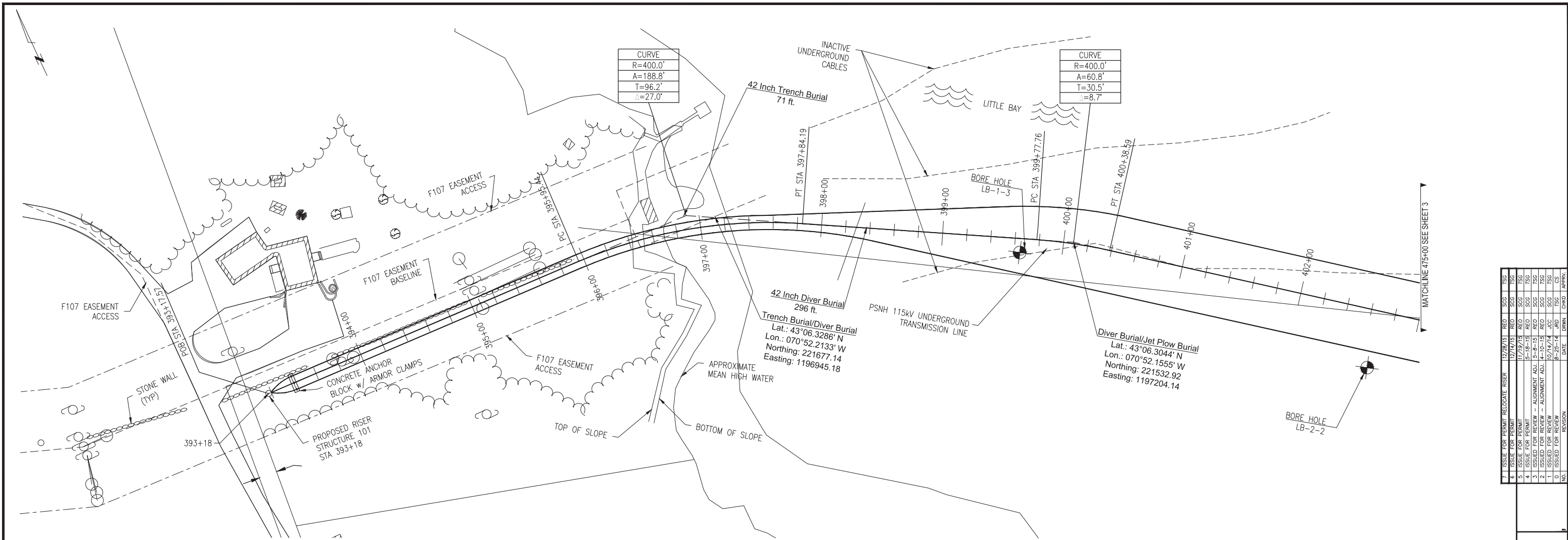
T 7

UNDERGROUND TRANSMISSION
 PLAN & PROFILE
 SEACOAST RELIABILITY PROJECT
 SCALE: H. 1"=40', V. 1"=8'
 DATE: 8/25/2015

DES: TSO
 CHECK: T
 DRAW: REC
 APR: T
 TOWN: NEWINGTON, NH
 TRANSMISSION LINE: F-107
 MILE NO:
 DISCIPLINE/SHT NO:
 SHEET 1 OF 12

COVER

REVISION: 01/23/2014



NO.	REVISION	DATE	BY	CHKD	APPRV.
7	ISSUED FOR PERMIT	12/28/15	REO	SCG	TSG
6	ISSUE FOR PERMIT	12/14/15	REO	SCG	TSG
5	ISSUE FOR PERMIT	11/19/15	REO	SCG	TSG
4	ISSUE FOR PERMIT	5-18-15	REO	SCG	TSG
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2	ISSUED FOR REVIEW - ALIGNMENT ADJ.	10/14/14	SCG	SCG	TSG
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 - ALL VERTICAL CURVES TO BE 400' UNLESS OTHERWISE NOTED.
 - ANCHOR BLOCK DESIGN, BY OTHERS, TO INCLUDE PULLING TENSIONS AND ACCIDENTAL ENTANGLEMENT BY PASSING VESSELS.

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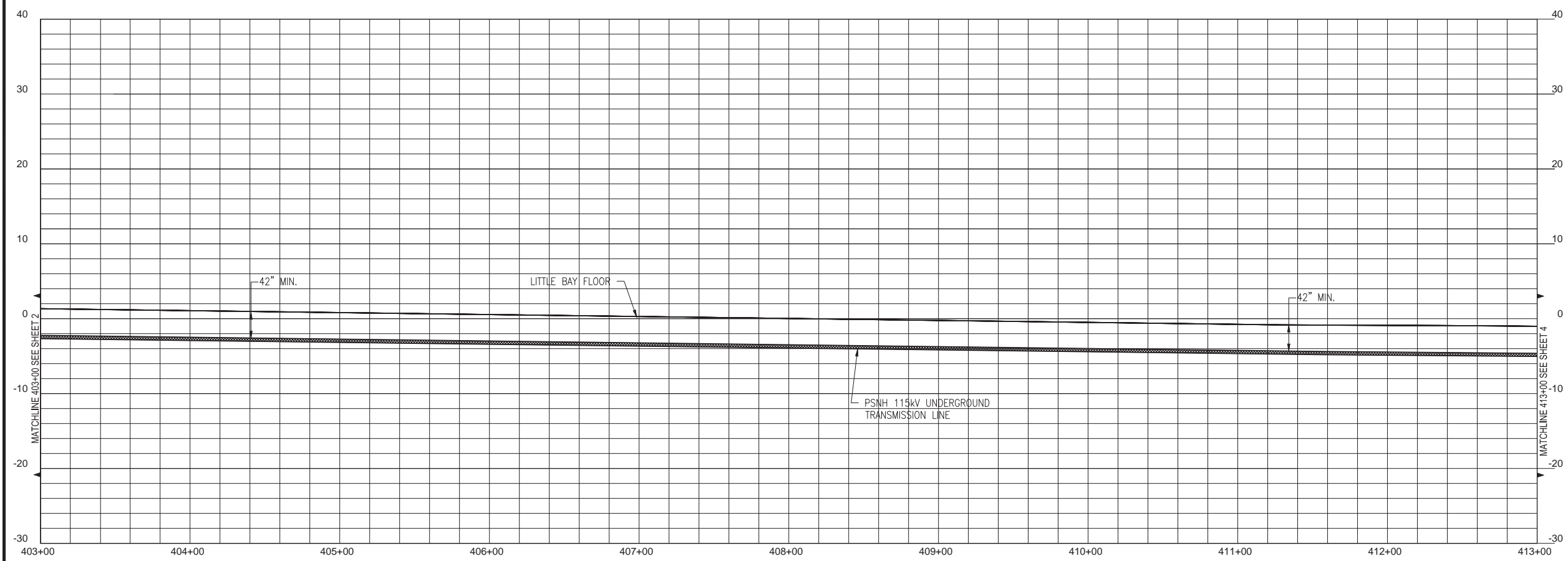
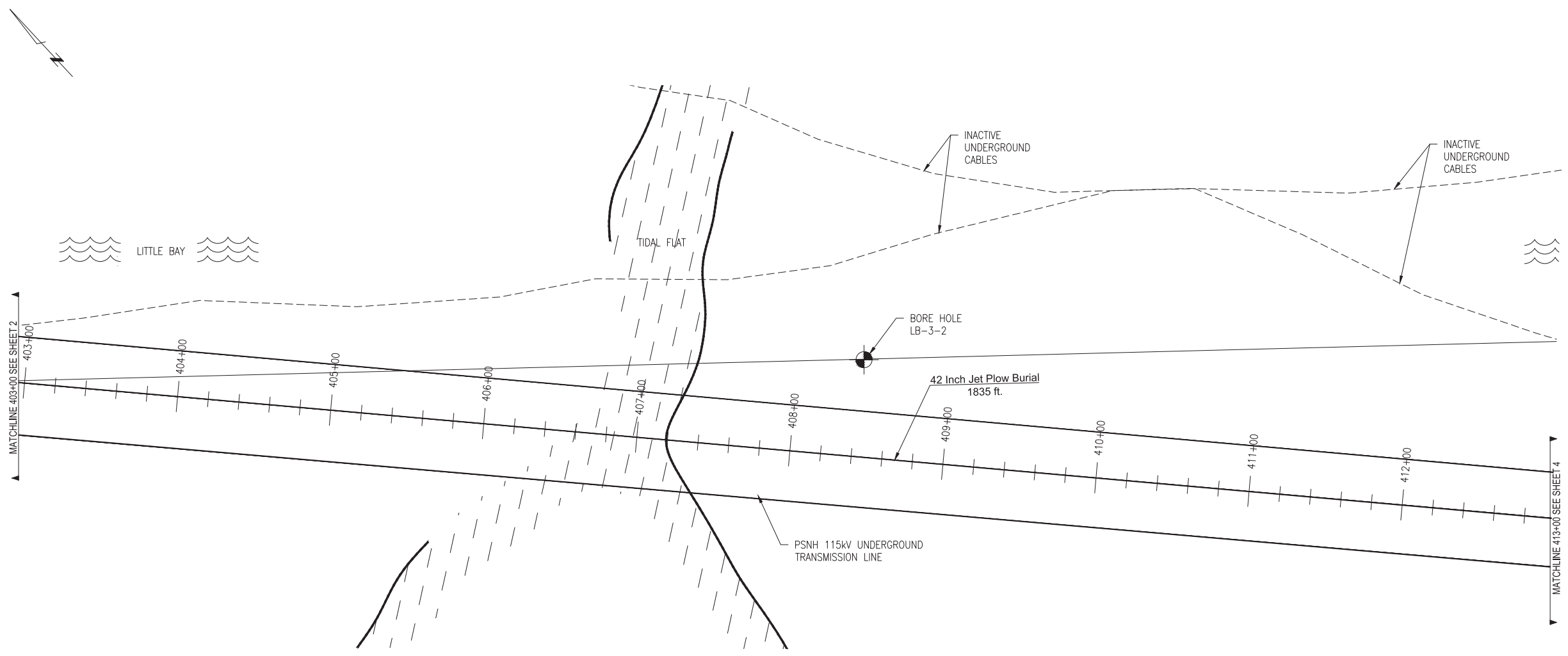


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UNDERGROUND TRANSMISSION
PLAN & PROFILE
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SCALE: H. 1"=40', V. 1"=8'
DATE: 8/25/2015

TOWN: NEWINGTON, NH
TRANSMISSION LINE: F-107
MILE NO: 8
DISCIPLINE/SHT NO.

SHEET 2 OF 12
2 OF 12
REVISION: 01/23/2014



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3	ISSUED FOR REVIEW - ALIGNMENT ADJ.	5-18-15	REC	SCG	TSG
2	ISSUED FOR REVIEW - ALIGNMENT ADJ.	10/14/14	REC	SCG	TSG
1	ISSUED FOR REVIEW	8-25-14	JRD	TSG	CS
0	ISSUED FOR REVIEW	8-25-14	JRD	TSG	CS

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Transmission Business

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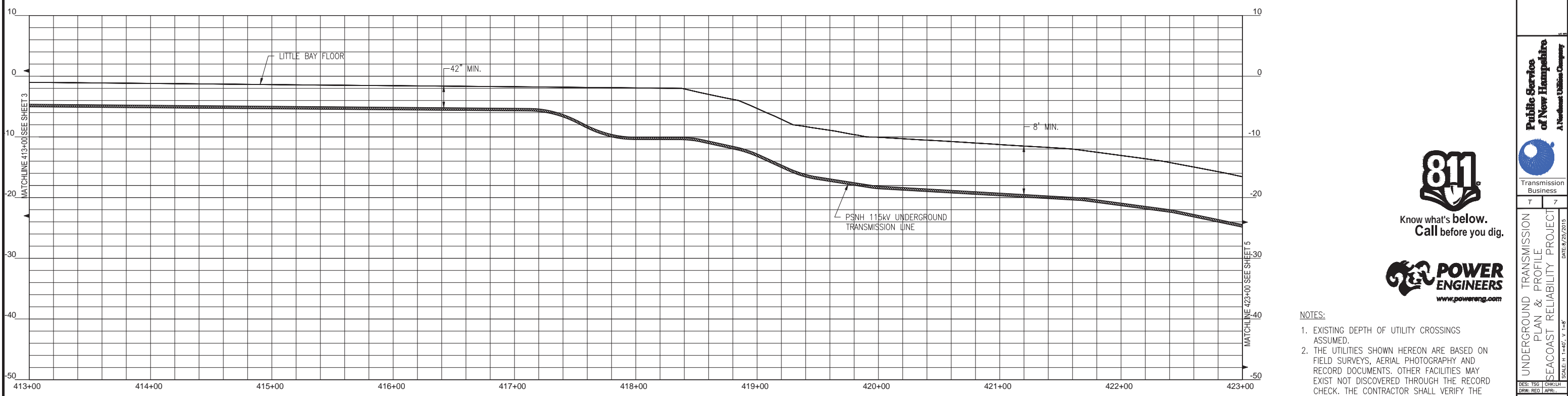
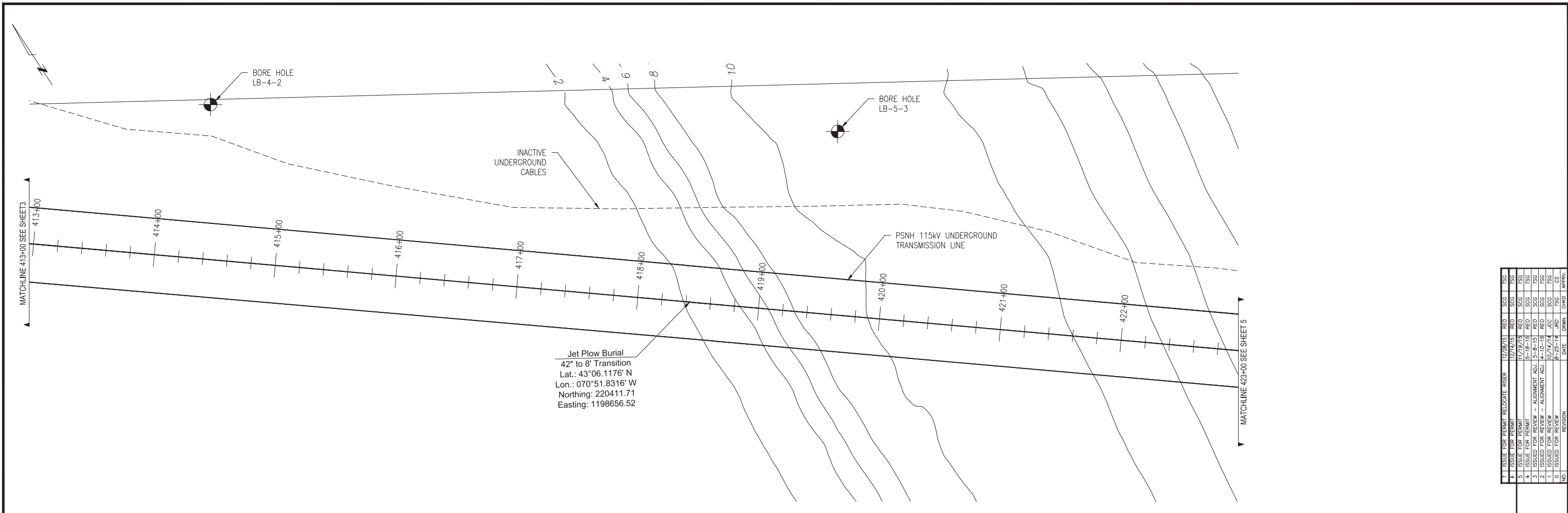
UNDERGROUND TRANSMISSION PLAN & PROFILE
SEACOAST RELIABILITY PROJECT
SCALE: H. 1"=40', V. 1"=8'

DES: TSG
CHKD: T
DRW: REC
APR: T

TOWN: NEWINGTON, NH
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MILE NO: 8
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SHEET 3 OF 12
3 OF 12

REVISION: 01/23/2014



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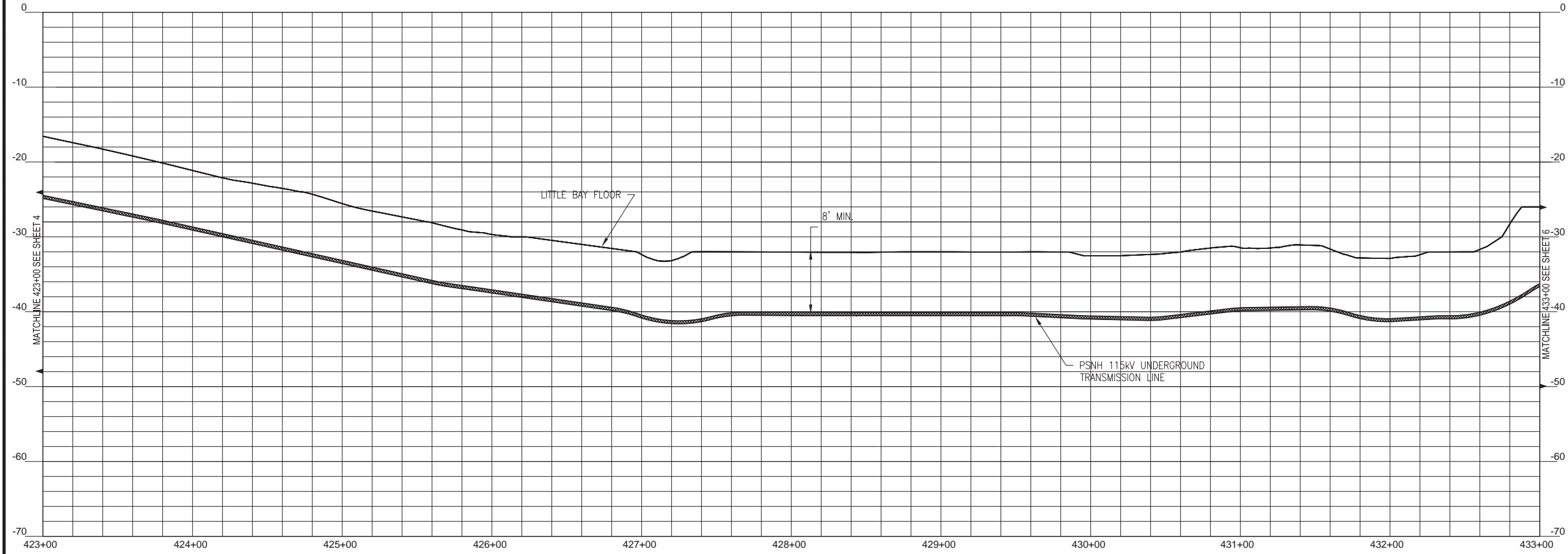
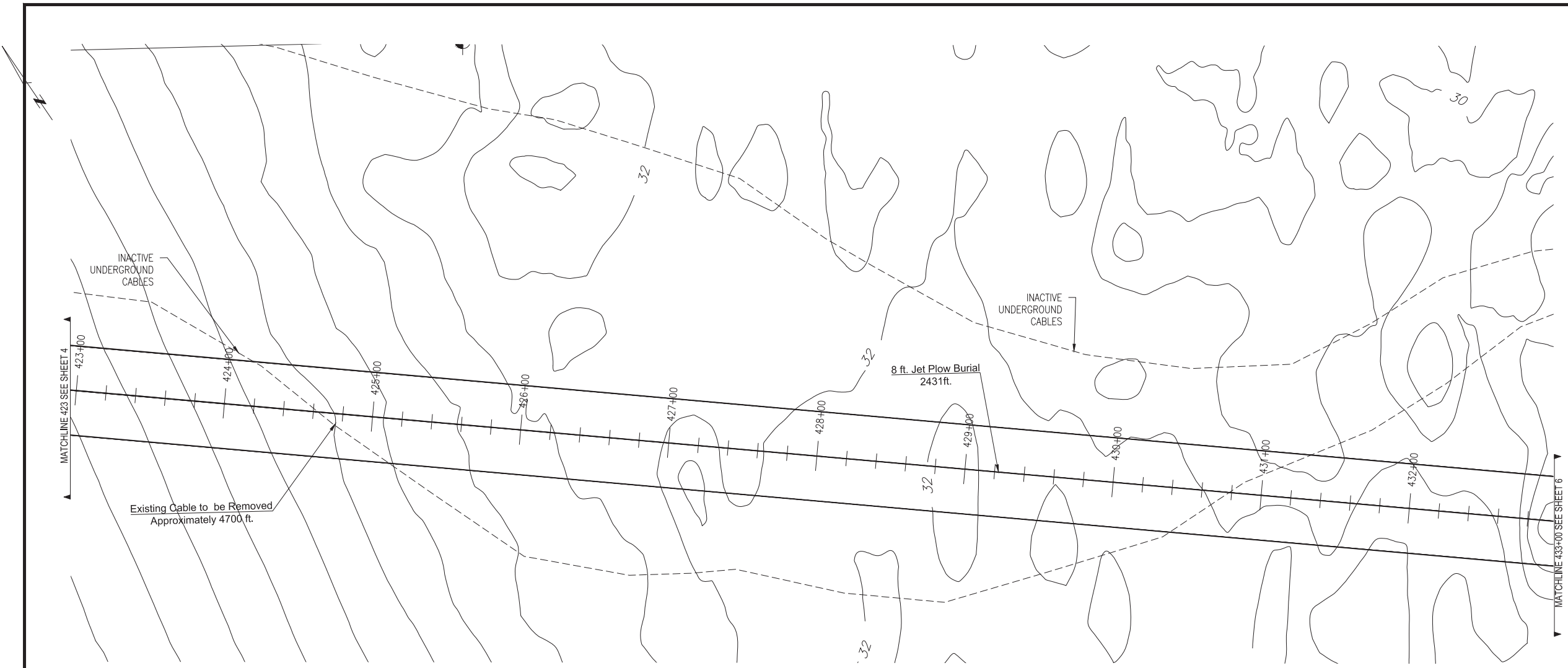
Transmission Business

UNDERGROUND TRANSMISSION PLAN & PROFILE
SEACOAST RELIABILITY PROJECT

DATE: 8/25/2015
SCALE: H: 1"=40', V: 1"=8'

TOWN: NEWINGTON, NH
TRANSMISSION LINE: F-107
MILE NO: 8
DISCIPLINE/SHT NO.

SHEET 4 OF 12
4 OF 12



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Transmission
Business

UNDERGROUND TRANSMISSION
PLAN & PROFILE
SEACOAST RELIABILITY PROJECT
SCALE: H. 1"=40'; V. 1"=8'

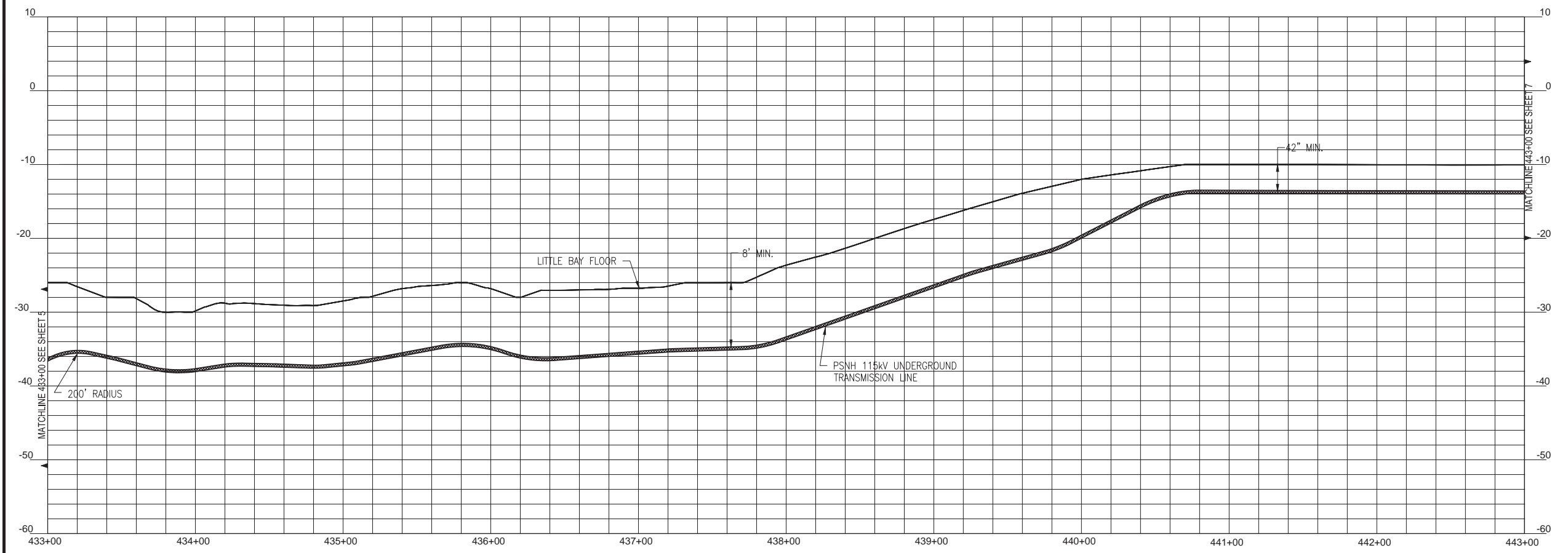
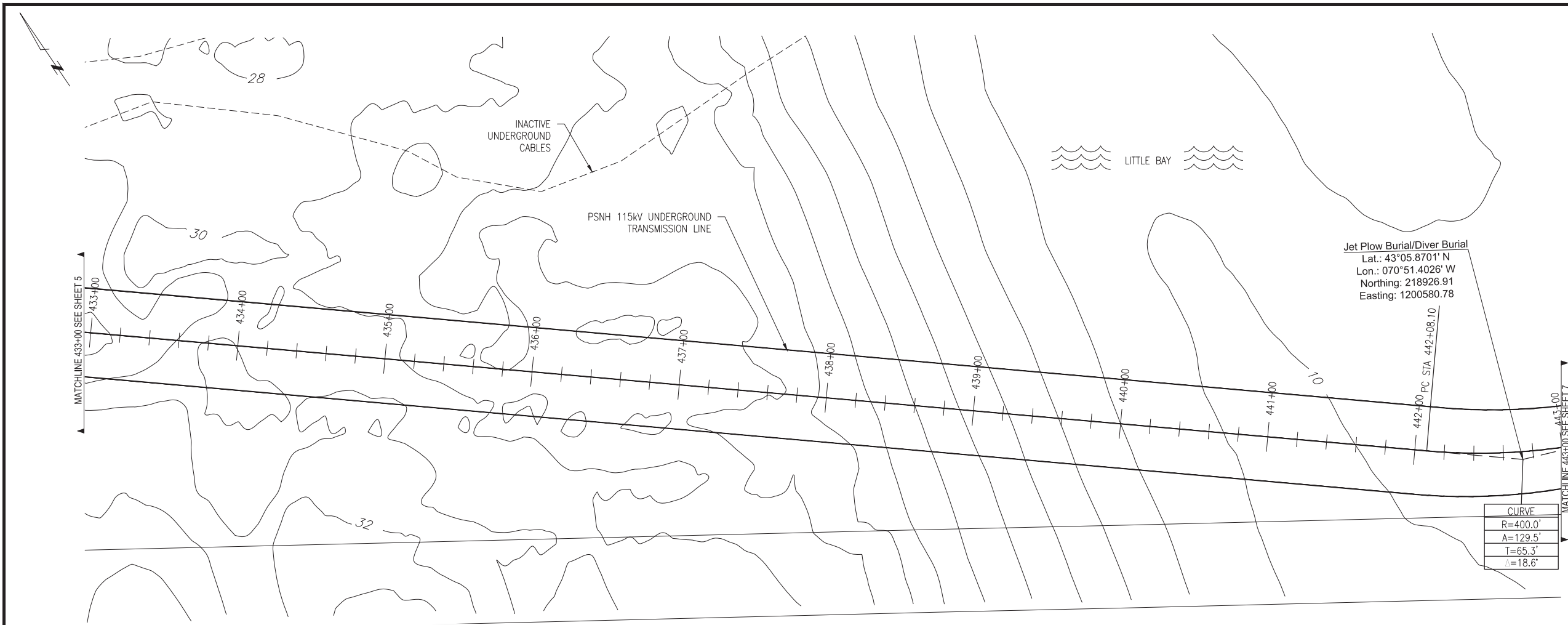
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CHKD: TSG
DRAW: REO
APR: TSG

TOWN:
NEWINGTON, NH

TRANSMISSION LINE:
F-107

DISCIPLINE/SHT NO.
5 OF 12

REVISION: 01/23/2014



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A Newmarket Utilities Company

Transmission Business

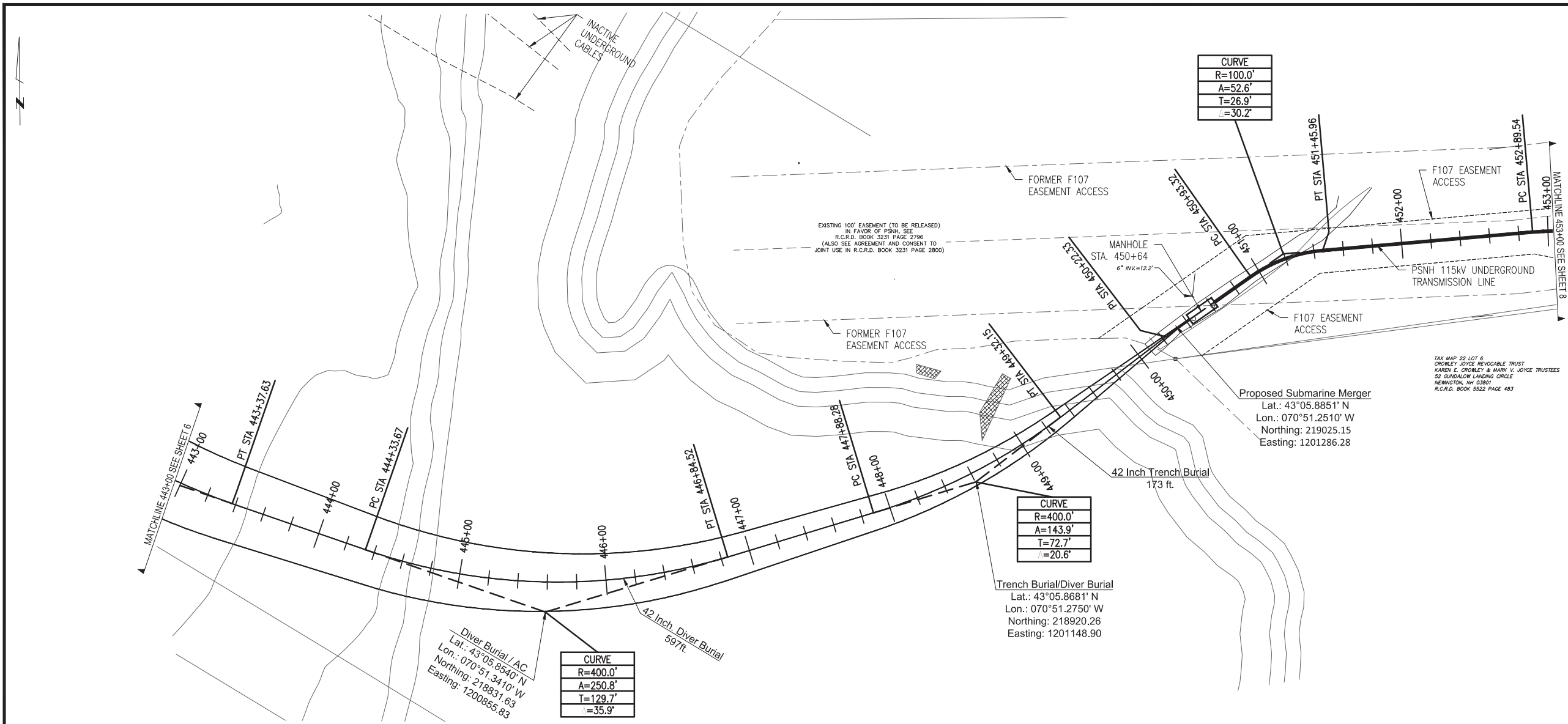
UNDERGROUND TRANSMISSION PLAN & PROFILE
SEACOAST RELIABILITY PROJECT
DATE: 8/25/2015
SCALE: H: 1"=40', V: 1"=8'

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CHKD: TSG
DRAW: REC
APPR: TSG

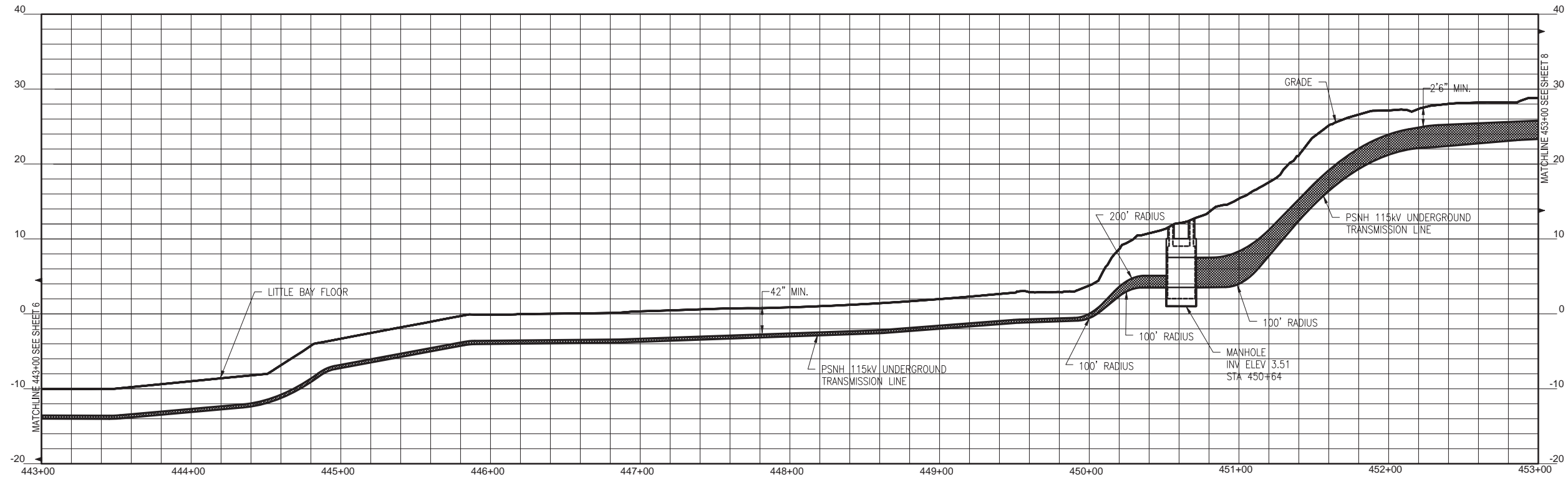
TOWN: NEWINGTON, NH
TRANSMISSION LINE: F-107
MILE NO: 9
DISCIPLINE/SHT NO.

SHEET 6 OF 12
6 OF 12

REVISION: 01/23/2014



TAX MAP 22 LOT 6
CROWLEY JOYCE REVOCABLE TRUST
KAREN E. CROWLEY & MARK V. JOYCE TRUSTEES
52 GUNDALOW LANDING CIRCLE
NEWINGTON, NH 03801
R.C.R.D. BOOK 5522 PAGE 483



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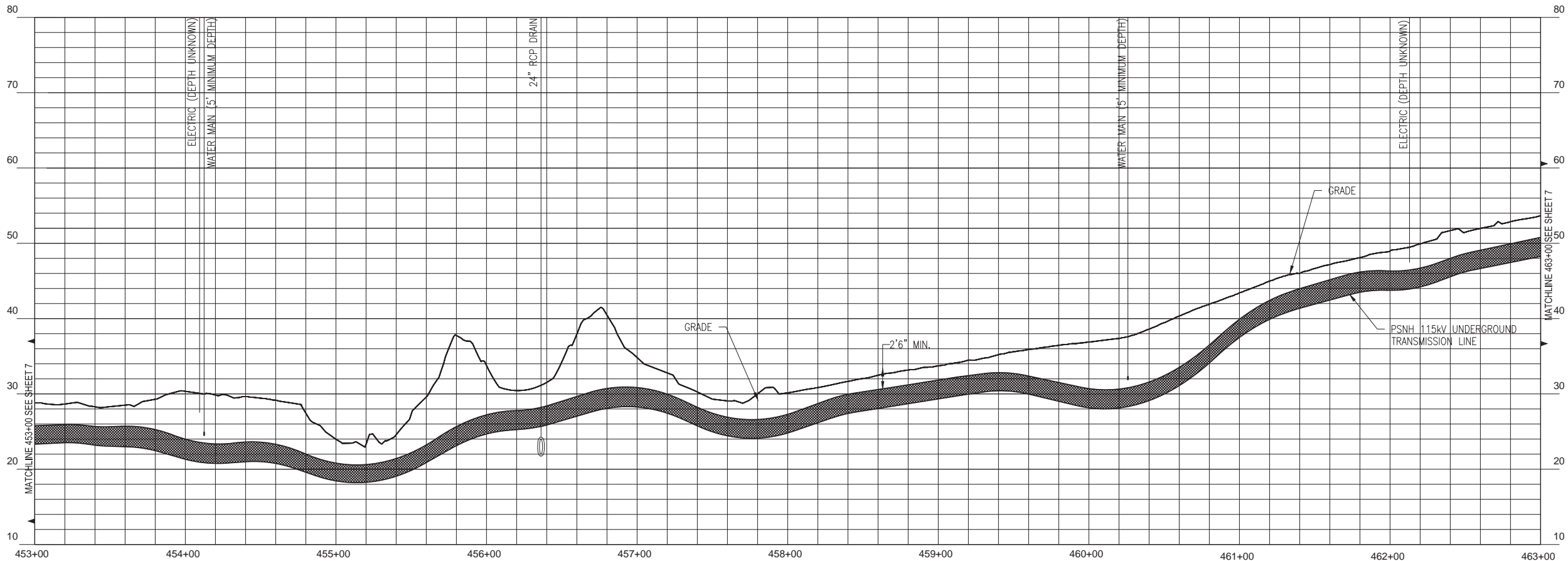
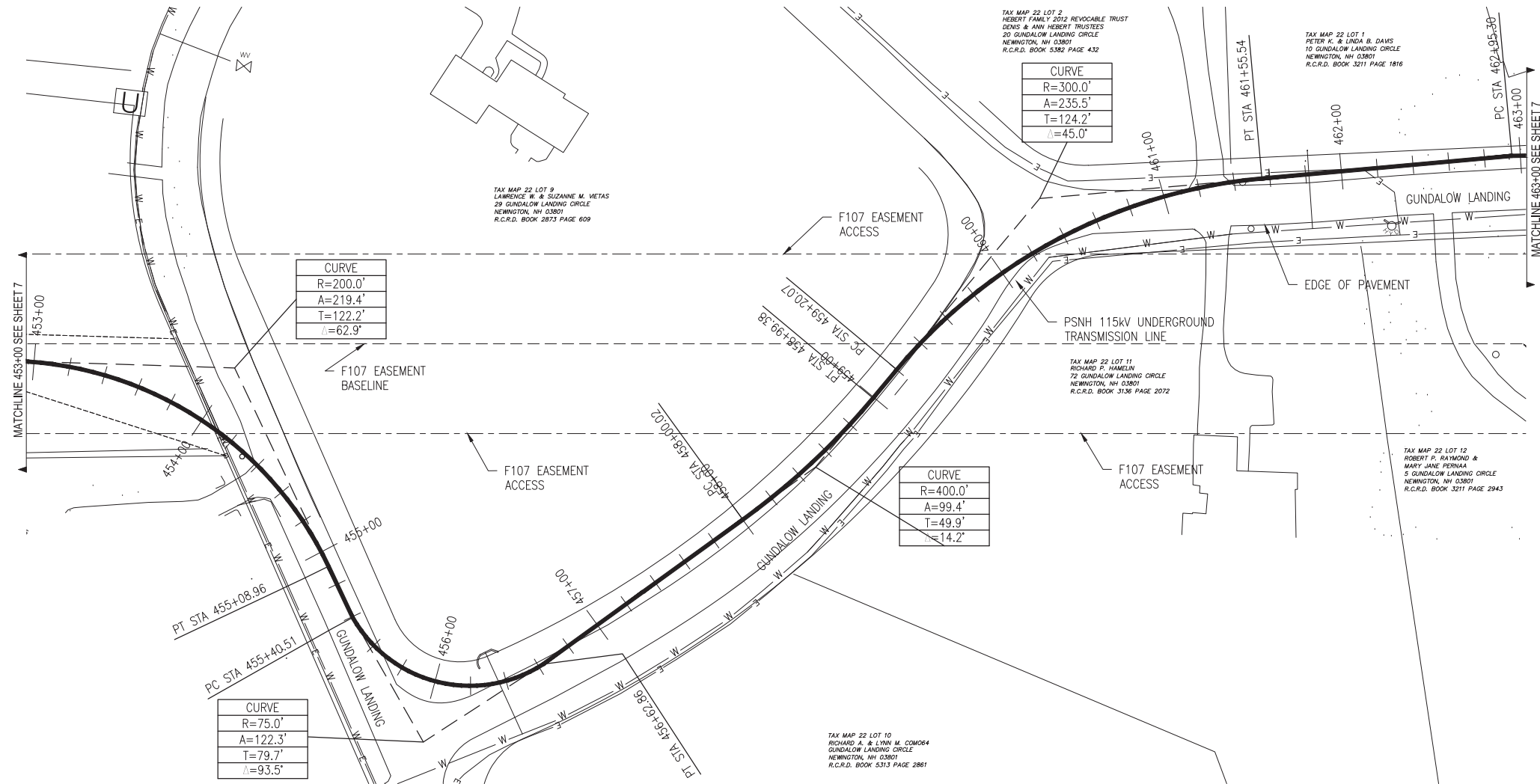
Public Service of New Hampshire
A. Nantuxent Utilities Company

Transmission Business

UNDERGROUND TRANSMISSION PLAN & PROFILE
SEACOAST RELIABILITY PROJECT
SCALE: H. 1"=40', V. 1"=8'

TOWN: NEWINGTON, NH
TRANSMISSION LINE: F-107
MILE NO: 9
DISCIPLINE/SHT NO. SHEET 7 OF 12

REVISION: 01/23/2014



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1	ISSUED FOR REVIEW	8-25-14	JRD	TSG	CS
0	ISSUED FOR REVIEW				

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Transmission Business

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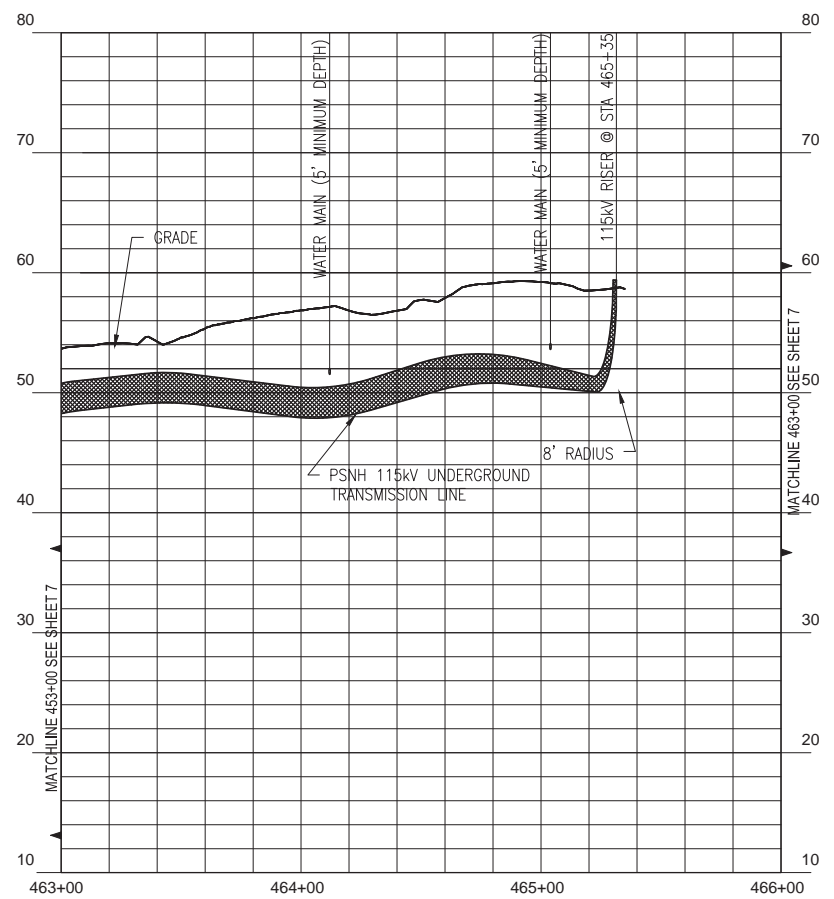
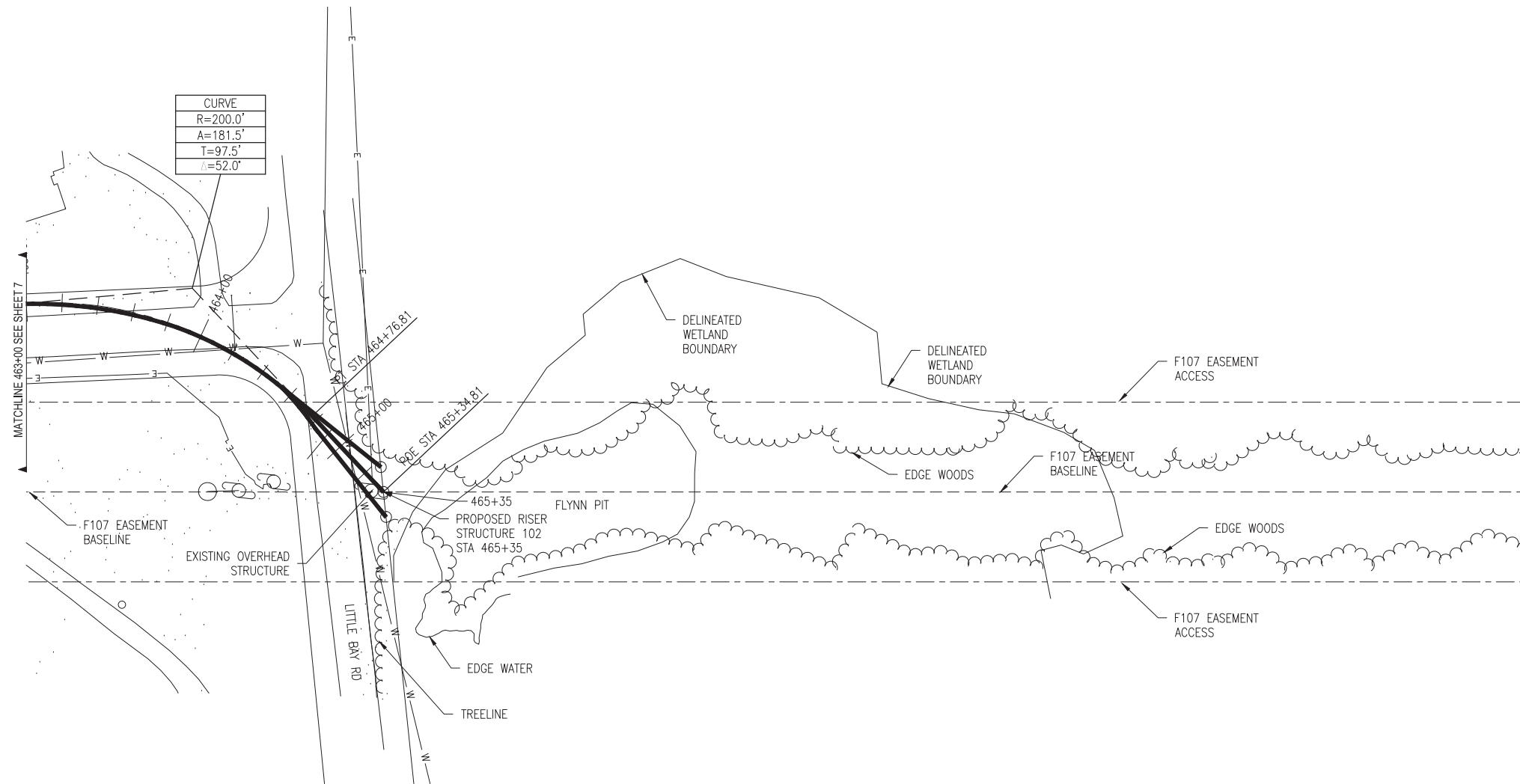
UNDERGROUND TRANSMISSION PLAN & PROFILE
SEACOAST RELIABILITY PROJECT
SCALE: H. 1"=40', V. 1"=8'

DES: TSG
CHKD: TSG
DRW: REO
APR: TSG

TOWN: NEWINGTON, NH
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SHEET 8 OF 12
8 OF 12

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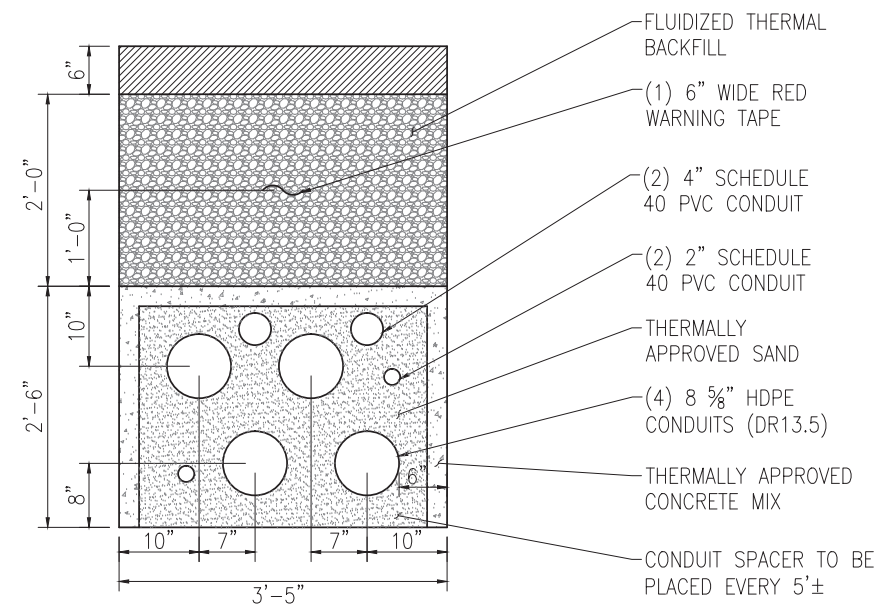
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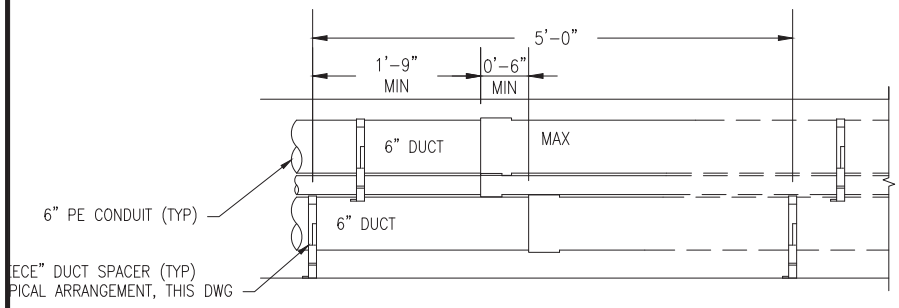
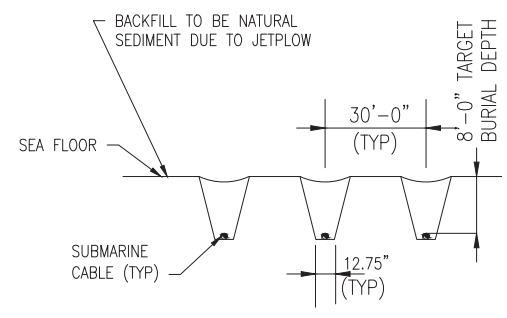
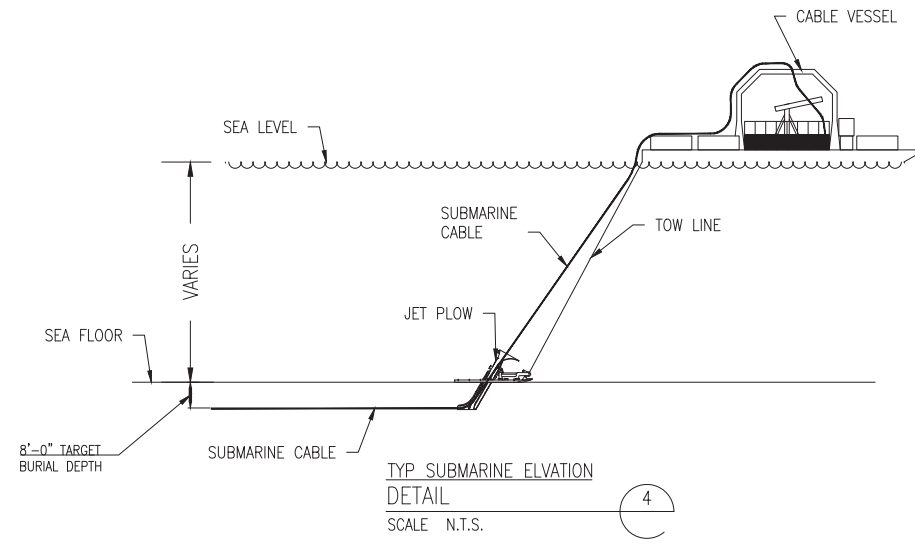
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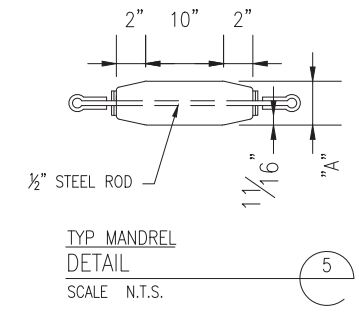
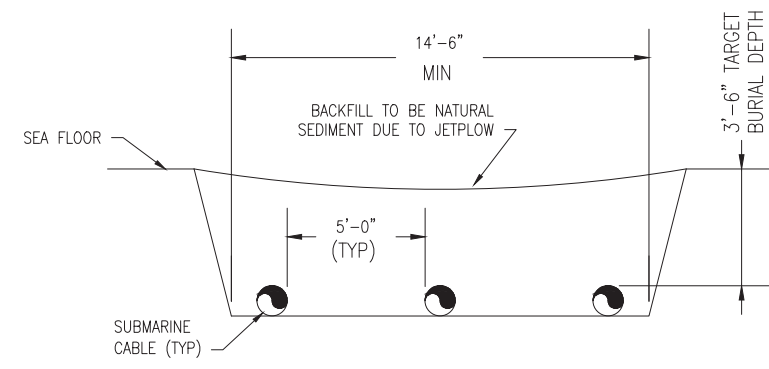
REVISION: 01/23/2014



TYP TRENCH DETAIL
 SCALE N.T.S.



TYP DUCT ELEVATION DETAIL
 SCALE N.T.S.

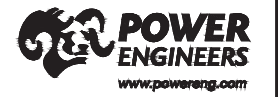


DIMENSION "A" TO BE 1/2" LESS THAN THE INSIDE DIAMETER OF THE SPECIFIED SIZE CONDUIT.

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0	ISSUED FOR REVIEW	8-25-14	REG	SMG	TSG



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NOTES:

- NOTES:
 1. STAGGER BELL ENDS.
 2. AVOID STANDING ON CONDUIT.
 3. BELL ENDS SHALL BE INSTALLED ALL IN THE SAME DIRECTION BETWEEN TERMINATIONS. (SEE PULL DIRECTION DETAIL.)
 4. ALL TRENCH DETAILS AND PHASING SHOWN AS LOOKING AHEAD STATIONS.
 5. ALL DUCT SPACERS ARE UNDERGROUND DEVICES "WUNPEECE" SPACERS, OR APPROVED EQUIVALENT.

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Transmission Business

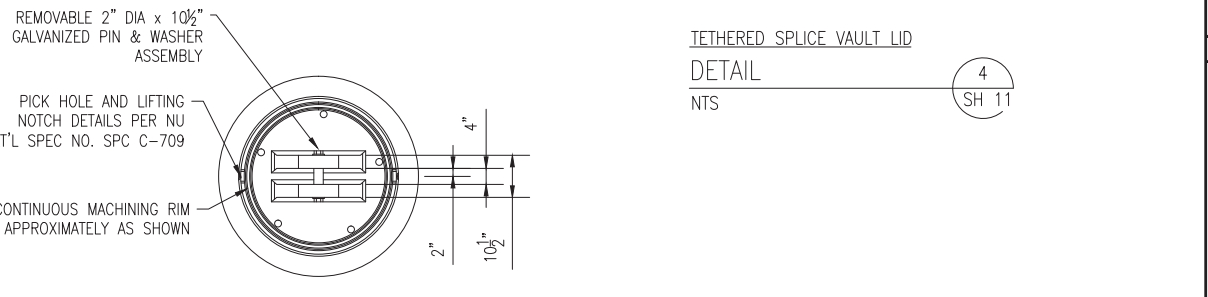
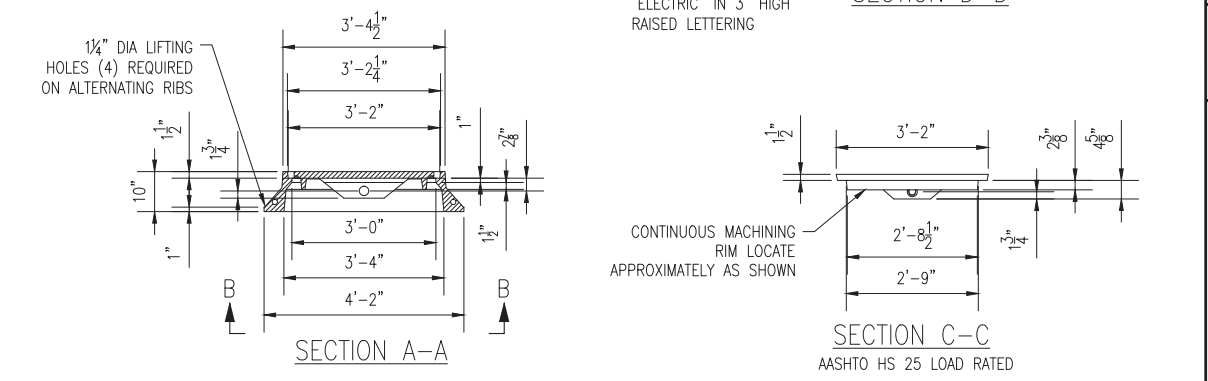
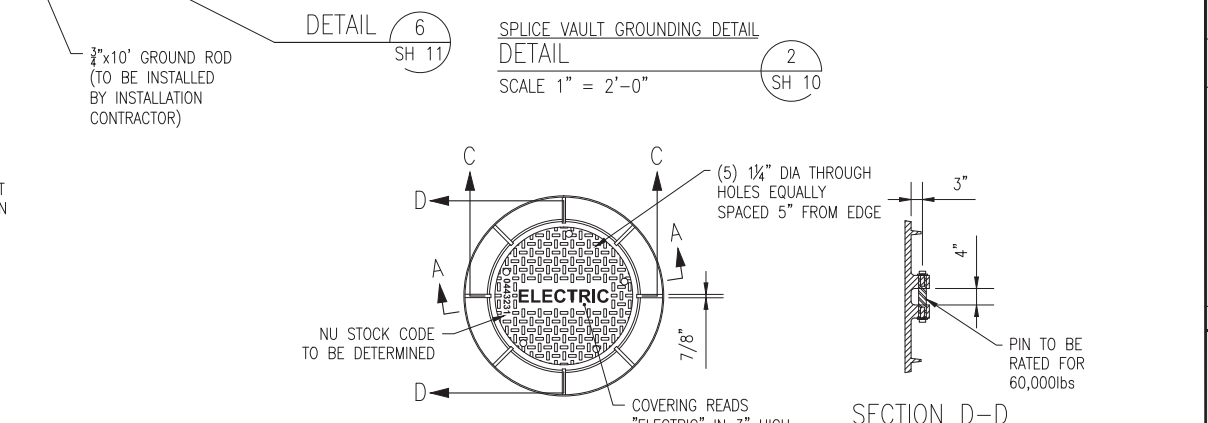
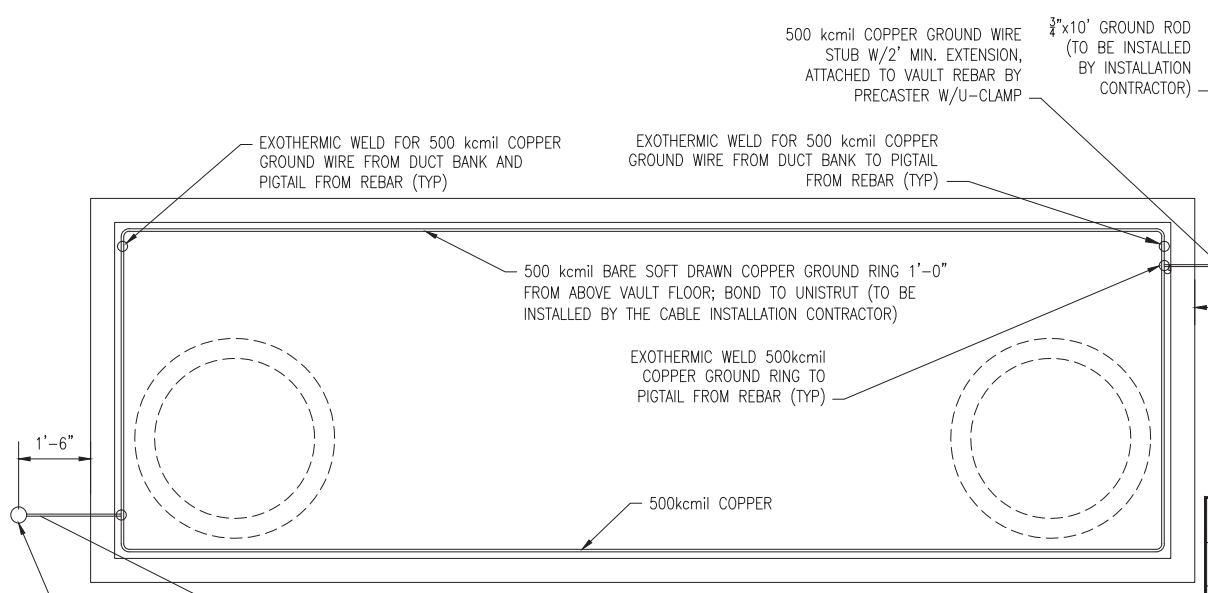
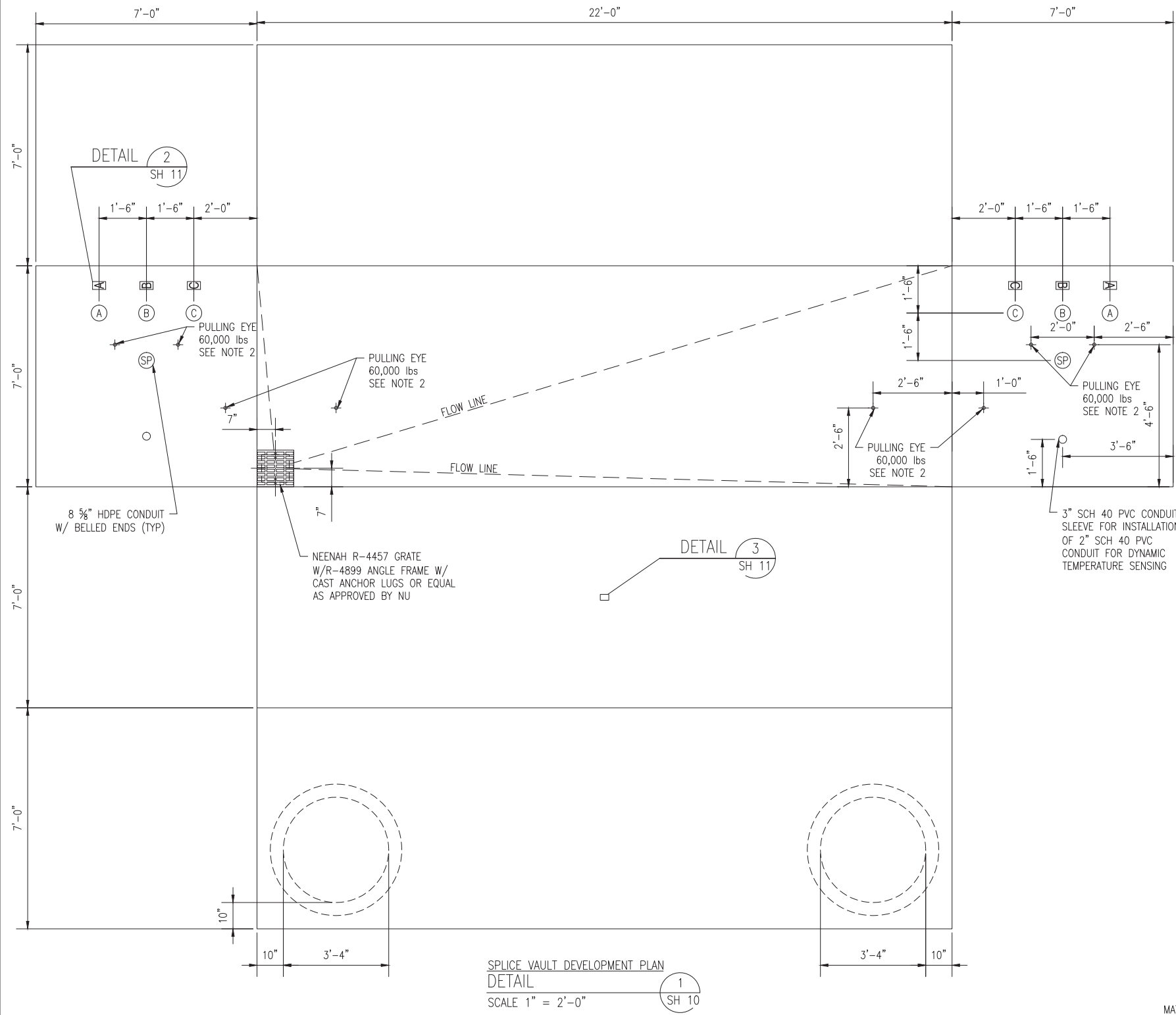
T 7

UNDERGROUND TRANSMISSION PLAN & PROFILE
 SEACOAST RELIABILITY PROJECT
 DATE: 6/25/2015
 SCALE: AS NOTED

DES: ISO
 CHKD: JH
 TOWN: NEWINGTON, NH
 TRANSMISSION LINE: F-107
 MILE NO:
 DISCIPLINE/SHT NO:

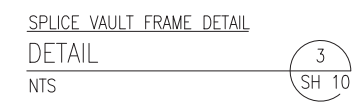
SHEET 10 OF 12
 DETAILS

REVISION: 01/23/2014



- NOTES:**
- ALL DIMENSIONS ARE INSIDE DIMENSIONS.
 - PULLING HARDWARE SHALL BE GOOD FOR 60,000lbs OF TENSION, MINIMUM.
 - SUMP SHALL BE CAPABLE OF HANDLING SUMP PUMP, MINIMUM 4" DEEP.
 - CONDUITS MUST ALWAYS BE INSTALLED IN THE SAME DIRECTION (BELL END FLUSH WITH INTERIOR WALL OF VAULT).
 - CABLE & ACCESSORIES CONTRACTOR TO FIELD VERIFY ACTUAL SPLICE VAULT DEPTHS. CONTRACTOR IS RESPONSIBLE FOR ALL SAFETY & ENTRY/EXIT REQUIREMENTS.
 - ALL CHIMNEY RINGS SHALL BE MORTARED OR OTHERWISE "KEYED" TO PREVENT HORIZONTAL DISPLACEMENT AND SHALL BE SECURELY MORTARED TO SPLICE VAULT ROOF.
 - MANHOLE RING SHALL BE SECURELY FASTENED TO THE SPLICE VAULT ROOF OR CHIMNEY USING INSERTS AND BOLTS OR OTHER MEANS WITH PRIOR APPROVAL.

- REINFORCING STEEL SHALL BE BONDED TO 500kcmil SOFT DRAWN BARE COPPER BONDING JUMPERS.
- MULTISECTION SPLICE VAULTS SHALL INCORPORATE EITHER SHIPLAP OR TONGUE AND GROOVE JOINTS UTILIZING APPROPRIATE SILICONE, POLYMERIC OR ELASTOMERIC SEALANTS.
- ALL UNISTRUT TO BE GROUNDING BY CONTRACTOR.
- ALL EXTERNAL SURFACES OF VAULT SHALL BE SEALED USING SONNEDORN HYDROCID 700 OR OWNER APPROVED EQUIVALENT.
- NO STEEL REINFORCING BAR MAY ENCAPSULATE ANY INDIVIDUAL CONDUIT.
- INSTALL CIRCUIT IDENTIFICATION LABELS ON VAULT WALL AND INSTALL DANGER WARNING SIGN IN CHIMNEY.
- CONTRACTOR SHALL PROVIDE RACKING FOR 50' OF DYNAMIC TEMPERATURE SENSING CABLE TO BE COILED ON THE WALL OPPOSITE THE CABLE SPLICES.



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DES: TSG
CHK: JLT
DRAW: REO
APR: []

TOWN: NEWINGTON, NH
TRANSMISSION LINE: F-107
MILE NO:
DISCIPLINE/SH/NO.

UNDERGROUND TRANSMISSION PLAN & PROFILE
SEACOAST RELIABILITY PROJECT
SCALE: AS NOTED

DATE: 8/25/2015

NO. DATE CHG. APPROV. DATE

1	1-19-14	REO	TSG
2	5-18-15	REO	TSG
3	5-8-15	REO	TSG
4	10-17-15	REO	TSG
5	12-17-15	REO	TSG
6	12-17-15	REO	TSG
7	12-17-15	REO	TSG
8	12-17-15	REO	TSG

Public Service of New Hampshire
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Transmission Business

DATE: 8/25/2015

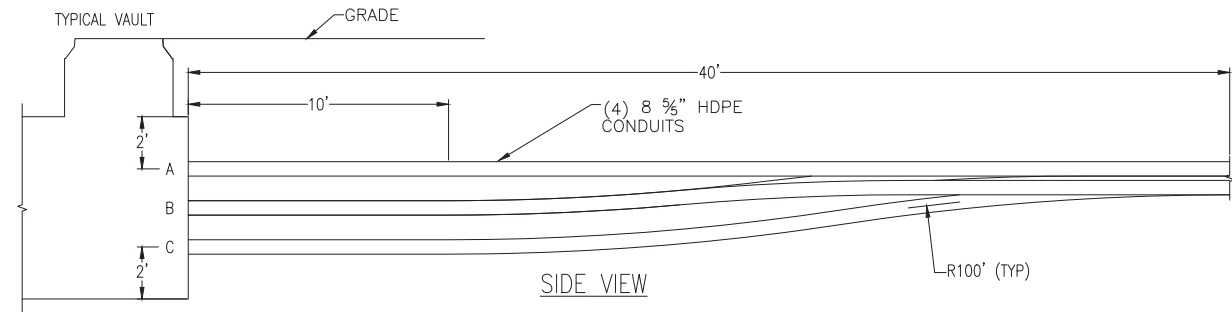
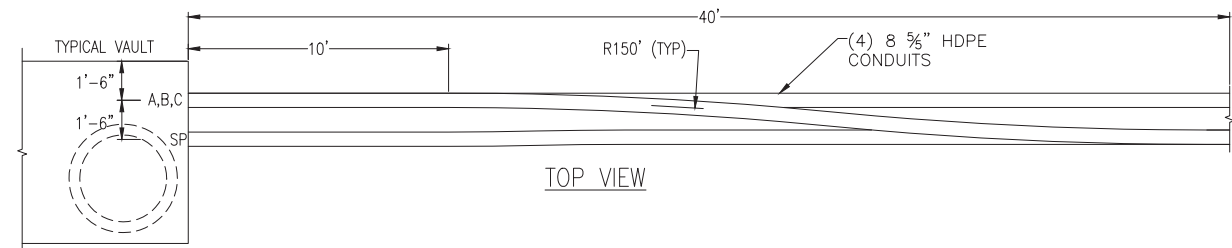
UNDERGROUND TRANSMISSION PLAN & PROFILE
SEACOAST RELIABILITY PROJECT
SCALE: AS NOTED

DES: TSG
CHK: JLT
DRAW: REO
APR: []

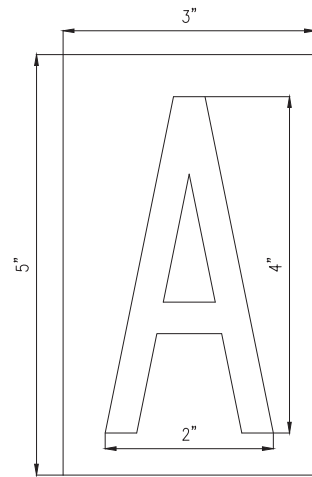
TOWN: NEWINGTON, NH
TRANSMISSION LINE: F-107
MILE NO:
DISCIPLINE/SH/NO.

SHEET 11 OF 12
DETAILS

REVISION: 01/23/2014



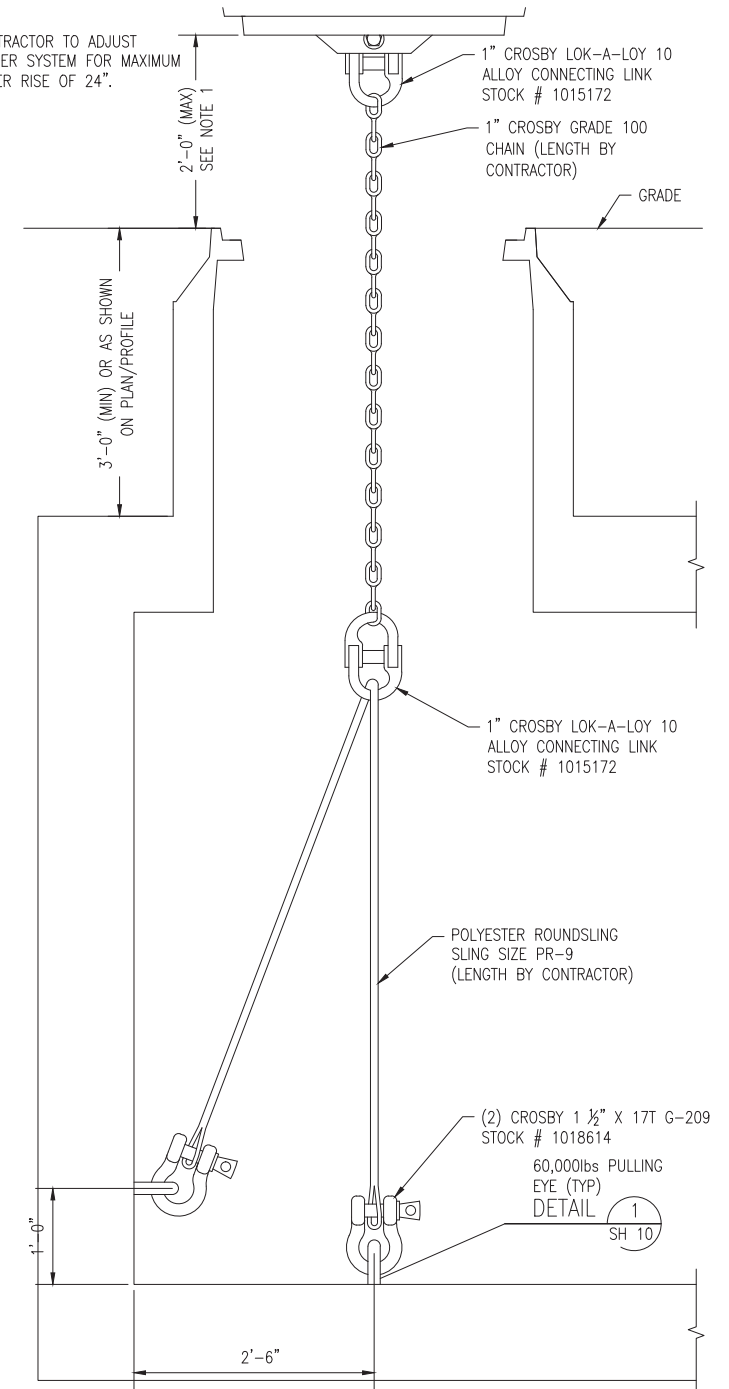
SPLICE VAULT TRANSITION DETAIL
DETAIL 1
NTS SH 11



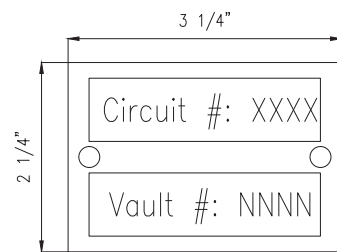
PHASE IDENTIFICATION TAG
DETAIL 2
NTS SH 11

- NOTES
- CHARACTER SHALL BE 4" HIGH BOLD TYPE.
 - CHARACTER SHALL BE CENTERED ON SIGN.
 - BACKGROUND: WHITE
LETTERING: BLACK
CHARACTERS: A, B & C AS SHOWN

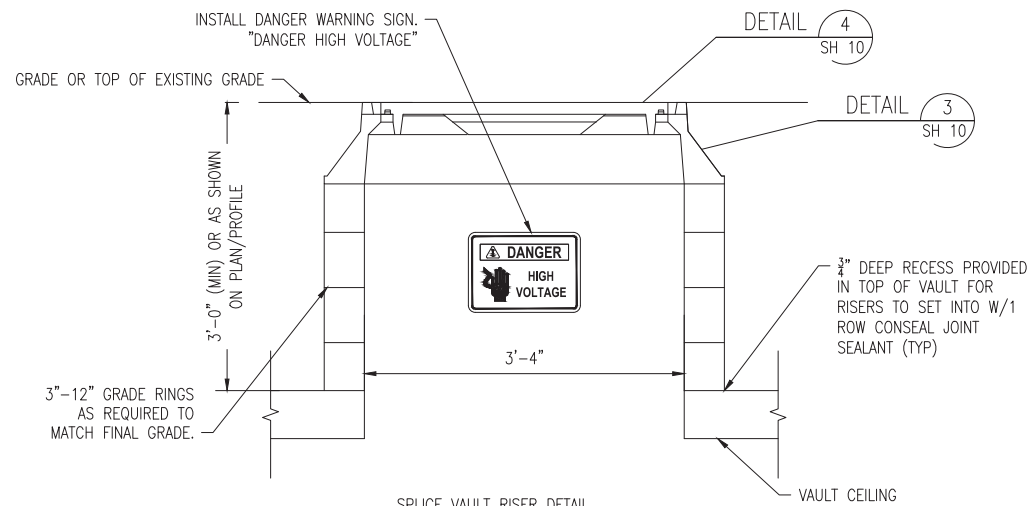
NOTE:
1. CONTRACTOR TO ADJUST TETHER SYSTEM FOR MAXIMUM COVER RISE OF 24".



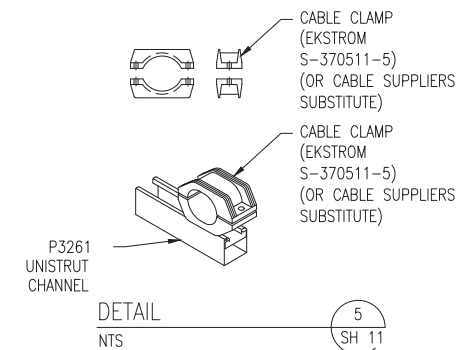
MANHOLE TETHER DETAIL
DETAIL 8
NTS SH 11



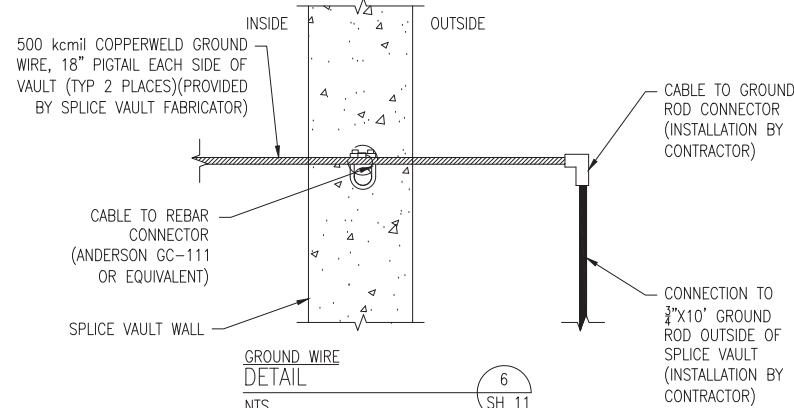
CIRCUIT IDENTIFICATION TAG
DETAIL 3
NTS SH 11



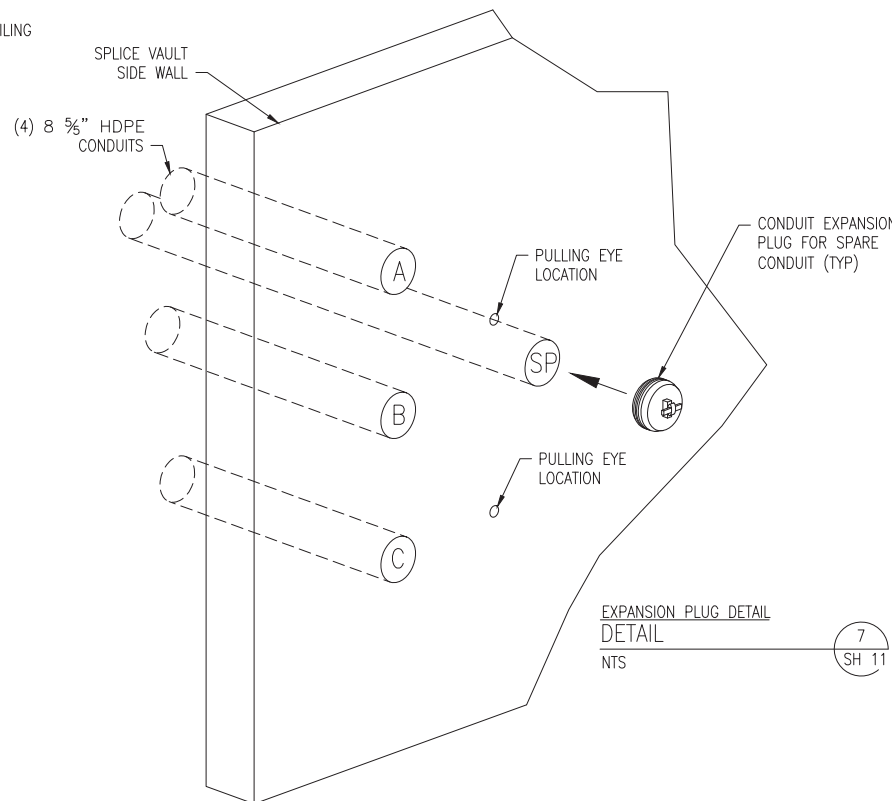
SPLICE VAULT RISER DETAIL
DETAIL 4
NTS SH 11



DETAIL 5
NTS SH 11



GROUND WIRE
DETAIL 6
NTS SH 11



EXPANSION PLUG DETAIL
DETAIL 7
NTS SH 11

NO.	REVISION	DATE	DRWN	CHKD	APPRV.
7	ISSUE FOR PERMIT RELOCATE RISER	12/28/15	REO	SCG	TSG
6	ISSUE FOR PERMIT	12/14/15	REO	SCG	TSG
5	ISSUE FOR PERMIT	11-19-14	REO	SCG	TSG
4	ISSUE FOR REVIEW - ALIGNMENT ADJ.	5-18-15	REO	SMG	TSG
3	ISSUE FOR REVIEW - ALIGNMENT ADJ.	9-8-15	REO	SMG	TSG
2	ISSUE FOR REVIEW - ALIGNMENT ADJ.	10/14/14	SCG	SMG	TSG
1	ISSUE FOR REVIEW	8-25-14	JED	TSG	CS
0	ISSUE FOR REVIEW				

Public Service
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Transmission
Business

T 7

UNDERGROUND TRANSMISSION
PLAN & PROFILE
SEACOAST RELIABILITY PROJECT
SCALE: AS NOTED
DATE: 8/25/2015

TOWN:
NEWINGTON, NH
TRANSMISSION LINE:
F-107
MILE NO.:
DISCIPLINE/SHT NO.:

SHEET 12 OF 12
DETAILS

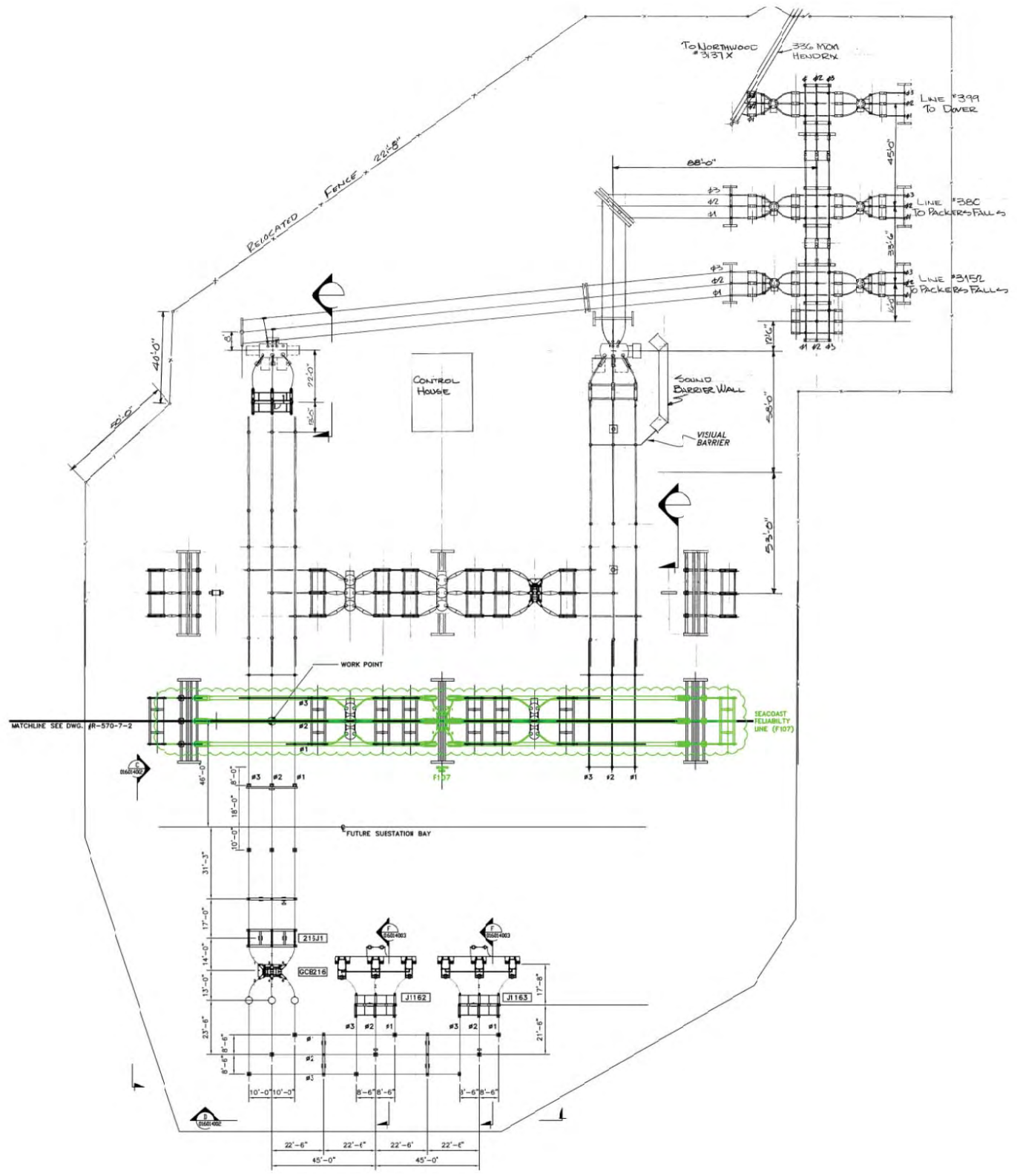


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REVISION: 01/23/2014



ADDITIONS

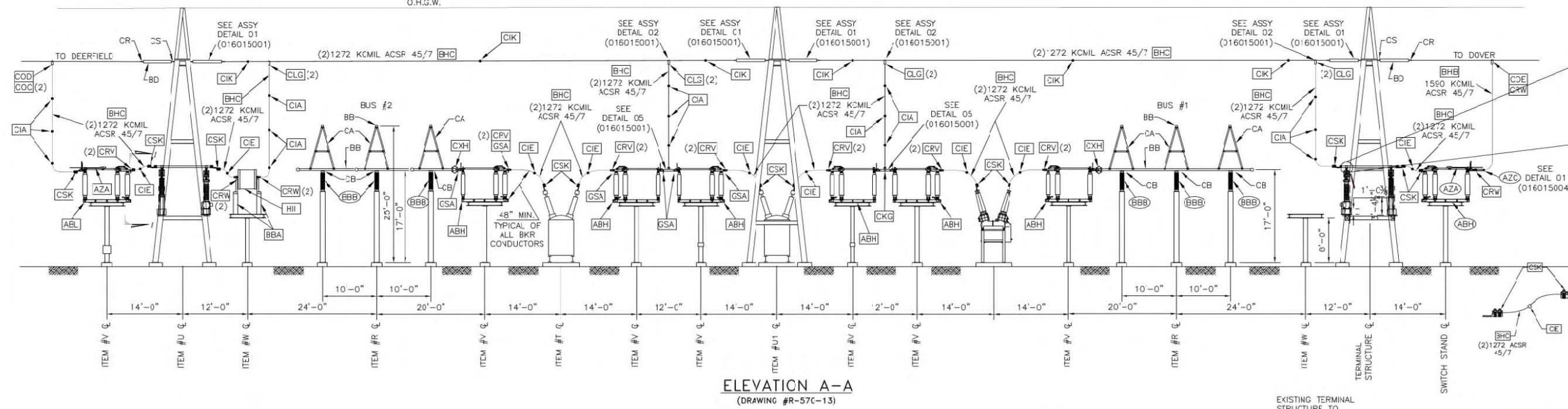
CONTRACT SERVICES		DRAWN FOR REVISION R8465		T 1	
0	ISSUED FOR PERMITTING	4/015	LEIDOS	SAH	NAL
REV	DESCRIPTION	ENG/PI#	DATE	DRN	CHKC
1	RECORD DRAWING	9-8-05	MB	LLM	WFC
DWG REV	EPN/DESCRIPTION	CONT/FE#	DATE	DRN	CHKC
SCALE: 1/32" = 1'-0"		FILE: 016014001.DWG		DRAWING NO. C16014001	
NAME:		DATE:		APPR:	

Public Service of New Hampshire
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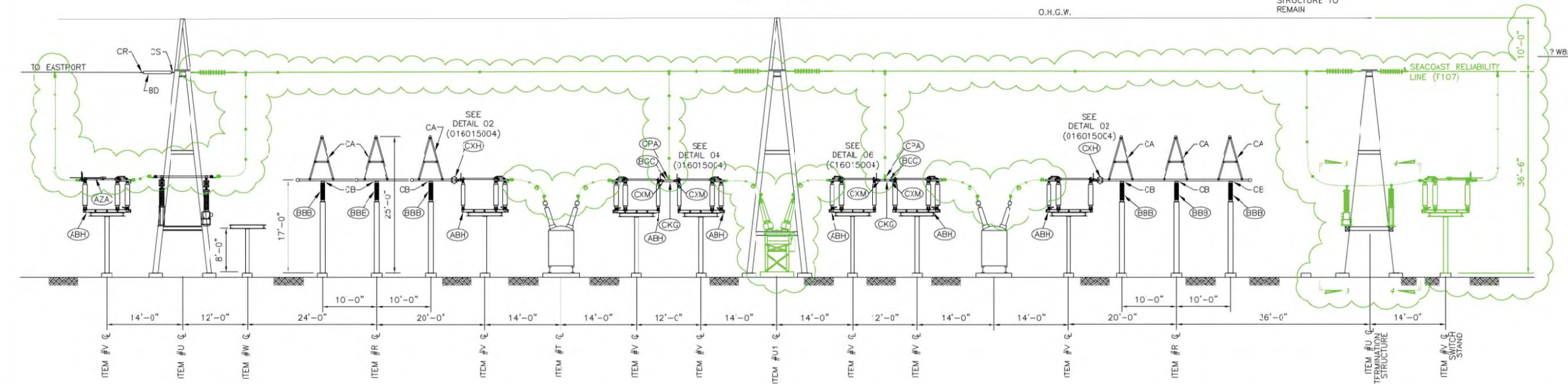
GENERAL ARRANGEMENT PLAN
MADBURY SUBSTATION

CHECKED: WFC-PEI
APPROVED: VCD-PSNH
DATE: 11/10/04

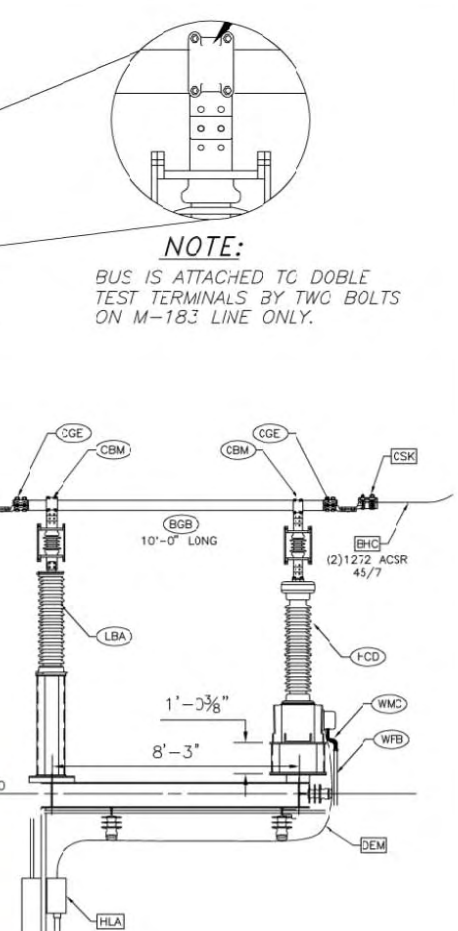
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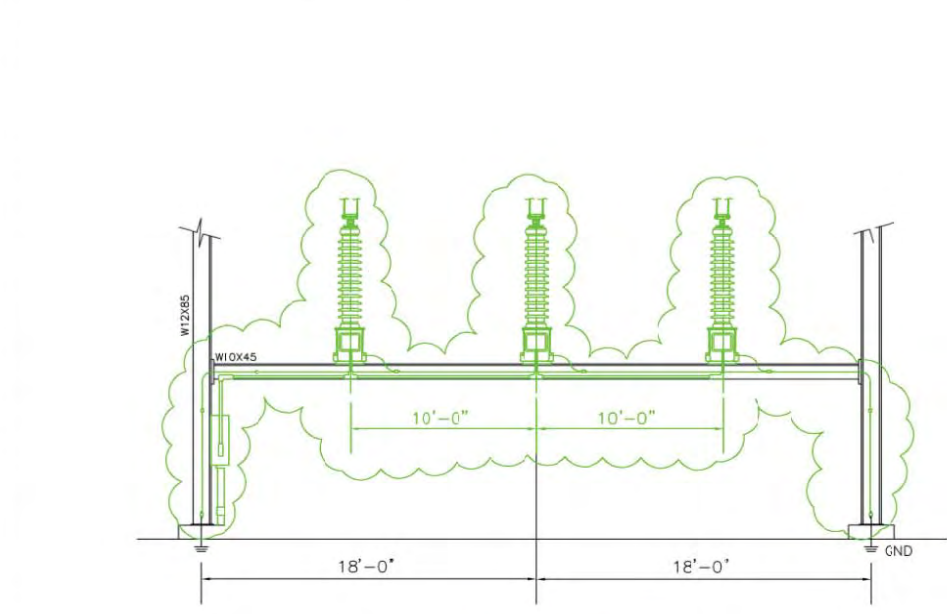
ELEVATION A-A
(DRAWING #R-57C-13)



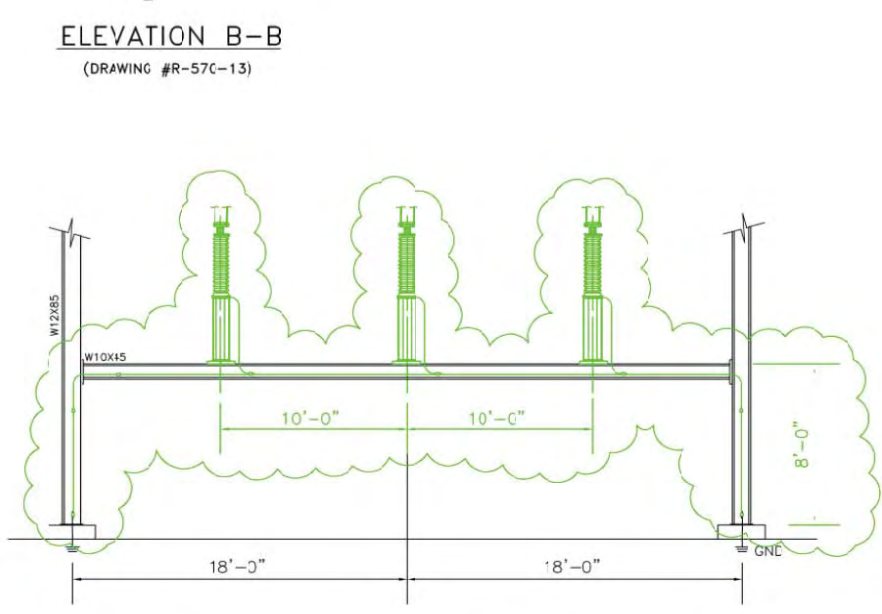
ELEVATION B-B
(DRAWING #R-57C-13)



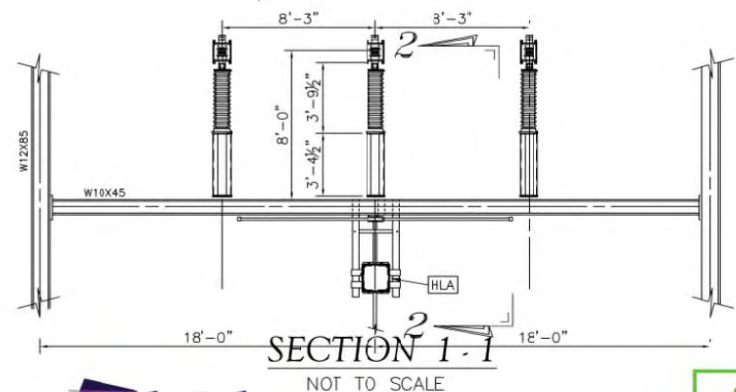
SECTION 2-2
NOT TO SCALE



SECTION 3-3
NOT TO SCALE



SECTION 4-4
NOT TO SCALE



SECTION 1-1
NOT TO SCALE

LEGEND
 [XXX] DENOTES 2010 CONSTRUCTION
 [XXX] DENOTES 2011 CONSTRUCTION
 [XXX] DENOTES 2015 CONSTRUCTION

ADDITIONS



CONTRACT SERVICES	REV	DESCRIPTION	ENG/PI#	DATE	DRN	CHK	APPR
0	ISSUED FOR PERMITTING			4/015	LEIDOS	SAH	NAL
10	ISSUED FOR CONSTRUCTION, REV. RB428		GRP/12333	11/3/13	JN	JFK	DLC
9	AS-BUILT FOR REV 7262		GRP/12333	6/18/11	JTH	SMA	GRP
8	HOLLOW CORE INSULATOR REPL. IFC, REV 7262		GRP/12333	2/7/11	JTH	SMA	GRP
7	AS-BUILT FOR TERMINAL UPGRADE REV. 6866		GRP/12333	12/7/10	JTH	SMA	GRP
6	TERMINAL UPGRADE IFC REV. 6866		GRP/12333	5/8/10	JTH	SMA	GRP
5	01B, L175 & M181 LA & CVT REPL PROJECT AS-BUILT			01/08	DGP		
4	M-183 LA & CVT REPLACEMENT PROJECT			02/07	DGP	KPM	CEC
11	AS-BUILT, REV. RB428			05/20/14	JN	DLC	DLC
DWG REV	SPN/DESCRIPTION			DATE	DRN	CHK	APPR

DRAWN FOR REVISION RB465

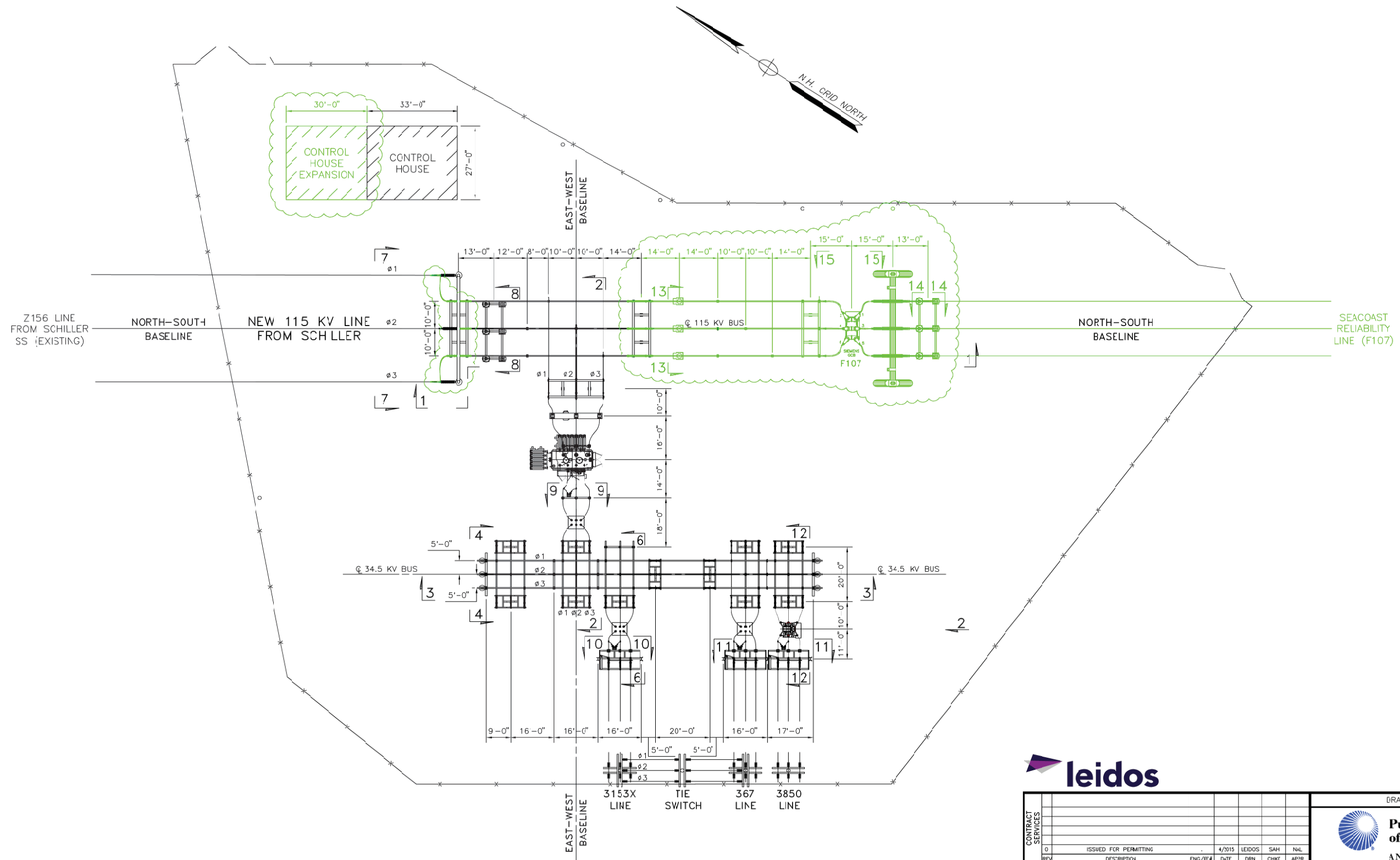
Public Service of New Hampshire
A Northeast Utilities Company

GENERAL ARRANGEMENT & ELEVATIONS
MADBURY 115KV S/S
MADBURY, N.H.

SCALE: 3/32" = 1'-0"
FILE: R-570-13.1-NO MM.DWG
DRAWING NO: R-570-13.1

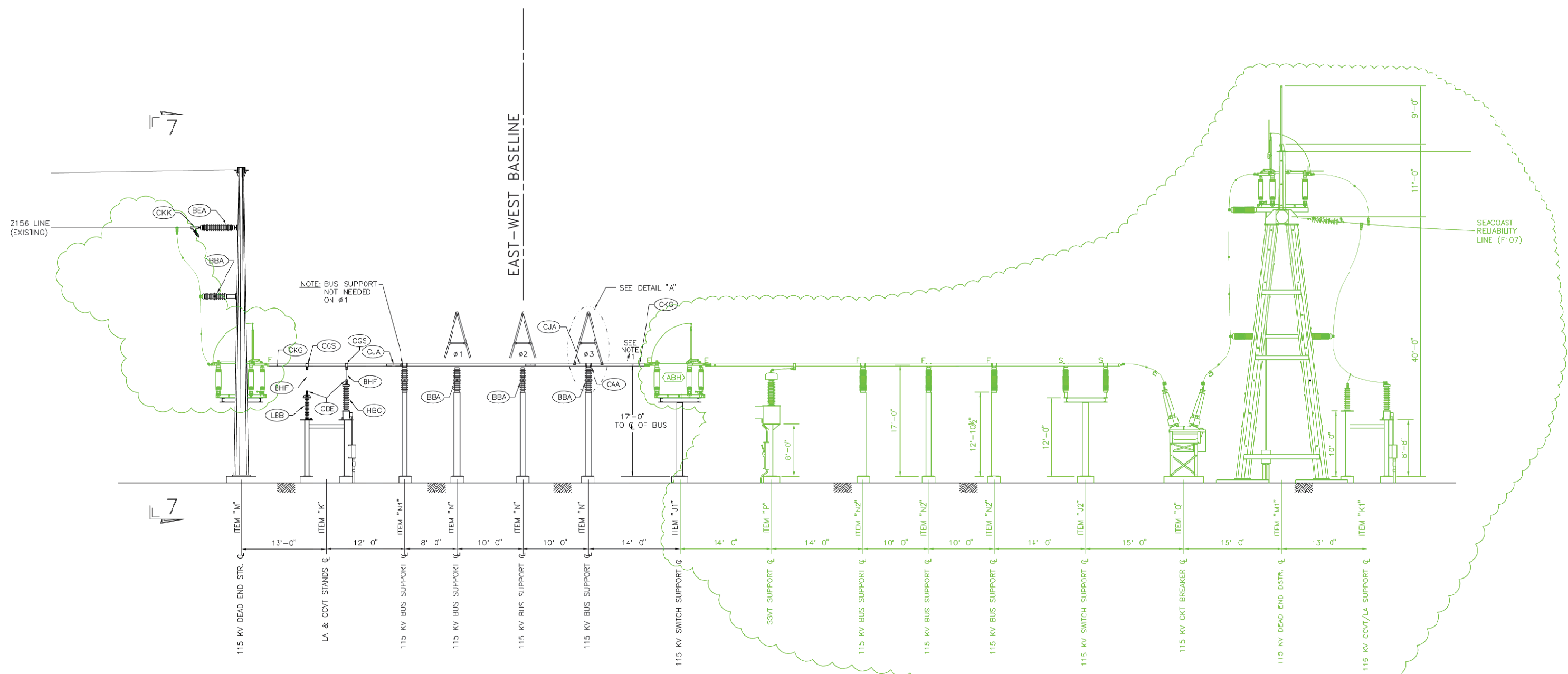
T	11
DRAWN	CLG-PEI
ENGINEER	JWC-PEI
CHECKED	WFC-PEI
APPROVED	MOB-PSNH
DATE	11/18/04

4/8/2015 8:58 AM - c:\pwork\vt\yssh\offices\dmst05789\062514001.DWG - T1276C1-ADDITIONS NU VER: 08/2012

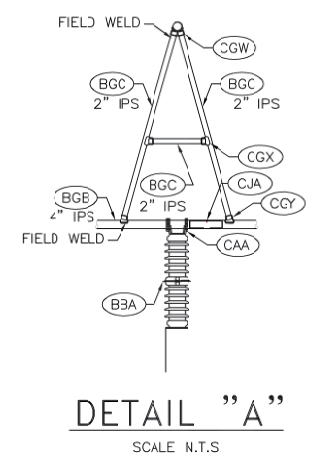


ADDITIONS

CONTRACT SERVICES		DRAWN FOR REVISION RB464				1	2
0	ISSUED FOR PERMITTING	4/015	LEIDOS	SAH	NAL	DRAWN	MDL
REV	DESCRIPTION	ENG/FE#	DATE	DRN	CHKI	APPR	ENGINEER
							RGP
2	FINAL AS BUILDS	12/05	MAR				CHECKED
.1	AS-BUILT & LINE TERMINAL	3/05	J.MAR	EJW	EJW		RGP
DWG REV	EPN/DESCRIPTION	CONT/FE#	DATE	DRN	CHKI	APPR	APPROVED
							RGP
GENERAL ARRANGEMENT PLAN						DATE	
FORTSMOUTH 115/34.5 KV S/S						11/02	
PORTSMOUTH, NH						FILE: 062514001.DWG	
SCALE: 1"=20'						DRAWING NO. 062514001	



SECTION 1-1
SCALE 1/8" = 1'-0"



NOTES:
1.) 477 KCMIL DAMPING CONDUCTOR TO BE INSTALLED IN MAIN 4" IPS BUS RUN.

LEGEND:
<XXX> 2014 CONSTRUCTION, WO# T1276C-DWG# 062516C02



ADDITIONS

CONTRACT SERVICES		DRAWN FOR REVISION RB464				1 2	
0	ISSUED FOR PERMITTING	4/015	LEIDOS	SAH	NAL	DRAWN MDL	
1	AS BUILT	12/05	MAR	RGF	RSP	ENGINEER RGP	
2	CORRECT BUS SUPPORT LAYOUT	5/06	MAR	RGF	RSP	CHECKED RGP	
DWG REV	EPN/DESCRIPTION	DATE	DRN	CHKI	APPR	APPROVED RGP	
						DATE 11/02	
SCALE: 1/8" = 1'-0" FILE: 062514002.DWG DRAWING NO.: 062514002						Public Service of New Hampshire A Northeast Utilities Company GENERAL ARRANGEMENT SECTION 1-1 FORTSMOUTH 115/34.5 KV S/S PORTSMOUTH, NH	

**Public Service Company of New Hampshire
Seacoast Reliability Project**

Madbury, Durham, Newington & Portsmouth, NH

**New Hampshire Department of Environmental Services
Alteration of Terrain Permit Application**

Construction Notes

Prepared for:

**Public Service Company of New Hampshire
d/b/a/ Eversource Energy
780 North Commercial Street
Manchester, NH 03101**

Prepared by:

**Normandeau Associates, Inc.
25 Nashua Road
Bedford, NH 03110**

March 2016

GENERAL NOTES:

1. BACKGROUND AND EXISTING CONDITION INFORMATION PROVIDED BY EVERSOURCE, POWER ENGINEERS, AND CORNERSTONE ENERGY SERVICES INCLUDING CONTOURS, DESIGN AND STRUCTURE LOCATIONS, CROSS SECTIONS, EXISTING STRUCTURES (LiDAR), PARCEL DATA AND LANDOWNER INFORMATION. WETLAND, STREAMS AND OTHER NATURAL RESOURCES DELINEATED BY NORMANDEAU ASSOCIATES (2013-2015). IMPACT ANALYSIS PREPARED BY NORMANDEAU ASSOCIATES BASED ON DESIGN AND NATURAL RESOURCES INFORMATION (2015). AERIAL PHOTO (NH COASTAL 2014), NH DOT ROADS, FEMA FLOODPLAINS, CONSERVATION LANDS (CONSNH) PROVIDED BY NH GRANIT AND ARE PUBLICALLY AVAILABLE. HISTORICAL AND ARCHAEOLOGY DATA PROVIDED BY VICTORIA BUNKER, INC.
2. CONTRACTOR(S) TO TAKE AND VERIFY ALL DIMENSIONS AND CONDITIONS OF THE WORK AND BE RESPONSIBLE FOR COORDINATION OF SAME. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO START OF WORK. CONTRACTORS SHOULD REFER TO DETAILED ENGINEERING PLANS FOR CONSTRUCTION. PERMIT AND ACCESS ROAD/WORK PAD PLANS ARE FOR GENERAL USE ONLY.
3. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.
4. ELECTRICAL SUBSTATION COMPONENTS, UNDERGROUND TRANSMISSION LINES, OVER HEAD TRANSMISSION LINES AND THEIR FOUNDATIONS DEPICTED HEREIN ARE FOR REFERENCE ONLY.
5. CONTRACTOR SHALL TAKE PRECAUTIONS TO ENSURE NO DISTURBANCE BEYOND THE DEPICTED LIMIT OF DISTURBANCE. ANY CHANGES SHALL BE APPROVED AND PERMITTED IN ADVANCE.
6. ALL REGULATORY AGENCY PERMITS REQUIRED FOR THE SITE SHALL BE OBTAINED PRIOR TO SITE WORK COMMENCING.
7. THE PROJECT SHALL MEET THE REQUIRMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES.

EROSION AND SEDIMENTATION CONTROL NOTES:

1. PRIOR TO THE COMMENCEMENT OF ALL CLEARING, DEMOLITION AND CONSTRUCTION ACTIVITY WITHIN THE APPROVED LIMITS OF DISTURBANCE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES.
2. PRIOR TO THE COMMENCEMENT OF ALL CLEARING, DEMOLITION AND CONSTRUCTION ACTIVITY WITHIN THE APPROVED LIMITS OF DISTURBANCE, THE CONTRACTOR SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
3. CONSTRUCTION ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE GENERAL NOTES, SEQUENCE PROVIDED ON THE CONSTRUCTION PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING BY THE OWNER, ENGINEER, AND APPROPRIATE REGULATORY AGENCY PRIOR TO IMPLEMENTATION.
4. THE EROSION AND SEDIMENTATION CONTROL MEASURES, CONSTRUCTION SEQUENCE AND PHASING IS THE MINIMUM RECOMMENDED. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ADDITIONAL MEASURES AND SEQUENCING AS REQUIRED BASED ON ACTUAL FIELD OPERATIONS AND CONDITIONS AND BE CONSISTENT WITH THE NEW HAMPSHIRE STORMWATER MANUAL. SIGNIFICANT ADDITIONS AND/OR MODIFICATIONS FROM THE PLANS SHALL BE SUBMITTED, REVIEWED AND APPROVED BY THE OWNER, ENGINEER AND APPLICABLE REGULATORY AGENCIES.
5. CONTRACTOR SHALL ONLY EXCAVATE AS MUCH UTILITY AND STORM PIPE TRENCH WORK AS CAN BE COMPLETED, BACKFILLED AND STABILIZED IN ONE DAY SO AS TO LIMIT THE AMOUNT OF OPEN, DISTURBED TRENCHING. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION.
6. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL.
7. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
8. AREAS REMAINING UNSTABILIZED FOR A PERIOD OF MORE THAN 30 DAY SHALL BE TEMPORAR LY SEEDED AND MULCHED. HAY MULCH SHALL BE APPLIED AT A MINIMUM RATE OF 1-1/2 TONS /ACRE.
9. PERMANENT SEEDING SHALL OCCUR BETWEEN APRIL 1 AND JUNE 1, AND/OR BETWEEN AUGUST 15 AND OCTOBER 15. ALL SEEDING FROM SEPTEMBER 15 SHALL BE HAY MULCHED.
10. STRAW WATTLES ARE RECOMMENDED ALONG THE EDGES OF ALL WETLAND MATTING WITHIN WETLAND AREAS AND ADJACENT TO STREAMS. ADDITIONAL MEASURES SHOULD BE BASED ON SITE-SPECIFIC CONDITIONS, RISK OF EROSION AND SLOPE AND SHALL INCLOUDE SILT FENCE, STAKED HAYBALES OR APPROVED EROSION CONTROL MIX BERMS AND/OR COMBINATIONS OF THE ABOVE.
11. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE CONTRACTOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.

12. THE CONTRACTOR SHALL KEEP A SUPPLY OF EROSION CONTROL MATERIAL (HAY BALES, SILT FENCE, JUTE MESH, RIP RAP ETC.) ON-SITE FOR MAINTENANCE AND EMERGENCY REPAIRS.
13. STONE CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED AT START OF CONSTRUCTION AND MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION. THE LOCATION OF THE TRACKING PADS MAY CHANGE AS VARIOUS PHASES OF CONSTRUCTION ARE COMPLETED.
14. AT NO TIME SHALL THE TOTAL UNSTABILIZED DISTURBED AREA ON-SITE BE GREATER THAN (5) FIVE ACRES .
15. WATER SHALL BE USED FOR DUST CONTROL IN APPROPRIATE AREAS IN ACCORDANCE WITH ENV-A 1000.
16. MAXIMUM SLOPES SHALL NOT EXCEED 3-FT HORIZONTAL TO 1-FT VERTICAL (3:1), UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL VERIFY SLOPE STABILITY OF ALL SLOPES PRIOR TO CONSTRUCTION. UNSTABLE SLOPES SHALL BE LAID BACK (FLATTENED) UNTIL STABLE OR PROVIDE REINFORCING TO ACHIEVE STABILIZATION. SLOPE BENCHES SHALL BE IN ACCORDANCE WITH THE NHDES STORMWATER MANUAL.
17. THE CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY HIS WORK AT ALL TIMES.
18. TEMPORARY AND PERMANENT SEEDING SHALL BE IN ACCORDANCE WITH THE PLANTING PLAN, NH DES STORMWATER MANUAL VOLUME 3, AND NH DOT STANDARD SPECIFICATIONS SECTION 644.
19. ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
20. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
21. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM OF 85% UNIFORM PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING OR OTHER MOVEMENTS.
22. MAINTAIN ALL PERMANENT AND TEMPORARY SEDIMENT CONTROL DEVICES IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD. UPON COMPLETION OF WORK REMOVE ALL TEMPORARY EROSION CONTROLS.

WINTER CONSTRUCTION NOTES:

1. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 % VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
2. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE TEMPORARILY STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
3. AFTER NOVEMBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.

BLASTING BMPS:

1. A. BEST MANAGEMENT PRACTICES FOR BLASTING. ALL ACTIVITIES RELATED TO BLASTING SHALL FOLLOW BEST MANAGEMENT PRACTICES (BMPS) TO PREVENT CONTAMINATION OF GROUNDWATER INCLUDING PREPARING, REVIEWING AND FOLLOWING AN APPROVED BLASTING PLAN; PROPER DRILLING, EXPLOSIVE HANDLING AND LOADING PROCEDURES; OBSERVING THE ENTIRE BLASTING PROCEDURES; EVALUATING BLASTING PERFORMANCE; AND HANDLING AND STORAGE OF BLASTED ROCK.
2. LOADING PRACTICES. THE FOLLOWING BLASTHOLE LOADING PRACTICES TO MINIMIZE ENVIRONMENTAL EFFECTS SHALL BE FOLLOWED:
 - (A) DRILLING LOGS SHALL BE MAINTAINED BY THE DRILLER AND COMMUNICATED DIRECTLY TO THE BLASTER. THE LOGS SHALL INDICATE DEPTHS AND LENGTHS OF VOIDS, CAVITIES, AND FAULT ZONES OR OTHER WEAK ZONES ENCOUNTERED AS WELL AS GROUNDWATER CONDITIONS.
 - (B) EXPLOSIVE PRODUCTS SHALL BE MANAGED ON-SITE SO THAT THEY ARE EITHER USED IN THE BOREHOLE, RETURNED TO THE DELIVERY VEHICLE, OR PLACED IN SECURE CONTAINERS FOR OFF-SITE DISPOSAL.
 - (C) SPILLAGE AROUND THE BOREHOLE SHALL EITHER BE PLACED IN THE BOREHOLE OR CLEANED UP AND RETURNED TO AN APPROPRIATE VEHICLE FOR HANDLING OR PLACEMENT IN SECURED CONTAINERS FOR OFF-SITE DISPOSAL.

- (D) LOADED EXPLOSIVES SHALL BE DETONATED AS SOON AS POSSIBLE AND SHALL NOT BE LEFT IN THE BLASTHOLES OVERNIGHT, UNLESS WEATHER OR OTHER SAFETY CONCERNS REASONABLY DICTATE THAT DETONATION SHOULD BE POSTPONED.
- (E) LOADING EQUIPMENT SHALL BE CLEANED IN AN AREA WHERE WASTEWATER CAN BE PROPERLY CONTAINED AND HANDLED IN A MANNER THAT PREVENTS RELEASE OF CONTAMINANTS TO THE ENVIRONMENT.
- (F) EXPLOSIVES SHALL BE LOADED TO MAINTAIN GOOD CONTINUITY IN THE COLUMN LOAD TO PROMOTE COMPLETE DETONATION. INDUSTRY ACCEPTED LOADING PRACTICES FOR PRIMING, STEMMING, DECKING AND COLUMN RISE NEED TO BE ATTENDED TO.
3. EXPLOSIVE SELECTION. THE FOLLOWING BMPS SHALL BE FOLLOWED TO REDUCE THE POTENTIAL FOR GROUNDWATER CONTAMINATION WHEN EXPLOSIVES ARE USED:
- (A) EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT ARE APPROPRIATE FOR SITE CONDITIONS AND SAFE BLAST EXECUTION.
- (B) EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT HAVE THE APPROPRIATE WATER RESISTANCE FOR THE SITE CONDITIONS PRESENT TO MINIMIZE THE POTENTIAL FOR HAZARDOUS EFFECT OF THE PRODUCT UPON GROUNDWATER.
4. PREVENTION OF MISFIRES. APPROPRIATE PRACTICES SHALL BE DEVELOPED AND IMPLEMENTED TO PREVENT MISFIRES.
5. MUCK PILE MANAGEMENT. MUCK PILES (THE BLASTED PIECES OF ROCK) AND ROCK PILES SHALL BE MANAGED IN A MANNER TO REDUCE THE POTENTIAL FOR CONTAMINATION BY IMPLEMENTING THE FOLLOWING MEASURES:
- (A) REMOVE THE MUCK PILE FROM THE BLAST AREA AS SOON AS REASONABLY POSSIBLE.
- (B) MANAGE THE INTERACTION OF BLASTED ROCK PILES AND STORMWATER TO PREVENT CONTAMINATION OF WATER SUPPLY WELLS OR SURFACE WATER.
6. SPILL PREVENTION MEASURES AND SPILL MITIGATION. SPILL PREVENTION AND SPILL MITIGATION MEASURES SHALL BE IMPLEMENTED TO PREVENT THE RELEASE OF FUEL AND OTHER RELATED SUBSTANCES TO THE ENVIRONMENT. THE MEASURES SHALL INCLUDE AT A MINIMUM:
- (A) THE FUEL STORAGE REQUIREMENTS SHALL INCLUDE:
1. STORAGE OF REGULATED SUBSTANCES ON AN IMPERVIOUS SURFACE.
 2. SECURE STORAGE AREAS AGAINST UNAUTHORIZED ENTRY.
 3. LABEL REGULATED CONTAINERS CLEARLY AND VISIBLY.
 4. INSPECT STORAGE AREAS WEEKLY.
 5. COVER REGULATED CONTAINERS IN OUTSIDE STORAGE AREAS.
 6. WHEREVER POSSIBLE, KEEP REGULATED CONTAINERS THAT ARE STORED OUTSIDE MORE THAN 50 FEET FROM SURFACE WATER AND STORM DRAINS, 75 FEET FROM PRIVATE WELLS, AND 400 FEET FROM PUBLIC WELLS.
 7. SECONDARY CONTAINMENT IS REQUIRED FOR CONTAINERS CONTAINING REGULATED SUBSTANCES STORED OUTSIDE, EXCEPT FOR ON PREMISE USE HEATING FUEL TANKS, OR ABOVEGROUND OR UNDERGROUND STORAGE TANKS OTHERWISE REGULATED.
- (B) THE FUEL HANDLING REQUIREMENTS SHALL INCLUDE:
1. EXCEPT WHEN IN USE, KEEP CONTAINERS CONTAINING REGULATED SUBSTANCES CLOSED AND SEALED.
 2. PLACE DRIP PANS UNDER SPIGOTS, VALVES, AND PUMPS.
 3. HAVE SPILL CONTROL AND CONTAINMENT EQUIPMENT READILY AVAILABLE IN ALL WORK AREAS.
 4. USE FUNNELS AND DRIP PANS WHEN TRANSFERRING REGULATED SUBSTANCES.
 5. PERFORM TRANSFERS OF REGULATED SUBSTANCES OVER AN IMPERVIOUS SURFACE.
- (C) THE TRAINING OF ON-SITE EMPLOYEES AND THE ON-SITE POSTING OF RELEASE RESPONSE INFORMATION DESCRIBING WHAT TO DO IN THE EVENT OF A SPILL OF REGULATED SUBSTANCES.
- (D) FUELING AND MAINTENANCE OF EXCAVATION, EARTHMOVING AND OTHER CONSTRUCTION RELATED EQUIPMENT WILL COMPLY WITH THE REGULATIONS OF THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES [NOTE THESE REQUIREMENTS ARE SUMMARIZED IN WD-DWGB-22-6 BEST MANAGEMENT PRACTICES FOR FUELING AND MAINTENANCE OF EXCAVATION AND EARTHMOVING EQUIPMENT" OR ITS SUCCESSOR DOCUMENT. (SEE [HTTP://DES.NH.GOV/ORGANIZATION/COMMISSIONER/PIP/FACTSHEETS/DWGB/DOCUMENTS/DWGB-22-6.PDF](http://des.nh.gov/organization/commissioner/PIP/FACTSHEETS/DWGB/DOCUMENTS/DWGB-22-6.PDF))