RANSOM
Consulting, Inc.

Consulting
Engineers
and Scientists

November 19, 2019

Project 171.05027.008

Department of the Army – New England District
Peter Tischbein
Project Manager Regulatory Division
Maine Project Office
442 Civic Center Drive
Augusta, Maine 04330

Re: Nordic Aquafarms, Inc
Request for Additional Information (2)
File No. NAE-2019-01481

Dear Mr. Tischbein:

This letter is in response to your request dated October 7, 2019 for additional materials and information pertaining to our submitted permit application, file number NAE-2019-01481. Included with this letter are your original submitted questions, accompanied by the respective responses. For clarity, the entire comment from the letter has been copied below and italicized. Responses are in regular text, and on the attached plans and figures as referenced below.

1. I will need the original "Preliminary Jurisdictional Determination Form" provided by John Hessler on June 27th.

The Preliminary Jurisdictional Determination Form is attached as Attachment 1. The original has been mailed in hard copy, and a copy provided in the electronic version of this submittal.

2. I have the list of abutters (your Attachment A) but can you send them to me in the form of mailing labels. I only need the 16 listed and John mentioned you typically copy the Town of Northport on your correspondence so please add this address as well. Our office staff will then affix them to the Public Notice as it gets sent out. Please provide me with two sets.

Two sets of the abutters list have been provided on mailing labels, attached as Attachment 2.

3. Attachment C. Sheet 1 of 2. This does not show the expanded W-16 wetland area. Was there impacts associated with the expanded area? Utility line? If not, does not have to be denoted on this Sheet.

The expanded W-16 wetland area was shown on the black and white drawing in Attachment C entitled "Wetland and Stream Survey" and shown in a cross hatched pattern. An updated set of Wetland and Stream Impacts maps reflecting the most recent site survey in October 2019 are attached to this submittal as Attachment 3. The planned domestic waste pipeline leading to City of Belfast sewer crosses W-16. The wetland impact area for this crossing is shown on Map 2 of 4

in Attachment 3. As noted on the revised text of Section 13.0 Compensation Plan also in Attachment 3, no permanent impacts to W-16 are proposed.

4. Attachment C. Sheet 2 of 2. This drawing needs to have the High Tide Line denoted since this is the tidal limits of our permitting jurisdiction for the "fill" work waterward of this line. Although there are small boxes as a legend for the tidal lines, I would add them directly to the respective plotted lines. I would add the nos. 1, 2, & 3 to the Underwater Zones so that the labelling synchs up with the Impact Table. Please add a linear footage of the line in the Intertidal/Surf Zone. Can a corridor width label be added somewhere along the alignment?

The Highest Annual Tide Line has been added to this figure, and the linear footage and width have been added as suggested. The revised wetland impact maps have been broken into four figures for clarity, which are attached to this submittal as Attachment 3. The intertidal and subtidal areas are shown on Maps 3 and 4 within Attachment 3.

5. Attachment F. Sheet CC-101. Eckrote crossing. I need this reduced to 8 ½ x 11 like done for CG-201 (No. 9) and please denote the existing Ordinary High-Water Mark on the plan's Cross Section insert.

Impact compensation plans for the project are in Attachment 4. Culvert replacement locations are shown on Map 3. The reduced plan is attached as Attachment 5 for the replacement of the three hung culverts under the Eckrote driveway. There is a second, single, perched culvert under the Eckrote driveway that currently carries flows from D7 to its confluence with S8. This culvert will also be replaced with an open bottom aluminum arch similar to the attached as part of the project stream impact compensation package.

6. Attachment D. Sheet CS-101. I need a reduced 8 ½ x 11 version of this plan. Given the length this can be on 2 sheets, one of the Plan views with a match line and Cross Section with a match line or both views with a match line. Like Sheet 2 of 2 (Item 4) this should also show the High Tide Line along the shore.

The reduced plan is attached as Attachment 6, which shows the High Tide Line as requested. Note that construction mats are now shown on the drawing for work to be conducted in the intertidal zone. The construction mats will be placed in a linear fashion along the planned trench, and removed when not in use,

7. For Stream Crossing 9 and the Eckrote culvert, if the stream bottom within the footprint of the culvert needs to be disturbed/excavated and then backfilled with imported "embed material" or "stream channel material" we consider that a permanent impact not temporary. Therefore, on the Impact Tables (Attachment E) I will need the temporary impacts for S8 & S9 moved over to the permanent column. I will need these revised impact amounts to go out on Public Notice. Note – Since the Eckrote culvert replacement is being done as part of the project's compensation, the aforementioned permanent impact amount can be backed-out of an In-lieu fee calculation.

The Stream 9 crossing culvert is a box span that will have its supports outside of the existing stream channel banks, so no permanent impacts to the stream channel are anticipated. The Eckrote culvert will replace the existing perched culverts with an open bottom aluminum arch and recreate a stream bottom per Maine DEP Stream-Smart protocol. Since a true stream bottom does not exist within the footprint of the current perched culverts, no permanent impacts are

anticipated during the compensation work of creating a stream channel as part of the aluminum arch installation. There is a second, single, culvert under the Eckrote driveway that is now being proposed for replacement with an aluminum arch (see Impact Compensation Maps, Attachment 4, for location). This is also a perched culvert that carries flow from D7 to its confluence with S8. As with the culvert replacement for S8, a true stream bottom does not exist within the footprint of the current perched culvert and no permanent impacts are anticipated during the compensation work of creating a stream channel as part of an aluminum arch installation. Table 3 is attached as Attachment 7 here for reference.

8. It is not clear what the permanent and temporary impacts are attributed to in the marine Transitional and Underwater Zone 1-3 (Attachment E). The number of permanent impacts are good if it reflects the backfill needed for the trenching. Reduce the impact amounts if you are counting in the concrete anchors in these locations. Once the popes are installed exposed and secured by concrete anchors the permanent impact is just the footprint of the anchor. Are the impact amounts in Table 1 (Attachment G) embodied in the Impact Tables (Exhibit E)? IF not supplement the Impact Tables with Rows that reflect the impacts attributed to the anchors.

Temporary impacts in the Transition and Underwater Zones 1-3 assume impacts to the entire 100-foot wide construction corridor (equipment, staging, etc.), which will be restored-in-place following pipeline installation, minus the area that will remain permanently impacted. Excavated material not restored-in-place will be placed onto barges for transportation and disposal at a permitted offsite and upland facility. Permanent impacts in the Transition Zone, where the pipeline transitions from buried to sitting on the seafloor, are based on the footprint of the partially exposed anchors and partially exposed pipe as it surfaces on the sea floor, prior to being lifted off the sea floor. Permanent impacts in the Underwater Zones 1-3 are based on the anchor footprints and intake structure, as the pipeline will be suspended off the sea floor between anchor points. Based on dive reports, sampling, and video along the pipeline route, the substrate beneath the pipeline in the transition and underwater zones is anticipated to be fairly uniform and silty, limiting the need for additional excavation and/or backfill during pipeline installation. Table 2 of Exhibit E has been modified to reflect that temporary impacts are a product of the 100-foot wide construction corridor minus remaining permanent impacts. Table 2 has been attached here as Attachment 8 for reference.

9. Please provide 8 ½ x 11 drawings of CS501 anchoring plan.

An 8 1/2 x 11 drawing of CS501 is attached as Attachment 9.

Peter Tischbein
Department of the Army – New England District

Please contact me with any additional questions or comments.

Sincerely,

RANSOM CONSULTING, INC.

Elizabeth M. Ransom, P.G.
Senior Project Manager

EMR:jar
Attachments

ATTACHMENT 1

Preliminary Jurisdictional Determination Form

Nordic Aquafarms, Inc
Request for Additional Information (2)
File No. NAE-2019-01481

Ransom Consulting, Inc.
Project 171.05027.008

US Army Corps of Engineers®
New England District

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

1. Report completion date for Preliminary Jurisdictional Determination (JD): June 26, 2019

2. Name and Address of Person Requesting Preliminary JD: Nordic Aquafarms, Inc., 551 Congress St., Suite 500 Portland, Maine 04101

3. District office, file name and number: New England District, Maine Project Office, Nordic Aquafarms, Inc., NAE-2019-01481

4. Project location(s) and background information: Place permanent and temporary fills in freshwater wetlands, below the Ordinary High Water Mark of streams, into saltmarsh wetlands and waterward of the High Tide Line in the City of Belfast and in Belfast Bay. The fills are necessary to construct an upland salmon aquafarm with marine intake and discharge pipes.

State: **Maine** County: **Waldo** City: **Belfast**
Coordinates of site (lat/long in degree decimal format):
Lat. **44.3959600 ° N**, Long. **-68.9888900 ° W**
Universal Transverse Mercator: **19**

Name of nearest waterbody: **Little River & Belfast Bay**

Identify (estimate) amount of waters in the review area:
Non-wetland waters: **4,000** linear feet: **varied 2-6 ft.** width (ft)
Cowardin Class: **Palustrine unconsolidated bottom.**
Stream Flow: **Intermittent**
Wetlands: **4.0 + acres**
Cowardin Class: **Palustrine forested.**

Name of any water bodies on the site that have been identified as Section 10 waters:
Tidal: **Belfast Bay**
Non-Tidal: **None.**

5. Review performed for site evaluation (check all that apply):
☒ Office (Desk) Determination. Date: **June 18, 2019**
☒ Field Determination. Date(s): **August 6, 2018**

a. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD)

for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

b. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

c. Supporting Data. Data reviewed for Preliminary JD - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **Belfast Aquaculture Project Wetland and Stream Survey produced by Normandeau Associates**.
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant. **Contained in administrative record.**
  ☒ Office concurs with data sheets/delineation report.
  ☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps:
☐ Corps navigable waters' study:
☒ U.S. Geological Survey Hydrologic Atlas: **Maine Coastal Subregion 01050002**
  ☐ USGS NHD data.

☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name: **1:24,000 Searsport**
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: **Waldo County**
☒ National wetlands inventory map(s). Cite name: **Searsport**
☐ State/Local wetland inventory map(s):
☒ FEMA/FIRM maps:
☒ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☐ Aerial (Name & Date): **Available on Google Earth**.
or ☒ Other (Name & Date): **Ground photos provided by applicant**.
☐ Previous determination(s). File no. and date of response letter:
☐ Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Peter Tischbein Date
Regulatory Project Manager
Maine Project Office
U.S. Army Corps of Engineers

10/11/19
Nordic Aquafarms, Inc. Date
Ed Cotter
Project Director

ATTACHMENT 2

Abutter List Mailing Labels

Nordic Aquafarms, Inc
Request for Additional Information (2)
File No. NAE-2019-01481

City of Belfast
131 Church Street
Belfast, Maine 04915

R.W. & J.E. Curtis Irrevocable Trust
34 Perkins Road
Belfast, Maine 04915

Belfast Water District
285 Northport Ave
Belfast, Maine 04915

Samuel Cassida
Jacqueline Cassida
271 Northport Ave
Belfast, Maine 04915

Robert F. Prescott Jr.
448 Town Farm Road
Bucksport, Maine 04416

Jeffrey R. Mabee
Judith B. Grace
290 Northport Ave
Belfast, Maine 04915

Rosemary R. Prescott
30 Herrick Road
Belfast, Maine 04915

Larry D. Theye
Betty Becker-Theye
286 Northport Ave
Belfast, Maine 04915

Kyle E. Engstrom
Heather Ross Engstrom
20 Herrick Road
Belfast, Maine 04915

Richard Eckrote
Janet Eckrote
42 Grandview Ave
Lincoln Park, New Jersey 07035

Debby A. Heath
14 Herrick Road
Belfast, Maine 04915

Lyndon W. Morgan
1 Tozier Street
Belfast, Maine 04915

George Flimlin
Larissa Flimlin
530 E Jimmie Leeds Rd
Galloway, New Jersey 08205

Islesboro Island Trust
c/o Stephen Miller
PO Box 182
Islesboro, Maine 04848

Eleanor G. Daniels
Donna L. Broderick
28 Perkins Road
Belfast, Maine 04915

Jim Grant
Amy Grant
67 Perkins Road
Belfast, Maine 04915

Lisa Jo Desmarteau
James T. Desmarteau
10855 SW Visconti Way
Port Saint Lucie, Florida 34986

Town of Northport
16 Beech Hill Road
Northport, Maine 04849

Golden Rod Properties, LLC
34 Perkins Road
Belfast, Maine 04915

ATTACHMENT 3

Revised Compensation Section 13.0 11-14-19

Nordic Aquafarms, Inc
Request for Additional Information (2)
File No. NAE-2019-01481

13.0 SECTION 13 - COMPENSATION PLAN

A revised comprehensive resource compensation plan is presented by Normandeau Associates, Inc. for the proposed development and can be found in **Appendix 13-A.** As part of the application requirements, Nordic Aquafarms has provided proof of financial capacity to carry out the compensations in **Appendix 13-B**.

Compensatory mitigation measures included under NRPA that can be considered, at the Corps discretion, to reduce the in-lieu-fee payment include:

- Preservation of a deeded buffer (4.73 acres) encompasses the enhancement of riparian restoration areas (2.09 acres) as well as existing riparian areas that are currently well vegetated along the stream designated as S9. The deeded area is proposed on both sides of S9 and is, at a minimum, 75 ft wide and as much as 150 ft in width. S9 is the only intermittent stream within the project site that is indicated on the USGS topographical maps and is therefore considered the most appropriate stream for restoration and preservation.
- Enhancement of streams through the stabilization of slopes and stream bed protection at streams S3, S5, and S6 (1,633.50 sq ft, 65.5 l ft). This includes:

  S3 (32 l ft)
  Western Bank:
  - Native plantings after bridge replacement (160 sq ft)
  - Revegetation with native plantings (297 sq ft)

  Eastern Bank:
  - Stone steps along steeply sloped trail (195 sq ft)
  - Slope stabilization with native plantings (390 sq ft)

  S5 (9 l ft):
  - 166.5 sq ft of stream bed protection with a new bridge

  S6 (24.5 l ft):
  - 325 sq ft of stream bed protection with a new bridge)
  - Revegetation with native plantings on either side of bank (100 sq ft)

- Restore aquatic passage at 2 culvert locations under the Eckrote property driveway

  S8 (13 l ft):
  - Replace 3 perched culverts with 1 aluminum arch culvert and stabilize disturbed slopes with native plantings (65 sq ft)

  D7 (95 l ft):
  - Replace 1 perched culvert with 1 aluminum arch culvert and stabilize slopes at plunge pool with native plantings (90 sq ft)

- Restore temporary impacts as follows:
  - Restore in kind and in place 2,295 sq ft of salt marsh
  - Restore in kind and in place 486 sq ft of cobble beach
  - Restore in kind and in place 78,300 sq ft of mudflat
  - Restore in kind and in place 1,245 sq ft of scrub shrub wetland
  - Restore in kind and in place 120 l ft of stream S9
  - Convert 2,716 sq ft of forested wetland (W6) to emergent wetland

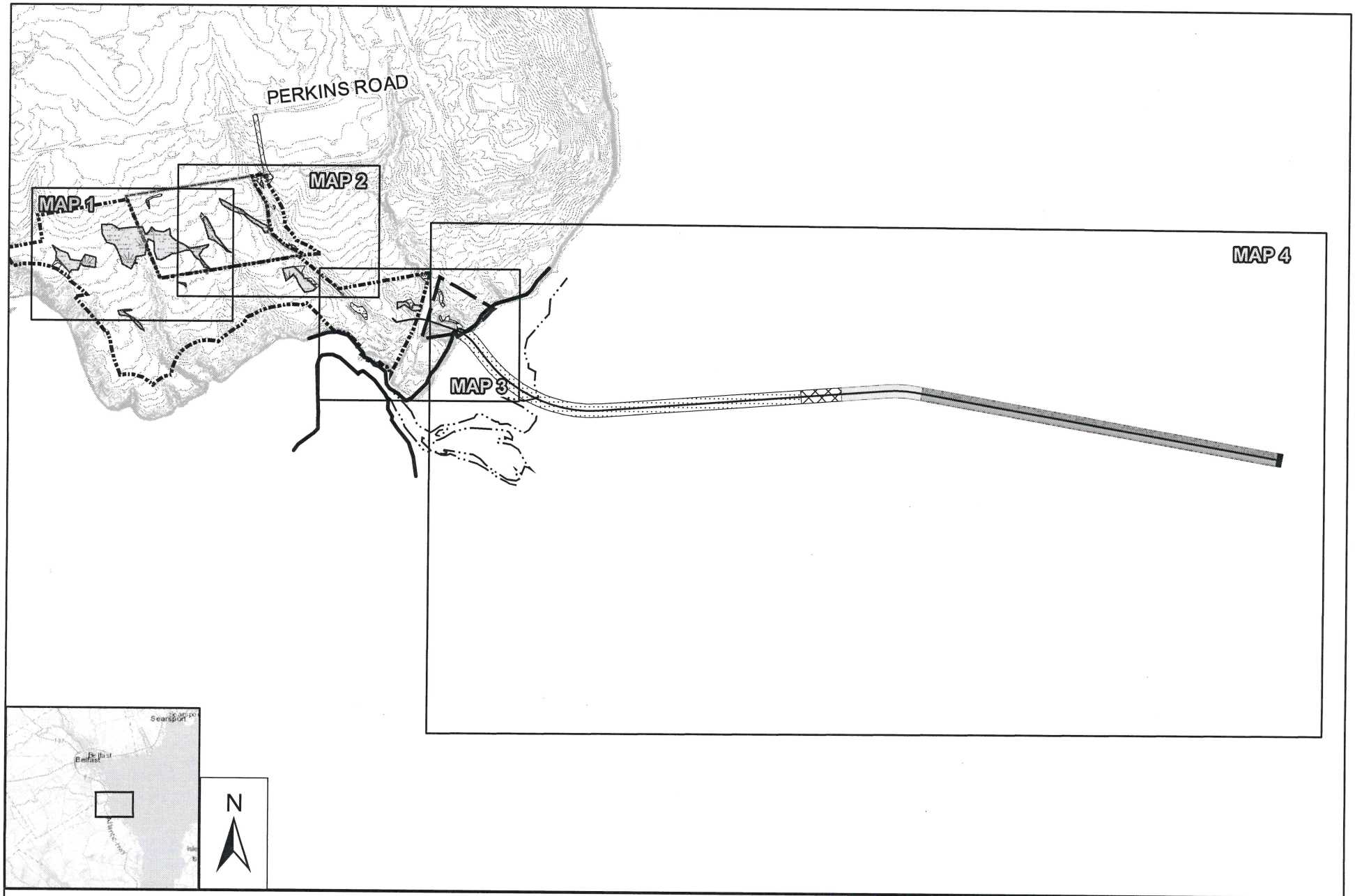
The New England District Compensatory Mitigation Guidance (9-7-16, “Guidance”) was reviewed and the proposed compensation plan, as outlined above, is evaluated based on interpretation of the multiplier

tables in Appendix C of the Guidance document. Table 1 outlines the estimated credits and required compensation based on the Guidance and the tables provided in Appendix C of the Guidance document.

Table 1. Impact and Compensatory Mitigation Assessment

Impact Type	Wetland Type/Impact	Guidance	Compensation Provided/Required
Direct/Permanent Wetlands (Guidance Table C-1)	Emergent/0.55 acres (23,884 sq ft) W13, W15, W19		-None proposed -Pay assessed in-lieu-fee for 0.55 acres of uncompensated impacts
	Forested/3.43 acres (149,513 sq ft) W1,W2, W3, W4, W6		-None proposed -Pay assessed in-lieu-fee for 3.43 acres of uncompensated impacts
	Scrub Shrub/0.43 acres (18,672 sq ft) W5		-None proposed -Pay assessed in-lieu-fee for 0.43 acres of uncompensated impacts
Temporary Impact Wetlands (Guidance Table C-2)	Conversion - Forested to Emergent (20 ft wide sewer crossing)/0.029 acres (1,245 sq ft) W16	30%	-0.0087 acres provided -Pay assessed in-lieu-fee for 0.0203 acres of uncompensated impacts
	Edge effect High level 50 ft (sewer crossing)	25%	-Wetland is 30 ft wide to the northwest and 20 ft wide to the southeast of the crossing (50 ft) High level --Pay assessed in-lieu-fee for uncompensated impacts
	Edge effect remainder 100 ft, total 150 ft (sewer crossing)	10%	-To either side of crossing wetland is 120 ft in total width. -Remainder of edge is 20 ft wide -Pay assessed in-lieu-fee of uncompensated impacts
	Emergent – revert to previous (salt marsh) W11	5%	-Restore in place 0.048 acres (2,125 sq ft) -Pay assessed in-lieu-fee for 0.0024 acres of uncompensated impacts
	Conversion - Forested to Emergent (Rte. 1 by-pass) W6	30%	-0.041 acres converted (1,766 sq ft) -Pay assessed in-lieu-fee for 0.0287 acres of uncompensated impacts
	Edge effect High level 50 ft (Rte. 1 by-pass)	25%	-Wetland is 80 ft wide to the northwest and 10 ft wide to the southeast of crossing (60 ft High level) --Pay assessed in-lieu-fee for uncompensated impacts
	Edge effect remainder 100 ft, total 150 ft (Rte. 1 by-pass)	10%	-To either side of the crossing is wetland is 90 ft in total width. -Remainder of edge is 20 ft wide -Pay assessed in-lieu-fee for uncompensated impacts
Direct Impact Streams (Guidance Table C-3 - Other)	Intermittent – poor condition (buildings and related infrastructure) S3, S4, S5, S6		-1,868 l ft of permanent impacts

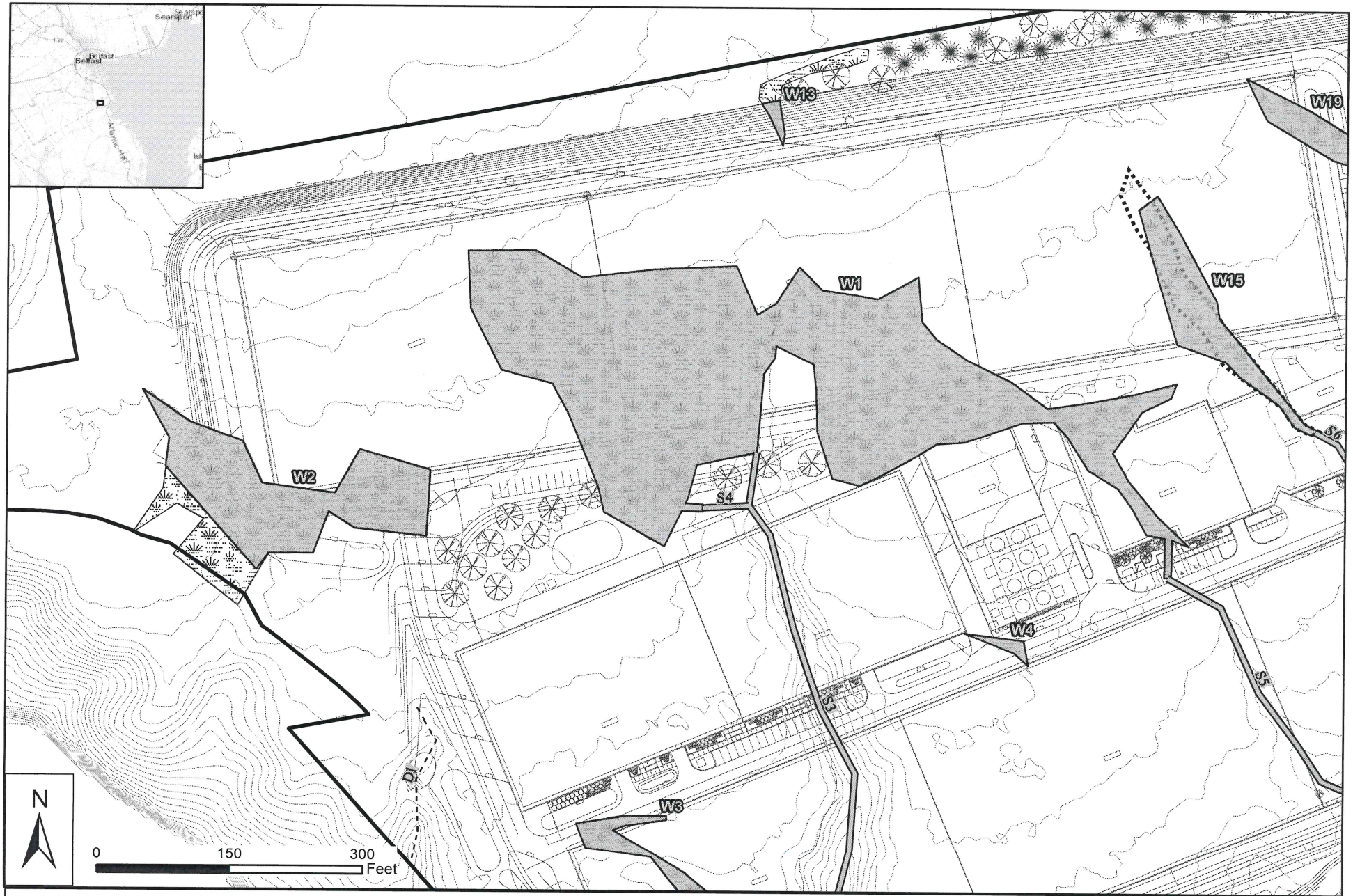
Stream Credit (Guidance Table C-5)	Intermittent – Good condition S9	0.5 0.8 0.5	-Enhancement of riparian buffer (both banks of S9) 1,285 l ft. -Reduce assessed in-lieu-fee for 642.5 l ft of compensation -Deeded riparian buffer protection (4.73 acres) -Reduce assessed in-lieu-fee for 3.78 acres of buffer protection -Restore 120 l ft for Sewer and Rte. 1-by-pass. -Pay assessed in-lieu-fee for 60 l ft of uncompensated impacts
	Intermittent – poor condition S8, D7	0.5	-Modification to eliminate fully lined channel, restore connectivity (Eckrote driveway culverts) 115 l ft -No assessed in-lieu-fee for driveway culvert improvements -Reduce assessed in-lieu-fee for 115 l ft of stream enhancement
	Intermittent – poor condition S3, S4, S5, S6	0.1	See list above for S3, S4, S5, and S6 (65.5 l ft). -Reduce assessed in-lieu-fee for 6.55 l ft of stream enhancement
Temporary Impact Wetlands (Guidance Table C-7)	Cobble beach/mudflat –re-establishment	3	-Restore in place 0.011 acres (486 sq ft) - Reduce assessed in-lieu-fee for 0.033 acres of restored cobble beach/mudflat



Belfast Aquaculture Project
Wetland and Stream Impact Mapping
Index Map - November 8, 2019

0 500 1,000 Feet

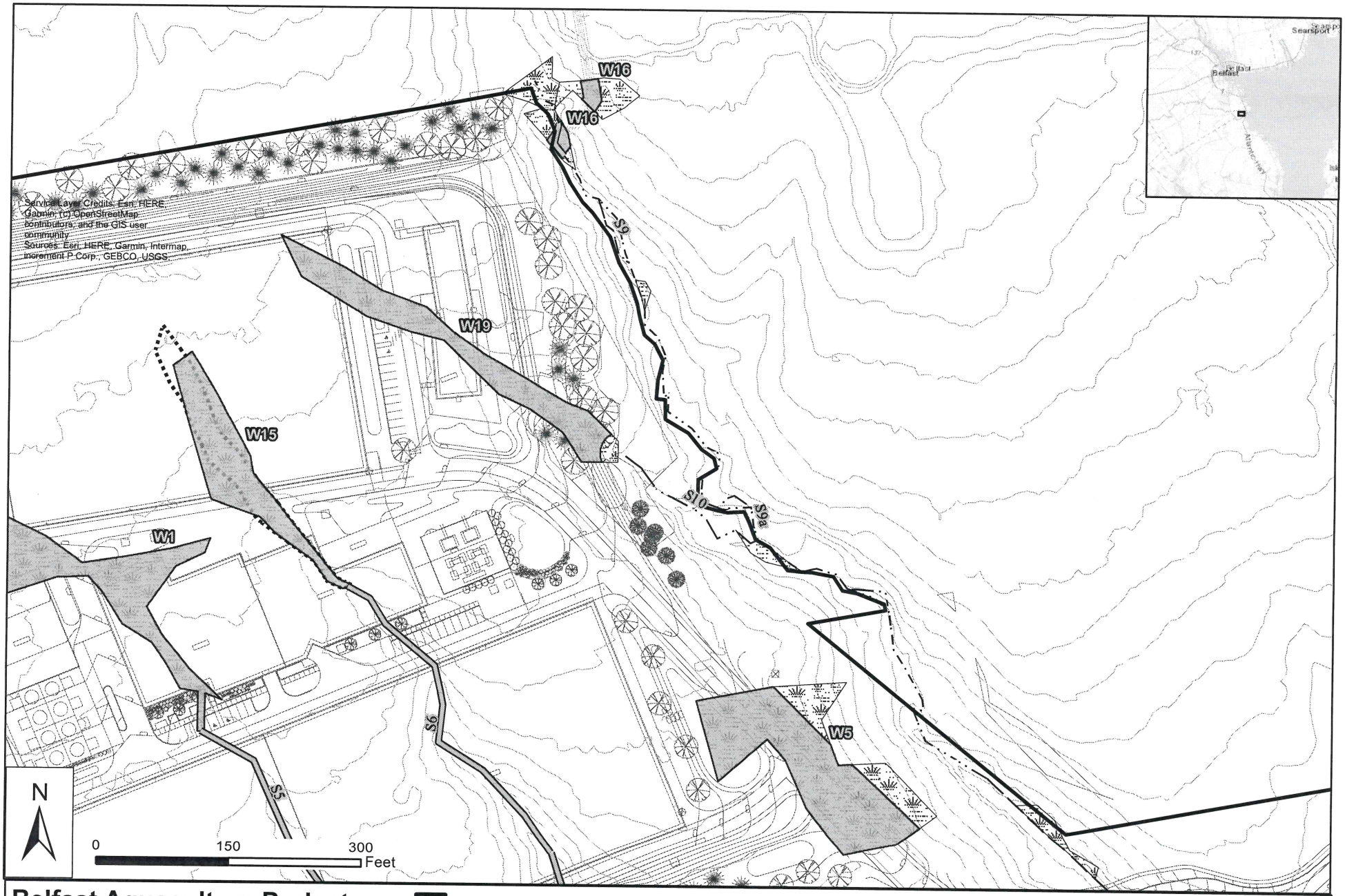
NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS



Belfast Aquaculture Project
Wetland and Stream Impacts
Map 1 of 4 - November 8, 2019

- Site Boundary
- Eckrote Parcel
- Proposed Development
- Current Pipeline Route
- 40' Pipeline Easement
- Temporary Route 1 By-Pass
- Limit of Rte 1 by-pass work
- Intermittent Stream Impact
- Existing Culvert
- Drainage
- Intermittent Stream
- × — × Stream Not Field Delineated
- Wetland Impact
- Palustrine Wetlands
- Salt Marsh
- Cobble Beach
- Previous NAI Delineation

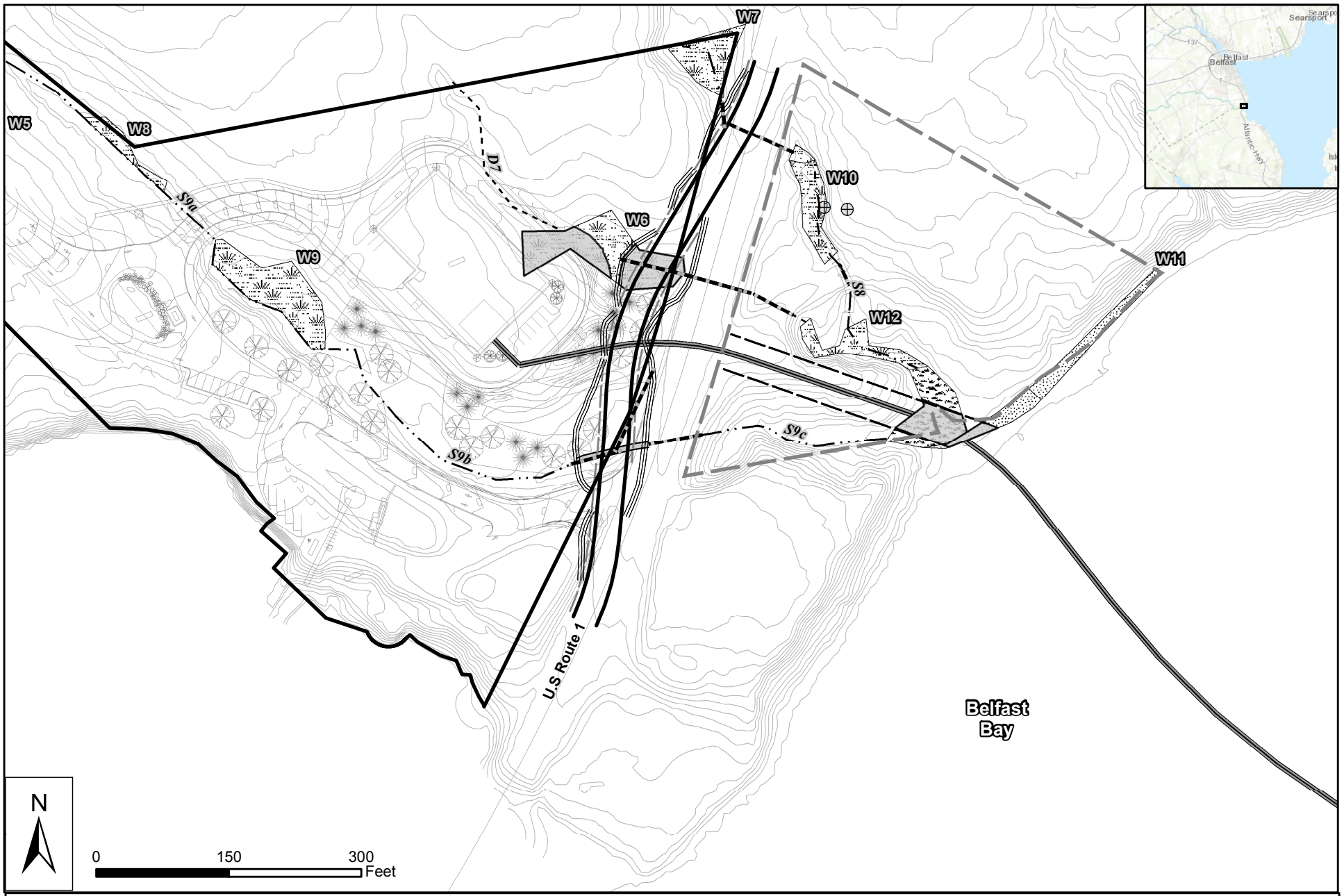
NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS



Belfast Aquaculture Project
Wetland and Stream Impacts
Map 2 of 4 - November 8, 2019

- Site Boundary
- Eckrote Parcel
- Proposed Development
- Current Pipeline Route
- 40' Pipeline Easement
- Temporary Route 1 By-Pass
- Limit of Rte 1 by-pass work
- Intermittent Stream Impact
- Existing Culvert
- Drainage
- Intermittent Stream
- Stream Not Field Delineated
- Wetland Impact
- Palustrine Wetlands
- Salt Marsh
- Cobble Beach
- Previous NAI Delineation

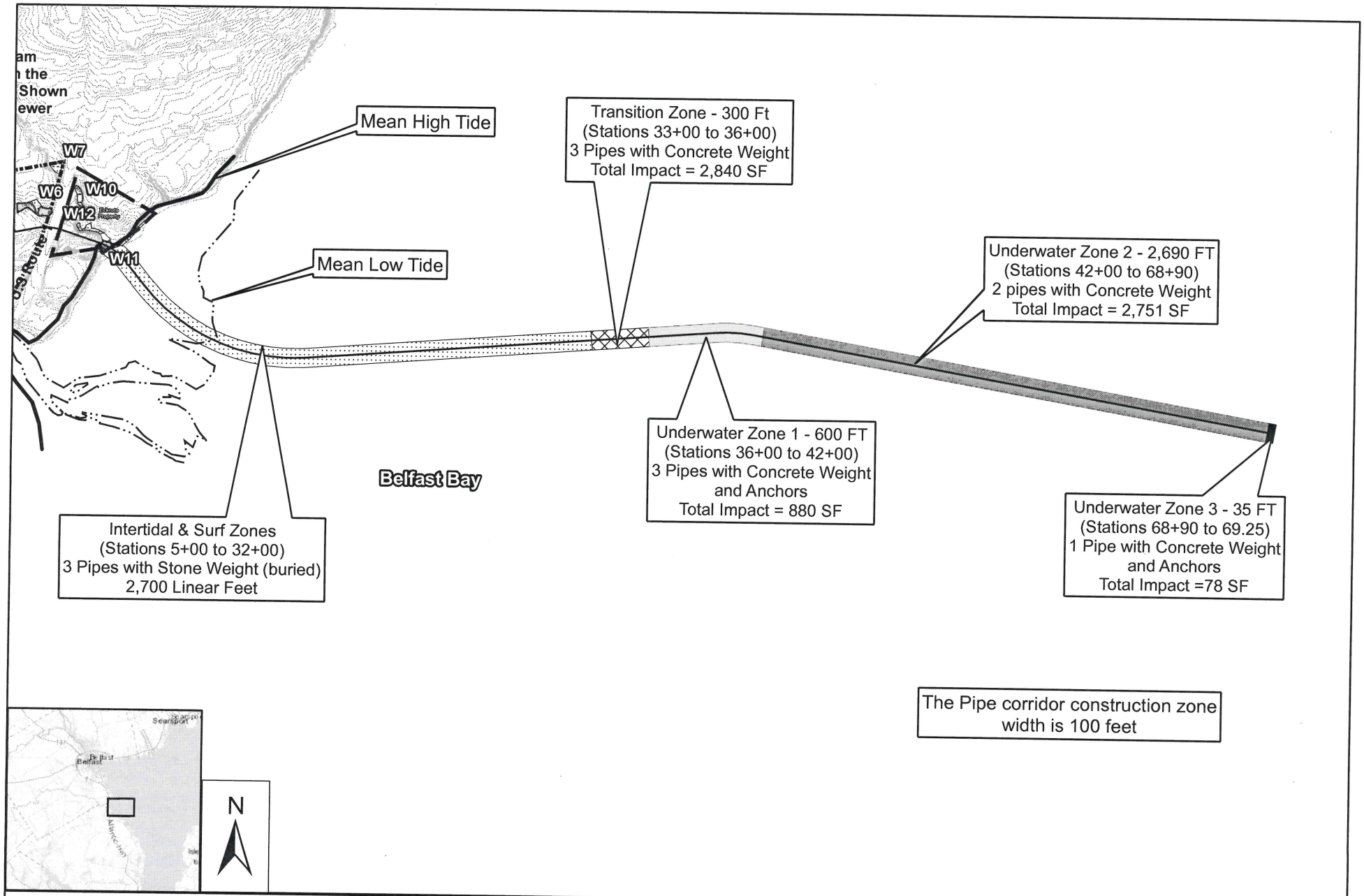
NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS



Belfast Aquaculture Project
Wetland and Stream Impacts
Map 3 of 4 - November 8, 2019

Site Boundary
Eckrote Parcel
Proposed Development
Current Pipeline Route
40' Pipeline Easement
Temporary Route 1 By-Pass
Limit of Rte 1 by-pass work
Intermittent Stream Impact
Existing Culvert
Drainage
Intermittent Stream
Stream Not Field Delineated
Wetland Impact
Palustrine Wetlands
Salt Marsh
Cobble Beach
Previous NAI Delineation

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS



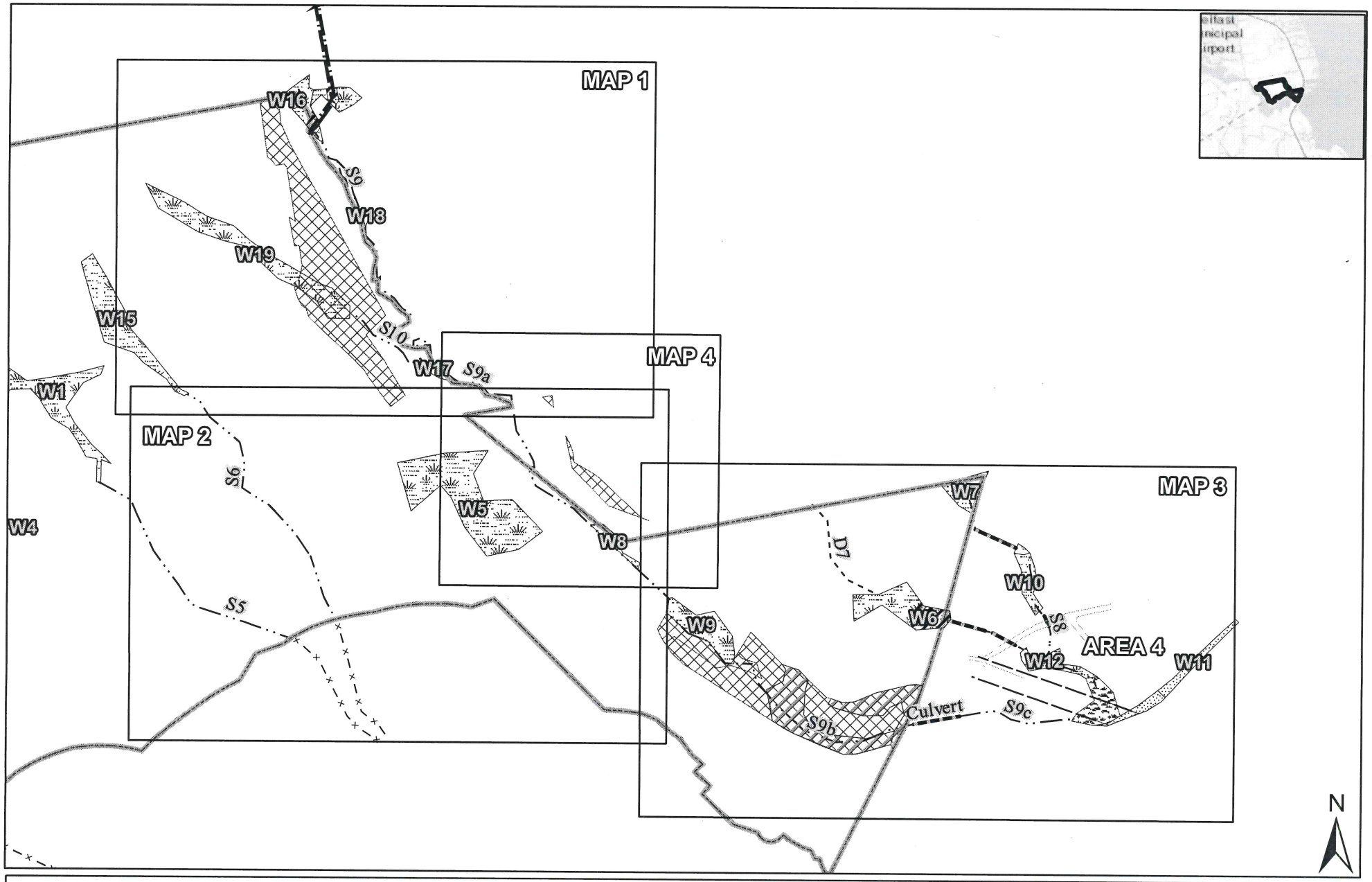
Belfast Aquaculture Project
Wetland and Stream Impact Mapping
Map 4 of 4 - November 8, 2019

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS

ATTACHMENT 4

Impact Compensation Maps

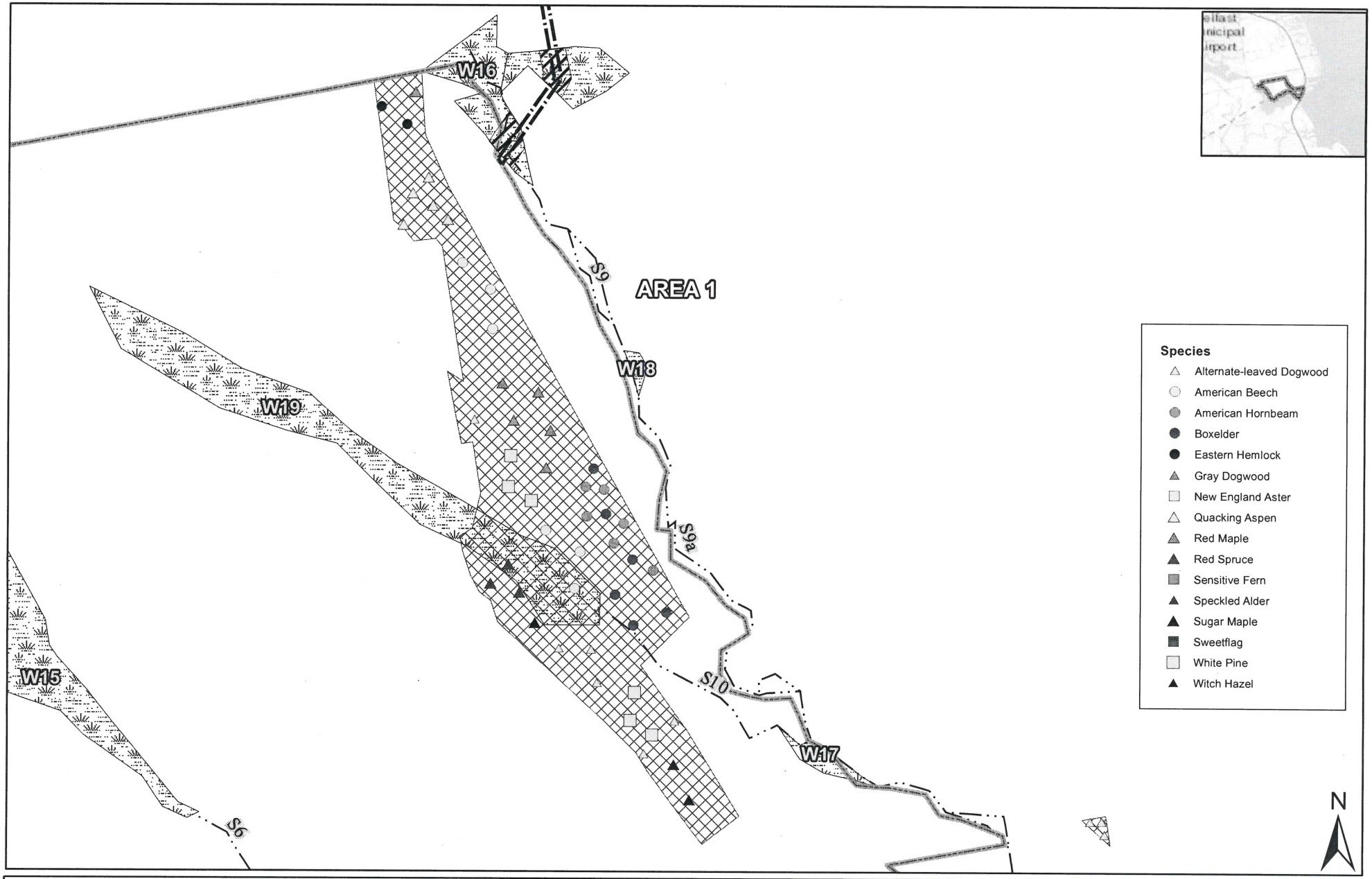
Nordic Aquafarms, Inc
Request for Additional Information (2)
File No. NAE-2019-01481



Belfast Aquaculture Project
Impact Compensation Index Map
Date: November 8, 2019

0 125 250 500 Feet

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS

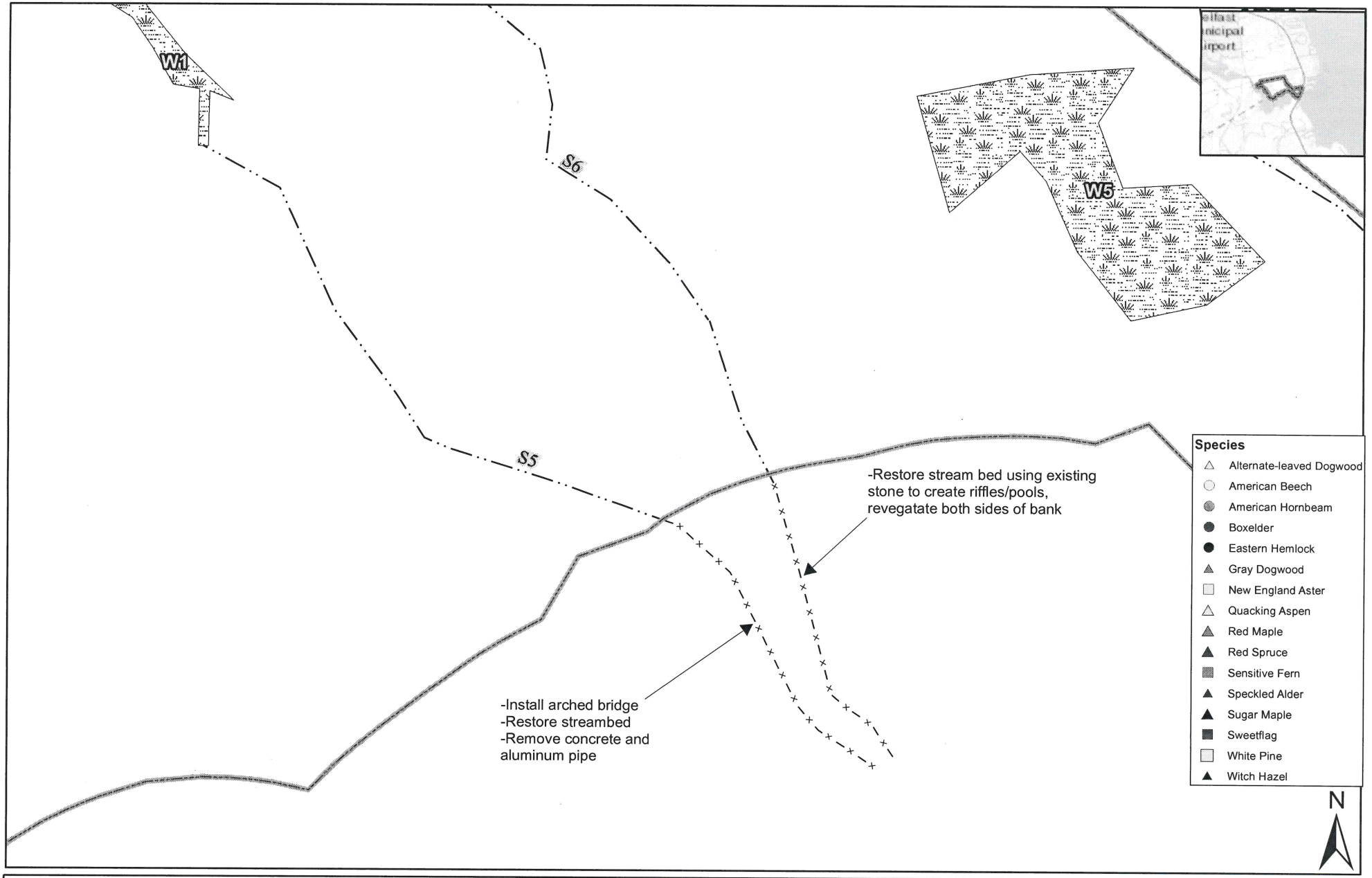


Belfast Aquaculture Project
Impact Compensation Map 1
Date: November 8, 2019

Sewer Easement
New England Wet Mix
Project Area
Intermittent Stream
Palustrine Wetlands
Riparian Restoration Area

0 50 100 200 Feet

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS

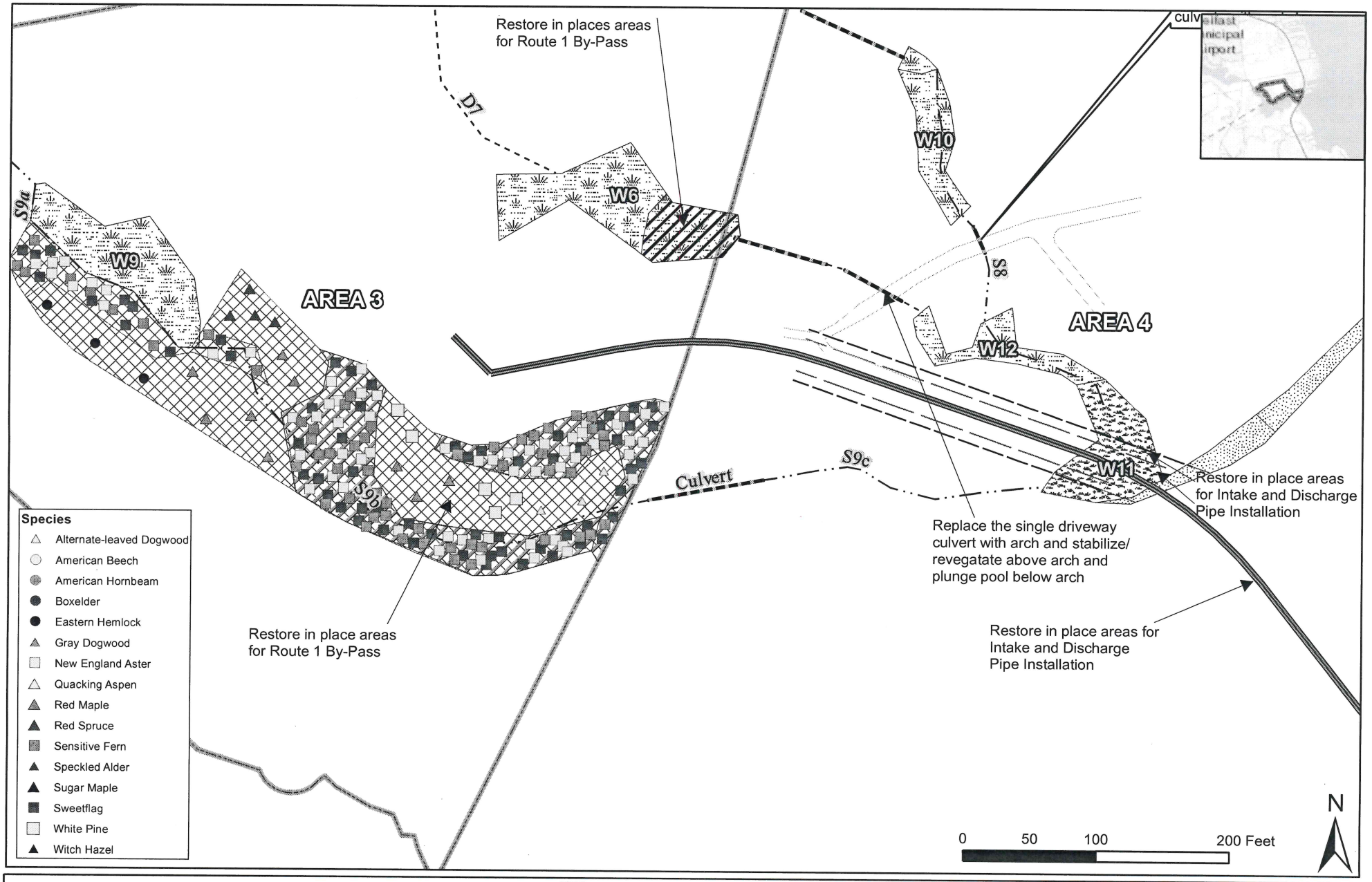


Belfast Aquaculture Project
Impact Compensation Map 2
Date: November 8, 2019

Project Area
Intermittent Stream
Stream or Drainage Not Field Delineated
Palustrine Wetlands
Riparian Restoration Area

0 50 100 200 Feet

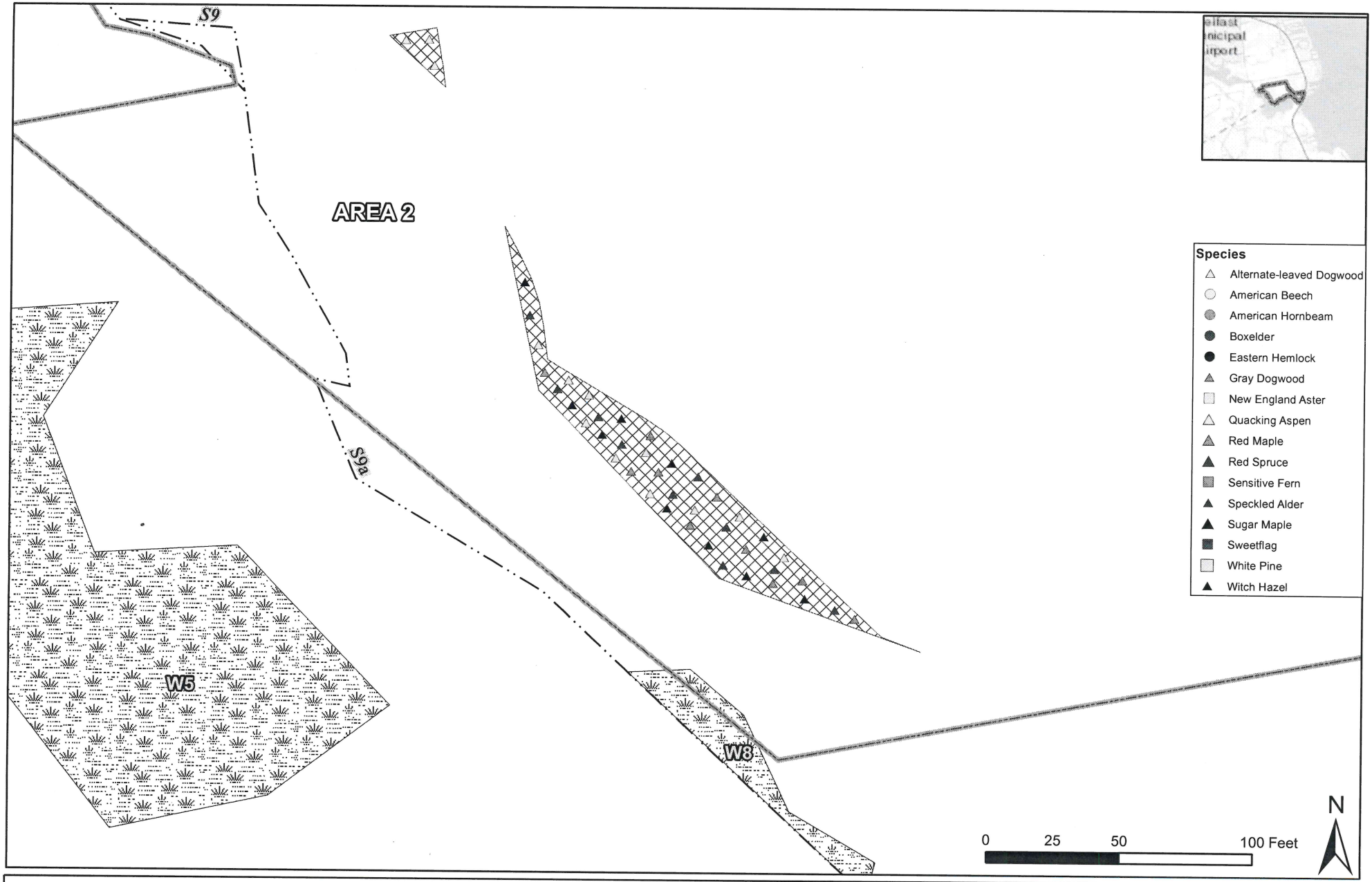
NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS



Belfast Aquaculture Project
Impact Compensation Map 3
Date: November 8, 2019

- 40' Pipeline Easement
- Eckrote_Driveway_Digitized
- Current Pipeline Route
- Conservation Wildlife Mix
- New England Wet Mix
- Project Area
- Existing Culvert
- Drainage
- Intermittent Stream
- Palustrine Wetlands
- Salt Marsh
- Cobble Beach
- Riparian Restoration Area

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS



Belfast Aquaculture Project
Impact Compensation Map 4
Date: November 8, 2019

Project Area
Intermittent Stream
Palustrine Wetlands
Riparian Restoration Area

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS

Herbaceous Species	Planting Specification/Number of Stock				
	*Indicator Code	Restoration Area 1	Restoration Area 2	Restoration Area 3	Restoration Area 4
Onoclea sensibilis /Sensitive Fern	FACW			60	
Acorus americana /Sweetflag	OBL			60	
Aster novae-angliae /New England Aster	FACW			60	
New England Wet Mix/Conservation Wildlife Mix	See Map 4			See Map 4	See Map 4
Shrub Species					
Cornus racemosa /Gray Dogwood	FAC		10		3
Hamamelis virginiana /Witch Hazel	FAC		10		3
Alnus incana /Speckled Alder	FACW		10		3
Cornus alternifolia /Alternate-leaved dogwood	UPL	6	13	3	
Tree Species					
Pinus strobus /White pine	FACU	6		6	
Acer Rubrum /Red maple	FAC	6		9	
Acer saccharum /Sugar maple	UPL	2			
Picea rubens /Red spruce	FACU	3		4	
Fagus grandifolia /American beech	FACU	6			
Carpus caroliniana /American hornbeam	FAC	6			
Acer negundo /Boxelder	FAC	6			
Populus tremuliodes /Quaking Aspen	FACU	5			
Tsuga Canadensis /Eastern Hemlock	FACU	2		3	

Species

- Alternate-leaved Dogwood
- American Beech
- American Hornbeam
- Boxelder
- Eastern Hemlock
- Gray Dogwood
- New England Aster
- Quacking Aspen
- Red Maple
- Red Spruce
- Sensitive Fern
- Speckled Alder
- Sugar Maple
- Sweetflag
- White Pine
- Witch Hazel

Impact Compensation Plan Specifications		
Plant Type	Stock	Planting Specification
Trees	4'-6'	64 sq. ft. on center
Shrubs	3'-4'	16 sq.ft. on center
Herbaceous	2" plugs	2 sq.ft. on center
Ferns	1 gal. pot	2 sq.ft. on center

*Indicator Code	Indicator Status	Comment
OBL	Obligate Wetland	Almost always occur in wetlands (>99%)
FACW	Facultative Wetland	Usually occur in wetlands, but may occur in non-wetlands (67-99%)
FAC	Facultative	Occur in wetlands and non-wetlands (34-66%)
FACU	Facultative Upland	Usually occur in non-wetlands, but may occur in wetlands (1-33%)
UPL	Obligate Upland	Almost never occur in wetlands (<1%)

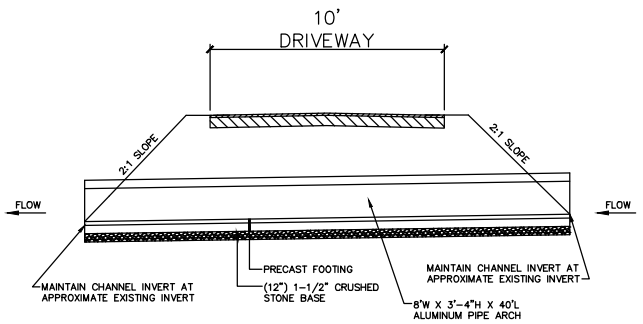
Belfast Aquaculture Project
Impact Compensation Tables
Date: November 8, 2019

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS

ATTACHMENT 5

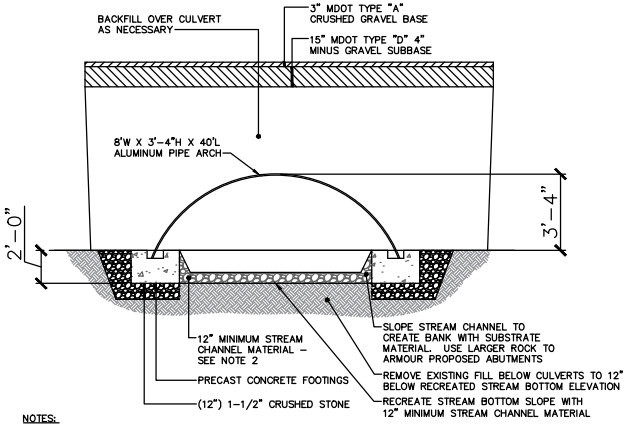
8.5 x 11 Eckrote Culvert 10-22-19

Nordic Aquafarms, Inc
Request for Additional Information (2)
File No. NAE-2019-01481



CULVERT PROFILE

NOT TO SCALE

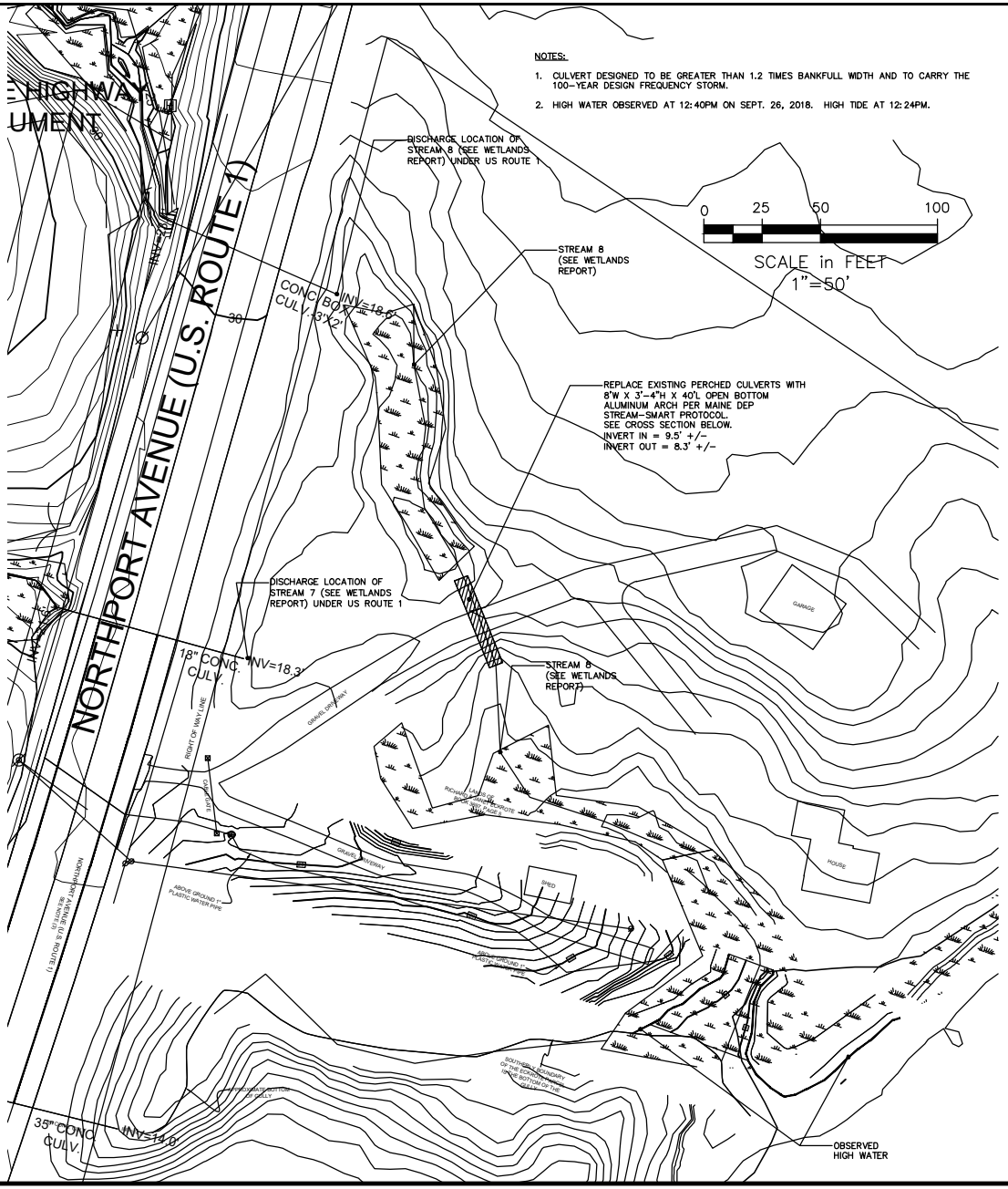


NOTES:

1. CULVERT TO BE SET AT BEST FIT TO EXISTING CHANNEL ELEVATION.
2. STREAM CHANNEL EMBEDMENT MATERIAL TO MATCH EXISTING CHANNEL MATERIAL.
3. HIGHEST STREAM DEPTH OBSERVED IS 18" ABOVE STREAM BED. OBSERVED HIGH WATER AT COAST AT APPROX. ELEV. 5.5'

CROSS SECTION OF ALUMINUM ARCH CULVERT

NOT TO SCALE



Site:
ECKROTE DRIVEWAY CULVERT

Prepared for:
RICHARD AND JANET ECKROTE
42 GRANDVIEW AVE.
LINCOLN PARK, NJ

PLAN, PROFILE AND CROSS SECTIONS

STATE OF MAINE
MAUREEN P. McGLONE #7705
LICENSED PROFESSIONAL ENGINEER

CIVIL ENGINEER:
MAUREEN P. McGLONE, PE #7705
400 COMMERCIAL STREET, SUITE 404
PORTLAND, ME 04101
207-772-2891

RANSOM
Consulting, Inc.
400 Commercial Street
Suite 404
Portland, Maine 04101
Tel (207) 772-2891
Fax (207) 772-3248
www.ransomenv.com

No.	Revision/Issue	Date
D	RESPONSE TO ACOE	10/22/19
C	COMMENT RESPONSE	7/12/19
B	PERMITTING	5/10/19
A	REVIEW	4/29/19

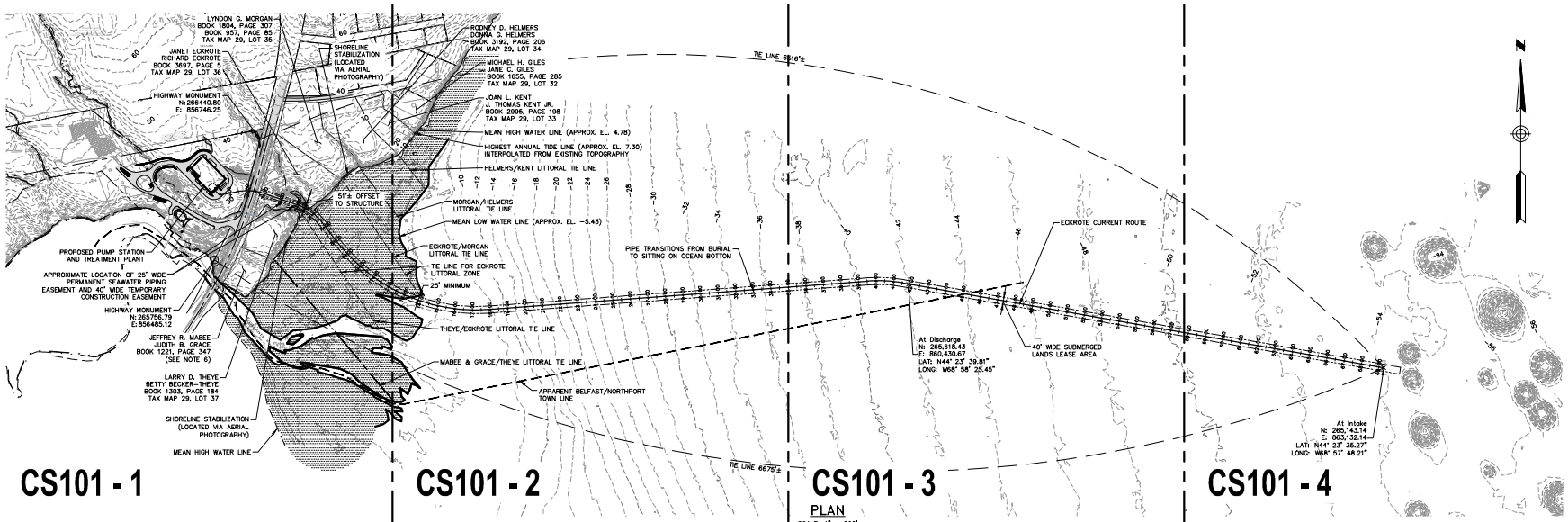
Project: 171.05027

Sheet No:
CC-101

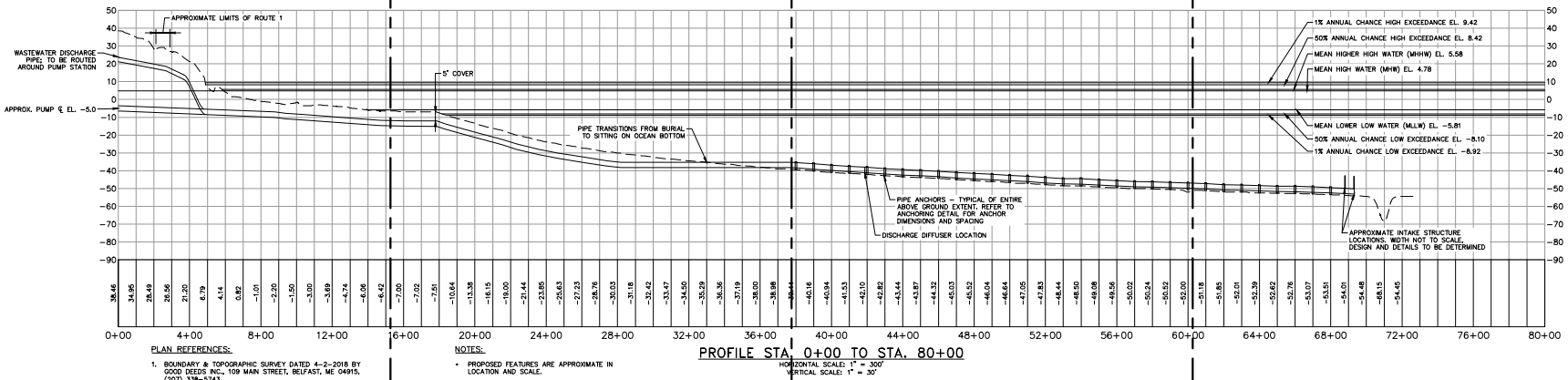
ATTACHMENT 6

CS101 Intake and Discharge Piping Plans

Nordic Aquafarms, Inc
Request for Additional Information (2)
File No. NAE-2019-01481



PLAN
SCALE: 1" = 300'



PROFILE STA. 0+00 TO STA. 80+00
HORIZONTAL SCALE: 1" = 300'
VERTICAL SCALE: 1" = 30'

CS101 - 5
CS101 - 6
CS101 - 7
CS101 - 8

PLAN REFERENCES:

1. BOUNDARY & TOPOGRAPHIC SURVEY DATED 4-2-2018 BY GOOD DEEDS INC., 109 MAIN STREET, BELFAST, ME 04915, (207) 338-5743
2. 2 FOOT LIDAR CONTOURS OBTAINED FROM THE MAINE OFFICE OF GIS. https://www.maine.gov/megis/
3. BATHYMETRY DATA PROVIDED BY NORMANDEAU ASSOCIATES, ENVIRONMENTAL CONSULTANTS IN OCTOBER 2018.
4. LITTORAL ZONE & TOWN LINE IS BASED ON A PLAN BY GARTLEY & DORSKY ENGINEERING SURVEYING, 59 UNION STREET, UNIT 1, P.O. BOX 1031 CAMDEN, ME 04843-1031, DATED NOVEMBER 14, 2018 AND REVISED FEBRUARY 22, 2019.
5. VERTICAL DATUM IS REFERENCED TO NAVD88 (FEET).

NOTES:

- PROPOSED FEATURES ARE APPROXIMATE IN LOCATION AND SCALE.
- PIPE ALIGNMENT IS SETBACK GREATER THAN 25 FEET FROM TIE LINES.
- ANCHORING LOCATIONS ARE SCHEMATIC ONLY. REFER TO ANCHORING DETAILS FOR ANCHOR DIMENSIONS AND SPACING.
- SINGLE PIPE ROUTE SHOWN FOR CLARITY; SYSTEM CONSISTS OF TWO NOMINAL 30" INTAKE PIPES AND ONE NOMINAL 36" DISCHARGE PIPE.

RANSOM Consulting Engineers and Scientists

WOODARD & CURRAN
41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

REV	DESCRIPTION	DATE

REVISED FOR PERMIT
08-14-19

CURRENT ISSUE STATUS:

STATE OF MAINE
JAMES D. WILSON
No. 8592
REGISTERED PROFESSIONAL ENGINEER
CIVIL

TRUE NORTH:

SMRT Architects and Engineers
144 Fore Street, PO Box 618
Portland, Maine 04104
ARCHITECTURE | ENGINEERING | PLANNING | INTERIORS | ENERGY

NORDIC AQUAFARMS

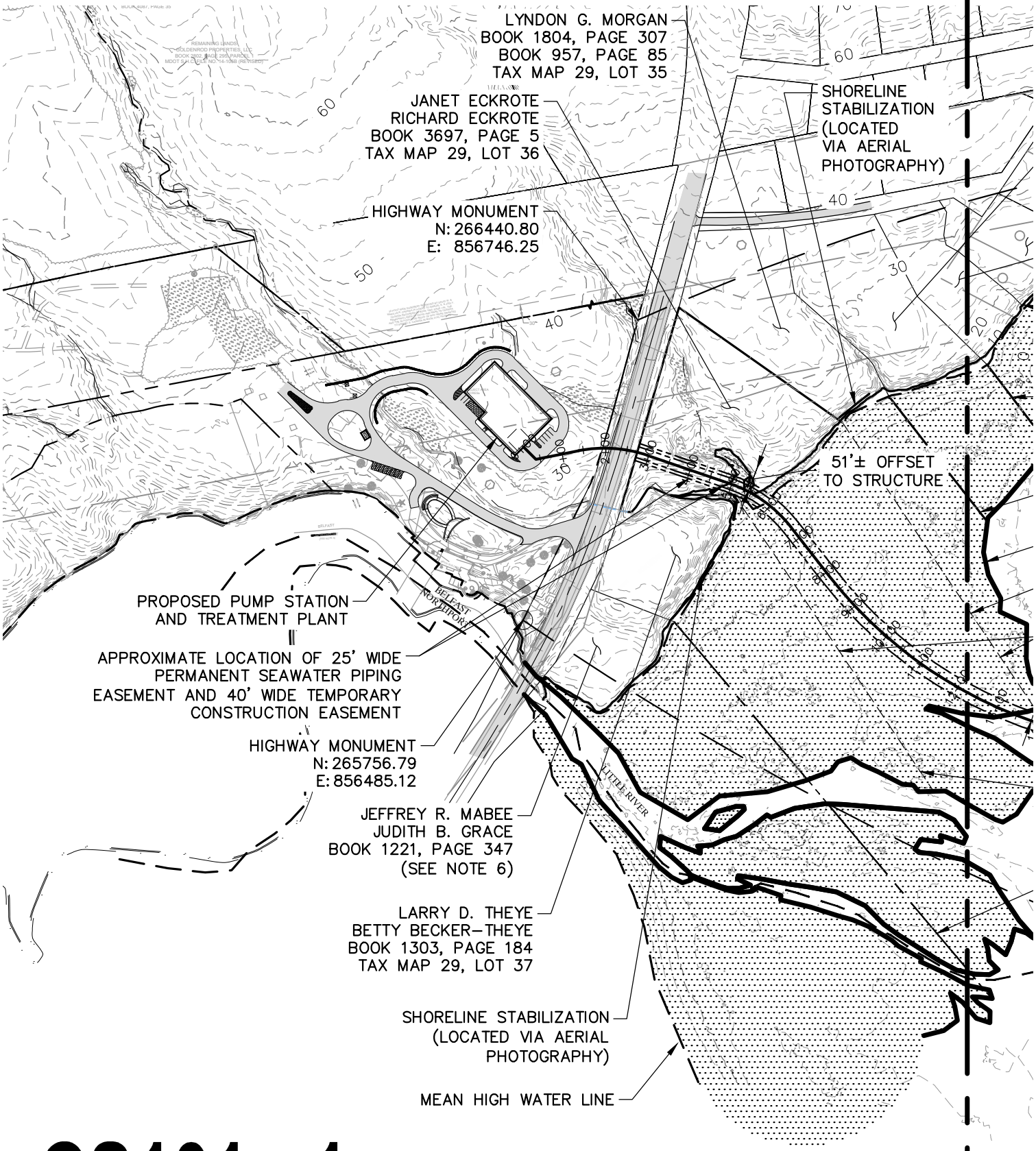
BELFAST, MAINE

INTAKE/DISCHARGE PIPING
PLAN & PROFILE

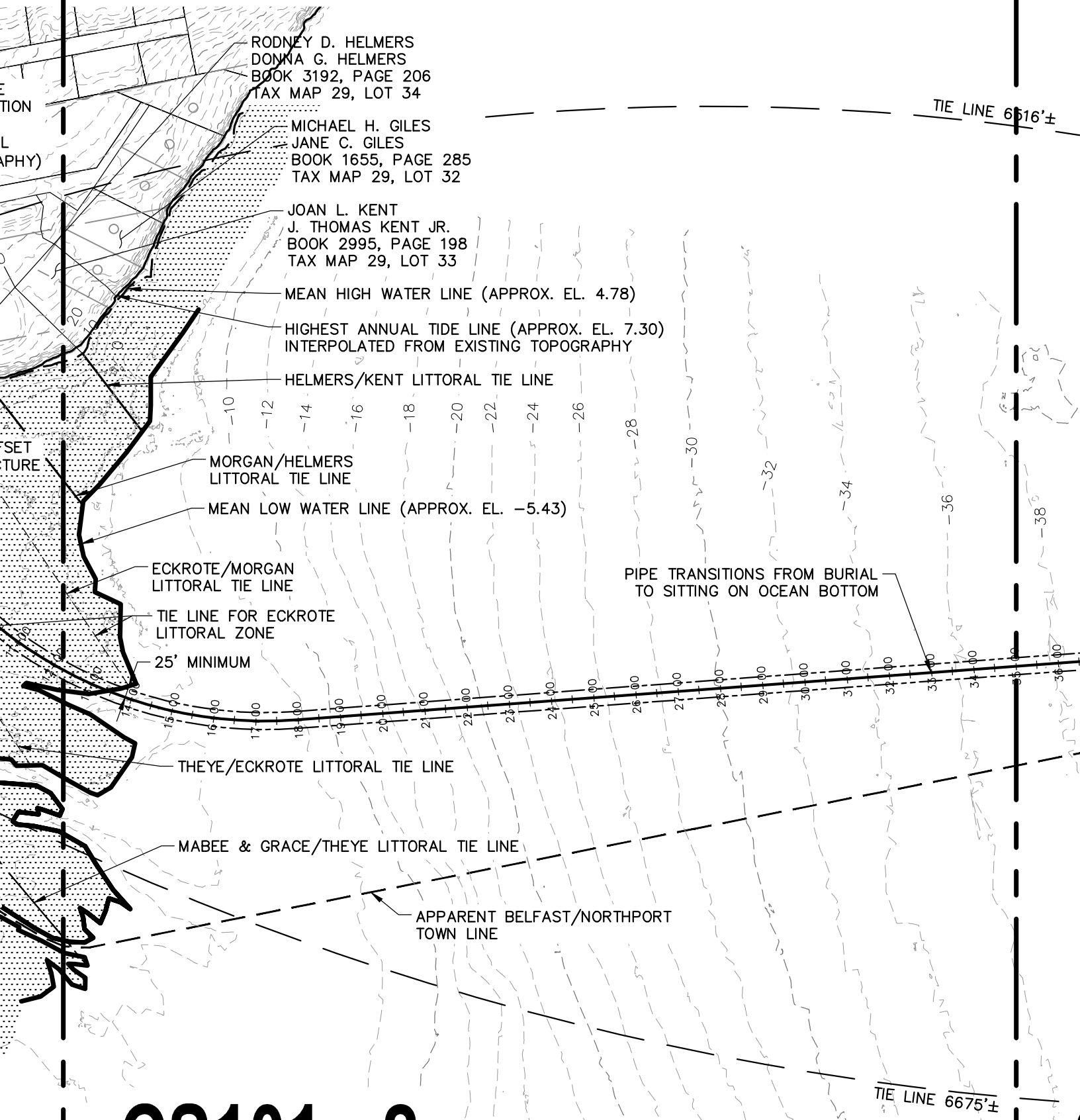
300' 0 300' 600'
BAR SCALE
1" = 300'
CHECK GRAPHIC SCALE BEFORE USING

PROJECT MANAGER:
PROJECT NO: 18076
JOB CAPTAIN:
CS101

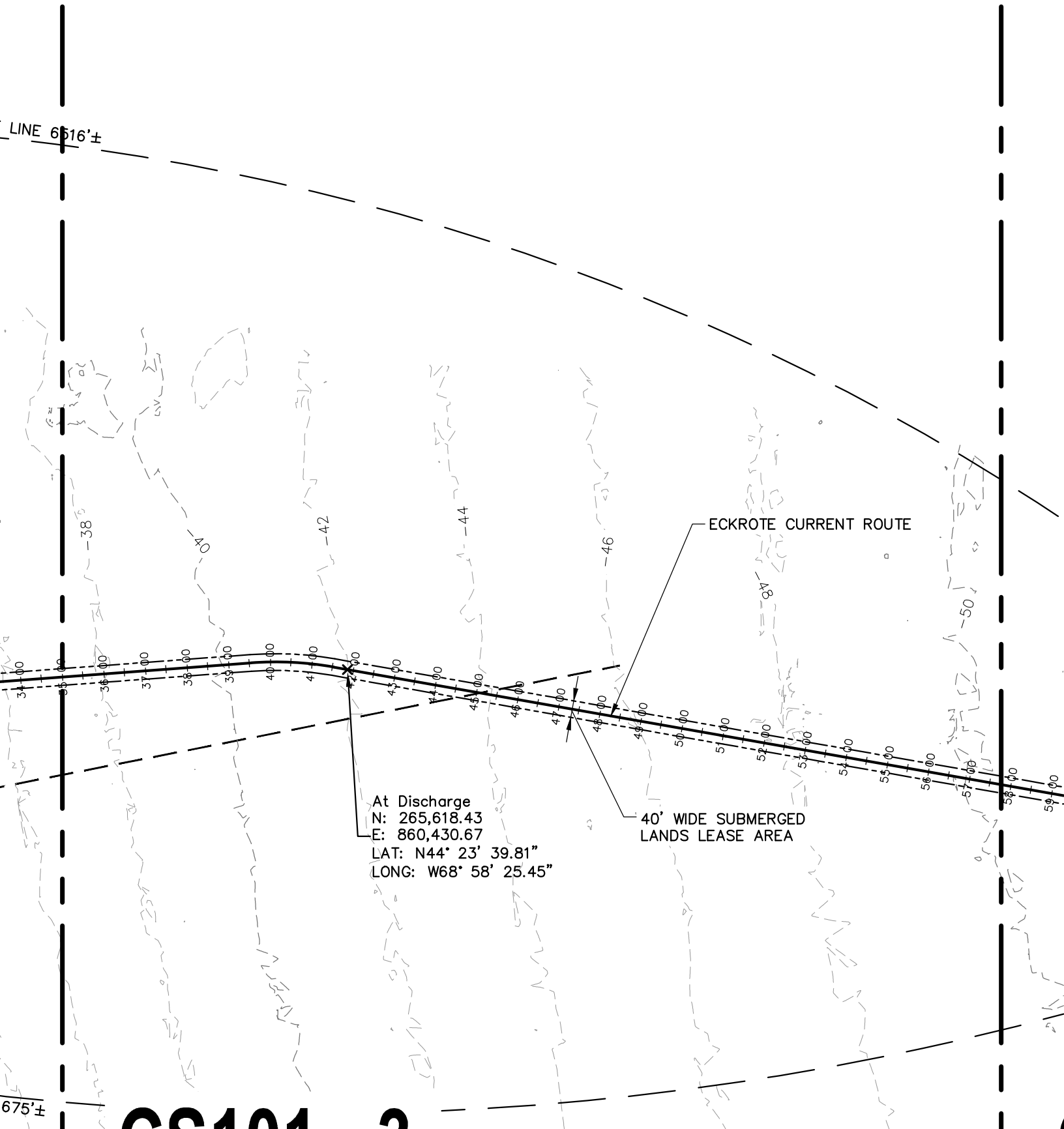
NOT FOR CONSTRUCTION


LYNDON G. MORGAN
BOOK 1804, PAGE 307
BOOK 957, PAGE 85
TAX MAP 29, LOT 35
JANET ECKROTE
RICHARD ECKROTE
BOOK 3697, PAGE 5
TAX MAP 29, LOT 36
HIGHWAY MONUMENT
N: 266440.80
E: 856746.25
SHORELINE STABILIZATION (LOCATED VIA AERIAL PHOTOGRAPHY)
51'± OFFSET TO STRUCTURE
PROPOSED PUMP STATION AND TREATMENT PLANT
APPROXIMATE LOCATION OF 25' WIDE PERMANENT SEAWATER PIPING EASEMENT AND 40' WIDE TEMPORARY CONSTRUCTION EASEMENT
HIGHWAY MONUMENT
N: 265756.79
E: 856485.12
JEFFREY R. MABEE
JUDITH B. GRACE
BOOK 1221, PAGE 347
(SEE NOTE 6)
LARRY D. THEYE
BETTY BECKER-THEYE
BOOK 1303, PAGE 184
TAX MAP 29, LOT 37
SHORELINE STABILIZATION (LOCATED VIA AERIAL PHOTOGRAPHY)
MEAN HIGH WATER LINE
BELFAST NORTHPORT
LITTLE RIVER

CS101 - 1


RODNEY D. HELMERS
DONNA G. HELMERS
BOOK 3192, PAGE 206
TAX MAP 29, LOT 34
MICHAEL H. GILES
JANE C. GILES
BOOK 1655, PAGE 285
TAX MAP 29, LOT 32
JOAN L. KENT
J. THOMAS KENT JR.
BOOK 2995, PAGE 198
TAX MAP 29, LOT 33
TIE LINE 6616'±
MEAN HIGH WATER LINE (APPROX. EL. 4.78)
HIGHEST ANNUAL TIDE LINE (APPROX. EL. 7.30)
INTERPOLATED FROM EXISTING TOPOGRAPHY
HELMERS/KENT LITTORAL TIE LINE
MORGAN/HELMERS
LITTORAL TIE LINE
MEAN LOW WATER LINE (APPROX. EL. −5.43)
ECKROTE/MORGAN
LITTORAL TIE LINE
TIE LINE FOR ECKROTE
LITTORAL ZONE
25' MINIMUM
PIPE TRANSITIONS FROM BURIAL
TO SITTING ON OCEAN BOTTOM
THEYE/ECKROTE LITTORAL TIE LINE
MABEE & GRACE/THEYE LITTORAL TIE LINE
APPARENT BELFAST/NORTHPORT
TOWN LINE
TIE LINE 6675'±

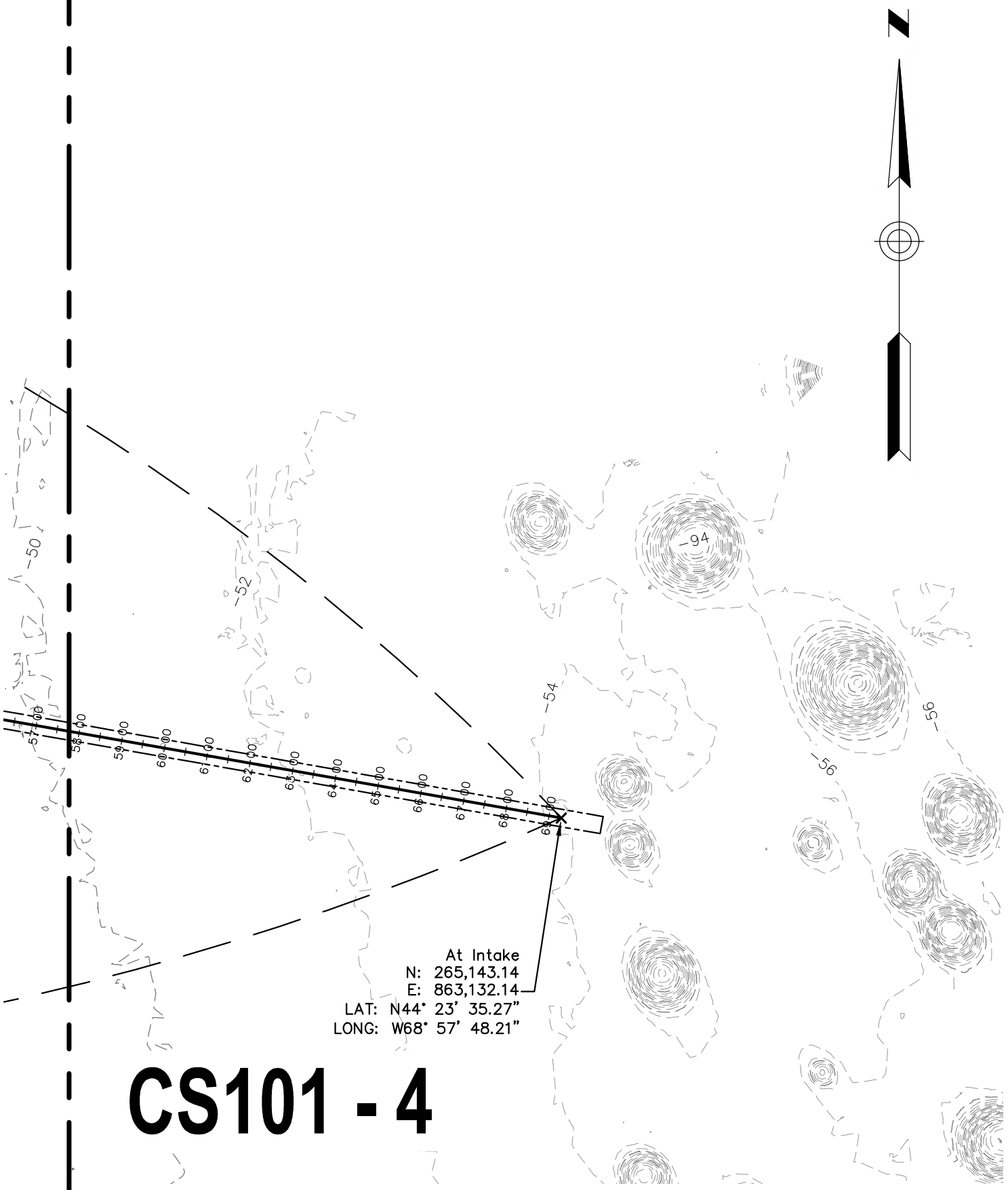
CS101 - 2



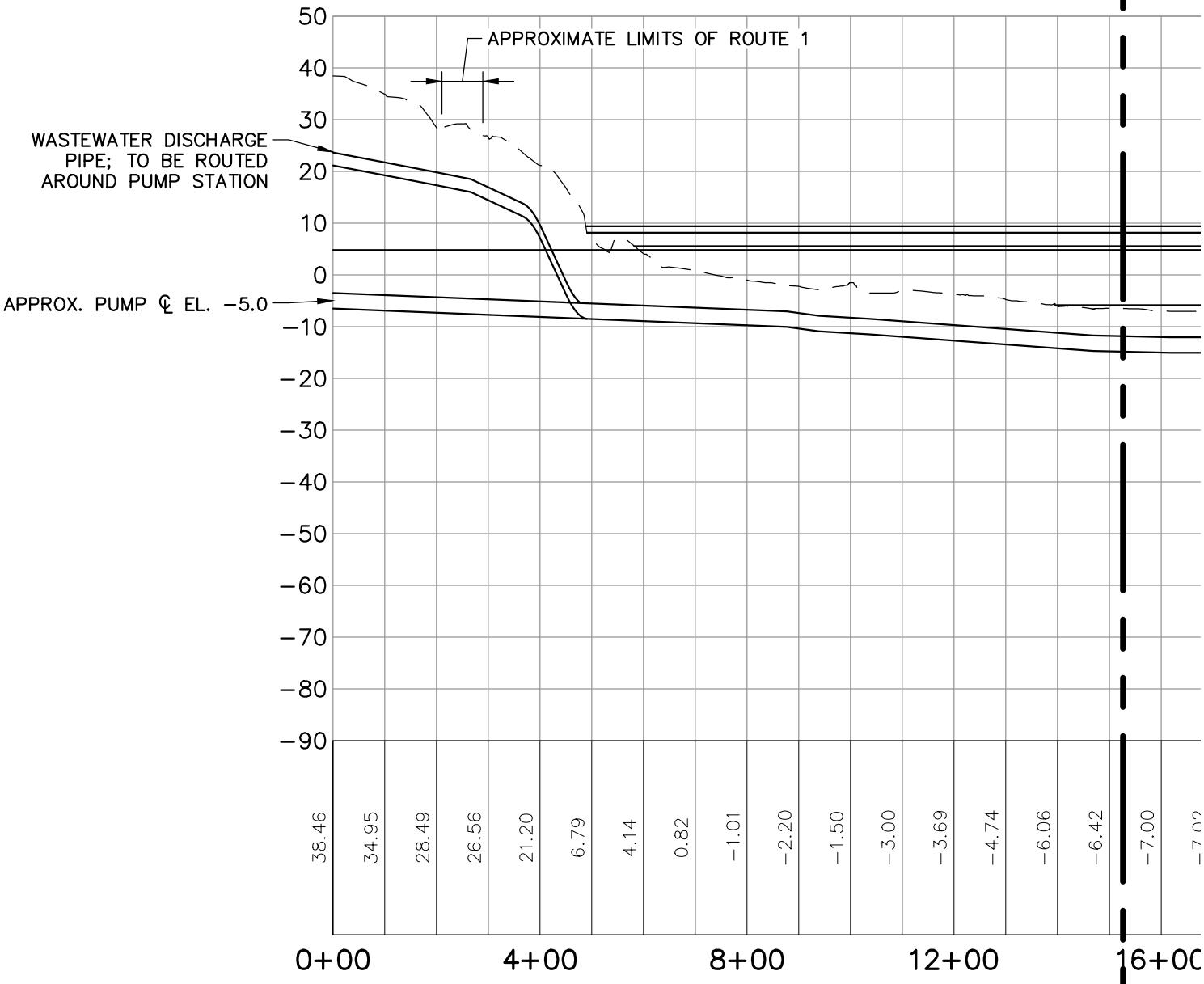
CS101 - 3

PLAN

SCALE: 1" = 300'


N
-50
-52
-54
-56
-94
57+00
58+00
59+00
60+00
61+00
62+00
63+00
64+00
65+00
66+00
67+00
68+00
69+00
At Intake
N: 265,143.14
E: 863,132.14
LAT: N44° 23' 35.27"
LONG: W68° 57' 48.21"

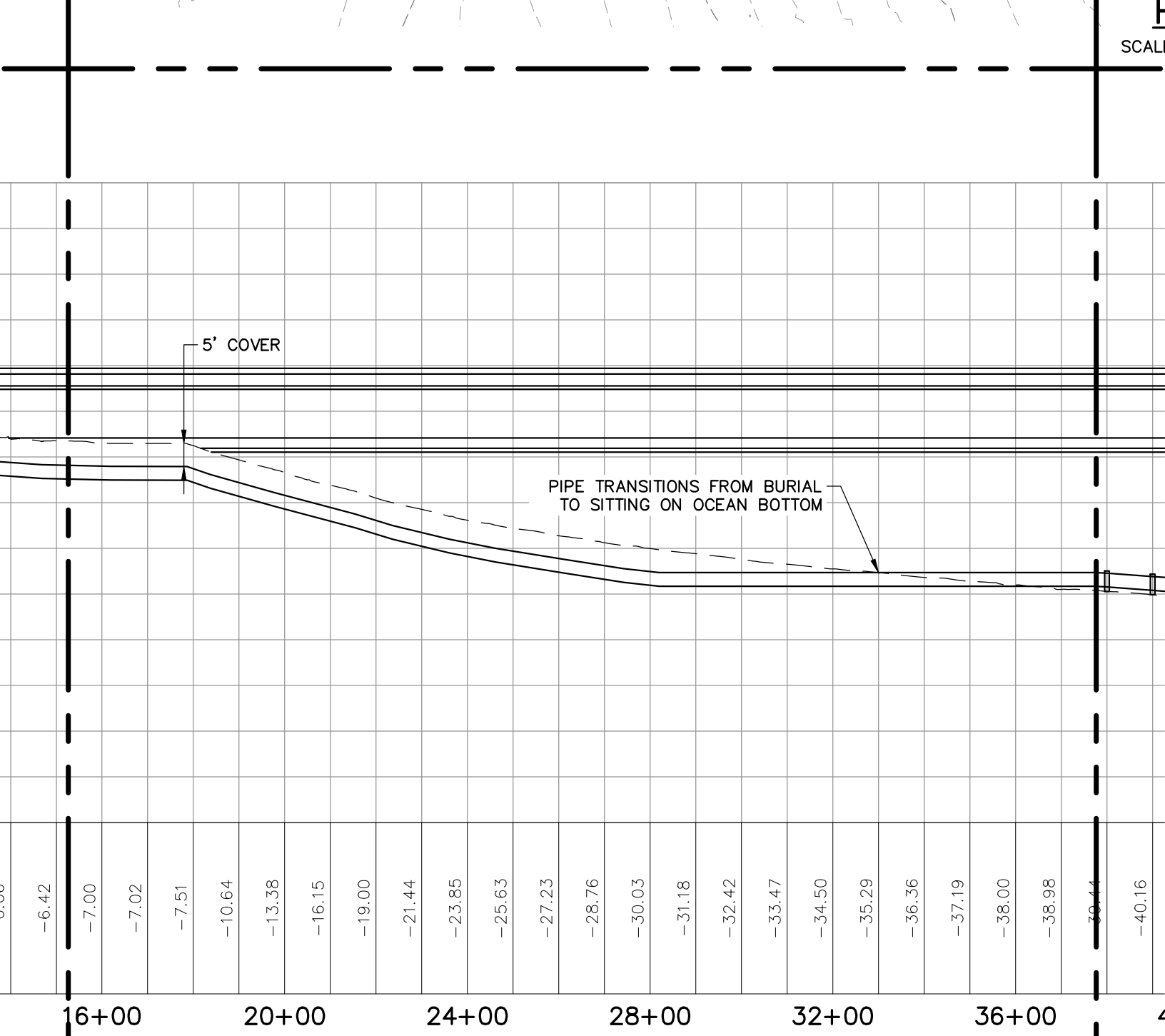
CS101 - 4



PLAN REFERENCES:

1. BOUNDARY & TOPOGRAPHIC SURVEY DATED 4−2−2018 BY GOOD DEEDS INC., 109 MAIN STREET, BELFAST, ME 04915, (207) 338−5743
2. 2 FOOT LIDAR CONTOURS OBTAINED FROM THE MAINE OFFICE OF GIS. https: //www.maine.gov/megis/
3. BATHYMETRY DATA PROVIDED BY NORMANDEAU ASSOCIATES, ENVIRONMENTAL CONSULTANTS IN OCTOBER 2018.
4. LITTORAL ZONE & TOWN LINE IS BASED ON A PLAN BY GARTLEY & DORSKY ENGINEERING SURVEYING, 59 UNION STREET, UNIT 1, P.O. BOX 1031 CAMDEN, ME 04843−1031, DATED NOVEMBER 14, 2018 AND REVISED FEBRUARY 22, 2019.
5. VERTICAL DATUM IS REFERENCED TO NAVD88 (FEET).

CS101 - 5



NOTES:

- PROPOSED FEATURES ARE APPROXIMATE IN LOCATION AND SCALE.
- PIPE ALIGNMENT IS SETBACK GREATER THAN 25 FEET FROM TIE LINES.
- ANCHORING LOCATIONS ARE SCHEMATIC ONLY. REFER TO ANCHORING DETAILS FOR ANCHOR DIMENSIONS AND SPACING.
- SINGLE PIPE ROUTE SHOWN FOR CLARITY; SYSTEM CONSISTS OF TWO NOMINAL 30" INTAKE PIPES AND ONE NOMINAL 36" DISCHARGE PIPE.

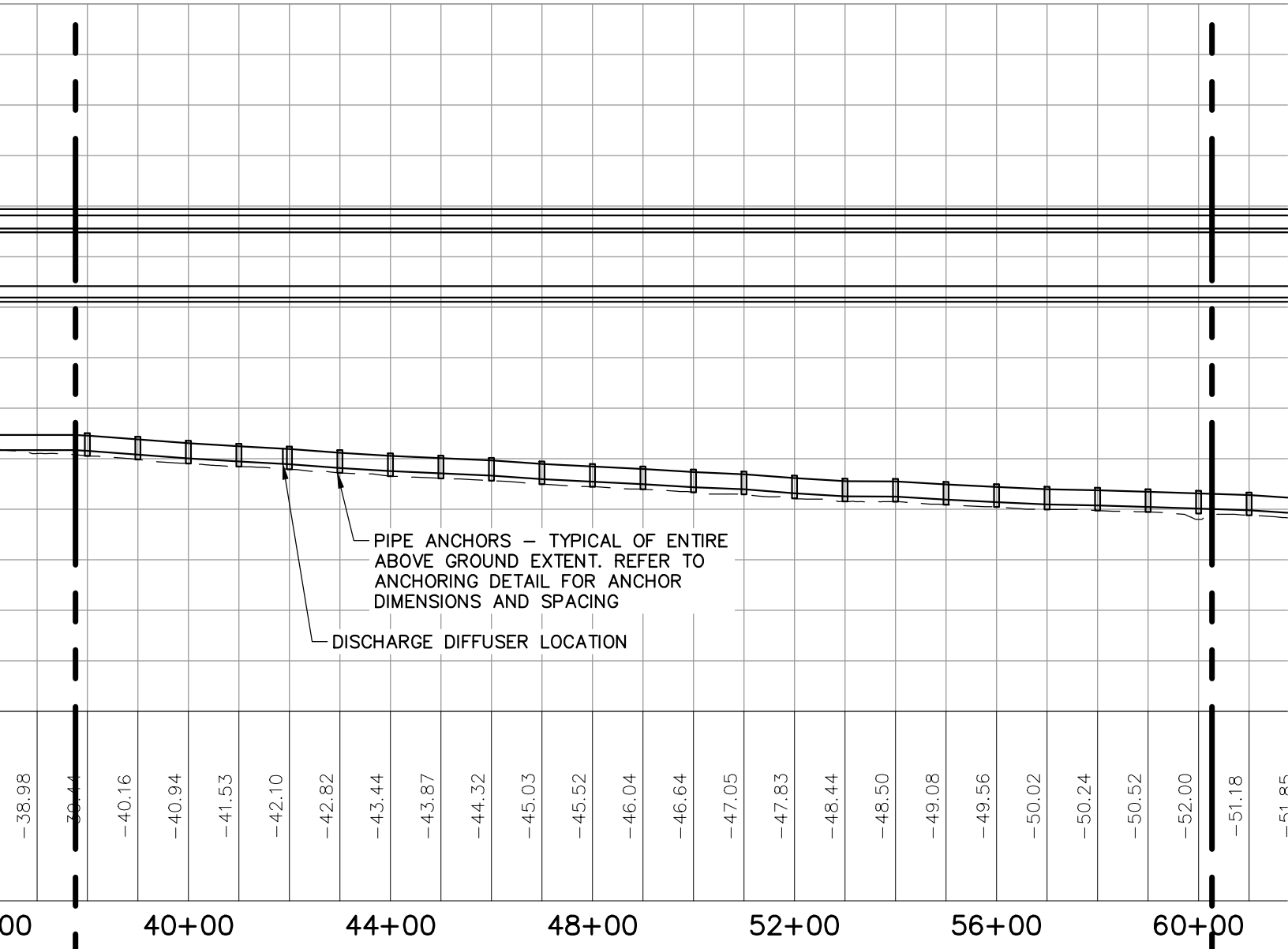
PROFILE STA. 0+

HORIZONTAL
VERTICAL

CS101 - 6

PLAN

SCALE: 1" = 300'

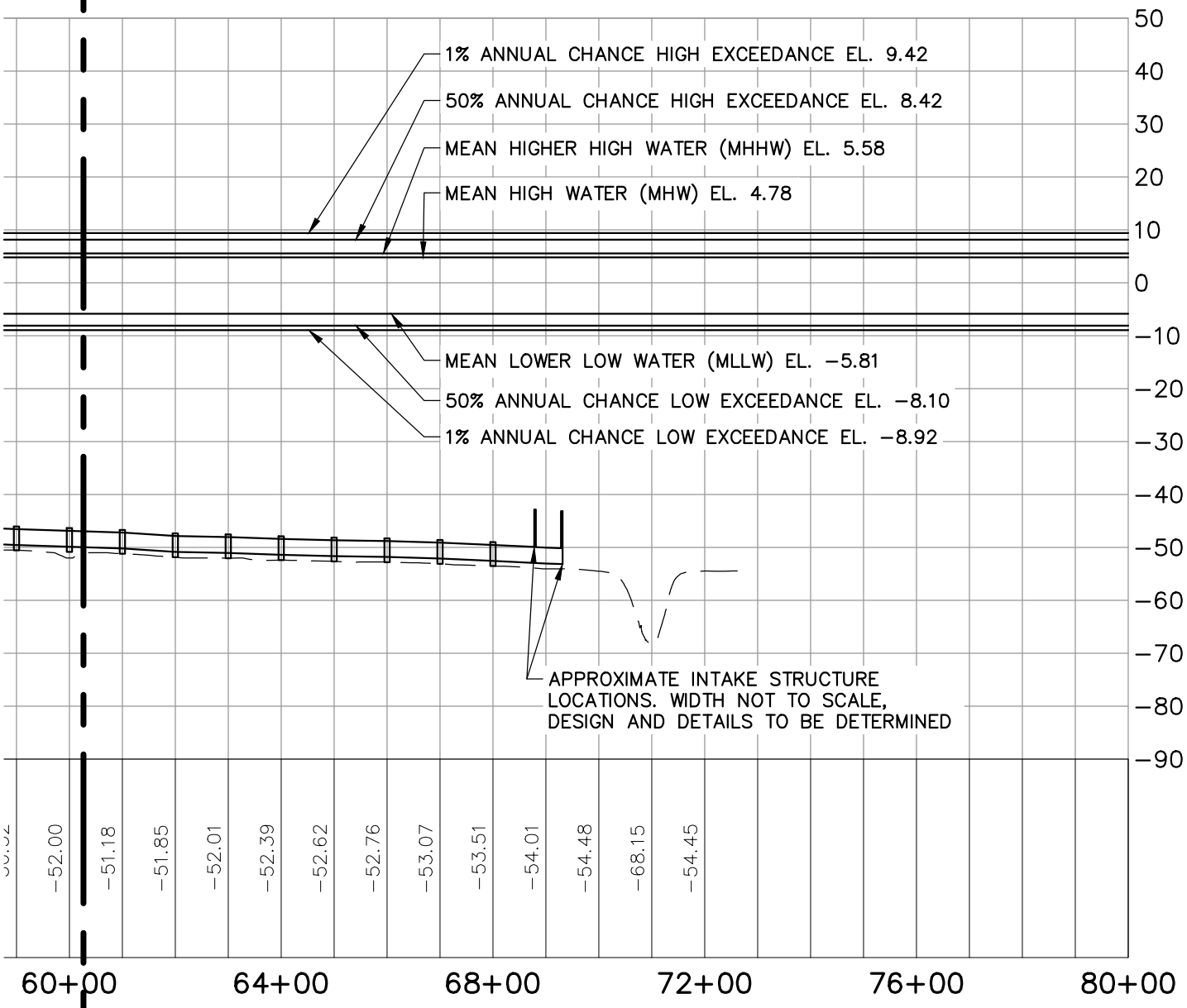


STA. 0+00 TO STA. 80+00

HORIZONTAL SCALE: 1" = 300'

VERTICAL SCALE: 1" = 30'

CS101 - 7


1% ANNUAL CHANCE HIGH EXCEEDANCE EL. 9.42
50% ANNUAL CHANCE HIGH EXCEEDANCE EL. 8.42
MEAN HIGHER HIGH WATER (MHHW) EL. 5.58
MEAN HIGH WATER (MHW) EL. 4.78
MEAN LOWER LOW WATER (MLLW) EL. −5.81
50% ANNUAL CHANCE LOW EXCEEDANCE EL. −8.10
1% ANNUAL CHANCE LOW EXCEEDANCE EL. −8.92
APPROXIMATE INTAKE STRUCTURE LOCATIONS. WIDTH NOT TO SCALE, DESIGN AND DETAILS TO BE DETERMINED
50
40
30
20
10
0
−10
−20
−30
−40
−50
−60
−70
−80
−90
−52.00
−51.18
−51.85
−52.01
−52.39
−52.62
−52.76
−53.07
−53.51
−54.01
−54.48
−68.15
−54.45
60+00
64+00
68+00
72+00
76+00
80+00

CS101 - 8

ATTACHMENT 7

Table 3 Streams Impact Table

Nordic Aquafarms, Inc
Request for Additional Information (2)
File No. NAE-2019-01481

Table 3. Streams Impact Table

Stream ID	Flow Regime	[1]Temporary Impacts (LF)	Permanent Impacts (LF)	Impact Total (LF)	[1]Temporary Impacts (SF)	Permanent Impacts (SF)	Impact Total (SF)	Impact Characterization
S3	Intermittent	0	917	917	0	2,751	2,751	Direct, Fill
S4	Intermittent	0	53	53	0	159	159	Direct, Fill
S5	Intermittent	0	424	424	0	2,544	2,544	Direct, Fill
S6	Intermittent	0	474	474	0	1,422	1,422	Direct, Fill
S8	Intermittent	13	0	13	65	0	65	Direct, Fill
S9	Intermittent	107	0	107	428	0	428	Direct, Excavation, Fill
Grand Total		**120**	**1,868**	**1,988**	**493**	**6,876**	**7,369**	

1 All temporary impacts will be restored in-place.

ATTACHMENT 8

Table 2 Coastal Wetlands Impact Table

Nordic Aquafarms, Inc
Request for Additional Information (2)
File No. NAE-2019-01481

Table 2. Coastal Wetlands Impact Table

Coastal Zone	Wetland ID	[1]Cowardin Class	Pipeline Station	[2]Temporary Impacts (SF)	Permanent Impacts (SF)	Impact Total (SF)	Impact Characterization
Intertidal	Salt Marsh (W11)	E2EM	5+00 to 5+57	2,295	0	2,295	Direct, Excavation
Intertidal	Cobble Beach (W11)	M2US	5+57 to 5+67	486	0	486	Direct, Excavation
Intertidal	Mudflat	M2US	5+67 to 13+50	78,300	0	78,300	Direct, Excavation
Subtidal	Surf Zone	M1UB	13+50 to 32+00	185,000	0	185,000	Direct, Excavation
Subtidal	Transition Zone	M1UB	32+00 to 36+00	37,006	2,994	40,000	Direct, Excavation, Fill
Subtidal	Underwater Zone 1	M1UB	36+00 to 42+00	59,120	880	60,000	Direct
Subtidal	Underwater Zone 2	M1UB	42+00 to 68+90	266,249	2,751	269,000	Direct
Subtidal	Underwater Zone 3	M1UB	68+90 to 69+25	3,422	78	3,500	Direct
Totals		E2EM		2,295	0	2,295	
		M2US		78,786	0	78,786	
		M1UB		550,797	6,703	557,500	
Grand Total				**631,877**	**6,703**	**638,580**	

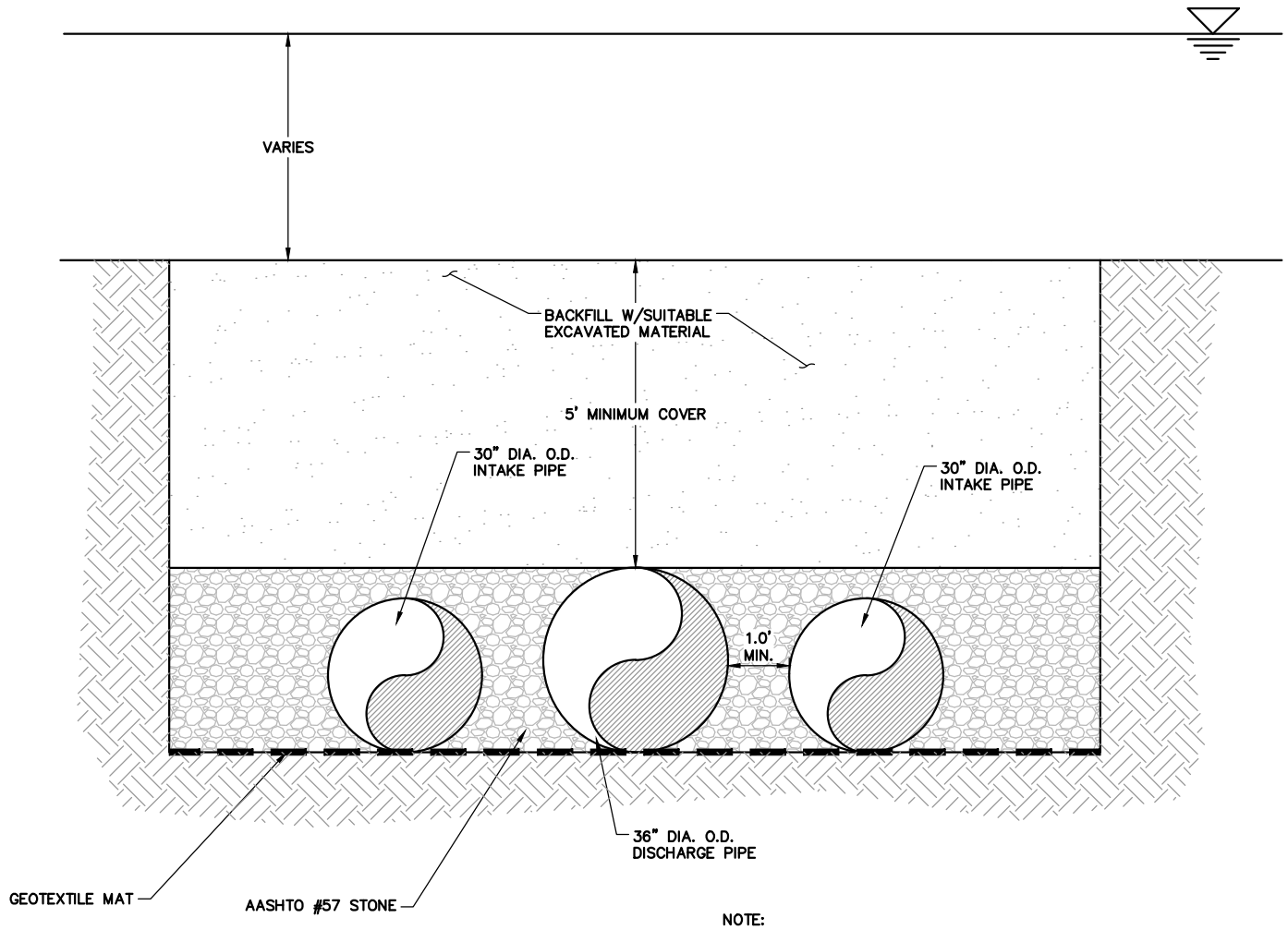
1 Cowardin Class: E2EM = Estuarine Intertidal Emergent; M2US = Marine Intertidal Unconsolidated Shore; M1UB = Marine Subtidal Unconsolidated Bottom

2 All temporary impacts will be restored in-place.

ATTACHMENT 9

CS501 Plans

Nordic Aquafarms, Inc
Request for Additional Information (2)
File No. NAE-2019-01481



NOTE:

- PROVIDE MINIMUM OF 200 LBS PER LINEAR FOOT OF PIPE STONE WEIGHT IN MARINE MATTRESS (3 PIPES – 600 LBS/LF)
- PENDING PIPELINE INSTALLATION METHODS CONCRETE COLLARS AT 200 LBS PER LINEAR FOOT PER PIPE MAY BE REQUIRED IN TRENCHED AREAS. TYPICAL SPACING 10 FEET TO 20 FEET.

INTERTIDAL & SURF ZONES (STATIONS 5+00 TO 32+00)

1 / CS501

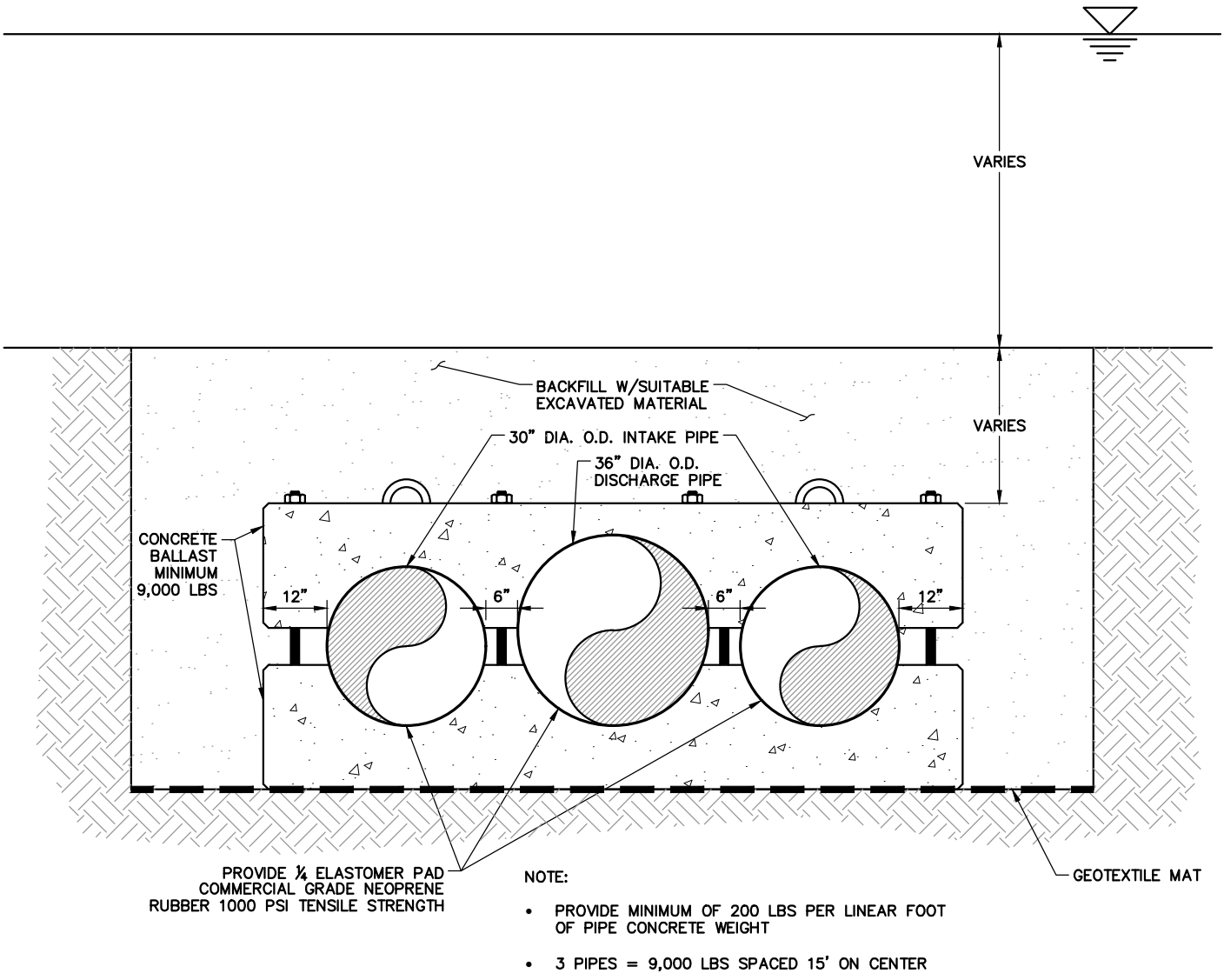
NOT TO SCALE

CONCEPTUAL NOT FOR CONSTRUCTION

WOODARD &CURRAN
41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

INTERTIDAL & SURF ZONES (STATIONS 5+00 TO 32+00)	CIANBRO
DESIGNED BY: / CHECKED BY:	NAF BELFAST
DRAWN BY: 0231714.00–CS501 – CS50*.dwg	Detail 1 CS501

JOB NO: 0231714.00
DATE: OCTOBER 2019
SCALE: N.T.S.



NOTE:

- PROVIDE MINIMUM OF 200 LBS PER LINEAR FOOT OF PIPE CONCRETE WEIGHT
- 3 PIPES = 9,000 LBS SPACED 15' ON CENTER

TRANSITION ZONE (STATIONS 32+00 TO 36+00)

2 / CS501

NOT TO SCALE

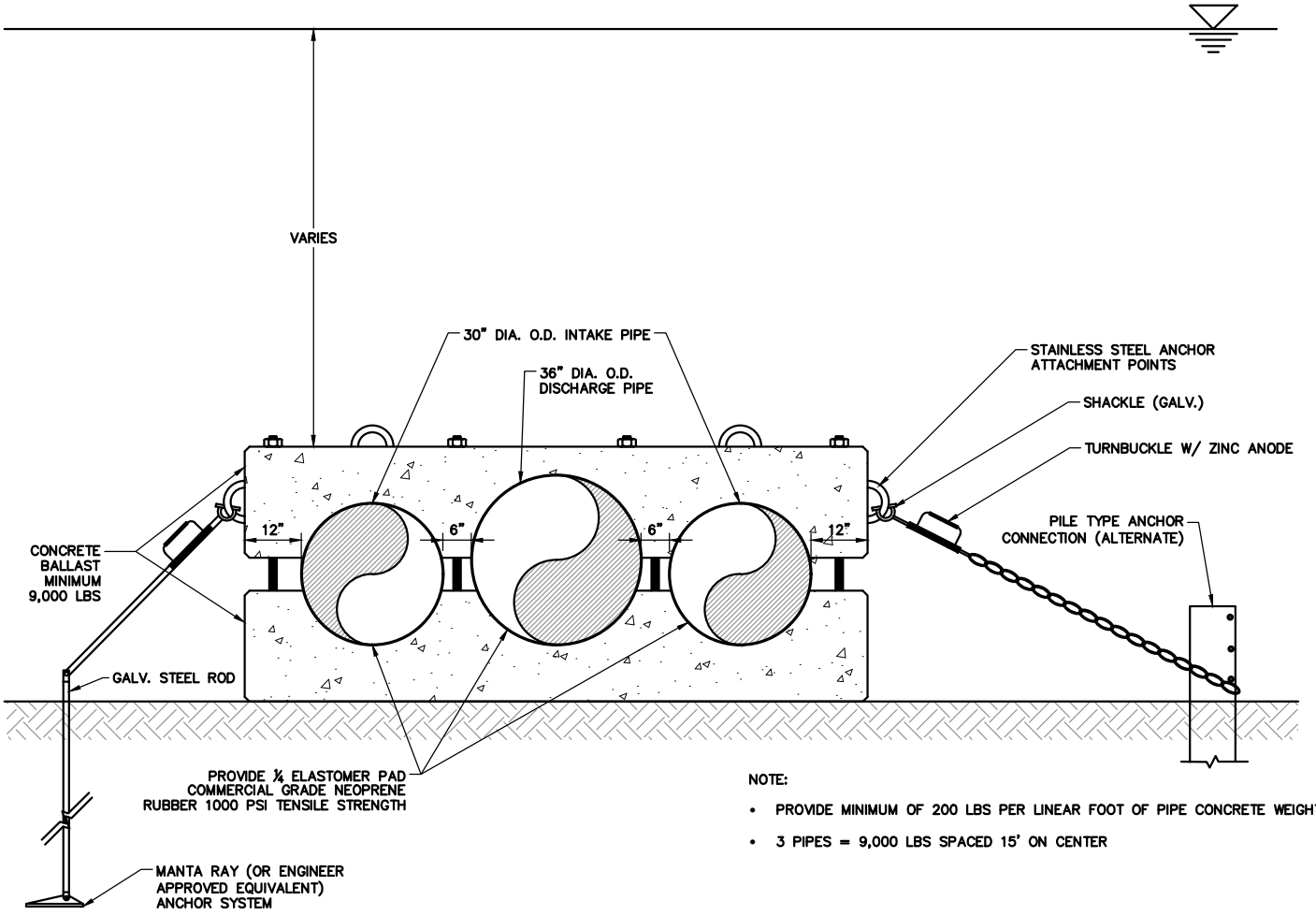
CONCEPTUAL NOT FOR CONSTRUCTION

WOODARD &CURRAN
41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

TRANSITION ZONE (STATIONS 32+00 TO 36+00)	CIANBRO
DESIGNED BY: / CHECKED BY:	NAF BELFAST
DRAWN BY: 0231714.00–CS501 – CS50*.dwg	

JOB NO: 0231714.00
DATE: OCTOBER 2019
SCALE: N.T.S.

Detail 2
CS501



UNDERWATER ZONE (STATIONS 36+00 TO 42+00)

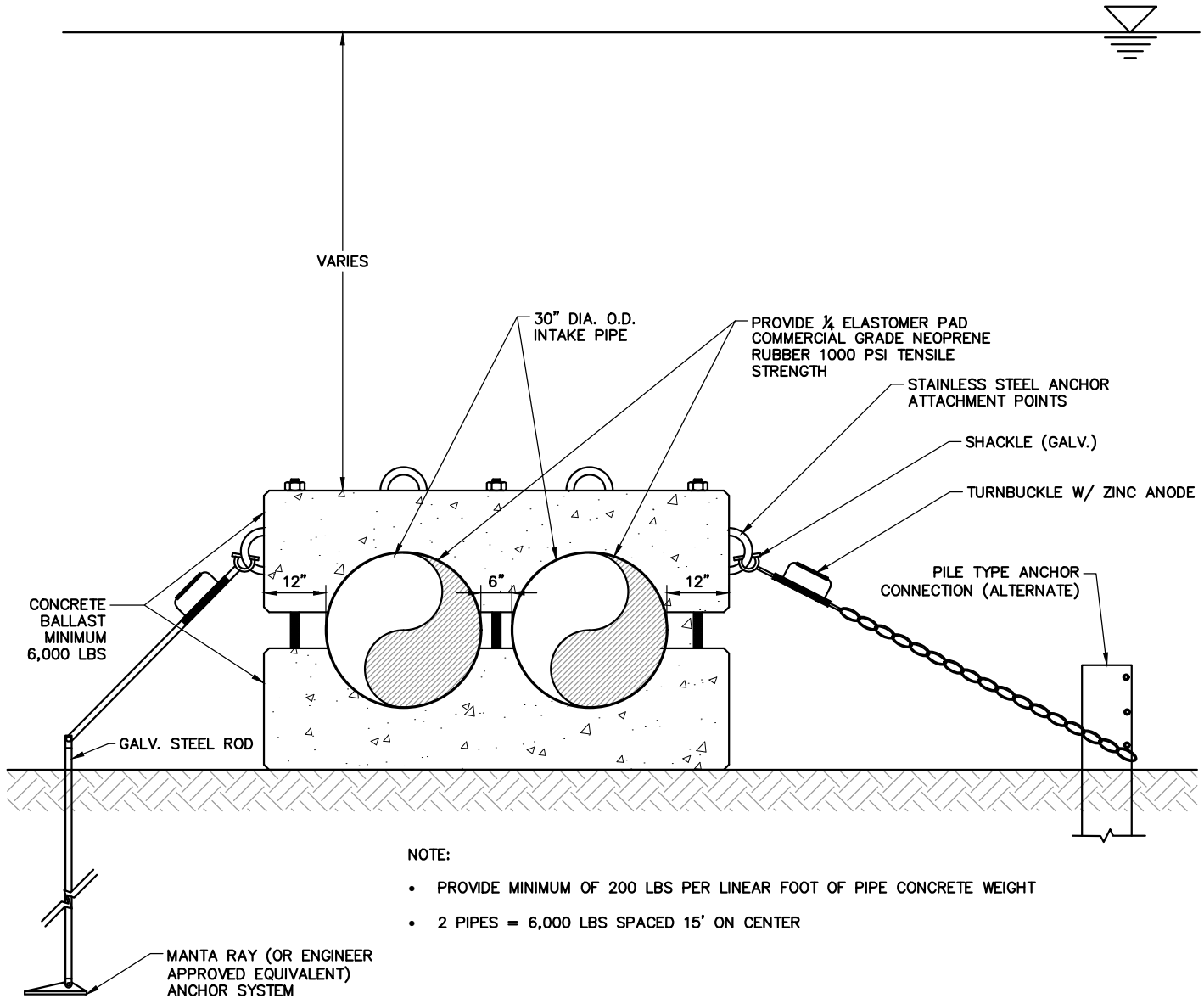
3 / CS501

NOT TO SCALE

CONCEPTUAL NOT FOR CONSTRUCTION

WOODARD & CURRAN
41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

UNDERWATER ZONE (STATIONS 36+00 TO 42+00)	CIANBRO	JOB NO: 0231714.00
		DATE: OCTOBER 2019
		SCALE: N.T.S.
DESIGNED BY:	CHECKED BY:	NAF BELFAST
DRAWN BY:	0231714.00–CS501 – CS50*.dwg	Detail 3 CS501



NOTE:

- PROVIDE MINIMUM OF 200 LBS PER LINEAR FOOT OF PIPE CONCRETE WEIGHT
- 2 PIPES = 6,000 LBS SPACED 15' ON CENTER

UNDERWATER ZONE (STATIONS 42+00 TO 68+90)

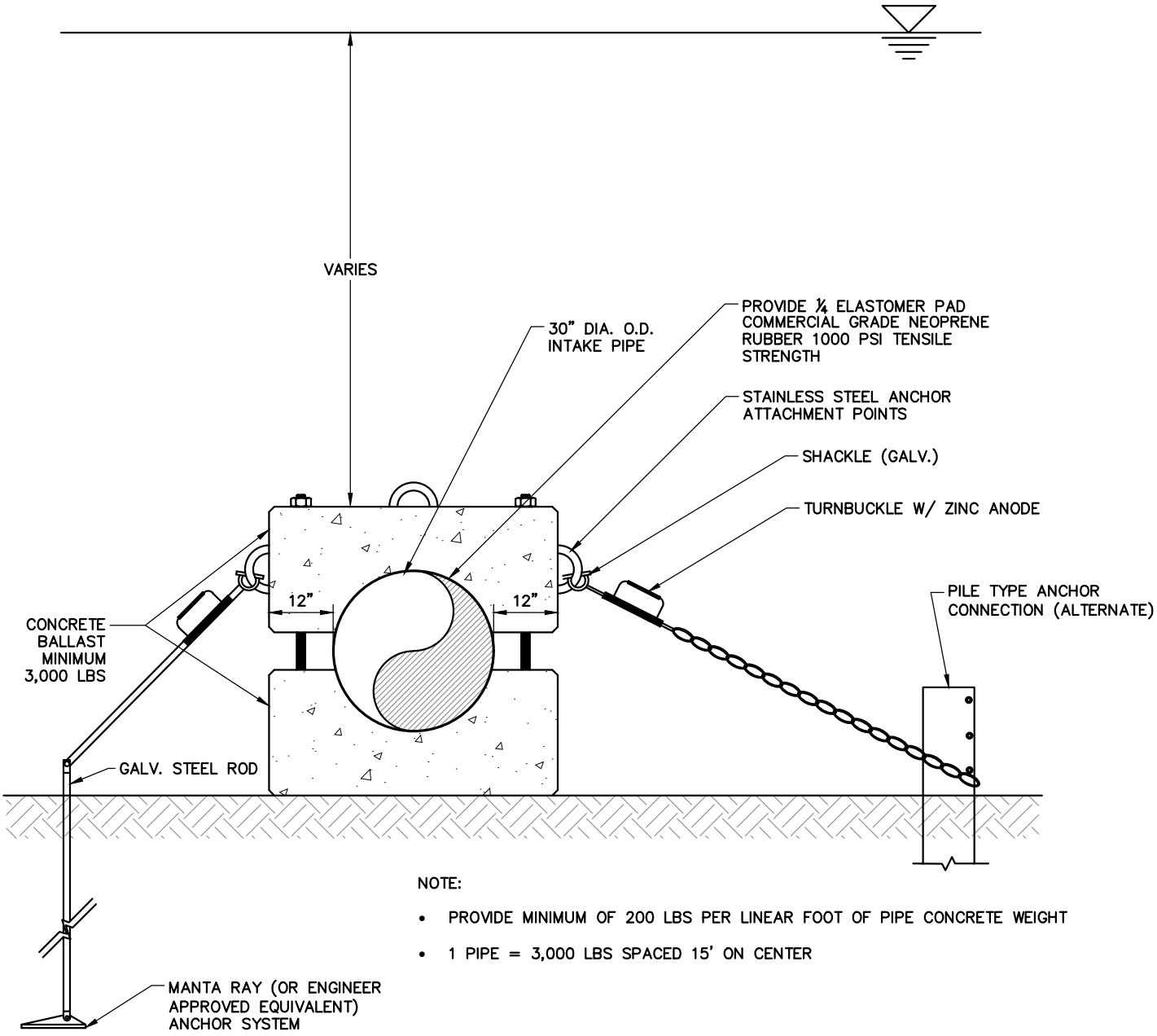
4 / CS501

NOT TO SCALE

CONCEPTUAL NOT FOR CONSTRUCTION

WOODARD &CURRAN
41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

UNDERWATER ZONE (STATIONS 42+00 TO 68+90)	CIANBRO	JOB NO: 0231714.00
		DATE: OCTOBER 2019
		SCALE: N.T.S.
DESIGNED BY: / CHECKED BY:	NAF BELFAST	Detail 4 CS501
DRAWN BY: 0231714.00–CS501 – CS50*.dwg		



NOTE:

- PROVIDE MINIMUM OF 200 LBS PER LINEAR FOOT OF PIPE CONCRETE WEIGHT
- 1 PIPE = 3,000 LBS SPACED 15' ON CENTER

UNDERWATER ZONE
(STATIONS 68+90 TO 69+25)

4A
CS501

NOT TO SCALE
CONCEPTUAL NOT FOR CONSTRUCTION

WOODARD &CURRAN
41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

UNDERWATER ZONE (STATIONS 68+90 TO 69+25)	CIANBRO	JOB NO: 0231714.00
		DATE: OCTOBER 2019
		SCALE: N.T.S.
DESIGNED BY: / CHECKED BY:	NAF BELFAST	Detail 4A CS501
DRAWN BY: 0231714.00-CS501 - CS50*.dwg		