

CITY OF PORTSMOUTH

JULY 2023

**New Hampshire Department of Environmental Services  
Water Quality Certification Application**

**Little Bay Subaqueous Water  
Transmission Main**

**Durham and Newington, NH**

**NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES  
WATER QUALITY CERTIFICATION APPLICATION**

**Little Bay Subaqueous Water Transmission Main  
Durham and Newington, NH**

**JULY 2023**

**PREPARED FOR:**

CITY OF PORTSMOUTH  
680 PEVERLY HILL ROAD  
PORTSMOUTH, NH 03801

**PREPARED BY:**

WRIGHT-PIERCE  
230 COMMERCE WAY, SUITE 302  
PORTSMOUTH, NH 03801

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**APPLICATION FOR WATER QUALITY  
CERTIFICATION**  
Water Division  
Water Quality Certification Program



**RSA:** 485-A: 12, III and IV

Date of Request 7/6/2023

Date Request Received by NHDES \_\_\_\_\_

**I. Applicant Information**

Principal Place of Business of the Applicant City of Portsmouth, Department of Public Works
Mailing Address [Street, PO Box, RR, etc.] 680 Peverly Hill Road
City/Town and ZIP Code Portsmouth, NH 03801
Telephone No. 603.610.7304
Email Address bfgoetz@cityofportsmouth.com
Name and Title of Signatory Official Responsible for the Activity for which Certification is Sought (e.g., President, Administrator) Brian Goetz, Deputy Director of Public Works

**II. Project Information**

Name of Project Little Bay Subaqueous Water Transmission Main
Name of Town and County that contains the Project Durham (Strafford Country) and Newington (Rockingham County)
Name of Receiving Waterbody and Drainage Basin Little Bay
Summary of Activity (e.g., construction, operation, or other practice or action) Construction of a subaqueous 24" HDPE water main in Little Bay. The proposed pipeline will be placed between two existing, cast iron water mains that are part of the City of Portsmouth's 6-mile cross-country drinking water transmission main that brings treated drinking water from the Madbury Water Treatment Plant to the Newington Booster Pump Station. The cast irons pipes have experienced significant erosion.

phone [\(603\) 271-2457](tel:6032712457)  
 fax (603) 271-7894  
 PO Box 95, Concord, NH 03302-0095  
[www.des.nh.gov](http://www.des.nh.gov)

### III. Additional Submittal Information

#### PLEASE SUBMIT AS MUCH INFORMATION AS POSSIBLE IN ELECTRONIC FORMAT

Please provide an individual response to each bullet, below. If applicable information is contained in the application materials, please provide a reference to the specific section in the application materials that will represent the response to the individual bullets below.

- Type of activity (e.g., construction, operation, other action such as water withdrawal) and the start and end dates of the activity.
- The characteristics of the activity: Whether the activity is associated with a discharge and/or water withdrawal and whether the discharge and/or withdrawal is proposed or occurring.
- The characteristics of the discharge and/or withdrawal:
  - Flow rate (cfs).
  - Potential chemical, physical, biological constituents.
  - Frequency (e.g., daily, hourly).
  - Duration.
  - Temperature (Celsius).
  - Latitude and longitude (dd:mm:ss).
- The existing and designated use(s) that are potentially affected by the proposed activities. (Designated Uses are listed in the NHDES Consolidated Assessment and Listing Methodology.)
- The provision(s) of surface water quality standards (Env-Wq 1700) that are applicable to the designated uses affected by the proposed activities.
- A pollutant loading analysis to show the difference between predevelopment and post-development pollutant loads for a typical year. The objective of the loading analysis is to show post-development pollutant loads do not exceed pre-development pollutant loads. Loading analysis guidance and a simple spreadsheet model will be provided by NHDES. The loading analysis will be used to determine appropriate stormwater management measures, which must be effectively designed, installed, and maintained to ensure compliance with surface water quality standards.
- A description of any other aspect of associated with construction and operation of the activity that would affect the chemical composition, temperature, flow, or physical aquatic habitat of the surface water.
- An original or color copy/reproduction of a United States Geological Survey Quadrangle Map that clearly shows the location of the activity and all potential discharge points.
- A copy of the final complete federal permit application or federal license application, including the federal permit, license, or project number.
- A copy of the NHDES wetlands permit (RSA 482-A:3), if necessary.
- A copy of the NHDES alteration of terrain permit (RSA 485-A:17), if necessary.
- A plan showing the proposed activities to scale including:
  - The location(s) and boundaries of the activities.
  - The location(s), dimension(s), and type(s) of any existing and/or proposed structures.
  - The location(s), name(s), identification number(s), and extent of all potentially affected surface water bodies, including wetlands.
- For projects that involve a new surface water withdrawal, provide the following:

phone [\(603\) 271-2457](tel:6032712457)

fax (603) 271-7894

PO Box 95, Concord, NH 03302-0095

[www.des.nh.gov](http://www.des.nh.gov)

- A copy of the water conservation plan (WCP) submitted to the NHDES Water Conservation Program and the status of NHDES approval.
- A copy of a waiver approved by the NHDES Water Conservation Program that waives the requirement to submit a WCP prior to or in conjunction with the application for water quality certification.
  
- Pursuant to Env-Wq 2101, and unless a waiver is applied for and granted by NHDES, all applicants for water quality certification are required to submit a water conservation plan (WCP) for projects that involve a new withdrawal from a surface water prior to or in conjunction with this application. Contact the NHDES Water Conservation Program for guidance related to drafting a WCP and the review and approval process. Information regarding the WCP, including contact information, may be found at the [NHDES Water Conservation website](#).
  
- If the project is located within ¼ (one quarter) mile of a designated river, as defined under RSA 483 (the Rivers Management and Protection Act), provide documentation showing that the Local River Management Advisory Committee (LAC) has been provided with a copy of this complete application. A list and map of the designated rivers, as well as contact information, may be found at the [NHDES Rivers Management and Protection website](#).

**Signature – MUST BE SIGNED AND DATED BY APPLICANT**

***To the best of my knowledge, the data and information described above, which I have submitted to the New Hampshire Department of Environmental Services, is true and correct. I understand that an approval of the requested water quality certification based upon incorrect data may be subject to revocation of the certification. I have complied with all local regulations or ordinances relative to the proposed activity and have obtained or will obtain, prior to the commencement of any work, all other approvals that may be required.***

Signed: Brian Goetz  
Date: July 17, 2023

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Addendum  
Certification Request to fulfill federal regulations 40 CFR 121.5(b)

(b) A certification request for an individual license or permit shall:

(1) Identify the project proponent(s) and a point of contact;

**Project Applicant:** City of Portsmouth, NH  
**Point of Contact:** Brian Goetz, Deputy Public Works Director  
[bfgoetz@cityofportsmouth.com](mailto:bfgoetz@cityofportsmouth.com)  
603.766.1420

**Applicant's Agent:** Wright-Pierce  
Britt Eckstrom  
[Britt.eckstrom@wright-pierce.com](mailto:Britt.eckstrom@wright-pierce.com)  
603.570.7126

(2) Identify the proposed project;

**Little Bay Subaqueous Water Transmission Main**

(3) Identify the applicable federal license or permit;

**Federal permits are required pursuant to:**

- Section 10 of the Rivers and Harbors Act of 1899
- Section 404 of the Clean Water Act (ACOE Individual Permit)

(4) Identify the location and nature of any potential discharge that may result from the proposed project and the location of receiving waters;

**The proposed project is located at an existing crossing of Little Bay by the City of Portsmouth's drinking water transmission main. New permanent discharges are not proposed. Potential temporary discharges during construction include stormwater runoff from the construction areas and discharge of drinking water into Little Bay.**

(5) Include a description of any methods and means proposed to monitor the discharge and the equipment or measures planned to treat, control, or manage the discharge;

**Erosion control best management practices will be installed around all areas where earth disturbance is proposed to mitigate stormwater quality impacts. BMPs will be monitored regularly to confirm performance and to determine if repairs or modifications are needed.**

(6) Include a list of all other federal, interstate, tribal, state, territorial, or local agency authorizations required for the proposed project, including all approvals or denials already received;

**Authorizations anticipated for the project include:**

<b>Army Corps of Engineer Individual Permit (404)</b>	<b>Application pending</b>
<b>NHDES Standard Dredge and Fill Permit</b>	<b>2020-02959 Permit Approved</b>
<b>NHDES Shoreland Permit by Notification</b>	<b>Application to be submitted</b>
<b>NH Dept. of Energy Utility License</b>	<b>Application to be submitted</b>

Addendum  
Certification Request to fulfill federal regulations 40 CFR 121.5(b)

(7) Include documentation that a pre-filing meeting request was submitted to the certifying authority at least 30 days prior to submitting the certification request;

**A request for a pre-filing meeting was made by email to the NHDES Water Quality Planning Section on May 4, 2021. (Refer to documentation included in Appendix A)**

(8) Contain the following statement: 'The project proponent hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief';

**SEE BELOW**

(9) Contain the following statement: 'The project proponent hereby requests that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.'

**SEE BELOW**

I hereby certify that all information contained herein is true, accurate, and complete to the best of my knowledge and belief and hereby requests that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.

Name: (Printed) Brian Goetz, City of Portsmouth

Name: (Signature) *Brian Goetz*

Date: July 17, 2023

## Project Introduction

The City of Portsmouth (the City) owns and maintains a 7-mile cross-country drinking water transmission main that brings treated drinking water from the Madbury Water Treatment Plant to Portsmouth. The 24-inch reinforced concrete main carries approximately 60% of the water serving the City's regional water system that includes Portsmouth, Newington, Greenland, New Castle and portions of Madbury, Dover, Durham and Rye. The main crosses the Little Bay, approximately 4,000 ft to the southwest of the Scammell Bridge (US Route 4). At the crossing, the 24-inch concrete main transitions to two 20-inch cast iron pipes from the Durham shore to Fox Point shore in Newington. The two parallel transmission mains, installed in the 1950s, are approximately 3,200 feet in length across the bay. A dive inspection completed in 2016 observed that portions of the two cast iron pipes have become exposed to salt water and have experienced significant corrosion, with pits greater than 50% of the pipe wall thickness in some instances. This critical water main requires replacement in order for the City to maintain a safe reliable supply of drinking water to the regional water system.

The proposed project involves installing one 24-inch high density polyethylene main (HDPE) on the floor of the bay in a previously disturbed corridor between the existing cast iron mains crossing Little Bay and connections made to the existing reinforced concrete mains on the Durham and Newington shores. Refer to USGS locus map in this Section. Several alternatives for water main replacement were evaluated including directionally drilling, establishing a new water main route along existing roads and bridges, and rehabilitation the existing pipes. Installation of a replacement pipe on the channel floor was selected as the most technically feasible and viable solution for providing a reliable drinking water supply for the Madbury drinking water treatment facility.

The proposed installation method involves assembling the new pipeline on land and floating the pipeline into Little Bay. Since the HDPE pipe is buoyant, concrete collars are required to sink and anchor the pipeline along the river bottom. The concrete anchors are designed to be installed while the pipeline is floating and full of air. Upon the evacuation of the air from the pipe, the pipe sinks to the bottom at the proposed location. At the intertidal zone and within portions of the tidal buffer zone, the proposed pipeline will be buried to protect the pipe from freezing, anchor drag, navigational hazards, and tidal currents. Excavation within the tidal buffer zone will also be necessary to connect the new main to the existing mains. Where excavation within the water is necessary, a temporary steel cofferdam will be installed. The cofferdam will be constructed by driving steel sheet piles into the channel floor. Excavation will occur within the cofferdam which will serve as a turbidity barrier to prevent the spread of sediment during excavation. A temporary trestle will be installed adjacent to the cofferdam to provide access to the work zone during construction. The cofferdam and trestle will extend approximately 400 ft from shore on either side. Upon installation of the replacement pipe, the cofferdam and trestle will be removed. Barges may be used in the middle of the channel to support the water main during installation and facilitate installation.

Excavation will be necessary on land at both shores to connect the new main to the existing water main and replace the existing non-operational valves. After installation and connection of the new HDPE main, and replacement of the non-working isolation valves, the two existing cast iron mains can be taken out of service individually, as needed, and evaluated for potential to be rehabilitated or replaced to maintain a redundant pipeline crossing.

Throughout construction, the City will have a designated construction monitor to observe that the project is being constructed in accordance with the contract documents and in accordance with approved environmental permit

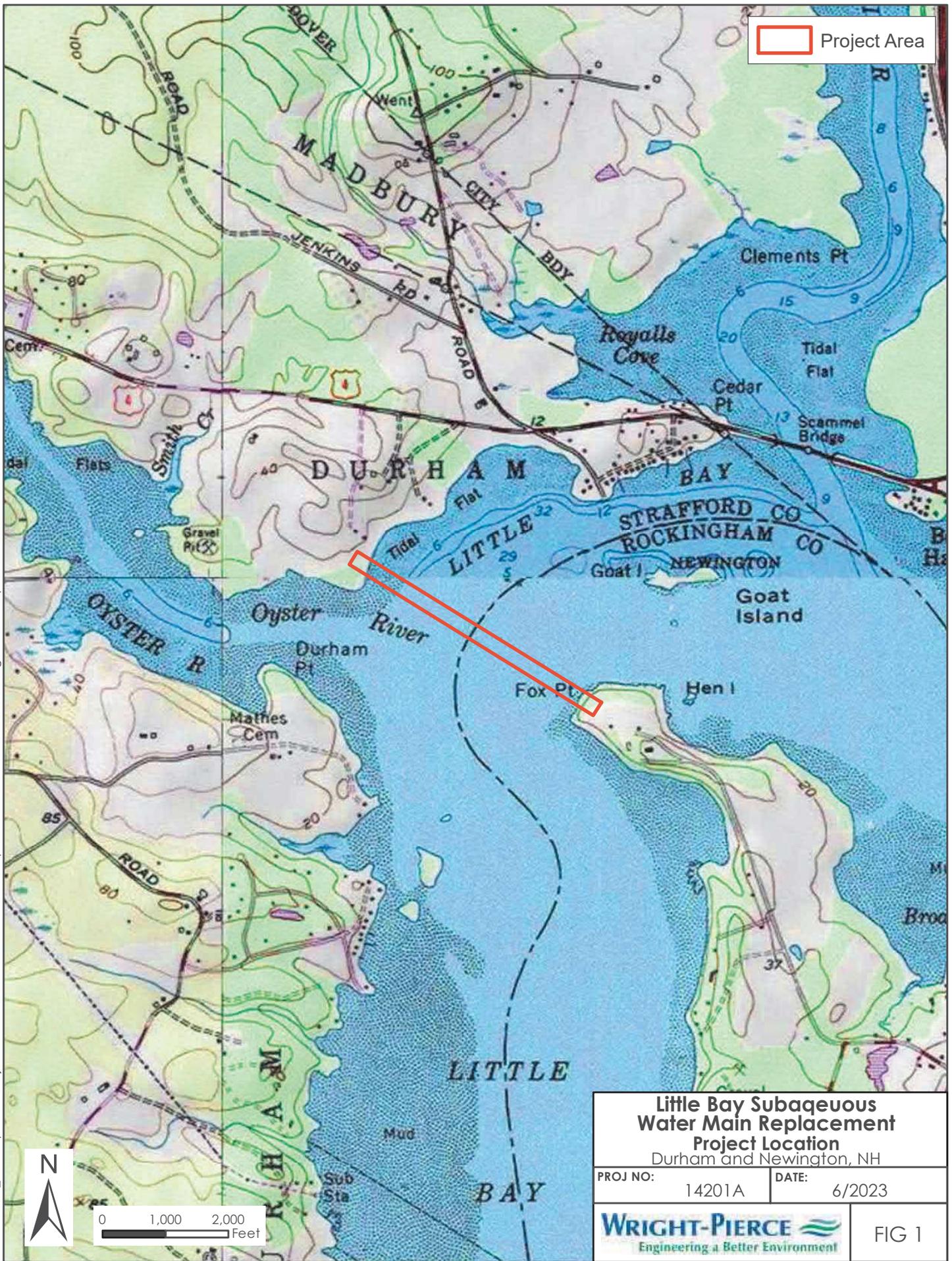
conditions. The contractor will be required to perform frequent turbidity monitoring to confirm that the construction is not resulting in an increase of turbidity in excess of water quality standards.

The areas on shore impacted by construction will be restored by reestablishing vegetation including grasses and shrubs. On the Durham side of the project, approximately 2,100 sq. ft. of salt marsh will be impacted by the trench excavation for the pipeline. A salt marsh restoration plan has been developed to salvage impacted salt marsh and preserve it during construction. Upon removal of construction equipment, the salvaged salt marsh will be replanted and monitored to confirm successful restoration. Salt marsh seedlings may be planted, as needed, to fully re-establish the salt marsh. Areas within the water impacted by trench excavation will be restored back to existing elevation and conditions by placing the excavated materials back in the trench to the existing subaqueous surface elevation.

### **Proposed Construction BMPs**

In general, proposed construction will be completed in accordance with the Best Management Practices Manual: Utility Maintenance in and Adjacent to Wetlands and Waterbodies in New Hampshire. The contractor will be required to develop a Stormwater Pollution Prevention Plan and obtain coverage under the NPDES Stormwater Construction General Permit.

J:\M:\w:\GIS\_Development\Projects\NH\Portsmouth\14202A-SubaqueousWaterTransMain\MXD\Figure-LittleBayFocusArea-8x11.mxd



0 1,000 2,000 Feet

## Type of Activity

Type of activity (e.g., construction, operation, other action such as water withdrawal) and the start and end dates of the activity.

The proposed project involves installation of a 24" HDPE pipe across Little Bay to replace existing drinking water infrastructure. There will be excavation on either shore to bury the pipeline and make connections to the existing main. All excavated areas will be restored. The following schedule is anticipated for the water main replacement project:

- Summer 2023 – Bidding
- October-December 2023 – Construction Mobilization, Set Up
- December 2023 – February 2024 - In Water Work
- Spring 2024 – Site Restoration

## Characteristics of the Activity

Whether the activity is associated with a discharge and/or water withdrawal and whether the discharge and/or withdrawal is proposed or occurring.

Permanent water withdrawals or discharges are not proposed as a part of this project. Temporary discharges associated with the project include stormwater runoff from the onshore construction areas and a discharge of drinking water into Little Bay on the Newington side of the project. The temporary discharge of drinking water will be necessary in order to clean and disinfect the new drinking water transmission main after installation. Cleaning will involve flushing drinking water from the existing transmission main through the new main. Disinfecting will involve filling the new main with drinking water and adding sodium hypochlorite (chlorine) to kill any potentially harmful bacteria during a holding period of 24-48 hours. The chlorinated water will then be flushed through a dichlorination basin, where all chlorine will be deactivated by adding ascorbic acid, before discharging into Little Bay.

## Characteristics of the Discharge and/or Withdrawal

The characteristics of the discharge and/or withdrawal:

- *Flow rate (cfs).*  
The anticipated flow rate of water discharged while flushing the pipe is 2,000-2,500 gpm (4.5-5.6 cfs). The anticipated flow rate of water discharged after dichlorination is 20-40 gpm (0.04-0.08 cfs)
- *Potential chemical, physical, biological constituents.*  
There may be a small amount of sediment removed from the pipe while flushing that could potentially be discharged. Otherwise the discharge will consist of drinking water.
- *Frequency (e.g., daily, hourly).*  
The flushing and dechlorinated water discharge will occur one time after installation of the pipe is complete.
- *Duration.*  
It's anticipated flushing will take 2-3 days and discharge of the dechlorinated water would take less than 2 days.
- *Temperature (Celsius).*  
The temperature of the discharged water would be the same as the temperature of the water flowing through the drinking water transmission main (10-15°C).
- *Latitude and longitude (dd:mm:ss).*  
Lat: 43°7'14.56" Long: 70°51'33.57"

### **Existing and Designated Uses Potentially Affected by Activity**

*The existing and designated use(s) that are potentially affected by the proposed activities. (Designated Uses are listed in the NHDES Consolidated Assessment and Listing Methodology.)*

The proposed project is located within NHDES Assessment Unit NHEST600030904-06-18 (Lower Little Bay). Designated uses for this assessment unit listed in the 2020/2022 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology include Aquatic Life Integrity, Fish Consumption, Potential Drinking Water Supply, Primary and Secondary Contact Recreation, Shellfish Consumption, and Wildlife. Of these designated uses, it is anticipated that the Shellfish Consumption may be affected temporary by the proposed project. There is an existing aquaculture licensed area located on the Durham side overlapping part of the project area and several other licensed shellfish farms near the proposed projects. The project team has been coordinating with the oyster farmer whose farm overlaps the pipeline and the farmer has moved seed oyster in preparation for the project. Oyster farms near the project could be temporary impacted by turbidity when the cofferdam system is removed. The project schedule has been selected, in part, to minimize impacts to the oyster farms by conducting in water work during the winter when few farmers are harvesting oysters.

### **Provisions of the Application Surface Water Standards**

*The provision(s) of surface water quality standards (Env-Wq 1700) that are applicable to the designated uses affected by the proposed activities.*

It is anticipated that the provisions of the surface water quality standards that are applicable to the designated uses that will potentially be affected (Aquatic Life and Shellfish Consumption) is Env-Wq 1703.11, Turbidity. The waters that are proposed to be affected are Class B waters under NH RSA 485-A:8. Env-Wq 1703.11 states: “(b) Class B waters shall not exceed naturally occurring conditions by more than 10 NTUs.” The proposed project will include monitoring during construction of turbidity levels. See attached Turbidity Monitoring Plan in Appendix B.

### **Pollutant Loading Analysis**

*A pollutant loading analysis to show the difference between predevelopment and post-development pollutant loads for a typical year.*

Since the proposed project involves temporary disturbance during installation of the pipeline and all disturbed areas will be fully restored, a pollutant loading analysis is assumed to be unnecessary for this application. During construction, the contractor will be required to install and maintain erosion and sediment control practices to prevent the pollution of stormwater discharged from the project work areas.

### **Description of Other Aspects of Project Affect on Surface Water**

*A description of any other aspect of associated with construction and operation of the activity that would affect the chemical composition, temperature, flow, or physical aquatic habitat of the surface water.*

Since the proposed project involves temporary disturbance and all disturbed areas will be restored, the project is not anticipated to affect surface water quality. The volume of water discharged during pipe cleaning is minimal compared to the volume of water in Little Bay.

### **Copy of the Federal Permit Application**

A copy of the U.S. Army Corps of Engineers (USACE) permit application is included as Appendix C. The USACE has determined this project will require an Individual Permit. The USACE file number is NAE-2019-01078.

**Copy of the NHDES Wetlands Permit**

A copy of the NHDES Wetlands Permit and subsequent application amendments are included as Appendix D.

**Copy of the NHDES Alteration of Terrain Permit**

An NHDES Alteration of Terrain Permit is not required for this project.

**Project Plans**

*A plan showing the proposed activities to scale.*

A copy of the project plans is included in Appendix E.

**Compliance with Rivers Management and Protection Act**

*If the project is located within ¼ (one quarter) mile of a designated river, as defined under RSA 483 (the Rivers Management and Protection Act), provide documentation showing that the Local River Management Advisory Committee (LAC) has been provided with a copy of this complete application.*

The project is located near where the Oyster River discharges to Great Bay. Upper reaches of the Oyster River have been classified as Designated Rivers, however the section near the project areas has not.