

MEMORANDUM FOR: Peter Tischbein, Project Manager, CENAE-RDC

SUBJECT: Draft Sampling and Analysis Plan for Dredging by Yachting Solutions and the City of Rockland in Inner Rockland Harbor in Rockland, Maine; File Number NAE-2018-01522.

Background: In response to your request of 27 June 2018, the Marine Analysis Section of the New England District, Regulatory Division (MAS) has developed this sampling and analysis plan (SAP) to gather information to support a suitability determination for the proposed in-water disposal of material dredged from Inner Rockland Harbor. All sampling and analysis activities described in this plan shall follow the requirements set forth in the *Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters* (RIM) dated May 6, 2004. A copy of the RIM as well as requirements for electronic submission of data, may be downloaded from the website,

<http://www.nae.usace.army.mil/Missions/Regulatory/DredgedMaterialProgram/RegionalImplementationManual.aspx>

1. Project Description: The applicant is proposing new dredging of 13.76 acres of material from Inner Rockland Harbor. The applicant proposes to mechanically dredge the inner harbor to three different depths: 1) 0.8 acres will be dredged to -5 ft. at MLW (plus one foot of over dredge) generating 4,708 cubic yards of material. 2) 4.1 acres will be dredged to -10 ft. at MLW (plus one foot of over dredge) generating 44,533 cubic yards of material. 3) 8.8 acres will be dredged to -15 ft. at MLW (plus one foot of over dredge) generating 113,414 cubic yards of material for disposal. In total, this project will generate 162,655 cubic yards of material. The material is proposed to be disposed of at the Rockland Disposal Site (RDS).

2. Conceptual Site Model: MAS reviewed information provided by the applicant's contractor as well as information available online and at NAE including historic testing data, previous environmental assessments, water quality data, adjacent land-use information, spill and outfall data, and interviews with local officials. This information was used to develop a conceptual site model (CSM) for the proposed project that characterized potential sources of contamination, site-specific contaminants of concern, exposure pathways, and biological receptors to help develop this sampling and analysis plan.

General Area Description and Hydrographic Features:

The City of Rockland is 15 square miles in size and has a population of 7,200 people. Rockland Harbor runs about 8,000 feet north to south and 8,000

feet east to west at its widest point and empties into the Penobscot Bay. There is a mile-long breakwater at the northern end of Rockland Harbor. The Inner Harbor is a smaller tidal basin within Rockland Harbor. Several private marinas and public piers are located here. Journey's End Marina to the far north has 85 slips, boat storage and repair, fuel docks, and a pump-out station. The Rockland Municipal Fish Pier services commercial fishing boats and has about 2,000 square feet of dockage. Rockland Landings Marina has 34 slips and 13 moorings for rent. Middle Pier, owned by the City, has 1,440 square feet of floats according to the harbormaster, and the public landing has 9,580 square feet of floats. A 14-foot deep channel, which is a portion of the Rockland Harbor Federal Navigation Project (FNP), terminates within the Inner Harbor and is indicated in red on the project vicinity map.

Lermond Cove is directly north of the Inner Harbor. The Rockland Wastewater Pollution Control Facility and the Dupont FMC carrageenan processing plant are located along the southern portion of Lermond Cove and the Rockland-Vinalhaven ferry operates within that cove as well.

Site History:

The City of Rockland was chartered in 1854 and developed quickly due to shipbuilding and lime production. Other industries in the late 1800's included foundries, carriage factories, lumber mills, machine shops, a tannery, granite works, shoe factories, and fishing. In the 1900's there were several fish processing plants in Rockland, but they have all since closed and the Boston Financial Data Services call center was formerly the site of Fisher Engineering's snowplow manufacturing center. Harbor Park was at one time a city dump that was converted into a park. In the vicinity of the Inner Harbor, from north to south, current properties include Journey's End Marina, a Coast Guard unit, the Rockland Municipal Fish Pier, the Rockland Landings Marina, the city-owned Middle Pier, the Pearl Restaurant, Harbor Park Public Landing, Boston Financial Data Services call center, the YMCA, and Yachting Solutions Boat Basin. The Rockland Harbor FNP was last dredged in 2003.

Potential Sources of Sediment Contamination:

Outfalls: There are three storm water outfalls in the project vicinity, which are shown on the plan with the proposed sampling points. Also, the main discharge outfall for the city sewage treatment plant (Outfall 001A) is located in the Inner Harbor, just to the north of Middle Pier according to the harbormaster.

Spills: The applicant's contractor reviewed spill records from two sources—the Maine Department of Environmental Protection (DEP) website and the U.S. Coast Guard's National Response Center website. Between May 1, 2005 and January 3, 2018 forty-nine spills were reported to the Maine DEP for Rockland Harbor or its surrounding environs. The majority of these were related to gasoline or oil spills or unknown sheens on the water. During the same timeframe, 78 spills were reported to the Coast Guard for Rockland, the majority of which were also related to gasoline or oils spills or unknown sheens on the water.

Other Contaminant Sources: There is the potential for contamination from the former canning/fish processing factories, old lime kilns, other former or present commercial and industrial uses in Rockland Harbor, the former city dump, as well as contamination associated with recreational and commercial fishing boats.

Related Sampling Data:

Bulk sediment chemistry was analyzed based on the sampling done for the Rockland Harbor FNP dredging in the inner harbor and the material was found suitable for unconfined disposal at the Rockland Disposal Site (RDS). In contrast, bulk sediment chemistry analysis of sampling done for the Rockland Municipal Fish Pier in 2015 indicated that the material was not suitable for unconfined disposal at RDS. The Rockland Municipal Fish Pier is outside of and north of the proposed dredging footprint but is within the Inner Harbor. In addition, bulk sediment chemistry analysis of material sampled for the portion of the Rockland Harbor FNP dredging in Lermond Cove north of the Inner Harbor indicated that the material was not suitable for unconfined disposal at RDS.

Risk Summary:

Following this Tier One review of the site characteristics and the available historical data, the **Dredging Project** was given a **moderate** risk ranking according to the following matrix (adapted from USACE 2014 Dredged Material Evaluation and Disposal Procedures, User Manual. Dredged Material Management Program, U.S. Army Corps of Engineers, Seattle District).

Rank	Guidelines
Low	Few or no sources of contamination. Data available to verify no significant potential for adverse biological effects.
Low-Moderate	Few or no sources of contamination but existing data is insufficient to confirm ranking.
Moderate	Contamination sources exist within the vicinity of the project with the potential to produce chemical concentrations that may cause adverse biological effects.
High	Known sources of contamination within the project area and historical data exists that has previously failed biological testing.

This ranking was based primarily on the history of previous sediment concentrations at this site and the semi-enclosed basin which would lessen flushing of contaminants inside the cove.

3. Sample Collection: Dredge area sediment cores shall be collected at the thirteen locations specified on the drawing entitled “Proposed Sampling Locations YS1-YS13. These locations were selected based on information from

the CSM described above and from the distribution of point sources in the vicinity of the project footprint. Core samples shall be collected to the proposed dredge depth plus the over-dredge amount. The cores shall be inspected in the field for stratification. If the cores show significant stratification, in the opinion of the sampling crew, subsamples shall be made of each layer. Sufficient material shall be collected from each sample location for grain size and bulk sediment chemistry analyses as described in the sections below.

All sediment being held for testing shall be stored in accordance with the requirements in Table 2 (from Table 8-2 in Evaluation of Dredged Material Proposed for Ocean Disposal, Testing Manual, 1991).

The latitude and longitude for each sample location shall be reported in the Geographic NAD 83 coordinate system in decimal degree format. The horizontal accuracy of each sample location shall be 9 feet or less. The horizontal accuracy at each sample location shall be reported along with the coordinates.

4. Sample Analysis: Each core or core segment from the dredge area shall be individually analyzed for grain size and the results reported to MAS project manager before any compositing is performed. The final compositing plan will be determined by the Corps based on proximity, sediment type, and physical characteristics.

Bulk sediment chemistry shall be performed on the individual or composite sediment samples from the dredge area according to the final compositing plan. Testing parameters, analytical methods, and reporting limits to be used are outlined in Table 3 (Extracted from Tables 1, 2, and 3 of the RIM). The listed analytical methods are recommended but can be replaced by other methods that will give the required reporting limits. The Total Organic Carbon analysis (TOC) shall be performed in duplicate on each composited sample, and a TOC Standard Reference Material (SRM) shall be run with the sample batch. Additional guidance on the physical and chemical analysis of sediments can be found in Chapter 5 of the RIM.

All laboratories used for this project must have an approved Laboratory Quality Assurance Plan (LQAP) on file with NAE. Any data produced from a lab without an approved LQAP will not be accepted. The RIM, a list of laboratories with approved LQAPs, and the reporting format and requirements for electronic submission of data are available for download through the NAE website: <http://www.nae.usace.army.mil/Missions/Regulatory/Dredged-Material-Program/>

5. Reporting: All sediment testing data is required to be submitted electronically in the electronic data deliverable (EDD) format available on the NAE website (<http://www.nae.usace.army.mil/Missions/Disposal-Area-Monitoring-System-DAMOS/Electronic-Data-Deliverables.aspx>). Hard copy data submission is also

required but may be substituted with a printer friendly, easy-to-read format (e.g., PDF, MS Word). Any analytes not detected shall be reported as the reporting limit and qualified with a “U”. Non-detects shall not be reported as the method detection limit (MDL). RIM quality control summary tables are required to be submitted with each project dataset. These tables are found in Appendix II of the RIM.

Quality Control Summary Tables must be completed and included with each data submission. These tables are found in Appendix II of the RIM and are also available on the RIM website:

<http://www.nae.usace.army.mil/Missions/Regulatory/DredgedMaterialProgram/RegionalImplementationManual.aspx>

6. Contact Information: If you, the applicant or the testing laboratory have any questions about this SAP, feel free to contact me at 978-318-8054 or at ruthann.a.brien@usace.army.mil.

Ruthann Brien
Project Manager
Marine Analysis Section

Table 3 BULK SEDIMENT TESTING PARAMETERS

Parameter	Analytical Method	Detection Limit (ppm)
Metals		
Arsenic	7060, 7061	0.5
Cadmium	7130, 7131	0.1
Chromium	7190, 7191	1.0
Copper	7210	1.0
Lead	7420, 7421	1.0
Mercury	7471	0.02
Nickel	7520	1.0
Zinc	7950	1.0
PCBs (total by NOAA summation of congeners)		
	8082	0.001
Pesticides		
	8081A	0.02
Aldrin	Endrin	
Chlordane	Hexachlorobenzene	
DDT	gamma Hexachlorocyclohexane (Lindane)	
DDE	Heptachlor	
DDD	Heptachlor Epoxide	
Dieldrin	Methoxychlor	
Endosulfan I	Toxaphene	
Endosulfan II	Trans-nonachlor	
Endosulfan Sulfate		
Polyaromatic Hydrocarbons (PAH's)		
	8270	0.02
Acenaphthene	Chrysene	
Acenaphthylene	Dibenzo(a,h)anthracene	
Anthracene	Fluoranthene	
Benzo(a)anthracene	Fluorene	
Benzo(a)pyrene	Indeno(1, 2, 3-cd)pyrene	
Benzo(b)fluoranthene	Naphthalene	
Benzo(k)fluoranthene	Phenanthrene	
Benzo(g, h, i)perylene	Pyrene	
Total Organic Carbon	9060	0.1%
Percent Water		1.0%
Grain Size	Wet Sieve (#4, 10, 40, 200)	
	As of 2004, as per the RIM	

PCB CONGENERES

Analytical Method: EPA Method 8082

Target Detection Limit: 1 ppb

Congeners

8*	2,4' diCB
18*	2,2',5 triCB
28*	2,4,4' triCB
44*	2,2',3,5' tetraCB
49	2,2',4',5 tetraCB
52*	2,2',5,5' tetraCB
66*	2,3',4,4' tetraCB
87	2,2',3,4,5' pentaCB
101*	2,2',4,5,5' pentaCB
105*	2,3,3',4,4' pentaCB
118*	2,3',4,4',5 pentaCB
128*	2,3,3',4,4' hexaCB
138*	2,2',3,4,4',5' hexaCB
153*	2,2',4,4',5,5' hexaCB
170*	2,2',3,3',4,4',5 heptaCB
180*	2,2',3,4,4',5,5' heptaCB
183	2,2',3,4,4',5',6 heptaCB
184	2,2',3,4,4',6,6' heptaCB
187*	2,2',3,4',5,5',6 heptaCB
195*	2,2',3,3',4,4',5,6 octaCB
206*	2,2',3,3',4,4',5,5',6 nonaCB
209*	2,2',3,3',4,4',5,5',6,6' decaCB

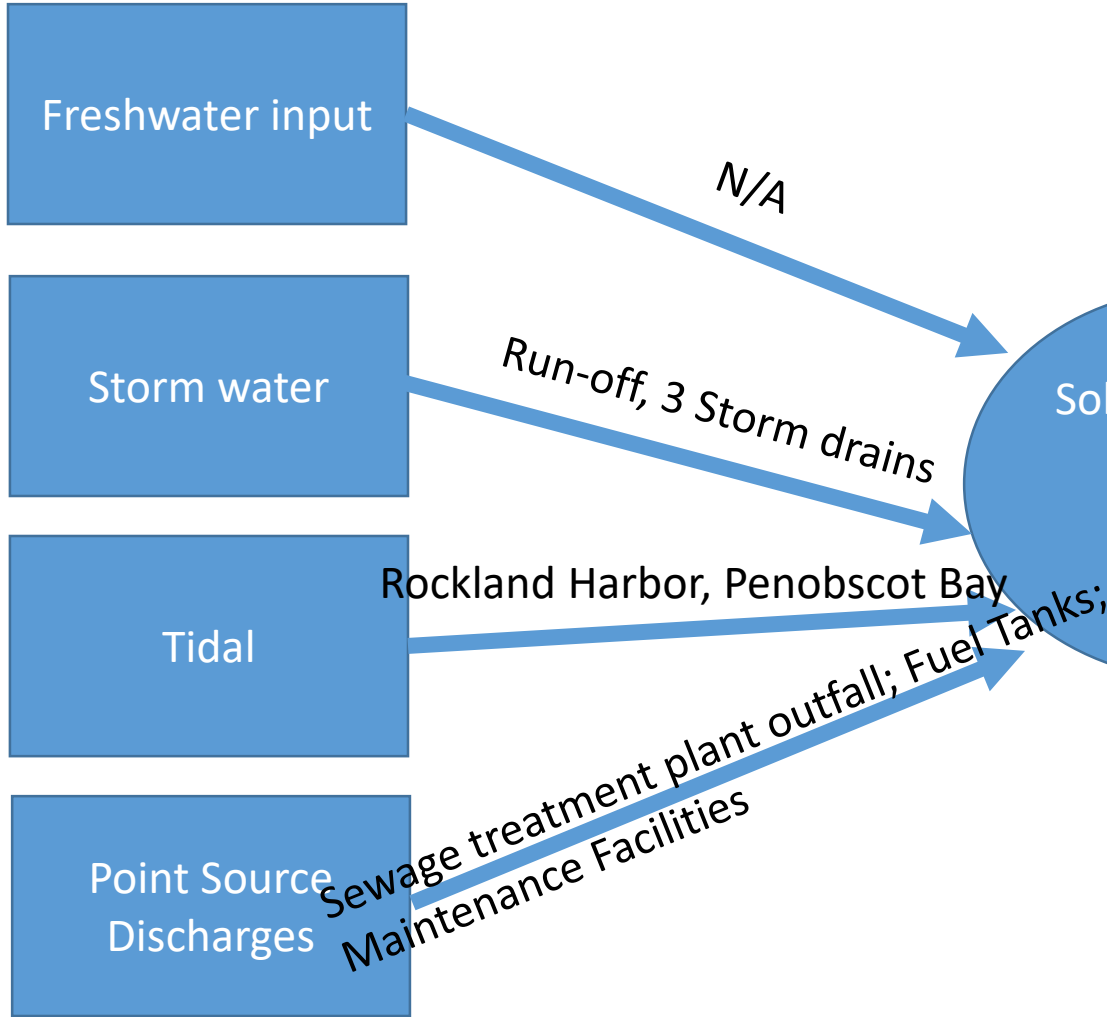
Arochlor 1268

The specified method is a recommendation only. Other acceptable methodologies capable of meeting the Target Detection Limits can be used. Sample preparation methodologies (e.g. extraction and cleanup) and sample size may need to be modified to achieve the required target detection limits.

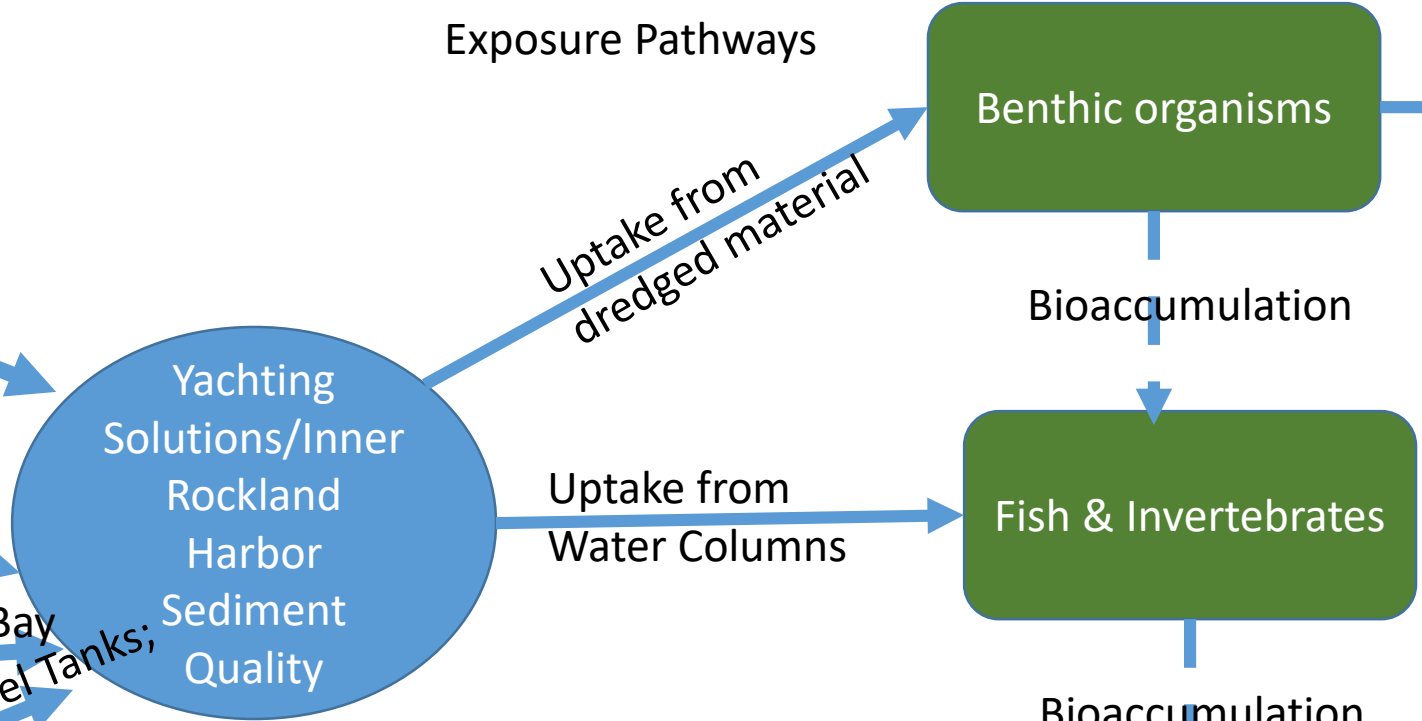
* denotes a congener to be used in estimating Total PCB. To calculate Total PCB, sum the concentrations of all eighteen congeners marked with a "*" and multiply by 2.

As of 5/5/2004, as per the RIM.

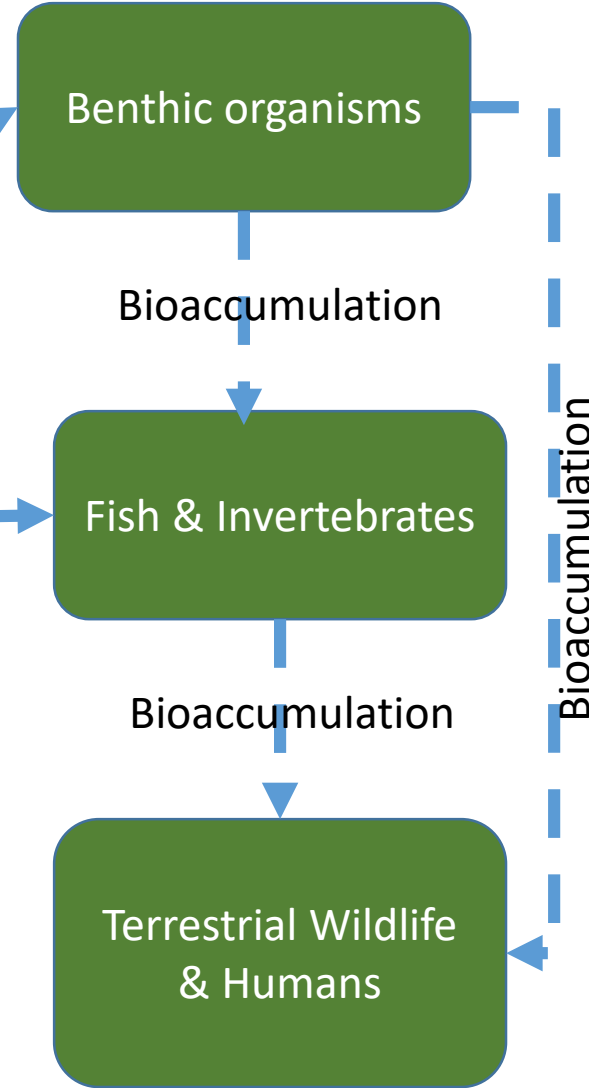
System Inputs



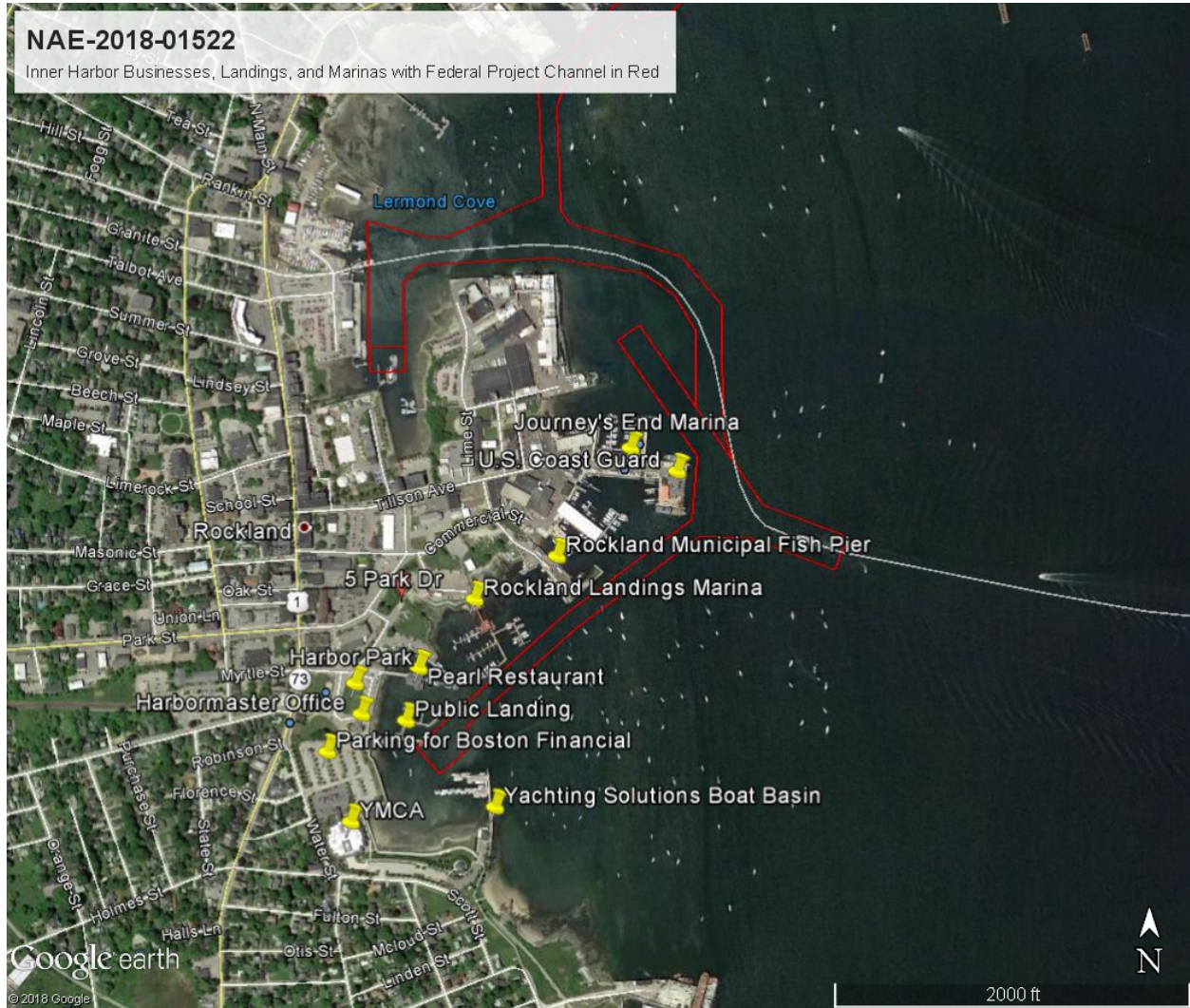
Exposure Pathways



Potential Receptors

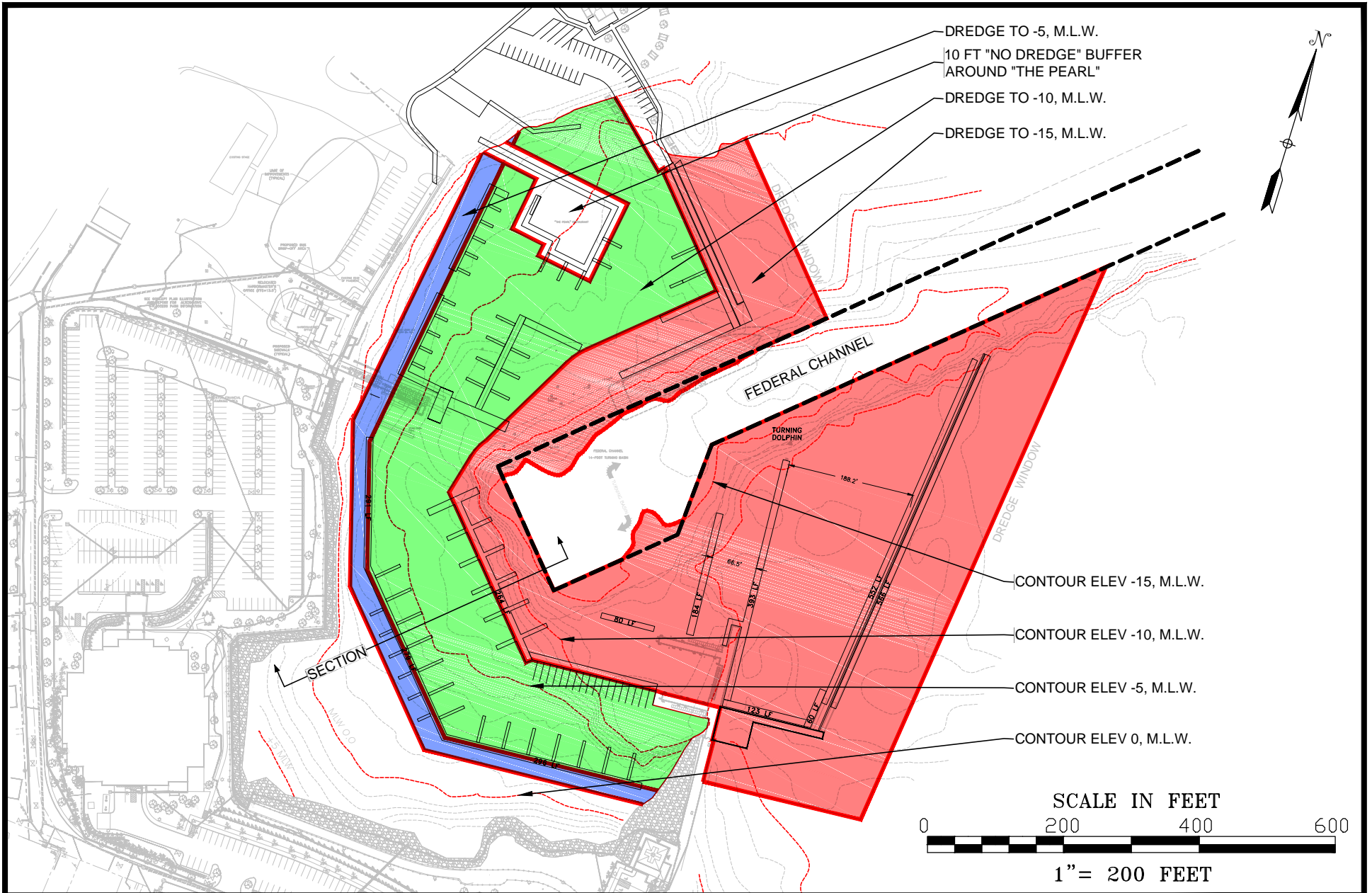


NAE-2018-1522: Inner Harbor Businesses, Piers, & Marinas with Federal Project Channel in Red and Lermond Cove to the North



NAE-2018-1522: Project Vicinity With Proposed Dredge Area Outlined in Orange & Existing Federal Navigation Project Channel Outlined in Red





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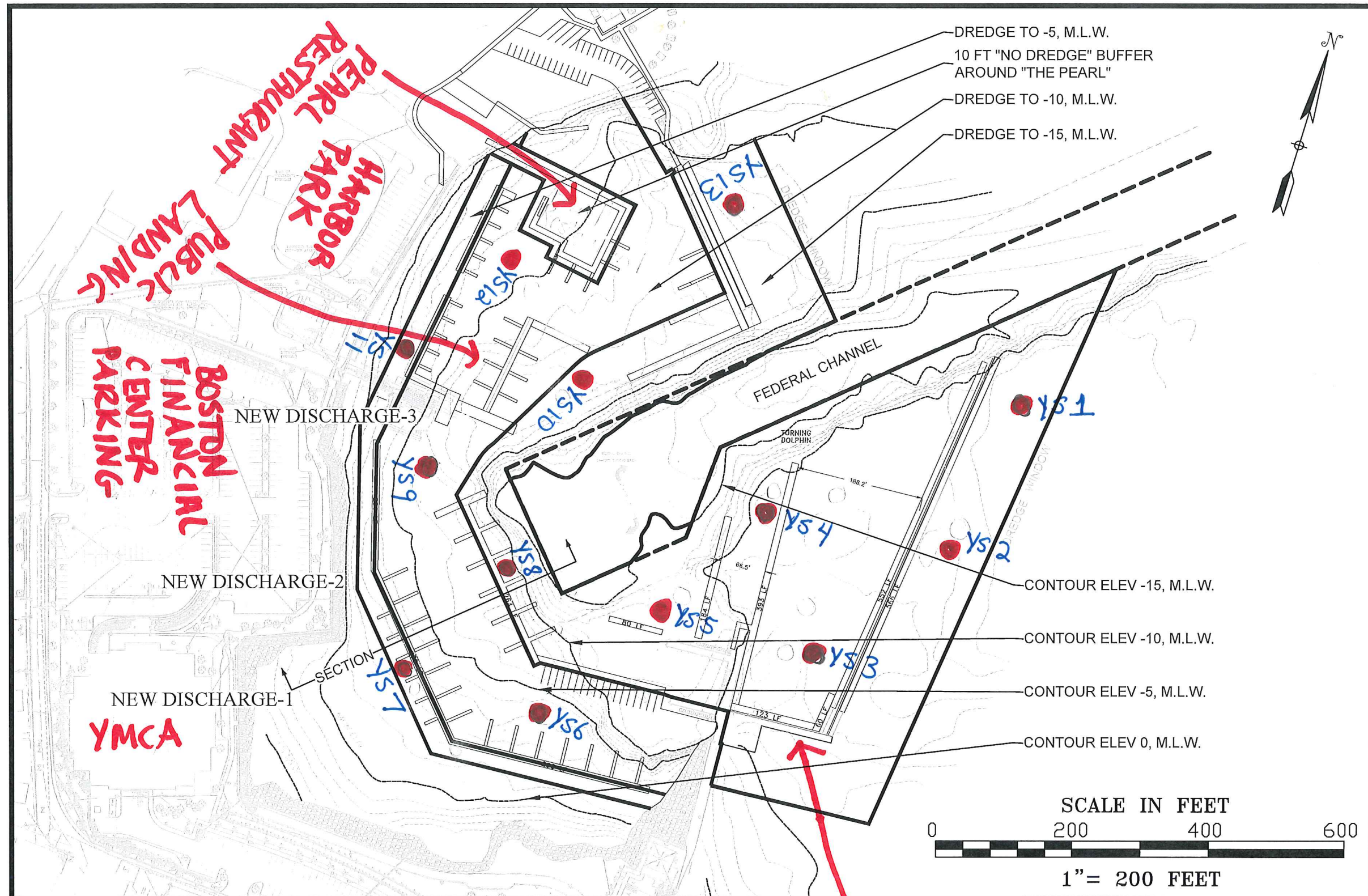
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 Drafted By: TF

Rockland Harbor, Rockland, Maine

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PROPOSED SAMPLING LOCATIONS YS1-YS13

9/28/18



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YACHTING SOLUTIONS

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