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June 19, 2018
File No. 01.0173751.00

SUBMITTED VIA E-MAIL ON JUNE 19, 2018

Ms. Sarah Porter
Conservation Agent
City of New Bedford
133 William Street, Room 304
New Bedford, Massachusetts 02740

Re: Peer Review Consulting Services
East Beach Proposed Sand Nourishment Project Notice of Intent
New Bedford, Massachusetts

Dear Ms. Porter,

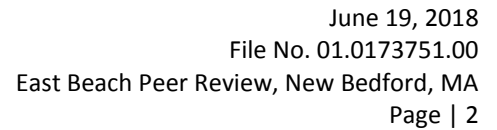
Pursuant to your request, GZA GeoEnvironmental, Inc. (GZA) is pleased to provide the City of New Bedford Conservation Commission (NBCC; Client) with this report presenting the results of our peer review of the proposed Notice of Intent for the "East Beach Proposed Sand Nourishment Project" (MassDEP File No SE49-0801).

BACKGROUND

The proposed beach nourishment project is located in the City of New Bedford on the east side of East Rodney French Boulevard (Site). Based on information provided by the Client we understand that the City of New Bedford Department of Public Infrastructure ("Applicant") has submitted a Notice of Intent (NOI) and is seeking an Order of Conditions (OOC) through the NBCC under the Wetlands Protection Act (MGL c 131 §40; "WPA") and its associated Regulations (310 CMR 10.00) and the City of New Bedford Wetland Ordinance (Chapter 15 Licenses and Permits-Business Regulations and Section 15-101; "Ordinance") to perform limited beach nourishment work at the Site.

East Beach extends about 1,000 linear feet about and is bounded to the north by an approximately 400 foot-long pier/groin and to the south by an approximately 250-foot long groin. The beach is separated from the developed upland by a concrete seawall. Several groin and a major pier are located to the south of the beach. The pier is expected to provide some protection to East Beach from waves within Buzzards Bay. The beach elevation at the wall is approximately 8 feet NAVD88. GZA has not been provided with the seawall details. The USGS and Massachusetts Moris shoreline change data indicates that the short-term (1994 to 2009) shoreline change along East Beach has been net accretion at end rate of about 1.5 feet/year. GZA review of aerial photographs indicates a relatively stable beach. The NOAA National Beach Nourishment Database was reviewed for past beach nourishment projects. No past beach nourishment was identified for East Beach. Six beach nourishment events were identified for Clark Point, between 1956 and 1980 for a total volume of about 280,903 c.y. over a 1,600 l.f. area.

The stated goal of the proposed beach nourishment project is to provide storm damage protection to the existing seawall and increase the desirability and functionality of East Beach to the community. The proposed placement of material is intended to be limited to areas above (i.e., landward) of the Jurisdictional Line per Chapter 91 regulations. The placement is proposed to be completed in annual phases over a 3-year period.



GZA REVIEW FINDINGS AND RECOMMENDATIONS

1.0 ENGINEERING REVIEW (TASK A)

1.1 DESIGN CONTOURS AND DATUMS

Under “General Notes” it is noted that all elevations are referenced to NAD 83. NAD 83 is a horizontal datum and therefore the note should be revised to reflect that the vertical datum of the project. Based on the emails GZA exchanged with the Applicant, the vertical datum for the project is the North American vertical datum of 1988 (NAVD88).



GZA verified the tidal datums used for the project based on NOAA station 8447712 (New Bedford Clarks Point) which is located near the Site. These datums reflect the mean values during the current tidal epoch (1983 to 2001). Station 8447712 is not a reference station; the station datums were converted to NAVD88 using the NOAA Online Vertical Datum Transformation (VDatum) software tool. Table 1 below presents tidal elevations at the site referenced to NAVD88 in feet. Based on the topographic data collected by the City, the Mean High Water (MHW) datum line was placed appropriately on the design drawings. Even though it does not have any impact to the project design, GZA noticed that the Mean Low Water (MLW) line elevation was -4.53 ft-NAVD in the CAD file, which is not consistent with the MLW elevation presented in Table 1. GZA recommends verifying the MLW elevation used in the CAD files and updating the location of the line in the design plans, if necessary.

Table 1. Tidal Elevations Referenced to feet - NAVD88

MHHW	2.00	Mean Higher-High Water
MHW	1.75	Mean High Water
MTL	-0.04	Mean Tide Level
MSL	-0.29	Mean Sea Level
DTL	0.01	Mean Diurnal Tide Level
MLW	-1.82	Mean Low Water
NAVD	0	NAVD
MLLW	-1.97	Mean Lower-Low Water

1.2 PROPOSED EROSION CONTROL

The project plans indicate that a single line of straw wattle will be placed along the Chapter 91 Jurisdiction Line for sediment control during the construction period. Given that the overall project will be implemented over a 3-year period, GZA recommends including language in the plans under General Notes and the Storm Water Management Report clarifying the intent of keeping the straw wattles on site between the different phases of the project. GZA notes that keeping the wattles on site may interfere with recreational activities during beach season and may result in displacement and disassembling of the wattles due to storms occurring during winter months. GZA agrees that it is good practice to physically mark the Chapter 91 line to prevent placing sediment seaward of the line by construction equipment operators. For the purposes of this project, limits alternatively be delineated with a construction fence instead of straw wattles, as it is questionable whether an erosion and sedimentation barrier is necessary at this site. Any such barrier would be subject to time of year restrictions per Massachusetts Division of Marine Fisheries requirements.

1.3 SEDIMENT SAMPLING PLAN

The Applicant collected beach sediment samples at 50 locations along 10 transect on East Beach. Three (3) of the samples along each transect were above the Chapter 91 line and 2 of them were below. Composite samples were collected above and below the Chapter 91 Jurisdiction Line and 20 samples (2 from each transect) were submitted for laboratory gradation testing. According to the test results, the sediment samples consisted principally of fine to medium, poorly graded sand with traces of silt. The Applicant states in the NOI their intention of finding compatible sediment from an upland source to match the native sand composition, however; the Applicant does not provide gradation specifications for the imported sand. GZA recommends specifying a range for compatible material gradation and including the lower and upper bound gradation curves stated in the NOI. Once the sediment source is determined, available sediment gradation can be compared to the specified bounds as a proof of compatibility.



1.4 TECHNICAL REVIEW OF PROJECT GOALS

As stated in the NOI, the goal of the limited beach nourishment project is to provide storm damage protection to the existing seawall and to increase desirability and functionality of East Beach to the community. Added sediment with the proposed project will increase the desirability and functionality of East Beach to the community. GZA has not completed beach erosion analyses as part of our work; however, it is our opinion that the proposed sediment volumes will provide only minimal additional storm damage protection of the seawall. It will help to maintain the existing beach profile and width.

Beach nourishment, in general, provides storm protection to upland and structures (e.g., seawalls) by: 1) increasing the width of the beach (dune and/or berm) and 2) providing sacrificial sand to reduce wave-induced scour at the toe of structure during storms. The cross-shore component of sediment transport (beach erosion) is accelerated during storm events due to elevated water levels and high wave heights, scouring the beach and carrying the sediment seaward. Predicted water level and waves, associated with recurrence interval, are available from FEMA Flood Insurance Studies (FIS) and the U.S. Army Corps of Engineers (USACE) North Atlantic Comprehensive Study (NACCS). NACCS provides water levels and wave height associated with different return period events at a save point located approximately 1,800 feet north of the project site (Figure 2 and summarized in Table 2). As presented in Table 2, even high probability storm event such as the 1-year recurrence interval flood will cause water elevations and wave run-up to within the limits of the proposed fill. The FEMA FIS indicates similar (slightly higher) predicted flood elevations. As a general rule, FEMA suggests a minimum of 6 c.y. per linear foot of berm/dune in sacrificial sand above the 5-year recurrence interval stillwater elevation to accommodate erosion during a 5-year recurrence interval flood.

Alongshore sediment transport is mainly the result of wave-induced currents and may shift direction depending on the approach angle of breaking waves. Alongshore sediment transport is usually reported as annual net transport rate to estimate sediment transport quantities. Even though sediment can be transported in either alongshore direction, the net annual transport rate direction is determined by the transport direction of the majority of the sediment. Review of aerial images of East Beach indicate that the annual net sediment transport is N – NNE. East Beach shoreline contains groins to the north and south of the project area. These structures restrain alongshore sediment transport by not allowing sediment to be transported into the project shorelines from the South and not allowing it to leave from the North. Therefore, the alongshore component of the sediment transport is not expected to result in a significant amount of sediment loss after the nourishment project is complete.

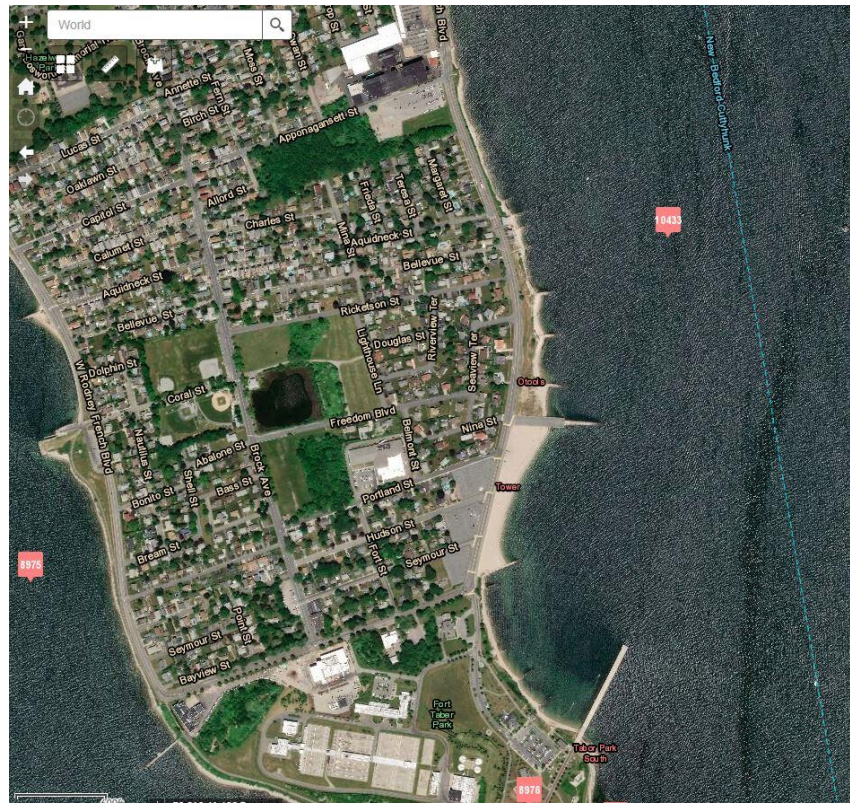


Figure 2. NACCS Save Point 10433 Location

Table 2. USACE NACCS Data Save Point 10433 (Water levels in feet, NAVD88)

ARI* (yrs)	Stillwater Water Level		Wave Height	
	Mean (ft)	Upper 95% CL (ft)	Mean (ft)	Upper 95% CL (ft)
1	4.13	6.43	3.94	7.94
2	4.72	7.25	4.72	8.82
5	5.58	8.13	5.54	9.58
10	6.33	8.99	6.17	10.17
20	7.28	10.20	6.72	10.66
50	8.82	11.91	7.38	11.28
100	10.07	13.15	7.87	11.74
200	11.32	14.43	8.40	12.17
500	12.99	16.10	8.99	12.69
1,000	14.17	17.25	9.41	13.09
2,000	15.22	18.34	9.84	13.38
5,000	16.50	19.61	10.17	13.78
10,000	17.38	20.50	10.43	14.01

*Annual Recurrence Interval



2.0 PERMITTING REVIEW (TASK B)

GZA reviewed the City of New Bedford: Notice of Intent Application (4/17/2018) for documentation that the project complies with the WPA and Ordinance. GZA's comments are as follows and are broken down into review comments for each main component of the NOI application package.

2.1 WPA FORM 3-NOTICE OF INTENT

B1- The box for "Buffer Zone Only" should not be checked as the project is located within a Coastal Resource Area itself (Coastal Beach) and is not a Buffer Zone Only project.

B3. Resource Areas- GZA concurs that Coastal Beaches is relevant and is appropriately checked off. In addition, Land Subject to Coastal Storm Flowage should also be checked off as the project lies within a VE Velocity Zone.

C1. The NHESP Natural Heritage Atlas 14th Edition was published on August 1, 2017; therefore, the date of map listed in this section should be August 1, 2017.

C2. Since C1 was marked "no", C2 describing the required filing under MESA, should not be checked as this section is only relevant if the project requires MESA review and is requesting a "streamlined" review. This project does not require MESA review.

NOI Wetland Fee Transmittal Form

A. This section is completed correctly as, although the City is exempt from paying the WPA filing fee, the Transmittal Form needs to be sent to the MassDEP LockBox.

B. Fees section does not need to be completed as there is no fee when a municipality is the "Applicant."

2.1.1 NOI Project Narrative and Supporting Documentation

GZA reviewed the project narrative included with the NOI application. Typically, a project narrative includes a description of each relevant jurisdictional resource area and addresses how the project meets performance standards for each resource that is within the project footprint or being impacted, temporarily or permanently, by the project. This information was not included in the project narrative.

By our assessment, although it is adjacent to other resource areas, including Land Containing Shellfish, the project footprint falls directly within Land Subject to Coastal Storm Flowage and a Coastal Beach resource area.

Land Subject to Coastal Storm Flowage

Land Subject to Coastal Storm Flowage (LSCSF) is defined as "land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, whichever is greater". LSCSF is determined by the latest available FEMA Map. Please see attached Figure 3 for location of LSCSF associated with the Site. There are no performance standards for LSCSF so it is not discussed further in the section regarding performance standards.

Coastal Beaches

As described in the Preamble of 310 CMR 10.27, Coastal Beaches are significant to storm damage prevention, flood control and the protection of wildlife habitat. They are also likely to be significant to the protection of marine fisheries and where there are shellfish, to land containing shellfish.



Section 310 CMR 10.27(2) defines Coastal Beach as follows:

Unconsolidated sediment subject to wave, tidal and coastal storm action which forms the gently sloping shore of a body of salt water and includes tidal flats. Coastal Beaches extend from the mean low water line landward to the dune line, coastal bankline or the seaward edge of existing human-made structures, when these structures replace one of the above lines, whichever is closest to the ocean.

The Coastal Beach associated with East Beach appears to extend to the seawall/road. Coastal Beaches dissipate wave energy, serve as a sediment source for dunes and subtidal areas and serves as a sediment source for coastal areas downdrift, storm damage prevention and flood control. Coastal Beaches are also habitat for nesting birds as they rely on the area between the toe of a dune and the high tide line.

When a proposed project involves work on the Coastal Beach and the Conservation Commission determines that the Coastal Beach is significant to storm damage prevention or flood control, the volume (quantity of sediments) and form and the ability to respond to wave action must be considered in the design of a project. Additionally, when the Conservation Commission determines that Coastal Beaches are also significant to the protection of marine fisheries or wildlife habitat, the following are also critical to the protection of those interests: distribution of sediment grain size, water circulation, water quality and relief and elevation.

A beach nourishment project, such as the one proposed, is permissible under the WPA and City Wetlands Ordinance, provided the project design meets the performance standards for Coastal Beach. A summary of the assumed performance standards for Coastal Beaches are as follows (performance standards directly from WPA are in *italics*):

310 CMR 10.27(3): Any project on a coastal beach, except any project permitted under 310 CMR 10.30(3)(a), shall not have an adverse effect by increasing erosion, decreasing the volume or changing the form of any such coastal beach or an adjacent or downdrift coastal beach.

Because the stated goal of the proposed beach nourishment project is to provide storm damage protection to the existing seawall and the proposed steps include nourishing the beach by placing suitable material at the Coastal Beach to enhance protection, the project appears to meet this performance standard.

310 CMR 10.27(4): Any groin, jetty, solid pier, or other such solid fill structure which will interfere with littoral drive, in addition to complying with 310 CMR 10.27(3), shall be constructed as follows {remainder of performance standard not copied}.

This performance standard is not applicable as no groins, jetties solid piers or other solid fill is proposed as part of this project.

310 CMR 10.27(5): Notwithstanding 310 CRM 10.27(3), beach nourishment with clean sediment of a grain size compatible with that on the existing beach may be permitted.

The Applicant states their intention of finding compatible sediment from an upland source to match the native sand composition in the NOI, however; does not state specifications for the nourishment sediment nor has a source of material been identified yet. Because this performance standard has to be met to make the project permissible, GZA recommends that the Applicant identify the source of the material prior to the close of the NOI public hearing process. If that is not possible, as an alternative, GZA recommends that a Special Condition be included with the Order of Conditions for the project that requires Conservation Commission approval of the clean sediment of a grain size compatible with that on the existing beach prior to the commencement of the project.



GZA reviewed the City of New Bedford: East Beach Nourishment Project Stormwater Report (4/17/2018) for documentation that the project complies with the Massachusetts Stormwater Standards. GZA's comments are as follows:

Overall: GZA concurs with the classification of this project as a redevelopment project.

Standard 1: GZA concurs that Standard 1 is fully met. The project will not include any new stormwater outfalls.

Standard 2: Standard 2 is not applicable, as the project does not include the construction of any new stormwater management systems. In addition, the project does not include any changes to land cover that would result in changes to peak discharge rates between existing and proposed conditions. Nevertheless, as the Site is land subject to coastal storm flowage as defined in 310 CMR 10.04, GZA concurs that a waiver request would be appropriate if Standard 2 was applicable.

Standard 3: In GZA's opinion, Standard 3 is not applicable, because there will be no loss of annual recharge to groundwater as the project does not involve the creation of impervious surfaces.

Standard 4: The Stormwater Report states that Standard 4 is not applicable. However, Standard 4 should be met to the maximum extent practicable, as the project is a redevelopment project, with the goal of providing for treatment of all runoff from existing (as well as new) impervious areas to achieve 80% TSS removal. Existing impervious areas within the project area includes two buildings with a concrete pad. There are no changes to impervious areas proposed as part of the project. Stormwater runoff from impervious areas will sheet flow out to the surrounding sand and infiltrate. As the project will not include any new stormwater outfalls nor stormwater management systems, then the requirement to include a stormwater treatment train to achieve 80% TSS removal is not applicable.

A Long-term pollution prevention plan is required and needs to be prepared and included with the Stormwater Report. The long-term pollution prevention plan must include the following source control measures, most of which are likely not applicable to this site. However, the Long-term pollution prevention plan should briefly mention these measures and explain how they are not applicable to this site.

- Street sweeping
- Proper management of snow, salt, sand and other deicing chemicals
- Proper management of fertilizers, herbicides and pesticides
- Stabilization of existing eroding surfaces

Standard 5: GZA concurs that Standard 5 is not applicable.

Standard 6: The site is a bathing beach which is considered a critical area as described under the MA Stormwater Standards. All projects that have the potential to impact critical areas shall implement a source control and pollution prevention program that includes proper management of snow and deicing chemicals. A stormwater discharge within or near or to a bathing beach requires the use of a treatment train that provides 80% TSS removal prior to discharge. The treatment BMPs must be designed to treat the required water quality volume, a volume equal to one-inch times the total impervious surfaces at the post-development site. Stormwater runoff from impervious areas will sheet flow out to the surrounding sand and infiltrate. As the project will not include any new stormwater outfalls nor stormwater management systems, then the requirement to include a stormwater treatment train to achieve 80% TSS removal is not applicable. Standard 6 should be met to the maximum extent practicable, as the project is a redevelopment project; thus, the Stormwater Report should include a source control and pollution prevention program that includes proper management



of snow and deicing chemicals. If snow and deicing chemicals are not used at the site, then this should be stated in the Stormwater Report.

Standard 7: All redevelopment projects must fully comply with the provisions of the Stormwater Management Standards requiring the development and implementation of a construction period erosion and sedimentation control plan (Standard 8), a pollution prevention plan (Standard 4), an operation and maintenance plan (Standard 9), and the prohibition of illicit discharges (Standard 10). All redevelopment projects are also required to meet the following Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural stormwater best management practice requirements of Standards 4, 5, and 6 and improve existing conditions.

Standard 8: It appears that the area of disturbance associated with the project (area of beach nourishment) is over 2 acres (i.e. exceeds the 1 acre threshold); thus, the Project will be required to obtain coverage under the NPDES Construction General Permit (CGP) issued by EPA and prepare a Stormwater Pollution Prevention Plan (SWPPP). A SWPPP prepared to meet the requirements of the CGP may also satisfy the construction period erosion, sedimentation and pollution prevention plan requirements of Standard 8. The SWPPP should be submitted to the New Bedford Conservation Commission before land disturbance commences.

The construction period erosion, sedimentation, and pollution prevention plan included in the Stormwater Report meets the minimum requirements of Standard 8. However, straw wattles (hay should not be allowed) may not be the most appropriate perimeter control for the purposes of stormwater management, as they could act primarily as a barrier to water flow, wildlife movement, and recreation use.

Standard 9: Standard 9 requires a Long -Term Operation and Maintenance (O&M) Plan for stormwater management systems designed as part of the project. As this project does not include new stormwater management systems, then Standard 9 is not applicable. The Post Construction Operation and Maintenance Plan included in the Stormwater Report is useful information for the project but is not directly applicable to stormwater management.

Standard 10: GZA concurs with the Illicit Discharge Compliance Statement included in the Stormwater Report.

2.1.3 Compliance with City of New Bedford Wetlands Ordinance

GZA reviewed Chapter 15 Licenses and Permits-Business Regulations and Section 15-101 Section 2 of the New Bedford Wetlands Ordinance ("Ordinance"), which states that, although there is no mandated set-back under the Ordinance, the Conservation Commission will work with applicants to achieve a 25-foot set-back of the project from resource areas. Since the goal of this project is to add material to nourish the beach, provide erosion and storm protection and enhance the public's enjoyment of the public beach, we assume that this policy would not be considered applicable for this project. There are no additional performance standards for the specific resources areas under the Ordinance that are relevant to this project; therefore, it appears that the project is in compliance with the Ordinance.

3.0 REVIEW OF ADDITIONAL PERMITS REQUIRED

GZA conducted a review of what, if any, additional assess local, state and federal permits land-use based and wetlands and waterways permits might be required to authorize the project.

4.0 STATE PERMITS

4.1 MASSACHUSETTS ENVIRONMENTAL POLICY ACT THRESHOLDS

The Massachusetts Environmental Policy Act (MEPA), as administered by the Executive Office of Energy & Environmental Affairs, is a state law that requires that state agencies study the environmental consequences of their actions, including



the granting of permits and financial assistance. It also requires agencies to take all feasible measures to avoid, minimize, and mitigate damage to the environment. While MEPA is not a permitting process, the documentation process requires public study, disclosure, and development of feasible mitigation for a proposed project. Other state permits may not be issued until the MEPA process is completed. The process, depending upon the threshold level of activities in multiple categories can typically require either an Environmental Notification Form (ENF) or an ENF and an Environmental Impact Report. GZA reviewed MEPA categorical thresholds relevant to the project and, at this stage in the planning process, there are no obvious MEPA categorical review triggers.

4.2 CHAPTER 91 PUBLIC WATERFRONT ACT

The Public Waterfront Act (Chapter 91) requires a Chapter 91 waterways license for work in, under or over flowed or filled tidelands. GZA reviewed the proposed plan provided with the referenced Notice of Intent (NOI) application to compare the location of the applicant's Chapter 91 "Fill Line" (as shown on the proposed project plan) with the relevant Chapter 91 Jurisdictional limits. The Chapter 91 regulations under 310 CMR 9.02 defines flowed tidelands as "*present submerged lands and tidal flats which are subject to tidal action*" and filled tidelands as "*former submerged lands and tidal flats which are no longer subject to tidal action due to the presence of fill.*" GZA reviewed the current shorelines, along with geologic materials descriptions, and reviewed historic maps from 1853 (Attachment 2 and Attachment 3). This review indicates that shoreline change at this site appears to have been limited to change associated with the existing coastal structures (i.e., jetties and piers) resulting in accretion and erosion along the beach. As such, in GZA's opinion it appears that the Site is categorized as "Flowed Tideland," as opposed to a "Filled Tideland." The geographic areas subject to jurisdiction under Chapter 91, 310 CMR 9.04 includes "*all waterways, including flowed tidelands and all submerged lands lying below the high water mark...*" The proposed "fill line" referenced on the NOI drawing is shown to have an elevation of +4.5 NAVD88, approximately 2.76 feet above the present Mean High Water (MHW) elevation at the site. Based on this information, the beach nourishment project is considered outside of the Chapter 91 Jurisdiction and therefore does not need a Chapter 91 Permit.

GZA notes that information available on MassGIS shows the potential Chapter 91 jurisdiction line (shown on Figure 3) farther landward than either the current MHW line or the Applicant's "fill line." If the Commission, or MassDEP, has information indicating that this area is comprised of Filled Tideland, a Request for Determination could be sought from MassDEP.

4.3 SECTION 401 WATER QUALITY CERTIFICATION

A 401 Water Quality Certification (WQC) under the federal Clean Water Act, issued by MassDEP, is required for projects that result in a discharge of material greater than 100 cubic yards to waters of the United States (or that disturb greater than 5,000 SF of certain wetlands resource areas) and that are subject to regulation by any federal agency. Because the proposed fill is above the High Tide Line, no USACE permit is required (see Section 5.2), therefore, the 401 WQC is not required.

5.0 FEDERAL PERMITS

5.1 NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) CONSTRUCTION GENERAL PERMIT

A Construction General Permit (CGP) for disturbance of over an acre of ground with a presumed discharge to Waters of the United States is assumed to be required. **Since the area of disturbance associated with the project (area of beach nourishment) is over two acres, coverage under the NPDES Construction General Permit (CGP) issued by EPA will be required.** The CGP requires the preparation of a Stormwater Pollution Prevention Plan (SWPPP). A SWPPP prepared to meet the requirements of the CGP may also satisfy the construction period erosion, sedimentation and pollution prevention plan requirements of Standard 8 of the Massachusetts Stormwater Standards (see Section 2.1.3). GZA



recommends that the SWPPP be submitted to the New Bedford Conservation Commission before land disturbance commences.

In order to assess whether the US Army Corps of Engineers (USACE) has jurisdiction over a project under Section 404 of the US Clean Water Act, the High Tide Line of the ocean at the project site must first be identified. GZA reviewed the existing topographic survey to assess the project need for a permit from the US Army Corps of Engineers. The federal jurisdiction limit at the site is the high tide line (HTL). In order to calculate the HTL elevation at the site, GZA assessed the highest predicted tide over 2018. GZA reviewed the predicted tides for National Oceanic and Atmospheric Administration (NOAA) tide station 8447712, New Bedford, Clarks Point and isolated the highest predicted tide on July 13, 2018 as 2.86 feet above NAVD88. The attached Figure 3 depicts the location of this HTL elevation in relation to the other regulated areas on the site. The project, as proposed, will not place fill below HTL and will, therefore, not need a permit from the USACE, in GZA's opinion.

6.0 ASSESSMENT OF ADHERENCE TO MASSDEP'S BEACH NOURISHMENT GUIDANCE

The Applicant used the Massachusetts Department of Environmental Protection (MassDEP) Beach Nourishment Guide to Best Management Practices for Projects in Massachusetts (March 2007, "Beach Nourishment Guide"). There are 5 basic steps outlined in the guidance.

Step 1- Determine if the project is near endangered species habitat and in or adjacent to: Shellfish beds, vegetated shallows, pawing areas, or rocky sub-tidal habitat.

Detail the impact of the proposed project on these areas. The project is adjacent to, but not within, Priority Natural Habitat and Estimated Habitat of Rare Wildlife, as designated by the Natural Heritage and Endangered Species Program. Per the guidance, the Applicant sought the guidance of the Massachusetts Division of Marine Fisheries. In a correspondence dated May 2, 2018, DMF noted that the project site lies within and adjacent to mapped shellfish habitat for soft shell clam, razor clam, bay scallop, and American oyster. DMF also noted that the East Beach is mapped as horseshoe crab spawning area. GZA assumes the DMR recommendations outlined in the correspondence will be incorporated into the project plan and OOC issued by the Commission.

Step 2- Determine Wetlands and Waterway Permits required from MassDEP or other agency approvals for the project and note application timelines.

The applicant submitted an NOI to the Conservation Commission and MassDEP and review is underway. As for the additional state permits required, the City has retained GZA to assist it to identify additional state permits that are required (see Section 3.1).

Step 3- Determine the profile of the receiving beach.

The Applicant included information depicting the existing cross-sections at five separate stations at East Beach and included it as a figure titled "East Beach: Existing Conditions, New Bedford, MA" dated April 17, 2018.

Step 4- Determine the grain size of the receiving beach.

The Applicant developed and implemented a sediment sampling and analysis plan, which was included with the NOI application.



Step 5- Characterize source materials and determine best dredging source

This step will be completed when the Applicant determines the source material, which is intended to be from an upland source. The City is working to identify an appropriate source material and intends to select an upland source that matches the grain size of East Beach.

Step 6- Develop a beach monitoring/maintenance plan

The primary objectives of a beach monitoring plan are to document and evaluate whether the project is performing as designed, identify maintenance and renourishment requirements and the evaluate project impacts. GZA recommends that the Applicant develop a plan to monitor and maintain the newly placed sediment, especially since it is proposed to be place in three phases over three years. GZA recommends that the Conservation Commission include a Beach Monitoring and Maintenance Plan as a Special Condition in the Order of Conditions.

7.0 SUMMARY OF RECOMMENDATIONS

We have summarized our recommendations that are discussed in more detail throughout this report:

7.1 ENGINEERING RECOMMENDATIONS

1. Design contours are not smooth between stations 2+00 and 4+50, and 7+50 and 10+00, as marked in Figure 1 (above). Protrusions in contours cause wave energy to focus on these locations leading to excessive erosion during storm events. GZA recommends smoothing the design contours to eliminate this potential issue.
2. The Mean Low Water (MLW) line elevation was -4.53 ft-NAVD in the CAD file, which is not consistent with the MLW elevation presented in Table 1. Although this does not have a bearing on the project design, GZA recommends verifying the MLW elevation used in the CAD files and updating the location of the line in the design plans, if necessary.
3. GZA recommends including language in the plans under General Notes and the Storm Water Report clarifying the intent of keeping the straw wattles on site between construction of different phases of the project. GZA notes that keeping the wattles on site may interfere with recreational activities during beach season and may result in displacement and disassembling of the wattles during storms occurring in the winter months. GZA also notes that it is good practice to physically mark the Chapter 91 line to prevent placing sediment seaward of the line by construction equipment operators. For the purposes of this project, limits could be delineated with a construction fence instead of straw wattles, as it is questionable whether an erosion and sedimentation barrier is necessary at this site.
4. The specifications for the nourishment sediment is not identified in the NOI. GZA recommends specifying a range for compatible material gradation and including the lower and upper bound gradation curves stated in the NOI. Once the sediment source is determined, available sediment gradation can be compared to the specified bounds as a proof of compatibility.

7.2 PERMITTING RECOMMENDATIONS

1. The NOI does not state specifications for the nourishment sediment nor has a source of material been identified yet. Since this performance standard has to be met to make the project permissible, GZA recommends, that the Applicant identify the source of the material prior to the close of the NOI public hearing process. If that is not possible, as an alternative, GZA recommends that a Special Condition be included with the Order of Conditions for the project that requires Conservation Commission approval of the clean sediment of a grain size compatible with that on the existing beach.



2. To meet Stormwater Standard #4 a Long-term pollution prevention plan is required. The Long-term pollution prevention plan must include source control measures, most of which are likely not applicable to this site, so it could be a simplified LTPP.
3. A SWPPP will be required to authorize the project under NPDES. A SWPPP that is prepared to meet the requirements of the CGP may also satisfy the construction period erosion, sedimentation and pollution prevention plan requirements of Standard # 8 of the Massachusetts Stormwater Standards (see Section 2.1.3). GZA recommends that the SWPPP be submitted to the New Bedford Conservation Commission before land disturbance commences.
4. GZA recommends that the Conservation Commission include the development of a Beach Monitoring and Maintenance Plan as a Special Condition in the Order of Conditions, per the MassDEP Beach Nourishment guidance. The MassDEP Beach Nourishment Guide has a "Generic Beach Monitoring Plan" included as an attachment that can be used as a template.
5. We note the correspondence from Massachusetts Division of Marine Fisheries noting that East Beach is mapped as a horseshoe crab spawning area and that the project site lies adjacent to and within a mapped shellfish habitat for soft shell clam, quahog, razor clam, bay scallops and American Oyster. DMF outlines recommendations that include time of year restrictions from May 1-July 30 to protect horseshoe crab spawning and development and has additional recommendations for disposal of beach fill per the MassDEP Beach Nourishment Guide. GZA recommends incorporating DMF's recommendations into the OOC.

Thank you for the opportunity to work with you. If you have any questions, please contact Hande McCaw at 781-278-5760 or hande.mccaw@gza.com.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Hande McCaw, PE
Senior Project Manager

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Principal

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Senior Wetland Scientist

(for) Daniel Stapleton, P.E.
Consultant Reviewer

Attachments: Attachment 1 - Limitations
Attachment 2- 1852 Topographic Map
Attachment 3- Surficial Geology Map
Figure 3: Relevant Regulated Areas



Attachment 1 – Limitations



USE OF REPORT

1. GZA GeoEnvironmental, Inc. (GZA) has prepared this report on behalf of, and for the exclusive use of Client for the stated purpose(s) and location(s) identified in the Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

STANDARD OF CARE

2. The observations, findings, conclusions, and recommendations in this report were made under the conditions present at the facility during our site visit(s) and described herein. The conclusions presented in this report were based solely upon the services described in this report, and not on scientific tasks or procedures beyond the scope of described services or the time and budgetary constraints imposed by Client. Conditions in many of the areas reviewed during the reconnaissance are subject to change, therefore the compliance status at any given time could differ from the status at the time of our visit.
3. This report describes the compliance status with respect to the environmental regulatory programs outlined in the report. Compliance with regulatory programs or specific regulatory requirements other than those outlined in this report have not been evaluated.
4. Observations were made of the facility, structures, and operations and activities conducted at the facility as indicated within the report. Where access to portions of the facility, structures, or operations and activities was unavailable or limited, GZA renders no opinion as to the regulatory compliance status of areas, operations, or activities not observed.
5. This study was not intended to be an environmental site assessment. No attempt was made to evaluate whether soil and/or groundwater at the facility is contaminated by chemicals or petroleum products. In addition, GZA renders no opinion as to the presence of hazardous material (including asbestos and polychlorinated biphenyls) on or in any of the exterior or interior processes, equipment, walls, floors, or ceilings of the onsite structures.
6. The purpose of this study was to review the regulatory compliance of current operations and activities conducted at the facility within the limits of the objective and scope of work described in our proposal and/or report. We did not attempt to assess the compliance status of present or past owners or operators of the facility.
7. Unless otherwise specified in the report, GZA did not perform testing or analyses to determine the presence or concentration of any chemicals, oils, asbestos, or polychlorinated biphenyls at the site buildings or in the environment at the site. Where such analyses have been conducted by an outside laboratory, GZA has relied upon the data provided, and has not conducted an independent evaluation of the reliability of these data.

COMPLIANCE WITH CODES AND REGULATIONS

8. The regulatory compliance status described in this report has been evaluated based on our interpretation of regulations, and where appropriate, the interpretations provided by the applicable regulatory authority personnel at the time of our study. In some cases, these interpretations require subjective judgment and we cannot guarantee that all applicable regulatory authority personnel will interpret the regulations in the same manner as we have, or in the manner that the agency personnel we may have spoken to have. Applicable regulatory authorities' interpretations, requirements, and enforcement policies vary from district office to district office, from state to state, and between federal and state agencies. In addition, statutes, rules, standards, and regulations may be legislatively changed and inter-agency and intra-agency policies may be changed from present practices from time to time.



9. In preparing this report, GZA has relied on certain information provided by federal, State, or local applicable regulatory authorities and other parties referenced herein, and on information contained in the files of federal, State, and/or local applicable regulatory authorities available to GZA at the time of our compliance study. Although there may have been some degree of overlap in the information provided by these various sources, GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of the study. Where information provided by Client was not complete, representations regarding the regulatory compliance of such operations and activities has not been made.

INTERPRETATION OF DATA

10. GZA's work was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same geographical area, and GZA observed that degree of care and skill generally exercised by other consultants under similar circumstances and conditions. GZA's findings and conclusions must be considered not as scientific certainties, but rather as our professional opinion concerning the significance of the limited data gathered during the course of the study. No warranty, express or implied, is made. Specifically, GZA does not and cannot represent that the Site contains no hazardous material, oil, or other latent condition beyond that observed by GZA during its study. Additionally, GZA makes no warranty that any response action or recommended action will achieve all of its objectives or that the findings of this study will be upheld by an applicable regulatory authority.

NEW INFORMATION

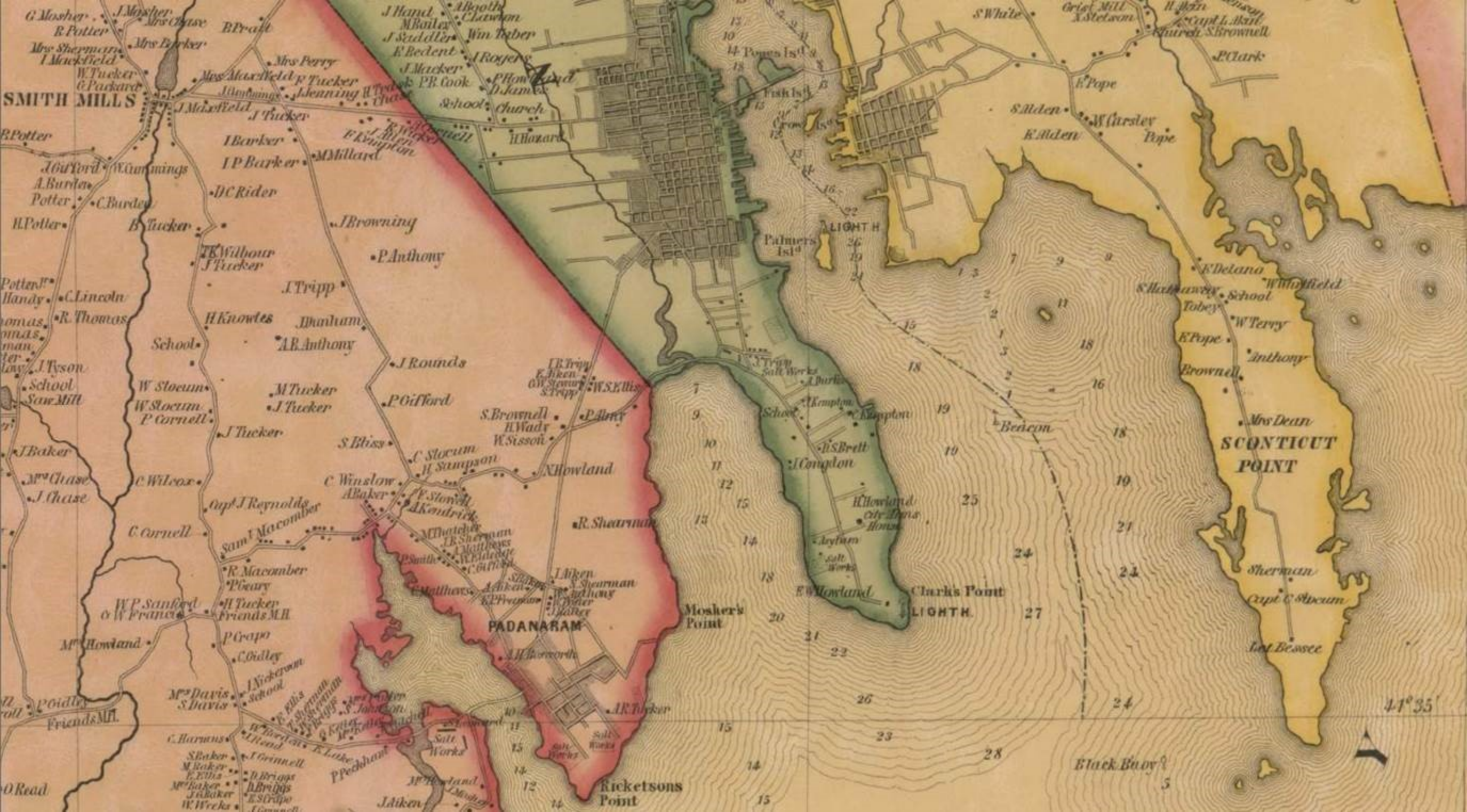
11. In the event that the Client or others authorized to use this report obtain information on environmental regulatory compliance issues at the facility not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this study, may modify the conclusions stated in this report.

ADDITIONAL SERVICES

12. GZA recommends that we be retained to evaluate the implementation of our recommendations provided in our report(s) to address the regulatory requirements cited. By retaining GZA, this will allow us the opportunity to (1) evaluate whether or not the recommendations have been made in a manner compliant with the regulatory requirements or industry best management practices identified, (2) evaluate whether the manner of implementation creates a potential new finding, and (3) evaluate whether the manner of implementation effects or changes the conditions on which our opinions were made.

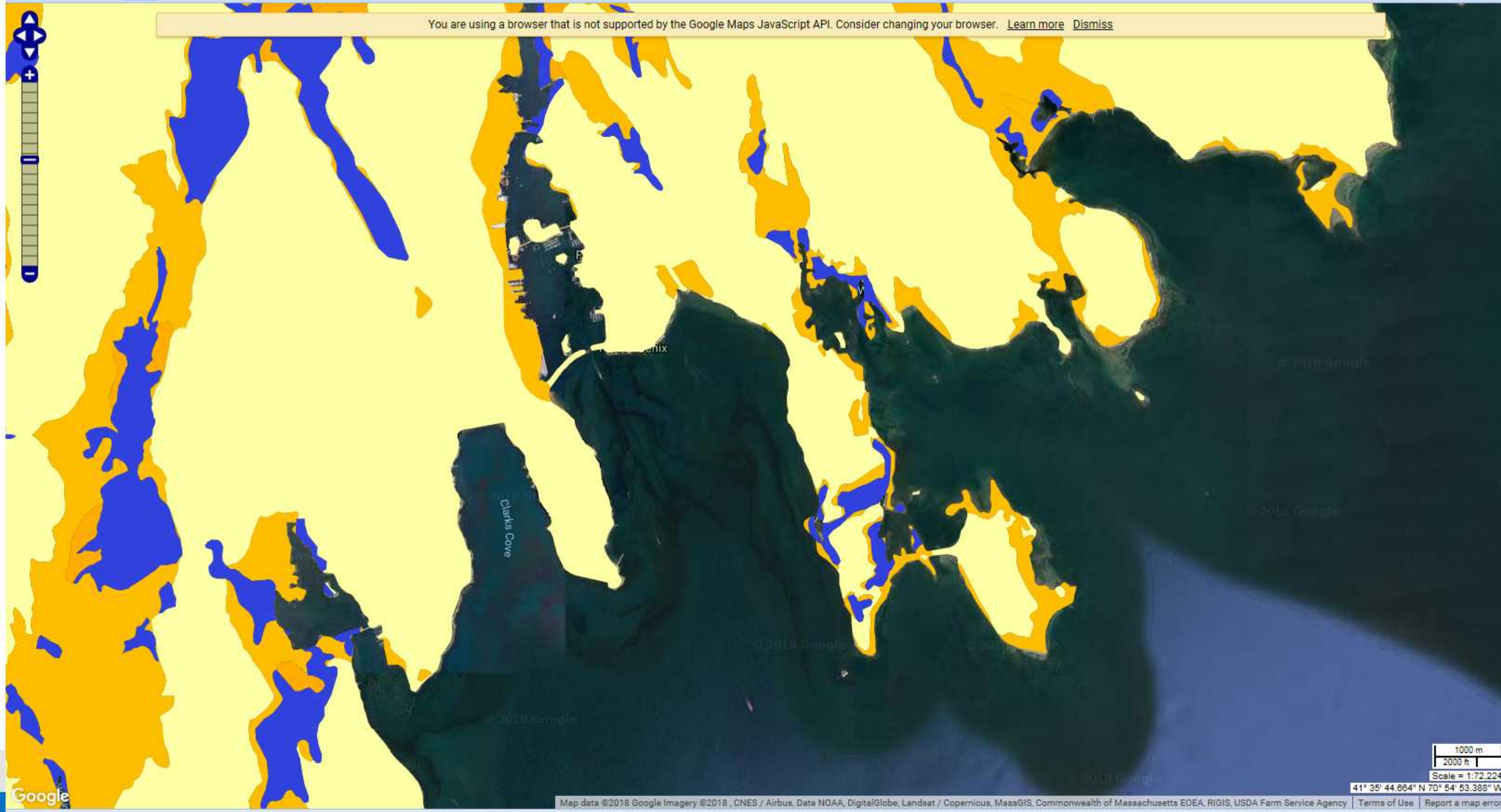


Attachment 2 - 1852 Topographic Map





Attachment 3- Surficial Geology Map



Available Data Layers

Search data layers

- Coastal Hazards
- Geology
 - Seafloor
 - Shoreline
 - Bedrock Lithology - Detailed
 - Bedrock Lithology - Drainage Basin
 - Bedrock Lithology - General
 - Bedrock Lithology - Geologic Provinces
 - Cape Cod and the Islands Geologic Map
 - Surficial Geology (1:250,000)
 - Surficial Geology (1:250,000) - Depth in Feet
 - Western Cape Cod Bedrock Data
- Oceanography and Weather
- Fisheries
- Wetlands and Hydrology

Active Data Layers

Check all | Uncheck all | Remove all

- ☒ Surficial Geology (1:250,000)
- ☒ New Bedford-Fairhaven Designated Port Area
- ☐ Massachusetts Lateral Boundaries
- ☐ Submerged Lands Act (SLA) Boundary
- ☐ Massachusetts Municipal Boundaries Lines

Legend

Surficial Geology (1:250,000)

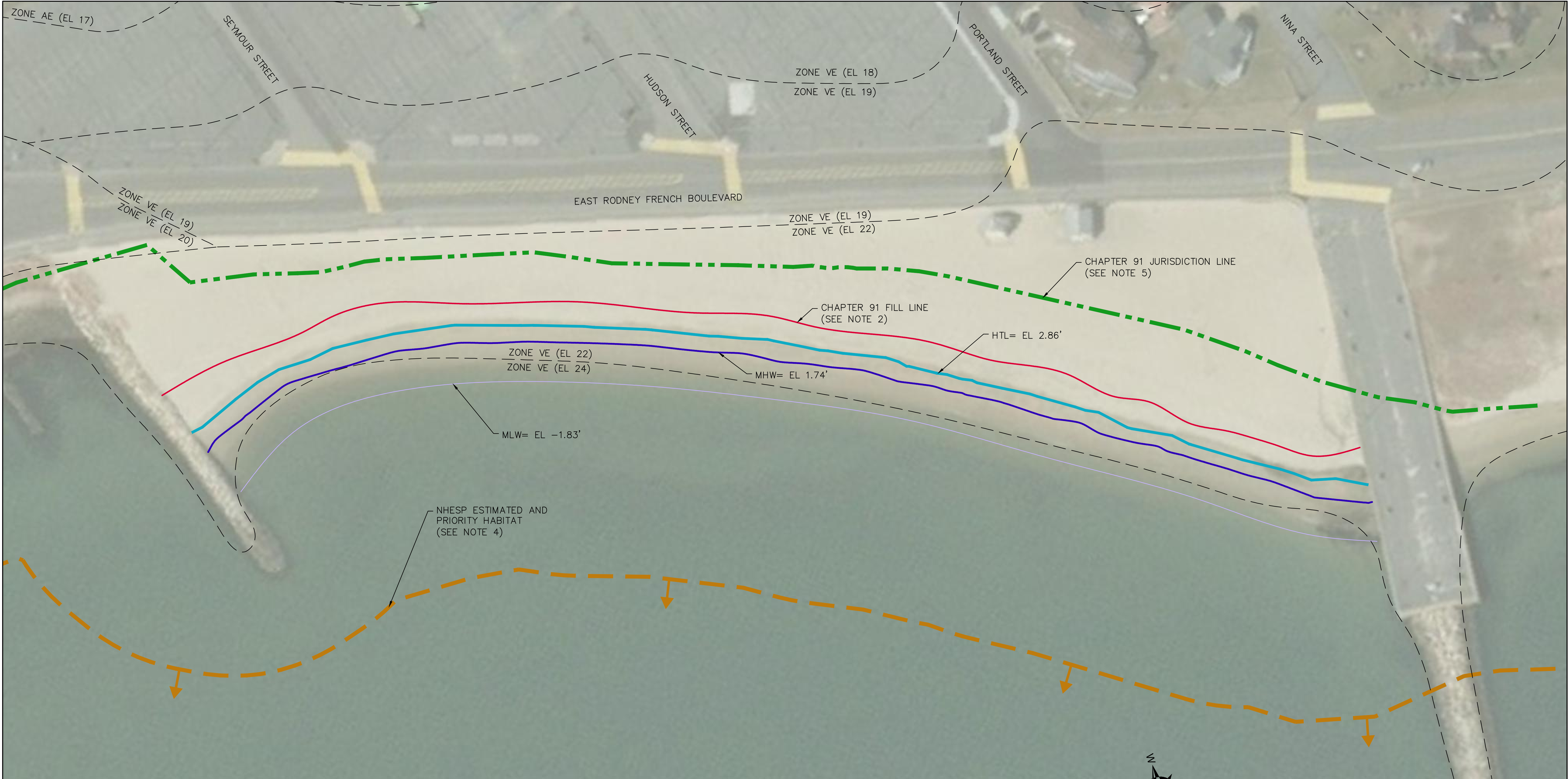
- SAND AND GRAVEL
- TILL OR BEDROCK
- SANDY TILL OVER SAND
- END MORaine
- LARGE SAND DEPOSIT
- FINE GRAINED DEPOSIT
- FLOODPLAIN ALLUVIUM

New Bedford-Fairhaven Designated Port Area (DPA) Boundary



Figure 3: Relevant Regulated Areas

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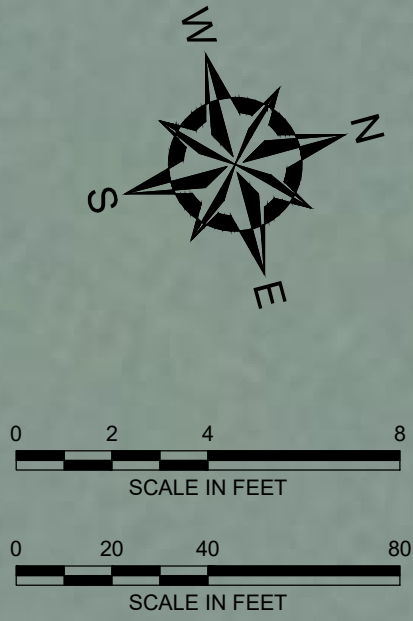
LEGEND

- MEAN LOW WATER (MLW) (EL -1.83')
- MEAN HIGH WATER (MHW) (EL 1.74')
- HIGH TIDE LINE (HTL) (FEDERAL JURISDICTION) (EL 2.86')
- ESTIMATED AND PRIORITY HABITAT (FROM MASSGIS)
- CHAPTER 91 JURISDICTION LINE (FROM MASSGIS)
- CHAPTER 91 FILL LINE (SEE NOTE 2)
- FEMA HAZARD ZONES

HTL
MHW
NAVD88
MLW

DATUM RELATIONSHIP
SCALE: 1"=4'

- NOTES:**
- ELEVATIONS REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88): MLW=-1.83, NAVD88=0.00, MHW=1.74, HTL=2.86.
 - MLW AND MHW LINES, AND CHAPTER 91 FILL LINE FROM PLAN OF EAST BEACH NOURISHMENT PROJECT BY NEW BEDFORD DEPARTMENT OF PUBLIC WORKS.
 - HIGH TIDE LINE (HTL) (FEDERAL JURISDICTION) BASED ON REVIEW OF HIGHEST PREDICTED TIDE FOR 2018, BASED ON NOAA PREDICTED TIDES.
 - ESTIMATED AND PRIORITY HABITATS FROM MASSACHUSETTS BUREAU OF GEOGRAPHIC INFORMATION (MASSGIS).
 - CHAPTER 91 JURISDICTION LINE BASED ON AVAILABLE DATALAYERS FROM MASSGIS SHOWING THE CONTEMPORARY AND HISTORIC HIGH WATER LINES.



NO.	ISSUE/DESCRIPTION	BY	DATE
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EAST BEACH NOURISHMENT PROJECT EAST RODNEY FRENCH BOULEVARD NEW BEDFORD, MASSACHUSETTS			
EAST BEACH RELEVANT REGULATED AREAS			
PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: CITY OF NEW BEDFORD	
PROJ MGR: HM	REVIEWED BY: MS	CHECKED BY: CC	FIGURE 3 SHEET NO. 1 OF 1
DESIGNED BY: MS	DRAWN BY: JJZ	SCALE: AS SHOWN	
DATE: JUNE, 2018	PROJECT NO. 01.0173751.00	REVISION NO.	