

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
THE OFFICE OF APPEALS AND DISPUTE RESOLUTION

In the Matter of
Entergy Nuclear Operations, Inc. and
Entergy Nuclear Generation Co.

OADR Docket No. 2015-009
DEP File No.: Waterways Application
No. W14-4157, Superseding Written
Determination
Plymouth, MA

PRE-FILED TESTIMONY OF ERIC J. LAS, PE, LEED AP

1. My name is Eric J. Las. I am a registered Professional Engineer in the Commonwealth of Massachusetts; my License number is 46522. I am a Principal at Beals and Thomas, Inc. (“Beals and Thomas”), a multidisciplinary consulting firm that provides civil engineering, planning, landscape architecture, environmental, permitting, and land surveying services to support development, conservation and infrastructure projects throughout Massachusetts and surrounding states. I have worked at Beals and Thomas for fifteen years; I began as a civil engineer in 2000 and was promoted to Principal in 2012.
2. In my role as a Principal at Beals and Thomas, I am responsible for project direction and management, civil and environmental engineering and permitting matters. I am experienced in Chapter 91 waterways applications and permitting matters. During my tenure at Beals and Thomas, I have worked on approximately six Chapter 91 matters.
3. I hold a Bachelor of Science degree in Civil Engineering from Worcester Polytechnic Institute in Worcester, Massachusetts (2001). I am also certified as a LEED Accredited Professional. A copy of my resume is attached as Exhibit 1.

4. I am the project permitting consultant for Entergy's Chapter 91 Application that is the subject of this adjudicatory proceeding. I helped to prepare Entergy's Chapter 91 Application, Supplemental Information and responses to comments during the permitting process as well as information necessary for this adjudicatory proceeding.
5. On behalf of Entergy, Beals and Thomas submitted the Application for Chapter 91 Waterways License – Intake Embayment Mooring dated May 9, 2014 (“Chapter 91 Application”) with the Massachusetts Department of Environmental Protection (“MassDEP”) Southeast Regional Office. A copy of the Chapter 91 Application is attached hereto as Exhibit 2.
6. On September 26, 2014, Beals and Thomas submitted Supplemental Information to MassDEP consisting of six sheets of revised plans (“September 2014 Supplemental Information”), a copy of which is attached hereto as Exhibit 3.
7. I helped to prepare and supervised the preparation of the plans that were submitted with the Chapter 91 License Application (as supplemented) and stamped them pursuant to the generally accepted standards incumbent upon professional engineers licensed in the Commonwealth of Massachusetts.
8. The Project (as defined in paragraph 9, below) is shown on the plans initially dated May 8, 2014 (submitted with the Chapter 91 Application) (see Exhibit 2) and amended on September 25, 2014 (Exhibit 3). The revised plans adjusted the mooring locations slightly to match the detail on Sheet 5 of 6 depicting a minimum of 5' of depth at low tide at the request of MassDEP. Exhibit 3. In addition, the current Mean High Water Line is depicted relative to the current Mean Low Water Line on Sheet 3 of 6. Exhibit 3.

9. As stated in the Chapter 91 Application, the Project is located within the existing cooling water intake embayment at the Pilgrim Nuclear Power Station (the "Station"). Exhibit 2, p. 2-1. The Project consists of a proposed outhaul and mooring system which will accommodate the deployment of floating strainers and semi-rigid suction pipe into the intake embayment to provide cooling water as a redundant backup option in the event of an emergency that requires a significant heat sink (the "Project"). Exhibit 2, p. 2-1. More specifically, two Eco-Mooring Systems comprised of helical pile moorings will be mechanically augered into the sand. Exhibit 2, p. 2-2.
10. The moorings will be placed approximately 170 and 177 feet, respectively, seaward of, and perpendicular to, the current mean high water line. Exhibit 3, Sheet 3 of 6. The moorings will be placed approximately 320 and 330 feet, respectively, seaward of the outhaul land connections. Exhibit 3, Sheet 3 of 6.
11. Each helical mooring has a square thickness of 1 ½" and is 15' in total length. Exhibit 3. Each helical mooring will be augered into the sand to a maximum embedment of approximately 14.5'. As noted in the Chapter 91 Application, the helical pile moorings have a minimal environmental impact compared to the typical bottom weighted mooring alternative that is commonly used for boat moorings. Exhibit 2, p. 2-2. The two helical moorings are less intrusive than thousands of other moorings located throughout Chapter 91 jurisdictional property in the Commonwealth. In my opinion, the two proposed moorings do not cause any significant destruction, damage or impairment to natural resources.
12. The Project includes a float and Grainger snatch block pulley that will be anchored to each mooring with a line to the surface, and connected to the shore via the outhaul

system. Exhibit 2, p. 2-2 to 2-3. The outhaul system consists of a snatch block pulley mounted with beam brackets on the foundation wall of the outer security fence at the barge landing area, connecting to the floating pulleys with anchor line. Exhibit 2, p. 2-3.

13. There will be no dredging associated with the Project.¹
14. In the event of an emergency such as a Beyond-Design-Basis External Event (“BDBEE”) as defined in the Nuclear Regulatory Commission Order EA-12-049 which requires Entergy to implement what is known as its FLEX Strategy (all as set forth in the Pre-Filed Testimony of Philip D. Harizi), two floating strainers connected to semi-rigid suction pipe will be deployed with the outhaul system, and anchored to the mooring. Exhibit 2, p. 2-3. The suction pipe will then be connected to a centrifugal pump temporarily deployed by a truck at the current Mean High Water Line, which will provide cooling water to the Station. Exhibit 2, p. 2-3.
15. The semi-rigid suction pipes with floating strainers are not a permanent part of the mooring system. The semi-rigid suction pipes with floating strainers would only be deployed temporarily and attached to the moorings during a BDBEE or during a training exercise.
16. Regarding the design of the pump, the outhaul system that includes the rope is designed to facilitate the deployment of a suction intake pipe. The Project is designed to pull a flexible suction intake pipe out onto the water using the outhaul system, which is designed to be as simple and robust as practicable. As noted on the plans (Sheet 6 of 6), the proposed rope is a West Marine ¾-inch premium white three-strand nylon anchor rope (which Entergy has more specifically identified as a SAMSON AmSteel-Blue ¾-

¹ Note 3 on Sheet 2 of 6, which states, “No structures are proposed as part of this maintenance dredging project,” was left over from a prior Chapter 91 Permit for maintenance dredging of the intake embayment, for which the bathymetric survey was prepared. See Exhibit 3, Sheet 2 of 6.

inch diameter 12-Strand Class II Single Braid Rope, which has a 58,000 Lbf strength rating). This specific rope was chosen over a steel wire cable of equivalent strength because it is more flexible, lighter, easier to handle, and buoyant. We are not aware of any better ropes, fittings, or marine hardware than was selected to be used. The outhaul system will also be rigorously maintained as is required for all such marine installations.

17. With respect to the current high water line which is relevant for purposes of determining current Chapter 91 jurisdiction, Sheet 2 of 6 of the plans clearly shows the elevations associated with the various coastal resource areas present within the intake embayment at the Station. Exhibit 3. Beals and Thomas coordinated bathymetric surveys of the intake embayment in 2011, and determined the current mean low water, current mean high water, spring low tide, and spring high tide elevations based on tidal station data. A Massachusetts Registered Professional Land Surveyor correlated all elevations to the Mean Low Water (“MLW”) datum. This is a standard practice in the Commonwealth when dealing with coastal projects. The Chapter 91 jurisdictional boundaries are depicted on Sheet 3 of 6 of the Plans, including the Coastal Flood Zone elevations and boundaries as taken from the most recent FEMA FIRM map dated July 17, 2012. Exhibit 3.
18. Beals and Thomas located the current mean high water line based on topographic data provided by the Town of Plymouth. It is my opinion that the location of the current high water line is noted properly on Sheet 3 of 6 of the Beals and Thomas plans and, therefore, the security fence, truck access road, concrete wall, buried water pipe, and outhaul land connections are landward of the current high water line and outside of Chapter 91’s jurisdiction.

19. Regarding the historic low water line, the protocol in Chapter 91 licensing proceedings is that MassDEP determines the relevant historic mean low water line. During the Chapter 91 permitting process for the Project, David Hill of MassDEP verbally confirmed that the Project was located within Private Tidelands.² The plans submitted to MassDEP in September 2014 clearly showed the Project as located landward of the historic mean low water line, therefore in Private Tidelands as defined in the Chapter 91 regulations (310 CMR 9.02).
20. After issuance of the Written Determination (in which MassDEP made a specific finding that the Project is located in Private Tidelands) and the filing of the appeal by the Petitioners, MassDEP provided the documents and its rationale for the determination that the Project is located in Private Tidelands. On May 27, 2015, MassDEP circulated a black and white plan used by the Massachusetts Office of Coastal Zone Management (“CZM”) for its Chapter 91 Shoreline Mapping Project. The plan is referred to as a “T-Sheet”, labeled as T-1063 Sheet and is a portion of the plan titled “U.S. Coast Survey, Western Shore of Cape Cod Bay from Eel River to Ship Pond, Register No. 1063” dated 1866. A copy of the May 27, 2015 MassDEP transmittal including T-1063 Sheet is attached hereto as the first sheet of Exhibit 5. As explained by MassDEP, CZM conducted the Chapter 91 Shoreline Mapping Project, which involved taking old plans and overlaying the historic shoreline onto MassGIS aerial photos. Exhibit 5. T-1063 Sheet includes two yellow lines: the seaward line depicts the historic low water line and the landward line depicts the historic high water line. Exhibit 5. MassDEP also overlaid the historic high and low water lines on an orthophoto of the Station. Exhibit 5.

² Beals and Thomas conducted its own research and assessment regarding the location of the historic low water line using historic information available from Entergy. See Exhibit E to Entergy September 12, 2014 Supplemental Information submission to MassDEP (“September 2014 Supplemental Information”), attached hereto as Exhibit 4.

21. Using T-1063 Sheet and MassDEP's orthophoto, Beals and Thomas then prepared a plan entitled "Historic Tidelands Exhibit" dated June 3, 2015; a copy of the Historic Tidelands Exhibit is attached hereto as Exhibit 6. The Historic Tidelands Exhibit shows the current configuration of the Project area, the location of the moorings and outhaul lines (shown in pink) and the historic mean low water and historic mean high water lines from T-1063 Sheet. Exhibit 6. We developed the Historic Tidelands Exhibit using a shapefile of T-1063 Sheet provided by MassDEP. We held the location of the proposed moorings constant based on the bathymetric survey information and engineering information contained in the Chapter 91 Application, as amended and supplemented. We then overlaid the mooring locations and historic water lines onto the most recent aerial orthophotograph provided by Google Earth. Finally, we moved the location of the Outhaul Land Connections further inland to match the visible location of the concrete security wall on the orthophotograph; however it is my opinion that the Outhaul Land Connections are located landward of the current mean high water line, and are therefore outside of Chapter 91's jurisdiction (as discussed in paragraph 18, above). Entergy's counsel circulated the Historic Tidelands Exhibit to all parties to this matter via email dated June 3, 2015.
22. It is my opinion that, as shown on the Historic Tidelands Exhibit, the proposed moorings are landward of the historic low water line; therefore, they are in Private Tidelands as defined in 310 CMR 9.02. Exhibit 6.
23. It is my opinion that it is common practice and fully in compliance with the Chapter 91 regulations to use historic data, maps, photos or images from prior to human alteration of

the shoreline when determining the historic low water line or the historic high water line for a Chapter 91 project.

24. I have reviewed the Pre-Filed Testimony of Stephen B. Sovick dated June 29, 2015 and filed in this proceeding. I do not agree with Mr. Sovick's analysis or conclusions regarding the location of the "mean low water mark" or the "mean high water mark" as noted on Exhibit 2 to his pre-filed testimony. I note that the plan attached to Mr. Sovick's pre-filed testimony is in NAVD88 datum and not correlated to the Mean Low Water datum; therefore, it is not directly comparable to the plans prepared by Beals and Thomas. Mr. Sovick does not depict the historic high or low water lines on his plans, and therefore cannot accurately make a determination regarding the location of the project in Private or Commonwealth Tidelands. Further, the lines noted on Mr. Sovick's exhibit do not correspond to the correct current high or low water marks. It does not seem possible that the current mean high water line would be landward of the concrete security wall at the Station. Based on my observations at the Station, I am not aware that the seawater comes that far landward at any point during the tidal cycle.
25. On June 5, 2014, MassDEP issued its Public Notice of Waterways Application No. W14-4157 in which it states that "the WRP has made a determination that this project is a water-dependent use project." See Exhibit F to Exhibit 4.
26. In my opinion, based on the fact that the Project is necessary to bring seawater from Cape Cod Bay to the Station as an ultimate heat sink in the event of a BDBEE, the Project is water-dependent as defined in 310 CMR 9.12(2).
27. The moorings are located within the Cape Cod Bay Ocean Sanctuary, which is defined in the Ocean Sanctuaries Act (M.G.L. Chapter 132A, Section 13) as "That body of water

known as Cape Cod Bay and lying southerly of the Bay Closing Line between Brant Rock in the Town of Marshfield and Race Point in the town of Provincetown as established on the aforementioned Marine Boundary Map of the Commonwealth, and lying seaward of the mean low-water line.”

28. The Project received an Order of Conditions (SE 57-2706) from the Plymouth Conservation Commission issued on June 6, 2014. See Exhibit G to Exhibit 4. The Order of Conditions was not appealed by any entity.
29. I have reviewed the Pre-Filed Testimony of E. Pine duBois dated June 29, 2015 and filed in this proceeding. Ms. duBois confuses the Wetlands Protection Act and Chapter 91’s regulatory schemes. See duBois, ¶¶14-15. The jurisdictional boundaries for Chapter 91 and the Wetlands Protection Act are different; the fact that the Project also requires an Order of Conditions from the Conservation Commission and that the Order of Conditions governs more than the Chapter 91 License governs is a reflection of the statutory and regulatory breadth of each program. I disagree that “the project is much more than the two moorings and buoys with outhaul lines.” See duBois Pre-Filed Testimony, paragraph 15.
30. The mouth of the Jones River is approximately 8 miles from the proposed mooring location measured over land and water; the distance is even longer if limited to a water route. JRWA’s property appears to be at least one mile upstream from the mouth of the Jones River, increasing the distance from the Project. See Jones River Location exhibit identifying the Jones River and the property owned by the Jones River Watershed Association, along with distances measured from the Station by Beals and Thomas, attached hereto as Exhibit 7.

31. The Petitioners assert that “[t]he outhaul system proposal is constructed and designed in a manner function as designed [*sic*], resulting in an unreasonable threat to public health or safety” for each of the following reasons, which I refute in turn:

- a. “the outhaul system proposal is located in the FEMA 18.43 VE zone, Sovick Ex. 2; Maurer PFTD ¶s 12-15 and Ex. 3.” Petitioners’ Memorandum of Law, p. 25. The proposed outhaul system is located within a VE zone as mapped by FEMA. However, as depicted on Sheet 2 of 6, the elevation of the VE zone is 18.43 feet in MLW datum, and 13 feet in NAVD 88 datum. Mr. Sovick depicts the MLW elevation on his plans, which were prepared in the NAVD 88 datum. It is my opinion that the VE zone is therefore further seaward than depicted on Mr. Sovick’s plans. See Exhibit 3, Sheet 2 of 6.
- b. “The moorings are unlikely to be covered at all times by 5 feet of water as shown in the License Plans Sheet 3, Dubois ¶ 16 and 18.” Petitioners’ Memorandum of Law, p. 25. I have reviewed paragraphs 16 and 18 of Ms. duBois’ Pre-Filed Testimony and there is no engineering basis for her apparent conclusion that “it is not always true that the moorings will be in five feet of water at low tide”. As stated above in Paragraph 17, the mooring locations are based upon a bathymetric survey reviewed by Beals and Thomas. It is my opinion that this bathymetric survey is accurate and was conducted in compliance with standard survey practice and that the moorings will be covered by 5 feet of water at all times.
- c. “the mooring location in the FEMA Velocity Zone, Sovick Ex. 2, is unsuitable for long reliable service, Dubois PFTD ¶18 and 19.” Petitioners’ Memorandum of Law, p. 25. There is no evidence that the helical moorings will be impacted as a

result of their location in the FEMA Velocity Zone. The semi-rigid suction pipes with floating strainers are not a permanent part of the mooring system and will only be deployed in the event of an emergency such as a BDBEE or a training exercise (as discussed in paragraph 15, above). The permanent components of the Project will be regularly maintained and tested.³

32. In my opinion, the Project complies with the applicable provisions of the Chapter 91 regulations and MassDEP was justified in issuing the Written Determination and Chapter 91 License.

Signed under the penalties of perjury



Eric J. LaS, PE, LEED AP
Principal, Beals and Thomas, Inc.

Date: JULY 29, 2015

³ The Chapter 91 regulations governing projects within a flood zone only outline design standards for buildings, not for moorings. See 310 CMR 9.37(2). We note that “moorings” are specifically excluded from the definition of “Structure” in the Chapter 91 regulations. 310 CMR 9.02.

List of Exhibits:

- Exhibit 1: Resume
- Exhibit 2: Application for Chapter 91 Waterways License – Intake Embayment Mooring dated May 9, 2014 (“Chapter 91 Application”)
- Exhibit 3: September 26, 2014, Beals and Thomas, Inc. submitted Supplemental Information to MassDEP (“September 2014 Supplemental Information”)
- Exhibit 4: Entergy September 12, 2014 Supplemental Information submission to MassDEP (“September 2014 Supplemental Information”) (including Exhibits A-J)
- Exhibit 5: May 27, 2015 MassDEP transmittal including T-1063 Sheet and Orthophoto
- Exhibit 6: Historic Tidelands Exhibit dated June 3, 2015 prepared by Beals and Thomas, Inc.
- Exhibit 7: Jones River Location - Map identifying the Jones River and the property owned by the Jones River Watershed Association, along with distances measured from the Station, dated July 28, 2015 prepared by Beals and Thomas, Inc.