

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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THE OFFICE OF APPEALS AND DISPUTE RESOLUTION

September 5, 2025

In the Matter of 326 Commercial
Street Associates Limited Partnership

OADR Docket Number: 2021-016
DEP File No. Jurisdictional Determination WW04-0000004
Malden, Massachusetts

RECOMMENDED FINAL DECISION

In this appeal, 326 Commercial Street Associates Limited Partnership (“the Petitioner”) challenges a Determination of Applicability (“the Determination”) that the Boston Office of the Massachusetts Department of Environmental Protection (“MassDEP” or “the Department”) issued to the Petitioner on May 28, 2021, pursuant to G.L. c. 91 (“Chapter 91”) and the Waterways Regulations at 310 CMR 9.00, *et seq.* In the Determination, MassDEP found that a portion of the Petitioner’s real property at 326 Commercial Street in Malden, Massachusetts (“the Site” or “the Property”) “includes [tidelands] subject to [the Department’s regulatory] jurisdiction under [Chapter 91 and the Waterways Regulations].” Determination, p. 1. MassDEP made this finding based on mapping data from the 2006 Chapter 91 Mapping Study Report that was prepared by The BSC Group, Inc. (“BSC”) for MassDEP and the Commonwealth’s Office of Coastal Zone Management (“CZM”) to establish presumptive lines of MassDEP jurisdiction over Chapter 91 tidelands (“BSC Report”).¹ *Id.*, at pp. 2-3.

¹ The BSC Report is in the record as Exhibit 1 attached to the Pre-filed Testimony (“PFT”) of Frank Taormina (“Taormina PFT”).

As first noted in the 2012 Final Decision in Armstrong,² “the presumptive lines [of the BSC Report] ‘provid[e] a clear, predictable[,] and well-grounded delineation of chapter 91 jurisdiction’ that can only be rebutted in ‘the exceptional instance in which a party has presented unusually compelling, site-specific evidence, backed by expert testimony, to rebut [the presumptive lines].’”³ Here, MassDEP relied on BSC’s determination in the BSC Report that a U.S. Coast and Geodetic Survey Plan entitled “North Side of Boston Bay, Massachusetts” dated 1894 (“the 1894 Plan”)⁴ is “the most reliable [depiction of the] landward natural historic high water shoreline of the former unaltered Malden River” along the shoreline where the Site is located in Malden and not a historical map entitled “U.S Coast Survey Roxbury Cambridge and Medford, Massachusetts” dated 1847 (“the 1847 Plan”).^{5,6} Id. at p. 2. The Petitioner disagrees, arguing that the historic high-water mark (“HHWM”) was erroneously determined using an oxbow on the Property (“Oxbow”) that was manmade sometime between 1852 and 1864. The Department responds that the Petitioner has failed to prove its claim under the Armstrong evidentiary standard, specifically, the Department contends that the Petitioner has failed to rebut the presumptive of HHWM established by the 1894 Plan as set forth in the BSC Report with compelling, site-specific evidence, backed by expert testimony, demonstrating that the Oxbow was manmade.

The Petitioner also contends that in January 2016, MassDEP determined that the 1847 Plan was more accurate than the 1894 Plan in depicting “the most landward natural historic high

² In the Matter of Paul J. Armstrong, as agent for Jill Armstrong, Trustee of Whites Ferry Realty Trust, OADR Docket No. 2009-032, Final Decision (March 12, 2012), p. 1, adopting Recommended Final Decision (February 17, 2012), 2012 WL 920508. The Final Decision in Armstrong is available on the Department’s internet website at <https://www.mass.gov/info-details/office-of-appeals-and-dispute-resolution-oadr-2012-appeals-decisions#a---b---c>

³ Id.

⁴ The 1894 Plan is referred to in the BSC Report as T Sheet T-2156. BSC Report, p. 38.

⁵ The 1847 Plan is referred to in the BSC Report as T Sheet T-233. BSC Report, p. 38.

⁶ Taormina PFT, ¶ 10.

water (HHW) shoreline” for the real property at 295 Canal Street (formerly 171 Medford Street)⁷ in Malden located 580 feet upriver from the Property (“2016 Determination”).⁸ *Id.* at p. 2. The Department responds that the circumstances of the property at issue in the 2016 Determination make that determination inapplicable to the Property at issue here.

I held an evidentiary Adjudicatory Hearing (“Hearing”) to adjudicate this appeal. At the Hearing, expert witnesses testified supporting the Parties’ respective positions regarding whether MassDEP’s Determination was correct, and they were cross-examined on their testimony by opposing counsel. The Petitioner’s expert witnesses were Stacy Minihane (“Ms. Minihane”) and Mark Benson (“Mr. Benson”), both environmental consultants for Beals and Thomas. MassDEP’s expert witness was Frank Taormina of MassDEP’s Chapter 91 Program. I have reviewed the documents produced by MassDEP at the outset of the appeal, the Hearing transcript, and the Parties’ Pre-Filed Testimony (“PFT”), memoranda of law, and briefs.⁹ Based on all of those materials, I find that the Petitioner did not meet its evidentiary burden under Armstrong of rebutting the HHWM with compelling, site-specific evidence, backed by expert

⁷ 295 Canal Street is owned by the Suffolk Square Associates III Limited Partnership, an entity unrelated to this appeal.

⁸ DEP File Number JD15-4541.

⁹ Citations to the pertinent PFT, pleadings, and other documents are as follows:

Pre-Filed Testimony: [Witness(es) Name(s)] PFT, ¶ [paragraph number].

Rebuttal Pre-Filed Testimony: [Witness(es) Name(s)] RPFT, ¶ [paragraph number].

Supplemental Pre-Filed Testimony: [Witness(es) Name(s)] SPFT, ¶ [paragraph number].

Supplemental Rebuttal Pre-Filed Testimony: [Witness(es) Name(s)] SRPFT, ¶ [paragraph number].

Hearing Transcript: Tr. [page]:[line].

Memorandum of Law: [Party] Memo., p. [page number].

Rebuttal Memorandum of Law: [Party] Rebuttal Memo., p. [page number].

Closing Brief: [Party] Brief, p. [page number].

Exhibits: [Party Document] Ex. [exhibit identifier], p. [page number].

Supplemental Memorandum of Law: [Party] Supp. Memo., p. [page number].

testimony. Accordingly, I recommend that the Department's Commissioner issue a Final Decision affirming the Determination and finding that the historic high-water mark on the Property is to be determined based on the 1894 Plan.

I. The Issue for Adjudication.

The sole Issue for Adjudication in this appeal is whether the 1847 Coast Survey Plan is a more reliable plan than the 1894 Plan to map the historic high-water mark on the Property.¹⁰

II. Witnesses.

A. The Petitioner's Expert Witnesses, Ms. Minihane and Mr. Benson¹¹

Mr. Benson is an Associate with Beals and Thomas, Inc.¹² He has worked at Beals and Thomas for 33 years and has 36 years of experience in the land surveying field.¹³ He is licensed as a Professional Land Surveyor in the Commonwealth of Massachusetts.¹⁴ In his role as an Associate at Beals and Thomas, he is responsible for project management and land surveying for a variety of projects, including geo-referencing various types of plans and historic maps to locus boundaries.¹⁵

Ms. Minihane is a senior associate with Beals and Thomas.¹⁶ She has worked at Beals and Thomas for 18 years in the land use permitting, environmental planning, and wetland science fields.¹⁷ She is certified as a Professional Wetland Scientist.¹⁸ In her role as a Senior Associate,

¹⁰ As noted previously above, the 1894 Plan was used to determine the presumptive HHWM in the BSC Report.

¹¹ Mr. Benson and Ms. Minihane filed their PFT, RPFT, SPFT, and SRPFT jointly, meaning that they filed one document containing testimony that they each certified. When referring to their testimony, I will refer to them jointly unless the context of the testimony indicates that only one of them is speaking.

¹² Benson and Minihane PFT, ¶ 1.

¹³ Id. at ¶ 2.

¹⁴ Id.

¹⁵ Id.

¹⁶ Id. at ¶ 1.

¹⁷ Id. at ¶ 3.

¹⁸ Id.

she is responsible for project direction, project management, land use permitting, environmental planning, and wetland science services for a variety of projects, including waterfront sites.¹⁹ Ms. Minihane and Mr. Benson were retained to review the material used by the Department to establish the presumptive Chapter 91 jurisdictional line and other pertinent historic maps and plans.²⁰ I find them both qualified to offer expert opinion testimony in this matter.

B. MassDEP’s Expert Witness, Mr. Taormina

Mr. Taormina has been employed by MassDEP as a Regional Planner V in the Bureau of Water Resources, Waterways Regulation Program, since 2014.²¹ His responsibilities include administering and enforcing Chapter 91 and the Waterways Regulations.²² He reviews Chapter 91 Waterways License and Permit Applications, drafts associated Written Determinations and License/Permit Conditions, reviews and processes Requests for Determination of Applicability Applications and draft associated Jurisdictional Determinations, and works with CZM.²³ As of February 2022, he had worked on nearly 100 Waterways Licenses and 15 Jurisdictional Determinations.²⁴ I find him qualified to offer expert opinion testimony in this matter.

III. Applicable Standards.

A. The purpose of Chapter 91.

“Throughout history, the shores of the sea have been recognized as a special form of property of unusual value[,] and therefore subject to different legal rules from those which apply to inland property.” Navy Yard Four Associates, LLC v. Department of Environmental Protection, 88 Mass. App. Ct. 213, 218 (2015) (“NYFA”), citing, Boston Waterfront Dev. Corp.

¹⁹ Id.

²⁰ Id. at ¶ 4.

²¹ Taormina PFT, ¶ 1.

²² Id. at ¶ 4.

²³ Id.

²⁴ Id. at ¶ 5.

v. Commonwealth, 378 Mass. 629, 631 (1979);²⁵ In the Matter of Entergy Nuclear Operations, Inc. and Entergy Nuclear Generation Co. (“Entergy”), OADR Docket No. 2015-009, Recommended Final Decision (February 5, 2016), 2016 WL 921973, *6, adopted as Final Decision (February 25, 2016), 2016 WL 903463. “Under common law, private ownership in coastal land could historically extend only landward of the mean high water mark.” NYFA, 88 Mass. App. Ct. at 218. “Seaward of the high water mark, ownership remained with ‘the Crown [and eventually the Massachusetts Bay Colony, followed by the Commonwealth,] but subject to the rights of the public to use the coastal waters for fishing and navigation.’” Id. “This changed, however, with the Colonial Ordinance of 1641-1647, which authorized the transfer of title to property between the high and low water marks — the tidal flats — to private parties, though this title has always had ‘strings attached.’” Id. “While ‘[g]reater public rights exist in submerged lands, the land lying seaward of the low water mark,’ both tidal flats and submerged lands are referred to collectively as ‘tidelands,’ and ‘[a]ll tidelands below [the historic] high water mark are subject to [the public trust doctrine].’” Id.

Under the Public Trust Doctrine and Chapter 91, “the Commonwealth holds tidelands in trust for the use of the public for, traditionally, fishing, fowling, and navigation.” Boston Edison Company v. Massachusetts Water Resources Authority, 459 Mass. 724, 735 (2011). “Tidelands” are “present and former submerged lands and tidal flats lying between the present or historic high water mark.” 310 CMR 9.02 (definition of “tidelands”). Formerly submerged lands and flats that have been filled to make them dry land are referred to as “filled tidelands.” Id. (definitions

²⁵ The Appeals Court’s decision in NYFA affirmed the November 22, 2011, Final Decision of the Department’s then Commissioner in an administrative appeal that the petitioner in that appeal filed with OADR challenging the Department’s denial of the petitioner’s request that tidelands at its property be categorized as “Private Tidelands” instead of “Commonwealth Tidelands.” NYFA, 88 Mass. App. Ct. at 214-17. The Commissioner’s Final Decision adopted the Recommended Final Decision of the Presiding Officer who adjudicated the administrative appeal. See In the Matter of Navy Yard Four Assoc., Ltd., OADR Docket No. 2010-062, Recommended Final Decision (November 21, 2011), 2011 WL 6425501, adopted as Final Decision (November 22, 2011), 2011 WL 6400161.

of “fill” and “filled tidelands”). “Flowed tidelands” are those lands over which the tides still flow. Id. (definition of “flowed tidelands”).

As noted above, the HHWM is the starting point for the Commonwealth's Chapter 91 jurisdiction over all tidelands. The HHWM is “the high water mark which existed prior to human alteration of the shoreline by filling, dredging, excavating, impounding, or other means.” 310 CMR 9.02 (definition of “historic high water mark”). The high water mark for tidelands is: “[the] mean high tide line, as established by the present arithmetic mean of the water heights observed at high tide over a specific 19-year Metonic Cycle (the National Tidal Datum Epoch),²⁶ and shall be determined using hydrographic survey data of the National Ocean Survey of the U.S. Department of Commerce.” 310 CMR 9.02 (definition of “high water mark”).

“In areas where there is evidence of [human] alteration [of the shoreline] by fill, the Department [is required by the Waterways Regulations to] presume the [HHWM] is the farthest landward former shoreline which can be ascertained with reference to topographic or hydrographic surveys, previous license plans, and other historic maps or charts, which may be supplemented as appropriate by soil logs, photographs, and other documents, written records, or information sources of the type on which reasonable persons are accustomed to rely in the conduct of serious business affairs.” 310 CMR 9.02 (definition of “historic high water mark”). “[This] presumption may be overcome by a clear showing that a seaward migration of such shoreline occurred solely as a result of natural accretion not caused by the owner or any predecessor in interest.” Id.

B. Licensing under Chapter 91 and the Waterways Regulations.

Under G.L. c. 91, § 14, “[t]he [D]epartment may license and prescribe the terms for the

²⁶ The Metonic cycle is “a period of 19 years in which there are 235 lunations, or synodic months, after which the Moon’s phases recur on the same days of the solar year, or year of the seasons.” *Metonic Cycle, Britannica*, <https://www.britannica.com/science/Metonic-cycle> (last accessed August 19, 2025).

construction or extension of a . . . structure, or for the filling of land or flats, or the driving of piles in or over tide water below high water mark.” In accordance with its statutory authority under G.L. c. 91, § 18, the Department has promulgated the Waterways Regulations that include licensing provisions regulating the proposed uses of and construction activities in tidelands.

Under 310 CMR 9.03(1):

[w]ritten authorization in the form of a license, permit, or amendment thereto must be obtained from the Department before the commencement of one or more activities specified in . . . 310 CMR 9.05 and located in one or more geographic areas specified in 310 CMR 9.04

The geographic areas subject to licensing include “all filled tidelands, except for landlocked tidelands,” which are not pertinent to this appeal. 310 CMR 9.04(1), 9.04(2). “[A]n application for [a] license or license amendment shall be submitted to the Department for the following activities involving work on or use of fill or structures [in tidelands]”:

- (1) any construction, placement, excavation, addition, improvement, maintenance, repair, replacement, reconstruction, demolition or removal of any fill or structures, not previously authorized, or for which a previous grant or license is not presently valid;
- (2) any existing or proposed use of any fill or structures not previously authorized, or for which a previous grant or license is not presently valid;
- (3) any structural alteration of fill or structures from the specifications contained in a valid grant or license, whether such authorization was obtained prior to or after January 1, 1984; or
- (4) any change in use of fill or structures from that expressly authorized in a valid grant or license or, if no such use statement was included, from that reasonably determined by the Department to be implicit therein, whether such authorization was obtained prior to or after January 1, 1984.

310 CMR 9.05(1).

Under 310 CMR 9.06(1), any person who desires a determination whether the Department has Chapter 91 jurisdiction over “any area of land or water, or any activity thereon,

may submit to the Department a request for a determination of applicability.” The request must include a plan or plans showing:

- (1) an appropriately-scaled site location map;
- (2) references to any previous licenses, permits, or other authorizations for existing structures, fill, or dredging at the site, including the license number(s) and the date the license was recorded at the Registry of Deeds or Land Court;
- (3) appropriately-scaled principal dimensions and elevations of proposed and existing fill, structures, or dredging in waterways;
- (4) any historic dredging, filling, or impoundment at the site; and
- (5) a delineation of the present high and low water marks, and the historic high and low water marks, as relevant.

310 CMR 9.06(1).

C. The Presumptive HHWM Lines Under the 2006 Chapter 91 Mapping Project.

As noted previously above, in making the Determination at issue in this appeal, the Department relied on the 1894 Plan as set forth in the BSC Report to establish the presumptive HHWM. The BSC Report was the product of a four-year historical shoreline mapping project conducted from 2002 to 2006 by the Commonwealth’s Office of Coastal Zone Management (“CZM”) in conjunction with MassDEP to facilitate determinations of the Commonwealth’s Chapter 91 jurisdiction. BSC Report, at p. 1; Armstrong, 2012 WL 920508, *5; Entergy, 2016 WL 921973, *17. CZM retained BSC, a private consulting firm comprised of land surveyors, civil engineers, and environmental planners, to map the Commonwealth’s tidelands jurisdiction under Chapter 91 and develop a Geographic Information System (“GIS”)²⁷ based mapping product. Id. The purpose of this project was to develop presumptive Chapter 91 lines of

²⁷ GIS “is a computer system capable of capturing, storing, analyzing, and displaying geographically referenced information; that is, data identified according to location. Practitioners also define a GIS as including the procedures, operating personnel, and spatial data that go into the system.” <https://wsfirtraining.fws.gov/mod/glossary/showentry.php?eid=276> (last accessed August 21, 2025).

jurisdiction over tidelands, including “produc[ing] plans depicting geographic presumptive lines of [Department] jurisdiction in tidelands pursuant to Chapter 91 and the Waterways Regulations.” BSC Report, pp. 1 and 9.

For geographic areas located on filled tidelands, the mapping project included the mapping of the presumptive HHWM lines for each area. Id. The mapping was performed by reviewing “planimetric information and symbology present on [numerous] historical plans.” Id., at p. 10. According to the BSC project team, “[the] presumptive lines . . . represent the best spatial representation of former shoreline conditions that can be documented by the project database, . . . [but] it is possible that additional plans or information could be recovered that would support future modification to the [presumptive] line defined by project data sets.” Id.

To establish presumptive lines, the BSC project team reviewed “a wide range of coastal maps, plans, and charts that were available through public and private sources” designated as primary, secondary, or tertiary data repositories.²⁸ Id. at pp. 11 and 13. “The primary research goal was to identify . . . the most reliable historical maps/plans illustrating the shoreline and hydrographic conditions that existed prior to human alteration.” Id. at p. 11.

During the course of the Chapter 91 Mapping Project, approximately 3,000 plans were reviewed by the BSC project team, and that of that amount, approximately 300 were determined to be relevant to the Project’s purpose and accurate enough to be “georeferenced” or

²⁸ Public sources considered primary data repositories included the Department's Waterways Program and the Waterways Division of the former Department of Environmental Management (now part of the Department of Conservation and Recreation). BSC Report, at p. 13. Private sources considered primary data repositories included the Peabody Essex Museum in Salem, Massachusetts, and BSC's in-house plan library. Id. Secondary Data Repositories included the private entities, such as the Harvard Map Collection and Boston Athenaeum, and public entities such as the Massachusetts Highway Department. Id. Registries of Deeds and the Massachusetts Land Court were designated as tertiary data repositories because according to the BSC project team, “Registries in general contain plans that are focused at a parcel, or real estate ownership level as opposed to larger geographic areas,” and “[the] Land Court was created in 1898 . . . after much of the coastal alteration in developed areas was well under way.” Id. at pp. 13-14. As a result, the BSC project team opined that “[c]oastal properties registered in Land Court . . . contain minimal quantifiable information related to tidal boundaries[,] [and] [c]onsequently, both Land Court and county registries were used as a tertiary source for researching specific problem areas if research in other locations did not produce tangible results.” Id.

“registered.” Armstrong, 2012 WL 920508 at *6; Entergy, 2016 WL 921973, *18. The process of “georeferencing” or “registering” (the terms are used interchangeably) a historical map fixes the map to a known geographic plane of reference (horizontal datum) so that it can be compared directly with another map on the same horizontal datum. Id.; BSC Report, at pp. 20-28.

BSC georeferenced all project maps using the computer program Autodesk Raster Design. BSC Report, p. 22. BSC registered Coast Survey work primarily using either (a) triangulation stations, which are locations established and confirmed through multiple field surveys by the U.S. Coast Survey (“USCS”),²⁹ U.S. Coast and Geodetic Survey (“USC&GS”), and/or National Geodetic Survey (“NGS”), with published current horizontal datum values (coordinates), or (b) latitude/longitude graticules or grid marks, translated to contemporary datum values using methods of the NGS, that were superimposed upon the maps by the USCS at the time they were produced or at a later date in recognition of changes in horizontal datums. Armstrong, 2012 WL 920508 at *6; Entergy, 2016 WL 921973, *18; BSC Report, pp. 20-28.

Once the historic map was registered, the high water mark on the historic map was then digitized, meaning that BSC electronically traced the shoreline on the map. BSC Report, p. 41. A key characteristic of this digitized line is that it has a geographic location relative to the base map to which the historic map was registered; it is a string of coordinates defined by the base map's coordinate system. Armstrong, 2012 WL 920508 at *6; Entergy, 2016 WL 921973, *18. This allows the digitized line to be superimposed on other georeferenced maps and plans to allow for the comparison of historical and present-day conditions. Id.

BSC relied principally on mid-19th century Topographic Sheet (“T-Sheets”) and

²⁹ The USCS was created by Congress in 1807 to chart the U.S. coastlines. <https://nauticalcharts.noaa.gov/about/history-of-coast-survey.html> (last accessed August 21, 2025). In 1878, the USCS became the U.S. Coast and Geodetic Survey (“USC&GS”) after its responsibilities expanded to conducting geodetic surveys into the interior of the country. Id. In 1965, the USC&GS became a component of the U.S. Environmental Sciences Services Administration (“ESSA”), and five years later, in 1970, ESSA expanded and was reorganized into the NGS, a division of NOAA. Id.

Hydrographic Sheets (“H-Sheets”) of the USCS to develop its mapping. BSC Report, pp. 15-16.³⁰ The T-Sheets and H-Sheets were used to prepare finished charts for mariners, and the T-Sheets and H-Sheets were typically original field sheet manuscripts of plane table and sounding surveys which were then compiled into larger charts. Id. The T-Sheets showed period-specific shoreline detail for all of the Massachusetts ocean-facing coast and most of its more inland waterways. Armstrong, 2012 WL 920508 at *7; Entergy, 2016 WL 921973, *18. T-Sheets were an important component of the Chapter 91 Mapping Project because:

[1] they were produced and updated over several common time frames: 1832-1867, 1868-1898, 1899-1938, and 1933-1954 allowing for a “snapshot” of the Massachusetts coastline at distinct times[;] [2] the surveyors and cartographers charged with preparation of T-Sheets were subject to distinct protocols and instructions as how the work was to be performed[,] [which] contributed to a uniformity in end products, in terms of known quality and cartographic representation, affording BSC’s surveyors the ability to interpret historical lines accurately and consistently[;] [and] [3] T-Sheets could be registered easily and reliably.

BSC Report, at p. 16; Entergy, 2016 WL 921973, *18-19.

In sum, the Chapter 91 Mapping Project “identified [T-Sheets] as a primary source for historical high water lines[,] [and] H-Sheets ... as a primary source for historical low water lines because of their spatial integrity, relative consistency of cartography” BSC Report, at p. 31; Entergy, 2016 WL 921973, *19. However, “[i]n areas where the low water line was located within a quarter of a mile from the shore, this feature was frequently depicted in the T-Sheet.” Id.

With respect to the HHWM along the Malden River, Malden Canal, and Oxbow at the Property, BSC relied on the 1894 Plan. BSC Report, pp. 38-39. In making this choice, BSC noted as follows:

On [the 1847 Plan] all [salt] marsh is depicted with a homogenous symbology. No attempt was made by the cartographer to determine the high water mark within the marsh. If this plan were utilized to

³⁰ As previously noted in n.4, at p. 2, above, the 1894 Plan is a T-Sheet referred to in the BSC Report as T Sheet T-2156. BSC Report, p. 38.

determine the historic high water without regard for the subsequent mapping, the seaward edge of the marsh would necessarily have been held as the historical limit of high water. However, careful examination of the same area as depicted on [the 1894 Plan] provides additional important information that supports a different conclusion. The later T sheet uses a more refined marsh symbology along the southeasterly bank of the Malden River that identifies an area of marsh that was routinely flooded or mostly submerged at high water

Id. at p. 38.

IV. Discussion.

A. The Petitioner's Burden of Proof at the Hearing.

At the Hearing, the Petitioner had the burden of proving by a preponderance of credible evidence that that the Oxbow (discussed in detail below at page 16) is not subject to the Department's Chapter 91 jurisdiction because it was manmade, and therefore the Department's presumptive HHWM line for the Property established by the 1894 Plan as set forth in the BSC Report is incorrect.³¹ Energys, 2016 WL 921973 at *15; Armstrong, 2012 WL 920508 at *7. To do so, the Petitioner had to present compelling, site-specific evidence, backed by expert testimony, demonstrating that the Oxbow was manmade. Armstrong, Final Decision, p. 1. "A party in a civil case having the burden of proving a particular fact [by a preponderance of the evidence] does not have to establish the existence of that fact as an absolute certainty [I]t is sufficient if the party having the burden of proving a particular fact establishes the existence of that fact as the greater likelihood, the greater probability." Armstrong, 2012 WL 920508 at *7, citing Massachusetts Jury Instructions, Civil, 1.14(d); Energys, 2016 WL 921973 at *15.

As for the relevancy, admissibility, and weight of evidence that the parties sought to introduce in the Hearing, this was governed by G.L. c. 30A, § 11(2) and 310 CMR

³¹ As discussed below at page 17, the Petitioner is incorrect that the burden is on the Department.

1.01(13)(h)(1). Armstrong, 2012 WL 920508 at *8. Under G.L. c. 30A, § 11(2):

[u]nless otherwise provided by any law, agencies need not observe the rules of evidence observed by courts, but shall observe the rules of privilege recognized by law. Evidence may be admitted and given probative effect only if it is the kind of evidence on which reasonable persons are accustomed to rely in the conduct of serious affairs. Agencies may exclude unduly repetitious evidence, whether offered on direct examination or cross-examination of witnesses.

Under 310 CMR 1.01(13)(h), “[t]he weight to be attached to any evidence in the record will rest within the sound discretion of the Presiding Officer”

The Petitioner contends that the burden in this appeal is on the Department. It argues variously that the Department must “overcome the presumption that the oldest accurate map that predates human alteration of the shoreline should be used to depict the HHWM, the [Department] must clearly show that the migration of the shoreline ‘occurred solely as a result of natural accretion’”³² and “[t]he Department must to provide a ‘clear showing’ that the Oxbow was natural”³³ In failing to do so, it argues, “the DEP has not shown with clear and reliable evidence that the shoreline changed through the natural process of accretion or erosion, the 1847 Plan must be used to establish the HHWM.”³⁴ However, the Petitioner misplaces the burden of proof on the Department. The burden is on the Petitioner to rebut the presumptive HHWM with compelling, site-specific evidence, backed by expert testimony. Armstrong, 2012 WL 920508 at *7; Armstrong, Final Decision, p. 1.

A presumption in this context is a “rule[] of evidence calling for a certain result in a given case unless the adversely affected party overcomes it with other evidence.” *Presumption*, *Black’s Law Dictionary* (Bryan A. Garner, ed., 12th ed. 2024); Mass. Guide Evid. § 301(d). As

³² Petitioner Memo., p. 7, quoting 310 CMR 9.02; see also Petitioner Supp. Memo., p. 15.

³³ Petitioner Supp. Memo., p. 17; see also Petitioner Rebuttal Memo., p. 9 (“the Department must provide a ‘clear showing’ that the [Oxbow] was natural”); Petitioner Brief, p. 27 (“the Department must provide a ‘clear showing’ that the [Oxbow] was natural”).

³⁴ Petitioner Supp. Memo., p. 15.; see also Petitioner Memo., p. 3.

the Petitioner is the adverse party, the burden is on the Petitioner to demonstrate the presumptive HHWM is incorrect. Armstrong, 2012 WL 920508 at *7. “If that party comes forward with evidence to rebut or meet the presumption, the presumption shall have no further force or effect.” Mass. Guide Evid. § 301; see also Armstrong, 2012 WL 920508 at *27.

The presumptive HHWMs in the BSC Report are, by definition, presumed to be accurate. Under 310 CMR 9.02, the presumptive HHWM is determined by reference to the “oldest accurate map that predates human alteration of the shoreline” However, if there is evidence of alteration by fill, the presumptive HHWM “is the farthest landward former shoreline which can be ascertained with reference to topographic or hydrographic surveys” or other documents. Id. In this case, when the BSC Report was being prepared, there was evidence that the Property had been filled. The BSC Report then turned to other documentation to determine the HHWM, and concluded that 1894 Plan was the most accurate depiction of the HHWM.³⁵ It therefore referenced the 1894 Plan to set the presumptive HHWM that the Department used in issuing the Determination.³⁶ The Petitioner must therefore rebut the presumptive HHWM with compelling, site-specific evidence, backed by expert testimony, to prevail.

MassDEP has consistently interpreted the Waterways Regulations to place the burden on the party challenging the presumptive HHWM. In Armstrong, the burden was on the petitioner to demonstrate that the presumptive HHWM was incorrect. Id. The Petitioner was able to rebut the presumption with compelling, site-specific evidence, backed by expert testimony, that portions of the petitioner’s marina in Marshfield, Massachusetts were not subject to c. 91 jurisdiction. Armstrong, 2012 WL 920508 at *14-*26. In Entergy, by contrast, the petitioner was unable to rebut the presumptive HHWM. Entergy, 2016 WL 921973 at *20. There the petitioner referenced Chapter 91 licenses, Land Court registration documents, and aerial photographs to

³⁵ BSC Report, p. 38.

³⁶ Id.

argue that two moorings were located in Commonwealth tidelands but that evidence was unavailing because it did not clearly show that the moorings were in Commonwealth tidelands. Id. at *21-*23. With respect to the 2016 Determination (which is discussed in greater detail below at page 38), the Department adopted the 1847 Plan because the *applicant* demonstrated that the 1847 Plan depicted “the most reliable landward natural former high water shoreline”³⁷ The burden is therefore on the Petitioner to show with compelling, site-specific evidence backed by expert testimony, that the presumptive HHWM is incorrect, which it can accomplish by showing that the Oxbow was manmade.

B. Findings.

Based on the evidence in the record, the Petitioner has not presented compelling, site-specific evidence, backed by expert testimony, demonstrating that the presumptive HHWM line for the Property established by the 1894 Plan as set forth in the BSC Report is incorrect. Below, I set forth how I arrived at this finding. First, I begin with a history of the Property starting in 1847 (the earliest date the Parties contend is relevant) and describe salient features of the relevant maps and plans in the record depicting the Property through 1894 (the latest date that the Parties contend is relevant). I then turn to the Parties’ arguments. I review the Department’s reasoning for adopting the 1894 Plan as depicting the HHWM. Then I examine how the evidence in the record fails to meet the Petitioner’s burden that the Oxbow was manmade. I conclude by recommending that the Department’s Commissioner issue a Final Decision finding that the HHWM on the Property is to be determined based on the presumptive HHWM and affirming the Determination.

1. The history of the Property and the Oxbow.

The presumptive HHWM at the Property derives from the 1894 Plan and the 1847 Plan.

³⁷ Taormina PFT, Ex. 6, pp. 1-2. As discussed below, at pp. 43, the 2016 Determination was also factually distinguishable from the circumstances in this case.

The 1847 Plan was used to establish the easterly portion of the presumptive HHWM, while the 1894 Plan was used to establish the HHWM of the Oxbow.³⁸ The Petitioner does not challenge the Determination with respect to the easterly portion of the HHWM, only the Determination with respect to the Oxbow.³⁹

The Property is located along the Malden Canal, which is a manmade alteration of the Malden River.⁴⁰ The Malden River is itself a tributary of the Mystic River. In 1847 (which is the year of the earliest map in the record⁴¹), the Property was undeveloped and largely part of what was demarcated in the 1847 Plan as salt marsh.⁴²

In 1846, the Massachusetts Legislature established the Malden Canal Company.⁴³ The Malden Canal Company was authorized to “locate and construct a canal in Malden, from a point in Mystic River, at or near the mouth of Malden Creek, to the central village of Malden, at some convenient point near Lewis Bridge or Barretts Red Mills”⁴⁴ Based on the maps discussed below, that the Malden Canal Company dredged a north-to-south channel through the Malden River, creating what became labeled on later maps and plans as the Malden Canal. In 1853, the Massachusetts Legislature passed an act declaring that the northern terminus of the Malden Canal was located on the southerly side of the Saugus Branch Railroad, which was located north of the Property.⁴⁵ Its work completed, the Malden Canal Company was dissolved by an act of the

³⁸ Minihane and Benson PFT, ¶ 11.

³⁹ Taormina PFT, ¶ 10.

⁴⁰ The eastern edge of the Property was once part of the original Malden River, which is why it is subject to Chapter 91 jurisdiction, even though the eastern edge of the Property is now part of the manmade Malden Canal. See Minihane and Barnes PFT, Ex. 2.

⁴¹ Mr. Taormina testified that there are no maps depicting the Oxbow prior to 1847. Tr. 93:10-14.

⁴² Minihane and Benson PFT, Ex. 2.

⁴³ Minihane and Benson RPFT, Ex. I.

⁴⁴ Id.

⁴⁵ Id.

Massachusetts Legislature in 1873.⁴⁶

In 1917, the Commonwealth issued a license allowing the filling of the Oxbow.⁴⁷ The Oxbow was filled at some point after this license was issued, resulting in the present configuration of the Property, where the eastern edge of the Property abuts the Malden Canal and the remainder of the Property is dry land.⁴⁸ The Property today contains two buildings (one of which crosses the presumptive HHWM) and a parking lot (which covers much of the former footprint of the Oxbow and presumptive HHWM).⁴⁹

MassDEP determined, based on the BSC Report's presumptive HHWMs, that the Oxbow traversed through the Property prior to it being filled. Accordingly, all of the filled land on the footprint of the Oxbow is tideland subject to Chapter 91 jurisdiction. The Petitioner contends that the Oxbow was manmade. If it was manmade, then the presumptive HHWM would be incorrect and the only jurisdictional tideland on the Property would be that portion of the Malden Canal on the eastern edge of the Property. The primary question, therefore, is whether the Oxbow was manmade. In making this determination, the Parties have presented a number of plans and other maps, which I review here.

a) The 1847 Plan.

The 1847 Plan is the “U.S. Coast Survey, Roxbury, Cambridge, and Medford, by H.L. Whiting Assist.,” surveyed in 1847.⁵⁰ It depicts the Malden River flowing south toward the Mystic River.⁵¹ The Property is also depicted. The Malden River traverses through the Property

⁴⁶ Id.

⁴⁷ See Middlesex South Registry of Deeds, Registered Plan No. 51005408, dated May 25, 1917.

⁴⁸ See Determination, p. 19 (GIS Map depicting the Property and presumptive HHWM; produced by the Department at the outset of the appeal).

⁴⁹ Minihane and Benson PFT, Ex. 11.

⁵⁰ Minihane and Benson PFT, ¶ 10.

⁵¹ Minihane and Benson PFT, Ex. 2.

from north-to-south on the eastern edge of the Property line. Some oxbows and tributaries are depicted along the river, but the area surrounding the Malden River is largely depicted as homogeneous salt marsh. The Oxbow at issue here is not depicted.

As to manmade structures, the 1847 Plan shows two railroads, one to the west of the Property and the other to the east of the Property, both running approximately north-to-south.⁵² Running perpendicular to the railroads and slightly north of the Property is a road and a bridge. There are some small features depicted on the Property in its northwest corner which Mr. Taormina identifies as buildings,⁵³ but the Property is otherwise largely notated as homogenous salt marsh.⁵⁴

b) The 1852 Map.

The “1852 Map” is a “Map of Boston Harbor Showing Commissioners’ Lines, Wharves &C.,” prepared by order of the Harbor Committee of the City Council of 1852, under the direction of E. S. Chesbrough, City Engineer.⁵⁵ This map depicts the Property, and like the 1847 Plan, shows the Property with the Malden River running north-to-south on the eastern edge. The Property is again largely undeveloped and mostly salt marsh.⁵⁶ The Oxbow is not present.⁵⁷

c) The 1860 Map.

The “1860 Map” is the “U. S. Coast Survey Comparative Map of Boston Harbor, Massachusetts, from Surveys made by Lieut. A. S. Wadsworth, U.S.N. in 1817 and Coast Survey in 1846-53,” executed in the Office of the U. S. Coast Survey for the U. S. Commissioners on

⁵² Id.

⁵³ Tr. 90:20-22.

⁵⁴ Minihane and Benson PFT, Ex. 2.

⁵⁵ Minihane and Benson PFT, ¶ 12.

⁵⁶ Minihane and Benson PFT, Ex. 3.

⁵⁷ Id.

Boston Harbor, 1860.⁵⁸ The 1860 Map does not depict the Property, but does depict the southern portion of the Malden River.⁵⁹

d) The 1864 Plan.

The “1864 Plan” is a March 10, 1864, plan referred to in a conveyance of several parcels directly to the north of the Property.⁶⁰ The 1864 Plan clearly shows a portion of the Property and depicts a portion of the Oxbow.⁶¹ Of the documents in the record, this plan is the first where the Oxbow is depicted, and the Oxbow is labeled “Malden River.”⁶² The Malden Canal, which runs north-to-south on the eastern edge of the Property, is separately labeled as the “Malden Canal.”⁶³

e) The 1873 Plan.

The “1873 Map” is a “Map of Malden River prepared for the establishment of Commissioner’s Lines and Improvements in the Channel from Mystic River to Malden” prepared by W.B. Cunningham and A.F. Sargent, Engineers, dated February 1873.⁶⁴ The 1873 Plan depicts the serpentine nature of the Malden River, and depicts the Oxbow.⁶⁵ The “original watercourse [of the Malden River] is shown with dotted lines as it passed through the man-made canal segments [of the Malden Canal]”⁶⁶

f) The 1875 Map.

The “1875 Map” is a map from the Malden Historical Society.⁶⁷ The 1875 Map depicts

⁵⁸ Minihane and Benson PFT, ¶ 12.

⁵⁹ Minihane and Benson PFT, ¶ 16; Minihane and Benson PFT, Ex. 4.

⁶⁰ Taormina SPFT, Exx. 5a-5b.

⁶¹ Taormina SPFT, Ex. 5b.

⁶² Id.

⁶³ Id.

⁶⁴ Taormina SPFT, Exx. 6a-h.

⁶⁵ Taormina SPFT, Exx. 6a-h.

⁶⁶ Taormina SPFT, ¶ 11.

⁶⁷ Minihane and Benson RPFT, Ex. 3A.

the straightened main channel of the Malden River and labels it the “Malden Canal.”⁶⁸ The Oxbow is depicted as rounded on both sides.⁶⁹ There are also two buildings depicted on the Property that were not present previously, suggesting that they were built between 1852 and 1875.⁷⁰

g) License 630.

In 1866, Chapter 149 of the Acts & Resolves of the Massachusetts Legislature established a Board of Harbor Commissioners for the “general care and supervision of all the harbors and tidewaters, and of all the flats and lands flowed thereby, within the Commonwealth”⁷¹ In 1881, the Board of Harbor and Land Commissioners approved License 630, which granted David L. and John G. Webster approval to build a wharf on the Malden River on the Property.⁷² Attached to License 630 is a plan that identifies the western bank of the Oxbow as the “Old wharf.”⁷³ The Old Wharf is depicted as a straight line,⁷⁴ suggesting that area used as the wharf was straightened sometime between 1875 and 1881.

h) The 1885 Map.

The “1885 Map” is Plate 6 of the Malden Atlas.⁷⁵ The Oxbow is depicted, and the Property is depicted as developed with several buildings on site.⁷⁶ The western edge of the Oxbow is a straight line, not curved.⁷⁷ Mr. Taormina testified that the use of straight lines

⁶⁸ Minihane and Benson PFT, ¶ 17.

⁶⁹ Id.

⁷⁰ Id.

⁷¹ Minihane and Benson SPFT, ¶ 4.

⁷² Minihane and Benson SPFT, ¶ 2; Minihane and Benson SPFT, Ex. A1.

⁷³ Minihane and Benson SPFT, ¶ 3; Minihane and Benson SPFT, Ex. A1.

⁷⁴ Minihane and Benson SPFT, ¶ 3; Minihane and Benson SPFT, Ex. A1.

⁷⁵ Minihane and Benson PFT, ¶ 12.

⁷⁶ Minihane and Benson PFT, Ex. 5.

⁷⁷ Minihane and Benson RPFT, ¶ 11.

suggests that the western edge of the Oxbow was used as a wharf at this time.⁷⁸

i) The Sanborn Maps of 1887 and 1892.

The “Sanborn Maps”⁷⁹ depict the Property in 1887 and 1892.⁸⁰ The Sanborn Maps depict the three buildings on the westerly portion of the Property and describes them as part of a tannery.⁸¹ The Oxbow is present as well, with the western edge of the Oxbow appearing to be composed of straight line segments.⁸² The land to the east of the Oxbow is described as “Vacant Meadow.”⁸³ The Sanborn Maps were likely not consulted by BSC when the presumptive HHWM was established.⁸⁴

j) The 1890 Map.

The “1890 Map” is a “Boston Harbor Mass., Map of Mystic and Malden Rivers from their confluence to head of navigation made under the direction of the U. S. Harbor Line Board of 1888,” by T. T. Hunter Harwood, Asst. Engineer, April 1890.⁸⁵ The 1890 Map depicts the straightened main channel of the Malden Canal and depicts the Oxbow on the Property. South of the Property, the straightened main channel of the Malden River connects the two ends of a

⁷⁸ Tr. 46:11, 47:20-22

⁷⁹ According to the Library of Congress, Sanborn Maps are “a uniform series of large-scale maps, dating from 1867 to the present and depicting the commercial, industrial, and residential sections of some twelve thousand cities and towns in the United States, Canada, and Mexico. The maps were designed to assist fire insurance agents in determining the degree of hazard associated with a particular property and therefore show the size, shape, and construction of dwellings, commercial buildings, and factories as well as fire walls, locations of windows and doors, sprinkler systems, and types of roofs. The maps also indicate widths and names of streets, property boundaries, building use, and house and block numbers.” Introduction to the Sanborn Map Collection, Library of Congress, <https://www.loc.gov/collections/sanborn-maps/articles-and-essays/introduction-to-the-collection/> (last accessed August 13, 2025).

⁸⁰ See Petitioner Rebuttal, Ex. G.

⁸¹ Minihane and Benson RPFT, Ex. 2B.

⁸² Minihane and Benson RPFT, Ex. 2B.

⁸³ Petitioner Rebuttal, Ex. G.

⁸⁴ Tr. 92:1-3.

⁸⁵ Minihane and Benson PFT, ¶ 12.

separate oxbow in the river depicted south of the Property on the 1847 and 1852 maps.⁸⁶

k) The undated JHills Map.

The “JHills Map” is “An undated map named ‘jhills.tif’ obtained by downloading the CZM Tideland Jurisdiction file on MassGIS (the JHills map). This map was referenced in the MassGIS file’s metadata for the frame that includes the [Property].”⁸⁷ The JHills Map does not depict the Oxbow.⁸⁸ The JHills Map is undated, and the Petitioner notes that it is therefore “of less value.”⁸⁹

l) The 1893 Map.

The “1893 Map” is the “U. S. Coast and Geodetic Survey, T. C. Mendenhall Supt., Boston Harbor, Mass, Northern Part, from Point Shirley to Boston, including the Chelsea and Mystic Rivers and the Charles River above West Boston Bridge,” by the party under the charge of Lieut. W. F. Low, U.S.N. Asst. in Schooner Eagre, begun July 11, 1892, Ended May 31, 1893.⁹⁰ The Malden River appears as it does in the 1890 Map, including the presence of the Oxbow.⁹¹ This map is an H-Sheet, and therefore does not depict high-water marks.⁹²

m) The 1894 Plan.

The 1894 Plan is the “U.S. Coast and Geodetic Survey-North Side of Boston Bay, Massachusetts,” surveyed by W.I. Vinal dated 1894.⁹³ This is the plan that the BSC Report used to establish the HHWM on the Property.⁹⁴ The 1894 Plan depicts the Malden River, including

⁸⁶ Minihane and Benson PFT, ¶ 18; Minihane and Benson PFT, Ex. 6.

⁸⁷ Minihane and Benson PFT, ¶ 12.

⁸⁸ Minihane and Benson PFT ¶ 14; Ex. Minihane and Benson PFT 10.

⁸⁹ Minihane and Benson PFT, Ex. 10.

⁹⁰ Minihane and Benson PFT, ¶ 12.

⁹¹ Minihane and Benson PFT, Ex. 7; Minihane and Benson PFT, ¶ 19.

⁹² Taormina PFT, ¶ 35.

⁹³ Minihane and Benson PFT, ¶ 10.

⁹⁴ BSC Report, pp. 37-38.

the straightened portion of what is labeled the Malden Canal, and the Property.⁹⁵ The Oxbow is depicted, and the western edge of the Oxbow is straight.⁹⁶ Also visible on the 1894 Plan are the railroad tracks on the western and eastern sides of the Property, as well as the bridge traversing the Malden Canal situated north of the Property.⁹⁷

n) The Petitioner's overlays.

Mr. Benson created several maps that he submitted with his PFT.⁹⁸ To do so, he overlaid (geo-referenced) historical maps onto the MassGIS 2019 Color Orthophoto based on a best fit of features shown on the historic maps with current streets and railroads surrounding the Property.⁹⁹ He noted in his testimony that in most cases the historic maps fit reasonably well, but some uncertainty exists due to possible stretch in the historic plan images.¹⁰⁰ He positioned the property line as shown on a 2020 plan prepared by Hancock Associates and dated August 21, 2020, onto the MassGIS 2019 Color Orthophoto based on aligning the parking lot striping, which was clearly visible on the Orthophoto.¹⁰¹

The Petitioner's overlays show the Property and the presumptive HHWM based on the BSC Report.¹⁰² A line depicting the Oxbow as it existed in the 1894 Plan is set over the presumptive HHWM, and the two largely match. Mr. Benson testified that simply because the lines did not match at any point did not undermine the accuracy of the BSC Report's

⁹⁵ Minihane and Benson PFT, Ex. 8.

⁹⁶ Id.

⁹⁷ Id.

⁹⁸ Tr. 66:8-13.

⁹⁹ Minihane and Benson PFT, ¶ 6.

¹⁰⁰ Id.

¹⁰¹ Minihane and Benson PFT, ¶ 7.

¹⁰² Minihane and Benson PFT, Exx. 11-13.

presumptive HHWM, as the Petitioner’s maps are just “a sort of general approximate location to look at the general shape of the lines.”¹⁰³

*o) **The Determination.***

As part of the Determination, the Department included an Orthophoto of the Property with the presumptive HHWM lines superimposed.¹⁰⁴ The presumptive HHWM traces the footprint of the Oxbow, which is now filled.¹⁰⁵ The portion of the Oxbow on the Property is depicted with straightened edges.¹⁰⁶ Parts of a building and a parking lot sit on top of the footprint of the Oxbow.¹⁰⁷

2. The Petitioner has not met its burden of rebutting the presumptive HHWM.

The Petitioner agrees that the BSC Report is the correct starting point for determining the HHWM, but it believes that it has rebutted the presumptive HHWM line for the Property established by the 1894 Plan as set forth in the BSC Report. Petitioner Brief, p. 13. However, the Petitioner contends that the 1847 Plan should be utilized to determine the HHWM, and that the use of the presumptive HHWM is therefore arbitrary and capricious.¹⁰⁸ The Department contends otherwise, firmly holding to its position that the presumptive HHWM line for the Property established by the 1894 Plan as set forth in the BSC Report is correct.

The Parties have made various arguments and referenced the numerous maps, plans, and other documents in the record that I discussed above in support of their respective positions in the appeal. After reviewing all of these materials, I find that the Petitioner has not presented

¹⁰³ Tr. 67:9-22.

¹⁰⁴ Determination, p. 19.

¹⁰⁵ Id.

¹⁰⁶ Id.

¹⁰⁷ Id.

¹⁰⁸ Petitioner Memo., p. 1.

compelling, site-specific evidence, backed by expert testimony, demonstrating that the presumptive HHWM line for the Property established by the 1894 Plan as set forth in the BSC Report is incorrect. Armstrong, Final Decision, p. 1. Simply stated, MassDEP was correct to use the presumptive HHWM to determine the extent of Chapter 91 jurisdiction over the Property.¹⁰⁹

a) **The fact that the 1847 Plan does not depict the Oxbow does not clearly show that the Oxbow was manmade.**

One of the Petitioner's primary contentions is straightforward: the Oxbow does not appear on the 1847 Plan.¹¹⁰ Its first appearance is in the 1864 Plan.¹¹¹ From this, the Petitioner infers that the Oxbow must have been manmade. However, it has failed to provide compelling, site-specific evidence, backed by expert testimony supporting that inference.

In 1847, the land abutting the Malden River was primarily salt marsh. When the area of the Malden River was surveyed to create the 1847 Plan, salt marsh was often depicted homogeneously and without delineating all of its features. Mr. Taormina testified that "just because the main branch of the [Malden River] was mapped in a certain method in [18]47 and there was an omission of other tributaries to that main branch [i.e., the Oxbow,] that didn't show up until the next edition of the coast survey plan, it doesn't mean that [those tributaries] didn't exist."¹¹²

In support, Mr. Taormina references Aaron L. Shalowitz, LL.M, "Shore and Sea Boundaries, with Special Reference to the Interpretation and Use of Coast and Geodetic Survey Data," Volume 1 (United States Government Printing Office, Washington, 1962) and Volume 2

¹⁰⁹ Because I come to this conclusion and the 1894 Plan is used to establish the HHWM, I do not address the Petitioner's concern that "different map years should not be utilized to create a singular jurisdictional limit given the definition of historic high water mark as well as magnification of accuracy issues associated with overlaying multiple historic maps." Minihane and Benson PFT, ¶ 21.

¹¹⁰ Petitioner Memo., p. 3.

¹¹¹ Taormina SPFT, Ex. 5b.

¹¹² Tr. 78:17-22.

(United States Government Printing Office, Washington, 1964) (“Shalowitz”), which was used in preparing the BSC Report. Shalowitz observes that in salt marsh areas, “the actual high-water line might start at the water’s edge in one portion of the marsh and meander through the area in irregular fashion, terminating at another portion at the water’s edge or at the edge of firm ground in the interior.”¹¹³ The reason that the plans at that time were often vague about the location of high-water marks in these areas is because the “survey boats could not penetrate beyond the outer edge of marsh because there was not enough water to float it, so for the purpose of navigation, it was only necessary to survey the outer edge of marsh which defined the line between land and water, and not the high water mark in marsh.”¹¹⁴ Thus, the line between salt marsh and the upland “may be considered as the limit of penetration of the highest tides, but, as has been noted previously, in certain stages of marsh development it may coincide with the high-water line.”¹¹⁵ The net result of these observations is that salt marsh was often depicted homogeneously, with the edge of the salt marsh the most important feature depicted.¹¹⁶ It was less important to depict the interior of the salt marsh, and therefore some features (such as the Oxbow) may have been omitted altogether as not relevant to the cartographers at the time.

Mr. Taormina also testified that the first edition of T-Sheets (of which the 1847 Plan is one) were not intended to depict the mean high-water mark.¹¹⁷ The BSC Report explained that in instances where the T-Sheets depicted salt marsh, the first generation T-Sheets used for the

¹¹³ Taormina PFT, ¶ 20, quoting Shalowitz, Vol. 2, pp. 176-77.

¹¹⁴ Taormina PFT, ¶ 20, quoting Shalowitz, Vol. 2, p. 180.

¹¹⁵ Taormina PFT, ¶ 21, citing Shalowitz, Vol. 2, p. 181.

¹¹⁶ The purpose of mapping these areas was to record the location of navigable waters. Taormina PFT, ¶ 24. Accordingly, preference was given to mapping those areas through which ships could navigate. “One topographical survey may show all the waterways tributary to the main waterway, whereas an earlier survey may have omitted them, thus lacking the detail of the later survey.” *Id.*, quoting Shalowitz, Vol 2, p. 170. “[T]o have surveyed every then important creek or slough with the same degree of detail as was included in surveys of important river or harbor area could not have been justified administratively or otherwise.” Taormina PFT, ¶ 24, quoting Shalowitz, Vol. 2, p. 80.

¹¹⁷ Taormina PFT, ¶ 40.

purpose of historic shoreline analysis were often compared with more contemporary T-Sheets to verify their accuracy.¹¹⁸ The BSC Report concluded that when determining the HHWM:

the earliest shoreline [as depicted in the first edition T-Sheets] may not be appropriate. For example, as mapping symbology evolved, areas of salt marsh formerly mapped as one unit were further refined to depict those areas of [salt] marshes that were mostly submerged at high water. For those cases, use of early mapping alone would not detect the more landward high water line in marsh.¹¹⁹

The BSC Report was aware of the uncertainty in mapping salt marshes that Shalowitz described. The BSC Report used the Malden River itself as an example of where mapping of homogeneous salt marsh may have excluded features in the interior.¹²⁰ The BSC Report explained that in most instances the most reliable landward historic high-water shoreline of the Malden River derived from the 1894 Plan.¹²¹ The cartographer of the 1847 Plan did not attempt “to determine the high water mark within the marsh. If [the 1847 Plan] were utilized to determine the extent of historic high water without regard for subsequent mapping, the seaward edge of the marsh would necessarily have been held as the historical limit of high water.”¹²² By contrast, the 1894 Plan “uses a more refined marsh symbology along the southeasterly bank of the Malden River that identifies an area of marsh that was routinely flooded or mostly submerged at high water.”¹²³ Accordingly, the presumptive HHWM at the Property was determined using the 1894 Plan, not the 1847 Plan.¹²⁴

The Petitioner argues that while the Oxbow does not appear on the 1847 Plan, smaller

¹¹⁸ Taormina PFT, ¶ 17, citing BSC Report, pp. 32-33.

¹¹⁹ Taormina PFT ¶ 17, quoting BSC Report, p. 33.

¹²⁰ Taormina PFT, ¶ 22.

¹²¹ Taormina PFT, ¶ 22, citing BSC Report, p. 33.

¹²² Taormina PFT, ¶ 22, citing BSC Report, p. 38.

¹²³ Taormina PFT, ¶ 22, citing BSC Report, p. 38.

¹²⁴ BSC Report, pp. 37-38.

water features do,¹²⁵ and Mr. Taormina conceded that this was the case.¹²⁶ From this fact, the Petitioner concludes that “if the Oxbow existed in the form it appears on the 1894 Plan, it would have appeared on the 1847 Plan.”¹²⁷ This does not necessarily follow for the reasons just described: the T-Sheets of the time tended to omit features that were not relevant to navigation. The cartographers of the time may have decided that the smaller features were relevant even though the Oxbow was not.¹²⁸

The Petitioner also argues that, based on the Sanborn Maps, which depict a coal runway abutting the Oxbow,¹²⁹ “the [Oxbow] is sufficiently deep to allow barges laden with coal and saltpeter to navigate the [Oxbow] and would certainly have been shown on the 1847 Plan, as the oxbow on 171 Medford Street was.”¹³⁰ Again, this conclusion does not necessarily follow for the same reasons. The omission of the Oxbow could have been justified based on the priorities of the cartographer at the time the 1847 Plan was created.¹³¹

The fact that the Oxbow was not present on the 1847 Plan but present on the 1894 Plan does not compel the inference that the Oxbow was manmade in the interim.¹³² The 1847 Plan may simply have omitted the Oxbow, which was at the time located in the area demarcated as homogenous salt marsh, because it was not relevant to the cartographers. It may also have been omitted because the Oxbow was entirely submerged at high tide.¹³³ The Petitioner’s argument

¹²⁵ Petitioner Brief, p. 17.

¹²⁶ Tr. 80:10-14.

¹²⁷ Petitioner Brief, p. 17.

¹²⁸ According to the 1893 Map, the Oxbow was not inundated at low tide—it was merely a tidal flat. This may have justified its omission. Taormina PFT, ¶ 35.

¹²⁹ Petitioner Rebuttal, Ex. G.

¹³⁰ Petitioner Rebuttal, pp. 8-9.

¹³¹ See Taormina PFT, ¶ 20, quoting Shalowitz, Vol. 2, pp. 176-77; Taormina PFT, ¶ 40.

¹³² Taormina PFT, ¶ 25.

¹³³ The Oxbow was within the homogeneous marsh area, which the Petitioner agreed meant that it was submerged at high tide. See Tr. 39:16-40:1-19.

does not meet its burden of showing that the Oxbow was manmade and rebutting the presumptive HHWM.

b) The Waterways Regulations do not require that the Department use the 1847 Plan to determine the HHWM.

The Petitioner argues that only plans showing no human alterations to the Property can be used to establish the HHWM.¹³⁴ They make this argument based on the language of 310 CMR 9.02, which states in part that the HHWM is that which “existed prior to human alteration of the shoreline by filling, dredging, excavating, impounding, or other means.” Because prior maps (such as the 1885 Map¹³⁵) show human alterations to the Oxbow—in particular, the straightening of its western edges—then the 1894 Plan should not have been used to determine the HHWM.¹³⁶

The Department responds that this reads the Waterways Regulations too narrowly.¹³⁷ Under 310 CMR 9.02, “In areas where there is evidence of such alteration by fill, the Department shall presume the historic high water mark is the farthest landward former shoreline which can be ascertained with reference to topographic or hydrographic surveys, previous license plans, and other historic maps or charts.” This language sets forth the process by which a HHWM is determined. In the first instance, MassDEP considers the high-water mark as it exists at present. If there is evidence of fill in the area, then the Department may consult historic, maps, T-sheets, H-sheets, and other documents in order to determine the nature of the alterations to the high-water mark. To the extent that older maps permit allow it to “ascertain” where the high-water mark was historically, MassDEP relies on that ascertained line as the HHWM.¹³⁸ This was

¹³⁴ Petitioner Rebuttal Memo., pp. 2-5; Minihane and Benson SRPFT, ¶ 4; Petitioner Memo., p. 8 (“Only the 1847 Plan shows the detailed shoreline of the Malden River prior to the human alteration of the River and therefore only the 1847 Plan must be used to establish the HHWM.”).

¹³⁵ See Minihane and Benson PFT, Ex. 5.

¹³⁶ Minihane and Benson SPFT, ¶¶ 7-8.

¹³⁷ See Taormina SPFT, ¶ 16.

¹³⁸ Department Supp. Memo., pp. 6-7.

the approach taken in Armstrong; there, as the Presiding Officer in the appeal, I rejected an 1831 plan as unreliable and found later plans more reliable, including many depicting shoreline alterations in the area. Armstrong, 2012 WL 920508 at *14-*26.

Here, it is clear that the BSC Report rejected the 1847 Plan as demarcating the HHWM because of the uncertainty due to the area being labeled as homogeneous salt marsh.¹³⁹ It therefore utilized the next most recent document available: the 1894 Plan.¹⁴⁰ As Mr. Taormina testifies, this is well within the discretion given to MassDEP in 310 CMR 9.02 to ascertain the most reliable HHWM.¹⁴¹ The Petitioner is therefore incorrect that the Waterways Regulations require MassDEP to utilize the 1847 Map to determine the HHWM.

c) **The fact that the Banks of the Malden River were dredged to create the Malden Canal does not clearly show that the Oxbow was manmade.**

The Petitioner argues that the Oxbow was “most likely” manmade because the banks of the Malden River were altered prior to 1894 by dredging to create the Malden Canal.¹⁴² The Department does not dispute that the banks of the Malden River were “clearly altered before 1894 by dredging to create the Malden Canal”¹⁴³ However, the Petitioner’s conclusion that the Oxbow was manmade and therefore “the use of the 1894 Plan [is therefore] inappropriate” does not follow.¹⁴⁴

The Petitioner argues that the “alteration of the bank, and development of the site, including the building of structures on the newly created [O]xbow, supports the conclusion that

¹³⁹ BSC Report, pp. 37-38.

¹⁴⁰ Id.

¹⁴¹ Taormina SPFT, ¶ 16. Mr. Taormina testified at the Hearing that the “most reliable plan is what was used to determine” the Department’s jurisdiction. Tr. 94:11-12.

¹⁴² Petitioner Brief, p. 17; Petitioner Rebuttal Memo., p. 5; Petitioner RPFT, Exs. F, G, H, I; Minihane and Benson PFT ¶¶ 17, 21; Minihane and Benson RPFT ¶¶ 2, 3, 11, 15.

¹⁴³ Petitioner Rebuttal Memo., p. 5; Taormina SPFT, ¶ 8.

¹⁴⁴ Id.

the [O]xbow was artificially created to allow for barge traffic to access the Property, eliminating the need to traverse marshland.”¹⁴⁵ The Petitioner’s reasoning is erroneous. As Mr. Taormina testified, “just because the river was straightened and authorized to be straightened, the omission of a tributary thereto doesn't mean that the department should ignore that because the river was authorized to be straightened.”¹⁴⁶ The fact that the bank was altered to allow for commerce does not imply that the Oxbow was necessarily created at that time. It may have pre-dated the dredging of the Malden Canal and later determined to be suitable for commercial use. The Petitioner’s argument does not meet its burden of showing that the Oxbow was manmade and rebutting the presumptive HHWM.

d) **The 1864 conveyance to the United States government does not provide clear evidence that the Oxbow was manmade.**

The Petitioner argues that a conveyance in May 1864 to the United States government of the land abutting the Property immediately to the north supports the Petitioner’s contention that the Oxbow did not exist at that time. The Petitioner points out that the grant of land to the federal government described the easterly bound of the property as “the Malden Canal.”¹⁴⁷ The Petitioner concludes from this that the Oxbow did not exist at that time, because it is not mentioned in the conveyance. I disagree.

MassDEP reviewed records at the Registry of Deeds and located a deed conveying the same Property two months earlier in March 1864.¹⁴⁸ In that conveyance, the property line is described as crossing the Malden River on its southerly bound and crossing the Malden River

¹⁴⁵ Id. at pp. 5-6.

¹⁴⁶ Tr. 79:7-11.

¹⁴⁷ Petitioner Rebuttal, Ex. K.

¹⁴⁸ Taormina SPFT, ¶ 9; Taormina SPFT, Ex. 5a.

again on its easterly bound.¹⁴⁹ This matches precisely the course of the Oxbow through the property, as depicted on the contemporaneous 1864 Plan.¹⁵⁰

The 1864 Plan, which was prepared as part of the March 1864 conveyance, is notable as the first map in the record that depicts the Oxbow. The entirety of the Oxbow is not depicted, but the portion of the Oxbow that is depicted in the 1864 Plan appears consistent with the later maps and plans relied on by the Parties.¹⁵¹ Of note, the 1864 Plan labels the Oxbow as “Malden River.”¹⁵² The fact that the Oxbow is labeled as part of the Malden River (as opposed to the Malden Canal, which is also depicted) suggests that the Oxbow existed prior to the creation of the Malden Canal and that it was part of the original “serpentine” shape of the Malden River.¹⁵³ This is consistent with what the Department contends was the original course of the Malden River in the 1873 Plan, as discussed in the next section.¹⁵⁴ The Petitioner does not address why the 1864 Plan would label the Oxbow as the “Malden River” if it was in fact manmade.¹⁵⁵

The 1864 Plan, March 1864 conveyance, and May 1846 conveyance are consistent: the easterly bound of the property is the Malden Canal. The Oxbow is referred to separately as the Malden River. Its omission in the 1864 conveyance is of no moment; the bounds of the property are the same. The Petitioner is incorrect to infer from the 1864 conveyance that the Oxbow was not present in May 1864. The Petitioner’s argument does not meet its burden of showing that the Oxbow was manmade and rebutting the presumptive HHWM.

¹⁴⁹ Taormina SPFT, Ex. 5a.

¹⁵⁰ Taormina SPFT, Ex. 5b.

¹⁵¹ Taormina SPFT, Ex. 5b; *cf.* Taormina SPFT, Exx. 6a-h; Petitioner Rebuttal, Ex. G; Minihane and Barnes PFT, Exx. 5, 6, 7, 8; Minihane and Benson SPFT, Ex. A1; Minihane and Benson RPFT, Ex. 2B.

¹⁵² Taormina SPFT, Ex. 5b.

¹⁵³ *See* Taormina SPFT, ¶ 11.

¹⁵⁴ *See* Taormina SPFT, Exx. 6a-6h; Taormina SPFT, ¶ 11.

¹⁵⁵ The Petitioner had the opportunity to address this argument in its Rebuttal Supplemental PFT.

e) **The 1873 Plan suggests that the Oxbow was a naturally occurring part of the Malden River.**

In the 1873 Plan, which the Department included with Mr. Taormina’s Supplemental PFT, identifies not just the Malden Canal, but also the original course of the Malden River prior to the construction of the Malden Canal.¹⁵⁶ The “original watercourse [of the Malden River] is shown with dotted lines as it passed through the man-made canal segments [of the Malden Canal]”¹⁵⁷ Given that each end of the Oxbow is connected to these dotted-line segments, it is reasonable to infer that the Oxbow was a pre-existing natural bend in the Malden River and therefore not manmade.¹⁵⁸ The Petitioner does not mention the 1873 Plan in its Supplemental Rebuttal Memorandum, nor do its expert witnesses, Ms. Minihane or Mr. Benson, mention it in their Supplemental Rebuttal PFT, despite the opportunity to do so, and the Department’s conclusions are unrefuted. I therefore find the 1873 Plan to be strong evidence that the Oxbow pre-existed the Malden Canal and was a natural bend in the Malden River.

f) **The fact that the Oxbow contained a wharf does not clearly show that the Oxbow was manmade.**

The Petitioner argues that the western edge of the Oxbow was used as a wharf.¹⁵⁹ In particular, it points to the fact that the Oxbow was composed of straight lines by 1888. The 1875 Map depicts the Oxbow as having rounded edges,¹⁶⁰ but the 1885 Map shows that the western edges were straight.¹⁶¹ The plan accompanying License 630 also shows the Oxbow with straight edges, and in particular labels the portion of the western edge of the Oxbow running approximately north-to-south as the “Old wharf.” The Petitioner contends that the wharf was

¹⁵⁶ Taormina SPFT, Exx. 6a-6h.

¹⁵⁷ Taormina SPFT, ¶ 11.

¹⁵⁸ See id.

¹⁵⁹ Tr. 46:11, 47:20-22; Petitioner Brief, p. 19.

¹⁶⁰ Minihane and Benson RPFT, Ex. 3A.

¹⁶¹ Minihane and Benson PFT, Ex. 5.

used to provide for the delivery of coal for use at the tannery.¹⁶² MassDEP does not contest this fact.¹⁶³

Even crediting that the Oxbow's edges were altered by man at some point during its use as a wharf, the Petitioner still does not show that prior to the Oxbow's use as a wharf it did not exist at all. It may have existed as a natural feature and then had its edges straightened sometime between 1875 and 1885.¹⁶⁴ The 1873 Map, as discussed in the previous section, suggests that this is the case. The Petitioner's argument does not meet its burden of showing that the Oxbow was manmade and rebutting the presumptive HHWM.

g) The fact that the Board of Harbor and Land Commissioners did not have jurisdiction over non-tidal marshland does not clearly show that the Oxbow was manmade.

The Board of Harbor and Land Commissioners ("BOHLC") was established in 1866.¹⁶⁵ The powers and duties of the BOHLC were enumerated in Chapter 19 of the Statutes of the Commonwealth in effect in 1882.¹⁶⁶ In 1882, the BOHLC had "charge of all the lands, flats, shores, and rights in tide-waters belonging to the commonwealth," but did not have authority over non-tidal marshland.¹⁶⁷

The BOHLC issued License 630 in 1881.¹⁶⁸ The Petitioner argues that if the "Oxbow was created in tidal marshland or flats, or if the Oxbow were a naturally occurring tidal water feature, the creation of the Old Wharf shown on the License 630 plan would have required a license or

¹⁶² Petitioner Brief, p. 4, citing Minihane and Benson RPFT, Ex. G.

¹⁶³ Tr. 83:5-6; see DEP Supp. Memo., pp. 3-4.

¹⁶⁴ The 1875 Map depicts the Oxbow with more rounded edges, while the 1885 Map depicts the Oxbow with straighter edges. Minihane and Benson RPFT, Ex. 3A; Minihane and Benson PFT, Ex. 5.

¹⁶⁵ See Chapter 149 of the Acts and Resolves of the Massachusetts Legislature; Minihane and Benson SPFT, Ex. B.

¹⁶⁶ Minihane and Benson SPFT, Ex. C.

¹⁶⁷ Minihane and Benson SPFT, Ex. C, § 3.

¹⁶⁸ Taormina SPFT, ¶ 2.

legislative grant.”¹⁶⁹ The inference the Petitioner draws is that the Oxbow did not exist at the time of the Old Wharf’s construction and therefore did not require a separate license, because it would have been dredged in non-tidal marshland, over which the BOHLC would have lacked jurisdiction.

The Department located evidence that refutes the Petitioner’s inference. The Department looked further back in time and identified Chapter 190 of the Legislative Acts of 1849.¹⁷⁰ Chapter 190 includes a grant to the Edgeworth Company to “purchase and hold a tract of land “lying on the west side of Malden Creek,”¹⁷¹ including the Property.¹⁷² The Edgeworth Company was authorized as part of that conveyance to “straighten and deepen the channel of said creek, and to erect, construct, and maintain wharves from its lands into said creek.”¹⁷³ From this, the Department concludes that the extant “Old Wharf” described in License 630 was in fact authorized by the Massachusetts Legislature and did not require a Waterways License, because the construction of the wharf predated the establishment of the BOHLC.¹⁷⁴

The existence of Chapter 190 is also significant in that it provides evidence that the Oxbow existed in 1849, as the Old Wharf was built on the western side of the Oxbow.¹⁷⁵ It is possible that the Edgeworth Company intended to build a wharf on the main channel of the Malden River itself (and not the Oxbow), and it is possible that it did so. But because of this uncertainty, the Petitioner’s argument does not meet its burden of showing that the Oxbow was manmade and rebutting the presumptive HHWM.

¹⁶⁹ Minihane and Benson SPFT, ¶ 6.

¹⁷⁰ Taormina SPFT, ¶ 4; Taormina SPFT, Ex. 1.

¹⁷¹ It appears that “Malden Creek” as used in the Legislative Acts of 1849 is synonymous with the Malden River as it existed at the time.

¹⁷² Taormina SPFT, ¶ 4; see also Taormina SPFT, Ex. 2.

¹⁷³ Taormina SPFT, ¶ 4; Taormina SPFT, Ex. 1, § 3.

¹⁷⁴ See Department Supp. Memo., pp. 4-5.

¹⁷⁵ The 1852 Map, which post-dates Chapter 190, does not depict the Oxbow. Minihane and Benson PFT, ¶ 3.

h) The fact that the Oxbow may have been used for commerce does not clearly show that the Oxbow was manmade.

The Petitioner argues that “[t]he man-made nature of the Oxbow is further confirmed by evidence that the Oxbow was used for waterborne commerce - specifically the unloading of coal for the tannery.”¹⁷⁶ The Petitioner argues that because the Malden Canal was dredged to allow its use for commercial purposes, and the Oxbow was being used for commercial purposes in 1887, the Oxbow must have been dredged around the same time as part of the dredging of the Malden Canal.¹⁷⁷ This conclusion does not necessarily follow.

There is no genuine dispute that the Oxbow was used for commerce, especially after the tannery was built sometime between 1852¹⁷⁸ and 1887.¹⁷⁹ First, “the appearance of the ‘Old wharf’ on License 630 of 1881 and coal runway on [the Sanborn Maps] in 1887 and 1892 used to provide coal to the tannery via barges or other vessels confirm that the Oxbow was used for waterborne commerce.”¹⁸⁰ The Department does not contest this fact.¹⁸¹ Second, the Sanborn Maps also show that the western edge of the Oxbow in 1887 was made up of three connected straight-line segments, one from northeast-to-southwest, from that point traveling straight south, and from that point traveling to the southeast.¹⁸² Third, the Sanborn Maps show that the Oxbow was used as a conduit to supply coal power to the tannery on the Property as evidenced by a coal

¹⁷⁶ Petitioner Brief, p. 19, citing Petitioner Rebuttal, Ex. G and Petitioner Rebuttal, Ex. N.

¹⁷⁷ See, e.g., Petitioner Supp. Memo., p. 18 (“The overwhelming evidence shows that the banks of the Malden River at the Property were altered to create the newly dredged and straightened Malden Canal, that the Property was fully developed with a large tannery, and that the banks of the Oxbow were an artificial creation constructed as part of the development of this Property.”).

¹⁷⁸ See Minihane and Benson PFT, Ex. 3 (1852 Map showing no buildings on the Property).

¹⁷⁹ Petitioner Rebuttal, Ex. G (Sanborn Maps showing a tannery on the Property).

¹⁸⁰ Petitioner Brief, p. 19, citing Petitioner Rebuttal, Ex. G and Petitioner Rebuttal, Ex. N.

¹⁸¹ Tr. 82:21-83:6 (Mr. Taormina testified that “I’m not saying that it’s devoid of not being used for commerce. The -- the tidal influence in that creek limits, significantly limits, what type of commerce that can occur there. It’s not that it’s devoid of any use whatsoever.”).

¹⁸² Petitioner Rebuttal, Ex. G.

runway to the south of the Property adjoining the Oxbow.¹⁸³ Mr. Taormina agreed that there was a coal runway on the Property depicted in the Sanborn Maps.¹⁸⁴

However, the fact that the Oxbow was used for commerce does not necessarily imply that it was dredged around the time the remainder of the Malden Canal was dredged. The Oxbow may have pre-existed the dredging of the Malden Canal (as evidenced by the 1873 Map¹⁸⁵) and started being used as a wharf because it was convenient for the then-Property owner to do so. Moreover, according to the 1893 Map, the Oxbow was not inundated at low tide—it was merely a tidal flat.¹⁸⁶ This suggests that the Oxbow was not manmade, because if it had been intended for commerce from its creation, one would expect it to be deep enough to be filled at all times.¹⁸⁷ The Petitioner’s argument does not meet its burden of showing that the Oxbow was manmade and rebutting the presumptive HHWM.

In sum, none of the arguments that the Petitioner has made—whether considered separately or collectively—are sufficient to clearly show that the Oxbow was manmade. See Armstrong, 2012 WL 920508 at *7. The evidence of the precise nature of the human alterations on the Property remains largely unknown and speculative. I therefore conclude that the Petitioner has not met its burden of showing that the Oxbow was manmade and has failed to rebut the presumptive HHWM.

3. The 2016 Determination is factually distinguishable and does not compel the same result in this appeal.

The Petitioner lastly argues that the 2016 Determination that the HHWM of 295 Canal Street (which is located 580 feet to the north of the Property) should be derived from the 1847

¹⁸³ Petitioner Rebuttal, p. 8; Petitioner Rebuttal, Ex. G.

¹⁸⁴ Tr. 82:21-83:6.

¹⁸⁵ See Taormina SPFT, Exx. 6a-6h.

¹⁸⁶ Taormina PFT, ¶ 35.

¹⁸⁷ Id.

Plan and thus should guide MassDEP's Determination in this appeal. The Petitioner contends that "there is no material difference" between the two properties.¹⁸⁸ In particular, the Petitioner argues that the reasoning of the 2016 Determination is directly applicable to the Determination here because both properties abut the Malden River and 295 Canal Street is merely 580 feet upriver from the Property.¹⁸⁹

The 2016 Determination found, in part, that:

sometime after 1847 and before 1894 portions of the Malden River were authorized to be filled, straightened, and dredged to facilitate ship navigation and commerce. The 1847 plan clearly depicts the Malden River and its tributaries prior to human alteration, while the 1894 plan was surveyed sometime after human alteration of the river and its natural shoreline.¹⁹⁰

Accordingly, the Department utilized the 1847 Plan to determine the HHWM (as opposed to the presumptive HHWM of the BSC Report) on the Property.

In his testimony, Mr. Taormina¹⁹¹ explained why the Department made its decision in the 2016 Determination:

the 1847 Plan clearly depicted an oxbow traversing through undeveloped salt marsh and under two railroad bridges on the 171 Medford Street property[]. Furthermore, the 1847 Plan vaguely depicted a roadway and bridge crossing over the Malden River just south of the 171 Medford Street property with a dashed line. Whereas the 1894 Plan depicted that same roadway and bridge over the Malden River with a solid line located in a different configuration with substantial alteration of the former outer edge of marsh on both sides of said roadway and crossing[]. The 1894 Plan demonstrates evidence of altering of the outer or seaward edge of marsh on the 171 Medford Street property, the adjacent roadway and bridge, and on the abutting southern property.¹⁹²

¹⁸⁸ Petitioner Memo., p. 3; Petitioner Rebuttal Memo., p. 12; Petitioner Brief, p. 34.

¹⁸⁹ Petitioner Memo., pp. 2-3.

¹⁹⁰ Taormina PFT, Ex. 6, p. 2.

¹⁹¹ Mr. Taormina participated in the 2016 Determination. See Taormina PFT, Ex. 6, Cover Letter.

¹⁹² Taormina PFT, ¶ 27.

With respect to the 2016 Determination, the alterations to the oxbow were clear based on comparing the 1847 and 1894 Plans.¹⁹³ Contrary to the Petitioner’s argument that “[t]he dredging and straightening of the Malden River to create the Malden Canal was the only reason cited by the Department” in making the 2016 Determination,¹⁹⁴ it was the existence of alterations to the seaward edge of the salt marsh relative to the extant bridge and roadway that were most pertinent to MassDEP’s determination.

For the purposes of this appeal, what is notable is what the 2016 Determination does not find: it does not find that the Oxbow on the Property was manmade, because the 2016 Determination did not pertain to the Property.¹⁹⁵ While the 2016 Determination finds that the Malden River was straightened to facilitate commerce, it does not address whether the Oxbow on the Property in particular was constructed for commercial purposes.¹⁹⁶ Lastly, the 2016 Determination discusses alterations to the edges of the salt marsh along the Malden River and Malden Canal as evidence of manmade alterations,¹⁹⁷ but it does not discuss alterations made to the interior of the salt marsh where the Oxbow is present (and where Mr. Taormina testified that the mapping of the salt marsh may have omitted features such as the Oxbow¹⁹⁸).

The alterations pertinent to the 2016 Determination (i.e. those at the outer edge of the salt marsh) did not implicate the uncertainties inherent in mapping the interior of the salt marsh at the time of the 1847 Plan (as discussed above at page 26), and thus the fact of these alterations on a separate parcel of property does not necessarily imply that the Oxbow did not exist in 1847.

¹⁹³ Department Memo., pp. 5-6.

¹⁹⁴ Petitioner Rebuttal Memo., p. 7.

¹⁹⁵ See Taormina PFT, Ex. 6.

¹⁹⁶ See Taormina PFT, Ex. 6, p. 2.

¹⁹⁷ See Taormina PFT, Ex. 6 (mentioning “human alteration of the river and its natural shoreline” but nothing about the interior of the salt marsh on the 1847 Plan).

¹⁹⁸ Taormina PFT, ¶ 24, quoting Shalowitz, Vol. 2, p. 170.

Ultimately, it is not genuinely in dispute that the area proximate to the Malden River underwent substantial improvements and alterations in the years 1847 to 1894 and beyond. But the Petitioner's arguments still fail to prove the essential element of its claim: that the Oxbow itself was manmade.

V. Conclusion.

The Petitioner failed to present compelling, site-specific evidence, backed by expert testimony demonstrating that the Oxbow was manmade. Consequently, the Petitioner has failed to meet its burden of proof, and the Department was correct to rely on the presumptive HHWM on the Property set forth in the BSC Report. I therefore recommend that the Department's Commissioner issue a Final Decision affirming the Determination and finding that the HHWM on the Property is to be determined based on the presumptive HHWM.



Date: September 5, 2025

Salvatore M. Giorlandino
Chief Presiding Officer

NOTICE OF RECOMMENDED FINAL DECISION

This decision is a Recommended Final Decision of the Presiding Officer. It has been transmitted to the Commissioner for her Final Decision in this matter. This decision is therefore not a Final Decision subject to reconsideration under 310 CMR 1.01(14)(d) and may not be appealed to Superior Court pursuant to M.G.L. c. 30A. The Commissioner's Final Decision is subject to rights of reconsideration and court appeal and will contain a notice to that effect.

Because this matter has now been transmitted to the Commissioner, no party may file a motion to renew or reargue this Recommended Final Decision or any part of it, and no party may communicate with the Commissioner's office regarding this decision unless the Commissioner, in her sole discretion, directs otherwise.

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