

Recent discussions with USACE

Draft plan in progress, fleshing out the details.

We'll need to do a baseline survey for HR 1 site.

It can be done by Nancy and Johnny with input and participation from GEI.

Grab samples, grain size, oyster density; six representative locations within the 14 acres.

We'll do a follow-up survey when we request relinquishment of the HR 1 site, once BF 1 is established.

Discussed Adaptive Management Plan details including a review after 3 years in BF 1 to see if we're on track with the plan.

Discussed language with respect to if we're not meeting some of the metrics. USACE will review some specific language with their higher ups.

USACE noted that Force Majeure would kick in to our benefit, for unexpected events/acts of God, such as ice, nor'easters.

Discussed some of our proposed Performance Standards.

Discussed LT Management Plan - should be referenced in the plan but provided as an attachment.

USACE provided some helpful guidance about grouping some of the metrics by category to make it easier.

Talked about protection for the town and finding a solution with respect to failed performance on biologic metrics and we sent them language to that effect. USACE will review and provide comments back.

Mitigation Work Plan:

The mitigation work plan proposes a phased approach to enhancement of mudflat habitat in the Wellfleet Harbor system. The initial phase will be to enhance a 14-acre parcel of mudflat in the Herring River system to the southwest of the Chequessett Neck Road dike (see Fig 1). This area is currently conditionally approved for shellfish propagation and harvest. There is also a portion of the proposed area that is currently permitted through a MA DEP Chapter 91 license for cultching. Cultch has been used for over 100 years in Wellfleet Harbor to provide substrate for larval oysters (spat) to attach. Without oysters, shell or suitable substrate, natural set, which is uniquely abundant in Wellfleet Harbor, would otherwise die. Replacement of substrate through cultching is well established for maintaining and restoring oyster populations. The addition of cultch and subsequent sets of oysters that can grow there will improve the water quality of the area through the natural filter feeding of the oysters. The cultch strips also improve biodiversity through providing substrate for other organisms to use for food or refuge.

Phase 1 enhancement of the Herring River parcel would begin in summer of 2023. These areas would be enhanced with cultch (sea clam shell) and oyster seed from locally available resources. Cultch will be trucked from a whole sea clam processing plant to the Town Transfer Station and supplemented with oyster shell from recycling programs with restaurants and the general public. This material is properly aged then loaded by front-end loader and delivered to a custom-built cultch barge. The barge has a hopper which delivers a strip of shells approximately 4'x100' with about 6 inches of relief on the bottom. Cultch has been shown to be the ideal material for "catching a natural set" of oyster spat due to Wellfleet's significant locally spawning oyster population without using "spat on-shell" or extensive seeding which is necessary in areas where there is not a local "set". It is anticipated that the enhancement through cultching in the Herring River would be completed in one year, and then the Town would request the relinquishment of this site for mitigation use and

transfer the mitigation to a 28-acre contiguous parcel in South Wellfleet.

A 28-acre parcel of mudflat habitat has been identified in Blackfish Creek (BFC), east and south of Pleasant Point (see Fig 2). This area is currently approved for shellfish propagation and harvest. A baseline biological survey will be performed in BFC in the summer of 2023 that will identify water quality metrics, current substrate, density of oysters and other biodiversity. In summer of 2024, provided the proper MA DEP permits are in place, it is expected that all restoration focus will shift to BFC. Cultching will be conducted as described above. It is expected that restoration efforts of cultching and seed placement will take approximately 5 years to reach the desired levels of oyster density, biodiversity, and water quality improvement.

Basic yearly timelines would be as follows:

Herring River 2023

The area will be marked with additional signage and buoys, communication will be sent to all shellfishermen establishing the temporary mitigation area.

May 2023 quahog (*Mercenaria mercenaria*) relay from the Taunton River into the Herring River (dependent on Shellfish Department determination)

Eight cultch strips would be placed in the first 2 weeks of June 2023

Local Oyster seed will be purchased in June of 2023 and raised on the Shellfish Department's farm.

September of 2023 seed will be deployed adjacent to the placed cultch lines.

Blackfish Creek 2024 (- 2029)

May 2024 28-acre mitigation area in Blackfish Creek will be marked with signage and buoys, communication will be sent to all shellfishermen establishing the mitigation area.

May 2024 quahog (*Mercenaria mercenaria*) relay will take place from the Taunton River into the Blackfish Creek mitigation area.

June 2024 during the first two weeks of June 10 strips of cultch will be laid in Blackfish Creek.

June 2024 oyster seed from local sources will be purchased and raised on the Shellfish Department's farm.

Sept / Oct 2024 large oyster seed will be placed adjacent to the cultch strips.

When seeding occurs in 2024 it will start the three-year closure for the area.

After three years the shellfish department will evaluate the oyster density and propose an opening of a portion of the area for harvest as per MA DMF regulations.

Past season(s) enhancement will be evaluated to make adjustments before the next season (through year 4).

After year 5 the site will move into a monitoring plan only with no active enhancement of resources. Ongoing harvest opportunities will be decided by the Shellfish Department in such a way as to ensure minimum density of oyster populations.

Maintenance Plan:

The mitigation plan is predicated on increasing the oyster populations through cultching and seed placement. Over a five-year period, we expect to place approximately 125-200 tons of cultch in MA DEP Chapter 91 approved area for this purpose. Cultching and seeding the entire 28-acre area in one season is not planned as there are many factors that could negatively influence the restoration efforts. Placing all of the cultch strips and seed would leave the area susceptible to negative environmental and biological impacts. Storms or disease could spread quickly through an area that has all been recently enhanced. By enhancing smaller areas over a longer five-year time period, evaluations can be made as to the success of the enhancement, and adjustments can be made to maximize the enhancement of the mudflat habitat

allowing the Town to adjust maintenance in real time, over the first 5 years.

Performance Standards:

Performance standards will be measured according to the attached table. Metrics will include water quality indicators as well as oyster density and biodiversity. The basic conclusion is that an oyster density of 25/m² (Restoration Goals, Quantitative Metrics and Assessment Protocols for Evaluating Success on Restored Oyster Reef Sanctuaries Report of the Oyster Metrics Workgroup Submitted to the Sustainable Fisheries Goal Implementation Team of the Chesapeake Bay Program. December 2011) is considered a successful restoration and is expected to be self-sustaining. One caveat is that these densities do not assume harvest. MA DMF regulations require that areas be open for a minimum of a day every three years in order to be in compliance with Massachusetts law. After the initial five years of enhancement, once our target goal of 25/m² is achieved, we will evaluate future harvest opportunities and timing in order to ensure healthy oyster resources and habitat, in the context of continuing to meet our restoration goals. This will include an evaluation of substrate health, including bottom relief, increased bottom structure and distribution relative to other performance goals such as biodiversity and water quality. On-going monitoring will determine if recruitment is self-sustaining. Harvest, productivity, disease, weather events, ice mortality and other previously unforeseen impacts will be closely monitored in relation to impacts on performance standards.

Monitoring Requirements:

[Monitoring the Project is necessary to determine if the Project is meeting its Performance Standards and if measures are necessary to ensure the Project is accomplishing its objectives. The submission of monitoring reports to assess the development and condition of the compensatory mitigation project is required, but the content and level of detail for those monitoring reports must be commensurate with the scale and scope of the mitigation

project, as well as the mitigation type. The Mitigation Plan must address the monitoring requirements for the Project, including the parameters to be monitored, the length of the Monitoring Period, the party responsible for conducting the monitoring, the frequency for submitting monitoring reports to USACE and the IRT, and the party responsible for submitting those monitoring reports to USACE and the IRT. See 33 C.F.R. § 332.6.]

Monitoring Methods: In general, compensatory mitigation monitoring methods should include quantitative sampling methods following established, scientific protocols. Sampling documentation, as part of monitoring reports, should include maps and coordinates (also shapefiles, if available) showing locations of sampling

points, transects, quadrats, etc. In addition, permanent photo stations should be established coincident with sampling locations. Additionally, where structures are placed in Waters of the U.S. and/or State, photo stations should be established that capture the structures and any consequent effect on channel morphology.

Monitoring reports shall be prepared in accordance with **RGL 08-03**, which identifies specific contents and formatting of the report. Monitoring reports shall include the data collected from all applicable sections of this guidance; however, not all monitoring reports will include the same information (e.g., for five monitoring periods, monitoring reports submitted in years two and four typically will not include vegetation plot data). Performance Standards, as provided in the Mitigation Plan or in the permit conditions, must be restated verbatim in the monitoring report. Additionally, each monitoring report shall include baseline data and data from preceding monitoring years presented in both graphic and tabular forms.

Stream mitigation Projects with in-channel modifications, high levels of complexity and scale shall provide As-Built surveys that include at minimum the following information: photo documentation at all cross-sections and structures, a plan view

survey, a longitudinal profile, and vegetation information (type, number and location of species planted).

As-Built Plan surveys for wetland mitigation projects shall be completed immediately following the completion of construction to document post-construction conditions. Projects provide As-Built Plan surveys that include the following: photo documentation at permanent documented photo points with bearing and azimuth, a plan view diagram, baseline location and in-situ soil profile descriptions at well locations, and vegetation information (type, number of species planted). Also, any special permit condition relating to signage or Deed Restriction should be submitted. These projects shall also provide location data including coordinates and shapefiles, if available, of all monitoring activities (permanent vegetation plots, wells, piezometers, pressure transducer gages, surface water gauges, crest gauges, stream cross-sections, **bank** pins, water quality and aquatic biota sampling points, etc.).]

Long-Term Management Plan:

The mitigation area in Blackfish Creek is designated as protected by the MA ACEC program (see Figure 2), therefore subjected to closer scrutiny to avoid or minimize adverse environmental impacts by local and state agencies (<https://www.mass.gov/service-details/acec-program-overview>). The area will be indicated as a resource protection area on official shellfish maps, with local signage and routine patrol 364 days a year at each low tide during daylight. For the first five years, annual quadrat assessment by an academic or governmental institution or creditable nonprofit organization will be performed to assure compliance unless or until such time as USACE determines this is no longer necessary for another approach the Town may offer and to which USACE agrees.

The Town agrees not to disturb the mitigation area through a mooring basin, piers or other development. Due to Division of Marine Fisheries regulations the area cannot be closed to

harvest for longer than a three-year period. The Town of Wellfleet Shellfish Department will open the area for harvest in such a way as to ensure minimum density of oyster populations, ensuring an increased overall productivity of the mitigation area.

Adaptive Management Plan:

As with any biological system, there are numerous unknowns that can affect results. The main tenants of the adaptive management plan revolve around field performance and initial performance metrics. We believe, based upon experience and best available science that a self-sustaining population can be achieved that meets protection of fish species, bio-diversity and water quality improvement goals. However, as noted above, the initial targets of 25 oysters/m² are based on data that is not from Wellfleet Harbor.

The variables we will need to address for adaptive management include:

Weather
Recruitment
Cultch volumes
Survival rates
Genetic make-up
Bottom condition
Disease
Predator Pressure
Growth rates
Water Quality
Poaching
Ice mortality

Each of these variables, and there may be more, may require different management responses. Those responses could include increased or decreased need for cultch or spawning stock. Increased or decreased allowance for harvest. Changes in how harvest can be conducted to protect other ecosystem functions. Other potential measures to ensure successful ecosystem

restoration could include seeding the area with additional brood stock or “spat on shell” stock from other productive areas. It is likely that as conditions and influences on the mitigation area change, a combination of these approaches will be necessary to meet our performance goals. Any proposed approach will be sent to the Corps for approval prior to implementation.

Long-term and adaptive management will be conducted by the Wellfleet Shellfish Department. Consistent with other shellfish designations such as conditional, prohibited, seasonal closures and rotations, and the required harvest openings, this area will be managed to achieve a density of 25 oysters/m² with the goal for it to become self-sustaining and providing enhanced ecoservices with a contingency buffer against disease, ice mortality or other resource destruction.

In addition, there may be compelling reasons, based on local conditions, to either increase or decrease any of the metrics such as oyster density, biodiversity or water quality. Based on monitoring data, the Town will have a meeting with the USACE mitigation team after three years to assess progress to date and determine whether any substantive changes are required and what the Town’s plan of action will be. Based on monitoring results this may result in adjustments to performance goals up or down. The Town will be judged to be in compliance with the mitigation agreement so long as the agreed upon work plan is being executed. Due to the vagaries of natural resource habitats specific achievement of any performance standard may require changes to the work plan but would not constitute noncompliance.