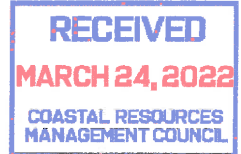




MEMORANDUM



DATE: March 10, 2022

TO: RIDEM Water Quality Certification Program Attn: Sarah Frazar

CC via email:

Neal Personcus, RIDEM WQC Program
Charles Horbert, RIDEM WQC Program
Eric Schneider, RIDEM DMF
JA Macfarlan, RIDEM DMF
Rich Lucia, CRMC
Amy Silva, CRMC
Paula Kullberg, USACE New England District

FROM: Seaver Anderson, Environmental Scientist
Brian Dutra, P.E., Project Engineer
J. Mathew Bellisle, P.E., Chief Operating Officer

RE: Lower Kickemuit Reservoir Dam Removal – Shellfish Survey Plan

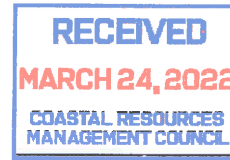
This memo provides the Shellfish Survey Plan prepared in support of the proposed Lower Kickemuit Reservoir Dam removal (RIDEM WQC File No. 21-148, CRMC File No. 2021-08-102). A survey will be conducted in accordance with this plan prior to the commencement of any construction activities associated with removal of the Lower Kickemuit Reservoir Dam (herein referred to as the “dam”). The goal of the survey is to identify the distribution, abundance, and density of Eastern Oyster (*Crassostrea virginica*) within the project impact area, and to inform a temporary relocation plan for oysters identified in the survey.

The RIDEM Department of Marine Fisheries (DMF) has indicated that Eastern Oysters have been identified within the project footprint along the upstream side of the Child Street (Route 103) bridge in a previous survey conducted by the DMF. Two meetings with DMF staff were held on February 17, 2022 and March 3, 2022 to discuss details of the proposed survey and temporary relocation plan. The following methodology is based upon feedback provided by the DMF and sampling techniques outlined in the Oyster Habitat Restoration Monitoring and Assessment Handbook¹.

Survey Methodology

The survey will be performed by two qualified professionals during a low tide cycle under the supervision of RIDEM DMF staff. The survey will be coordinated in advance with DMF staff and will preferably take place during the late winter or spring when conditions allow for maximum water clarity and visibility. The attached Oyster Survey Plan illustrates the proposed survey extents which is also outlined below along with the metrics to be recorded during the survey:

¹Baggett, L.P., S.P. Powers, R. Brumbaugh, L.D. Coen, B. DeAngelis, J. Greene, B. Hancock, and S. Morlock, 2014. Oyster habitat restoration monitoring and assessment handbook. The Nature Conservancy, Arlington, VA, USA., 96pp.



Survey Extents

- Perimeter survey of the shoreline between the Child Street bridge and dam at a width of approximately five meters;
- Perform seven transects oriented parallel with the dam (northeast/southwest direction) at a 3-4 meter interval in the deeper pool between Child Street and the dam as shown on the attached Survey Plan. Underwater footage using a Go-Pro or similar camera will be recorded along the transects;
- Survey the area below the Child Street bridge; and
- Survey the area immediately downstream of the bridge to the southern extent of the project LOD.

Sampling Metrics

A total count of oysters identified in the survey will be recorded in addition to the presence of other shellfish identified during the survey. GPS locations will be taken where oysters are identified using a sub-meter accuracy Trimble GPS unit. The following metrics will be measured within one square meter quadrat plots at oyster locations:

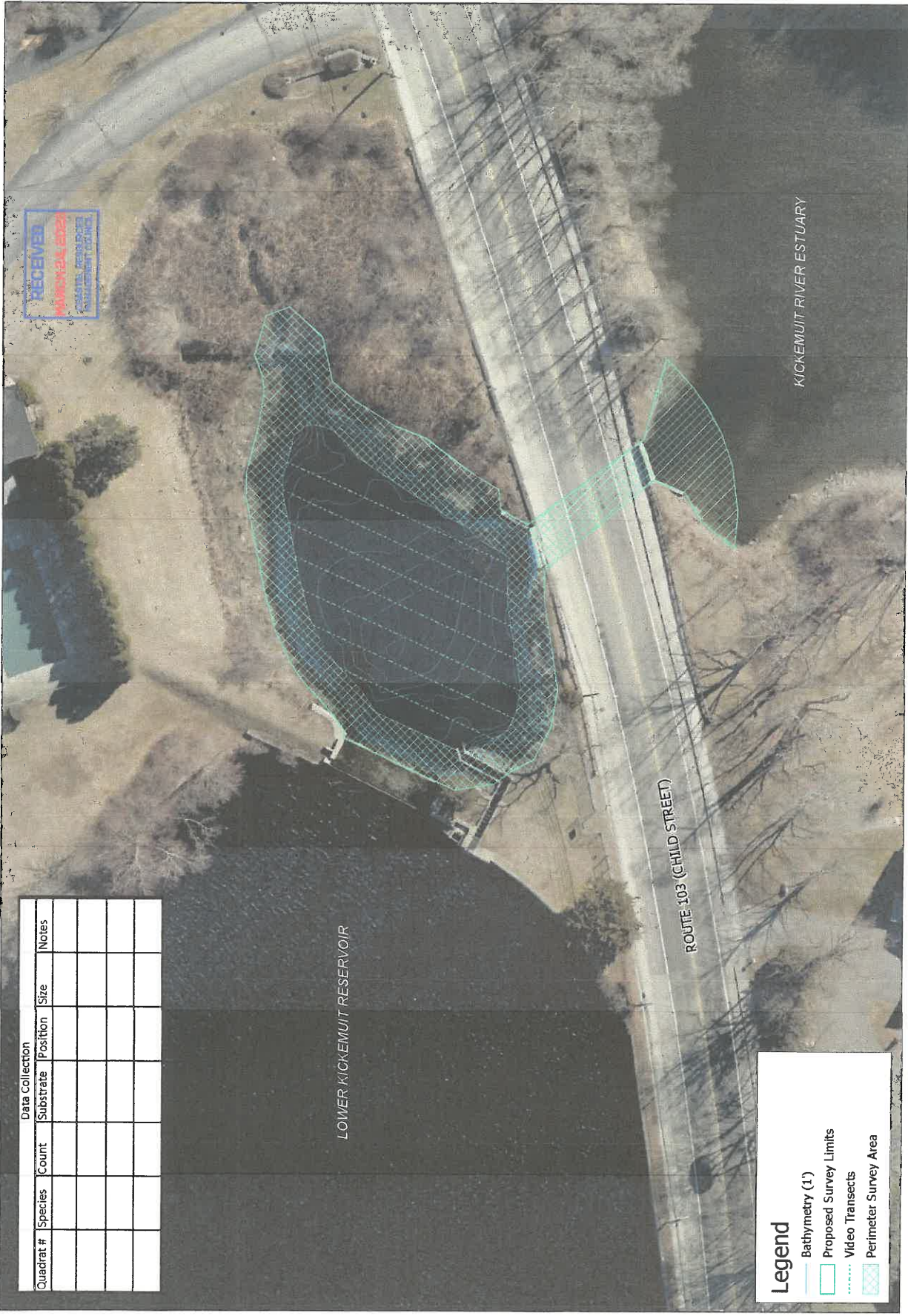
- Number of oysters within the quadrat;
- Substrate or structure type that oysters are attached to along with the general size and type of the structure (i.e., riprap < 12" diameter, boulder > 24" diameter);
- Position in the water column (i.e., intertidal or subtidal);
- Size of the specimen(s), if many are identified a size range will be provided within the quadrat; and
- Photographs of quadrats and surveyed areas.

The above metrics will be used to calculate the oyster abundance and relative density per 1 m² within the project impact area. Distribution of oysters within the impact area will also be mapped based upon GPS data taken during the survey. An example of the data collection form is included on the attached Shellfish Survey Plan Figure. Upon completion, a report including the above metrics and photographs will be provided to RIDEM DMF, RIDEM WQC Program, CRMC, and USACE.

Future Relocation Plan

A Temporary Relocation Plan will be informed by the survey results. The relocation site will be dependent upon the habitat of specimens located in the survey to minimize distress associated with relocation. Water quality monitoring data will also be reviewed to relocate specimens to habitat with similar salinity levels. The relocation plan will be coordinated with and submitted to RIDEM DMF for approval in advance of any relocation action.

Attachments: Figure 1 Shellfish Survey Plan



Data Collection						
Quadrat #	Species	Count	Substrate	Position	Size	Notes

Legend

- Bathymetry (1')
- Proposed Survey Limits
- Video Transects
- Perimeter Survey Area

LOWER KICKEMUIT RESERVOIR

ROUTE 103 (CHILD STREET)

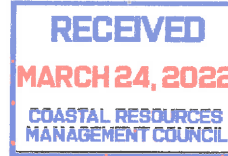
KICKEMUIT RIVER ESTUARY

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 COASTAL RESOURCE MANAGEMENT DIVISION



Engineers | Scientists | Planners

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March 22, 2022

RI Department of Environmental Management
Permit Application Center
Attn: Ms. Sarah Frazar
235 Promenade Street
Providence, RI 02908-5767

Re: **Technical Review Comment Responses**
WQC File No. 21-148; Upper and Lower Kickemuit Dam Removals
(Pare Proposal No. 14217.07)

Dear Ms. Frazar:

Pare Corporation, on behalf of Bristol County Water Authority, has prepared the following in response to comments issued by the RIDEM Water Quality Certification Program dated January 27, 2022. One hard copy of revised plans for both the Upper and Lower Kickemuit Reservoir Dam Removals, revised Sediment Management Report, revised Written Evaluation for the Upper Kickemuit Dam Removal, and Shellfish Survey Plan are included with this response to comments package. PDFs of the submittal materials are also being provided via email.

1. With respect to the Application for State Assent, please confirm that Section 2, "Project Narrative" and Section 9, "Sediment Management Report," are based on "Condition #6: Both Dams Removed and Schoolhouse Road Culvert Replacement" as described in Section 10, "Hydrologic and Hydraulic Study Report". Although the Schoolhouse Road Culvert Replacement was permitted under a separate application, the culvert replacement project has the potential to impact the dam removal projects (in particular sediment mobility and management) and therefore must be accounted for in the application.

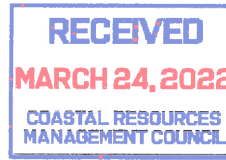
RESPONSE: The Project Narrative and Sediment Management Report are based upon Condition #6 of the Hydrologic and Hydraulic Study. This condition considers the Schoolhouse Road Culvert Replacement, and coordination with RIDOT was conducted so that the accurate culvert dimensions were input into the hydrologic model.

2. The Table of Contents of the Sediment Management Report included as Section 9 in the Application for State Assent does not match the content of the Sediment Management Report. For example, section 3.0 is labeled as "Existing Conditions" in the Table of Contents but is labeled as "Sediment Management Plan" within the report. Additionally, the Table of Contents indicates the report has 18 pages, however the report included in the Assent Application ends at page 11. Please update the Table of Contents to reflect the included report or provide the entire Sediment Management Report as described in the Table of Contents.

RESPONSE: The table of contents has been updated to reflect the Sediment Management Report and will be submitted as an attachment to this response to comments letter.

3. Item number 4 under "Notes" on Sheet 6.2 (Sediment Dewatering Plan) of the Plan Set entitled "Lower Kickemuit Reservoir Dam Removal (Warren Reservoir Lower Dam)", states that "Dredge sediment will be





Ms. Sarah Frazar

(2)

March 22, 2022

transported offsite and stockpiled at the former BCWA Water Treatment Plant at 472 Child Street. See Sheet 6.2 Sediment Dewatering Plan. Stockpiled sediment may be used for offsite mitigation.” Please note that the submitted analysis of sediment to be dredged/removed and dewatered from both the copper impacted areas and sediment traps indicates that the sediment is not suitable for beneficial reuse nor any purpose other than disposal. Please update the site plans, the Sediment Management Report, and any sections of the report to that effect.

RESPONSE: The following language will be reflected in the updated site plans, Sediment Management Report and other sections as needed:

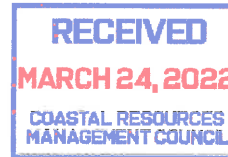
Soil Characterization

Soil to be encountered during construction will require characterization to determine allowable use or disposal requirements. Project specifications shall specify that the Contractor either:

- Provide independent sampling and characterization of soil to be encountered during construction in advance of excavation, such that excavated soil can be pre-approved for disposal, segregated and directly transported to an appropriate facility, or
- Make the necessary arrangements to secure a staging area(s) suitable for storing soil stockpiles pending analysis.
- Sampling shall be performed by or under the direct supervision of a Qualified Environmental Professional. Sampling methods, chain of custody documentation, and quality control shall conform to ASTM standards, RIDEM and other State regulations where applicable (e.g., material disposal outside of Rhode Island), and EPA requirements. Samples shall be analyzed by a laboratory certified in the State of Rhode Island.

The Contractor shall determine the proposed characterization sampling and analysis requirements based on their anticipated soil disposal outlet. While the RIRRC may be assumed as the disposal outlet for the basis of bidding, the Contractor can propose alternate disposal facilities so long as they are legally authorized to accept the material. Sampling and analysis shall be performed at a minimum frequency of one sample per 1,000 cubic yards, and that samples be representative of the material through composite sampling. At a minimum, samples shall be analyzed for the following parameters:

- Volatile Organic Compounds (VOCs);
- Semi-Volatile Organic Compounds (SVOCs);
- Total Petroleum Hydrocarbons (TPH);
- RCRA 8 Metals,
- Polychlorinated Biphenyls (PCBs);
- pH;
- Flashpoint;
- Conductivity; and



Ms. Sarah Frazar

(3)

March 22, 2022

- Free Liquids.

Additional characterization requirements may vary, depending on disposal facility acceptance policies. The Contractor is responsible for determining the disposal facility(ies) characterization needs in advance to facilitate timely disposal and to adequately estimate the disposal costs.

Staging Areas

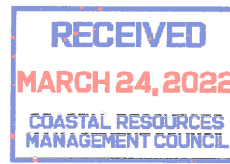
Excavated material requiring additional characterization from soil stockpiles shall be staged in a designated area(s) on the project site or in at an offsite location, selected by the Contractor and accepted by the owner. Staging areas should be selected to not impair or impede construction activities, be readily accessible, and sized to adequately stockpile material pending characterization or transport offsite. Stockpiles shall be appropriately managed until material is removed. This includes placing material on polyethylene sheeting, using perimeter erosion and sedimentation controls, and covering stockpiles with polyethylene sheeting to prevent migration by wind or rain when they will not be disturbed in more than 14 days. The Contractor shall mitigate dust and use dust suppression techniques on any uncovered stockpile. Pre-characterization samples will be analyzed for the soil characterization suite of analysis listed above. Once the staging area is no longer in use, post-characterization sampling and analysis shall be conducted at the staging area for the same suite of parameters to verify that contaminants have not been transferred to the staging area due to its use during construction.

No soil stockpiles shall remain onsite for more than 90 days unless material has been segregated for reuse on the project site or otherwise agreed to and accepted by the owner. Stockpiles are to be segregated based on visual, olfactory, and field screening. Like materials should be stockpiled together but stockpile size and dimensions should facilitate sampling for characterization. Each stockpile shall be clearly separated from other stockpiles and each stockpile shall be sign posted or notated on a sketch so that it can be cross-referenced with the results of soil characterization.

Soil Reuse and Disposal

Based on the findings of previous investigations excavated soils are expected to be identified in the following categories:

1. Material which is suitable for general reuse (i.e., material which has been found to be below RIDEM R DEC concentrations based on sufficient sampling and analysis). The material may be reused on-site, provided it is geotechnically suitable (refer to applicable technical specifications) and is not used in an area where soil concentrations are significantly lower at the receiving location. If the material cannot be reused by the Owner and the Owner does not wish to store it, the material may be reused off-site as fill as allowed by local, state,



Ms. Sarah Frazar

(4)

March 22, 2022

- and federal regulations.
2. Material that exceeds RIDEM R DEC concentrations but is suitable for reuse as alternate daily cover at a non-hazardous solid waste facility (in accordance with RIRRC Alternative Cover Policy or as defined in DEP Policy #COMM-97-001 if the material is proposed for reuse at a Massachusetts landfill).
 3. Material which is suitable for solid waste disposal at a non-hazardous solid waste facility, such as the RIRRC Central Landfill.
 4. Material tested as being a hazardous waste as defined by the Toxic Substances Control Act (TSCA) or Resource Conservation and Recovery Act (RCRA). Such waste must be disposed off-site as a hazardous waste at an appropriately permitted RCRA facility.

It is likely that excavated soils will fall into multiple categories at project sites, and material residing in each category shall be segregated and handled separately, without comingling to ensure it is either properly reused or disposed.

4. Please add to the notes on the appropriate sheets of the plan set and the report that all trucks transporting the copper impacted dredge material and /or the dredging material from the sediment basins to the dewatering locations(s) are to have watertight seals on the load bed gates to keep sediment laden water from the public roadways and municipal drainage systems.

RESPONSE: This comment has been added to appropriate sheets and report.

5. Sheet 4.0 (Proposed Site Plan) of the Plan Set entitled “Lower Kickemuit Reservoir Dam Removal (Warren Reservoir Lower Dam)”, indicates that sediment will be reused within the existing culvert and states “8-inch thick layer of 6-inch minus trap stone between culvert walls and within culvert downstream, fill voids between stone with sediment from basin for aesthetic purposes.” Please note, as above, that the sediment that has been dredged/dewatered from the project will not be appropriate for reuse, and that the goal should be to have as little sediment from the project area transported beyond the entrance to the Child Street culvert as possible. Please revise to indicate the use of clean material for any new fill.

RESPONSE: The callout has been revised to fill trap stone with clean fill.

6. Section 4.3.1 (Lower Kickemuit Reservoir) of the Application for State Assent states that copper-contaminated sediment will be removed, transported to 472 Child Street for dewatering, and ultimately transported to a “licensed management facility for final disposal”. Please provide the name and location of the proposed disposal facility. Additionally, Section 3.3 (Sediment Management Plan) of the Upper and Lower Kickemuit Reservoir Dam Removals Sediment Characterization & Management Plan states multiple times that dewatered material from the periodic dredging of the sediment basins will be transferred to “an offsite disposal facility.” Please provide the name and location of this offsite disposal facility.

RESPONSE: Licensed facilities within RI that are applicable to take this material consist of Tiverton Landfill in Tiverton, RI and Rhode Island Resource Recovery Inc., in Johnston, RI. Sampling of the material will follow similar guidelines stated in comment no. 3 and will be subject to sampling prior to disposal.



March 22, 2022

7. Based upon your consultations with RIDEM Division of Fish & Wildlife and Division of Marine Fisheries (DMF) staff, please provide a more detailed schedule of appropriate windows of work for all in-water activities for each project area and how they relate to fishery and downriveruses.

RESPONSE: Proposed work windows for in-water work activities for the Lower Kickemuit Reservoir Dam are September 01, 2023, to December 01, 2023. These dates are proposed to avoid springtime high flow and in-migration events as well as downstream uses during the summer. The Winter Flounder (*Pleuronectes americanus*) migration and spawning period will be avoided by the proposed time of year work. Cofferdams will be installed gradually to avoid entrapment of aquatic species and the area will be inspected throughout the control of water installation to ensure organisms are not entrapped in the work area. Work within the fall out migration time frame for juvenile Alewife (*Alosa pseudoharengus*) is unavoidable due to the above-mentioned time of year restrictions, therefore, a waiver is requested for work to be performed during the out-migration period from September 01 to December 01. Based upon anecdotal information received from RIDEM Division of Fish & Wildlife, the Kickemuit River does not currently support a significant Alewife population. Spawning success in the Lower Kickemuit Reservoir is likely significantly impacted by the salinity levels and water quality impairments documented by BCWA, Save the Bay, and Watershed Watch. In order to properly contain sediments and prevent downstream turbidity impacts, cofferdams and turbidity barriers must stretch across the full width of the river. Mitigative measures will include the installation of a temporary bypass chute that will pass flow at a rate equivalent to the existing fishway which is currently the only route for downstream passage. It is anticipated that the proposed bypass chute will accommodate passage of juvenile sized Alewife to a similar degree as existing conditions allow and downstream passage will not be entirely cut off.

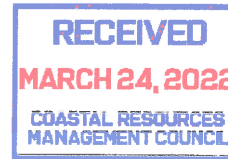
8. The proposed turbidity barrier downstream of the Child Street culvert is indicated as only being in place during the placement of dewatered sediment in the stone within the culvert under the road. Please address why the use of the turbidity curtain during other portions of the operation wasn't discussed or considered. Please include this issue in the response to Item #7 above.

RESPONSE: The Proposed Removal Plan will be revised to maintain the downstream turbidity barrier for the duration of construction.

9. On Sheet 7.0, "Serpentine Road Improvements", the Tide Gate Type 2 detail shows the "Typical" condition of the existing culvert to be hanging extended over the substrate. Please verify if this is in fact the typical condition for those outlet pipes and, if so, please update the plans to include the placement of riprap scour protection in these areas to prevent breakage and collapse of the outlet pipe and new tide gate under future tidal conditions.

RESPONSE: The existing outlet pipe does not hang extended over the substrate. The section has been updated to reflect its true condition.

10. Under Section 2.2.1 (Sediment Collection and Testing) Upper Kickemuit Reservoir, on Page 6 under "2019 Sampling Effort" in the paragraph starting with "Pare compared the analytical results to three potentially applicable screening criteria, . . .", please note that once the sediment is removed from the aquatic environment and is stockpiled above Mean High Water (MHW) it is considered soil/solid waste as regulated by the State's remedial regulations, and as such must meet all required reuse and disposal criteria. The State's Dredge Regulations also provide the requirements for any beneficial reuse of dredge



Ms. Sarah Frazar

(6)

March 22, 2022

material in coastal waters.

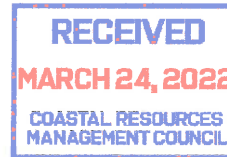
RESPONSE: Please refer to the response to Comment No. 3.

11. Page 4 of the EFH Assessment Worksheet, included in Section 8 of the Application for State Assent, states that there will not be impacts to shellfish beds or oyster reefs from this work. Recent survey work conducted by DMF has documented natural oyster populations within the project footprint and directly downstream of the footprint that will be directly impacted by the proposed work. To minimize direct impacts and loss of natural oyster populations located directly below the lower impoundment and Child Street, and below Child Street, a mitigation and relocation plan must be designed, in consultation with DMF, that at minimum includes additional shellfish surveys to locate oysters, relocating oysters during project construction, and then translocating them to suitable habitat after construction completion. In addition, substrate enhancement may be required to compensate for mortality to standing stocks that will likely occur from the relocation and construction processes. Details of the mitigation and relocation plan will need to be included in your response to this comment.

RESPONSE: Two meetings have been held with RIDEM Department of Marine Fisheries (DMF) to coordinate shellfish survey and temporary relocation plans since the receipt of this comment letter. The attached Shellfish Survey Plan details the proposed shellfish survey limits and methodology based upon coordination with the DMF. Survey results will inform the current oyster abundance and habitat type including location within the water column and preferred structure. Once these variables are known, a temporary relocation plan will be developed so that oysters are re-located to similar habitat that will minimize distress and mortality associated with relocation. The proposed dam removal will result in the restoration of approximately 37.6 acres of sub-tidal and intertidal estuarine habitat that will be available to oyster colonization. It is proposed that this major estuarine restoration provides mitigation for oyster relocation. There is opportunity for oysters relocated from the work area to be transported upstream of the lower dam once construction is complete to enhance oyster establishment in the restored estuary. Additionally, the proposed Restoration and Monitoring Plan will be revised to include recording the presence and abundance of shellfish identified along transects to inform post dam removal responses.

12. Section 3.3.2, "Upper Kickemuit Reservoir Sediment Management Plan," within the Sediment Management Plan included as Section 9 of the Application for State Assent states that, "The anticipated sediment removal time frame will be late winter through early spring. Sediment remaining within the reservoir is anticipated to establish vegetation from the accumulation of the natural seed stock that was retained within in the impoundment over the years." Please provide details of a contingency plan if the "seed stock" does not adequately vegetate the area early in the first growing season, to reduce sediment transport into the Kickemuit River and Estuary system from unvegetated soils.

RESPONSE: Post dam removal monitoring will be performed by Save the Bay and BCWA to evaluate conditions for 3 years following the project as detailed in the Restoration and Monitoring Plan included as Section 12 of the CRMC Application for State Assent. A minimum of three cross-section monitoring transects will be established throughout the site with one in the Upper Kickemuit Reservoir, one in the Lower Kickemuit Reservoir, and one downstream of the Lower Kickemuit Reservoir Dam. A minimum of 25 quadrants will be established along the transects for evaluation of the following metrics: plant community inventory, elevation of each quadrant, and water surface elevation. Water quality monitoring will be performed upstream and downstream of the dams. An additional transect will be performed in the



Ms. Sarah Frazar

(7)

March 22, 2022

Lower Kickemuit Reservoir for vegetation monitoring. Overall conditions within the impoundments, outside of the transect areas, will also be evaluated for vegetation establishment and habitat development.

Adaptive management will be informed by the monitoring program and areas identified for issues such as erosion or significant sediment loss will be addressed. Measures to mitigate such issues may include, but not be limited to the following: installation of coir logs where significant erosion is evident, application of Coastal Salt Tolerant Grass or similar seed mix, and planting of native vegetation such as *Spartina alterniflora* and *Distichlis spicata* plugs or *Iva frutescens* tublings. Invasive species management of *Phragmites australis* will be addressed by restoration of hydrology in the marsh area by hand digging shallow drainage pathways (runnels) to prevent impounded freshwater in the upper marsh.

Sincerely,
Pare Corporation

J. Matthew Bellisle, P.E.
Senior Vice President

Seaver Anderson
Environmental Scientist

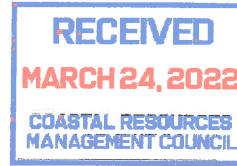
cc: via electronic copy:

Neal Personeus, RIDEM WQC Program
Charles Horbert, RIDEM WQC Program
Eric Schneider, RIDEM Marine Fisheries
JA Macfarlan, RIDEM Marine Fisheries
Rich Lucia, CRMC
Amy Silva, CRMC
Paula Kullberg, USACE New England District
Stephen Coutu, BCWA



Engineers | Scientists | Planners

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March 22, 2022

RI Department of Environmental Management
Permit Application Center
Attn: Mr. Andy Charpentier
235 Promenade Street
Providence, RI 02908-5767

Re: **Technical Review Comment Responses**
RIDEM Freshwater Wetlands Application No. 21-0229
(Pare Project No. 14217.05)

Dear Mr. Charpentier:

Pare Corporation, on behalf of Bristol County Water Authority, has prepared the following in response to comments issued by the Rhode Island Department of Environmental Management (RIDEM) Freshwater Wetlands Program dated January 25, 2022. Three hard copies of revised plans dated March 10, 2022 are included with this response to comments package along with two hard copies of the revised Written Evaluation, Sediment Management Report, and Hydrologic and Hydrualic modelling figures. A thumb drive containing the HEC-RAS model is also included with this submittal.

BIOLOGICAL REVIEW COMMENTS:

1. The wetland encompassed within flags B-16 to B-30 and north of flags B-38 to B-50 is continuous with the pond and requires a 50-foot perimeter wetland. This wetland should be labeled as a "Forested Wetland/Pond" and the perimeter wetland modified to be measured from these wetland flags on all relevant plan sheets.

RESPONSE: The B-series wetland has been labeled as a "Forested Wetland/Pond" and a 50-foot perimeter wetland off the B-series flags has been added to the revised plan set. The modified Perimeter Wetland increases the overall impact to Perimeter Wetland from 42,454± square feet to 46,213± square feet as provided in the revised Written Evaluation.

2. On plan sheets 4, 5, and 6 of 13 add a note to specify that the Schoolhouse Road culvert improvements are to be completed per DEM's Freshwater Wetland Permit No. 20-0289.

RESPONSE: A note indicating the Schoolhouse Road culvert improvements will be completed per Freshwater Wetland Permit No. 20-0289.

3. Sheet 2.2 is incorrectly numbered 6 of 13. Please renumber 5 of 13.

RESPONSE: Sheet numbering has been corrected on the revised plans.

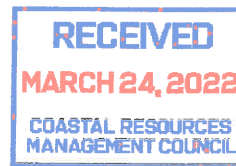
4. An Access Road detail or descriptive note (i.e. "3" layer of crushed stone) must be provided on the site plan. The proposed access ramps within wetland and pond will need additional details (proposed grades, materials, matting, etc.)

▼

10 LINCOLN ROAD, SUITE 210
FOXBORO, MA 02035
508.543.1755

8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401.334.4100

14 BOBALA ROAD, SUITE 2B
HOLYOKE, MA 01040
413.507.3448



Mr. Charpentier

(2)

March 22, 2022

RESPONSE: The temporary access road will consist of timber mats placed over woven geotextile as shown in the detail provided on Sheet 2.2 of the revised Plans. The temporary access roads along the upstream slopes of the dam have been eliminated to reduce the amount of soil disturbance required for construction access. Excavation and grading along the upstream side of the dam will be performed from the dam embankment and breach, therefore an access road to the Upper Reservoir will not be necessary. The access road along the downstream slope has been moved to the south along Schoolhouse Road. The grade along this newly proposed access road is more gradual and will reduce the risk of erosion. No additional grading will be required along these proposed access roads. The revised access road alignment will result in an approximately 885 square foot increase in impact to the B-series Forested Wetland/Pond and 39 cubic yard increase in fill below ordinary high water of the tailwater pond. This change is reflected in the revised Written Evaluation impact tables. As shown in the revised Planting Plan, the are disturbed by the access road will be re-vegetated with *Clethra alnifolia*, *Baccharis halmifolia*, and *Morella pensylvanica* plantings.

5. A Limit of Disturbance (LOD) should be commensurate with the erosion controls west of the “Access Road” and east of wetland flags B-16 to B-25 and continue with the depicted erosion controls near flag B-12.

RESPONSE: The LOD has been revised to align with the erosion controls in the vicinity of wetland flags B-16 to B-25 and continuing west around the proposed access road. Sheet 3.3 of the revised plans depicts the revised LOD.

6. A Limit of Disturbance (LOD) should be commensurate with the proposed cofferdams south of the dam and turn north to the vicinity of wetland Flag B-12.

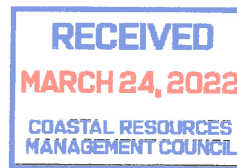
RESPONSE: The LOD has been revised to align with the proposed coffer dams and erosion controls from wetland flags B-16 and B-23. The portion of the basin north of the proposed turbidity barrier will be utilized to temporarily store mobilized sediment.

7. Please provide erosion controls and a comprehensive limit of disturbance on the site plan to prevent sediments from entering the impoundment north of Schoolhouse Road during the access ramp construction and the breach excavation work. It appears that a Turbidity Curtain or temporary coffer dam may be required south of proposed fill and grading. Consider modifying the coffer dam south of the proposed breach to be in place and enclose the breach excavation work and modified with a gradual “Coffer Dam Breach” when the sediments are allowed to mobilize.

RESPONSE: A turbidity barrier will be utilized at the end of the downstream cofferdam to improve sediment containment while maintaining a temporary storage area for mobilized sediment along the alignment north of the downstream coffer dam. The use of the area north of the proposed turbidity barrier results in an increase of approximately 13,552 square feet of temporary impact to the tailwater pond associated with access required to install the barrier and impacts from sediment release.

8. Modify the Construction Sequence to state that the work area will be dewatered, and flow will be diverted around the proposed dam breach after the coffer dams are installed.

RESPONSE: The low-level outlet located along the eastern end of the dam embankment will be utilized to convey flow downstream during construction. This has been added to the Construction Sequence in the



Mr. Charpentier

(3)

March 22, 2022

revised Written Evaluation and is indicated on the project plans. The low-level outlet will not be abandoned until the breach has been established and is conveying flow.

9. The colors within the plan legends on “Existing” and “Proposed” Wetland Conditions Plans (Sheets 9 and 10 of 13) do not synch with the site plan. Can this be corrected? In any case, and for clarity, it is recommended that each wetland type be labeled with its Cowardin Classification with a corresponding legend as they are within Figure 6 and 7 within the submitted narrative.

RESPONSE: Colors in the legends have been revised in the Existing and Proposed Wetland Condition Plans to correspond to what is shown on the site plan. Labels indicating the Cowardin Classification have been added to the revised plans for clarification.

ENGINEERING REVIEW COMMENTS:

The following engineering comments includes a review of the “Design Basis Report” dated September 2019 which the applicant submitted in support of the Freshwater Wetland application. When responding to these comments, please clearly state which scenario and extent of alterations RI DEM is expected to review.

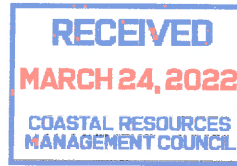
1. Page 18 of the Application to Alter Freshwater Wetlands for the Upper Kickemuit Reservoir Dam Removal indicates that alternative 4 (upper dam removal and lower dam removal) is the preferred alternative. However, hydraulic modeling drawings were not provided for condition #1 (existing conditions), condition #2 (upper dam removal only) and condition #5 (both dams removed only). Please provide hydraulic modeling drawings for all the conditions. The RIDEM is requesting larger drawings that provide more fine detail of the blue and red flood lines. Please provide the Kickemuit River Hydraulic Modeling Drawings on 24” by 36” sheets.

RESPONSE: The preferred alternative is Condition #6 (both dams removed and Schoolhouse Road culvert replacement). Model drawings for Condition #1 (Existing Conditions) are shown as the “Existing Conditions (EC)” on all model drawings. Conditions #2 through #5 were evaluated and determined to have fewer benefits than Condition #6. Conditions #2 through #5 are not considered feasible based on the model results and further analysis of the model drawings is unnecessary; therefore, hydraulic model drawings of these conditions were not provided. We will provide larger drawings of the Condition #6 hydraulic model results, which also includes Condition #1 as the Existing Conditions.

2. The dam cross section that was provided in the design basis report does not match the dam cross section that is provided on sheet 3.1 of the site plans. The grading shown on sheet 3.1 of the site plans needs to match the HEC-RAS inputs. Has the proposed conditions hydraulic model been updated to reflect the proposed dam cross sections that are shown on the latest site plans?

RESPONSE: Yes, the proposed conditions hydraulic model has been updated to reflect the dam cross sections shown in the latest plans. The recommendations in the Design Basis Report (DBR) have been modified since the DBR submission; the dam cross section provided on sheet 3.1 of the site plans represents the current preferred grading design, as well as the current HEC-RAS model inputs.

3. According to the Kickemuit River Hydraulic Modeling Drawing 6.5 (condition # 6, 100-year storm event) the site area near the intersection of Child Street and Apartment Road has a higher peak water



Mr. Charpentier

(4)

March 22, 2022

surface elevation. Please determine whether or not there are any impacts on the lot where the condominiums are located. Please confirm that the flooding associated with the higher elevations will not cause harm to life or property (i.e., condominiums). If there are impacts, then please provide an engineering technical justification that clearly addresses the proposed floodplain change and please obtain a letter from the impacted property owner to authorize a floodplain change on their property. Please calculate the existing and proposed water surface elevations during the 100-year storm event.

RESPONSE: The inundation extents as shown on the figure represent the maximum water surface elevation; there is no risk of loss of life or harm to property. The maximum water surface elevation at the intersection of Child Street and Apartment Road is El. 2.6. The maximum water surface elevation under proposed conditions increases 0.5 feet to El. 3.1. This elevation increase results in no real impacts to the adjacent property as this area is typically inundated by tidal surge events during storms, eliminating the need for an authorization letter from the property owner.

4. The hydrologic and hydraulic report indicates that under proposed conditions it is anticipated that all culverts will be equipped with a tide gate at the downstream end. The site plans need to be revised to clearly show the locations of the tide gates. Please provide a detail for the tide gate on the site plans.

RESPONSE: The plan set submitted for the Lower Kickemuit Dam removal (August 2021) indicates the locations of the tide gates and also contains tide gate details. Please refer to on Sheet 7.0 of the Lower Kickemuit Dam Removal plan set for this information.

5. Please provide existing and proposed conditions profiles of the Kickemuit Reservoir during the 100-year flood event, with and without coastal storm flooding impacts.

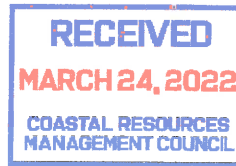
RESPONSE: Proposed condition profiles are included as an attachment to this letter.

6. As an attachment to the submitted HEC-RAS analysis please provide separate existing and proposed cross sections for the pertinent river stations (i.e., condominium berm area, Serpentine Roadway improvements, the roadway improvements near the new culverts) that exist within the proposed project area. Please ensure that the topography is labeled on these plan sheets, so as to facilitate review.

RESPONSE: The requested cross sections have been submitted with the Lower Kickemuit Dam removal plan set. Please refer to that plan set for the cross section information.

7. Please provide the cross-section inputs for the HEC-RAS model that were used in the pre and post conditions. The RIDEM is requesting that the designer specifically point out the data for the dam area pre-development and post-development, Serpentine Road pre-development and post-development, the new berm pre-development and post-development and the land area near the house at the corner of Serpentine Road and School House Road.

RESPONSE: The hydraulic model calculations were completed entirely using 2D methods; as such, cross sectional inputs necessary for a 1D model are not required at specific points along the river reach. The requested information can be obtained by referencing the 2D hydraulic model results and the accompanying plan set. Please note: The model and plan sets represent the most current proposed modification configuration, and it may differ from what was reported in the DBR.



Mr. Charpentier

(5)

March 22, 2022

8. The Kickemuit Reservoir has impairments so please ensure that the water quality calculations are consistent with the design criteria that is provided in the RIDEM guidance document water quality goals and pollutant loading analysis guidance for discharges to impaired waters. Please clearly indicate whether or not the Serpentine Road improvements will have more impervious surface area. If the roadway width will increase, then please treat 100% of the stormwater runoff from the net increase of impervious area with a water quality BMP. Please be aware that the primary purpose of the roadway work is for flood plain mitigation so the engineer can provide an engineering technical justification for not treating the stormwater runoff from the proposed reconstructed area of the Serpentine Roadway.

RESPONSE: The Serpentine Road improvements shown on sheet 7.0 of the Lower Kickemuit Dam Removal Plan Set will create no increases to impervious surface area; there will be no increase in stormwater runoff. Roadway improvements, associated with the DBR report, are no longer proposed. The addition of the culvert flap gates will be the only improvements.

9. Upon review of the layout plan that was provided in the design basis report the RIDEM noticed that red lines for the 100-year storm event are shown near a house that is located at the intersection of School House Road and Serpentine Road. Please determine whether or not there are any impacts on the lot where the house is located. If there are impacts, then please provide an engineering technical justification that clearly addresses the proposed floodplain change and please obtain a letter from the impacted property owner to authorize a floodplain change on their property. Please calculate the existing and proposed water surface elevations during the 100-year storm event.

RESPONSE: The aerial imagery included with that plan submission is outdated; the house in question no longer exists. Additionally, the maximum water surface elevation at that location during the 100-year storm event under existing conditions is El. 6.60. The water surface elevation at this location during the 100-year storm event under proposed conditions decreases, with a maximum elevation of El. 4.32.

10. The design basis report provides 11" x 17" drawings of the Serpentine Road improvements plan and the condominium berm plan. The site plans need to be revised to include new drawings for the condominium berm area, Serpentine Roadway improvements, and the roadway improvements near the new culverts.

RESPONSE: The recommendations contained within the DBR have been modified since the DBR submission. The improvements found in the DBR for Serpentine Road, the condominium berm, and the roadway improvements near the new culverts are no longer required due to the planned removal of the lower dam.

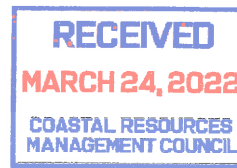
11. The engineer will need to clearly describe how the proposed land disturbance activity (i.e., proposed fill volumes within the floodplain) at the condominium berm area, Serpentine Roadway improvements, roadway improvements at the new culverts were modeled. Please provide a copy of the inputs that were used in the HEC-RAS model.

RESPONSE: The land disturbance activity at the above locations was not modelled in HEC-RAS; the modifications to these areas are no longer included in the planned scope of work.

12. The condominium berm plan that was provided in the design basis report indicates that the proposed

Mr. Charpentier

(6)



March 22, 2022

condominium berm will have approximately 4,600 cubic yards of fill. Please provide a copy of the design calculations (volume ft by ft *basis*) that were used to calculate the 4,600 cubic yards of fill. Please clearly describe how the impacts from the proposed 4,600 cubic yards of fill volume were modeled.

RESPONSE: The condominium berm as described in the DBR is no longer included in the planned scope of work. The impacts from the berm fill volume were not modelled in HEC-RAS.

Sincerely,
PARE CORPORATION

A handwritten signature in blue ink, appearing to read "J. Matthew Bellisle".

J. Matthew Bellisle, P.E.
Senior Vice President

A handwritten signature in blue ink, appearing to read "Seaver Anderson".

Seaver Anderson
Environmental Scientist

cc: vie electronic copy:

Neal Personeus, RIDEM WQC Program
Sarah Frazar, RIDEM WQC Program
Charles Horbert, RIDEM WQC Program
Paula Kullberg, USACE New England District
Rich Lucia, CRMC
Amy Silva, CRMC
Stephen Coutu, BCWA