



## **TOWN OF HOLLISTON**

**703 Washington Street  
Holliston, MA 01746**

**508-958-4416**

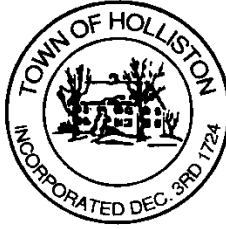
### **REQUEST FOR PROPOSALS (RFP)**

#### **HOLLISTON DEPARTMENT OF PUBLIC WORKS**

#### **Factory Pond Dam and Woodland Street Bridge Repair/Replacement**



*West view of Factory Pond Dam and Woodland St Bridge*



## **TOWN OF HOLLISTON**

**703 Washington Street  
Holliston, MA 01746**

**508-958-4416**

## **TOWN OF HOLLISTON**

### **RFP**

### **HOLLISTON DEPARTMENT OF PUBLIC WORKS**

#### **Factory Pond Dam Rehabilitation and Woodland Street Bridge Repair/Replacement**

The Town of Holliston is seeking sealed proposals for Design Engineering Services associated with the rehabilitation of Factory Pond Dam and repair or replacement of the adjoining Woodland Street Bridge located in Holliston, MA. Sealed proposals will be received by the Chief Procurement Officer at Holliston Town Hall, 703 Washington Street, Holliston, MA 01746 until October 21, 2022 at 10:00 am. This RFP shall be governed by applicable provisions of the Designer Selection Law – M.G.L. c.7C, §§ 44 – 58, inclusive, and the Town’s Designer Selection process.

Information regarding this RFP may be obtained from the Chief Procurement Officer at Holliston Town Hall, 703 Washington Street, Holliston, MA 01746 on or after September 21, 2022 during normal business hours Monday, Wednesday, Thursday 8:30 am to 4:30 pm; Tuesday 8:30 am to 7:00 PM; Friday 8:30 am to 12:00 pm. Information is also available on The Town of Holliston website under the Facilities tab <https://www.townofholliston.us/facilities>

Once submitted, all proposals shall remain in effect for sixty (60) days, Saturdays, Sundays and legal holidays included. The Town reserves the right to waive any informalities, to reject any or all proposals and to accept the quote deemed to be in the best interest of the Town of Holliston.

The fee for assessment services will be negotiated with the highest ranked finalist, but shall not exceed \$100,000. The selected proposer must be able to complete the Design Engineering Services as more specifically outlined within the RFP within 6 months from the award of the contract. Pursuant to MGL, c. 7C § 51(h), the Town, in its sole discretion, may continue with the selected proposer for Construction Monitoring Services.



## TOWN OF HOLLISTON

### RFP

#### Factory Pond Dam Rehabilitation and Woodland Street Bridge Repair/Replacement

#### 1. OVERVIEW

Factory Pond Dam is in the Town of Holliston, Middlesex County, Massachusetts. It is located near coordinates 42.20936 N/71.41783 W. The dam is located at the eastern end of the impoundment (Factory Pond). The dam, which was originally constructed for water supply purposes for a mill, currently impounds water for recreational use.

Factory Pond is located along the Bogastow Brook and is also fed by the Jar Brook. The downstream brook flows under a stone masonry railroad viaduct that supports the Upper Charles recreational Rail Trail, and then through a channel lined by stone masonry walls one to two feet high. The brook continues through a swampy area for approximately 1.5 miles until its confluence with the Dopping Brook.

No design or construction records are available for the Dam, Bridge or Pond. Information within the MADCR dam database indicates that the dam was originally constructed in 1873. Based upon observations at the site, it is inferred that the original dam crest carried a roadway which crossed a timber and concrete bridge constructed in 1920 over a spillway. Later during the 1900's (exact date unknown), the roadway was relocated approximately 30 feet upstream, a new dam and bridge were constructed, and the replaced dam and bridge were abandoned in place.

The Town of Holliston has retained Pare Corporation (Pare) to evaluate conditions of the Factory Pond Dam, and Woodland Street Bridge, and develop a report of conceptual design alternatives to address known deficiencies at the dam. A final report dated May 2022 is available for review (**Appendix A**).

The Town has decided to follow the Dam Rehabilitation Program outlined by Pare Corporation in their report and seeks Design Engineering Services to move this project to construction phase.



## 2. SCOPE

As outlined in the Pare Corporation report from May 2022, The scope of a Dam Rehabilitation Program may include:

A. Control of Water and Diversions: A temporary bypass would likely be required to allow for work on the spillway to be completed; this bypass would likely consist of a temporary culvert excavated through the embankment to either side of the spillway to accommodate base and storm flows during construction. Phasing of the construction work will be designed to allow for continued flow of water past the work area to facilitate completing the work in the dry.

In conjunction with the diversion, control of water will also be required. It is anticipated that this would include a drawdown of the impoundment on the order of 3 feet and the installation of a temporary cofferdam (Port-A-Dam or bulk sand bags).

B. Clearing and grubbing of trees and other unwanted vegetation along the length of the dam. Fill resulting holes. Clearing would extend a minimum of 20 feet beyond the limits of the embankment downstream of the dam as well as into each abutment.

C. Evaluate for the presence of and formerly abandon the reported potential outlet through the right end of the dam; this may include an open cut and replacement, a grouting program, or driven sheet pile cutoff.

D. Modify the spillway to accommodate the spillway design flood (100-year storm event) without overtopping of the roadway or spillway walls. Based upon conceptual designs, high stage weirs to both sides of the existing spillway, each approximately 30 feet long, would provide required capacity:

- Construct overflow weirs 6-inches above the existing spillway and extending 30 feet to either side of the spillway.
- Excavate the embankment to either side of the spillway between the pond and the roadway to lower the grade approximately 2.5 feet.
- Install concrete slab scour aprons to convey flow from the new channel back to the spillway channel upstream of the bridge.

Alternatively, a 60-foot-long weir could be provided to one side of the spillway; however, depth of excavation for the scour slab would be increased. Given the age and condition of the existing spillway, complete replacement may be warranted. If complete replacement is the preferred approach to provide a rehabilitated dam with a longer design life, the new spillway could take the form of a single cycle labyrinth spillway with an effective weir



length designed to match required total discharge capacity while maintaining some of the flood routing benefits of the impoundment (i.e, provide high and low stage weirs). The reconstructed spillway could also be designed to provide a low level outlet via a gated conduit through the spillway as well as a bay of stop logs at an accessible location to allow for pre-storm or seasonal drawdowns to be implemented (as presented below).

E. Provide low level outlet discharge capacity. The low level outlet should be designed to meet regulatory requirements and also to provide sufficient freeboard during a spillway design flood event.

- Demolish the existing spillway weir
- Dredge an approach channel
- Reconstruct the weir to include a gated outlet (slide gate or valve)
- Install a catwalk across the conceptual high stage overflow weirs and/or discharge slabs to provide access to the gate controls

F. Regrade the downstream slope to provide a stable, maintainable section:

- Clear and grub the slope; strip organics
- Regrade to stable section; provide drainage if required in the area of the former outlet structure near the right abutment

G. Install stone riprap along the upstream slope of the dam

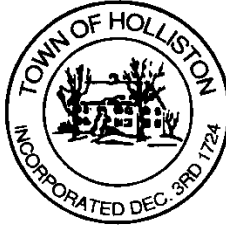
H. Establish a maintainable surface covering within the limits of the dam embankment (i.e. grass, riprap in areas prone to scraping and erosion)

I. Evaluate the repair or replacement of the Woodland Street Bridge that crosses the spillway for the dam.

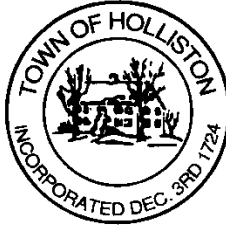
### **3. GENERAL CONDITIONS AND REQUIREMENTS**

A. Instructions for Submissions:

- a. Copies of the Request for Qualifications (RFP) may be obtained from the Chief Procurement Officer at Holliston Town Hall, 703 Washington Street, Holliston, MA 01746, during normal business hours Monday, Wednesday, Thursday 8:30 am to 4:30 pm; Tuesday 8:30 am to 7:00 pm; Friday 8:30 am to 12:00 pm. Information is also available on The Town of Holliston website under the Facilities tab <https://www.townofholliston.us/facilities>



- b. The deadline for the RFP submission is October 21, 2022 at 10:00 am. Proposals shall be submitted to the attention of the Chief Procurement Officer at Holliston Town Hall, 703 Washington Street, Holliston, MA 01746 in a sealed envelope clearly marked **“FACTORY POND DAM REHABILITATION - BRIDGE REPLACEMENT”**. Faxed or emailed proposals will not be accepted.
- c. On October 21, 2022 at 10:00 am, the RFP documents will be opened at the Holliston Town Hall Select Board Conference Room 105 at 703 Washington Street, Holliston, MA 01746. The RFP documents will be reviewed by the DPW Foreman, Facilities Manager and Emergency Management Director .
- d. Inquiries regarding this RFP must be in writing or email ([keastj@holliston.k12.ma.us](mailto:keastj@holliston.k12.ma.us)) and submitted to the Chief Procurement Officer at Holliston Town Hall, 703 Washington Street, Holliston, MA 01746 no later than October 7, 2022 by 12 pm. The Town’s responses to inquiries will be provided to all parties who have requested copies of this RFP from the Chief Procurement Officer.
- e. The RFP may be corrected, modified, withdrawn or resubmitted prior to the deadline for the submission of the RFP by submitting the required number of copies of such correction, modification, withdrawal or new submission, clearly marked on the outside envelope with the appropriate heading, by deadline noted above.
- f. All proposals must be unconditional; any proposal that purports to impose conditions not included in this RFP will be deemed nonresponsive. The awarding authority may waive or allow a proposal submitter to correct minor informalities and omissions in the proposal if it decides, in its sole discretion, that such informality or omission is not prejudicial to the interests of the Town or to fair competition. If a mistake and the intended proposal are clearly evident on the face of the proposal document, the awarding authority will correct the mistake to reflect the intended correct proposal and so notify the submitter in writing, and the proposer may not withdraw their proposal. A submitter may withdraw their proposal if a mistake is clearly evident on the face of the proposal document but the intended correct proposal is not similarly evident.
- g. The Town reserves the right to interview or seek additional information from any submitter after the RFP submission, but before making submitter selection, to reject any proposal if doing so is in the best interest of the Town, and to award to the next qualified submitter. If, at the time of the Submission Deadline, Town offices are closed due to uncontrolled events such as fire, snow, ice, wind, or building evacuation, the Submission Deadline will be postponed until 3 p.m. on the next regular Town business day. Proposals will be accepted until that new date and time.



- B. Fees: The fee will be negotiated with the selected firm based on the Scope of Services in this RFP and shall not exceed the appropriation of \$100,000. If an agreement cannot be reached within seven (7) business days of commencement, negotiations will be concluded and the town reserves the right to enter into fee negotiations with the next most qualified proposer.
- C. The Town of Holliston's standard agreement for architect/engineering services will be used as the contract document and is attached hereto.

#### **4. SUBMISSION REQUIREMENTS**

All submitters shall submit three (3) copies of its sealed proposal. Each proposal envelope must state; the quote number, the company name and the date of opening.

##### **A. The proposals must include the following:**

- i. Letter of Submittal. The letter must be signed by the owner of the company and addressed to the Chief Procurement Officer at Holliston Town Hall, 703 Washington Street, Holliston, MA 01746. The letter must outline the submitter's understanding of the objectives articulated in the RFP.
- ii. Standard Designer Application Form for Municipalities and Public Agencies not within DSB Jurisdiction. As required.
- iii. Project Scope. Outline the steps and or proposed actions to be taken to develop the project plans outlined in Section 2, Scope.
- iv. Forms: The Certification of Good Faith and Statement of Tax Compliance forms attached hereto must be completed and submitted with the proposal.

#### **5. EVALUATION CRITERIA**

##### **A. Minimum Requirements:** Proposals must meet the following minimum criteria to qualify for competitive consideration:

- i. Demonstrate complete conformance with all submission requirements as previously stated in the RFP.
- ii. Documented experience with similar projects
- iii. The ability to complete all within 6 months from the start of the project.
- iv. Relevant Experience: Minimum experience of five (5) years in the design and evaluation of similar projects. In documenting this qualification, the Proposer should describe the professional background of the firm and the extent of previous experience of firm personnel or consultants to be assigned to the Project.



- v. Knowledge of Relevant Codes: Knowledge of, and experience in, legal and administrative requirements, procedures, and practices related to the design, funding and construction of public buildings, including the State Building Code, regulations of the Massachusetts Architectural Access Board, the State's Prevailing Wage Law, and the State's Public Building Construction Procurement Law.
- vi. Professional Registrations: Possession of all necessary current licenses and registrations, either within the firm or through independent consultants, to qualify under Massachusetts law to perform the services as the architect for the Project.
- vii. Insurance: Provide evidence of insurance for general liability (\$3 million combined single limit), automobile (\$1 million combined single limit), worker's compensation (statutory) and professional services liability (\$3 million minimum).
- viii. Eligibility: The Proposer must not be debarred under M.G.L. Chapter 149 §44C.

**B. Competitive Evaluation Criteria:** The Town through its DPW Foreman, Facilities Manager, Emergency Manager and Town Administrator will evaluate each proposal for conformance with the objectives, submission requirements and threshold criteria outlined in this RFPs. Preference categories have been established for the purpose of further distinguishing competitive proposals. In addition, the preference categories will be used to compare the relative advantages of each competing proposal. The following preference categories must be addressed in the proposal:

- i. Experience with Dam Rehabilitation and Bridge work projects similar in scope to this project:
  - 1. 15 or more years - **Highly Advantageous**
  - 2. 5 to 14 years - **Advantageous**
  - 3. Less than 5 years - **Not Advantageous**
- ii. Minimization of Environmental Impacts:
  - 1. Provide examples or highlight relevant experiences that demonstrates the minimization of environmental impacts when undertaking a project of this type - **Highly Advantageous**
  - 2. Provide some examples or experience highlighting some environmental impact mitigation - **Advantageous**
  - 3. Provide some examples or experience highlighting minimal environmental impact mitigation - **Not Advantageous**





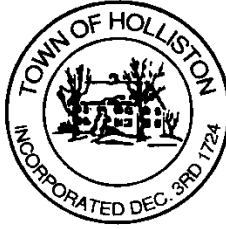
- iii. Experience with systems and Processes that lead to timely project completion:
  1. Provide examples or highlight relevant experience that demonstrate unique and cost effective approaches to timely project completion (i.e. prefabricated components) - **Highly Advantageous**
  2. Provide some examples or experience highlighting timely project completion - **Advantageous**
  3. Provide some examples or experience highlighting poor timely project completion - **Not Advantageous**

## **6. INTERVIEWS:**

In addition to evaluating the Proposals, the Town may decide, in its sole discretion, to conduct interviews with the Proposers that submitted the three (3) highest ranked Proposals. If so, these three Proposers will be notified by the Town, either by mail, fax, or telephone, of the date, time and place for their interviews and any other pertinent information that may be required. If interviews are conducted, the Proposer should be prepared to present its Project Manager and key members of its Project Team, the Proposer's general history, the Proposer's specific experience with similar types of projects, the Proposer's approach to the Project and general timeline for completion of the Project.

## **7. SELECTION PROCESS**

- The DPW Foreman, Facilities Manager and Emergency Management Director will review proposers' qualifications.
- The DPW Foreman, Facilities Manager and Emergency Management Director will first open the Proposals and verify completeness with respect to the Proposal Submission Requirements. Any Proposals determined to be incomplete may not be reviewed further.
- The DPW Foreman, Facilities Manager and Emergency Management Director will then evaluate and rank the Proposals based on the Minimum Criteria and the Evaluation Criteria.
- The DPW Foreman, Facilities Manager and Emergency Management Director will narrow the proposals down to the three (3) top-ranked finalists, and may choose to interview the three finalists prior to selection of the successful Proposer for award of the contract.
- Before awarding the contract(s), the Town may request additional information from a finalist to ensure that the Proposer has the necessary resources to perform the required services. The Town reserves the right to reject any Proposal if the Town later determines that any criterion established in this RFQ has not been satisfied or was falsified.



## **CERTIFICATION OF GOOD FAITH**

The undersigned certifies under pains and penalties of perjury that this contract has been obtained in good faith and without collusion or fraud with any other person. As used in this certification, the word “person” shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

The Contractor by:

---

Print Name

---

Title/Authority



## CERTIFICATE OF STATE TAX COMPLIANCE

Pursuant to Massachusetts General Laws, Chapter 62C, Section 49A

\_\_\_\_\_, authorized signatory for

name of signatory

\_\_\_\_\_, whose

name of contractor

principal place of business is at \_\_\_\_\_,

\_\_\_\_\_ does hereby certify under the pains and penalties of perjury  
that \_\_\_\_\_ has paid all

name of contractor

Massachusetts taxes and has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name

\_\_\_\_\_  
Federal Tax ID # or Social Security #



***-SAMPLE-***

## **TOWN OF HOLLISTON<sup>1</sup>**

**CONTRACT #** \_\_\_\_\_

**STATE CONTRACT # (if applicable)** \_\_\_\_\_

---

**DATE:** \_\_\_\_\_

This Contract is entered into on, or as of, this date by and between the Town of Holliston, 703 Washington Street, Holliston, MA 01746 (the "Town"), and

\_\_\_\_\_  
["Contractor"]

\_\_\_\_\_  
[Contact Name for Responsible Person]

\_\_\_\_\_  
[Address of the Contractor]

\_\_\_\_\_  
[Telephone Number]

\_\_\_\_\_  
[FAX Number]

\_\_\_\_\_  
[email address]

1. This is a Contract for the procurement of the following:

**\*\* Attach scope of services \*\***

The "Services".

2. The Contract price to be paid to the Contractor by the Town is:

---

<sup>1</sup> Contract Form – Architect/Engineering Services



### 3. Payment will be made as follows:

3.1 If any portion of the contract price is to be paid by a private citizen(s) no work shall be performed until a sum has been deposited with the Town Treasurer, upon an estimate made by the board, committee or officer having charge of the work, sufficient to cover the payment for the portion of the said work chargeable to the private citizen(s).

3.2 Fees and Reimbursable Costs combined shall not exceed \$100,000 as more fully set forth in the Contractor Documents.

3.3 There shall be no further costs, fees or reimbursable charges due the Contractor under this Contract unless said fees and/or costs are so set forth in writing. The Town will not pay any surcharge or premium on top of the direct out of pocket expenses, if any.

3.4 Final payment including any unpaid balance of the Contractor's compensation shall be due and payable when the Project is completed.

### 4. INTENTIONALLY OMITTED

### 5. Definitions:

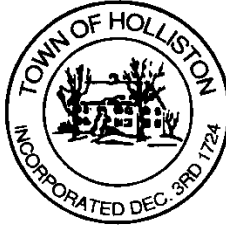
5.1 Acceptance: All Contracts require proper acceptance of the described goods or services by the Town. Proper acceptance shall be understood to include inspection of goods and certification of acceptable performance for services by authorized representatives of the Town to ensure that the goods or services are complete and are as specified in the Contract.

5.2 Contract Documents: All documents relative to the Contract including (where used) Request for Proposals and all attachments thereto, Instructions to Bidders, Proposal Form, General Conditions, Supplementary General Conditions, General Specifications, Other Specifications included in Project Manual, Drawings, all Addenda issued during the bidding period and Contractor's Response to the Request for Proposal. The Contract documents are complementary, and what is called for by any one shall be as binding as if called for by all.

5.3 The Contractor: The "other party" to any Contract with the Town. This term shall (as the sense and particular Contract so require) include Vendor, Contractor, Engineer, or other label used to identify the other party in the particular Contract. Use of the term "Contractor" shall be understood to refer to any other such label used.

5.4 Date of Substantial Performance: The date when the work is sufficiently complete, the services are performed, or the goods delivered, in accordance with Contract documents, as modified by approved Amendments and Change Orders.

5.5 Goods: Goods, Supplies, Services or Materials.



5.6 Subcontractor: Those having a direct Contract with the Contractor. The term includes one who furnished material worked to a special design according to the Drawings or Specifications of this work, but does not include one who merely furnishes material not so worked.

5.7 Work: The services or materials contracted for, or both.

6. Term of Contract and Time for Performance:

This Contract shall be fully performed by the Contractor in accordance with the provisions of the Contract Documents on or before six (6) months from the date of this Contract, unless extended, in writing, at the sole discretion of the Town, and not subject to assent by the Contractor, and subject to the availability and appropriation of funds as certified by the Town Accountant. Time is of the essence for the completion of the Contract.

7. Subject to Appropriation:

Notwithstanding anything in the Contract documents to the contrary, any and all payments which the Town is required to make under this Contract shall be subject to appropriation or other availability of funds as certified by the Town Accountant. In the absence of appropriation or availability as certified herein, this Contract shall be immediately terminated without liability for damages, penalties or other charges to the Town. In the event this is a multi-year contract, this Contract is subject to annual appropriation and in the event funds are not so appropriated, this Contract shall terminate immediately without liability for damages, penalties or charges to the Town.

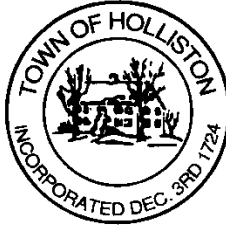
8. Permits and Approvals and Standard of Care:

- a. Permits, Licenses, Approvals and all other legal or administrative prerequisites to its performance of the Contract shall be secured and paid for by the Contractor.
- b. The Contractor warrants that it shall perform its Services in accordance with the level of care and diligence normally practiced by architectural/engineering firms and/or designers, as applicable, in performing services of a similar nature at the time and place the Services are performed ("Standard of Care").

9. Termination and Default:

9.1 Without Cause. The Town may terminate this Contract on seven (7) calendar days' notice when in the Town's sole discretion it determines it is in the best interests of the Town to do so, by providing notice to the Contractor, which shall be in writing and shall be deemed delivered and received when given in person to the Contractor, or when received by fax, express mail, certified mail return receipt requested, regular mail postage prepaid or delivered by any other appropriate method evidencing actual receipt by the Contractor. Upon termination without cause, Contractor will be paid for services rendered to the date of termination.

9.2 For Cause. If the Contractor is determined by the Town to be in default of any term or condition of this Contract, the Town may terminate this Contract on seven (7) days' notice by



providing notice to the Contractor, which shall be in writing and shall be deemed delivered and received when given in person to the Contractor, or when received by fax, express mail, certified mail return receipt requested, regular mail postage prepaid or delivered by any other appropriate method evidencing actual receipt by the Contractor.

9.3 Default. The following shall constitute events of a default under the Contract:

(1) any material misrepresentation made by the Contractor to the Town; 2) any failure to perform any of its obligations under this Contract including, but not limited to the following: (i) failure to commence performance of this Contract at the time specified in this Contract due to a reason or circumstance within the Contractor's reasonable control, (ii) failure to perform this Contract with sufficient personnel and equipment or with sufficient material to ensure the completion of this Contract within the specified time due to a reason or circumstance within the Contractor's reasonable control, (iii) failure to perform this Contract in a manner reasonably satisfactory to the Town, (iv) failure to promptly re-perform within a reasonable time the services that were rejected by the Town as unsatisfactory, or erroneous, (v) discontinuance of the services for reasons not beyond the Contractor's reasonable control, (vi) failure to comply with a material term of this Contract, including, but not limited to, the provision of insurance and non-discrimination, (vii) any other acts specifically and expressly stated in this Contract as constituting a basis for termination of this Contract, and (viii) failure to comply with any and all requirements of state law and/or regulations, and Town bylaw and/or regulations.

10. Suspension or Delay:

The Town may order the Contractor, in writing, to suspend, delay or interrupt all or any part of the Services without cause for such period of time as the Town may determine to be appropriate for its convenience. In the event of any such suspension, delay or interruption, the Contractor's time for performance shall be equitably adjusted. No adjustment shall be made if the Contractor is or otherwise would have been responsible for the suspension, delay or interruption of the Services, or if another provision of this Contract is applied to render an equitable adjustment.

11. The Contractor's Breach and the Town's Remedies:

Failure of the Contractor to comply with any of the terms or conditions of this Contract shall be deemed a material breach of this Contract, and the Town of HOLLISTON shall have all the rights and remedies provided in the Contract documents, the right to cancel, terminate, or suspend the Contract in whole or in part, the right to maintain any and all actions at law or in equity or other proceedings with respect to a breach of this Contract, including but not limited to costs, attorney's fees or other damages resulting from said breach as well as specific performance, and the right to select among the remedies available to it by all of the above.

From any sums due to the Contractor for services, the Town may keep the whole or any part of the amount for expenses, losses and Damages incurred by the Town as a consequence of procuring services as a result of any failure, omission or mistake of the Contractor in providing services as provided in this Contract.



#### 12. Statutory Compliance:

- 12.1 This Contract will be construed and governed by the provisions of applicable federal, state and local laws and regulations; and wherever any provision of the Contract or Contract documents shall conflict with any provision or requirement of federal, state or local law or regulation, then the provisions of law and regulation shall control. Where applicable to the Contract, the provisions of the General Laws are incorporated by reference into this Contract.
- 12.2 Wherever applicable law mandates the inclusion of any term and provision into a municipal contract, this Section shall be understood to import such term or provision into this Contract. To whatever extent any provision of this Contract shall be inconsistent with any law or regulation limiting the power or liability of cities and towns, such law or regulation shall control.
- 12.3 The Contractor shall comply with all Federal, State and local laws, rules, regulations, policies and orders applicable to the Work provided pursuant to this Contract, such provisions being incorporated herein by reference, and shall be responsible for obtaining all necessary licenses, permits, and approvals required for the supply of such Work.

The Contractor shall indemnify and hold the Town harmless for and against any and all fines, penalties or monetary liabilities incurred by the Town as a result of the failure of the Contractor to comply with the previous sentence. If any discrepancy or inconsistency is discovered in the Drawings, Specifications or Contract for this work in violation of any such law, by-law, regulation, order or decree, it shall forthwith report the same in writing to the Town. It shall, at all times, itself observe and comply with all such existing and future laws, by-laws, regulations, orders and decrees; and shall protect and indemnify the Town, and its duly appointed agents against any claim or liability arising from or based on any violation whether by him or its agents, employees or subcontractors of any such law, by-law, regulation or decree.

#### 13. Conflict of Interest:

Both the Town and the Contractor acknowledge the provisions of the State Conflict of Interest Law (General Laws Chapter 268A), and this Contract expressly prohibits any activity which shall constitute a violation of that law. The Contractor shall be deemed to have investigated the application of M.G.L. c. 268A to the performance of this Contract; and by executing the Contract documents the Contractor certifies to the Town that neither it nor its agents, employees, or subcontractors are thereby in violation of General Laws Chapter 268A.

#### 14. Certification of Tax Compliance

This Contract must include a certification of tax compliance by the Contractor, as required by General Laws Chapter 62C, Section 49A (Requirement of Tax Compliance by All Contractors Providing Goods, Services, or Real Estate Space to the Commonwealth or Subdivision).





15. Non-Discrimination/Affirmative Action:

The Contractor shall carry out the obligations of this Agreement in compliance with all requirements imposed by or pursuant to federal, State and local ordinances, statutes, rules and regulations and policies prohibiting discrimination in employment, including but not limited to, Title VII of the Civil Rights Act of 1964; the Age Discrimination in Employment Act of 1967; Section 504 of the Rehabilitation Act of 1973 and Mass. G. L. c. 151B, and any other executive orders, rules, regulations, requirements and policies relating thereto enacted by the Commonwealth of Massachusetts and the Town as they may be amended from time to time. Contractor shall not discriminate against any qualified employee or applicant for employment because of race, color, national origin, ancestry, age, sex, religion, physical or mental handicap or sexual orientation.

16. Assignment:

The Contractor shall not assign, sublet or otherwise transfer this Agreement, in whole or in part, without the prior written consent of the Town, and shall not assign any of the monies payable under this Contract, except by and with the written consent of the Town.

17. Condition of Enforceability Against the Town:

This Contract is only binding upon, and enforceable against, the Town if: (1) the Contract is signed by the Selectboard or its designee; and (2) endorsed with approval by the Town Accountant as to appropriation or availability of funds; and (3) endorsed with approval by the Town Counsel as to form.

18. Corporate Contractor:

If the Contractor is a corporation, it shall endorse upon this Contract (or attach hereto) its Clerk's Certificate certifying the corporate capacity and authority of the party signing this Contract for the corporation. Such certificate shall be accompanied by a letter or other instrument stating that such authority continues in full force and effect as of the date the Contract is executed by the Contractor. This Contract shall not be enforceable against the Town of HOLLISTON unless and until the Contractor complies with this section.

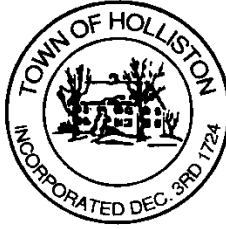
The Contractor, if a foreign corporation, shall file with the Commissioner of Corporations a Power of Attorney and duly authenticated copies of its Charter or Certificate of Incorporation; and said Contractor shall comply with all the laws of the Commonwealth.

19. Contractor's Personnel:

The Contractor shall utilize only its employees and shall not utilize any third-party contractors without prior written approval of the Town.

20. Liability of Public Officials:

To the full extent permitted by law, no official, employee, agent or representative of the Town of HOLLISTON shall be individually or personally liable on any obligation of the Town under this Contract.



## 21. Indemnification:

- 21.1 With respect to professional services rendered by the Contractor, to the fullest extent permitted by law, the Contractor shall defend, indemnify and hold harmless the Town, and its officers and employees from and against all claims, damages, liabilities, injuries, costs, fees, expenses, or losses, including, without limitation, reasonable attorney's fees and costs of investigation and litigation, whatsoever which may be incurred by the Town to the extent caused by the negligence of or breach of any provision of this Contract by the Contractor, a person employed by the Contractor, or any of its Subcontractors.
- 21.2 With respect to non-professional services rendered by the Contractor, to the fullest extent permitted by law, the Contractor shall defend, indemnify and hold harmless the Town and its officers and employees from and against all claims, damages, liabilities, injuries, costs, fees, expenses, or losses, including, without limitation, reasonable attorney's fees and costs of investigation and litigation, whatsoever which may be incurred by the Town arising out of or resulting from the performance of its services provided that such claims, damages, liabilities, injuries, costs, fees, expenses, or losses are attributable to bodily injury or death or injury to or destruction of tangible property and to the extent caused by an act or omission of the Contractor, a person employed by the Contractor, or any of its Subcontractors.

The foregoing provisions shall not be deemed to be released, waived, limit or modified in any respect by reason of any surety or insurance provided by the Contractor under the Contract.

## 22. Insurance

### 22.1 Workers Compensation Insurance:

The Contractor shall provide by insurance for the payment of compensation and the furnishing of other benefits under Chapter 152 of the General Laws of Massachusetts (The Worker's Compensation Act) to all employees of the Contractor who are subject to the provisions of Chapter 152 of the General Laws of Massachusetts.

Failure to provide and continue in force such insurance during the period of this Contract shall be deemed a material breach of this Contract, shall operate as an immediate termination thereof, and Contractor shall indemnify the Town for all losses, claims, and actions resulting from the failure to provide the insurance required by this Article.

The Contractor shall furnish to the Town a certificate evidencing such insurance prior to the execution of this Contract before the same shall be binding on the parties thereto, except if specifically waived by the Town.



## 22.2 Professional Liability Insurance

Liability of \$1 million per claim and \$3 million aggregate.

Failure to provide and continue in force such insurance during the period of this Contract shall be deemed a material breach of this Contract, shall operate as an immediate termination thereof, and Contractor shall indemnify the Town for all losses, claims, and actions resulting from the failure to provide the insurance required by this Article.

## 22.3 Other Insurance Requirements

- a. Comprehensive commercial general liability insurance with limits of at least \$1 Million per occurrence and \$3 Million annual aggregate for property damage and \$1 Million per person and \$3 Million per occurrence for bodily injury, which shall include the Town of HOLLISTON as an additional insured, and which shall cover bodily injury, sickness or disease, or death of any person including employees and those persons other than the Contractor's employees, and claims insured by usual personal liability coverage, death, or property damage arising out of the Work including injury or destruction of tangible property, including loss of use resulting therefrom.
- b. Motor vehicle insurance for any motor vehicles used in performing the Work, with limits of at least \$500,000 per person, and \$1 Million per accident.
- c. All policies shall identify the Town as an additional insured (except Workers' Compensation and Professional Liability). The Contractor shall notify the Town immediately upon the cancellation or amendment to any policy. Renewal Certificates shall be filed with the Town at least ten (10) days prior to the expiration of the required policies. Certificates evidencing all such coverage shall be provided to the Town upon the execution of this Agreement, and upon the renewal of any such coverage. Each such certificate shall specifically refer to this Contract and shall state that such insurance is as required by this Contract. Failure to provide the necessary notice required in this Section or to continue in force such insurance shall be deemed a material breach of this Contract and shall be grounds for immediate termination. Said insurance shall include: Workers Compensation/Employers' Liability Insurance, Business Automobile Liability Insurance, and Commercial General Liability Insurance (CGL). The CGL policy shall include coverage for liability arising from premises, operations, independent Contractors, personal injury, contractual liability. All Certificates of Insurance shall be on the "MIIA" or "ACORD" Certificate of Insurance form, shall contain true transcripts from the policies, authenticated by the proper officer of the Insurer, evidencing in particular those insured, the extent of coverage, the location and operations to which the



insurance applies, the expiration date and the above-mentioned notice clauses. All insurance shall be written on an occurrence basis. Coverage shall be maintained without interruption from date of the Contract until date of final payment and termination of any coverage required to be maintained after payment.

- d. The Contractor shall obtain and maintain during the term of this Contract the insurance coverage in companies licensed to do business in the Commonwealth of Massachusetts and acceptable to the Town.

#### 23. Documents, Materials, Etc.:

Any materials, reports, information, data, etc. given to or prepared or assembled by the Contractor under this Contract are to be kept confidential and shall not be made available to any individual or organization by the Contractor (except agents, servants, or employees of the Contractor) without the prior written approval of the Town, except as otherwise required by law. The Contractor shall comply with the provisions Chapter 66A of the General Laws of Massachusetts as it relates to public documents, and all other state and federal laws and regulations relating to confidentiality, security, privacy and use of confidential data.

Any materials produced in whole or in part under this Contract shall not be subject to copyright, except by the Town, in the United States or any other country. The Town shall have unrestricted authority to, without payment of any royalty, commission, or additional fee of any type or nature, publicly disclose, reproduce, distribute and otherwise use, and authorize others to use, in whole or in part, any reports, data or other materials prepared under this Contract.

All data, reports, programs, software, equipment, furnishings, and any other documentation or product paid for by the Town shall vest in the Town at the termination of this Contract. The Contractor shall at all times, during or after termination of this Contract, obtain the prior written approval of the Town before making any statement bearing on the work performed or data collected under this Contract to the press or issues any material for publication through any medium.

#### 24. No Employment:

The Contractor acknowledges and agrees that it is acting as an independent Contractor for all services rendered pursuant to this Contract, and neither the Contractor, nor its employees, agents, servants nor any person for whose conduct the Contractor is responsible shall be considered an employee or agent of the Town for any purpose and shall not file any claim or bring any action for any worker's compensation unemployment benefits and compensation for which they may otherwise be eligible as a Town employee as a result of work performed pursuant to the terms of this Contract.

#### 25. Audit, Inspection and Recordkeeping:

At any time during normal business hours, and as often as the Town may deem it reasonably necessary, there shall be available in the office of the Contractor for the purpose of audit, examination, and/or to make excerpts or transcript all records, contracts, invoices, materials, payrolls, records of personnel, conditions of employment and other data relating to all matters covered by this Agreement.



26. Payment:

The Town agrees to make all reasonable efforts to pay to the Contractor the sum set forth in the Contractor's bid or proposal within sixty (60) days of receipt of an invoice detailing the work completed and acceptance from the Town of the work completed.

27. Waiver and Amendment:

Amendments, or waivers of any additional term, condition, covenant, duty or obligation contained in this Contract may be made only by written amendment executed by all signatories to the original Agreement, prior to the effective date of the amendment.

To the extent allowed by law, any conditions, duties, and obligations contained in this Contract may be waived only by written Agreement by both parties.

Forbearance or indulgence in any form or manner by a party shall not be construed as a waiver, nor in any manner limit the legal or equitable remedies available to that party. No waiver by either party of any default or breach shall constitute a waiver of any subsequent default or breach of a similar or different matter.

28. Severability:

If any term or condition of this Contract or any application thereof shall to any extent be held invalid, illegal or unenforceable by the court of competent jurisdiction, the validity, legality, and enforceability of the remaining terms and conditions of this Contract shall not be deemed affected thereby unless one or both parties would be substantially or materially prejudiced.

29. Forum and Choice of Law:

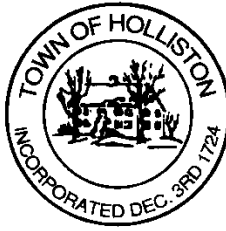
This Contract and any performance herein shall be governed by and be construed in accordance with the laws of the Commonwealth. Any and all proceedings or actions relating to subject matter herein shall be brought and maintained in the courts of the Commonwealth or the federal district court sitting in the Commonwealth, which shall have exclusive jurisdiction thereof. This paragraph shall not be construed to limit any other legal rights of the parties.

30. Notices:

Any notice permitted or required under the provisions of this Contract to be given or served by either of the parties hereto upon the other party hereto shall be in writing and signed in the name or on the behalf of the party giving or serving the same. Notice shall be deemed to have been received at the time of actual service or three (3) business days after the date of a certified or registered mailing properly addressed. Notice to the Contractor shall be deemed sufficient if sent to the address set forth on page 1 or furnished from time to time in writing hereafter.

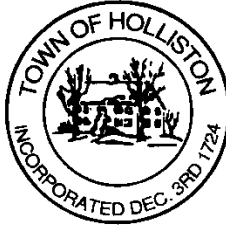
31. Binding on Successors:

This Contract is binding upon the parties hereto, their successors, assigns and legal representatives (and where not corporate, the heirs and estate of the Contractor). Neither the Town nor the Contractor shall assign or transfer any interest in the Contract without the written consent of the other.



32. Entire Agreement:

This Contract, including all documents incorporated herein by reference, constitutes the entire integrated agreement between the parties with respect to the matters described. This Contract supersedes all prior agreements, negotiations and representations, either written or oral, and it shall not be modified or amended except by a written document executed by the parties hereto.



IN WITNESS WHEREOF the parties have hereto and to two other identical instruments set forth their hands and executed this as an instrument under seal this the day and year first above written.

The Town of HOLLISTON by its  
Select Board  
By:

The Contractor by:

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name & Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Department Head Date

\_\_\_\_\_  
Print Name

Certified as to Form:

\_\_\_\_\_  
Town Counsel Date

Certified as to  
Appropriation/Availability of Funds:

\_\_\_\_\_  
Town Accountant Date

Chief Procurement Officer:

\_\_\_\_\_  
Date



### **CERTIFICATION OF GOOD FAITH**

The undersigned certifies under pains and penalties of perjury that this contract has been obtained in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

The Contractor by:

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title/Authority

### **CERTIFICATE OF STATE TAX COMPLIANCE**

Pursuant to Massachusetts General Laws, Chapter 62C, Section 49A

\_\_\_\_\_, authorized signatory for

name of signatory

\_\_\_\_\_, whose

name of contractor

principal place of business is at \_\_\_\_\_,

\_\_\_\_\_ does hereby certify under the pains and penalties of perjury that

\_\_\_\_\_ has paid all

name of contractor

Massachusetts taxes and has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

\_\_\_\_\_  
Signature

Date





## EXAMPLE CLERK'S CERTIFICATE

\_\_\_\_\_  
Action of Shareholders  
Written Consent

(Date)

The undersigned, being the Shareholders of \_\_\_\_\_, a Massachusetts Corporation (the "Corporation") entitled to vote on the action, hereby consent to the adoption of the following votes:

VOTED: That the [President and/or the Vice President or named individual], each of them acting singly is, authorized to execute any and all contract documents and to enter into and negotiate the terms of all contracts and to accomplish same and to execute any and all documents, instruments, and agreements in order to effectuate the transaction and that said transaction shall be valid, binding, effective, and legally enforceable.

VOTED: That the officers are, and each of them acting singly is, authorized, from time to time, in the name and on behalf of the Corporation to take or cause to be taken all such action(s) as s/he or they, as the case may be, deem necessary, appropriate or advisable to effect the foregoing votes, as may be shown by the officer or officers execution or performance which shall be conclusive evidence that the same is authorized by the directors of this Corporation.

VOTED: That the officers are, and each of them acting singly is, authorized, from time to time, in the name and on behalf of this Corporation, under its corporate seal, if desired, attested by an appropriate officer, if desired, to execute, make oath to, acknowledge, deliver and file any and all of the agreements, instruments, certificates and documents referred to or related to the foregoing votes.

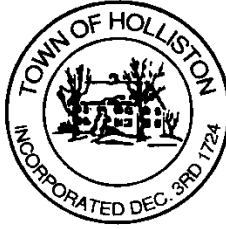
VOTED: That the officers are, and each of them acting singly is, authorized, from time to time and on behalf of this Corporation, under its corporate seal, if desired, to execute, acknowledge and deliver any and all agreements, instruments, certificates and documents referred to or related to the foregoing votes, with such changes as the officer or officers so acting may deem necessary or desirable, and the signature of such officer or officers to be conclusive evidence that the same is authorized by the directors of this Corporation.

Clerk of Corporation Certificate

I, \_\_\_\_\_ the Clerk of the foregoing corporation, do hereby certify that the above vote was taken at a duly called meeting of the shareholders of the Corporation on \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Clerk of Corporation

SEAL



## CONTRACT CHECKLIST TOWN USE

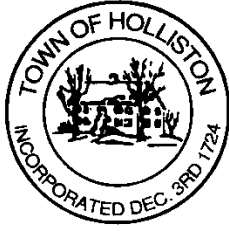
Initials

1. Certification of Signatures  
  - For Corporation: need President's signature or Clerk's Certificate dated no more than 2 years ago With Corporate Seal affixed (see attached form)
  - For LLC: need Manager signature or signed vote of the LLC
2. Certificate of Good Faith and Non-collusion
3. Insurance Certificate  
(showing Town as additional insured)
  - Matches amount of insurance required under contract
4. Certificate of Tax Compliance
5. Signed by Contractor
  - Matches certification by Corp officer of authority.
6. Certificate of Good Standing for Corporation or Certificate of Legal Existence for LLC both from the Secretary of State

Contract Reviewed by: \_\_\_\_\_

Signature

\_\_\_\_\_  
Name, Title



## APPENDIX A

PREPARED FOR: TOWN OF HOLLISTON, MA

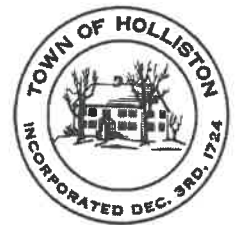
---

**ALTERNATIVES REPORT**  
**FACTORY POND DAM**  
MA02952 / 4-9-136-7  
HOLLISTON, MASSACHUSETTS



PREPARED FOR:

TOWN OF HOLLISTON  
703 WASHINGTON STREET  
HOLLISTON, MA 01746



PREPARED BY:

PARE CORPORATION  
10 LINCOLN ROAD SUITE 210  
FOXBORO, MASSACHUSETTS 02035

PARE PROJECT NO. 21214.00/202

May 2022



**FACTORY POND DAM**  
**MA02952 | 4-9-136-7**

**ALTERNATIVES REPORT**  
**HOLLISTON, MASSACHUSETTS**

May 2022

*prepared for:* Town of Holliston  
703 Washington Street  
Holliston, MA 01746

*prepared by:* Pare Corporation  
10 Lincoln Road Suite 210  
Foxboro, MA 02035

**Authority**

The Town of Holliston, MA has retained Pare Corporation (Pare) to evaluate conditions of the Factory Pond Dam in Holliston, Massachusetts and to develop a report of conceptual design alternatives to address known deficiencies at the dam. This inspection, report, and evaluations were performed in accordance with MGL Chapter 253, Sections 44-50 of the Massachusetts General Laws.

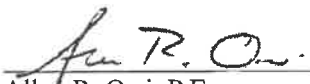


## PREFACE

The assessment of the condition of the dam is based upon available data, visual inspections, subsurface investigations, hydrologic and hydraulic studies, topographic surveys and stability analyses as well as supplemental information developed by others during previous evaluations of the dam.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection, along with data available to the inspection team and other information collected as part of the evaluation.

It is critical to note that the condition of the dam is evolutionary in nature and depends on numerous and constantly changing internal and external conditions. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

  
Allen R. Orsi, P.E.  
Massachusetts License No.: 46904  
Vice President  
Pare Corporation



## TABLE OF CONTENTS

	Page No.
PREFACE	ii
<b>1.0 PROJECT INFORMATION</b>	<b>1-1</b>
1.1 General	1-1
1.1.1 Authority	1-1
1.1.2 Purpose of Work	1-1
1.1.3 Definitions	1-1
1.2 Description of Project	1-1
1.2.1 General	1-1
1.2.2 Location	1-2
1.2.3 Owner/Operator	1-2
1.2.4 Purpose of Dam	1-2
1.2.5 Description of the Dam and Appurtenances	1-2
1.3 Pertinent Data	1-4
1.3.1 Size Classification	1-4
1.3.2 DCR Hazard Classification	1-4
1.4 Inspection History	1-4
<b>2.0 ENGINEERING DATA</b>	<b>2-1</b>
2.1 General	2-1
2.1.1 Drainage Area	2-1
2.1.2 Reservoir Information	2-1
2.1.3 Discharges at the Dam Site	2-1
2.1.4 General Elevations (feet)	2-1
2.1.5 Spillway	2-2
2.2 Design and Construction Records	2-2
<b>3.0 BASIS OF ALTERNATIVES ANALYSIS</b>	<b>3-1</b>
3.1 Structural Stability	3-1
3.1.1 Embankment (Slope) Stability	3-1
3.1.2 Embankment (Seepage) Stability	3-2
3.1.3 Retaining Wall Stability	3-2
3.1.4 Spillway Stability	3-2
3.2 Spillway Design Flood Compliance	3-2
3.3 Uncertainty	3-3
<b>4.0 ALTERNATIVES ANALYSIS</b>	<b>4-1</b>
4.1 Alternatives Analysis	4-1
4.1.1 Dam Repair	4-1
4.1.2 Dam Rehabilitation	4-2
4.1.3 Dam Removal	4-3
4.1.4 No Action / Status Quo	4-4
4.2 Opinions of Probable Cost	4-4
4.3 Life Cycle Analysis	4-5
4.4 Potential Permitting Requirements	4-6

## TABLES

Table 1-1: Owner/Operator Information	1-2
Table 1-2: Inspection History Summary	1-4



Table 2-1: Reservoir Properties	2-1
Table 4-1: Conceptual Opinion of Probable Costs	4-5
Table 4-2: Life Cycle Cost Analysis (30 Year Analysis)	4-6
Table 4-3: Potential Permitting Requirements	4-6

## FIGURES

Figure 1:	Locus Plan
Figure 2:	Aerial Plan
Figure 3:	Existing Site Sketch
Figure 4.1:	Repair Concept
Figure 4.2:	Rehabilitation Concept
Figure 4.3:	Removal Concept

## APPENDICES

Appendix A:	Visual Dam Inspection Limitations
Appendix B:	Opinion of Probable Costs
Appendix C:	Previous Reports and References
Appendix D:	Common Dam Safety Definitions
Appendix E:	Supporting Information





## **1.0 PROJECT INFORMATION**

### **1.1 General**

#### **1.1.1 Authority**

The Town of Holliston has retained Pare Corporation (Pare) to develop a report of alternative approaches to address known and/or approximated deficiencies at the dam. This inspection, report, and evaluations were performed in accordance with MGL Chapter 253, Sections 44-50 of the Massachusetts General Laws.

#### **1.1.2 Purpose of Work**

The purpose of this study is to utilize available information pertaining to the dam to develop an initial understanding of the level of effort which may be required to advance a variety of alternatives for the dam site including dam removal, dam repair, dam rehabilitation, and no action

This investigation consisted of six parts: 1) Review available reports, investigations, and data previously submitted to the owner pertaining to the dam and appurtenant structures; 2) Complete a field review of existing conditions of the dam; 3) Develop conceptual designs to either remove, repair, or rehabilitate the dam; 4) Develop opinions of probable cost for each of the identified alternatives; and 6) Prepare and submit a final report presenting the findings of the completed work.

#### **1.1.3 Definitions**

To provide the reader with a better understanding of the report, definitions of commonly used terms associated with dams are provided in Appendix D. Many of these terms may be included in this report. The terms are presented under common categories associated with dams which include: 1) orientation; 2) dam components; 3) size classification; 4) hazard classification; 5) general; and 6) condition rating.

### **1.2 Description of Project**

#### **1.2.1 General**

Sections of this report are based upon available documentation, including previous inspection reports and other available information as identified in Appendix C. Other historical information obtained during the inspection, including information provided by the caretaker, has also been incorporated in this report. This material is intended to provide general information. The accuracy of this referenced information was not verified as part of this study.

Elevations that are included in this evaluation roughly correlate to the North American Vertical Datum of 1988 (NAVD88) based upon available data from MassGIS with approximate conversions of previously reported site elevations to NAVD88. Elevation reference should only be considered accurate to the extent provided by the methods utilized.



### 1.2.2 Location

Factory Pond Dam is in the Town of Holliston, Middlesex County, Massachusetts. It is located near coordinates 42.20936°N/71.41783°W. The dam is accessible from State Route 16 as follows: Follow State Route 16 approximately 0.3 miles west from its northern intersection with State Route 126; turn right onto Woodland Street and go approximately 0.3 miles to the dam. The dam is located at the eastern end of the impoundment, as indicated on Figure 1: Locus Plan.

### 1.2.3 Owner/Operator

The dam is currently owned by the Town of Holliston. The Town of Holliston DPW is responsible for operation and maintenance of the dam.

**Table 1-1: Owner/Operator Information**

	<b>Dam Owner</b>	<b>Dam Caretaker</b>
Name	Town of Holliston	Town of Holliston DPW
Mailing Address	703 Washington Street	703 Washington Street
Town	Holliston, MA 01746	Holliston, MA 01746
Daytime Phone	508.429.0608	508.429.0615
Emergency Phone	508.429.4631 (Fire Dept)	508.429.4631 (Fire Dept)
Email Address		

### 1.2.4 Purpose of Dam

The dam, which was originally constructed for water supply purposes for a mill, currently impounds water for recreational use.

### 1.2.5 Description of the Dam and Appurtenances

As shown on Figure 3: Site Sketch, Factory Pond Dam is an earthen dam about 135 feet long oriented primarily north/south. A dam was originally constructed at the site in 1873 and subsequently modified during the 1900's. The current structure has a maximum structural height of approximately 13 feet.

The crest carries Woodland Street, a 24-foot wide bituminous roadway with a 7-foot wide bituminous sidewalk on the west (upstream) side. Upstream of the roadway, the crest is a 25-foot wide grass and gravel area. The upstream slope is vegetated with no protection on its 4H:1V slope. A concrete wall replaces the upstream slope within about 25 feet on either side of the spillway.

The downstream slope is irregular and is largely defined by the presence of the abandoned roadway and dam. Left of the spillway, the abandoned and current roadway grades are at



*Image 1: Factory Pond Dam impoundment and primary spillway looking northwest from the Upper Charles Rail Trail Bridge*

about the same elevation. Consequently, the downstream slope is rather level in this area to the original downstream slope, which slopes away at about 2H:1V. Vehicle access to this flat area is available through a small grass and gravel driveway. Right of the spillway, the roadway embankment slopes at 2H:1V to a lower, level area of the abandoned roadway. The slope continues approximately level to the original downstream slope.

The right abutment is not well defined. The bank of Factory Pond turns gradually away from the crest starting about 135 feet from the left abutment. On the downstream side of the crest, the slope and embankment from the original dam and roadway continue for approximately 165 feet. A portion of this embankment is supported by a stone masonry wall. A possible outlet structure and downstream channel are present near the right end of the slope. A potential concrete headwall structure is visible on the bank of Factory Pond opposite the downstream structure. The configuration of these structures could not be determined.

The spillway is a 13-foot wide broad crested overflow concrete weir. Stoplog slots are present within the spillway walls; however, the level of the concrete weir currently regulates the normal pool elevation. Downstream, the training walls are concrete up to the abutments supporting a steel and concrete bridge over the downstream channel. The abutments and downstream walls are stone masonry, including the walls forming the abutments for the abandoned bridge. An abandoned concrete weir lies immediately downstream of the abandoned bridge near the toe of the dam.

As indicated in the 2017 Phase I Inspection Report, "Visible under the fall of the main spillway wall is another possible low level outlet, measuring approximately 3 feet by 3 feet by 5 feet 6 inches deep. The opening is through the right half of the downstream masonry face of the spillway and approximately 3 feet from the right training wall. The headwall over the opening is approximately 32 inches from soffit to spillway crest. No controls were observed. No "twin" outlet was observed on the left half of the spillway.

A stone headwall and inlet were observed on right shore of the impoundment approximately 135 feet to the right of the spillway. The matching stone masonry discharge headwall was observed across



Image 2: Concrete walls at primary spillway approach



Image 3: Downstream slope right of primary spillway. Arrow indicates approximate location of stone masonry wall and outlet.

Woodland Street approximately 150 feet to the right of the spillway. No controls were observed. No further information regarding the outlets were available.”

The impoundment, Factory Pond, is located along the Bogastow Brook and is also fed by the Jar Brook. The downstream brook flows under a stone masonry railroad viaduct that supports the Upper Charles recreational Rail Trail, and then through a channel lined by stone masonry walls one to two feet high. The brook continues through a swampy area for approximately 1.5 miles until its confluence with the Dopping Brook.

### 1.3 Pertinent Data

#### 1.3.1 Size Classification

Factory Pond Dam has a maximum structural height of approximately 13 feet and a reported maximum storage capacity of 50 acre-feet. Therefore, in accordance with Department of Conservation and Recreation Office of Dam Safety classification, under Commonwealth of Massachusetts Dam Safety rules and regulations stated in 302 CMR 10.00, Factory Pond Dam is a **Small** size structure.

#### 1.3.2 DCR Hazard Classification

Factory Pond Dam carries Woodland Street and lies 40 feet upstream of an abandoned railroad viaduct, 0.6 miles upstream of Lowland Street, 0.9 miles upstream of Marilyn and Northway Streets, and 1.1 miles upstream of power transmission lines. Commercial and residential properties are present along this stretch of the Bogastow Brook. Therefore, in accordance with Department of Conservation and Recreation classification procedures, under Commonwealth of Massachusetts dam safety rules and regulations stated in 302 CMR 10.00 failure of the dam “may cause loss of life and damage home(s), industrial or commercial facilities, secondary highway(s) or railroad(s).” As such, Factory Pond Dam is a **Class II (Significant)** hazard potential dam.

### 1.4 Inspection History

Based upon a review of available information provided by the Town of Holliston and the MADCR Office of Dam Safety, the site has a history of developing conditions resulting in the current poor condition rating. The following tables provides a summary of past inspections and noted conditions:

**Table 1-2: Inspection History Summary**

Date	Inspector	Dam Condition	Noted Deficiencies
8/16/1973	Pizan & Pare	Good	Brush on embankment
10/8/1987	CVP	Fairly Good	Obstructions and dislodged masonry in discharge channel, brush on embankment
5/5/1999	Haley & Aldrich	Fair	Brush on embankment, areas of erosion adjacent to discharge channel and bridge abutments
2/13/2007	Pare	Poor	Concrete deterioration, failing scour apron, eroded channels, seepage at right abutment, failing stone wall on downstream slope, brush & stumps on embankment
5/23/2008	Pare	Poor	Voids in walls, failed scour apron, seepage at right abutment, leakage at left downstream training wall, brush & stumps on embankment



5/25/2010	Fuss & O'Neill	Poor	Deteriorating concrete, failed scour apron, eroded channels, unprotected upstream slope, possible seepage/leakage at right abutment, failing downstream stone wall, brush, trees & stumps on embankment
11/16/2010	Lenard Engineering	Poor	Deteriorating concrete, failed scour apron, eroded channels, unprotected upstream slope, possible seepage/leakage at right abutment, failing downstream stone wall, voids in walls, brush, trees & stumps on embankment, animal burrows, minor depressions, inadequate grass cover, and debris obstruction
5/9/2011	Lenard Engineering	Poor	Deteriorating concrete, failed scour apron, voids in concrete, heavy brush on embankment, inadequate grass cover, failing stone walls, animal burrows & sinkholes on crest and downstream slope, seepage, and leakage
6/8/2012	Lenard Engineering	Poor	Heavy brush and trees on embankment, unprotected slope, inadequate grass cover, failing downstream stone wall, void under concrete slab, deteriorating concrete, failing scour apron, bank erosion, and stained seepage
6/13/2013	Lenard Engineering	Poor	Heavy brush on embankment, unprotected slope, inadequate grass cover, failing downstream stone wall, void under concrete slab, deteriorating concrete, failing scour apron, bank erosion, animal burrows, and stained seepage
11/10/2016	Lenard Engineering	Poor	Unprotected slope, inadequate grass cover, failing downstream stone wall, voids in concrete, deteriorating/missing concrete, failing scour apron, slope erosion, seepage/leakage at abandoned outlet, and animal burrows
10/13/2017	Lenard Engineering	Poor	Heavy brush on embankment, unprotected slope, inadequate grass cover, failing downstream stone wall, void under concrete slab, deteriorating concrete, failing scour apron, and bank erosion
11/26/2018	Lenard Engineering	Poor	Failing guard post, cracked asphalt, seepage, heavy brush on embankment, unprotected slope, inadequate grass cover, deteriorating/missing concrete, voids in concrete, failing scour apron, slope erosion, animal burrows, and debris obstruction
5/10/2021	Lenard Engineering	Poor	Heavy brush on embankment, unprotected slope, inadequate grass cover, failing downstream stone masonry wall, voids in concrete, deteriorating/missing concrete, failing scour apron, and debris obstruction



## 2.0 ENGINEERING DATA

### 2.1 General

#### 2.1.1 Drainage Area

As reported in the 2017 Report, “The drainage area for Factory Pond Dam is approximately 5.84 square miles. The drainage area is generally between 0.9 and 1.6 miles wide and extends approximately 3.1 miles south of the dam and 2.9 miles northwest of the dam. The drainage area includes the drainage areas for Lake Winthrop Dam, Houghton Pond Dam, and Linden (aka Mill) Pond Dam. The drainage area also includes the Jar Brook, Bogastow Brook (including the Winthrop Canal), and several other unnamed tributaries and ponds. Topographical features include low to moderate hills, the developed areas of Holliston center and northern Holliston, and swampland upstream and southeast of Lake Winthrop.”

#### 2.1.2 Reservoir Information

The following table provides a general overview of impoundment geometric properties. Data is based upon available LiDAR data from MassGIS for above normal pool storage volume and previous reports for below normal pool storage.

**Table 2-1: Reservoir Properties**

	<b>Elevation</b>	<b>Surface Area (acres)</b>	<b>Storage Volume (acre-feet)</b>
Normal Pool	163.5±	9.9 ±	18 ±
Maximum Pool	166.2±	23 ±	50 ±
SDF Pool	Unknown	Unknown	Unknown

#### 2.1.3 Discharges at the Dam Site

No records of discharges at the dam site were made available during the preparation of this report.

#### 2.1.4 General Elevations (feet)

Elevations are based upon information provided within available inspection reports. As indicated in the 2017 Phase I Report, the previously referenced datum is assumed. Elevations have been roughly converted from the previously reported datum to NAVD88 based upon correlation of spot elevations to available LiDAR data; to approximately convert from the assumed datum to NAVD88, add 64.5 feet. The elevations should only be considered accurate to the level of the methods used.

	<u>Previously Reported (Assumed Datum)</u>	<u>Approximate NAVD88</u>
A. Top of Dam	102	166.5
B. Spillway Design Flood Pool	No H&H Available	
C. Normal Pool	99.0±	163.5±
D. Downstream Channel		
1. At toe of Spillway	94.1±	158.6±
2. Downstream of Former Bridge	89±	153.5±
3. Downstream of Abandoned Outlet	90.4±	154.9±



E.	Downstream Water	. 90±	154.5±
----	------------------	-------	--------

### 2.1.5 Spillway

A.	Type	Concrete Weir with Stoplogs	
B.	Width	13 feet	
C.	Elevations		
	1. Top Stop Log Slots	100.0	164.5
	2. Fixed Crest	99.0	163.5

## 2.2 Design and Construction Records

No design or construction records were available during the preparation of this report. Information within the MADCR dam database detail indicates that the dam was originally constructed in 1873. Based upon observations at the site, it is inferred that the original dam crest carried a roadway which crossed a timber and concrete bridge constructed in 1920 over the spillway. Later during the 1900's (exact date unknown), the roadway was relocated approximately 30 feet upstream, a new dam and bridge were constructed, and the replaced dam and bridge were abandoned in-place. The abandoned dam and bridge now form a portion of the downstream slope.



### 3.0 BASIS OF ALTERNATIVES ANALYSIS

The scope of this study provides for the development of alternatives to comply with current state dam safety regulations and to address known deficiencies at the dam. Where available, the study references previously completed studies and detailed analyses. In the absence of detailed evaluations, the scope of the work includes developing approximations of the dam's current compliance with applicable regulations based upon available published information and the engineer's judgment. The following provides the basis for which the dam has been assessed.

#### 3.1 Structural Stability

Available documentation for the dam includes visual inspections and assessments of the dam stability. As indicated in the 2017 Phase I Report:

Based solely on visual observation alone, the embankments currently appear stable. However, there are deficiencies which if left uncorrected may shorten the service life of the dam. These deficiencies include:

- A. Mature trees and brush within 20 feet of the dam area;
- B. Inappropriate or missing grass cover on slopes;
- C. Failing downstream stone masonry wall which supports both the downstream dam embankment and the abandoned roadway embankment at the right of the spillway.

Based solely on visual observation alone, the spillway currently appears stable. There are deficiencies, which if left uncorrected may shorten the service life of the dam. These deficiencies include:

- A. Erosion between cap and spillway crest at the joints;
- B. Erosion of top of weir at the center of the spillway;
- C. Poor condition of the concrete overlay;
- D. Missing and cracked portions of the forebay weir walls;
- E. Poor condition of the scour apron.

Although not truly an appurtenance of the dam, should the abandoned roadway bridge collapse, the downstream main channel may become blocked.

In addition to previously reported observations, a void was noted behind the downstream left training wall upstream of the roadway bridge. This void appears to have developed as a result of overtopping of the spillway walls and return flow over the training wall and back to the spillway channel. The extent of void space and damage to the walls has not been determined.

Given available information, the dam has been reported to be structurally stable based upon visual observations with areas of deterioration which may lead to the development of future instability.

##### 3.1.1 Embankment (Slope) Stability

The embankment sections at the dam include the upstream slope beyond the limits of the spillway walls and the downstream slope along the downstream side of the roadway. For the purposes of this assessment, the following conditions are assumed:





- 1) The upstream slope, reported to be near 4H:1V<sup>1</sup>, is presumed to be stable and meeting required factors of safety. Erosion and scarping of the slope appears to warrant provision of slope protection.
- 2) The downstream slope is steeper than 1.7H:1V<sup>2</sup> in areas approaching the right end of the dam; while no indications of slope movement have been reported, the section of slope is presumed to not meet required factors of safety.

### 3.1.2 Embankment (Seepage) Stability

Areas of seepage have been reported at the downstream toe near the right end of the dam. However, this seepage has been noted to be related to a potential former outlet structure. Flow rates have generally been low with no indication of sediment transport. No other areas of seepage have been reported.

Given the observed conditions, for the purposes of this study the embankment is assumed to be adequately resistant to seepage through the embankment. While measures to cutoff/reduce seepage do not appear warranted, embankment work to address slope stability in the area of seepage is assumed to require appropriate drainage features.

### 3.1.3 Retaining Wall Stability

No previous evaluations of the stability of retaining walls at the dam has been completed. The alignment and condition of the walls have generally been reported to be satisfactory as part of previous inspections. As such, the walls have been presumed to be stable for the purposes of this study.

While walls appurtenant to the dam have been considered stable, previous reports have noted concerns with the stability of the bridge abutment walls. For this report, the bridge abutment walls have not been considered as part of the dam structure and are excluded from the scope of this assessment.

### 3.1.4 Spillway Stability

No previous evaluations of the stability of the spillway and appurtenant training walls at the dam has been completed. The alignment and condition of the walls have generally been reported to be satisfactory as part of previous inspections. As such, the structures are presumed to be stable for the purposes of this study.

## 3.2 Spillway Design Flood Compliance

Given the size and hazard potential classification for the dam, the spillway design flood is the 100-year storm event.

The 1987 Phase I Inspection report included the completion of rudimentary hydrologic and hydraulic

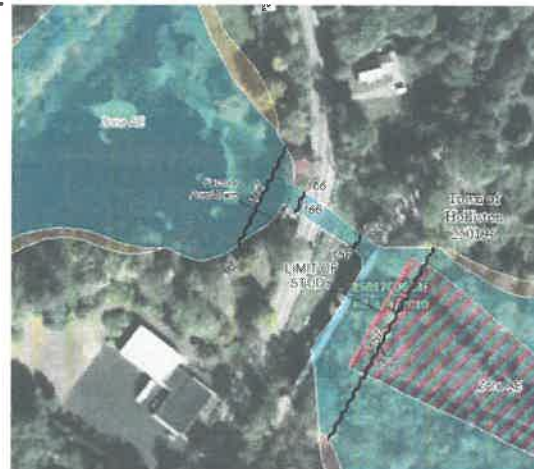


Image 3-1: FIS Panel in Area of Factory Pond Dam

<sup>1</sup> Office of Dam Safety Inspection Guidance and Notes suggests a condition rating of 4 or 5 for earthen slopes flatter than 3H:1V.

<sup>2</sup> Office of Dam Safety Inspection Guidance and Notes suggests a condition rating of 1 for earthen slopes steeper than 2H:1V.

analysis. Utilizing ACOE Probable Maximum Flood (PMF) Peak Flow Rate charts, which predict a Probable Maximum Flood flow of 4,730 cfs, the report estimated the 100-year flow to be approximately 1,180 cfs (25% of the full PMF). The study concluded that the dam, with a reported maximum discharge capacity of 495 cfs, would be overtopped by the 100-year storm event.

The effective Flood Insurance Study (FIS) for the dam (FIS Number 25017CV001C, dated July 6, 2016), reports a 100-year flow of 540 cfs from the Bogastow Brook upstream of the impoundment (with a drainage area of 2.9 square miles); this flow does not account for the contributory drainage area from the Winthrop Canal. The FIS reports a 100-year flow of 800 cfs downstream of the dam at the confluence with Dopping Brook (with a drainage area of 6.7 square miles). The FIS predicts that the 100-year water surface elevation will rise to near the crest of the dam; however, no overtopping of Woodland Street is predicted.

Several occurrences of overtopping of the upstream walls and training walls at the spillway have been reported, including August 2011 (Tropical Storm Irene) and most recently after heavy rainfall around September 2, 2021. While the upstream walls and spillway training walls overtopped, no overtopping of the roadway has been reported.

Given available studies and past performance of the dam, it appears that the dam has capacity near the required spillway design flood event; however, modifications to the dam are presumed to be required to protect the dam and spillway structures during high flow events. It is presumed that modification of the existing spillway can meet spillway design flood flows; however, reconstruction or replacement is not required.



*Figure 3-3 High water levels post Tropical Storm Irene (August 28, 2011)*

To support the development of conceptual designs, flow rates reported within the FIS will be adjusted for the site drainage area using the area ratio of ungaged to gaged watersheds (Equation 1):

$$Q_{\text{ungaged}} = Q_{\text{gaged}} \times \frac{A_{\text{ungaged}}}{A_{\text{gaged}}} \quad \text{Equation 1}$$

For Factory Pond, with a reported drainage area of 5.8 square miles, the corrected flow rate using the reported flow at the confluence with the Dopping Brook is 692 cfs. Given uncertainty and approximate nature of the methods, a conceptual design flow rate of 700 cfs will be utilized for this study. This value falls within the range of peak flows predicted by USGS StreamStats (587 cfs; Upper Limit 1310 cfs, Lower Limit 263 cfs).

### 3.3 Uncertainty

Detailed evaluations specific to the project site are not available. As such, the accuracy of critical criteria presented above is uncertain.

Detailed hydrologic and hydraulic analysis incorporating current modeling methods and data sets and accounting for routing effects of the impoundment may find SDF flows higher or lower than those presumed herein.

The assessment also assumes that past performance of structural components of the dam indicates adequate stability; however, detailed assessment may indicate that while stable, factors of safety for stability meeting current dam safety regulations requirements may not be met.



## 4.0 ALTERNATIVES ANALYSIS

### 4.1 Alternatives Analysis

For the purposes of this evaluation, four design alternatives were considered to address the concerns at the site. These alternatives include 1) Dam Repair; 2) Dam Rehabilitation; 3) Dam Removal; and 4) No Action. The general scope of each of these alternatives includes the following:

- 1) **Dam Repair:** Includes maintenance, repair, and/or replacement of existing features at the dam to restore their original design functionality. Repair generally includes upgrading existing facilities to address known structural deficiencies; however, measures to address regulatory deficiencies are beyond the scope of a repair program.
- 2) **Dam Rehabilitation:** Includes repairs and modifications to the dam to address physical deficiencies as well as to upgrade the dam to comply with applicable design requirements, such as spillway design flood requirements and meeting required factors of safety. In general, dam rehabilitation alters the current design to provide a structure compliant with all design requirements.
- 3) **Dam Removal:** Includes complete removal of the spillway control structure and portions of the dam as necessary to fully drain the impoundment. The extent of removal for the purposes of this evaluation assumes that the difference in water surface elevation across the former dam location is less than 6-feet, which would classify the remaining structure as non-jurisdictional. It should be noted that ecological restoration permit process requires that the removal results in no increase to water surface elevation upstream of the dam location during a 500-year storm event; as such, extent of required removal may exceed that considered as part of this study.
- 4) **No Action:** Includes maintaining the current level of operations, maintenance, and inspection at the dam; no repairs or remedial measures are to be completed.

#### 4.1.1 Dam Repair

The scope of a dam repair program may include:

1. **Control of Water and Diversions:** A temporary bypass would likely be required to allow for work on the spillway to be completed; this bypass would likely consist of a siphon structure over the crest of the dam. Phasing of the construction work will be designed to allow for continued flow of water past the work area to facilitate completing the work in the dry.

In conjunction with the diversion, control of water will also be required. It is anticipated that this would include a drawdown of the impoundment on the order of 1 to 3 feet and the installation of a temporary cofferdam (Port-A-Dam or bulk sand bags).

2. **Clearing and grubbing of trees and other unwanted vegetation along the length of the dam.** Fill and compact resulting holes. Clearing would extend a minimum of 20 feet beyond the limits of the embankment downstream of the dam as well as into each abutment.
3. **Structural repairs to the spillway and associated walls including:**
  - Patching damaged concrete and sealing cracks in concrete
  - Repointing masonry wall sections



- Filling areas of observed voids
  - Repairing the scour apron
4. Restoring upstream slope protection where previously provided; this is assumed to include lining the normal pool waterline with boulders.
  5. Regrading slopes to uniform sections; establish a maintainable surface covering within the limits of the dam embankment.

The dam repair program is expected to extend the serviceable life of the structure and enable the implementation of a routine maintenance program. The program may not fully address all dam safety deficiencies at the dam. For example, this repair program would not address any concerns regarding the spillway design flood compliance or seepage or stability issues that may exist and have not been visually apparent during past inspections.

The general character and limits of the dam repair program are shown on Figure 3.1: Dam Repair Concept.

#### **4.1.2 Dam Rehabilitation**

The scope of a dam rehabilitation program may include:

1. **Control of Water and Diversions:** A temporary bypass would likely be required to allow for work on the spillway to be completed; this bypass would likely consist of a temporary culvert excavated through the embankment to either side of the spillway to accommodate base and storm flows during construction. Phasing of the construction work will be designed to allow for continued flow of water past the work area to facilitate completing the work in the dry.

In conjunction with the diversion, control of water will also be required. It is anticipated that this would include a drawdown of the impoundment on the order of 3 feet and the installation of a temporary cofferdam (Port-A-Dam or bulk sand bags).

2. Clearing and grubbing of trees and other unwanted vegetation along the length of the dam. Fill resulting holes. Clearing would extend a minimum of 20 feet beyond the limits of the embankment downstream of the dam as well as into each abutment.
3. Evaluate for the presence of and formerly abandon the reported potential outlet through the right end of the dam; this may include an open cut and replacement, a grouting program, or driven sheet pile cutoff.
4. Modify the spillway to accommodate the spillway design flood (100-year storm event) without overtopping of the roadway or spillway walls. Based upon conceptual designs, high stage weirs to both sides of the existing spillway, each approximately 30 feet long, would provide required capacity:
  - Construct overflow weirs 6-inches above the existing spillway and extending 30 feet to either side of the spillway.
  - Excavate the embankment to either side of the spillway between the pond and the roadway to lower the grade approximately 2.5 feet.



- Install concrete slab scour aprons to convey flow from the new channel back to the spillway channel upstream of the bridge.

Alternatively, a 60-foot-long weir could be provided to one side of the spillway; however, depth of excavation for the scour slab would be increased.

Given the age and condition of the existing spillway, complete replacement may be warranted. If complete replacement is the preferred approach to provide a rehabilitated dam with a longer design life, the new spillway could take the form of a single cycle labyrinth spillway with an effective weir length designed to match required total discharge capacity while maintaining some of the flood routing benefits of the impoundment (i.e., provide high and low stage weirs). The reconstructed spillway could also be designed to provide a low level outlet via a gated conduit through the spillway as well as a bay of stoplogs at an accessible location to allow for pre-storm or seasonal drawdowns to be implemented (as presented below).

5. Provide low level outlet discharge capacity. The low level outlet should be designed to meet regulatory requirements and also to provide sufficient freeboard during a spillway design flood event.
  - Demolish the existing spillway weir
  - Dredge an approach channel
  - Reconstruct the weir to include a gated outlet (slide gate or valve)
  - Install a catwalk across the conceptual-high stage overflow weirs and/or discharge slabs to provide access to the gate controls
6. Regrade the downstream slope to provide a stable, maintainable section:
  - Clear and grub the slope; strip organics
  - Regrade to stable section; provide drainage if required in the area of the former outlet structure near the right abutment
7. Install stone riprap along the upstream slope of the dam
8. Establish a maintainable surface covering within the limits of the dam embankment (i.e., grass, riprap in areas prone to scarping and erosion)

The dam rehabilitation program is expected to fully address the noted deficiencies at the dam and provide a structure that satisfies or exceeds regulatory requirements.

The general character and limits of the dam rehabilitation program are shown on Figure 4.2: Dam Rehabilitation Concept.

#### **4.1.3 Dam Removal**

As for all dams, breaching of the dam and river restoration is an alternative for addressing the dam safety concerns. Factory Pond currently only supports passive recreational activities. No water supply, wells, or other resources supported by the impoundment or the dam have been identified as part of the current evaluation. Removal of the dam would also have limited impact on peak flows during storm events to the downstream area due to the small size of the impoundment, limited flow attenuation offered by the outlet structures, and relatively large floodplain immediately downstream of the dam. As such, breaching of the dam may be a feasible approach for this site.



No information pertaining to the quantity or quality of sediment is available for this site; as such, it is unknown if sediment mitigation measures would be required. Additional consideration of sediment upon the feasibility of dam removal would be required if removal is a preferred approach.

A dam removal program would likely consist of complete demolition and removal of the vertical extents of the dam in the vicinity of the spillway. Preliminary hydraulic evaluations indicate that the 100-year flow would result in 8 feet of water within the channel at the Woodland Street bridge. This does not satisfy the design requirement for non-jurisdictional dams to impound less than 6 feet of differential head. Widening of the bridge would likely be required for the dam to be considered adequately removed. To meet non-jurisdictional requirements, the bridge would need to be approximately 20 feet wide. However, to meet Massachusetts Stream Crossing Standards, an approximately 35-foot-wide bridge would be required to meet the optimum goal of 1.2 times the bankfull width (given a bankfull width of 29 feet predicted by USGS StreamStats).

To enable completion of the dam removal and bridge replacement program, temporary traffic control will be required. As part of design development, traffic studies would be required to determine if Woodland Street could be closed to thru traffic between Linden Street and Washington Street; if closure and detour is not possible, then phasing of the work would be required which would significantly impact the project cost and duration.

Impoundment area restoration would likely include a natural revegetation program with supplemental planting and bank stabilization measures as deemed necessary during final design activities; should sediment characterization and quantification indicate concerns with in-stream management of sediment, additional measures to either remove and dispose of sediment, stabilize sediment in place, or otherwise remove sediment from the system will need to be implemented.

In addition to environmental considerations, public outreach would also play a critical role in a dam removal program.

#### **4.1.4 No Action / Status Quo**

Implement and continue maintenance activities at the dam. This option would not address the existing deficiencies at the dam or result in compliance with current state dam safety regulations. As such, this option was not considered further.

## **4.2 Opinions of Probable Cost**

The following opinions of probable cost have been developed for the conceptual alternatives noted above based upon limited information as presented within Section 3.0. The costs shown herein are based on a limited investigation and are provided for general information only. This should not be considered an engineer's estimate, as actual construction costs may be somewhat less or considerably more than indicated. For more detailed information utilized for the development of the opinions of probable cost, refer to Appendix C.



**Table 4-1: Conceptual Opinion of Probable Costs**

Work Item	Alternative		
	Repair	Rehabilitation	Removal
General Requirements	\$28,220.00	\$66,690.00	\$79,220.00
Mobilization / Demobilization	\$17,000.00	\$30,000.00	\$90,000.00
Clearing and Grubbing	\$8,850.00	\$8,850.00	\$3,790.00
E&S Controls	\$10,200.00	\$10,200.00	\$10,200.00
Control of Water	\$40,600.00	\$35,600.00	\$28,300.00
Embankment Work	\$72,210.00	\$77,450.00	N/A
Spillway Work	\$123,500.00	\$122,500.00	N/A
Low Level Outlet Work	N/A	\$9,000.00	N/A
Bridge Work	N/A	\$400,000.00 (Repair)	\$1,371,000.00 (Replacement)
Dam Removal Work	N/A	N/A	\$120,000.00
Sediment Management	N/A	N/A	Unknown
<b>Subtotal w/ Bonds</b>	<b>\$304,580.00</b>	<b>\$768,290.00</b>	<b>\$1,720,510.00</b>
Design Contingency	\$105,350.00	\$228,300.00	\$510,900.00
Engineering and Design	\$55,000.00	\$80,000.00	\$150,000.00
Permitting	\$15,000.00	\$30,000.00	\$80,000.00
Construction Administration	\$60,000.00	\$80,000.00	\$50,000.00
<b>Conceptual Opinion of Probable Cost</b>	<b>\$540,000.00</b>	<b>\$1,187,000.00</b>	<b>\$2,512,000.00</b>

When comparing costs, the total cost including design, engineering, permitting, construction and long-term maintenance should be considered. The applicability of environmental permits needs to be determined prior to undertaking maintenance activities that may occur within resource areas under the jurisdiction of MADEP, local conservation commissions, or other regulatory agencies.

### 4.3 Life Cycle Analysis

An analysis was conducted to estimate the life cycle cost of each of the alternatives over a period of 30 years in order to develop a better understanding of the true costs of each alternative. The National Institute of Standards and Technology (NIST) Life Cycle Cost Manual Handbook 135 with the 2019 Supplement was used to determine the life cycle costs for the proposed alternatives (NIST, 1995). At this level of study, a simple method was utilized that accounts for initial investment, capital replacement, energy, and operation, maintenance, and repair.

Operations and Maintenance (O&M) costs for the dam structure consists of gate operation (if provided/installed), mowing and other vegetation maintenance, debris removal, and other miscellaneous items. O&M includes routine activities but does not account for intermittent repairs or other minor repairs to address identified deficiencies.

The estimated yearly O&M cost estimate is \$4,000 for Alternatives 1, 2, and 4. Estimated O&M costs for Alternative 3 are \$500 to account for post-dam removal maintenance (mowing, cleanup, etc.) of any publicly accessible areas created or restored as part of the dam removal program.

The present cost for each alternative was determined based on a 30-year analysis period, considering initial capital costs, assumed design life, and yearly O&M costs. Capital replacement costs were determined based on the assumed remaining design life at the end of the 30-year analysis period. Note that the costs in Table 4-1 do not include environmental restoration components, allowing for a focused analysis on the





infrastructure costs. Additional life cycle costs may be realized should sediment management or invasive species management be required as part of dam removal activities.

**Table 4-2: Life Cycle Cost Analysis (30 Year Analysis)**

	Alternative		
	Repair	Rehabilitation	Removal
Initial Capital Investment			
Discount Factor	1	1	1
Initial Capital Cost	\$540,000	\$1,187,000	\$2,512,000
Capital Replacement Cost			
Assumed Design Life (yrs)	25	50	N/A
Assumed CIP Cost Percentage	100%	40%	0%
Discount Factor	0.412	0.412	0.412
Operations & Maintenance			
O&M Costs	\$6,000	\$4,000	\$250
Discount Factor	19.6	19.6	19.6
<b>Total Present Cost</b>	<b>\$ 880,080</b>	<b>\$ 1,461,018</b>	<b>\$ 2,516,900</b>

#### 4.4 Potential Permitting Requirements

The following table presents the potential permitting requirements for each of the alternatives considered. Depending upon the final scope of work, the required permitting may vary from that set forth below.

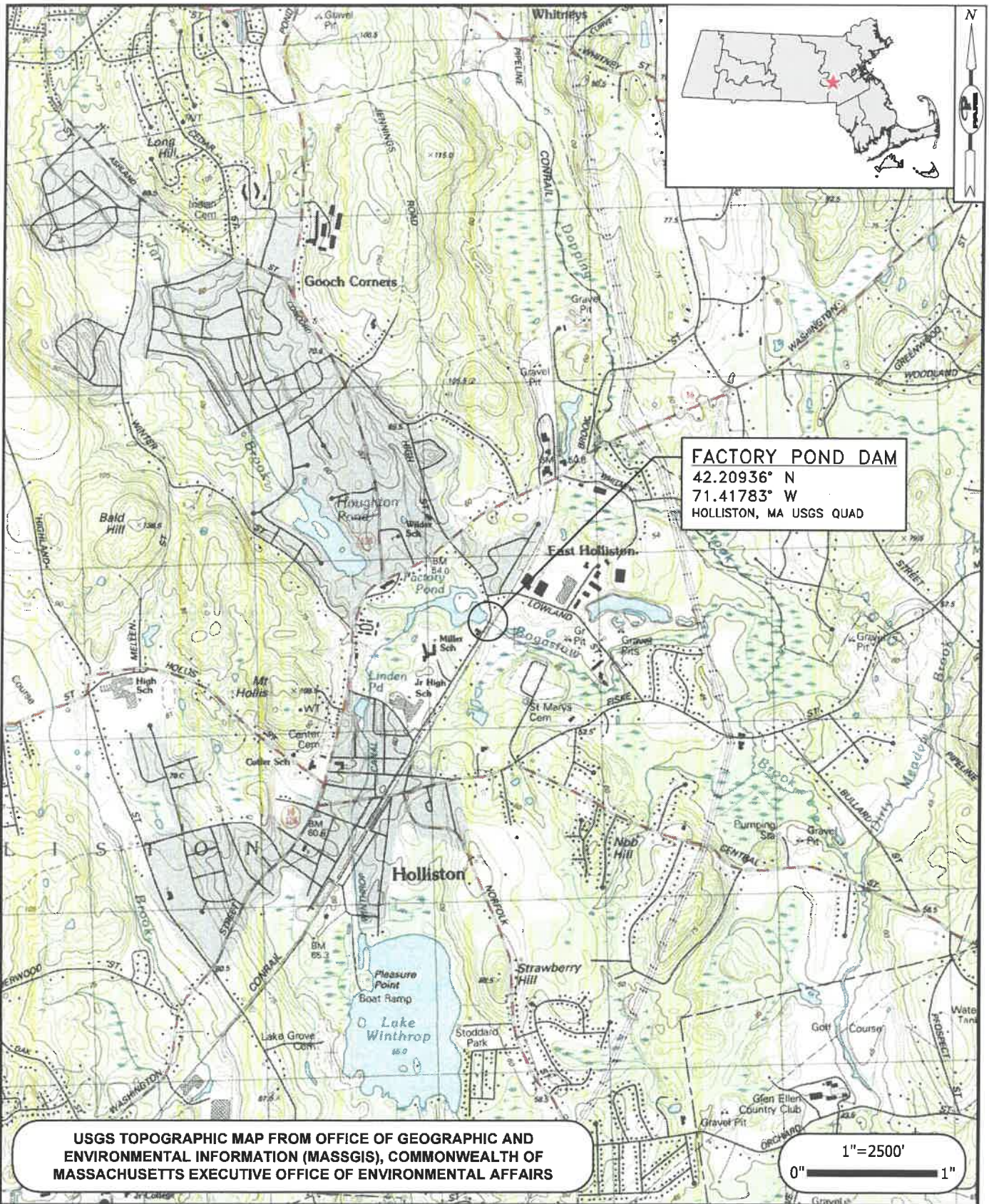
**Table 4-3: Potential Permitting Requirements**

	Alternative			
	#1 Dam Repair	#2 Dam Rehabilitation	#3 Dam Removal	#4 No Action
<b>NOI</b>	Yes	Yes	Yes	Not Applicable
<b>MEPA</b>	Potentially	ENF/EENF	EIR	Not Applicable
<b>ACOE GP</b>	SV	PCN	IP	Not Applicable
<b>DCR Dam Safety</b>	Part A & B	Part A & B	Part A & B	Not Applicable
<b>WQC</b>	No	YES	Yes	Not Applicable



## **FIGURES**

*Factory Pond Dam  
Holliston, Massachusetts*



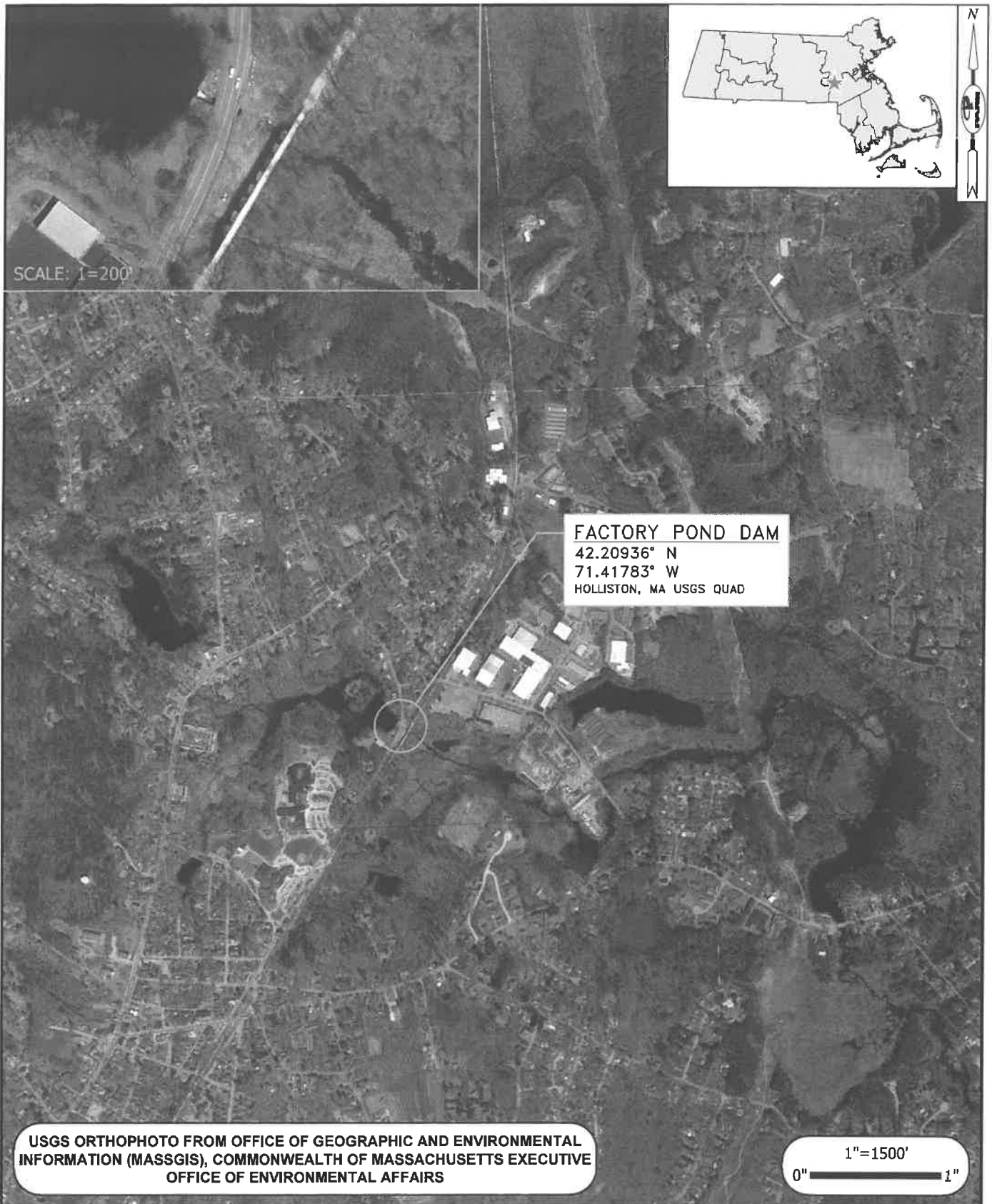
**FACTORY POND DAM**  
MA02952 / 4-9-136-7  
HOLLISTON, MASSACHUSETTS

**LOCUS PLAN**

NOVEMBER 2021

FIGURE 1





**FACTORY POND DAM**  
MA02952 / 4-9-136-7  
HOLLISTON, MASSACHUSETTS

**AERIAL PLAN**

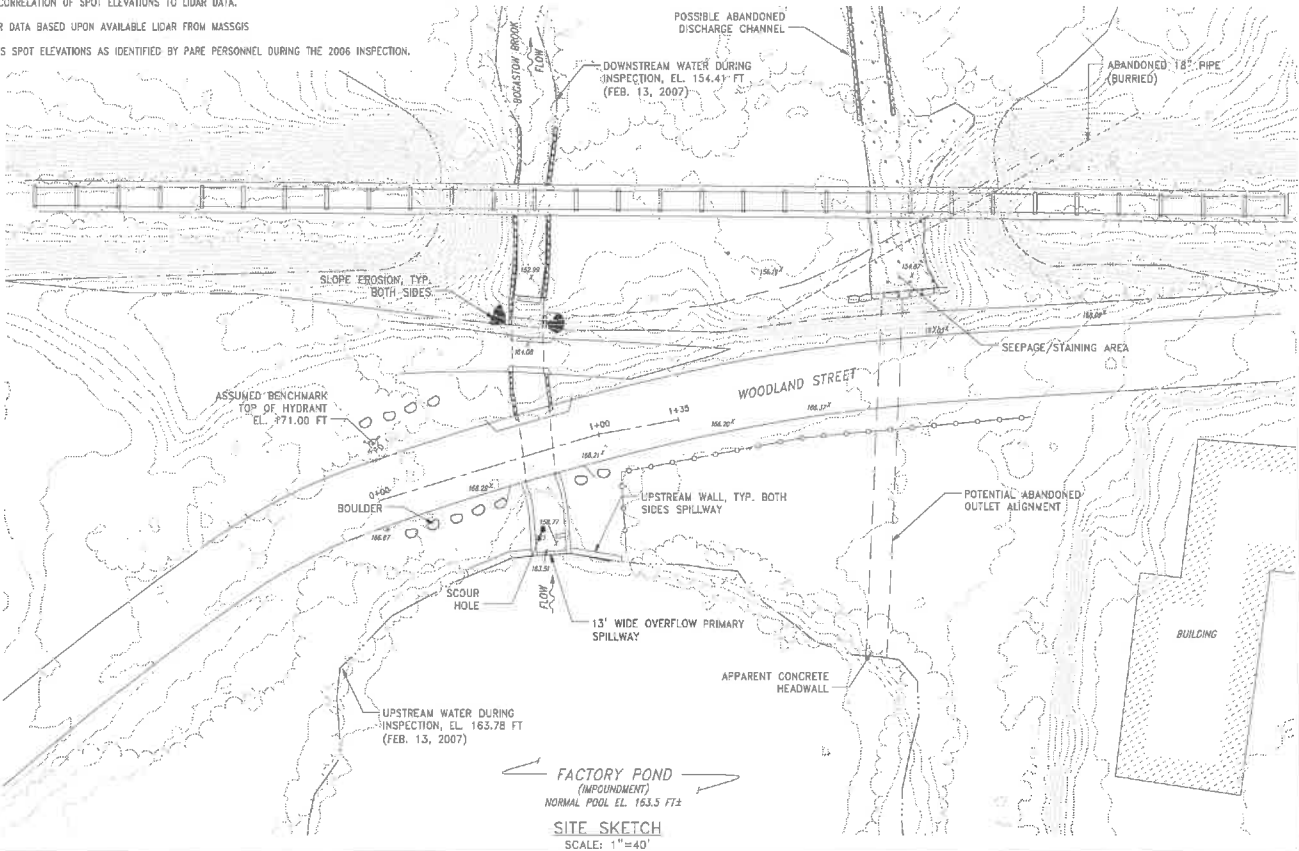
NOVEMBER 2021

FIGURE 2

# NOTES AND LEGEND

1. SKETCH DEVELOPED FROM INFORMATION OBTAINED DURING THE INSPECTION AND AVAILABLE AERIAL PHOTOGRAPHY. THE INFORMATION INCLUDED ON THE SKETCH IS PROVIDED FOR REFERENCE PURPOSES ONLY.
2. ELEVATIONS BASED UPON A RELATIVE ELEVATION SURVEY PERFORMED BY PARE PERSONNEL DURING THE 2006 INSPECTION. ELEVATIONS APPROXIMATELY REFERENCE NAVD88 BASED UPON ROUGH CORRELATION OF SPOT ELEVATIONS TO LIDAR DATA.
3. CONTOUR DATA BASED UPON AVAILABLE LIDAR FROM MASSGIS

100.00' INDICATES SPOT ELEVATIONS AS IDENTIFIED BY PARE PERSONNEL DURING THE 2006 INSPECTION.



**PARE CORPORATION**  
 1000 STATE STREET  
 SUITE 200  
 BOSTON, MA 02116  
 TEL: 617.552.1000  
 FAX: 617.552.1001  
 WWW.PARECORP.COM

**FACTORY POND DAM**  
 MA02552 / 4-9-136-7  
 HOLLISTON, MASSACHUSETTS  
 TOWN OF HOLLISTON

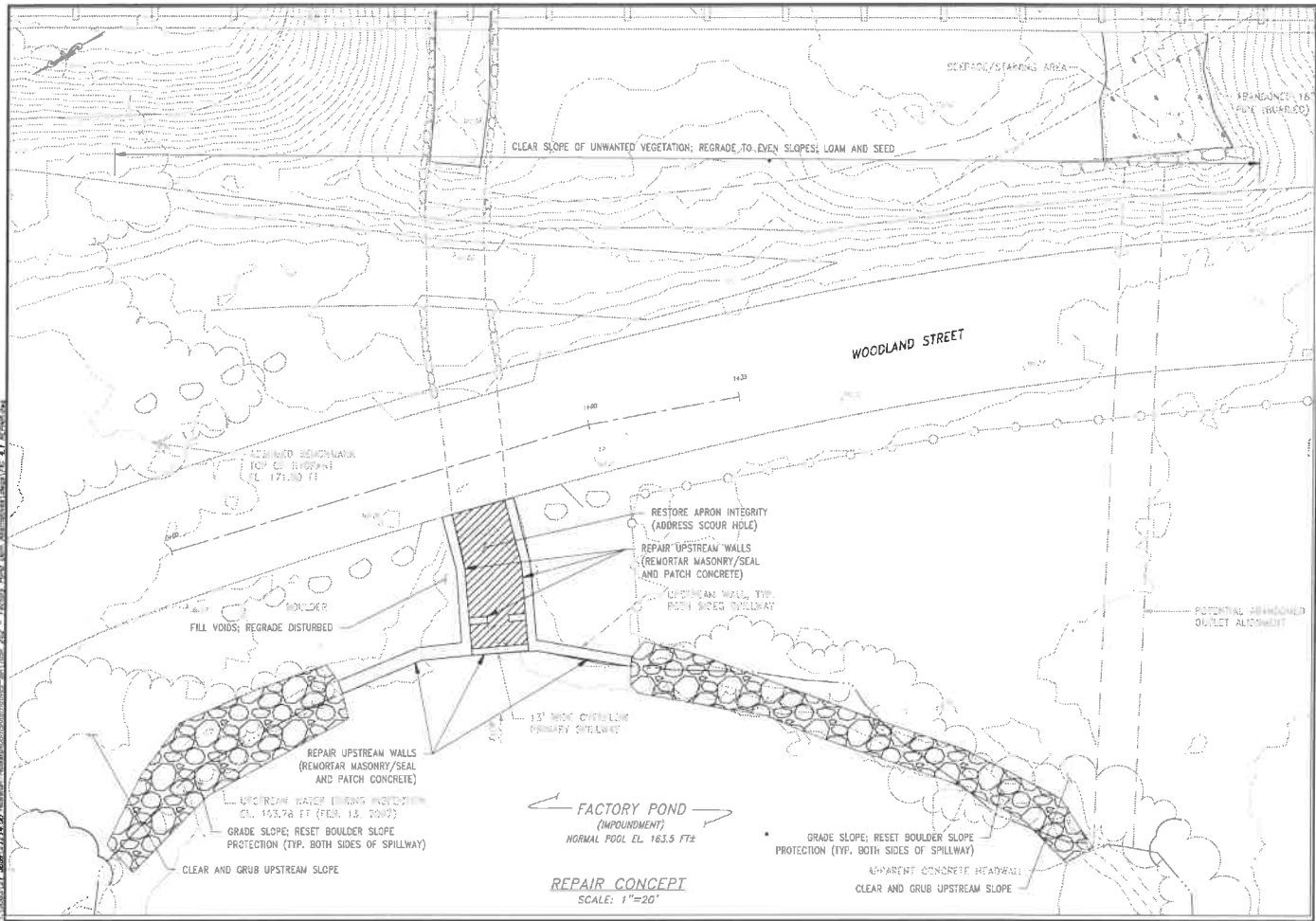
**REVISIONS**

NO.	DATE	DESCRIPTION
1	NOVEMBER 2001	AS NOTED


**PROJECT NO.** 21214-00-202  
**DATE:** NOVEMBER 2001  
**SCALE:** AS NOTED  
**DESIGNED BY:** HSA  
**CHECKED BY:** JMB  
**DRAWN BY:** LMC  
**APPROVED BY:** AGD

**SITE SKETCH**

**FIGURE NO.:** 3



**REPAIR CONCEPT**  
SCALE: 1"=20'



**PARE**  
PARE CORPORATION  
ENGINEERS-ARCHITECTS  
1400 WASHINGTON STREET  
BOSTON, MA 02108  
TEL: 617.552.1234  
WWW.PARECORP.COM

---

**FACTORY POND DAM**  
MA02952 / 4-9-13c-7  
HOLLISTON, MASSACHUSETTS  
TOWN OF HOLLISTON

---

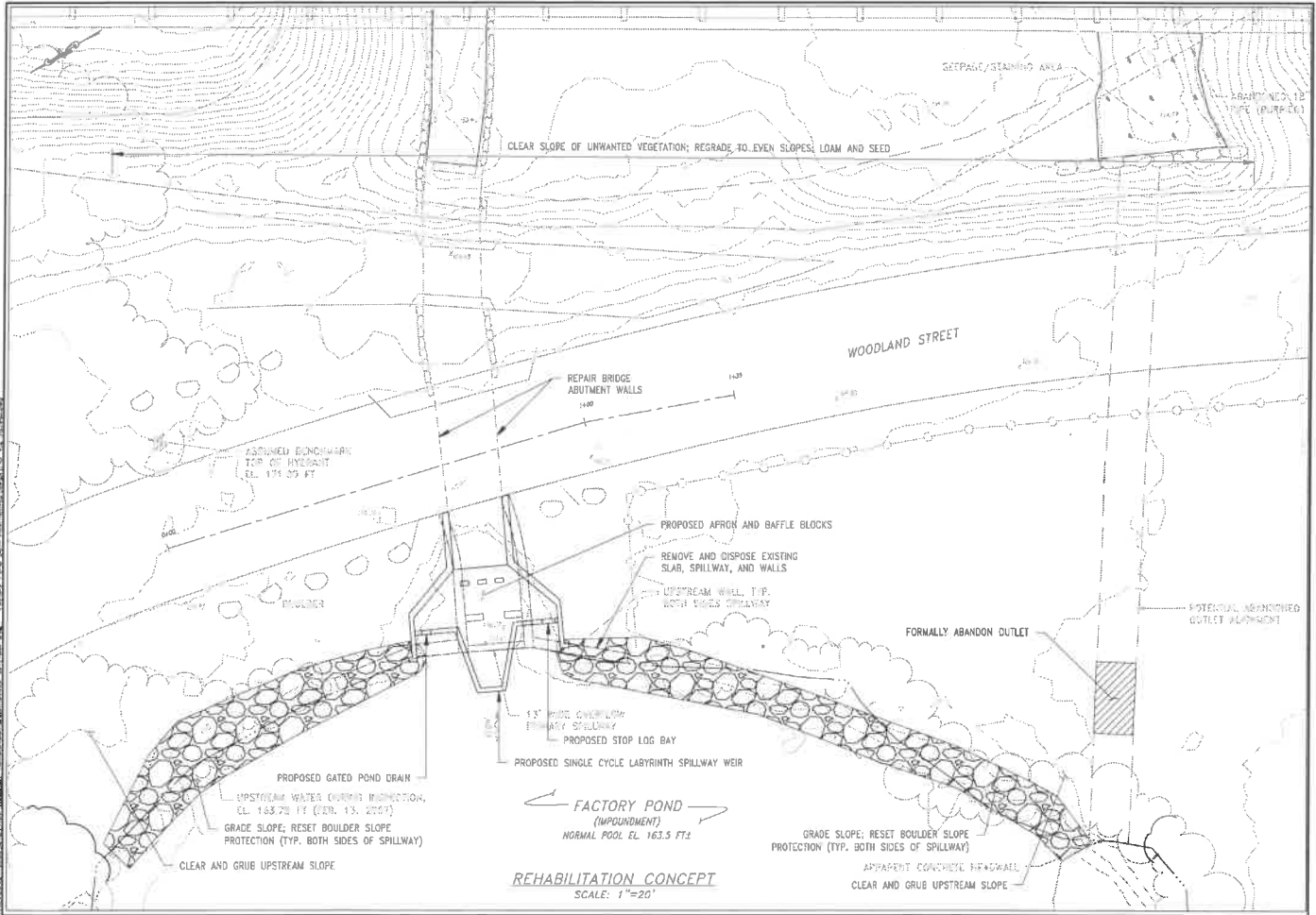
REVISIONS	

---

PROJECT NO. 21214-00-202	DATE: NOVEMBER 2021
SCALE: AS NOTED	DESIGNED BY: HNO
CHECKED BY: JMB	DATE: 11/18/21
APPROVED BY: JMB	DATE: 11/18/21

**REPAIR CONCEPT**

FIGURE NO. 4.1



**FACTORY POND DAM**  
MA02952 / 4-9-136-7  
HOLLISTON, MASSACHUSETTS  
TOWN OF HOLLISTON

PROJECT NO.	21214.00. 102
DATE	NOVEMBER 2001
SCALE	AS NOTED
DESIGNED BY	ARO
CHECKED BY	JMB
DRAWN BY	LUC
APPROVED BY	ARO
<b>REHABILITATION CONCEPT</b>	
FIGURE NO.	4.2





**APPENDIX A**  
**Visual Dam Inspection Limitations**  
*Factory Pond Dam*  
*Holliston, Massachusetts*

## **VISUAL DAM INSPECTION LIMITATIONS**

### **Visual Inspection**

1. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigations and analyses involving topographic mapping, subsurface investigations, testing and detailed computational evaluations are beyond the scope of this report.
2. In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection, along with data available to the inspection team.
3. In cases where an impoundment is lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions, which might otherwise be detectable if inspected under the normal operating environment of the structure.
4. It is critical to note that the condition of the dam is evolutionary in nature and depends on numerous and constantly changing internal and external conditions. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

### **Use of Report**

1. The applicability of other environmental permits (ie., NOI, PGP, Water Quality Certificate, etc.) needs to be determined prior to undertaking maintenance activities that may occur within resource areas under the jurisdiction of MADEP, the local conservation commission or other regulatory agency.
2. This report has been prepared for the exclusive use of the Town of Holliston for specific application to the reference Factory Pond Dam in accordance with generally accepted engineering practices. No other warranty, expressed or implied, is made.
3. This report has been prepared for this project by Pare. This report is for preliminary evaluation purposes only and is not necessarily sufficient to support design or repairs or recommendations or to prepare an accurate bid.

**APPENDIX B**  
**Opinion of Probable Costs**  
*Factory Pond Dam*  
*Holliston, Massachusetts*



Project: Factory Pond Dam  
Subject: Opinions of Probable Costs  
Computation By: MLP  
Check By:

Project No.: 21214.00  
Date: January 2022  
Date:

## CONCEPTUAL DESIGN OPINION OF PROBABLE COST

### Alternate 1: Dam Repair

Item	Quantity	Unit	Unit Price	Total	Source	Notes
<b>General Bid Items</b>						
Construction Trailer and Utilities	2	MON	\$ 2,700.00	\$ 5,400.00	Engineering Judgement	
Project Superintendent	2	MON	\$ 8,200.00	\$ 16,400.00	Engineering Judgement	
QC Plans	10	HR	\$ 75.00	\$ 750.00	Engineering Judgement	
Submittals	10	HR	\$ 75.00	\$ 750.00	Engineering Judgement	
Schedules	10	HR	\$ 75.00	\$ 750.00	Engineering Judgement	
Meetings	8	EA	\$ 150.00	\$ 1,200.00	Engineering Judgement	
Project Sign	1	LS	\$ 1,000.00	\$ 1,000.00	Engineering Judgement	
Proctor Tests	1	TEST	\$ 225.00	\$ 200.00	Laboratory Quote plus markup	
Sieve Analyses	2	EA	\$ 110.00	\$ 220.00	Laboratory Quote plus markup	
Concrete Sampling/Testing	2	EA	\$ 500.00	\$ 1,000.00	Recent project bids	
Concrete Compression Tests	1	EA	\$ 50.00	\$ 50.00	Laboratory Quote plus markup	
Field Density Testing	1	DAY	\$ 500.00	\$ 500.00	Recent project bids	
Chemical Soil Tests	0	EA	\$ 1,000.00	\$ -	Recent project bids	
<b>Subtotal</b>				<b>\$ 28,220.00</b>		
<b>Mobilization &amp; Demobilization</b>						
Mobilization	1	LS	\$ 12,000.00	\$ 12,000.00	Engineering Judgement	Assume 5% M&D total
Demobilization	1	LS	\$ 5,000.00	\$ 5,000.00	Engineering Judgement	
<b>Subtotal</b>				<b>\$ 17,000.00</b>		
<b>Clear and Grub</b>						
Clear and Grub	0.5	ACRE	\$ 5,000.00	\$ 2,500.00	RSMEANS 31 11 10.10 0200	
Clear Trees up to 24"	10	EA	\$ 500.00	\$ 5,000.00	RSMEANS 31 13 13 20 3150	
Engineered Fill Imported	30	TN	\$ 25.00	\$ 750.00	Recent Project Costs	
Engineered Fill Placed	15	CY	\$ 40.00	\$ 600.00	Recent Project Costs	
<b>Subtotal</b>				<b>\$ 8,850.00</b>		
<b>Erosion Control</b>						
Hay bales	300	LF	\$ 9.00	\$ 2,700.00	RSMEANS 31 25 14 16 0600	
Silt Fence	300	LF	\$ 5.00	\$ 1,500.00	RSMEANS 31 25 14 16 1000 + markup	
Maintenance and Removal	1	LS	\$ 3,000.00	\$ 3,000.00	Engineer's Judgment	
Turbidity Barrier	100	LF	\$ 30.00	\$ 3,000.00	Recent project bids	
<b>Subtotal</b>				<b>\$ 10,200.00</b>		
<b>Control of Water / Water Diversion</b>						
Implement Drawdown	1	LS	\$ 15,000.00	\$ 15,000.00	Engineer's Judgment	
Small Sand Bag	100	EA	\$ 6.00	\$ 600.00	Engineer's Judgment	0.5'x2'x1'
Large Sand Bag	35	EA	\$ 200.00	\$ 7,000.00	Engineer's Judgment	3'x3'x3'
Install and Remove Sand Bag	1	LS	\$ 8,000.00	\$ 8,000.00	Engineer's Judgment	
Install and Remove Siphon for drawdown	1	LS	\$ 10,000.00	\$ 10,000.00	Engineer's Judgment	
<b>Subtotal</b>				<b>\$ 40,600.00</b>		
<b>Embankment Work</b>						
Regrade Upstream and Downstream Slope	340	CY	\$ 40.00	\$ 13,600.00	Engineering's Judgement	
Import EF	680	TN	\$ 25.00	\$ 17,000.00	Engineering's Judgement	
Upstream Slope Riprap	220	SY	\$ 85.00	\$ 18,700.00	RSMEANS 31 37 13 10 0200	
Import Riprap	221	TN	\$ 40.00	\$ 8,840.00	RSMEANS 31 37 13 10 0350	
Geotextile Fabric	220	SY	\$ 6.00	\$ 1,320.00	RSMEANS 3132 19 16 1550 plus markup	
Loam DS Slope	1000	SY	\$ 7.00	\$ 7,000.00	RSMEANS 32 91 19 13 0800	
Import Loam	230	TN	\$ 25.00	\$ 5,750.00	Local Price	
<b>Subtotal</b>				<b>\$ 72,210.00</b>		
<b>Spillway work</b>						
Scour Apron	30	CY	\$ 1,250.00	\$ 37,500.00	Engineering's Judgement	
Seal and Patch Concrete	1	LS	\$ 50,000.00	\$ 50,000.00	Engineering's Judgement	
Repoint Upstream Wall	800	LF	\$ 45.00	\$ 36,000.00	RSMEANS 04 01 20 41 01 32	
<b>Subtotal</b>				<b>\$ 123,500.00</b>		
<b>SUBTOTAL</b>						
			\$	300,580.00		
			Contract Bonds	\$ 4,000.00		
			Design Contingency	\$ 105,350.00	35%	
<b>OPINION OF PROBABLE CONSTRUCTION COST</b>				<b>\$ 410,000.00</b>		
			Engineering & Design	\$ 55,000.00		
			Permitting	\$ 15,000.00		
			Construction Phase Services	\$ 60,000.00		
<b>OPINION OF PROBABLE CONSTRUCTION COST</b>				<b>\$ 540,000.00</b>		



**Project:** Factory Pond Dam  
**Subject:** Opinions of Probable Costs  
**Computation By:** MLP  
**Check By:**

**Project No.:** 21214.00

**Date:** January 2022  
**Date:**

## CONCEPTUAL DESIGN OPINION OF PROBABLE COST

### Alternate 2: Dam Rehabilitation

Item	Quantity	Unit	Unit Price	Total	Source	Notes
<b>General Bid Items</b>						
Construction Trailer and Utilities	5	MON	\$ 2,700.00	\$ 13,500.00	Engineering Judgement	
Project Superintendent	5	MON	\$ 8,200.00	\$ 41,000.00	Engineering Judgement	
QC Plans	20	HR	\$ 75.00	\$ 1,500.00	Engineering Judgement	
Submittals	20	HR	\$ 75.00	\$ 1,500.00	Engineering Judgement	
Schedules	20	HR	\$ 75.00	\$ 1,500.00	Engineering Judgement	
Meetings	20	EA	\$ 150.00	\$ 3,000.00	Engineering Judgement	
Project Sign	1	LS	\$ 1,000.00	\$ 1,000.00	Engineering Judgement	
Proctor Tests	1	TEST	\$ 200.00	\$ 200.00	Laboratory Quote plus markup	
Sieve Analyses	4	EA	\$ 110.00	\$ 440.00	Laboratory Quote plus markup	
Concrete Sampling/Testing	5	EA	\$ 500.00	\$ 2,500.00	Recent project bids	
Concrete Compression Tests	1	EA	\$ 50.00	\$ 50.00	Laboratory Quote plus markup	
Field Density Testing	1	DAY	\$ 500.00	\$ 500.00	Recent project bids	
Chemical Soil Tests	0	EA	\$ 1,000.00	\$ -	Recent project bids	
<b>Subtotal</b>				<b>\$ 66,680.00</b>		
<b>Mobilization &amp; Demobilization</b>						
Mobilization	1	LS	\$ 20,000.00	\$ 20,000.00	Engineering Judgement	
Demobilization	1	LS	\$ 10,000.00	\$ 10,000.00	Engineering Judgement	
<b>Subtotal</b>				<b>\$ 30,000.00</b>		
<b>Clear and Grub</b>						
Clear and Grub	0.5	ACRE	\$ 5,000.00	\$ 2,500.00	RSMEANS 31 11 10 10 0200	
Clear Trees up to 24"	10	EA	\$ 500.00	\$ 5,000.00	RSMEANS 31 13 13 20 3150	
Engineered Fill Imported	30	TN	\$ 25.00	\$ 750.00	Recent Project Costs	
Engineered Fill Placed	15	CY	\$ 40.00	\$ 600.00	Recent Project Costs	
<b>Subtotal</b>				<b>\$ 8,850.00</b>		
<b>Erosion Control</b>						
Hay bales	300	LF	\$ 9.00	\$ 2,700.00	RSMEANS 31 25 14 16 0600	
Silt Fence	300	LF	\$ 5.00	\$ 1,500.00	RSMEANS 31 25 14 16 1000 + markup	
Maintenance and Removal	1	LS	\$ 3,000.00	\$ 3,000.00	Engineer's Judgment	
Turbidity Barrier	100	LF	\$ 30.00	\$ 3,000.00	Recent project bids	
<b>Subtotal</b>				<b>\$ 10,200.00</b>		
<b>Control of Water / Water Diversion</b>						
Implement Drawdown	1	LS	\$ 10,000.00	\$ 10,000.00	Engineer's Judgment	
Small Sand Bag	100	EA	\$ 6.00	\$ 600.00	Engineer's Judgment	0.5"x2"x1'
Large Sand Bag	35	EA	\$ 200.00	\$ 7,000.00	Engineer's Judgment	3'x3'x3'
Install and Remove Sand Bag	1	LS	\$ 8,000.00	\$ 8,000.00	Engineer's Judgment	
Install and Remove Siphon for drawdown	1	LS	\$ 10,000.00	\$ 10,000.00	Engineer's Judgment	
<b>Subtotal</b>				<b>\$ 35,600.00</b>		
<b>Embankment Work</b>						
Regrade Upstream and Downstream Slope	340	CY	\$ 40.00	\$ 13,600.00	Engineering's Judgement	
Import EF	680	TN	\$ 25.00	\$ 17,000.00	Engineering's Judgement	
Upstream Slope Riprap	260	SY	\$ 85.00	\$ 22,100.00	RSMEANS 31 37 13 10 0200	
Import Riprap	261	TN	\$ 40.00	\$ 10,440.00	RSMEANS 31 37 13 10 0350	
Geotextile Fabric	260	SY	\$ 6.00	\$ 1,560.00	RSMEANS 3132 19 16 1550 plus markup	
Loam DS Slope	1000	SY	\$ 7.00	\$ 7,000.00	RSMEANS 32 91 19 13 0800	
Import Loam	230	TN	\$ 25.00	\$ 5,750.00	Local Price	
<b>Subtotal</b>				<b>\$ 77,450.00</b>		
<b>Abandon Outlet</b>						
Flowable Fill	60	CY	\$ 150.00	\$ 9,000.00	RSMEANS 03 31 13 35 43 50 plus mark up	
<b>Subtotal</b>				<b>\$ 9,000.00</b>		
<b>Spillway work</b>						
Spillway demolition	1	LS	\$ 20,000.00	\$ 20,000.00	Engineering's Judgement	
Excavation & Prep	200	CY	\$ 25.00	\$ 5,000.00	Engineering's Judgement	
Proposed Apron and Baffle Blocks	45	CY	\$ 1,000.00	\$ 45,000.00	Engineering's Judgement	
Stop Log	1	LS	\$ 6,000.00	\$ 6,000.00	Engineering's Judgement	
Gated Pond Drain	1	LS	\$ 12,000.00	\$ 12,000.00	Recent Project Quotes Plus Install	
Labyrinth Weir	14	CY	\$ 1,500.00	\$ 21,000.00	Engineering's judgement	
Spillway backfill	150	CY	\$ 40.00	\$ 6,000.00	Engineering's judgement	
Import EF	300	TN	\$ 25.00	\$ 7,500.00	Engineering's Judgement	
<b>Subtotal</b>				<b>\$ 122,500.00</b>		
<b>Bridge Repair</b>						
Bridge Repair	1	LS	\$ 400,000.00	\$ 400,000.00		
<b>Subtotal</b>				<b>\$ 400,000.00</b>		
<b>Summary</b>						
			<b>SUBTOTAL</b>	<b>\$ 760,280.00</b>		
			Contract Bonds	\$ 8,000.00		
			Design Contingency	\$ 228,300.00	30%	
			<b>OPINION OF PROBABLE CONSTRUCTION COST</b>	<b>\$ 997,000.00</b>		
			Engineering & Design	\$ 80,000.00		
			Permitting	\$ 30,000.00		
			Construction Phase Services	\$ 80,000.00		
			<b>OPINION OF PROBABLE CONSTRUCTION COST</b>	<b>\$ 1,187,000.00</b>		



Project: Factory Pond Dam  
 Subject: Opinions of Probable Costs  
 Computation By: MLP  
 Check By:

Project No.:  
 Date:  
 Date:

21214.00  
 January 2022

### CONCEPTUAL DESIGN OPINION OF PROBABLE COST Alternate 3: Dam Removal

Item	Quantity	Unit	Unit Price	Total	Source	Notes
<b>General Bid Items</b>						
Construction Trailer and Utilities	6	MON	\$ 2,700.00	\$ 16,200.00	Engineering Judgement	
Project Superintendent	6	MON	\$ 8,200.00	\$ 49,200.00	Engineering Judgement	
QC Plans	30	HR	\$ 75.00	\$ 2,250.00	Engineering Judgement	
Submittals	30	HR	\$ 75.00	\$ 2,250.00	Engineering Judgement	
Schedules	30	HR	\$ 75.00	\$ 2,250.00	Engineering Judgement	
Meetings	24	EA	\$ 150.00	\$ 3,600.00	Engineering Judgement	
Project Sign	1	LS	\$ 1,000.00	\$ 1,000.00	Engineering Judgement	
Proctor Tests	1	TEST	\$ 225.00	\$ 200.00	Laboratory Quote plus markup	
Sieve Analyses	2	EA	\$ 110.00	\$ 220.00	Laboratory Quote plus markup	
Concrete Sampling/Testing	4	EA	\$ 500.00	\$ 2,000.00	Recent project bids	
Concrete Compression Tests	1	EA	\$ 50.00	\$ 50.00	Laboratory Quote plus markup	
Field Density Testing	0	DAY	\$ 500.00	\$ -	Recent project bids	
Chemical Soil Tests	0	EA	\$ 1,000.00	\$ -	Recent project bids	
<b>Subtotal</b>				<b>\$ 79,220.00</b>		
<b>Mobilization &amp; Demobilization</b>						
Mobilization	1	LS	\$ 60,000.00	\$ 60,000.00	Engineering Judgement	
Demobilization	1	LS	\$ 30,000.00	\$ 30,000.00	Engineering Judgement	
<b>Subtotal</b>				<b>\$ 90,000.00</b>		
<b>Clear and Grub</b>						
Clear and Grub	0.25	ACRE	\$ 5,000.00	\$ 1,250.00	RSMEANS 31 11 10 10 0200	
Clear Trees up to 24"	4	EA	\$ 500.00	\$ 2,000.00	RSMEANS 31 13 13 20 3150	
Engineered Fill Imported	12	TN	\$ 25.00	\$ 300.00	Recent Project Costs	
Engineered Fill Placed	6	CY	\$ 40.00	\$ 240.00	Recent Project Costs	
<b>Subtotal</b>				<b>\$ 3,790.00</b>		
<b>Erosion Control</b>						
Hay bales	300	LF	\$ 8.00	\$ 2,700.00	RSMEANS 31 25 14 16 0600	
Silt Fence	300	LF	\$ 5.00	\$ 1,500.00	RSMEANS 31 25 14 16 1000 + markup	
Maintenance and Removal	1	LS	\$ 3,000.00	\$ 3,000.00	Engineer's Judgment	
Turbidity Barrier	100	LF	\$ 30.00	\$ 3,000.00	Recent project bids	
<b>Subtotal</b>				<b>\$ 10,200.00</b>		
<b>Control of Water / Water Diversion</b>						
Implement Drawdown	1	LS	\$ 5,000.00	\$ 5,000.00	Engineer's Judgment	
Small Sand Bag	50	EA	\$ 6.00	\$ 300.00	Engineer's Judgment	0.5'x2'x1'
Large Sand Bag	75	EA	\$ 200.00	\$ 15,000.00	Engineer's Judgment	3'x3'x3'
Install and Remove Sand Bag	1	LS	\$ 8,000.00	\$ 8,000.00	Engineer's Judgment	
<b>Subtotal</b>				<b>\$ 28,300.00</b>		
<b>Structures Demolition</b>						
Concrete Disposal	120	TN	\$ 300.00	\$ 36,000.00	Engineering's Judgement	
Channel Excavation	2100	CY	\$ 15.00	\$ 31,500.00	Engineering's Judgement	
Dispose Material	2100	CY	\$ 25.00	\$ 52,500.00	Engineering's Judgement	
Downstream Bridge Removal	70	TN	\$ 300.00	\$ 21,000.00	RSMEANS 04 01 20 41 01 32	
<b>Subtotal</b>				<b>\$ 141,000.00</b>		
<b>Bridge Replacement</b>						
Existing Bridge Demolition	1	LS	\$ 250,000.00	\$ 250,000.00		
Substructure Demolition	1	LS	\$ 100,000.00	\$ 100,000.00		
Bridge Replacement	1	LS	\$ 1,000,000.00	\$ 1,000,000.00		
<b>Subtotal</b>				<b>\$ 1,350,000.00</b>		
<b>Sediment Management</b>						
Dredging & Disposal	TBD		-	\$ -	Sediment Management Reqs Unknown	
<b>Subtotal</b>				<b>\$ -</b>		
<b>Summary</b>						
			SUBTOTAL	\$ 1,702,510.00		
			Contract Bonds	\$ 18,000.00		
			Design Contingency	\$ 510,900.00	30%	
			OPINION OF PROBABLE CONSTRUCTION COST	\$ 2,232,000.00		
			Engineering & Design	\$ 150,000.00		
			Permitting	\$ 80,000.00		
			Construction Phase Services	\$ 50,000.00		
			OPINION OF PROBABLE CONSTRUCTION COST	<b>\$ 2,512,000.00</b>		

**APPENDIX C**  
**Previous Reports and References**  
*Factory Pond Dam*  
*Holliston, Massachusetts*

## PREVIOUS REPORTS AND REFERENCES

The following documents were identified within the dam safety database or reference as part of this work:

1. "Emergency Action Plan for Factory Pond Dam", Lenard Engineering. August 25, 2021
2. "Office of Dam Safety Poor and Unsafe Condition Dam Follow-up Inspection Form – Factory Pond Dam", Lenard Engineering. Date of Inspection: May 10, 2021
3. "6-Month Follow-up Dam Safety Visual Inspection – Factory Pond Dam", Lenard Engineering. Date of Inspection: November 26, 2018
4. "Factory Pond Dam Phase I Inspection/Evaluation Report", Lenard Engineering. Date of Inspection: October 13, 2017
5. "6-Month Follow-up Dam Safety Visual Inspection – Factory Pond Dam", Lenard Engineering. Date of Inspection: November 10, 2016
6. "6-Month Follow-up Dam Safety Visual Inspection – Factory Pond Dam", Lenard Engineering. Date of Inspection: June 13, 2013
7. "Factory Pond Dam Phase I Inspection/Evaluation Report", Lenard Engineering. Date of Inspection: June 8, 2012
8. "6-Month Follow-up Dam Safety Visual Inspection – Factory Pond Dam", Lenard Engineering. Date of Inspection: May 9, 2011
9. "6-Month Follow-up Dam Safety Visual Inspection – Factory Pond Dam", Lenard Engineering. Date of Inspection: November 16, 2010
10. "Followup Inspection Report – Factory Pond Dam", Fuss & O'Neill. Date of Inspection: May 25, 2010
11. "Poor Condition Follow-Up Inspection – Factory Pond Dam", Pare. Date of Inspection: May 23, 2008
12. "Factory Pond Dam Phase I Inspection/Evaluation Report", Pare. Date of Inspection: February 13, 2007
13. "Municipally Owned Dam Inspection/Evaluation Report, Factory Pond Dam", Gifford, D.G. (Haley & Aldrich. Date of Inspection: May 5, 1999
14. "Factory Pond Dam Inspection Report", Smith, R.W. (CVP). Date of Inspection October 8, 1987
15. "Inspection Report – Dams and Reservoirs, Factory Pond Dam", Pare & Pizan. Date of Inspection: August 16, 1973

The following references were utilized during the preparation of this report and the development of the recommendations presented herein:

1. "Design of Small Dams", United States Department of the Interior Bureau of Reclamation, 1987
2. "ER 110-2-106 - Recommended Guidelines for Safety Inspection of Dams", Department of the Army, September 26, 1979.
3. "Guidelines for Reporting the Performance of Dams" National Performance of Dams Program, August 1994.
4. 302 CMR: Department of Conservation and Recreation Section 10.00 Dam Safety
5. Massachusetts State Building Code Sec. 1612.4.9
6. Massachusetts Wetlands Protection Act Regulations 310 CMR 10.00



**APPENDIX D**  
**Common Dam Safety Definitions**  
*Factory Pond Dam*  
*Holliston, Massachusetts*

## COMMON DAM SAFETY DEFINITIONS

For a comprehensive list of dam engineering terminology and definitions refer to 302 CMR10.00 Dam Safety, or other reference published by FERC, Dept. of the Interior Bureau of Reclamation, or FEMA. Please note should discrepancies between definitions exists, those definitions included within 302 CMR 10.00 govern for dams located within the Commonwealth of Massachusetts.

### Orientation

Upstream – Shall mean the side of the dam that borders the impoundment.

Downstream – Shall mean the high side of the dam, the side opposite the upstream side.

Right – Shall mean the area to the right when looking in the downstream direction.

Left – Shall mean the area to the left when looking in the downstream direction.

### Dam Components

Dam – Shall mean any artificial barrier, including appurtenant works, which impounds or diverts water.

Embankment – Shall mean the fill material, usually earth or rock, placed with sloping sides, such that it forms a permanent barrier that impounds water.

Crest – Shall mean the top of the dam, usually provides a road or path across the dam.

Abutment – Shall mean that part of a valley side against which a dam is constructed. An artificial abutment is sometimes constructed as a concrete gravity section, to take the thrust of an arch dam where there is no suitable natural abutment.

Appurtenant Works – Shall mean structures, either in dams or separate therefrom, including but not be limited to, spillways; reservoirs and their rims; low level outlet works; and water conduits including tunnels, pipelines, or penstocks, either through the dams or their abutments.

Spillway – Shall mean a structure over or through which water flows are discharged. If the flow is controlled by gates or boards, it is a controlled spillway; if the fixed elevation of the spillway crest controls the level of the impoundment, it is an uncontrolled spillway.

### Size Classification

(as listed in Commonwealth of Massachusetts, 302 CMR 10.00 *Dam Safety*)

Large – structure with a height greater than 40 feet or a storage capacity greater than 1,000 acre-feet.

Intermediate – structure with a height between 15 and 40 feet or a storage capacity of 50 to 1,000 acre-feet.

Small – structure with a height between 6 and 15 feet and a storage capacity of 15 to 50 acre-feet.

Non-Jurisdictional – structure less than 6 feet in height or having a storage capacity of less than 15 acre-feet.

### **Hazard Classification**

(as listed in Commonwealth of Massachusetts, 302 CMR 10.00 *Dam Safety*)

High Hazard (Class I) – Shall mean dams located where failure will likely cause loss of life and serious damage to home(s), industrial or commercial facilities, important public utilities, main highway(s) or railroad(s).

Significant Hazard (Class II) – Shall mean dams located where failure may cause loss of life and damage to home(s), industrial or commercial facilities, secondary highway(s) or railroad(s), or cause the interruption of the use or service of relatively important facilities.

Low Hazard (Class III) – Dams located where failure may cause minimal property damage to others. Loss of life is not expected.

### **General**

EAP – Emergency Action Plan - Shall mean a predetermined plan of action to be taken to reduce the potential for property damage and/or loss of life in an area affected by an impending dam break.

O&M Manual – Operations and Maintenance Manual; Document identifying routine maintenance and operational procedures under normal and storm conditions.

Normal Pool – Shall mean the elevation of the impoundment during normal operating conditions.

Acre-foot – Shall mean a unit of volumetric measure that would cover one acre to a depth of one foot. It is equal to 43,560 cubic feet. One million U.S. gallons = 3.068 acre feet

Height of Dam – Shall mean the vertical distance from the lowest portion of the natural ground, including any stream channel, along the downstream toe of the dam to the crest of the dam.

Spillway Design Flood (SDF) – Shall mean the flood used in the design of a dam and its appurtenant works particularly for sizing the spillway and outlet works, and for determining maximum temporary storage and height of dam requirements.

### **Condition Rating**

Unsafe - Major structural, operational, and maintenance deficiencies exist under normal operating conditions.

Poor - Significant structural, operation and maintenance deficiencies are clearly recognized for normal loading conditions.

Fair - Significant operational and maintenance deficiencies, no structural deficiencies. Potential deficiencies exist under unusual loading conditions that may realistically occur. Can be used when uncertainties exist as to critical parameters.

Satisfactory - Minor operational and maintenance deficiencies. Infrequent hydrologic events would probably result in deficiencies.

Good - No existing or potential deficiencies recognized. Safe performance is expected under all loading including SDF.

**APPENDIX E**  
**Supporting Information**  
*Factory Pond Dam*  
*Holliston, Massachusetts*

1. Hydrologic and Hydraulic Analyses Output

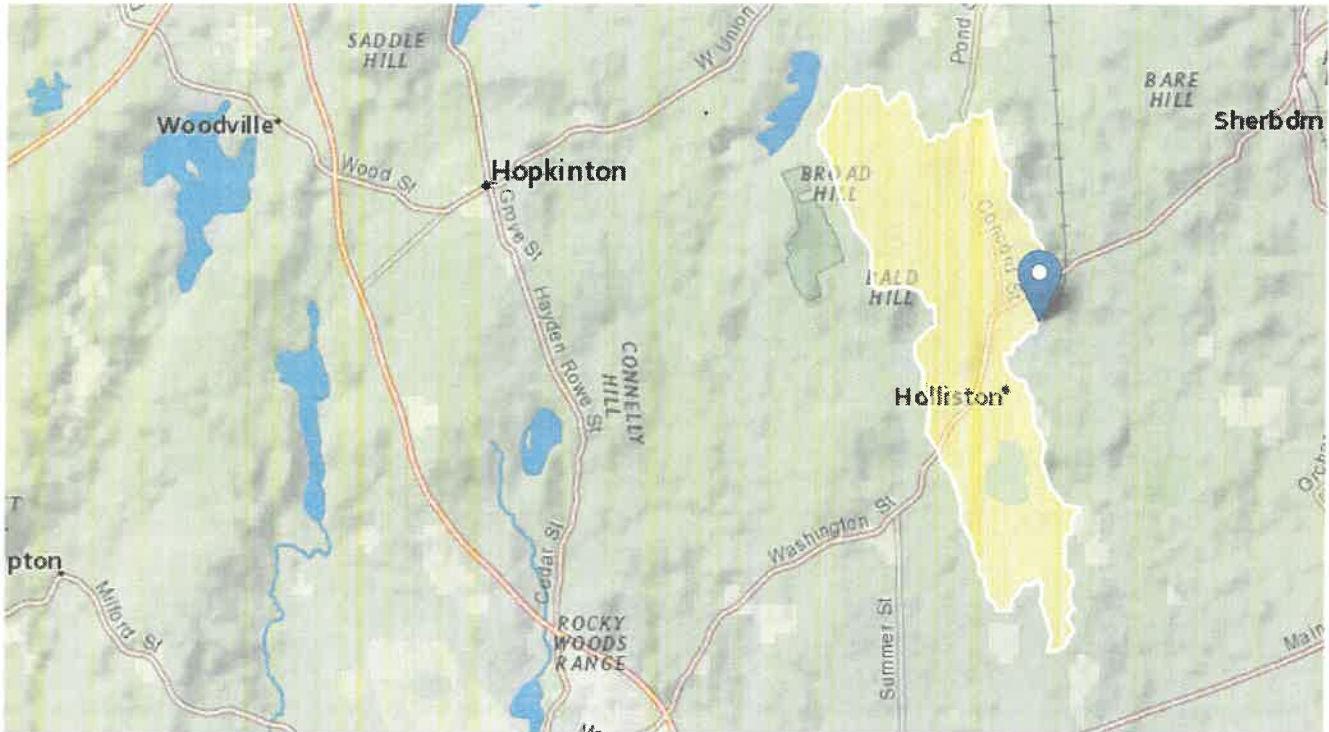
# Factory Pond StreamStats Report

Region ID: MA

Workspace ID: MA20211130220316285000

Clicked Point (Latitude, Longitude): 42.20930, -71.41802

Time: 2021-11-30 17:03:35 -0500



## Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	5.84	square miles
ELEV	Mean Basin Elevation	243	feet
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	11.74	percent
BSLDEM10M	Mean basin slope computed from 10 m DEM	5.737	percent

Peak-Flow Statistics Parameters [Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.84	square miles	0.16	512
ELEV	Mean Basin Elevation	243	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	11.74	percent	0	32.3

Peak-Flow Statistics Flow Report [Peak Statewide 2016 5156]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	Plu	ASEp
50-percent AEP flood	143	ft <sup>3</sup> /s	73.3	279	42.3
20-percent AEP flood	235	ft <sup>3</sup> /s	119	465	43.4
10-percent AEP flood	307	ft <sup>3</sup> /s	152	622	44.7
4-percent AEP flood	411	ft <sup>3</sup> /s	196	861	47.1
2-percent AEP flood	497	ft <sup>3</sup> /s	230	1070	49.4
1-percent AEP flood	587	ft <sup>3</sup> /s	263	1310	51.8
0.5-percent AEP flood	686	ft <sup>3</sup> /s	299	1570	54.1
0.2-percent AEP flood	827	ft <sup>3</sup> /s	344	1990	57.6

#### *Peak-Flow Statistics Citations*

Zarriello, P.J.,2017, **Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2016–5156, 99 p.** (<https://dx.doi.org/10.3133/sir20165156>)

Bankfull Statistics Parameters [Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.84	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	5.737	percent	2.2	23.9

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.84	square miles	0.07722	940.1535

Bankfull Statistics Parameters [New England P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
----------------	----------------	-------	-------	-----------	-----------

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.84	square miles	3.799224	138.999861

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.84	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Bankfull Statewide SIR2013 5155]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
Bankfull Width	29	ft	21.3
Bankfull Depth	1.53	ft	19.8
Bankfull Area	44.1	ft^2	29
Bankfull Streamflow	119	ft^3/s	55

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	31.6	ft
Bieger_D_channel_depth	1.86	ft
Bieger_D_channel_cross_sectional_area	59.7	ft^2

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	41.4	ft
Bieger_P_channel_depth	2.03	ft
Bieger_P_channel_cross_sectional_area	85.1	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	23	ft
Bieger_USA_channel_depth	1.76	ft
Bieger_USA_channel_cross_sectional_area	44.3	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
Bankfull Width	29	ft	21.3
Bankfull Depth	1.53	ft	19.8
Bankfull Area	44.1	ft^2	29
Bankfull Streamflow	119	ft^3/s	55
Bieger_D_channel_width	31.6	ft	
Bieger_D_channel_depth	1.86	ft	
Bieger_D_channel_cross_sectional_area	59.7	ft^2	
Bieger_P_channel_width	41.4	ft	
Bieger_P_channel_depth	2.03	ft	
Bieger_P_channel_cross_sectional_area	85.1	ft^2	
Bieger_USA_channel_width	23	ft	
Bieger_USA_channel_depth	1.76	ft	
Bieger_USA_channel_cross_sectional_area	44.3	ft^2	

#### *Bankfull Statistics Citations*

**Bent, G.C., and Waite, A.M.,2013, Equations for estimating bankfull channel geometry and discharge for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2013–5155, 62 p., (<http://pubs.usgs.gov/sir/2013/5155/>)**

**Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. ([https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm\\_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm\\_medium=PDF&utm\\_campaign=](https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=)**

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

USGS Software Disclaimer: This software has been approved for release by the U.S. Geological Survey (USGS). Although the software has been subjected to rigorous review, the USGS reserves the right to update the software as needed pursuant to further analysis and review. No warranty, expressed or implied, is made by the USGS or the U.S. Government as to the functionality of the software and related material nor shall the fact of release constitute any such warranty. Furthermore, the software is released on condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from its authorized or unauthorized use.

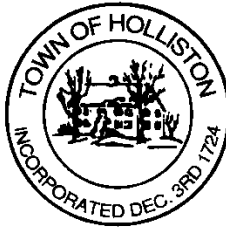


USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.6.2

StreamStats Services Version: 1.2.22

NSS Services Version: 2.1.2



## **APPENDIX B**

**Standard Designer Application Form for Municipalities and Public Agencies not within  
DSB Jurisdiction (Updated July 2016)**

<b>Commonwealth of Massachusetts</b>  <b>Standard Designer Application</b> <b>Form for Municipalities and Public</b> <b>Agencies not within DSB</b> <b>Jurisdiction (Updated July 2016)</b>	1. Project Name/Location For Which Firm Is Filing:		2. Project #																																																																																																	
			This space for use by Awarding Authority only.																																																																																																	
3a. Firm (Or Joint-Venture) - Name and Address Of Primary Office To Perform The Work:		3. Name Of Proposed Project Manager: For Study: (if applicable) For Design: (if applicable)																																																																																																		
3b. Date Present and Predecessor Firms Were Established:		3f. Name and Address Of Other Participating Offices Of The Prime Applicant, If Different From Item 3a Above:																																																																																																		
3c. Federal ID #:		3g. Name and Address Of Parent Company, If Any:																																																																																																		
3d. Name and Title Of Principal-In-Charge Of The Project (MA Registration Required):   <div style="display: flex; justify-content: space-between;"> <span>Email Address:</span> <span></span> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <span>Telephone No:</span> <span>Fax No.:</span> </div>		3. Check Below If Your Firm Is Either: <div style="display: flex; flex-direction: column; align-items: flex-end;"> <div>(1) SDO Certified Minority Business Enterprise (MBE) <input type="checkbox"/></div> <div>(2) SDO Certified Woman Business Enterprise (WBE) <input type="checkbox"/></div> <div>(3) SDO Certified Minority Woman Business Enterprise (M/WBE) <input type="checkbox"/></div> <div>(4) SDO Certified Service Disabled Veteran Owned Business Enterprise (SDVOBE) <input type="checkbox"/></div> <div>(5) SDO Certified Veteran Owned Business Enterprise (VBE) <input type="checkbox"/></div> </div>																																																																																																		
4. <b>Personnel From Prime Firm Included In Question #3a Above</b> By Discipline (List Each Person Only Once, By Primary Function -- Average Number Employed Throughout The Preceding 6 Month Period. Indicate Both The Total Number In Each Discipline And, Within Brackets, The Total Number Holding Massachusetts Registrations):																																																																																																				
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Admin. Personnel</td> <td style="width: 10%; text-align: center;">_____</td> <td style="width: 10%; text-align: center;">( _____ )</td> <td style="width: 25%;">Ecologists</td> <td style="width: 10%; text-align: center;">_____</td> <td style="width: 10%; text-align: center;">( _____ )</td> <td style="width: 25%;">Licensed Site Profs.</td> <td style="width: 10%; text-align: center;">_____</td> <td style="width: 10%; text-align: center;">( _____ )</td> <td style="width: 25%;">Other</td> <td style="width: 10%; text-align: center;">_____</td> <td style="width: 10%; text-align: center;">( _____ )</td> </tr> <tr> <td>Architects</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td>Electrical Engrs.</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td>Mechanical Engrs.</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td></td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> </tr> <tr> <td>Acoustical Engrs.</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td>Environmental</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td>Planners: Urban./Reg.</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td></td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> </tr> <tr> <td>Civil Engrs.</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td>Fire Protection</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td>Specification Writers</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td></td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> </tr> <tr> <td>Code Specialists</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td>Geotech. Engrs.</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td>Structural Engrs.</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td></td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> </tr> <tr> <td>Construction Inspectors</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td>Industrial</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td>Surveyors</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td></td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> </tr> <tr> <td>Cost Estimators</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td>Interior Designers</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td></td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td></td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> </tr> <tr> <td>Drafters</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td>Landscape</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td></td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> <td style="text-align: center;">Total</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">( _____ )</td> </tr> </table>					Admin. Personnel	_____	( _____ )	Ecologists	_____	( _____ )	Licensed Site Profs.	_____	( _____ )	Other	_____	( _____ )	Architects	_____	( _____ )	Electrical Engrs.	_____	( _____ )	Mechanical Engrs.	_____	( _____ )		_____	( _____ )	Acoustical Engrs.	_____	( _____ )	Environmental	_____	( _____ )	Planners: Urban./Reg.	_____	( _____ )		_____	( _____ )	Civil Engrs.	_____	( _____ )	Fire Protection	_____	( _____ )	Specification Writers	_____	( _____ )		_____	( _____ )	Code Specialists	_____	( _____ )	Geotech. Engrs.	_____	( _____ )	Structural Engrs.	_____	( _____ )		_____	( _____ )	Construction Inspectors	_____	( _____ )	Industrial	_____	( _____ )	Surveyors	_____	( _____ )		_____	( _____ )	Cost Estimators	_____	( _____ )	Interior Designers	_____	( _____ )		_____	( _____ )		_____	( _____ )	Drafters	_____	( _____ )	Landscape	_____	( _____ )		_____	( _____ )	Total	_____	( _____ )
Admin. Personnel	_____	( _____ )	Ecologists	_____	( _____ )	Licensed Site Profs.	_____	( _____ )	Other	_____	( _____ )																																																																																									
Architects	_____	( _____ )	Electrical Engrs.	_____	( _____ )	Mechanical Engrs.	_____	( _____ )		_____	( _____ )																																																																																									
Acoustical Engrs.	_____	( _____ )	Environmental	_____	( _____ )	Planners: Urban./Reg.	_____	( _____ )		_____	( _____ )																																																																																									
Civil Engrs.	_____	( _____ )	Fire Protection	_____	( _____ )	Specification Writers	_____	( _____ )		_____	( _____ )																																																																																									
Code Specialists	_____	( _____ )	Geotech. Engrs.	_____	( _____ )	Structural Engrs.	_____	( _____ )		_____	( _____ )																																																																																									
Construction Inspectors	_____	( _____ )	Industrial	_____	( _____ )	Surveyors	_____	( _____ )		_____	( _____ )																																																																																									
Cost Estimators	_____	( _____ )	Interior Designers	_____	( _____ )		_____	( _____ )		_____	( _____ )																																																																																									
Drafters	_____	( _____ )	Landscape	_____	( _____ )		_____	( _____ )	Total	_____	( _____ )																																																																																									
5. Has this Joint-Venture previously worked together? <input type="checkbox"/> Yes <input type="checkbox"/> No																																																																																																				

6. List **ONLY** Those Prime And Sub-Consultant Personnel Specifically Requested In The Advertisement. This Information Should Be Presented Below In The Form Of An Organizational Chart. Include Name Of Firm And Name Of The One Person In Charge Of The Discipline, With Mass. Registration Number, As Well As MBE/WBE Status, If Applicable:

**CITY / TOWN / AGENCY**

**Prime Consultant**  
Principal-In-Charge

**Project Manager for Study**

**Project Manager for Design**

**Discipline**  
(from advertisement)

Name Of Firm  
Person In Charge Of Discipline  
Mass. Registr. #  
MBE/WBE Certified (If  
Applicable)

**Discipline**  
(from advertisement)

Name Of Firm  
Person In Charge Of Discipline  
Mass. Registr. #  
MBE/WBE Certified (If  
Applicable)

**Discipline**  
(from advertisement)

Name Of Firm  
Person In Charge Of Discipline  
Mass. Registr. #  
MBE/WBE Certified (If  
Applicable)

**Discipline**  
(from advertisement)

Name Of Firm  
Person In Charge Of Discipline  
Mass. Registr. #  
MBE/WBE Certified (If  
Applicable)

7. Brief Resume of ONLY those Prime Applicant and Sub-Consultant personnel requested in the Advertisement. <u>Include Resumes of Project Managers</u> . Resumes should be consistent with the persons listed on the Organizational Chart in Question # 6. Additional sheets should be provided only as required for the number of Key Personnel requested in the Advertisement and they must be in the format provided. By including a Firm as a Sub-Consultant, the Prime Applicant certifies that the listed Firm has agreed to work on this Project, should the team be selected.	
a. Name and Title Within Firm:	a. Name and Title Within Firm:
b. Project Assignment:	b. Project Assignment:
c. Name and Address Of Office In Which Individual Identified In 7a Resides: <div style="text-align: right;"> MBE <input type="checkbox"/>  WBE <input type="checkbox"/>  SDVOBE <input type="checkbox"/>  VBE <input type="checkbox"/> </div>	c. Name and Address Of Office In Which Individual Identified In 7a Resides: <div style="text-align: right;"> MBE <input type="checkbox"/>  WBE <input type="checkbox"/>  SDVOBE <input type="checkbox"/>  VBE <input type="checkbox"/> </div>
d. Years Experience: With This Firm: _____ With Other Firms: _____	d. Years Experience: With This Firm: _____ With Other Firms: _____
e. Education: Degree(s) /Year/Specialization	e. Education: Degree(s) /Year/Specialization
f. Active Registration: Year First Registered/Discipline/Mass Registration Number	f. Active Registration: Year First Registered/Discipline/Mass Registration Number
g. Current Work Assignments and Availability For This Project:	g. Current Work Assignments and Availability For This Project:
h. Other Experience and Qualifications Relevant To The Proposed Project: (Identify Firm By Which Employed, If Not Current Firm):	h. Other Experience and Qualifications Relevant To The Proposed Project: (Identify Firm By Which Employed, If Not Current Firm):

8a. Current and Relevant Work By Prime Applicant Or Joint-Venture Members. Include <b><u>ONLY</u></b> Work Which Best Illustrates Current Qualifications In The Areas Listed In The Advertisement (List Up To But Not More Than 5 Projects).					
a. Project Name And Location Principal-In-Charge	b. Brief Description Of Project And Services (Include Reference To Relevant Experience)	c. Client's Name, Address And Phone Number (Include Name Of Contact Person)	d. Completion Date (Actual Or Estimated)	e. Project Cost (In Thousands)	
				Construction Costs (Actual, Or Estimated If Not Completed)	Fee for Work for Which Firm Was Responsible
(1)					
(2)					
(3)					
(4)					
(5)					

8b. List Current and Relevant Work By Sub-Consultants Which Best Illustrates Current Qualifications In The Areas Listed In The Advertisement (Up To But Not More Than 5 Projects For Each Sub-Consultant). Use Additional Sheets Only As Required For The Number Of Sub-Consultants Requested In The Advertisement.					
Sub-Consultant Name:					
a. Project Name and Location Principal-In-Charge	b. Brief Description Of Project and Services (Include Reference To Relevant Experience	c. Client's Name, Address And Phone Number. Include Name Of Contact Person	d. Completion Date (Actual Or Estimated)	e. Project Cost (In Thousands)	
				Construction Costs (Actual, Or Estimated If Not Completed)	Fee For Work For Which Firm Was/Is Responsible
(1)					
(2)					
(3)					
(4)					
(5)					

9. List All Projects Within The Past 5 Years For Which Prime Applicant Has Performed, Or Has Entered Into A Contract To Perform, Any Design Services For All Public Agencies Within The Commonwealth.					
# of Total Projects:		# of Active Projects:	Total Construction Cost (In Thousands) of Active Projects (excluding studies):		
Role P, C, JV *	Phases St., Sch., D.D., C.D., A.C.*	Project Name, Location and Principal-In-Charge	Awarding Authority (Include Contact Name and Phone Number)	Construction Costs (In Thousands) (Actual, Or Estimated If Not	Completion Date (Actual or Estimated) (R)Renovation or (N)New
		1.			
		2.			
		3.			
		4.			
		5.			
		6.			
		7.			
		8.			
		9.			
		10.			
		11.			
		12.			

\* P = Principal; C = Consultant; JV = Joint Venture; St. = Study; Sch. = Schematic; D.D. = Design Development; C.D. = Construction Documents; A.C. = Administration of Contract



10.	Use This Space To Provide Any Additional Information Or Description Of Resources Supporting The Qualifications Of Your Firm And That Of Your Sub-Consultants For The Proposed Project. If Needed, Up To Three, Double-Sided 8 ½" X 11" Supplementary Sheets Will Be Accepted. <b><u>APPLICANTS ARE ENCOURAGED TO RESPOND SPECIFICALLY IN THIS SECTION TO THE AREAS OF EXPERIENCE REQUESTED IN THE ADVERTISEMENT.</u></b>																																
<b>Be Specific – No Boiler Plate</b>																																	
11.	Professional Liability Insurance:  <table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Name of Company</td> <td style="width: 30%;">Aggregate Amount</td> <td style="width: 30%;">Policy Number</td> <td style="width: 10%;">Expiration Date</td> </tr> </table>	Name of Company	Aggregate Amount	Policy Number	Expiration Date																												
Name of Company	Aggregate Amount	Policy Number	Expiration Date																														
12.	Have monies been paid by you, or on your behalf, as a result of Professional Liability Claims (in any jurisdiction) occurring within the last 5 years and in excess of \$50,000 per incident? Answer <b>YES</b> or <b>NO</b> . If YES, please include the name(s) of the Project(s) and Client(s), and an explanation (attach separate sheet if necessary).																																
13.	Name Of Sole Proprietor Or Names Of All Firm Partners and Officers: <table style="width: 100%; border: none;"> <tr> <td style="width: 20%;">Name</td> <td style="width: 15%;">Title</td> <td style="width: 15%;">MA Reg #</td> <td style="width: 15%;">Status/Discipline</td> <td style="width: 20%;">Name</td> <td style="width: 15%;">Title</td> <td style="width: 15%;">MA Reg #</td> <td style="width: 15%;">Status/Discipline</td> </tr> <tr> <td>a.</td> <td></td> <td></td> <td></td> <td>d.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>b.</td> <td></td> <td></td> <td></td> <td>e.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>c.</td> <td></td> <td></td> <td></td> <td>f.</td> <td></td> <td></td> <td></td> </tr> </table>	Name	Title	MA Reg #	Status/Discipline	Name	Title	MA Reg #	Status/Discipline	a.				d.				b.				e.				c.				f.			
Name	Title	MA Reg #	Status/Discipline	Name	Title	MA Reg #	Status/Discipline																										
a.				d.																													
b.				e.																													
c.				f.																													
14.	If Corporation, Provide Names Of All Members Of The Board Of Directors: <table style="width: 100%; border: none;"> <tr> <td style="width: 20%;">Name</td> <td style="width: 15%;">Title</td> <td style="width: 15%;">MA Reg #</td> <td style="width: 15%;">Status/Discipline</td> <td style="width: 20%;">Name</td> <td style="width: 15%;">Title</td> <td style="width: 15%;">MA Reg #</td> <td style="width: 15%;">Status/Discipline</td> </tr> <tr> <td>a.</td> <td></td> <td></td> <td></td> <td>d.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>b.</td> <td></td> <td></td> <td></td> <td>e.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>c.</td> <td></td> <td></td> <td></td> <td>f.</td> <td></td> <td></td> <td></td> </tr> </table>	Name	Title	MA Reg #	Status/Discipline	Name	Title	MA Reg #	Status/Discipline	a.				d.				b.				e.				c.				f.			
Name	Title	MA Reg #	Status/Discipline	Name	Title	MA Reg #	Status/Discipline																										
a.				d.																													
b.				e.																													
c.				f.																													
15.	Names Of All Owners (Stocks Or Other Ownership): <table style="width: 100%; border: none;"> <tr> <td style="width: 20%;">Name And Title</td> <td style="width: 15%;">% Ownership</td> <td style="width: 15%;">MA. Reg.#</td> <td style="width: 15%;">Status/Discipline</td> <td style="width: 20%;">Name And Title</td> <td style="width: 15%;">% Ownership</td> <td style="width: 15%;">MA. Reg.#</td> <td style="width: 15%;">Status/Discipline</td> </tr> <tr> <td>a.</td> <td></td> <td></td> <td></td> <td>d.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>b.</td> <td></td> <td></td> <td></td> <td>e.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>c.</td> <td></td> <td></td> <td></td> <td>f.</td> <td></td> <td></td> <td></td> </tr> </table>	Name And Title	% Ownership	MA. Reg.#	Status/Discipline	Name And Title	% Ownership	MA. Reg.#	Status/Discipline	a.				d.				b.				e.				c.				f.			
Name And Title	% Ownership	MA. Reg.#	Status/Discipline	Name And Title	% Ownership	MA. Reg.#	Status/Discipline																										
a.				d.																													
b.				e.																													
c.				f.																													
16.	I hereby certify that the undersigned is an Authorized Signatory of Firm and is a Principal or Officer of Firm. I further certify that this firm is a "Designer", as that term is defined in Chapter 7C, Section 44 of the General Laws, or that the services required are limited to construction management or the preparation of master plans, studies, surveys, soil tests, cost estimates or programs. The information contained in this application is true, accurate and sworn to by the undersigned under the pains and penalties of perjury.  <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Submitted by (Signature) _____</td> <td style="width: 50%;">Printed Name and Title _____ Date _____</td> </tr> </table>	Submitted by (Signature) _____	Printed Name and Title _____ Date _____																														
Submitted by (Signature) _____	Printed Name and Title _____ Date _____																																