Planning

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ADAM J. BRODSKY
abrodsky@dtm-law.com

July 1, 2025

***Via* Email and Federal Express**

Northern Middlesex Council of Governments
40 Church Street, Suite 200
Lowell, MA 01852

Re: Appeal of Denial of Application for Historic Districts Commission Review of the Talbot Mills Dam Removal/Concord River Ecological Restoration Project Pursuant M.G.L. c. 40C, § 12, and Billerica By-Law to Establish Historic Districts Commission, § 14

Dear Sir or Madam:

This office represents CRT Development Realty LLC ("CRT"), which owns the Talbot Mills Dam (the "Dam") located on the Concord River upstream of the Faulkner Street Bridge. CRT has appealed (the "Appeal") the decision of the Billerica Historic Districts Commission (the "Commission") denying its Application for Historic Districts Review ("Application") for the Talbot Mills Dam Removal/Concord River Ecological Restoration Project (the "Project") (the "Decision").

Pursuant to M.G.L. c. 40C, § 12 ("Historic Districts Act", and the Billerica By-law to Establish Historic Districts Commission ("HDC Bylaw), § 14, CRT requested review of the Decision by the Northern Middlesex Council of Governments ("NMCOG").

We enclose the following documents: (1) a copy of Request for Review of a Decision of the Billerica Historic Districts Commission by NMCOG form; (2) a copy of our letter in support of the Appeal; and (3) a check in the amount of $1,500 made payable to NMCOG. CRT has compiled electronic copies of all of the files relating to the Application and we are prepared to provide a link to NMCOG directly with the Commission's permission.

Please notice the public hearing on this Appeal at your earliest convenience but within the 42-day time period. Please also contact us to schedule a site visit by the hearing officer.

Should you have any questions, please do not hesitate to contact us. Thank you.

Very truly yours,

Adam J. Brodsky
DTM Law, P.C.

Enclosure

Cc: Donna McCoy, Town Clerk (*via* email)
David Gagliardi, Chair, Historic Districts Commission (*via* email)
Katherine Malgieri, Planning and Community Development Director (*via* email)
Christopher Dillon, Acting Town Manager (*via* email)
Jill Griffiths, P.E., Gomez and Sullivan Engineers, Water Resources Engineer (*via* email)
Matt Brown, OARS 3 Rivers, Executive Director (*via* email)

Bcc: Robert Martin, Manager (*via email*)

Request for Review of a Decision of the Billerica Historic Districts Commission by the Northern Middlesex Council of Governments

Name of appellant: Robert Martin, CRT Development Realty, LLC

Address: 80 Washington Street

Norwell, MA 02061

Telephone: (978) 314-8080

Name of Historic District: Billerica Mills Historic District

Address of subject Property: Talbot Mills Dam (accessed from 6 Old Elm Street)

Date of Decision: June 13, 2025
(Please attach a copy of the decision being appealed)

Reason for Appeal: Please reference attached letter by

Adam J. Brodsky, Esq.

There is a fee of $1,500 to file an appeal. Please make the check payable to Northern Middlesex Council of Governments. **Payment must be in the form of a cashier's check or money order.** A hearing will not be scheduled until payment has been received.

Mail payment to: Northern Middlesex Council of Governments
40 Church Street, Suite 200
Lowell, MA 01852

DTM Law, P.C.

ATTORNEYS AT LAW
175 DERBY STREET, SUITE 30
HINGHAM, MASSACHUSETTS 02043
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www.dtm-law.com

ADAM J. BRODSKY
abrodsky@dtm-law.com

July 2, 2025

***Via* Email and Federal Express**

David Gagliardi, Chair
Billerica Historic Districts Commission
365 Boston Road
Billerica, MA 01821

Re: Appeal of Denial of Application for Historic Districts Commission Review of the Talbot Mills Dam Removal/Concord River Ecological Restoration Project Pursuant M.G.L. c. 40C, § 12, and Billerica By-Law to Establish Historic Districts Commission, § 14

Dear Chair Gagliardi:

This office represents CRT Development Realty LLC ("CRT"), which owns the Talbot Mills Dam (the "Dam") located on the Concord River immediately upstream of the Faulkner Street Bridge. This letter is submitted in support of CRT's appeal of the decision of the Billerica Historic Districts Commission (the "Commission") denying its Application for Historic Districts Review ("Application") for the Talbot Mills Dam Removal/Concord River Ecological Restoration Project (the "Project") filed with the Billerica Town Clerk on June 13, 2025 (the "Decision").

CRT asserts that the Decision on its face is insufficient in law and not warranted by the evidence. Accordingly, the Decision should be annulled and a Certificate of Appropriateness, Non-applicability, or Hardship be issued as appropriate to allow the Project to proceed.

CRT requests review of the Decision by the Northern Middlesex Council of Governments ("NMCOG") pursuant to M.G.L. c. 40C, § 12 ("Historic Districts Act", and the Billerica By-law to Establish Historic Districts Commission ("HDC Bylaw), § 14. We request that the Commission immediately notify NMCOG of the appeal and transmit a copy to NMCOG pursuant to NMCOG's Historic District Appeal Process. We understand that Stephen Stowell, Administrator, Lowell Historic Board, has been designated by NMCOG to hear such appeals.

We enclose the following documents: (1) a Request for Review of a Decision of the Billerica Historic Districts Commission by the Northern Middlesex Council of Governments form; and (2) a copy of a check in the amount of $1,500 made payable to NMCOG, the original of which

will be mailed separately to NMCOG.

I. Background Facts

CRT provided extensive testimony and detailed documents supporting the Application to the Commission. We request that you please forward the entire administrative record to NMCOG with this appeal. CRT has compiled electronic copies of all of the files relating to the Application and we will provide a link to the Commission and NMCOG directly. We provide below a brief summary of the background facts.

The Dam is a former mill dam constructed in 1828. The Dam was previously used for industrial waterpower, but no longer serves this purpose. The Dam is regulated by the Massachusetts Department of Conservation and Recreation ("DCR") Office of Dam Safety ("ODS"), among other regulators, and has been determined to be a Significant (Class II) Hazard potential structure, which requires significant maintenance and improvement to comply with current regulatory standards. Among other things, the Dam does not meet the dam safety requirement to be able to pass the spillway design flood (100-year flood) without overtopping and is not adapted for climate change. As such, the Dam poses significant public safety concerns.

The Dam also results in significant, adverse ecological impacts. Among other things, the Dam does not allow fish passage and would require the construction of a fishway to comply with current regulatory standards. The Dam is one of seven dams identified as a priority for fish passage in the 2021 Merrimack River Comprehensive Plan, and the proposed project, discussed below, has been designated as a Priority Project by the Massachusetts Division of Ecological Restoration ("DER").

CRT owns the Dam by virtue of a Quitclaim Deed dated September 21, 2004, recorded in the Middlesex County North Registry of Deeds at Book 17958, Page 95. CRT does not have the financial resources to maintain and improve the Dam. As such, it offered to convey the Dam for nominal consideration to various entities, including the Town of Billerica, which either refused to acquire the Dam or demanded commercially unreasonable conditions for the acquisition.

However, a private-public partnership, which includes Federal and State agencies and local non-profits, has come together to propose the Project. The major elements of the Project include: (1) removal of the approximately 127-foot long, 10-foot-high existing masonry spillway and concrete abutment; (2) archaeological recordation and removal of a former timber/rock fill dam thought to be submerged upstream (if found); (3) grading of sediment immediately upstream of the dam; and (4) passive instream management of potentially mobile sediment within the dam impoundment. The Project requires extensive Federal, State, and local permitting. With respect to historic preservation, the National Oceanic and Atmospheric

Administration Restoration Center ("NOAA") is serving as the Lead Federal Agency for National Historic Preservation Act ("NHPA") Section 106 review and the Project team has filed a Project Notification Form ("PNF") with the Massachusetts Historical Commission ("MHC").

The Project has received funding for design, permitting, and construction. The funding is approved for Dam removal and is not available for construction of a fish ladder or another alternative that does not meet the Project's ecological restoration goals. In order to facilitate the Project, CRT also purchased land abutting the Project site in April 2025, formerly owned by Pace Industries, LLC, for access.

The Dam is listed in the National Register of Historic Places as a contributing resource to both the Middlesex Canal Historic and Archaeological District and the Billerica Mills Historic District and is also located in the Northern Billerica Mills Local Historic District. As such, CRT submitted the Project for review by the Commission under the Historic Districts Act and the HDC Bylaw. CRT, through Gomez and Sullivan Engineers ("Gomez and Sullivan"), the Project engineer, submitted an Application for Historic Districts Commission Review to the Commission on December 11, 2024. A copy of the Application package is attached as **Exhibit 1** (the Application form is labeled Exhibit 1 in the package). The Application requests a Certificate of Appropriateness, Non-applicability, or Hardship, "as appropriate". The Application includes extensive background information, Project design details, discussion of potential resource impacts and benefits, including historical and archaeological resources, and a detailed alternatives analysis.

The Commission conducted public hearings on January 8, 2025, April 2, 2025, May 7, 2025, and June 4, 2025. The Commission received substantive testimony from the Project team and other stakeholders on January 8 and June 4.

On May 28, 2025, CRT, through Gomez and Sullivan, submitted its Supplemental Information to Application to the Commission ("Application Supplement"). A copy of the Application Supplement is attached as **Exhibit 2**. The Application Supplement addressed whether review under the Historic Districts Act and the HDC Bylaw was appropriate given that the Project concerns a dam rather than a building or structure as typically reviewed by the Commission. Additionally, CRT provided a comprehensive analysis of hardship under the HDC Bylaw and the Commission's Review Standards. The analysis included an estimate of costs to meet current dam safety requirements; an estimate of costs to meet fish passage requirements; and an estimate of ongoing maintenance and repair costs. In summary, the estimated costs to meet the ODS requirements and construct the fishway alone would be over $2 million, which would exceed the estimated cost of Dam removal ($1.2 million). Ultimately, the Project team opined that the Project should not fall within the jurisdiction of the Commission and presented credible evidence that the Project should qualify for a Certificate of Hardship.

Notwithstanding, at a public hearing on June 4, 2025, the Commission voted 6-0 to deny a Certificate for the Project. On June 13, 2025, the Commission filed its one-page Decision with the Town Clerk. A copy of the Decision is attached as **Exhibit 3**. The Decision is labeled "Application for Certificate of Hardship Talbot Mills Dam Removal" and fails to address a Certificate of Non-applicability as specifically requested by CRT. Additionally, the Decision fails to provide any specific factual findings instead paraphrasing the regulatory language and providing generalized conclusions.

II. Overview of the Historic Districts Act

The Historic Districts Act permits cities and towns to establish historic districts to preserve "distinctive characteristics of buildings and places ... or their architecture." Springfield Preservation Trust, Inc. v. Springfield Library and Museums Association, Inc., 447 Mass. 408, 409 (2006), citing M.G. L. c, 40C, § 2. Within a historic district, buildings or structures may not be constructed or altered in a manner that "affects exterior architectural features" without first submitting the proposed work for review by the historic district commission. Id., citing M.G. L. c. 40C, § 6, § 19(a)-(c). A historic district commission is to consider various factors in its decision to issue a certificate, including "the historic and architectural value and significance of the site, building or structure ... and the relation of ... features to similar features of buildings and structures in the surrounding area." Id., citing M.G.L. c. 40C, § 7.

III. Standard of Review

M.G.L. c. 40C, § 12 does not provide an express standard of review of a decision by a historic district commission by a regional planning agency. Compare M.G.L. c. 40C, § 12A ("The court shall hear all pertinent evidence and shall annul the determination of the commission if it finds the decision of the commission unsupported by the evidence or to exceed the authority of the commission ...."); see also HDC Bylaw, § 14.

The courts review the adequacy of a decision of a historic districts commission by applying the standard of review analogous to special permits under zoning. See Warner v. Lexington Historic Districts Commission, 64 Mass. App. Ct. 78, 82 (2005) (Lexington Historic District statute). As such, a decision of the commission should not be disturbed "unless it is based on a legally untenable ground, or is unreasonable, whimsical, capricious or arbitrary." Id., quoting Gumley v. Board of Selectmen of Nantucket, 371 Mass. 718, 719 (1977). A judge would conduct a two-step inquiry. First, the judge should determine whether the decision, on its face, is insufficient in law to warrant the commission's determination. Warner, 64 Mass. App. Ct. at 83. Second, if the decision appears to be based on a legally tenable ground, the court must then consider whether the reasons given are "warranted by the evidence". Id., quoting Marr v. Back Bay Architectural

Comm., 23 Mass. App. Ct. 679, 682-683 (1987).

Importantly, the commission is obligated to make findings of fact and the failure to do so is an error of law. A decision which paraphrases the statutory language without making specific factual findings is erroneous. Warner, 64 Mass. App. Ct. at 83. "Mere repetition of statutory language does not adequately support the commission's decision." Id. When a decision is fatally deficient, a court may annul the decision, or, in its discretion, request a supplemental statement of the commission's reasons. Id. at 84.

IV. NMCOG Should Reverse the Decision Because On its Face It is Insufficient in Law.

A. The Decision Fails to Address the Request for Certificate of Non-applicability.

The Decision fails entirely to address CRT's request for a Certificate of Non-applicability and is insufficient on its face. CRT made a compelling case that neither the Historic Districts Act nor the HDC Bylaw contemplated review of dams subject to regulation by the ODS and other regulators. We refer you to the Application Supplement and, in particular, Exhibit 2 entitled Consistency with Bylaws and Review Standards.

We note that the following terms are defined in the Historic Districts Act:

> "building" means a combination of materials forming a shelter for persons, animals or property ...
>
> "exterior architectural feature" means such portion of the exterior of a building or structure as is open to view from a public street, public way, public park or public body of water, including but not limited to the architectural style and general arrangement and setting thereof, the kind, color and texture of exterior building materials, the color of pain or other materials applied to exterior surfaces and the type and style of windows, doors, lights, signs and other appurtenant exterior fixtures ...
>
> "structure" means a combination of materials other than a building, including a sign, fence, wall, terrace, walk or driveway.

See also HDC Bylaw, § 2.

There does not appear to be a dispute that the Dam is not a building. Therefore, the relevant question is whether the Dam is a structure which should be reviewed for its exterior architectural features.

The definition of "structure" in various historic district statutes appears to have been derived from building codes in effect at the time. See, e.g., Globe Newspaper Company v. Beacon Hill Architectural Commission, 421 Mass. 570, 573-574 (1996) (Beacon Hill Historic District definition of "structure" from Boston Building Code). Dams are permitted through the ODS pursuant to M.G.L. c. 253, § 45A, and not typically through local building departments under the State building code.[1] As such, it is not surprising that the definitions of "structure" in both the Historic Districts Act and the HDC Bylaw do not expressly include dams.

Additionally, we have found at least one example of a land use regulation drawing a definitional distinction between a "structure" and a "dam". § 305-13.02 of Marshfield Zoning Bylaw, which governs the Marshfield Coastal Wetlands District, provides that:

> No structure intended for human occupancy or use on a permanent basis having water or sewerage facilities, and no other building, wall, dam, or structure (except flagpoles, signs and the like) intended for permanent use shall be erected, constructed, altered, enlarged or otherwise created or moved for any purpose except for piers, boathouses, walkways, and similar facilities as which may be granted by a special permit from the Board. [Emphasis added].

See, e.g., Corry v. Town of Marshfield Zoning Board of Appeals, 2015 WL 758445, Decision (Mass. Land Court February 19, 2015) n. 8.

Even assuming that the dam is a structure under the Historic Districts Act and the HDC Bylaw, it does not have typical "exterior architectural features". While the Dam is arguably constructed of building materials, e.g., granite block masonry, mortared stone masonry, and concrete, presumably the materials were not selected for their "kind, color and texture". Similarly, we are not aware of any paint or other materials applied to exterior surfaces for architectural effect. Lastly, the Dam does not have windows, doors, lights, signs, and other appurtenant exterior architectural features.

The courts will interpret ambiguous provisions of land use regulations to avoid absurd or unreasonable results when the language is susceptible to a sensible meaning. See, e.g. North

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[1] "Dam" is defined in M.G.L. c. 253, § 44 as follows:

> any man-made artificial barrier, including appurtenant works, which impounds or diverts water, and which (1) is 25 feet or more in height from the natural bed of the stream or watercourse measured at the downstream toe of the barrier, or from the lowest elevation of the outside limit of the barrier, if it is not across a stream channel or watercourse, to the maximum water storage elevation or (2) has an impounding capacity at maximum water storage elevation of 50 acre feet or more....

Shore Realty Trust v. Commonwealth, 434 Mass. 109, 112 (2001) ("Zoning by-laws must be construed reasonably .... [and] not be so interpreted as to cause absurd or unreasonable results ..."). Arguably, neither the Historic Districts Act nor the HDC Bylaw is ambiguous because they do not expressly include dams in their definitions. However, if the statute and regulation are ambiguous, they should be interpreted to not apply to dams which have none of the architectural features typically regulated by historic district commissions. This would lead to an absurd and unreasonable result.

The Decision is fatally flawed and should be annulled without remand. CRT should not bear the burden of the Commission's failure to comply with law, including, but not limited to, the costs of remand.

B. The Decision Fails to Provide Specific Factual Findings.

The Decision also fails to provide specific factual findings. In paragraph 1 of the Decision, the Commission paraphrases the burden of proof for the grant of a Certificate of Hardship in § 12(d) of the HDC Bylaw. In paragraph 2, the Commission states only that it "found that loss of the dam would not be in the public's best interest as the dam has local and national historic significance and should be protected and preserved." Decision, ¶ 2. The Decision fails to provide any factual findings in support of this conclusion, and also does not address the specific elements to be considered for non-applicability (§ 12(c)) or hardship (§ 12(d)) under the HDC Bylaw.

In particular, with respect to a request for a Certificate of Hardship, the Commission must determine that:

> owing to conditions specific to a particular building or structure, failure to approve an application will result in substantial hardship, whether financial or otherwise, to the applicant, and that granting the application will not involve substantial detriment to the public welfare or substantial derogation from the intent and purpose of this By-law ....

HDC Bylaw, § 12(d).

Again, the Commission fails to make any factual findings on hardship and does not even consider the required elements under § 12(d). On its face, the Decision is fatally flawed and should be annulled without remand.

V. NMCOG Should Annul the Hardship Decision Because It Is Not Warranted by the Evidence.

CRT presented credible evidence establishing each element of its hardship claim. See Application Supplement, Exhibit 1.2 and 1.3. In particular, and with reference to the Commission's Review Standards, CRT provided:

1. A financial report detailing the costs of rehabilitation and evidencing that the Dam is incapable of producing a reasonable economic return on investment. See Review Standard 2.1021. The report details that the Dam is incapable of producing any return on investment and is an ongoing liability to CRT. To date, CRT has incurred since 1997 $66,905 in costs, not including the cost to purchase the land for access to the Project. Additionally, CRT provided an estimate of ongoing maintenance and repair costs.

2. A technical report detailing the nature and extent of the specific problems, and providing reasonably accurate costs estimates for their correction. See Review Standard 2.1022. The reports included the estimated costs to meet dam safety requirements and the fish passage requirements. More particularly, detailed information was provided regarding the challenges of constructing a fish ladder, other fish ladder examples, and the costs of construction. As stated above, these costs exceed $2 million, which exceeds the cost of the Project.

3. Complete plans for the new development proposed on the site, together with a timetable and a budget for demolition and reconstruction, as well as satisfactory evidence that adequate financing is available. See Review Standard 2.1023. As indicated above, the Project has received funding, but the funding can only be used for dam removal and not repair, maintenance, or construction of a fish ladder.

4. Documentation of the Dam's design plans which included elevations and detailed views. The submittal also included details of specific notable architectural features, through measured drawings and photographs. See Review Standard 2.1024. The Public Archeology Lab (PAL) has completed multiple studies in the area.

CRT provided credible evidence that owing to the conditions specific to the Dam, the failure to approve the Certificate of Hardship will result in substantial hardship, financial or otherwise, to CRT. See HDC Bylaw, § 12(d); Review Standard 6.10. Additionally, CRT provided credible evidence that granting the application will not involve substantial detriment to the public welfare or substantially derogate from the intent and purpose of the HDC Bylaw. See HDC Bylaw, § 12(d); Review Standard 6.11. In fact, to the contrary, the denial of relief will only increase the risk to public safety and result in further ecological damage.

We note that during deliberations on June 4, 2025, each Commission member described the reasons why he or she voted the way that they did. However, the Commission members did not review the Application with respect to the applicable standards. Instead, they offered their "personal opinions" which were unrelated to the Historic Districts Act and the HDC Bylaw. In fact, we understand that one member stated to the effect that "I don't care what the standards are ...whether it's a building or not ... As far as the hardship for the owner, I have no compunction about saying 'well that's too bad' ...." See recording of the June 4, 2025 HDC hearing at time 1:53:19, accessible through the following link: HDC 06-04-2025.

The Decision was not warranted by the evidence and must be annulled.

VI. Conclusion

For all the foregoing reasons, the Decision should be annulled and a Certificate of Appropriateness, Non-applicability, or Hardship be issued as appropriate to allow the Project to proceed.

Should you have any questions, please do not hesitate to contact us. Thank you.

Very truly yours,

Adam J. Brodsky
DTM Law, P.C.

Enclosures

Cc: Donna McCoy, Town Clerk (*via* email and hand delivery)
Katherine Malgieri, Planning and Community Development Director (*via* email)
Christopher Dillon, Acting Town Manager (*via* email)
Jill Griffiths, P.E., Gomez and Sullivan Engineers, Water Resources Engineer (*via* email)
Matt Brown, OARS 3 Rivers, Executive Director (*via* email)

Bcc: Robert Martin, Manager (*via email*)

EXHIBIT 1

TALBOT MILLS DAM REMOVAL / CONCORD RIVER ECOLOGICAL RESTORATION PROJECT

HISTORIC DISTRICTS COMMISSION CERTIFICATE APPLICATION

Town of Billerica, Middlesex County, MA

DECEMBER 2024

Project Proponent:

CRT DEVELOPMENT REALTY, LLC

Prepared for:

TOWN OF BILLERICA
HISTORIC DISTRICTS COMMISSION

365 Boston Road, Room 105, Billerica, MA 01821

Prepared by:

GOMEZ AND SULLIVAN ENGINEERS

PO Box 2179, Henniker, NH 03242

GOMEZ AND SULLIVAN ENGINEERS
41 Liberty Hill Road • PO Box 2179 • Henniker, NH 03242 • Phone 603-428-4960 • Fax 603-428-3973

December 11, 2024

David Gagliardi, Chair
Historic Districts Commission
365 Boston Road, Room 105
Billerica, MA 01821
planning@town.billerica.ma.us

Re: Talbot Mills Dam Removal / Concord River Restoration Project
Application for Historic Districts Commission Review/Certificate

Dear Mr. Gagliardi:

Gomez and Sullivan Engineers, DPC hereby submits the enclosed Application for Historic Districts Commission Review/Certificate for the Talbot Mills Dam Removal / Concord River Restoration Project in Billerica, Massachusetts on behalf of the dam owner, CRT Development Realty, LLC. The National Oceanic and Atmospheric Administration Restoration Center (NOAA) is serving as the Lead Federal Agency (LFA) for National Historic Preservation Act (NHPA) Section 106 review.

The Talbot Mills Dam is a former mill dam located on the Concord River just upstream of the Faulkner Street bridge. The dam no longer serves its design purpose and creates a barrier in the river, which blocks anadromous (migratory) fish from accessing important spawning habitat, and has resulted in other environmental and public safety impacts. In partnership with multiple state and federal agencies and local watershed organizations, the owner of the dam is seeking removal as the best alternative to restore anadromous fish passage and connectivity for resident aquatic species; decommission aging infrastructure; reduce flood hazards and increase climate resilience; and improve water quality, habitat, and natural river functions. The Talbot Mills Dam is one of seven dams identified as a priority for fish passage in the 2021 Merrimack River Comprehensive Plan, and the proposed dam removal project has been designated as a Priority Project by the Massachusetts Division of Ecological Restoration.

Major elements of the proposed project include: 1) removal of the approximately 127-foot-long, 10-foot-high existing masonry spillway and concrete abutment, 2) archaeological recordation and removal of a former timber/rock fill dam thought to be submerged just upstream (if found), 3) grading of sediment immediately upstream of the dam, and 4) passive instream management of potentially mobile sediment within the dam impoundment. The granite masonry abutment at the southwest end of the spillway will be retained to honor the history of the site and protect the Faulkner Street bridge. An approximately 20-foot-wide stepped section of the spillway adjacent to the masonry abutment will be retained to support this structure.

The Talbot Mills Dam removal project requires review under Section 106 of the National Historic Preservation Act. The Public Archaeology Laboratory (PAL) completed a historic and archaeological reconnaissance survey for the project in 2016 and a Cultural Resources Assessment Update in 2023. The National Oceanic and Atmospheric Administration Restoration Center (NOAA), serving as Lead Federal Agency, has determined that the project will result in adverse effects to the Middlesex Canal Historic and Archaeological District and the Billerica Mills Historic District, which are listed in the National Register of Historic Places. NOAA is conducting ongoing consultation with the parties that have been invited to

participate in the Section 106 process. The goal of the consultation is to seek ways to avoid, minimize, and/or mitigate adverse effects from the project to historic properties, including archaeologically sensitive areas, in accordance with Section 106 of the NHPA and Massachusetts General Law (MGL) Chapter 9, Sections 26-27C (950 CMR 70-71). The next Section 106 consultation meeting is scheduled for January 29, 2025.

Alternatives to restore diadromous fish passage at Talbot Mills Dam were evaluated in the 2016 *Concord River Diadromous Fish Restoration Feasibility Study* and summarized in Section 2.1 of the Single Environmental Impact Report filed for the Massachusetts Environmental Policy Act review in February 2024. Installation of a fish ladder at the dam could provide passage for some of the target species under ideal flow conditions and with proper (intensive daily) operation and maintenance. However, passage efficiency of target species would be low, and passage of other aquatic species and overall connectivity of the river would be limited. Other ecological restoration goals and public safety benefits associated with dam removal would not be realized with this alternative. The obligation to bring the dam into compliance with dam safety regulations as well as the continued responsibility for ongoing operation, maintenance, and liability associated with the dam and fishway would make this alternative prohibitively expensive and not feasible for the dam owner to undertake. Therefore, dam removal was selected as the only feasible alternative that meets project goals.

Electronic copies of this and other permit application materials for the proposed project as well as the project feasibility study and design documents can be downloaded from the following publicly accessible file transfer site: https://tinyurl.com/TalbotDamRemovalPublic. Additional resources can be found on the project websites (https://merrimack.org/talbotmills and https://oars3rivers.org/talbot-mills-dam-removal), including links to previous documents, answers to frequently asked questions, a StoryMap, recordings and/or slides from previous public meetings, and press coverage.

We look forward to your review of this project. We respectfully request to present the project at the January 8, 2025 meeting of the Historic Districts Commission. Please do not hesitate to contact me directly with any questions or comments at jgriffiths@gomezandsullivan.com or (716) 402-6777.

Sincerely,

Jill Griffiths, PE
Water Resources Engineer

Encl.

TABLE OF CONTENTS

1. Historic Districts Commission Review Application Form

Application Number_____
Date of Hearing:_____
Major or Minor:_____

Town of Billerica
Billerica Historic Districts Commission

365 Boston Road. Room 105 Billerica, MA 01821 978-671-0962

Application for Historic Districts Commission Review

Under the Town of Billerica General By-laws, Article VII, Section 5, for properties in a local historic district, a certificate from the Historic District Commission is required before obtaining any building permit or before proceeding with construction projects affecting the exterior of the property. Submission of this application will begin the process of review for a Certificate of Appropriateness, Non-Applicability, or Hardship, which will be issued by the Historic District Commission as applicable.

Submit the application to: planning@town.billerica.ma.us

Application fee: Check payable to the Town of Billerica required with application.
$25.00 for a minor-$50.00 for a major

I. **Property Address** Faulkner Street (adjacent to 2 Old Elm Street)

Property Owner Name Robert Martin, CRT Development Realty, LLC

Phone (978) 314-8080 **Email** martinr181@gmail.com

Name of Contractor Jill Griffiths, Gomez and Sullivan Engineers, DPC (engineering consultant; contractor TBD)

Phone (716) 402-6777 **Email** jgriffiths@gomezandsullivan.com

Est. Start Date July 1, 2025 **Est. Completion Date:** December 31, 2025

II. **Type of Structure:**

☐ House ☐ Shed ☐ Fence ☐ Non-Residential

☐ Garage ☐ Wall ☐ Sign ☑ Other

Proposed Work:

☐ Addition ☐ New Construction ☐ Replacement ☐ Roofing

☑ Demolition ☐ Repair ☐ Alteration ☐ Other

III. **Description of Work**

On a separate page, please provide a detailed statement of the work to be completed, including information on materials, style of work, etc., referencing plans and photographs if appropriate. Please note if approval is needed or has been received from any other boards or departments (Planning, Zoning Board of Appeals)

Application Number_____
Date of Hearing:_____
Major or Minor:_____

IV. Supporting Documentation

Please provide any appropriate documentation for the project, including:

✓ - Photographs (clear, in color, and current) See Attachment 3

✓ - Site Plan See Attachment 4

- Building plans or elevations (no larger than 11 x 17) See Attachment 5
- Product/material information (spec sheets from the manufacturer, photographs of installed examples)

We encourage applicants to consult with staff in order to determine what additional documentation should be provided.
See Attachment 2 (Project Narrative) and Attachment 6 (Response to BHDC MEPA Comments)
Dimensions and materials should be clearly labeled on all plans.

For window replacement, please provide a photograph showing the full side of the building, and cross off the windows that are to be replaced.

For signs, please provide a rendering showing accurate dimensions and graphics, how it will be erected in its proposed location, along with current photographs of the proposed location.

V. Notice to Applicants

-The Commission generally hears applications for certificates on the first Wednesday of every month (subject to change). Applications should be submitted at least three weeks in advance for review and to satisfy public hearing notice requirements.

-An approved certificate shall expire six months from the time of issuance unless otherwise extended by the Commission.

-Certificates are specific to the project and owner cited on the application.

-Please notify the Commission in writing (email is acceptable) upon completion of the changes included in this certificate

Date of Hearing:	
Date of Decision:	
Signed By:	
Conditions:	

2. Project Narrative

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2.1 Project Background

CRT Development Realty, LLC (CRT) plans to remove the Talbot Mills Dam located on the Concord River in Billerica, Middlesex County, Massachusetts. The project is proposed as an Ecological Restoration Project in accordance with 310 CMR 10.13(1). The Talbot Mills Dam is an approximately 127-foot-long, 10-foot-high, granite masonry former mill dam built in 1828. The project site is located in the Sudbury, Assabet and Concord (SuAsCo) watershed on the Concord River approximately 4.76 miles upstream of its confluence with the Merrimack River in Lowell. The area of significant changes in water level anticipated to result from the proposed project extends from the dam to the Pollard Street bridge about 0.6 miles upstream (where there is a significant hydraulic control known as the Fordway Bar).

A location map is provided in **Figure 1** in **Attachment 4** of this permit application package. An aerial image of the project site is provided in **Figure 2** in **Attachment 4**.

Project Goals & Anticipated Benefits

The primary goal of the proposed project is to restore passage for diadromous (migratory) fish species, including both species of river herring (alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*)), American eel (*Anguilla rostrata*), and sea lamprey (*Petromyzon marinus*). Other anticipated benefits of the proposed dam removal and river restoration project include the following:

- Decommissioning of aging and unsafe infrastructure
- Elimination of ongoing maintenance and repair obligations
- Reduction of upstream flood hazards and increased climate resiliency
- Elimination of the potential for unexpected dam failure resulting in downstream property damage
- Restoration of natural riverine processes and ecological functions (e.g., sediment movement)
- Improvement of water quality (increased flow velocity and dissolved oxygen, reduced water temperature and stagnation)
- Restoration of passage and connectivity for diadromous fish and resident aquatic species
- Enhancement of aquatic habitat
- Significant reduction of invasive water chestnut infestation in impoundment and associated ongoing monitoring and treatment costs
- Improved public access to the river and new recreational activities (e.g., through-paddling, whitewater boating, fishing in fast-moving flow conditions, viewing of natural falls)
- Support of commercial and sport fisheries (e.g., striped bass, trout, cod, bluefish, tuna, etc.) and other species that forage upon diadromous fish throughout the Gulf of Maine

Removal of the Talbot Mills Dam will result in one of the largest diadromous fish habitat restoration efforts in Massachusetts, opening access to over 35 miles of mainstem river habitat, plus more than 100 miles of tributary habitat and at least 260 acres of spawning and rearing habitat in lakes and ponds.

Project Partners

Project partners include the dam owner, the Massachusetts Department of Fish and Game (DFG) Division of Marine Fisheries (DMF) and Division of Ecological Restoration (DER), the National Oceanic and Atmospheric Administration (NOAA) Restoration Center, the US Fish and Wildlife Service (USFWS), the National Park Service (NPS), OARS For the Sudbury, Assabet & Concord Rivers (OARS), the Merrimack River Watershed Council (MRWC), the Lowell Parks and Conservation Trust (LPCT), and others.

Regulatory Reviews

The following permits and regulatory reviews are anticipated to be required or potentially required for this project:

- US Army Corps of Engineers (USACE) Preconstruction Notice (PCN) **(filed)**
- MA Historical Commission (MHC) Project Notification Form (PNF) **(complete)** and Section 106 Consultation **(in progress)**
- MA Environmental Policy Act (MEPA) Expanded Environmental Notification Form (EENF) and Single Environmental Impact Report (SEIR) **(complete)**
- MA Dept. of Environmental Protection (DEP) Joint Application for 401 Water Quality Certification (WQC) and Chapter 91 Waterways Dredge Permit **(filed)**
- MA Dept. of Conservation and Recreation (DCR) Office of Dam Safety (ODS) Chapter 253 Dam Safety Permit **(pending)**
- MA. Dept. of Marine Fisheries (DMF) – Fishway Construction Permit **(pending)**
- Town of Billerica – Wetlands Protection Act (WPA) and Billerica Wetlands Protection Bylaw Notice of Intent (NOI) for an Ecological Restoration Project **(filed)**
- Town of Billerica – Historic Districts Commission Review/Certificate **(this application)**

Project Funding

The project has received funding from the Nyanza Chemical Waste Dump Superfund Site Natural Resource Damages (NRD) settlement for feasibility studies; from DER for conceptual design; from the American Rescue Plan Act (ARPA) through DER for design, permitting, and construction phase services; and from the Bipartisan Infrastructure Law (BIL) through USFWS for construction. The funding sources currently allocated for engineering and construction have been approved only for dam removal, and would not be available for a fish ladder or other alternative that does not meet the project's ecological restoration goals.

Project Documents

Electronic copies of project documents can be downloaded from the following publicly accessible file transfer site: https://tinyurl.com/TalbotDamRemovalPublic. Additional resources can be found on the project website (https://merrimack.org/talbotmills). The following previous studies and design phases have been completed to date:

- Concord River Diadromous Fish Restoration Feasibility Study (Gomez and Sullivan Engineers, DPC (GSE), 2016)
- Talbot Mills Dam Historic & Archeological Report (The Public Archaeology Laboratory, Inc. (PAL), 2016)
- Talbot Mills Dam Removal Targeted Impact Analysis (GSE, 2021)
- Conceptual Design Plans & Analyses (GSE, 2022)
- Preliminary (60%) Design & MEPA Expanded Environmental Notification Form (GSE, 2023)
- Talbot Mills Dam Cultural Resources Assessment Update (PAL, 2023)
- Preliminary (75%) Design & MEPA Single Environmental Impact Report (GSE, 2024)
- Various permit applications (2023 to present)

2.2 Existing Conditions

Photographs of Talbot Mills Dam are shown in **Attachment 3**. Figures are shown in **Attachment 4**. Design plans are provided in **Attachment 5**.

Watershed

The Concord River is part of the Merrimack River watershed. It joins the Merrimack River downstream of the Pawtucket Dam in Lowell, Massachusetts, making it an ideal candidate for fish passage restoration. Fish migrating upstream from the ocean must only navigate the fish passage facilities at the Essex Dam in Lawrence before reaching the Concord River. The Concord River originates at the confluence of the Assabet and Sudbury Rivers near historic Egg Rock in the town of Concord, Massachusetts. The three rivers collectively drain an approximately 400-square-mile area known as the SuAsCo watershed.

Dam

A detailed description of the dam, its history, and the various surrounding infrastructure is provided in the 2016 Feasibility Study Report and the SEIR. A summary is provided below.

The Talbot Mills Dam (NID ID MA00774) is an approximately 127-foot-long, 10-foot-high, granite masonry former mill dam built in 1828. The spillway has a crest elevation of approximately 108.2 feet North American Vertical Datum of 1988 (NAVD88)[1]. The dam was previously used for industrial waterpower, but no longer serves a useful purpose. The current dam was built just downstream of a previous dam at the site, built in 1798. The 1798 dam was approximately 150 feet long and 8 feet high and is believed to be submerged in the impoundment approximately 8 to 12 feet upstream of the current dam, with rock/gravel fill between the two dams.

Figure 2 in **Attachment 4** shows an aerial image of the site with key features labeled. Existing plans, sections, and elevations of the dam are provided in the Design Plans in **Attachment 5**.

The spillway is flanked by small granite block masonry abutments that tie into retaining/training walls for the river and impoundment. The left and right abutments have lengths of approximately 17 and 20 feet and average crest elevations of 110.5 and 110.8 feet, respectively. The left abutment contains two small former low-level outlets with downstream inverts at approximately 99.8 feet. The outlets are partially blocked, although there is significant leakage through them. There is no operational low-level outlet for the dam. A section of the right abutment is constructed of cast-in-place concrete, which is reportedly the location of a former fishway that was filled with concrete sometime after the 1960s.

An approximately 12-foot-wide, mortared stone masonry and concrete sluiceway just east of the right spillway abutment, historically known as the Faulkner Canal, diverts water to the Faulkner Mill complex located on the right bank of the river just downstream from the dam. The sluiceway contains a concrete weir with a movable sluice gate. The gate is in poor condition and leaks through large gaps in the wood. Water in the sluiceway passes under a small bridge supporting Faulkner Street and into a stilling basin located between the road and the Faulkner Mill complex. From the stilling basin, water flows through an outlet gate locked in the open position to a former turbine under the mill, which reportedly has not been in service since 1972. Water from the sluiceway is discharged back to the river approximately 150 feet downstream of the Faulkner Street bridge.

A small park is located adjacent to the right abutment of the spillway. The park contains a gazebo, benches, and a historic marker dedicated to the employees of the Faulkner Mills. Access to the park is

[1] All elevations in feet NAVD88 unless otherwise specified. To convert from the National Geodetic Vertical Datum of 1929 (NGVD29), subtract 0.827 feet.

available from a paved parking lot just east of the river and south of Faulkner Street by crossing a pedestrian bridge over the sluiceway.

The Talbot Mills Dam is classified as an Intermediate sized, Significant (Class II) Hazard potential structure by the ODS. The most recent Phase I dam safety inspection was conducted on April 30, 2021, by Geotechnical Consultants, Inc. (GCI). According to the 2021 inspection, the Talbot Mills Dam was found to be in "fair" condition. The following deficiencies were noted:

- Lack of an operation and maintenance plan
- Lack of routine oversight of the dam, particularly during storm events
- Lack of working controls
- Lack of a functional low-level outlet
- Leaks and inability to control water at sluiceway gate and weir
- Trees located just downstream of the primary spillway and on the upstream face of the left embankment near the former intake gates to the Talbot Mills complex

The following remedial measures were recommended in the inspection report:

- Prepare an Emergency Action Plan (EAP).
- Prepare and implement a comprehensive maintenance and routine inspection plan.
- Remove trees on the upstream face of the roadway embankment near the non-functional intake gates to the Talbot Mills Complex.
- Remove tree trunks and branches just upstream of the primary spillway.
- Repair/replace the sluiceway and stilling basin gates so that the gates are operational and can provide emergency bypass control.
- Inspect the interior of the Talbot Mills complex, particularly the downstream end of the former intake structures. The infilling of the intake tunnels on the left side of the dam rendered these intakes inoperable. Given the configuration of the dam, proximity of the mill complexes, and changing ownership of the downstream properties, the reconstruction of a low-level outlet in this area is impractical.
- Repair/replace the left spillway abutment to provide an operational low-level outlet and emergency bypass control.

Additionally, detailed hydraulic analyses conducted for this project found that the dam does not meet the dam safety requirement of being able to pass the spillway design flood—in this case, the 100-year flood—without overtopping[2]. If the dam were to remain in place, an engineering assessment would need to be conducted to confirm this finding and investigate options to increase spillway capacity. The amount of water that can pass over a spillway is a product of length of the spillway, the depth of water atop the spillway (head), and a weir coefficient (which is related to the spillway shape and head). The capacity of an existing spillway can be increased by lengthening the spillway crest and/or increasing the operating head or weir coefficient. Some increase in the weir coefficient may be possible by improving the spillway crest shape (e.g., from broad-crested to an ogee crest), but this approach is generally costly for the limited results attained. To increase head, the spillway crest elevation would need to be lowered. Due to the physical constraints at the site (i.e., the road, parking lot, and bridge bounding the current spillway), increasing spillway length is not feasible without replacing the spillway with an alternate design such as a

[2] This finding contradicts that in the most recent dam safety inspection report (GCI, 2021) but is based on an updated analysis and more detailed hydraulic modeling.

labyrinth weir, which uses a zig-zag layout to fit more spillway length within a given overall structure width. Any of these potential spillway retrofit/replacement projects would involve destruction or significant modification of the historic structure and many of the associated impacts of dam removal with none of the ecological or other benefits, likely at a substantially higher cost.

Impoundment

Because the upper Concord and lower Assabet and Sudbury Rivers are relatively flat in gradient, the Talbot Mills Dam has some effect on upstream water levels for 11.6 miles on the Concord River, 17 miles on the Sudbury River (up to the Saxonville Dam in Framingham), and 6.4 miles on the Assabet River (up to the High Street Dam in Acton). However, the area of significant hydraulic influence is limited to the area between the dam and the Pollard Street bridge (about 0.6 miles upstream of the dam), which is referred to in this document as the lower impoundment. A natural high point in the riverbed known as the Fordway Bar, comprised primarily of cobbles, boulders, bedrock, and other hard substrate, spans the river in the vicinity of the Pollard Street bridge and reduces the hydraulic influence of the dam upstream of that point. The lowermost section of the impoundment, which is significantly wider than the riverine sections upstream, is referred to as the Mill Pond and is approximately 9 acres in surface area.

Cultural Resources

The Talbot Mills Dam is a historic property listed in the National Register of Historic Places as a contributing resource to both the Middlesex Canal Historic and Archaeological District and the Billerica Mills Historic District. The dam is also within the North Billerica Mills Local Historic District.

The project Area of Potential Effects (APE), shown in **Figure 3** in **Attachment 4**, contains two National Register-listed historic districts and one local historic district that overlap and extend outside of the project APE:

- Middlesex Canal Historic and Archaeological District/Middlesex Canal Historic District (MHC Nos. BIL.T, BIL.K, BIL.P)
- Billerica Mills National Register Historic District (MHC No. BIL.O)
- Billerica Mills Local Historic District (MHC No. BIL.E)

Properties that contribute to one or more of these historic districts in the project APE consist of:

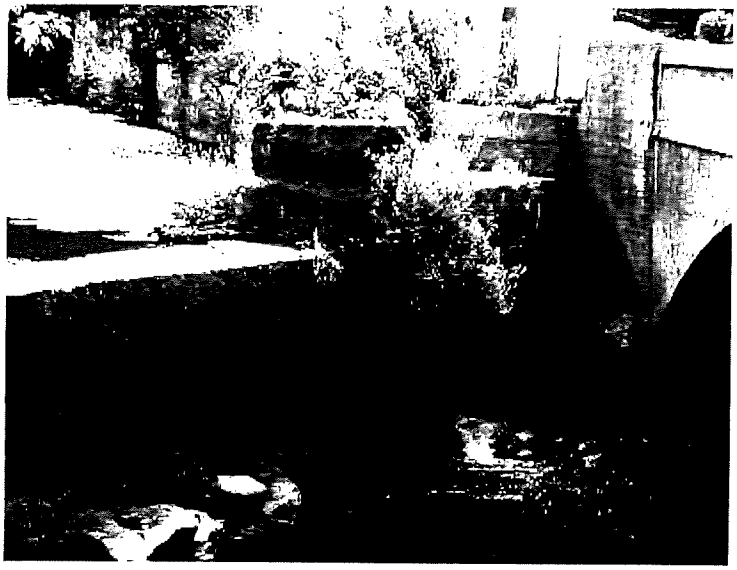
- Middlesex Canal Dam and Locks (aka Talbot Mills Dam) (MHC Nos. BIL.900/BIL-HA-09)
- Middlesex Canal Segment 24 (MHC Nos. BIL.P, BIL.T, BIL.929/BIL-HA-08)
- Middlesex Canal Floating Towpath Peninsula (MHC No. BIL.953/BIL-HA-39)
- Middlesex Canal Floating Towpath Anchor Stone (MHC No. BIL-HA-40)
- J.R. Faulkner Mills (MHC No. BIL.77)
- Faulkner Kindergarten (MHC No. BIL.78)
- Talbot Mills (MHC No. BIL.80)
- William Rogers House/Toothaker Tavern (MHC No. BIL.273)
- Talbot Woolen Mills Worker Housing (MHC No. BIL.274)
- Warehouse (MHC No. BIL.317)
- Faulkner Street Bridge over Concord River (MHC No. BIL.935)

The site of the current Talbot Mills Dam has a long and controversial past, with several exhaustive studies of the river system and upstream impacts associated with the "Flowage Controversy" of 1858-1862.

Multiple dams have been constructed, removed, and rebuilt throughout the years. Prior to the damming of the river at this location, the area was used by generations of Native Americans as an encampment and fishing grounds. A map of Billerica circa 1700 documents the existence of a series of falls in the Concord River between the present-day Pollard Street and Faulkner Street bridges. A large Native American village is reported to have been located along the Concord River in proximity to the Talbot Mills Dam. The Native American occupation in the area of the dam was focused on a natural falls, which would have afforded an abundance of diadromous fish resources and wildlife. The first dam was erected at the location of the current Talbot Mills Dam in 1710-11.

2.3 Proposed Design

Proposed design plans are provided in the Design Plans in **Attachment 5**. Major elements of the proposed project include: 1) removal of the approximately 127-foot-long, 10-foot-high existing granite masonry spillway and concrete right abutment, 2) documentation and removal of a former 1798 timber/rock fill dam assumed to be submerged just upstream (if found), and 3) grading of sediment immediately upstream of the dam. Sediment within the dam impoundment is proposed to be allowed to move downstream naturally over time and restore sediment-deprived areas. The river left[3] (southwest) granite masonry abutment will be retained. An approximately 20-foot-wide stepped section of the spillway adjacent to the left abutment will be retained to support the abutment (conceptually approximated by the red line in the photograph below).



Sketch approximating the section of the spillway to remain adjacent to the left abutment, which will also remain.

All construction activities will be undertaken in compliance with the conditions of all state and local permits. The proposed project is scheduled for construction in the summer/fall of 2025 and is anticipated to take approximately three to four months to complete. Proposed temporary construction access and staging areas for the project are shown in **Drawings 5 & 6** of the design plans in **Attachment 5**. Two potential access options are further detailed on **Drawing 7A** (Alternative 1) and **Drawing 7B** (Alternative

[3] For the purposes of this document, "river left" and "river right" refer to the direction when facing downstream.

2). The area of direct disturbance due to temporary access/staging activities will be restored to former conditions following construction.

2.4 Potential Resource Impacts & Benefits

Historic & Archaeological Resources

The Talbot Mills Dam removal project requires review under Section 106 of the NHPA. In 2014, on behalf of the project proponent, PAL submitted a PNF and permit application to the MHC to conduct a historic and archaeological reconnaissance survey for the modification or removal of the Talbot Mill Dam. The PNF identified that the project involved participation by federal agencies, including NOAA, the USFWS, and possibly the USACE. In a comment letter dated November 18, 2014, in response to the PNF, the MHC recommended that NOAA (as the lead federal agency for complying with Section 106 of the NHPA) contact potential consulting parties, including the Billerica Historical Commission (BHC), Billerica Historic Districts Commission (BHDC), Middlesex Canal Association (MCA), and Middlesex Canal Commission (MCC), to ascertain their interest in reviewing and commenting on the project. The MHC requested copies of any written comments received from these bodies.

Surveys & Consultation

In 2014–2016, PAL completed the reconnaissance survey for the project under a State Archaeologist's Permit issued by the MHC. The reconnaissance survey identified previously recorded historic properties, archaeological sites, and archaeologically sensitive areas within a study area that was developed based on concept plans for the proposed project alternatives. The 2016 survey identified 14 previously recorded historic and archaeological resources within the recommended APE for the Project alternatives. A link to a redacted version of the 2016 reconnaissance survey report is provided in **Section 2.1** above.

In a letter dated February 16, 2016, the MHC provided comments to NOAA on PAL's reconnaissance survey report. The MHC requested to review additional information as project planning proceeds, including scaled proposed conditions project plans and NOAA's determinations and findings for the preferred project alternative, including determinations of the project's APE and potential effects to significant historic and archaeological resources.

In June 2022, NOAA distributed a letter to potential consulting parties, including the Town of Billerica, MCC, MCA, BHC, BHDC, Wampanoag Tribe of Gay Head (Aquinnah), Mashpee Wampanoag Tribe, Narragansett Indian Tribe, Massachusetts Commission on Indian Affairs, and MA BUAR. The letter invited parties to attend a public meeting that was held on June 29, 2022, and to formally participate in the Section 106 consultation process as the project progresses. A response was requested by July 29, 2022; responses were received from the BHC and the MCC.

PAL completed a Cultural Resources Assessment Update dated December 12, 2023, for the preferred alternative based on the 75% design plans (link to a redacted version of the report provided in **Section 2.1** above). NOAA submitted the Cultural Resources Assessment Update to MHC via a letter dated December 18, 2023, requesting concurrence with its determination of the APE, identification of historic properties, and finding that the project will have an adverse effect on historic properties. MHC concurred with NOAA's finding in a letter dated January 8, 2024. On January 31, 2024, NOAA filed an Electronic Section 106 (e106) form with the Advisory Council on Historic Preservation (ACHP) to notify the ACHP of its findings and invite the ACHP to participate in the consultation. Outreach meetings have been held with interested and consulting parties to discuss mitigation alternatives on March 19, 2024 and May 22, 2024 to date. The next Section 106 consultation meeting is scheduled for January 29, 2025.

Copies of Section 106 correspondence are provided in Attachment 5 of the MEPA EENF (2014 through 2022) and Appendix D of the MEPA SEIR (2023 through February 2024).

Findings

NOAA has determined that the project will result in adverse effects to the Middlesex Canal Historic and Archaeological District and the Billerica Mills Historic District, which are listed in the National Register. The project will affect four historic/archaeological resources that contribute to both districts. The preferred alternative includes the demolition of the granite masonry spillway and concrete right abutment of the Talbot Mills Dam (MHC No. BIL-HA-09). The proposed permanent drawdown of the impoundment (Mill Pond) will expose the Middlesex Canal Prism, Middlesex Canal Floating Towpath Peninsula, and the Middlesex Canal Floating Towpath Stone Anchor, all of which are inventoried archaeological resources (MHC Nos. BIL-HA-08, BIL-HA-39, and BIL-HA-40, respectively).Furthermore, the permanent drawdown of the dam impoundment will expose and potentially impact archaeologically sensitive upland shoreline and underwater ground surfaces. These sensitive shoreline and underwater areas could contain potentially significant pre-contact Native American archaeological resources and structural remains of other documented resources associated with the Middlesex Canal, including a 1798 dam.

NOAA is conducting ongoing consultation with the parties that have been invited to participate in the Section 106 process. The goal of the consultation is to seek ways to avoid, minimize, and/or mitigate adverse effects from the project to historic properties, including archaeologically sensitive areas, in accordance with Section 106 of the NHPA and Massachusetts General Law (MGL) Chapter 9, Sections 26-27C (950 CMR 70-71).

Measures to minimize impacts to the Talbot Mills Dam that have already been incorporated into the project design include retaining the river-left (southwest) granite masonry abutment (which contains the waste gate openings), as well as an adjacent section of the granite masonry spillway to support the remaining abutment. Potential mitigative measures could include the preparation of written and photographic documentation to form a permanent archival record of the affected properties and installation of interpretive signage, and archaeological monitoring and recordation during construction. Other appropriate measures to resolve project effects may be developed during discussions among the Section 106 consulting parties.

2.5 Alternatives Analysis

Alternatives to restore diadromous fish passage in the Concord River were developed for the Talbot Mills Dam for the 2016 Feasibility Study. Possible scenarios were identified in part through review of planning documents such as the Nyanza Restoration Plan, discussed with project partners, presented to the public at an informational session, and narrowed to those with the greatest potential to be ecologically effective and feasible to implement. These alternatives are briefly excerpted below and are summarized in more detail in Section 2.1 of the Single Environmental Impact Report filed with MEPA in February 2024 (available from https://tinyurl.com/TalbotDamRemovalPublic or provided upon request).

No Action / Dam Repair

The "no action" alternative assumes that none of the proposed or other fish passage restoration alternatives would be implemented at the Talbot Mills Dam, and the dam would remain in place. Because the dam has documented deficiencies that are required to be addressed per dam safety regulations, this alternative would also include necessary dam repairs (discussed in **Section 2.2**).

The "no action / dam repair" alternative would continue to negatively impact fisheries, water quality and aquatic habitat, wetlands and riparian habitat, upstream flooding, and, for some people, recreation and aesthetics. An aging structure that does not have a formal maintenance plan and does not meet dam safety criteria (unless costly repairs are implemented) would remain in place and able to potentially fail unexpectedly, causing substantial impacts to these and other resources. The dam owner would still be responsible for ongoing maintenance, inspection, and repair costs. Project goals would not be met with no action at Talbot Mills Dam.

Fishway

Due to its relative effectiveness at passing target species including American shad, a Denil fishway was selected for the concept design alternative at the Talbot Mills Dam. A simple eel ramp was proposed to accommodate upstream migrating elvers. Since experience has shown that sea lamprey can effectively utilize a Denil ladder, a separate lamprey-specific structure was not included in the concept design. A downstream passage notch in the spillway was also proposed.

Installation of a technical fishway—including a Denil ladder, eel ramp, and downstream bypass notch—at the Talbot Mills Dam could provide passage for some of the target species under ideal flow conditions and with proper (intensive daily) operation and maintenance. However, passage efficiency of target species would be low, and passage of other aquatic species and overall connectivity of the river would be limited. With the exception of cultural resources and aesthetics, little to no impacts or benefits to other resources would be anticipated. The obligation to bring the dam into compliance with dam safety regulations as well as the continued responsibility for ongoing operation, maintenance, and liability associated with the dam and fishway would make this alternative prohibitively expensive and not feasible for the dam owner to undertake.

Dam Removal

Complete or partial removal of dams has been shown to be a simple, highly effective option for fish passage at dam barriers. Dam removal has the advantage of restoring connectivity of rivers in both upstream and downstream directions for a wide variety of fish and other aquatic species. Additionally, removing the dam eliminates the need for ongoing maintenance and inspections of the dam, and the risk for dam failure and consequential flooding.

Full removal of the entire Talbot Mills Dam and all appurtenances (including the former intake gates to the Faulkner Mills complex, the sluiceway channel, and any embankment sections that may or may not have been constructed as part of the original dam) is not feasible due to the integral nature of some structures with Faulkner Street and other adjacent structures. Therefore, the dam removal alternative considered for this study is a partial dam removal that would consist of removing the entire primary spillway structure down to bedrock at a minimum as well as the 1798 dam structure that is reportedly buried upstream, if found. The alternatives analysis considered maintaining one or both spillway abutments in an effort to honor the historic significance of the site. For the proposed design, the left stone abutment will be retained, and the right concrete abutment will be removed.

In summary, the proposed removal of the Talbot Mills Dam would meet project goals by providing effective passage for target fish species as well as significant benefits for other resources. Water quality, aquatic habitat connectivity, and natural riverine sediment regime would be restored. Increased upstream flooding resulting from the dam would be reduced. Aging infrastructure would be decommissioned, eliminating ongoing operation, maintenance, and liability costs and concerns. Recreation and aesthetic resources may improve as well, although these benefits are subject to individual preferences of the

members of the public using the site. With the exception of cultural resources, few significant impacts to other resources are anticipated. As such, partial removal of the Talbot Mills Dam is the selected alternative to achieve all of the project goals, and therefore has been advanced to the permitting stage.

Summary

Below is a summary of the alternatives discussed above:

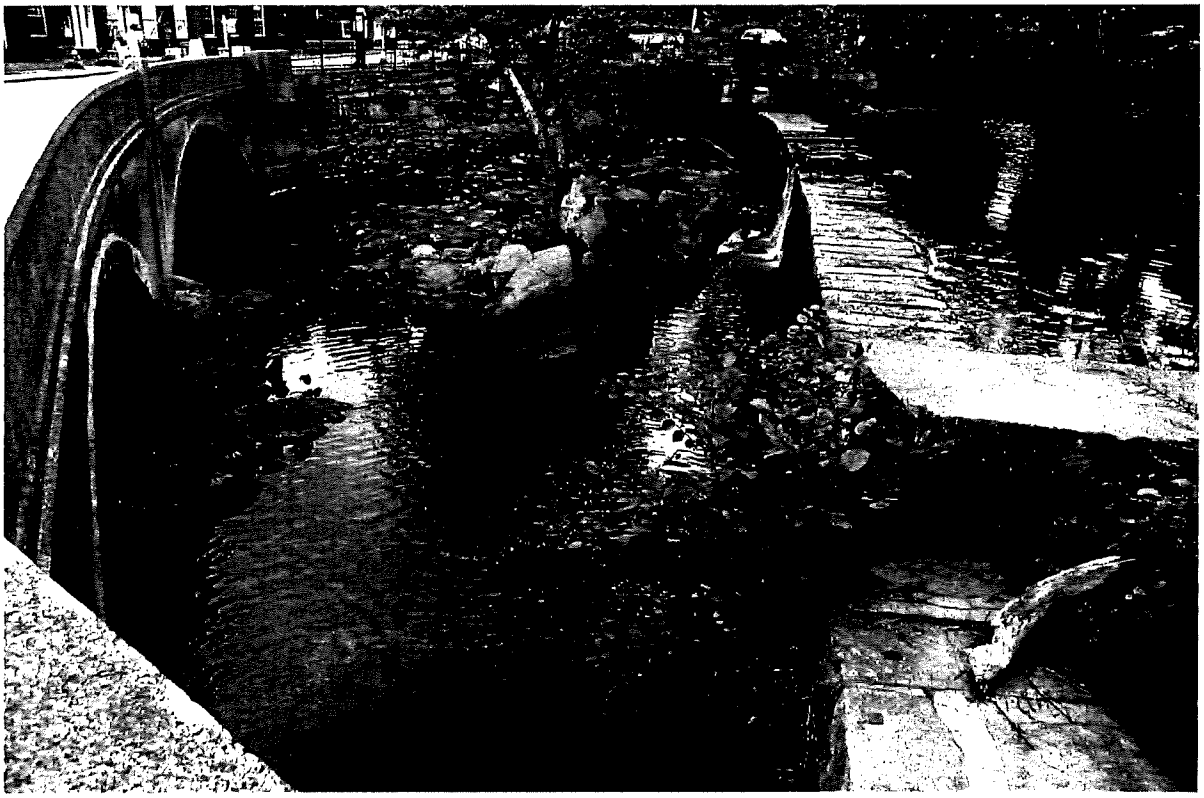
- **No Action/Dam Repair** – does not meet project goals; no ecological or public safety benefits; would require costly repairs to bring the dam into compliance with dam safety regulations
- **Technical Fishway** – would provide some level of passage for specific target fish species, but would not meet project ecological restoration goals, and would be cost prohibitive to address dam safety requirements and build, maintain, and operate the fishway
- **Dam Removal** – meets project goals and provides greater ecological restoration and public safety benefits; would bring the dam into compliance with dam safety regulations

3. Photographs

Aerial View

Spillway from Downstream Channel

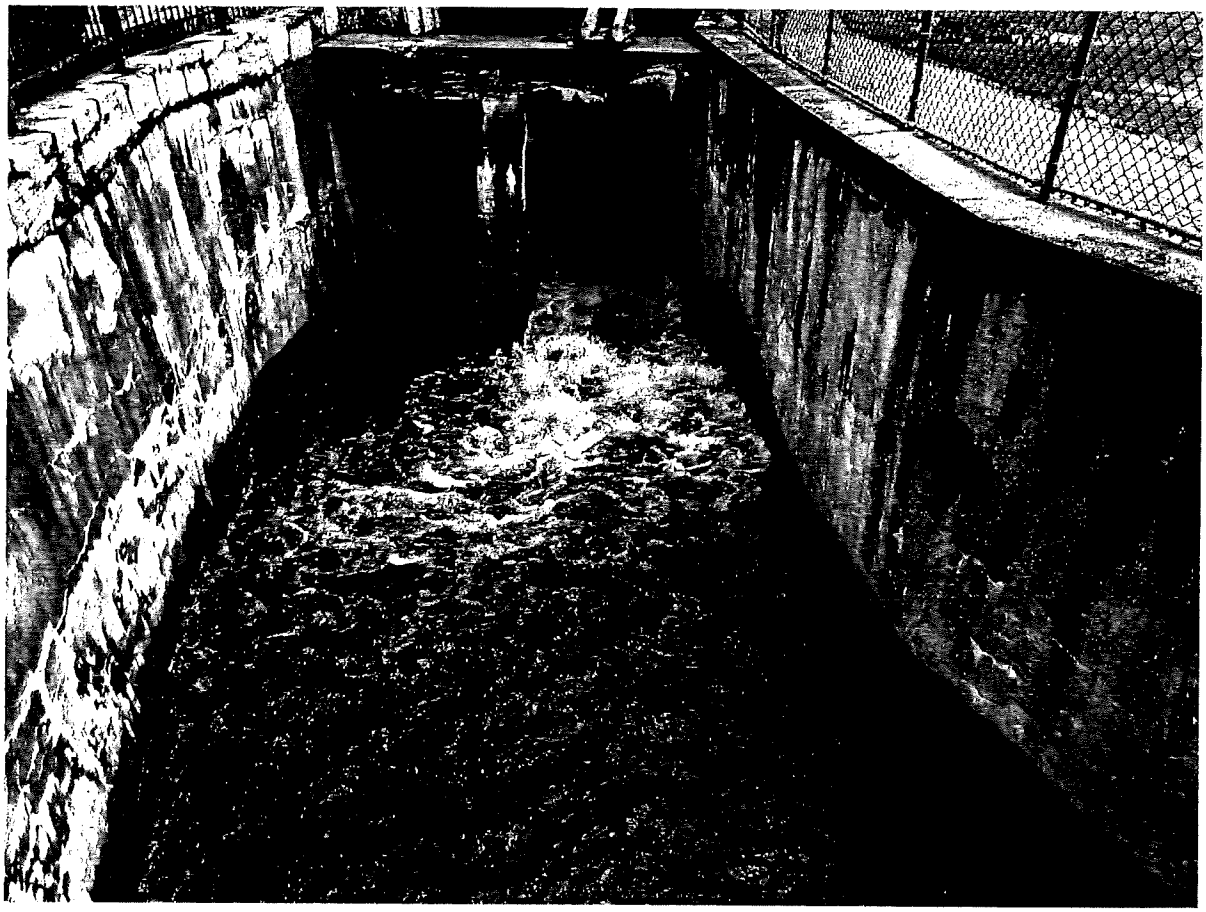
Spillway from Right Abutment



Spillway from Left Abutment

Right Abutment (to be removed)

Left Abutment (to remain)



Sluiceway and Stoplog Gate Structure, Looking Upstream (to remain)

4. Figures

This section contains the following figures:

Figure 1: Location Map

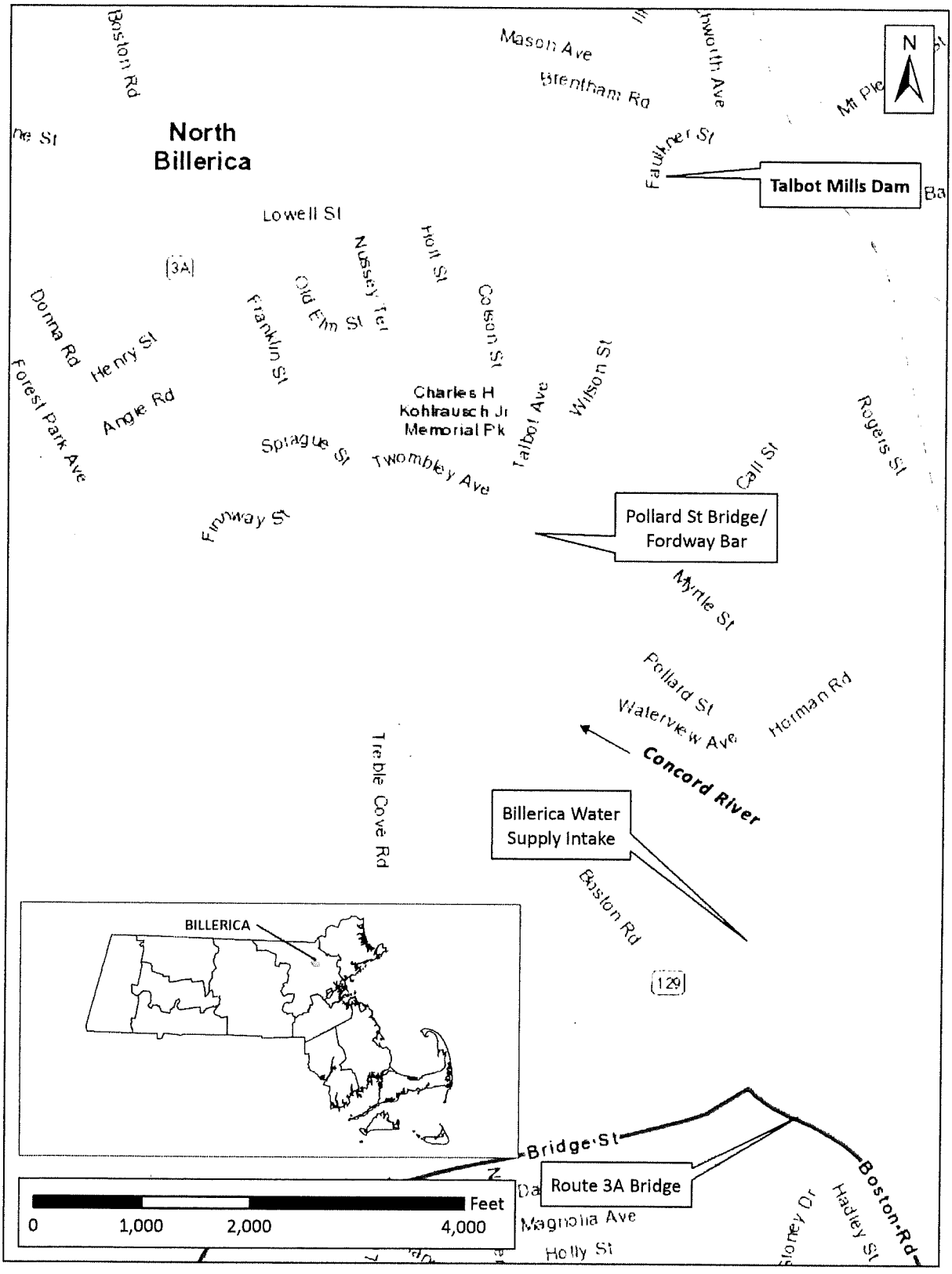


Figure 2: Aerial View of Talbot Mills Dam

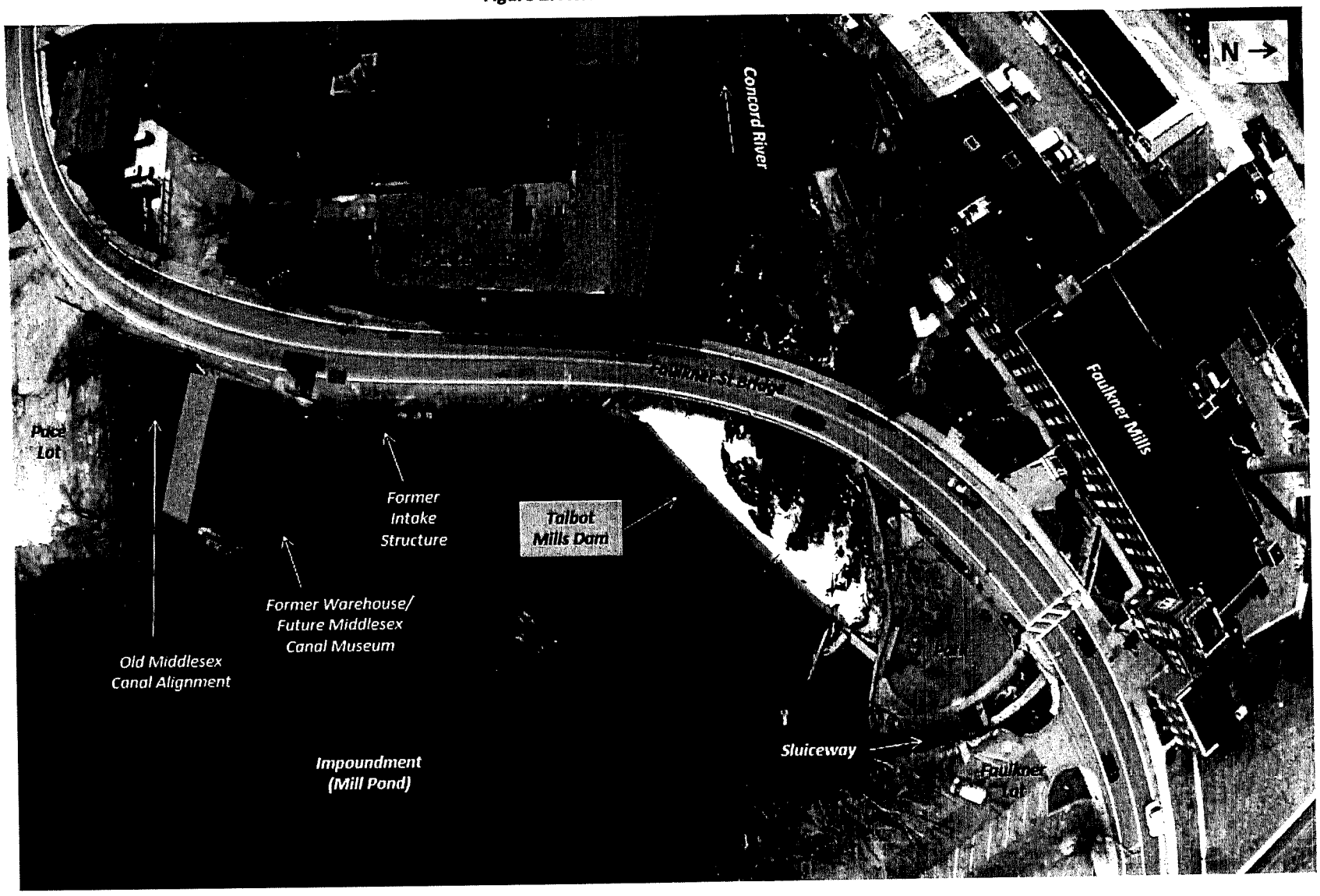


Figure 3: Area of Potential Effects Map

5. Design Plans

TALBOT MILLS DAM REMOVAL/ CONCORD RIVER RESTORATION PROJECT

BILLERICA, MA

CRT DEVELOPMENT REALTY, LLC (DAM OWNER)

PRELIMINARY (75%) DESIGN PLANS

DRAWING NO.	TITLE
1	COVER SHEET
2	GENERAL NOTES
3	EXISTING SITE PLAN
4	EXISTING DAM SECTION AND ELEVATION
5	PROPOSED STAGING AND INVASIVE SPECIES CONTROL PLAN
6	PROPOSED STAGING AND ACCESS PLAN (ALTERNATIVE 1)
7A	PROPOSED ACCESS, STAGING, WATER CONTROLS, & REMOVALS PLAN (ALTERNATIVE 1)
7B	PROPOSED ACCESS, STAGING, WATER CONTROLS, & REMOVALS PLAN (ALTERNATIVE 2)
8	PROPOSED ACCESS & WATER CONTROL DETAILS (ALTERNATIVE 2)
9	PROPOSED DAM BREACH SECTION AND ELEVATION
10	PROPOSED SITE PLAN
11	EROSION AND SEDIMENT CONTROL DETAILS

FUNDING PARTNERS:
MA DEPT. OF FISH & GAME, DIV. OF ECOLOGICAL RESTORATION
MA DEPT. OF FISH & GAME, DIV. OF MARINE FISHERIES
MA DEPT. OF ENVIRONMENTAL PROTECTION
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION RESTORATION CENTER
US FISH AND WILDLIFE SERVICE

SOURCE: GOOGLE SCALE: 1" = 2000'

PROJECT SITE

SOURCE: GOOGLE SCALE: 1" = 1000'

IT IS A VIOLATION OF THE LAW FOR ANY PERSON TO ALTER THIS DRAWING IN ANYWAY UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER. ALTERATIONS MUST HAVE THE ENGINEER'S SEAL AFFIXED ALONG WITH A DESCRIPTION OF THE ALTERATION, THE SIGNATURE AND DATE.

PRELIMINARY NOT FOR CONSTRUCTION

DATE	#	DESCRIPTIONS	BY	APP

DRAWN BY: MAO
CHECKED BY: JWG
APPROVED BY: JWG
PROJECT NO. 02450 DATE: 10/11/2024

TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

COVER SHEET

OARS, INC.
29 Bradford Street
Concord, MA 01742

Gomez and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2179
Henniker, NH 03242

SCALE: AS NOTED DRAWING: 1

DATA SOURCES

1. HORIZONTAL DATUM IS NORTH AMERICAN DATUM (NAD) 1983, MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, MAINLAND ZONE. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM (NAVD) 1988 FEET.
2. CONTOUR INTERVAL SHOWN ON PLANS IS 1 FOOT.
3. TOPOGRAPHIC SURVEYS OF THE DAM AND DOWNSTREAM CHANNEL WERE CONDUCTED BY GOMEZ AND SULLIVAN ENGINEERS, DPC ON OCTOBER 8, 2014 AND AUGUST 9, 2022. PLANS WERE SUPPLEMENTED BY SURVEY DATA COLLECTED BY EAGLEBROOK ENGINEERING & SURVEY, LLC ON APRIL 14, 2009.
4. ALL OTHER TOPOGRAPHY OUTSIDE SURVEY AREAS DERIVED FROM LIDAR DATA WITH A VERTICAL ACCURACY OF 0.56 FEET COLLECTED IN WINTER/SPRING 2011 AND OBTAINED FROM MASSGIS.
5. BATHYMETRIC DATA WITHIN THE IMPOUNDMENT WAS COLLECTED BY GOMEZ AND SULLIVAN ENGINEERS, DPC ON JULY 28, 2021.
6. WETLAND BOUNDARIES IN THE VICINITY OF THE DAM AND MILL POND WERE DELINEATED BY LEC ENVIRONMENTAL CONSULTANTS, INC ON JUNE 29, 2022. WETLAND BOUNDARIES UPSTREAM OF THE MILL POND AND DOWNSTREAM OF FAULKNER STREET WERE DERIVED FROM 2005 MASSACHUSETTS DEPT. OF ENVIRONMENTAL PROTECTION (MASSDEP) WETLANDS DATA AND/OR AERIAL IMAGERY.
7. PROPERTY BOUNDARIES WERE OBTAINED FROM MASSGIS.
8. BORDERING LAND SUBJECT TO FLOODING (BLSF) DEPICTED ON THE PLANS IS BASED ON THE 100-YEAR FLOOD INUNDATION MAPPING DEVELOPED BY GOMEZ AND SULLIVAN ENGINEERS, DPC FOR EXISTING AND PROPOSED CONDITIONS. THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) 100-YEAR REGULATORY FLOODPLAIN (ZONE AE) IS ALSO SHOWN FOR REFERENCE BUT IS ASSUMED TO BE LESS ACCURATE THAN THE MODELED BLSF.

GENERAL NOTES

1. CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF EXCAVATION. CONTRACTOR SHALL NOTIFY DIG SAFE MASSACHUSETTS AT 811 OR 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION. SATURDAYS, SUNDAYS, AND LEGAL HOLIDAYS ARE NOT TO BE INCLUDED IN THE REQUIRED 72 HOUR NOTICE.
2. CONTRACTOR SHALL MAINTAIN CONTROL POINTS DURING CONSTRUCTION, INCLUDING BENCHMARKS AND ELEVATIONS AT CRITICAL AREAS. SITE LAYOUT SURVEY REQUIRED FOR CONSTRUCTION SHALL BE PROVIDED BY THE CONTRACTOR AND PERFORMED BY A MASSACHUSETTS REGISTERED PROFESSIONAL LAND SURVEYOR. ALL GRADE STAKES SET BY SURVEYOR SHALL BE MAINTAINED BY CONTRACTOR UNTIL FINAL INSPECTION OF THE ITEM HAS BEEN COMPLETED BY ENGINEER.
3. EXCESSIVE IDLING DURING THE CONSTRUCTION PERIOD IS PROHIBITED. SIGNS SHALL BE POSTED AT THE SITE LIMITING IDLING TO 5 MINUTES OR LESS. PERIODIC INSPECTIONS SHALL BE CONDUCTED BY SITE SUPERVISORS TO ENSURE COMPLIANCE. STAGING AREAS SHALL BE LOCATED TO MINIMIZE EMISSION IMPACTS TO ABUTTING PROPERTIES.
4. ANY WOOD OR OTHER DEBRIS CAUGHT ON THE DAM OR IN THE SLUICEWAY SHALL BE REMOVED AND DISPOSED OF BY CONTRACTOR PRIOR TO CONSTRUCTION.
5. ALL OPTIONAL TASKS ARE TO BE COMPLETED AT THE CONTRACTOR'S DISCRETION AND SHALL BE ADDRESSED IN THE CONTRACTOR'S SUBMITTALS.
6. SUGGESTED DETAILS HAVE BEEN PROVIDED IN THE DRAWINGS FOR A TEMPORARY ACCESS BRIDGE TO BE USED BY THE CONTRACTOR. ALL COMPONENTS OF THE PROPOSED TEMPORARY BRIDGE SHALL BE DESIGNED AND DETAILED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED TO PRACTICE IN THE COMMONWEALTH OF MASSACHUSETTS.
7. SUPPORTING SURFACE/CRANE FOUNDATION REQUIREMENTS:
   - 7.1. AN ENGINEERED CRITICAL LIFT PLAN SHALL BE DEVELOPED BY A QUALIFIED PROFESSIONAL ENGINEER TO DETAIL SUPPORTING SURFACE/CRANE FOUNDATION REQUIREMENTS FOR ANY PROPOSED CRANE USE.
   - 7.2. THE CRITICAL LIFT PLAN SHALL BE DEVELOPED IN ACCORDANCE WITH OSHA, THE COMMONWEALTH OF MASSACHUSETTS REQUIREMENTS, AND THE U.S. ARMY CORPS OF ENGINEERS EM 385-1-1, SECTION 18, LOAD HANDLING EQUIPMENT (LHE).
   - 7.3. THE CONTRACTOR SHALL SUBMIT A CRITICAL LIFT PLAN, INCLUDING ALL CALCULATIONS, STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE COMMONWEALTH OF MASSACHUSETTS.

CONSTRUCTION WASTE MANAGEMENT

1. SITE SHALL BE KEPT WELL ORGANIZED, SIGNED, AND FREE OF WASTE MATERIALS, DEBRIS, AND RUBBISH AT ALL TIMES. GOOD HOUSEKEEPING PRACTICES SHALL BE MAINTAINED ON A CONTINUOUS BASIS FROM WORK SITE TO WORK SITE. DISPOSAL OF ANY WASTE MATERIALS ON THE CONSTRUCTION SITE IS PROHIBITED.
2. SANITARY, WASTE DISPOSAL, AND EMPLOYEE FACILITIES SHALL BE PROVIDED BY CONTRACTOR.
3. ALL WATER RESOURCES (E.G., GROUND AND SURFACE WATERS), INCLUDING ALL DRAINS AND CATCH BASINS, SHALL BE PROTECTED FROM LEACHING AND/OR RUN-OFF OF CHEMICAL POLLUTANTS, SOLID WASTES, AND CONSTRUCTION SITE DEBRIS. ALL CATCH BASINS SHALL BE MAINTAINED FREE FLOWING.
4. ALL COMBUSTIBLE WASTE MATERIALS SHALL BE PLACED IN COVERED METAL CONTAINERS AND PROMPTLY DISPOSED OF IN AN APPROVED MANNER AT AN APPROVED WASTE DISPOSAL FACILITY.
5. STORAGE AND/OR USE OF CHEMICALS, FUELS, OILS, GREASES, BITUMINOUS MATERIALS, SOLIDS, WASTE, WASHINGS, AND CEMENT SHALL BE HANDLED APPROPRIATELY AS TO PREVENT LEACHING OR SURFACE RUNOFF INTO PUBLIC WATERS OR DRAINS. ALL APPROVED STORAGE AREAS FOR THESE MATERIALS MUST BE DIKED.
6. ALL ROADWAYS SHALL BE MAINTAINED FREE OF DEBRIS. STABILIZED CONSTRUCTION ENTRANCES SHALL BE CONSTRUCTED TO CAPTURE DEBRIS FROM WHEELS OF CONSTRUCTION VEHICLES. VEHICLES SHALL BE INSPECTED AT ENTRANCES BEFORE TURNING ONTO THE ROADWAY AND EXCESS DEBRIS SHALL BE REMOVED.
7. ALL EXCESS DREDGED MATERIALS SHALL BE REMOVED FROM THE SITE AS SOON AS POSSIBLE AND IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS FOR REUSE AND DISPOSAL.

CARE AND DIVERSION OF WATER

1. CONTRACTOR SHALL PREPARE A WATER CONTROL PLAN STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN MASSACHUSETTS TO BE APPROVED BY ENGINEER INCLUDING 1) PROPOSED COFFERDAM/TEMPORARY BYPASS PLAN, DETAILS, AND CALCULATIONS 2) WATER CONTROL CONTINGENCY PLAN, AND 3) DEWATERING/SEDIMENT CONTROL METHODS. WATER CONTROL PLAN SHALL CONFORM TO ALL APPLICABLE ENVIRONMENTAL PERMIT REQUIREMENTS AND CONDITIONS.
2. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT DAMAGE TO WORK OR EQUIPMENT BY HIGH WATER OR STORMS.
3. ANY WATER PUMPED FROM THE EXCAVATION MUST FLOW THROUGH A SEDIMENT FILTER BAG (OR APPROVED EQUAL) PRIOR TO RELEASE INTO ANY WATER BODY.

TEMPORARY ACCESS ROUTE STABILIZATION

1. DEFINITION: THE STABILIZATION OF TEMPORARY CONSTRUCTION ACCESS ROUTES, ON-SITE VEHICLE TRANSPORTATION ROUTES, AND CONSTRUCTION PARKING AREAS.
2. PURPOSE: TO CONTROL EROSION ON TEMPORARY CONSTRUCTION ROUTES AND PARKING AREAS.
3. CONDITION WHERE PRACTICE APPLIES: ALL TRAFFIC ROUTES AND PARKING AREAS FOR TEMPORARY USE BY CONSTRUCTION TRAFFIC.
4. DESIGN CRITERIA: CONSTRUCTION ROADS SHOULD BE LOCATED TO REDUCE EROSION POTENTIAL, MINIMIZE IMPACT ON EXISTING SITE RESOURCES, AND MAINTAIN OPERATIONS IN A SAFE MANNER. HIGHLY EROSIVE SOILS, WET OR ROCKY AREAS, AND STEEP SLOPES SHOULD BE AVOIDED. ROADS SHOULD BE ROUTED WHERE SEASONAL WATER TABLES ARE DEEPER THAN 18 INCHES. SURFACE RUNOFF AND CONTROL SHOULD BE IN ACCORDANCE WITH OTHER STANDARDS.
5. ROAD GRADE: A MAXIMUM GRADE OF 12% IS RECOMMENDED, ALTHOUGH GRADES UP TO 20% ARE ACCEPTABLE FOR SHORT DISTANCES.
6. ROAD WIDTH: 14 FT (8 FT MINIMUM) FOR ONE-WAY TRAFFIC, OR 24 FT MINIMUM FOR TWO-WAY TRAFFIC.
7. SIDE SLOPE OF ROAD EMBANKMENT: 2:1 OR FLATTER.
8. COMPOSITION: USE AN 8-INCH LAYER OF STATE DOT APPROVED GRAVEL SUB-BASE OR EQUIVALENT, PLACED ON A GEOTEXTILE FABRIC.
9. MAINTENANCE: ACCESS ROUTES AND PARKING AREAS SHALL BE INSPECTED PERIODICALLY FOR CONDITION OF SURFACE AND TOPDRESSED WITH NEW GRAVEL AS NEEDED.
10. RESTORATION: UPON COMPLETION OF THE WORK, ALL TEMPORARY MATERIALS SHALL BE REMOVED AND THE SITE SHALL BE RESTORED TO PRE-PROJECT CONDITIONS.

CONSTRUCTION SEQUENCE

1. CONTRACTOR SHALL PREPARE A CONSTRUCTION SEQUENCE PLAN TO BE APPROVED BY OWNER AND ENGINEER. THE FOLLOWING GENERAL SEQUENCE SHALL BE ADAPTED FOR THE SITE-SPECIFIC REQUIREMENTS.
2. INSTALL TURBIDITY CURTAINS TO CONTAIN WATER CHESTNUT IN IMPOUNDMENT PRIOR TO DEWATERING.
3. REMOVE STOPLOGS FROM SLUICE GATE TO LOWER IMPOUNDMENT.
4. INSTALL EROSION AND SEDIMENTATION CONTROLS.
5. INSTALL OIL BOOM ACROSS CHANNEL DOWNSTREAM OF DAM.
6. REMOVE EXISTING FENCE SECTIONS AS NEEDED TO FACILITATE ACCESS. REPLACE IN KIND FOLLOWING CONSTRUCTION.
7. INSTALL TEMPORARY FENCING AND SWING GATES AT ENTRANCE(S) TO STAGING AREA(S).
8. OPTIONAL – INSTALL TEMPORARY ACCESS ROAD FROM STAGING AREA AT 8 OLD ELM STREET TO LEFT DAM ABUTMENT.
9. OPTIONAL – INSTALL TEMPORARY COFFERDAM AT UPSTREAM END OF SLUICEWAY TO FACILITATE CONSTRUCTION OF TEMPORARY SLUICEWAY CROSSING AT CONTRACTOR'S DISCRETION.
10. OPTIONAL – REMOVE WOODEN PEDESTRIAN BRIDGE FROM SLUICEWAY, RETAINING STEEL BEAM SPANNING THE SLUICEWAY BELOW. REINSTALL OR REPLACE IN KIND FOLLOWING CONSTRUCTION.
11. OPTIONAL – INSTALL TEMPORARY STONE FILL CROSSING IN SLUICEWAY WITH 4' DIA. BYPASS PIPE EXTENDING THROUGH SLUICE GATE OPENING. REMOVE TEMPORARY COFFERDAM AT UPSTREAM END OF SLUICEWAY.
12. ANCHOR 1/2" STEEL PLATE TO INFRASTRUCTURE ADJACENT TO LEFT AND/OR RIGHT DAM ABUTMENTS TO PROTECT FROM FLOW AS REQUIRED BY WATER CONTROL PLAN.
13. REMOVE CONCRETE RIGHT ABUTMENT.
14. OPTIONAL – INSTALL TEMPORARY COFFERDAM UPSTREAM OF RIGHT ABUTMENT TO FACILITATE INSTALLATION OF TEMPORARY BRIDGE AT CONTRACTOR'S DISCRETION.
15. OPTIONAL – INSTALL TEMPORARY BRIDGE CROSSING AT RIGHT ABUTMENT.
16. OPTIONAL – INSTALL TEMPORARY STONE ACCESS ROAD ALONG SPILLWAY AT CONTRACTOR'S DISCRETION.
17. OPTIONAL – DREDGE SEDIMENT AND REMOVE ANY BLOCKAGES FOUND UPSTREAM OF LEFT ABUTMENT TO ALLOW FLOW THROUGH TWO EXISTING APPROX. 4' H X 3' W LOW-LEVEL OUTLETS.
18. BREACH 30-FOOT-WIDE SECTION OF GRANITE SPILLWAY AND FORMER TIMBER/ROCK DAM (IF FOUND) TO FACILITATE FLOW.
19. OPTIONAL – INSTALL COFFERDAM UPSTREAM OF SPILLWAY AT CONTRACTOR'S DISCRETION.
20. OPTIONAL – INSTALL TEMPORARY STONE RAMP FOR DOWNSTREAM ACCESS AT CONTRACTOR'S DISCRETION.
21. COMMENCE ARCHAEOLOGICAL RECORDATION (IF PRACTICABLE) AND REMOVAL OF FORMER DAM REMAINS (IF FOUND) FOLLOWED BY EXISTING GRANITE SPILLWAY. RETAIN STEPPED GRANITE BLOCKS ADJACENT TO LEFT ABUTMENT TO SUPPORT ABUTMENT (SEE ELEVATION SHEET 8). SALVAGE GRANITE BLOCKS AS REASONABLY PRACTICABLE FOR STOCKPILING AS DIRECTED BY OWNER. GRADE ANY SEDIMENT UPSTREAM OF DAM AT 3:1 SLOPE OR FLATTER.
22. REMOVE ANY TEMPORARY ACCESS RAMPS, ROADS, AND/OR COFFERDAMS WITHIN THE CHANNEL.
23. REMOVE TEMPORARY BRIDGE AND/OR SLUICEWAY CROSSING (IF UTILIZED).
24. REMOVE TEMPORARY FENCING AND SWING GATES.
25. REINSTALL OR REPLACE FENCE SECTIONS AND PEDESTRIAN BRIDGE IN KIND AS NEEDED.
26. RESTORE ACCESS AND STAGING AREAS TO FORMER CONDITIONS.
27. REMOVE EROSION AND POLLUTION CONTROL MEASURES ONLY AFTER ALL AREAS ARE STABILIZED TO THE SATISFACTION OF ENGINEER.

SOIL EROSION AND SEDIMENTATION CONTROL

1. ALL WORK SHALL BE CONDUCTED IN ACCORDANCE WITH MASSDEP EROSION AND SEDIMENTATION CONTROL GUIDELINES AND APPLICABLE NPDES STANDARDS.
2. ALL APPLICABLE SOIL EROSION AND SEDIMENT CONTROL PRACTICES ARE TO BE INSTALLED PRIOR TO ANY SOIL OR STREAM DISTURBANCE, OR IN THEIR PROPER SEQUENCE, AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
3. ALL DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN FOURTEEN (14) DAYS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, SHALL IMMEDIATELY RECEIVE A TEMPORARY SEEDING WITH A NATIVE SEED MIXTURE, MULCH, WATER AND ANCHOR AS NECESSARY TO ESTABLISH GRASS AND PREVENT LOSS TO WIND OR EROSION. IF THE SEASON PREVENTS THE ESTABLISHMENT OF A TEMPORARY COVER, THE DISTURBED AREAS SHALL BE MULCHED WITH SMALL GRAIN STRAW AT A RATE OF TWO (2) TONS PER ACRE IN ACCORDANCE WITH STATE STANDARDS.
4. PERMANENT VEGETATION SHALL BE SEEDED WITH A NATIVE SEED MIXTURE ON ALL EXPOSED AREAS IMMEDIATELY AFTER FINAL GRADING. MULCH SHALL BE USED AS NECESSARY FOR PROTECTION UNTIL SEEDING IS ESTABLISHED.
5. ALL CRITICAL AREAS SUBJECT TO EROSION SHALL RECEIVE A TEMPORARY SEEDING WITH AN APPROVED NATIVE SEED MIXTURE IN COMBINATION WITH STRAW MULCH, AT A RATE OF TWO (2) TONS PER ACRE IN ACCORDANCE WITH STATE STANDARDS.
6. SHOULD THE CONTROL OF DUST AT THE SITE BE NECESSARY, THE SITE SHALL BE SPRINKLED WITH WATER UNTIL THE SURFACE IS WET. TEMPORARY VEGETATIVE COVER SHALL BE ESTABLISHED, OR MULCH SHALL BE APPLIED IN ACCORDANCE WITH STATE STANDARDS FOR EROSION CONTROL.
7. ALL SOIL WASHED, DROPPED, SPILLED, OR TRACKED OUTSIDE THE LIMIT OF DISTURBANCE OR ONTO PUBLIC RIGHTS-OF-WAY SHALL BE REMOVED IMMEDIATELY.
8. STOCKPILE AND STAGING LOCATIONS DETERMINED IN THE FIELD SHALL BE PLACED WITHIN THE LIMIT OF DISTURBANCE. ALL SOIL STOCKPILES SHALL BE TEMPORARILY STABILIZED IN ACCORDANCE WITH NOTE #3 AND PROTECTED BY COMPOST FILTER SOCKS ON DOWNHILL SIDES.
9. THE CONTRACTOR SHALL INSPECT DISTURBED AREAS OF THE CONSTRUCTION SITE, AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION AND THAT HAVE NOT BEEN FINALLY STABILIZED, STABILIZATION PRACTICES, STRUCTURAL PRACTICES, AND OTHER CONTROLS AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS AFTER THE END OF ANY STORM THAT PRODUCES AT LEAST 0.5 INCHES OF RAINFALL AT THE SITE. WHERE SITES HAVE BEEN FINALLY STABILIZED, SUCH INSPECTION SHALL BE CONDUCTED AT LEAST ONCE EVERY MONTH UNTIL FINAL COMPLETION. CRITICAL AREAS AND AREAS WHERE VEHICLES EXIT THE SITE SHALL BE INSPECTED DAILY.

PROPOSED DREDGE/FILL VOLUMES

TYPE	VOLUME (CY)	DESCRIPTION
DREDGE	440	GRANITE MASONRY SPILLWAY + ABUTMENT
	30	CONCRETE ABUTMENT
	350	WOOD/ROCK FILL FORMER DAM
	800	ROCK FILL BETWEEN DAMS
	220	ACTIVE SEDIMENT GRADING UPSTREAM OF DAMS
	1,840	TOTAL DREDGE
FILL	0	TOTAL FILL

PROPOSED DREDGING DIMENSIONS

LENGTH (FT)	150	SPILLWAY + ABUTMENT
WIDTH (FT)	30	BOTH DAMS + ACTIVE SEDIMENT GRADING
DEPTH (FT)	< 13	MAX HEIGHT OF SPILLWAY
AREA (SF)*	10,000	

*NOTE THAT THE VOLUME CALCULATED BY THESE DIMENSIONS IS LARGER THAN THE PROPOSED DREDGING VOLUME IN THE TABLE ABOVE BECAUSE IT IS CONSERVATIVE IN ALL DIMENSIONS.

WETLAND RESOURCE AREA IMPACTS

WETLAND RESOURCE	AREA (SF)	
	TEMP. DISTURBANCE	PERMANENT CHANGE
BANK (LINEAR FEET)	1,200	-2,800
LAND UNDER WATER (LUW)	46,000	-436,000
BORDERING VEGETATED WETLANDS (BVW)	0	435,000
BORDERING LAND SUBJECT TO FLOODING (BLSF)	900	-441,000
BVW BUFFER ZONE	51,000	0
RIVERFRONT AREA (RFA)	51,000	-314,000

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APPROVED BY: JWG
PROJECT NO. 02450 DATE: 10/11/2024

TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

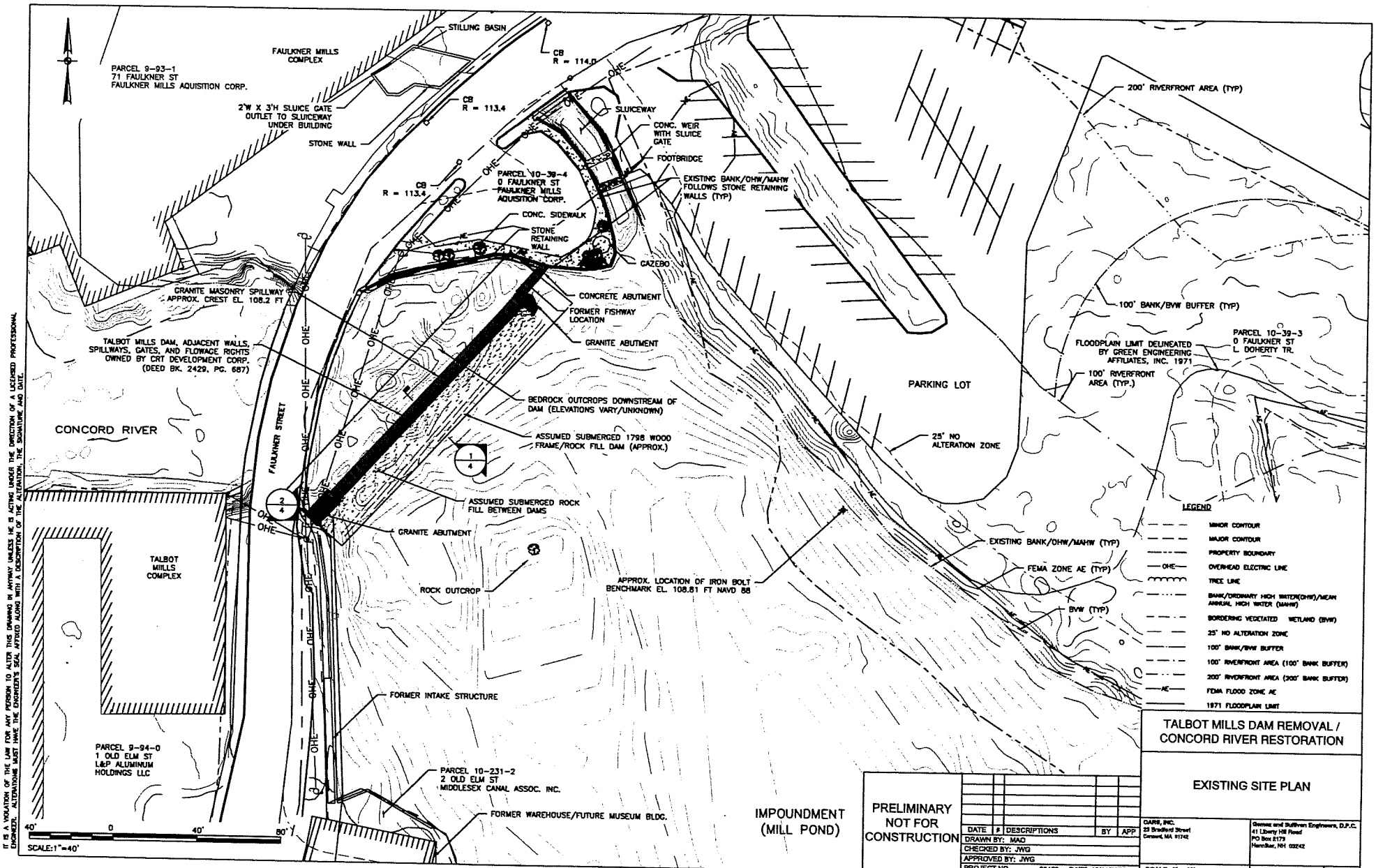
GENERAL NOTES

DAMS, INC.
23 Bradford Street
Concord, MA 01742

Gomez and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2179
Henniker, NH 03242

SCALE: NONE

DRAWING: 2



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PROJECT NO. 02450 DATE: 10/11/2024

TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

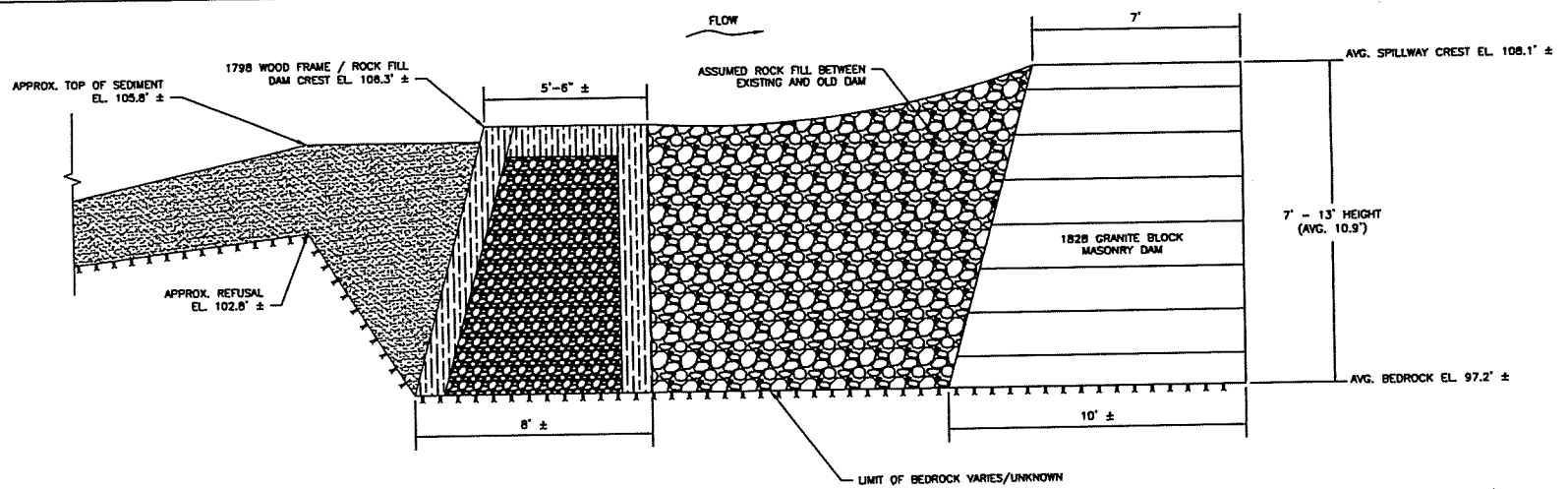
EXISTING SITE PLAN

CARR, INC.
23 Bradford Street
Concord, MA 01742

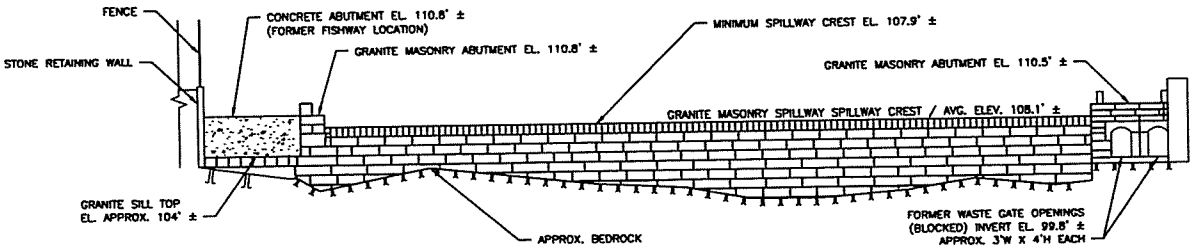
Gomez and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2179
Henniker, NH 03242

SCALE: 1" = 40'

DRAWING: 3



1/4 EXISTING AND 1798 DAM SECTION
SCALE: 1"=4'



2/4 EXISTING DAM ELEVATION (LOOKING UPSTREAM)
SCALE: 1" = 20'

4' 0 4' 8'
SCALE:1"=4'

20' 0 20' 40'
SCALE:1"=20'

PRELIMINARY NOT FOR CONSTRUCTION

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CHECKED BY: JWG				
APPROVED BY: JWG				
PROJECT NO. 02450	DATE: 10/11/2024			

TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

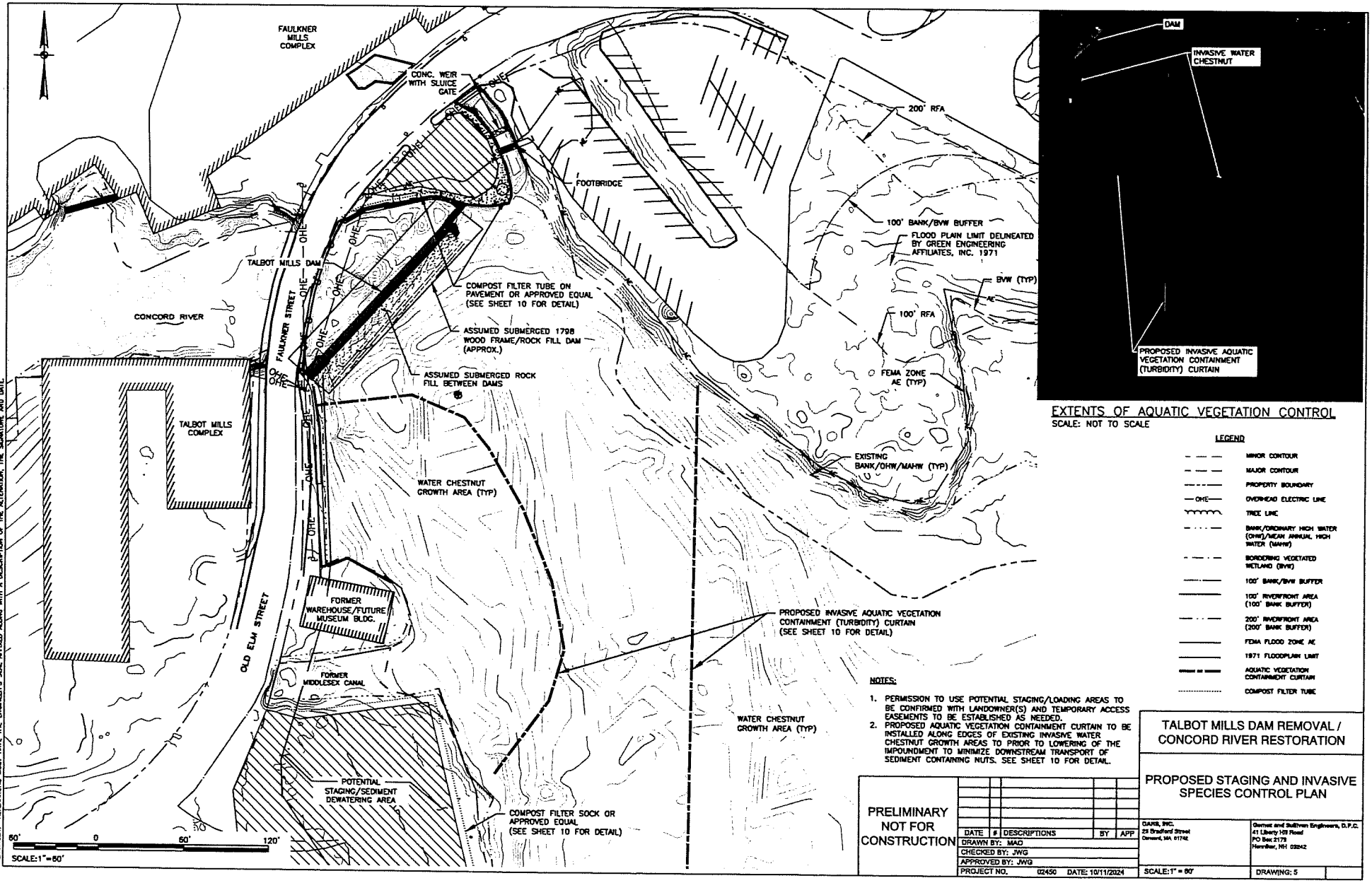
EXISTING DAM SECTION AND ELEVATION

DAMS, INC.
29 Bradford Street
Concord, MA 01742

Gomez and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2179
Henniker, NH 03242

SCALE: AS NOTED

DRAWING: 4



EXTENTS OF AQUATIC VEGETATION CONTROL
SCALE: NOT TO SCALE

LEGEND

- MINOR CONTOUR
- MAJOR CONTOUR
- PROPERTY BOUNDARY
- OHE — OVERHEAD ELECTRIC LINE
- TREE LINE
- BANK/ORDINARY HIGH WATER (OHW)/MEAN ANNUAL HIGH WATER (MAHW)
- BORDERING VEGETATED WETLAND (BVW)
- 100' BANK/BVW BUFFER
- 100' RIVERFRONT AREA (100' BANK BUFFER)
- 200' RIVERFRONT AREA (200' BANK BUFFER)
- FEMA FLOOD ZONE AE
- 1971 FLOODPLAIN LIMIT
- AQUATIC VEGETATION CONTAINMENT CURTAIN
- COMPOST FILTER TUBE

NOTES:

1. PERMISSION TO USE POTENTIAL STAGING/LOADING AREAS TO BE CONFIRMED WITH LANDOWNER(S) AND TEMPORARY ACCESS EASEMENTS TO BE ESTABLISHED AS NEEDED.
2. PROPOSED AQUATIC VEGETATION CONTAINMENT CURTAIN TO BE INSTALLED ALONG EDGES OF EXISTING INVASIVE WATER CHESTNUT GROWTH AREAS TO PRIOR TO LOWERING OF THE IMPOUNDMENT TO MINIMIZE DOWNSTREAM TRANSPORT OF SEDIMENT CONTAINING NUTS. SEE SHEET 10 FOR DETAIL.

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TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

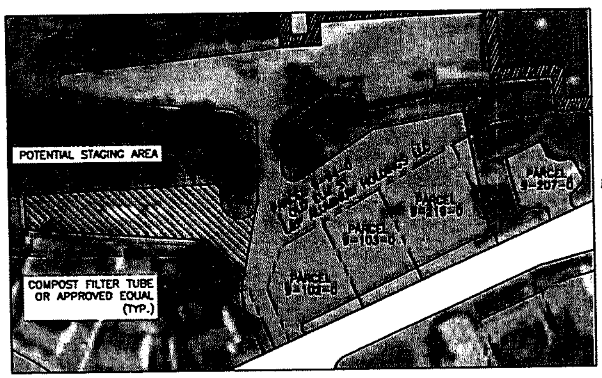
PROPOSED STAGING AND INVASIVE SPECIES CONTROL PLAN

DAMS, INC.
29 Bradford Street
Concord, MA 01742

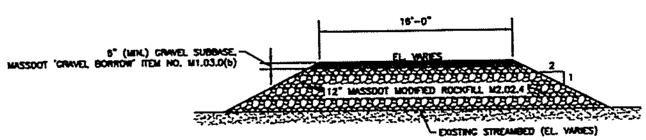
Gomez and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2179
Henniker, NH 03242

SCALE:1" = 60' DRAWING: 5

SITE PLAN
SCALE: 1" = 200'



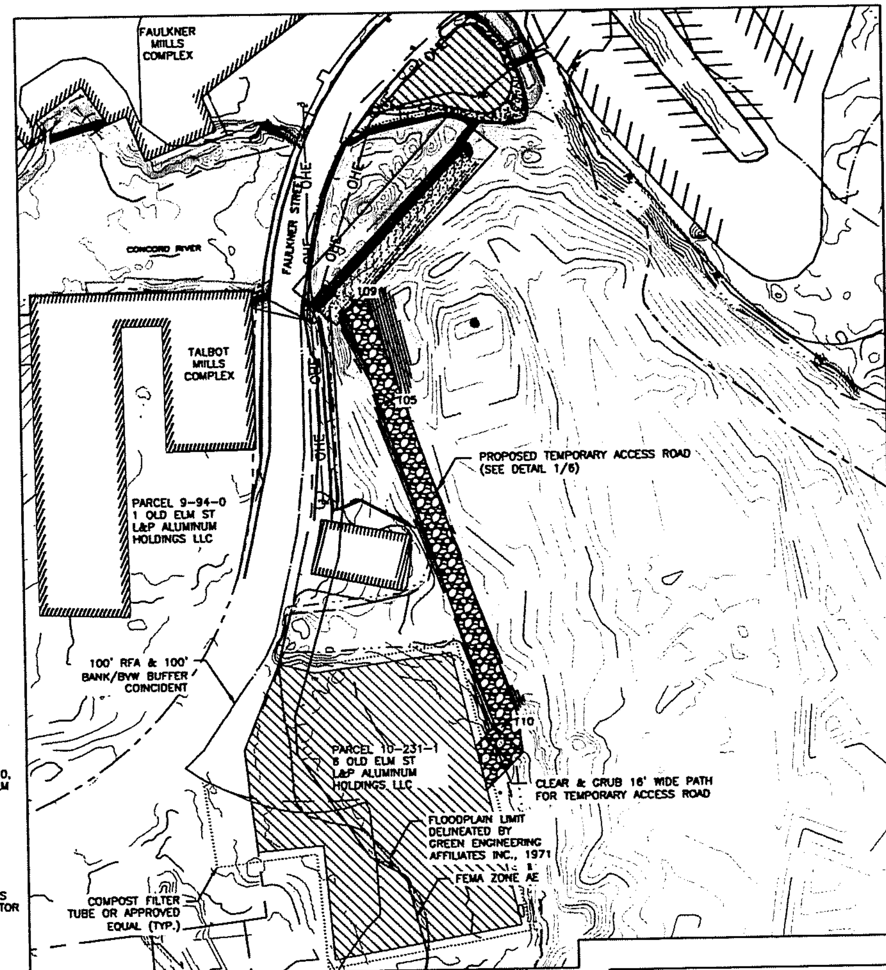
STAGING PLAN
SCALE: 1" = 100'



1/6 TEMPORARY ACCESS ROAD DETAIL
SCALE: 1" = 10'

NOTES:

1. PARCELS 9-102-0, 9-103-0, 9-219-0, AND 9-207-0 ARE ADDRESS 0 OLD ELM STREET AND ARE OWNED BY L&P ALUMINUM HOLDINGS LLC.
2. PERMISSION TO USE POTENTIAL STAGING/LOADING AREAS TO BE CONFIRMED WITH LANDOWNER(S) AND TEMPORARY ACCESS EASEMENTS TO BE ESTABLISHED AS NEEDED.
3. TRAFFIC CONTROL PLAN, INCLUDING TEMPORARY FENCE AND GATE LOCATIONS SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER AND OWNER.



ACCESS PLAN
SCALE: 1" = 80'

200' 0 200' 400'
SCALE:1"=200'
100' 0 100' 200'
SCALE:1"=100'
80' 0 80' 160'
SCALE:1"=80'
10' 0 10' 20'
SCALE:1"=10'

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TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

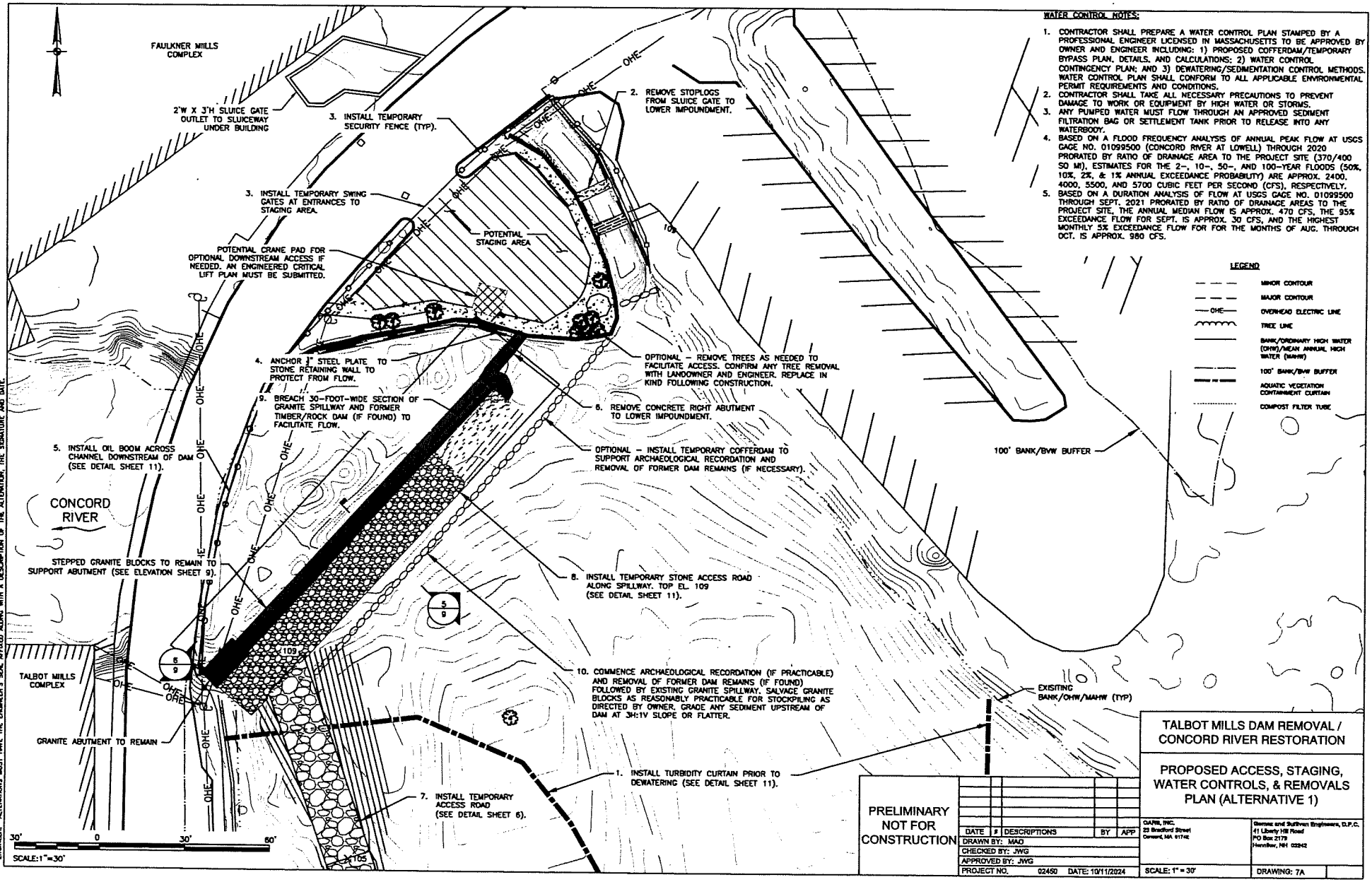
PROPOSED STAGING AND ACCESS PLAN (ALTERNATIVE 1)

OARS, INC.
23 Bradford Street
Concord, MA 01742

Gomez and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2179
Henniker, NH 03242

SCALE: AS NOTED
DRAWING: 8

IT IS A VIOLATION OF THE LAW FOR ANY PERSON TO ALTER THIS DRAWING IN ANYWAY UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER. ALTERATIONS MUST HAVE THE ENGINEER'S SEAL AFFIXED ALONG WITH A DESCRIPTION OF THE ALTERATION, THE SIGNATURE AND DATE.



WATER CONTROL NOTES:

1. CONTRACTOR SHALL PREPARE A WATER CONTROL PLAN STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN MASSACHUSETTS TO BE APPROVED BY OWNER AND ENGINEER INCLUDING: 1) PROPOSED COFFERDAM/TEMPORARY BYPASS PLAN, DETAILS, AND CALCULATIONS; 2) WATER CONTROL CONTINGENCY PLAN; AND 3) DEWATERING/SEDIMENTATION CONTROL METHODS. WATER CONTROL PLAN SHALL CONFORM TO ALL APPLICABLE ENVIRONMENTAL PERMIT REQUIREMENTS AND CONDITIONS.
2. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT DAMAGE TO WORK OR EQUIPMENT BY HIGH WATER OR STORMS.
3. ANY PUMPED WATER MUST FLOW THROUGH AN APPROVED SEDIMENT FILTRATION BAG OR SETTLEMENT TANK PRIOR TO RELEASE INTO ANY WATERBODY.
4. BASED ON A FLOOD FREQUENCY ANALYSIS OF ANNUAL PEAK FLOW AT USGS GAGE NO. 01099500 (CONCORD RIVER AT LOWELL) THROUGH 2020 PRORATED BY RATIO OF DRAINAGE AREA TO THE PROJECT SITE (370/400 SQ MI), ESTIMATES FOR THE 2-, 10-, 50-, AND 100-YEAR FLOODS (50%, 10%, 2%, & 1% ANNUAL EXCEEDANCE PROBABILITY) ARE APPROX. 2400, 4000, 5500, AND 5700 CUBIC FEET PER SECOND (CFS), RESPECTIVELY.
5. BASED ON A DURATION ANALYSIS OF FLOW AT USGS GAGE NO. 01099500 THROUGH SEPT. 2021 PRORATED BY RATIO OF DRAINAGE AREAS TO THE PROJECT SITE, THE ANNUAL MEDIAN FLOW IS APPROX. 470 CFS, THE 95% EXCEEDANCE FLOW FOR SEPT. IS APPROX. 30 CFS, AND THE HIGHEST MONTHLY 5% EXCEEDANCE FLOW FOR FOR THE MONTHS OF AUG. THROUGH OCT. IS APPROX. 980 CFS.

LEGEND

- MINOR CONTOUR
- MAJOR CONTOUR
- OHE — OVERHEAD ELECTRIC LINE
- TREE LINE
- BANK/ORDINARY HIGH WATER (OHW)/MEAN ANNUAL HIGH WATER (MAHW)
- 100' BANK/BVW BUFFER
- AQUATIC VEGETATION CONTAINMENT CURTAIN
- COMPOST FILTER TUBE

PRELIMINARY NOT FOR CONSTRUCTION

DATE	#	DESCRIPTIONS	BY	APP

DRAWN BY: MAO
CHECKED BY: JWG
APPROVED BY: JWG
PROJECT NO. 02450 DATE: 10/11/2024

TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

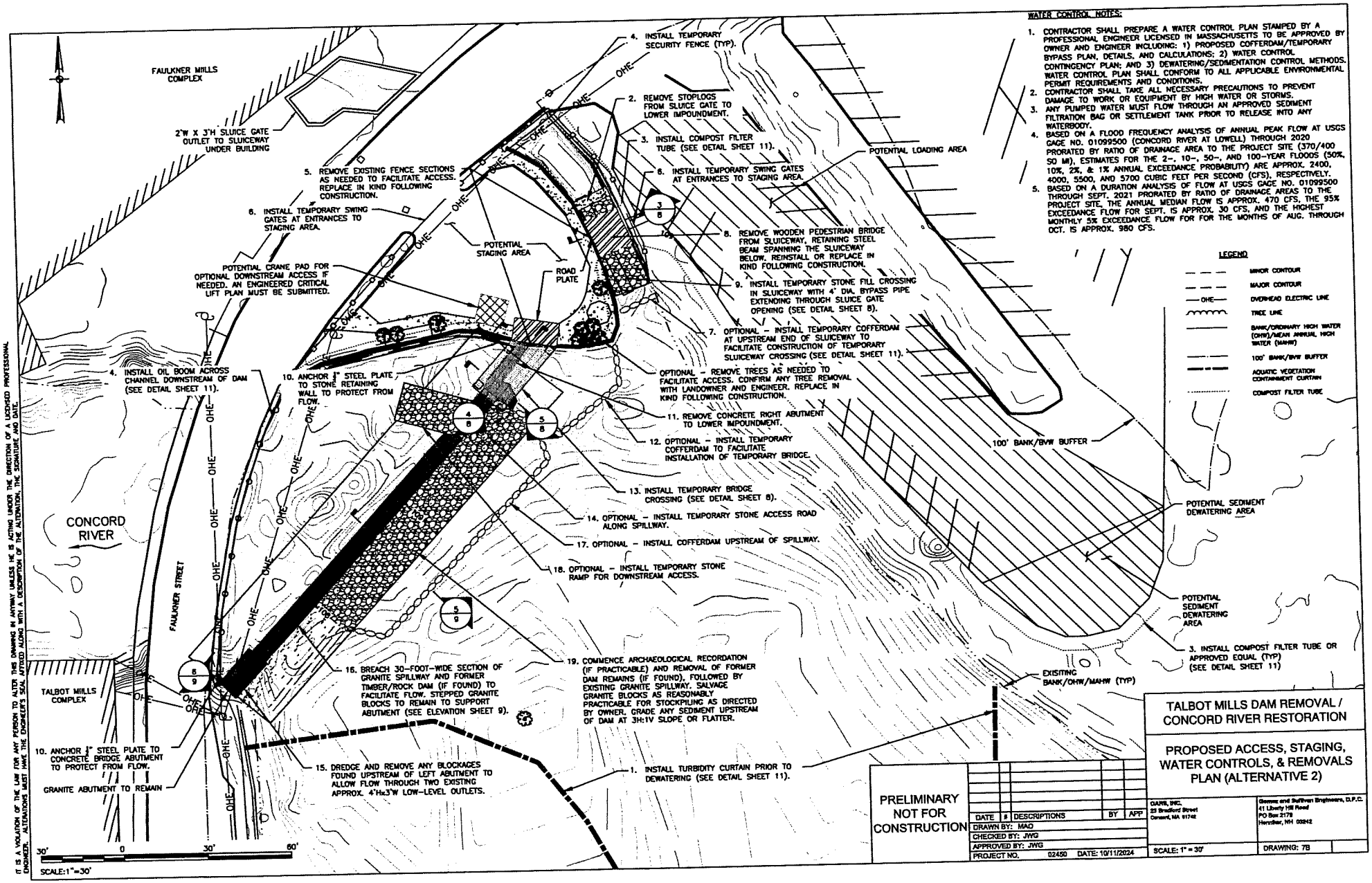
PROPOSED ACCESS, STAGING, WATER CONTROLS, & REMOVALS PLAN (ALTERNATIVE 1)

GZA, INC.
22 Bradford Street
Concord, MA 01742

Stamski and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2178
Henniker, NH 03242

SCALE: 1" = 30'

DRAWING: 7A



WATER CONTROL NOTES:

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LEGEND

- MINOR CONTOUR
- MAJOR CONTOUR
- OHE — OVERHEAD ELECTRIC LINE
- TREE LINE
- BANK/ORDINARY HIGH WATER (OHW)/MEAN ANNUAL HIGH WATER (MAHW)
- 100' BANK/BVW BUFFER
- AQUATIC VEGETATION CONTAINMENT CURTAIN
- COMPOST FILTER TUBE

PRELIMINARY NOT FOR CONSTRUCTION

DATE	#	DESCRIPTIONS	BY	APP

DRAWN BY: MAO
CHECKED BY: JWG
APPROVED BY: JWG
PROJECT NO. 02450 DATE: 10/11/2024

TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

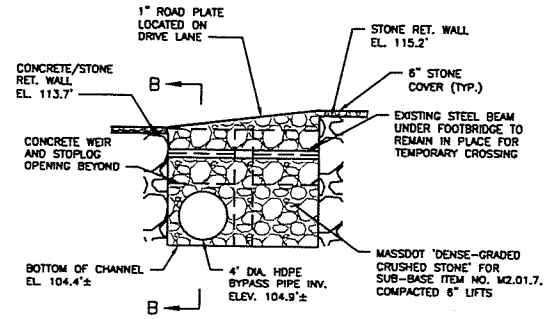
PROPOSED ACCESS, STAGING, WATER CONTROLS, & REMOVALS PLAN (ALTERNATIVE 2)

OARS, INC.
55 Bradford Street
Concord, MA 01742

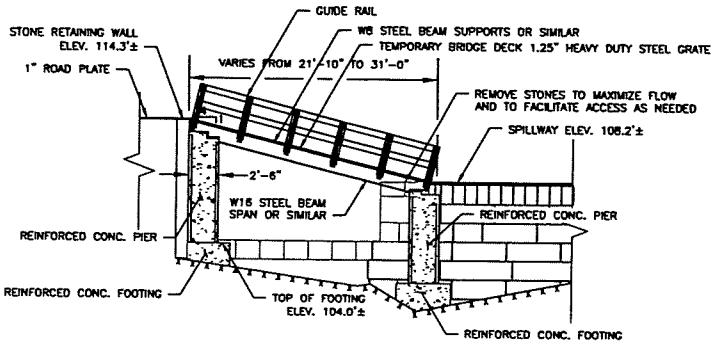
Stevens and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2178
Henniker, NH 03242

SCALE: 1" = 30'

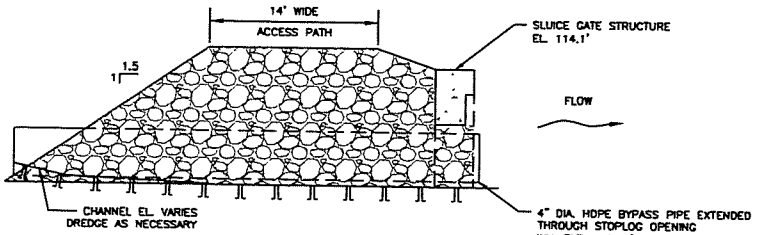
DRAWING: 7B



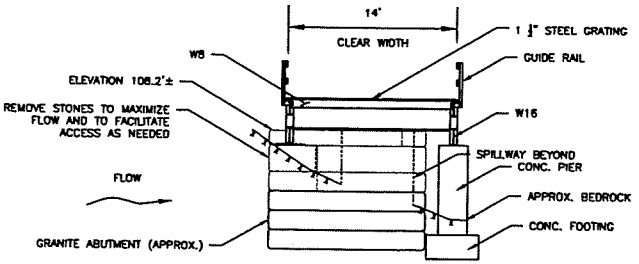
3/8 TEMPORARY CROSSING & BYPASS PIPE IN SLUICEWAY
(LOOKING DOWNSTREAM) SCALE: 1" = 10'



4/8 TEMPORARY ACCESS BRIDGE AT RIGHT ABUTMENT
(LOOKING UPSTREAM) SCALE: 1" = 10'



SECTION B-B
SCALE: 1" = 10'



5/8 TEMPORARY BRIDGE SECTION
SCALE: 1" = 10'

10' 0 10' 20'
SCALE:1"=10'

PRELIMINARY NOT FOR CONSTRUCTION

DATE	#	DESCRIPTIONS	BY	APP
DRAWN BY: MAD				
CHECKED BY: JWG				
APPROVED BY: JWG				
PROJECT NO. 02450		DATE: 10/11/2024		

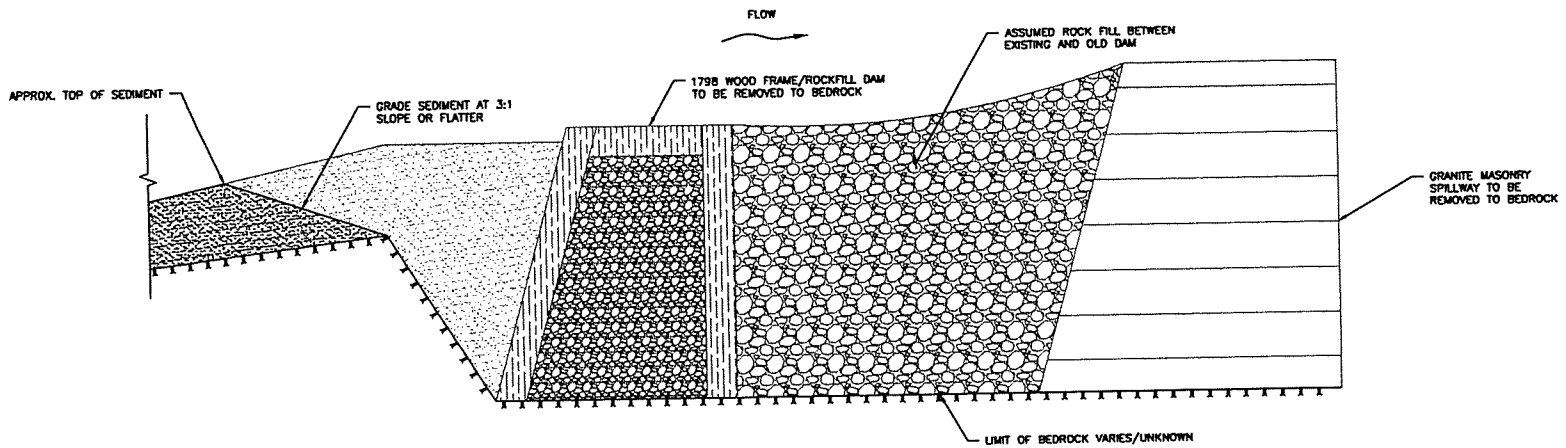
TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

PROPOSED ACCESS & WATER CONTROL DETAILS (ALTERNATIVE 2)

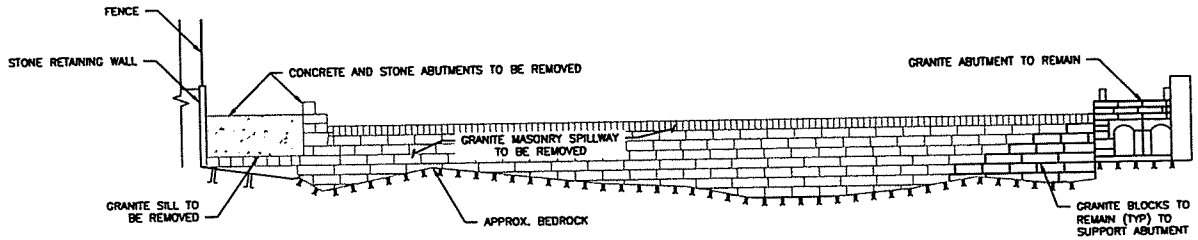
DAIN, INC.
23 Bradford Street
Concord, MA 01742

Gomez and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2179
Henniker, NH 03242

SCALE: AS NOTED DRAWING: 8



5/9 PROPOSED DAM REMOVAL SECTION
SCALE: 1"=4'



6/9 PROPOSED DAM REMOVAL ELEVATION (LOOKING UPSTREAM)
SCALE: 1" = 20'

4' 0 4' 8'
SCALE:1"=4'

20' 0 20' 40'
SCALE:1"=20'

PRELIMINARY NOT FOR CONSTRUCTION

DATE	#	DESCRIPTIONS	BY	APP

DRAWN BY: MAC
CHECKED BY: JWG
APPROVED BY: JWG
PROJECT NO. 02450 DATE: 10/11/2024

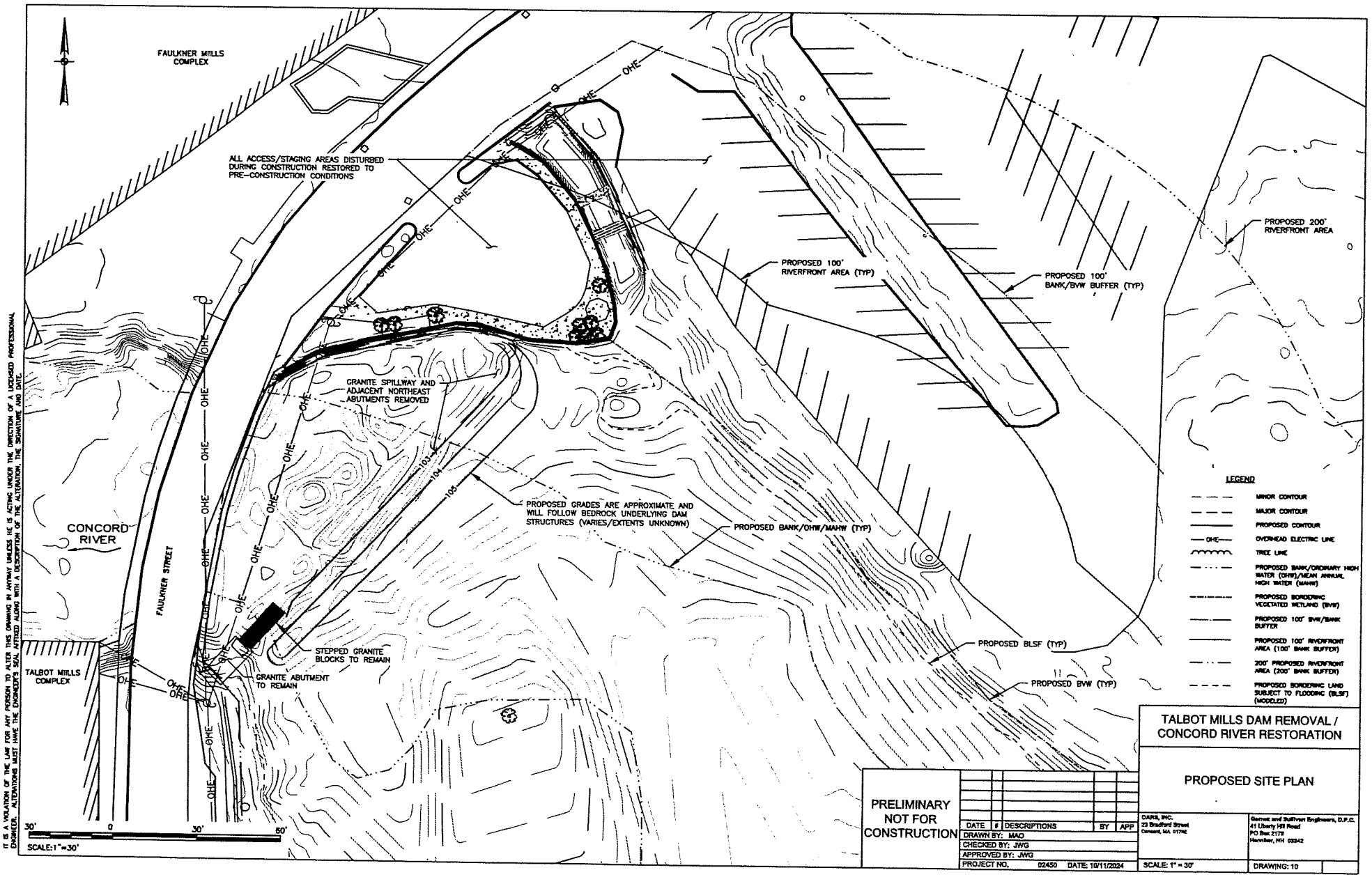
TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

PROPOSED DAM BREACH SECTION AND ELEVATION

GZA, INC.
29 Bradford Street
Concord, MA 01742

Gomez and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2179
Henniker, NH 03242

SCALE: AS NOTED
DRAWING: 9



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PRELIMINARY NOT FOR CONSTRUCTION

DATE	#	DESCRIPTIONS	BY	APP

DRAWN BY: MAO
CHECKED BY: JWG
APPROVED BY: JWG
PROJECT NO. 02450 DATE: 10/11/2024

TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

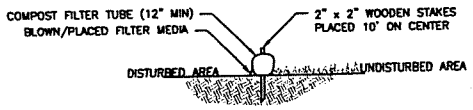
PROPOSED SITE PLAN

DARS, INC.
23 Bradford Street
Concord, MA 01742

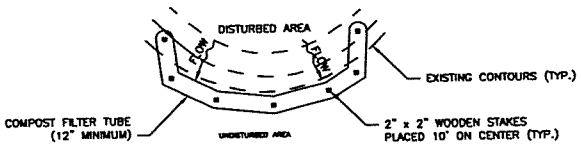
Gomez and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2179
Henniker, NH 03242

SCALE: 1" = 30'

DRAWING: 10

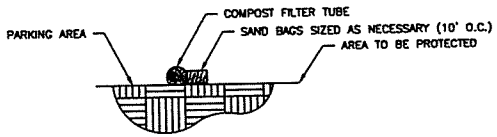


SECTION

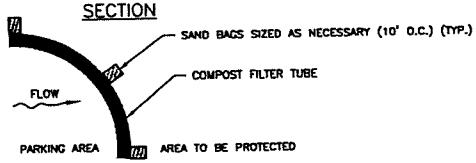


PLAN

COMPOST FILTER TUBE DETAIL
SCALE: NOT TO SCALE

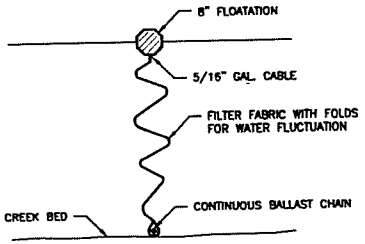


SECTION



PLAN

COMPOST FILTER TUBE ON PAVEMENT DETAIL
SCALE: NOT TO SCALE



OIL BOOM SECTION DETAIL
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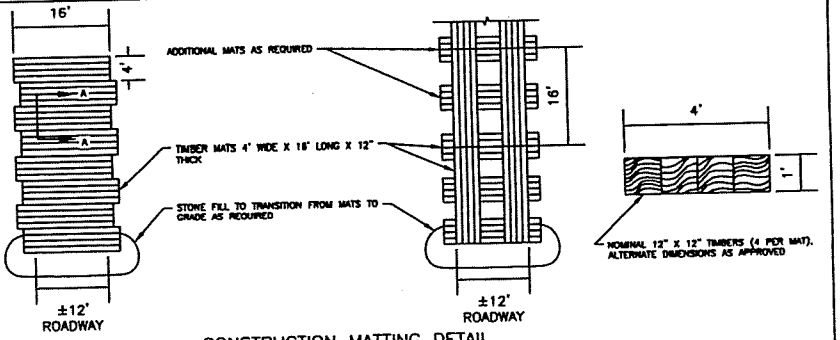

CONSTRUCTION MATTING DETAIL
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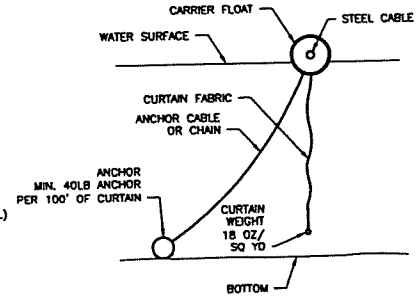
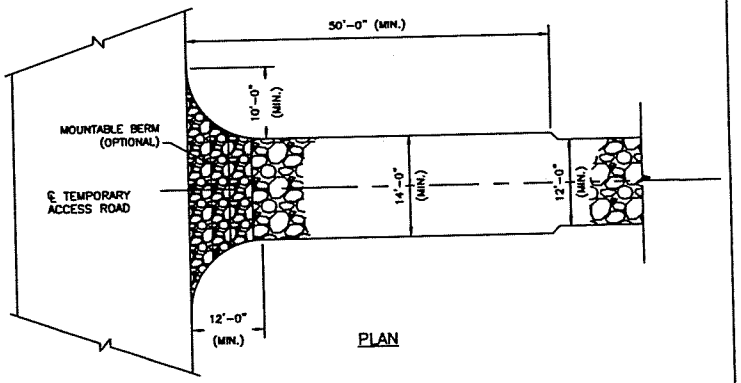
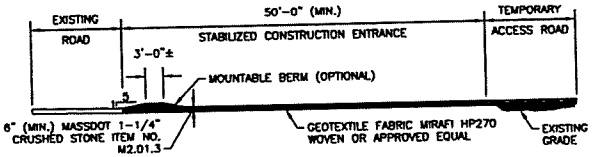


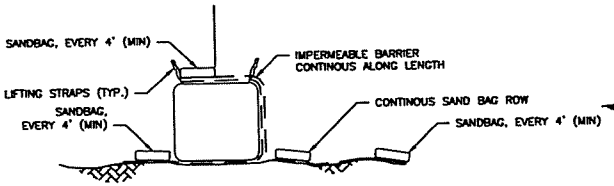
TURBIDITY CURTAIN DETAIL
SCALE: NOT TO SCALE



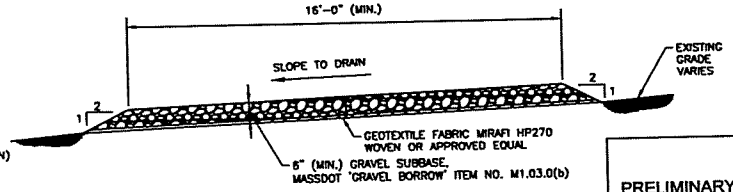
PLAN



℄ SECTION
STABILIZED CONSTRUCTION ENTRANCE
SCALE: NOT TO SCALE



SUPER SACK DETAIL
SCALE: NOT TO SCALE



TEMPORARY CONSTRUCTION ROAD
SCALE: NOT TO SCALE

PRELIMINARY
NOT FOR
CONSTRUCTION

DATE	#	DESCRIPTIONS	BY	APP

DRAWN BY: MAO
CHECKED BY: JWG
APPROVED BY: JWG
PROJECT NO. 02450 DATE: 10/11/2024

TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

EROSION AND SEDIMENT CONTROL DETAILS

GZA GeoEnvironmental, Inc.
55 Bradford Street
Concord, MA 01742

Gomez and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2179
Henniker, NH 03242

SCALE: NONE

DRAWING: 11

6. Response to BHDC Comments on MEPA EENF

This section provides excerpts from the BHDC's August 25, 2023 letter and report submitted during the MEPA EENF public comment period, along with responses from the project team. These responses were initially published in Section 8.5 of the SEIR (starting on page 120 of the SEIR), but have been updated to replace references to other SEIR comment responses with the direct responses themselves.

The Talbot Mills Dam, which has been in place for nearly two centuries, is uniquely historic and should not be demolished. It not only served the Talbot Mills complex with power, but it also provided the water that made the Middlesex Canal possible, which, in turn, "revolutionized engineering in the U.S., leading to the development of hydraulic cement and serving as the inspiration for the Erie Canal." As such, it is unique among historic structures. The National Park Service (NPS) has recognized its significance by including it on the National Register of Historic Places (NRHP). . . .

1. **Response: The project team is committed to working with consulting parties to address the effects of the project on historic properties. Outreach to potential consulting parties has been initiated, and continued discussions will be held to determine ways to avoid, minimize, and/or mitigate adverse effects from the project to historic properties, including archaeologically sensitive areas, in accordance with Section 106 of the NHPA and MGL Chapter 9, Sections 26-27C (950 CMR 70-71). A consultation meeting is scheduled for March 19, 2024, with invited interested and consulting parties. The Section 106 consultation process is anticipated to result in an MOA that will specify measures to avoid, minimize, and/or mitigate the adverse effects.**

Although various rationales have been given for removing the dam and have been accompanied by statements suggesting that removal does not present risks, it is the opinion of the Commission that the underlying motivation for the dam's removal appears to be purely financial on the part of its owner. This is evidenced by the owner appearing at the recent 7/27/2023 site visit and telling those in attendance that he doesn't want to pass the responsibility of owning the dam on to his grandchildren, which appears to be consistent with the observations of the Middlesex Canal Commission at its 6/22/2022 meeting, where the meeting minutes state that the owner "said he wants the dam removed as removal ends [his company's] burdensome responsibility for it."

Fish Passage

In the various supporting documents offered by the MRWC, the efficacy of a fishway (or fish ladder) seems to have been summarily cast aside in favor of removing the dam. To start, the MRWC Webpage states that removing the dam "would reconnect [upstream] rivers with the ocean." Yet while characterizing the removal of this dam as a means to reconnect rivers to the ocean, they ignore the fact that there are two additional dams downstream of Talbot Mills. How is it that one dam (Talbot Mills) is a disconnect while the other two dams downstream of it are not? If it's because those dams have fishways, then isn't that a tacit acknowledgment that a fishway at Talbot Mills is also a viable option for restoring fish passage?

2. **Response: The dams downstream of Talbot Mills are active hydropower dams with owners who wish to keep their dams, and consequently are required to provide effective fish passage and continually work with fisheries agencies to monitor fish passage, maintain their fishways, and implement improvements as needed, at the cost of millions of dollars. Fish passage improvements are planned for both the Essex Dam in Lawrence and the Centennial Island Dam in Lowell downstream of Talbot Mills Dam. At Centennial Falls, engineering design for a new nature-like**

fishway is currently underway to improve fish passage efficiency at that site. The Essex Dam is an important part of strategies to restore diadromous fish to the Concord. Fish passage at the dam is provided through a mechanical fish lift rather than a fish ladder. This allows restoration biologists to capture spawning condition herring and shad and transport them to the Concord, effectively re-starting the populations once the Talbot Mills Dam is removed.

The MRWC Webpage provides a link titled "Read All Studies" in support of their position. The Commission's review of those reports showed the following regarding fish passage:

- *2016 Concord River Diadromous Fish Restoration Feasibility Study (2016 Fish Study). It states that three alternatives "were determined to be most feasible" for the Talbot Mills Dam: take no action, construct a fishway, and remove the dam. With regard to building a fishway, the study states that a fishway "would provide effective passage for target species," and concludes that "a fishway at Talbot Mills Dam is a viable alternative for restoring diadromous fish in the Concord River." However, whether fish can actually make it to Talbot Mills is another story. The study discusses the remnants of the Middlesex Dam and states that "the natural bedrock ledge of the falls creates turbulence, making it hard for fish to pass upstream. Previous studies have suggested that during low flow conditions in spring, fish passage could be impeded, particularly for river herring and American shad." And upstream of that, the study notes that the Centennial Dam fishway "has a history of deficiencies and passage efficiency is unknown."*

3. **Response: Installation of a technical fishway at the Talbot Mills Dam could provide passage for some of the target species under ideal flow conditions and with proper (intensive daily) operation and maintenance. However, passage efficiency of target species would be low, and passage of other aquatic species and overall connectivity of the river would be limited. The obligation to bring the dam into compliance with dam safety regulations as well as the continued responsibility for ongoing operation, maintenance, and liability associated with the dam and fishway would make this alternative prohibitively expensive and not feasible for the dam owner to undertake.**

   The 2016 Feasibility Study determined that neither the breached Middlesex Falls Dam nor the Centennial Falls Dam are significant barriers to fish passage. An adaptive management strategy is recommended for the former Middlesex Falls Dam location to evaluate whether future improvements would be recommended to enhance fish passage at that site. At Centennial Falls Dam, engineering design for a new nature-like fishway is currently underway to improve fish passage efficiency at that site.

   - *2021 Talbot Mills Dam Removal Targeted Impact Analysis (2021 Impact Analysis). Despite the belief that dam removal would restore fish passage, this report notes that Streamworks* [PLLC]*, a consultant hired by the Town of Billerica, raised doubts about whether dam removal would actually restore fish passage. Specifically, it points to Streamworks' recommendation that further study was required "to verify that fish would be able to navigate through the site after the dam is removed and provide a contingency for fish passage ... in case remnant falls are not adequately passable for target species." So not only is it uncertain that dam removal will provide fish passage, but the level of uncertainty is high enough that this consultant recommended a contingency plan be developed to fulfill what appears to be the project's main purpose.*

4. **Response: Updated hydraulic modeling developed in response to the peer reviewer's (Streamworks') comments, as well as additional data collection and analyses, indicates that average**

channel velocities between the dam and the Fordway Bar will not exceed 4 ft/s, which is below the maximum acceptable velocity for passage of target fish species (6 ft/s), as presented in Section 3.5 of the SEIR. Project permits and specifications will include an option for adaptive management during or following construction to modify channel bed elevations within acceptable ranges to achieve project goals. This may include removal of major impediments to fish passage and/or threats to safe recreational navigation within the reach between the dam and the Pollard Street bridge.

- *2021 Merrimack River Watershed Comprehensive Plan for Diadromous Fishes (2021 Fish Plan). The plan states that "NOAA Fisheries Restoration Center and MADMF are working closely with the Talbot Dam owner to improve fish passage at the site with dam removal the preferred alternative." Note that removal is one alternative, it's not the only option. The plan later calls into question whether fish are even reaching Talbot Mills, stating that "fish passage effectiveness at the [Centennial Dam downstream of Talbot Mills] has not been evaluated, despite [the dam's] importance as the first barrier in the system," and observes that multiple options exist "to provide fish passage, ranging from installing a fish ladder to complete removal of the dam."*

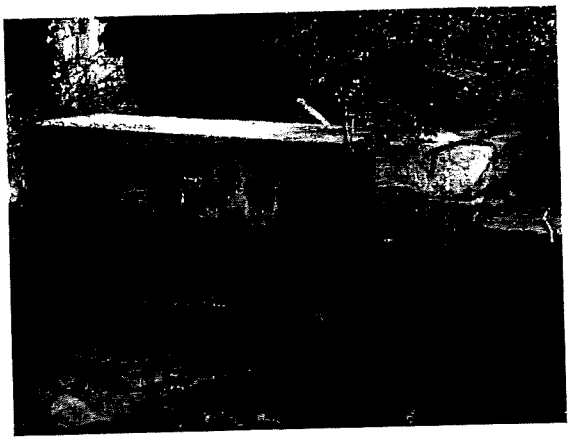
5. **Response: See Response 2 above regarding planned improvements at Centennial Island Dam and Response 3 regarding the evaluation and dismissal of the fish ladder alternative at Talbot Mills Dam.**

Interestingly, the story map portion of the MRWC Website includes several figures illustrating the extent of the Merrimack River watershed. In those figures . . . the MRWC describes the green portions of the rivers as "habitat available to migratory fish today." Note that the vast majority of this apparently available habitat is, in fact, upstream of the Essex Dam fishway in Lawrence. So, in the MWRC's own estimation, fishways increase available habitat above an otherwise impassible barrier like the Talbot Mills Dam.

6. **See Response 3 above regarding the effectiveness of fishways in general and specific to Talbot Mills Dam. Again, Essex Dam is an active hydropower dam whose owner is required to provide effective fish passage and continually work with fisheries agencies to monitor fish passage, maintain their fishways, and implement improvements as needed, at the cost of millions of dollars, which is not feasible or appropriate for the Talbot Mills Dam as it is not a hydropower dam.**

In addition to the good/passable fishways at the two downstream dams, the installation of a fishway at Talbot Mills would, in fact, be historically accurate, since it apparently had one, though this fact is conspicuously absent from the fish passage section of the MRWC Webpage.

7. **There is a long history of fish passage being provided and repealed/removed at the Talbot Mills Dam. Both the 1798 and 1828 dam structures reportedly included a fishway at the northeast (river right) end of the spillway. Maintaining a fishway at the dam was required by an act of the Legislature as early as 1820, which ordered that the fishway be open from April 1 through May 20 and measure at least 15 feet wide (or 6 feet during low flow periods) and 30 inches high (MA Senate and House of Representatives, 1820).**



The fishway was reportedly filled with concrete sometime after the 1960s (Ingraham, 1995). However, based on historic plans and reports, it is likely that the former fishway was simply an opening in the dam through which fish could swim under suitable flow conditions. It was assumed to be located in the portion of the right spillway abutment currently comprised of concrete (pictured at right). The granite capstones under the concrete likely formed the sill over which fish were intended to swim. The concrete abutment (and the assumed former fishway opening) is about 16 feet wide by 6.5 feet high with a bottom elevation (top of the granite sill under the concrete) of approximately 104.3 feet NAVD 88. The opening was likely fitted with wooden stoplogs or a gate structure so that it could be closed at times of the year outside of the mandated fish migration period.

It is unknown how effective the former fishway would have been at providing for upstream fish passage under the range of flows experienced during the migration period. It appears to have been essentially a gate opening in the dam abutment that could be opened to allow flow through it during the upstream fish passage period. Water velocities through an opening of this size would range from approximately 4 to 13 feet per second (ft/s) during the upstream fish passage period target design flow range. The upper half of this range exceeds the burst swimming speeds of target fish species (approximately 6 ft/s for river herring or 8.25 ft/s for American shad), and the fishway opening would be fully submerged (pressurized) on the upstream side, making it even less likely that fish would be able to enter it. Additionally, the drop from what is assumed to be the sill of the former fishway (the existing granite sill seen below the concrete abutment, with an elevation of 104.3 feet NAVD88) to the bedrock channel below ranges from 2 to 4 feet (plus the added depth of any water flowing through the fishway would make the drop even greater). The fish species targeted for restoration at this site do not have the ability to "jump" over falls like Atlantic salmon do. The maximum hydraulic drop that American shad and river herring can ascend is approximately 6 to 12 inches. Due to the above findings, it is unlikely that the former fishway effectively passed many fish. A fishway of this design would not be approved by modern regulatory standards.

Water Quality

The MWRC Webpage states that "thousands of people currently get their drinking water from the Concord River and improved water quality will benefit them as well." Two of the studies available through the "Read All Studies" link at the webpage are illuminating:

2022 Review of 2021 Impact Analysis (Review of 2021 Impact Analysis). This review, also performed for the Town of Billerica by Streamworks, was centered on potential contamination of the Concord River (and, consequently, Billerica's water supply) due to changes in ground water flow triggered by the removal of the dam. The contaminants at issue would be coming from the Iron Horse Park superfund site, which is located east and slightly north of the Talbot Mills. Streamworks makes numerous concerning observations and statements that cast doubt on the safety, from a water quality perspective, of dam removal. . . .

2022 Talbot Mills Dam Removal Targeted Impact Analysis (2022 Impact Analysis). This report, prepared by Gomez and Sullivan Engineers for the Division of Marine Fisheries, also addressed contamination

concerns and states that "the [superfund] site appears to be hydrologically connected to the dam's impoundment by a wetted section ... of the old Middlesex Canal."

8. **Response: An updated assessment of the Iron Horse Park Superfund site was provided in the EENF and reviewed by Streamworks in their July 14, 2023, review of the EENF that was attached to the Town of Billerica's EENF comment letter. A field survey conducted in April 2023 confirmed that 1) the canal is completely blocked at the railroad with fill material (no culvert present), 2) water flows east from the railroad toward the Superfund Site, 3) the culvert nearest to the impoundment (Rogers Street) has an invert elevation approximately 2.5 feet above the Talbot Mills Dam, which would be significantly perched above the river post-dam removal. Based on these findings, it was determined that the proposed dam removal project will not result in the migration of contaminants away from the Iron Horse Park Superfund Site.**

   Streamworks reviewed these findings and recommended no further action on their comments from Gomez and Sullivan (Streamworks' full response can be found on pages 133-134 of the SEIR). The EPA has also been consulted about the project, and has not identified any concerns or additional data needs.

2022 Intake Pump Performance Analysis (Intake Pump Analysis). Although this analysis was limited to pump performance questions stemming from the lowering of the Concord River's water surface due to dam removal, the authors apparently felt it necessary to make observations about water quality. While they state that they don't anticipate hydraulic issues to arise, they immediately (in the same sentence) note that "changes in water quality at the intake are difficult to predict." They then go on to recommend that Billerica construct "a second water supply intake and pump station at an alternative location on the Concord River" or get "an alternative water supply source for the Town." And why did they recommend this? Because the town has "only one water supply source and a single intake at their existing intake pump station" and because of "the unpredictable adverse effects to the Concord River from contamination."

9. **Response: Extensive studies have been conducted to assess potential impacts to the Town of Billerica's water supply intake. These studies were scoped in collaboration with the Town DPW and peer reviewed by their consultants, Woodard & Curran and Streamworks, as well as by DEP. Woodard & Curran noted that changes in water quality at the intake are difficult to predict. However, if anything, dam removal may improve water quality by increasing flow velocity and reducing water temperature, which can lead to less stagnation, sedimentation, and other issues that could affect water treatment costs. In an EENF comment letter dated August 25, 2023, DEP Northeast Regional Office (NERO) concurred that "Based on the studies conducted, it does not appear that removal of the Talbot Mills Dam will have a significant impact on Billerica's intake pump."**

Upstream and Downstream Flood Hazards

The MWRC Webpage states that removing the dam would "remove the risk of a catastrophic failure of the dam, which would release a significant amount of water at once, potentially flooding downstream properties." Yet this risk is never quantified. A proper risk analysis requires two assessments – 1) the likelihood of the event occurring and 2) the consequences of the event if it occurs. We have yet to see any quantitative study assessing the potential for the dam to fail; in fact, we note that its condition, as discussed below in the Aging Infrastructure section, is quite good. With regard to the potential consequences, the wording by MRCA says "potentially flooding" without quantifying this potential. Importantly, the nature of the speculated flooding (e.g., its extent and severity) is not presented to the

reader. Studies assessing, in part, potential flooding have been performed. . . . [Refer to original comment letter in Appendix H for additional context from previous studies.]

10. **Response: A dambreak analysis was conducted by Geotechnical Consultants, Inc. and summarized in a letter to the DCR Office of Dam Safety dated June 2, 2009. A flow of 6,000 cfs was modeled, which is comparable to the 100-year (1% AEP) flood (5,675 cfs per the current Flood Insurance Study). A breach width of approximately 25 feet was assumed for the 127-foot-long spillway. The results indicated that the incremental rise in downstream flood elevations due to the dam breach (above existing flood elevations) would be approximately 0.2 feet. A greater potential risk, and the reason that the dam is classified as Significant Hazard Potential, is the risk of damage or possible loss of life associated with the downstream Faulkner Street Bridge and mill buildings.**

Decommissioning Aging Infrastructure

We find it interesting that MRWC uses the term "decommissioning," since that implies taking the dam out of service. Yet what's being proposed is not decommissioning it; it's destroying it. But aside from nuances of word choice, the structure of the dam is actually in good condition. . . . In spite of [dam safety inspection] documents characterizing the dam as being in fair condition, and in spite of this characterization being based upon poor maintenance and operation of the dam rather than the condition of the dam itself, the MRWC Website's story map appears to intentionally mislead the reader by stating that "Talbot Mills Dam is aging and in poor condition."

11. **According to the most recent (2021) dam safety inspection, the Talbot Mills Dam was found to be in "fair" condition. The following deficiencies were noted:**

    - **Lack of an operation and maintenance plan**
    - **Lack of routine oversight of the dam, particularly during storm events**
    - **Lack of working controls**
    - **Lack of a functional low-level outlet**
    - **Leaks and inability to control water at sluiceway gate and weir**
    - **Trees located just downstream of the primary spillway and on the upstream face of the left embankment near the former intake gates to the Talbot Mills complex**

    The following remedial measures were recommended in the inspection report:

    - **Prepare an Emergency Action Plan (EAP).**
    - **Prepare and implement a comprehensive maintenance and routine inspection plan.**
    - **Remove trees on the upstream face of the roadway embankment near the non-functional intake gates to the Talbot Mills Complex.**
    - **Remove tree trunks and branches just upstream of the primary spillway.**
    - **Repair/replace the sluiceway and stilling basin gates so that the gates are operational and can provide emergency bypass control.**
    - **Inspect the interior of the Talbot Mills complex, particularly the downstream end of the former intake structures. The infilling of the intake tunnels on the left side of the dam rendered these intakes inoperable. Given the configuration of the dam, proximity of the mill complexes, and changing ownership of the downstream properties, the reconstruction of a low-level outlet in this area is impractical.**
    - **Repair/replace the left spillway abutment to provide an operational low-level outlet and emergency bypass control.**

Additionally, detailed hydraulic analyses conducted for this project found that the dam does not meet the dam safety requirement of being able to pass the spillway design flood—in this case the 100-year flood—without overtopping[3]. If the dam were to remain in place, an engineering assessment would need to be conducted to confirm this finding and investigate options to increase spillway capacity. The amount of water that can pass over a spillway is a product of length of the spillway, the depth of water atop the spillway (head), and a weir coefficient (which is related to the spillway shape and head). The capacity of an existing spillway can be increased by lengthening the spillway crest and/or increasing the operating head or weir coefficient. Some increase in the weir coefficient may be possible by improving the spillway crest shape (e.g., from broad-crested to an ogee crest), but this approach is generally costly for the limited results attained. To increase head, the spillway crest elevation would need to be lowered. Due to the physical constraints at the site (i.e., the road, parking lot, and bridge bounding the current spillway), increasing spillway length is not feasible without replacing the spillway with an alternate design such as a labyrinth weir, which uses a zig-zag layout to fit more spillway length within a given overall structure width. Any of these potential spillway retrofit/replacement projects would involve destruction or significant modification of the historic structure and many of the associated impacts of dam removal with none of the ecological or other benefits, likely at a substantially higher cost.

[3] This finding contradicts that in the most recent dam safety inspection report (GCI, 2021) but is based on an updated analysis and more detailed hydraulic modeling.

EXHIBIT 2

TALBOT MILLS DAM REMOVAL / CONCORD RIVER ECOLOGICAL RESTORATION PROJECT

HISTORIC DISTRICTS COMMISSION SUPPLEMENTAL INFORMATION TO APPLICATION

Town of Billerica, Middlesex County, MA

MAY 2025

Project Proponent:

CRT DEVELOPMENT REALTY, LLC

Prepared for:

TOWN OF BILLERICA
HISTORIC DISTRICTS COMMISSION

365 Boston Road, Room 105, Billerica, MA 01821

Prepared by:

GOMEZ AND SULLIVAN ENGINEERS

PO Box 2179, Henniker, NH 03242

GOMEZ AND SULLIVAN ENGINEERS
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May 28, 2025

David Gagliardi, Chair
Historic Districts Commission
365 Boston Road, Room 105
Billerica, MA 01821
planning@town.billerica.ma.us

Re: Talbot Mills Dam Removal / Concord River Restoration Project
Application for Historic Districts Commission Review/Certificate, Supplemental Information

Dear Mr. Gagliardi:

Gomez and Sullivan Engineers, DPC hereby submits supplemental information for the previously submitted Application for Historic Districts Commission Review/Certificate for the Talbot Mills Dam Removal / Concord River Restoration Project in Billerica, Massachusetts on behalf of the dam owner, CRT Development Realty, LLC. The information provided herein further demonstrates that the removal of the Talbot Mills dam is consistent with the Commonwealth's biodiversity and climate resiliency goals, that the application of MGL Chapter 40C is inappropriate in this context, and that the Project will retain as many historical features of the site as feasible.

The Talbot Mills Dam is a former mill dam located on the Concord River just upstream of the Faulkner Street bridge. The dam no longer serves a current purpose and creates a barrier in the river, which blocks migratory fish from accessing important spawning habitat, and has resulted in other environmental and public safety impacts. The dam is considered to be in "fair" condition and it's hazard potential classification is "significant (Class II)" as defined by the Office of Dam Safety, which means that *"failure may cause loss of life and damage to home(s), industrial or commercial facilities, secondary highway(s) or railroad(s) or cause interruption of use or service of relatively important facilities"* (302 CMR 10.06). The Division of Marine Fisheries is requiring the dam owner to provide fish passage for diadromous species. Dam removal is the only feasible and financially viable option for this dam to meet the Commonwealth's climate resiliency goals, dam safety requirements and fish passage requirements. Other options, such as dam repair and fish ladder construction have been explored, but would not be funded by grants, would cost over a million dollars and more than the proposed dam removal project, and would not remove the liability of the dam. Removal of this dam will:

- Reduce upstream flood hazards and increase climate resiliency
- Eliminate the potential for unexpected dam failure resulting in downstream property damage
- Restore passage and connectivity for migratory fish and resident aquatic species
- Support river and ocean ecosystems as migratory species are the base of the food chain in both ecosystems (e.g., striped bass, trout, cod, bluefish, tuna, seals, other larger marine mammals and fish, heron, eagles, and many more that forage upon diadromous fish in the Concord and Merrimack Rivers and throughout the Gulf of Maine) which in turn supports commercial and sport fisheries
- Restore natural riverine processes and ecological functions (e.g., sediment movement to the Merrimack River and estuary)
- Enhance aquatic habitat

- Improve water quality (increased flow velocity and dissolved oxygen, reduced water temperature and stagnation)
- Significantly reduce invasive water chestnut infestation in the impoundment that impedes recreational use of the river
- Improve public access to the river and new recreational activities (e.g., through-paddling, whitewater boating, fishing in fast-moving flow conditions, fishing for more species of fish, viewing of natural falls)

The purpose of MGL Chapter 40C, Historic Districts, is to

> *"promote the educational, cultural, economic and general welfare of the public through the preservation and protection of the distinctive characteristics of buildings and places significant in the history of the commonwealth and its cities and towns or their architecture, and through the maintenance and improvement of settings for such buildings and places and the encouragement of design compatible therewith."*

No where in Chapter 40C is the word "dam" used. The statute centers around the exteriors of buildings and "structures." The word structure is given the definition of *"a combination of materials other than a building, including a sign, fence, wall, terrace, walk or driveway."* In contrast, the word "dam" is defined in MGL Chapter 253 section 44 as *"any man-made artificial barrier, including appurtenant works, which impounds or diverts water."* Nothing like this definition exists in Chapter 40C. The word "dam" is mentioned in 145 sections in the Massachusetts General Laws throughout at least six chapters but not one of those mentions are in Chapter 40C. Dams are highly regulated by state agencies with expertise in dealing with the complex issues that arise with these man-made barriers. As admitted by a Billerica Historic District Commission (BHDC) member during the May meeting, the BHDC does not have experience in evaluating the issues that come along with the removal of a dam, and it is understandable that a Historic Districts Commission would not have this experience as dams were not meant to be regulated by Historic District Commissions. Therefore, the BHDC should recognize that a dam does not fit within its statutory authority.

Although the project team and legal counsel do not believe that the BHDC has authority to regulate this project under Chapter 40C, we do believe that the project would qualify for a hardship exemption under the BHDC's bylaws. The dam provides no value to the owner or the town. The cost to improve fish passage at the site through means other than removal, such as a fish ladder, would be prohibitively expensive and would involve decades of commitment by the owner to maintain, monitor and improve the fish ladder as necessary. The fish ladder alone would not address the necessary improvements to achieve the Commonwealth's standards for dam safety, which would require substantial additional upfront costs, as well as ongoing maintenance costs.

Despite the inappropriate assertion of authority over this project, the project does still intend to preserve and document as much as the historical elements of the dam as possible, in alignment with the BHDC's Review Standards. The removal of the dam will maintain the granite masonry abutment at the southwest end of the spillway and a portion of the granite block spillway to honor the history of the site and protect the Faulkner Street bridge. Additionally, the project will include archaeological recordation and removal of a former timber/rock fill dam thought to be submerged just upstream, as well as any other artifacts uncovered within the project area (if found). The federal Section 106 process being led by the National Oceanic and Atmospheric Administration (NOAA), as Lead Federal Agency, will result in a Memorandum of Agreement with the Massachusetts Historical Commission (MHC) and the dam owner that details these

historic preservation and other mitigation efforts such as interpretive signage that will be implemented as part of the project.

The dam removal and its potential impacts and benefits have been studied extensively. Electronic copies of previous studies and other permit application materials for the proposed project can be downloaded from: https://tinyurl.com/TalbotDamRemovalPublic. Additional resources can be found on the project websites (https://merrimack.org/talbotmills and https://oars3rivers.org/talbot-mills-dam-removal).

This project supports the goals of the Commonwealth for climate resiliency and for fish passage. Dams are highly regulated infrastructure that should not fall under the jurisdiction of the BHDC, however this project would qualify for a hardship exemption under the BHDC's bylaws and review standards.

Please do not hesitate to contact me directly with any questions or comments at jgriffiths@gomezandsullivan.com or (716) 402-6777.

Sincerely,

Jill Griffiths, PE
Water Resources Engineer

Encl.

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1. Consistency with Bylaws and Review Standards

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1.1 Purpose of Historic Districts

The purpose of MGL Part I, Title VII, Chapter 40C: Historic Districts (Massachusetts Bylaw) is defined in Section 2 to

> *"promote the educational, cultural, economic and general welfare of the public through the preservation and protection of the distinctive characteristics of buildings and places significant in the history of the commonwealth and its cities and towns or their architecture, and through the maintenance and improvement of settings for such buildings and places and the encouragement of design compatible therewith."*

The Billerica Historic District Commission's (BHDC) purpose is defined in Section 1 of the By-Law to establish Billerica Historic Districts Commission (BHDC Bylaw) as exactly the above, and in the Billerica Historic District Commissions Review Standards (Review Standards), the purpose is described as similar to above.

None of the purposes stated above indicate that the purpose of the bylaw is to preserve and protect infrastructure that impacts public safety and environmental habitat, such as a dam, whose maintenance, function and design are regulated by multiple state entities. The spirit of the law is tailored toward the exterior of buildings where adherence to the bylaw would not substantially change the function or safety of the building. Neither of the Bylaws nor the Review Standards mention the words "dam" or "infrastructure."

While it could be argued that the bylaws do discuss the preservation of "structures", this is defined in both the Massachusetts Bylaw and the BHDC Bylaw as a *"combination of materials other than a building, including but not limited to a sign, fence, wall, terrace, walk or driveway"*. These are all structures on land, and none are infrastructure regulated by other public entities or whose structural integrity, design or function impact public safety. Additionally, dam statutes in MGL define dam without the use of the word "structure." In MGL Chapter 253 section 44, dam is defined as *"any man-made artificial barrier, including appurtenant works, which impounds or diverts water...."*

Dams are not meant to be regulated based on aesthetics like the exteriors of buildings. Dams are highly regulated in the Commonwealth having many statutes and agencies dedicated to rating their safety and condition and regulating their maintenance and removal. There are 145 sections in the MGL that mention the word dam, and not one of those is located within Chapter 40C. This is because the legislature did not intend for the Historic District Commissions to regulate dams. The statute that gives the Historic District Commission its authority does not support its regulation of dams which are infrastructure affecting public safety and already regulated by multiple state agencies.

Even if we try, as we have done, to fit the dam into the statute so that the BHDC could pass judgment on its removal, the Commission would still need to apply its own bylaws which bar the Commission from applying the law such that it prevents the meeting of standards required by public officials and public safety.

The BHDC Bylaw specifically states in Section 9 that *"Nothing in this By-Law shall be construed to prevent the ordinary maintenance, repair or replacement of any exterior architectural feature within an historic district which does not involve a change in design, material, color or the outward appearance thereof, subject to the application requirements of Section 12(c) of this By-Law, ... nor to prevent the meeting of requirements certified by a duly authorized public officer to be necessary for public safety because of an*

unsafe or dangerous condition, nor construed to prevent any construction or alteration under a permit duly issued prior to the effective date of this By-Law."

The Talbot Mills Dam is a significant hazard dam considered to be in fair condition. It is regulated by the Massachusetts Department of Conservation and Recreation Office of Dam Safety (ODS) under 302 CMR 10 for compliance with dam safety standards. The dam does not currently meet all ODS standards and is not in full compliance. Further detail on the dam's condition is provided in **Section 1.2 Application of the Review Standards**, below. Removal of the dam is the most feasible, comprehensive and the only financially viable way to meet all ODS safety standards at this site. The federal and state grant funds and technical support provided for the project are for removal of the dam only, not for dam repair or rehabilitation. Even if financial viability were disregarded, the changes necessary to adhere to all ODS standards would include full or substantial removal of the existing dam and rebuilding a new and differently shaped dam, also requiring demolition within the historic district. A more detailed explanation of feasibility and financial viability are described in **Section 1.3 Demonstration of Hardship**.

Additionally, because migratory fish can access the river up to the dam but not beyond, it is regulated by the Massachusetts Division of Marine Fisheries (DMF) for fish passage. The dam owner is required to provide adequate fish passage during all upstream and downstream migration periods for migratory fish or be subject to pay DMF for alterations made to the site to allow for fish passage, per Massachusetts General Laws Part I, Title XIX, Chapter 130, Section 19. Removal of the dam is the most feasible, comprehensive and the only financially viable way to meet DMF fish passage requirements at this site. The Federal and State grant funds and technical support provided for the project are for removal of the dam only, not for other fish passage alternatives. A more detailed explanation of feasibility and financial viability are described in **Section 1.3 Demonstration of Hardship**, below.

Given this information, it is challenging to make the case that the bylaws and Review Standards do and should pertain to this project and the removal of the Talbot Mills Dam, as the purpose and spirit of the law does not align with the regulation of functional infrastructure such as a dam.

1.2 Application of the Review Standards

While the Bylaws fundamentally do not apply to this project as described above, further information is still provided regarding the application of the Review Standards to this project. Within the purpose of the Review Standards, in Section 1 it is stated that *"The goal is to minimize reliance on the individual tastes and preferences of those who happen to be awarding permits and instead set up clear rules that everyone will understand."* As such, the intent of this supplementary material is to demonstrate how the Talbot Mills Dam removal project does or does not align with the Review Standards, in order to minimize the influence of personal opinions in the review of the project.

It is challenging to find sections of the Review Standards that pertain to this project, as almost all the standards pertain to buildings and therefore do not apply to a dam. A building is defined in the BHDC Bylaws as *"A combination of materials forming a shelter for persons, animals, or property,"* And as we stated above, the definition of structure does not fit a dam either. However, there are a few standards that may be considered relevant within section 2.10 Demolition:

Demolition

There are seven standards within section 2.10 Demolition of the Review Standards:

- *"2.101 There shall be a presumption toward retaining all existing historic buildings.*

- *2.102 Demolition shall be allowed only when the new construction relates better to the Historic District than does the existing building, and when all the other requirements below are satisfied."*

  These two review standards do not apply as the dam is not a building.

- *"2.1021 A prerequisite for demolition shall be an application for Certificate of Hardship, which shall contain a financial report detailing the costs of rehabilitation and evidencing that the existing building is incapable of producing a reasonable economic return on the investment. The maximum rate of return which is theoretically possible on the land with new buildings shall not constitute such evidence if the existing buildings can generate a reasonable return."*

  As confirmed by the Billerica Planning and Community Development Department on May 6, 2025, there is no separate application for a Certificate of Hardship, and the previous application form submitted for this project is adequate to meet the prerequisite of *"an application for Certificate of Hardship"*. Nonetheless, the supplemental information demonstrating hardship is provided herein.

  The dam is not a building, and therefore *"evidencing that the existing building is incapable of producing a reasonable economic return on investment"* does not apply. Nonetheless, the property is incapable of producing any return on investment, and instead, continuing to own the dam incurs ongoing costs and liability to the dam owner. In 1997 the current dam owner sold the mill buildings and properties associated with the dam. It was intended that the sale included the dam as well. However, the company that purchased the property removed the dam from the sale. This left the dam owner owning only a dam, and no property. Since then, the dam owner has incurred $66,905 in direct costs related to dam ownership, as detailed in the table below. This does not account for the significant amount of personal time spent finding and hiring consultants and engineers and seeking ways to sell or remove the dam, or additional costs that would be incurred to ensure the dam meets all current regulatory requirements.

Table 1. Costs incurred due to dam ownership since 1997.

Description	Cost
26 years of Massachusetts state filings	$13,520
Phase I Dam Safety inspections	$24,000
Consulting services	$20,500
Legal fees	$8,885
Total	**$66,905**

While the dam once served a purpose that provided economic viability (powering adjacent mills), this is no longer feasible. The mills stopped using river water diverted off the Summit Pond as a power source in the mid to late 1800's when they switched to steam power. The canal that the Summit Pond once fed only exists in some places as a symbolic representation, but not as a functioning canal. There is no land associated with the dam where a new building could be built (as evidenced by the deed provided in **Section 3. Property Deed**). The dam sits in the river, and no other development on the footprint of the dam is feasible to build under current-day environmental regulations. Therefore, the property is not capable of producing any economic

return. More details regarding the economic costs of continued dam ownership and alterations necessary to meet current regulatory requirements are provided in **Section 1.3 Demonstration of Hardship**.

In addition to not being a source of *"reasonable economic return"* and costing the owner thousands of dollars a year, the dam remains a persistent liability. So long as a dam exists, the owner *"shall be responsible for liability for damage to property of others or injury to persons, including but not limited to loss of life, resulting from the operation, failure of or misoperation of a dam."* (MGL Ch. 253, S. 48B). Forcing the owner to keep the dam creates perpetual costs and an eternal liability.

- *"2.1022 If an applicant's request for permission to demolish a structure or part of a structure is based upon structural instability or advanced deterioration, a technical report prepared by an architect or professional engineer registered in Massachusetts and approved by the Commission shall be submitted, detailing the nature and extent of the specific problems, and providing reasonably accurate cost estimates for their correction."*

  The motivation to remove the dam is not entirely based upon structural instability or advanced deterioration. However, the condition of the dam and regulatory requirements to adhere to strict dam safety standards is relevant. The Talbot Mills Dam is classified as an Intermediate sized, Significant (Class II) Hazard potential structure by the ODS which means that *"failure [of the dam] may cause loss of life and damage to home(s), industrial or commercial facilities, secondary highway(s) or railroad(s) or cause interruption of use or service of relatively important facilities"* (302 CMR 10.06). The hazard classification is determined separate from the condition of the dam, and based on the location of the dam relative to houses and other infrastructure.

  The most recent Phase I dam safety inspection which determines the dams condition, was conducted on April 30, 2021, by Geotechnical Consultants, Inc. (GCI) and is provided in **Section 2. Dam Safety Inspection.** According to the 2021 inspection, the Talbot Mills Dam was found to be in "fair" condition due to significant operational and maintenance deficiencies. The following deficiencies were noted:

  - Lack of an operation and maintenance plan
  - Lack of routine oversight of the dam, particularly during storm events
  - Lack of working controls
  - Lack of a functional low-level outlet
  - Leaks and inability to control water at sluiceway gate and weir
  - Trees located just downstream of the primary spillway and on the upstream face of the left embankment near the former intake gates to the Talbot Mills complex

  The following remedial measures were recommended in the inspection report:

  - Prepare an Emergency Action Plan (EAP).
  - Prepare and implement a comprehensive maintenance and routine inspection plan.
  - Remove trees on the upstream face of the roadway embankment near the non-functional intake gates to the Talbot Mills Complex.
  - Remove tree trunks and branches just upstream of the primary spillway.

- Repair/replace the sluiceway and stilling basin gates so that the gates are operational and can provide emergency bypass control.
- Inspect the interior of the Talbot Mills complex, particularly the downstream end of the former intake structures. The infilling of the intake tunnels on the left side of the dam rendered these intakes inoperable. Given the configuration of the dam, proximity of the mill complexes, and changing ownership of the downstream properties, the reconstruction of a low-level outlet in this area is impractical.
- Repair/replace the left spillway abutment to provide an operational low-level outlet and emergency bypass control.

Additionally, detailed hydraulic analyses conducted for this project found that the dam does not meet the dam safety requirement of being able to pass the spillway design flood—in this case the 100-year flood—without overtopping[1]. If the dam were to remain in place, an engineering assessment would need to be conducted to confirm this finding and investigate options to increase spillway capacity in order to meet dam safety standards. The alteration to the dam that would be necessary to meet these standards is explained in **Section 1.3 Demonstration of Hardship.**

- *"2.1023 Applications for permission to demolish existing structures shall be accompanied by complete plans for the new development proposed on the site, together with a timetable and a budget for the demolition and the reconstruction, as well as satisfactory evidence that adequate financing is available."*

  Complete plans for the restoration of the dam site and river were provided with the initial application and are provided again in **Section 4. Design Plans,** for reference. The plans do not include new development but instead restore the river to the closest possible historically accurate condition that existed prior to the dam construction, while protecting and maintaining existing infrastructure. Demolition and restoration are anticipated to begin once all permits are secured and last approximately three months.

  The project has received funding from the Nyanza Chemical Waste Dump Superfund Site Natural Resource Damages (NRD) settlement for feasibility studies, from the Massachusetts Division of Ecological Restoration (DER) for conceptual design, from the American Rescue Plan Act (ARPA) through DER for design, permitting, and construction phase services and from the US Fish and Wildlife Service (USFWS) for construction. The most recent Opinion of Probable Construction Cost is $1.2 million. The project team currently has $1.2 million in grant funding secured for the construction phase of dam removal. <u>This funding can only be used for dam removal. Dam repair or construction of a fish ladder are not eligible expenses for the available funding.</u>

- *"2.1024 A standard condition of approval for demolition shall be the documentation of the building's elevations, including details of specific notable architectural features (doors, cornices, etc.), through measured drawings and photographs. Such data shall be provided according to the procedures established by the Historic American Building Survey."*

[1] This finding contradicts that in the most recent dam safety inspection report (GCI, 2021) but is based on an updated analysis and more detailed hydraulic modeling.

The Public Archeology Lab (PAL) has already completed multiple studies of the area. In 2014–2016, PAL completed the reconnaissance survey for the project under a State Archaeologist's Permit issued by the Massachusetts Historic Commission. The reconnaissance survey identified previously recorded historic properties, archaeological sites, and archaeologically sensitive areas within a study area that was developed based on concept plans for the proposed project at the time. The 2016 survey identified 14 previously recorded historic and archaeological resources within the project area. More recently, PAL completed a Cultural Resources Assessment Update dated December 12, 2023 based on the 75% design plans.2

Some measures to minimize impacts to the Talbot Mills Dam have already been incorporated into the project design including retaining the river-left (southwest) granite masonry abutment (which contains the waste gate openings), as well as an adjacent section of the granite masonry spillway to support the remaining abutment. Additional potential mitigative measures could include the preparation of written and photographic documentation to form a permanent archival record of the affected properties and installation of interpretive signage, and archaeological monitoring and recordation during construction. These aspects of the project will be determined through the Federal Section 106 process and detailed in a Memorandum of Agreement between NOAA, MHC and the dam owner.

Certificates of Hardship

As stated in the Demolition section above, an application for a Certificate of Hardship is a prerequisite to demolition. According to Section 6.0 of the Review Standards:

- *"6.1 Where the Historic Districts Commission finds that extraordinary and unnecessary hardships may result from strict compliance with these standards, or where there are exceptional circumstances, it may vary these standards so that substantial justice may be done."*

  Compliance with disallowing demolition in this case would offend substantial justice. This dam is a financial drain and a source of liability for the owner. Should the dam fail, the owner would be strictly liable for damages. Because there is no source of reasonable economic return for the dam yet its ownership incurs ongoing expenses, a Certificate of Hardship is applicable and therefore, this supplemental information is provided to demonstrate hardship.

- *"In order to issue a Certificate of Hardship, the Commission shall make specific factual findings demonstrating that:*

  - *6.10 Owing to conditions specific to a particular building or structure, failure to approve an application will result in substantial hardship, whether financial or otherwise, to the applicant, and"*

  Failure to approve an application for a certificate of hardship would result in significant hardship for the dam property and the dam owner as well as upstream and downstream abutters, as the dam would continue to exist along with all the regulatory and financial requirements that accompany it. The responsibility of owning this dam amounts to a considerable financial loss every year for the dam owner, as discussed previously. As the dam deteriorates the owner's risk for liability for dam failure increases as well. The financial hardship of the dam is further demonstrated in **Section 1.3 Demonstration of Hardship**.

[2] All prior studies are available at: https://tinyurl.com/TalbotDamRemovalPublic

- *6.11 That granting the application will not involve substantial detriment to the public welfare or substantial derogation from the intent and purpose of the Historic Districts By-Law."*

As described in the initial application materials submitted, removal of the dam would provide significant benefits to the public welfare in the form of improved public safety, decreased flooding, improved climate resiliency, improved recreation, improved ecosystem health and the myriad of ecosystem services that accompany a healthy riverine and oceanic ecosystem. As such, granting the application will not involve substantial detriment to public welfare.

- *"6.2 In granting waivers, the Historic Districts Commission may require such conditions as will, in its judgment, secure substantially the objectives of the standards which have been waived. A Certificate of Hardship shall then be issued."*

The federal Section 106 process being led by NOAA, as Lead Federal Agency, will result in a Memorandum of Agreement with the MHC and dam owner that details historic preservation and other mitigation efforts that will be implemented as part of the proposed project. The project team is also willing to work with the Historic District Commission regarding conditions to achieve the goals of historic preservation at the project location through this review process.

1.3 Demonstration of Hardship

According to the Appendix "Determination of Hardship" in the Review Standards:

- *"Application for a Certificate of Hardship shall be made on a form prepared by the Historic Districts Commission. The Commission shall schedule a public hearing concerning the application and any person may testify at the hearing concerning hardship."*

As confirmed by the Billerica Planning and Community Development Department on May 6, 2025, there is no separate application or form for a Certificate of Hardship, and the previous application form submitted for this project is adequate.

- *The Commission may solicit expert testimony or require that the applicant for a Certificate of Hardship make submissions concerning any or all of the following information before it makes a determination on the application.*

During the Billerica Historic Districts Commission hearing on May 7, 2025, representatives from Gomez and Sullivan Engineers and the Division of Ecological Restoration, on behalf of the applicant, asked the Commission what information the Commission requires to make a determination on the application. No specific information was requested, and commissioners admitted to being at a loss as to what information would be needed to assess the hardship of a dam. Nonetheless, this section documents how each item that the Commission may request, as listed in the Appendix of the Review Standards, is either provided or not applicable.

1. *A professional estimate of the cost of the proposed construction, alteration, demolition, or removal and an estimate of any additional cost that would be incurred to comply with the standards of the Commission for changes necessary for the issuance of a Historic Permit.*

An Opinion of Probable Construction Cost for the dam removal project, prepared by a licensed engineer, is provided in **Section 5. Opinion of Probable Construction Cost** and is estimated to

cost nearly $1.2 million for construction. Additionally, the project already incorporates historic documentation so it is not anticipated that any additional costs would be incurred to comply with the standards of the Commission.

As discussed in **Section 1.1 Purpose of Historic Districts**, the Talbot Mills dam is regulated by ODS for dam safety and DMF for fish passage. There is no financially viable or feasible way to meet both regulatory agencies' standards aside from dam removal as dam removal is funded by state and federal grants and dam repairs and a fish ladder would not be, which is further explained below.

Costs to Meet Dam Safety Requirements

In order to meet the dam safety requirement of passing the 100-year flood, the existing spillway would need to be lengthened, lowered, or the shape would need to be changed. Due to the physical constraints at the site (i.e., the road, parking lot, and bridge bounding the current spillway), increasing spillway length is not feasible without replacing the spillway with an alternate design such as a labyrinth weir, which uses a zig-zag layout to fit more spillway length within a given overall width. This would significantly change the appearance of the dam and result in loss of the historic resource. It would therefore not protect the historic dam as it currently exists. Lowering the spillway height would also lead to significant change in the appearance of the dam and loss of the historic resource. Changing the spillway crest shape is generally costly for the limited results attained and would result in significant changes to the appearance of the dam and loss to the historic resource. Any of these potential spillway retrofit/replacement projects would involve destruction or significant modification of the historic resource, incurring all of the costs of dam removal as detailed in **Section 5. Opinion of Probable Construction Cost** in addition to the costs to rebuild the dam.

Costs to Meet Fish Passage Requirements

In order to meet the fish passage requirement, the dam would have to first meet all dam safety standards and incur the costs described in the previous paragraph. In addition to these costs, would be the costs of designing, permitting and building a fish ladder. Two examples of fish passage project costs are provided in **Section 6. Supplemental Cost Information.** The table below summarizes these costs, ranging from $599,000-$1.5M, which do not include any costs for dam repair/retrofit as would be required at the Talbot Mills Dam, and compares them against the cost for this dam removal project. The Forge Pond Dam Denil Fish Ladder is the most comparable project to a fish ladder that would be required at Talbot Mills Dam and the fish ladder alone costs significantly more than dam removal at $1.5M

Table 2. Comparison of two fish passage project costs with the Talbot Mills Dam removal costs.

Project	Fish passage construction cost ($2025)	Notes
Forge Pond Dam Denil Fish Ladder	$1,475,000	This is a very comparable fish ladder to the one that would need to be built at the Talbot Mills Dam. The dam is just upstream of the bridge, and due to the dam and site constraints, a Denil fish ladder is the best option for fish passage.
Centennial Island Dam Nature-Like Fishway	$599,000	This fishway is a nature-like rock-ramp fishway, which is significantly less expensive than building a fish ladder, which would be the necessary fishway type at the Talbot Mills Dam due to the site constraints and dam height.
Talbot Mills Dam Removal	$1,153,000	

Ongoing Maintenance and Repair Costs

In addition to the initial construction costs required to adhere to ODS and DMF requirements, they both require consistent ongoing maintenance. Fish ladders must be cleared daily during the migration period and adjusted and maintained in response to daily fluctuations in river flows. This requires an expert in the field of fish passage and fish ladder maintenance and is a nearly full-time job. Hydropower companies employ full-time and seasonal staff to manage fish passage operations at their dams. As the Talbot Mills dam generates no economic income, employing a fish passage technician at this dam location is not economically feasible. As the dam owner is retired, becoming a full-time fish passage technician, or starting a new business to employ a fish passage technician is not reasonable. Grants do not cover ongoing maintenance costs.

Additionally, fish ladders have a typical useful life of around 50 years, which means this is not a one-time cost. Ladders will have to be redesigned and built every 50 years, adding to the perpetual expense of the dam.

Adhering to dam safety standards also requires consistent and ongoing maintenance and compliance costs. The Talbot Mills Dam is a significant hazard dam which requires a Phase I safety inspection every five years. As shown in the Talbot Phase I Inspection proposal included in **Section 6. Supplemental Cost Information,** this can cost up to $14,755 for the Talbot Mills dam. According to ODS staff (See email exchange included in **Section 6. Supplemental Cost Information)**, on average, these range from $5,000 - $10,000. All the remedial measures recommended in the most recent dam safety inspection report incur costs separate from the costs to retrofit/remove the spillway to pass the design flood and are ongoing in perpetuity. In addition to the safety inspections, some of these include implementing a comprehensive maintenance and routine inspection plan which entails hiring professional engineers, regularly removing trees and branches from the dam, operating bypass controls during an emergency or high flood situation, among others. As noted above, the dam generates no economic income and maintenance is not funded by grants, so it is not economically feasible to achieve these requirements. Hydropower dams or dams owned by government entities such as a city or state agency provide alternative economic

viability in covering costs associated with dam ownership, where a privately owned dam providing no economic benefit or purpose does not.

In summary, retrofitting the dam to meet ODS standards would likely cost more than dam removal, $1.2M. Adding a fish ladder would like cost at least $1M and may be incurred every 50 years. Ongoing maintenance and repairs would cost at least what the dam owner has paid to date annually ($2,400) plus the cost of hiring staff to manage and maintain the fish ladder, both in perpetuity. None of these costs account for the potential costs related to liability if the dam were to fail. It is evident these costs are substantially more than the one-time cost of $1.2M to remove the dam, which adequately meets all Commonwealth regulatory requirements.

2. *A report from a licensed engineer or architect with experience in rehabilitation as to the structural soundness of any structures on the property and their suitability for rehabilitation.*

   See the explanation in **Section 1.2 Application of the Review Standards, Demolition**, standard 2.1022.

3. *Estimated market value of the property in its current condition; after completion of the proposed construction, alteration, demolition, or removal; and after changes required by the Commission.*

   There is no property associated with the dam, as demonstrated by the deed provided in **Section 3. Property Deed**. The dam owner only owns the dam, and no parcel associated with the dam. The dam owner has tried to sell and gift the dam by multiple means without success as described in item #9, below. As such, the dam has no market value however, as described previously, ownership of the dam incurs costs. Therefore, the current market value of the property could be considered less than $0.

4. *In the case of a proposed demolition, an estimate from an architect, developer, real estate consultant, appraiser, or other real estate professional experienced in rehabilitation as to the economic feasibility of rehabilitation or reuse of the existing Structure on the property.*

   The dam no longer serves the economic purpose it once did, and there is no economic need or viability for the dam to serve the purpose of powering the adjacent mill buildings as it once did. As such, the dam cannot be reused. See response to item #1 above for discussion regarding the economic feasibility of rehabilitation. This dam removal project is being funded by state and federal grants which is what makes it economically feasible. It is unlikely that dam repair and construction of a fish ladder would feasibly be funded by grants, as explained below.

   The Dam and Seawall grant program is largely the only state program that funds dam repair. It is unlikely that retrofit/rehabilitation of this dam would be funded as the dam currently serves no purpose. This is evidenced by the project eligibility and evaluation criteria outlined in the grant's request for responses[3]. In summary, dams that are municipally owned are prioritized for funding (this dam is not), and projects are scored based on the environmental and public safety benefits they provide. Rebuilding the Talbot Mills dam to meet ODS standards would not provide sufficient benefits to be competitive. Additionally, ongoing maintenance and operational costs are not eligible expenses for this grant program. Permitting the full replacement of the dam to meet modern standards would also prove to be extremely difficult, costly and time-consuming, if even allowed by the various federal and state regulators. The dam repair is also not eligible for

[3] Available for download at: https://www.commbuys.com/bso/external/bidDetail.sdo?docId=BD-25-1042-ENV-ENV01-113868&external=true&parentUrl=close

the Massachusetts Preservation Projects Fund which helps fund rehabilitation of historic sites, as private citizens are not eligible to apply. Additionally, the maximum award amount from this grant program is $100,000 and it is likely the cost of dam rehabilitation and construction of a fish ladder would cost over $2 million as explained previously.[4]

5. *Amount paid for the property, the date of purchase, and the party from whom purchased including a description of the relationship, if any, between the owner of record or applicant and person from whom the property was purchased, and any terms of financing between the seller and buyer.*

   The property was purchased from CRT Development Corp. for $1.00 on 7/9/1980 (Bk 2429, Pg 687), as shown in **Section 3. Property Deed**.

6. *If the property is income-producing, the annual gross income from the property for the previous two years; itemized operating and maintenance expenses for the previous two years; and depreciation deduction and annual cash flow before and after debt service, if any, for the previous two years;*

   The property does not produce income.

7. *Remaining balance on any mortgage or other financing secured by the property and annual debt service, if any, for the previous two years.*

   Not applicable.

8. *All appraisals obtained within the previous two years by the owner or applicant in connection with the purchase, financing, or ownership of the property.*

   Not applicable.

9. *Any listing of the property for sale or rent, price asked, and others received, if any, within the previous two years.*

   Soon after the initial property sale that left the dam owner owning the dam in 1997, the dam owner approached Leggett & Platt, Incorporated, the company that purchased the remaining property, about transferring dam ownership. Leggett & Platt, Incorporated was willing to accept the dam under certain conditions, including being able to gift the dam to another entity. Leggett & Platt, Incorporated offered the dam to the town and the Middlesex Canal Commission (MCC) and the town was unwilling to accept the dam and the MCC was only willing to accept it if they were also given $200,000 to cover ongoing maintenance and inspection costs, which was all discussed verbally. Leggett & Platt, Incorporated ultimately was unwilling to accept the dam. Later, the dam owner engaged in communications again with the town and the MCC regarding acceptance of the dam, as documented in an email exchange starting in 2017 included in **Section 6. Supplemental Cost Information.** By the time a response was received from the MCC five years later, the dam owner had already pursued other options and raised funds to advance removal. See email documentation in **Section 6. Supplemental Cost Information.**

10. *Assessed value of the property according to the two most recent assessments.*

    Not applicable.

[4] See grant information at https://www.sec.state.ma.us/divisions/mhc/grants/mppf.htm

11. *Real estate taxes for the previous two years.*

    Not applicable.

12. *Form of ownership or operation of the property, whether sole proprietorship, for-profit or not-for-profit corporation limited partnership, joint venture, or other.*

    Limited Liability Company (LLC)

1.4 Conclusion

The Talbot Mills Dam is a former mill dam located on the Concord River just upstream of the Faulkner Street bridge. The dam no longer serves a current purpose, generate no economic revenue, and is costly to own and creates a liability for the dam owner. The dam owner, with the support of various state and federal government entities and nonprofits it pursuing removal of the dam. Dam removal is the only feasible and financially viable option for this dam to meet the Commonwealth's dam safety and fish passage requirements and the removal of the dam provides a public safety benefit while supporting the Commonwealth's for climate resiliency goals.

Dams are highly regulated infrastructure that should not fall under the jurisdiction of Historic District Commissions. Although the project team and legal counsel do not believe that the BHDC has authority to regulate this project under Chapter 40C, we do believe that the project would qualify for a hardship exemption under the BHDC's bylaws, and evidence for this determination is provided within this supplemental material.

2. Dam Safety Inspection

TALBOT MILLS DAM

PHASE I

INSPECTION / EVALUATION REPORT

Dam Name:	***Talbot Mills Dam***
NID ID#:	***MA 00774***
Owner:	***CRT Development***
Town:	***North Billerica***
Consultant:	***Geotechnical Consultants, Inc.***
Date of Inspection:	***April 30, 2021***

EXECUTIVE SUMMARY

This Phase I Inspection/Evaluation Report details the inspection and evaluation of Talbot Mills Dam located in North Billerica, Massachusetts. The inspection was conducted on 30 April 2021 by Geotechnical Consultants, Inc. of Marlborough, Massachusetts.

Currently, the Talbot Mills Dam is classified as an Intermediate sized, Significant (Class II) Hazard potential structure. Based on our inspection, measurements and evaluation, it is our opinion the dam should remain as an Intermediate sized, Significant (Class II) Hazard potential structure.

In general, the Talbot Mills Dam was found to be in fair condition primarily due to the lack of any operation or maintenance plan. Structurally, we found non indications of instability of seepage which comprise the integrity of the dam and appurtenant structures. The spillway appears to be adequately sized for the Spillway Design Flood (SDF).

Some operational deficiencies exist and include:

- Minor seepage in the spillway particularly at the right side.
- Trees located on the upstream side of the right abutment near the spillway.
- Lack of an operable low-level outlet and emergency bypass in the event of flooding.

Geotechnical Consultants, Inc. recommends the following actions be taken to address the deficiencies found at the dam during this inspection and evaluation:

- Prepare and implement "routine" inspection and maintenance plans for the operation and maintenance of this dam.

- Inspect the interior of the Talbot Mills complex, particularly the downstream end of the former intake structures.

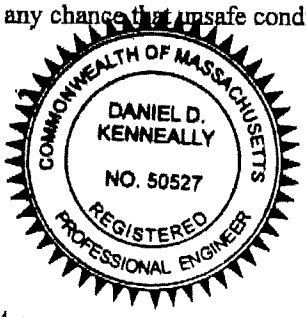
- Repair/replace the sluiceway and stilling basin gates so that the gates are operational and can provide emergency bypass control.

PREFACE

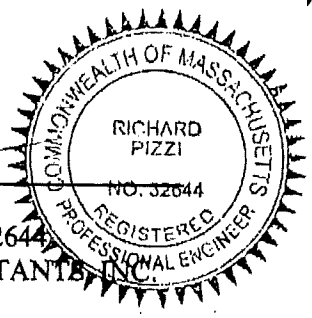
The assessment of the general condition of the dam reported herein was based upon available data and visual inspections. Detailed investigations and analyses involving topographic mapping, subsurface investigations, testing and detailed computational evaluations were beyond the scope of this report unless reported otherwise.

In reviewing this report, it should be realized that the reported condition of the dam was based on observations of field conditions at the time of inspection, along with data available to the inspection team.

It is critical to note that the condition of the dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the reported 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.



Dan Kenneally, P.E.
Massachusetts License No.: 50527



Richard Pizzi, P.E.
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GEOTECHNICAL CONSULTANTS, INC.

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APPENDICES

Dam Evaluation Summary Detail Sheet

1. NID ID:	MA 00774	4. Inspection Date:	April 30, 2021
2. Dam Name:	Talbot Mills Dam	5. Last Insp. Date:	November 6, 2015
3. Dam Location:	Billerica, MA	6. Next Inspection:	April 30, 2026
7. Inspector:	Daniel Kenneally		
8. Consultant:	Geotechnical Consultants, Inc.		
9. Hazard Code:	Significant	9a. Is Hazard Code Change Requested?:	No
10. Insp. Frequency:	5 Years	11. Overall Physical Condition of Dam:	FAIR
12. Spillway Capacity (% SDF)	>100% SDF w/ no actions by Caretaker		

E1. Design Methodology:	1	E7. Low-Level Discharge Capacity:	1
E2. Level of Maintenance:	1	E8. Low-Level Outlet Physical Condition:	1
E3. Emergency Action Plan:	1	E9. Spillway Design Flood Capacity:	5
E4. Embankment Seepage:	5	E10. Overall Physical Condition of the Dam:	3
E5. Embankment Condition:	5	E11. Estimated Repair Cost:	$0
E6. Concrete Condition:	4		

Evaluation Description

E1: DESIGN METHODOLOGY
1. Unknown Design – no design records available
2. No design or post-design analyses
3. No analyses, but dam features appear suitable
4. Design or post design analysis show dam meets most criteria
5. State of the art design – design records available & dam meets all criteria

E2: LEVEL OF MAINTENANCE
1. Dam in disrepair, no evidence of maintenance, no O&M manual
2. Dam in poor level of upkeep, very little maintenance, no O&M manual
3. Dam in fair level of upkeep, some maintenance and standard procedures
4. Adequate level of maintenance and standard procedures
5. Dam well maintained, detailed maintenance plan that is executed

E3: EMERGENCY ACTION PLAN
1. No plan or idea of what to do in the event of an emergency
2. Some idea but no written plan
3. No formal plan but well thought out
4. Available written plan that needs updating
5. Detailed, updated written plan available and filed with MADCR, annual training

E4: SEEPAGE (Embankments, Foundations, & Abutments)
1. Severe piping and/or seepage with no monitoring
2. Evidence of monitored piping and seepage
3. No piping but uncontrolled seepage
4. Minor seepage or high volumes of seepage with filtered collection
5. No seepage or minor seepage with filtered collection

E5: EMBANKMENT CONDITION (See Note 1)
1. Severe erosion and/or large trees
2. Significant erosion or significant woody vegetation
3. Brush and exposed embankment soils, or moderate erosion
4. Unmaintained grass, rodent activity and maintainable erosion
5. Well maintained healthy uniform grass cover

E6: CONCRETE CONDITION (See Note 2)
1. Major cracks, misalignment, discontinuities causing leaks, seepage or stability concerns
2. Cracks with misalignment inclusive of transverse cracks with no misalignment but with potential for significant structural degradation
3. Significant longitudinal cracking and minor transverse cracking
4. Spalling and minor surface cracking
5. No apparent deficiencies

E7: LOW-LEVEL OUTLET DISCHARGE CAPACITY
1. No low level outlet, no provisions (e.g. pumps, siphons) for emptying pond
2. No operable outlet, plans for emptying pond, but no equipment
3. Outlet with insufficient drawdown capacity, pumping equipment available
4. Operable gate with sufficient drawdown capacity
5. Operable gate with capacity greater than necessary

E8: LOW-LEVEL OUTLET PHYSICAL CONDITION
1. Outlet inoperative needs replacement, non-existent or inaccessible
2. Outlet inoperative needs repair
3. Outlet operable but needs repair
4. Outlet operable but needs maintenance
5. Outlet and operator operable and well maintained

E9: SPILLWAY DESIGN FLOOD CAPACITY
1. 0 - 50% of the SDF or unknown
2. 50-90% of the SDF
3. 90 - 100% of the SDF
4. >100% of the SDF with actions required by caretaker (e.g. open outlet)
5. >100% of the SDF with no actions required by caretaker

E10: OVERALL PHYSICAL CONDITION OF DAM
1. UNSAFE – Major structural, operational, and maintenance deficiencies exist under normal operating conditions
2. POOR - Significant structural, operation and maintenance deficiencies are clearly recognized under normal loading conditions
3. 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
4. SATISFACTORY - Minor operational and maintenance deficiencies. Infrequent hydrologic events would probably result in deficiencies.
5. GOOD - No existing or potential deficiencies recognized. Safe performance is expected under all loading including SDF

E11: ESTIMATED REPAIR COST
Estimation of the total cost to address all identified structural, operational, maintenance deficiencies. Cost shall be developed utilizing standard estimating guides and procedures

Changes/Deviations to Database Information since Last Inspection

SECTION 1

1.0 DESCRIPTION OF PROJECT

1.1 General

1.1.1 Authority

CRT Development Realty retained Geotechnical Consultants, Inc. to perform a visual inspection and develop a report of conditions for the dam at the Mill Pond Dam, also know as the Talbot Mills Dam along the Concord River in North Billerica, Middlesex County, Massachusetts. This inspection and report were performed in accordance with MGL Chapter 253, Sections 44-50 of the Massachusetts General Laws as amended by Chapter 330 of the Acts of 2002.

1.1.2 Purpose of Work

The purpose of this investigation was to inspect and evaluate the present condition of the dam and appurtenant structures in accordance with 302 CMR10.07 to provide information that will assist in both prioritizing dam repair needs and planning/conducting maintenance and operation.

The investigation was divided into four parts: 1) obtain and review available reports, investigations, and data previously submitted to the owner pertaining to the dam and appurtenant structures; 2) perform a visual inspection of the site; 3) evaluate the status of an emergency action plan for the site and; 4) prepare and submit a final report presenting the evaluation of the structure, including recommendations and remedial actions, and opinion of probable costs.

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; and 5) miscellaneous. All elevations referred to in this report are given in feet and are referenced to the National Geodetic Vertical Datum (NGVD) of 1929.

1.2 Description of Project

1.2.1 Location

The Talbot Mills Dam is located in Middlesex County in the village of North Billerica, Massachusetts. North Billerica is an unincorporated village of the town of Billerica, Massachusetts; one of nine villages that make up the Town of Billerica.

The Concord River flows through North Billerica, and at the old Talbot and Faulkner Mills is the Mill Pond and Dam marking the area where the old Middlesex Canal crossed over the river. This run-of-the-river dam and the impoundment are shown on the Billerica USGS quadrangle map at the following approximate coordinates:

Latitude: 42.59173° North

Longitude: 71.28400° East

The best access for driving to the dam is via exit #29 off of US Route 3; then east on Billerica Road (State Route 129) for approximately 0.3 miles; turn north onto Brick Kiln Road for 0.4 miles; northeast onto Alpine Street for 0.4 miles; south onto Boston Road (State Route 3A) for approximately 400 feet; northeast onto Lowell Street for 0.5 miles; then northeast onto Old Elm Street 0.3 miles (Old Elm Street becomes Faulkner Street). The dam location and general vicinity are shown on the *Locus Plan* attached as Figure 1.

1.2.2 Owner/Caretaker

See Table 1.1 for current owner and caretaker data (names and contact information).

1.2.3 Purpose of the Dam

See Table 1.1 for the current purpose of the dam.

The area was originally meadow land and its hay and grass were used by the early English settlers as food for their farm animals. As it was subject to annual flood, attempts were made to curtail the problem. In 1659 William Sheldon received permission to construct a mill to grind corn, but it was not until 1708 that Christopher Osgood successfully erected an effective dam at the site. All subsequent owners of this spot trace their deed to Osgood and his dam. By the end of the 18th century there were five grist mills, three saw mills and one fulling mill at work here.

Faulkner Mills was at a crucial junction of waterways in the early 1800s. Not only were the mills on the Concord River, a source of water power, but they were also at the highest point of the Middlesex Canal. The canal was the longest early American canal, dug entirely by hand and explosives, reaching over 20 miles from Boston at the southeast end to Lowell and the Merrimack River in the north. This canal would prove to be an important link for commerce in the early 1800s, before the advent of the railroads. The canal was the transport mechanism for lumber from New Hampshire, textiles from Lowell, and passengers from Boston.

During the period of the Middlesex Canal's operations, its Proprietors were in charge of the area and continued to run the mills as well as a fishway. For them, Loammi Baldwin replaced Osgood's old worn dam with a new one near the current dam at the Faulkner Street bridge. In 1828 the Proprietors again built a new dam on this site. At the Canal's demise, the control of the area passed to two families: the Faulkners and the Talbots.[1]

1.2.4 Description of the Dam and Appurtenances

Talbot Mills Dam is located on the Concord River approximately 4.2 miles south of the confluence of the Concord and Merrimack Rivers. Overall, the dam, excluding the south training wall and sluiceway, is approximately 316 feet long with a maximum height of about 15 feet. It is an overflow or run-of-the-river type stone masonry, concrete and (presumably) earthen structure.

[1] http://www.middlesexcanal.org/gallery.htm

In 2015, Geotechnical Consultants, Inc. completed an evaluation study of the Talbot Mills Dam as part of its contract with the dam owner. This is the last known inspection report for the dam and the information contained in the report was used as the basis for the current DCR size and hazard classification.

The Geotechnical Consultants report entitled *Talbot Mills Dam Phase I Inspection/Evaluation Report* dated November 6, 2015 was reviewed as part of our services.

As part of the dam inspection done in 2009, a complete survey of the dam and appurtenant structures as well as limited soundings to determine the water depth of the pond were made to provide a completer and more accurate basis for determination of both DCR size and hazard classification. The survey was done by Eaglebrook Engineering & Survey, LLC in April 2009. A copy of the *Site Plan,* drawing EX-1 dated April 20, 2009 is attached as Figure 2. for reference.

There are three primary components to this dam:

- Main impoundment and intake structure to the Talbot Mills complex
- Main spillway and abutments
- Sluiceway and primary intake to the Faulkner Mills complex.

Main Impoundment

The primary dam structure is of unknown construction and makes up the left (south) portion of the dam. This area of the dam supports Old Elm Street/Faulkner Street and separates the Mill Pond from the Talbot Mills complex located on the left bank of the river just downstream from the dam. Elevations along Old Elm Street/Faulkner Street over this are of the dam range between 114.5 and 116.0 feet NGVD.

A vertical concrete wall was constructed at the southernmost end of the left side of the dam. The 60-foot-long concrete wall forms the upstream dam face of the dam and contains five intake gates which formerly provided water to the Talbot Mills. We understand the gates are no longer functional and the intake tunnels upstream of the Talbot Mills were filled with concrete at some time in the past. The top of the concrete wall is at approximately elevation 118.0 feet at the gates.

A masonry stone wall is located on the upstream side of the dam and is located between the north end of the concrete intake wall and the left abutment of the spillway. The stone wall is approximately 73 feet long. Elevations along the top of the stone all range between 115.3 feet at the south end and 114.2 feet at the north end adjacent to the spillway abutment.

Further to the south, a stone wall serves as a training wall. The top of the training wall ranges between elevation 112.2 and elevation 114.9 feet. Grades behind the wall slope slightly upward to the old Middlesex Canal Building. Remnants of the old Middlesex Canal alignment are located to the south of the building as shown in Photograph 13.

Spillway

Although the primary spillway was not visible at any time during our site visit due to the continued flow, both the left and right abutments were visible and appeared to be constructed of masonry granite blocks. During our site inspection on 30 April 2021, approximately 6-inches of water was flowing across the top of the spillway. It appears the spillway crest is square-cut with a near vertical face. A portion of the right abutment is constructed of cast-in-place concrete. Spot grades at the top of the abutments range between elevations 111.0± to 111.5±. The top elevation at the primary spillway was estimated in the field due to the high flow at elevation 109.7±. This elevation is consistent with the elevation provided in the FEMA study[2] of the Concord River. A complete copy of the FEMA study is provided in Appendix E.

Two small low-level outlets are located in the granite block left abutment. The outlets are blocked. Invert elevations at the downstream end of the outlets is approximately 100.6 feet. The outlets are shown in Photograph 12.

Numerous bedrock outcrops are visible at the toe of the spillway and form the downstream channel bed. Elevations of the downstream channel bed vary due to the jagged rock profile. However, the estimated grade at the top of rock/toe of spillway near the centerline of the channel is approximately elevation 99.5±.

The primary spillway is approximately 127 feet long with a height of approximately 10.2 feet. Both the left and right spillway abutments provide auxiliary spilling capacity. The left spillway abutment is approximately 17 feet long with a crest at elevation 111.2 feet. The right spillway abutment is approximately 20 feet long with the crest at elevation 111.6 feet.

Sluiceway

A sluiceway and intake structure provides water to the Faulkner Mills complex located on the right bank of the river just downstream from the dam. The sluiceway is approximately 13 feet wide and is located on the right side of the dam just east of the right spillway abutment. Walls of the sluiceway are constructed primarily of mortared masonry field stone but portions of the sluiceway are concrete lined. Water in the sluiceway passes under a small bridge supporting Faulkner Street and is discharged into a stilling basin located between Faulkner Street and the Faulkner Mill Complex. The outlet gate from the stilling basin is in an open locked position and directs flows through an intake tunnel to a turbine located within the mill complex. Reportedly, the turbine has not been in service since 1972.

A movable gate and concrete weir are located within the sluiceway just east of the Faulkner Street Bridge. The gate is in poor condition and water continuously bypasses the gate. It is unknown whether or not the gate is operational. There are no other controls for the dam.

A small park is located adjacent to the right abutment of the spillway. The park contains a sitting area and a historic marker dedicated to the employees of the Faulkner Mills. The marker is

[2] Federal Emergency Management Agency, *Flood Insurance Study*, town of Billerica, Massachusetts, Middlesex County; February 8, 1985.

shown in Photograph 11. Access to the park is available from a paved parking lot just east of the river and south of Faulkner Street by crossing a pedestrian bridge over the sluiceway.

Mill Pond

The dam impounds water to form the Mill Pond. Surface area of the irregularly shaped pond was estimated using scaled aerial photographs from several sources. The approximate pond shoreline and computation of surface area are shown on Figure 3. Attached as Appendix G are eight aerial photographs obtained from Environmental Data Resources, Inc. and are specifically prepared for this site. The eight photos contained in the EDR Aerial Photo Decade Packaged were taken between 1938 and 2006 and, in general, show the pond shoreline has remained relatively unchanged throughout this period.

During periods of "normal" flow, we estimated that the pond occupies an area of 8.6± acres and contains two branches which are shown on Figure 3. and the aerial photos of Appendix G. The west branch forms the main channel of the Concord River. Within the deeper west branch, the current is typically strong throughout the year. The east branch is much shallower, and during the summer months, has almost no flow as evidenced by an annual growth of algae on the pond surface. The delineation between the algae growth and channel flow are clearly visible in the 1980 and 2006 aerial photographs.

A complete profile for the Concord River is contained in the FEMA Flood Study of 1985. Stream bed elevations and water depths through the west branch of the Mill Pond, along the primary flow path of the river, are shown as elevation 98.5± and 16± feet, respectively. Soundings taken in the shallower east branch of the Mill pond showed the bed level to vary between elevations 108± near the periphery of the pond close to the north shore to elevations 103± at about the centerline of the east branch of the pond. No soundings were made at the south end of the east branch. Based on the general topography and evidence of aquatic plant growth at the south end of the east branch, we expect the water depths to be shallowest in this area. Using the information cited above along with the survey measurements and aerial photographs, we estimate the storage capacity of the Mill Pond at the 100-year flood level is 140 acre-feet.

Faulkner Street Bridge

Located immediately downstream from the primary dam spillway is the Faulkner Street Bridge. Having a width of approximately 32 feet, the bridge carries two lanes of vehicle traffic and a pedestrian sidewalk on the west (downstream) side only. The curved concrete arch bridge has an overall length of approximately 120 feet. Each individual span of the dual span concrete arch is approximately 42 feet long at the base. It appears the center pier and abutment footings are armored and founded directly on the bedrock. The bridge can be seen in Photograph 6.

1.2.5 Operations and Maintenance

The responsible party of the operations and maintenance of the Talbot Mills Dam is CRT Development Realty, LLC of Naples, Florida. The caretaker is Mr. Bruce Henriksen of 80 Washington Street in Norwell, Massachusetts.

There are no formal records kept on the operations and maintenance of this dam, nor are there any written operating procedures for this dam.

1.2.6 DCR Size Classification

Talbot Mills Dam has a height of dam of approximately 10.2 feet and a maximum storage capacity of 140 acre-feet. Refer to Appendix D for definitions of height of dam and storage. 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 as amended by Chapter 330 of the Acts of 2002, Talbot Mills Dam is an intermediate size structure.

1.2.7 DCR Hazard Potential Classification

Talbot Mills Dam is located upstream of the Faulkner Street Bridge. It appears that a failure of the dam at maximum pool will not result in significant damage to the bridge or other downstream structures based on our review of the available flood records.

A review of the aerial photographs and topographic maps of the Concord River downstream of the Talbot Mills Dam indicated that the potential damage to habitable structures will be minor since no structures are in the direct path of the probable flood wave produced upon failure of the dam. In addition, both the Town of Billerica and City of Lowell have adopted zoning and conservation bylaws which are consistent with FEMA recommendations for construction within the floodway. As a result, not more than a 2.0-foot incremental rise of flood water above the lowest ground elevation adjacent to the outside foundation walls, nor more than a 2.0-foot incremental rise of flood water above the lowest habitable floor elevation of structures within the floodway is likely to occur in the event of dam breach at the Talbot Mills Dam during the design flood event.

Given the minimal rise in flood water downstream in the even of a dam failure, the risk of loss of life and damage to homes, industrial or commercial facilities, secondary highways or railroads is considered to be low. Additionally, flooding as a result of a dam breach to the Talbot Mills Dam is unlikely to cause interruption of use or service or relatively important facilities located downstream of the dam.

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 as amended by Chapter 330 of the Acts of 2002, Talbot Mills Dam should be classified as a Significant (Class II) hazard potential dam. The Hazard Potential Classification recommendation is consistent with the Hazard Potential Classification on record with the Office of Dam Safety for Talbot Mills Dam.

1.3 Pertinent Engineering Data

1.3.1 Drainage Area

The drainage area for Talbot Mills Dam is approximately 370 square miles and extends through the communities of Concord Carlisle, Bedford and Billerica. The Concord River is formed by the confluence of the Assabet and Sudbury Rivers, approximately one mile northwest of the center of Concord. The river system is often referred to as the Sudbury-Assabet-Concord (SuAsCo) river basin.

The Concord River flows sluggishly in a general northerly direction for approximately 16 miles before joining the Merrimack River in Lowell and falls 62 feet over its course. Approximately 50 feet of drop occurs at dam in the first mile of the river in Lowell; downstream from the Talbot Mills Dam. The 11.5-mile reach of the Concord River from its confluence with the Assabet an Sudbury Rivers in Concord to North Billerica is controlled by the Talbot Mills Dam

1.3.2 Reservoir

See Table 1.1 for data about normal, maximum, and spillway design flood (SDF) pools.

	Length[1] (feet)	Width[1] (feet)	Surface Area (acres)	Storage Volume (acre-feet)
Normal Pool	1300	720	8.6	110
Maximum Pool	1360	780	12.6	162
SDF Pool	--	--	10.7	140

1. Maximum dimension

1.3.3 Discharges at the Dam Site

Storm Event	Peak Discharges at Talbot Mills Dam (cfs)
10 Year	2,940
50 Year	4,660
100 Year	5,675
500 Year	8,395

1.3.4 General Elevations (feet – Referenced to NGVD of 1929)

A.	Top of Dam	114.6
B.	Spillway Design Flood Pool (100 Yr.)	114.2
C.	Normal Pool	110.5
D.	Spillway Crest	109.7
E.	Upstream Water at Time of Inspection	110.5
F.	Downstream Water at Time of Inspection	103.6
G.	Streambed at Toe of the Dam	99.5
H.	Low Point along Toe of the Dam	99.5

1.3.5 Main Spillway Data

A.	Type	Broad Crested
B.	Length	127 feet
C.	Invert Elevation	109.7 feet

D.	Upstream Channel	98.5 feet
E.	Downstream Channel	99.5 feet
F.	Downstream Water	103.6

1.3.6 Lower-Level Outlet

A.	Type	Sluiceway with Gate
B.	Number of bays:	2 (at left spillway abutment)
C.	Invert	105.7 feet
D.	Bay Size	13 feet open channel

1.3.7 Design and Construction Records and History

No construction records or design data were available for review during the inspection and preparation of this report.

1.3.8 Operating Records

There were no operating records or records of rainfall or pond height for this dam available at the time of inspection.

1.4 Summary Data Table

1.1 Summary Data Table

Required Phase I Report Data	Data Provided by the Inspecting Engineer
National ID #	MA 00774
Dam Name	Talbot Mills Dam
Dam Name (Alternate)	Old Elm Street/Old Elm Street Extension
River Name	Concord River
Impoundment Name	Mill Pond (a.k.a. Talbot Mills Pond or Faulkner Mills I
Hazard Class	Significant
Size Class	Intermediate
Dam Type	Masonry/Earth (Spillway: Masonry Gravity)
Dam Purpose	Recreational and flood control purposes
Structural Height of Dam (feet)	16±
Hydraulic Height of Dam (feet)	10.2
Drainage Area (sq. mi.)	370
Reservoir Surface Area (acres)	10.7
Normal Impoundment Volume (acre-feet)	110±
Max Impoundment Volume ((top of dam) acre-feet)	162±
SDF Impoundment Volume* (acre-feet)	140
Spillway Type	Broad Crest Granite Masonry
Spillway Length (feet)	127
Freeboard at Normal Pool (feet)	5
Principal Spillway Capacity* (cfs)	6030
Auxiliary Spillway Capacity* (cfs)	620
Low-Level Outlet Capacity* (cfs)	Unknown - Gate is non-functional
Spillway Design Flood* (flow rate - cfs)	100 year / 5,675 cfs
Winter Drawdown (feet below normal pool)	0
Drawdown Impoundment Vol. (acre-feet)	110
Latitude	42.59173° North
Longitude	71.28400° East
City/Town	Billerica
County Name	Middlesex
Public Road on Crest	Faulkner Street
Public Bridge over Spillway	Faulkner Street Bridge
EAP Date (if applicable)	0
Owner Name	CRT Development Realty, LLC
Owner Address	242 5th Street South
Owner Town	Naples, FL 34102
Owner Phone	978-314-8080
Owner Emergency Phone	0
Owner Type	Private
Caretaker Name	Mr. Bruce Henriksen
Caretaker Address	80 Washington Street, Building S
Caretaker Town	Norwell, MA 02061
Caretaker Phone	781-878-9111
Caretaker Emergency Phone	0
Date of Field Inspection	4/30/2021
Consultant Firm Name	Geotechnical Consultants, Inc.
Inspecting Engineer	Daniel Kenneally
Engineer Phone Number	508-229-0900

*In the event a hydraulic and hydrologic analysis has not been completed for the dam, indicate "No H&H" in this table, recommendation section shall include specific recommendation to hire a qualified dam engineering consultant to conduct analysis to determine spillway adequacy in conformance with 302 CMR 10.00.

SECTION 2

2.0 INSPECTION

2.1 Visual Inspection

Talbot Mills Dam was inspected on 30 April 2021. At the time of the inspection, the weather was cloudy and in the 50's. On Thursday, 29 April 2021 approximately 1.3in of rainfall had occurred prior to our inspection. Photographs to document the current conditions of the dam were taken during the inspection and are included in Appendix A. The level of the impoundment was 110.5 on 30 April 2021. Underwater areas were not inspected. A copy of the inspection checklist is included in Appendix B.

2.1.1 General Findings

In general, Talbot Mills Dam was found to be in fair condition due to the lack of routine maintenance and operational procedures. The specific concerns are identified in more detail in the sections below:

2.1.2 Dam

Abutments
The left and right abutments appear sound with no evidence of erosion, significant seepage or cracking. Both abutments of the spillway appear to be founded on bedrock.

Embankments
The left embankment is of unknown construction but most likely consists of an earthen structure support Old Elm Street/Faulkner Street. Immediately downstream of the left embankment is the Talbot Mills Complex. No inspection was made of the interior space of the mill complex.

Upstream Face
The upstream face of the left embankment is constructed with a near vertical facing wall. Overall, the wall is approximately 133 long with a 60-foot-long concrete facing at the south end and 73-foot-long stone masonry face between the concrete wall and the primary abutment to the north. Intake gates for the Talbot Mills complex are located at the concrete wall. However, the gates are not operational and the intake tunnels have reportedly been infilled with concrete.

Crest
The crest of the embankment is nearly flat and level and supports the paved surface of Old Elm Street/Faulkner Street. This portion of the road leading to the Faulkner Street Bridge shows no indications of erosion or undue wear from traffic (either pedestrian or vehicular) and the area is well-maintained. Several trees are located at the upstream side of the crest; near the Talbot Mills intake gates

Downstream Face
The Talbot Mills complex is located at the downstream face of the embankment. No inspection was made of the interior space of the mill complex.

Right of the Spillway – This area is comprised of a portion of the Faulkner Street Embankment which is located between the right spillway abutment, the sluiceway and the stilling basin. This area is well maintained.

Drains
There were no drains in use or visible at this dam at the time or our inspection.

Instrumentation
There were no instruments at this dam at the time of our inspection.

Access Roads and Gates
Access to the dam is via Old Elm and Faulkner Streets. The intake gates at the left side of the dam which formerly provided water to the Talbot Mills are not operational and the intake tunnels have reportedly been infilled with concrete.

A movable gate and concrete weir are located within the sluiceway just east of the Faulkner Street Bridge. The gate is in poor condition and water continuously bypasses the gate. It is unknow whether or not the gate is operational.

2.1.3 Appurtenant Structures

- Primary Spillway

Although the primary spillway was not visible at any time during our site visit due to continued flow, both the left and right abutments were visible and appeared to be constructed of masonry granite blocks. Information contained in the previous inspection report characterize the spillway as a granite block structure forming a broad crested weir. During our site inspection on 30 April 2021, approximately 6-inches of water was flowing across the top of the spillway. It appears the spillway crest is square-cut with a near vertical face.

The primary spillway is approximately 127 feet long with a height of approximately 10.2 feet. Direct measurement of the top of spillway elevation was not possible due to the continuous flow during or site visit. The top elevation at the primary spillway is estimated to be at elevation 109.7±. This elevation is consistent with the data provided in the FEMA study[3] of the Concord River and the elevation shown on the river profile. A complete copy of the FEMA study is provided in Appendix E.

The primary spillway is flanked by small granite block abutments. A portion of the right abutment is constructed of cast-in-place concrete. At flood stages, the abutments serve as auxiliary spillways and provide additional discharge capacity. Spot grades at the top of the abutments range between elevation 111.2± to 111.6± with lengths of approximately 17 feet at the left abutment and 20 feet at the right abutment.

[3] Federal Emergency Management Agency, *Flood Insurance Study*, Town of Billerica, Massachusetts, Middlesex County; February 8, 1985.

Numerous bedrock outcrops are visible at the toe of the spillway and form the downstream channel bed. Elevations of the downstream channel bed vary due to the jagged rock profile which can be seen in Photographs 2, 4, 5, 6 and 7. However, the estimated grade at the top of rock/toe of spillway near the centerline of the channel is approximately elevation 99.5±.

A small tree which was once thriving amongst the jagged bedrock channel just downstream of the primary spillway is now just a stump. This tree was noted in the 1999 report prepared by Weston & Sampson and the 2009 and 2015 reports prepared by Geotechnical Consultants and is clearly visible in the photographs contained in those reports.

Based on the FEMA study, the flood elevation of the 100-year storm event at the Talbot Mills Dam crests at elevation 114.7 feet and the estimated river flow at the dam is 5,675 cfs. A check of the spillway capacity is provided in Appendix F. At the 100-year design level, we estimate the spillway capacity to be approximately 6,650 cfs. Our estimate compares favorably with the estimated capacity provided in the 1999 Weston & Sampson report and the 2009 and 2015 Geotechnical Consultants reports. Therefore, the spillway, in its current state is adequate to pass the design flood.

- Low-Level Outlets

There is no operational low-level outlet for the dam. A sluiceway and intake structure provides water to the Faulkner Mills complex located on the right bank of the river just downstream from the dam. The sluiceway is approximately 13 feet wide and is located on the right side of the dam just east of the right spillway abutment. Walls of the sluiceway are constructed primarily of mortared field stone but portions of the sluiceway are concrete lined. Water in the sluiceway passes under a small bridge supporting Faulkner Street and is deposited into a stilling basin located between Faulkner Street and the Faulkner Mill complex. From the stilling basin, the outlet gate is in a open locked position and directs flows to a turbine which reportedly has not been in service since 1972.

A movable gate and concrete weir are located within the sluiceway just east of the Faulkner Street Bridge. The gate is in poor condition and water continuously bypasses the gate. It is unknown whether or not the gate is operational. There are no other controls for the dam.

Two small low-level outlets are located in the granite block left abutment of the spillway. The outlets are blocked and the conditions of the upstream end of the outlets was not visible for inspection. Invert elevations at the downstream end of the outlets is approximately 110.6 feet. The outlets are shown in Photograph 12.

2.1.4 Downstream Area

Downstream of the dam are the Talbot Mills and Faulkner Mills complexes. Both of these complexes are founded on the exposed bedrock walls adjacent to the downstream channel. Beyond the mill complexes, is a series of floodplains and wetlands areas.

2.1.5 Reservoir Area

The Talbot Mill Dam impounds water to form the Mill Pond. Surface area of the irregularly shaped pond was estimated using scaled aerial photographs from several sources taken over many years. For all years reviewed, the pond shoreline was relatively unchanged.

Th pond is comprised of two branches. The west branch forms the main channel of the Concord River and is the deeper of the two while the east branch is much shallower. During the summer months, the east branch has almost no flow as evidenced by an annual growth of algae on the pond surface. The topography surrounding the pond is relatively flat and level with negligible risk of slides which potentially could affect the water level. A wetland area is located at the south end of the east branch which provides significant reserve capacity during periods of flooding.

2.2 Caretaker Interview

The caretaker is Mr. Bruce Henriksen of 80 Washington Street, Building S, in Norwell, Massachusetts. Mr. Henriksen was interview on 4 May 2021. He has taken over the caretaker position from William Martin since our inspection in 2009. At the time or our interview Mr. Henriksen did not know of a maintenance plan or any work that had taken place on the dam since he became involved.

According to Mr. Robert Martin, although originally part of the Talbot Mills and Faulkner Mills properties, when the mill complexes were sold in recent years, the dam site remained the possession of CRT Development Realty, LLC. Although the dam provided water power to the mill complexes, it is presently used exclusively for recreation, flood control and kept for its historical significance. Mr. Martin also stated that have been in serious discussions with state officials and are fairly far along in the process to breach the dam. He said studies to breach the dam have come back with favorable results.

Mr. Martin indicated that no formal operation or maintenance plan exist for the dam and due to the formerly disputed ownership, no maintenance has been performed at the dam for several years. He did state that some level of clearing debris has taken place since the last inspection.

2.3 Operation and Maintenance Procedures

At the time of the inspection there were no formal operation or maintenance plans available.

2.3.1 Operational Procedures

The dam spillway is uncontrolled, which means that the fixed elevation of the spillway crest controls the level of impoundment. No other operational procedures are in place, or are required, for this dam.

2.3.2 Maintenance of Dam and Operating Facilities

There are no maintenance plans available for this dam.

2.4 Emergency Warning System

There was no information found on an emergency warning system for this dam and it was not required at the time of the last inspection. However, since the last inspection the requirements have been amended and in 302 CMR 10.00: Dam Safety, Department of Conservation and Recreation, it is stated that all dams classified as high hazard potential and significant hazard potential shall submit an Emergency Action Plan (EAP) to the Department of Conservation and Recreation (DCR) and the Massachusetts Emergency Management Agency (MEMA). We understand this dam may be breached in the near future but if it is not, then a EAP should be submitted to the DCR and MEMA.

2.5 Hydrologic/Hydraulic Data

Talbot Mills Dam is an intermediate size, Class II (Significant) hazard structure and in accordance with Massachusetts Law, the spillway design flood (SDF) for the site is ¼ PMF (100 year) storm event. A FEMA flood study was completed for the Town of Billerica in 1985. A copy of the study entitled *Flood Insurance Study*, Town of Billerica, Massachusetts, Middlesex County; February 8, 1985 is included as Appendix E. A summary of available information is provided below:

A. Spillway Design Flood (SDF) Return Period:	¼ PMF
B. Precipitation (inches) and methodology:	FEMA
C. SDF Inflow (cfs):	5,675
D. SDF Outflow (cfs):	--
E. Principal Spillway Capacity (cfs):	5,675
F. Auxiliary Spillway Capacity (cfs):	620
G. Low-level Outlet Capacity (cfs):	N/A
H. Percentage of the SDF that can be safely routed without overtopping:	100

Based on the FEMA study, the flood elevation of the 100-year storm event at the Talbot Mills Dam crests at elevation 114.7 feet and the estimated river flow at the dam is 5,675 cfs. A check of the spillway capacity is provided in Appendix F. At the 100-year design level, we estimate the spillway capacity to be approximately 6,650 cfs. Our estimate compares favorably with the estimated capacity provided in the 1999 Weston & Sampson report and the 2009 and 2015 Geotechnical Consultants reports. Therefore, the spillway, in its current state is adequate to pass the design flood.

2.6 Structural and Seepage Stability

2.6.1 Embankment Structural Stability

Based on our inspection and review, as well as historical evidence, the dam is stable. The spillway appears intact with a level crest. The impoundment side walls are vertical and level. The embankment supports Old Elm/Faulkner Street is paved and in good condition. There are no signs of vehicular ruts, foot trails, sloughing or animal burrows.

2.6.2 Structural Stability of Non-Embankment Structures

From our observations the Talbot Mills and Faulkner Mills complexes are founded on the exposed bedrock walls adjacent to the downstream channel. The Faulkner Street Bridge, as it appears, the center pier and abutment footings are armored and founded directly on the bedrock. We recommend that the necessary data should be collected to complete an analysis of the structural stability of non-embankment structures in accordance with 302 CMR 10.14.

2.6.3 Seepage Stability

There was no significant seepage observed during our site visit on 30 April 2021. No seepage instrumentation was available and it appears tat all field stone and concrete is founded on rock.

SECTION 3

3.0 ASSESSMENTS AND RECOMMENDATIONS

3.1 Assessments

In general, the overall condition of Talbot Mills Dam is Fair. The dam was found to have the following deficiencies:

1. Lack of operation and maintenance plan.
2. Lack of routine oversight of the dam, particularly during a storm event.
3. Lack of working controls.
4. Lack of functional low-level outlet.
5. Leaks and inability to control water at the sluiceway gate and weir.
6. Remove tree trunks and branches just upstream of the spillway.

Previously identified deficiencies from prior inspection reports are summarized in the table below. The table also presents the present condition or resolution of the deficiencies.

Previously Identified Deficiency	***Resolution or Current Condition***
Lack of operation and maintenance plan.	Unresolved, no apparent change since last inspection.
Lack of routine oversight of the dam, particularly during a storm event.	Unresolved, no apparent change since las inspection.
Lack of working controls.	Unresolved, and appears to be unchanged since last inspection.
Lack of functional low-level outlet	Unresolved, and appears to be unchanged since last inspection.
Leaks and inability to control water at sluiceway gate and weir.	Unresolved, no apparent change since last inspection.

The following recommendations and remedial measures generally describe the recommended approach to address current deficiencies at the dam. Prior to undertaking recommended maintenance, repairs, or remedial measures, the applicability of environmental permits needs to be determined for activities that may occur within resource areas under the jurisdiction of local conservation commissions, MADEP, or other regulatory agencies.

3.2 Studies and Analyses

In 302 CMR 10.00: Dam Safety, Department of Conservation and Recreation, it is stated that all dams classified as high hazard potential and significant hazard potential shall submit an Emergency Action Plan (EAP) to the Department of Conservation and Recreation (DCR) and the Massachusetts Emergency Management Agency (MEMA). We understand this dam may be breached in the coming months but if it is not, then a EAP needs to be submitted to the DCR and MEMA. We also recommend that an Operations and Maintenance (O&M) manual should be implemented.

3.3 Recurrent Maintenance Recommendations

There are no routine maintenance procedures in place for this dam. A comprehensive maintenance and "routine" inspection plan should be implemented.

1. Regular maintenance activities should prevent growth of unwanted vegetation on the embankment, and pond periphery to reduce the potential for debris to impede flow over the spillway and downstream channel.

2. Clear debris from the spillway and downstream channel on a regular basis. Inspect the spillway for accumulation of debris particularly after storm events or other periods of high runoff.

3. Regularly inspect the dam for indications of seepage or erosion. Particular emphasis should be placed on:

   - the spillway walls
   - portions of the impoundment facing walls immediately adjacent to the spillway on the left side of the dam
   - the fieldstone wall immediately downstream of the spillway and north of the Faulkner Street Bridge
   - removal of debris and unwanted vegetation from the sluiceway and stilling basin on the right side of the primary spillway.

3.4 Minor Repair Recommendations

These recommendations may require construction by a contractor experienced in dam repair.

- Remove trees on the upstream face of the roadway embankment near the non-functional intake gates to the Talbot Mills Complex.

- Remove tree trunks and branches just upstream of the primary spillway.

- Repair/replace the sluiceway and stilling basin gates so that the gates are operational and can provide emergency bypass control.

- Inspect the interior of the Talbot Mills complex, particularly the downstream end of the former intake structures. The infilling of the intake tunnels on the left side of the dam rendered these intakes inoperable. Given the configuration of the dam, proximity of the mill complexes, and changing ownership of the downstream properties, the re-construction of a low-level outlet in this area is impractical.

3.5 Remedial Modifications Recommendations

Repair/replace the left spillway abutment to provide an operational low-level outlet.

3.6 Alternatives

At this time the owner is looking into the possibility of breaching this dam. At time of the inspection many fish were observed downstream at the toe of the dam. Breaching of the dam would allow the fish to travel further upstream.

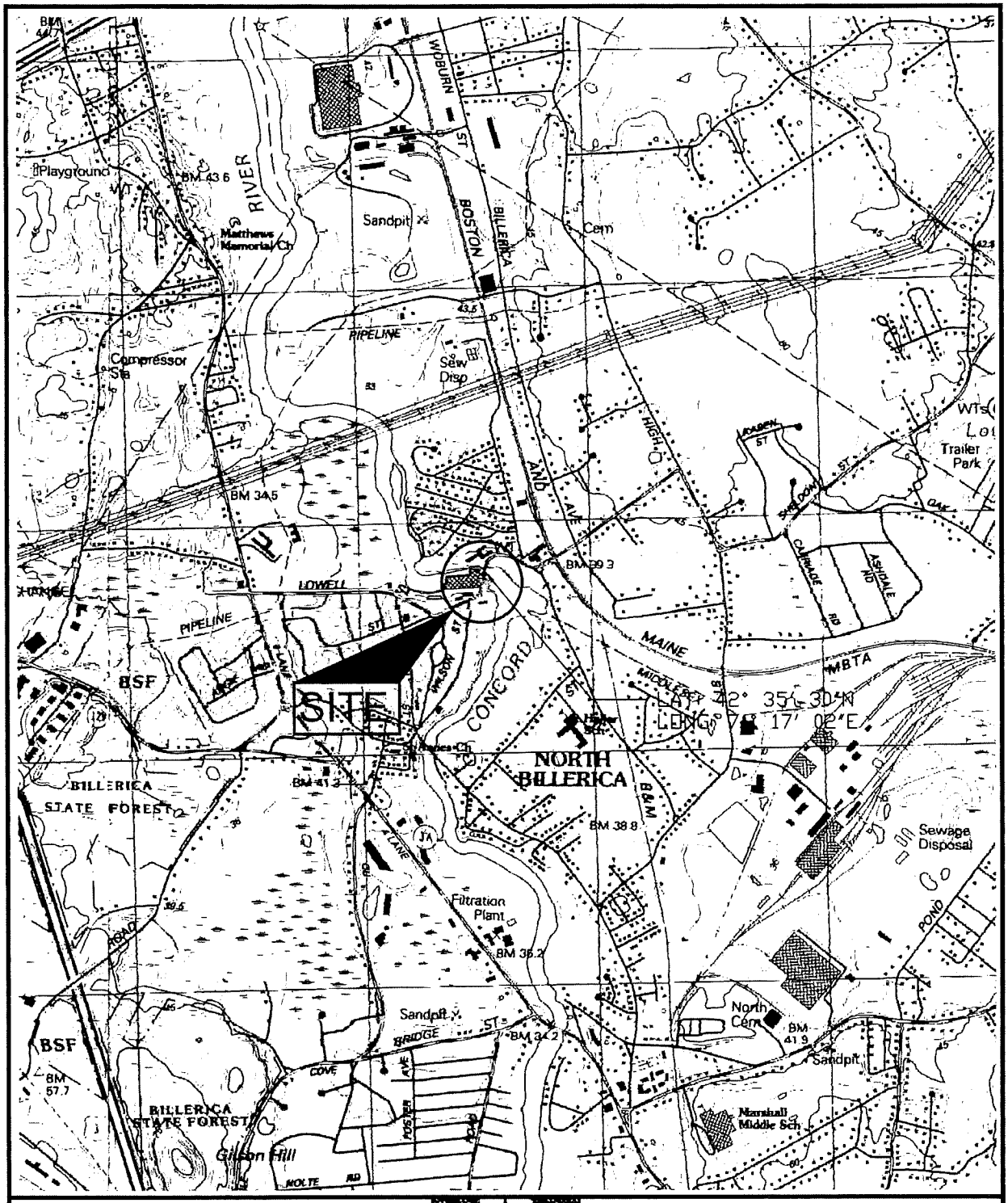
3.7 Opinion of Probable Construction Costs

The following conceptual opinions of probable construction costs have been developed for the recommendations and remedial measures noted above. The costs 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

Talbot Mills Dam

• Remove trees	$5,000
• Repair/replace the sluiceway and stilling basin gates	$60,000
• Repair/replace the left spillway and install gates	$40,000

FIGURES



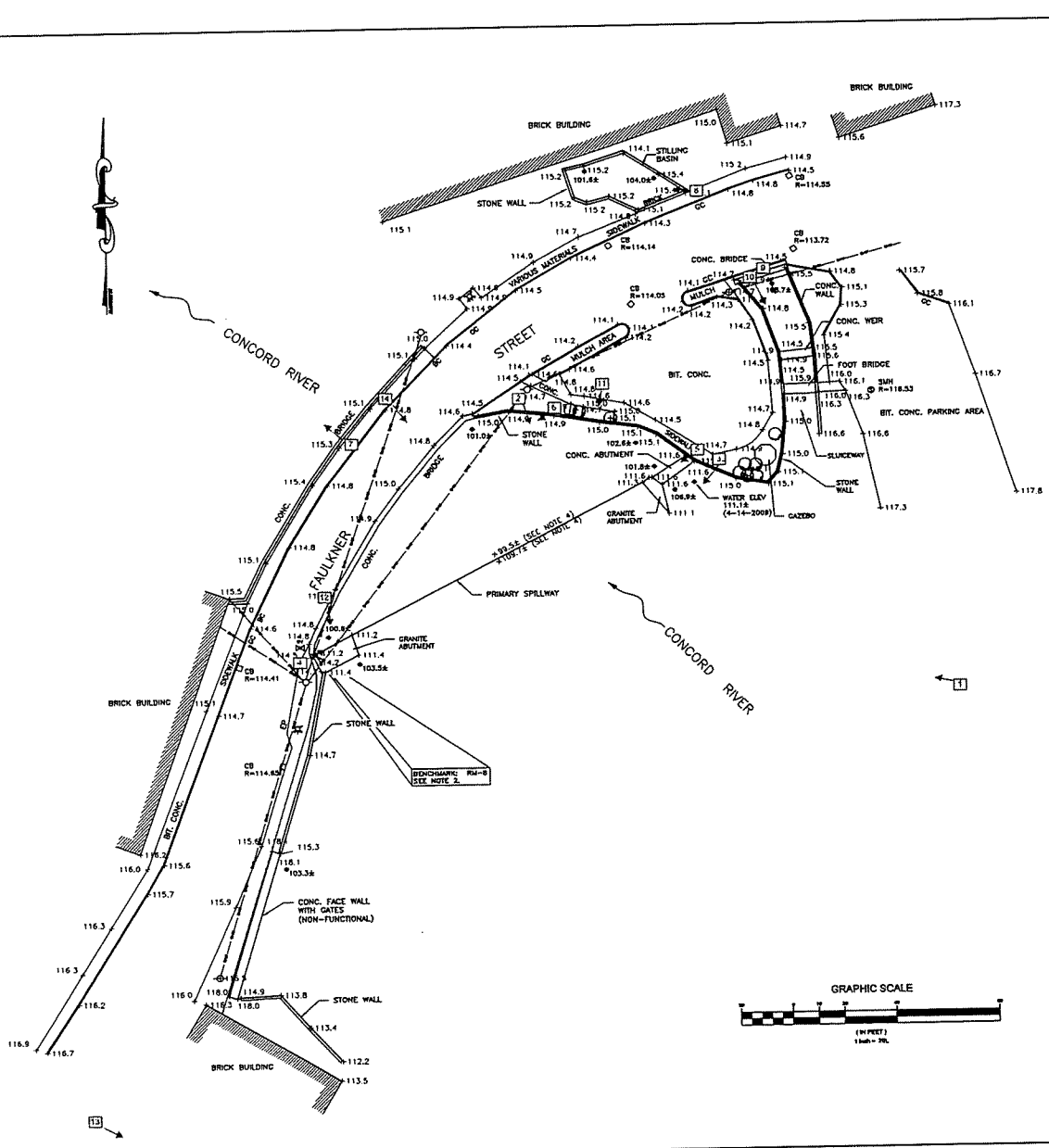
TALBOT MILLS DAM
Billerica, Massachusetts
NID ID# MA00774

LOCUS PLAN
U.S.G.S. QUADRANGLE
Billerica
APPROX. SCALE 1:24 000

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, MA 01752
(508)229-0900 FAX (508)229-2279

GCI Project # 2215032

Figure 1.



NOTES:

1. THE FIELD WORK WAS PERFORMED ON APRIL 14, 2009. A MAGNETIC NORTH READING WAS OBTAINED DURING THE FIELD WORK.
2. THE STARTING VERTICAL BENCHMARK IS THE NORTHEAST SIDE OF THE TOP OF GRANITE BLOCK, AT THE SOUTHWEST END OF THE TALBOT MILL DAM NEAR FAULKNER STREET, ON THE SOUTHWEST SIDE OF THE SPILLWAY AT GROUND LEVEL. A SQUARE CUT WAS NOT FOUND ON THE GRANITE BLOCK. ELEVATION IS 114.28 (RM-8) ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 AS DEPICTED ON THE FEMA FLOOD MAP 250183, PANEL 9 OF 10 DATED AUGUST 5, 1985. A BENCHMARK WAS CHECKED AS PROVIDED BY THE BILLERICA ENGINEERING DEPARTMENT SINCE THE SQUARE CUT WAS NOT VISIBLE. THE BENCHMEAK VERIFIED THE ACCURACY OF RM-8. IT IS DESCRIBED AS A HYDRANT SPINDLE AT THE SOUTHEAST CORNER OF LOWELL STREET AND TALBOT STREET (ELEV. 131.39)
3. THE SOLE PURPOSE OF THIS PLAN IS TO DEPICT PLANIMETRIC AND SPOT ELEVATIONS IN THE VICINITY OF THE TALBOT MILL DAM.
4. GRADES AT MID-POINT OF SPILLWAY WERE TAKEN FROM FEMA FLOOD INSURANCE STUDY DATED FEBRUARY 5, 1985.

LEGEND:

BIT. CONC.	BITUMINOUS CONCRETE
GRANITE CURB	GRANITE CURB
CONC.	CONCRETE
CB	CATCHBASIN
RIM	RIM
SMH	SEWER MANHOLE
+110.0	SPOT ELEVATION
110.0±	GROUND ELEVATION (UNLESS NOTED OTHERWISE)
	TREE
	EDGE OF PAVEMENT
	BITUMINOUS CONCRETE CURB
	UTILITY POLE
OHW	OVERHEAD WIRES

Talbot Mills Dam MA00774
North Billerica, Massachusetts
Dam Site Plan
Date of Inspection: April 20, 2021 Figure 2.

DWG No. 09-011 SITE PLAN

EAGLEBROOK
EAGLEBROOK ENGINEERING & SURVEY, LLC
199 NEWBURY STREET
DANVERS, MASS. 01923
TEL: (781) 771-7310

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, MA 01752
Phone: (508)229-0900
FAX (508)229-2279
www.geotechnical.us

TALBOT MILL DAM
LOCATED IN
BILLERICA, MASSACHUSETTS
PREPARED FOR
GEOTECHNICAL CONSULTANTS, INC.
201 BOSTON POST ROAD WEST
MARLBOROUGH, MASSACHUSETTS

RICHARD PIZZI 33949 REGISTERED PROFESSIONAL ENGINEER

DATE:
APRIL 20, 2009

NO:	REVISIONS: DESCRIPTION:	DATE:
1	Spillway Grades	5-12-09

DRAWN BY: MJI
CHECKED BY: MJI/RP
SCALE: AS NOTED

PROJECT NO. 09-011

TITLE:
SITE PLAN

EX-1

SHEET No. 1 OF 1

0 150 300 600

1:150 FEET

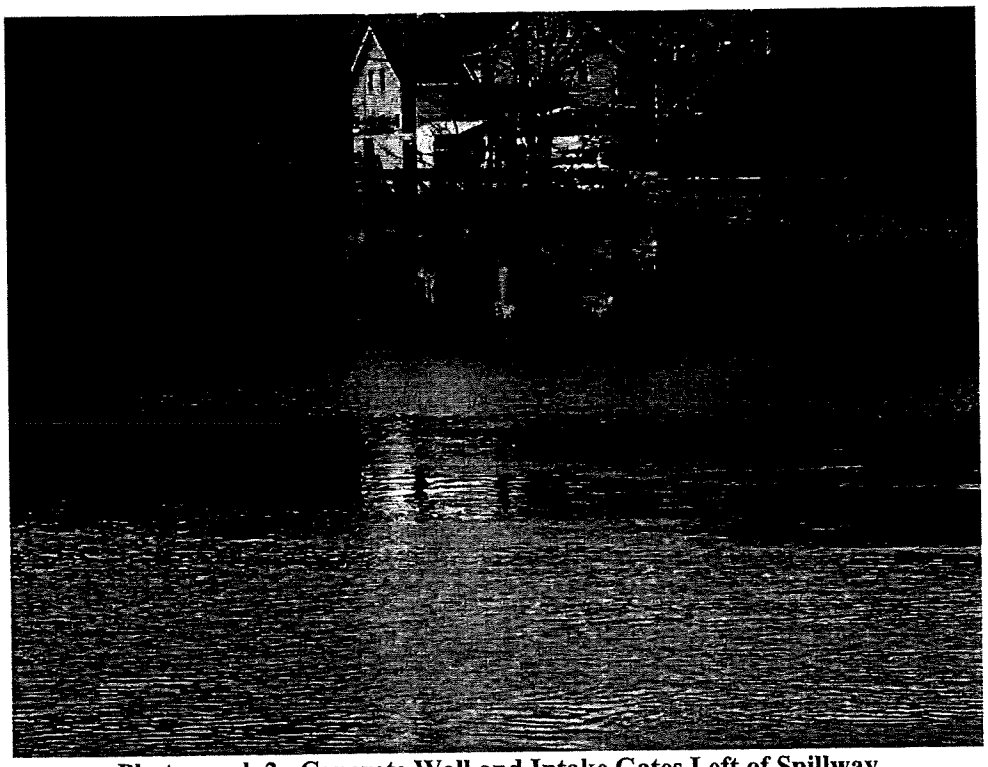
Geotechnical Consultants, Inc. 201 Boston Post Road West Marlborough, MA 01752 (508)229-0800 FAX (508)229-2279	Rev	Date	TALBOT MILLS DAM FAULKNER STREET Billerica, Massachusetts
	0	30 APRIL 2021	

FIG. 3

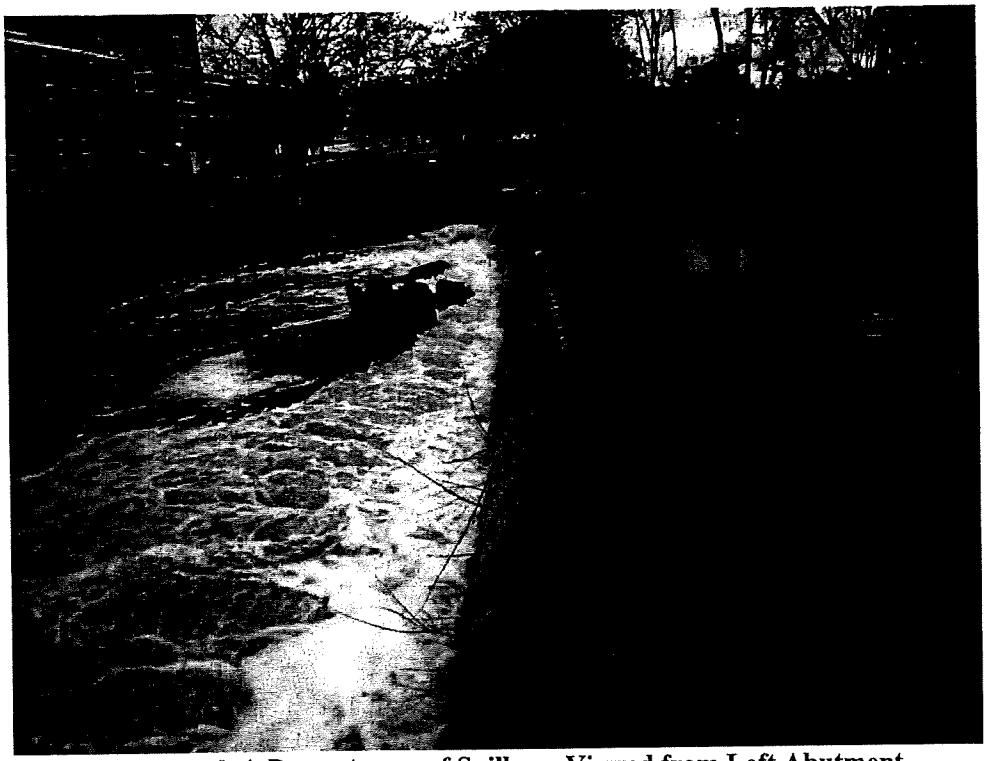
APPENDIX A
Photographs

Photograph 1. Overview of Talbot Mills Dam Looking Downstream

Photograph 2. Overview of Talbot Mills Dam Looking Upstream

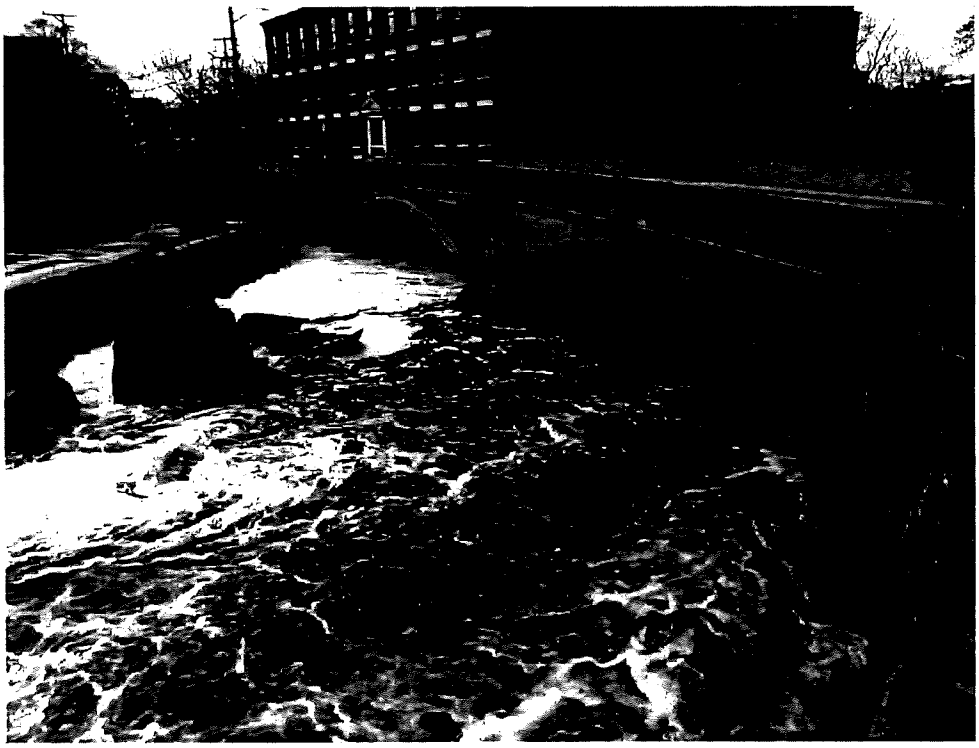


Photograph 3. Concrete Wall and Intake Gates Left of Spillway

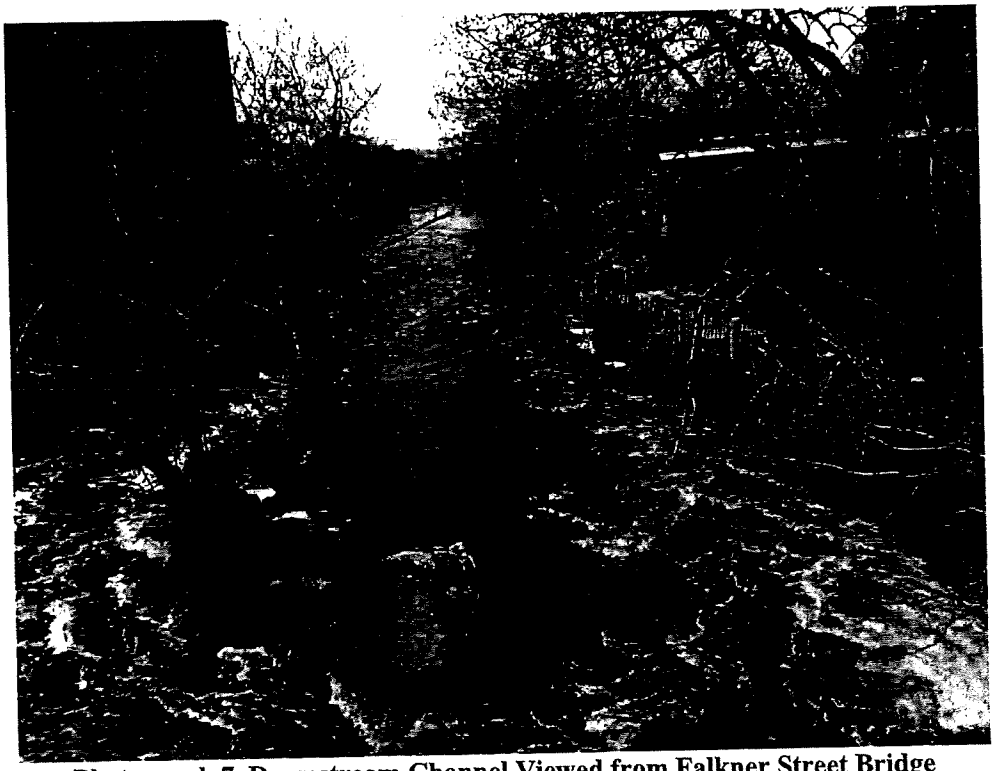


Photograph 4. Downstream of Spillway Viewed from Left Abutment

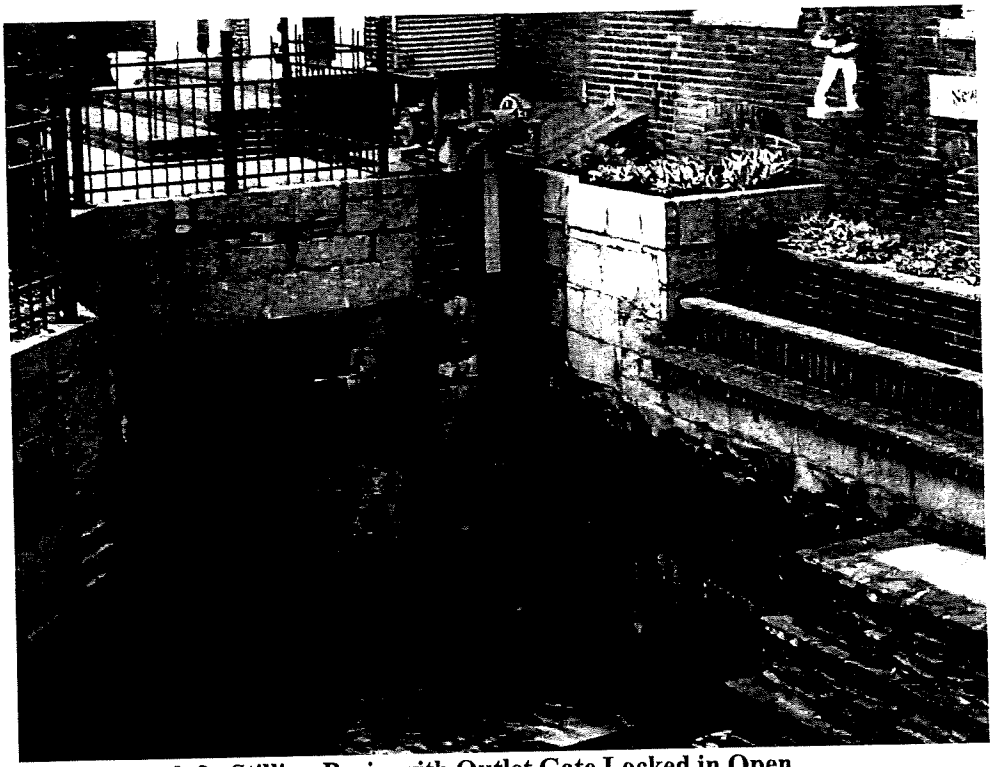
Photograph 5. Downstream of Spillway Viewed from Right Abutment



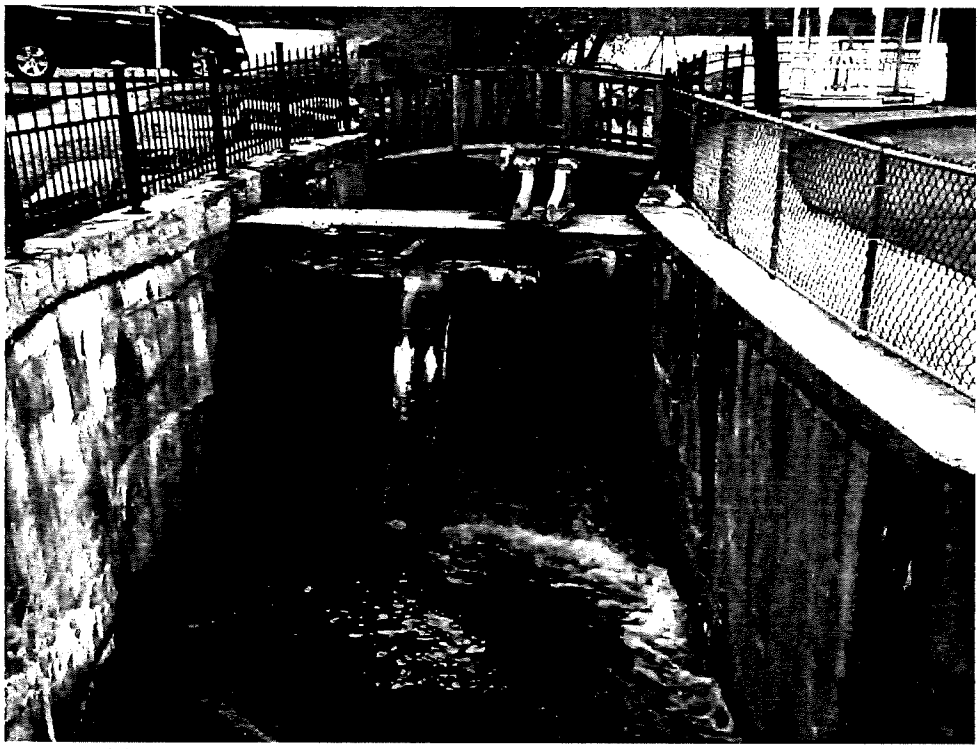
Photograph 6. Falkner Street Bridge Viewed from Right Abutment



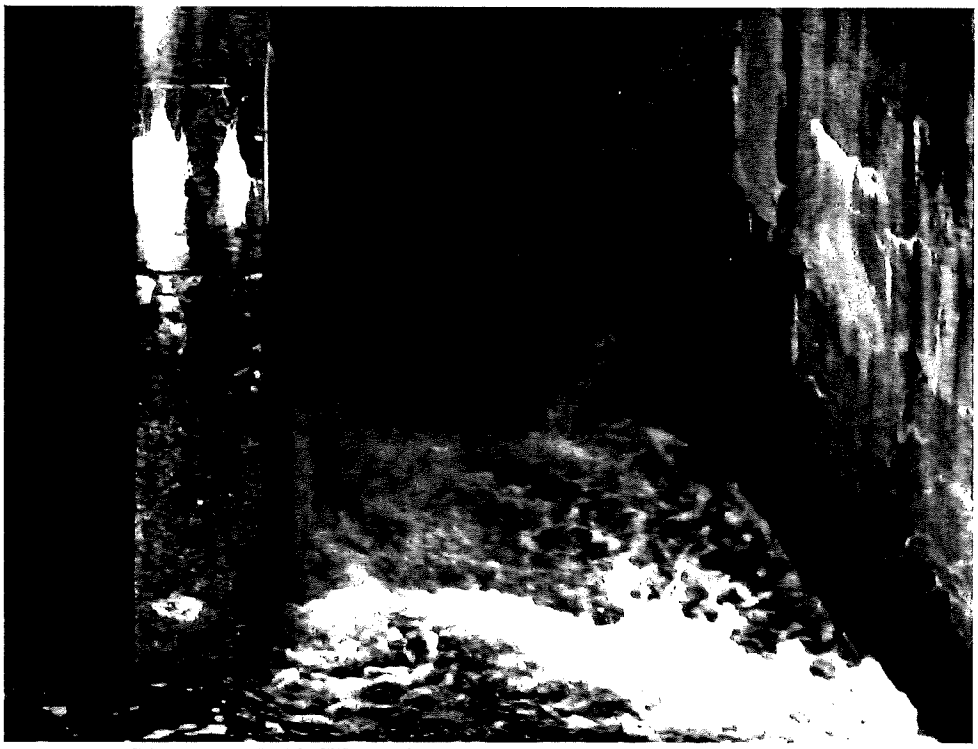
Photograph 7. Downstream Channel Viewed from Falkner Street Bridge



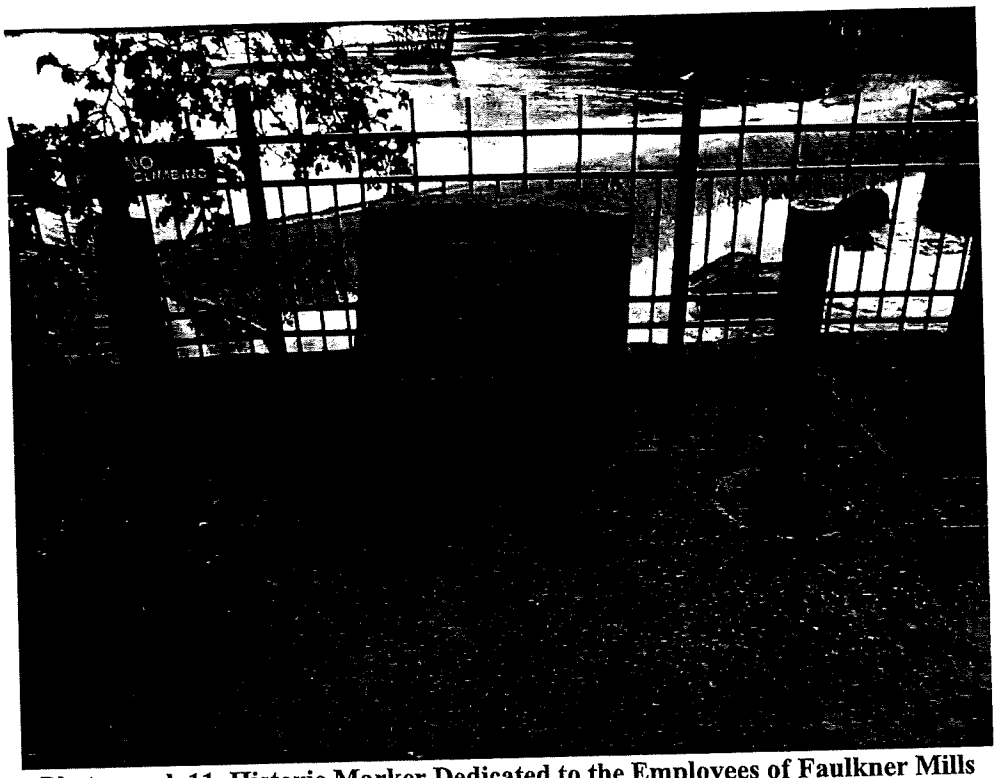
Photograph 8. Stilling Basin with Outlet Gate Locked in Open



Photograph 9. Sluiceway with Movable Gate and Concrete Weir

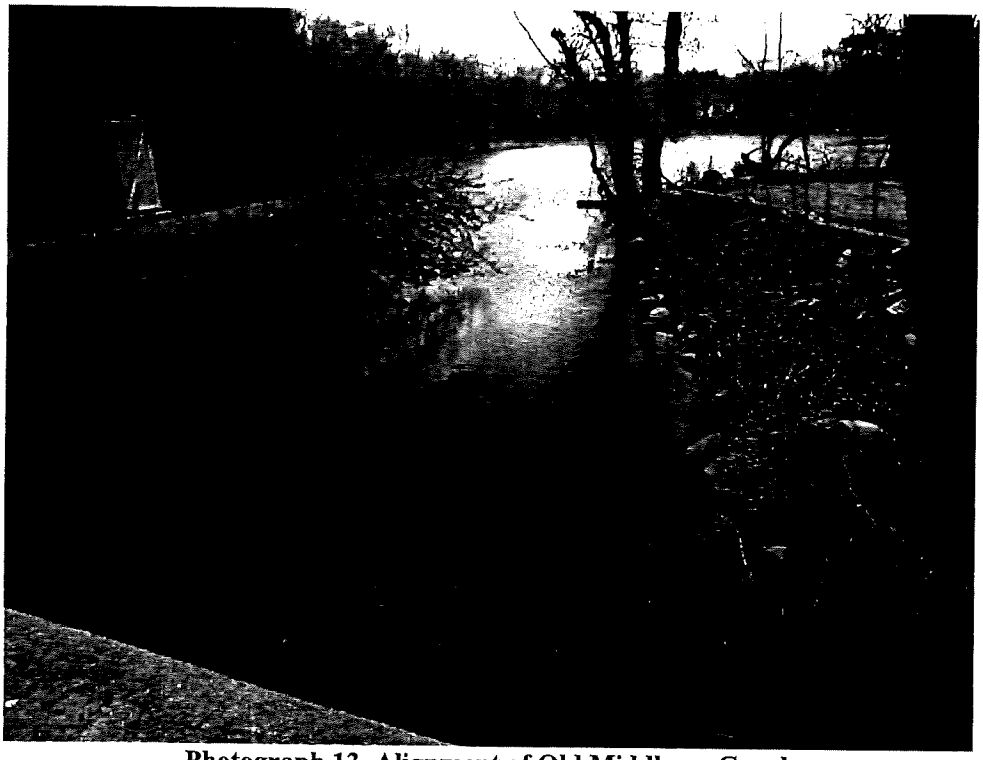


Photograph 10. Water Seepage Through the Sluiceway Gate



Photograph 11. Historic Marker Dedicated to the Employees of Faulkner Mills

Photograph 12. Lower Level Outlet at Left Spillway Abutment



Photograph 13. Alignment of Old Middlesex Canal

Photograph 14. Overview of Reservoir

APPENDIX B
Inspection Checklist

DAM SAFETY INSPECTION CHECKLIST

NAME OF DAM: Talbot Mills Dam

STATE ID #: 4-9-31-1

REGISTERED: ☑ YES ☐ NO

NID ID #: MA 00774

STATE SIZE CLASSIFICATION: Intermediate

STATE HAZARD CLASSIFICATION: Significant

CHANGE IN HAZARD CLASSIFICATION REQUESTED?: No

DAM LOCATION INFORMATION

CITY/TOWN: Billerica

COUNTY: Middlesex

DAM LOCATION: 67 Faulkner Street
(street address if known)

ALTERNATE DAM NAME: Old Elm Street/Old Elm Street Extension

USGS QUAD.: Billerica

LAT.: 42.59173° North

LONG.: 71.28400° East

DRAINAGE BASIN: Concord

RIVER: Concord River

IMPOUNDMENT NAME(S): Mill Pond (a.k.a. Talbot Mills Pond or Faulkner Mills Pond)

GENERAL DAM INFORMATION

TYPE OF DAM: Masonry/Earth (Spillway: Masonry Gravity)

OVERALL LENGTH (FT): 316

PURPOSE OF DAM: Recreational and flood control purposes

NORMAL POOL STORAGE (ACRE-FT): 110±

YEAR BUILT: circa 1828

MAXIMUM POOL STORAGE (ACRE-FT): 162±

STRUCTURAL HEIGHT (FT): 16±

EL. NORMAL POOL (FT): 110.5±

HYDRAULIC HEIGHT (FT): 10.2

EL. MAXIMUM POOL (FT): 114.8±

FOR INTERNAL MADCR USE ONLY

FOLLOW-UP INSPECTION REQUIRED: ☐ YES ☐ NO

CONDITIONAL LETTER: ☐ YES ☐ NO

NAME OF DAM: Talbot Mills Dam | STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021 | NID ID #: MA 00774

INSPECTION SUMMARY

DATE OF INSPECTION: April 30, 2021 | DATE OF PREVIOUS INSPECTION: November 6, 2015

TEMPERATURE/WEATHER: 50's, Cloudy | ARMY CORPS PHASE I: ☐ YES ☑ NO If YES, date

CONSULTANT: Geotechnical Consultants, Inc. | PREVIOUS DCR PHASE I: ☑ YES ☐ NO If YES, date 11/6/2015

BENCHMARK/DATUM: NGVD 1929

OVERALL PHYSICAL CONDITION OF DAM: FAIR | DATE OF LAST REHABILITATION: Unknown

SPILLWAY CAPACITY: >100% SDF w/ no actions by Caretaker

EL. POOL DURING INSP.: 110.5± | EL. TAILWATER DURING INSP.: 103.6±

PERSONS PRESENT AT INSPECTION

NAME	TITLE/POSITION	REPRESENTING
Daniel Kenneally	Professional Engineer	Geotechnical Consultants, Inc.

EVALUATION INFORMATION

	Click on box to select E-code
E1) TYPE OF DESIGN	1
E2) LEVEL OF MAINTENANCE	1
E3) EMERGENCY ACTION PLAN	1
E4) EMBANKMENT SEEPAGE	5
E5) EMBANKMENT CONDITION	5
E6) CONCRETE CONDITION	4
E7) LOW-LEVEL OUTLET CAPACITY	1

	Click on box to select E-code
E8) LOW-LEVEL OUTLET CONDITION	1
E9) SPILLWAY DESIGN FLOOD CAPACITY	5
E10) OVERALL PHYSICAL CONDITION	3
E11) ESTIMATED REPAIR COST	
ROADWAY OVER CREST	YES
BRIDGE NEAR DAM	YES

NAME OF INSPECTING ENGINEER: Daniel Kenneally | SIGNATURE:

NAME OF DAM: Talbot Mills Dam | STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021 | NID ID #: MA 00774

OWNER:	ORGANIZATION	CRT Development Realty, LLC	CARETAKER:	ORGANIZATION	LMHS, PC
	NAME/TITLE	Mr. Robert Martin		NAME/TITLE	Mr. Bruce Henriksen
	STREET	242 5th Street South		STREET	80 Washington Street, Building S
	TOWN, STATE, ZIP	Naples, FL 34102		TOWN, STATE, ZIP	Norwell, MA 02061
	PHONE	978-314-8080		PHONE	781-878-9111
	EMERGENCY PH. #			EMERGENCY PH. #	
	FAX			FAX	
	EMAIL	martinr181@gmail.com		EMAIL	bhenriksen@lmhspc.com
	OWNER TYPE	Private			

PRIMARY SPILLWAY TYPE: Broad Crest Granite Masonry

SPILLWAY LENGTH (FT): 127 | SPILLWAY CAPACITY (CFS): 6,030

AUXILIARY SPILLWAY TYPE: Overflow - Both sides of Primary | AUX. SPILLWAY CAPACITY (CFS): 620

NUMBER OF OUTLETS: 1 | OUTLET(S) CAPACITY (CFS): Unknown - Gate is non-functional

TYPE OF OUTLETS: Sluiceway with Gate | TOTAL DISCHARGE CAPACITY (CFS): 6,650

DRAINAGE AREA (SQ MI): 370 | SPILLWAY DESIGN FLOOD (PERIOD/CFS): 100 year / 5,675 cfs

HAS DAM BEEN BREACHED OR OVERTOPPED ☐ YES ☑ NO IF YES, PROVIDE DATE(S)

FISH LADDER (LIST TYPE IF PRESENT): none

DOES CREST SUPPORT PUBLIC ROAD? ☑ YES ☐ NO | IF YES, ROAD NAME: Old Elm Street/Faulkner Street

PUBLIC BRIDGE WITHIN 50' OF DAM? ☑ YES ☐ NO | IF YES, ROAD/BRIDGE NAME: Faulkner Street Bridge

MHD BRIDGE NO. (IF APPLICABLE

NAME OF DAM: Talbot Mills Dam

STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021

NID ID #: MA 00774

EMBANKMENT (CREST)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
CREST	1. SURFACE TYPE	Paved Roadway			
	2. SURFACE CRACKING	Minor cracking			
	3. SINKHOLES, ANIMAL BURROWS	None observed			
	4. VERTICAL ALIGNMENT (DEPRESSIONS	No depressions or sinkholes observed			
	5. HORIZONTAL ALIGNMENT	Straight			
	6. RUTS AND/OR PUDDLES	None observed			
	7. VEGETATION (PRESENCE/CONDITION)	Small trees adjacent to upstream face near concrete intake structure face wall			
	8. ABUTMENT CONTACT	Good; no indications of seepage			

ADDITIONAL COMMENTS:

NAME OF DAM: Talbot Mills Dam STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021 NID ID #: MA 00774

EMBANKMENT (D/S SLOPE)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S SLOPE	1. WET AREAS (NO FLOW)	None observed			
	2. SEEPAGE	None observed			
	3. SLIDE, SLOUGH, SCARP	None			
	4. EMB.-ABUTMENT CONTACT	OK			
	5. SINKHOLE/ANIMAL BURROWS	None observed			
	6. EROSION	None observed			
	7. UNUSUAL MOVEMENT	None observed			
	8. VEGETATION (PRESENCE/CONDITION)	None			

ADDITIONAL COMMENTS: Note: The Talbot Mills Complex and Faulkner Mills complex from both the left and right downstream sides of the dam, respectively. These properties are not owned by the dam owners. Access to the inside of the mill complexes was not available at the time of this inspection.

NAME OF DAM: Talbot Mills Dam

STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021

NID ID #: MA 00774

EMBANKMENT (U/S SLOPE)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
U/S SLOPE	1. SLIDE, SLOUGH, SCARP	None observed. (see note 1)			
	2. SLOPE PROTECTION TYPE AND COND.	See note 1. Condition of walls; good.			
	3. SINKHOLE/ANIMAL BURROWS	None observed			
	4. EMB.-ABUTMENT CONTACT	OK. No observed indications of seepage.			
	5. EROSION	None observed			
	6. UNUSUAL MOVEMENT	None observed			
	7. VEGETATION (PRESENCE/CONDITION)	Small trees adjacent to upstream face near concrete intake structures face wall on top.			

ADDITIONAL COMMENTS: 1. Upstream faces of dam are constructed with either masonry stone walls or concrete wall.

NAME OF DAM: Talbot Mills Dam STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021 NID ID #: MA 00774

INSTRUMENTATION

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
INSTR.	1. PIEZOMETERS	N/A			
	2. OBSERVATION WELLS	N/A			
	3. STAFF GAGE AND RECORDER	N/A			
	4. WEIRS	N/A			
	5. INCLINOMETERS	N/A			
	6. SURVEY MONUMENTS	N/A			
	7. DRAINS	N/A			
	8. FREQUENCY OF READINGS	N/A			
	9. LOCATION OF READINGS	N/A			

ADDITIONAL COMMENTS: Ther is no known instrumentation at any part of the dam or appurtenant structures.

NAME OF DAM: Talbot Mills Dam STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021 NID ID #: MA 00774

DOWNSTREAM MASONRY WALLS

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S WALLS	1. WALL TYPE	Masonry Walls; predominantly field stone. Some cut granite block. Concrete at Talbot M			
	2. WALL ALIGNMENT	Straight			
	3. WALL CONDITION	Good			
	4. HEIGHT: TOP OF WALL TO MUDLINE	min: 6 max: 16 avg: 10			
	5. SEEPAGE OR LEAKAGE	None observed			
	6. ABUTMENT CONTACT	No observed seepage			
	7. EROSION/SINKHOLES BEHIND WALL	None observed			
	8. ANIMAL BURROWS	None observed			
	9. UNUSUAL MOVEMENT	None observed			
	10. WET AREAS AT TOE OF WALL	None observed. See note 1.			

ADDITIONAL COMMENTS: Note: The Talbot Mills Complex and the Faulkner Mills complex from both the left and right downstream sides of the dam, respectively. These properties are not owned by the dam owners. Access to the inside of the mill complexes was not available at the time of this inspection.

NAME OF DAM: Talbot Mills Dam STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021 NID ID #: MA 00774

UPSTREAM MASONRY WALLS

AREA INSPECTED	CONDITION	OBSERVATIONS			NO ACTION	MONITOR	REPAIR
U/S WALLS	1. WALL TYPE	Masonry Walls; predominantly field stone. Some cut granite block. Concrete at Talbot M					
	2. WALL ALIGNMENT	Straight					
	3. WALL CONDITION	Good					
	4. HEIGHT: TOP OF WALL TO MUDLINE	min: 6	max: 16	avg: 10			
	5. ABUTMENT CONTACT	No observed seepage.					
	6. EROSION/SINKHOLES BEHIND WALL	None observed					
	7. ANIMAL BURROWS	None observed					
	8. UNUSUAL MOVEMENT	None observed					

ADDITIONAL COMMENTS:

NAME OF DAM: Talbot Mills Dam

STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021

NID ID #: MA 00774

DOWNSTREAM AREA

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S AREA	1. ABUTMENT LEAKAGE	None observed			
	2. FOUNDATION SEEPAGE	None observed			
	3. SLIDE, SLOUGH, SCARP	None observed			
	4. WEIRS	N/A			
	5. DRAINAGE SYSTEM	N/A			
	6. INSTRUMENTATION	N/A			
	7. VEGETATION	Trees within the bedrock outcrops.			
	8. ACCESSIBILITY	Not Accessible			
	9. DOWNSTREAM HAZARD DESCRIPTION	The Faulkner Street Bridge is immediately downstream of the dam spillway. The Talbot and Faulkner Mills are on the left and right channel banks, respectively.			
	10. DATE OF LAST EAP UPDATE	0			

ADDITIONAL COMMENTS: Note: The Talbot Mills Complex and the Faulkner Mills complex from both the left and right downstream sides of the dam, respectively. These properties are not owned by the dam owners. Access to the inside of the mill complexes was not available at the time of this inspection.

NAME OF DAM: Talbot Mills Dam STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021 NID ID #: MA 00774

MISCELLANEOUS

AREA INSPECTED	CONDITION	OBSERVATIONS
MISC.	1. RESERVOIR DEPTH (AVG)	6± feet
	2. RESERVOIR SHORELINE	Generally flat and level. Some trees and little underbrush.
	3. RESERVOIR SLOPES	No Significant slopes
	4. ACCESS ROADS	Old Elm Street/Faulkner Street
	5. SECURITY DEVICES	None
	6. VANDALISM OR TRESPASS	☐ YES ☑ NO WHAT:
	7. AVAILABILITY OF PLANS	☐ YES ☑ NO DATE:
	8. AVAILABILITY OF DESIGN CALCS	☐ YES ☑ NO DATE:
	9. AVAILABILITY OF EAP/LAST UPDATE	☐ YES ☑ NO DATE:
	10. AVAILABILITY OF O&M MANUAL	☐ YES ☑ NO DATE:
	11. CARETAKER/OWNER AVAILABLE	☑ YES ☐ NO DATE: xxxxxx
	12. CONFINED SPACE ENTRY REQUIRED	☐ YES ☑ NO PURPOSE:

ADDITIONAL COMMENTS:

NAME OF DAM: Talbot Mills Dam

STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021

NID ID #: MA 00774

PRIMARY SPILLWAY

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
SPILLWAY	SPILLWAY TYPE	Broad Crested Masonry - probably granite block construction (see note 1)			
	WEIR TYPE	N/A			
	SPILLWAY CONDITION	Presumed Good - No indication of instability			
	TRAINING WALLS	N/A - Small stone wall at left embankment			
	SPILLWAY CONTROLS AND CONDITION	None			
	UNUSUAL MOVEMENT	None observed			
	APPROACH AREA	Mostly clear and unobstructed. Some tree branches and logs need to be removed.			
	DISCHARGE AREA	Only the stump remains (see note 2)			
	DEBRIS	Some tree branches and logs ontop of the spillway and need to be removed.			
	WATER LEVEL AT TIME OF INSPECTION	Elevation 110.5 on 30 April 2021			

ADDITIONAL COMMENTS: 1. During the inspection date, only a small portion was visible due to the continuous flow.
2. Only the stump remains of the tree that was once growing among the rocks immediately downstrea of the spillway

NAME OF DAM: Talbot Mills Dam STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021 NID ID #: MA 00774

AUXILIARY SPILLWAY

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
SPILLWAY	SPILLWAY TYPE	Sluiceway at right of primary spillway; serves as intake for Faulkner Mills			
	WEIR TYPE	N/A			
	SPILLWAY CONDITION	Fair			
	TRAINING WALLS	Masonry stone and concrete			
	SPILLWAY CONTROLS AND CONDITION	Wood Gate - Non Functional			
	UNUSUAL MOVEMENT	None observed			
	APPROACH AREA	Clear, unobstructed			
	DISCHARGE AREA	Discharge through Faulkner Mills Complex; Not inspected			
	DEBRIS	Minor debris (wood, trash) in stilling basin and very minor vegetation growing within			
	WATER LEVEL AT TIME OF INSPECTION	N/A			

ADDITIONAL COMMENTS:

NAME OF DAM: Talbot Mills Dam

STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021

NID ID #: MA 00774

OUTLET WORKS

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
OUTLET WORKS	TYPE	Note 1.			
	INTAKE STRUCTURE	Intake tunner under Old Elm Street reportedly filled with concrete - no records.			
	TRASHRACK	N/A			
	PRIMARY CLOSURE	N/A			
	SECONDARY CLOSURE	N/A			
	CONDUIT	N/A			
	OUTLET STRUCTURE/HEADWALL	Outlet structure located within Talbot Mill complex - not inspected.			
	EROSION ALONG TOE OF DAM	None observed. Bedrock visible at channel bed			
	SEEPAGE/LEAKAGE	None observed.			
	DEBRIS/BLOCKAGE	Reportedly completely blocked by concrete infill - no records available.			
	UNUSUAL MOVEMENT	None observed.			
	DOWNSTREAM AREA	Not inspected.			
	MISCELLANEOUS				

ADDITIONAL COMMENTS: 1. Five (5) manually operated wooden gates left of the primary spillway - gates not operational. These gates formerly intake structure for the Talbot Mils complex. Also, a blocked low level outlet is located in the left spillway abutment. No gates visible at this outlet.

NAME OF DAM: Talbot Mills Dam STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021 NID ID #: MA 00774

CONCRETE/MASONRY DAMS

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
GENERAL	TYPE				
	AVAILABILITY OF PLANS	None available			
	AVAILABILITY OF DESIGN CALCS	None available			
	PIEZOMETERS	None available			
	OBSERVATION WELLS	None available			
	INCLINOMETERS	None available			
	SEEPAGE GALLERY	N/A			
	UNUSUAL MOVEMENT	None observed			

ADDITIONAL COMMENTS:

NAME OF DAM: Talbot Mills Dam STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021 NID ID #: MA 00774

CONCRETE/MASONRY DAMS (CREST)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
CREST	TYPE				
	SURFACE CONDITIONS	Good condition. Concrete limited face wall at intake gate left of primary spillway.			
	CONDITIONS OF JOINTS	No observed craks or indications of seepage.			
	UNUSUAL MOVEMENT	None observed.			
	HORIZONTAL ALIGNMENT	Straight. No observed displacements.			
	VERTICAL ALIGNMENT	Straight. No observed displacements.			

ADDITIONAL COMMENTS:

NAME OF DAM: Talbot Mills Dam STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021 NID ID #: MA 00774

CONCRETE/MASONRY DAMS (DOWNSTREAM FACE)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
D/S FACE	TYPE				
	SURFACE CONDITIONS	Surface appeared to be in good condition. See note 1.			
	CONDITIONS OF JOINTS	The joints looked to be in good condition. See note 1.			
	UNUSUAL MOVEMENT	None observed. See note 1.			
	ABUTMENT CONTACT	See note 1.			
	LEAKAGE	None observed. See note 1.			

ADDITIONAL COMMENTS: 1. During the inspection date, only a very small portion of the spillway was visible. Any observations listed above are based on the only small portion that was visible at the time of the inspection.

NAME OF DAM: Talbot Mills Dam

STATE ID #: 4-9-31-1

INSPECTION DATE: April 30, 2021

NID ID #: MA 00774

CONCRETE/MASONRY DAMS (UPSTREAM FACE)

AREA INSPECTED	CONDITION	OBSERVATIONS	NO ACTION	MONITOR	REPAIR
U/S FACE	TYPE				
	SURFACE CONDITIONS	Flat and level. No indications of seepage such as sinkholes or depressions.			
	CONDITIONS OF JOINTS	Ok; minor seepage at granite block abutment joints.			
	UNUSUAL MOVEMENT	None observed			
	ABUTMENT CONTACTS	Clean contact. No seepage observed.			

ADDITIONAL COMMENTS:

APPENDIX C
Previous Reports and References

PREVIOUS REPORTS AND REFERENCES

The following is a list of reports that were located during the file review, or were referenced in previous reports.

1. Department of Environmental Management, Office of Dam Safety, Talbot Mills Dam Phase 1 Inspection/Evaluation Report – Billerica, Massachusetts, Geotechnical Consultants, Inc.; November 06, 2015

2. Department of Environmental Management, Office of Dam Safety, Talbot Mills Dam Phase 1 Inspection/Evaluation Report – Billerica, Massachusetts, Geotechnical Consultants, Inc.; May 22, 2009

3. Department of Environmental Management, Office of Dam Safety, Owned Dam Inspection/Evaluation Report – Billerica, Massachusetts, Weston & Sampson Engineers, Inc.; May 20, 1999

4. Department of Environmental Management, Office of Dam Safety, Inspection/Evaluation Report – Billerica, Massachusetts, O'Brien & Gere Engineers, Inc..; November 17, 1987

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

5. *www.middlesexcanal.org*

6. Eaglebrook Engineering & Survey, Inc., Site Plan EX-1 "Talbot Mill Dam – Billerica, Massachusetts; April 20, 2009

7. Federal Emergency Management Agency, Flood Insurance Study, Town of Billerica, Massachusetts, Middlesex County, Feb 08 1985

8. Environmental Data Resources, Inc., Aerial Photo Decade Package, Talbot Mills Dam – Billerica, Massachusetts; April 13, 2009

APPENDIX D
Definitions

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 exist, 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 (and properly documented) 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 failure.

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 (Structural Height) – 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 lowest point on the crest of the dam.

Hydraulic Height – means the height to which water rises behind a dam and the difference between the lowest point in the original streambed at the axis of the dam and the maximum controllable water surface.

Maximum Water Storage Elevation – means the maximum elevation of water surface which can be contained by the dam without overtopping the embankment section.

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.

Maximum Storage Capacity – The volume of water contained in the impoundment at maximum water storage elevation.

Normal Storage Capacity – The volume of water contained in the impoundment at normal water storage elevation.

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.

* Structural deficiencies include but are not limited to the following:

- Excessive uncontrolled seepage (e.g., upwelling of water, evidence of fines movement, flowing water, erosion, etc.)
- Missing riprap with resulting erosion of slope
- Sinkholes, particularly behind retaining walls and above outlet pipes, possibly indicating loss of soil due to piping, rather than animal burrows
- Excessive vegetation and tree growth, particularly if it obscures features of the dam and the dam cannot be fully inspected
- Deterioration of concrete structures (e.g., exposed rebar, tilted walls, large cracks with or without seepage, excessive spalling, etc.)
- Inoperable outlets (gates and valves that have not been operated for many years or are broken)

APPENDIX E
FEMA Flood Insurance Study, 1985

APPENDIX F

(The Dam Spillway has remained unchanged since the previous inspection. Therefore, our attached Spillway Capacity Check from 2009 is sufficient)

Project TALBOT MILLS DAM - NORTH BILLERICA
Project No. 2092945 Sheet No. 1 OF 2
Calculated By RP Date 5-4-2009
Checked By Date
Subject Scale

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, MA 01752
(508) 229-0900 FAX (508) 229-2279

SPILL WAY CAPACITY CHECK.

REFERENCES: 1. USACE EM-110-2-1603.
HYDRAULIC DESIGN OF SPILL WAYS

2. FEMA - FLOOD INSURANCE STUDY 1985
TOWN OF BILLERICA, MA

PERTINENT DATA

DESIGN FLOOD - 100YR EVENT.
REQUIRED DISCHARGE - 5675 cfs (per FEMA Study).
SPILL WAY TYPE - BROAD CREST
SPILL WAY LENGTH - 127' (NOT INCL. AUX @ ABUTMENTS)
SPILL WAY CREST - EL 109.7 Ft.
CHANNEL - UPSTREAM - EL 98.5 Ft.
100YR FLOOD LEVEL - EL 114.7 Ft (per FEMA Study)

DESIGN HEAD: $114.7 - 109.7 \Rightarrow$ $H_d = 5.0$ Ft.

APPROACH CHANNEL X-SECT:

$(114.7 - 98.5) \times 127 = 2057$ SF

APPROACH CHANNEL VELOCITY

$$V_{ac} = \frac{5675 \text{ cfs}}{2057 \text{ SF}} = 2.75 \text{ ft/sec}$$

$$\frac{V_{ac}^2}{2g} = \frac{\left(2.75 \frac{\text{ft}}{\text{sec}}\right)^2}{(2)(32.2 \text{ ft/sec}^2)} = 0.12 \text{ ft.}$$ SMALL!

TOTAL ENERGY HEAD: $H_e = 5.0 + 0.12 = 5.12$ Ft

Geotechnical Consultants, Inc.
201 Boston Post Road West
Marlborough, MA 01752
(508) 229-0900 FAX (508) 229-2279

Project TALBOT MILLS DAM - NORTH BILLERICA
Project No. 2092945 Sheet No. 2 OF 2
Calculated By RP Date 5-4-2009
Checked By Date
Subject Scale

SPILLWAY CAPACITY CHECK (CONT.)

COMPUTE: $H_e/H_d = \frac{5.12\ ft}{5.00\ ft} = 1.02$ OK

COMPUTE: $P/H_d = \frac{109.7\ ft - 98.5\ ft}{5.07\ ft} = 2.24$

DETERMINE DISCHARGE COEFFICIENT

REFER TO PLATE 3-4 $C = 4.1$

COMPUTE SPILLWAY DISCHARGE CAPACITY

SPILLWAY LENGTH = 127'

$$Q_s = C L_c H_e^{1.5} = (4.1)(127ft)(5.12)^{1.5}$$

$$= 6,032\ cfs$$

ESTIMATE CAPACITY AT SPILLWAY ABUTMENTS

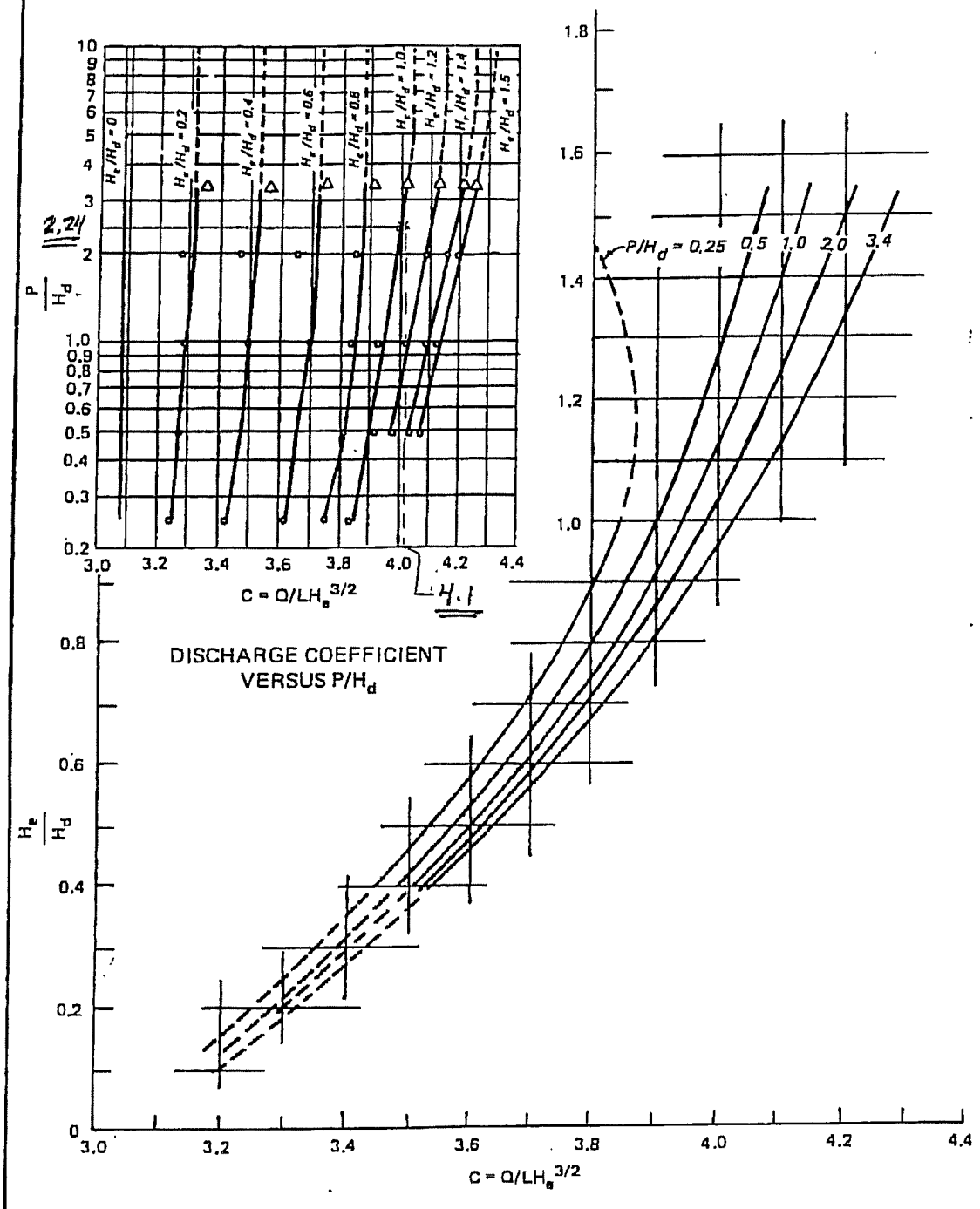
LENGTH: LEFT = 17' RIGHT = 20' TOT L = 27'

$H_{ea} \approx 114.7 - 111.5\ ft = 3.2\ ft$

$Q_a \approx (4.0)(27ft)(3.2ft)^{1.5} \approx 620\ cfs$

$Q_{TOTAL} \approx 6,650\ cfs > 5675\ cfs$

OK



SPILLWAY
DISCHARGE COEFFICIENTS
VERTICAL UPSTREAM FACE
FROM HDC 111-21

PLATE 3-4

APPENDIX G
EDR Aerial Photo Decade Package

3. Property Deed

M
2

2009 00000166
Bk: 22684 Pg: 104 Page: 1 of 2
Recorded: 01/02/2009 02:56 PM

dcr
Massachusetts

Commonwealth of Massachusetts
Department of Conservation and Recreation
Office of Dam Safety
DAM REGISTRATION CERTIFICATE
Issued in Accordance with MGL Chapter 253
Sections 44-50 and 302 CMR 10.05

CERTIFICATE NUMBER MA00774-R1

As required by MGL Chapter 253, and for the purpose of creating a public record of the subject dam, the Office of Dam Safety hereby issues this Dam Registration Certificate, to be recorded by the dam owner at the Registry of Deeds in the county where the dam lies.

Section 1: Dam Information

Dam Name	TALBOT MILLS DAM AKA FALKNER MILLS DAM
Name of Impoundment	CONCORD RIVER
Location (City/Town)	BILLERICA
Height	12.5'
Hazard Potential Rating	HIGH HAZARD
National Dam ID No.	MA00774
Latitude	42.592
Longitude	-71.284

Section II: Registry of Deeds Information for the Property of which the Dam Lies

Property/Dam Owner(s)	CRT DEVELOPMENT REALTY, LLC
Registry Location (County Name)	MIDDLESEX
Registry of Deeds Book No.	17958
Registry of Deeds Page No.	95

Section III: Town/City Accessor's Office Information for the Property on which the Dam Lies

Property/Dam Owner Name	CRT DEVELOPMENT REALTY, LLC
Mailing Address	6 NICHOLAS CIRCLE
Town/Zip	ANDOVER, MA 01810-4278
Map No	10
Lot No	

Locus: Falkner Street Dam, Billerica, MA

COMMONWEALTH OF MASSACHUSETTS · EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS

Department of Conservation and Recreation
Office of Dam Safety
John Augustus Hall
180 Beaman Street
West Boylston, MA 01583
508-792-7716 508-792-7718 FAX
www.mass.gov/dcr

Deval L. Patrick
Governor

Timothy P. Murray
Lt. Governor

Ian A. Bowles, Secretary
Executive Office of Environmental Affairs

Richard K. Sullivan, Jr., Commissioner
Department of Conservation & Recreation

Please return to:
DAVAGIAN & ASSOCIATES
ATTORNEYS AT LAW
365 BOSTON POST ROAD, SUITE 200
SUDBURY, MA 01776-3023

CERTIFCATE NUMBER MA00774-R1

Section IV: Transfer of Ownership Notification Requirement

In accordance with M.G.L. c. 253, the dam owner shall notify the Commissioner by registered or certified mail, of the proposed transfer of legal title of such dam 30 days prior to any such transfer. Upon receipt of such notice, a new Certificate of Registration will be issued. Such Certificate shall contain any outstanding obligations of the registered owner under M.G.L. c. 253, §§ 44 through 50.

The Department of Conservation and Recreation

By: _____
William C. Salomaa, Director
Office of Dam Safety

Date Issued:
December 9 2008

Suffolk, *ss.* Commonwealth of Massachusetts

On this 9th day of December, 2008, before me, the undersigned notary public, personally appeared William C. Salomaa, proved to me through satisfactory evidence of identification, which was personally known to me, to be the person whose name is signed on the preceding document, and acknowledged to me that he signed it voluntarily, in his capacity as Director of the Office of Dam Safety with the Department of Conservation and Recreation, for its stated purpose.

_____
Ariana L. Johnson
Notary Public
My Commission Expires
August 13, 2015

2

QUITCLAIM DEED

CRT Development, a Massachusetts limited partnership with a principal place of business in Andover, Massachusetts for consideration paid of **One ($1.00) Dollar** hereby **grants** to **CRT Development Realty, LLC**, a Massachusetts limited liability company having a principal place of business of 6 Nicholas Circle, Andover, Massachusetts, with **quitclaim covenants** that certain parcel of land located in Billerica, Middlesex County, Massachusetts more particularly described on Exhibit A attached hereto and made a part hereof.

Executed as an instrument under seal this 21st day of Sept, 2004.

2004 00077184
Bk: 17958 Pg: 95 Page: 1 of 2
Recorded: 10/15/2004 02:41 PM

CRT DEVELOPMENT
a Massachusetts limited partnership

By: _____
Robert S. Martin, general partner

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss.

On this the 21 day of September, 2004, before me, the undersigned notary public, personally appeared Robert S. Martin, general partner of CRT Development, a Massachusetts limited partnership and proved to me through satisfactory evidence of identification, which was personal knowledge to be the person whose name is signed on this document, and acknowledged to me that he signed it voluntarily as general partner of CRT Development for its stated purpose.

_____
Notary Public
My commission expires:

IMOGENE H. KANDIEL
Notary Public
Commonwealth of Massachusetts
My Commission Expires
May 22, 2009

ID # 404100v01/4268-1/ 09.21.2004

EXHIBIT A

The land situated southeasterly of Faulkner Street and Westerly and Northerly of said Concord River and thus bounded and described Northwesterly by Faulkner Street 10 feet; Easterly and Southerly by said Concord River; Northerly by land now or formerly of North Billerica Company 60.72 feet; and Westerly by land now or formerly of North Billerica Company, and being Lot 25 on Plan recorded with Middlesex Northern District Registry of Deeds in Plan Book 62, Plan 64, a portion of which is recorded.

Together with the land and dam situated in and on the Concord River near and between the premises above described together with all concrete and granite walls adjacent thereto and the bed of the Concord River and all riparian rights and rights of flowage, all water rights (including all rights to draw water from the mill pond created by the existence of the above described dam and located over the bed of the Concord River hereinbefore described), mill powers, mill privileges, spillways, gates, rights of way and other rights and easements and appurtenant to the above described premises whether or not the same are specifically mentioned herein.

Being a greater portion of the premises conveyed to Fabricon, Inc., by Deed of Talbot Mills, Inc., dated October 28, 1965, recorded with said Registry in Book 1724, Page 23.

Conveying also all buildings and structures adjoining the above described premises located in and over the Concord River, together with the right to maintain, repair and replace the same.

Said premises are hereby conveyed subject to and with the benefit of all rights, easements, privileges, and appurtenances of record insofar as now in force and applicable, as set forth in deed of Fabricon, Inc., to Clifford R. Jennings, William S. Ricci, William Martin and Sherwood A. Quinlan dated April 2, 1968, recorded with Middlesex Northern District Registry of Deeds in Book 1838, Page 109, and deed from Sherwood A. Quinlan to Clifford R. Jennings, et als., dated January 7, 1972, recorded with said Deeds in Book 1994, Page 293.

Being a portion of the premises conveyed by Deed dated July 2, 1980 and recorded with said Deeds in Book 2429, Page 692.

END OF DOCUMENT

Richard P Howe Jr

MASSACHUSETTS QUITCLAIM DEED SHORT FORM (INDIVIDUAL) 881

Faulkner Realty, Inc., a corporation duly established under the laws of the Commonwealth of Massachusetts and having its usual place of business at Nine Central Street, Lowell, Middlesex County, Massachusetts

~~being unmarried~~, for consideration paid, and in full consideration of One Dollar ($1.00)

grant to Faulkner Mills Acquisition Corp.

of ~~55 High Street~~ North P.O. Box 54, Billerica, Massachusetts, ~~01864~~ 01862 with quitclaim covenants

~~[illegible]~~

[Description and encumbrances, if any]

the land in Billerica shown as Parcel II on Plan Book 202, Plan 21, which is more fully described in Exhibit "A" attached hereto.

The Grantor also conveys to the Grantee, its successors and assigns, all of the Grantor's rights as a riparian owner and its rights, if any, to the flow and use of water in the Concord River.

Property Address: 71 Faulkner Street
no. Billerica, Ma.
~~01821~~ 01862

07/31/2000 10:28:40 39250 26.50 6

In Witness Whereof, the said Faulkner Realty, Inc. has caused its corporate seal to be hereto affixed and these presents to be signed, acknowledged and delivered in its name and behalf by MARSHALL L. FIELD, Its President, and ROBERT A. MCKITTRICK, Its Treasurer, hereto duly authorized, this 13th day of July in the year Two Thousand.

~~[illegible]~~

Marshall L. Field, Its President

Robert A. McKittrick, Its Treasurer

The Commonwealth of Massachusetts

Middlesex, ss. July 13, 2000 ~~19~~

Then personally appeared the above named Marshall L. Field and Robert A. McKittrick and acknowledged the foregoing instrument to be their free act and deed before me

Barbara D. Goggin
Notary Public — Justice of the Peace
My commission expires March 22, 2007

(* Individual — Joint Tenants — Tenants in Common.)

CHAPTER 183 SEC. 6 AS AMENDED BY CHAPTER 497 of 1969

Every deed presented for record shall contain or have endorsed upon it the full name, residence and post office address of the grantee and a recital of the amount of the full consideration thereof in dollars or the nature of the other consideration therefor, if not delivered for a specific monetary sum. The full consideration shall mean the total price for the conveyance without deduction for any liens or encumbrances assumed by the grantee or remaining thereon. All such endorsements and recitals shall be recorded as part of the deed. Failure to comply with this section shall not affect the validity of any deed. No register of deeds shall accept a deed for recording unless it is in compliance with

DESCRIPTION OF PARCEL TO BE PURCHASED BY

FAULKNER MILLS ACQUISITION CORP.

Being a portion of land and canal area located on the southerly side of Faulkner Street, Billerica, MA, and shown as Parcel II and Canal Area on a Plan by Robert M. Gill & Associates, Inc., dated August 25, 1999 (to be recorded herewith), bounded and described as follows:

Beginning at the southwesterly corner of the premises on the southerly side of Faulkner Street and the northerly side of the Concord River;

thence northerly and easterly at a curved line at a radius of 380.00 feet, a length of 106.93 feet, by Faulkner Street;

thence still by said Faulkner Street, N52°48'52"E, 25.71 feet to a point on the inlet canal;

thence in six courses by the easterly face of said canal wall, S47°13'38"E, 11.62 feet, S40°16'19"E, 13.39 feet, S25°59'47"E, 12.19 feet, S24°28'34"E, 23.64 feet, S15°39'17"E, 22.86 feet, S46°27'05"E, 6.58 feet;

thence across said canal by the edge of the Corcord River, S79°12'19"W, 19.95 feet;

thence in six courses by mostly a stone retaining wall and the Concord River, S52°37'39"W, 3.07 feet, S75°53'44"W, 7.47 feet, N84°27'36"W, 21.66 feet, N76°01'54"W, 20.18 feet, N88°58'21"W, 4.57 feet, S77°51'28"W, 65.24 feet, to the point of beginning.

Said Parcel II containing 4,979 square feet of land area. The area within the canal is 1,180 square feet, or a total of 6,159 square feet. Also included is a six (6) foot right of way easement, being six (6) feet easterly from and parallel to the easterly wall of said canal. This easement is for the purpose of passing and repassing, and to repair and maintain the easterly canal wall.

Refer to Book 7566 Page 275
Middlesex No. Co. Registry of Deeds

EXHIBIT A

END OF DOCUMENT

Richard P. Howe Jr.

4. Design Plans

TALBOT MILLS DAM REMOVAL/
CONCORD RIVER RESTORATION PROJECT

BILLERICA, MA

CRT DEVELOPMENT REALTY, LLC (DAM OWNER)

90% (DRAFT FINAL) DESIGN PLANS

DRAWING NO.	TITLE
1	COVER
2	GENERAL NOTES
3	EXISTING AND PROPOSED RESOURCE AREAS
4	EXISTING WETLAND RESOURCES PLAN
5	EXISTING SITE PLAN
6	EXISTING DAM SECTION AND ELEVATION
7	PROPOSED STAGING AND INVASIVE SPECIES CONTROL PLAN
8	PROPOSED STAGING AND ACCESS PLAN
9	PROPOSED ACCESS, WATER CONTROL, & REMOVALS PLAN
10	PROPOSED DAM BREACH SECTION AND ELEVATION
11	PROPOSED SITE PLAN
12	PROPOSED WETLAND RESOURCES & RESTORATION PLAN
13	EROSION AND SEDIMENT CONTROL DETAILS (1 OF 2)
14	EROSION AND SEDIMENT CONTROL DETAILS (2 OF 2)

SOURCE: USGS SCALE: 1" = 2000'

PROJECT SITE

SOURCE: GOOGLE SCALE: 1" = 1000'

FUNDING PARTNERS:
MA DEPT. OF FISH & GAME, DIV. OF ECOLOGICAL RESTORATION
MA DEPT. OF FISH & GAME, DIV. OF MARINE FISHERIES
MA DEPT. OF ENVIRONMENTAL PROTECTION
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION RESTORATION CENTER
US FISH AND WILDLIFE SERVICE

TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

COVER

DATE	#	DESCRIPTIONS	BY	APP

DRAWN BY: MAO
CHECKED BY: JWG
APPROVED BY: JWG
PROJECT NO. 02450 DATE: 05/21/2025
SCALE: AS NOTED
DRAWING: 1

OARS, INC.
23 Bradford Street
Concord, MA 01742

Gomez and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2179
Hannifer, NH 03242

DATA SOURCES

1. HORIZONTAL DATUM IS NORTH AMERICAN DATUM (NAD) 1983, MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, MAINLAND ZONE. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM (NAVD) 1988 FEET.
2. BENCHMARK "RM–8" SHOWN ON FEMA HISTORIC COMMUNITY PANEL 250183 0003 DATED AUGUST 3, 1985 IS DESCRIBED AS A CHISELED SQUARE ON THE NORTHEAST SIDE OF THE TOP OF A GRANITE BLOCK AT THE SOUTWEST END OF THE TALBOT MILLS DAM SPILLWAY AT GROUND LEVEL. THE PUBLISHED ELEVATION FOR "RM–8" IS 114.28 NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29) OR 113.43 FT NAVD88 BASED ON A DATUM CONVERSION OF –0.827 FT FROM NGVD29 TO NAVD88 FOR THIS LOCATION.
3. CONTOUR INTERVAL SHOWN ON PLANS IS 1 FOOT UNLESS OTHERWISE NOTED.
4. TOPOGRAPHIC SURVEYS OF THE DAM AND DOWNSTREAM CHANNEL WERE CONDUCTED BY GOMEZ AND SULLIVAN ENGINEERS, DPC (GOMEZ AND SULLIVAN) ON OCTOBER 6, 2014 AND AUGUST 9, 2022. PLANS WERE SUPPLEMENTED BY SURVEY DATA COLLECTED BY EAGLEBROOK ENGINEERING & SURVEY, LLC ON APRIL 14, 2009 AND BY LANDPLEX, LLC IN OCTOBER 2017.
5. ALL OTHER TOPOGRAPHY OUTSIDE SURVEY AREAS DERIVED FROM LIDAR DATA WITH A VERTICAL ACCURACY OF 0.33 FEET COLLECTED IN 2021 AND OBTAINED FROM MASSGIS.
6. BATHYMETRIC SURVEY DATA WITHIN THE IMPOUNDMENT WAS COLLECTED BY GOMEZ AND SULLIVAN ON JULY 28, 2021 USING A SONTEK ACCOUSTIC DOPPLER CURRENT PROFILER (ADCP) AND SURVEY GRADE RTK GPS WITH AN ACCURACY OF 0.04 TO 0.14 FT. BATHYMETRY WAS SUPPLEMENTED FROM SEDIMENT PROBING DATA COLLECTED BY GOMEZ AND SULLIVAN ON OCTOBER 6, 2014 AND BY CR ENVIRONMENTAL, INC. ON MAY 24, 2022. BATHYMETRIC SURVEY DATA WAS ALSO COLLECTED IMMEDIATELY UPSTREAM AND DOWNSTREAM OF THE DAM DURING A LOW FLOW PERIOD BY GOMEZ AND SULLIVAN ON AUGUST 9, 2022 USING AN RTK GPS WITH AN ACCURACY OF 0.03 TO 0.1 FT.
7. WETLAND BOUNDARIES IN THE VICINITY OF THE DAM AND MILL POND WERE DELINEATED BY LEC ENVIRONMENTAL CONSULTANTS, INC ON JUNE 29, 2022 AND REFLAGGED ON OCTOBER 7, 2024. WETLAND BOUNDARIES UPSTREAM OF THE MILL POND AND DOWNSTREAM OF FAULKNER STREET WERE DERIVED FROM 2005 MASSACHUSETTS DEPT. OF ENVIRONMENTAL PROTECTION (MASSDEP) WETLANDS DATA, HYDRAULIC MODELING CONDUCTED BY GOMEZ AND SULLIVAN, AND/OR AERIAL IMAGERY.
8. PROPERTY BOUNDARIES FOR 2 OLD ELM ST (10–231–2) AND 6 OLD ELM ST (10–231–1) WERE OBTAINED FROM A NOVEMBER 2013 SURVEY BY CLAUDIO SALA, PLS (PLAN BOOK 237, PLAN 27). PROPERTY BOUNDARIES FOR PARCEL 10–39–4 WERE OBTAINED FROM AN AUGUST 25, 1999 PLAN OF LAND BY ROBERT N. GILL & ASSOCIATES, INC. (PLAN BOOK 202, PLAN 21). THE PROPERTY BOUNDARY FOR PARCEL 10–39–3 ALONG THE CONCORD RIVER WAS OBTAINED FROM A SEPTEMBER 20, 1995 PLAN OF LAND BY MOONAN & MCDOWELL, INC. (PLAN BOOK 189, PLAN 137). PROPERTY BOUNDARIES ADJACENT TO THE CONCORD RIVER FOLLOW THE MEAN ANNUAL HIGH WATER LINE, WHICH WAS SURVEYED FOR THIS PROJECT AS PART OF THE WETLAND DELINEATION CONDUCTED IN 2022 AND 2024 BY (SEE NOTE 8 ABOVE). ALL OTHER PROPERTY BOUNDARIES OUTSIDE OF THE IMMEDIATE DISTURBANCE AREA WERE OBTAINED FROM MASSGIS.
9. PORTIONS OF THE PROJECT AREA SHOWN HEREON ARE LOCATED WITHIN FLOOD HAZARD ZONE AE AS SHOWN ON FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) PANELS 25017C0258F AND 25017C0259F EFFECTIVE JULY 7, 2014, AND LETTER OF MAP REVISION 250183 EFFECTIVE FEBRUARY 8, 2018 (CASE NO. 17–01–1899P). THE BASE FLOOD ELEVATION AT THE UPSTREAM FACE OF THE DAM IS 113.9 FT NAVD88. PORTIONS OF THE PROJECT AREA ARE ALSO LOCATED WITHIN THE TOWN OF BILLERICA "GREEN ENGINEERING" FLOODPLAIN, OBTAINED FROM THE BILLERICA GIS LAYER. PROPOSED BORDERING LAND SUBJECT TO FLOODING (BLSF) IS BASED ON 1% ANNUAL EXCEEDANCE PROBABILITY (AEP) (100–YR) FLOOD INUNDATION MAPPING DEVELOPED BY GOMEZ AND SULLIVAN FOR PROPOSED CONDITIONS.
10. UTILITIES OUTSIDE OF THE SURVEY AREA WERE OBTAINED FROM TOWN OF BILLERICA GIS.

GENERAL NOTES

1. CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF EXCAVATION. CONTRACTOR SHALL NOTIFY DIG SAFE MASSACHUSETTS AT 811 OR 1–888–344–7233 AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION. SATURDAYS, SUNDAYS, AND LEGAL HOLIDAYS ARE NOT TO BE INCLUDED IN THE REQUIRED 72 HOUR NOTICE.
2. CONTRACTOR SHALL MAINTAIN CONTROL POINTS DURING CONSTRUCTION, INCLUDING BENCHMARKS AND ELEVATIONS AT CRITICAL AREAS. SITE LAYOUT SURVEY REQUIRED FOR CONSTRUCTION SHALL BE PROVIDED BY THE CONTRACTOR AND PERFORMED BY A MASSACHUSETTS' REGISTERED PROFESSIONAL LAND SURVEYOR. ALL GRADE STAKES SET BY SURVEYOR SHALL BE MAINTAINED BY CONTRACTOR UNTIL FINAL INSPECTION OF THE ITEM HAS BEEN COMPLETED BY ENGINEER.
3. CONTRACTOR SHALL PREPARE AND IMPLEMENT TRAFFIC CONTROL PLAN. TRAFFIC MANAGEMENT PLAN PREPARED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND MASSDOT TRAFFIC CONTROL STANDARDS.
4. EXCESSIVE IDLING DURING THE CONSTRUCTION PERIOD IS PROHIBITED. SIGNS SHALL BE POSTED AT THE SITE LIMITING IDLING TO 5 MINUTES OR LESS. PERIODIC INSPECTIONS SHALL BE CONDUCTED BY SITE SUPERVISORS TO ENSURE COMPLIANCE. STAGING AREAS SHALL BE LOCATED TO MINIMIZE EMISSION IMPACTS TO ABUTTING PROPERTIES.
5. ANY WOOD OR OTHER DEBRIS CAUGHT ON THE DAM OR IN THE SLUICEWAY SHALL BE REMOVED AND DISPOSED OF BY CONTRACTOR PRIOR TO CONSTRUCTION.

CONSTRUCTION WASTE MANAGEMENT

1. SITE SHALL BE KEPT WELL ORGANIZED, SIGNED, AND FREE OF WASTE MATERIALS, DEBRIS, AND RUBBISH AT ALL TIMES. GOOD HOUSEKEEPING PRACTICES SHALL BE MAINTAINED ON A CONTINUOUS BASIS FROM WORK SITE TO WORK SITE. DISPOSAL OF ANY WASTE MATERIALS ON THE CONSTRUCTION SITE IS PROHIBITED.
2. SANITARY, WASTE DISPOSAL, AND EMPLOYEE FACILITIES SHALL BE PROVIDED BY CONTRACTOR.
3. ALL WATER RESOURCES (E.G., GROUND AND SURFACE WATERS), INCLUDING ALL DRAINS AND CATCH BASINS, SHALL BE PROTECTED FROM LEACHING AND/OR RUN–OFF OF CHEMICAL POLLUTANTS, SOLID WASTES, AND CONSTRUCTION SITE DEBRIS. ALL CATCH BASINS SHALL BE MAINTAINED FREE FLOWING.
4. ALL COMBUSTIBLE WASTE MATERIALS SHALL BE PLACED IN COVERED METAL CONTAINERS AND PROMPTLY DISPOSED OF IN AN APPROVED MANNER AT AN APPROVED WASTE DISPOSAL FACILITY.
5. STORAGE AND/OR USE OF CHEMICALS, FUELS, OILS, GREASES, BITUMINOUS MATERIALS, SOLIDS, WASTE WASHINGS, AND CEMENT SHALL BE HANDLED APPROPRIATELY AS TO PREVENT LEACHING OR SURFACE RUNOFF INTO PUBLIC WATERS OR DRAINS. ALL APPROVED STORAGE AREAS FOR THESE MATERIALS MUST BE DIKED.
6. ALL ROADWAYS SHALL BE MAINTAINED FREE OF DEBRIS. STABILIZED CONSTRUCTION ENTRANCES SHALL BE CONSTRUCTED TO CAPTURE DEBRIS FROM WHEELS OF CONSTRUCTION VEHICLES. VEHICLES SHALL BE INSPECTED AT ENTRANCES BEFORE TURNING ONTO THE ROADWAY AND EXCESS DEBRIS SHALL BE REMOVED.
7. ALL EXCESS DREDGED MATERIALS SHALL BE REMOVED FROM THE SITE AS SOON AS POSSIBLE AND IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS FOR REUSE AND DISPOSAL.

CARE AND DIVERSION OF WATER

1. REFER TO DETAILED WATER CONTROL NOTES ON SHEET 9.

TEMPORARY ACCESS ROUTE STABILIZATION

1. DEFINITION: THE STABILIZATION OF TEMPORARY CONSTRUCTION ACCESS ROUTES, ON–SITE VEHICLE TRANSPORTATION ROUTES, AND CONSTRUCTION PARKING AREAS.
2. PURPOSE: TO CONTROL EROSION ON TEMPORARY CONSTRUCTION ROUTES AND PARKING AREAS.
3. CONDITION WHERE PRACTICE APPLIES: ALL TRAFFIC ROUTES AND PARKING AREAS FOR TEMPORARY USE BY CONSTRUCTION TRAFFIC.
4. DESIGN CRITERIA: CONSTRUCTION ROADS SHOULD BE LOCATED TO REDUCE EROSION POTENTIAL, MINIMIZE IMPACT ON EXISTING SITE RESOURCES, AND MAINTAIN OPERATIONS IN A SAFE MANNER. HIGHLY EROSIVE SOILS, WET OR ROCKY AREAS, AND STEEP SLOPES SHOULD BE AVOIDED. ROADS SHOULD BE ROUTED WHERE SEASONAL WATER TABLES ARE DEEPER THAN 18 INCHES. SURFACE RUNOFF AND CONTROL SHOULD BE IN ACCORDANCE WITH MASSDEP EROSION AND SEDIMENT CONTROL GUIDELINES.
5. TEMPORARY ACCESS ROAD/RAMP GRADE: A MAXIMUM GRADE OF 12% IS RECOMMENDED, ALTHOUGH GRADES UP TO 20% ARE ACCEPTABLE FOR SHORT DISTANCES.
6. TEMPORARY ACCESS ROAD/RAMP WIDTH: 14 FT (9 FT MINIMUM) FOR ONE–WAY TRAFFIC, OR 24 FT MINIMUM FOR TWO–WAY TRAFFIC.
7. SIDE SLOPE OF ROAD EMBANKMENT: 2:1 OR FLATTER.
8. COMPOSITION: MINIMUM 8–INCH OF MASSDOT "GRAVEL BORROW" ITEM NO. M1.03.0(b). PLACED ON WOVEN GEOTEXTILE FABRIC MASSDOT ITEM NO. M9.50.0.
9. MAINTENANCE: ACCESS ROUTES AND PARKING AREAS SHALL BE INSPECTED PERIODICALLY FOR CONDITION OF SURFACE AND TOPDRESSED WITH NEW GRAVEL AS NEEDED.
10. RESTORATION: UPON COMPLETION OF THE WORK, ALL TEMPORARY MATERIALS SHALL BE REMOVED AND THE SITE SHALL BE RESTORED TO PRE–PROJECT CONDITIONS.

CONSTRUCTION SEQUENCE

1. CONTRACTOR SHALL PREPARE A CONSTRUCTION SEQUENCE PLAN TO BE APPROVED BY OWNER AND ENGINEER. THE FOLLOWING GENERAL SEQUENCE SHALL BE ADAPTED FOR THE SITE–SPECIFIC REQUIREMENTS. ALL TASKS LISTED WITH "AT CONTRACTOR'S DISCRETION" SHALL BE ADDRESSED IN THE CONTRACTOR'S REQUIRED SUBMITTALS.
2. INSTALL TURBIDITY CURTAIN PRIOR TO DEWATERING.
3. REMOVE STOPLOGS FROM SLUICE GATE TO LOWER IMPOUNDMENT.
4. INSTALL TEMPORARY FENCING AND SWING GATES AT ENTRANCE(S) TO STAGING AREA(S).
5. INSTALL EROSION AND SEDIMENTATION CONTROLS.
6. INSTALL OIL BOOM ACROSS CHANNEL DOWNSTREAM OF DAM.
7. ANCHOR 1/2" STEEL PLATE TO INFRASTRUCTURE ADJACENT TO LEFT AND/OR RIGHT DAM ABUTMENTS TO PROTECT FROM FLOW AS REQUIRED BY WATER CONTROL PLAN.
8. AT CONTRACTOR'S DISCRETION, DREDGE SEDIMENT AND REMOVE ANY BLOCKAGES FOUND UPSTREAM OF WEST ABUTMENT TO ALLOW FLOW THROUGH TWO EXISTING APPROX. 4'H X 3'W LOW–LEVEL OUTLETS TO FURTHER DRAW DOWN IMPOUNDMENT PRIOR TO CONSTRUCTION.
9. INSTALL TEMPORARY ACCESS ROAD FROM STAGING AREA AT 8 OLD ELM STREET TO WEST (LEFT) DAM ABUTMENT AND ALONG SPILLWAY AS SHOWN.
10. REMOVE EAST (RIGHT) ABUTMENT AND BREACH A 30–FOOT–WIDE SECTION OF GRANITE SPILLWAY AND FORMER TIMBER/ROCK DAM (IF FOUND) TO FACILITATE FLOW.
11. AT CONTRACTOR'S DISCRETION, INSTALL COFFERDAM UPSTREAM OF SPILLWAY AS NECESSARY.
12. COMMENCE ARCHAEOLOGICAL RECORDATION AND REMOVAL OF FORMER DAM REMAINS (IF FOUND) FOLLOWED BY EXISTING GRANITE SPILLWAY. RETAIN STEPPED GRANITE BLOCKS ADJACENT TO LEFT ABUTMENT TO SUPPORT ABUTMENT (SEE ELEVATION SHEET 10). SALVAGE GRANITE BLOCKS AS REASONABLY PRACTICABLE FOR STOCKPILING AS DIRECTED BY OWNER. GRADE ANY SEDIMENT UPSTREAM OF DAM AT 3:1 SLOPE OR FLATTER.
13. REMOVE ANY TEMPORARY ACCESS RAMPS, ROADS, AND/OR COFFERDAMS WITHIN THE CHANNEL.
14. RESTORE ACCESS AND STAGING AREAS TO FORMER CONDITIONS.
15. REMOVE TEMPORARY FENCING AND SWING GATES
16. REMOVE EROSION AND POLLUTION CONTROL MEASURES ONLY AFTER ALL AREAS ARE STABILIZED TO THE SATISFACTION OF ENGINEER.

SOIL EROSION AND SEDIMENT CONTROL

1. ALL WORK SHALL BE CONDUCTED IN ACCORDANCE WITH MASSDEP EROSION AND SEDIMENT CONTROL GUIDELINES, APPLICABLE NPDES STANDARDS, LOCAL CONSERVATION COMMISSION, AND BOARD OF HEALTH REGULATIONS.
2. ALL APPLICABLE SOIL EROSION AND SEDIMENT CONTROL PRACTICES ARE TO BE INSTALLED PRIOR TO ANY SOIL OR STREAM DISTURBANCE, OR IN THEIR PROPER SEQUENCE, AND MAINTAINED UNTIL PERMANENT STABILIZATION IS ESTABLISHED.
3. ALL DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN FOURTEEN (14) DAYS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, SHALL IMMEDIATELY RECEIVE A TEMPORARY SEEDING WITH A NATIVE SEED MIXTURE. MULCH, WATER AND ANCHOR AS NECESSARY TO ESTABLISH GRASS AND PREVENT LOSS TO WIND OR EROSION. IF THE SEASON PREVENTS THE ESTABLISHMENT OF A TEMPORARY COVER, THE DISTURBED AREAS SHALL BE MULCHED WITH SMALL GRAIN STRAW AT A RATE OF TWO (2) TONS PER ACRE IN ACCORDANCE WITH STATE STANDARDS.
4. PERMANENT VEGETATION SHALL BE SEEDED WITH A NATIVE SEED MIXTURE ON ALL EXPOSED AREAS IMMEDIATELY AFTER FINAL GRADING. MULCH SHALL BE USED AS NECESSARY FOR PROTECTION UNTIL SEEDING IS ESTABLISHED.
5. ALL CRITICAL AREAS SUBJECT TO EROSION SHALL RECEIVE A TEMPORARY SEEDING WITH AN APPROVED NATIVE SEED MIXTURE IN COMBINATION WITH STRAW MULCH, AT A RATE OF TWO (2) TONS PER ACRE IN ACCORDANCE WITH STATE STANDARDS.
6. SHOULD THE CONTROL OF DUST AT THE SITE BE NECESSARY, THE SITE SHALL BE SPRINKLED WITH WATER UNTIL THE SURFACE IS WET, TEMPORARY VEGETATIVE COVER SHALL BE ESTABLISHED, OR MULCH SHALL BE APPLIED IN ACCORDANCE WITH STATE STANDARDS FOR EROSION CONTROL.
7. ALL SOIL WASHED, DROPPED, SPILLED, OR TRACKED OUTSIDE THE LIMIT OF DISTURBANCE OR ONTO PUBLIC RIGHTS–OF–WAY SHALL BE REMOVED IMMEDIATELY.
8. STOCKPILE AND STAGING LOCATIONS DETERMINED IN THE FIELD SHALL BE PLACED WITHIN THE LIMIT OF DISTURBANCE. ALL SOIL STOCKPILES SHALL BE TEMPORARILY STABILIZED IN ACCORDANCE WITH NOTE #3 AND PROTECTED BY COMPOST FILTER SOCKS ON DOWNHILL SIDES.
9. THE CONTRACTOR SHALL INSPECT DISTURBED AREAS OF THE CONSTRUCTION SITE, AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION AND THAT HAVE NOT BEEN FINALLY STABILIZED, STABILIZATION PRACTICES, STRUCTURAL PRACTICES, AND OTHER CONTROLS AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS AFTER THE END OF ANY STORM THAT PRODUCES AT LEAST 0.5 INCHES OF RAINFALL AT THE SITE. WHERE SITES HAVE BEEN FINALLY STABILIZED, SUCH INSPECTION SHALL BE CONDUCTED AT LEAST ONCE EVERY MONTH UNTIL FINAL COMPLETION. CRITICAL AREAS AND AREAS WHERE VEHICLES EXIT THE SITE SHALL BE INSPECTED DAILY.

PROPOSED DREDGE/FILL VOLUMES

TYPE	VOLUME (CY)	DESCRIPTION
DREDGE	440	GRANITE MASONRY SPILLWAY + ABUTMENT
	30	CONCRETE ABUTMENT
	350	WOOD/ROCK FILL FORMER DAM
	600	ROCK FILL BETWEEN DAMS
	220	ACTIVE SEDIMENT GRADING UPSTREAM OF DAMS
	1,640	TOTAL DREDGE
FILL	0	TOTAL FILL

PROPOSED DREDGING DIMENSIONS

LENGTH (FT)	150	SPILLWAY + ABUTMENT
WIDTH (FT)	30	BOTH DAMS + ACTIVE SEDIMENT GRADING
DEPTH (FT)	< 13	MAX HEIGHT OF SPILLWAY
AREA (SF)*	10,000	

*NOTE THAT THE VOLUME CALCULATED BY THESE DIMENSIONS IS LARGER THAN THE PROPOSED DREDGING VOLUME IN THE TABLE ABOVE BECAUSE IT IS CONSERVATIVE IN ALL DIMENSIONS.

DATE	#	DESCRIPTIONS	BY	APP

DRAWN BY: MAO
CHECKED BY: JWG
APPROVED BY: JWG
PROJECT NO. 02450 DATE: 05/21/2025

TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

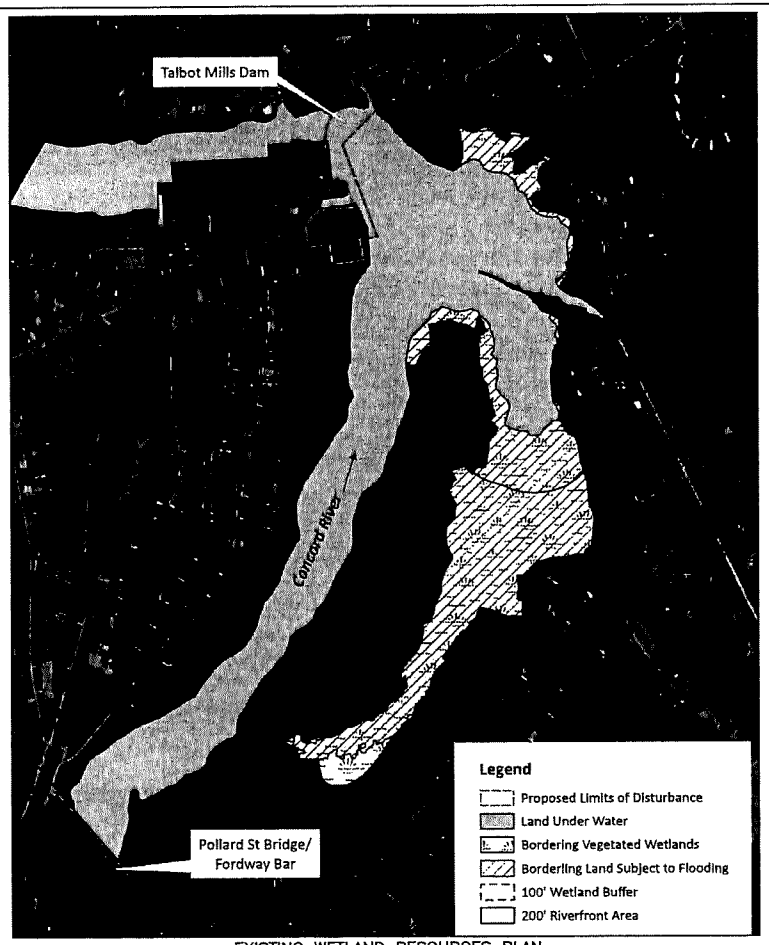
GENERAL NOTES

OARS, INC.
25 Bradford Street
Concord, MA 01742

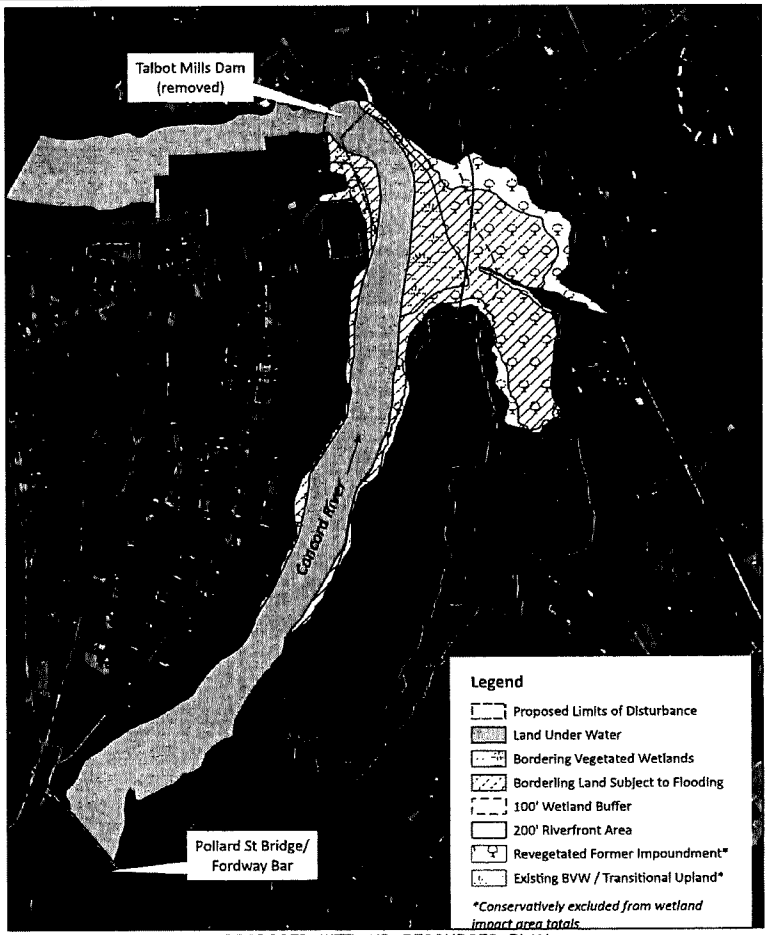
Gomez and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2179
Henniker, NH 03242

SCALE: NONE

DRAWING: 2



EXISTING WETLAND RESOURCES PLAN
SCALE: 1" = 400'



PROPOSED WETLAND RESOURCES PLAN
SCALE: 1" = 400'

WETLAND RESOURCE AREA IMPACTS

WETLAND RESOURCE	AREA (SF)	
	TEMP. DISTURBANCE	PERMANENT CHANGE
BANK (LINEAR FEET)	1,300	-5,100
LAND UNDER WATER (LUW)	30,000	-430,000
BORDERING VEGETATED WETLANDS (BVW)	0	-327,000
BORDERING LAND SUBJECT TO FLOODING (BLSF)	3,800	-317,000
25' NO ALTERATION ZONE	10,200	-173,000
100' BANK/BVW BUFFER ZONE	31,600	-599,000
100' RIVERFRONT AREA (RFA)	31,600	-232,000
200' RIVERFRONT AREA (RFA)	47,900	-388,000

400' 0 400' 800'
SCALE:1"=400'

DATE	#	DESCRIPTIONS	BY	APP

DRAWN BY: MAO
CHECKED BY: JWG
APPROVED BY: JWG
PROJECT NO. 02450 DATE: 05/21/2025

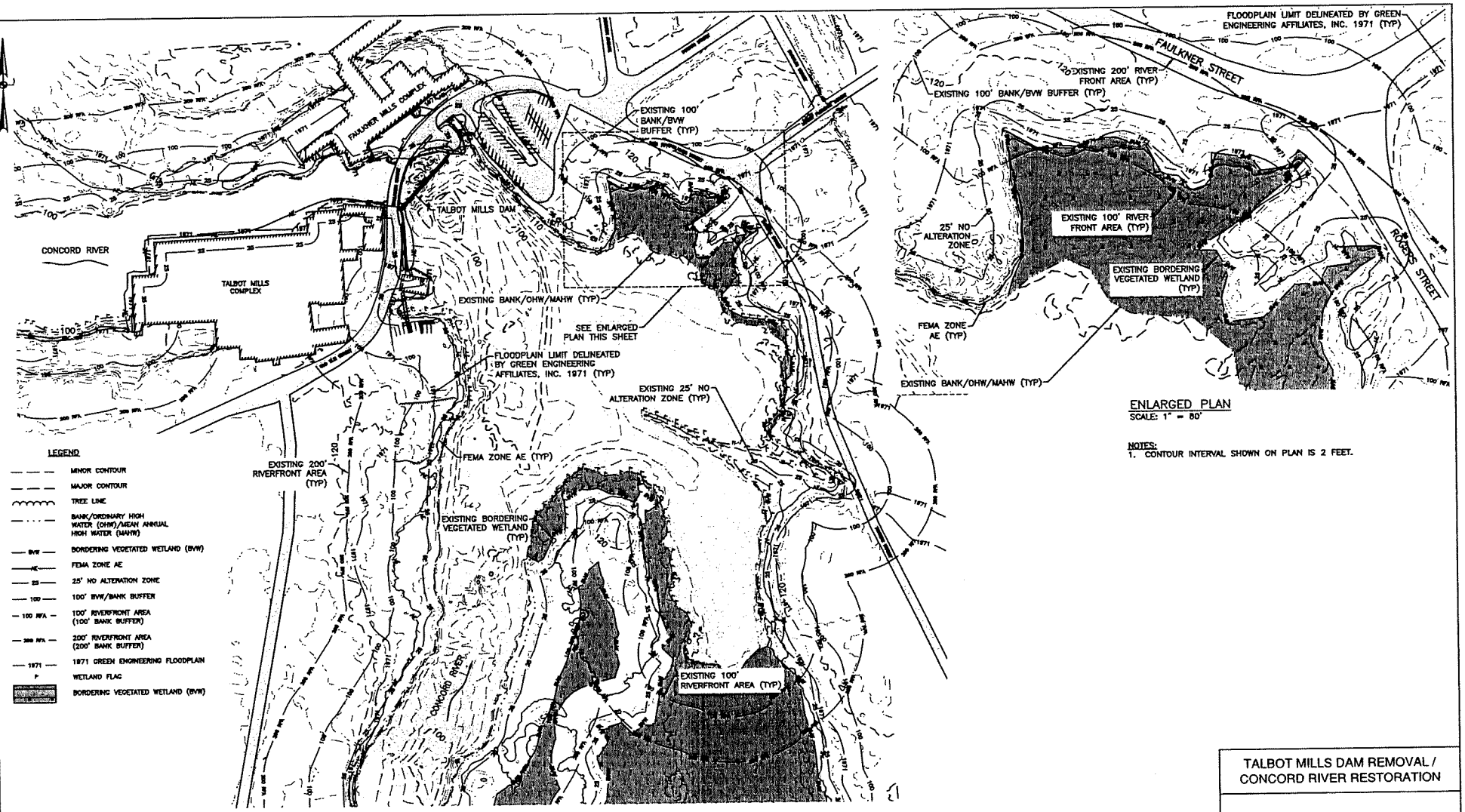
TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

EXISTING AND PROPOSED RESOURCE AREAS

OARS, INC.
23 Bradford Street
Concord, MA 01742

Gemaz and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2179
Hennikar, NH 03242

SCALE: 1" = 400'
DRAWING: 3



EXISTING PLAN
SCALE: 1" = 200'

NOTES:
1. WHERE THE 100' BVW/BANK BUFFER AND THE 100' RFA ARE COINCIDENT ONLY THE 100' BANK/BVW BUFFER IS SHOWN.
2. CONTOUR INTERVAL SHOWN ON PLAN IS 2 FEET.

ENLARGED PLAN
SCALE: 1" = 80'

NOTES:
1. CONTOUR INTERVAL SHOWN ON PLAN IS 2 FEET.

80' 0 80' 160'
SCALE:1"=80'

200' 0 200' 400'
SCALE:1"=200'

TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

EXISTING WETLAND RESOURCES PLAN

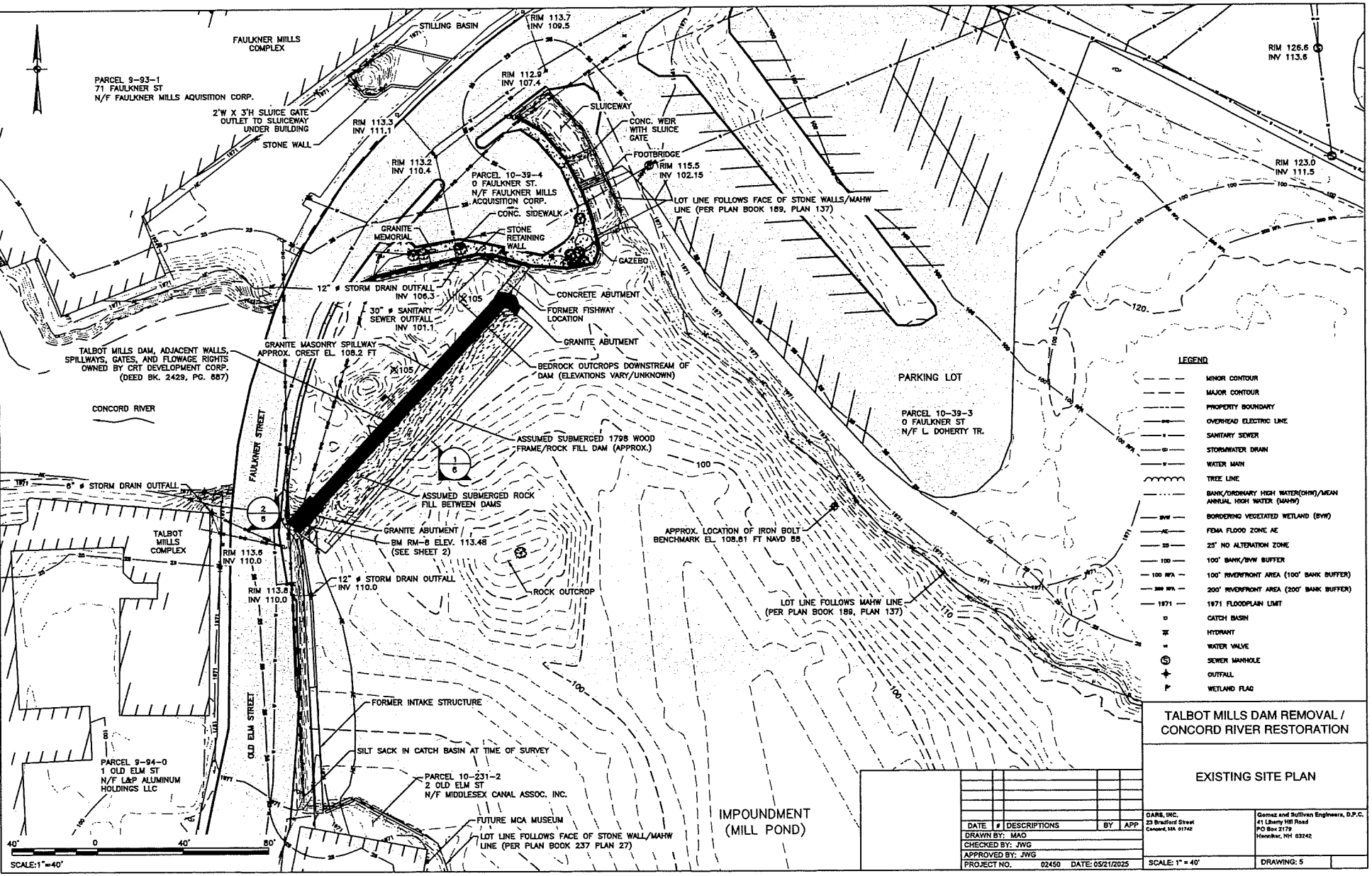
DATE	#	DESCRIPTIONS	BY	APP

DRAWN BY: MAO
CHECKED BY: JWG
APPROVED BY: JWG
PROJECT NO. 02450 DATE: 05/21/2025

OARS, INC.
23 Bradford Street
Concord, MA 01742

Gomez and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
P.O Box 2179
Henniker, NH 03242

SCALE: AS NOTED
DRAWING: 4



TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

EXISTING SITE PLAN

DATE	#	DESCRIPTIONS	BY	APP

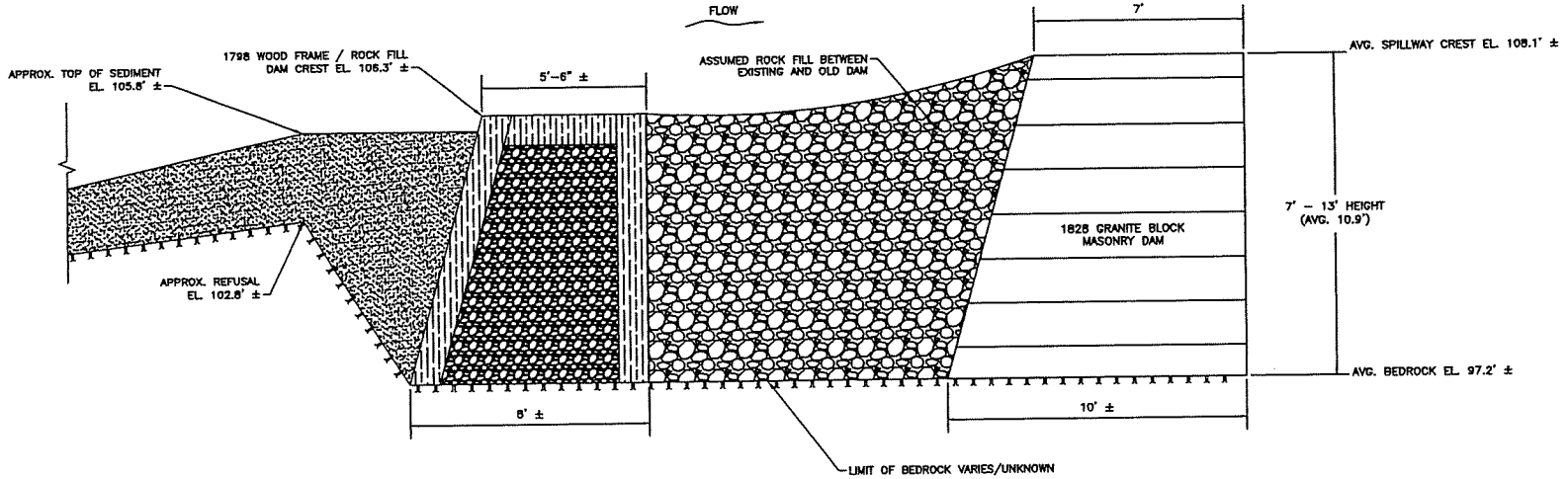
DRAWN BY: MAO
CHECKED BY: JWG
APPROVED BY: JWG
PROJECT NO. 02450 DATE: 05/21/2025

OARS, INC.
23 Bradford Street
Concord, MA 01742

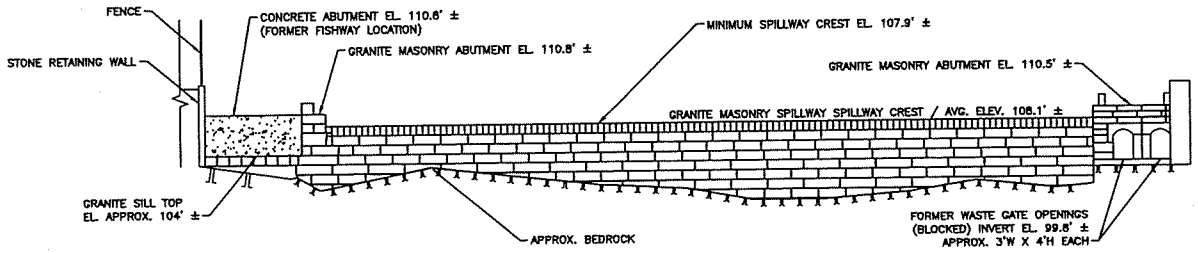
Gomez and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2179
Henniker, NH 03242

SCALE: 1" = 40'

DRAWING: 5



1/6 EXISTING AND 1798 DAM SECTION
SCALE: 1"=4'



2/6 EXISTING DAM ELEVATION (LOOKING UPSTREAM)
SCALE: 1" = 20'

4' 0 4' 8'
SCALE:1"=4'
20' 0 20' 40'
SCALE: 1"=20'

DATE	#	DESCRIPTIONS	BY	APP
DRAWN BY: MAO				
CHECKED BY: JWG				
APPROVED BY: JWG				
PROJECT NO. 02450		DATE: 05/21/2025		

TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

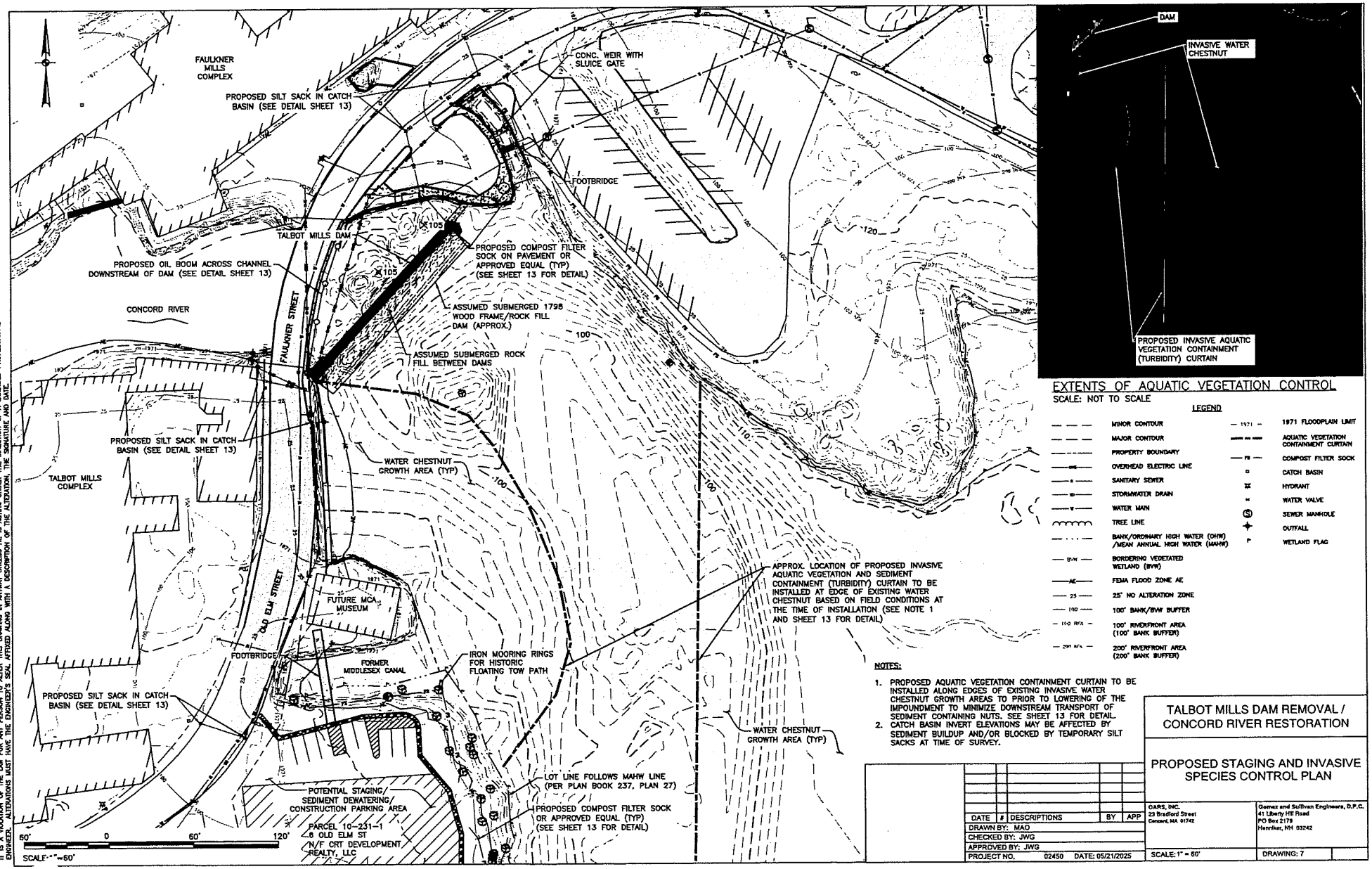
EXISTING DAM SECTION AND ELEVATION

OARS, INC.
23 Bradford Street
Concord, MA 01742

Gomez and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2179
Henniker, NH 03242

SCALE: AS NOTED

DRAWING: 6



EXTENTS OF AQUATIC VEGETATION CONTROL

SCALE: NOT TO SCALE

LEGEND

- MINOR CONTOUR
- MAJOR CONTOUR
- PROPERTY BOUNDARY
- OVERHEAD ELECTRIC LINE
- SANITARY SEWER
- STORMWATER DRAIN
- WATER MAIN
- TREE LINE
- BANK/ORDINARY HIGH WATER (OHW) /MEAN ANNUAL HIGH WATER (MAHW)
- BVW — BORDERING VEGETATED WETLAND (BVW)
- AE — FEMA FLOOD ZONE AE
- 25 — 25' NO ALTERATION ZONE
- 100 — 100' BANK/BVW BUFFER
- 100 RFA — 100' RIVERFRONT AREA (100' BANK BUFFER)
- 200 RFA — 200' RIVERFRONT AREA (200' BANK BUFFER)
- 1971 — 1971 FLOODPLAIN LIMIT
- AQUATIC VEGETATION CONTAINMENT CURTAIN
- FS — COMPOST FILTER SOCK
- CATCH BASIN
- HYDRANT
- WATER VALVE
- S — SEWER MANHOLE
- OUTFALL
- WETLAND FLAG

NOTES:

1. PROPOSED AQUATIC VEGETATION CONTAINMENT CURTAIN TO BE INSTALLED ALONG EDGES OF EXISTING INVASIVE WATER CHESTNUT GROWTH AREAS TO PRIOR TO LOWERING OF THE IMPOUNDMENT TO MINIMIZE DOWNSTREAM TRANSPORT OF SEDIMENT CONTAINING NUTS. SEE SHEET 13 FOR DETAIL.
2. CATCH BASIN INVERT ELEVATIONS MAY BE AFFECTED BY SEDIMENT BUILDUP AND/OR BLOCKED BY TEMPORARY SILT SACKS AT TIME OF SURVEY.

TALBOT MILLS DAM REMOVAL / CONCORD RIVER RESTORATION

PROPOSED STAGING AND INVASIVE SPECIES CONTROL PLAN

DATE	#	DESCRIPTIONS	BY	APP

DRAWN BY: MAO
CHECKED BY: JWG
APPROVED BY: JWG
PROJECT NO. 02450 DATE: 05/21/2025

OARS, INC.
23 Bradford Street
Concord, MA 01742

Gomez and Sullivan Engineers, D.P.C.
41 Liberty Hill Road
PO Box 2179
Henniker, NH 03242

SCALE: 1" = 60' | DRAWING: 7

PCL XL Error

Subsystem:	I/O
Error:	InputReadError
Operator:	EndPage
Position:	5216470

EXHIBIT 3

Billerica Historic Districts Commission
365 Boston Road, Billerica, MA 01821
www.town.billerica.ma.us/HDC
968-671-0962

Application for Certificate of Hardship
Talbot Mills Dam Removal

The following item was Denied at the Historic District Commission hearing on June 4, 2025.

Application Name	Location	Description	Major/Minor	Application #
CRT Development Realty, LLC	Talbot Mills Dam / Concord River	Dam removal	Major	2025-01

Vote:
None (0) in favor – six (6) opposed.

Findings:
Pursuant to Section 12(d) of the Bylaw to Establish Historic Districts Commission, a Certificate of Hardship shall be issued if the Commission determines that, owing to conditions specific to a particular building or structure, failure to approve an application will result in substantial hardship, whether financial or otherwise, to the applicant, and that granting the application will not involve substantial detriment to the public welfare or substantial derogation from the intent and purpose of this By-Law, the Commission shall grant a Certificate of Hardship.

Commission found that loss of the dam would not be in the public's best interest as the dam has local and national historical significance and should be protected and preserved.

Katherine Malgieri
Katherine Malgieri
Planning and Community Development
Director

BANK OF AMERICA

Cashier's Check

No. 6390902839

Notice to Purchaser - In the event that this check is lost, misplaced or stolen, a sworn statement and 90 day waiting period will be required prior to replacement. This check should be negotiated within 90 days.

Void After 90 Days 30-1/1140 Date 06/24/25 09:04:57 AM

NMA

FALMOUTH MAIN

752 0088437 007

Pay BANK OF AMERICA 1,500.00

$1,500.00

One Thousand Five Hundred and 00/100 Dollars

To The Order Of NORTHERN MIDDLESEX COUNCIL OF GOVERNMENTS

Remitter (Purchased By): MR ROBERT S MARTIN

Bank of America, N.A.
SAN ANTONIO, TX

AUTHORIZED SIGNATURE

00-53-3364B 06-2019

⑈6390902839⑈ ⑆114000019⑆ 1641005388⑈

THE ORIGINAL DOCUMENT HAS A WHITE REFLECTIVE WATERMARK ON THE BACK. HOLD AT AN ANGLE TO VIEW WHEN CHECKING THE ENDORSEMENTS.