TOWN OF GLASTONBURY
PROFESSIONAL SERVICES PROCUREMENT NOTICE
REQUEST FOR QUALIFICATIONS
BLACKLEDGE DAM REMOVAL
RPGL-2016-19

The Town of Glastonbury is seeking to engage the services of a Consulting Engineering firm to provide engineering services for the preparation of contract plans and documents for the following project: Blackledge Dam Removal. This project includes the design, permitting and production of construction specifications necessary to complete removal of the dam, restore the stream channel and revegetate the area currently covered by the impoundment. Work must be accomplished in accordance with a report entitled "Wetland Mitigation Plan/Blackledge Dam Removal Glastonbury Connecticut" dated June 18, 2015 completed by Environmental Planning Services LLC and Army Corp of Engineers permit # NAE-2004-0507.

The firm selected will be required to prepare environmental documents, assist in gaining necessary local, State and Federal regulatory permits, and make presentations at public meetings. Firms responding to this request should be of adequate size and sufficiently staffed to perform the assignment described above.

The selected firm must meet all Municipal, State, and Federal affirmative action and equal employment opportunity practices. The Town of Glastonbury is an Affirmative Action/Equal Opportunity Employer. Minority / Women /Disadvantaged Business Enterprises are encouraged to submit a proposal.

Interested individuals and firms should request the instructions for submitting a qualifications statement from the Office of the Purchasing Agent, 2155 Main Street, Glastonbury, CT 06033-6523 or via the Town's website **www.glastonbury-ct.gov.** Responses to the Proposal must be submitted to the Purchasing Agent no later than **May 24, 2016 at 11:00 AM. LATE PROPOSALS WILL NOT BE CONSIDERED.**

Mary F. Visone
Purchasing Agent

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Attachments

SECTION I – GENERAL INFORMATION

EXECUTIVE SUMMARY

Removal of the Blackledge Dam is being proposed by the Town of Glastonbury as compensation for impacts to wetland regulated area resulting from remediation of a Global Stability problem at the Glastonbury Riverfront Park on the Connecticut River. The least environmentally damaging practicable alternative for the remedial actions required placing rip-rap in approximately 25,660± s.f. of fish habitat in the Connecticut River. To mitigate any potential adverse impacts on fishery resources, the Town proposed removal of an existing, stone masonry dam on the Blackledge River north of Hebron Avenue in Glastonbury: The dam is in poor condition as determined by the CT DEEP Dam Safety Unit.

The Connecticut River, as it flows through Glastonbury, is an important migratory corridor for native diadromous1 fish species, including Atlantic salmon (Salmo salar), American eel (Anguilla rostrata). The work required to remediate the Global Stability problem at the Glastonbury Riverfront Park could influence the diadromous fish habitat in this area. Therefore, the Town has developed the mitigation plan to fully satisfy requirements and expectations of CT DEEP and the Army Corps of Engineers (ACOE). The protection and restoration of diadromous fish has long been a priority for the Connecticut Department of Energy and Environmental Protection (CTDEEP) and the Connecticut River Atlantic Salmon Commission (CRASC); a Congressionally-authorized interagency body comprised of the four Connecticut River states, the U.S. Fish & Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). The NMFS has indicated that Atlantic salmon (Salmo salar) is a species of particular concern. Atlantic salmon is listed as 'endangered' under the federal Endangered Species Act in the Gulf of Maine. The restoration population in the Connecticut River is provided complete protection under State laws and regulations. American eel are also present in this reach of the Connecticut River, and are potentially affected by the proposed work. American eel is experiencing severe declines throughout its range and is currently a candidate for listing under the Endangered Species Act.

The proposed mitigation project directly benefits the same species that could be adversely affected by the work already completed within the CT River. The Blackledge River Dam is primarily located in Glastonbury (a portion is located in Hebron) and currently blocks runs of anadromous Atlantic salmon, sea lamprey (Petromyzon marinus), and the catadromous American eel. All of these species are targeted by CTDEEP and CRASC for restoration to the Connecticut River watershed. The Blackledge River is a major tributary to the Salmon River, one of the primary Connecticut River tributaries targeted by CTDEEP and CRASC.

The Blackledge River Dam will be the only major dam left in the entire watershed that impacts diadromous fishes following completion of other similar projects scheduled in 2016. It currently blocks access to 2.1 miles of habitat up to Gay City State Park in Hebron Connecticut. The removal of this dam would allow salmon, lamprey, and eels to fully utilize this habitat.

The stream becomes smaller above the Gay City dam and is likely of minimal value to these species. Thus this project would re-connect most of the important available habitat on the Blackledge River. Furthermore, the removal of the dam will restore the native, free-flowing habitat that these species prefer so the quality of the re-connected habitat will improve. The dam's impoundment results in degraded water quality in terms of water temperature, dissolved oxygen, and turbidity. Removal of the dam will result in improvement of water quality for many miles of downstream riverine habitat that is used by these three diadromous fish species. Other

riverine species will also benefit from this project, including the eastern brook trout (Salvelinus fontinalis), which is a priority species for the USFWS.

SPECIAL CONSIDERATIONS

- A report entitled "Wetland Mitigation/Blackledge Dam Removal Glastonbury Connecticut" dated June 18, 2015 prepared by Environmental Planning Services LLC This report may serve as a reference for this project and is included with this document as Attachment B.

- Permit number NA-2004-0507 issued by the U.S. Army Corp of Engineers (ACOE) may also serve as a reference for this project and is included as Attachment C.

- CT Department of Energy and Environmental Protection (CT DEEP) Emergency Authorization Letter dated April 1, 2015 and is included as Attachment D.

GENERAL SCOPE

The Town of Glastonbury is seeking to engage the services of a Consulting Environmental Engineering firm to provide engineering services for the preparation of contract plans and documents for this project. The Consulting firm selected will also be required to provide environmental documents, assist in gaining local, State and Federal regulatory permits, and make public presentations on the project. The design fee will be negotiated on a Lump Sum basis.

The project construction must be completed no later than June 30, 2018.

- The Town of Glastonbury Engineering Division will be performing the necessary topographic and boundary surveys and will be preparing any property maps necessary for right-of-way and easement acquisition. Consultant services shall be limited to preparation of design drawings and preparation of Specifications suitable for public bidding. The Consultant shall also provide cost opinions for the construction and anticipated post construction monitoring. It is expected that Town of Glastonbury Engineering Division staff will perform construction inspection and administration duties. However, the Consultant may be retained for selected functions pertinent to the construction phase. Construction phase services would be negotiated separately from the design phase agreement.

- The Consultant will be expected to closely coordinate with Officials from all relevant Regulatory Agencies throughout the course of the design phase. Feedback from said agencies to be incorporated into the construction documents and applicable permit applications.

- The Consultant will be expected to develop a Construction sequencing plan which ensures that dam removal does not result in adverse downstream impacts to public and/or private property.

- The Consultant will be expected to devise schemes to ensure that invasive plant species do not predominate over land surface areas created by removing the impoundment. An invasive species management plan shall similarly be devised.

- The Consultant will be expected to integrate design features aimed at ensuring that the newly created stream channel will not suffer undue erosion and change of course due to future heavy flow conditions. Sufficient hydraulic modeling shall be performed to ensure the adequacy of the resultant stream channel.

- The Consultant shall identify means of Contactor access/storage which are environmentally responsible.

SECTION II – CONSULTANT'S SERVICES

- The Consultant shall perform professional services as stated and according to instructions received from the Town. The Consultant's services shall include all design related incidental services.

- All drawings, reports, and other documents prepared by the Consultant according to this Agreement shall be submitted to the Town for its review and approval.

- No such approval shall in any way be construed to relieve the Consultant of responsibility for technical adequacy or operate as a waiver of any of the Town's rights under this Agreement. The Consultant shall remain liable to the Town according to applicable laws and practices for all damages to the Town caused by the Consultant's negligent performance of any of the services furnished under this Agreement.

- The Consultant shall conduct regular meetings with the Town, and other appropriate parties, at a location established by the Town to review progress. The Consultant will provide written notes of each meeting to all attending parties before the next meeting. The Consultant shall attend and make presentations at public meetings for the purpose of gaining necessary approval and provide information to the general public.

- The Consultant's services under agreements reached shall be as described above. The Town does not guarantee future construction phase work.

SECTION III - SUBMISSION OF QUALIFICATIONS STATEMENT

MINIMUM REQUIREMENTS

- Firm/Individual shall be registered with the Secretary of the State of Connecticut, the State of Connecticut Board of Examiners for Professional Engineers and Land Surveyors, or other appropriate State of Connecticut licensing boards.

- Firm/Individual shall have demonstrated successful experience with similar dam removal and stream restoration projects. Consultants shall be advised that dam inspection experience alone will not be deemed sufficient to meet minimum requirements.

- Respondents shall utilize staff or subconsultants having extensive experience in fisheries related fields applicable to the subject project.

- The Consulting firm shall have hydraulic modeling experience sufficient to properly design the size, shape and type of bank stabilization measures necessary.

- The selected firm must meet all Municipal, State, and Federal affirmative action and equal employment opportunity practices.

TERM OF SERVICE

The selected firm will be expected to commence services within 15 days of contract execution or on such other schedule as may be agreed to with the Town. The Town anticipates allocating up to four (4) months for the design project described herein, including data collection, meetings, consultant design, and preparation of bid documents, etc. The Town understands that time required to gain necessary permits will likely exceed that which is required for actual design phase work.

PROPOSAL INSTRUCTIONS

- By submitting a Qualifications Statement, you represent that you have thoroughly examined and become familiar with the Scope of Services outlined in this RFQ and you are capable of performing the work to achieve the Town's objectives.

- All firms are required to submit an original and seven (7) copies of their Qualifications Statement to Mary F. Visone, Purchasing Agent, 2155 Main Street, Glastonbury, CT by the date and time listed in the proposal response page. All Qualifications Statements will be opened publicly and recorded as received. Respondents may be present at the opening; however, there will be no public reading. Qualification Statements received later than the time and date specified will not be considered. The Qualifications Statement must be submitted in a sealed envelope or package and the outside shall be clearly marked with the Respondent's Company Name, Address and the following:

  SEALED REQUEST FOR QUALIFICATIONS
  PROFESSIONAL SERVICES PROCUREMENT NOTICE
  BLACKLEDGE DAM REMOVAL DESIGN
  RPGL- 2016-19
  May 24, 2016
  TIME – 11:00 A.M.

- All respondents are required to submit the information detailed below. **Responses shall be organized and presented in the order listed below to assist the Town in reviewing and rating proposals.** Responses should be presented in appropriate detail to thoroughly respond to the requirements and expected services described herein.

  1. Table of Contents to include clear identification of the material provided by section and number.
  2. A letter of transmittal indicating the firm's interest in providing the service and any other information that would assist the Town in making a selection. This letter must be signed by a person legally authorized to bind the firm to a contract.
  3. Name and telephone number of person(s) to be contacted for further information or clarification.

4. A background statement including a description of the firm/individual submitting the proposal and any sub-consultants.

5. A detailed statement describing the organizational structure under which the firm proposes to conduct business. Proposed sub-consultants should be clearly identified, and their relationship to any "parent" firm or subsidiary firm, with any of the parties concerned, must be clearly defined.

6. A list of key staff members who would be involved with the project, including their assigned roles and a description of their background and experience. Descriptions should highlight specialized design and technical competence of individuals assigned to the project including knowledge and experience related to stream channel hydraulics, invasive species management and fisheries related expertise.

7. A description of relevant engineering experience of the firm, including specific reference to similar services as required by the Town under this proposal. Qualification statements should include examples of projects completed within agreed upon time frames thereby demonstrating capacity and the capability to perform the work within the time allotted.

8. List of similar projects completed over the past five (5) years with the contact name, address, and telephone number of the owners' representative in each project. Projects cited should detail past record of performance on similar contracts with the Town and other clients with respect to such factors as control of costs, quality of work, and cooperation with the client; including knowledge of Federal, State and Municipal procedures.

9. Overall approach to the engineering and environmental needs of the Town for the dam removal project.

10. Proposed schedule for completion of engineering services as required to meet the Town's intended schedule.

11. A concluding statement as to why the respondent is best qualified to meet the needs of the Town.

12. Proposal Response Form (**ATTACHMENT A**).

13. Respondent is required to review the Town of Glastonbury Code of Ethics adopted October 22, 2013 and effective November 8, 2013 and revised October 29, 2013 and effective November 28, 2013. Respondent shall acknowledge that they have reviewed the document in the area provided on the attached Ethics Acknowledgement form included on **ATTACHMENT A.** The selected respondent will also be required to complete and sign a Consultant Acknowledgement Form prior to award. The Code of Ethics and the Consultant Acknowledgment Form can be accessed on the Town of Glastonbury website at http://www.glastonbury-ct.gov. Upon entering the website, click on Bids and Proposals icon which will bring you to the links for the Code of Ethics and the Acknowledgement Form. If the respondent does not have access to the internet, a copy of these documents can be obtained through the Purchasing Department at the address listed within this proposal.

14. Statement of Non-Collusion (**ATTACHMENT A**).

15. The Town of Glastonbury is dedicated to waste reduction and the practice of using and promoting the use of recycled and environmentally preferable products. Respondents are encouraged to submit RFQ responses that are printed double-sided (except for the signed proposal page) on recycled paper, and to use paper dividers to organize the RFQ for review. All proposal pages should be secured with a binder clip, staple or elastic band, and shall not be submitted in plastic binders or covers, nor shall the proposal contain any plastic inserts or pages. We appreciate your efforts towards a greener environment.

16. Any technical questions regarding this RFQ shall be made in writing and directed to Daniel A Pennington P.E., Town Engineer/Manager of Physical Services, 2155 Main Street Glastonbury, CT 06033 or by email to daniel.pennington@glastonbury-ct.gov. For administrative questions concerning this proposal, please contact Mary F. Visone, Purchasing Agent, via email: purchasing@glastonbury-ct.gov.

17. All questions, answers, and/or addenda, as applicable, will be posted on the Town's website at www.glastonbury-ct.gov. (Upon entering the website click on Bids & Proposals icon, click on the Bid Title to view all proposal details and document links). It is the respondent's responsibility to check the website for addenda prior to submission of any proposal. Note: Responses to requests for more specific contract information than is contained in the RFQ shall be limited to information that is available to all respondents and that is necessary to complete this process. The request must be received at least five (5) business days prior to the advertised response deadline.

18. Failure to include any of the above-referenced items in the submitted proposal may be grounds for disqualifying said proposal.

EVALUATION CRITERIA

- A Selection Committee, appointed by the Town Manager, will evaluate all proposals received for completeness and the respondent's ability to meet all requirements as outlined in this Request for Qualifications. The Selection Committee will then short list the specific firms whose proposals best meet all criteria required.

- The following factors will be considered by the Town when evaluating the proposals:

  - Specialized design and technical competence of individuals assigned to the project including knowledge and experience related to stream channel hydraulics, invasive species management and fisheries related expertise. Overall firm expertise with same should be noted if design experience of assigned individuals occurred with other firms.

  - Capacity and the capability to perform the work within the time allotted. Specific examples of past projects completed within agreed upon timeframes should be noted in the Consultant's submittal.

- Past record of performance on similar contracts with the Town and other clients with respect to such factors as control of costs, quality of work, and cooperation with the client; including knowledge of Federal, State and Municipal procedures.

- Overall approach to meeting the technical needs of the Town for the dam removal project.

- Schedule

- Overall quality, thoroughness, and responsiveness to the Town's requirements as summarized herein.

SELECTION PROCESS

- This request for qualifications does not commit the Town of Glastonbury to award a contract or to pay any costs incurred in the preparation of a proposal to this request. All proposals submitted in response to this request become the property of the Town of Glastonbury. The Town of Glastonbury reserves the right to accept or reject any or all proposals received as a result of this request, to negotiate with the selected respondents, the right to extend the contract for an additional services, or to cancel in part or in its entirety the request for qualifications, and to waive any informality if it is in the best interests of the Town to do so.

- A Selection Committee, appointed by the Town Manager, will evaluate all submittals received for completeness and the respondent's ability to meet all requirements as outlined in this RFQ. The Committee will then short list the specific firms whose statements best meet all criteria required and may conduct interviews with these firms. Upon completion of interviews, the Selection Committee will forward to the Town Manager, a list of firms recommended for further consideration.

- Top rated firms will be asked to submit a specific Scope of Services and associated fee proposal along with any exceptions taken to the Town's form of agreement. The Town Manager shall review said proposals and negotiate an agreement based on those discussions.

- Additional technical information may be requested from any respondent for clarification purposes, but in no way changes the original qualification statement submitted.

TIMELINE

The Town intends to adhere to the schedule listed below as closely as possible, but reserves the right to modify the schedule in the best interest of the Town as required.

Publicize RFQ	**05-06-16**
RFQ Due Date	**05-24-16 @ 11:00AM**
Shortlist of Proposals Received	**06-02-16**
Interviews with Top Respondents	**06-21-16**
Fee Proposal and Scope of Services	**TBD**
Contract Effective Date	**TBD**
Completion of Design	**TBD**

INSURANCE

The following insurance requirements are the Town's general requirements. Insurance requirements with the awarded respondent are subject to final negotiations.

The Respondent shall, at its own expense and cost, obtain and keep in force during the entire duration of the Project or Work the following insurance coverage covering the Respondent and all of its agents, employees, sub-contractors and other providers of services and shall name the Town of Glastonbury, its employees and agents as an Additional Insured on a primary and non-contributory basis to the Respondent's Commercial General Liability and Automobile Liability policies. **These requirements shall be clearly stated in the remarks section on the Respondent's Certificate of Insurance**. Insurance shall be written with Carriers approved in the State of Connecticut and with a minimum Best's Rating of A-VIII. In addition, all Carriers are subject to approval by the Town. Minimum limits and requirements are stated below:

1) Worker's Compensation Insurance:
- Statutory Coverage
- Employer's Liability
- $500,000 each accident/$500,000 disease-policy limit/$500,000 disease each employee
- A Waiver of Subrogation shall be provided in favor of the Town of Glastonbury and its employees and agents.

2) Commercial General Liability:

- Including Premises & Operations, Products and Completed Operations, Personal and Advertising Injury, Contractual Liability and Independent Contractors.
- Limits of Liability for Bodily Injury and Building Damage
  Each Occurrence $1,000,000
  Aggregate $2,000,000 (The Aggregate Limit shall apply separately to each job.)
- A Waiver of Subrogation shall be provided in favor of the Town of Glastonbury and its employees and agents.

3) Automobile Insurance:

- Including all owned, hired, borrowed and non-owned vehicles

- Limit of Liability for Bodily Injury and Building Damage:
  Per Accident $1,000,000
- A Waiver of Subrogation shall be provided in favor of the Town of Glastonbury and its employees and agents.

4) Errors and Omissions Liability or Professional Services Liability Policy:

- Provide Errors and Omissions Liability or Professional Services Liability Policy for a minimum Limit of Liability $2,000,000 each occurrence or per claim. The Town, its employees and agents shall be named Additional Insured for this specific Project. The certificate shall specify that the Town shall receive 60 days advance written notice of cancellation or non-renewal specific to this Project.

- The Respondent agrees to maintain continuous professional liability coverage for the entire duration of this Project, and shall provide for an Extended Reporting Period in which to report claims for five (5) years following the conclusion of the Project.

The Respondent shall provide a Certificate of Insurance as "evidence" of General Liability, Auto Liability including all owned, hired, borrowed and non-owned vehicles, and statutory Worker's Compensation and Employer's Liability coverage.

The Respondent shall direct its Insurer to provide a Certificate of Insurance to the Town before any work is performed. The Certificate shall specify that the Town shall receive 30 days advance written notice of cancellation or non-renewal. The Certificate shall evidence all required coverage including the Additional Insured and Waiver of Subrogation. The Respondent shall provide the Town copies of any such Policies upon request.

INDEMNIFICATION

To the fullest extent permitted by law, the Respondent shall indemnify and hold harmless the Town and their respective consultants, agents, and employees from and against all claims, damages, losses, and expenses, direct, indirect or consequential (including, but not limited to, fees and charges of engineers, attorneys and other professionals, and court and arbitration costs) arising out of or resulting from the performance of the Respondent's work, provided that such claim, damage, loss, or expense is caused in whole or in part by any negligent act or omission by the Respondent, or breach of its obligations herein or by any person or organization directly or indirectly employed or engaged by the Respondent to perform or furnish either of the services, or anyone for whose acts the Respondent may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

As to any and all claims against the Town or any of its consultants, agents, or employees by any employee of the Respondent, by any person or organization directly or indirectly employed by Respondent to perform or furnish any of the work, or by anyone for whose acts Respondent may be liable, the indemnification obligation stated herein shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Respondent under worker's or workman's compensation acts, disability benefit acts, or other employee benefit acts.

The above insurance requirements are the Towns' general requirement. Insurance requirements with the awarded respondent are subject to final negotiations.

ATTACHMENT A
PROPOSAL RESPONSE PAGE

TOWN OF GLASTONBURY * 2155 MAIN STREET * GLASTONURY * CT

BID / PROPOSAL NO: RPGL-2016-19 **DATE DUE:** 05-24-16

DATE ADVERTISED: 05-06-16 **TIME DUE:** 11:00 AM

NAME OF PROJECT: BLACKLEDGE DAM REMOVAL DESIGN REQUEST FOR QUALIFICATIONS

The Respondent acknowledges receipt of the following Addenda:

Addendum #1 _____(Initial/Date) **Addendum #2** _____ (Initial/Date) **Addendum #3** _____(Initial/Date)

NON-COLLUSION STATEMENT:
By submission of this proposal, the Respondent certifies that it is being submitted without any collusion, communication, or agreement as to any matter relating to it with any other respondent or competitor. We understand that this proposal must be signed by an authorized agent of our company to constitute a valid proposal.

CODE OF ETHICS:
I/We have reviewed a copy of the Town of Glastonbury's Code of Ethics and agree to submit a Consultant Acknowledgement Form if I/we are selected. Yes _____ No _____ *

***Respondent is advised that effective August 1, 2003, the Town of Glastonbury cannot consider any proposal where the respondent has not agreed to the above statement.**

Type or Print Name of Individual	**Doing Business as (Trade Name)**
Signature of Individual	**Street Address**
Title	**City, State, Zip Code**
Date	**Telephone Number / Fax Number**
E-Mail Address	**SS # or TIN#**

(Seal – If proposal is by a Corporation)
Attest

ATTACHMENT B
REPORT PREPARED BY EPS LLC

WETLAND MITIGATION PLAN

Blackledge River Dam Removal

Glastonbury, Connecticut

Prepared for:

Town of Glastonbury, CT

Submitted By:

Michael S. Klein
Registered Soil Scientist
Certified Professional Wetland Scientist

June 18, 2015

89 Belknap Road
West Hartford, CT 06117
Phone 860-236-1578 Fax
michael.klein@epsct.com

10 Maple Street
Chester, CT 06412
Phone 860-322-4524 Fax
eric.davison@epsct.com

138 Mystic Road
North Stonington, CT 06359
Phone 860-535-0625 Fax
james.cowen@epsct.com

www.epsct.com

GENERAL INFORMATION

This wetland mitigation plan is being proposed by the Town of Glastonbury as compensation for wetland impacts resulting from remediation of a slope failure at the Glastonbury Riverfront Park on the Connecticut River in Glastonbury. The least environmentally damaging practicable alternative for the remedial actions requires placing rip-rap in approximately 25,660± s.f. of fish habitat in the Connecticut River. To mitigate any potential adverse impacts on fishery resources, the Town proposes removal of an existing, stone masonry dam on the Blackledge River north of Hebron Avenue in Glastonbury:

The Connecticut River, as it flows through Glastonbury, is an important migratory corridor for native diadromous[1] fish species, including Atlantic salmon (*Salmo salar*), American eel (*Anguilla rostrata*). The work required to remediate a slope failure at the Glastonbury Riverfront Park could influence the diadromous fish habitat in this area. Thererfore, the Town has developed the mitigation plan described herein to full satisfy requirements and expectations of CT DEEP and the Army Corps of Engineers (ACOE). The protection and restoration of diadromous fish has long been a priority for the Connecticut Department of Energy and Environmental Protection (CTDEEP) and the Connecticut River Atlantic Salmon Commission (CRASC); a Congressionally-authorized interagency body comprised of the four Connecticut River states, the U.S. Fish & Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). The NMFS has indicated that Atlantic salmon (*Salmo salar*) is a species of particular concern. Atlantic salmon is listed as 'endangered' under the federal Endangered Species Act in the Gulf of Maine. The restoration population in the Connecticut River is provided complete protection under State laws and regulations. American eel is also present in this reach of the Connecticut River, and is potentially affected by the proposed work. American eel is experiencing severe declines throughout its range and is currently a candidate for listing under the Endangered Species Act.

The proposed mitigation project directly benefits the same species that could be adversely affected by the work. The Blackledge River Dam is located in Glastonbury and currently blocks runs of anadromous Atlantic salmon, sea lamprey (*Petromyzon marinus*), and the catadromous American eel. All of these species are targeted by CTDEEP and CRASC for restoration to the Connecticut River watershed. The Blackledge River is a major tributary to the Salmon River, one of the primary Connecticut River tributaries targeted by CTDEEP and CRASC. When the Dam is removed, it will transform the Salmon River watershed (115 sq. miles) into a rare

[1] fish that spend portions of their life cycles partially in fresh water and partially in salt water. These represent both anadromous and catadromous fish. Anadromous fishes spend most of their adult lives at sea, but return to fresh water to spawn. Catadromous fish spend most of their adult lives in fresh water, but must return to the sea to spawn.

undammed, free-flowing watershed. A handful of very small (<4 ft.) dams will persist on small tributaries but these dams do not alter the flow of the water and are located upstream of the range of the anadromous fish species. The Salmon River is perhaps the cleanest of all rivers in Connecticut. All discharges of any kind are prohibited by statute. It is also one of only two watersheds in the state stocked with Atlantic salmon by the CTDEEP. This makes the removal of the Dam an important opportunity and appropriate mitigation for the work at Riverfront Park.

Sixty years ago, there were many migratory barriers to diadromous fishes in the Salmon River but great progress has been made to eliminate them. The CTDEEP owns and operates the Leesville Dam Fishway in East Haddam, where wild adult salmon, sea lamprey, and juvenile eels are passed upstream. Further upstream, the Raymond Brook Dam has been removed and a fishway has been built at the Lyman Viaducts culvert. The Norton Mill Dam is scheduled for removal by the Nature Conservancy in 2016. This leaves the Blackledge River Dam as the only major dam left in the entire watershed that impacts diadromous fishes. It currently blocks access to 2.1 miles of habitat—up to Gay City State Park (see Figure 3). The removal of this dam would allow salmon, lamprey, and eels to fully utilize this habitat.

The stream becomes smaller above the Gay City dam and likely of minimal value to these species so this project would re-connect most of the important available habitat on the Blackledge River. Furthermore, the removal of the dam will restore the native, free-flowing habitat that these species prefer so the quality of the re-connected habitat will improve. The dam's impoundment results in degraded water quality in terms of water temperature, dissolved oxygen, and turbidity. Removal of the dam will result in improvement of water quality for many miles of downstream riverine habitat that is used by these three diadromous fish species. Other riverine species will also benefit from this project, including the eastern brook trout (*Salvelinus fontinalis*), which is a priority species for the USFWS.

- The Site Locus is shown on Figure 1.
- An annotated aerial photograph (2012, source USDA) is shown on Figure 2.
- The mitigation site is located at 41.697633, -72.454219.
- The mitigation site and the impact site are in the Lower Connecticut Hydrologic Unit. The 8 digit HUC code is 01080205.

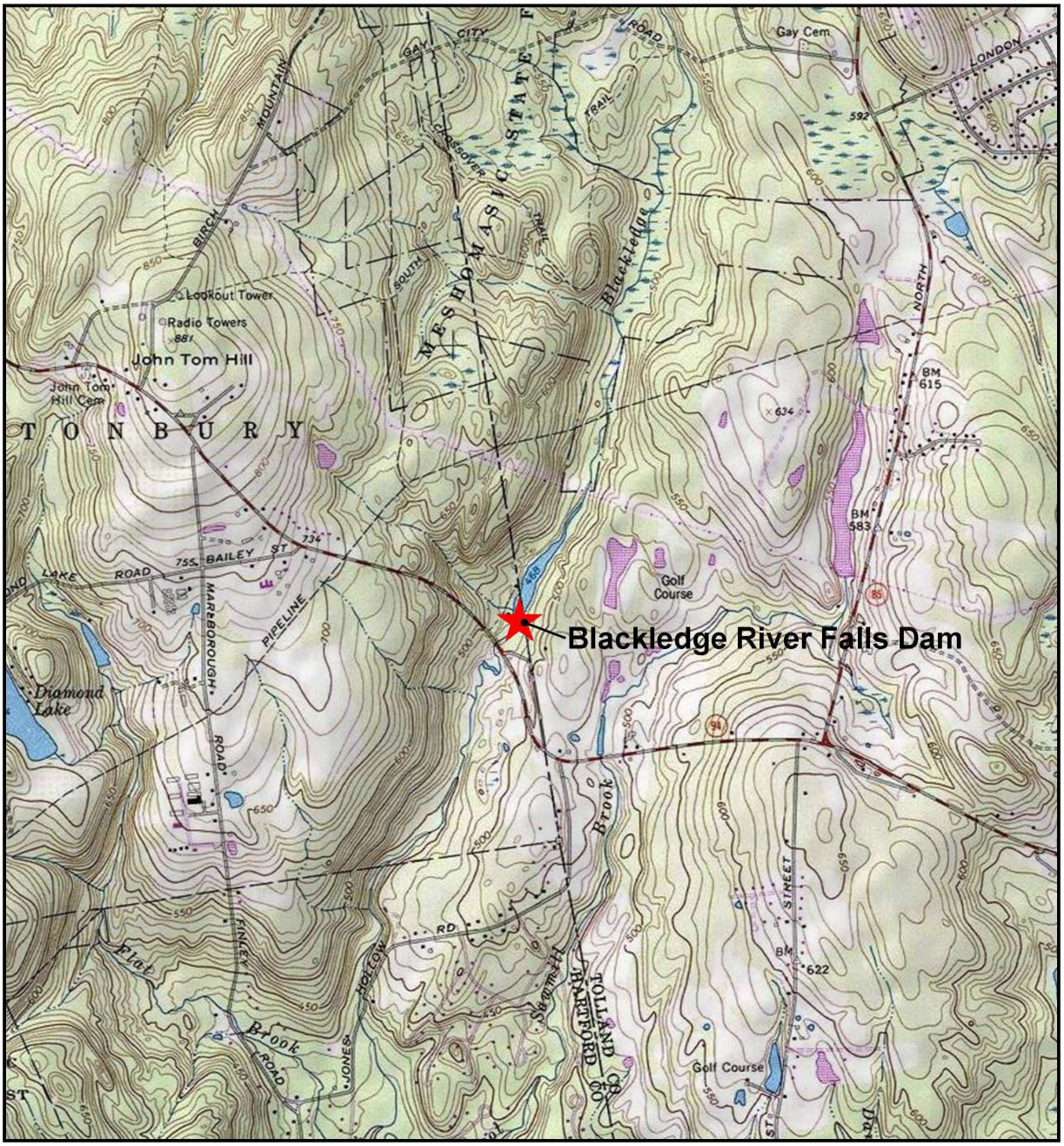


FIGURE 1
LOCATION MAP

Blackledge Falls Dam
Blackledge River
Glastonbury, CT

USGS topographic map showing project location.

SCALE
0 1,000 2,000 Feet
N

A

Environmental Planning Services
89 Belknap Road
West Hartford, CT 06117
860-236-1578
www.epsct.com

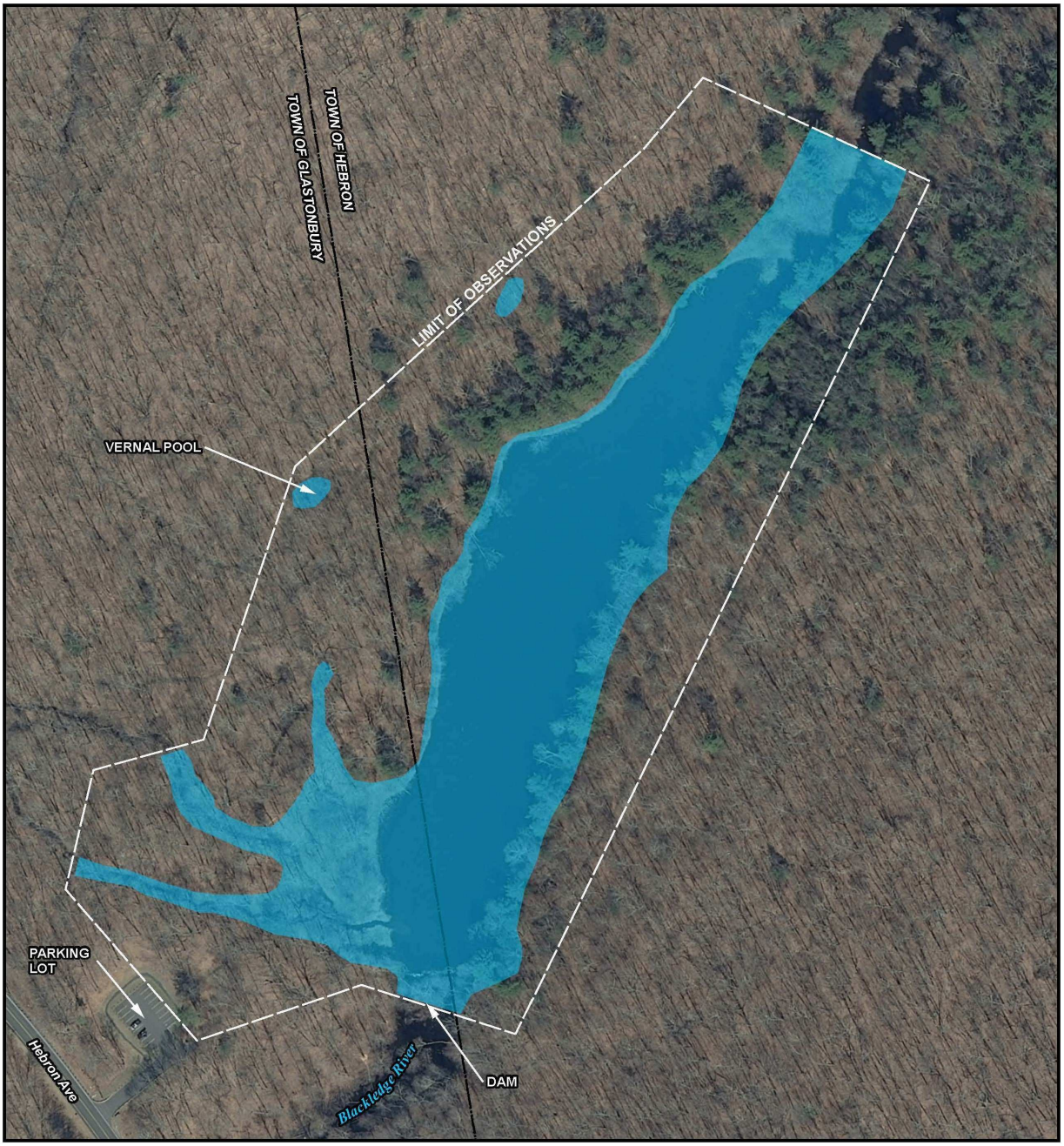


FIGURE 2
AERIAL MAP
Blackledge Falls Dam
Blackledge River
Glastonbury, CT

Legend

Wetlands

Map showing wetlands field sketched by EPS Soil Scientists on 5/9/15. The location and extent of wetlands is approximate. This map is intended for general planning purposes only.

SCALE
0 100 200 Feet
N
A

Environmental Planning Services
89 Belknap Road
West Hartford, CT 06117
860-236-1578
www.epsct.com

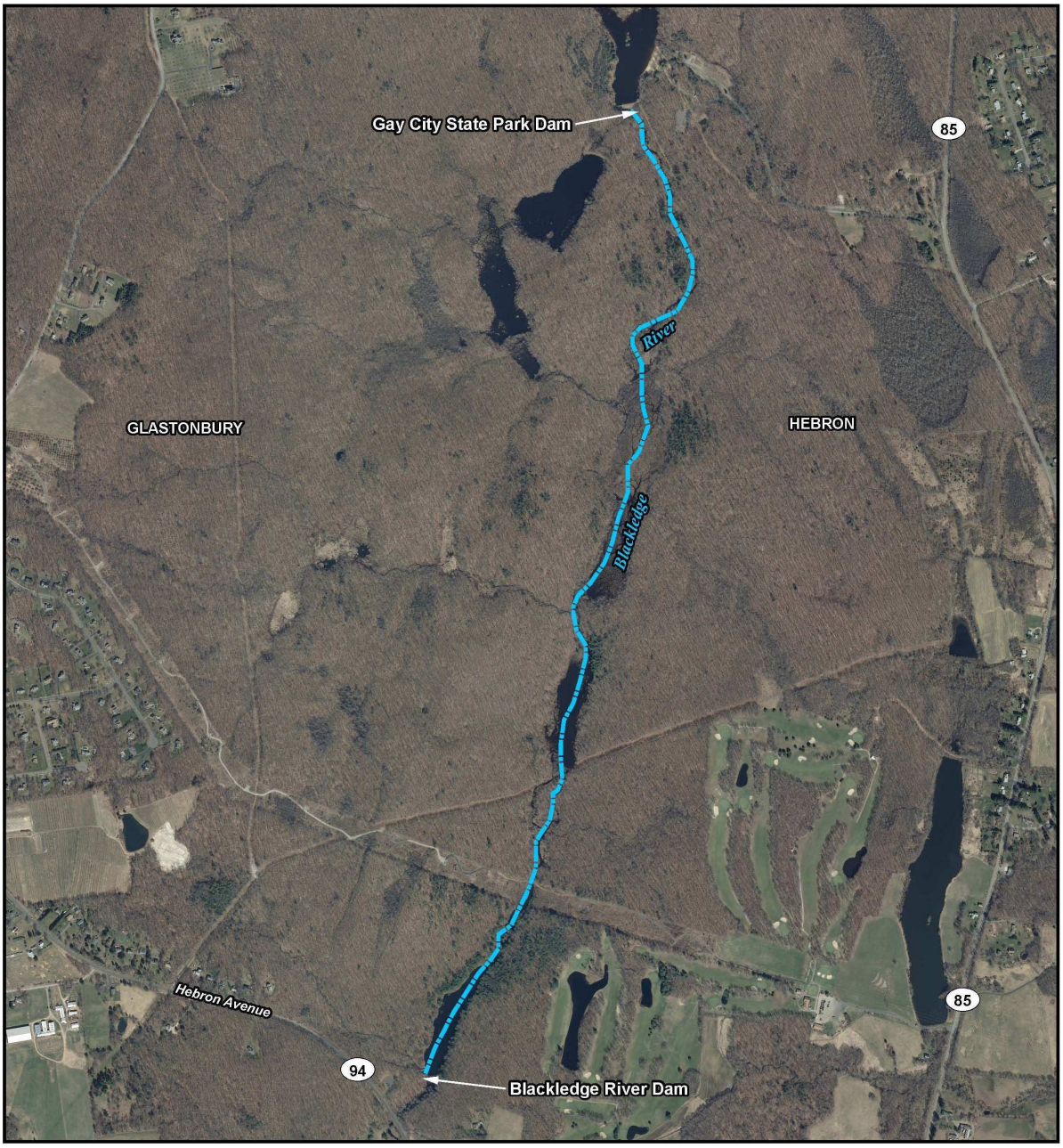


FIGURE 3
RIVER RECONNECTION MAP
Blackledge Falls Dam
Blackledge River
Glastonbury, CT

Legend

Blackledge River

Spatial depiction of the 2.1 miles of riverine habitat to be reconnected by removal of the dam beginning at the Blackledge River Dam to the south and ending at the Gay City State Park Dam to the north.

SCALE
625 1,250 Feet
N
A

Environmental Planning Services
89 Belknap Road
West Hartford, CT 06117
860-236-1578
www.epsct.com

IMPACT AREA

The Blackledge River Dam is located on two separate parcels within Glastonbury and Hebron. The western portion of the dam is located in the Town of Glastonbury, on the ±77-acre open space parcel known as Blackledge Falls, a municipal park owned and operated by the Town of Glastonbury. The eastern portion of the dam is located in the Town of Hebron, within a ±101-acre parcel that is part of Meshomasic State Forest, owned and operated by the CT DEEP. The waterbody retained by the dam is referred to locally as Blackledge Brook Pond. Public access to the dam is via the western property within the Town of Glastonbury.

The dam retains a small pond with fringing marsh and scrub-shrub wetlands. Marsh and scrub-shrub wetlands also occur at the upper reaches of the pond, predominately within and adjacent to the sediment delta at the pond's inflow. To the west of the pond lie forested wetlands with two embedded headwater streams that drain to the pond. The majority of these wetlands rise abruptly in elevation as you move west from the pond's banks. Their hydrology is driven by the impoundment and will not be adversely affected by the dam removal. Two isolated forested wetlands were observed within ±250 feet of the pond; the southernmost of which is a vernal pool.

1. Based on field sketching conducting by EPS Wetland Scientists on May 9, 2015 the wetlands and waters of the U.S. within the project area, as illustrated on Figure 2, total approximately 8 acres. The area of impounded water resulting from the dam totals ± 5.5 acres.
2. The Cowardin classification for the wetlands within the project area includes palustrine, lacustrine and riverine wetland classes: PEM2G, PSS1G, PFO1C, PFO1G, PFO1B, R2UB2 and L1UB3.
3. The HGM classifications include Riverine, Depressional, Lacustrine Fringe and Slope classes.
4. The on-site open water wetland provides the following functions and values: Floodwater storage, wetland wildlife habitat, fish and shellfish habitat, sediment/toxicant/pathogen retention, recreation, education/scientific value and visual/aesthetic quality. These functions and values are summarized below in Table 1:

Table 1. Summary of on-site wetland functions and values, Blackledge River Dam, Glastonbury, CT

Function/Value	Contributing Attributes and Limiting Factors
Floodwater Storage (S)	The dam impounds a significant volume of water; however, based on the configuration of the outlet, the impoundment appears to operate in a "flow through" condition, for most of the year, without the ability to retain additional volume during flooding.
Sediment, toxicant and pathogen retention (S)	The dam retains low to moderate volumes of sediment.
Fish / shellfish habitat (P)	The Blackledge River supports Atlantic salmon, sea lamprey and American eel.
Recreation (P)	The river and impounded pond are utilized for fishing, are located within a town recreation area and visible from a nearby hiking trail.
Educational/ scientific value (S)	The river is located within Town-owned open space, is easily accessible via trails and has a parking lot that can accommodate school groups for education programs. Current use for educational purposes is unknown.
Visual/aesthetic quality (P)	The pond and dam are visible from the hiking trail within Blackledge Falls Park.
Key (P)Indicates primary function (S) Indicates secondary functions provided at a marginal level only	

5. The work proposed is removal of the dam. Based on CT DEEP's experience with similar projects, the work is anticipated to follow the followings sequence:
    a. Mobilization on the east end of the spillway along an existing roadway.
    b. Use of the existing low flow outlet to drain the pond.
    c. Construction of two short access roads, one below the dam, down to the base of the spillway, and one above the dam, out to the low level outlet.
    d. Deploy water handling structures in the pond, according to the engineered plan.
    e. Excavate accumulated sediment immediately upstream of the spillway, de-water spoils on site, and dispose according to the engineered plan, outside of wetlands and waters.
    f. Remove the stone spillway using an excavator; stockpile stone according to plan. g. Grade stream bed and stream banks in a limited area upstream of the spillway, according to plans.
    h. Place selected large rocks taken from the spillway into the streambed to enhance fish passage and fish habitat according to plans and on-site supervision by CT DEEP Inland Fisheries Division and Town of Glastonbury wetland scientists.
    i. Remove portions of the earthen dam according to the plans.
    j. Remove access roads.
    k. Site restoration and de-mobilization.

No extensive removal of pond sediment is anticipated. General observations at this site suggest that the sediment accumulation in the pond is relatively low, the pond bed is relatively firm and possesses many boulders, and the side slopes of the pond are gentle and thus would be stable upon removal. Furthermore, sediment sampling and lab analysis by CT DEEP indicates that there is no contamination present in the pond bed, thus no compelling need to remove sediment for human safety concerns. If additional information is acquired during the design phase that indicates that this information is not accurate or there are additional sediment concerns, a plan for more sediment removal will be included in the final plans.

No proactive planting of native plants is anticipated, beyond stabilization seeding of disturbed areas to prevent erosion. The pond and surrounding land have no extensive stands of non-native plants such as *Phragmites*, Japanese knotweed, purple loosestrife, etc. It is the experience of stream restoration practitioners in Connecticut that pond bed sediments contain a multitude of viable seeds of native plants that germinate and immediately colonize the exposed pond bed upon dam removal. Examples include the Rutan Dam in Stonington, CT (see Figure 4.) and Zemko Dam in Salem. If information is gained during the design phase that suggests there is an elevated risk of colonization of non-native plants, an invasive control plan and planting scheme will be included in the plans.

Figure 4: Former Rutan Dam pond (to right), three months after removal.

6. The work proposed is the removal of the Blackledge River Dam.
7. Operation and maintenance of the area is performed by the Town of Glastonbury. The project described herein will be coordinated by the Town professional staff.

A. **MITIGATION AREA**

1. Background information
    a. Alternatives-
        1) On-site- The shallow water habitat in the Connecticut River currently provides habitat for the potentially affected species. Therefore, on-site alternatives are not available to mitigate potential adverse effects on fisheries habitat.

        2) Off-site – the current project is proposed offsite. The following alternatives, that would provide similar benefits, were considered:
            i. Build a fishway. This is another accepted alternative for providing fish passage. While the exact approach would have to be confirmed by detailed engineering studies, the Town and CT DEEP believe that the most likely method would be to build a right-bank Denil fishway (4 ft wide, slope: 12.5%). The CTDEEP builds smaller fishways for other anadromous fishes but the Atlantic salmon is a large fish (10 pounds, 30 – 35 inches) and it would require the Denil design. The disadvantages of this alternative are:

                Requires the Town to repair the dam to comply with Dam Safety standards and ensure the water level was maintained at a suitable level to allow the fishway to be operational.

                Does not eliminate the impoundment behind the dam and thus fails to deliver those additional ecological benefits.

                Will not pass American eels, so a separate eel pass would have to be designed and installed next to the Denil fishway.

                Will not pass many other non-target species like small trout, minnows, and other native riverine species.

                Would require the Town to operate and maintain the fishway and the dam well into the future.

                Continues to expose the Town to heightened liability by having a dam where the public could sustain injury or the dam could fail and cause downstream damage.

                Detracts from the undeveloped, highly natural setting of the Town property.

                Very expensive—perhaps over twice the cost of the chosen alternative.

            ii. Lower the dam and build a fishway. This is another accepted alternative for providing fish passage. It is generally done to reduce the cost of the fishway and is particularly effective if the dam is 20 feet high and there is some desire to retain a pond. Lowering the dam to 10 feet could cut the fishway costs in half. However, in the case of the Blackledge River Dam, the dam already is fairly low and any modest savings realized with a lower

fishway would be lost with the extra cost of lowering the dam. All of the disadvantages listed for Alternative 2 would still pertain to this alternative.

iii. Remove the dam. This is the chosen alternative. It does not share any of the disadvantages listed for alternatives 2 and 3. The main advantages are:

Restores the streambed to its natural condition and allow any species of fish that passed upstream historically to do so again.

Restores all natural riverine functions.

Avoids creating a structure that would need future operation and maintenance.

Cost is substantially less.

There are no significant disadvantages to this alternative. The pond is not highly valued for outdoor recreation. Its elimination would not cause undue hardship and would provide substantial ecological benefits.

3) In-lieu fee- This is a viable alternative if the dam is not removed. The Town will pay $130,000 into the Connecticut ILF if the dam is not removed by the summer of 2018.

b. Existing wildlife use- The Blackledge River currently supports Atlantic salmon, sea lamprey and American eel, all of which will be aided by dam removal. Other aquatic or wetland-dependent species observed during a brief site visit include American toad, painted turtle, northern water snake and eastern kingfisher.

c. The soils at the project site are Canton and Charlton (61B, 61C, 62D), Ridgebury, Leicester and Whitman (3), Fluvaquents-Udifluvents complex (109) and Hinckley gravelly sandy loam (38C).

d. The project site plant communities consist of the following palustrine, lacustrine and riverine classes: PEM2G, PSS1G, PFO1C, PFO1G, PFO1B, R2UB2 and L1UB3.

e. Surrounding land uses at the project site are upland mixed hardwood and white pine forest.

2. Mitigation Proposed

The proposed mitigation is removal of an existing dam on the Blackledge River, a tributary of the Salmon River and then the Connecticut River. The mitigation site contains a stone masonry dam and an upstream impoundment. A narrow band of wetlands occurs along the margins of the pond, predominately on the west side. The mitigation area totals $\pm$ 5.5 acres and includes restoration of a stream channel and riparian wetlands. Dam removal and riparian restoration has been successfully conducted on a number of sites across the northeast; therefore, there is a high probability of success.

a. Wetland acreage- total within project area ± 8 acres; total area impounded by dam ± 5.5 acres.
b. HGM classification- Riverine, Depressional, Lacustrine Fringe and Slope classes.
c. Other aquatic resources- none.
d. Functions and values- The principal functions and values of the proposed mitigation area are fish/shellfish habitat, visual/aesthetic quality and recreation.
e. Target fish and wildlife species- native coldwater fish species, particularly Atlantic salmon, sea lamprey and American eel.
f. Reference site- Examples of successful dam removal stream restoration include the Rutan Dam in Stonington, CT and Zemko Dam in Salem, CT.
g. Design constraints- The cost associated with design and implementation of dam removal is the most significant project constraint.
h. Construction will be provided by the Town of Glastonbury, most likely through contracts with appropriate professionals. Long-term oversight and management will be provided by the Town of Glastonbury which currently manages the existing recreational facilities in at the site. Mitigation monitoring will be provided by the Town through contracts with consulting wetland scientists.
i. Project construction timing is dependent on permit approvals. Ideal timing would be in late summer or early fall, to coincide with seasonal low flow/low table period.
j. The responsible party will be the Town of Glastonbury.
k. Potential to attract waterfowl/pose a threat to aircraft- The site is not located near any existing airports.

3. Specific Aquatic Resource Checklist
    a. Non-tidal wetlands- Wetlands at/adjacent to the site include the following palustrine, lacustrine and riverine classes: PEM2G, PSS1G, PFO1C, PFO1G, PFO1B, R2UB2 and L1UB3.
    b. Tidal wetlands- None present.
    c. Vernal pools- one vernal pool was observed within the upland forest west of the pond. The pool is located a considerable distance from the project area activities (see Figure 2). The pool contained spotted salamander egg masses. The spotted salamander is an obligate vernal pool species.
    d. Streams- The project area is proposed within the impounded portions of the Blackledge River. In addition, two unnamed, intermittent headwater streams drain from west to east into the impoundment.
    e. Submerged aquatic vegetation- some submerged aquatic vegetation was observed along the shallows of the pond.

B. GRADING PLAN

1. No significant regrading is proposed, outside of the immediate vicinity of the dam.
2. Microtopography is to be constructed per direction of CT DEEP Inland Fisheries and Town wetland scientists in the field.

3. Pedestrian and vehicular access for maintenance and monitoring is readily available from the existing parking area off Hebron Avenue (CT Rte. 94).

C. EROSION CONTROLS

1. A detailed erosion control plan and narrative in compliance with the requirements of CT statute will be developed as part of the detailed design plans. Due to the limited amunt of sediment removal and regrading required, these controls will consist primarily of perimeter siltation barriers, a construction entrance, and pump discharge basins. A local inland wetland permit is required and erosion control will be monitored in conjunction with their requirements.
    1. The controls will be removed upon final stabilization and bond release from the local wetland agency.
    2. Temporary devices and structures to control erosion and sedimentation in and around mitigation sites shall be properly maintained at all times. The devices and structures shall be disassembled and properly disposed of as soon as the site is stable but no later than November 1, three full growing seasons after planting. Sediment collected by these devices will be removed and placed upland in a manner that prevents its erosion and transport to a waterway or wetland.

D. INVASIVE SPECIES

As noted above, EPS did not identify any extensive stands of non-native invasive species in the immediate vicinity of the proposed work. This will be confirmed by a more detailed survey prior to the start of work. EPS personnel will mark invasive species for treatment via mechanical and chemical means, per their established methods. Invasive species control will be one of the primary components of the maintenance and monitoring program for the mitigation area. Best invasive plant species control practices shall be determined and implemented based on CT DEEP, Nature Conservancy and ecological restoration practices. These methods may include physical, chemical and biological controls.

1. Risks- Invasive species are not common at the site. Pro-active control and monitoring will minimize long term risks
2. Constraints- There are no known regulatory or environmental constraints affecting control strategies, other than restrictions on herbicides over and adjacent to standing water.

E. OFF-ROAD VEHICLE USE

1. There is no off-road vehicle use in the immediate area. The site is located within a Town-owned open space parcel where no motorized vehicle operation is permitted.
2. Monitoring of off-road vehicle use will continue as part of the Town's established procedures. An additional control plan is not required.

F. PRESERVATION

1. The mitigation area is currently owned by the applicant.
2. Wetlands within subdivision protected- No subdivision is proposed.
3. A conservation easement is not required. The property is owned by the Town and CT DEEP and its use is restricted under their control.
4. Plan of preservation area- Not applicable.
5. Form of legal means of preservation- Not applicable.
6. Documentation of acceptance by receiving agency- Not applicable.

G. MONITORING

Mitigation success monitoring will be funded by the applicant and performed by EPS soil scientists and wetland scientists. No extensive mitigation area plantings are currently anticipated. If required, they will be designed with plant materials that are native and indigenous to the region. Except where modified by any permit conditions herein, the mitigation shall be performed in accordance with the final plans approved by the Corps of Engineers and the CT DEEP. Within 60 days of completing the dam removal project, CT DEEP WHAMM applicant will submit a signed letter to the Corps, Policy Analysis and Technical Support Branch, specifying the date of completion of the mitigation work and the Corps permit number.

Monitoring Report Guidance

Monitoring shall be done of the dam removal area for five years and shall discuss the following performance standards:

Performance Standards

1. The stream reach has the necessary duration and depth of low to support passage of diadromous fish. Minimum of 90% of the stream reach must meet desired hydrology levels. Areas that are too dry should be identified along with suggested corrective measures.
2. Non-native invasive species are not dominant in the former impoundment or along the restored stream reach.
3. Exposed sediments are stable and vegetated with native, non-invasive species.
4. The fifth year (Year 5) monitoring report shall contain a wetland delineation and documentation of the vegetation within the former impoundment and wetlands within 100’ of the former high water mark.
5. There is evidence of expected natural colonization as documented by the presence of at least 10 species of volunteer native herbaceous species.

6. The following plants are being controlled at the site:
   Common Reed (*Phragmites australis*)
   Purple loosestrife (*Lythrum salicaria*)
   Smooth and Common buckthorns (*Frangula alnus, Rhamnus cathartica*)
   Russian and Autumn olives (*Elaeagnus angustifolia and E. umbellata*)
   Multiflora rose (*Rosa multiflora*)
   Reed canary-grass (*Phalaris arundinacea*)
   Japanese knotweed (*Fallopia japonica*)

For this standard, small patches must be eliminated during the entire monitoring period. Large patches must be aggressively treated and the treatment documented.

7. All slopes, soils, substrates, and constructed features within and adjacent to the mitigation site(s) are stable.

Monitoring Report Requirements

Monitoring reports should generally follow a 10-page maximum report format per site, with a self-certification form transmittal. Submission of electronic formats (e.g., pdf) is strongly encouraged. The information required should be framed within the following format.

1) Project Overview (1 page)

Highlighted summary of problems which need immediate attention (e.g., problem with hydrology, severe invasive species problem, serious erosion, major losses from herbivory, etc.). This should be at the beginning of the report and highlighted in the self-certification form and the project overview (Appendices E and F).

2) Requirements (1 page)

List all performance and/or success standards, required financial assurances, required preservation, etc., and note whether required documents have been provided and evaluate whether the compensatory mitigation project site is successfully achieving the approved performance and/or success standards or trending toward success.

3) Summary Data (maximum of 4 pages)

Summary data must be provided to substantiate the success and/or potential challenges associated with the compensatory mitigation project. Photo documentation should be provided to support the findings and recommendations, and placed in the Appendix.

- Address performance standards achievement and/or measures to attain the standards.

- Describe the monitoring inspections, and provide their dates, that occurred since the last report.

- Concisely describe remedial actions done during the monitoring year to meet the performance or success standards – actions such as removing debris, replanting,

controlling invasive plant species (with biological, herbicidal, or mechanical methods), regrading the site, applying additional topsoil or soil amendments, adjusting site hydrology, etc. Also describe any other remedial actions done at each site.

- Report the status of all erosion control measures on the compensation site(s). Are they in place and functioning? If temporary measures are no longer needed, have they been removed?

- Give visual estimates of (1) percent vegetative cover for each mitigation site and (2) percent cover of the invasive species listed under Success Standard No. 3, above, in each mitigation site.

- What fish and wildlife use the site(s) and what do they use it for (nesting, feeding, shelter, etc.)?

4) Maps/Plans/photographs (maximum 3 pages)

Maps must be provided to show the location of the mitigation site relative to other landscape features, habitat types, locations of photographic reference points, transects, sampling data points, and/or other features pertinent to the mitigation plan. In addition, the submitted maps/plans must clearly delineate the mitigation site boundaries to assist in proper locations for subsequent site visits. Each map or diagram must fit on a standard 8 ½ x 11" piece of paper and include a legend, bar scale, and the location of any photos submitted for review.

5) Conclusions (1 page)

A general statement must be included describing the conditions of the compensatory mitigation project. If performance or success standards are not being met, a brief discussion of the difficulties and potential remedial actions proposed by the permittee, including a timetable, must be provided.

6) Monitoring Report Appendices

Appendix A -- A plan showing the location and extent of the designed wetland or watercourse habitat types (e.g., perennial stream).

Appendix B – A vegetative species list of volunteers in each plant community type. The volunteer species list should, at a minimum, include those that cover at least 5% of their vegetative layer.

Appendix C -- Representative photos of each mitigation site taken from the same locations for each monitoring event. Photos should be dated and clearly labeled with the direction from which the photo was taken. The photo sites must also be identified on the appropriate maps.

J. ASSESSMENT

A post-construction assessment of the condition of the River in the area of the dam removal shall be performed following the fifth growing season (Year 5) after completion of the

mitigation site(s) construction, or by the end of the monitoring period, whichever is later. "Growing season" in this context begins no later than May 31st. To ensure objectivity, the person(s) who prepared the annual monitoring reports shall not perform this assessment without written approval from the Corps. The assessment report shall be submitted to the Corps by December 15 of the year the assessment is conducted; this will coincide with the year of the final monitoring report, so it is acceptable to include both the final monitoring report and assessment in the same document.

The post-construction assessment shall include the four assessment appendices listed below and shall:

Summarize the original or modified mitigation goals and discuss the level of attainment of these goals at each mitigation site.

Describe significant problems and solutions during construction and maintenance (monitoring) of the mitigation site(s).

Identify agency procedures or policies that encumbered implementation of the mitigation plan. Specifically note procedures or policies that contributed to less success or less effectiveness than anticipated in the mitigation plan.

Recommend measures to improve the efficiency, reduce the cost, or improve the effectiveness of similar projects in the future.

ASSESSMENT APPENDICES:

Appendix A -- Summary of the results of a functions and values assessment of the mitigation site(s), using the same methodology used to determine the functions and values of the impacted wetlands.

Appendix B -- Calculation of the area by type (e.g., wetlands, vernal pools) of aquatic resources in each mitigation site. Wetlands should be identified and delineated using the Corps Wetlands Delineation Manual and approved regional supplements. Supporting documents shall include (1) a scaled drawing showing the aquatic resource boundaries and representative data plots and (2) datasheets for the corresponding data plots.

Appendix C -- Comparison of the area and extent of aquatic resources (from Appendix B) with the area and extent of aquatic resources proposed in the mitigation plan. This comparison shall be made on a scaled drawing or as an overlay on the as-built plan. This plan shall also show any major vegetation community types.

Appendix D -- Photos of each mitigation site taken from the same locations as the monitoring photos.

K. CONTINGENCY

The applicant's supervising wetland scientist shall identify any technical barriers to success during construction and monitoring and recommend appropriate remedial measures.

L. LONG-TERM STEWARDSHIP

The Town of Glastonbury will own and maintain the mitigation area as necessary.

M. FINANCIAL ASSURANCES

The Town of Glastonbury will provide a bond or escrow in the amount of $130,000 to the Corps of Engineers to assure the dams removal.

N. REFERENCES

Cowardin, L.M., Golet, F.C., Edward T. LaRoe, E.T. 1979. CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES. US Department of the Interior, Fish and Wildlife Service.

US Army Corp of Engineers, New England District. 1999. The Highway Methodology Workbook Supplement. Wetland Functions and Values, a Descriptive Approach.

ATTACHMENTS

Site photos taken May 9, 2015

Photo 1: dam looking east.

Photo 2: Blackledge River immediately downstream of dam, looking south.

Photo 3: impounded segment of river, looking south from western shore.

Photo 4: western shore, just north of dam; note fringe of emergent and scrub-shrub vegetation.

Photo 5: northern end of impoundment at inflow.

Photo 6: unnamed stream draining into southwest corner of pond, looking east.

ATTACHMENT C
ARMY CORP OF ENGINEERS LETTER

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO
ATTENTION OF

June 19, 2015

Regulatory Division
CENAE-R-B
Permit Number: NAE-2004-0507
CT DEEP File No.: 201502313-SB

Town of Glastonbury
c/o Richard J. Johnson, Town Manager
2155 Main Street
Glastonbury, CT 06033

Dear Mr. Johnson:

We have reviewed your application to place approximately 5300 cubic yards of riprap over approximately 26,000 SF at the toe of slope in the Connecticut River at 252 Welles Street in Glastonbury, Connecticut. The work is shown on plans entitled "Glastonbury Riverfront Park/Welles Road, Glastonbury, CT", on six (6) sheets including a vicinity map dated "July 1, 2011" and sheets 1 through 5 dated "March 19, 2015".

Based on the information you have provided, we have determined that the proposed activity, which includes a discharge of dredged or fill material into waters or wetlands, will have only minimal individual and cumulative impacts on waters of the United States, including wetlands. Therefore, this work is authorized as a Category 2 activity under the enclosed Federal permit known as the Connecticut General Permit (GP). This work must be performed in accordance with the terms and conditions of the GP, and also in compliance with the following special conditions:

1. Work shall be performed according to plans entitled: "Glastonbury Riverfront Park/ Welles Road, Glastonbury, CT" on five (5) pages and dated "May 19, 2015".

2. Mitigation shall consist of the removal of the Blackledge River Dam and shall be performed in accordance with the attached mitigation plan entitled, "Wetland Mitigation Plan/Blackledge River Dam Removal Glastonbury, Connecticut" and dated "June 18, 2015." Mitigation work, other than post-construction monitoring, shall be completed by June 30, 2018, unless the Corps provides a written extension.

3. Glastonbury shall provide a financial assurance, in the form of a performance bond, letter of credit or escrow account, in the amount of $130,000 prior to performing any work in waters of the U.S. Note that the Corps of Engineers must not be made the recipient of any funds. If by June 30, 2018 the dam has not been removed and the Corps has not provided any written extensions, the $130,000 will be sent as payment to the Connecticut

in Lieu Fee program to compensate for the loss of 0.60 acres of riverine lower perennial unconsolidated shore (R2US) habitat.

The Town may cancel the financial assurance when it has received a letter from the Corps stating that the Dam removal is completed. This letter will be based on the successful completion of all activities described on page 7 of the Mitigation Plan by June 30, 2018, the review of an as-built plan provided by the permittee to the Corps, and a possible site visit. This letter of completion does not relinquish the Town's responsibilities for five years of post construction monitoring and reporting and invasive species removals as described in the mitigation plan.

You are responsible for complying with all of the GP's requirements. Please review the enclosed GP carefully; in particular the GP conditions, to be sure you understand its requirements. You should ensure that whoever does the work also fully understands the requirements and that a copy of the permit document and this authorization letter are at the project site throughout the time the work is being performed.

The Connecticut Department of Energy & Environmental Protection (DEEP) has issued an Emergency Authorization for this project. All terms and conditions of the attached DEEP's Emergency Authorization are now conditions of this authorization.

This authorization expires on July 15, 2016, unless the GP is modified, suspended, or revoked before then. You must commence or be under contract to commence the work authorized herein by that expiration date and complete the work by July 15, 2017. If not, you must contact this office to determine the need for further authorization *before* beginning or continuing the activity. We recommend you contact us before this permit expires to discuss a permit reissuance.

If you change the plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

This authorization requires you to complete and return the enclosed Work Start Notification Form to this office at least two weeks before the anticipated starting date. You must also complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work and any required mitigation.

This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law, as listed on Page 2 of the GP. Performing work not specifically authorized by this determination or failing to comply with any special conditions and all the terms and conditions of the GP may subject you to the enforcement provisions of our regulations.

This authorization presumes that the work as described above and as shown on your plans noted above is in waters of the U.S. Should you desire to appeal our jurisdiction, please submit a request for an approved jurisdictional determination in writing to this office.

We continually strive to improve our customer service. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Please contact Barbara Newman, of my staff, at (978) 318-8515 if you have any questions.

Sincerely,

Robert J. DeSista
Chief, Permits & Enforcement Branch
Regulatory Division

Enclosure:

Copy furnished:
Sue Bailey, CT DEEP, via e-mail
Mike Marsh, US EPA, via e-mail
Alison Verkade, NOAA, via email

US Army Corps
of Engineers ®
New England District

GENERAL PERMIT
WORK-START NOTIFICATION FORM
(Minimum Notice: Two weeks before work begins)

****

* MAIL TO: U.S. Army Corps of Engineers, New England District *
* Permits and Enforcement Branch *
* Regulatory Division *
* 696 Virginia Road *
* Concord, Massachusetts 01742-2751 *

****

Corps of Engineers Permit No. NAE-2004-0507 was issued to the Town of Glastonbury. The permit authorized the permittee to place approximately 5300 cubic yards of riprap over approximately 26,000 SF at the toe of slope in the Connecticut River at 252 Welles Street in Glastonbury, Connecticut.

PLEASE PRINT OR TYPE

Name of Person/Firm: _____

Business Address: _____

_____

_____

_____

Telephone Numbers: (___) _____ (___) _____

Proposed Work Dates: **Start:** _____ **Finish:** _____

Permittee/Agent Signature: _____ **Date:** _____

Printed Name: _____ **Title:** _____

Date Permit Issued: June 19, 2015_____**Date Expires: July 15, 2016**_____

****

PM: Barbara Newman_____ **Submittals Required:** ____

US Army Corps
of Engineers®
New England District

(Minimum Notice: Permittee must sign and return notification within one month of the completion of work.)

COMPLIANCE CERTIFICATION FORM

Permit Number: NAE-2004-0507

Project Manager Barbara Newman

Name of Permittee: Town of Glastonbury

Permit Issuance Date: June 18, 2015

Please sign this certification and return it to the following address upon completion of the activity and any mitigation required by the permit. You must submit this after the mitigation is complete, but not the mitigation monitoring, which requires separate submittals.

****
* MAIL TO: U.S. Army Corps of Engineers, New England District *
* Permits and Enforcement Branch B *
* Regulatory Division *
* 696 Virginia Road *
* Concord, Massachusetts 01742-2751 *
****

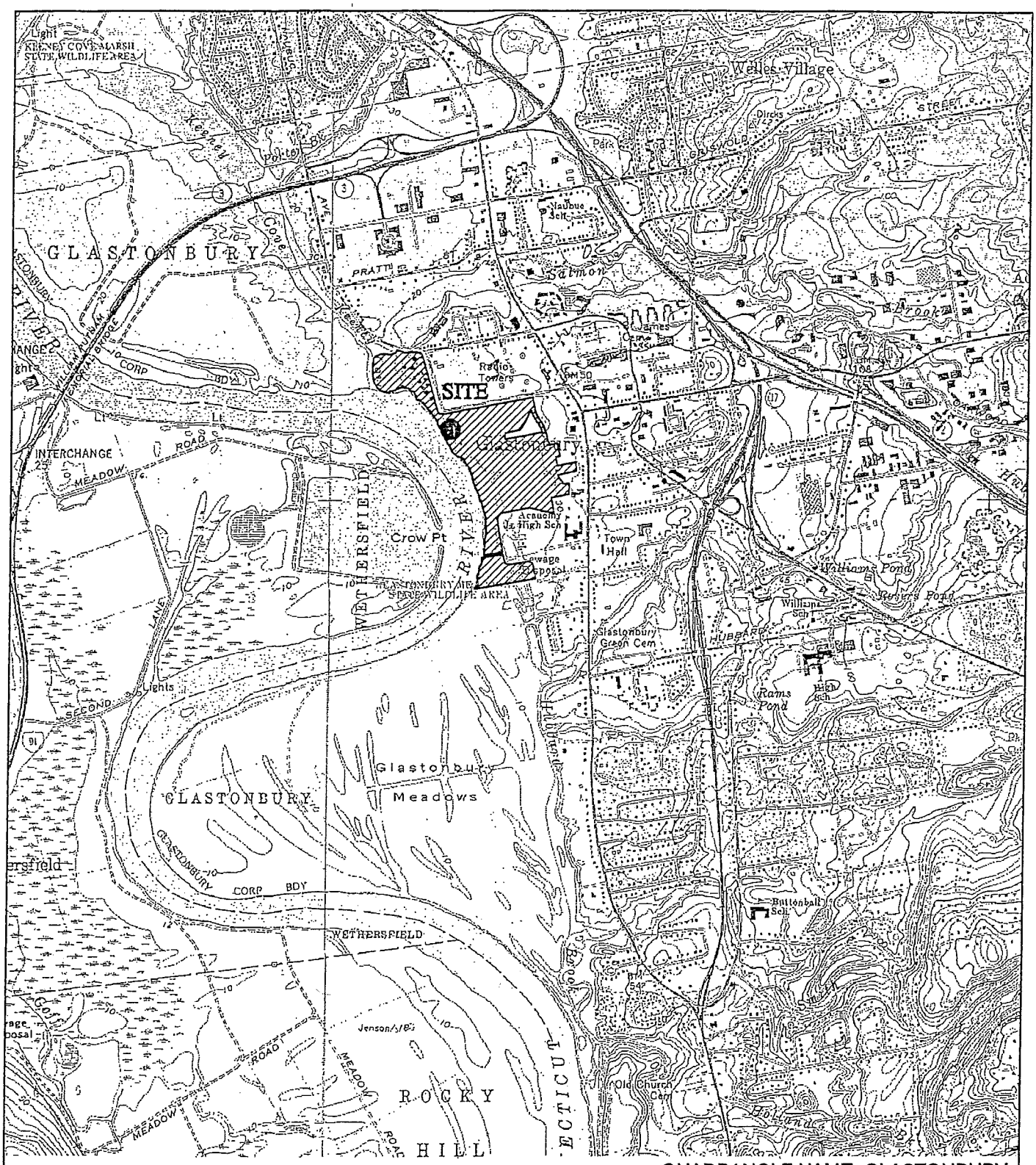
Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

_____ _____
Signature of Permittee Date

_____ _____
Printed Name Date of Work Completion

(____) _____ (____) _____
Telephone Number Telephone Number



QUADRANGLE NAME: GLASTONBURY

SCALE: 1" = 2400'

L-1

PURPOSE:	TITLE:	APPLICATION BY:
RIVERFRONT PARK	VICINITY MAP Glastonbury Riverfront Park	Town of Glastonbury

	NAVD 1988	NAVD 1929
FLOOD ELEVATION (100 YR FLOOD)	27.7 FT.	28.71 FT.
HIGH TIDE LINE	5.99	7.00
MEAN HIGH WATER	1.69	2.70
NAVD 1988	0.00	1.01
MEAN LOW WATER	-0.48	0.53
NGVD 1929	-1.01	0.00

Richter & Cegan Inc.
Landscape Architects Urban Designers Land Planners
88 Canal Court P.O. Box 567 Avon, Connecticut 06001
(860) 678-0669

IN: GLASTONBURY
AT: CONNECTICUT RIVER
COUNTY: HARTFORD STATE: CT

DATE: 07-01-2011

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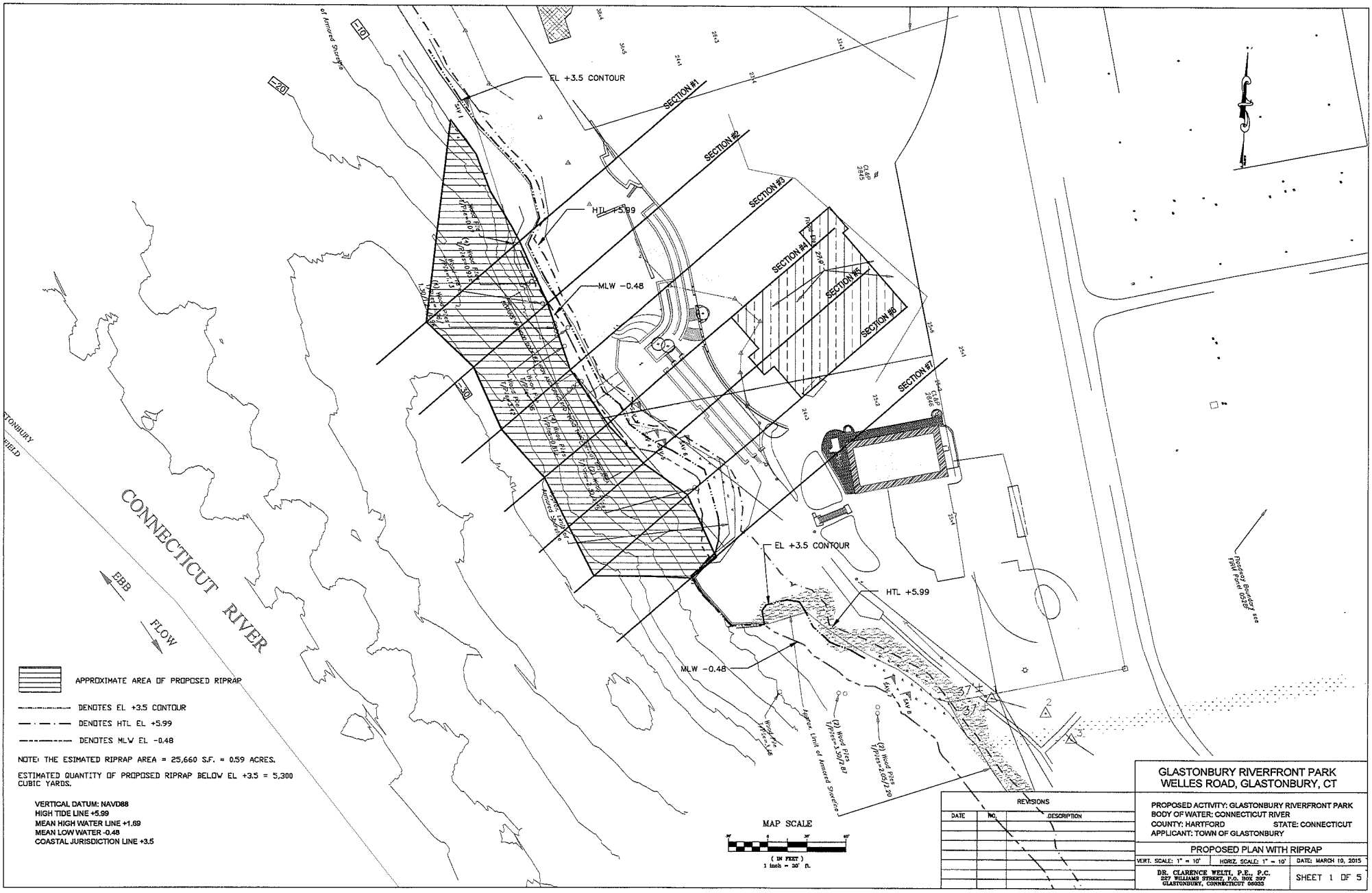
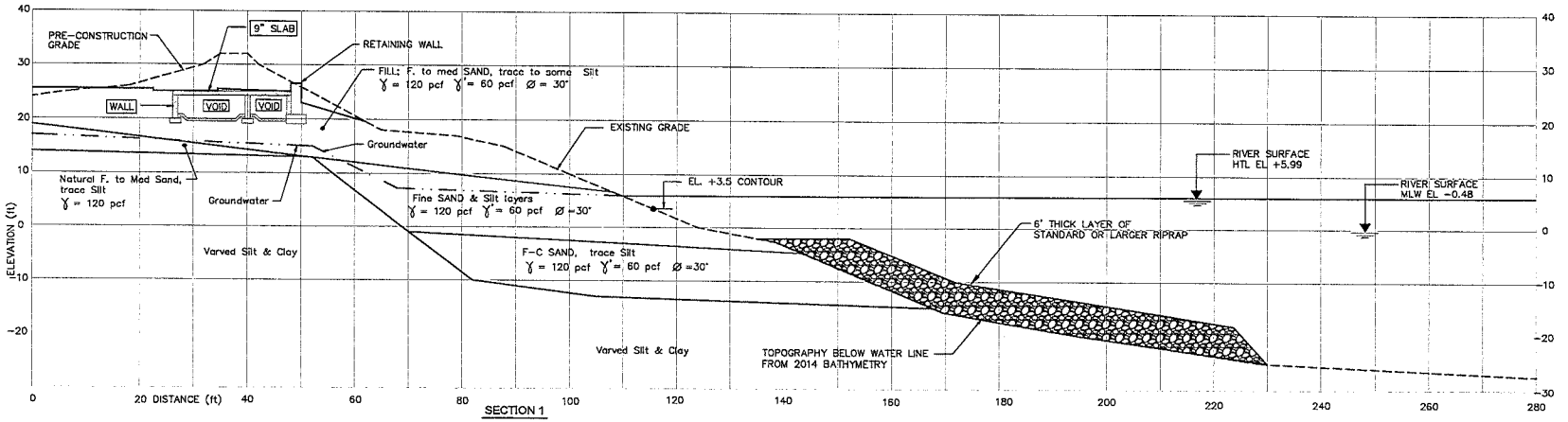
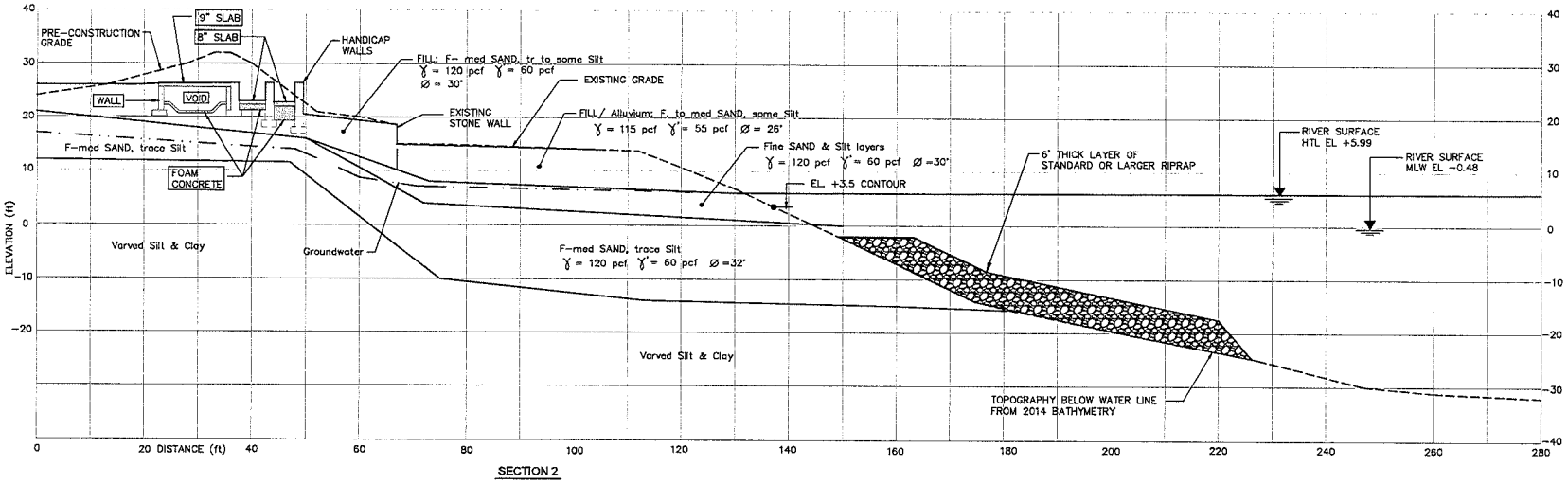

EL +3.5 CONTOUR
HTL +5.99
MLW -0.48
SECTION #1
SECTION #2
SECTION #3
SECTION #4
SECTION #5
SECTION #6
SECTION #7
CONNECTICUT RIVER
EBB
FLOW
EL +3.5 CONTOUR
HTL +5.99
MLW -0.48
Approx. Limit of Armored Shoreline
Proposed Boundary Line FIRM Panel 0528F
APPROXIMATE AREA OF PROPOSED RIPRAP
DENOTES EL +3.5 CONTOUR
DENOTES HTL EL +5.99
DENOTES MLW EL -0.48
NOTE: THE ESIMATED RIPRAP AREA = 25,660 S.F. = 0.59 ACRES.
ESTIMATED QUANTITY OF PROPOSED RIPRAP BELOW EL +3.5 = 5,300 CUBIC YARDS.
VERTICAL DATUM: NAVD88
HIGH TIDE LINE +5.99
MEAN HIGH WATER LINE +1.69
MEAN LOW WATER -0.48
COASTAL JURISDICTION LINE +3.5
MAP SCALE
(IN FEET)
1 inch = 20' ft.
REVISIONS
DATE
NO.
DESCRIPTION
GLASTONBURY RIVERFRONT PARK
WELLES ROAD, GLASTONBURY, CT
PROPOSED ACTIVITY: GLASTONBURY RIVERFRONT PARK
BODY OF WATER: CONNECTICUT RIVER
COUNTY: HARTFORD
STATE: CONNECTICUT
APPLICANT: TOWN OF GLASTONBURY
PROPOSED PLAN WITH RIPRAP
VERT. SCALE: 1" = 10'
HORIZ. SCALE: 1" = 10'
DATE: MARCH 10, 2015
DR. CLARENCE WELTI, P.E., P.C.
227 WILLIAMS STREET, P.O. BOX 207
GLASTONBURY, CONNECTICUT 06033
SHEET 1 OF 5



SECTION 1



SECTION 2

VERTICAL DATUM: NAVD88
HIGH TIDE LINE +5.99
MEAN HIGH WATER LINE +1.69
MEAN LOW WATER -0.48
COASTAL JURISDICTION LINE +3.5

MAP SCALE

(IN FEET)
1 inch = 10' ft.

REVISIONS		
DATE	NO.	DESCRIPTION

GLASTONBURY RIVERFRONT PARK
WELLES ROAD, GLASTONBURY, CT

PROPOSED ACTIVITY: GLASTONBURY RIVERFRONT PARK
BODY OF WATER: CONNECTICUT RIVER
COUNTY: HARTFORD STATE: CONNECTICUT
APPLICANT: TOWN OF GLASTONBURY

PROPOSED CROSS SECTIONS WITH RIPRAP

VERT. SCALE: 1" = 10' | HORIZ. SCALE: 1" = 10' | DATE: MARCH 19, 2013

DR. CLARENCE WELTI, P.E., P.C.
227 WILLIAMS STREET, P.O. BOX 397
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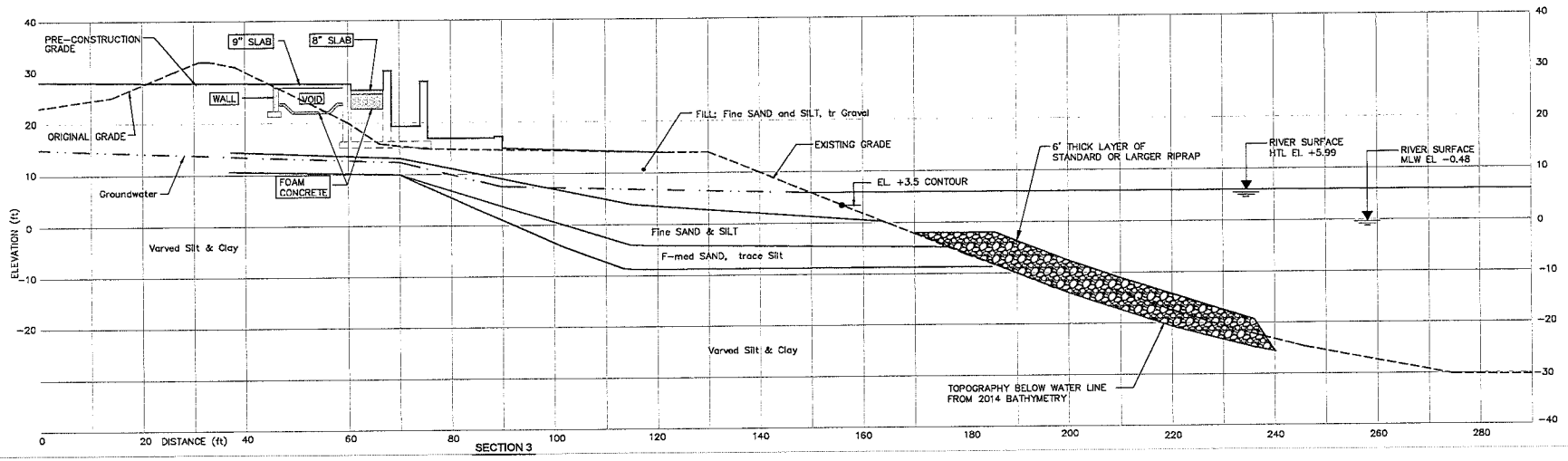

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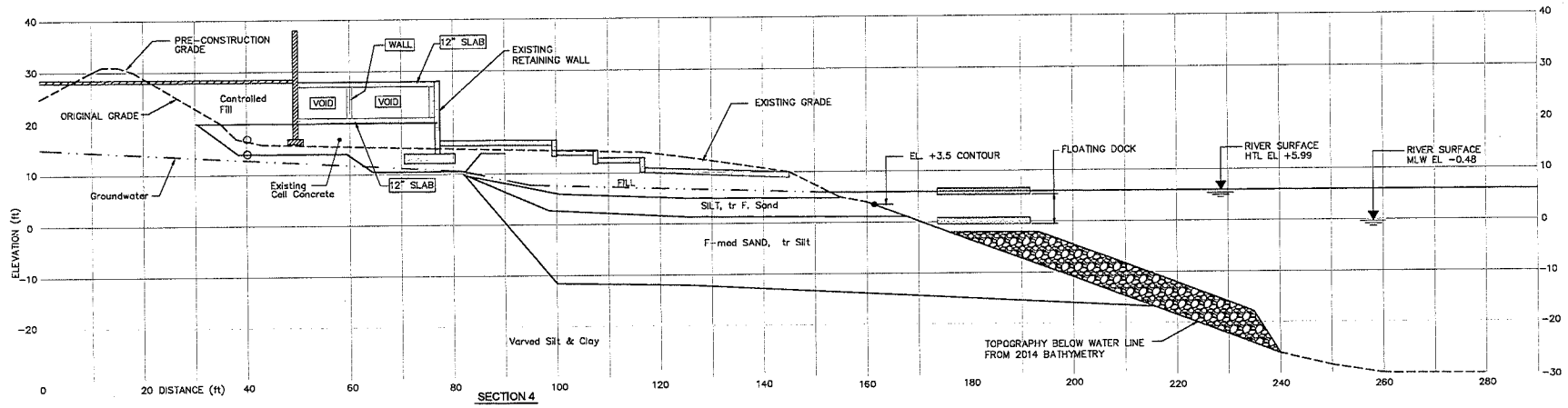


SECTION 4

VERTICAL DATUM: NAVD88
HIGH TIDE LINE +5.99
MEAN HIGH WATER LINE +1.69
MEAN LOW WATER -0.48
COASTAL JURISDICTION LINE +3.5

MAP SCALE

(IN FEET)
1 inch = 10' ft.

REVISIONS		
DATE	NO.	DESCRIPTION

GLASTONBURY RIVERFRONT PARK
WELLES ROAD, GLASTONBURY, CT

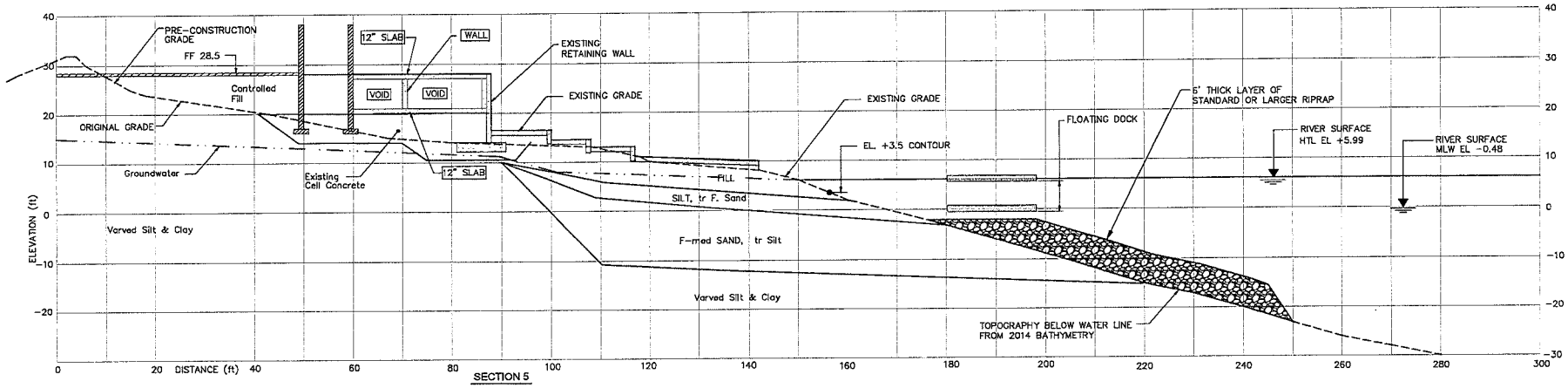
PROPOSED ACTIVITY: GLASTONBURY RIVERFRONT PARK
BODY OF WATER: CONNECTICUT RIVER
COUNTY: HARTFORD STATE: CONNECTICUT
APPLICANT: TOWN OF GLASTONBURY

PROPOSED CROSS SECTIONS WITH RIPRAP

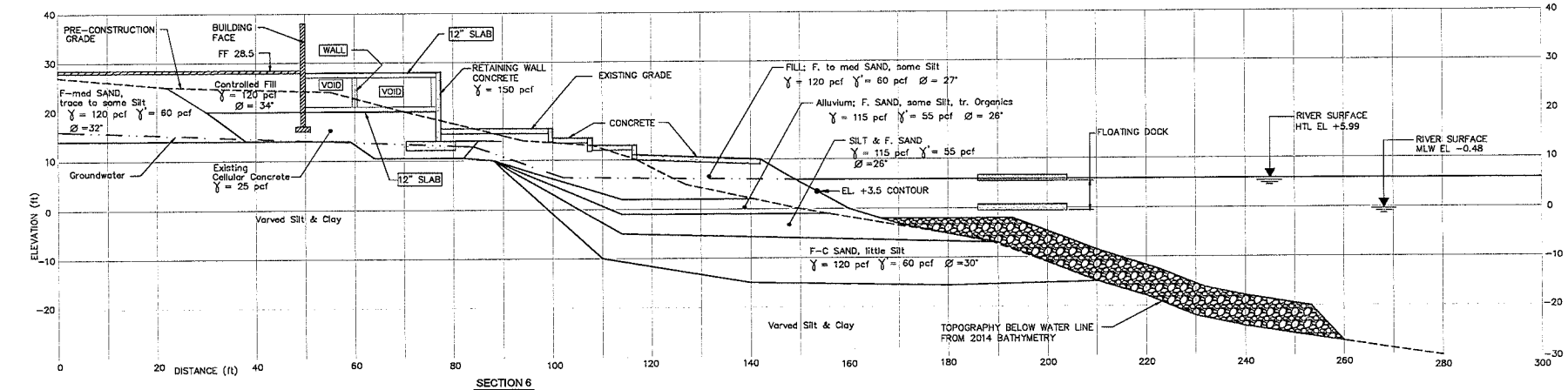
VERT. SCALE: 1" = 10' | HORIZ. SCALE: 1" = 10' | DATE: MARCH 19, 2015

DR. CLARENCE WELTI, P.E., P.C.
227 WILLIAMS STREET, P.O. BOX 397
GLASTONBURY, CONNECTICUT 06033

SHEET 3 OF 5



SECTION 5



SECTION 6

VERTICAL DATUM: NAVD88
HIGH TIDE LINE +5.99
MEAN HIGH WATER LINE +1.69
MEAN LOW WATER -0.48
COASTAL JURISDICTION LINE +3.5

MAP SCALE

(IN FEET)
1 inch = 10' ft.

REVISIONS		
DATE	NO.	DESCRIPTION

GLASTONBURY RIVERFRONT PARK
WELLES ROAD, GLASTONBURY, CT

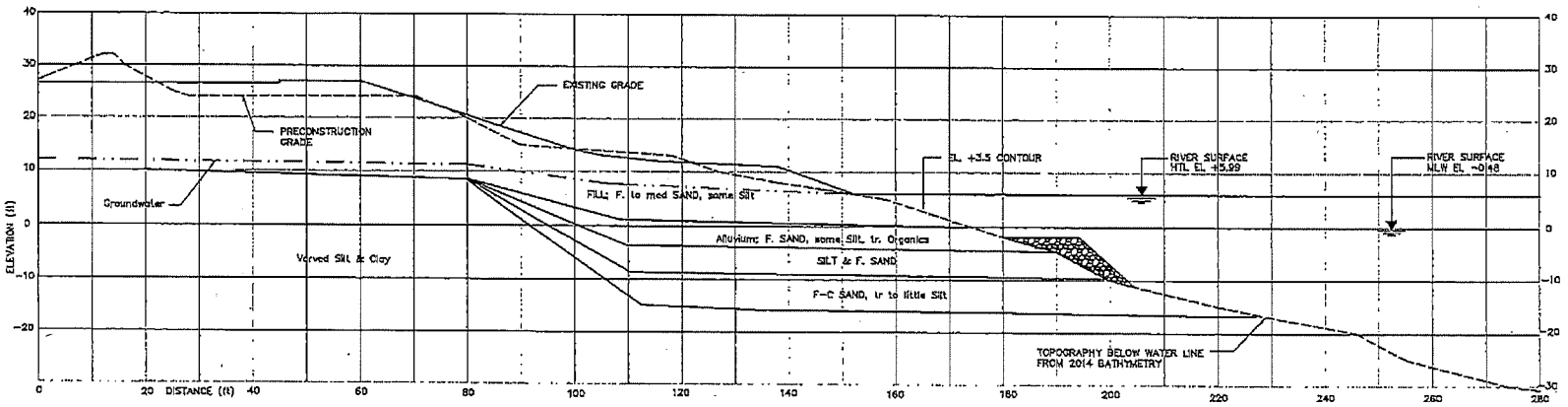
PROPOSED ACTIVITY: GLASTONBURY RIVERFRONT PARK
BODY OF WATER: CONNECTICUT RIVER
COUNTY: HARTFORD STATE: CONNECTICUT
APPLICANT: TOWN OF GLASTONBURY

PROPOSED CROSS SECTIONS WITH RIPRAP

VERT. SCALE: 1" = 10' | HORIZ. SCALE: 1" = 10' | DATE: MARCH 19, 2015

DR. CLARENCE WELTI, P.E., P.C.
227 WILLIAMS STREET, P.O. BOX 397
GLASTONBURY, CONNECTICUT 06033

ATTACHMENT G
TOWN OF GLASTONBURY
RIVERFRONT PARK



SECTION 7

VERTICAL DATUM: NAVD88
HIGH TIDE LINE +5.09
MEAN HIGH WATER LINE +1.69
MEAN LOW WATER -0.48
COASTAL JURISDICTION LINE +3.5

MAP SCALE

(IN FEET)
1 inch = 10' ft.

REVISIONS		
DATE	NO.	DESCRIPTION

GLASTONBURY RIVERFRONT PARK
WELLES ROAD, GLASTONBURY, CT

PROPOSED ACTIVITY: GLASTONBURY RIVERFRONT PARK
BODY OF WATER: CONNECTICUT RIVER
COUNTY: HARTFORD STATE: CONNECTICUT
APPLICANT: TOWN OF GLASTONBURY

PROPOSED CROSS SECTIONS WITH RIPRAP

VERT. SCALE 1" = 10' | HORIZ. SCALE 1" = 10' | DATE: MARCH 19, 2015

DR. CLARENCE WELTI, P.E., R.L.A.
257 WILLIAMS STREET, P.O. BOX 227
GLASTONBURY, CONNECTICUT 06033

SHEET 5 OF 5

WETLAND MITIGATION PLAN

Blackledge River Dam Removal

Glastonbury, Connecticut

Prepared for:

Town of Glastonbury, CT

Submitted By:

Michael S. Klein
Registered Soil Scientist
Certified Professional Wetland Scientist

June 18, 2015

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GENERAL INFORMATION

This wetland mitigation plan is being proposed by the Town of Glastonbury as compensation for wetland impacts resulting from remediation of a slope failure at the Glastonbury Riverfront Park on the Connecticut River in Glastonbury. The least environmentally damaging practicable alternative for the remedial actions requires placing rip-rap in approximately 25,660± s.f. of fish habitat in the Connecticut River. To mitigate any potential adverse impacts on fishery resources, the Town proposes removal of an existing, stone masonry dam on the Blackledge River north of Hebron Avenue in Glastonbury:

The Connecticut River, as it flows through Glastonbury, is an important migratory corridor for native diadromous[1] fish species, including Atlantic salmon (*Salmo salar*), American eel (*Anguilla rostrata*). The work required to remediate a slope failure at the Glastonbury Riverfront Park could influence the diadromous fish habitat in this area. Thererfore, the Town has developed the mitigation plan described herein to full satisfy requirements and expectations of CT DEEP and the Army Corps of Engineers (ACOE). The protection and restoration of diadromous fish has long been a priority for the Connecticut Department of Energy and Environmental Protection (CTDEEP) and the Connecticut River Atlantic Salmon Commission (CRASC); a Congressionally-authorized interagency body comprised of the four Connecticut River states, the U.S. Fish & Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). The NMFS has indicated that Atlantic salmon (*Salmo salar*) is a species of particular concern. Atlantic salmon is listed as 'endangered' under the federal Endangered Species Act in the Gulf of Maine. The restoration population in the Connecticut River is provided complete protection under State laws and regulations. American eel is also present in this reach of the Connecticut River, and is potentially affected by the proposed work. American eel is experiencing severe declines throughout its range and is currently a candidate for listing under the Endangered Species Act.

The proposed mitigation project directly benefits the same species that could be adversely affected by the work. The Blackledge River Dam is located in Glastonbury and currently blocks runs of anadromous Atlantic salmon, sea lamprey (*Petromyzon marinus*), and the catadromous American eel. All of these species are targeted by CTDEEP and CRASC for restoration to the Connecticut River watershed. The Blackledge River is a major tributary to the Salmon River, one of the primary Connecticut River tributaries targeted by CTDEEP and CRASC. When the Dam is removed, it will transform the Salmon River watershed (115 sq. miles) into a rare

[1] fish that spend portions of their life cycles partially in fresh water and partially in salt water. These represent both anadromous and catadromous fish. Anadromous fishes spend most of their adult lives at sea, but return to fresh water to spawn. Catadromous fish spend most of their adult lives in fresh water, but must return to the sea to spawn.

undammed, free-flowing watershed. A handful of very small (<4 ft.) dams will persist on small tributaries but these dams do not alter the flow of the water and are located upstream of the range of the anadromous fish species. The Salmon River is perhaps the cleanest of all rivers in Connecticut. All discharges of any kind are prohibited by statute. It is also one of only two watersheds in the state stocked with Atlantic salmon by the CTDEEP. This makes the removal of the Dam an important opportunity and appropriate mitigation for the work at Riverfront Park.

Sixty years ago, there were many migratory barriers to diadromous fishes in the Salmon River but great progress has been made to eliminate them. The CTDEEP owns and operates the Leesville Dam Fishway in East Haddam, where wild adult salmon, sea lamprey, and juvenile eels are passed upstream. Further upstream, the Raymond Brook Dam has been removed and a fishway has been built at the Lyman Viaducts culvert. The Norton Mill Dam is scheduled for removal by the Nature Conservancy in 2016. This leaves the Blackledge River Dam as the only major dam left in the entire watershed that impacts diadromous fishes. It currently blocks access to 2.1 miles of habitat—up to Gay City State Park (see Figure 3). The removal of this dam would allow salmon, lamprey, and eels to fully utilize this habitat.

The stream becomes smaller above the Gay City dam and likely of minimal value to these species so this project would re-connect most of the important available habitat on the Blackledge River. Furthermore, the removal of the dam will restore the native, free-flowing habitat that these species prefer so the quality of the re-connected habitat will improve. The dam's impoundment results in degraded water quality in terms of water temperature, dissolved oxygen, and turbidity. Removal of the dam will result in improvement of water quality for many miles of downstream riverine habitat that is used by these three diadromous fish species. Other riverine species will also benefit from this project, including the eastern brook trout (*Salvelinus fontinalis*), which is a priority species for the USFWS.

- The Site Locus is shown on Figure 1.
- An annotated aerial photograph (2012, source USDA) is shown on Figure 2.
- The mitigation site is located at 41.697633, -72.454219.
- The mitigation site and the impact site are in the Lower Connecticut Hydrologic Unit. The 8 digit HUC code is 01080205.

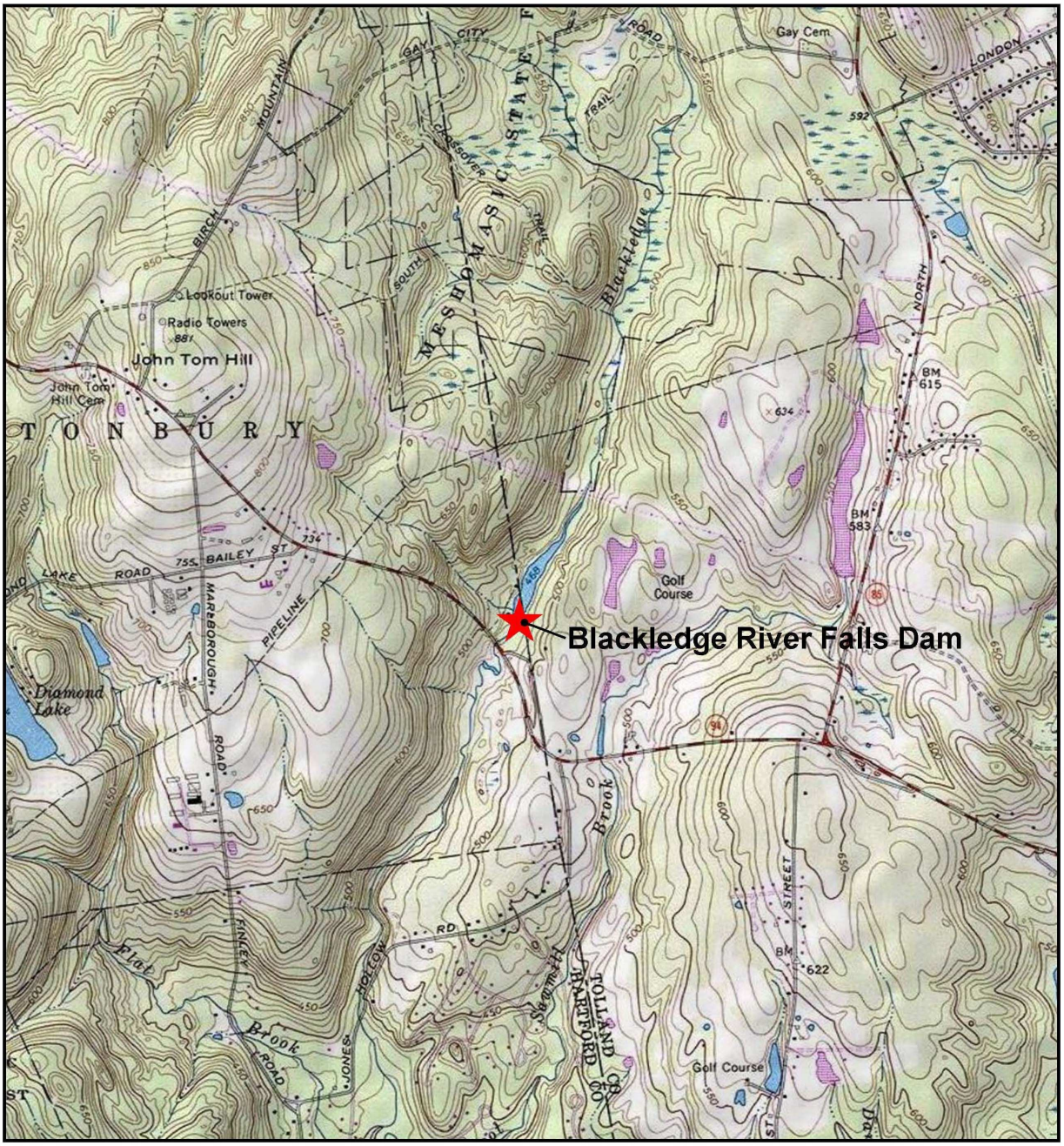

FIGURE 1
LOCATION MAP

Blackledge Falls Dam
Blackledge River
Glastonbury, CT

USGS topographic map showing project location.

SCALE
0 1,000 2,000 Feet
N

A

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89 Belknap Road
West Hartford, CT 06117
860-236-1578
www.epsct.com

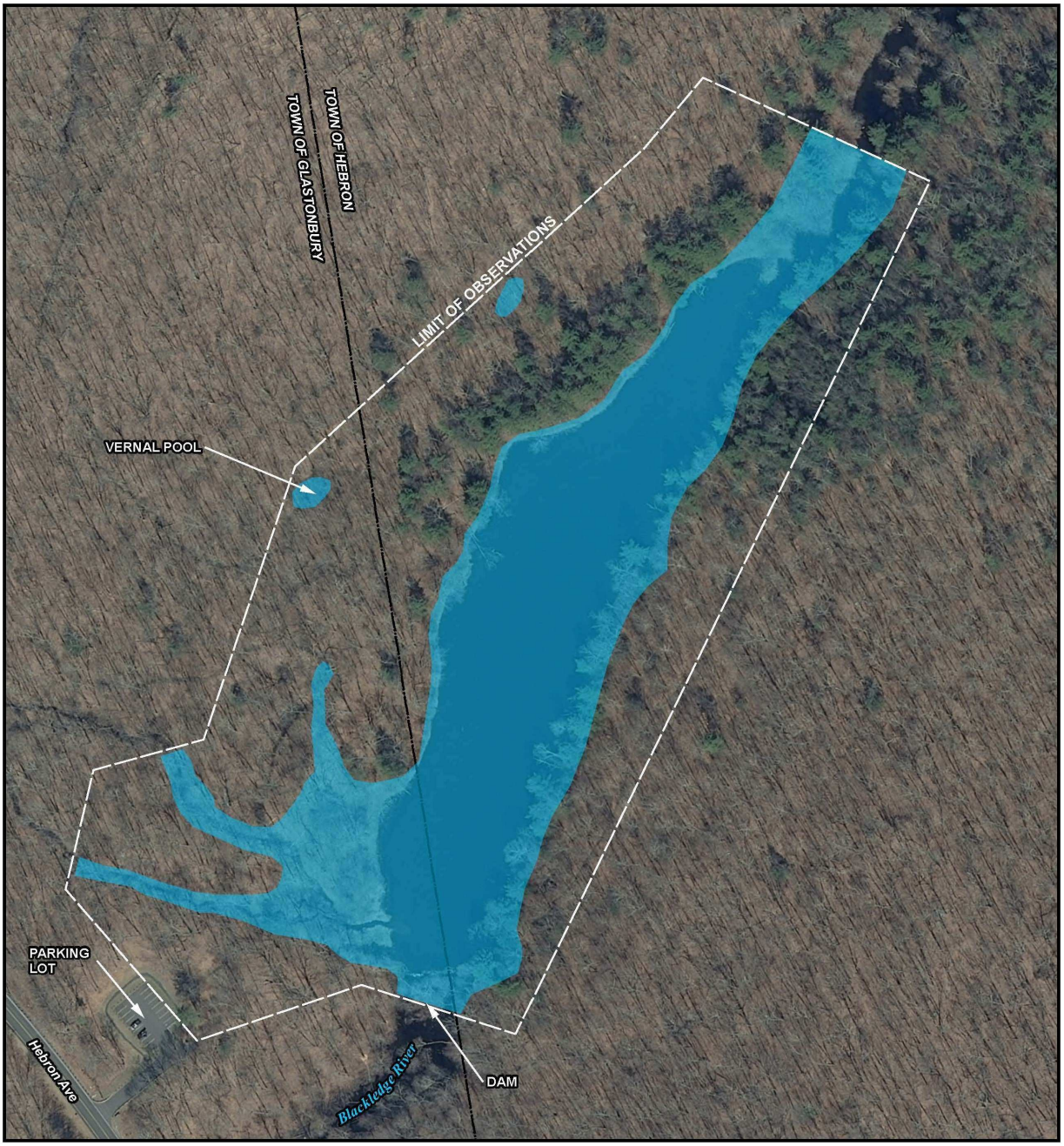

FIGURE 2
AERIAL MAP
Blackledge Falls Dam
Blackledge River
Glastonbury, CT

Legend

Wetlands

Map showing wetlands field sketched by EPS Soil Scientists on 5/9/15. The location and extent of wetlands is approximate. This map is intended for general planning purposes only.

SCALE
0 100 200 Feet
N
A

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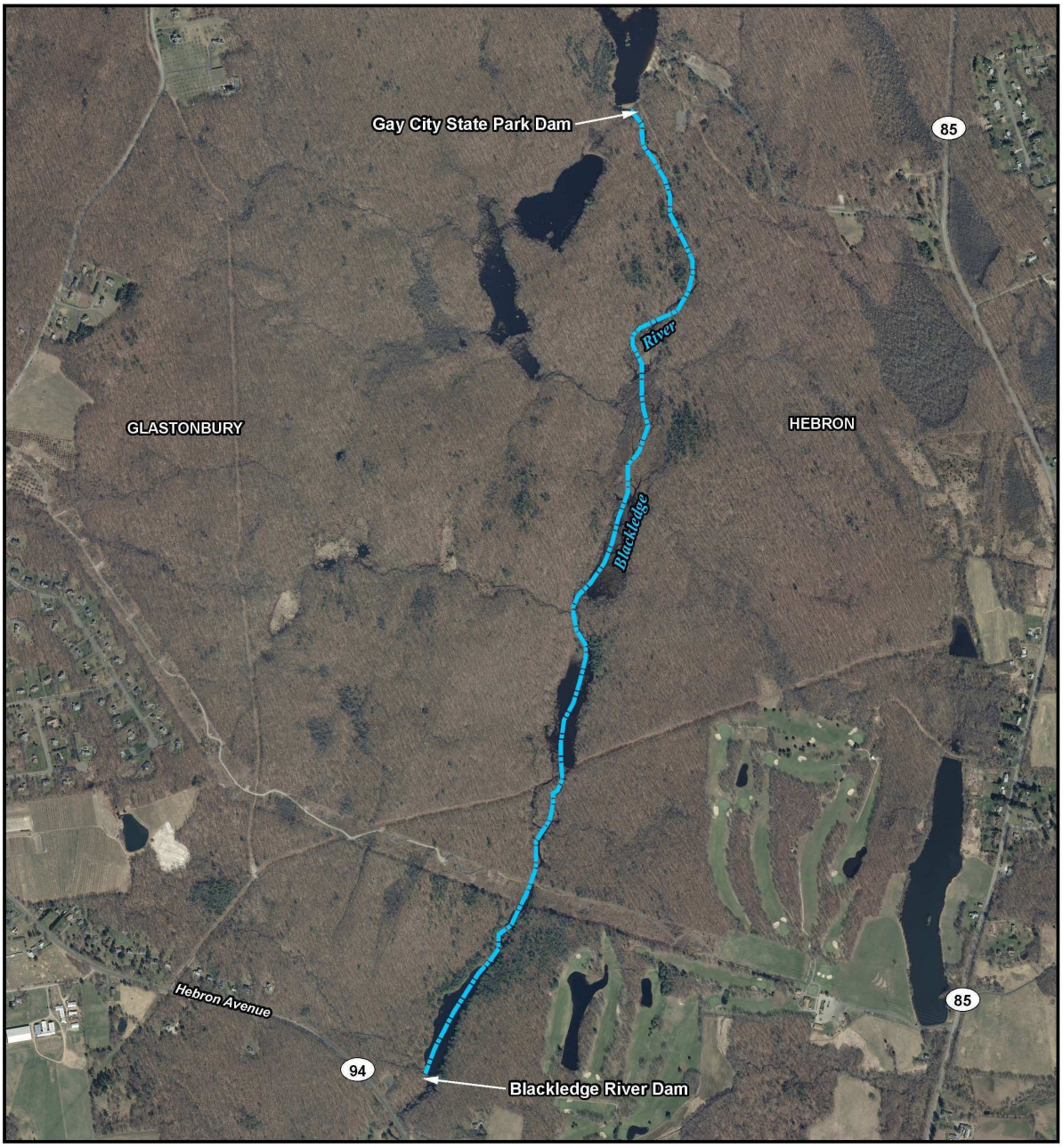

FIGURE 3
RIVER RECONNECTION MAP
Blackledge Falls Dam
Blackledge River
Glastonbury, CT

Legend

Blackledge River

Spatial depiction of the 2.1 miles of riverine habitat to be reconnected by removal of the dam beginning at the Blackledge River Dam to the south and ending at the Gay City State Park Dam to the north.

SCALE
625 1,250 Feet
N
A

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West Hartford, CT 06117
860-236-1578
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IMPACT AREA

The Blackledge River Dam is located on two separate parcels within Glastonbury and Hebron. The western portion of the dam is located in the Town of Glastonbury, on the ±77-acre open space parcel known as Blackledge Falls, a municipal park owned and operated by the Town of Glastonbury. The eastern portion of the dam is located in the Town of Hebron, within a ±101-acre parcel that is part of Meshomasic State Forest, owned and operated by the CT DEEP. The waterbody retained by the dam is referred to locally as Blackledge Brook Pond. Public access to the dam is via the western property within the Town of Glastonbury.

The dam retains a small pond with fringing marsh and scrub-shrub wetlands. Marsh and scrub-shrub wetlands also occur at the upper reaches of the pond, predominately within and adjacent to the sediment delta at the pond's inflow. To the west of the pond lie forested wetlands with two embedded headwater streams that drain to the pond. The majority of these wetlands rise abruptly in elevation as you move west from the pond's banks. Their hydrology is driven by the impoundment and will not be adversely affected by the dam removal. Two isolated forested wetlands were observed within ±250 feet of the pond; the southernmost of which is a vernal pool.

1. Based on field sketching conducting by EPS Wetland Scientists on May 9, 2015 the wetlands and waters of the U.S. within the project area, as illustrated on Figure 2, total approximately 8 acres. The area of impounded water resulting from the dam totals ± 5.5 acres.
2. The Cowardin classification for the wetlands within the project area includes palustrine, lacustrine and riverine wetland classes: PEM2G, PSS1G, PFO1C, PFO1G, PFO1B, R2UB2 and L1UB3.
3. The HGM classifications include Riverine, Depressional, Lacustrine Fringe and Slope classes.
4. The on-site open water wetland provides the following functions and values: Floodwater storage, wetland wildlife habitat, fish and shellfish habitat, sediment/toxicant/pathogen retention, recreation, education/scientific value and visual/aesthetic quality. These functions and values are summarized below in Table 1:

Table 1. Summary of on-site wetland functions and values, Blackledge River Dam, Glastonbury, CT

Function/Value	Contributing Attributes and Limiting Factors
Floodwater Storage (S)	The dam impounds a significant volume of water; however, based on the configuration of the outlet, the impoundment appears to operate in a "flow through" condition, for most of the year, without the ability to retain additional volume during flooding.
Sediment, toxicant and pathogen retention (S)	The dam retains low to moderate volumes of sediment.
Fish / shellfish habitat (P)	The Blackledge River supports Atlantic salmon, sea lamprey and American eel.
Recreation (P)	The river and impounded pond are utilized for fishing, are located within a town recreation area and visible from a nearby hiking trail.
Educational/ scientific value (S)	The river is located within Town-owned open space, is easily accessible via trails and has a parking lot that can accommodate school groups for education programs. Current use for educational purposes is unknown.
Visual/aesthetic quality (P)	The pond and dam are visible from the hiking trail within Blackledge Falls Park.
Key (P)Indicates primary function (S) Indicates secondary functions provided at a marginal level only	

5. The work proposed is removal of the dam. Based on CT DEEP's experience with similar projects, the work is anticipated to follow the followings sequence:
    a. Mobilization on the east end of the spillway along an existing roadway.
    b. Use of the existing low flow outlet to drain the pond.
    c. Construction of two short access roads, one below the dam, down to the base of the spillway, and one above the dam, out to the low level outlet.
    d. Deploy water handling structures in the pond, according to the engineered plan.
    e. Excavate accumulated sediment immediately upstream of the spillway, de-water spoils on site, and dispose according to the engineered plan, outside of wetlands and waters.
    f. Remove the stone spillway using an excavator; stockpile stone according to plan. g. Grade stream bed and stream banks in a limited area upstream of the spillway, according to plans.
    h. Place selected large rocks taken from the spillway into the streambed to enhance fish passage and fish habitat according to plans and on-site supervision by CT DEEP Inland Fisheries Division and Town of Glastonbury wetland scientists.
    i. Remove portions of the earthen dam according to the plans.
    j. Remove access roads.
    k. Site restoration and de-mobilization.

No extensive removal of pond sediment is anticipated. General observations at this site suggest that the sediment accumulation in the pond is relatively low, the pond bed is relatively firm and possesses many boulders, and the side slopes of the pond are gentle and thus would be stable upon removal. Furthermore, sediment sampling and lab analysis by CT DEEP indicates that there is no contamination present in the pond bed, thus no compelling need to remove sediment for human safety concerns. If additional information is acquired during the design phase that indicates that this information is not accurate or there are additional sediment concerns, a plan for more sediment removal will be included in the final plans.

No proactive planting of native plants is anticipated, beyond stabilization seeding of disturbed areas to prevent erosion. The pond and surrounding land have no extensive stands of non-native plants such as *Phragmites*, Japanese knotweed, purple loosestrife, etc. It is the experience of stream restoration practitioners in Connecticut that pond bed sediments contain a multitude of viable seeds of native plants that germinate and immediately colonize the exposed pond bed upon dam removal. Examples include the Rutan Dam in Stonington, CT (see Figure 4.) and Zemko Dam in Salem. If information is gained during the design phase that suggests there is an elevated risk of colonization of non-native plants, an invasive control plan and planting scheme will be included in the plans.

Figure 4: Former Rutan Dam pond (to right), three months after removal.

6. The work proposed is the removal of the Blackledge River Dam.
7. Operation and maintenance of the area is performed by the Town of Glastonbury. The project described herein will be coordinated by the Town professional staff.

A. **MITIGATION AREA**

1. Background information
    a. Alternatives-
        1) On-site- The shallow water habitat in the Connecticut River currently provides habitat for the potentially affected species. Therefore, on-site alternatives are not available to mitigate potential adverse effects on fisheries habitat.

        2) Off-site – the current project is proposed offsite. The following alternatives, that would provide similar benefits, were considered:
            i. Build a fishway. This is another accepted alternative for providing fish passage. While the exact approach would have to be confirmed by detailed engineering studies, the Town and CT DEEP believe that the most likely method would be to build a right-bank Denil fishway (4 ft wide, slope: 12.5%). The CTDEEP builds smaller fishways for other anadromous fishes but the Atlantic salmon is a large fish (10 pounds, 30 – 35 inches) and it would require the Denil design. The disadvantages of this alternative are:

                Requires the Town to repair the dam to comply with Dam Safety standards and ensure the water level was maintained at a suitable level to allow the fishway to be operational.

                Does not eliminate the impoundment behind the dam and thus fails to deliver those additional ecological benefits.

                Will not pass American eels, so a separate eel pass would have to be designed and installed next to the Denil fishway.

                Will not pass many other non-target species like small trout, minnows, and other native riverine species.

                Would require the Town to operate and maintain the fishway and the dam well into the future.

                Continues to expose the Town to heightened liability by having a dam where the public could sustain injury or the dam could fail and cause downstream damage.

                Detracts from the undeveloped, highly natural setting of the Town property.

                Very expensive—perhaps over twice the cost of the chosen alternative.

            ii. Lower the dam and build a fishway. This is another accepted alternative for providing fish passage. It is generally done to reduce the cost of the fishway and is particularly effective if the dam is 20 feet high and there is some desire to retain a pond. Lowering the dam to 10 feet could cut the fishway costs in half. However, in the case of the Blackledge River Dam, the dam already is fairly low and any modest savings realized with a lower

fishway would be lost with the extra cost of lowering the dam. All of the disadvantages listed for Alternative 2 would still pertain to this alternative.

iii. Remove the dam. This is the chosen alternative. It does not share any of the disadvantages listed for alternatives 2 and 3. The main advantages are:

Restores the streambed to its natural condition and allow any species of fish that passed upstream historically to do so again.

Restores all natural riverine functions.

Avoids creating a structure that would need future operation and maintenance.

Cost is substantially less.

There are no significant disadvantages to this alternative. The pond is not highly valued for outdoor recreation. Its elimination would not cause undue hardship and would provide substantial ecological benefits.

3) In-lieu fee- This is a viable alternative if the dam is not removed. The Town will pay $130,000 into the Connecticut ILF if the dam is not removed by the summer of 2018.

b. Existing wildlife use- The Blackledge River currently supports Atlantic salmon, sea lamprey and American eel, all of which will be aided by dam removal. Other aquatic or wetland-dependent species observed during a brief site visit include American toad, painted turtle, northern water snake and eastern kingfisher.

c. The soils at the project site are Canton and Charlton (61B, 61C, 62D), Ridgebury, Leicester and Whitman (3), Fluvaquents-Udifluvents complex (109) and Hinckley gravelly sandy loam (38C).

d. The project site plant communities consist of the following palustrine, lacustrine and riverine classes: PEM2G, PSS1G, PFO1C, PFO1G, PFO1B, R2UB2 and L1UB3.

e. Surrounding land uses at the project site are upland mixed hardwood and white pine forest.

2. Mitigation Proposed

The proposed mitigation is removal of an existing dam on the Blackledge River, a tributary of the Salmon River and then the Connecticut River. The mitigation site contains a stone masonry dam and an upstream impoundment. A narrow band of wetlands occurs along the margins of the pond, predominately on the west side. The mitigation area totals $\pm$ 5.5 acres and includes restoration of a stream channel and riparian wetlands. Dam removal and riparian restoration has been successfully conducted on a number of sites across the northeast; therefore, there is a high probability of success.

a. Wetland acreage- total within project area ± 8 acres; total area impounded by dam ± 5.5 acres.
b. HGM classification- Riverine, Depressional, Lacustrine Fringe and Slope classes.
c. Other aquatic resources- none.
d. Functions and values- The principal functions and values of the proposed mitigation area are fish/shellfish habitat, visual/aesthetic quality and recreation.
e. Target fish and wildlife species- native coldwater fish species, particularly Atlantic salmon, sea lamprey and American eel.
f. Reference site- Examples of successful dam removal stream restoration include the Rutan Dam in Stonington, CT and Zemko Dam in Salem, CT.
g. Design constraints- The cost associated with design and implementation of dam removal is the most significant project constraint.
h. Construction will be provided by the Town of Glastonbury, most likely through contracts with appropriate professionals. Long-term oversight and management will be provided by the Town of Glastonbury which currently manages the existing recreational facilities in at the site. Mitigation monitoring will be provided by the Town through contracts with consulting wetland scientists.
i. Project construction timing is dependent on permit approvals. Ideal timing would be in late summer or early fall, to coincide with seasonal low flow/low table period.
j. The responsible party will be the Town of Glastonbury.
k. Potential to attract waterfowl/pose a threat to aircraft- The site is not located near any existing airports.

3. Specific Aquatic Resource Checklist
    a. Non-tidal wetlands- Wetlands at/adjacent to the site include the following palustrine, lacustrine and riverine classes: PEM2G, PSS1G, PFO1C, PFO1G, PFO1B, R2UB2 and L1UB3.
    b. Tidal wetlands- None present.
    c. Vernal pools- one vernal pool was observed within the upland forest west of the pond. The pool is located a considerable distance from the project area activities (see Figure 2). The pool contained spotted salamander egg masses. The spotted salamander is an obligate vernal pool species.
    d. Streams- The project area is proposed within the impounded portions of the Blackledge River. In addition, two unnamed, intermittent headwater streams drain from west to east into the impoundment.
    e. Submerged aquatic vegetation- some submerged aquatic vegetation was observed along the shallows of the pond.

B. GRADING PLAN

1. No significant regrading is proposed, outside of the immediate vicinity of the dam.
2. Microtopography is to be constructed per direction of CT DEEP Inland Fisheries and Town wetland scientists in the field.

3. Pedestrian and vehicular access for maintenance and monitoring is readily available from the existing parking area off Hebron Avenue (CT Rte. 94).

C. EROSION CONTROLS

1. A detailed erosion control plan and narrative in compliance with the requirements of CT statute will be developed as part of the detailed design plans. Due to the limited amunt of sediment removal and regrading required, these controls will consist primarily of perimeter siltation barriers, a construction entrance, and pump discharge basins. A local inland wetland permit is required and erosion control will be monitored in conjunction with their requirements.
    1. The controls will be removed upon final stabilization and bond release from the local wetland agency.
    2. Temporary devices and structures to control erosion and sedimentation in and around mitigation sites shall be properly maintained at all times. The devices and structures shall be disassembled and properly disposed of as soon as the site is stable but no later than November 1, three full growing seasons after planting. Sediment collected by these devices will be removed and placed upland in a manner that prevents its erosion and transport to a waterway or wetland.

D. INVASIVE SPECIES

As noted above, EPS did not identify any extensive stands of non-native invasive species in the immediate vicinity of the proposed work. This will be confirmed by a more detailed survey prior to the start of work. EPS personnel will mark invasive species for treatment via mechanical and chemical means, per their established methods. Invasive species control will be one of the primary components of the maintenance and monitoring program for the mitigation area. Best invasive plant species control practices shall be determined and implemented based on CT DEEP, Nature Conservancy and ecological restoration practices. These methods may include physical, chemical and biological controls.

1. Risks- Invasive species are not common at the site. Pro-active control and monitoring will minimize long term risks
2. Constraints- There are no known regulatory or environmental constraints affecting control strategies, other than restrictions on herbicides over and adjacent to standing water.

E. OFF-ROAD VEHICLE USE

1. There is no off-road vehicle use in the immediate area. The site is located within a Town-owned open space parcel where no motorized vehicle operation is permitted.
2. Monitoring of off-road vehicle use will continue as part of the Town's established procedures. An additional control plan is not required.

F. PRESERVATION

1. The mitigation area is currently owned by the applicant.
2. Wetlands within subdivision protected- No subdivision is proposed.
3. A conservation easement is not required. The property is owned by the Town and CT DEEP and its use is restricted under their control.
4. Plan of preservation area- Not applicable.
5. Form of legal means of preservation- Not applicable.
6. Documentation of acceptance by receiving agency- Not applicable.

G. MONITORING

Mitigation success monitoring will be funded by the applicant and performed by EPS soil scientists and wetland scientists. No extensive mitigation area plantings are currently anticipated. If required, they will be designed with plant materials that are native and indigenous to the region. Except where modified by any permit conditions herein, the mitigation shall be performed in accordance with the final plans approved by the Corps of Engineers and the CT DEEP. Within 60 days of completing the dam removal project, CT DEEP WHAMM applicant will submit a signed letter to the Corps, Policy Analysis and Technical Support Branch, specifying the date of completion of the mitigation work and the Corps permit number.

Monitoring Report Guidance

Monitoring shall be done of the dam removal area for five years and shall discuss the following performance standards:

Performance Standards

1. The stream reach has the necessary duration and depth of low to support passage of diadromous fish. Minimum of 90% of the stream reach must meet desired hydrology levels. Areas that are too dry should be identified along with suggested corrective measures.
2. Non-native invasive species are not dominant in the former impoundment or along the restored stream reach.
3. Exposed sediments are stable and vegetated with native, non-invasive species.
4. The fifth year (Year 5) monitoring report shall contain a wetland delineation and documentation of the vegetation within the former impoundment and wetlands within 100’ of the former high water mark.
5. There is evidence of expected natural colonization as documented by the presence of at least 10 species of volunteer native herbaceous species.

6. The following plants are being controlled at the site:
   Common Reed (*Phragmites australis*)
   Purple loosestrife (*Lythrum salicaria*)
   Smooth and Common buckthorns (*Frangula alnus, Rhamnus cathartica*)
   Russian and Autumn olives (*Elaeagnus angustifolia and E. umbellata*)
   Multiflora rose (*Rosa multiflora*)
   Reed canary-grass (*Phalaris arundinacea*)
   Japanese knotweed (*Fallopia japonica*)

For this standard, small patches must be eliminated during the entire monitoring period. Large patches must be aggressively treated and the treatment documented.

7. All slopes, soils, substrates, and constructed features within and adjacent to the mitigation site(s) are stable.

Monitoring Report Requirements

Monitoring reports should generally follow a 10-page maximum report format per site, with a self-certification form transmittal. Submission of electronic formats (e.g., pdf) is strongly encouraged. The information required should be framed within the following format.

1) Project Overview (1 page)

Highlighted summary of problems which need immediate attention (e.g., problem with hydrology, severe invasive species problem, serious erosion, major losses from herbivory, etc.). This should be at the beginning of the report and highlighted in the self-certification form and the project overview (Appendices E and F).

2) Requirements (1 page)

List all performance and/or success standards, required financial assurances, required preservation, etc., and note whether required documents have been provided and evaluate whether the compensatory mitigation project site is successfully achieving the approved performance and/or success standards or trending toward success.

3) Summary Data (maximum of 4 pages)

Summary data must be provided to substantiate the success and/or potential challenges associated with the compensatory mitigation project. Photo documentation should be provided to support the findings and recommendations, and placed in the Appendix.

- Address performance standards achievement and/or measures to attain the standards.

- Describe the monitoring inspections, and provide their dates, that occurred since the last report.

- Concisely describe remedial actions done during the monitoring year to meet the performance or success standards – actions such as removing debris, replanting,

controlling invasive plant species (with biological, herbicidal, or mechanical methods), regrading the site, applying additional topsoil or soil amendments, adjusting site hydrology, etc. Also describe any other remedial actions done at each site.

- Report the status of all erosion control measures on the compensation site(s). Are they in place and functioning? If temporary measures are no longer needed, have they been removed?

- Give visual estimates of (1) percent vegetative cover for each mitigation site and (2) percent cover of the invasive species listed under Success Standard No. 3, above, in each mitigation site.

- What fish and wildlife use the site(s) and what do they use it for (nesting, feeding, shelter, etc.)?

4) Maps/Plans/photographs (maximum 3 pages)

Maps must be provided to show the location of the mitigation site relative to other landscape features, habitat types, locations of photographic reference points, transects, sampling data points, and/or other features pertinent to the mitigation plan. In addition, the submitted maps/plans must clearly delineate the mitigation site boundaries to assist in proper locations for subsequent site visits. Each map or diagram must fit on a standard 8 ½ x 11" piece of paper and include a legend, bar scale, and the location of any photos submitted for review.

5) Conclusions (1 page)

A general statement must be included describing the conditions of the compensatory mitigation project. If performance or success standards are not being met, a brief discussion of the difficulties and potential remedial actions proposed by the permittee, including a timetable, must be provided.

6) Monitoring Report Appendices

Appendix A -- A plan showing the location and extent of the designed wetland or watercourse habitat types (e.g., perennial stream).

Appendix B – A vegetative species list of volunteers in each plant community type. The volunteer species list should, at a minimum, include those that cover at least 5% of their vegetative layer.

Appendix C -- Representative photos of each mitigation site taken from the same locations for each monitoring event. Photos should be dated and clearly labeled with the direction from which the photo was taken. The photo sites must also be identified on the appropriate maps.

J. ASSESSMENT

A post-construction assessment of the condition of the River in the area of the dam removal shall be performed following the fifth growing season (Year 5) after completion of the

mitigation site(s) construction, or by the end of the monitoring period, whichever is later. "Growing season" in this context begins no later than May 31st. To ensure objectivity, the person(s) who prepared the annual monitoring reports shall not perform this assessment without written approval from the Corps. The assessment report shall be submitted to the Corps by December 15 of the year the assessment is conducted; this will coincide with the year of the final monitoring report, so it is acceptable to include both the final monitoring report and assessment in the same document.

The post-construction assessment shall include the four assessment appendices listed below and shall:

Summarize the original or modified mitigation goals and discuss the level of attainment of these goals at each mitigation site.

Describe significant problems and solutions during construction and maintenance (monitoring) of the mitigation site(s).

Identify agency procedures or policies that encumbered implementation of the mitigation plan. Specifically note procedures or policies that contributed to less success or less effectiveness than anticipated in the mitigation plan.

Recommend measures to improve the efficiency, reduce the cost, or improve the effectiveness of similar projects in the future.

ASSESSMENT APPENDICES:

Appendix A -- Summary of the results of a functions and values assessment of the mitigation site(s), using the same methodology used to determine the functions and values of the impacted wetlands.

Appendix B -- Calculation of the area by type (e.g., wetlands, vernal pools) of aquatic resources in each mitigation site. Wetlands should be identified and delineated using the Corps Wetlands Delineation Manual and approved regional supplements. Supporting documents shall include (1) a scaled drawing showing the aquatic resource boundaries and representative data plots and (2) datasheets for the corresponding data plots.

Appendix C -- Comparison of the area and extent of aquatic resources (from Appendix B) with the area and extent of aquatic resources proposed in the mitigation plan. This comparison shall be made on a scaled drawing or as an overlay on the as-built plan. This plan shall also show any major vegetation community types.

Appendix D -- Photos of each mitigation site taken from the same locations as the monitoring photos.

K. CONTINGENCY

The applicant's supervising wetland scientist shall identify any technical barriers to success during construction and monitoring and recommend appropriate remedial measures.

L. LONG-TERM STEWARDSHIP

The Town of Glastonbury will own and maintain the mitigation area as necessary.

M. FINANCIAL ASSURANCES

The Town of Glastonbury will provide a bond or escrow in the amount of $130,000 to the Corps of Engineers to assure the dams removal.

N. REFERENCES

Cowardin, L.M., Golet, F.C., Edward T. LaRoe, E.T. 1979. CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES. US Department of the Interior, Fish and Wildlife Service.

US Army Corp of Engineers, New England District. 1999. The Highway Methodology Workbook Supplement. Wetland Functions and Values, a Descriptive Approach.

ATTACHMENTS

Site photos taken May 9, 2015

Photo 1: dam looking east.

Photo 2: Blackledge River immediately downstream of dam, looking south.

Photo 3: impounded segment of river, looking south from western shore.

Photo 4: western shore, just north of dam; note fringe of emergent and scrub-shrub vegetation.

Photo 5: northern end of impoundment at inflow.

Photo 6: unnamed stream draining into southwest corner of pond, looking east.

ATTACHMENT D
CT DEEP EMERGENCY AUTHORIZATION LETTER

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

April 1, 2015

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Town of Glastonbury
c/o Richard J. Johnson, Town Manager
P. O. Box 6523
2155 Main Street
Glastonbury, CT 06033

Subject: Emergency Authorization No. 201502313-SB, Glastonbury Riverfront Park
Town of Glastonbury

Dear Mr. Johnson:

Enclosed please find a copy of the emergency authorization (authorization) which is being issued pursuant to your application submitted on March 27, 2015 to place riprap in the river to prevent further slumping of the slope. Your attention is directed to the conditions of the enclosed authorization. All work must conform to that which is authorized. Please note that this authorization expires 120 days after the issuance date.

Any work, not authorized by a valid permit, certificate of permission or emergency authorization, which is in tidal wetlands and/or waterward of the coastal jurisdiction line in tidal, navigable or coastal waters of the State is a violation of state law and subject to enforcement action by the Department of Energy and Environmental Protection and the Office of the Attorney General.

Your initiation of authorized activities will be relied upon as your agreement to comply with the terms and conditions of the emergency authorization. Please contact me at 860-424-3625 or sue.bailey@ct.gov if you have any questions.

Sincerely,

Susan L. Bailey, Environmental Analyst 3
Office of Long Island Sound Programs
Bureau of Water Protection & Land Reuse

Enclosures

cc: Barbara Newman, U.S. Army Corps of Engineers

SPECIAL TERMS AND CONDITIONS

1. The Authorization Holder shall file Appendix A on the land records of the municipality in which the subject property is located not later than thirty (30) days after permit issuance pursuant to CGS section 22a-363g. A copy of Appendix A with a stamp or other such proof of filing with the municipality shall be submitted to the Commissioner no later than sixty (60) days after permit issuance.

2. Except as specifically authorized herein, no equipment or material including but not limited to, fill, construction materials, excavated material or debris, shall be deposited, placed or stored in any tidal wetland or watercourse on or off-site, nor shall any tidal wetland or watercourse be used as a staging area or accessway other than as provided herein.

3. The Authorization Holder shall make best efforts to ensure that the riprap authorized pursuant to the Scope of Authorization, above, is placed in a manner that minimizes turbidity and other adverse impacts to spawning migrations of anadromous fish.

4. At no time shall any barge be stored over intertidal flats, submerged aquatic vegetation or tidal wetland vegetation or in a location that interferes with navigation. In the event any barge associated with the work authorized herein is grounded, no dragging or prop dredging shall occur to free the barge.

5. The Authorization Holder shall ensure that any vessel utilized in the execution of the work authorized herein shall not rest on, or come in contact with, the substrate at any time.

GENERAL TERMS AND CONDITIONS

1. This Authorization shall expire 120 days after the issuance of this Authorization except as may be authorized in writing by the Commissioner.

2. No later than 30 days following the expiration date, the Authorization Holder shall submit a complete permit application pursuant to CGS section 22a-361 for the retention or continuation of the work authorized herein. Said application shall include, for the Commissioner's review and written approval, a proposed plan to mitigate for the placement of rock authorized herein. The mitigation plan shall be undertaken in accordance with requirements of the Commissioner's written approval.

3. The Authorization Holder may request an extension of the expiration date. Said request shall be in writing and shall be submitted to the Commissioner at least 7 days prior to the expiration date. Such request shall describe the work done to date, what work remains to be completed, the reason for the extension and the specific nature of the emergency based on current site conditions. Such request shall be subject to the Commissioner's sole discretion.