



RHODE ISLAND

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

235 Promenade Street, Providence, RI 02908-5767

TDD 401-222-4462

**HAND DELIVERED/CERTIFIED MAIL**

September 22, 2009

Mr. B. Joe Reddish  
 Town Council President  
 Town of Richmond  
 5 Townhouse Road  
 Richmond, Rhode Island 02898

**PERMIT TO ALTER FRESHWATER WETLANDS**

Re: Application Number ARRA 09-001:

Dear Mr. Reddish:

The Department of Environmental Management ("DEM") has completed its review of your **Application to Alter a Freshwater Wetland** regarding the proposed removal of the Lower Shannock Falls Dam with additional downstream channel and grade control modifications to promote upstream fish passage, as described and detailed in the material and information submitted in support of your application and site plans received by the DEM on July 14, 2009. These site plans describing the project were made available for public comment as part of the forty-five (45) day public notice period required in accordance with the Freshwater Wetlands Act (R.I. General Laws (R.I.G.L.) Section 2-1-18 et seq.) and the procedures set forth in Rule 10.04 of the Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act (Rules).

The DEM received three (3) letters relating to your application that were submitted during the public notice period. These letters expressed concern regarding your project's impacts to freshwater wetland values. DEM reviewed these letters together with any supporting documents and evaluated the potential impacts from the project upon the values mentioned in the letters. DEM has determined that the comments contained within these letters do not constitute an objection of a substantive nature as defined in Rule 10.04 (C)(3) of the Rules and R.I.G.L. Section 2-1-22(b). Therefore, a public hearing pursuant to R.I.G.L. Section 2-1-22 is not required.

Pursuant to the DEM's review and evaluation of your application including all supporting information and material, as well as the record to date, the DEM has determined that this project does not represent a random, unnecessary or undesirable alteration of freshwater wetlands. Additionally, DEM has determined that the project proposed within said application will not adversely affect any wetland so as to cause any of the impacts identified in Rule 10.05 (C) of the Rules. Therefore, DEM hereby issues this permit to alter freshwater wetlands **subject to all controlling Rules and the Terms and Conditions set forth herein.**

**Permit Terms and Conditions for Application No. ARRA 09-01:**

1. This letter is the DEM's permit for this project under the R.I. Fresh Water Wetlands Act, Rhode Island General Laws (RIGL) Section 2-1-18 et seq.
2. This permit is specifically limited to the project, site alterations and limits of disturbance as detailed on the site plans submitted with your application and received by the DEM on July 14, 2009 and revised on September 14, 2009. A copy of the site plans noted approved by the DEM is enclosed. Changes or revisions to the project which would alter freshwater wetlands are not authorized without a permit from the DEM.
3. Where the terms and conditions of the permit conflict with the approved site plans, these terms and conditions shall be deemed to supersede the site plans.
4. You must notify the DEM Office of Customer and Technical Assistance in writing or by email immediately prior to the commencement of site alterations and upon completion of the project.
5. A copy of the stamped approved site plans and a copy of this permit must be kept at the site at all times during site preparation, construction, and final stabilization. Copies of this permit and the stamped approved plans must be made available for review by any DEM or Town of Richmond or Town of Charlestown representative upon request.
6. Within ten (10) days of the receipt of this permit, you must record this permit in the land evidence records of the Towns of Richmond and Charlestown and supply DEM with written documentation obtained from the Towns showing this permit was recorded.
7. The effective date of this permit is the date this letter was issued. This permit expires one (1) year from the effective date unless renewed pursuant to the Rules.
8. Any material utilized in this project must be clean and free of matter that could pollute any freshwater wetland.
9. Prior to commencement of site alterations, you shall erect or post a sign resistant to the weather and at least twelve (12) inches wide and eighteen (18) inches long, which boldly identifies the initials "DEM" and the application number of this permit. This sign must be maintained at the site in a conspicuous location until such time that the project is complete and the DEM issues a Notice of Completion of Work for the project.
10. Temporary erosion and sediment controls detailed or described on the approved site plans shall be properly installed at the site prior to or commensurate with site alterations. Such controls shall be properly maintained, replaced, supplemented, or modified as necessary throughout the life of this project to minimize soil erosion and to prevent sediment from being deposited in any wetlands not subject to disturbance under this permit.
11. Upon permanent stabilization of all disturbed soils, temporary erosion and/or sediment controls consisting of hay bales and silt fence must be removed.
12. You are obligated to install, utilize and follow all best management practices detailed or described on the approved site plans in the construction of the project to minimize or prevent adverse impacts to any adjacent freshwater wetlands and the functions and values provided by such wetlands.
13. The Narragansett Indian Tribal Historic Preservation Office (NITHPO) must be notified at least ten (10) business days prior to the start of construction on this project. NITHPO representatives



must be allowed to be present during any ground disturbance or excavation work to help identify any possible cultural/historic items found on site during construction.

14. Final contractor plans and specifications for the design and operation of the temporary cofferdam and by-pass structures must be submitted to the DEM prior to construction.
15. The temporary cofferdam and by-pass structures must be installed during the low flow period (*i.e.*, the period from July 1 to October 31 of any calendar year) and be maintained to allow a dry working condition (no sediment plume) in the watercourse. Soil disturbance in the watercourse must temporarily cease in the event of any abnormally high stormwater runoff event if a dry working condition cannot be maintained with the use of mobile pumps.
16. Removal of the temporary cofferdam will be conducted sequentially to control upstream drawdown to no more than six (6) inches per day.
17. Final contractor design and specifications for the removal of all channel bottom materials by either mechanical or blasting operations must be submitted to the DEM prior to construction. Documentation must be provided for the final disposal of all excavated channel bottom material. If blasting is required, a copy of the State Fire Marshall Permit must be submitted at least three (3) business days prior to construction and include proof of insurance for any off-site impacts that may result from the blasting.
18. Placement of the blanketing/matting and all plantings of shrubs, trees or other forms of vegetation as shown or detailed on the approved plans, or detailed in this permit, must be installed as soon as possible after complete removal of the temporary cofferdam and by pass structures; weather and season permitting. You must notify DEM in writing upon completion of the required plantings for a compliance inspection by a DEM representative.
19. Buffer zone plantings of trees and/or shrubs proposed between the project and any adjacent freshwater wetland areas, except for necessary replacement, must be allowed to develop naturally without being subjected to mowing or manicuring.
20. An environmental consultant, experienced in site assessments and measures necessary to protect sensitive aquatic environments or sensitive ecosystems, must be employed prior to the commencement of site alterations to monitor this project and to ensure compliance with the terms and conditions of this permit. Prior to construction DEM must be notified in writing of the consultant chosen to comply with this condition and must receive monthly written progress reports from the consultant regarding compliance with this permit until such time that the project is complete or DEM issues a Notice of Completion of Work.

**This Permit also constitutes your authorization from the U.S. Army Corps of Engineers ("Corps") under Section 404 of the Clean Water Act for the work proposed.** Your project qualifies as a Category 2 activity under the Rhode Island Programmatic General Permit (General Permit No. NAE-2006-2711). **You are, therefore, not required to file a separate application with the Corps.**

Please note that the General Conditions within the enclosed RI Programmatic General Permit apply to all activities authorized under the RI PGP. Please review them carefully to thoroughly familiarize yourself with their contents. You may wish to discuss all permit conditions with your contractor to ensure that the work can be accomplished in a manner which conforms to all requirements.

You are required to comply with the terms and conditions of this permit and to carry out this project in compliance with the Rules at all times. Failure to do so may result in an enforcement action by this Department and/or subject you to the enforcement provisions of the Corps' regulations.

In permitting the proposed alterations, the DEM assumes no responsibility for damages resulting from faulty design or construction. This permit does not remove your obligation to obtain any local, state, or federal approvals or permits required by ordinance or law and does not relieve you from any duties owed to adjacent landowners with specific reference to any changes in drainage, groundwater flow, or structural integrity.

If you are aggrieved by this decision, you may, within thirty (30) days of the receipt of this letter, request an adjudicatory hearing in writing. This request must be sent directly to the DEM Administrative Adjudication Division ("AAD"), 235 Promenade Street, Providence, RI 02908. A copy of the request should also be forwarded to the Office of Legal Services, at the same address. Your written request for an adjudicatory hearing must be timely filed and should conform to the requirements of Rule 7.00(b) of the "Administrative Rules of Practice and Procedure for the Department of Environmental Management Administrative Adjudication Division for Environmental Matters", (AAD Rules). AAD Rule 7.00(b) provides:

"The request for hearing shall state clearly and concisely the specific issues which are in dispute and the facts in support thereof, the relief sought if any, the license or permit sought or involved and any additional information required by applicable statutes and regulations."

The written request must be accompanied by an adjudicatory hearing fee of two thousand dollars (\$2,000.00); in the form of a certified bank check or money order made payable to the Rhode Island General Treasurer; however, in the event that the cost of the hearing exceeds the fee paid, the Program through the AAD will require an additional fee which the applicant must submit prior to the DEM's issuance of any final decision regarding this application. The adjudicatory hearing will be held before a Hearing Officer from the AAD. Such hearing will be held in compliance with the AAD Rules, Chapter 42-35-1 et seq. of the R.I.G.L., and other governing laws, rules, and regulations adopted by the DEM. Please note that you have the right to be represented by legal counsel in any proceeding which may be held in this matter.

If you have any questions regarding this matter, you may contact me at 401 222-6822, extension 7500 or Andrew Manca at 401-222-6822, extension 2022.

Sincerely,



Ronald N. Gagnon, P.E., Chief  
Office of Customer and Technical Assistance

Enclosure:      Approved Site Plans  
                     RI PGP Conditions

xc: David Kerins, Acting Chief, Administrative Adjudication Division  
Russell Chateaufneuf, Chief of Groundwater & Wetlands Protection  
Richard M. Bianculli, Jr., DEM Office of Legal Services  
Robert DeSista, U.S. Army Corps of Engineers  
Director of Public Works  
Building Official  
Harold K. Ellis, Enforcement Supervisor, Office of Compliance and Inspection

**Department of the Army  
Programmatic General Permit  
State of Rhode Island**

The New England District of the U.S. Army Corps of Engineers (Corps) hereby issues a Programmatic General Permit (PGP) that expedites review of minimal impact work in coastal and inland waters and wetlands within the State of Rhode Island.

**I. GENERAL CRITERIA:**

Activities with minimal impacts, as specified by this PGP's terms (Pages 1 – 6), general conditions (Pages 7 – 14), and Appendix A - Definition of Categories, qualify for authorization under this PGP in either Category 1 or Category 2.

Project proponents should first review Appendix A - Definition of Categories to determine if a project meets either:

- Category 1: Non-reporting  
Projects meeting Category 1 may be authorized under this PGP without notifying the Corps. (An application to the State is required, unless exempt from State regulation),
- Category 2: Reporting.  
An application to the State and written authorization from the Corps (either directly or within a State issued permit) is required for these projects.

If you determine that your project is eligible for Category 1 as defined in Appendix A, you must then ensure that your project is in full compliance with this PGP's terms and general conditions. If any of these terms or general conditions are not met, your project must be reviewed in the Category 2 or the Individual Permit category. The Individual Permit thresholds are defined in Appendix A and the Individual Permit procedures are briefly described on Page 6. This PGP does not affect the Corps Individual Permit review process or activities exempt from Corps jurisdiction.

**II. ACTIVITIES COVERED:**

- Work and structures that are located in, or that affect, navigable waters of the United States (U.S.) [33 CFR 328.4(c)] (regulated by the Corps under Section 10 of the Rivers and Harbors Act of 1899);
- The discharge of dredged or fill material into waters of the U.S. (regulated by the Corps under Section 404 of the Clean Water Act); and
- The transportation of dredged material for the purpose of disposal in the ocean (regulated by the Corps under Section 103 of the Marine Protection, Research and Sanctuaries Act).

### **III. PROCEDURES:**

#### **A. State Approvals**

In order for PGP authorizations to be valid, when any of the following state approvals are also required, the approvals must be obtained prior to the commencement of work. (See General Condition 1.) Applicants are responsible for applying for and obtaining any of the required State approvals:

(1) RI Department of Environmental Management (DEM) approval under the Freshwater Wetland Act, Rhode Island General Laws (RIGL).

(2) RI DEM approval under RIGL Section 46-19 et seq. entitled "Inspection of Dams and Reservoirs" and regulations promulgated thereto.

(3) RI DEM approval under the "Water Quality Regulations for Water Pollution Control" pursuant to RIGL Chapter 42-17.1 and Section 46-12-1 et seq.

(4) RI DEM approval under the "Rules and Regulation for Dredging and the Management of Dredged Material" pursuant to RIGL Chapter 46-6.1.

(5) Water Quality Certification (WQC) under Section 401 of the Federal Clean Water Act (CWA) (33 USC 1341). The CWA requires applicants to obtain a WQC or waiver from the state water pollution control agency (DEM). The DEM has granted WQC for PGP Category 1 activities provided that the applicant obtains the required approvals listed above. The DEM conditionally granted WQC for PGP Category 2 activities provided that (a) the applicant obtains the required approvals listed above and (b) the DEM finds through Category 2 Federal/State screening meetings that the activity is reasonably likely to have minimal or no impact on water quality.

(6) RI Coastal Resources Management Council (CRMC) approval ("Assent") pursuant to RIGL Chapter 23, Section 46-23-1 et seq. "Rules and Regulations Governing the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast." Category 1 projects require an application to CRMC for their review. Category 2 projects require an application to CRMC for review by CRMC and the Corps.

(7) Coastal Zone Management (CZM) Consistency under Sec. 307 of the Federal CZM Act of 1972, as amended. The CRMC administers the RI CZM program. The CRMC has determined that any project in the Coastal Area that is authorized under Category 1 or 2 of this PGP is consistent with the RI CZM program and does not require any additional CZM review. The state's Coastal Area is statutorily defined in RIGL Chapter 23, Section 46-23.

#### **B. Corps Authorizations**

##### **CATEGORY 1 (Non-Reporting)**

**Activities in Rhode Island not exempt from Rhode Island regulation, and not located on the Narragansett Land Claim Settlement Area or sites that may influence this area (Areas of Influence) (see following page for description).**

##### **Eligibility**

Activities in RI (except those on the Narragansett Land Claim Settlement Area or Areas of Influence) that are:

- Subject to Corps jurisdiction (see General Condition 2, Page 7),
- Meet the definition of Category 1 in Appendix A,
- Meet the general conditions of this PGP (Pages 7 through 14), and
- Regulated by one of the state authorities listed in A. State Approvals above,

may proceed without application or notification to the Corps provided the applicable State authorizations above are obtained.

Although Category 1 projects are non-reporting, the Corps reserves the right to require either a Category 2 or Individual Permit review if there are concerns for the aquatic environment or any other factor of the public interest (see General Condition 4, Page 7).

Activities subject to Corps jurisdiction but exempt from state regulation or on the Narragansett Land Claim Settlement Area or Areas of Influence are not eligible for authorization under Category 1 even if they meet the definition of Category 1 in Appendix A. Proponents must submit an application for such activities directly to the Corps for review in accordance with the Category 2 screening requirements described below.

Project proponents seeking Category 1 authorizations are not relieved of the obligation to comply with this PGP's general conditions (Pages 7 - 14) and other Federal laws such as the National Historic Preservation Act, the Endangered Species Act and the Wild and Scenic Rivers Act. Therefore, consultation with the Corps and/or outside experts such as the RI Historic Preservation and Heritage Commission and the appropriate Indian tribes or tribal agencies (Page 16) is recommended when there is a high likelihood of the presence of resources of concern. The Corps may require a Category 2 or Individual Permit review for work impacting historical, archaeological or tribal cultural resources.

The Narragansett Land Claim Settlement Area is marked with hatch marks at Appendix B. Areas of Influence to this area are located outside of this Land Claim Settlement Area, but in or adjacent to either the Wood or Pawcatuck River. These are areas of special concern and shall be included as follows:

- the Pawcatuck River from the Highway 112 crossing downstream to the confluence with the Wood River;
- the Wood River, upstream of the confluence with the Pawcatuck River to the Highway 91 crossing;
- tributaries to the Wood and Pawcatuck Rivers within the segments described at the two bullets above and within .25 miles of the main stems of the Wood and Pawcatuck Rivers; and
- the adjacent wetlands (bordering, contiguous and neighboring) to the Wood and Pawcatuck Rivers and their above specified tributaries.

## **CATEGORY 2 (Reporting/Screening/Minimal Impacts)**

### **Activities in Rhode Island (including those on the Narragansett Land Claim Settlement Area)**

#### **Eligibility Criteria**

Activities in Rhode Island, which are:

- Subject to Corps jurisdiction,
- Meet the definition of Category 2 in Appendix A,
- Meet the general conditions of this PGP listed on Pages 7 - 14, and
- Regulated by one of the State permitting agencies listed on Page 2,

require written approval from the appropriate State permitting agency (Page 2) and the Corps. DEM's written approval will include an approval statement from the Corps, if the Corps approves the project.

To be eligible and subsequently authorized, an activity must result in minimal impacts to the aquatic environment, as determined by the Corps in coordination with the review team (Page 4), in addition to meeting the criteria listed above. Mitigation may be required to compensate for unavoidable impacts to ensure net effects of a project are minimal.

Project proponents seeking Category 2 authorizations are not relieved of the obligation to comply with this PGP's general conditions (Pages 7 – 14) and other Federal laws such as the National Historic Preservation Act, the Endangered Species Act and the Wild and Scenic Rivers Act. Therefore, consultation with the Corps and/or outside experts such as the RI Historic Preservation and Heritage Commission and the appropriate Indian tribes or tribal agencies (Page 16) is recommended when there is a high likelihood of the presence of resources of concern.

### **Application Procedures**

1. **Applicants** must apply directly to the appropriate RI permitting agency (DEM or CRMC), not to the Corps, for projects in Rhode Island. The Corps and Federal resource agencies will receive State Notices from CRMC and copies of complete applications from the DEM prior to the monthly interagency screening meetings.
2. Applicants must apply directly to the Corps for activities exempt from RI Regulation (see Page 5).
3. Applicants must apply directly to the Corps and notify the Narragansett Indian Land and Water Resource Commission (see Page 16) for all activities subject to Corps jurisdiction that are located on Narragansett Land Claim Settlement Area and Areas of Influence (see Page 3). These activities are not eligible for authorization under Category 1.

The Corps will forward copies of applications being reviewed under Category 2 of the PGP to the RI Historic Preservation and Heritage Commission, and the Narragansett and Wampanoag Tribal Historic Preservation Offices for projects in their areas of concern (Page 16), early in the permit review process.

### **Federal/State Screening Procedures**

The Corps will review all complete applications for Category 2 projects at interagency screening meetings (or "joint processing" meetings) with the interagency review team consisting of Federal resource agencies [U.S. Fish & Wildlife Service (FWS), U.S. Environmental Protection Agency (EPA) and National Marine Fisheries Service (NMFS)] and RI permitting agencies (CRMC and DEM). Screening meetings are held monthly at RI DEM for inland projects and at CRMC for coastal projects.

At the interagency screening meeting, the Corps will determine, in consultation with the interagency review team and the Federal resource agencies, if applications for Category 2 work:

- Are eligible under the PGP as proposed;
- Are ineligible under the terms and/or conditions of this PGP;
- Require additional information;
- Will require project modification, mitigation, or other special conditions to minimize impacts and protect the aquatic environment to be eligible for authorization under this PGP; or
- Require Individual Permit review irrespective of whether the terms and General Conditions of this PGP are met, based on concerns for the aquatic environment or any other factor of the public interest (see General Condition 4).

For inland projects, if the Corps and Federal resource agencies determine that the activity is eligible for the PGP, the Corps will send an authorization memorandum to the DEM, and the DEM may then notify the applicant in a joint Corps/DEM authorization letter. For coastal projects, if the Corps and Federal resource agencies determine that the activity is eligible for the PGP, the Corps will send an authorization letter directly to the permittee. The CRMC will send their decision (Assent) directly to the permittee.

The Corps for Federal issues, or the DEM or CRMC for state issues, will contact the applicant to discuss any concerns or request any additional information. If the applicant is unable to resolve the concerns, the Corps, independently or at the request of the RI DEM, CRMC or Federal resource agencies will require an Individual Permit for the project. The Corps will notify the applicant in writing within ten working days of the screening meeting if their project is not eligible for Category 2 and will require Individual Permit review. The Corps will provide information about submitting the necessary application materials for this review. If the applicant is able to modify the proposed project to address agency concerns, that project may be rescreened with the review team and subsequently authorized under the PGP.

For projects reviewed with the Federal agencies, the agencies may recommend within ten business days special conditions for projects to avoid or minimize adverse environmental effects and to ensure the terms and general conditions of the PGP are met. The Corps will determine that a project is ineligible under this PGP and will begin its Individual Permit review procedures if the Corps itself or any one of the Federal agencies within ten business days of the screening meeting, expresses a concern within their area of expertise, states the resource or species that could be impacted by the project, and describes the impacts that, either individually or cumulatively, will be more than minimal.

This ten-day notice may be spoken and is not required to be fully documented, but must be confirmed with a written response within an additional ten working days from the date of the spoken comment. Written responses must be signed by the Federal resource agency field supervisor or branch chief, as appropriate, and must identify the affected resource within their area of expertise. The intent of the spoken notification is to allow the Corps to give timely notification to the applicant that additional information is needed and/or an Individual Permit may be required. The Corps may reinstate a project's eligibility under the PGP provided the Federal agencies' concerns are satisfied. The Federal resource agencies may request additional information within their area of expertise within ten business days of the screening meeting. This information shall be commensurate to the level of impact and agreed upon by the Corps. The agencies are allowed an additional ten business days after their receipt of additional information to provide special conditions or a written Individual Permit request to the Corps.

The Corps will coordinate with the RI Historic Preservation and Heritage Commission and the tribal historic preservation offices to ensure that PGP approvals comply with Section 106 of the National Historic Preservation Act. These groups will review all projects under Corps jurisdiction in their respective areas of concern (Page 16). The Narragansett Indian Land and Water Resource Commission will review all activities located on the Narragansett Land Claim Settlement Area and Areas of Influence. The Corps will consider comments from the Commission and the tribes in the permit review process during the comment period as outlined in this section above.

## **CATEGORY 2 (Reporting/Screening/Minimal Impacts)**

### **Activities exempt from Rhode Island regulation**

Applicants shall apply directly to the Corps. The Corps and Federal agencies will review ALL Category 1 and 2 activities under this PGP's Category 2 procedures if the activity triggering Corps jurisdiction is exempt from State regulation. Proponents must submit applications directly to the Corps for these projects. The Corps, EPA and Federal resource agencies will review these activities. The Corps, not the state, will issue the written authorization for such projects once they are approved. They cannot be legally undertaken until the Corps approves them in writing, even if they meet the definition of Category 1 in Appendix A.



### **Emergency Situations Procedures**

Emergency situations are limited to sudden, unexpected occurrences that could potentially result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship if corrective action requiring a permit is not undertaken within a time period less than the normal time needed to process an application under standard procedures. Contact the Corps and the State (see Page 15) in the event of an emergency situation.

## **IV. INDIVIDUAL PERMIT**

Work that is defined in the Individual Permit category of Appendix A – Definition of Categories, or that does not meet the terms and conditions of this PGP, will require an application for an Individual Permit from the Corps (see 33 CFR 325.1). The screening procedures outlined for Category 2 projects will only serve to delay project review in such cases. The applicant should submit the appropriate application materials (including the Corps application form) at the earliest possible date. General information and application forms can be obtained at our web site or by calling us (see Page 15). Individual 401 WQC and CZM consistency concurrence are required when applicable from the State of Rhode Island before Corps permit issuance. The Federal resource agencies' comments are due within ten working days after the Public Notice's expiration date, unless the Corps receives and approves a written request for a time extension within ten working days after the notice's expiration.

## V. GENERAL CONDITIONS:

The following conditions apply to activities authorized under this PGP, including all Category 1 (non-reporting) and Category 2 (reporting /requiring screening) activities:

**1. Other Permits.** Authorization under the PGP does not obviate the need to obtain other Federal, State, or local authorizations required by law or to comply with all Federal, Rhode Island or local laws.

**2. Federal Jurisdictional Boundaries.** Applicability of this PGP shall be evaluated with reference to Federal jurisdictional boundaries. Applicants are responsible for ensuring that the boundaries used satisfy the Federal criteria defined at 33 CFR 328-329. These sections prescribe the policy, practice and procedures to be used in determining the extent of jurisdiction of the Corps concerning “waters of the U.S.” and “navigable waters of the U.S.” Wetland boundaries shall be delineated in accordance with the January 1987 Corps of Engineers Wetlands Delineation Manual, located at [www.saj.usace.army.mil/permit/documents/87manual.pdf](http://www.saj.usace.army.mil/permit/documents/87manual.pdf). The U.S. FWS publishes the National List of Plant Species that Occur in Wetlands, located at [www.nwi.fws.gov](http://www.nwi.fws.gov). The Natural Resources Conservation Service (NRCS) publishes the current hydric soil definition, criteria and lists, located at <http://soils.usda.gov/use/hydric/>. For the purposes of this PGP, the Corps will generally rely on the RI DEM’s CWA jurisdictional recommendations. However, on a case-by-case basis, the Corps may require additional documentation from the permit applicant to support the basis of Federal jurisdiction.

**3. Minimal Effects.** Projects authorized by the PGP shall have no more than minimal individual and cumulative adverse environmental impacts as determined by the Corps.

**4. Discretionary Authority.** Notwithstanding compliance with the terms and general conditions of this PGP, the Corps retains discretionary authority to require either a Category 2 or Individual Permit review (if the project originally qualified for Category 1) or an Individual Permit review (if the project originally qualified for a Category 2) based on concerns for the aquatic environment or for any other factor of the public interest [33 CFR 320.4(a)]. This authority is invoked on a case-by-case basis whenever the Corps determines that the potential impacts of the proposal warrant either a Category 2 or an Individual Permit review based on the concerns stated above. This authority may be invoked for projects with cumulative environmental impacts that are more than minimal or if there is a special resource or concern associated with a particular project that is not already covered by the remaining conditions of the PGP and that warrants greater review. Whenever the Corps notifies an applicant that either a Category 2 or Individual Permit review is required, authorization under this PGP is void and no work may be conducted until the Corps issues the required authorization or until the Corps notifies the applicant that further review has demonstrated that the work may proceed under this PGP.

**5. Single and Complete Projects.** This PGP shall not be used for piecemeal work and shall be applied to single and complete projects. All components of a single project and/or all planned phases of a multi-phased project shall be treated together as constituting one single and complete project unless the Corps determines that a component has independent utility. (The *Independent Utility* test is used to determine what constitutes a single and complete project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.) For linear projects, such as power lines or pipelines with multiple crossings, the “single and complete project” (i.e., single and complete crossing) will apply to each crossing of a separate water of

the U.S. (i.e., single waterbody) at that location; except that for linear projects crossing a single waterbody several times at separate and distant locations, each crossing is considered a single and complete project, and may be reviewed for Category 1 eligibility. (However, individual channels in a braided stream or river, or individual arms of a large, irregularly-shaped wetland or lake, etc., are not separate waterbodies.) If any crossing requires a Category 2 activity, then the entire linear project shall be reviewed as one project under Category 2 provided that the impact thresholds in Appendix A are met. Also, this PGP shall not be used for any activity that is part of an overall project for which an Individual Permit is required, unless the Corps determines the activity has independent utility. Note that modifications to state permits do not constitute a separate project. Modifications which involve Corps jurisdiction will be screened at the regular screening meetings in order to ascertain compliance with the PGP.

**6. Permit On-Site.** For Category 2 projects, the permittee shall ensure that a copy of this PGP and the accompanying authorization letter are at the work site (and the project office) authorized by this PGP whenever work is being performed, and that all personnel with operation control of the site ensure that all appropriate personnel performing work are fully aware of its terms and conditions. The entire permit authorization shall be made a part of any and all contracts and sub-contracts for work that affects areas of Corps jurisdiction at the site of the work authorized by this PGP. This shall be achieved by including the entire permit authorization in the specifications for work. The term "entire permit authorization" means this PGP and the authorization letter (including its drawings, plans, appendices and other attachments) and also includes permit modifications. If the authorization letter is issued after the construction specifications, but before receipt of bids or quotes, the entire permit authorization shall be included as an addendum to the specifications. If the authorization letter is issued after receipt of bids or quotes, the entire permit authorization shall be included in the contract or sub-contract as a change order. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire PGP authorization, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps jurisdiction.

#### **General Conditions Related to National Concerns:**

**7. Historic Properties.** Any activity authorized by this PGP shall comply with Section 106 of the National Historic Preservation Act. Information on the location and existence of historic resources can be obtained from the Rhode Island Historical Preservation and Heritage Commission, the National Register of Historic Places and the tribes. See Page 16 for historic properties contacts and geographic areas of concern for each. Project proponents shall apply to the Corps for all projects that would otherwise qualify for Category 1 if there is the potential for an effect on a historic property within the permit area or any known historic property that may occur outside the permit area. Historic properties include those that are eligible for inclusion, but not necessarily listed on the National Register. If the permittee, during construction of work authorized herein, encounters a previously unidentified archaeological or other cultural resource within the area subject to Corps jurisdiction that might be eligible for listing in the National Register of Historic Places, he/she shall immediately notify the Corps.

**8. National Lands.** Activities authorized by this PGP shall not impinge upon the value of any National Wildlife Refuge, National Forest, National Estuarine Research Preserves, National Marine Sanctuary, National Park or any other area administered by the U.S. FWS, U.S. Forest Service, or National Park Service.

**9. Endangered Species.** No activity may be authorized under this PGP which:

- May affect a threatened or endangered species, a proposed species, designated critical habitat, or proposed critical habitat as identified under the Federal ESA,
- Would result in a “take” of any threatened or endangered species of fish or wildlife, or
- Would result in any other violation of Section 9 of the ESA protecting threatened or endangered species of plants.

Applicants shall notify the Corps if any listed species or critical habitat or proposed species or critical habitat, is in the vicinity of the project and shall not begin work until notified by the Corps that the requirements of the ESA have been satisfied and that the activity is authorized. Information on the location of threatened and endangered species and their critical habitat can be obtained from the U.S. FWS and NMFS (see Page 15 for addresses).

**10. Essential Fish Habitat (EFH).** As part of the PGP screening process, the Corps will coordinate with NMFS in accordance with the 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act to protect and conserve the habitat of marine, estuarine and anadromous finfish, mollusks, and crustaceans. This habitat is termed “EFH” and is broadly defined to include “those waters and substrate necessary to fish for spawning, breeding, feeding and growth to maturity.” For additional EFH information and/or locations, see 50 CFR 600 ([www.nmfs.noaa.gov](http://www.nmfs.noaa.gov)), [www.nero.nmfs.gov/RO/DOC/appguide1.html](http://www.nero.nmfs.gov/RO/DOC/appguide1.html) or contact NMFS (see Page 15). For the Pawcatuck River and its tributaries, a map showing the extent of current and historic salmon migration routes is available as an aid to evaluation of potential impacts to EFH in that watershed (<http://204.139.0.188/website/maps>).

**11. Wild and Scenic Rivers.** Currently there are no designated Wild and Scenic Rivers or rivers designated as Study Rivers in the State of Rhode Island.

**12. Federal Navigation Project.** Any structure or work that extends closer to the horizontal limits of any Corps Federal Navigation Project (FNP) than a distance of three times the FNP’s authorized depth shall be subject to removal at the owner’s expense prior to any future Corps dredging or the performance of periodic hydrographic surveys.

**13. Navigation.** (a) There shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein, and no attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized herein. (b) The permittee understands and agrees that if future operations by the U.S. require the removal, relocation or other alteration of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps, to remove, relocate or alter the structural work or obstructions caused thereby, without expense to the U.S. No claim shall be made against the U.S. on account of any such removal or alteration.

**14. Federal Liability.** In issuing this PGP, the Federal Government does not assume any liability for the following: (a) damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes; (b) damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the U.S. in the public interest; (c) damages to persons, property or to other permitted or unpermitted activities or structures caused by the activity authorized by the PGP; (d) design or construction deficiencies associated with the permitted work; (e) damage claims associated with any future modification, suspension or revocation of this permit.

## **General Conditions Related to Minimizing Environmental Impacts:**

**15. Avoidance and Minimization.** Discharges of dredged or fill material into waters of the U.S. and any secondary impacts shall be avoided and minimized to the maximum extent practicable. Permittees may only fill those jurisdictional wetlands that the Corps authorizes to be filled and impact those wetlands that the Corps authorizes as secondary impacts. If not specifically authorized, any unauthorized fill or secondary impact to wetlands may be considered as a violation of the CWA.

- Unless specifically authorized, no work shall drain a water of the U.S. by providing a conduit for water on or below the surface.
- Projects using creosote-treated materials in any water or wetland require an Individual Permit.

**16. Heavy Equipment in Wetlands.** Heavy equipment other than fixed equipment (drill rigs, fixed cranes, etc.) working in wetlands shall not be stored, maintained or repaired in wetlands, unless it is less environmentally damaging otherwise, and as much as possible shall not be operated there. Where construction requires heavy equipment operation in wetlands, the equipment shall either have low ground pressure (<3 psi), or shall not be located directly on wetland soils and vegetation; it shall be placed on swamp mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation. Other support structures that are less impacting and are capable of safely supporting equipment may be used with written Corps authorization. Similarly, not using mats during frozen, dry or other conditions may be allowed with written Corps authorization. (See GC 17 below.) An adequate supply of spill containment equipment shall be maintained on site.

Note: "Swamp mats" is a generic term used to describe structures that distribute equipment weight to prevent wetland damage while facilitating passage and providing work platforms for workers and equipment. They are comprised of sheets or mats made from a variety of materials in various sizes. A type of swamp mat is a timber mat, which consists of large timbers bolted or cabled together. Corduroy roads, which are not considered to be swamp mats, are cut trees and/or saplings with the crowns and branches removed, and the trunks lined up next to one another. Corduroy roads are typically installed as permanent structures. Like swamp mats, they are considered as fill whether they're installed temporarily or permanently.

**17. Temporary Fill.** If a project's combined temporary and permanent fill totals <5,000 SF, it may be authorized under Category 1 if the project meets the Category 1 definition in Appendix A and it is in compliance with this PGP's terms and general conditions. If a project's combined temporary and permanent fill is  $\geq 5,000$  SF, no temporary fill (e.g., access roads, cofferdams) shall be placed in waters of the U.S. (including wetlands) unless the Corps specifically authorizes it in writing through the Category 2 review process. Swamp mats and corduroy roads (see 16 above) are considered as temporary fill when they are removed immediately upon work completion.

- All temporary fill shall be stabilized and maintained during construction in such a way as to prevent its eroding into portions of waters of the U.S. where it is not authorized.
- Unconfined temporary fill authorized for discharge into waters of the U.S. should consist of material that minimizes impacts to water quality (e.g. sandbags or clean, gravel and/or stone).
- Temporary fill authorized for discharge into wetlands shall be placed on geotextile fabric laid on the pre-construction wetland grade. (Swamp and timber mats are excluded from this requirement.)
- Temporary fill shall be removed as soon as it is no longer needed, and it shall be disposed of at an upland site and suitably contained to prevent its subsequent erosion into waters of the U.S.
- Waters of the U.S. where temporary fill was discharged shall be restored (see General Condition 18).
- If temporary fill is staged and then returned to its original location, e.g., sewer projects through wetlands, the original location shall be restored.

- Temporary fills shall be disposed of at an upland site and suitably contained to prevent erosion and/or transport to a waterway or wetland.

#### **18. Restoration.**

- Upon completion of construction, all disturbed wetland areas (the disturbance of these areas must be authorized) shall be properly stabilized. Any seed mix shall contain only plant species native to New England.
- The introduction or spread of invasive plant species in disturbed areas shall be controlled.
- In areas of authorized temporary disturbance, if trees are cut they shall be cut at ground level and not uprooted in order to prevent disruption to the wetland soil structure and to allow stump sprouts to revegetate the work area, unless otherwise authorized.
- Wetland areas where permanent disturbance is not authorized shall be restored to their original condition and elevation, which under no circumstances shall be higher than the pre-construction elevation. Original condition means careful protection and/or removal of existing soil and vegetation, and replacement back to the original location such that the original soil layering and vegetation schemes are approximately the same, unless otherwise authorized.

**19. Coastal Bank Stabilization.** Projects involving construction or reconstruction/maintenance of bank stabilization structures within Corps jurisdiction should be designed to minimize environmental effects, effects to neighboring properties, scour, etc. to the maximum extent practicable. For example, vertical bulkheads should only be used in situations where reflected wave energy can be tolerated. This generally eliminates bodies of water where the reflected wave energy may interfere with or impact on harbors, marinas, or other developed shore areas. A revetment is sloped and is typically employed to absorb the direct impact of waves more effectively than a vertical seawall. It typically has a less adverse effect on the beach in front of it, abutting properties and wildlife. For more information, see the Corps Coastal Engineering Manual, located at <http://chl.erdc.usace.army.mil>. Select "Products/Services" and then "Publications." Part 5, Chapter 7-8, a(2)c is particularly relevant.

**20. Sedimentation and Erosion Control.** Adequate sedimentation and erosion control management measures, practices and devices, such as phased construction, vegetated filter strips, geotextile silt fences, hay bales or other devices, shall be installed and properly maintained to reduce erosion and retain sediment on-site during and after construction. They shall be capable of preventing erosion, of collecting sediment, suspended and floating materials, and of filtering fine sediment. These devices shall be removed upon completion of work, and the areas disturbed by them shall be stabilized. The sediment collected by these devices shall be removed and placed at an upland location in a manner that will prevent its later erosion into a waterway or wetland. All exposed soil and other fills shall be permanently stabilized at the earliest practicable time. (See General Condition 18.)

#### **21. Waterway Crossings and Work:**

- (a) All temporary and permanent crossings of waterbodies shall be suitably culverted, bridged or otherwise designed to withstand and to prevent the restriction of high flows, to maintain existing low flows, and to not obstruct the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction.
- (b) Aquatic Life Movements. No activity may substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Open bottom arches, bridge spans or embedded culverts are generally favored over traditional culverts and should be installed when practicable. Bridge spans are generally preferred. Culverts shall be installed with their

inverts embedded below existing streambed grade to avoid “hanging” and associated impediments to fish passage. All temporary and permanent crossings of rivers, streams and intermittent streams (all referred to as “streams”) shall conform with the RI BMP Manual guidance [www.dem.ri.gov/programs/benviron/water/permits/fresh/pdfs/wetbmp.pdf](http://www.dem.ri.gov/programs/benviron/water/permits/fresh/pdfs/wetbmp.pdf).

(c) Culverts at waterbody crossings shall be installed in such a manner as to preserve hydraulic connectivity, at its present level, between the wetlands on either side of the road. The permittee shall take necessary measures to correct wetland damage due to lack of hydraulic connectivity.

(d) Projects using slip lining (retrofitting an existing culvert by inserting a smaller diameter pipe), plastic pipes, High Density Polyethylene Pipes (HDPP), or retrofit methods increasing flow velocity, are not allowed as non-reporting Category 1 activities, either as new or maintenance work.

(e) No projects involving open trench excavation in flowing waters are allowed under this PGP. Open trench excavation projects may qualify for Category 1 provided (1) the work doesn’t occur in flowing waters (requires using management techniques such as temporary flume pipes, culverts, cofferdams, etc.) and (2) normal flows are maintained within the stream boundary’s confines (see Appendix A, Endnote 5). Projects utilizing these management techniques must meet the other Category 1 requirements (see Appendix A, Page 1) and all of this PGP’s terms and General Conditions. If not, they will require review under the Category 2 screening procedures. Projects proposing no management techniques to avoid open trench excavation will require an Individual Permit.

(f) Construction equipment shall not cross or access streams without the use of temporary bridges, culverts, or cofferdams. (Note: Areas of fill and/or cofferdams must be included in total waterway/wetlands impacts to determine applicability of this PGP).

(g) For projects that otherwise meet the terms of Category 1, in-stream (e.g., rivers, streams, brooks, etc.) construction work shall be conducted only during the low flow period of July 1 to October 1 in any year. Projects that are conducted outside that time period are ineligible for Category 1 and shall be reviewed under Category 2, regardless of the waterway and wetland fill and/or impact area.

(h) Work impacting upstream or downstream flooding or wetlands must be reviewed under Category 2.

**22. Discharge of Pollutants.** All activities involving any discharge of pollutants into waters of the U.S. authorized under the PGP shall be consistent with applicable water quality standards, effluent limitations, standards of performance, prohibitions, and pretreatment standards and management practices established pursuant to the CWA (33 USC 1251) and applicable state and local laws. If applicable water quality standards, limitations, etc. are revised or modified during the term of this permit, the authorized work shall be modified to conform with these standards within six months of the effective date of such revision or modification or within a longer period of time deemed reasonable by the Corps in consultation with the EPA. Applicants may presume that state water quality standards are met with issuance of the WQC (applicable only to Section 404 activities).

**23. Spawning Areas.** Discharges of dredged or fill material, and/or suspended sediment producing activities in fish and shellfish spawning or nursery areas, or amphibian and waterfowl breeding areas, during spawning or breeding seasons shall be avoided. Impacts on these areas shall be avoided or minimized to the maximum extent practicable during all times of year.

**24. Storage of Seasonal Structures.** Coastal structures such as pier sections, floats, etc. that are removed from the waterway for a portion of the year (often referred to as seasonal structures) shall be stored in an upland location, located above mean high water (MHW) and not in tidal wetlands. These seasonal structures may be stored on the fixed, pile-supported portion of the structure that is seaward of MHW. This is intended to prevent structures from being stored on the marsh substrate and the substrate seaward of MHW.



**25. Environmental Functions and Values.** The permittee shall make every reasonable effort to carry out the construction or operation of the work authorized herein in a manner so as to maintain as much as is practicable; to minimize any adverse impacts on existing fish and wildlife, and natural environmental values; and to discourage the establishment or spread of plant species identified as non-native invasive species by any Federal or State agency.

**Procedural Conditions:**

**26. Inspections.** The permittee shall allow the Corps to make periodic inspections at any time deemed necessary in order to ensure that the work is being or has been performed in accordance with the terms and conditions of this permit. The Corps may also require post-construction engineering drawings for completed work or post-dredging survey drawings for any dredging work.

**27. Maintenance.** (a) The permittee shall maintain the work authorized herein in good condition and in conformance with the terms and general conditions of this permit. This does not include maintenance of dredging projects. Maintenance dredging is subject to the review thresholds in Appendix A and/or any special conditions included in a written Corps authorization. Maintenance dredging includes only those areas and depths previously authorized by the Corps and dredged. (b) See [www.nae.usace.army.mil](http://www.nae.usace.army.mil) for inland mosquito ditching and maintenance information. See "Regulatory/Permitting," and then "Other."

**28. Property Rights.** This PGP does not convey any property rights, either in real estate or material, or any exclusive privileges, nor does it authorize any injury to property or invasion of rights or any infringement of Federal, state, or local laws or regulations.

**29. Modification, Suspension, and Revocation.** This PGP may be either modified, suspended, or revoked in whole or in part pursuant to the policies and procedures of 33 CFR 325.7. Any such action shall not be the basis for any claim for damages against the U.S.

**30. Restoration Directive.** The permittee, upon receipt of a notice of revocation of authorization under this PGP, shall restore the wetland or waterway to its former conditions without expense to the U.S. and as directed by the Secretary of the Army or his authorized representative. If the permittee fails to comply with such a directive, the Secretary or his designee may restore the wetland or waterway to its former condition, by contract or otherwise, and recover the cost from the permittee.

**31. Special Conditions.** The Corps may impose other special conditions on a project authorized pursuant to this GP that are determined necessary to minimize adverse navigational and/or environmental effects or based on any other factor of the public interest. Failure to comply with all general conditions of the authorization, including special conditions, constitutes a permit violation and may subject the permittee to criminal, civil or administrative penalties and/or restoration.

**32. False or Incomplete Information.** If the Corps makes a determination regarding the eligibility of a project under this PGP and subsequently discovers that it has relied on false, incomplete or inaccurate information provided by the permittee, the PGP authorization shall not be valid and the U.S. Government may institute legal proceedings.

**33. Abandonment.** If the permittee decides to abandon the activity authorized under this PGP, unless such abandonment is merely the transfer of property to a third party, he/she may be required to restore the area to the satisfaction of the Corps.

**34. Enforcement cases.** The PGP does not apply to any existing or proposed activity in Corps jurisdiction associated with a Corps or EPA enforcement action until such time as the enforcement action is resolved or the Corps or EPA as appropriate determines that the activity may proceed independently without compromising the enforcement action.

**Duration of Authorization/Grandfathered:**

**35. Duration of Authorization.** Activities authorized under this PGP that have commenced (i.e., are under construction) or are under contract to commence before this PGP's expiration date have:

- For Category 1 projects, 12 months after this PGP's expiration date to complete the work.
- For Category 2 projects, until the project-specific date that the Corps provides to the permittee in the PGP authorization letter to complete the work.

Activities authorized and completed under Category 1 or 2 of this PGP will continue to remain authorized after this PGP's expiration date. The permittee must be able to document that the project was under construction or contract by the appropriate date. Activities authorized under Category 2 of this PGP (or by an Individual Permit) for the transport of dredged or fill material for the purpose of disposing of it in ocean waters will specify a completion date for the disposal not to exceed three years from the date of authorization.


PGP activities will remain authorized as specified above unless:

- The PGP is either modified or is revoked, or
- Discretionary authority has been exercised on a case-by-case basis to modify, suspend or revoke the authorization in accordance with 33 CFR 325.2(e)(2).

**36. Previously Authorized Activities:**

(a) Projects that received written authorization from the Corps and that were completed under the previous PGP's, nationwide permits, regional general permits or letters of permission, shall remain authorized as specified in each authorization letter.

(b) Activities authorized pursuant to 33 CFR 330.3 ("Activities occurring before certain dates") are not affected by this PGP.

*for*  
  
DISTRICT ENGINEER

2-13-07  
DATE

## **VI. CONTACTS FOR THE RI PGP**

### **1. FEDERAL**

#### **U.S. Army Corps of Engineers**

New England District, Regulatory Division  
696 Virginia Road  
Concord, Massachusetts 01742-2751  
(800) 343-4789 or (978) 318-8335  
(978) 318-8303 fax

#### **U.S. Environmental Protection Agency**

U.S. Environmental Protection Agency, Region I  
1 Congress Street, Suite 1100  
Boston, Massachusetts 02114-2023  
(617) 918-1397

#### **Federal Endangered Species**

U.S. Fish and Wildlife Service  
P.O. Box 307  
Charlestown, Rhode Island 02813  
(401) 364-9124

National Marine Fisheries Service  
Habitat Division  
212 Rogers Avenue  
Milford, Connecticut 06460  
(203) 882-6594

#### **Bridge Permits**

Commander (obr)  
First Coast Guard District  
One South Street - Battery Bldg  
New York, NY 10004  
(212) 668-7021

#### **National Park Service**

National Park Service  
North Atlantic Region  
15 State Street  
Boston, Massachusetts 02109  
(617) 223-5191

### **2. STATE**

RI Department of Environmental Management  
Water Resources/Freshwater Wetlands  
235 Promenade Street  
Providence, Rhode Island 02908  
(401) 222-6820  
(401) 222-6177 (fax)

RI Coastal Resources Management Council  
Oliver Stedman Government Center  
Wakefield, Rhode Island 02879-1900  
(401) 783-3370  
(401) 783-3767 (fax)

#### **State Endangered Species**

Department of Environmental Management.  
Natural Heritage Program  
235 Promenade Street  
Providence, Rhode Island 02908  
(401) 222-2776

## CONTACTS FOR THE RI PGP (Continued)

### 3. HISTORIC RESOURCES

Rhode Island Historical Preservation & Heritage Commission  
150 Benefit Street  
Providence, Rhode Island 02908  
(401) 222-2678  
(401) 222-2968 (fax)  
Area of Concern: All of Rhode Island

Tribal Historic Preservation Office  
Narragansett Tribe  
P.O. Box 700  
Wyoming, Rhode Island 02898  
(401) 539-1190  
(401) 742-5048 (cell)  
(401) 539-4217 (fax)  
Area of Concern: All of Rhode Island

Tribal Historic Preservation Office  
Wampanoag Tribe of Gay Head (Aquinnah)  
20 Black Brook Road  
Aquinnah, Massachusetts 02535-1546  
(508) 645-9265  
(508) 645-3790 (fax)  
Area of Concern: Barrington, Bristol, Central  
Falls, Cumberland, East Providence, Lincoln,  
Little Compton, Middletown, Newport,  
Pawtucket, Portsmouth, Tiverton, Warren,  
Woonsocket.

#### **Tribal Resources**

Narragansett Indian Land and Water Resource Commission  
P.O. Box 700  
Wyoming, Rhode Island 02898  
(401) 539-1190  
(401) 364-3977

### 4. ORGANIZATIONAL WEBSITES:

Army Corps of Engineers	<a href="http://www.nae.usace.army.mil/reg/index.htm">www.nae.usace.army.mil/reg/index.htm</a>
Army Corps of Engineers Headquarters	<a href="http://www.usace.army.mil">www.usace.army.mil</a> (click "Obtain a Permit?")
Environmental Protection Agency	<a href="http://www.epa.gov/owow/wetlands/">http://www.epa.gov/owow/wetlands/</a>
National Marine Fisheries Service	<a href="http://www.nmfs.noaa.gov">www.nmfs.noaa.gov</a>
U.S. Fish and Wildlife Service	<a href="http://www.fws.gov">www.fws.gov</a>
National Park Service	<a href="http://www.nps.gov/rivers/index.html">www.nps.gov/rivers/index.html</a>
RI Dept. of Environmental Management	<a href="http://www.dem.ri.gov">www.dem.ri.gov</a>
RI CRMC	<a href="http://www.crmc.ri.gov">www.crmc.ri.gov</a>
RI Division of Fish and Wildlife	<a href="http://www.dem.ri.gov/programs/bnatres/fishwild/index.htm">www.dem.ri.gov/programs/bnatres/fishwild/index.htm</a>
RI Historic Preservation & Heritage Comm	<a href="http://www.rihphc.state.ri.us">www.rihphc.state.ri.us</a>
RI GIS	<a href="http://www.planning.ri.gov/gis/gishome.htm">www.planning.ri.gov/gis/gishome.htm</a>
Narragansett Tribe	<a href="http://www.narragansetttribe.com">www.narragansetttribe.com</a>
Wampanoag Tribe	<a href="http://www.wampanoagtribe.net">www.wampanoagtribe.net</a>

## APPENDIX A: DEFINITION OF CATEGORIES

<b>I. INLAND WATERS AND WETLANDS</b>	<b>Inland Waters and Wetlands:</b> Waters that are regulated under Section 404 of the Clean Water Act, including rivers, streams, lakes, ponds and wetlands [33 CFR 328.4(c)], excluding Section 10 Navigable Waters of the U.S. The jurisdictional limits are the ordinary high water (OHW) mark in the absence of adjacent wetlands, beyond the OHW mark to the limit of adjacent wetlands when adjacent wetlands are present, and the wetland limit when only wetlands are present. For the purposes of this PGP, fill placed in the area between the mean high water (MHW) and the high tide line (HTL), and in the bordering and contiguous wetlands <sup>1</sup> to tidal waters are reviewed in the Navigable Waters section (see Page 3).		
	Projects not meeting Category 1 must apply/report to the Corps as either a Category 2 or Individual Permit project. All Category 1 and 2 projects must comply with all of this PGP's applicable terms (Pages 1 – 6) and general conditions (Pages 7 – 14).		
	<b>CATEGORY 1<sup>2</sup></b>	<b>CATEGORY 2</b>	<b>INDIVIDUAL PERMIT</b>
(a) NEW FILL/ EXCAVATION DISCHARGES	<p>&lt;5,000 SF of waterway and/or wetland fill and secondary impacts, (e.g., areas drained, flooded, cleared or excavated). Fill area includes all temporary and permanent fill areas<sup>3</sup>. Swamp mats and corduroy roads are considered as fill (see General Condition (GC) 17).</p> <p><u>Provided projects comply with all GCs, including:</u></p> <ul style="list-style-type: none"> <li>• GC 5: All fill, including subdivision fill, must be a single and complete project.</li> <li>• GC 15: Proper sequencing (avoidance and mitigation) is required<sup>4</sup>.</li> <li>• GC 21: Temporary and permanent stream crossings and work shall comply with all requirements.</li> <li>• GC 21: In-stream (e.g., rivers, streams, brooks, etc.) work limited to Jul 1-Oct 1.</li> </ul> <p><u>This category excludes:</u></p> <ul style="list-style-type: none"> <li>• Dams, dikes, or activities involving water diversions<sup>5</sup>.</li> <li>• Open trench excavation in flowing waters (see GC 21).</li> <li>• Work in vernal pools (VPs) or within 100' of the VP's edge when Corps jurisdiction is triggered.</li> <li>• Work in special aquatic sites (SAS)<sup>7</sup> other than wetlands.</li> <li>• Work on Corps properties and Corps-controlled easements<sup>8</sup></li> </ul>	<p>5,000 SF to 1 acre waterway and/or wetland fill and secondary impacts, (e.g., areas drained, flooded, cleared or excavated). Fill area includes all temporary and permanent fill areas<sup>3</sup>. Swamp mats and corduroy roads are considered as fill (see GC 17).</p> <p>Swamp mats filling any area ≥5,000 SF are reviewed in Category 2 (see GCs 16 &amp; 17).</p> <p>Projects with proactive restoration<sup>9</sup> as a primary purpose with impacts of any area ≥5,000 SF. The Corps, in consultation with Federal and State agencies, must determine that net adverse effects are not more than minimal.</p> <p>Specific activities with impacts ≥5,000 SF required to affect the containment, stabilization, or removal of hazardous or toxic waste materials performed, ordered or sponsored by a government agency with established legal or regulatory authority. Wetlands must be restored in place.</p> <p>Work in VPs or within 100' of the VP's edge when Corps jurisdiction is triggered. Wetland fill and/or secondary impacts (e.g., site clearing, grading and construction activities) should be limited to &lt;25% of the VP habitat<sup>6</sup>. Roads &amp; driveways should be excluded from the VP envelope<sup>6</sup>. The applicant shall delineate all VPs on the property when any work (upland or wetland/waterway) will occur within 750' of the VP.</p>	<p>≥1 acre waterway and/or wetland fill and secondary impacts, (e.g., area drained, flooded, cleared or excavated). Fill area includes all temporary and permanent fill areas<sup>3</sup>.</p> <p>In-stream work exceeding Category 2 limits, e.g., projects proposing no management techniques to avoid open trench excavation in flowing waters. (See GC 21.)</p>

(b) BANK STABILIZATION PROJECTS	<p>Inland bank stabilization &lt;100 FT long and &lt;1 CY of fill per linear foot below ordinary high water (OHW)</p> <ul style="list-style-type: none"> <li>• In-stream work limited to Jul 1-Oct 1.</li> <li>• No work in VPs or within 100' of the VP's edge<sup>6</sup>.</li> <li>• No work in SAS<sup>7</sup></li> <li>• No open trench excavation in flowing waters. (see GC21.)</li> <li>• No structures angled steeper than 3H:1V allowed. Only rough-faced stone or fiber roll revetments allowed.</li> <li>• No work on Corps properties and Corps-controlled easements<sup>8</sup>.</li> </ul>	Inland bank stabilization projects ≥100 FT long or ≥1 CY per linear foot below OHW.	
(c) REPAIR AND MAINTENANCE OF AUTHORIZED FILLS	<p>Repair/maintenance of existing, currently-serviceable, authorized fills with no expansion or change in use.</p> <ul style="list-style-type: none"> <li>• Conditions of the original authorization apply</li> <li>• Minor deviations in fill design allowed<sup>10</sup>.</li> </ul>	Repair/maintenance of existing, currently-serviceable, authorized fills; or replacement of non-serviceable authorized fills, <1 acre, including expansion or a change in use.	Repair/maintenance of currently serviceable authorized fills, or replacement of non-serviceable authorized fills, ≥1 acre, including expansion or a change in use.
(d) MISC.	<p>Oil spill clean-up discharges. Fish and wildlife harvesting such as duck blinds. Scientific measurement devices and survey activities, e.g., exploratory drilling, surveying, sampling. Doesn't include oil/gas exploration and fills for roads or construction pads. Includes monitoring wells.</p> <p>Maintenance, repair, and emergency repair of high, significant and low hazard dams performed in accordance with RI DEM Rules and Regulations for Dam Safety. Associated wetland impacts that don't meet the definition of maintenance in (c) Category 1 above are limited to &lt;5000 SF.</p>	Maintenance, repair, and emergency repair of high, significant and low hazard dams performed in accordance with RI DEM Rules and Regulations for Dam Safety with associated wetland impacts ≥5000 SF not meeting the definition of maintenance in (c) Category 1 above.	

<b>II. NAVIGABLE WATERS</b>	<b>Navigable Waters of the U.S.:</b> Waters that are subject to the ebb and flow of the tide (Section 10 Rivers and Harbors Act of 1899) (33 CFR 329). The jurisdictional limits are the mean high water (MHW) line in tidal waters. For the purposes of this PGP, fill placed in the area between MHW and the high tide line (HTL), and in the bordering and contiguous wetlands <sup>1</sup> to tidal waters are also reviewed in this Navigable Waters section.		
	Projects not meeting Category 1 must apply/report to the Corps as either a Category 2 or Individual Permit project. All Category 1 and 2 projects must comply with all of this PGP's applicable terms (Pages 1 – 6) and general conditions (Pages 7 – 14).		
	<b>CATEGORY 1<sup>2</sup></b>	<b>CATEGORY 2</b>	<b>INDIVIDUAL PERMIT</b>
(a) FILL	<p>No provisions for new or previously unauthorized fills in Category 1, other than:</p> <ul style="list-style-type: none"> <li>Discharges of dredged or fill material incidental to the construction of bridges across navigable waters of the U.S., including cofferdams, abutments, foundation seals, piers, and temporary construction and access fills provided the U.S. Coast Guard authorizes such discharges as part of the bridge permit. Causeways and approach fills are not included in this category and require Category 2 or Individual Permit authorization.</li> </ul>	<p>&lt;1 acre waterway fill and secondary waterway impacts (e.g., areas drained, flooded or cleared). Fill area includes all temporary and permanent waterway fills.</p> <p>Temporary fill and/or excavation &lt;1 acre in special aquatic sites (SAS)<sup>7</sup>.</p> <p>State-approved mosquito control using open-marsh water management (OMWM) techniques.</p> <p>Fills with proactive restoration<sup>9</sup> (SAS, saltmarsh, eelgrass, anadromous fish run, etc.) as a primary purpose with any amount of impact. The Corps, in consultation with Federal &amp; State agencies, must determine that net adverse effects are not more than minimal.</p>	<p>≥1 acre waterway fill and secondary waterway impacts (e.g., areas drained, flooded or cleared). Fill area includes all temporary and permanent waterway fills.</p> <p>Temporary fill and/or excavation ≥1 acre in SAS<sup>7</sup>.</p> <p>Permanent fill or excavation, any amount, in SAS<sup>7</sup>, other than as specified in Category 2.</p> <p>EIS required by the Corps.</p> <p>Projects using creosote-treated materials in any water or wetland.</p>
(b) REPAIR AND MAINTENANCE WORK	<p>Repair or maintenance of:</p> <ul style="list-style-type: none"> <li>Existing, currently serviceable, authorized structures and fills.</li> <li>Recreational docks authorized under RI amnesty program provided that they are outside Federal Navigation Projects (FNP)<sup>11</sup></li> </ul> <p><u>Provided:</u></p> <ul style="list-style-type: none"> <li>No expansion or change in use.</li> <li>Must be rebuilt in same footprint, however minor deviations in structure design allowed.<sup>10</sup></li> </ul>	<p>Repair/maintenance of currently serviceable authorized fills with expansion or a change in use &lt;1 acre.</p> <p>Replacement of non-serviceable authorized fills, including expansion or a change in use, totaling &lt;1 acre.</p> <p>Repair/maintenance of currently serviceable authorized structures w/expansion where the structure (existing + expansion) qualifies for Cat 2 [see (e) below].</p> <p>Replacement of non-serviceable authorized structures w/expansion where the structure (existing + expansion) qualifies for Cat 2 [see (e) below].</p>	<p>Repair/maintenance of currently serviceable authorized fills with expansion or a change in use ≥1 acre.</p> <p>Replacement of non-serviceable authorized fills, including expansion or a change in use, totaling ≥1 acre.</p> <p>Repair/maintenance of currently serviceable, authorized structures w/expansion where the structure (existing + expansion) qualifies for an Individual Permit [see (e) below].</p> <p>Replacement of non-serviceable, authorized structures where the structure (existing + expansion, if any) qualifies for an Individual Permit [see (e) below].</p>



(c) DREDGING	<p>Maintenance dredging<sup>12</sup> for navigational purposes &lt;1,000 CY with upland disposal. Includes return water from upland contained disposal area.</p> <p><u>Provided:</u></p> <ul style="list-style-type: none"> <li>• Dredging &amp; disposal operation limited to Nov 1 - Jan 15.</li> <li>• No impact to SAS<sup>7</sup>.</li> <li>• No dredging in intertidal areas.</li> <li>• Proper siltation controls are used.</li> </ul>	<p>Maintenance dredging<sup>12</sup> ≥1,000 CY.</p> <p>New dredging<sup>12</sup> &lt;10,000 CY (unlimited volumes within and below existing marina perimeter limits)</p> <p><u>Provided:</u></p> <ul style="list-style-type: none"> <li>• No impacts to SAS<sup>7</sup>.</li> <li>• Disposal includes: 1.upland; 2.beach nourishment of any area provided dredging's primary purpose is navigation or sand is from an upland source; or 3.open water &amp; confined aquatic disposal, if Corps, in consultation with Federal and State agencies, finds the material suitable.</li> <li>• New dredging at marinas is within the existing CRMC-approved marina perimeter limit, does not result in detrimental changes to tidal circulation patterns within the project area, and side slopes are maintained so as to cause no detrimental impacts to nearby SAS<sup>7</sup> or salt marsh.</li> </ul> <p>Projects with proactive restoration as a primary purpose with impacts of any area. The Corps, in consultation with State and Federal agencies, must determine that net adverse effects are not more than minimal<sup>9</sup>.</p> <p>Specific activities with impacts of any area or cubic yardage required to affect the containment, stabilization, or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored by a government agency with established legal or regulatory authority may be reviewed as a Cat. 2 project. Wetlands must be restored in place.</p>	<p>New dredging<sup>12</sup> ≥10,000 CY.</p> <p>Dredging affecting an SAS<sup>7</sup>.</p>
(d) MOORINGS	<p>Outhauls permitted by a CRMC-approved municipal harbor management plan (HMP). See CRMC 300.4.B.7.</p> <p>Private, non-commercial, non-rental, single-boat moorings.</p> <p><u>Provided:</u></p> <ul style="list-style-type: none"> <li>• Chains or other connections may not rest on the bottom in vegetated shallows<sup>14</sup>. Eco-friendly mooring technology is required.</li> <li>• Authorized by the local harbormaster.</li> <li>• Within a CRMC-approved HMP area.</li> </ul>	<p>Moorings that don't meet the terms of Category 1.</p> <p>Moorings located such that they, and/or vessels docked or moored at them, are within the buffer zone of the horizontal limits of a Federal Channel<sup>11</sup>.</p>	<p>Moorings and/or their moored vessels within the horizontal limits of a Federal Channel<sup>11</sup>.</p>

	<ul style="list-style-type: none"> <li>• Not associated with a boating facility<sup>13</sup>.</li> <li>• Moorings in Federal Anchorage<sup>11</sup> not associated with a boating facility<sup>13</sup>.</li> <li>• Not located within the buffer zone of the horizontal limits of a Federal Channel<sup>11</sup>.</li> <li>• No interference with navigation.</li> </ul>		
(e) PILE-SUPPORTED STRUCTURES AND FLOATS	<p>Reconfiguration of existing authorized docks.</p> <ul style="list-style-type: none"> <li>• No additional slips and no expansion.</li> <li>• Includes reconfiguration within CRMC-approved perimeters.</li> <li>• Must comply with the first 7 bullets below.</li> </ul> <p>Boat and float lifts to authorized residential docks.</p> <p>Private, bottom-anchored floats ≤400 SF, and private, pile-supported structures for navigational access to the waterway ≤400 SF with attached floats ≤150 SF.</p> <p><u>Provided:</u></p> <ul style="list-style-type: none"> <li>• Floats supported at least 2.5' above the substrate during all tides.</li> <li>• Pile-supported structures &amp; floats are not located within 25' of vegetated shallows<sup>14</sup> and moored vessels are not positioned over SAS<sup>7</sup>.</li> <li>• Pile-supported structures are ≤4' wide and have at least a 1:1 height:width ratio<sup>15</sup>.</li> <li>• Extend ≤75 FT waterward from MHW.</li> <li>• No structure extends across &gt;25% of the waterway width at MLW.</li> <li>• Not located within the buffer zone of the horizontal limits of an FNP<sup>11</sup>.</li> <li>• State license issued.</li> <li>• Not associated with a boating facility.<sup>13</sup></li> </ul>	<p>Private structures and floats that do not meet the terms of Category 1.</p> <p>Structures or floats located such that they, and/or vessels docked or moored at them, are within the buffer zone of the horizontal limits of a FNP<sup>11</sup>.</p> <p>Expansions to existing boating facilities<sup>13</sup></p>	<p>Structures or floats located such that they and/or vessels docked or moored at them are within the horizontal limits of an FNP<sup>11</sup></p> <p>Structures or floats associated with a new or previously unauthorized boating facility.<sup>13</sup></p> <p>Projects using creosote-treated materials in any water or wetland.</p>
(f) MISC.	<p>Temporary buoys, markers, floats, etc. for recreational use during specific events, provided that they are removed within 30 days after use is discontinued.</p> <p>The placement of aids to navigation and regulatory markers which are approved by and installed in accordance with the requirements of the U.S. Coast Guard. (See 33 CFR 66, Chapter I, subchapter C).</p> <p>Temporary oil spill clean up structures and fill.</p>	<p>Aquaculture projects that do not meet the terms of Category 1.</p> <p>Structures/work in or affecting tidal or navigable waters that are not defined under any other headings. Includes but is not limited to utility lines, aerial transmission lines, pipelines, outfalls, boat ramps, bridges, tunnels and horizontal directional drilling activities seaward of the MHW line.</p>	EIS required by the Corps.

(f) MISC (cont..)	<p>Scientific measurement devices and survey activities such as exploratory drilling, surveying and sampling, provided that such structures do not restrict movement of aquatic organisms, including the potential threat of entanglement to sea turtles or marine mammals in near-coastal waters. Does not include oil and gas exploration or seismic testing, or fills for roads or construction pads.</p> <p>Fish and wildlife harvesting devices and activities such as pound nets, crab traps, crab dredging, eel pots, lobster traps, duck blinds, clam and oyster digging, shellfish seeding, and small fish attraction devices such as open-water fish concentrators (sea kites, etc.). Provided: no hazard to navigation; activity is not in wetlands or sites that support submerged vegetation (including sites where submerged aquatic vegetation is determined to exist, but may not be present in a given year). This does not authorize artificial reefs or impoundments and semi-impoundments of waters of the U.S. for the culture or holding of motile species such as lobster, or the use of covered oyster trays or clam racks.</p> <p>Research, educational, commercial-viability or experimental aquaculture projects that don't exceed 1,000 SF in area, culture indigenous species only, use only "transient gear" type cages or bottom culture with predator netting, are marked to inform mariners of the location of the gear, have a minimum clearance of 4 FT between the top of the gear and the elevation of MLW in areas where the elevation of the sea floor is above -15 FT MLW, have a minimum clearance of 10 FT between the top of the gear and the elevation of MLW in areas where the elevation of the sea floor is equal to or below -15 FT MLW, and have been reviewed and approved in writing by the RICRMC and the RIDEM Divisions of Water Quality and Fish and Wildlife.</p>		
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### End Notes/Definitions

<sup>1</sup> **Bordering and Contiguous Wetlands:** A bordering wetland is immediately next to its adjacent waterbody and may lie at, or below, the OHW mark (MHW in navigable waters) of that waterbody and is directly influenced by its hydrologic regime. Contiguous wetlands extend landward from their adjacent waterbody to a point where a natural or manmade discontinuity exists. Contiguous wetlands include bordering wetlands as well as wetlands that are situated immediately above the ordinary high water mark and above the normal hydrologic influence of their adjacent waterbody. Note, with respect to the Federally designated navigable rivers, the wetlands bordering and contiguous to the tidally influenced portions of those rivers are reviewed under "II. Navigable Waters."

<sup>2</sup> **Regulation:** Either CRMC or DEM must regulate an activity for it to be considered eligible for authorization under Category 1 of the Rhode Island PGP. Category 1 doesn't apply to activities exempt from State regulation or on the Narragansett Land Claim Settlement Area. These activities must report to the Corps.

<sup>3</sup> **Fill Material:** Material placed in waters of the U.S. where the material has the effect of either replacing any portion of a water of the U.S. with dry land or changing the bottom elevation of any portion of a water. (33 CFR 323)

<sup>4</sup> **Sequencing:** Consists of avoidance and minimization of wetland impacts to the maximum extent practicable and mitigation of impacts where necessary to protect the aquatic environment.

<sup>5</sup> **Water Diversions:** Water diversions are activities such as bypass pumping or water withdrawals. Temporary flume pipes, culverts or cofferdams where normal flows are maintained within the stream boundary's confines aren't water diversions. "Normal flows" are defined as no change in flow from pre-project conditions. See GC 21.

<sup>6</sup> **Vernal Pools and Habitat:** Vernal pools are confined basin depressions with water for two or more continuous months in the spring and/or summer, for which evidence of one of more of the following indicator vernal pools species: wood frogs (*Rana sylvatica*), mole salamanders (*Ambystoma* spp), and fairy shrimp (*Eubranchipus* spp) has been documented **OR** for which evidence of two or more of the following facultative organisms: caddisfly (*Trichoptera*) larvae casings, fingernail clams (*Sphaeriidae*), or amphibious snails (*Basammatophora*) and evidence that the pool does not contain an established reproducing fish population has been documented. Vernal pool habitat is the seasonal pool depression, seasonal pool envelope (100 FT radius from the pool edge) and seasonal pool terrestrial habitat (750 FT radius from the pool edge).

<sup>7</sup> **Special Aquatic Sites:** Include inland & saltmarsh wetlands, mud flats, vegetated shallows (14 below), coral reefs, and riffle & pool complexes. (40 CFR 230)

<sup>8</sup> **Corps Properties & Easements:** Contact the Corps, Real Estate Division (978) 318-8580 to initiate reviews about both Corps holdings and permit requirements.

<sup>9</sup> **Restoration:** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former wetland (called re-establishment) or a degraded wetland (called rehabilitation). Restoration means the result of actions which, in the opinion of the Federal and State resource agencies, reinstates, or will reinstate, insofar as possible, the functions and values of a wetland which has been altered. Restoration is the re-creation or rehabilitation of wetland ecosystems whose natural functions have been destroyed or impaired.

<sup>10</sup> **Minor deviations** in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards, which are necessary to make repair, rehabilitation, or replacement are permitted, provided the adverse environmental effects resulting from such repair, rehabilitation, or replacement are minimal. Currently serviceable means useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

<sup>11</sup> **Federal Navigation Projects (FNPs):** FNPs are comprised of Federal channels and Federal anchorages. Contact the Corps for their location and information.

**Horizontal Limits:** The outer edge of an FNP. **Buffer Zone:** Equal to three times the authorized depth of that channel.

<sup>12</sup> **Maintenance Dredging.** Includes areas and depths previously authorized by the Corps and dredged. **New Dredging:** Includes dredging proposed in previously un-dredged areas and/or in areas exceeding previously authorized dimensions (deeper or wider than previously authorized) excluding normal overdredge.

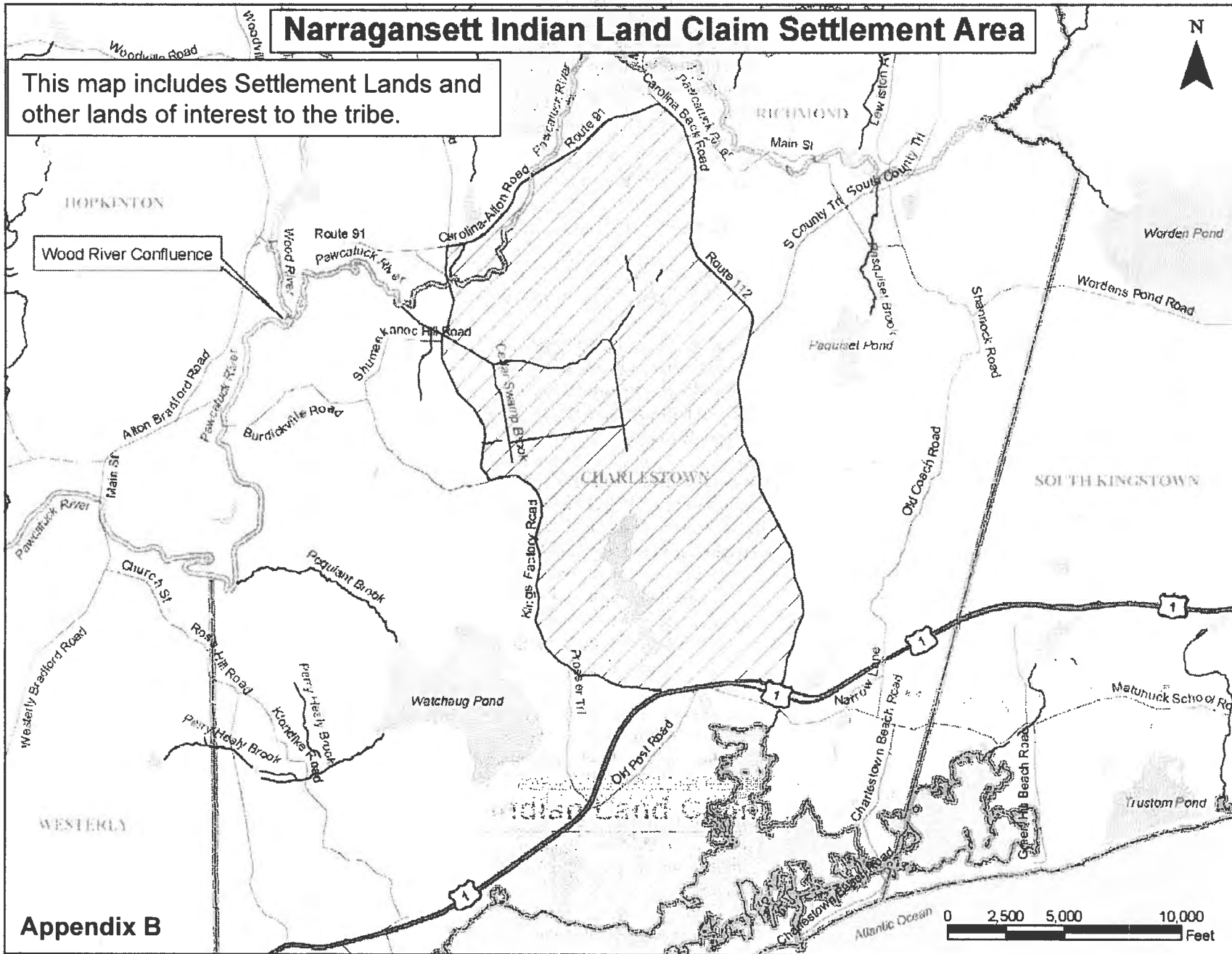
<sup>13</sup> **Boating Facilities:** Facilities that provide, rent or sell mooring space, e.g., marinas, yacht clubs, boat yards, dockominiums.

<sup>14</sup> **Vegetated Shallows:** Subtidal areas that support rooted aquatic vegetation such as eelgrass and widgeon grass (*Ruppia maritima*). (Doesn't include salt marsh.)

<sup>15</sup> **Height:Width Ratio:** The height of structures shall at all points be equal to or exceed the width of the deck. For the purpose of this definition, height shall be measured from the marsh substrate to the bottom of the longitudinal support beam.

## Narragansett Indian Land Claim Settlement Area

This map includes Settlement Lands and other lands of interest to the tribe.





# PAWCATUCK RIVER FISH PASSAGE RESTORATION

SHANNOCK VILLAGE · RHODE ISLAND

## PERMITTING DRAWING SET

### LOWER SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE

JULY 2009

REVISED: AUGUST 27, 2009

#### PROJECT TEAM

##### CONTRACT OWNER

WOOD-PAWCATUCK WATERSHED ASSOCIATION  
203B ARCADIA ROAD  
HOPE VALLEY, RI 02832  
P: 401-539-9017

##### DESIGN ENGINEER

FUSS & O'NEILL, INC.  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
P: 401-861-3070

##### PERMITTING BIOLOGIST

NATURAL RESOURCE SERVICES, INC.  
P.O. BOX 311  
HARRISVILLE, RI 02830  
P: 401-568-7390

##### RESTORATION BIOLOGIST

KCI TECHNOLOGIES, INC.  
10 NORTH PARK DRIVE  
HUNT VALLEY, MD 21030  
P: 410-316-7800

##### PROJECT PARTNERS

NATURAL RESOURCES CONSERVATION SERVICE  
RHODE ISLAND NRCS STATE OFFICE  
60 QUAKER LANE  
WARWICK, RI 02886  
P: 401-828-1300; F: 401-828-0433

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
250 PROMENADE STREET  
PROVIDENCE, RI 02908  
P: 401-222-3961; F: 401-222-3564

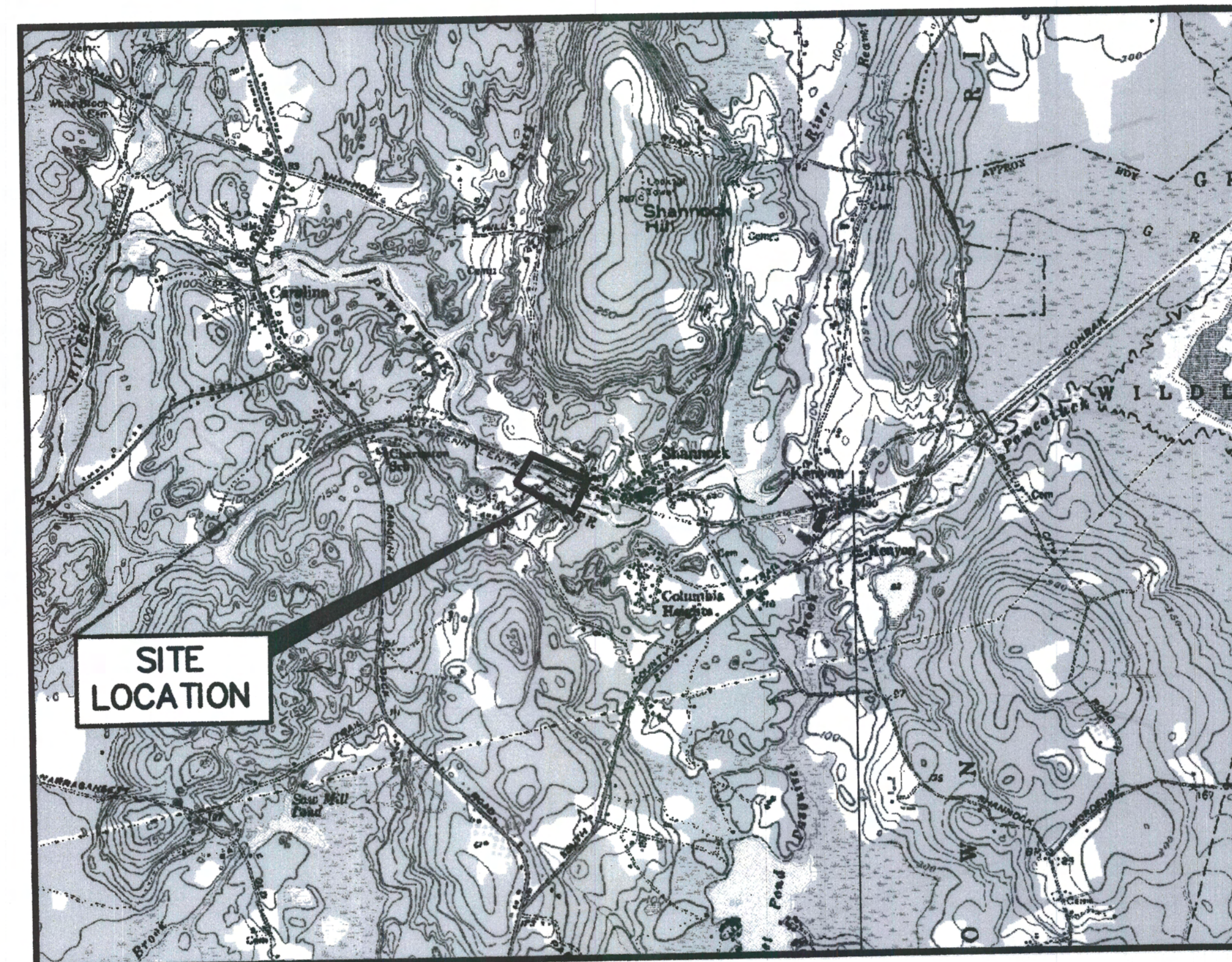
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
RESTORATION CENTER  
28 TARZWELL DRIVE  
NARRAGANSETT, RI 02882  
P: 401-782-3338; F: 401-782-3201

U.S. FISH & WILDLIFE SERVICE  
NORTH ATTLEBORO NATIONAL FISH HATCHERY  
144 BUNGAY ROAD  
NORTH ATTLEBORO, MA 02760  
P: 508-695-5002; F: 508-695-5098

RI COASTAL RESOURCES MANAGEMENT COUNCIL  
4808 TOWER HILL ROAD  
WAKEFIELD, RI 02879  
P: 401-783-7350; F: 401-783-3767

TOWN OF RICHMOND  
5 RICHMOND TOWNHOUSE ROAD  
RICHMOND, RI 02898  
P: 401-539-9000; F: 401-539-1089

SAVE THE BAY  
100 SAVE THE BAY DRIVE  
PROVIDENCE, RI 02905  
P: 401-272-3540; F: 401-273-7153



LOCATION MAP

SCALE: 1" = 2000'

PREPARED FOR  
WOOD-PAWCATUCK  
WATERSHED ASSOCIATION

203B ARCADIA ROAD  
HOPE VALLEY, RI 02832

PREPARED BY



FUSS & O'NEILL  
Discipline to Deliver  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
401.861.3070  
www.Fond0.com



#### SHEET INDEX

SHEET No.	SHEET TITLE
G-001	COVER SHEET
G-002	NOTES, LEGEND & INDEX PLAN
C-110 & C-111	EXISTING CONDITIONS PLAN
C-120 - C-122	RESOURCE AREA PLAN
C-130 - C-132	IN-STREAM & RIPARIAN HABITAT IMPROVEMENT PLAN
C-140	GRADING & DEMOLITION PLAN
C-150	WATER CONTROL & CONSTRUCTION PHASING PLAN
C-160	EROSION CONTROL & ACCESS PLAN
C-310 & C-311	CHANNEL EXCAVATION CROSS-SECTIONS
C-312	RIPARIAN RESOURCE CROSS SECTIONS
C-501	EROSION & SEDIMENTATION CONTROL DETAILS
C-502 & C-503	CONSTRUCTION DETAILS

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
APPROVED WITH CONDITIONS AS SPECIFIED IN  
THE LETTER OF APPROVAL DATED September 22, 2009  
FILE # AREA 09-001. NO CHANGES ALLOWED  
WITHOUT PRIOR APPROVAL. APPROVED PLANS MUST  
BE AT CONSTRUCTION SITE. *[Signature]*



PROJ. No.: 20080877.A10  
DATE: JULY 2009

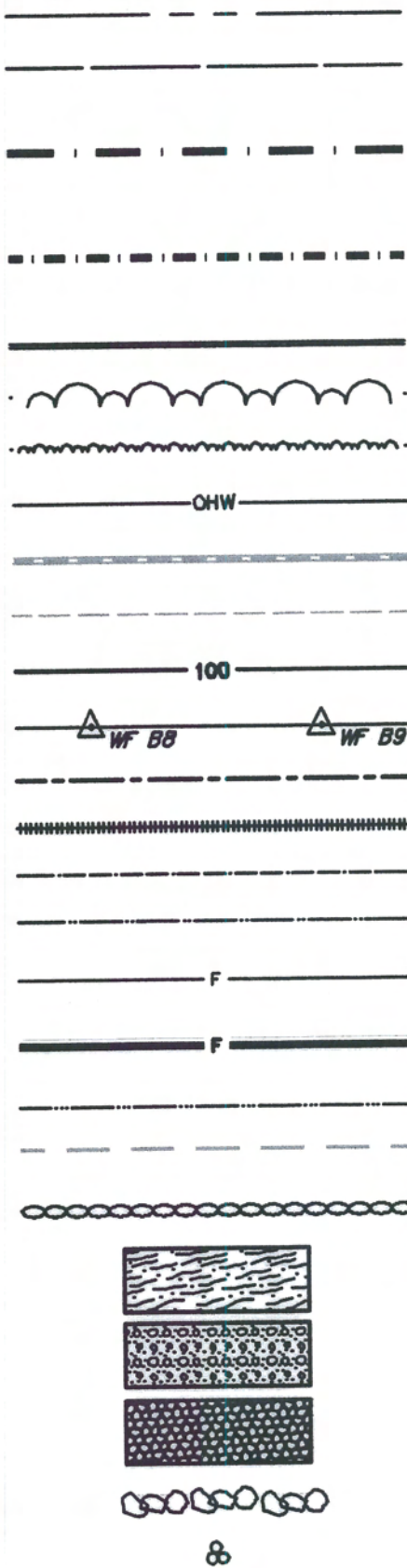
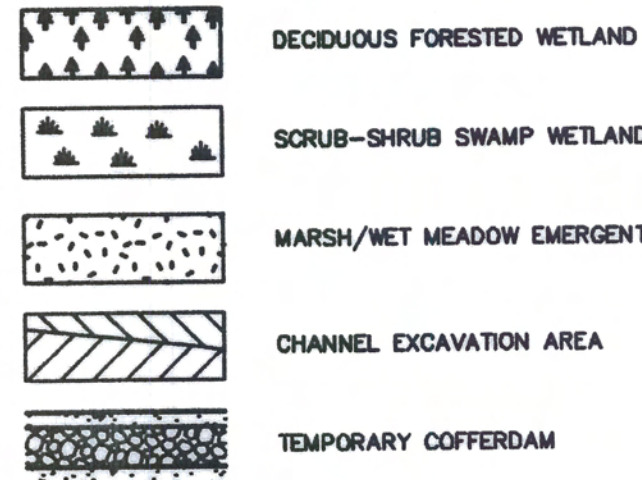
G-001

1 OF 19



## LEGEND

- GW GUY WIRE  
 HYDRANT  
 INV INVERT  
 MH MANHOLE  
 MN MAG-NAIL  
 S SEWER MANHOLE  
 TRANS TRANSFORMER  
 UGC UNDERGROUND CONDUIT  
 UGP UNDERGROUND PIPE  
 UTILITY FLOW  
 UTILITY POLE  
 CATCH BASIN  
 CONC CONCRETE  
 C.U. CONTINUATION UNKNOWN  
 CMP CORRUGATED METAL PIPE  
 CPP CORRUGATED PLASTIC PIPE  
 DRAIN MANHOLE  
 EP EDGE OF PAVEMENT  
 EM ELECTRIC METER  
 OWG WATER GATE



## SOIL ABBREVIATIONS

- Aa ADRIAN MUCK  
 Cd CANTON-CHARLTON-ROCK OUTCROP COMPLEX, 15 TO 35 PERCENT SLOPES  
 Cc CANTON-URBAN LAND COMPLEX, VERY ROCKY  
 CcC CANTON AND CHARLTON-FINE SANDY LOAMS, VERY ROCKY, 3 TO 15 PERCENT SLOPES  
 ChB CANTON AND CHARLTON VERY STONY FINE SANDY LOAMS, 3 TO 6 PERCENT SLOPES  
 Co CARLISLE MUCK  
 HkC HINCKLEY GRAVELLY SANDY LOAM, ROLLING  
 HkD HINCKLEY GRAVELLY SANDY LOAM, HILLY  
 Mu MERRIMAC-URBAN LAND COMPLEX  
 Rg RAYPOL SILT LOAM  
 RF RIDGEBURY, WHITMAN, AND LEICESTER EXTREMELY STONY FINE SANDY LOAM  
 Sb SCARBORO MUCKY SANDY LOAM  
 Ss SUDBURY SANDY LOAM  
 SvB SUTTON EXTREMELY STONY FINE SANDY LOAM, 0 TO 8 PERCENT SLOPE  
 Tb TIBSBURY SILT LOAM  
 UD UDORTHENTS-URBAN LAND COMPLEX  
 Ur URBAN LAND

## MAP NOTES AND REFERENCES

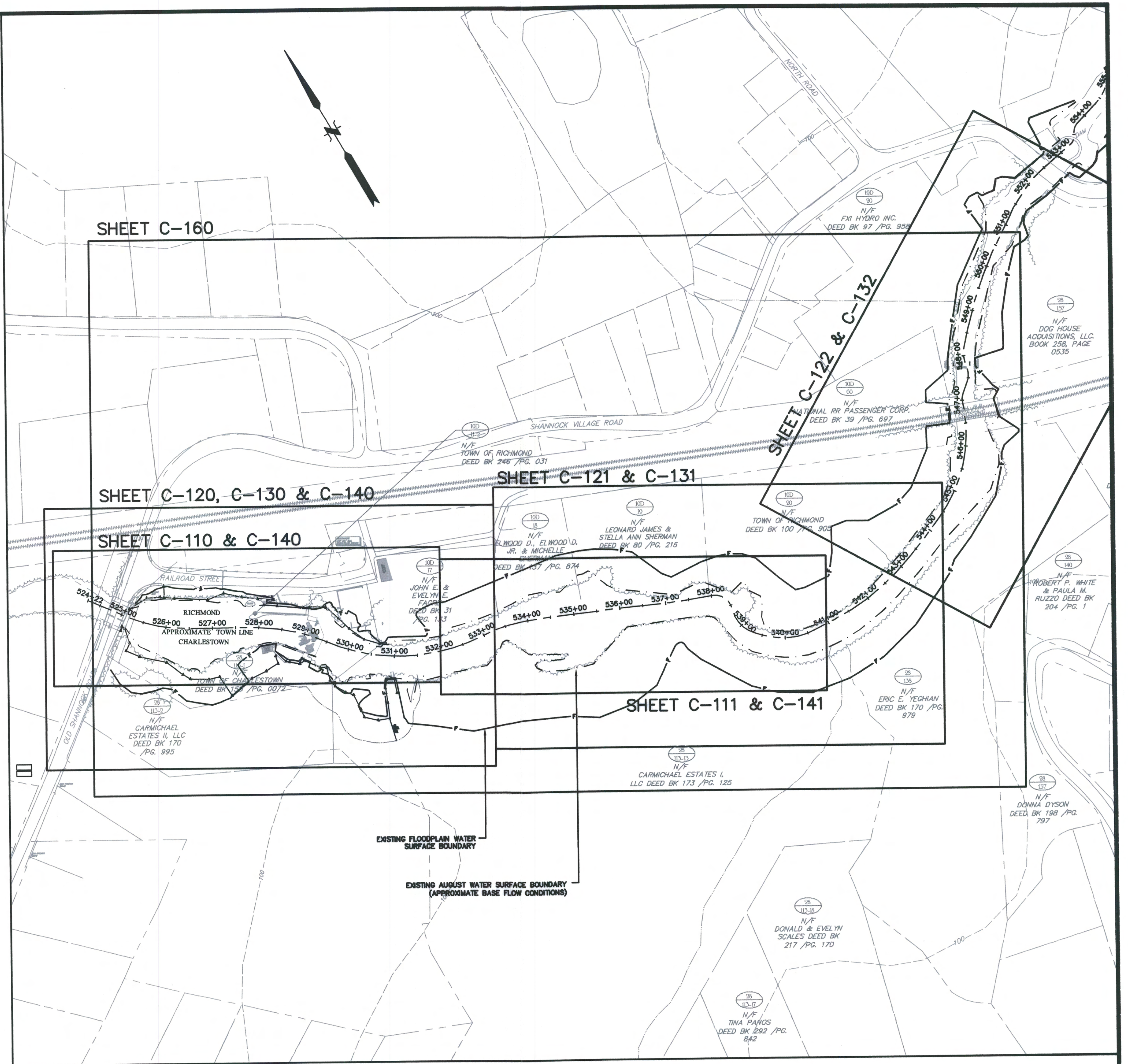
1. BASE PLAN UPDATED FROM DRAWING ENTITLED "EXISTING CONDITIONS SURVEY FOR A.P. 28 LOT 113-1 & A.P. 100 LOT 11-2 SITUATED ON OLD SHANNOCK HILL ROAD & RAILROAD AVENUE, CHARLESTOWN & RICHMOND, RI., DATED MARCH 15, 2007", PREPARED BY GAROFALO ASSOCIATES OF PROVIDENCE, RI.
2. SUPPLEMENTAL FIELD SURVEY PERFORMED BY NATIONAL LAND SURVEYORS - DEVELOPERS, INC. (NLS) OF WOODSOCKET, RI IN SEPTEMBER 2008. SURVEY LIMITED TO RIVER CHANNEL AREAS IMMEDIATELY ADJACENT TO THE DAM AND RIVERBANKS, INCLUDING WETLAND FLAGS, CHANNEL BED SPOT ELEVATIONS AND CROSS-SECTIONS UP TO STATION 552+00. ADDITIONAL FIELD SURVEY OF RIVER BOTTOM ELEVATIONS BETWEEN STATIONS 525+00 AND 528+00 COMPLETED BY NLS IN NOVEMBER 2008.
3. SPOT ELEVATIONS UPSTREAM OF STA. 530+50 ARE FROM NLS FIELD SURVEY. BATHYMETRIC CONTOURS UPSTREAM OF STA. 530+50 ARE APPROXIMATE ONLY BASED ON AVAILABLE SPOT ELEVATIONS AND WERE DEVELOPED BY FUSS & O'NEILL, INC.
4. PLAN ENTITLED "250 SHANNOCK, R.I. DEPARTMENT OF PUBLIC WORKS DIVISION OF HARBORS & RIVERS BY WORKS PROJECTS ADMINISTRATION, DATED 10-8-90, PLAN NO. P-250".
5. 100' CONTOURS SHOWN ADJACENT TO PROJECT SITE ARE APPROXIMATE ONLY AND AS DIGITIZED FROM AVAILABLE USGS MAPPING.
6. PROPERTY LINES SHOWN HEREON WERE OBTAINED FROM THE TOWN OF CHARLESTOWN'S GEOGRAPHIC INFORMATION SYSTEM (GIS) DATABASE. THIS PLAN IS SUBSTANTIALLY CORRECT IN ACCORDANCE WITH A CLASS IV STANDARD AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS. THIS PLAN IS NOT TO BE CONSTRUED AS AN ACCURATE BOUNDARY SURVEY AND IS SUBJECT TO SUCH CHANGES AS AN ACCURATE BOUNDARY SURVEY MAY DISCLOSE.
7. WETLAND RESOURCE, SOIL CLASSIFICATION, AND RARE SPECIES HABITAT LOCATIONS AND DESCRIPTIONS ARE APPROXIMATE ONLY AND AS DIRECTLY OBTAINED FROM THE RHODE ISLAND GEOGRAPHIC INFORMATION SYSTEM (GIS) DATABASE AND ARE INTENDED TO SHOW APPROXIMATE LOCATIONS OF SUCH RESOURCES. MAPPING CORRECTIONS HAVE BEEN MADE TO WETLAND RESOURCE BOUNDARIES WHERE THESE FEATURES BOUND TO THE EDGE OF RIVER WITHIN THE PROJECT'S STUDY AREA; BOUNDARIES AS OTHERWISE SHOWN HEREON ARE AS MAPPED BY RIDEM/USGS.
8. THE LOCATION OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE LATEST AVAILABLE INFORMATION. THE UTILITY LOCATIONS ARE APPROXIMATE AND MAY NOT BE ALL INCLUSIVE. THE CONTRACTOR SHALL CHECK AND VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES, BOTH OVERHEAD AND UNDERGROUND, AND "DIG-SAFE" MUST BE NOTIFIED PRIOR TO COMMENCING ANY CONSTRUCTION OPERATIONS. RESTORATION AND REPAIR OF DAMAGE TO EXISTING UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR WITH NO ADDITIONAL COST TO THE OWNER. NO EXCAVATION SHALL COMMENCE UNTIL ALL INVOLVED UTILITY COMPANIES AND/OR TOWN WHOSE FACILITIES MIGHT BE AFFECTED BY ANY WORK TO BE PERFORMED BY THE CONTRACTOR ARE NOTIFIED AT LEAST 72 HOURS IN ADVANCE.
9. 100-YEAR FLOOD PLAIN BOUNDARIES SHOWN HEREON WERE DIGITIZED FROM PUBLISHED FEMA FLOOD SURFACE ELEVATIONS INTERPOLATED ONTO CHANNEL BANK SECTIONS.
10. WETLAND FLAGS SHOWN HEREON WERE DELINEATED BY NATURAL RESOURCE SERVICES, INC. HARRISVILLE, RI NOVEMBER 10, 2008 OTHER WETLAND RESOURCES AND SOIL CLASSIFICATIONS WERE OBTAINED FROM RIGS. SEDIMENT TYPES, LOCATIONS, AND DEPTHS WITHIN THE RIVER CHANNEL SHOWN HEREON ARE BASED ON LIMITED FIELD SURVEY BY KCI TECHNOLOGIES, INC. ON NOVEMBER 24 & 25, 2008.
11. THIS SITE DOES NOT LIE WITHIN ANY KNOWN AGRICULTURAL USE, CIVIC STRUCTURAL USE, NATURAL HERITAGE OR FARMLAND CONSERVATION AREAS.

## DAM REMOVAL NOTES

1. THE DAM REMOVAL SHALL TAKE PLACE IN THE SEQUENCE OUTLINED IN THE PROPOSED SEQUENCE OF CONSTRUCTION ON GRADING & DEMOLITION PLAN IN ORDER TO PROVIDE CONTROL OF SEDIMENT MOVEMENT UNTIL THE EXCESS SEDIMENT HAS BEEN REMOVED AND THE IMPOUNDMENT AREA IS GRADED AND STABILIZED AS SHOWN ON THE PLANS.
2. DAM REMOVAL AND OTHER IN-CHANNEL WORK ACTIVITIES SHALL BE PERFORMED WITHIN THE SEASONAL LOW-FLOW PERIOD (JULY 1 - OCTOBER 31). RIDEM SHALL BE NOTIFIED OF ANY WORK OUTSIDE OF THIS PERIOD AT LEAST 14 CALENDAR DAYS BEFORE SUCH WORK OCCURS.
3. TIMBER AND OTHER MATERIALS FROM THE DAM WITHIN THE CHANNEL EXCAVATION AREA MUST BE REMOVED FROM THE SITE AND DISPOSED PROPERLY. CUT STONE AND ROCK RUBBLE FROM THE DAM MAY BE USED ON SITE IF IT IS FOUND TO COMPLY WITH THE SPECIFICATIONS. EXCESS MATERIALS MUST BE REMOVED FROM THE SITE AND DISPOSED PROPERLY.
4. CARE MUST BE TAKEN TO PROTECT THE SPILLWAY SECTIONS OUTSIDE CHANNEL EXCAVATION AREAS, AS WELL AS THE BUILDING, RETAINING WALL AND SLUICE GATE STRUCTURES TO REMAIN ON THE LEFT SIDE OF THE DAM.
5. CONTRACTOR SHALL PROTECT CONSTRUCTED WORK ON THE SITE DURING FLOOD FLOWS SHOULD THEY OCCUR.
6. TEMPORARY COFFERDAM(S) AND WATER DIVERSION STRUCTURE(S) ARE TO BE CONSTRUCTED OF MATERIALS THAT CAN BE COMPLETELY REMOVED FROM THE RIVER UPON COMPLETION OF CONSTRUCTION.
7. ACCESS, STAGING AND TEMPORARY SEDIMENT STOCKPILING AREAS SHALL BE DELINEATED BY THE CONTRACTOR FOR APPROVAL PRIOR TO PROJECT INITIATION. ALL DISTURBED AREAS OUTSIDE MODIFIED CHANNEL BANKS TO BE STABILIZED AND SUITABLY RESTORED.
8. VEHICLE STORAGE AND FUELING SHALL BE PERFORMED AT LEAST 50' OUTSIDE THE RIVER CHANNEL AND ONLY IN DESIGNATED AREAS SUCH THAT THERE WILL BE NO CONTAMINATION OF SOIL, GROUNDWATER OR SURFACE WATER FROM SPILLS OR LEAKS.

## FISH AND VEGETATIVE RESTORATION NOTES

1. PERMANENT VEGETATIVE COVER WILL BE APPLIED TO ALL DISTURBED AREAS THAT HAVE REACHED FINISHED GRADE AS SOON AS POSSIBLE, BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS PERMANENTLY CEASED. THE RECOMMENDED PERMANENT SEEDING DATES ARE APRIL 1 TO JUNE 15 AND AUGUST 15 TO SEPTEMBER 30. PERMANENT VEGETATIVE COVER WILL RECEIVE WETLAND SEED MIX:  
 SEASONALLY FLOODED WILDLIFE FOOD SEED MIX AVAILABLE FROM ALLEN'S SEED STORE INC, EXETER, RI, (401) 294-2722 OR APPROVED EQUAL
2. SEED WILL BE APPLIED BEFORE EROSION CONTROL BLANKETING AND MATTING ARE INSTALLED.
3. RESTORE DISTURBED AREAS TO SMOOTH GRADES PROMOTING UNIMPEDED DRAINAGE AND SEED WITH WETLAND SEED MIX TO ESTABLISH STABLE VEGETATIVE GROWTH.
4. THIS PROJECT IS INTENDED TO PROVIDE RESTORATION OF FISH PASSAGE FOR THE FOLLOWING SPECIES: AMERICAN EEL, ALEWIFE, BLUEBACK HERRING, AMERICAN SHAD, BROWN TROUT, AND BROOK TROUT.



## INDEX PLAN

SCALE: 1"=120'

SCALE:	HORIZ: NOT TO SCALE
	VERT:
DATUM:	HORIZ:
	VERT:
	GRAPHIC SCALE



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NOTES, LEGEND & INDEX SHEET

SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE

SHANNOCK VILLAGE

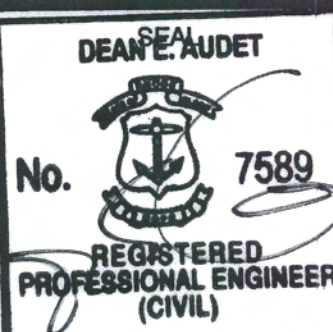
RHODE ISLAND

PROJ. No.: 20080877A10  
 DATE: JULY 2009

**G-002**

2 OF 19

PROJ. MANAGER: NSW  
 CHIEF DESIGNER: AEH  
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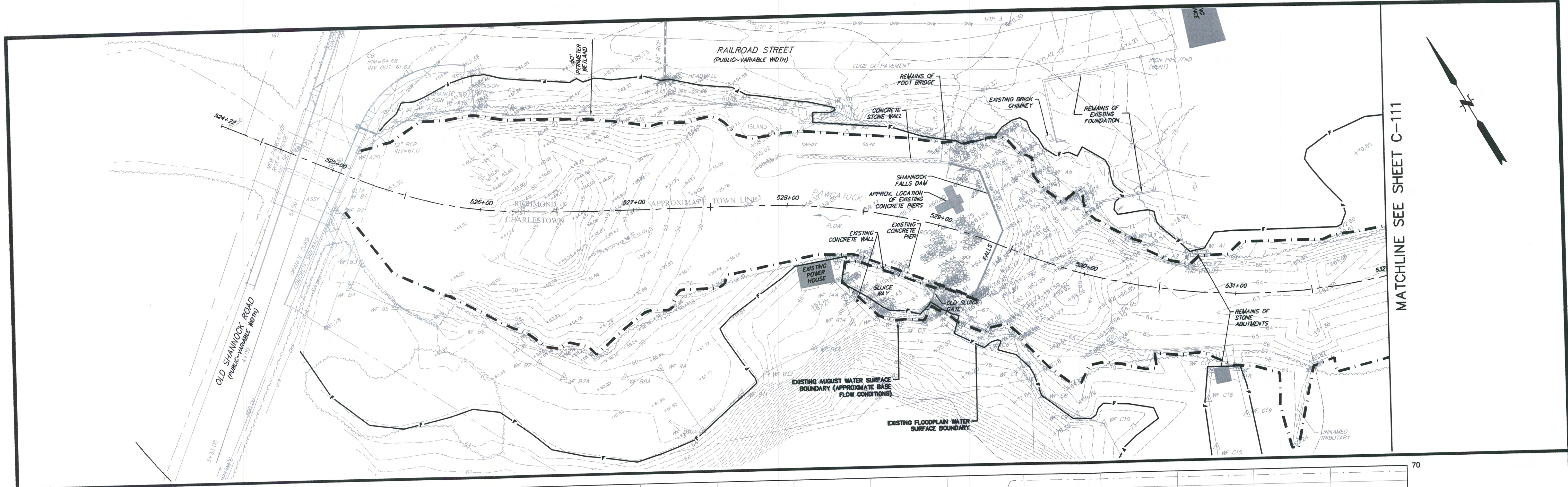
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 FILE # APPA C9-001. NO CHANGES ALLOWED  
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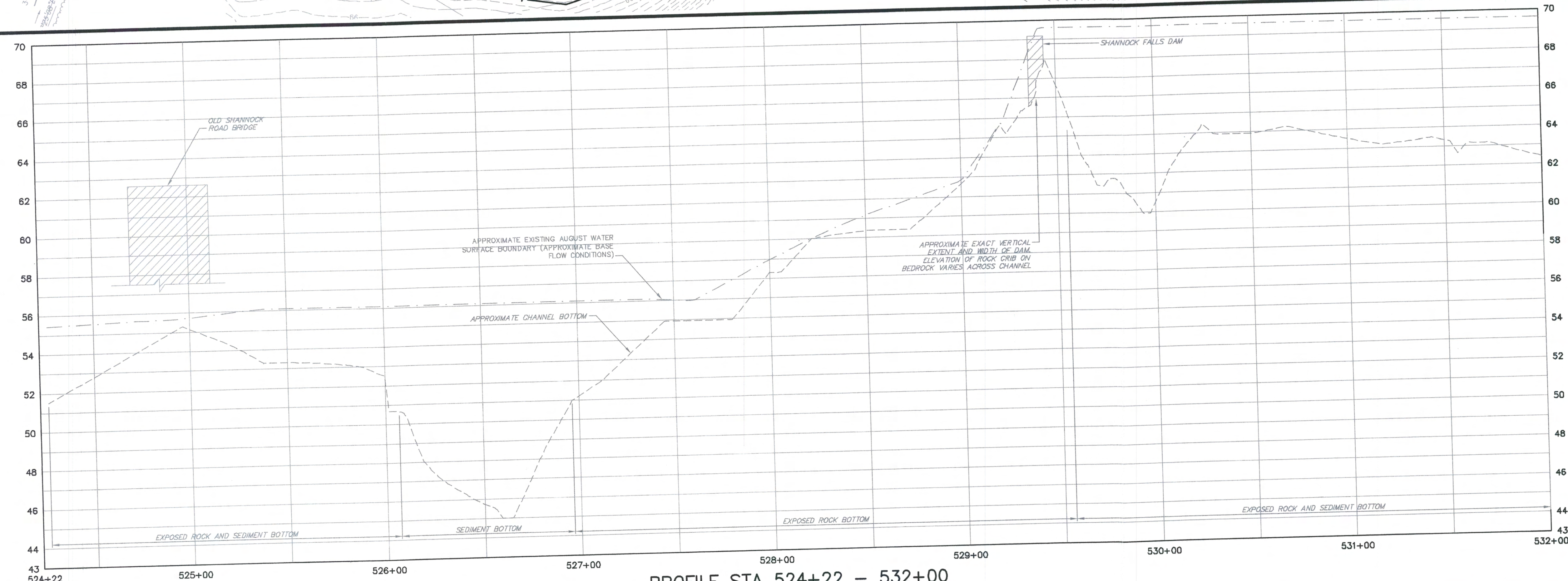
*David Legman*

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No.	DATE	DESCRIPTION			





MATCHLINE SEE SHEET C-111



PROFILE STA 524+22 - 532+00

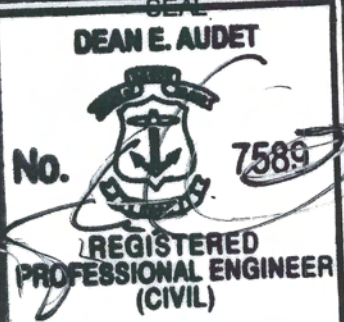
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V: 1"=3'

MAP NOTE:

BATHYMETRIC CONTOURS UPSTREAM OF STA. 530+50 ARE APPROXIMATE ONLY AND BASED ON LIMITED NOVEMBER 2008 SPOT ELEVATION DATA WHERE SHOWN ON THESE DRAWINGS. 100' CONTOUR SHOWN ADJACENT TO PROJECT SITE IS APPROXIMATE ONLY AND AS DIGITIZED FROM USGS MAPPING.

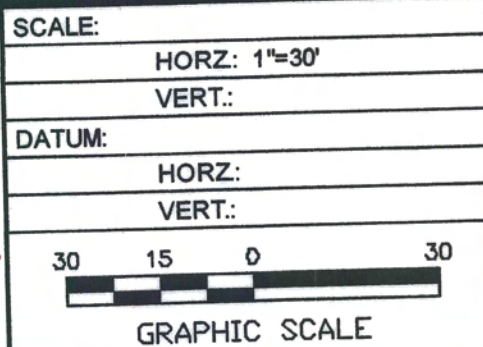
No.	DATE	DESCRIPTION	BY
1.			
REVISIONS			

PROJ. MANAGER: NSW  
CHIEF DESIGNER: AEH  
REVIEWED BY: DATE  
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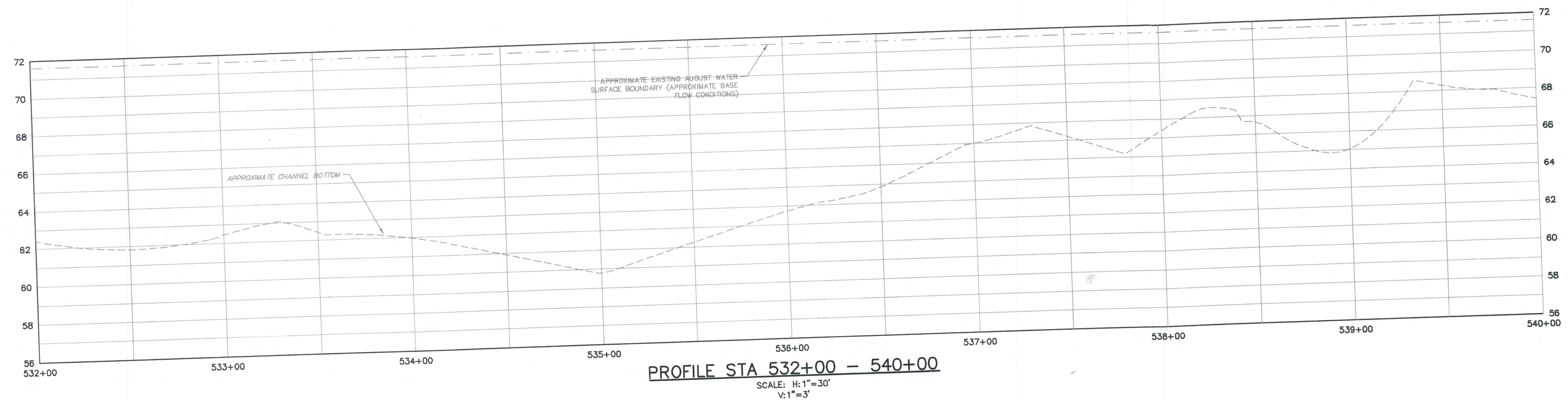
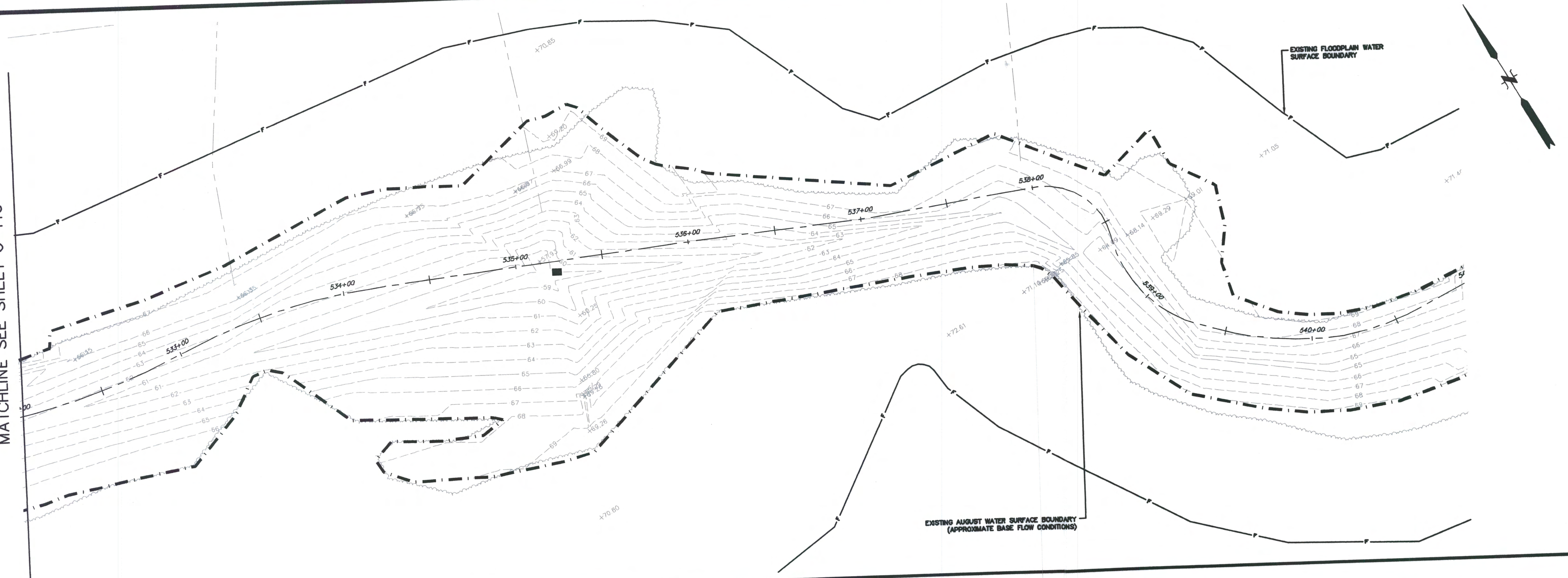
WOOD-PAWCATUCK WATERSHED ASSOCIATION  
EXISTING CONDITIONS PLAN  
**SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE**  
SHANNOCK VILLAGE RHODE ISLAND

PROJ. No.: 20080877A10  
DATE: JULY 2009

**C-110**  
3 OF 19



MATCHLINE SEE SHEET C-110

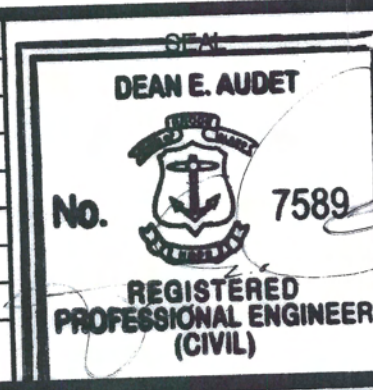


MAP NOTE

BATHYMETRIC CONTOURS SHOWN HEREON ARE APPROXIMATE ONLY AND BASED ON LIMITED NOVEMBER 2008 SPOT ELEVATION DATA WHERE SHOWN ON THESE DRAWINGS. 100' CONTOUR SHOWN ADJACENT TO PROJECT SITE IS APPROXIMATE ONLY AND AS DIGITIZED FROM USGS MAPPING.

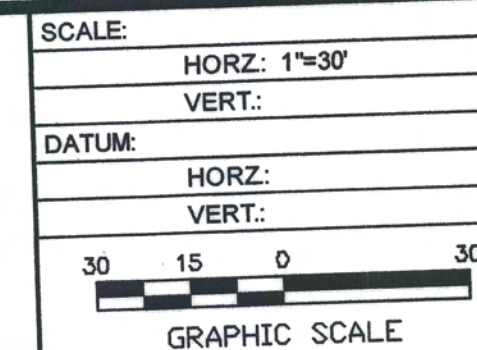
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REVISIONS		

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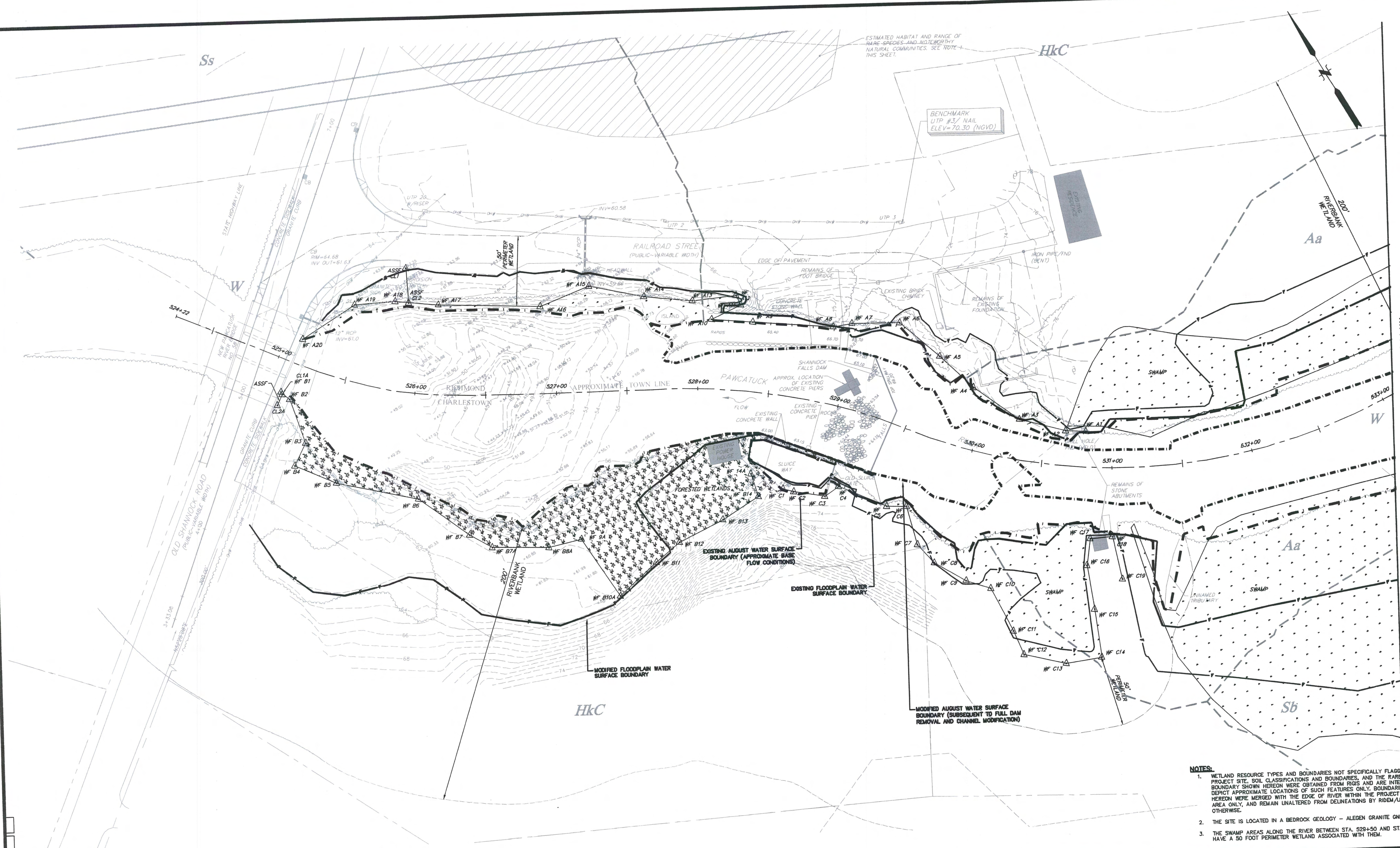
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SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE  
SHANNOCK VILLAGE RHODE ISLAND

PROJ. No.: 20080877A10  
DATE: JULY 2009

C-111  
4 OF 19



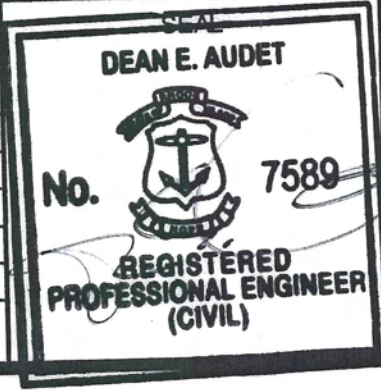


MATCHLINE SEE SHEET C-121

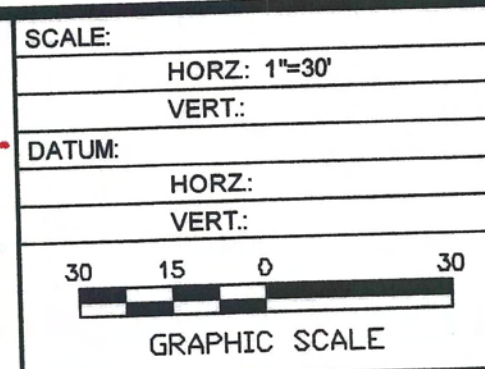
- NOTES:**
1. WETLAND RESOURCE TYPES AND BOUNDARIES NOT SPECIFICALLY FLAGGED AT THE PROJECT SITE. SOIL CLASSIFICATIONS AND BOUNDARIES, AND THE RARE SPECIES BOUNDARY SHOWN HEREON WERE OBTAINED FROM RIGS AND ARE INTENDED TO DEPICT APPROXIMATE LOCATIONS OF SUCH FEATURES ONLY. BOUNDARIES SHOWN HEREON WERE MERGED WITH THE EDGE OF RIVER WITHIN THE PROJECT STUDY AREA ONLY, AND REMAIN UNALTERED FROM DELINEATIONS BY RIDEM/USGS OTHERWISE.
  2. THE SITE IS LOCATED IN A BEDROCK GEOLOGY - ALEEN GRANITE GNEISS AREA.
  3. THE SWAMP AREAS ALONG THE RIVER BETWEEN STA. 529+50 AND STA. 546+50 HAVE A 50 FOOT PERIMETER WETLAND ASSOCIATED WITH THEM.

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			BY

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RESOURCE AREA PLAN

SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE

SHANNOCK VILLAGE RHODE ISLAND

PROJ. No.: 20080877A10  
DATE: JULY 2009

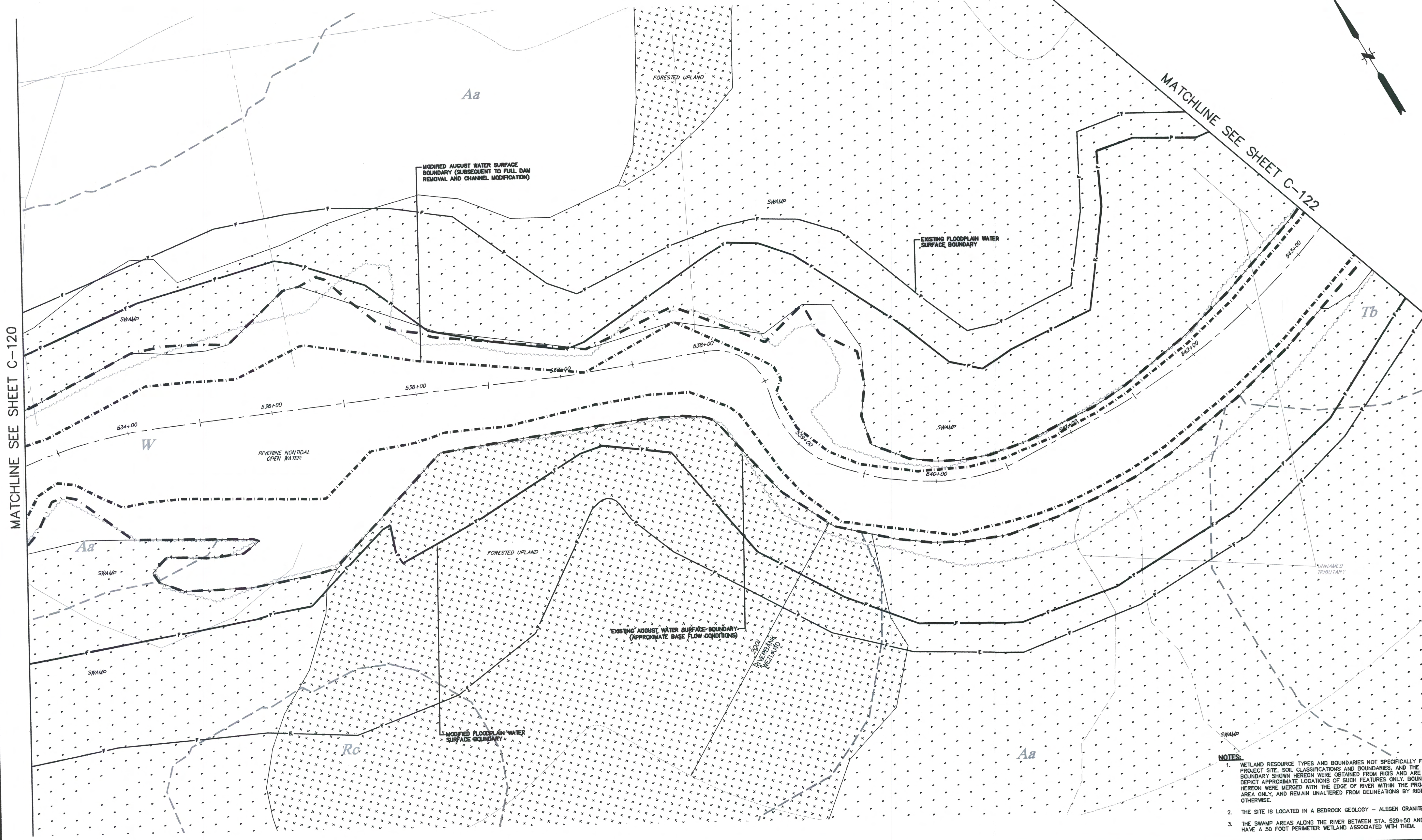
**C-120**

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MATCHLINE SEE SHEET C-120

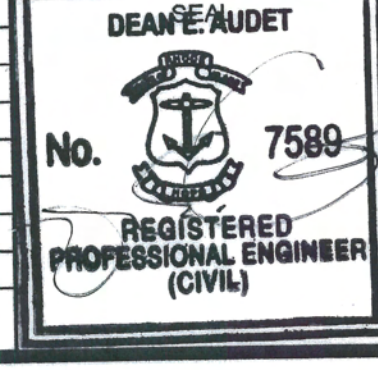
MATCHLINE SEE SHEET C-122



- NOTES:**
1. WETLAND RESOURCE TYPES AND BOUNDARIES NOT SPECIFICALLY FLAGGED AT THE PROJECT SITE, SOIL CLASSIFICATIONS AND BOUNDARIES, AND THE RARE SPECIES BOUNDARY SHOWN HEREON WERE OBTAINED FROM RIGIS AND ARE INTENDED TO DEPICT APPROXIMATE LOCATIONS OF SUCH FEATURES ONLY. BOUNDARIES SHOWN HEREON WERE MERGED WITH THE EDGE OF RIVER WITHIN THE PROJECT STUDY AREA ONLY, AND REMAIN UNALTERED FROM DELINEATIONS BY RIDEM/USGS OTHERWISE.
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  3. THE SWAMP AREAS ALONG THE RIVER BETWEEN STA. 529+50 AND STA. 546+50 HAVE A 50 FOOT PERIMETER WETLAND ASSOCIATED WITH THEM.

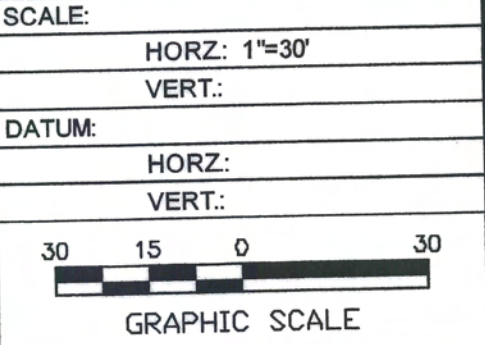
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CHIEF DESIGNER:	ASH
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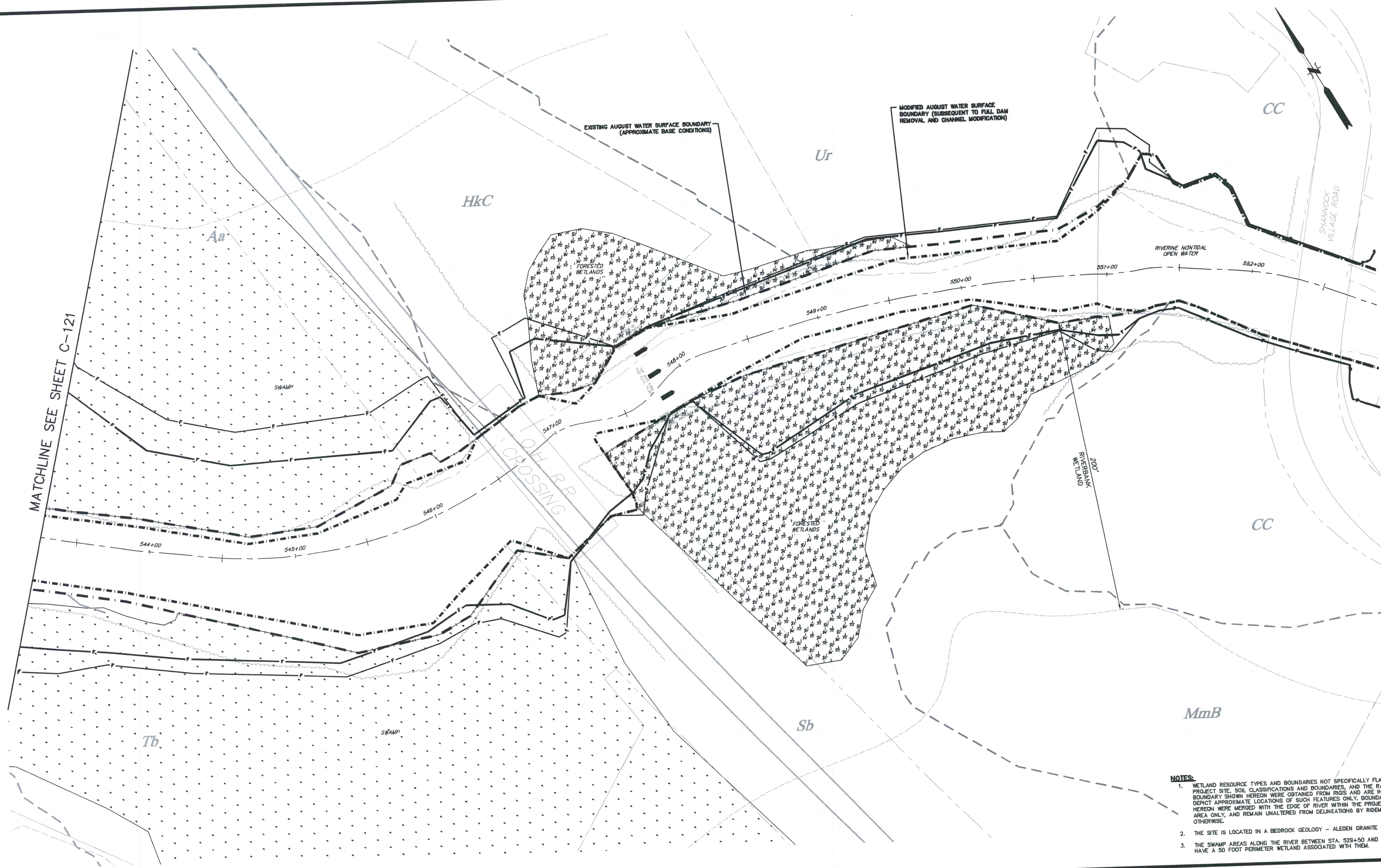
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RESOURCE AREA PLAN  
SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE  
SHANNOCK VILLAGE RHODE ISLAND

PROJ. No.: 20080877A10  
DATE: JULY 2009  
**C-121**  
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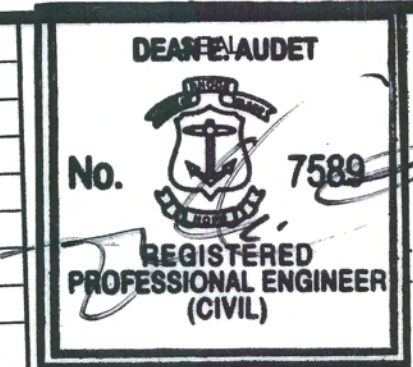




- NOTES:**
1. WETLAND RESOURCE TYPES AND BOUNDARIES NOT SPECIFICALLY FLAGGED AT THE PROJECT SITE, SOIL CLASSIFICATIONS AND BOUNDARIES, AND THE RARE SPECIES BOUNDARY SHOWN HEREON WERE OBTAINED FROM RIGS AND ARE INTENDED TO DEPICT APPROXIMATE LOCATIONS OF SUCH FEATURES ONLY. BOUNDARIES SHOWN HEREON WERE MERGED WITH THE EDGE OF RIVER WITHIN THE PROJECT STUDY AREA ONLY, AND REMAIN UNALTERED FROM DELINEATIONS BY RIDEM/USGS OTHERWISE.
  2. THE SITE IS LOCATED IN A BEDROCK GEOLOGY - AEGEAN GRANITE GNEISS AREA.
  3. THE SWAMP AREAS ALONG THE RIVER BETWEEN STA. 529+50 AND STA. 546+50 HAVE A 50 FOOT PERIMETER WETLAND ASSOCIATED WITH THEM.

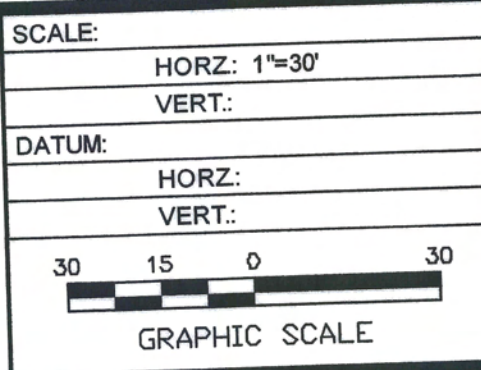
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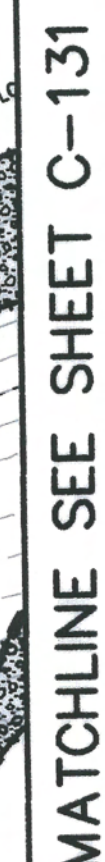
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RESOURCE AREA PLAN  
SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE  
SHANNOCK VILLAGE RHODE ISLAND


PROJ No.: 20080877A10  
DATE: JULY 2009

**C-122**  
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IN-STREAM & RIPARIAN HABITAT  
IMPROVEMENT PLAN  
**SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE**  
SHANNOCK VILLAGE RHODE ISLAND

PROJ. No.: 20080877.A10  
DATE: JULY 2009

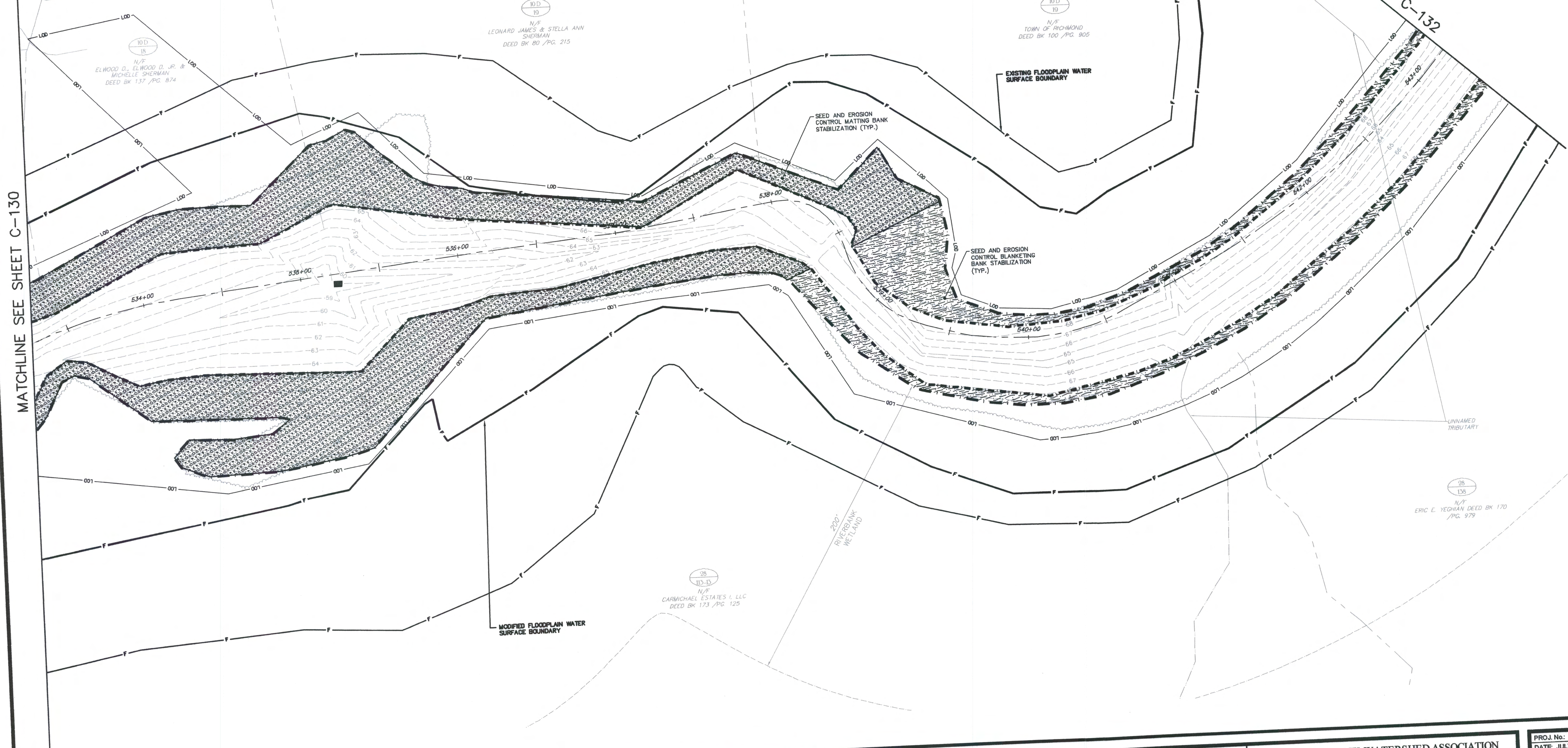
**C-130**

**8 OF 19**

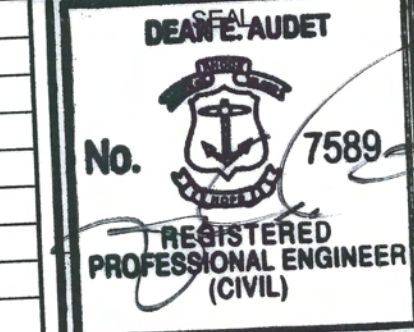


MATCHLINE SEE SHEET C-130

MATCHLINE SEE SHEET C-132

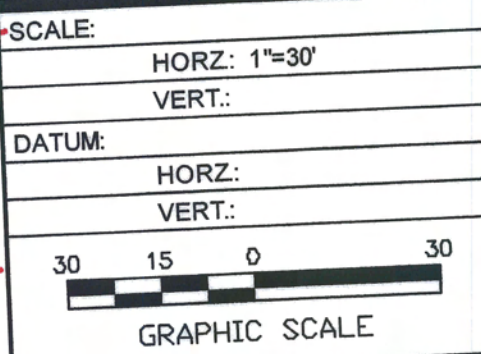


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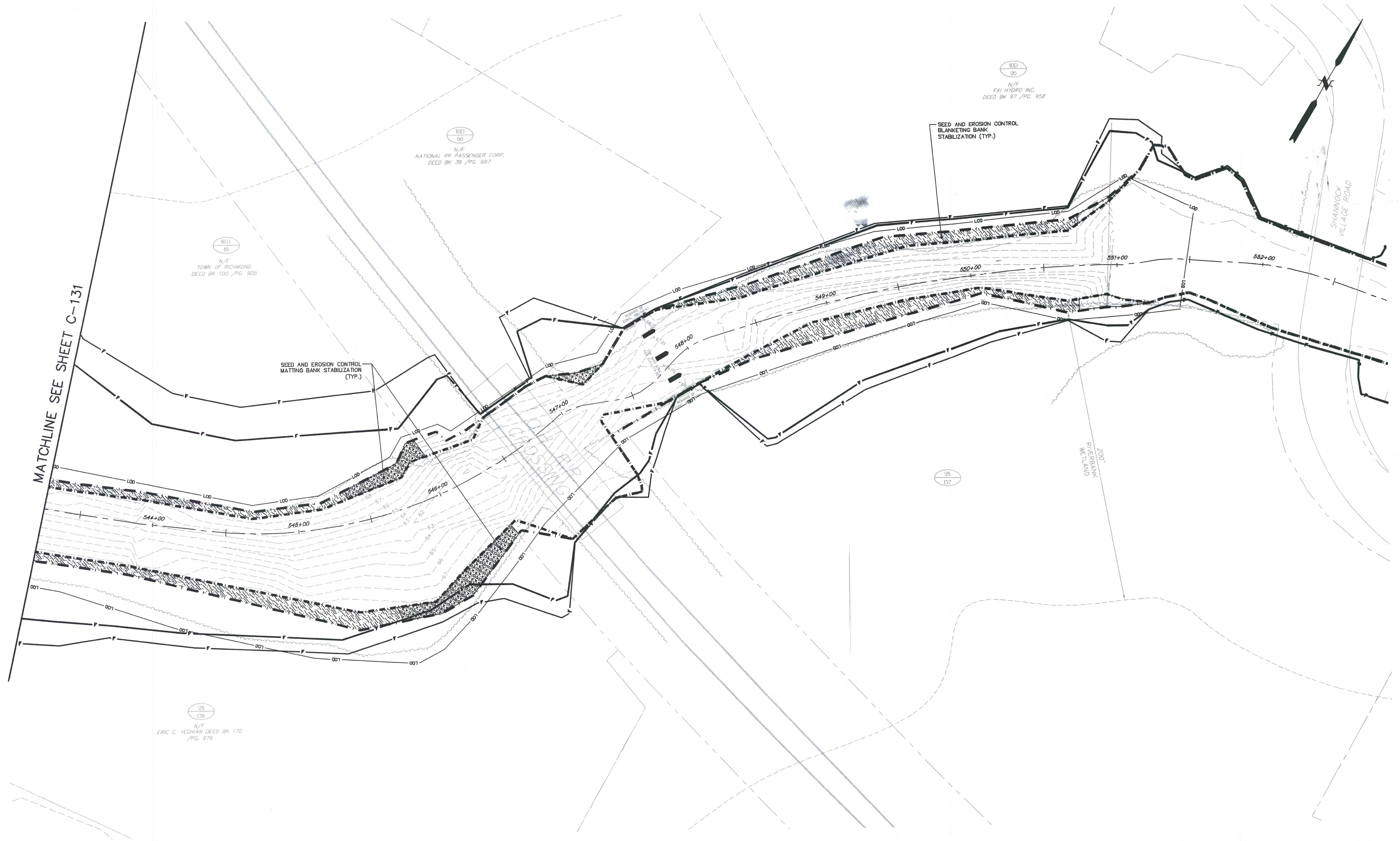


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IMPROVEMENT PLAN  
SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE  
SHANNOCK VILLAGE RHODE ISLAND

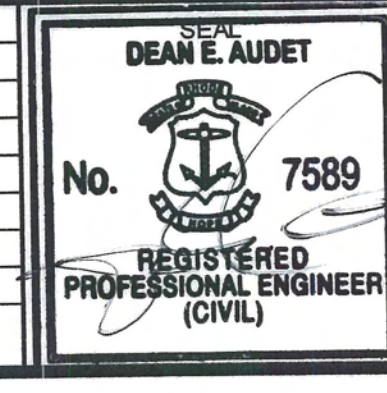
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DATE: JULY 2009  
**C-131**  
9 OF 19





No.	DATE	DESCRIPTION	BY
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	VERT:
DATUM:	HORZ:
	VERT:
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GRAPHIC SCALE	

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IMPROVEMENT PLAN  
SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE  
SHANNOCK VILLAGE RHODE ISLAND

PROJ No: 20080877.A10  
DATE: JULY 2009

**C-132**  
10 OF 19



### WEIR CONSTRUCTION NOTES:

1. THE PORTION OF THE GRADE CONTROL WEIR AT STA. 527+75 (DOWNSTREAM OF THE RIGHT RACEWAY OUTLET) IS TO BE CONSTRUCTED IF A FIELD REVIEW OF CHANNEL BED ELEVATIONS ALONG THE RIGHT BANK OF THE MAIN CHANNEL WHERE THE WALL IS TO BE CONSTRUCTED DETERMINE SUCH BANK ELEVATIONS ARE NOT SUFFICIENTLY HIGH TO ACHIEVE HYDRAULIC CUTOFF AROUND THE WALL. IF HYDRAULIC CUTOFF CANNOT BE ACHIEVED AT THIS LOCATION, THEN THE WALL WILL BE EXTENDED ACROSS THE RIGHT RACEWAY AS DEPICTED.
2. IF THE PORTION OF THE GRADE CONTROL WEIR AT STA. 527+75 DOWNSTREAM OF THE RIGHT RACEWAY IS TO BE CONSTRUCTED, SUCH CONSTRUCTION WILL OCCUR AFTER TEMPORARY BYPASS FLOWS TO THE RIGHT RACEWAY HAVE CEASED (FLOWS RESUMED TO MAIN RIVER CHANNEL).

### MAP NOTE:

BATHYMETRIC CONTOURS UPSTREAM OF STA. 530+50 ARE APPROXIMATE ONLY AND BASED ON LIMITED NOVEMBER 2008 SPOT ELEVATION DATA WHERE SHOWN ON THESE DRAWINGS. 100' CONTOUR SHOWN ADJACENT TO PROJECT SITE IS APPROXIMATE ONLY AND AS DIGITIZED FROM USGS MAPPING.

OLD SHANNOCK ROAD  
(PUBLIC-VARIABLE WIDTH)

RAILROAD STREET  
(PUBLIC-VARIABLE WIDTH)

GRADE CONTROL  
WEIR (TYP.)

FORMER POWER PLANT BUILDING AND  
CONCRETE RETAINING WALL TO  
REMAIN UNDISTURBED

RACEWAY INLET CLOSURE  
SEE DETAIL SHEET C-503

REMOVE AND DISPOSE OF  
CONCRETE PIERS (TYP.)

BOULDER  
CLUSTERS (TYP.)

RIGHT OVERBANK  
CHANNEL (TYP.)

CENTER  
CHANNEL (TYP.)

LEFT OVERBANK  
CHANNEL (TYP.)

EXISTING AUGUST WATER SURFACE  
BOUNDARY (APPROXIMATE BASE  
FLOW CONDITIONS)

EXISTING FLOODPLAIN WATER  
SURFACE BOUNDARY  
EXISTING SPILLWAY ROCK CRIBWORK TO REMAIN UNDISTURBED  
OUTSIDE CHANNEL EXCAVATION WHERE IT IS DETERMINED  
THAT NO FUTURE STRUCTURAL OR SAFETY HAZARDS WOULD  
EXIST (TYP. BOTH SIDES OF CHANNEL EXCAVATION)

SLUICeway INLET CLOSURE  
SEE DETAIL SHEET C-503

REMOVE SEDIMENT WITHIN  
EXISTING RIVERBANKS  
BETWEEN COFFERDAM AND  
EXISTING SPILLWAY

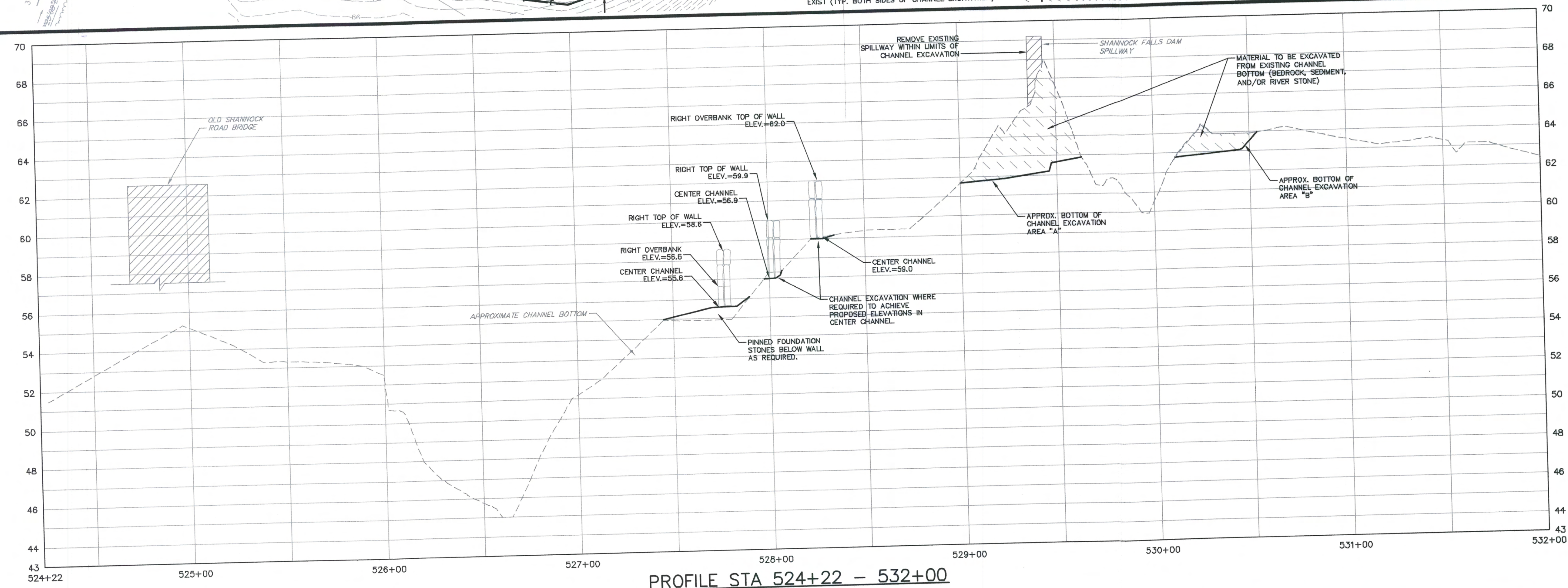
LIMIT OF  
CLEARING  
(TYP.)

VEGETATE  
CHANNEL  
VEGETATE  
CHANNEL

UNNAMED  
TRIBUTARY

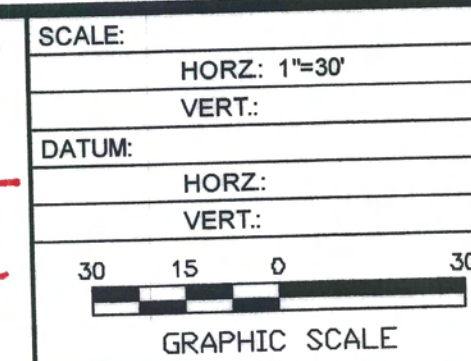
### PROFILE NOTES:

1. GRADE CONTROL WEIRS DEPICTED HEREON ARE APPROXIMATE ONLY. REFER TO SHEET C-502 FOR DETAILED INFORMATION ON STONE SIZING, PLACEMENT AND CONSTRUCTION REQUIREMENTS.
2. EXISTING CHANNEL BOTTOM DEPICTED HEREON IS APPROXIMATE ONLY AND IS BASED ON LIMITED SPOT ELEVATIONS IN THE PROJECT AREA. ACTUAL BEDROCK/RIVER SURFACE ELEVATIONS WILL VARY FROM THAT SHOWN AND CONSTRUCTED FEATURES WILL BE ADJUSTED AS REQUIRED FOLLOWING BYPASS OF WATER TO THE RIGHT RACEWAY TO ACHIEVE THE REQUIRED CHANNEL AND OVERBANK ELEVATION AND DIMENSIONS SHOWN ON SHEET C-502.



PROFILE STA 524+22 - 532+00

SCALE: H: 1"=30'  
V: 1"=3'



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GRADING & DEMOLITION PLAN

SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE

SHANNOCK VILLAGE

RHODE ISLAND

PROJ. No.: 20080877A10  
DATE: JULY 2009

**C-140**

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No.	DATE	REVISIONS	DESCRIPTION	BY
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NSW 09/09



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PHASE 1 NOTES

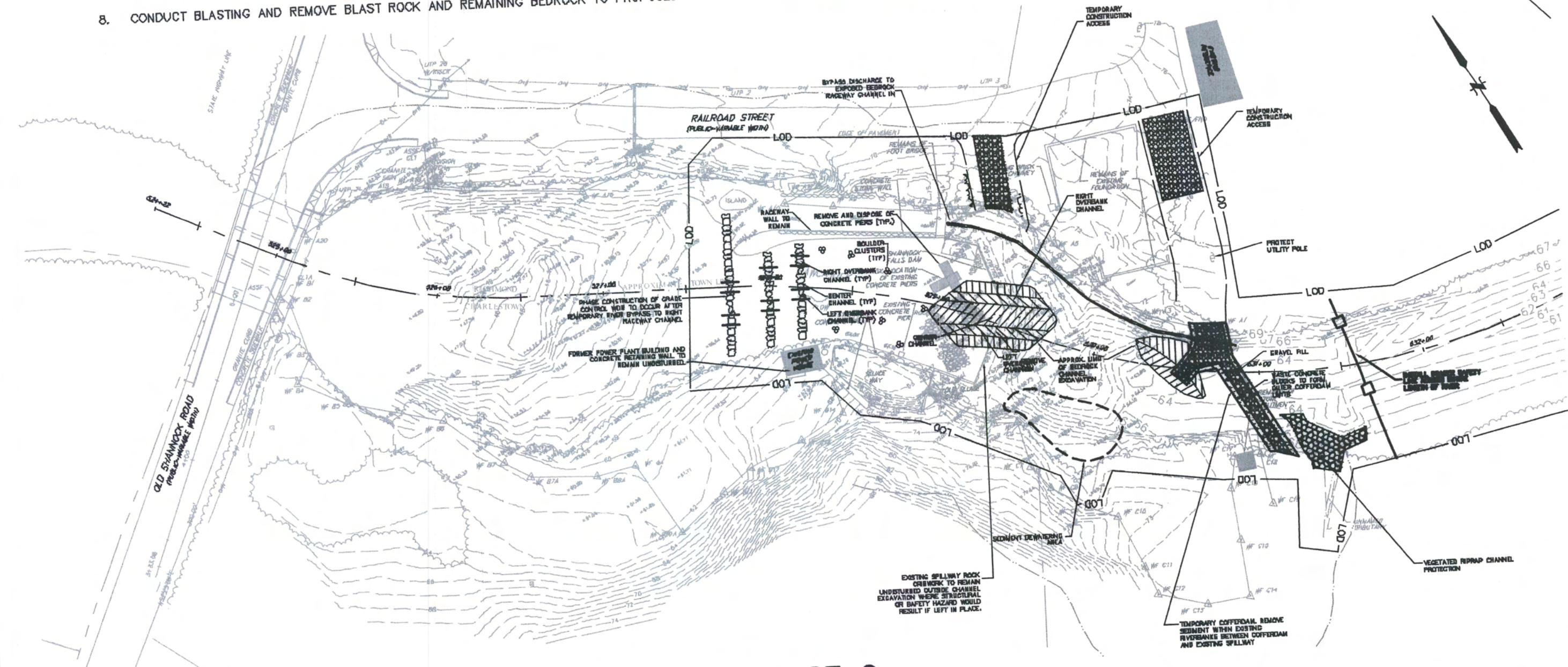
- OBTAIN CONFIRMATORY ELEVATIONS OF CHANNEL BOTTOM ALONG PROPOSED ROUTE OF DIVERSION PIPES ALONG RIGHT RIVERBANK TO VERIFY FLOW REGIME FOR BYPASS AS EITHER GRAVITY OR SIPHON.
- INSTALL COFFERDAM ON RIVER RIGHT WITH ADEQUATE LENGTH OF HOPE DIVERSION PIPE(S) UNDER COFFERDAM. SEAL PIPE INTERFACES WITH COFFERDAM WALLS WITH SANDBAGS. PLACE SANDBAGGED LINES FOLDED AT BASE OF UPSTREAM COFFERDAM WALL TO SEAL BOTTOM. CAP UPSTREAM END(S) OF DIVERSION PIPE(S). BASED UPON A PRELIMINARY REVIEW OF DRAINAGE BASIN HYDROLOGY, TWO 60" PIPES (MIN.) ARE TO BE INSTALLED IN COMBINATION WITH TWO 18" AXIAL FLOW PUMPS TO PASS NORMAL RIVER BASE FLOWS. ADDITIONAL OR LARGER PIPES, PUMPS, SIPHONS OR OTHER BYPASS CONDUITS MAY BE REQUIRED TO PASS HIGHER SEASONAL FLOWS OR INCREASES ASSOCIATED WITH PRECIPITATION. THE COFFERDAM AND BYPASS PROVISIONS ARE TO BE INSTALLED DURING LOW FLOWS AND UNDER CONTROLLED CONDITIONS AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD TO ENSURE RESPECTIVE COMPONENTS FUNCTION AS INTENDED TO PROTECT ADJACENT PROPERTIES, WETLAND RESOURCES AND DOWNSTREAM WORK AREAS. A COPY OF THE PROJECT'S WATER CONTROL PLAN WILL BE TRANSMITTED TO RIDEM PRIOR TO IMPLEMENTATION OF SUCH MEASURES.
- PRE-ASSEMBLE REMAINING SECTIONS OF HOPE DIVERSION PIPE(S) OUTSIDE CHANNEL BANKS. INSTALL SECTIONS SEQUENTIALLY TO DOWNSTREAM DISCHARGE POINT AT RIGHT RACEWAY CHANNEL. CONFIGURE DISCHARGE OUTLETS TO FLOW UNDER EXISTING CONCRETE FOOTBRIDGE AND/OR OVER SPILLWAY SECTION. FLOW OVER SPILLWAY SECTION IS TO BE CONTROLLED AROUND DOWNSTREAM WORK AREAS BY PLACEMENT AND RELOCATION OF SANDBAG BERMS OR OTHER TEMPORARY DIVERSIONS TO PROTECT WORK AREAS.
- UNCAP DIVERSION PIPE(S) TO BEGIN FLOW. EMPLOY SIPHON FLOWS OR PUMP OPERATIONS AS DICTATED BY CHANNEL INVERT ELEVATIONS ALONG RIGHT RIVERBANK AND RIVER LEVELS.
- INSTALL REMAINING SECTIONS OF COFFERDAM ACROSS RIVER TO LEFT RIVERBANK. EMPLOY ADDITIONAL TEMPORARY PUMPS AS REQUIRED TO DRAW UPSTREAM WATER LEVELS DOWN TO ALLOW PLACEMENT OF COFFERDAM MATERIALS UNDER CONTROLLED CONDITIONS.
- OPERATE ADDITIONAL 18" PUMPS (OR OTHERWISE SIZED AS REQUIRED BY FLOWS) IN MAIN RIVER CHANNEL BELOW COFFERDAM AS REQUIRED TO KEEP WORKING AREA SUITABLY PROTECTED FROM FLOWING OR STANDING WATER.



PHASE 1

PHASE 2 NOTES

- SIPHON OR PUMP REMAINING STANDING WATER IN LOW POINTS FROM BEHIND DAM SPILLWAY TO EXPOSE CHANNEL BOTTOM MATERIAL (BEDROCK, ROCKS OR SEDIMENT).
- SAMPLE AND TEST SEDIMENT FOR ANALYTICAL LABORATORY DISPOSAL CRITERIA.
- AFTER ALLOWING SEDIMENT TO DEWATER IN PLACE OR IN A TEMPORARY SLOPEPILE AREA WITHIN THE CHANNEL BANKS, REMOVE & RELOCATE SEDIMENT FROM ENTIRE AREA BETWEEN RIVERBANKS AND FROM DAM SPILLWAY UP TO TEMPORARY COFFERDAM. HAIL SEDIMENT (IN LINED TRUCKS IF REQUIRED BY RESIDUAL WATER CONTENT) TO OFF-SITE DISPOSAL AREA (CLEAN FILL, DAILY COVER OR SOLID WASTE AS SEDIMENT TESTING DICTATES IN COMPARISON TO RELAYED EXPOSURE AND DISPOSAL CRITERIA).
- CONDUCT SURVEY LAYOUT OF PROPOSED WEIR AND CHANNEL EXCAVATION AREAS. REVIEW LAYOUT DELINEATIONS IN COMPARISON TO CHANNEL BOTTOM CONDITIONS TO DETERMINE IF MODIFICATIONS TO LAYOUTS OF WEIRS AND CHANNELS IS REQUIRED TO SUPPORT SUCCESSFUL FISH PASSAGE. MARK OUT PROPOSED MODIFICATIONS TO WEIRS OR CHANNEL EXCAVATION AREAS AND REVIEW SIGNIFICANT MODIFICATIONS WITH RIDEM IN ADVANCE OF ANY WORK ON THESE ITEMS.
- REMOVE DAM SPILLWAY AND OTHER EXCAVATABLE MATERIALS WITHIN CHANNEL EXCAVATION LIMITS. SPILLWAY SECTIONS OUTSIDE EXCAVATION LIMITS TO REMAIN UNDISTURBED WHERE A STRUCTURAL/PUBLIC SAFETY REVIEW DETERMINES THE STRUCTURE(S) ARE STABLE AND WILL NOT PRESENT A FUTURE SAFETY HAZARD. SPILLWAY TO BE REMOVED WHERE DETERMINED OTHERWISE.
- DEVELOP CONTROLLED BLAST PLAN AS DESCRIBED HEREON AND PROVIDE COPY TO RIDEM. PROVIDE NOTIFICATION TO RIDEM, LOCAL FIRE DEPARTMENTS AND ADJACENT LANDOWNERS 48 HOURS PRIOR TO BLASTING ACTIVITIES. CONDUCT BLASTING SURVEY OF ADJACENT STRUCTURES AT LEAST ONE WEEK PRIOR TO BLASTING ACTIVITIES.
- CONDUCT BLASTING AND REMOVE BLAST ROCK AND REMAINING BEDROCK TO PROPOSED CHANNEL CONFIGURATIONS IN EXCAVATION AREA 'A' AND UP TO TEMPORARY COFFERDAM IN AREA 'B'.



PHASE 2

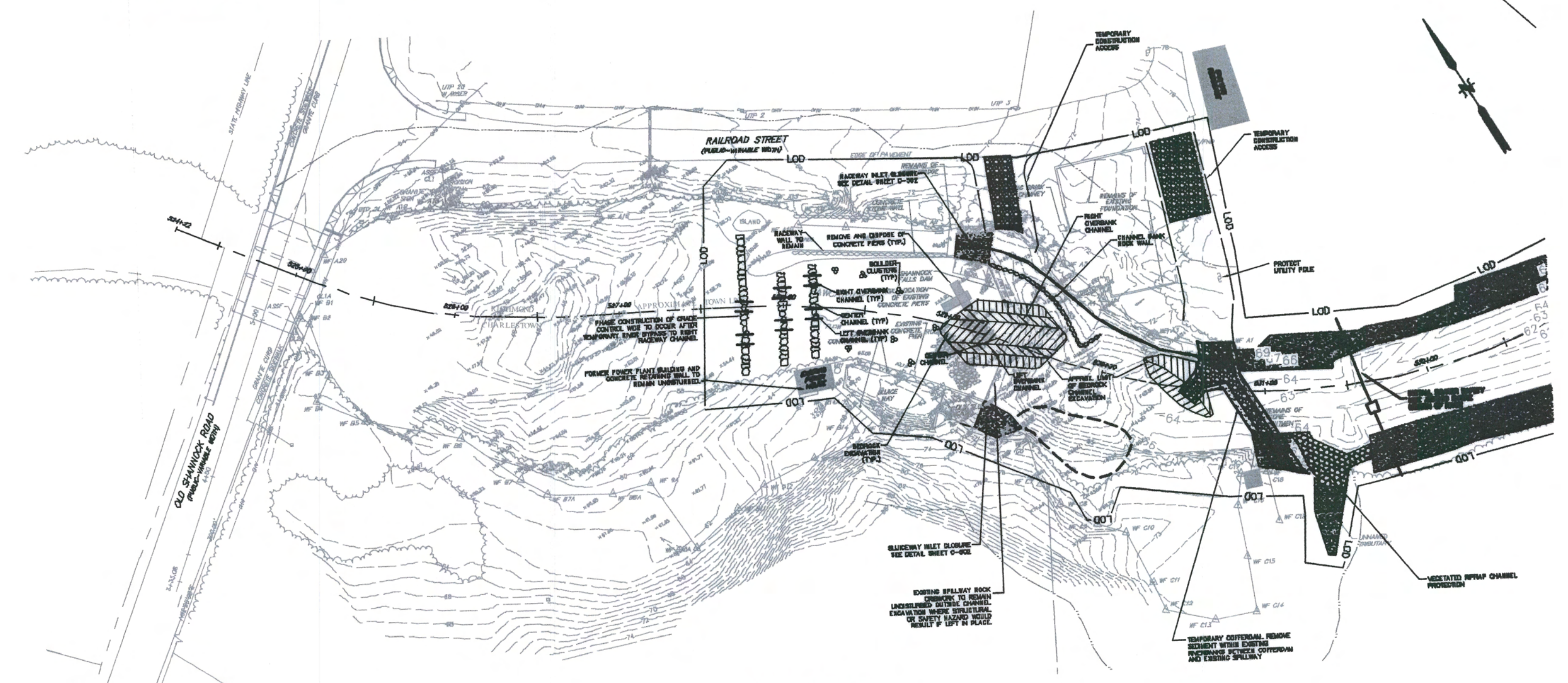
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1.	8/27/09	REVISOR COMMENTS		AEH
No.	DATE	DESCRIPTION		BY



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
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THE LETTER OF APPROVAL DATED September 22, 2009  
FILE # JARA 09-001 NO CHANGES ALLOWED  
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PHASE 3 NOTES

- PLACE STABLE CHANNEL FILL AND ROCKS TO BLOCK OFF LEFT SLUICeway INLET.
- CONSTRUCT DOWNSTREAM WEIR GRADE CONTROL STRUCTURES AS SHOWN. CONSTRUCT WEIR AT STA. 527+75 WITHIN MAIN CHANNEL ONLY TO AVOID FLOWS FROM RIGHT RACEWAY. SEQUENCE CONSTRUCTION AREAS IN COORDINATION WITH TEMPORARY SANDBAGS OR OTHER DIVERSIONS TO CHANNEL OVERFLOW FROM CONDUIT DISCHARGE OVER SPILLWAY AT RIGHT RACEWAY INLET.
- CONSTRUCT BOULDER CLUSTERS.
- CONSTRUCT CHANNEL BANK ROCK TOE WALL PARALLEL TO RIGHT RIVERBANK (ALONG MODIFIED WATER SURFACE BOUNDARY DEPICTED ON SITE PLAN).
- CONSTRUCT RIPRAP STABILIZATION UPSTREAM OF COFFERDAM AT TRIBUTARY DISCHARGE NEAR STA. 531+50 USING LONG-REACH EXCAVATION EQUIPMENT PLATFORM AT LEFT END OF TEMPORARY COFFERDAM.
- REMOVE TEMPORARY COFFERDAM SEQUENTIALLY BY STAGED REMOVAL OF TOP COURSE OF CONCRETE BLOCKS ADJOINING LEFT RIVERBANK, ALLOWING RIVER LEVELS UPSTREAM TO GRADUALLY DECREASE BY LOWERED COFFERDAM WEIR. REMOVE ADDITIONAL BLOCKS AND INTERIOR FILL MATERIAL IN COFFERDAM SECTIONS AS UPSTREAM RIVER LEVELS DROP CORRESPONDINGLY. CONTROL UPSTREAM DRAINAGE TO NO MORE THAN 6" PER DAY.
- WHEN RIVER LEVELS HAVE DROPPED TO CEASE/MINIMIZE FLOW THROUGH BYPASS PIPE(S), DISASSEMBLE PIPE SECTIONS AND REMOVE FROM WITHIN RIVERBANKS.
- REMOVE PORTION OF DOWNSTREAM COFFERDAM AT RIGHT RIVERBANK FOR TEMPORARY CONSTRUCTION EQUIPMENT ACCESS. CONDUCT BEDROCK CHIPPING IN REMAINING PORTION OF CHANNEL EXCAVATION AREA 'B' AS PORTIONS OF TEMPORARY COFFERDAM ARE REMOVED.
- REMOVE ALL REMAINING SECTIONS OF TEMPORARY COFFERDAM TO RESTORE PRECONSTRUCTION CHANNEL BOTTOM GRADES WITHIN COFFERDAM FOOTPRINT.
- PLACE STRUCTURAL TIMBERS AND STABLE CHANNEL FILL TO BLOCK OFF RIGHT RACEWAY INLET (UPSTREAM OF CONCRETE PEDESTRIAN BRIDGE).
- CONSTRUCT REMAINING PORTION OF GRADE CONTROL WEIR AT STA. 527+75 TO RIGHT RIVERBANK IF REQUIRED.
- INSTALL BANK STABILIZATION SEEDING, PLANTINGS AND BLANKETING/MATTING IN UPSTREAM RIVERBANK AREAS EXPOSED BY LOWERED RIVER WATER LEVELS.
- RESTORE AREAS DISTURBED BY TEMPORARY CONSTRUCTION ACCESS BY TOP DRESSING AND SEEDING. REMOVE ALL CONSTRUCTION MATERIALS TO RESTORE ADJACENT AREAS TO PRECONSTRUCTION CONDITIONS.



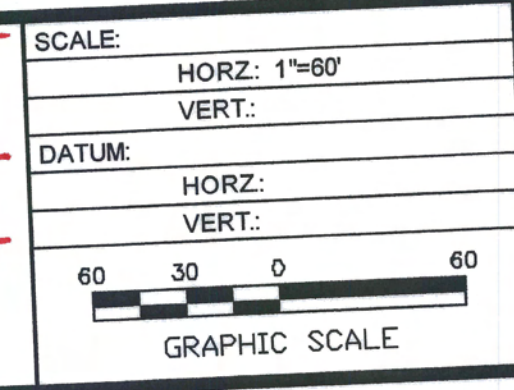
PHASE 3

GENERAL CONTROLLED BLAST SEQUENCE AND PROVISIONS

- BLASTING IS TO BE PERFORMED IN EXCAVATION AREA 'A' AND ONLY AS REQUIRED IN AREA 'B' WHERE BEDROCK CHIPPING CANNOT BE COMPLETED WITHIN PROJECT CONSTRUCTION SCHEDULE.
- THE BLASTING SUBCONTRACTOR SHALL BE LICENSED IN THE STATE OF RHODE ISLAND AND OBTAIN REQUIRED PERMITTING FROM THE STATE FIRE MARSHALL'S OFFICE. NOTICE SHALL BE PROVIDED TO THE TOWN OF RICHMOND'S AND CHARLESTOWN'S CLERK'S OFFICES IN ACCORDANCE WITH PERMIT CONDITIONS.
- A WRITTEN CONTROL BLAST PLAN SHALL BE DEVELOPED AND TRANSMITTED TO RIDEM PRIOR TO BLASTING.
- A PRE-BLAST SURVEY WILL BE OFFERED TO PROPERTY OWNERS WITHIN A 200-FOOT RADIUS OF THE BLAST LOCATIONS AT LEAST TWO WEEKS PRIOR TO BLASTING. THIS SURVEY WILL INCLUDE VIDEO DOCUMENTATION OF ACCESSIBLE INTERIOR AND EXTERIOR PORTIONS OF BUILDINGS AND OTHER STRUCTURES (E.G., RETAINING WALLS, ETC.) TO IDENTIFY EXISTING AREAS OF STRUCTURAL DISTRESS (E.G., CRACKS, MISALIGNMENT, ETC.). POST-BLAST SURVEYS WILL BE CONDUCTED IF AN ADJACENT PROPERTY OWNER BELIEVES THAT THE BLAST HAS CAUSED DAMAGE TO A STRUCTURE ON ITS PROPERTY.
- VIBRATION MONITORING WILL BE CONDUCTED USING CALIBRATED SEISMOGRAPH EQUIPMENT INSTALLED AND OPERATED BY TRAINED PERSONNEL. AT LEAST TWO SEISMOGRAPHS WILL BE USED, PLACED AT INTERMEDIATE POSITIONS TO ADJACENT STRUCTURES TO REMAIN UNDISTURBED (E.G., CAST-IN-PLACE CONCRETE TRAINING WALL ASSOCIATED WITH THE FORMER HYDROPOWER PLANT, BRICK CHIMNEY ON THE FORMER KNOWLE'S MILL SITE, AND ADJACENT PROPERTY OWNERS ON RAILROAD AVENUE). THIS SEISMOGRAPH EQUIPMENT WILL BE USED TO DOCUMENT VIBRATIONS DO NOT EXCEED ACCELERATION LIMITS SET FOR THE SITE (NO MORE THAN 2 IN/SEC').
- BLASTING MATS SHALL BE USED WHERE REQUIRED TO CONTROL EXCESSIVE ROCK MOVEMENT AND TO PROTECT PERSONS AND STRUCTURES ON OR ADJACENT TO THE SITE.
- BLASTING SITE SECURITY AND WARNING WHISTLES SHALL BE EMPLOYED, INCLUDING DEVELOPMENT AND IMPLEMENTATION OF A SITE SECURITY PLAN IDENTIFYING AT A MINIMUM THE BLAST AREA, EQUIPMENT REQUIRING REMOVAL, BLAST AREA ACCESS POINTS, SENTRY LOCATIONS AND DESIGNATED 'SAFE AREAS'. EACH BLAST WILL BE PRECEDED BY A SECURITY CHECK OF THE AFFECTED AREA AND THEN A SERIES OF WARNING WHISTLES. LOCAL FIRE CHIEFS, ADJACENT NEIGHBORS AND RIDEM WILL BE ADVISED OF THE BLASTING SCHEDULE AT LEAST 48 HOURS IN ADVANCE OF BLASTING.
- GENERAL BLAST SEQUENCE WILL BE AS FOLLOWS:
  - DRILL BLAST HOLES TO REQUIRED DEPTHS AND AT REQUIRED SIZE/SPACING TO MINIMIZE SHOCK VIBRATIONS FROM BLASTING.
  - LOAD DRILL HOLES WITH EXPLOSIVE CHARGES.
  - WIRE CHARGES TO DETONATION CONTROLLER IN DESIGNATED SAFE AREA.
  - PLACE PACKED CRUSHED STONE IN DRILL HOLES OVER EXPLOSIVE CHARGES.
  - PLACE BLASTING MATS AS REQUIRED OVER BLAST AREA.
  - FOLLOW STANDARD BLASTING WHISTLE ANNOUNCEMENTS AS FOLLOWS:
    - 3 WHISTLES - BLASTING IN FIVE MINUTES
    - 2 WHISTLES - BLASTING IN ONE MINUTE
    - 1 WHISTLE - BLASTING IS COMPLETE, ALL CLEAR
  - FIRE BLASTING CHARGES
  - REMOVE LOOSE ROCK FROM BLAST AREA.

**NOTE:**  
PROPOSED LAYOUT SHOWN HEREON IS APPROXIMATE ONLY AND IS INTENDED TO ONLY DEPICT RELATIVE PHASES OF WORK AND GENERAL WORK AREAS. REFER TO DRAWINGS C-130 AND C-140 FOR SPECIFIC WORK ACTIVITIES AND LIMITS.

**MAP NOTE:**  
BATHYMETRIC CONTOURS UPSTREAM OF STA. 530+50 ARE APPROXIMATE ONLY AND BASED ON LIMITED NOVEMBER 2008 SPOT ELEVATION DATA WHERE SHOWN ON THESE DRAWINGS. 100' CONTOUR SHOWN ADJACENT TO PROJECT SITE IS APPROXIMATE ONLY AND AS DIGITIZED FROM USGS MAPPING.



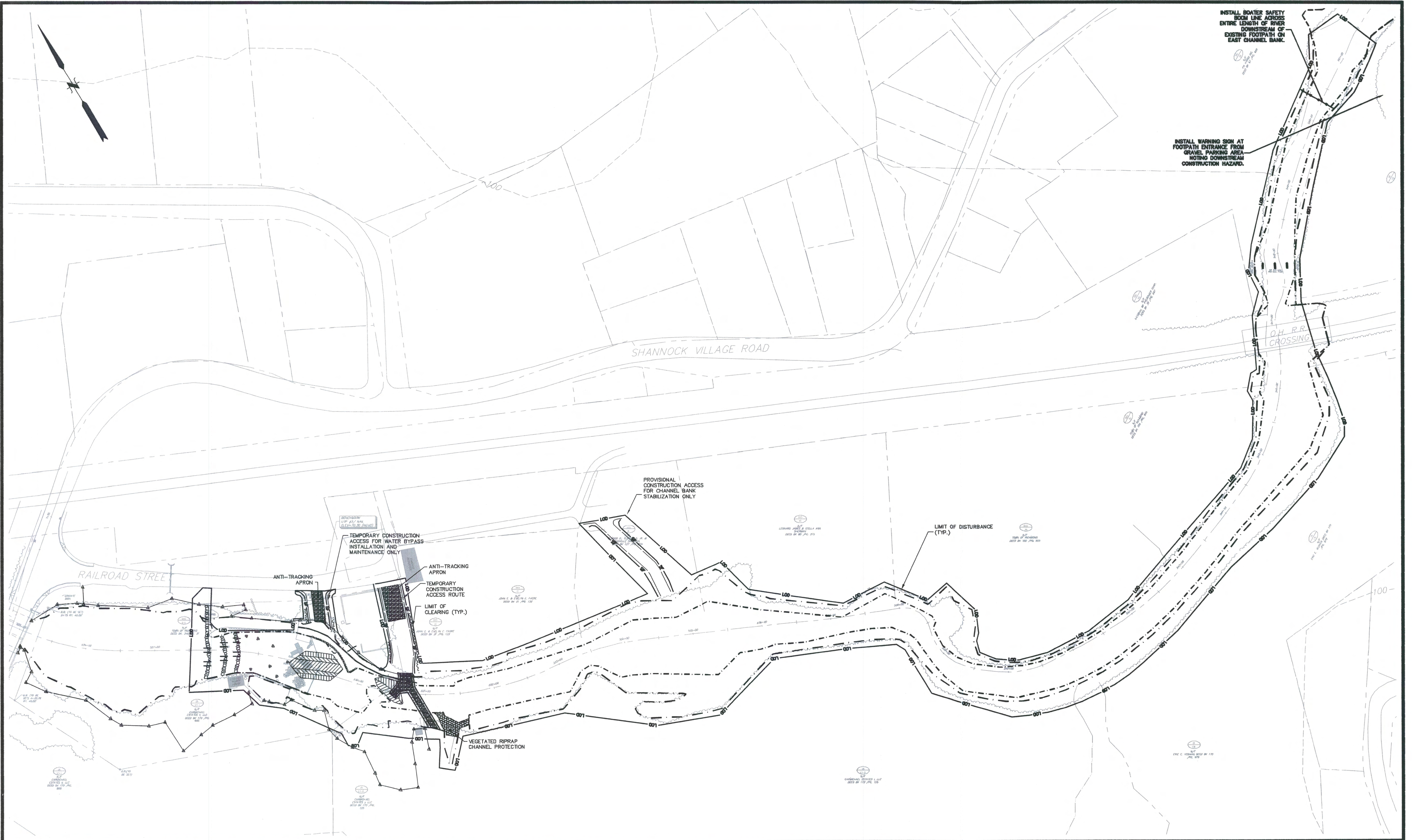
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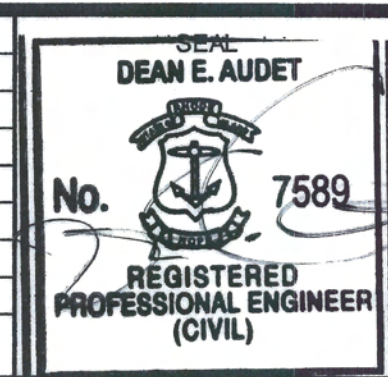
WOOD-PAWCATUCK WATERSHED ASSOCIATION  
WATER CONTROL AND  
CONSTRUCTION PHASING PLAN  
SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE  
SHANNOCK VILLAGE RHODE ISLAND

PROJ. No.: 2008077A10  
DATE: JULY 2009  
**C-150**  
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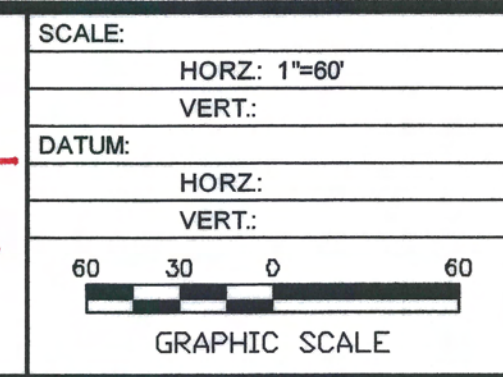


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		PWM 04/09	
		NSW 09/09	
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**SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE**

SHANNOCK VILLAGE RHODE ISLAND

PROJ. No: 20080877A10  
DATE: JULY 2009

**C-160**

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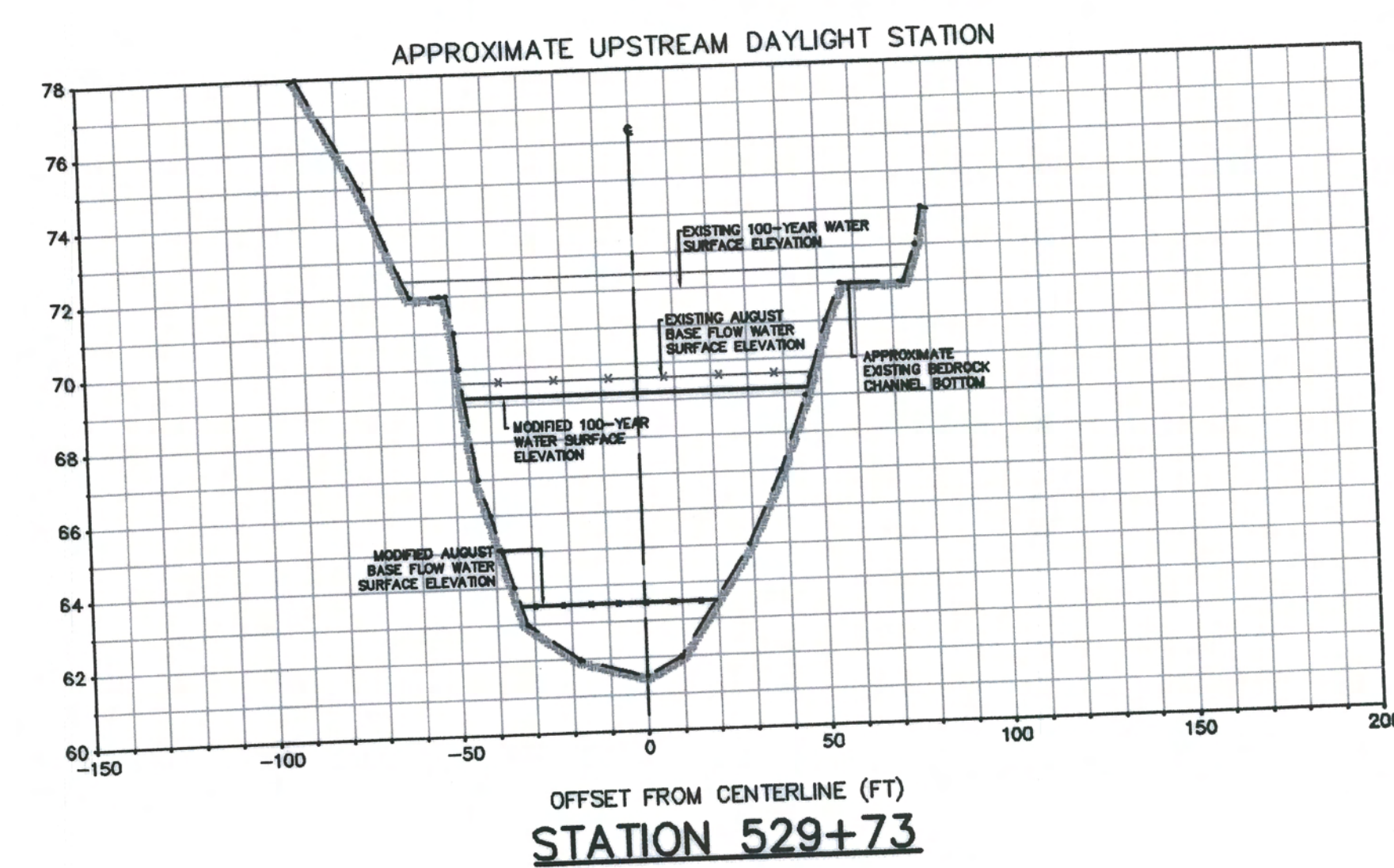
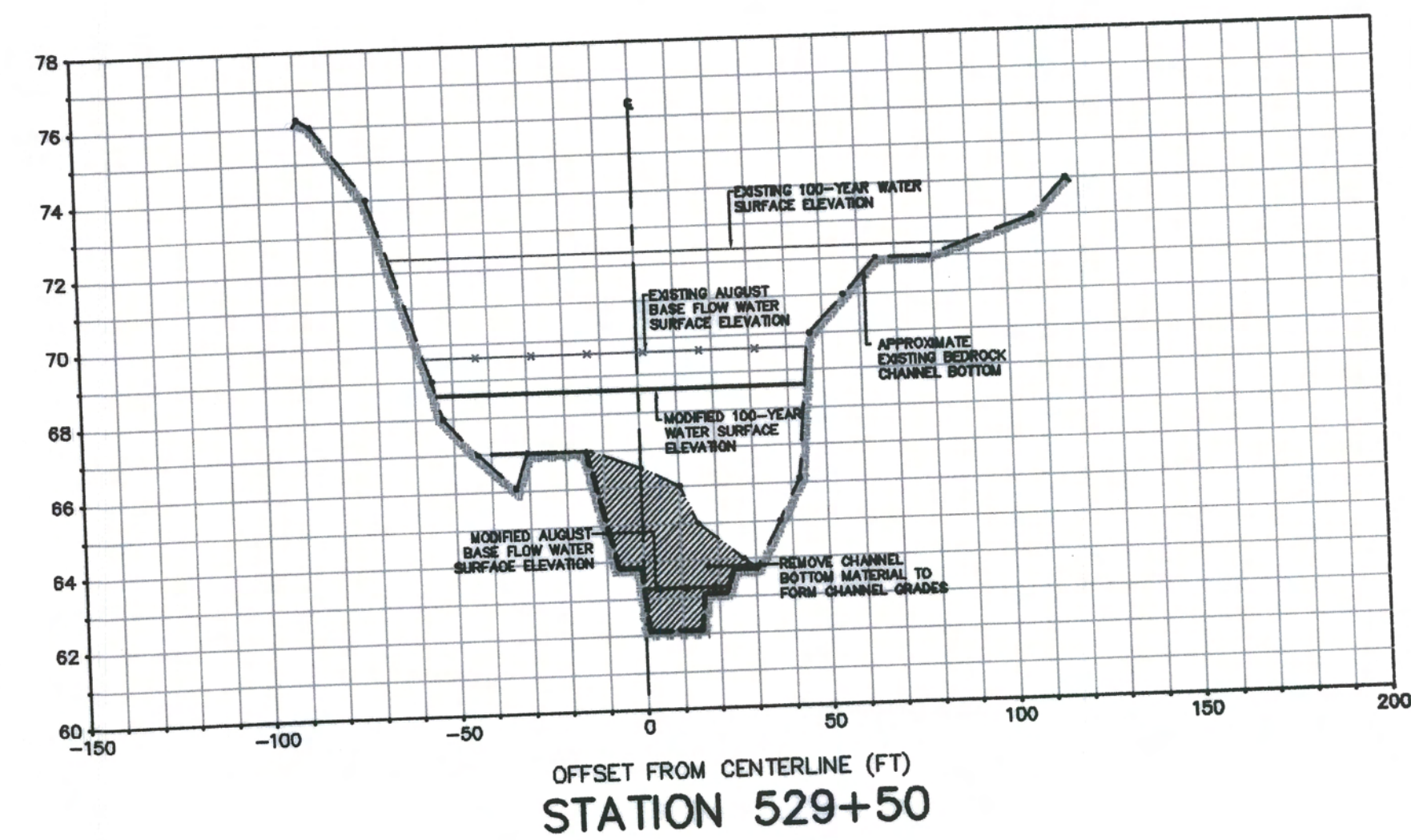
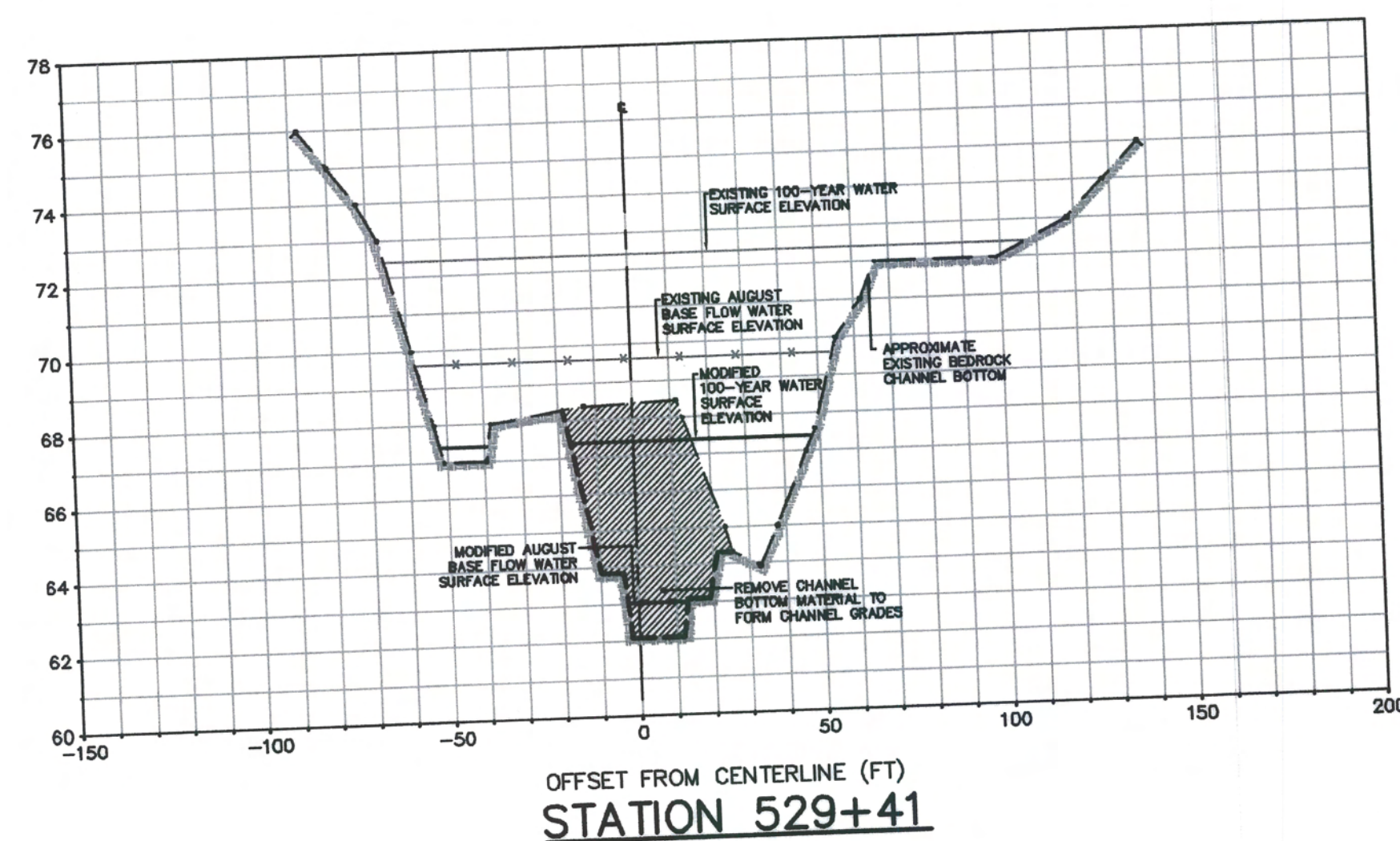
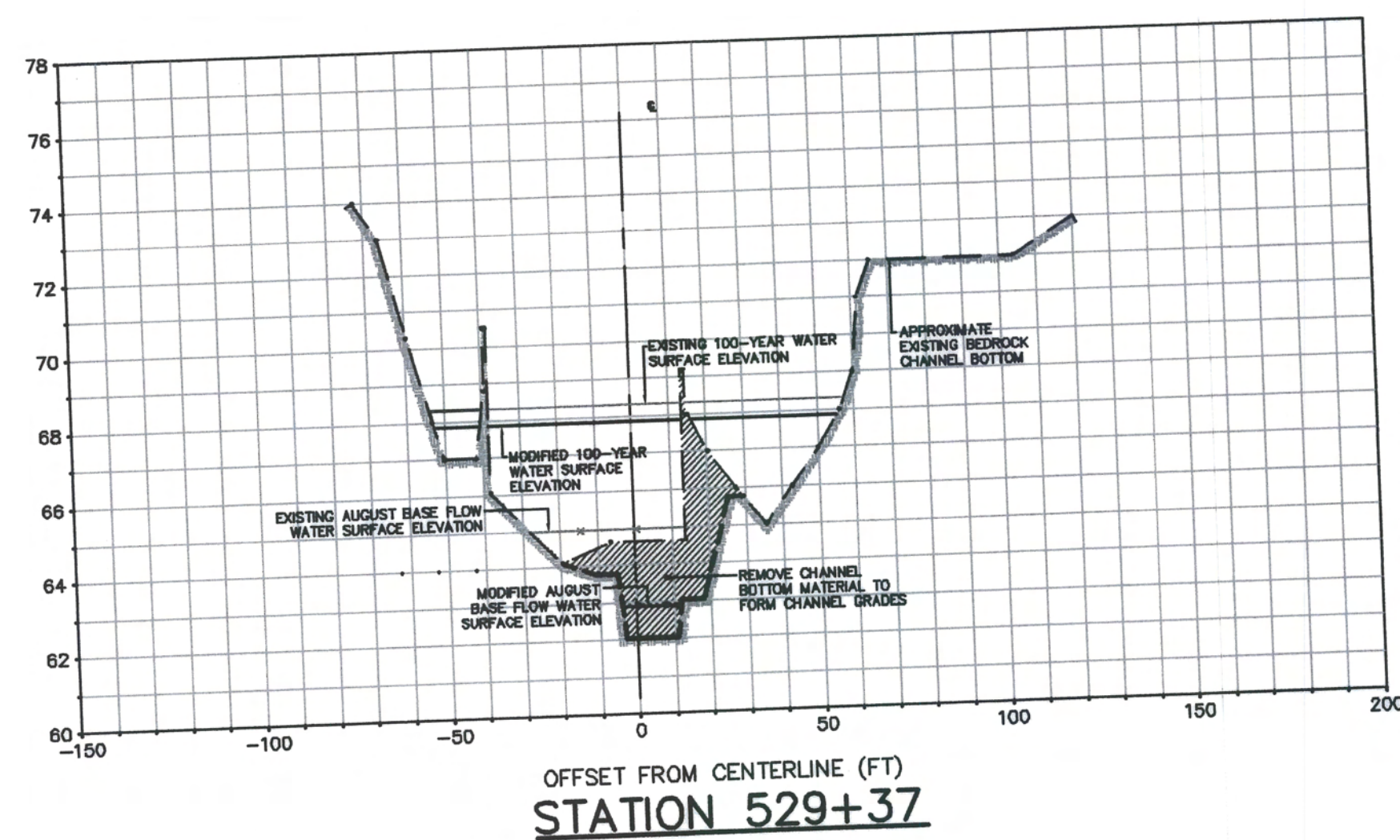
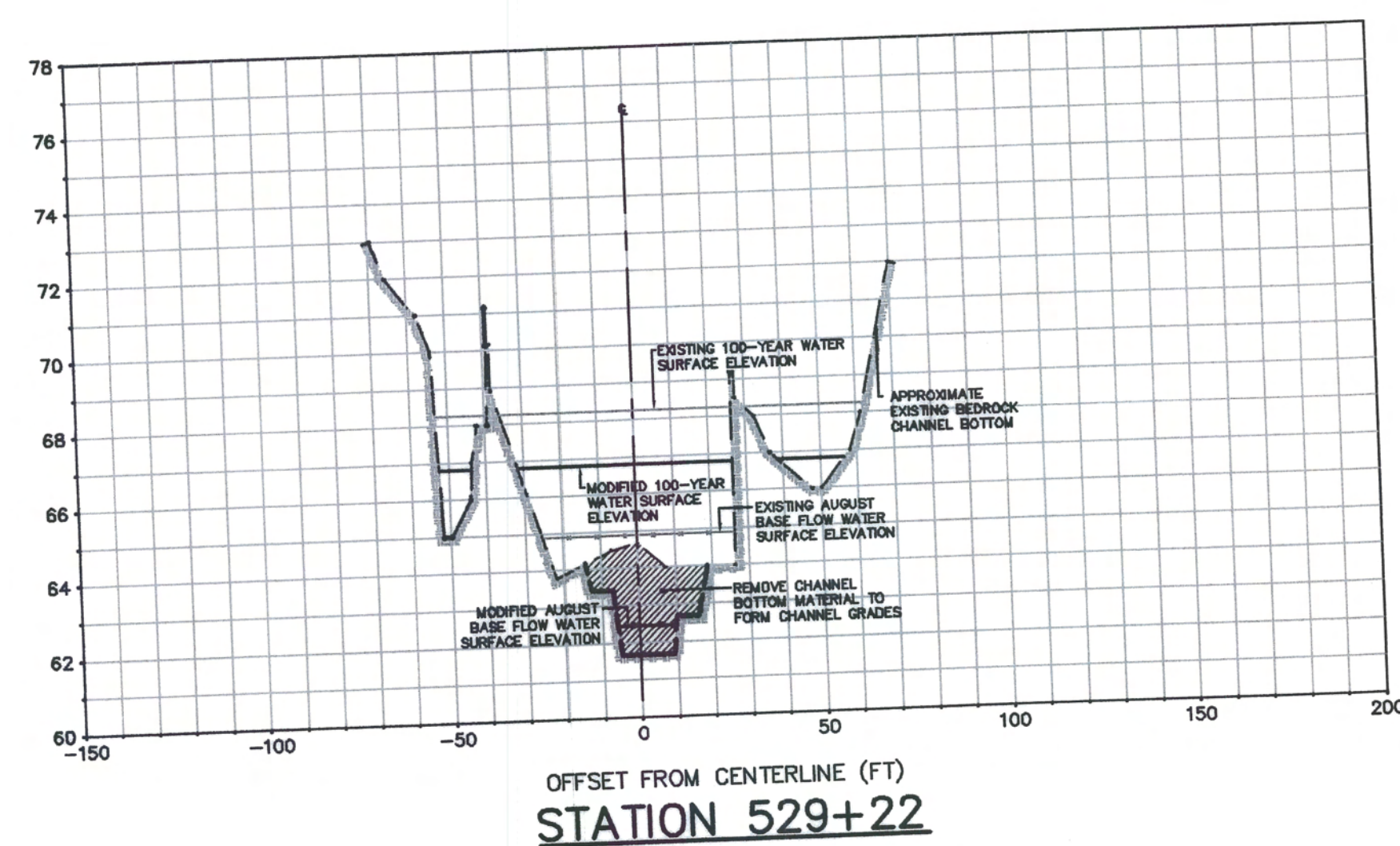
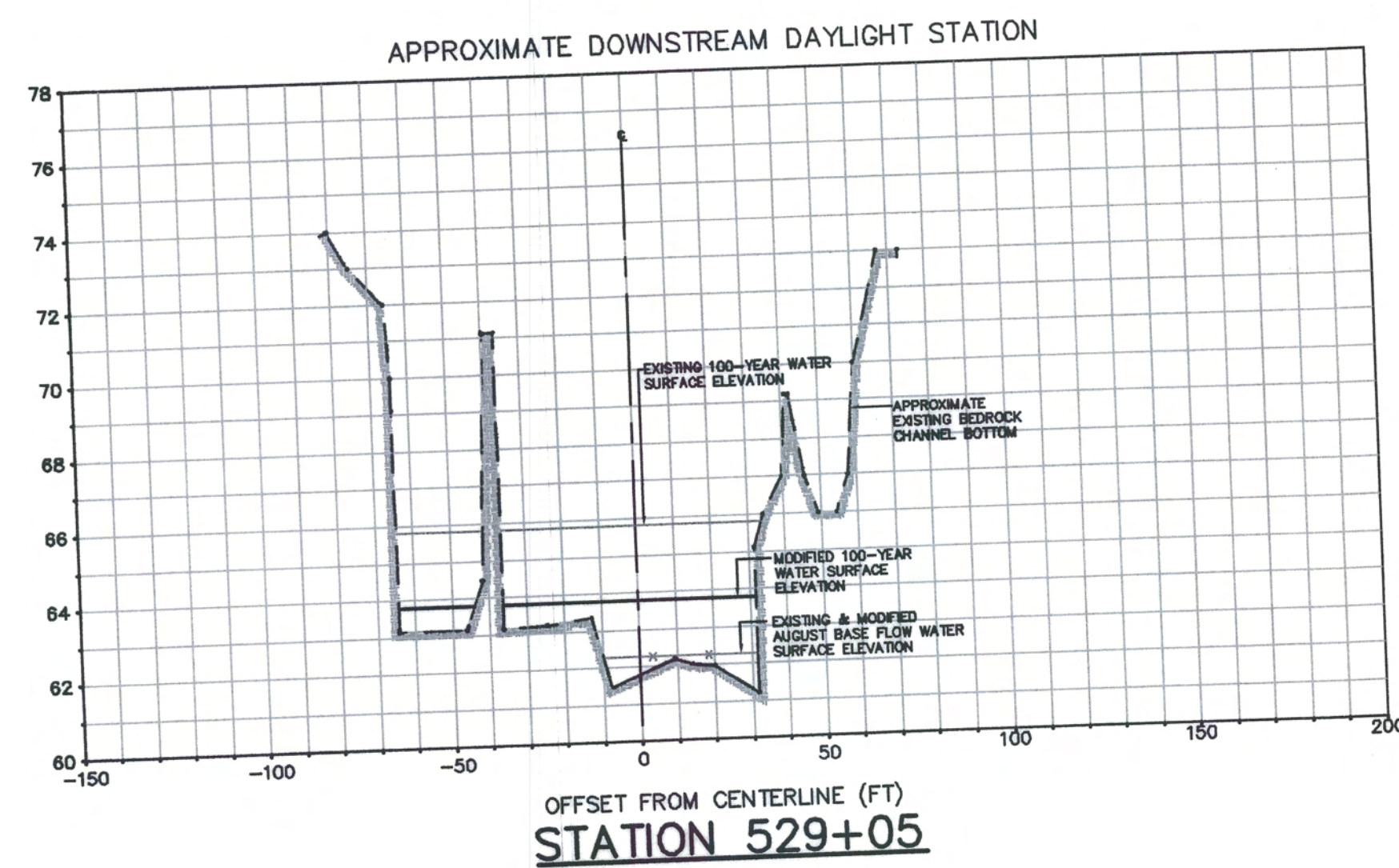
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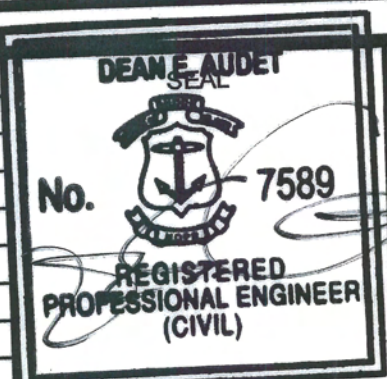
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CHANNEL EXCAVATION AREA 'A'

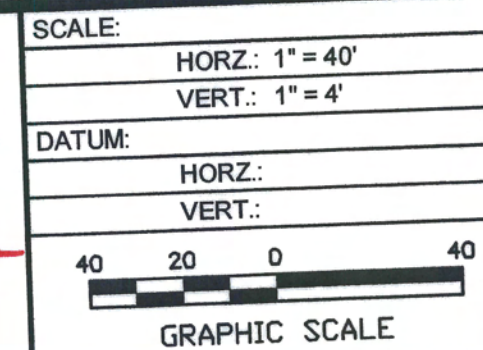
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PROJ. MANAGER: NSW  
CHIEF DESIGNER: MRP  
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FILE # 04-001 AREA A  
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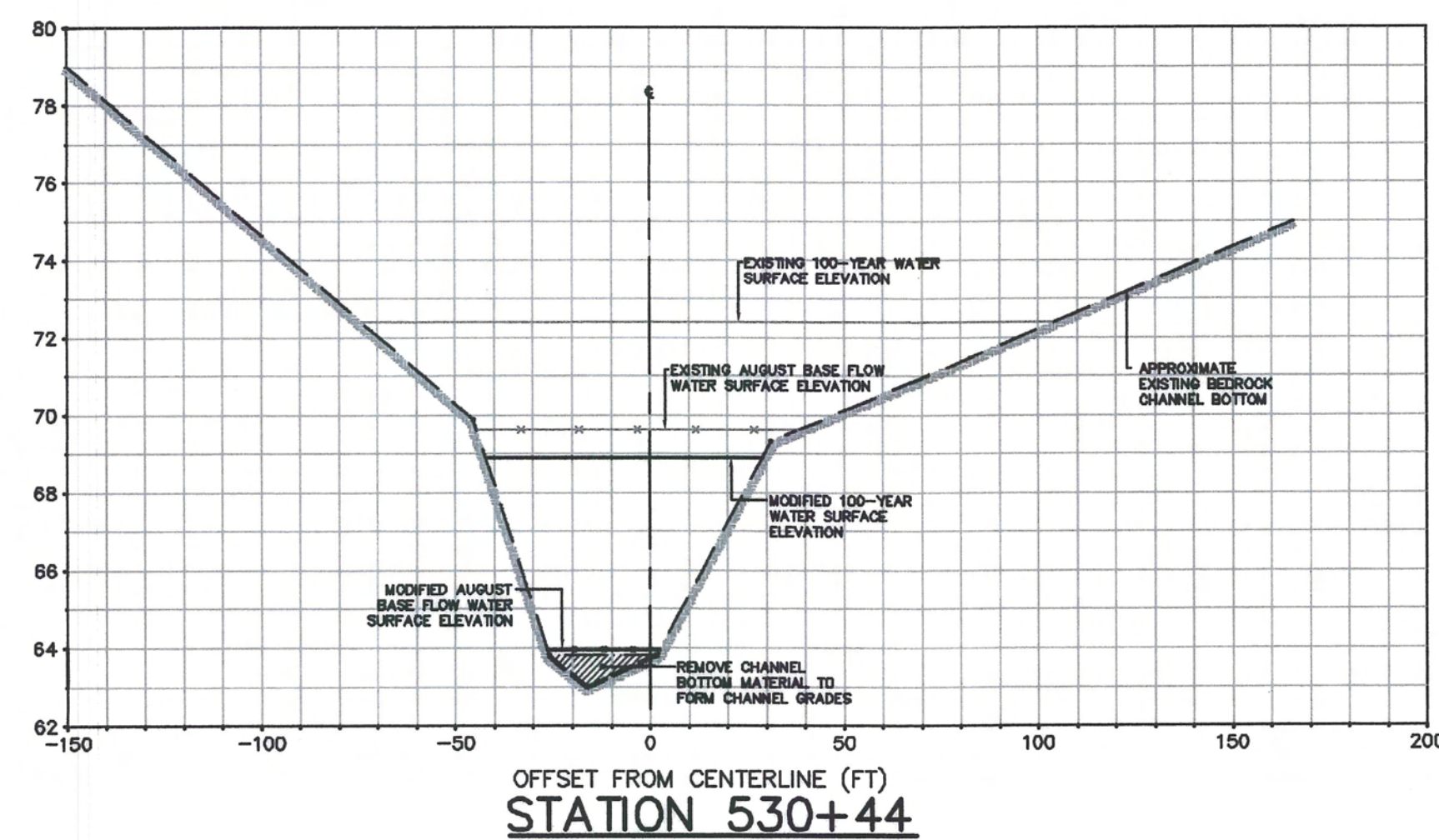
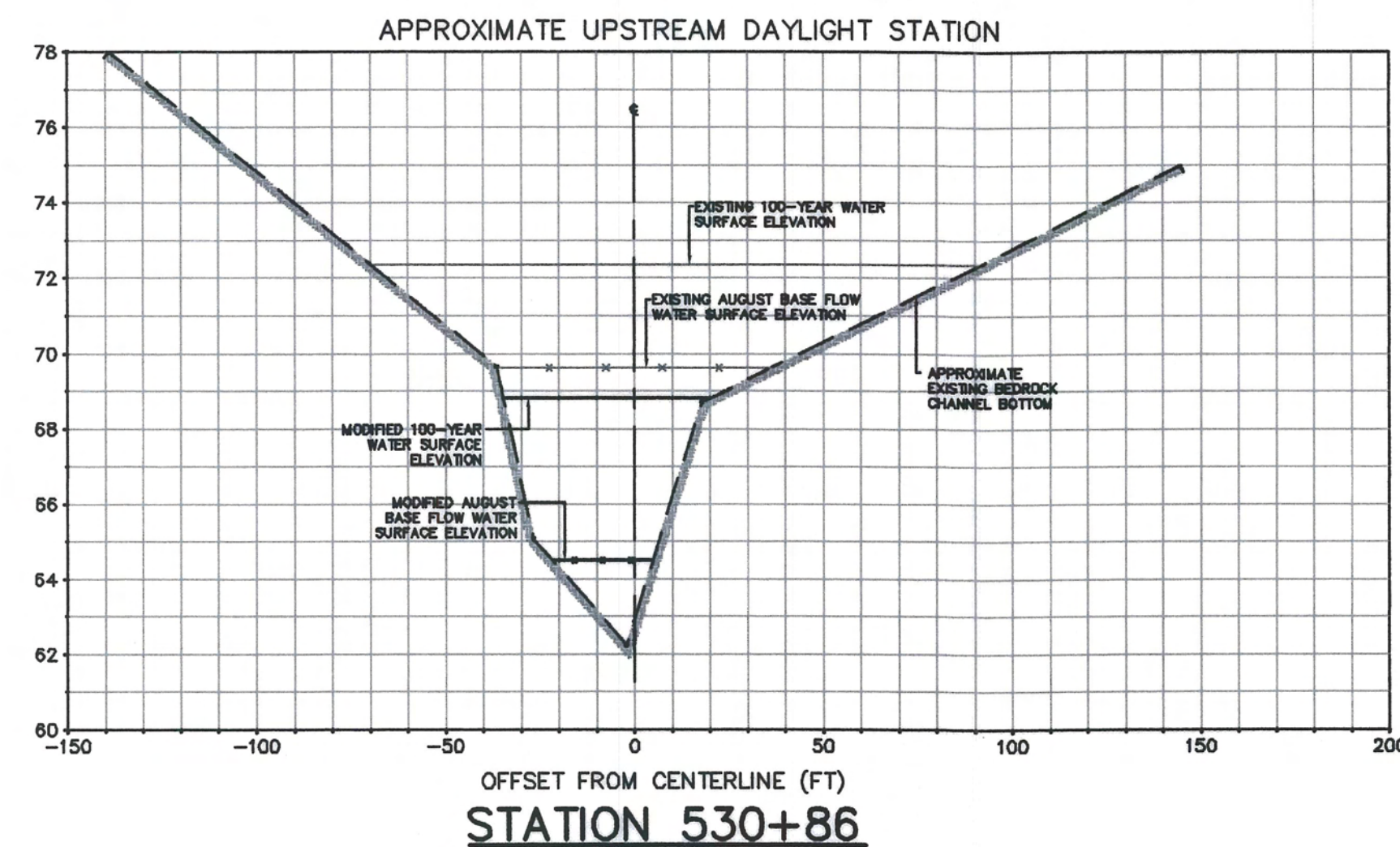
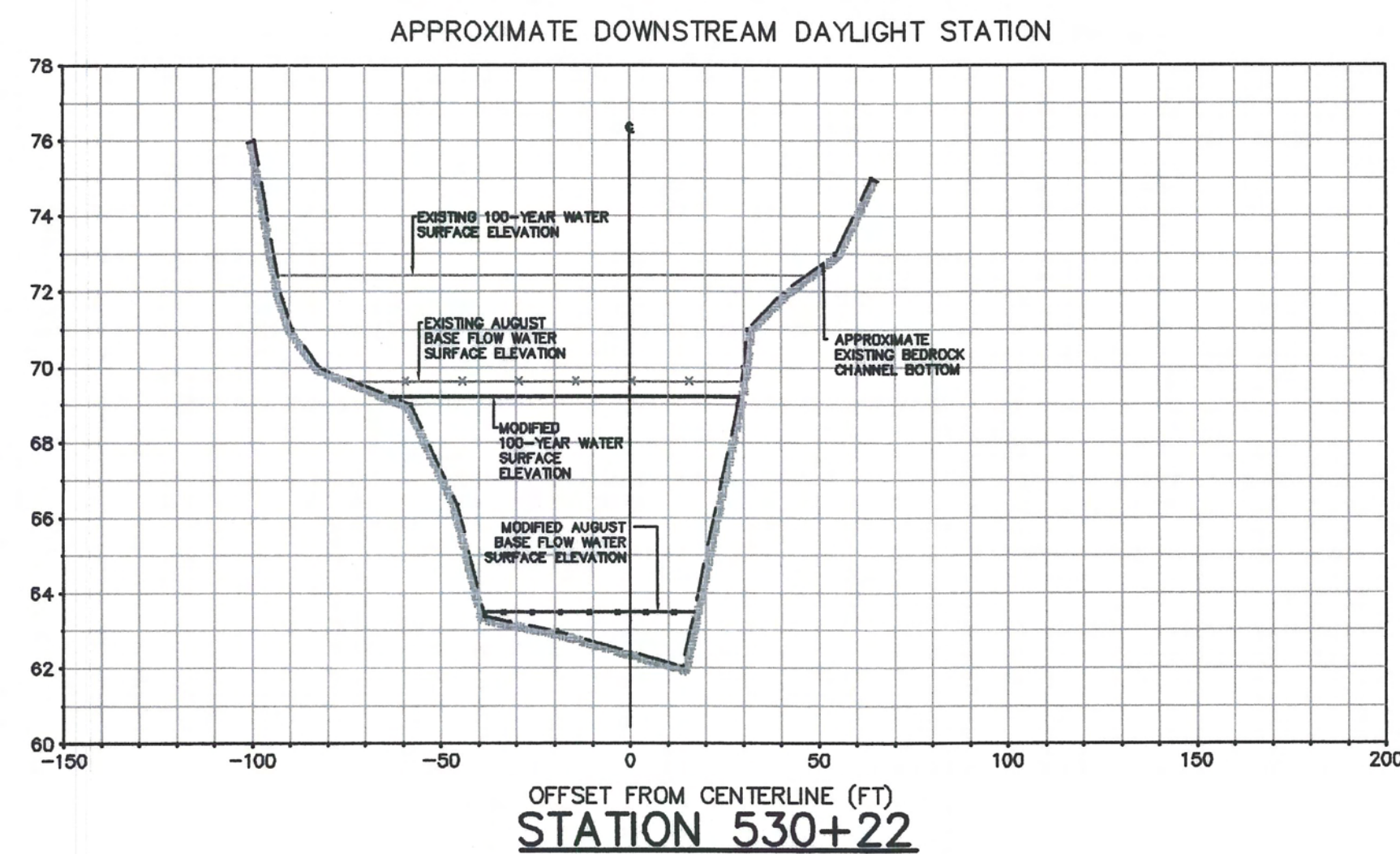
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CHANNEL EXCAVATION CROSS SECTIONS  
SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE  
SHANNOCK VILLAGE RHODE ISLAND

PROJ. No.: 20080877.A10  
DATE: JULY 2009

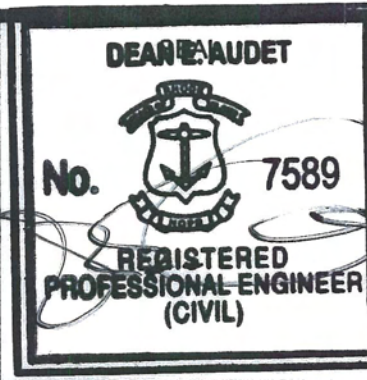




CHANNEL EXCAVATION AREA 'B'

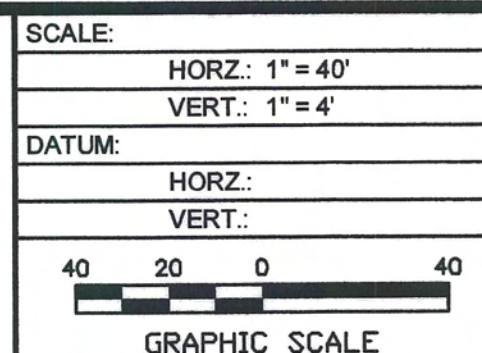
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SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE

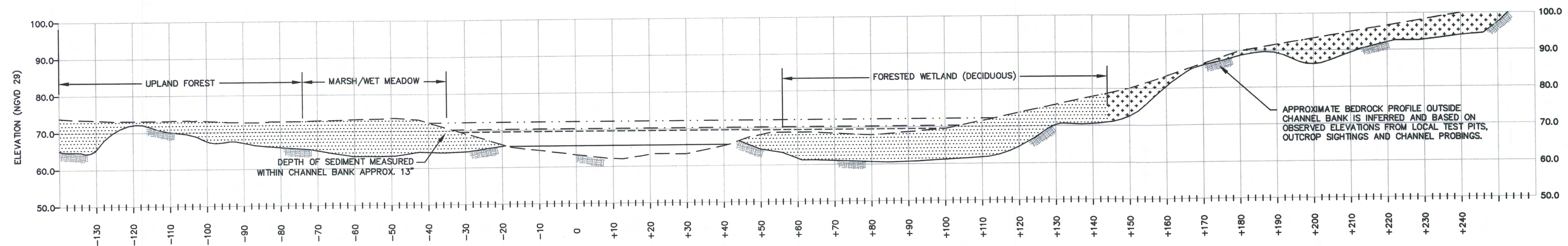
SHANNOCK VILLAGE RHODE ISLAND

PROJ. No.: 20080877A10  
DATE: JULY 2008

**C-311**

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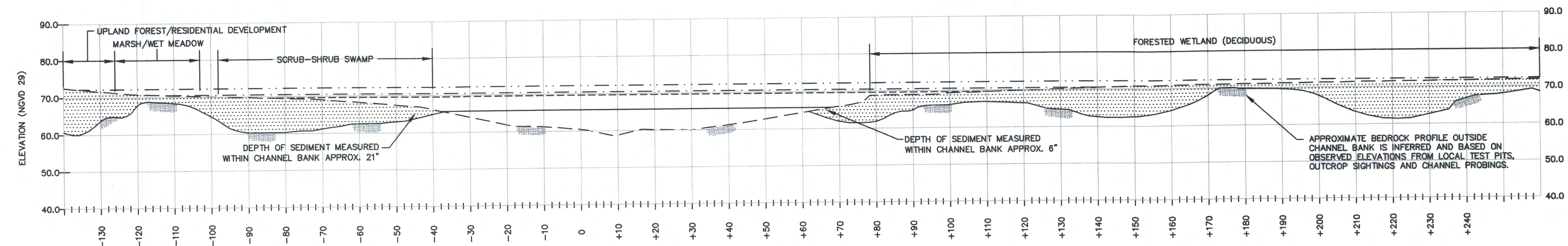




**STATION 531+55**  
**WETLAND RESOURCE AND SOIL/SEDIMENT CROSS-SECTION**

**LEGEND**

1. EXISTING 100-YR FLOODPLAIN EL. 72.2
2. POST-DAM 100-YR FLOODPLAIN EL. 70.3
3. EXISTING APRIL BASE FLOW WATER SURFACE EL. 69.6
4. POST-DAM REMOVAL APRIL BASE FLOW WATER SURFACE EL. 65.7



**STATION 535+30**  
**WETLAND RESOURCE AND SOIL/SEDIMENT CROSS-SECTION**

**LEGEND**

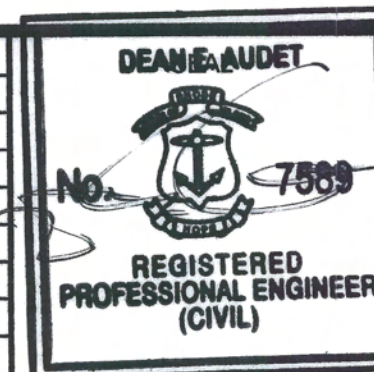
- EXISTING 100-YR FLOOD PLAIN
- POST-DAM 100-YR FLOOD PLAIN
- EXPOSED BEDROCK ON CHANNEL BOTTOM
- EXISTING APRIL BASE FLOW WATER SURFACE (EL. = )
- POST-DAM REMOVAL APRIL BASE FLOW WATER SURFACE (EL. = )
- SOIL - Aa (ADRIAN MUCK)
- SOIL - Sb (SCARBORO MUCKY SANDY LOAM)

**LEGEND**

1. EXISTING 100-YR FLOODPLAIN EL. 72.2
2. POST-DAM 100-YR FLOODPLAIN EL. 70.5
3. EXISTING APRIL BASE FLOW WATER SURFACE EL. 69.6
4. POST-DAM REMOVAL APRIL BASE FLOW WATER SURFACE EL. 65.7

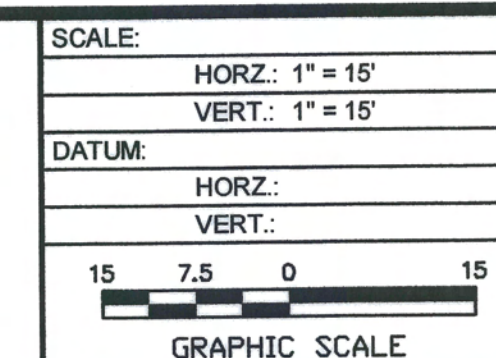
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REVIEWED BY:	DATE
PWM	04/09



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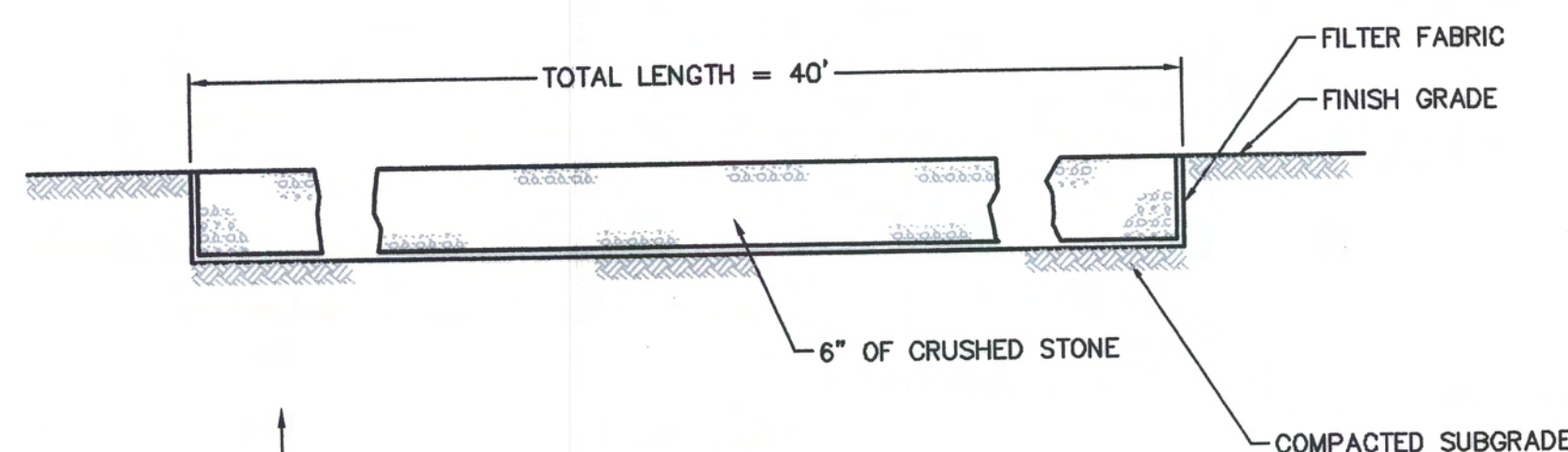
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**SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE**  
SHANNOCK VILLAGE RHODE ISLAND

PROJ. No.: 20080877-A10  
DATE: JULY 2009

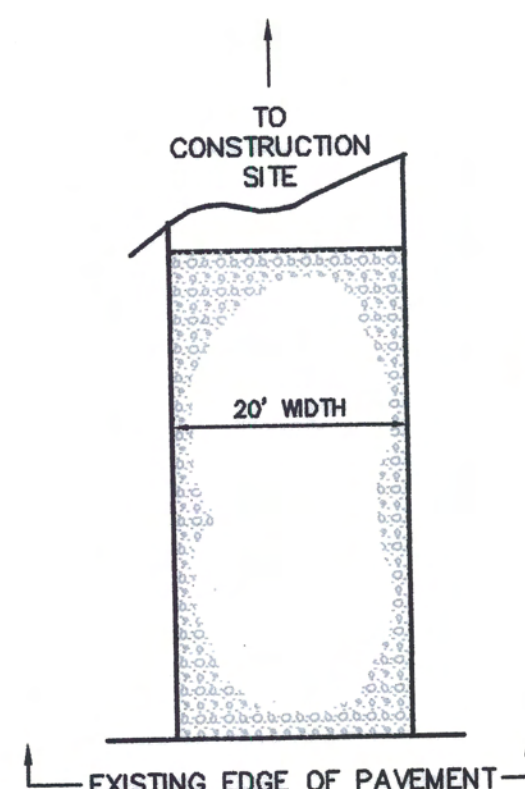
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SECTION



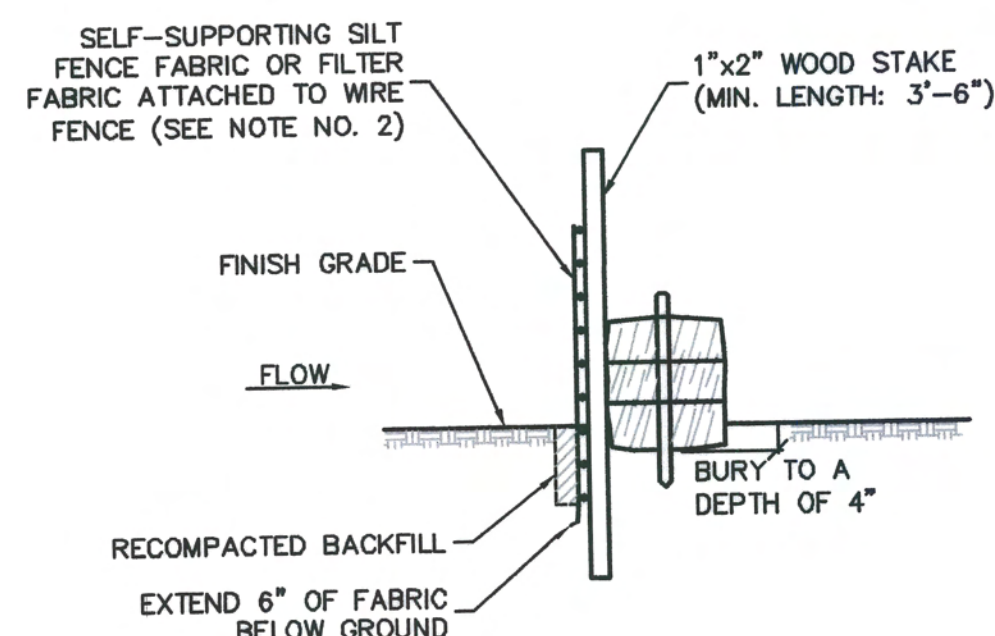
LOCATION PLAN

### ANTI-TRACKING APRON

NOT TO SCALE

#### NOTES:

- 1.) MAINTAIN ANTI-TRACKING PAVEMENT IN GOOD CONDITION THROUGHOUT CONSTRUCTION PERIOD.
- 2.) ADJACENT ROADWAY SHALL BE SWEEP DAILY TO REMOVE ANY MATERIAL THAT MAY BE TRACKED ONTO PAVEMENT.



SECTION

#### NOTE:

WATTLES MAY BE USED IN PLACE OF HAYBALES.

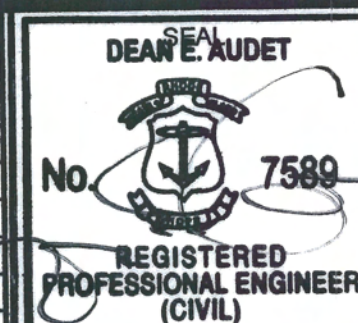
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## EROSION & SEDIMENT CONTROL NOTES

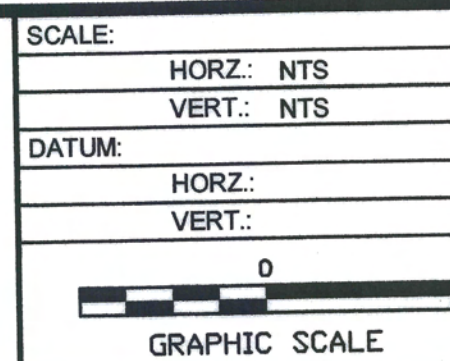
1. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO CONSTRUCTION. GRAVEL CONSTRUCTION ENTRANCE SHALL BE INSTALLED BEFORE CONSTRUCTION TRAFFIC INTO AND OUT OF PROJECT AREA BEGINS. STABILIZATION OF ALL REGRADED AND SOIL STOCKPILE AREAS SHALL BE INITIATED AND MAINTAINED DURING ALL PHASES OF CONSTRUCTION.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. ALL EROSION CONTROL MEASURES ARE TO BE MAINTAINED AND UPGRADED AS REQUIRED TO ACHIEVE PROPER SEDIMENT CONTROL DURING CONSTRUCTION.
3. ADDITIONAL CONTROL MEASURES SHALL BE INSTALLED DURING THE CONSTRUCTION PERIOD, IF DEEMED NECESSARY BY THE ENGINEER.
4. THE DAM REMOVAL SHALL BE PERFORMED WITHIN THE LOW-FLOW TIME FRAME ACCORDING TO JULY 1 - OCTOBER 31.
5. SEEDING MIXTURE FOR BANK STABILIZATION UPLAND AREAS SHALL BE SEASONALLY FLOODED WILDLIFE FOOD SEED MIX.  
SEED TO BE APPLIED AT A RATE OF 16 LBS. PER ACRE.  
PLANTING SEASONS SHALL BE APRIL 1 TO MAY 31 AND AUGUST 15 TO OCTOBER 15. AFTER OCTOBER 15, AREAS WILL BE STABILIZED WITH HAYBALE CHECK, FILTER FABRIC, OR WOODCHIP MULCH, AS REQUIRED, TO CONTROL EROSION.
6. UPLAND AREAS TO BE LEFT BARE FOR LONGER THAN 14 DAYS BEFORE FINISHED GRADING AND SEEDING IS ACHIEVED SHALL RECEIVE A TEMPORARY SEEDING OF PERENNIAL RYEGRASS APPLIED TO A RATE OF 2 LBS./1,000 SQ. FT. AT A DEPTH OF 1/2 INCH.
7. THE INSTALLATION AND MAINTENANCE OF EROSION CONTROL DEVICES IS THE RESPONSIBILITY OF THE CONTRACTOR. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE PLAN, OR AS DICTATED BY THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT. ALL EROSION CONTROL DEVICES SHALL BE MAINTAINED IN EFFECTIVE CONDITION DURING CONSTRUCTION.
8. THE CONTRACTOR SHALL USE THE LATEST EDITION OF THE "STATE OF RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" AS A GUIDE IN CONSTRUCTING THE EROSION AND SEDIMENT CONTROLS INDICATED ON THE PLANS. ALL EROSION AND SEDIMENT CONTROL MEASURES OR WORKS AND REHABILITATION MEASURES MUST CONFORM TO OR EXCEED THE SPECIFICATIONS OR STANDARDS SET OUT IN THIS HANDBOOK.
9. THE CONTRACTOR IS RESPONSIBLE FOR THE TIMELY INSTALLATION, INSPECTION, MAINTENANCE, AND/OR REPLACEMENT OF ALL TEMPORARY AND PERMANENT EROSION CONTROL DEVICES TO ENSURE PROPER OPERATION THROUGHOUT THE LIFE OF THE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF PERMANENT MEASURES UNTIL CONSTRUCTION OF THE PROJECT IS COMPLETED OR UNTIL IT IS ACCEPTED BY THE OWNER. THE OWNER IS RESPONSIBLE THEREAFTER.
10. THE CONTRACTOR SHALL INSTALL ALL SILT FENCES AS SHOWN ON THE PLANS. HAYBALES SHALL BE INSTALLED AROUND SOIL OR SEDIMENT STOCKPILE AREAS.
13. INSPECTION OF SILT FENCE HAYBALES ENCOMPASSING SOIL STOCKPILE AREAS SHALL BE MADE AFTER EACH STORM EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED. ACCUMULATED SEDIMENT BEHIND THE SILT FENCE MUST BE REMOVED PERIODICALLY.
14. THE CONTRACTOR SHALL RESTORE DISTURBED AREAS AS CLOSELY AS POSSIBLE. AREAS DAMAGED DURING CONSTRUCTION SHALL BE RESEED OR OTHERWISE RESTORED TO THEIR ORIGINAL STATE.
15. **WASTE DISPOSAL:** MATERIALS WHICH COULD BE A POTENTIAL SOURCE OF STORMWATER POLLUTION SUCH AS GASOLINE, DIESEL FUEL, HYDRAULIC OIL, ETC., SHALL BE STORED AT THE END OF EACH DAY IN A LOCKED STORAGE TRAILER OR COVERED LOCATION AND TAKEN OFF-SITE AND PROPERLY DISPOSED OF. ALL TYPES OF WASTE GENERATED AT THIS SITE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH STATE LAW AND/OR REGULATIONS.  
IN ADDITION, CONSTRUCTION WASTE MUST BE PROPERLY DISPOSED OF IN ORDER TO AVOID EXPOSURE TO PRECIPITATION AT THE END OF EACH WORKING DAY.
16. **GOOD HOUSEKEEPING:** THE CONTRACTOR SHALL PROVIDE FOR THE MINIMIZATION OF EXPOSURE OF CONSTRUCTION DEBRIS (INCLUDING, BUT NOT LIMITED TO, INSULATION, WIRING, PAINTS AND PAINT CANS, SOLVENTS, WALL BOARD, ETC.) TO PRECIPITATION BY MEANS OF DISPOSAL AND/OR PROPER SHELTER OR COVER.
17. **LANDSCAPE AREA:** ALL UNPAVED AREAS DISTURBED BY CONSTRUCTION SHALL RECEIVE SIX INCHES OF TOPSOIL, SEED, MULCH, AND BE WATERED UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.
18. **SPILL PROTECTION AND RESPONSE:** THE CONTRACTOR SHALL FUEL VEHICLES AND EQUIPMENT IN THE AREAS AWAY FROM THE WETLAND AND DRAINAGE SYSTEM. BOOMS AND OTHER CONTAINMENT DEVICES SHALL BE PROVIDED BY THE CONTRACTOR IN AREAS WHERE SPILLS MAY OCCUR. THE CONTRACTOR SHALL NOTIFY R.I.D.E.M. IMMEDIATELY OF ANY SPILLS.
19. **DEWATERING:** DEWATERING SHALL BE CONDUCTED IN ACCORDANCE WITH RHODE ISLAND EROSION AND SEDIMENT CONTROL HANDBOOK. COFFERDAM MATERIAL SHALL BE REMOVED AT THE COMPLETION OF CONSTRUCTION.
20. SEDIMENT REMOVED FROM CONTROL STRUCTURES SHALL BE DISPOSED OF. ALL HAYBALES OR SILT FENCE RETAINING SEDIMENT OVER 1/2 THEIR HEIGHT SHALL HAVE THE SEDIMENT REMOVED AND ALL DAMAGED EROSION CONTROL STRUCTURES REMOVED AND REPLACED.
21. CONTRACTOR SHALL BE ASSIGNED THE RESPONSIBILITY FOR IMPLEMENTING THIS EROSION AND SEDIMENT CONTROL PLAN. THIS RESPONSIBILITY INCLUDES THE INSTALLATION AND MAINTENANCE OF CONTROL MEASURES, INFORMING ALL PARTIES ENGAGED ON THE CONSTRUCTION SITE OF THE REQUIREMENTS AND OBJECTIVES OF THE PLAN, AND NOTIFYING THE OWNER OF ANY TRANSFER OF THIS RESPONSIBILITY.
22. THE CONTRACTOR SHALL VERIFY IN THE FIELD THAT THE CONTROLS REQUIRED BY THIS PLAN ARE PROPERLY INSTALLED, SHALL MAKE INSPECTION OF SUCH FACILITIES NOT LESS FREQUENTLY THAN WEEKLY AND WITHIN FORTY-EIGHT (48) HOURS OF ANY SIGNIFICANT RAINFALL, AND SHALL INFORM THE OWNER NOT LESS FREQUENTLY THAN WEEKLY AND OF OBSERVATIONS, MAINTENANCE, AND CORRECTIVE ACTIVITIES UNDERTAKEN.

		PROJ. MANAGER: NSW	
		CHIEF DESIGNER: AEH	
		REVIEWED BY: PWM	DATE: 04/09
1.	8/27/09	REVISED PER RIDEM COMMENTS	AEH
No.	DATE	DESCRIPTION	BY
REVISIONS			



SEAL

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
APPROVED WITH CONDITIONS AS SPECIFIED IN  
THE LETTER OF APPROVAL DATED September 22, 2009  
FILE # ADA 09-001. NO CHANGES ALLOWED  
WITHOUT PRIOR APPROVAL. APPROVED PLANS MUST  
BE AT CONSTRUCTION SITE. *Small signature*



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WOOD-PAWCATUCK WATERSHED ASSOCIATION  
EROSION & SEDIMENT CONTROL  
DETAILS  
SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE  
SHANNOCK VILLAGE RHODE ISLAND

PROJ. No.: 20080877A10  
DATE: JULY 2009

**C-501**  
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File Path: F:\dwg\20080877\A10\Plan\080877A10DET001.dwg Layout: DET-C-502 Tue, Sep 01, 2009 - 11:29 AM User: stons

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CHANNEL EXCAVATION AND GRADE CONTROL WEIR STATION LAYOUT TABLE						
GRADE CONTROL WEIR						
Station (2)	LTOV Elev.	LOB Elev.	Center Elev.	ROB Elev.	RTOV Elev.	CL Offset (1)
528+19	62.0'	60.75'	59.0'	60.0'	62.0'	+5
528+00	59.9'	58.65'	56.9'	57.9'	59.9'	-2
527+76	58.6'	57.35'	55.6'	56.6'	58.6'	-10
CHANNEL EXCAVATION AREAS						
Station (2)	LTOC Elev.	LOB Elev.	Center Elev.	ROB Elev.	RTOC Elev.	CL Offset (1)
529+22	64.7'	63.45'	61.7'	62.7'	64.7'	+2
529+40	65.1'	63.85'	62.1'	63.1'	65.1'	+5
529+50	65.1'	63.85'	62.1'	63.1'	65.1'	+8
530+44	N/A	N/A	63.0'	N/A	N/A	0

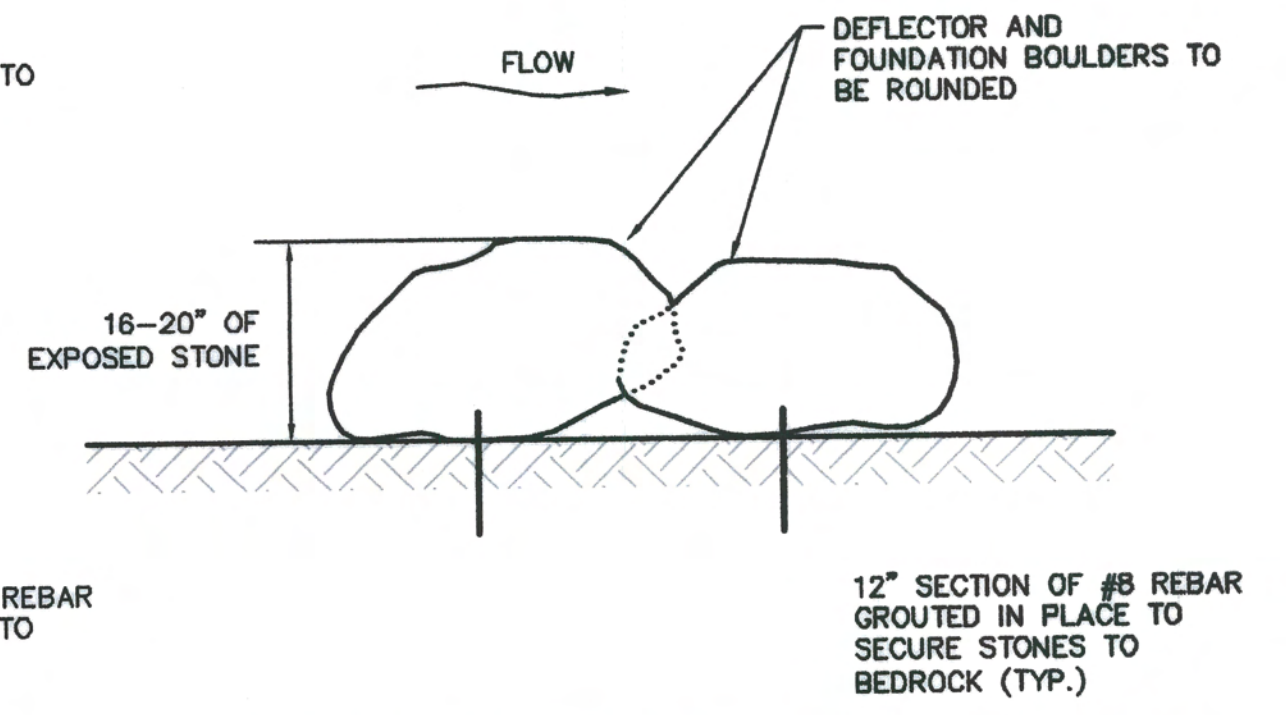
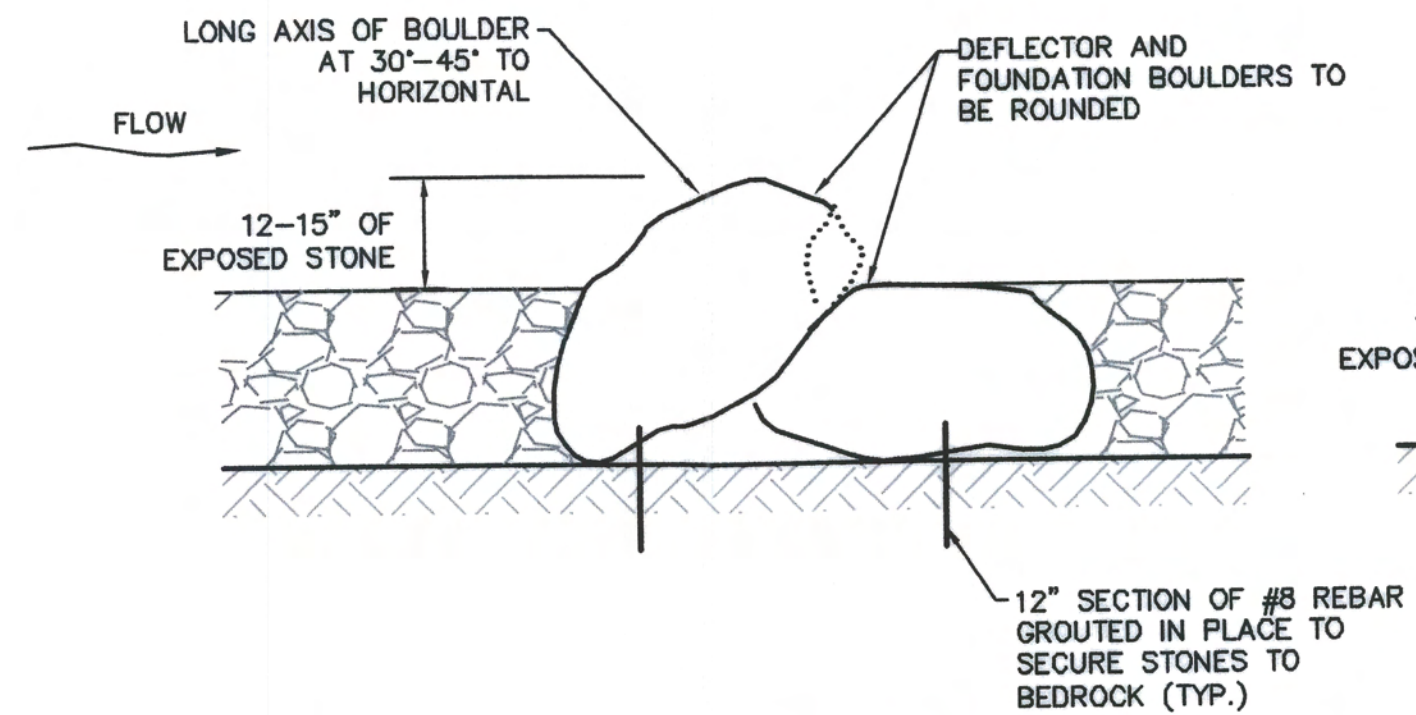
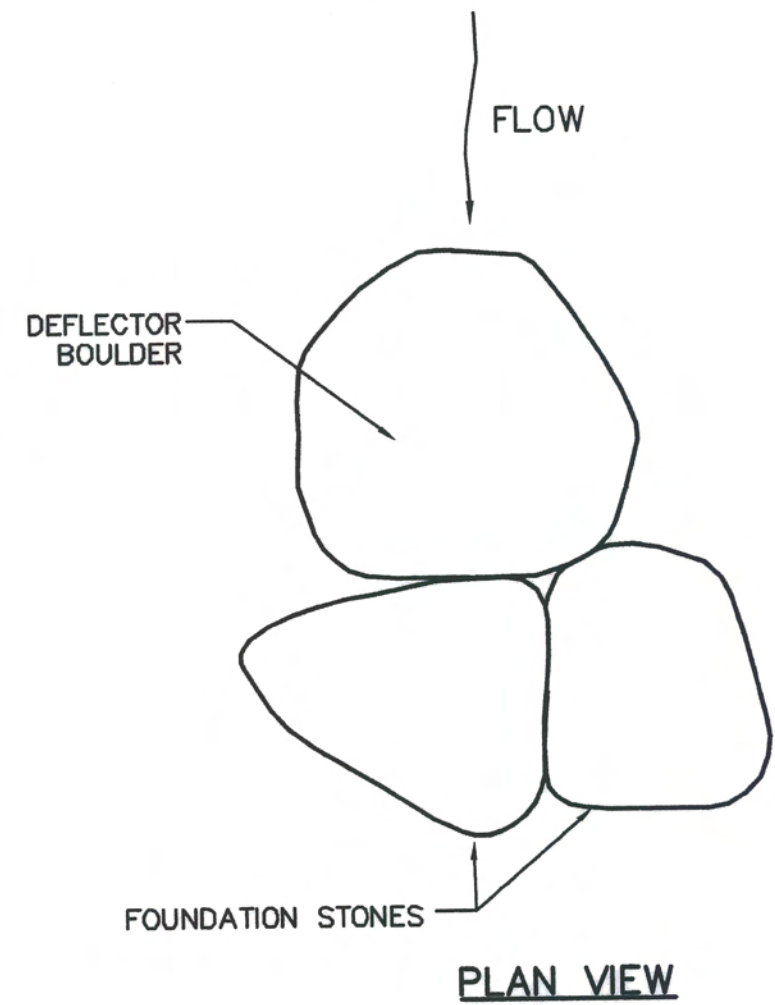
LTOV = Left top of weir; LTOC=Left top of channel  
LOB = Left Overbank  
ROB = Right Overbank  
RTOV = Right top of weir; RTOC=Right top of channel  
CL = Horizontal offset of channel bottom from centerline

(1) Offset right and left are established facing downstream and centered on the baseline of construction. Negative (-) offset is to the left and positive (+) offset is to the right.  
(2) Stations are based on HEC-RAS data. Actual station may vary based on field conditions

NOTES:  
Bedrock chipping transition upstream of station 529+50 and downstream of station 529+22 must occur over 13' and 12', respectively, and be smooth without any change in elevation greater than 6". Transition between stations will be gradual without any change in elevation greater than 6".  
Bedrock chipping at station 530+44 is in the shape of a shallow "V". The center elevation shall be achieved and then tapered out toward each bank to meet 63.8 at offset -10 and 63.8 at offset +18  
Bedrock chipping transition upstream and downstream of station 530+44 must occur over 10' in both directions and be smooth without any change in elevation greater than 6".

PAWCATUCK RIVER BASEFLOW AT LOWER SHANNOCK FALLS DAM		
NON-EXCEEDANCE PROBABILITY	Q(cfs)	
10%	85.2	
50%	175.1	
90%	356.5	

NOTE:  
BASEFLOW SEPARATION WAS CONDUCTED TO DETERMINE THE 10%, 50%, AND 90% NON EXCEEDENCE FLOWS DURING THE MIGRATION SEASONS OF TARGET SPECIES FROM APRIL 1 THROUGH JULY 1. BASEFLOWS WERE DERIVED FROM AN ANALYSIS OF THE USGS GAGE (01175000) ON THE PAWCATUCK RIVER AT WOOD RIVER JUNCTION, RHODE ISLAND (100 SQUARE MILES), AND SCALED DOWN BASED ON THE PROJECT SITE'S WATERSHED AREA (APPROXIMATELY 85 SQUARE MILES).



SECTION OF FOUNDATION STONES ON SEDIMENT

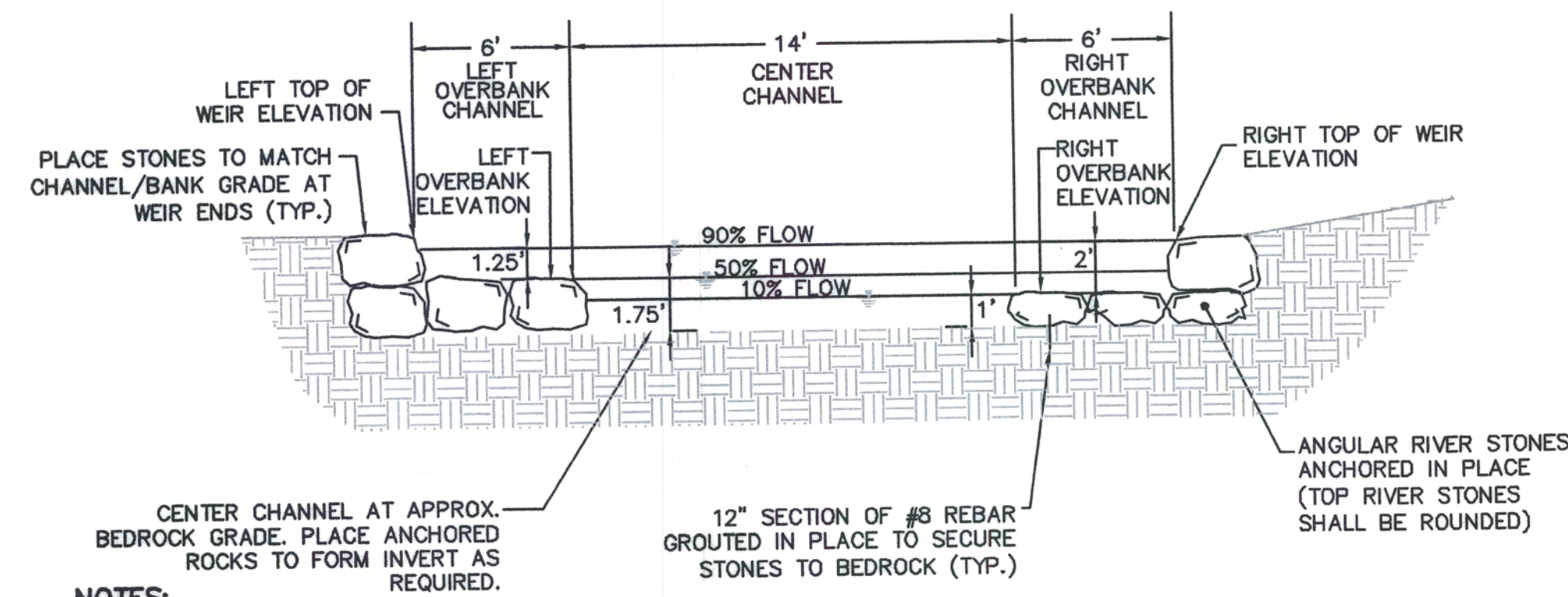
SECTION OF FOUNDATION STONES ON BEDROCK

NOTE:

- ALL BOULDERS SHALL BE APPROXIMATELY 3.5' LONG X 2.5' WIDE X 2' HIGH.

TYPICAL BOULDER CLUSTER

NOT TO SCALE

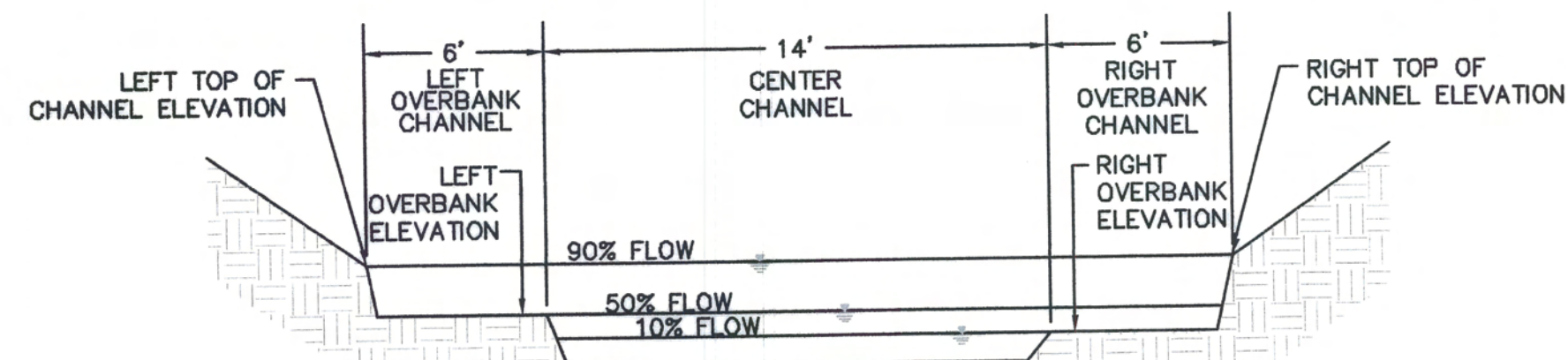


NOTES:

- SECTION IS DEPICTED FACING DOWNSTREAM.
- CHUNK STONES SHALL BE USED TO FILL GAPS IN PLACED ROCKS TO MINIMIZE LEAKAGE.
- WHERE EXISTING SEDIMENT DEPTHS IN THE CHANNEL EXCEED 24", EXCAVATE SEDIMENT AND PIN FOUNDATION STONES.
- WHERE EXISTING SEDIMENT DEPTHS IN THE CHANNEL ARE LESS THAN 24", EXCAVATE SEDIMENT AND SET FOUNDATION STONES ON FIRM SUBGRADE.
- RIVER AND FOUNDATION STONES SHALL BE APPROXIMATELY 3.5' LONG X 2.5' WIDE X 2' HIGH. STONES SHALL BE SIZED TO PROVIDE REQUIRED CHANNEL INVERT AND OVERBANK ELEVATIONS RELATIVE TO EXPOSED BEDROCK GRADE.
- JOINTS OF ADJACENT STONES SHALL BE STAGGERED.
- CENTER CHANNEL FOUNDATION AND RIVER STONES NOT SHOWN, BUT MAY BE REQUIRED TO ACHIEVE REQUIRED CENTER CHANNEL ELEVATION, DEPENDING ON EXISTING BEDROCK SURFACE ELEVATION ALONG THE WALL'S PROFILE.
- WIDTH OF GRADE CENTER WEIR SHALL BE AT LEAST TWO STONES WIDE WHERE DIRECTED BY THE ENGINEER TO PROPERLY SUPPORT UPPER STONES AND PREVENT LEAKAGE THROUGH THE WALL.

TYPICAL GRADE CONTROL WEIR SECTION

NOT TO SCALE

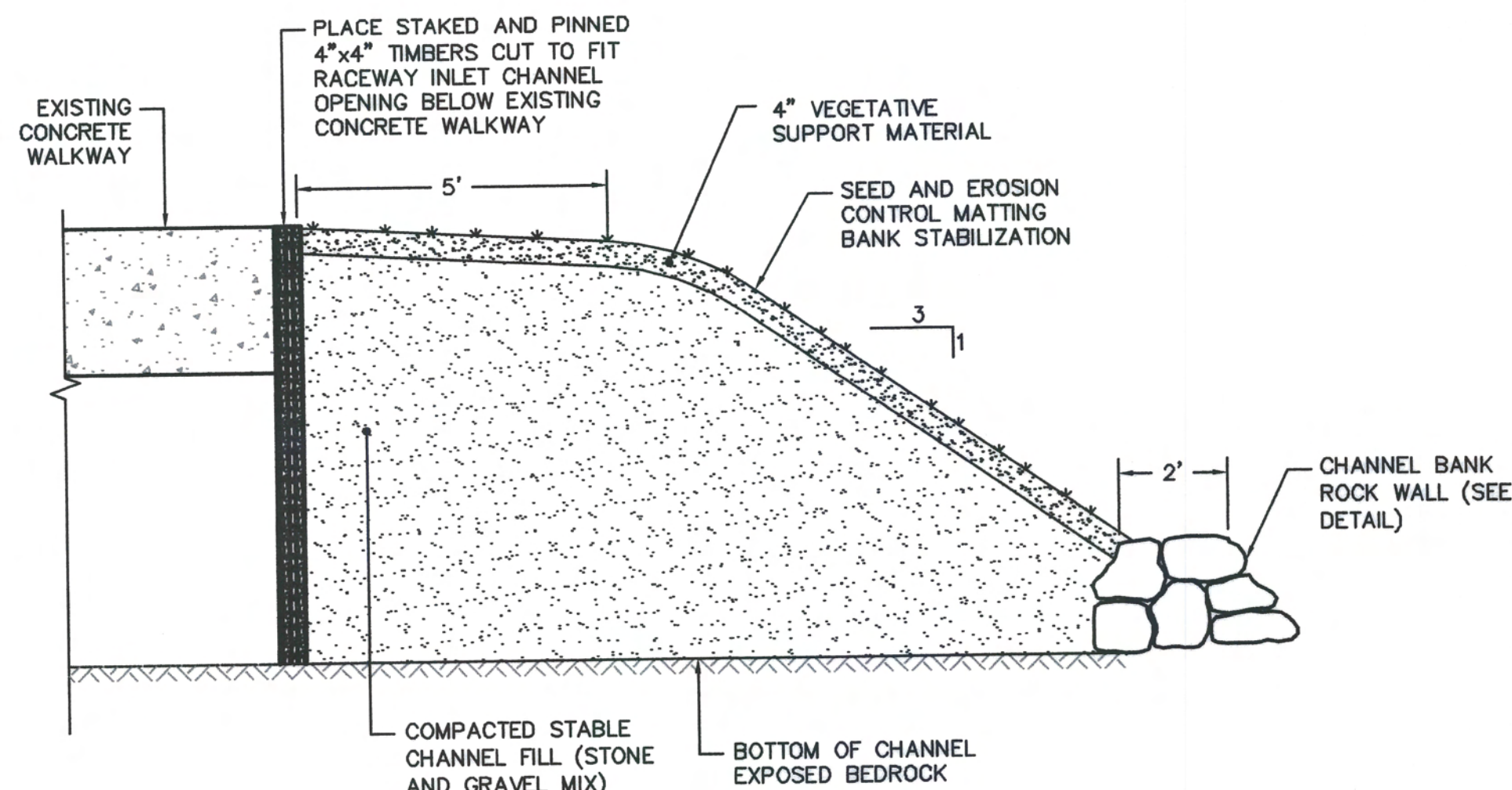


NOTE:

- SECTION IS DEPICTED FACING DOWNSTREAM.

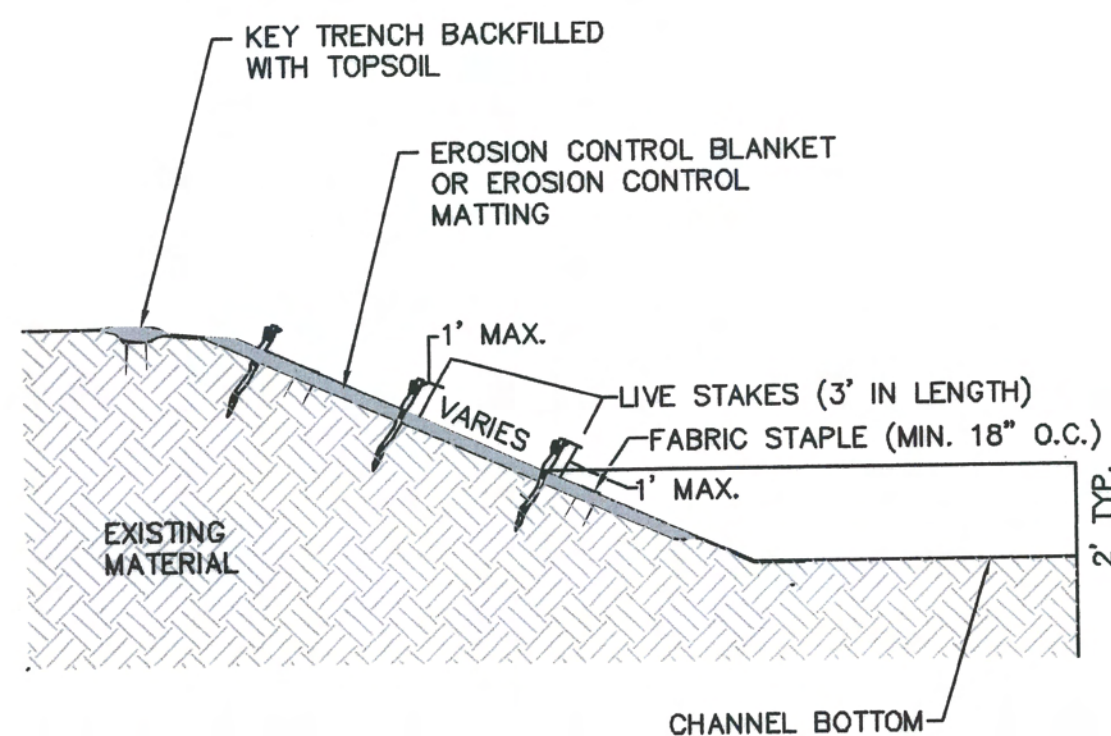
TYPICAL CHANNEL EXCAVATION SECTION

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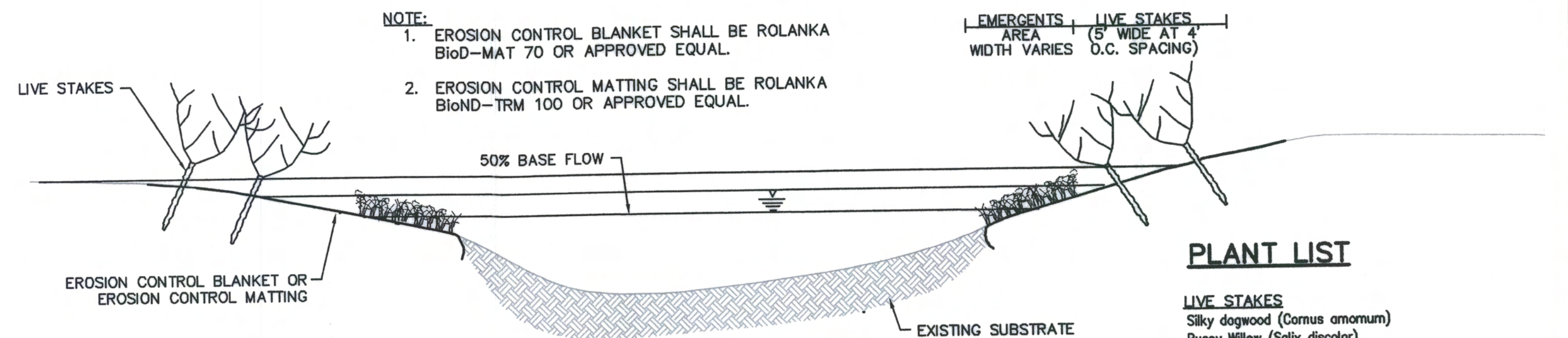
RACEWAY INLET CLOSURE

NOT TO SCALE



TYPICAL LIVE STAKE BANK STABILIZATION CROSS-SECTION

NOT TO SCALE



NOTE:

- EROSION CONTROL BLANKET SHALL BE ROLANKA BioD-MAT 70 OR APPROVED EQUAL.
- EROSION CONTROL MATTING SHALL BE ROLANKA BioD-TRM 100 OR APPROVED EQUAL.

PLANT LIST

**LIVE STAKES**  
Silky dogwood (Cornus amomum)  
Pussy Willow (Salix discolor)  
Red osier dogwood (Cornus sericea)  
Gray dogwood (Cornus racemosa)

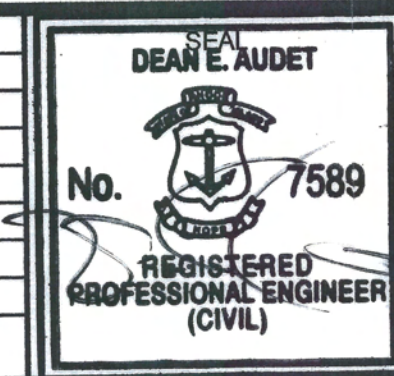
**EMERGENTS / HERB. (PLUGS)**  
Tussock sedge (Carex stricta) 18" o.c.  
Soft rush (Juncus effusus) 24" o.c.  
Black rush (Juncus gerardi) 18" o.c.  
Sturdy bulrush (Scirpus robustus) 12" o.c.  
Purple hairgrass (Muhlenbergia capillaris) 14" o.c.

TYPICAL BANK STABILIZATION PLANTING CROSS-SECTION

NOT TO SCALE

No.	DATE	REVISIONS
1.	8/27/09	REVISED PER RIDEM COMMENTS
No.	DATE	DESCRIPTION

PROJ. MANAGER:	NSW
CHIEF DESIGNER:	AEH
REVIEWED BY:	PWM
DATE	04/09



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DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
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THE LETTER OF APPROVAL DATED September 22, 2009  
FILE #A00A 09-001. NO CHANGES ALLOWED  
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DATUM:	HORZ.: NTS
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CONSTRUCTION DETAILS

SHANNOCK FALLS DAM REMOVAL AND FISH PASSAGE

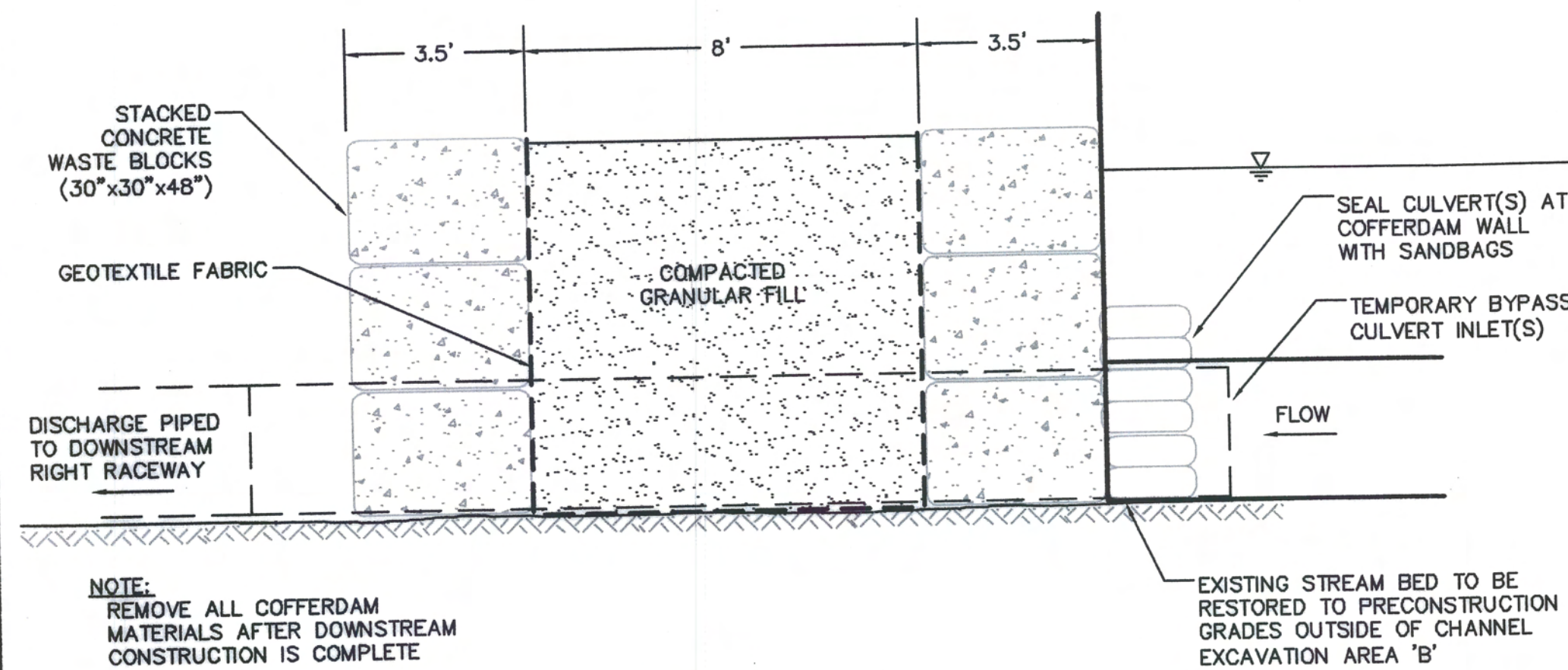
SHANNOCK VILLAGE RHODE ISLAND

PROJ. No.: 20080877A10  
DATE: JULY 2009

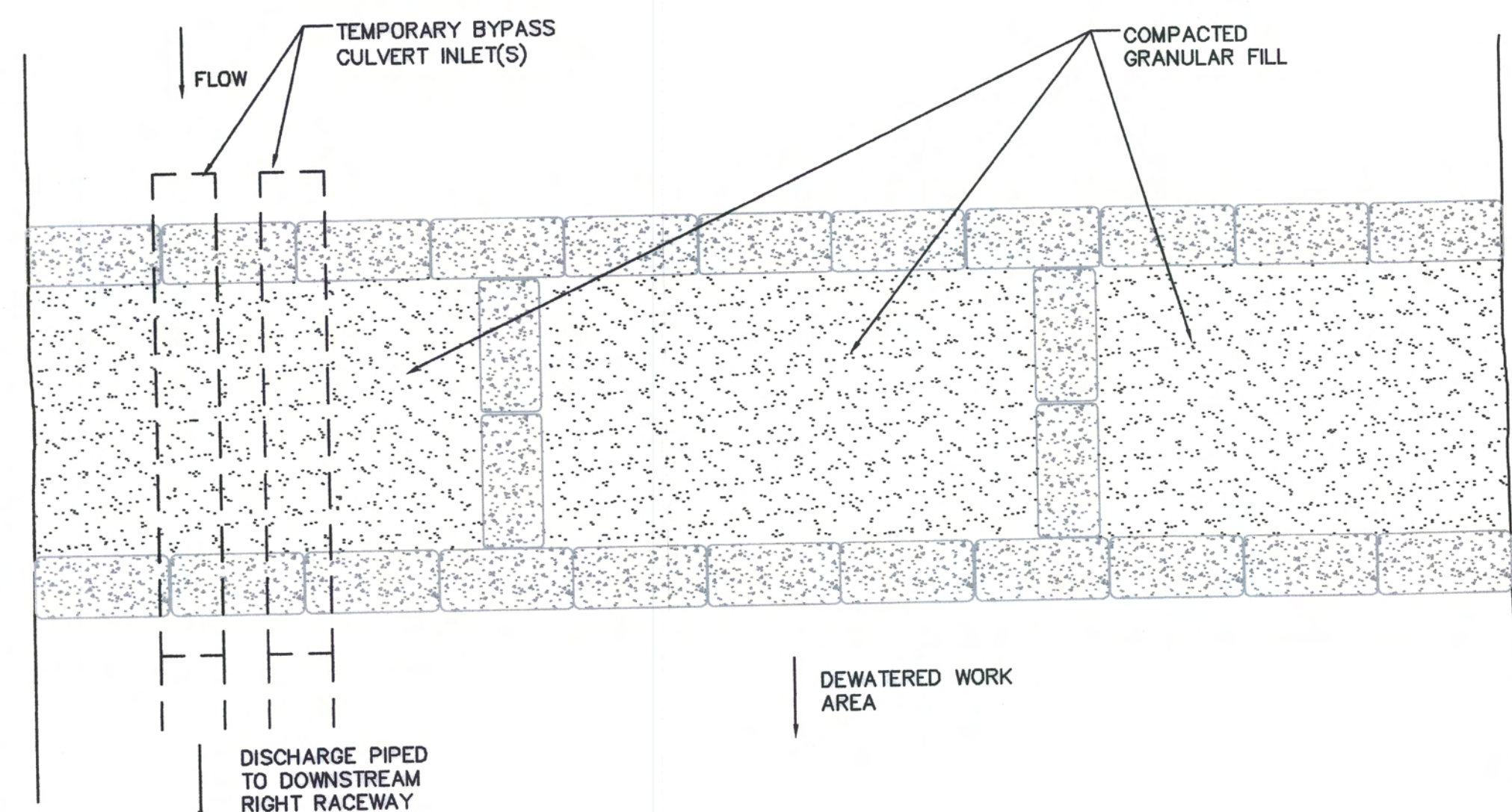
**C-502**

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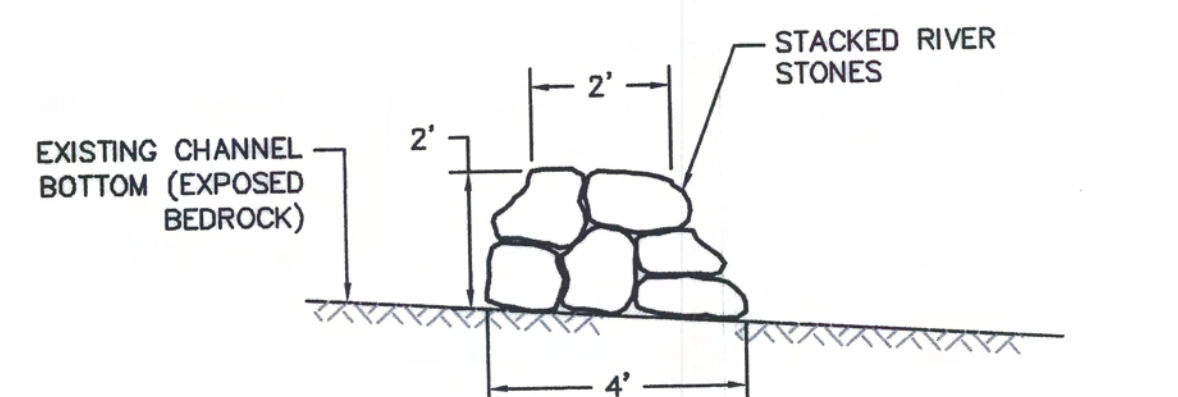




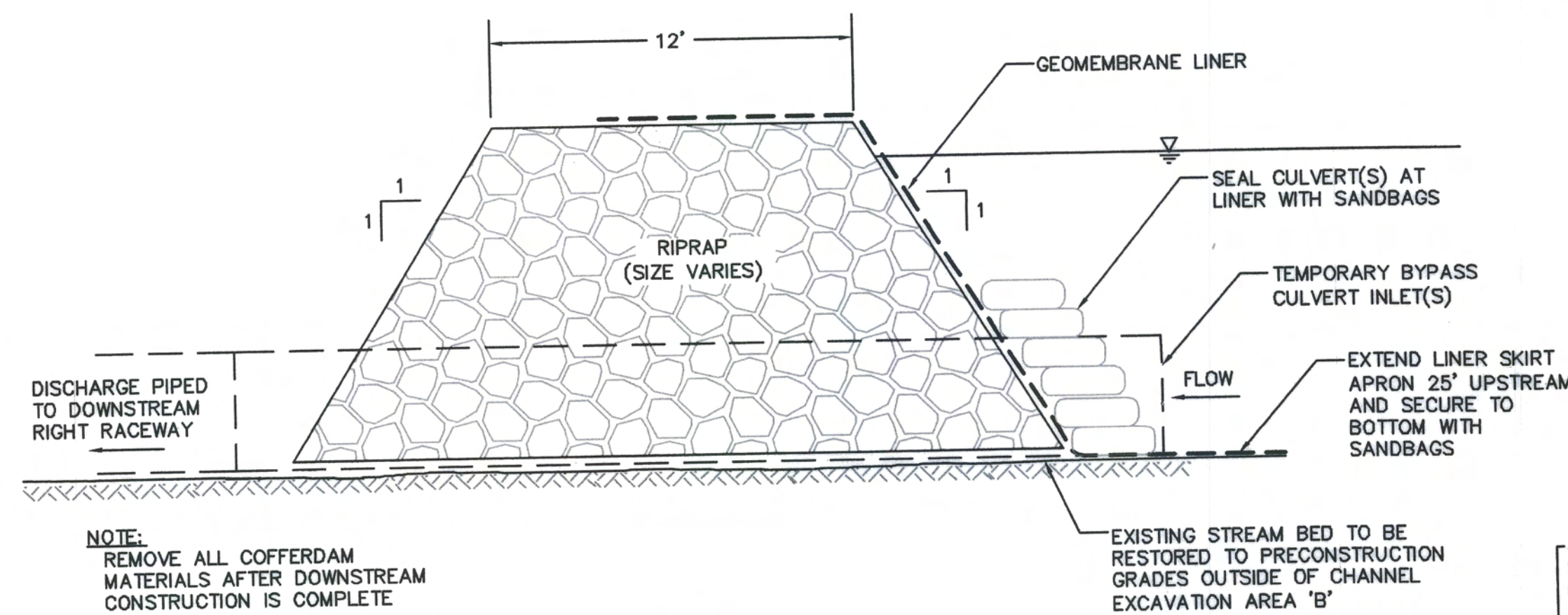
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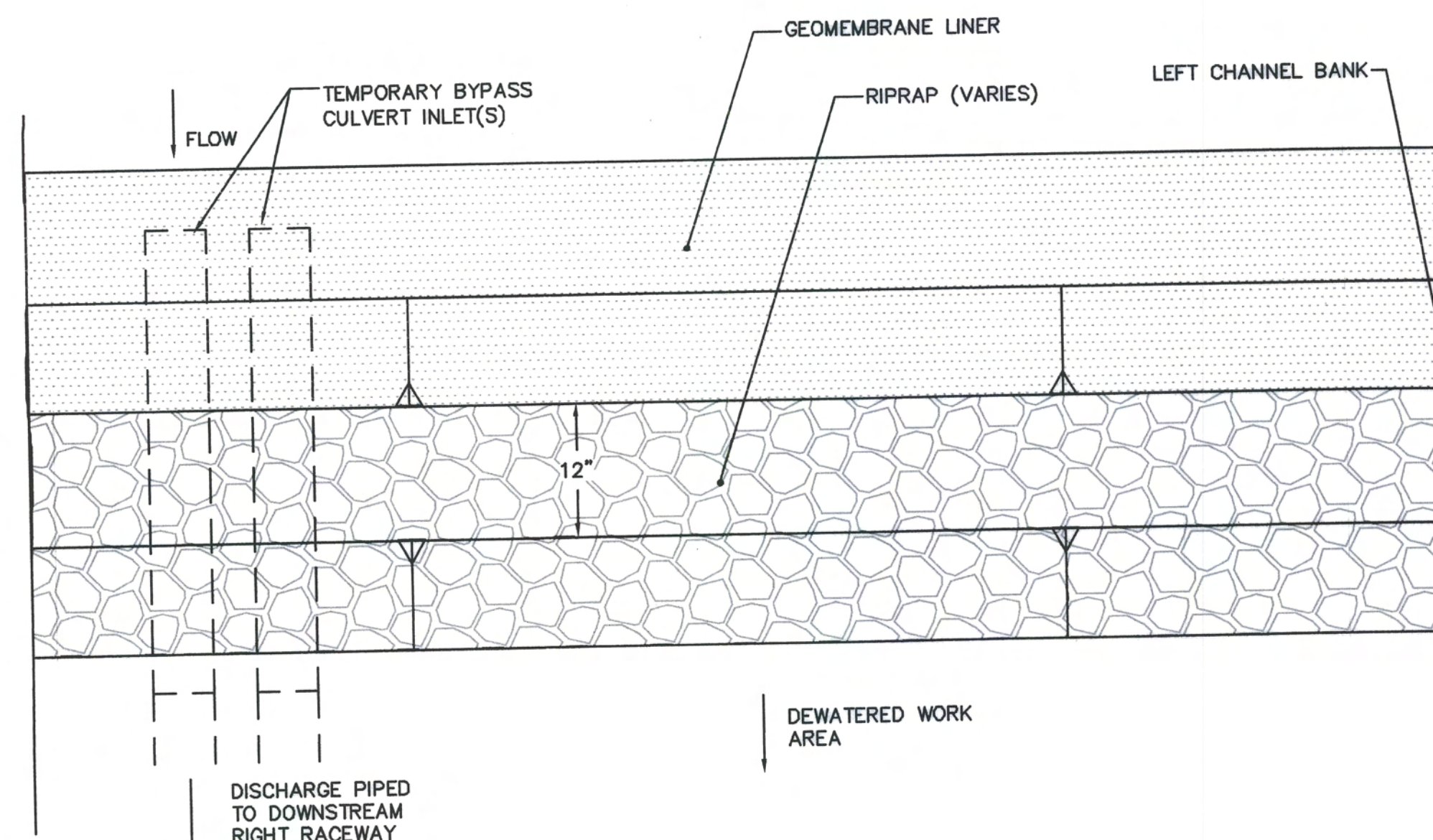
PLAN  
NOT TO SCALE  
**TEMPORARY CONCRETE WASTE BLOCK COFFERDAM**  
NOT TO SCALE



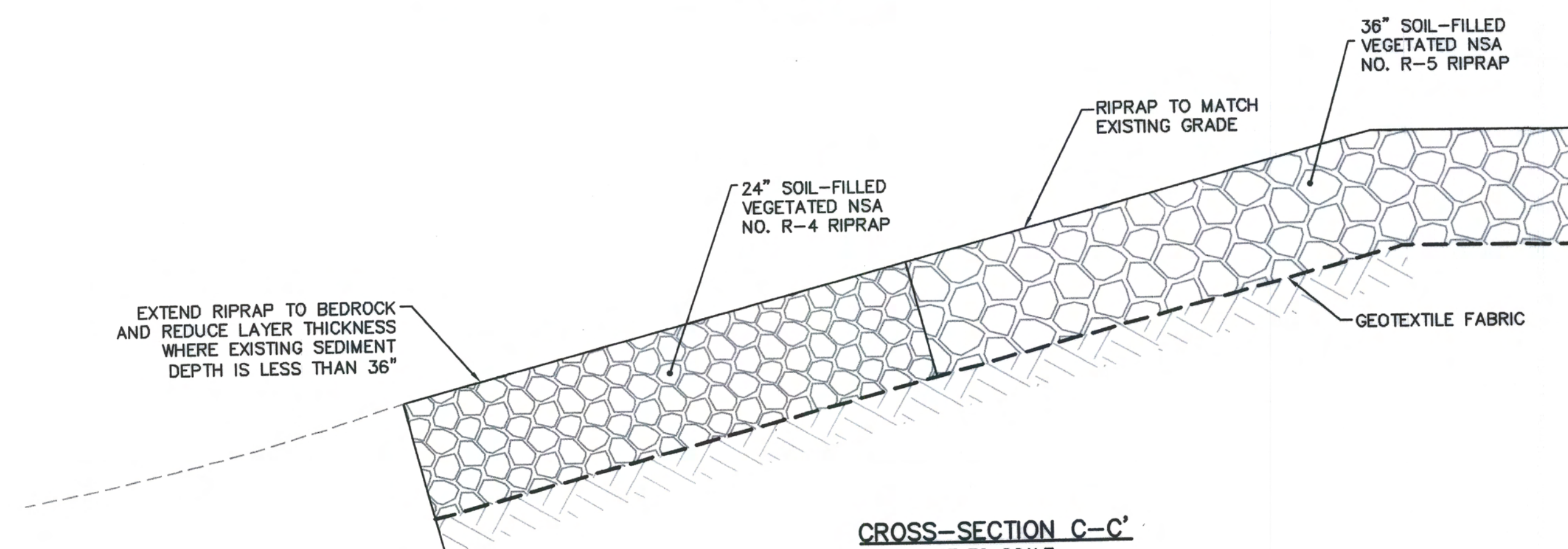
TYPICAL CHANNEL BANK ROCK WALL  
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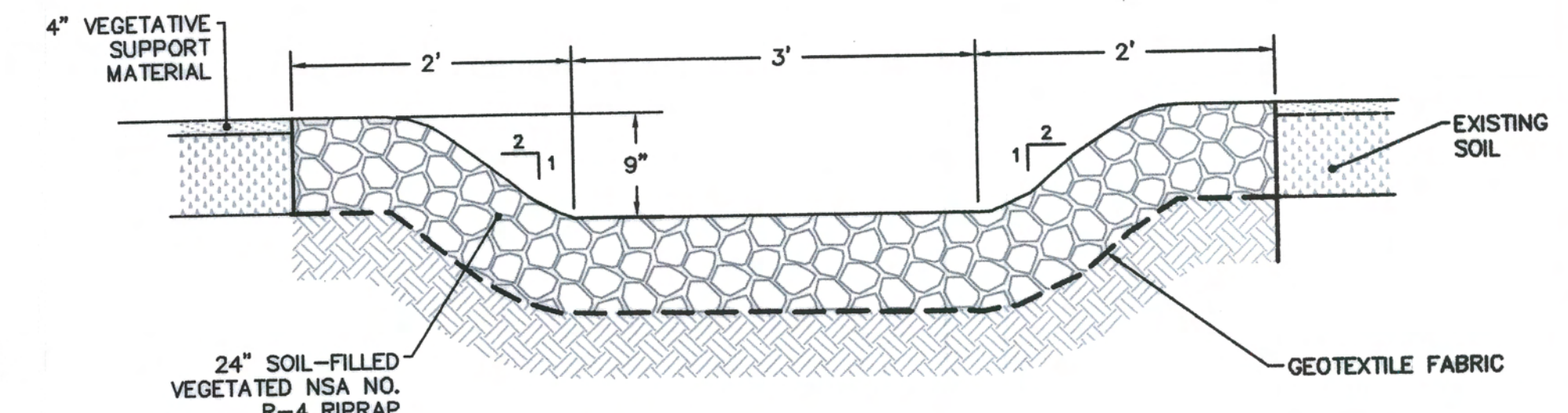
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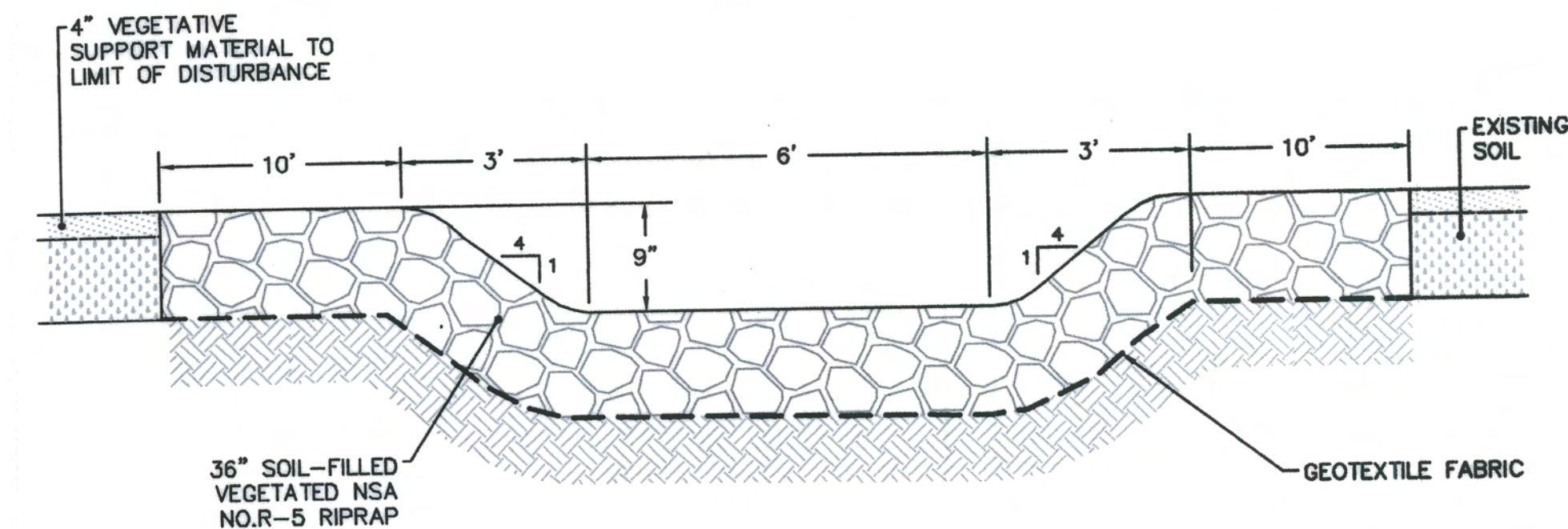
PLAN  
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**ALTERNATE TEMPORARY RIPRAP COFFERDAM**  
NOT TO SCALE



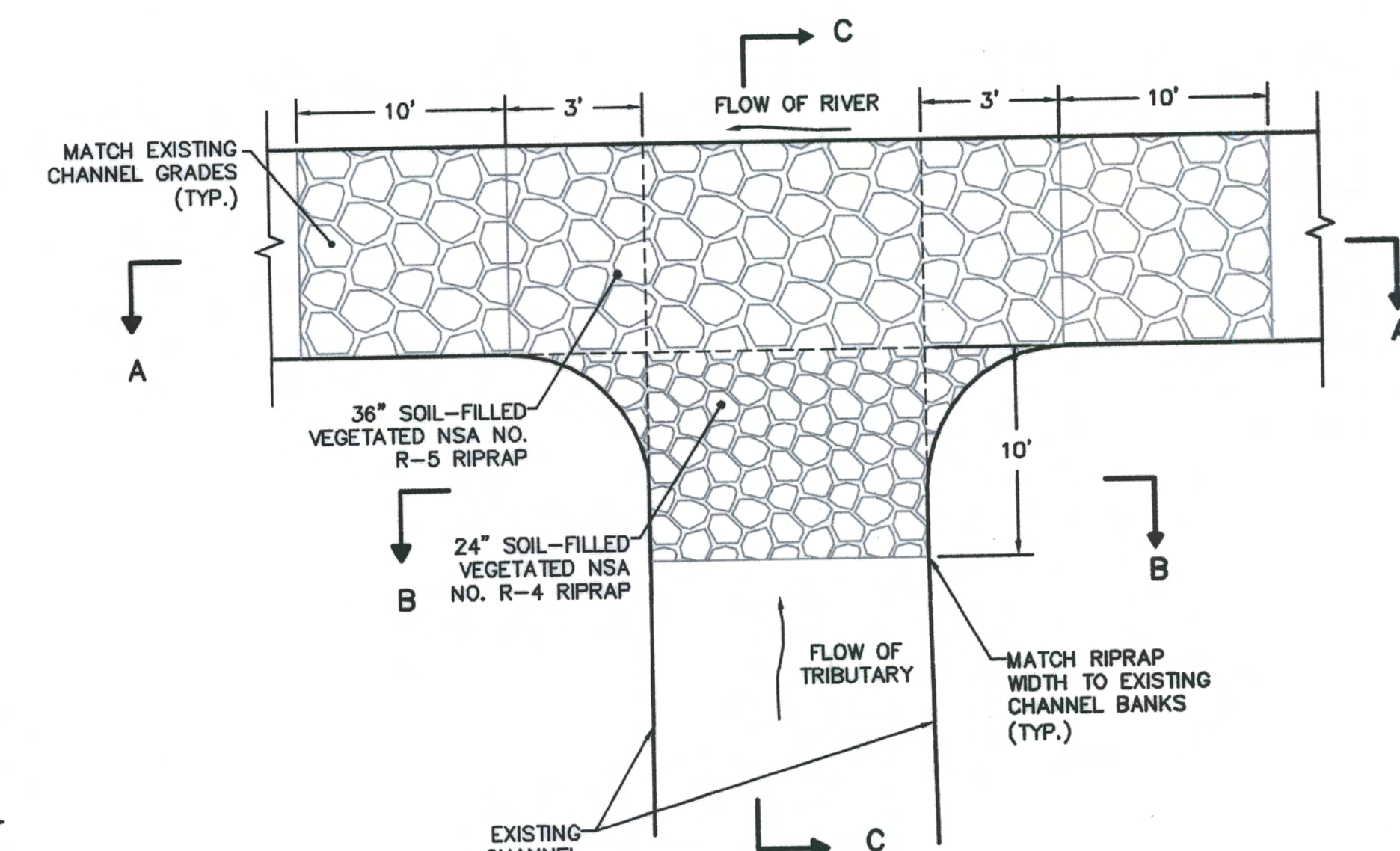
CROSS-SECTION C-C'  
NOT TO SCALE



CROSS-SECTION B-B'  
NOT TO SCALE



CROSS-SECTION A-A'  
NOT TO SCALE



PLAN  
**RIPRAP DOWNCHUTE INLET**  
NOT TO SCALE

No.	DATE	REVISIONS	DESCRIPTION	BY
1.	8/27/09	REVISED PER RIDEM COMMENTS		AEH

PROJ. MANAGER:	NSW
CHIEF DESIGNER:	AEH
REVIEWED BY:	DATE
PWM	04/09

SEAL	7589
REGISTERED PROFESSIONAL ENGINEER (CIVIL)	

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
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WOOD-PAWCATUCK WATERSHED ASSOCIATION  
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SHANNOCK VILLAGE RHODE ISLAND

PROJ. No.: 20080877A10  
DATE: JULY 2009  
**C-503**  
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