

REQUEST FOR PROPOSALS

**CONTRACT, PLANS AND SPECIFICATIONS
FOR
WETLAND MITIGATION BANK PROJECT
FOR
THE BOARD OF WATER, LIGHT AND SINKING FUND COMMISSIONERS
OF
THE CITY OF DALTON, GEORGIA**

COMMISSIONERS

**JOE YARBROUGH – CHAIRMAN
MARK MIXER – VICE CHAIRMAN
TOMMY BOGGS
ED ANTHONY
JACKIE KILLINGS**

**JOHN THOMAS
CHIEF EXECUTIVE OFFICER**



August 2023

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WETLAND MITIGATION PROJECT PROJECT
FOR
THE WATER, LIGHT AND SINKING FUND COMMISSION
OF
THE CITY OF DALTON, GEORGIA

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**ADVERTISEMENT FOR BIDS
FOR
WETLAND MITIGATION BANK PROJECT
FOR
THE BOARD OF WATER, LIGHT AND
SINKING FUND COMMISSIONERS
OF THE
CITY OF DALTON, GEORGIA
D/B/A DALTON UTILITIES**

Sealed Proposals for the WETLAND MITIGATION BANK PROJECT for the BOARD OF WATER, LIGHT AND SINKING FUND COMMISSIONERS OF THE CITY OF DALTON, GEORGIA D/B/A DALTON UTILITIES (“Owner”) will be received in the Auditorium of the Dalton Utilities Administration Building at 1200 V.D. Parrott Jr. Parkway until **2:00 P.M.** local time **September 1, 2023**, at which time they will be publicly opened and read.

Work to be Done: The work to be done (hereinafter referred to as “Work”) consists of furnishing all materials and equipment, except those specified in the Bid, and performing all labor necessary for the following project (hereinafter referred to as “Project”):

Construct the Wetland Mitigation Bank Project as shown in the drawings and specifications. The project will consist of disturbing approximately 92 acres sub-divided into 3 phases along with a planting plan. The contractor will be provided with a 3D model by the designer and is expected to use gps technology within equipment.

Dalton Utilities will not be supplying any material.

The Contractor’s work also includes all erosion, sedimentation, and pollution control necessary for the project. The cost of any permits required for erosion control and land disturbing will be borne by the Owner. The Contractor will be responsible for the cost of any other permits or licenses required to complete the work. The Contractor will complete all necessary clean-up and restoration work to include filling, finish grading, grassing, landscaping, pavement repairs, driveway repairs, culvert repairs, drainage ditch restoration and other necessary restoration activities such that post construction conditions are **EQUAL TO OR BETTER** than those conditions that existed prior to any construction activity occurring.

The Owner is authorized to issue change orders, without the necessity of additional requests for bids, within the scope of the Project when appropriate or necessary in the performance of the contract. No additional work shall be performed unless authorized by the Owner. The bidder declares that it understands that the unit price quantities shown in the proposal are subject to adjustment by either increase or decrease, by the Owner, and that should the quantities of any of the items of the work be increased, the bidder proposes to do the additional work at the unit prices stated herein; and should the quantities be decreased, the bidder also understands that payment will be made on actual quantities at the unit price bid and will make no claim for anticipated profits for any decrease in the quantities, and that quantities will be determined upon completion of the Work at which time adjustment will be made to the contract amount by direct increase or decrease.

001113-2
Advertisement for Bids

Bidder Pre-qualification: Pre-qualification of bidders for this project is required. Bidders must submit a pre-qualification package containing requested information to the office of Dalton Utilities by 5:00 P.M., local time, **Thursday, August 10, 2023**. All applicants submitting pre-qualification documentation will be notified of their status via phone call to the contact person listed on the package by 5:00 P.M. **Friday, August 11, 2023**. Only bids submitted by properly pre-qualified bidders will be opened.

Mandatory Pre-Bid Meeting: A mandatory pre-bid meeting will be held at Dalton Utilities for all properly pre-qualified bidders. **This meeting will be held on via Zoom Wednesday, August 16, 2023, at 2:00 pm and instructions will come at a further date.** This meeting is mandatory and if a properly pre-qualified bidder does not attend, then Dalton Utilities will not open a bid from this contractor.

Time Allotted: All work as specified herein shall be completed by **March 30, 2025**. Contractors submitting bids on project must be prepared to proceed with work within three weeks of bid opening.

Bids: Bids shall contain complete and detailed prices for labor, equipment, and construction materials for all items listed.

Contractor's License: All bidders must possess any and all licenses and permits as may be required by applicable federal, state and/or local law/ordinances.

Performance and Bid Bond: A bid bond will be required in the amount of 10% of the total bid amount. A contract performance bond and a payment bond, in an amount equal to one hundred percent (100%) of the contract price, will be required of the successful bidder.

Withdrawal of Bids: Except as provided in O.C.G.A. Section 36-91-50, no submitted bid may be withdrawn for a period of sixty (90) days after the scheduled closing time for the receipt of bids.

Additional Instructions to Bidders, Drawings, Specifications and Contract Documents: Additional instructions to bidders, drawings, specifications, and other contract documents may be examined at Dalton Utilities, Watershed Engineering Services, 1200 V.D. Parrott Jr. Parkway, Dalton, Georgia. Drawings, Specifications and Contract Documents may be obtained at Dalton Utilities' website <https://www.dutil.com/resources/> or in person at Dalton Utilities, 1200 V.D. Parrott Jr. Parkway, Dalton, Georgia 30721.

001113-3
Advertisement for Bids

Acceptance or Rejection of Bids: The right is reserved to accept or reject any and all bids and to waive technicalities and informalities.

Statutory Requirements: Notwithstanding any provision of this advertisement, all proposals must also comply with the minimum applicable requirements of Chapter 91 of Title 36 of the Official Code of Georgia Annotated.

E-Verify Requirements: All contractors and subcontractors performing work for Dalton Utilities must participate in the E-Verify Program pursuant to the Georgia Security and Immigration Compliance Act (SB 529).

THE BOARD OF WATER, LIGHT AND SINKING FUND
COMMISSIONERS OF THE CITY OF DALTON, GEORGIA

By: John Thomas, Chief Executive Officer

INSTRUCTIONS TO BIDDERS

002113

**INSTRUCTIONS TO BIDDERS
FOR
WETLAND MITIGATION BANK PROJECT
FOR
THE BOARD OF WATER, LIGHT AND SINKING FUND COMMISSIONERS
OF THE
CITY OF DALTON, GEORGIA
D/B/A DALTON UTILITIES**

Bids received until **2:00P.M.**, Local Time, **September 1, 2023**

INSTRUCTIONS TO BIDDERS

I. Definitions:

Unless otherwise defined in this document, capitalized terms have the meaning defined in the Contract.

II. Evaluation of Bidders:

The Contract will be awarded pursuant to O.C.G.A. Section 36-91-21 to the lowest responsible and responsive bidder whose bid meets the requirements and criteria set forth in the invitation for bids. A responsible bidder is a person or entity that has the capability in all respects to perform fully and reliably the Contract requirements as determined by Dalton Utilities ("Owner"). A responsive bidder is a person or entity that has submitted a bid that conforms in all material respects to the requirements set forth in the invitation for bids as determined by Owner. Factors to be considered may include, but are not necessarily limited to the following:

A. Determination of Contract Awardee:

1. The Owner reserves the right to award the project to the Contractor who presents a bid that is determined to be the best overall value to the Owner. **This does not guarantee award of the project to the lowest bidder.** Award of this contract will be based on a combination of price, schedule, previous experience on similar projects, references from other sources having employed the contractor, and all other requirements detailed in this document and all contract documents. The Owner will

determine which is the lowest responsible and responsive bidder based on:

- a) Completeness: The completeness and regularity of the bid form.
 - b) Exclusions: Bid form without exclusions, alternatives, or special conditions.
 - c) Contract Time: The Contractor has until **March 30, 2025** to complete the project.
 - d) **Lowest bid shall be determined on Base Bid amount, not including alternatives. In the event of a tie for lowest bid, the lowest bid will be determined by a coin flip, with the bidder whose corporate office is closest to the headquarters of Dalton Utilities making the call.**
2. Bidder's ability to begin the Work on this Project within **four** weeks upon the award of the Contract with sufficient resources to complete the Project by the Completion Date and maintain timely progress as determined by the Owner.

B. Qualifications of Bidders:

1. Each bidder must submit as part of its bid proposal a completed Statement of Bidder's Qualifications
2. The bidder must maintain a permanent place of business.
3. The bidder must have adequate technical experience on similar projects of comparable size.
4. The bidder must have sufficient resources (including but not limited to labor, equipment, and financial resources) to complete the Project by the Completion Date and maintain timely progress as determined by the Owner. The bidder should consider existing commitments in determining adequate personnel and equipment availability throughout the Project so as to stay on schedule and finish all Work by the Completion Date.
5. The bidder shall possess all necessary certifications for the bidder as an entity, for individuals it employs, and for all associated equipment to complete the Project by the Completion Date. Any reference made to necessary certifications includes but is not limited to conforming to the standards of all applicable technical society, organization, body, code, and standards. The bidder shall provide all materials needed to meet or

exceed these necessary certifications including material fabrication, and the bidder shall provide all necessary testing and installation. In a case where the Owner establishes a more stringent qualification, the more stringent qualification shall prevail. In addition, necessary certifications shall include all applicable requirements of local codes, utilities, and any other authorities having jurisdiction regarding the Project. The bidder must have a damage prevention program in place providing for coordination of excavating with the Utilities Protection Center of Georgia and have the provisions for a readily available location for the excavation permit on site for the particular excavation. This information shall be delivered in writing prior to commencement of Work on the Project.

6. Engineer will provide the following permits:

1. U.S. Army Corps of Engineers 404 permit
2. GA Environmental Protection Division stream buffer variance
3. An approved Erosion, Sedimentation, and Pollution Control Plan
4. Land Disturbance Permit

7. If the Contract is awarded to the bidder, the bidder must obtain and maintain insurance coverage of the types and amounts set forth in the Construction Contract.

III. Site Examination and Sub-Surface Conditions:

The bidder is expected to examine the location of the Project and to inform itself fully as to the conformation of the ground; the character of equipment and facilities needed preliminary to, and during the performance of the Work; the general and local conditions; and all other matters that can in any way affect the Work to be done.

A sub-surface investigation has not been made on any portion of the work site by Dalton Utilities. As such, the amount of rock excavation and unsuitable materials is unknown. The bidder shall make its own analysis of the materials to be encountered and include prices for removal and replacement of these materials in its unit prices.

IV. Interpretation of Drawings and Specifications:

If any entity contemplating submitting a bid for the Project has any question as to the true meaning of any part of the Drawings, Specifications, or other Contract Documents, or as to the scope of any part of the Work, it shall submit to the Owner a written request for an interpretation thereof. The entity submitting the request will be responsible for its prompt delivery in ample time for an interpretation to be issued before the bid opening date. Questions must be received by 2:00 pm on **Monday, August 21, 2023**. No questions will be answered within 72 hours of bid opening. Interpretations of the documents will be made only by addendum, and a copy of the addendum will be posted on the Owner's website 72 hours prior to bid opening. The Owner will not be responsible for other interpretations of the documents. The bids shall be opened publicly, and evaluated by the Owner without discussion with the bidders.

V. Complete Work Required:

The Specifications, the Drawings, and all Contract Documents are essential parts of the Contract. Application requirements occurring in one are as binding as though occurring in all. All requirements are intended to be complementary, and to describe and provide for the complete Work.

VI. Pre-qualification Submittal:

1. The bidder shall provide Corporate experience including:
 - a.) The applicant has operated under the current corporate name for the last 4 years.
 - b.) Provide name, address, and telephone number of applicant's corporate headquarters, relevant regional office(s) and subsidiaries, if any.
 - c.) Provide name, title and biographical summary of all corporate officers.
 - d.) The applicant has sufficient bonding capacity to provide performance and payment bonds, both in the amount of 100 % of the contract amount. **Provide a statement of bonding capacity**, bonding company, insurance agent contact persons, and telephone numbers.
 - e.) The applicant has access to adequate equipment to complete the project. Provide a list of major equipment proposed to perform the work and indicate whether owned or leased.
 - f.) The applicant has never failed to complete a project. Provide a statement that the applicant has never failed to complete a project. If this is not the case, explain.

- g.) The applicant has a history of completing projects consistently on time and within the bid amount. **Contractor must provide a statement of any projects that were not completed on time.** Provide a statement that the applicant has not been involved in liquidated damages in the past 5 years or served the Owner with a claim for additional compensation prepared by an attorney or a claims consultant, excluding routing change order requests. If this is not the case, explain.
 - h.) The applicant has a history of not being involved in litigation against Owners or Engineering Firms. The applicant should provide a statement that they have not been involved in litigation as a plaintiff against the Owner or Engineering Firm in the past 5 years. If this is not the case, please explain.
 - i.) The applicant has available project management personnel with at least two years' experience on projects with the technical characteristics listed in paragraph 2 below to complete the project. Provide experience of proposed on-site project manager and/or field superintendent who would supervise and be in charge of the project. Experience can be from a previous employment but must be pertinent to technical information listed in paragraph 2. If your firm is the successful bidder, at least one of these key personnel must be actively involved in the day-to-day operations of the Wetland Mitigation Bank Project in Whitfield County, Georgia.
 - j.) List all other projects currently under contract, the current contract amounts, and scheduled completion dates
 - k.) Contractor must provide OSHA Incident Rate for the past three (3) years.
2. The bidder shall provide Technical Experience including:
- a.) **Two Stream Restoration Projects, or comparable Grading Projects of similar scale and technical difficulty of the Wetland Mitigation Bank Project.**
 - b.) Projects must have been completed or started within the time frame of July 1, 2019 and July 1, 2023. Each of these projects must be complete or progressing on schedule as of July 1, 2023. Dalton Utilities will consider experience performed as a sub-contractor, provided that these projects were completed ahead of schedule and under budget.
 - c.) Projects must be at least \$350,000.00, or that portion of a sub-contracted project must have been equal to or greater than \$350,000.00.
3. Provide the information specified below for each of the above projects:

002113-6
Instructions to Bidders

- a.) Name of the project as bid; name of Owner; name of engineering firm; name, position or title, address and telephone number of contact person currently employed by each of the above; percent of labor related items performed by the applicant's own work force.
- b.) A complete description of each project.
- c.) The bid amount and final cost to the Owner, with an explanation of cost overrun, if any, including change orders.
- d.) The contract time as bid, actual time to complete project and completion date, with an explanation of time overrun, if any.

The applicant's pre-qualification package should be signed by an officer of the company. **Failure of the contractor to provide requested information or provide accurate information may result in contractor disqualification.** No bid shall be opened unless the bidder has been approved by Dalton Utilities prior to the bid opening date. If the bid is submitted by a joint venture, all parties to the joint venture must individually satisfy the pre-qualification requirements. Final determination of the applicant's qualification is the approval by Dalton Utilities. The package must be received by the Owner not later than 5PM on **Thursday, August 10, 2023**. Applicants will be advised of their pre-qualification status by 5PM on **Friday, August 11, 2023**. This package shall be emailed or be sent to the Owner at Dalton Utilities, 1200 V.D. Parrott Jr. Parkway, Dalton, Georgia 30721 Attention: **Rafael Romero, email: rromero@dutil.com**

BID

004113

BID

Project Description: Wetland Mitigation Bank Project

Proposal of _____
(hereinafter called "Bidder"),

To: The Board of Water, Light and Sinking Fund Commissioners of the City of Dalton, Georgia.

Gentlemen:

The Bidder, in compliance with your Advertisement for Bids for the construction of this project, having examined the Drawings and Specifications with related documents and the site of the proposed work and being familiar with all of the conditions surrounding the construction of the proposed project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, equipment, and supplies to construct the project in accordance with the Contract Documents, within the time set forth therein, and at the price(s) stated below. This price(s) is to cover all expenses including overhead and profit incurred in performing the work required under the Contract Documents, of which this proposal is a part.

Bidder hereby agrees to commence work under this contract on or before a date to be specified in written Notice to Proceed of the Owner and to fully complete the project **by March 30, 2025** as stipulated in the specifications. Bidder further agrees to pay, as liquidated damages, the sum of \$ 1,000.00 for each consecutive calendar day thereafter as hereinafter provided in the General Conditions.

Bidder acknowledges receipt of the following addenda:

Bidder agrees to perform all necessary work as described in the Specifications and shown on the Plans to complete the Project as specified, including all appurtenant and accessory work for the attached price(s).

The attached price(s) shall include all labor, materials, equipment, supplies, overhead, profit, insurance, etc., to cover the finished work of the several kinds for which are called.

Bidder understands that the Owner reserves the right to reject any or all Bids and to waive any informality in the bidding.

The Bidder agrees that this Bid shall be good and may not be withdrawn for a period of 60 calendar days after the scheduled closing time for receiving Bids.

Upon receipt of written notice of the acceptance of this Bid, Bidder will execute the formal contract attached within twenty (20) calendar days and deliver surety bonds and certificate(s) of insurance as required by the Contract Documents. 10 percent of the total Bid is to become the property of the Owner in the event the contract and bond are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

Respectfully submitted:

By _____

Signature

Title _____

Business Address

ATTEST:

Name _____

(Please Type)

Title _____

(SEAL)

Note: Attest for corporation secretary; for a partnership by another partner; for an individual By a Notary.

WETLAND MITIGATION BANK PROJECT

				Unit	Labor Total
Item No.	Approx. Quantity	Unit	Description	Price	Price
<u>GRADING AND PLANTING</u>					
1.)	1	LS	Prep (Clearing)		\$ -
2.)	1	LS	Stakeout and Setup		\$ -
3.)	1	LS	Construction		\$ -
4.)	1	LS	Planting		\$ -
5.)	1	LS	Erosion & Sedimentation (BMP's, Temp Seed, Permanent Seed)		\$ -
6.)	1	LS	Oversight		\$ -
7.)	1	LS	As-Built		\$ -
				SUBTOTAL	\$ -
<u>ALLOWANCE ITEMS</u>					
1.)	1	LS	Contingency	\$ 25,000.00	\$ 25,000.00
				SUBTOTAL	\$ 25,000.00
				TOTAL	

**NON-COLLUSION
AFFIDAVIT OF PRIME
BIDDER**

004519

Non-Collusion Affidavit of Prime BidderSTATE OF GEORGIACOUNTY OF WHITFIELD

_____, being first duly sworn, deposes and says that:

He is _____ of _____, the Bidder that has submitted the attached Bid;

He is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;

Such Bid is genuine and is not a collusive or sham Bid;

Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this Affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Board of Water, Light and Sinking Funding Fund Commissioners of the City of Dalton or any person interested in the proposed Contract; and

The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this Affiant.

(Signed)

(Signature on File)

(Title)

Subscribed and Sworn to before me this ____ day of _____, 2023.

(Signature on File)

(Notary Public)

My Commission Expires: _____

(SEAL)

CORPORATE CERTIFICATE

004543

CORPORATE CERTIFICATE

I, _____ certify that I am the Secretary of the corporation named as Contractor in the foregoing proposal; that _____, who signed said proposal in behalf of the Contractor was then _____ of said corporation; that said proposal was duly signed for and in behalf of said corporation by authority of its Board of Directors, and is within the scope of its corporate powers; that said corporation is organized under the laws of the State of _____ and its registered and in good standing with the _____ Secretary of State.

This _____ day of _____, 2023.

(SEAL)

STATEMENT OF LICENSE CERTIFICATE

004546

Statement of License Certificate

STATEMENT OF LICENSE CERTIFICATE

Each Contractor bidding shall fill in and sign the following:

This is to certify that _____ (“Contractor”) has fully complied with all the requirements of the Georgia State Construction Industry Licensing Board Laws and Rules. The Contractor’s license number, other information outlined in the Instructions for Bidders, expiration date, and that part of classification applying to the bid shall appear on the envelope containing the Bid, otherwise the Bid will not be considered.

The Georgia State Construction Industry Licensing Board issued to the Contractor, Certificate No. _____, expires on _____.

Signed _____

Name _____

Title _____

E-VERIFY

004549

Contractor Affidavit under O.C.G.A. §13-10-91(b)(1)

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. §13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services on behalf of the Water, Light and Sinking Fund Commission of the City of Dalton, Georgia d/b/a Dalton Utilities has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. §13-10-91. Furthermore, the undersigned contractor will continue to use the federal work authorization program throughout the contract period and the undersigned contractor will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the contractor with the information required by O.C.C.A. §13-10-91(b). Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

Federal Work Authorization User Identification Number

Date of Authorization

Name of Contractor

Name of Project

Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on _____, ____, 202__ in _____ (city), _____ (state).

Signature of Authorized Officer or Agent

Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME
ON THIS THE ____ DAY OF _____, 202__.

NOTARY PUBLIC

My Commission Expires: _____

Subcontractor Affidavit under O.C.G.A. §13-10-91(b)(3)

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. §13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with _____ (*name of contractor*) on behalf of the Water, Light and Sinking Fund Commission of the City of Dalton, Georgia d/b/a Dalton Utilities has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in OC.G.A. §13-10-91. Furthermore, the undersigned subcontractor will continue to use the federal work authorization program throughout the contract period and the undersigned subcontractor will contract for the physical performance of services in satisfaction of such contract only with sub-subcontractors who present an affidavit to the subcontractor with the information required by O.C.G.A. §13-10-91(b). Additionally, the undersigned subcontractor will forward notice of the receipt of an affidavit from a sub-subcontractor to the contractor within five business days of receipt. If the undersigned subcontractor receives notice of receipt of an affidavit from any sub-subcontractor that has contracted with a sub-subcontractor to forward, within five business days of receipt, a copy of such notice to the contractor. Subcontractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

Federal Work Authorization User Identification Number

Date of Authorization

Name of Subcontractor

Name of Project

Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on _____, ____ 202____ in _____ (city), _____ (state).

Signature of Authorized Officer or Agent

Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE ____ DAY OF _____, 202____.

NOTARY PUBLIC

My Commission Expires: _____

Sub-subcontractor Affidavit under O.C.G.A. §13-10-91(b)(4)

By executing this affidavit, the undersigned sub-subcontractor verifies its compliance with O.C.G.A. §13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract for _____ (*name of subcontractor or sub-subcontractor with whom such. sub-subcontractor has privity of contract*) and _____ (*name of contractor*) on behalf of the Water, Light and Sinking Fund Commission of the City of Dalton, Georgia d/b/a Dalton Utilities has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. §13-10-91. Furthermore, the undersigned sub-subcontractor will continue to use the federal work authorization program throughout the contract period and the undersigned sub-subcontractor will contract for the physical performance of services in satisfaction of such contract only with sub-subcontractors who present an affidavit to the sub-subcontractor with the information required by O.C.G.A. §13-10-91(b). The undersigned sub-subcontractor shall submit, at the time of such contract, this affidavit to _____ (*name of subcontractor or sub-subcontractor with whom such sub-subcontractor has privity of contract*). Additionally, the undersigned sub-subcontractor will forward notice of the receipt of any affidavit from a sub-subcontractor to _____ (*name of subcontractor or sub-subcontractor with whom such sub-subcontractor has privity of contract*). Sub-subcontractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

Federal Work Authorization User Identification Number

Date of Authorization

Name of Sub-subcontractor

Name of Project

Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on _____, _____, 202__ in _____ (city), _____ (state).

Signature of Authorized Officer or Agent

Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE __ DAY OF _____, 202__.

NOTARY PUBLIC

My Commission Expires: _____

CONSTRUCTION CONTRACT

005213

**CONSTRUCTION CONTRACT
FOR
WETLAND MITIGATION BANK PROJECT**

This construction contract ("Contract") is made and entered into on the _____ day of _____, 2023, by and between THE BOARD OF WATER, LIGHT AND SINKING FUND COMMISSIONERS OF THE CITY OF DALTON, D/B/A DALTON UTILITIES, hereinafter called the "Owner" and _____, hereinafter called the "Contractor".

WITNESSETH:

That for in consideration of the mutual covenants and agreements herein contained and other good and valuable considerations, the receipt and sufficiency of which is hereby acknowledged, the parties hereto do agree as follows:

1. Definitions. As used in this Contract, the following terms are defined as follows:
 - A. "Contract Documents" mean and include the following (and all exhibits and amendments thereto):
 - (i) Advertisement for Bids;
 - (ii) Instructions to Bidders;
 - (iii) Contractor's Bid;
 - (iv) Bid Bond;
 - (v) This Contract;
 - (vi) Payment Bond;
 - (vii) Performance Bond;
 - (viii) Notice of Award;
 - (ix) Notice to Proceed;
 - (x) Plans and Specifications;
 - (xi) Drawings; and
 - (xii) any and all Change Orders.
 - B. "Completion Date" means the date that the Contractor has completed all of its Work regarding the Project and all of the certifications and affidavits have been executed in compliance with the Contract Documents.
 - C. "Project" means Wetland Mitigation Bank Project, as previously described in the Contract Documents.
 - D. "Work" means all materials, supplies, tools, equipment, labor, installation, testing, and all other services necessary for the completion of the Project.
2. Performance of Work by Contractor. The Contractor shall perform all of the Work described in the Contract Documents and comply with the terms therein for the price set forth in the Notice of Award, as may be modified by Change Orders. All Work performed by the Contractor shall be subject to the inspection and approval of the Owner.
3. Changes from Plans and Specifications. Any and all changes from the Contract Plans and Specifications shall be approved by the Owner prior to any changes in the Work being

performed. Any and all changes from the Contract Plans and Specifications that result in a change in the scope of work to be performed shall be approved by the Owner in writing by a written Change Order Form, executed by the Owner and Contractor prior to any changes in the Work being performed. For the purpose of this section, a change in the scope of the Work to be performed occurs whenever there is a change in the total price of the Contract or the scheduled Completion Date.

4. Time Period for Performance of Work. The Contractor will be required to complete all work for the project by **March 30, 2025** unless the time period is modified by a written Change Order that has been executed by the Owner and Contractor. In addition, the Contractor shall achieve completion dates as specified in the Contract Documents for specific tasks to be accomplished as part of the overall Project. Work shall begin on the date specified in the Notice to Proceed. The Contractor shall deploy labor, materials, and equipment such that Work is prosecuted regularly, diligently and uninterrupted, at a rate of progress that will ensure meeting all final or task specific completion dates.

5. Bonds.

- A. Performance Bond. The Contractor shall provide a performance bond approved by the Owner in the amount of at least the total amount payable by the terms of this Contract and shall be increased as the total amount payable pursuant to this Contract is increased. The Contractor shall be required to maintain the performance bond in the amount of 100% of the total Contract price until the expiration of the warranty period.
- B. Payment Bond. The Contractor shall provide a payment bond approved by the Owner in an amount equal to the total amount payable by the terms of this Contract as may be amended, for the use and protection of all subcontractors, and all persons supplying labor, materials, machinery, and equipment in the performance of this Contract.

6. Compliance with Laws, Regulations, and Contractor Requirements. The Contractor will comply with all applicable laws and with all the requirements of any and all federal, state, and local authorities having jurisdiction over said Work or any matters connected therewith. Contractor will also comply with all requirements contained in General Requirements and Conditions of the Plans and Specifications.

7. Payment for Work Performed. The owner will pay only for Work completed in accordance with the unit prices detailed in the bid and as otherwise herein stated. The Contractor shall submit invoices not later than the tenth day of each month to the Owner for the Work completed during the preceding month and will attach to such invoices a detailed summary of the Work completed during the preceding month and the Contract period to date in a format prescribed by the Owner at the pre-construction meeting. Should the Owner not prescribe a format, the Contractor shall present the Owner with a format for review and approval prior to the first invoice being submitted. In preparing invoices, materials not subject to deterioration delivered on the Project site will be taken into consideration for inclusion in the payment request. The stored materials list must include

a brief description (not just manufacturer's name), invoice, material received during the period, and material used during the period. The eligible cost for on-site material included in the payment shall be the amount of the manufacturer invoice reduced by ten percent (10%) of the amount. All material and Work covered by partial payments made shall thereupon become the sole property of the Owner, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and Work upon which payments have been made or the restoration of any damaged work or as a waiver of the right of the Owner to require the fulfillment of all of the terms of the Contract.

Within 30 days after the receipt and approval of the invoices, the Owner will pay the Contractor for the Work covered by said invoices and completed in accordance with this Contract less any applicable retainage as discussed below in Section 8.

8. Retainage. The Owner shall retain a maximum of ten percent (10%) of each progress payment described in Section 7 of this Agreement. However, the Owner shall not, except as set forth hereinafter, withhold any additional retainage when fifty percent (50%) of the total Contract price, including Change Orders and other additions to the Contract, is due and the manner of completion of the Work and its progress are reasonably satisfactory to the Owner. If after discontinuing the retention, the Owner determines that the Work is unsatisfactory or has fallen behind schedule, the Owner may resume retention at the previous retention percentage level.

9. Non-Exclusivity. It is understood and agreed that this Agreement is not exclusive and that the Owner shall have the right to employ other persons or entities to perform work for it similar to that herein provided for and shall also have the right to perform such work for itself.

10. Warranty. The Contractor warrants and guarantees for a period of one (1) year from the Completion Date that the Contractor's Work is free from any and all defects. The Contractor shall promptly make all repairs or other corrections necessary as a result of said defects, including repairs to any other portion of the Project that are necessitated by said defects. If the Contractor fails to promptly make such repairs or corrections, the Owner may make, or contract with a third party to make, said repairs or corrections, and charge the Contractor the cost incurred by the Owner. The Contractor's Performance Bond shall remain in full force and effect during the warranty period. This Section shall survive the termination of this Agreement.

11. Insurance: The Contractor shall provide to the Owner proof and scope of insurance coverage in the form of a certificate of insurance currently in force. The Contractor shall maintain said insurance coverage during the entire time period of the Contractor's performance of this Contract and warranty period. The certificate of insurance must list The Board of Water, Light and Sinking Fund Commissioners of the City of Dalton, Georgia d/b/a Dalton Utilities and the City of Dalton as an additional named insured. The insurance shall not be cancelled or materially altered unless at least 30 days prior written notice has been given to the Owner. This coverage must include but is not limited to:

A. Worker's Compensation Insurance: Worker's Compensation for every person engaged in any work on the Project.

B. General Liability: Comprehensive General Liability for products and completed operations shall be XC, U, and the ISO Broadform General Liability endorsement or its equivalent. This coverage shall include:

1. Bodily Injury Insurance in an amount not less than \$1,000,000 for bodily injury, including accidental death, to any one person, and subject to the same limit for each person, in an amount not less than \$2,000,000 on account of one accident.

2. Property Damage Insurance in an amount not less than \$1,000,000 for any one damage claim, and in an aggregate amount up to \$2,000,000 during a period of 12 months.

3. Automobile Liability including bodily injury and property damage of aforesaid amount.

4. Owner's Protective Liability Insurance to be issued in the name of the Owner for liability and property damage in an amount to be determined by the owner.

5. Umbrella Policy to provide for increase in coverage of basic policies to an amount not less than \$5,000,000.

6. Builder's Risk or Installation Floater Insurance for fire and increase of coverage in the amount at all times at least equal to the amount paid on account of work and materials to be set up in the names of Owner and Contractor as their interest may appear.

12. Indemnification: The Contractor shall indemnify and hold harmless the Owner and its agents and employees from and against all claims, damages, losses and expenses including claims for consultants' and attorneys' fees, arising out of or resulting from the failure to perform the Work in a good and workmanlike manner by the Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable.

In any and all claims against the Owner, or any of its agents or employees, by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under worker's compensation acts, disability benefit acts or other employee benefits acts.

13. Termination of Contract. In the event the Contractor shall violate any of the provisions of this Contract or any of the other Contract Documents, or if the quality or quantity of the Work performed is, in the sole judgment of the Owner, substandard or unsatisfactory, the Owner shall have the right to terminate this Contract upon 10 days written notice to the

Contractor. If this Contract is terminated by the Owner pursuant to the provisions of this Section, Contractor shall be responsible for payment of all damages incurred by the Owner as a result of said termination, including but not limited to the cost of completing the Work on the Project.

14. Other Remedies. If the Contractor defaults under any of the provisions of the Contract Documents, the Owner shall be entitled to pursue all remedies permitted by law, including but not limited to those remedies set forth elsewhere in the Contract Documents. All remedies of the Owner are cumulative and non-exclusive.

15. Liquidated Damages for Delay in Completion of Project. The Contractor shall proceed with the Work at a rate of progress that will insure completion of the Project by the Completion Date. It is expressly understood and agreed by and between the Contractor and the Owner, that the time for Project completion described is a reasonable time, taking into consideration the average climatic and economic conditions, and other factors prevailing in the locality of the Project. It is further agreed that time is of the essence of each and every portion of this Project.

If the Contractor shall fail to complete all of the Work required by the Completion Date, or extended time if authorized by a Change Order, then the Contractor shall pay to the Owner the full amount of liquidated damages of \$ 1,000.00 for each calendar day that the Contractor shall be in default after the time stipulated in the Contract Documents. The Contractor acknowledges that the actual dollar amount of liquidated damages is difficult to determine, but the dollar amount of liquidated damages set forth above is a reasonable estimate of said damages incurred by the Owner.

The Contractor shall not be charged with liquidated damages or any excess cost when the delay in the completion of the Work is due to the following and the Contractor has promptly given written notice of such delay to the Owner (and Engineer if there is an Engineer on the Project):

A. To any preference, priority or allocation order duly issued by the Owner.

B. To unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to, acts of God or of the public enemy, acts of the Owner, acts of another contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather; and,

C. To any delays of subcontractors occasioned by any of the causes specified in paragraphs A and B above.

16. Approval of Subcontractors. The Contractor acknowledges and agrees that any person, firm or other party to whom it is proposed to award a subcontract under this Contract must be approved in writing by the Owner prior to the subcontractor performing any work on the Project.

17. Entire Agreement. This Contract and the Contract Documents constitute the entire agreement between the parties hereto with respect to its subject matter and there are no representations, warranties, agreements, undertakings or conditions, express or implied, except as set forth herein. In the event of any conflict between the provisions of the Contract and the other Contract Documents, the provisions of the Contract control.

18. Modification to Agreement. This Contract may not be amended, supplemented or otherwise modified except by written instrument signed by each of the parties hereto.

19. Notices. Any notices or other communications required or permitted to be given and instruments referred to herein must be given in writing and personally delivered or mailed by prepaid certified mail to the following addresses:

If to Owner: Dalton Utilities
Attn: CEO
PO Box 869
1200 V.D. Parrott, Jr. Parkway
Dalton, Georgia 30722

If to Contractor: **(Insert Name of Contractor)**

Any such notice or other communication shall be deemed to have been given (whether actually received or not) on the day it is mailed (postmarked) or personally delivered as aforesaid. Any party may change its address for purposes of this Contract by giving notice of said change to the other parties pursuant to this Section.

20. Non-Waiver. No delay or failure by either party to exercise any right under this Contract, and no partial or single exercise of that right shall constitute a waiver of that or any other right, unless otherwise expressly provided herein.

21. Severability. Every provision of this Contract is intended to be severable, and, if any term or provision is determined to be illegal or invalid for any reason whatsoever, such illegality or invalidity shall not affect the validity of the remainder of this Contract.

22. Governing Law. This Contract shall be deemed to have entered into in and shall be construed in accordance with and governed by the laws of the State of Georgia.

23. Binding Effect. The provisions of this Contract shall be binding upon and shall insure to the benefit of each of the parties hereto and their respective and permitted successors and assigns.

24. Time is of the Essence. Time is of the essence of each and every provision of this Contract.

25. No Third-Party Beneficiaries. Except as may be otherwise expressly provided in this Contract, nothing contained herein, express or implied, is intended to, nor shall it (1) confer on any entity other than the parties hereto and their respective and permitted, successors and assigns, any rights, remedies, obligations under or by reason of this Contract.

26. Captions. The sections and captions contained herein are for convenience and reference only, and are not intended to define, extend, extend, or limit any provision of this Contract.

27. Confidentiality. To the extent not prohibited by law, the Contractor shall keep confidential the terms of the Contract Documents.

28. Assignment. This Contract may not be assigned by the Contractor without the prior written consent of the Owner.

29. No partnership. This Contract shall not be interpreted or construed to create an association, joint venture, partnership, or employer-employee relationship between the Parties, nor to impose any such obligations or liability on either party. Furthermore, neither party shall have nay right, power, or authority to enter into any agreement or undertaking for or on behalf of, to act as, or be an agent or representative of, or to otherwise bind the other party.

30. Counterparts. This Contract may be executed in one or more counterparts, each of which shall be deemed an original, and all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have executed this Contract under their respective seals on the day and date first above written in two (2) counterparts, each of which shall without proof or accounting for the other counterparts be deemed an original Agreement.

ATTEST: (As to Contractor)

CONTRACTOR

(Insert Name of Contractor)

By:_____L.S.

Title: _____

(SEAL)

ATTEST:

Chief Watershed Operations Services
and Economic Development

BOARD OF WATER, LIGHT AND
SINKING FUND COMMISSIONERS
OF THE CITY OF DALTON, GEORGIA

By:_____L.S.

(SEAL)

Date:_____

John Thomas
CEO

PERFORMANCE BOND

006113.13

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, CONTRACTORS NAME & ADDRESS (hereinafter called the “Principal”) and **SURITY NAME AND ADDRESS** (hereinafter called the “Surety”) are held and firmly bound unto The Board of Water, Light and Sinking Fund Commissioners of the City of Dalton, Georgia d/b/a Dalton Utilities (hereinafter called the “Owner”) and its successors and assigns, in the penal sum of **AMOUNT (\$xxx,xxx)**, lawful money of the United States of America, for the payment of which the Principal and the Surety bind themselves, their administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or is about to enter, into a certain written contract with the Owner, dated _____, **2023** which is incorporated hereby by reference in its entirety (hereinafter called the “Construction Contract”), for the ***Wetland Mitigation Bank Project***, more particularly described in the Construction Contract (hereinafter called the “Project”); and

NOW, THEREFORE, the conditions of this obligation are as follows, that if the Principal shall fully and completely perform all the undertakings, covenants, terms, conditions, warranties, and guarantees contained in the Construction Contract, including all modifications, amendments, changes, deletions, additions, and alterations thereto that may hereafter be made, then this obligation shall be void; otherwise, it shall remain in full force and effect.

Whenever the Principal shall be, and declared by the Owner to be, in default under the Construction Contract, the Surety shall promptly remedy the default as follows:

1. Complete the Construction Contract in accordance with the terms and conditions;
or

2. Obtain a bid or bids for completing the Construction Contract in accordance with its terms and conditions, and upon determination by the Surety and the Owner of the lowest responsible bidder, arrange for a contract between such bidder and Owner and make available as the work progresses (even though there should be a default or succession of defaults under the Construction Contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the penal sum set forth in the first paragraph hereof, as may be adjusted, and the Surety shall make available and pay to the Owner the funds required by this Paragraph prior to the payment of the Owner of the balance of the contract price, or any portion thereof. The term “balance of the contract price,” as used in this paragraph, shall mean the total amount payable by the Owner to the Contractor under the Construction Contract, and any amendments thereto, less the amount paid by the Owner to the Contractor; or, at the option of the Owner,

3. Allow Owner to complete the work and reimburse the Owner for all reasonable costs incurred in completing the work.

006113.13-2
Performance Bond

In addition to performing as required in the above paragraphs, the Surety shall indemnify and hold harmless the Owner from any and all losses, liability and damages, claims, judgments, liens, costs and fees of every description, including reasonable attorney's fees, litigation costs and expert witness fees, which the Owner may incur, sustain, or suffer by reason of the failure or default on the part of the Principal in the performance of any or all of the terms, provisions, and requirements of the Construction Contract, including any and all amendments and modifications thereto, or incurred by the Owner in making good any such failure of performance on the part of the Principal.

The Surety shall commence performance of its obligations and undertakings under this Bond promptly and without delay, after written notice from the Owner to Surety.

The Surety hereby waives notice of any and all modifications, omissions, additions, changes, alterations, extensions of time, changes in payment terms, and any other amendments in or about the Construction Contract, and agrees that the obligations undertaken by this bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, alterations, extensions of time, change in payment terms, and amendments.

The Surety hereby agrees that this Bond shall be deemed amended automatically and immediately, without formal or separate amendments hereto, upon any amendment to the Construction Contract, so as to bind the Principal and the Surety to the full and faithful performance of the Construction Contract as so amended or modified, and so as to increase the penal sum to the adjusted Contract Price of the Construction Contract.

No right of action shall accrue on this Bond to or for the use of any person, entity, or corporation other than the Owner and any other obligee named herein, or their executors, administrators, successors or assigns.

This Bond is intended to comply with O.C.G.A. Section 36-91-70, and shall be interpreted so as to comply with the minimum requirements thereof. However, in the event the express language of this Bond extends protection to the Owner beyond that contemplated by O.C.G.A. Section 36-91-70, or any other statutory law applicable to this Project, then the additional protection shall be enforced in favor of the Owner, whether or not such protection is found in the applicable statutes.

IN WITNESS WHEREOF, the undersigned have caused this instrument to be executed and their respective corporate seals to be affixed and attested by their duly authorized representatives this _____ day of _____, 2023.

CONTRACTOR
(Insert Name)

By: _____

Title: _____

Attest:

(SEAL)

Title: _____

SURETY

By: _____

Title: _____

By: _____

Title: _____

By: _____

Title: _____

Attest:

(SEAL)

Title: _____

[Attach Power of Attorney]

PAYMENT BOND

006113.16

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, CONTRACTORS NAME & ADDRESS (hereinafter called the “Principal”) and **SURITY NAME AND ADDRESS** (hereinafter called the “Surety”) are held and firmly bound unto The Board of Water, Light and Sinking Fund Commissioners of the City of Dalton, Georgia d/b/a Dalton Utilities (hereinafter called the “Owner”) and its successors and assigns, in the penal sum of **AMOUNT (\$xxx,xxx)**, lawful money of the United States of America, for the payment of which the Principal and the Surety bind themselves, their administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or is about to enter, into a certain written contract with the Owner, dated _____, **2023** which is incorporated hereby by reference in its entirety (hereinafter called the “Construction Contract”), for the ***Wetland Mitigation Bank Project***, more particularly described in the Construction Contract (hereinafter called the “Project”); and

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall promptly make payment to all persons working on or supplying labor or materials under the Construction Contract, and any amendments thereto, with regard to labor or materials furnished and used in the Project, and with regard to labor or materials furnished but not so used, then this obligation shall be void; but otherwise it shall remain in full force and effect.

1. A “Claimant” shall be defined herein as any subcontractor, person, party, partnership, corporation or other entity furnishing labor, services, or materials used, or reasonably required for use, in the performance of the Construction Contract, without regard to whether such labor, services, or materials were sold, leased or rented, and without regard to whether such Claimant is or is not in privity of contract with the Principal or any subcontractor performing work on the Project, including, but not limited to, the following labor, services or materials: water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Construction Contract.

2. In the event a Claimant files a claim against the Owner, or the property of the Owner, and the Principal fails or refuses to satisfy or discharge it promptly, the Surety shall satisfy or discharge the claim promptly upon written notice from the Owner, either by bond or as otherwise provided in the Construction Contract.

3. The Surety hereby waives notice of any and all modifications, omissions, additions, changes, alterations, extensions of time, changes in payment terms, and any other amendments in or about the Construction Contract and agrees that the obligations undertaken by this Bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, alterations, extensions of time, changes in payment terms, and amendments.

4. The Surety hereby agrees that this Bond shall be deemed amended automatically and immediately, without formal or separate amendments hereto, upon any amendment or modification to the Construction Contract, so as to bind the Principal and Surety, jointly and severally, to the full payment of any Claimant under the Construction Contract, as amended or

modified, provided only that the Surety shall not be liable for more than the penal sum of the Bond, as specified in the first paragraph hereof.

5. This Bond is made for the use and benefit of all persons, firms and corporations who or which may furnish any materials or perform any labor for or on account of the construction to be performed or supplied under the Construction Contract, and any amendments thereto, and they and each of them may sue hereon.

6. No action may be maintained on this Bond after one (1) year from the date the last services, labor or materials were provided under the Construction Contract by the Claimant prosecuting said action.

7. This Bond is intended to comply with O.C.G.A. Section 36-91-90, and shall be interpreted so as to comply with the minimum requirements thereof. However, in the event the express language of this Bond extends protection to the Owner beyond that contemplated by O.C.G.A. Section 36-91-90, or any other statutory law applicable to this Project, then the additional protection shall be enforced in favor of the Owner, whether or not such protection is found in the applicable statutes.

IN WITNESS WHEREOF, the undersigned have caused this instrument to be executed and their respective corporate seals to be affixed and attested by their duly authorized representatives this _____ day of _____, 2023.

(Insert Contractors Name)

By: _____

Title: _____

Attest:

(SEAL)

Title: _____

SURETY

By: _____

Title: _____

By: _____

Title: _____

By: _____

Title: _____

Attest:

(SEAL)

Title: _____

[Attach Power of Attorney]

GENERAL REQUIREMENTS AND CONDITIONS

007213

GENERAL REQUIREMENTS AND CONDITIONS

Contract Scope of Work: Work to be done consists of furnishing all materials, equipment, and labor necessary for the Project described within the Contract Specifications and Drawings to include, but not limited to:

Construct the Wetland Mitigation Bank Project as shown in the drawings and specifications. The project will consist of disturbing approximately 92 acres sub-divided into 3 phases along with a planting plan. The contractor will be provided with a 3D model by the designer and is expected to use gps technology within equipment.

Dalton Utilities will not be supplying any material.

CONTRACTOR TASKS AND DUTIES

The specific tasks to be completed by the Contractor include: 1) site clearing, 2) ESCP implementation 3) site grading, 4) structure installation.

The Contractor shall provide weekly written updates to the project manager listed above on the implementation of the design during the construction activities. These updates may include discussions of where activities are in the phasing of the project, what components have been completed, photographs of project progress, description of changes to the approved design or technical specifications, description of site visits conducted by permit-issuing agencies or discussions with permitting agencies regarding project elements, and the status and projection of completion times for components that are currently being implemented. As part of the updates, the Contractor shall summarize the site activities completed during that week and the anticipated activities for the coming week.

In addition to weekly reporting, the Contractor shall submit reports at 50% and 75% completion of construction. These reports should document the time anticipated to reach the next project milestone and any anticipated issues or proposed revisions to the design plans.

Meetings shall be conducted on the site at pre-construction, 50% completion, and 100% completion with Dalton Utilities, the Project Manager, and the Contractor to ensure that all activities are satisfactorily planned for and completed. The 100% construction meeting shall be held prior to demobilization. The Contractor shall prepare punch lists for the meetings as needed. Punch lists will be provided to the Project Manager for review and final approval. Adjustments necessary due to poor workmanship or conflict with the approved plans and specifications shall be performed at no additional cost to Dalton Utilities.

TASK 1. SITE CLEARING

The Contractor shall be responsible for clearing existing woody vegetation from the site within the proposed area of disturbance. This clearing should be accomplished with a roller chopper or similar equipment. All mulch created from these activities should remain on the ground.

TASK 2. ESCP IMPLEMENTATION

The contractor shall be responsible for implementation of all necessary erosion and sedimentation control measures as outlined in the approved ESCP plans. It shall be the Contractor's responsibility to maintain all measures during the construction project until the site has met State stabilization requirements.

TASK 3. SITE GRADING

The Contractor and construction firm shall implement the grading plan as found in the approved design plans. The Contractor will be supplied with a digital 3D grading plan for use in GPS enabled equipment. This digital file would be provided as a .dxf or .dwg and .xml. Any differing file type required by the Contractor would be at the Contractor's expense. Additionally, if the Contractor is unable to use GPS enabled equipment, any required staking would be at the Contractors expense.

The design plans anticipate approximately 41,369 cubic yards of cut and 36,260 cubic yards of fill within the project area.

The Contractor and construction firm shall be responsible for all usual and customary coordination to locate and protect easements and utilities present within the project corridor. The Contractor and construction firm shall be responsible for conducting construction activities in a manner that does not damage utilities, other structures, roads or trails, and shall repair or pay for repair of any damages to utilities, other structures, roads or trails occasioned by such activities.

Finished grades must not deviate by more than +/-0.15 feet from elevations shown on final design and grading plan. The Contractor and construction firm, with the Project Manager's approval, may determine that elevations need to be adjusted to ensure proper fit with surrounding field conditions. The Contractor and construction firm shall then re-grade these areas to meet the appropriate elevations. If finished grades deviate more than +/-0.15 feet and the Project Manager determines that the deviation does not compromise the goals of the project, additional grading shall not be required.

A mix of temporary stabilizing native seed and permanent native seed shall be applied to all disturbed areas.

Soil compaction best management practices will be followed and all disturbed areas (including stockpile and staging areas) shall be restored prior to demobilization providing a final soil condition suitable for planting including loose soil 24-inches minimum depth, and minimal surface soil clods.

The Contractor and construction firm shall be responsible for the off-site transport and disposal of all unused construction materials (e.g., rock, fill, trees, etc.) not properly used or properly disposed of with the Project Manager's approval on-site.

TASK 4. STRUCTURE INSTALLATION

The Contractor shall implement the installation of all structures as depicted in the design plans. Various structures are proposed within the wetland restoration areas. The Contractor shall coordinate with the Project Manager prior to the first installation of the various structures and shall complete the structure with guidance from the Project Manager. Any deviations from the design plans shall require adjustments or re-installation of the proposed structures. Any disturbance to graded areas during the installation of structures shall be repaired by the Contractor.

The Contractor's work also includes all erosion, sedimentation, and pollution control necessary for the project. The cost of any permits required for erosion control and land disturbing will be borne by the Owner. The Contractor will be responsible for the cost of any other permits or licenses required to complete the work. The Contractor will complete all necessary clean-up and restoration work to include filling, finish grading, grassing, landscaping, pavement repairs, driveway repairs, culvert repairs, drainage ditch restoration and other necessary restoration activities such that post construction conditions are **EQUAL TO OR BETTER** than those conditions that existed prior to any construction activity occurring.

The Owner is authorized to issue change orders, without the necessity of additional requests for bids, within the scope of the Project when appropriate or necessary in the performance of the contract. No additional work shall be performed unless authorized by the Owner. The bidder declares that it understands that the unit price quantities shown in the proposal are subject to adjustment by either increase or decrease, by the Owner, and that should the quantities of any of the items of the work be increased, the bidder proposes to do the additional work at the unit prices stated herein; and should the quantities be decreased, the bidder also understands that payment will be made on actual quantities at the unit price bid and will make no claim for anticipated profits for any decrease in the

General Requirements and Conditions

quantities, and that quantities will be determined upon completion of the Work at which time adjustment will be made to the contract amount by direct increase or decrease.

Contractor's Obligations:

The Contractor shall, in good workmanlike manner, perform all Work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary and proper to complete all Work required by the Construction Documents within the time specified, in accordance with the provisions of the Construction Documents and any and all supplemental plans and drawings of the Work, and in accordance with the directions of the Owner as given from time to time during the progress of the Work. The Contractor shall furnish, erect, maintain, and remove such permanent and temporary construction works as may be required. The Contractor alone shall be responsible for the safety, efficiency, and adequacy of its methods, workmanship and materials, and for any damage which may result from its failure or its improper construction, maintenance, or operation. The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements, and limitations of the Contract Documents Specifications, and shall do, carry on, and complete the entire Work to the satisfaction of the Owner.

Note: The Contractor shall immediately notify the Owner upon becoming aware of any circumstances/factors that may negatively impact the Project Completion Date or bid amount so that the circumstances/factors can be reviewed/evaluated and a joint corrective action plan developed.

Owner's Authority:

The Owner shall determine the amount, quality, acceptability, and fitness of the several kinds of Work and materials. The Owner shall decide the meaning and intent of any portion of the Contract Documents where the same may be in dispute. The Owner's decisions shall be final and conclusive, except as herein otherwise expressly provided.

Any difference or conflicts in regard to the Work, which may arise between the Contractor under this Construction Contract and other contractors performing work for the Owner, shall be determined by the Owner.

The Owner is not, in any way, responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.

Time Period for Performance of the Work:

The time period for completion of the work is specified in the Construction Contract. Additionally, the Contractor shall comply with specified order of work requirements and intermediary completion dates as specified below for specific tasks to be accomplished as part of the overall Project. Meeting the overall Completion Date, as well as, any task-specific completion dates are ESSENTIAL CONDITIONS of this Contract. Work shall begin on the agreed date specified in the Notice to Proceed. The Contractor shall deploy labor, materials and equipment such that work is prosecuted regularly, diligently, and uninterruptedly at a rate of progress that will ensure meeting all final or task specific

General Requirements and Conditions

completion dates. Specified order of work requirements and intermediary completion dates are as follows:

- Once commenced, this work shall be completed in the shortest time possible such that the disturbance time period is minimized and the project can be inspected, a punch list developed and completed, as-built drawings provided, and the project designated as complete by the Owner.
- All disturbed areas shall be backfilled, finish graded, grassed, and seeded as soon as possible such that the area is “stabilized”, from a storm water perspective, as soon as possible.

Project Schedule:

The Contractor shall deliver to the Owner at the pre-construction meeting a Proposed Project Schedule outlining the order of Work and associated timeframes such that the required scope of Work can be successfully completed by the completion date. The Proposed Project Schedule shall incorporate any intermediary deadlines for completion of particular items of Work as outlined herein. This Project Schedule shall be in a form satisfactory to the Owner, showing the proposed dates of commencement and completion of each of the various subdivisions of Work required under the Contract Documents and the anticipated amount of each monthly payment that will become due by the Contractor in accordance with the progress schedule. This Project Schedule is subject to review and approval by the Owner. Activity codes shall be provided on the progress schedule to match cost center codes on the periodic estimate. The Contractor shall submit an updated progress schedule at each scheduled progress meeting such that progress can be routinely monitored and tracked.

At the Preconstruction Meeting the contractor shall provide the owner with their scheduled work hours for the project. Any deviations from these standard hours will require a minimum of 48 hours notice and approval by the owner.

Environmental, Health and Safety:

The Contractor shall perform all necessary action at all times during the construction period to ensure the protection of all persons performing Work on the Project, the general public and the environment. In emergencies affecting the safety of persons, the work or property at the Project site or adjacent thereto, the Contractor, without special instruction or authorization from the Owner, shall act to prevent threatened damage, injury or loss. The Contractor shall make prompt written notice to the Owner of any changes in the work or deviations from the Contract Documents caused thereby.

Safety and health facilities and procedures shall be in accordance with the requirements of the National Occupational Safety and Health Act of 1970, as amended. The Contractor shall comply with the Department of Labor's Safety and Health Regulations for construction promulgated under the National Occupational Safety and Health Act of 1970, as amended (P. L. 91-596), and under Section 107 of the Contract Work Hours and Safety Standard Act (P. L. 91-54).

All construction debris and construction waste shall be properly stored and disposed in accordance with applicable Federal, State and Local regulations/ordinances. All chemicals

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used during Project construction or furnished for Project operation, whether herbicide, pesticide, disinfectant or of other classification, must show approval of either Environmental Protection Agency (EPA) or United States Department of Agriculture (USDA). Use of all such chemicals and disposal of residue shall be in strict conformance with manufacturer's instructions and applicable Federal, State and Local regulations/ordinances.

The Contractor shall utilize best management practices for erosion, sedimentation, and pollution control during all phases of construction.

At the pre-construction meeting, the Contractor shall provide the Owner with a copy of the Company's Environmental, Health and Safety Program and a Project specific plan as to how the Contractor is to complete the Project in a safe and environmentally protective manner.

Laws of the Place:

The Contractor shall complete the Project in accordance with the applicable national, state, county, and municipal laws, ordinances, and regulations. The Contractor shall keep itself fully informed of those laws, ordinances, and regulations which would, in every way, affect those engaged and employed in the Project, the materials used in the Project, and the conduct of the Project; and the Contractor shall keep itself fully informed of all orders and decrees of bodies and tribunals having jurisdiction and authority over the Project. If discrepancies or inconsistencies, or both, should be discovered in the Construction Documents, in relation to laws, ordinances, regulations, orders, and decrees, the Contractor shall forthwith report the fact, in writing, to the Owner. The Contractor shall protect and indemnify the Owner, its officers, agents, and employees, against claims and liabilities arising from, or based on, the violation of those laws, ordinances, regulations, orders, and decrees, whether by the Contractor or by its employees, agents or subcontractors.

Licensing/Permits:

The Contractor shall have all necessary licenses and permits to complete the Project by the Completion Date. All licenses and permits must provide the Contractor authority to perform the Work including similar licensing for reference in the Contractor's state of origin. This includes any permits required by local government authorities. Subcontractors are required to have a current Georgia Utility Contractor's License.

Certifications:

The Contractor shall possess all necessary certifications for the Contractor as an entity, for individuals in its employ, and for all associated equipment to complete the Project by the Completion Date. Necessary certifications include but are not limited to conforming to the standards of all applicable technical societies, organizations, bodies, codes and standards. All materials shall meet or exceed these necessary certifications including material fabrication. In a case where the Owner establishes a more stringent qualification, the more stringent qualification shall prevail. In addition, necessary qualifications shall

General Requirements and Conditions

include all applicable requirements of local codes, utilities, and any other authority having jurisdiction.

Competent Labor:

The Contractor shall only employ competent and skilled personnel to perform the Work. The Contractor shall at all times have a superintendent who is satisfactory to the Owner and who is capable of acting as the Contractor's agent on this work. This superintendent shall receive instructions from the Owner or its authorized representative. The superintendent shall have full authority to execute the orders and directions of the Owner without delay, and to promptly supply materials, tools, plant equipment, and labor as may be required. The Contractor shall upon demand by Owner, immediately remove that superintendent, foreman, and/or workman whom the Owner may consider to be incompetent or undesirable, or both.

Subcontracting:

The Contractor may utilize the services of specialty subcontractors on those parts of the Work which, under normal contracting practices, are performed by specialty subcontractors.

The Contractor shall not subcontract the complete Work, or more than 50% of any portion of the work unless the work in question is to be performed by a specialty subcontractor, or any major portion thereof, and shall not award any Work to any subcontractor without prior written approval by the Owner, which approval will not be given until the Contractor submits to the Owner, a written statement concerning the proposed award to the subcontractor, which statement shall contain such information as the Owner may require.

The Contractor shall be as fully responsible to the Owner for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as the Contractor is for the acts and omissions of persons directly employed by it.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind subcontractors to the Contractor by the terms of the Contract Documents insofar as applicable to the Work of subcontractors and to give the Contractor the same power in regard to terminating any subcontract that the Owner may exercise over the Contractor under any provisions of the Contract Documents.

The Contractor will indemnify and save the Owner or the Owner's agents harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the Work.

Nothing contained in the Contract Documents shall create any contractual relation between any subcontractor and the Owner. Subcontractors are required to have a current Georgia Utility Contractor's License.

Materials, Services and Facilities:

The Contractor acknowledges that except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment,

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transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to complete and deliver the Work within the specified time.

Materials and equipment shall be stored in a manner to insure the preservation of their quality and fitness for the work. Contractor shall provide the Owner's inspector with confirmation that authorization was granted from any property owner prior to storing any Project materials on private property. Owner's inspector may verify such authorization with the property owners.

Quantities of Estimate:

The estimated quantities of Work to be done and materials to be furnished under these Contract Documents, including the Proposal, are given for use in comparing bids, and to indicate approximately the total amount of the Construction Contract; and the right is especially reserved, except as herein otherwise specifically limited, to increase or decrease them as may be deemed reasonably necessary or desirable by the Owner to complete the Work contemplated by the Construction Contract.

Extras:

Without invalidating the Construction Contract, the Owner may order extra work or make changes by altering, adding to, or deducting from the Work, the Contract sum being adjusted accordingly, and the consent of the Surety being first obtained where necessary or desirable. All Work of the kind bid upon shall be paid for at the price stipulated in the Proposal, and no claims for any extra Work or materials shall be allowed unless the Work is ordered in writing by the Owner and the price is stated in such order.

Owner's Right to Withhold Certain Amounts and Make Application Thereof:

The Contractor agrees that he will indemnify and save the Owner harmless from all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies including commissary, incurred in the furtherance of the performance of the Construction Contract. The Contractor shall furnish satisfactory evidence that all obligations of the nature herein above designated have been paid, discharged, or waived. If the Contractor fails so to do, then the Owner, may after having served written notice on the said Contractor, either directly pay said unpaid bills, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged, whereupon payment to the Contractor shall be resumed, in accordance with the terms of the Construction Contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to either the Contractor or its Surety. The Owner shall not be liable to the Contractor for any such payments made in good faith.

Payments by Contractor:

Payments by the Contractor to vendors for all materials, tools, and other expendable equipment in an amount not less than ninety percent (90%) of the cost thereof, shall be

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made not later than the 20th day of the calendar month following that in which such materials, tools, and equipment are delivered at the site of the Project.

Payments by the Contractor to Subcontractors shall be made not later than the 5th day following each payment to the Contractor, for the respective amounts allowed the Contractor on account of the Work performed by its subcontractors.

Changes/Deviations from Plans and Specifications:

Should the Contractor encounter, or the Owner discover, during the progress of the Work, subsurface or latent conditions at the site materially differing from those shown on the Drawings or indicated in the Specifications, or unknown conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Drawings and Specifications, the attention of the Owner shall be called immediately to such conditions before they are disturbed. The Owner shall thereupon promptly investigate the conditions, and if it finds that they do so materially differ, the Contract shall be modified, with the written approval by the Owner, to provide for any increase or decrease of costs or difference in time resulting from such conditions. No changes in Work shall be made without prior written approval by the Owner.

The Contractor shall proceed with the performance of any changes in the Work so ordered in the field by the Owner unless the Contractor believes said change entitles it to a change in Contract price and/or time, in which event the Contractor shall give the Owner written notice thereof within seven days after receipt of the field order and shall not execute the field change pending the execution of a Change Order unless the change is for accident prevention as cited herein.

Upon request, the Contractor shall furnish the Owner an itemized breakdown of the quantities and prices used in computing the value of any change that might be ordered. Source point documentation of claimed costs is required. In figuring these changes, instructions for measurement of quantities set forth in the Specifications shall be followed.

Charges or credits for the Work covered by the approved change shall be determined by one or more, or a combination of the following methods. All charges or credits must be pre-approved in writing by the Owner.

Unit Prices

Unit prices contained in extra work items or as subsequently approved. The unit prices shall include allowances for overhead and profit. This is the Owner preferred method.

Lump Sum

An agreed lump sum to include all labor, materials, equipment, overhead and profit.

Actual Cost

The actual cost, verified by daily approved time sheets, to include all labor, materials, equipment, overhead and profit.

Contractor Fees for Overhead and Profit:

The fixed percentage for overhead and profit shall not exceed fifteen percent (15%) of the actual cost of the labor, materials, and equipment, except that only actual cost will be allowed for Social Security, Old Age and Unemployment Insurance. Among the items considered as overhead are costs for insurance other than above, bonds, superintendence, time keeping, clerical work, watchman, use of small tools, general office expense and miscellaneous. The allowance for combined overhead and profit thus calculated should be the only such allowance included in the total cost of the Work performed by the Contractor or its Sub-Contractors. If the Work was performed by a Sub-Contractor, the Contractor may add a negotiated fixed fee for overhead and profit not to exceed five percent (5%) of the sub-contract cost.

Claims for Extra Cost:

No claim for extra work or cost shall be allowed, unless the same was done in pursuance of a prior written approval by the Owner and the claim is presented with the first estimate after the changed or extra work is done.

Any Work necessary to be performed after regular working hours, on Sundays, or legal holidays, shall be performed without additional expense to the Owner.

Inspection and Testing of Materials:

Unless otherwise specifically provided for in the Specifications, the inspection and testing of material and finished articles to be incorporated in the Work at the Project site shall be made by bureaus, laboratories, or agencies arranged for by the Contractor and as approved by the Owner. The Contractor shall furnish all such extra quantities of materials and items as may be required for testing, and shall deliver it to the laboratory. The cost of furnishing and delivering samples to the laboratory shall be paid for by the Contractor.

Where the Detailed Specifications calls for certified copies of mill or shop tests to establish conformance of certain materials with the Specifications, it shall be the responsibility of the Contractor to assure the delivery of such certifications to the Owner.

No materials or finished articles shall be incorporated in the Work until such materials and finished articles have passed the required tests. The Contractor shall promptly segregate and remove rejected material and finished articles from the site of the work.

The testing and approval of materials by the laboratory or laboratories approved by the Owner shall not relieve the Contractor of any of its obligations to fulfill its Contract and warranty of workmanship and materials. The Contractor may, at its option, and at its

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expense, cause such other tests to be conducted, as it may deem necessary to assure suitability, strength, and durability of any material or finished articles.

"Or Equal" Clause:

Whenever a material or article required is specified or shown on the Plans by using the name of the proprietary product or of a particular manufacturer or vendor, any material or article which will meet the design criteria and is equal in function and durability may be submitted to the engineer for approval. The engineer will determine if the material or article can be substituted for the named product. Equipment named in the proposal section of the contract documents shall be furnished as named.

Pre-Construction Meeting/Notice to Proceed:

Upon signing of the Contract Documents, a pre-construction meeting shall be scheduled by the Owner. At this pre-construction meeting, the Notice to Proceed will be provided to the Contractor and specific administrative, technical and logistical issues associated with the Project shall be discussed. The Contractor shall provide the Owner the following at the pre-construction meeting:

1. Copies of all required licenses, permits, and certifications or a plan acceptable to the Owner for obtaining said licenses, permits and certifications.
2. A copy of the Contractor's Environmental, Health and Safety Program.
3. A copy of the Contractor's Damage Prevention Program.
4. Proposed Project Schedule and order of work meeting the requirements specified herein.

Progress Meetings:

Regular progress meetings will occur between the Owner and the Contractor to routinely assess progress and proactively resolve issues until the project is complete to the satisfaction of the Owner. A frequency (usually bi-weekly or monthly) and schedule for progress meetings will be established at the pre-construction meeting.

Shop Drawings or Material Submittals:

Working drawings shall consist of detailed drawings which may be necessary for the performance of the Work, but which are not included in the Contract Drawings. Three copies all working drawings shall be submitted by the Contractor to the Owner for review. One copy shall be returned to the Contractor. Working drawings shall include details of all equipment fabrication and installation, pumps and pump curves, masonry lay out, bending diagrams for reinforcing steel, piping lay out, electrical lay out, mechanical lay out and all other drawings as may be required by the specifications, and as may be required for successful completion of the Work. Review by the Owner must be obtained before Work involving working drawings may be performed.

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- A. Review by Contractor: The Contractor shall review all working drawings for accuracy of dimensions and details, and for conformance with Contract Drawings and Specifications before submitting working drawings to the Owner for review. Notation in the form of a stamp verifying that the Contractor has reviewed the working drawings shall be included on all copies of the submittal to the Owner.
- B. Payment: The unit prices bid by the Contractor shall include the cost of furnishing all working drawings, and the Contractor shall be allowed no additional compensation for furnishing those drawings.

Working Drawings will be required for any and all materials supplied by the Contractor to perform the Work as specified.

Inspection:

The Contractor shall furnish the Owner with every reasonable facility for ascertaining whether or not the Work performed and materials used are in accordance with the requirements and intent of the Specifications and Drawings. No Work shall be performed or materials used without suitable inspection by the Owner or his representative. Failure by the Owner to reject defective Work and materials shall neither prevent later rejection when those defects are discovered, nor obligate the Owner to accept defective Work. The representatives of all state, local, and federal regulatory agencies will have access to the Work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for such access and inspection. Where special safety equipment is required for inspection, the inspector shall be furnished this equipment by the Contractor.

Authority and Duties of Owner's Inspector(s):

Owner's inspector(s) ("Inspector") shall be authorized to inspect all work done and all materials furnished, including preparation, fabrication, and manufacture of the materials to be used. The Inspector shall not be authorized to alter or waive requirements of the Drawings and/or Specifications. The Inspector shall inform the Contractor of failures of the Work and/or materials to conform to the Drawings and Specifications. The Inspector may reject materials or suspend Work until questions at issue can be decided by the Owner. The presence of the Inspector shall in no way lessen the responsibility of the Contractor. The Inspector's failure to notify the Contractor of failures of the Work and/or materials to conform to the Drawings and Specifications shall not relieve the Contractor of any liability for faulty Work and/or materials provided by the Contractor.

Rejection of Work and Materials:

All materials furnished or Work done which is not in accordance with the Specifications and Drawings will be rejected. Such materials or Work, which have been rejected, shall be immediately removed. Work shall then be done and materials furnished in accordance with the Specifications and Drawings. If the Contractor fails to remove the Work and materials within forty-eight hours after having been ordered to do so, the Owner shall have the authority to immediately suspend the Contractor's Work. The Owner shall also have the authority to supply personnel and materials, at the cost and expense of the Contractor, in order to remove that Work and/or those materials, which are found not to be in accordance with the Specifications and/or Drawings.

General Requirements and Conditions**Defective Materials and Work:**

The inspection of the Work shall not relieve the Contractor of any of its obligations to fulfill the Contract. Defective Work shall be corrected even though the Work and materials have been previously inspected by the Owner and accepted or estimated for payment. Previous failure by the Owner to condemn improper materials and/or workmanship shall not be considered a waiver of defects, nor will this previous failure to condemn improper materials prevent the Owner at any time subsequently from recovering damages for Work actually defective. Corrections:

Should any portion of the Drawings and Specifications be obscure or in dispute, they shall be referred to the Owner who shall decide as to the true meaning and intent. The Owner shall also have the right to correct errors and omissions at any time when those corrections are necessary for the proper fulfillment of the Drawings and Specifications.

Disagreement:

Should any disagreement or difference arise as to the estimate, quantities, or classifications, or as to the meaning of the Drawings and/or Specifications, on any point concerning the character, acceptability, and nature of the several kinds of work and materials and construction thereof, the decisions of the Owner shall be final, conclusive, and binding upon all parties to the Construction Contract.

Land and Rights-of-Way:

The Owner will furnish all land and rights-of-way necessary for the carrying out of this Construction Contract. The Contractor shall take every precaution to inconvenience as little as possible the owners or tenants of adjacent property. Public highways shall not be obstructed in such a way to cut off traffic. The Contractor shall, at its own expense, repair any damage or injury to either private or public property during progress of the Work.

Sanitary Facilities:

Necessary sanitary facilities shall be the responsibility of the Contractor. No temporary sanitary facilities shall be located on private property without first obtaining property owner permission and providing such to the Owner's inspector. Facilities shall be maintained in a sanitary condition, and in strict accordance with local regulations. No unsanitary act shall be committed outside sanitary facilities.

Roads, Streets, Driveways and Walks:

Access to all driveways, entrances, parking lots, buildings and equipment shall be available at all times. All driveways, roads, streets, and walks shall maintained in good condition at all times. If damage occurs, repairs shall be effected immediately. Cleaning, either by washing or sweeping or combination thereof, shall be employed at whatever frequency necessary to keep driveways, roads, streets and walks clean of mud, dirt and other construction debris. Streets, roads and drives used by the Contractor for access to and from material storage areas job site shall be protected from damage in excess of that caused by the normal traffic of vehicles used for, or in connection with, construction work. All access

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drives shall have a construction apron to prevent material carry-over onto public roads and streets.

Flagging/Signage/Protective Works:

The Contractor shall furnish and install all necessary temporary works for the protection of the Work and the general public including trained flagmen, warning signs, barricades, and lights at night. The Contractor shall provide signage at all times at the location of Work identifying the Contractor and that the Contractor is performing Work for the Owner.

Existing Utility Protection:

The Owner has determined that the proposed work may be in conflict with several existing, private water and other utility services. The Contractor shall be responsible for proper notification to the Utility Protection Center prior to any excavation and maintaining a copy of the excavation permit associated with each particular excavation such that it is readily available for review/inspection at the job site. The Contractor shall be prepared to repair any lines damaged during construction to maintain service to existing customers at all times. The cost for this work shall be included in the unit prices provided.

At the pre-construction meeting, the Contractor shall provide the Owner a copy of the Contractor's Damage Prevention Program outlining how the Contractor intends to protect existing utilities during construction.

Any damage done to existing utility lines, drains, power and telephone cable, poles, and structures of every nature, not indicated to be replaced and/or abandoned shall be repaired or replaced by the Contractor at its own expense. The approximate position of certain known underground lines and structures are shown on the Drawings according to available information. Existing small lines are not shown. The Contractor shall locate, excavate and expose all existing underground lines in advance of trenching and other construction operations. Where connections are to be made at underground structures and pipelines, elevations and locations shall be verified prior to construction of the pertinent Work. Where underground utilities or obstructions are encountered which conflict with the new Work, the location and/or alignment of the new or existing lines may be changed to avoid interference upon written approval of the engineer or Owner.

Operation of Existing Infrastructure:

No component of the Owner's existing operating systems (valves, piping, pumps, etc.) may be operated by anyone other than Owner's personnel unless express written permission is provided by the Owner in each and every instance. All connections to existing facilities shall be scheduled and planned with the Owner and Engineer.

Interruption of Service:

All Work shall be performed in such a manner so as to minimize and/or eliminate service interruptions to the Owner's customers. The Contractor shall coordinate all utility work through the Owner and all service interruptions must be reviewed and planned in advance

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with the Owner. As a general rule, no service interruption shall occur without the Owner being able to provide a 2-day advance notice to customers as to the date, time and expected duration of any outage. No outage shall last longer than 4 hours unless otherwise approved in writing by the Owner. If the work cannot be accomplished in this manner, the Contractor must plan to accomplish the required Work via other methods approved by the Owner. The Contractor shall perform any Work requiring outages during periods of low customer demand, some night work and weekend work may be required at the request of the Owner, there will be no additional compensation for this work.

Demolition:

Should the Contractor be required to perform any demolition, the structures shall be removed to grade. All structures demolished shall be filled to finished grade with compacted fill or crushed stone. Basement and pits of buildings to be demolished shall be filled with compacted fill or compacted crushed stone to finished grade level.

All materials shall be removed from the Project site and disposed of a legal landfill or sold for reuse. The Contractor shall provide information to the Owner concerning the disposition of materials from demolished buildings.

Blasting:

If the scope of the Project requires blasting or the Contractor contemplates conducting blasting at some point during the project, the Contractor shall obtain additional insurance to cover such work in an appropriate dollar amount to be determined by the Owner. In addition, a pre-blast survey shall be conducted on all utility structures and substructures checking for leaks, service connections in the vicinity, and potential problems that might arise from blast disturbances. Seismic recorders must be set up at all structures in the vicinity determined by the pre-blast survey to be possibly affected from blasting conforming to all local, state and federal codes. Immediately after blasting is completed, a post-blast survey will be conducted on all utility related structures and substructures checking for leaks, service interruptions and facility weakening caused by blasting.

Housekeeping:

The Contractor shall keep Project locations and material storage areas clean and orderly at all times. Trash, construction debris, litter etc shall not be allowed to accumulate. Clean-up shall occur on a frequent enough basis to ensure the aforementioned is achieved.

Before the work is considered as complete all rubbish and unused material related to the Work must be removed and the premises left in a condition satisfactory to the Owner. Streets, curbs, crosswalks, pavements, sidewalks, fence, and other public and private property disturbed or damaged shall be restored to their former condition or better on an on-going basis by the Contractor at no additional cost to the owner. This shall be done prior to the final inspection and any discrepancies noted on the inspection must be completed before final payment.

As-Built Drawings:

General Requirements and Conditions

The Contractor shall provide to the Owner a complete set of as-built drawings for the Work performed. The as-built drawings shall be provided on an ongoing basis throughout the Project as agreed during the pre-construction meeting. As-Builts shall comply with the following requirements:

1. As-built drawings shall graphically depict the location and elevation of all construction including underground piping. Changes of dimension and detail shall be shown on the drawings. Changes made by requests for information, field orders, clarification memorandums or change orders shall be shown on the drawings. Dimensions, distances and coordinates shall be shown to the nearest 0.1 foot. Elevations shall be shown to the nearest 0.01 foot. Underground piping location shall be dimensioned from the edge of pavement or, if no pavement is present, some other visible and established landmark(s).
 - a. As-built drawings shall graphically depict location and approximate elevation for all project equipment and apparatus such as manholes, pump/lift stations, air relief valves, in-line valves, flush valves, blow-off valves, fire hydrants, meters, etc. Location(s) shall be depicted using Geographic Positioning System (GPS) coordinates meeting the following specifications: GPS equipment shall have a MS Windows-based office processing software that supports GIS/CAD formats such as; ARC/INFO, AutoCAD and ArcView. GPS points shall be taken by recording ten (10) points at the equipment or apparatus' location with a minimum of four (4) satellites and accuracy based on a maximum Position Dilution of Precision (PDOP) of 6.0.
2. The address shall be noted above or adjacent to all service or tap locations.
3. All service lines shall be shown on the plans and indicate the nominal size and geographic location of each service line.
4. Any other non-standard construction features are to be noted.
5. All abandoned lines shall be labeled as such on the drawings with the points of isolation clearly identified.
6. Electrical wiring diagrams.
7. Instrumentation location and control loop configurations.
8. All as-built drawings shall be reviewed and approved prior to final payment being made.

Acceptance of Work and Final Payment:

Before final acceptance of the Work and payment to the Contractor of the retainage held by the Owner, the following requirements shall be complied with:

Final Inspection:

Upon written notice from the Contractor that final Work is ready for inspection, the Owner will make a final inspection of the Work, and shall notify the Contractor of instances where its Work fails to comply with the Contract Drawings and/or Specifications via creation and distribution of a "Punch List" of work remaining to be completed and/or deficiencies requiring remedy. The Contractor shall immediately make such corrections as are necessary to make the Work comply with the Contract Drawings and Specifications to the satisfaction of the Owner. All parties shall complete a "Certificate of Substantial Completion" in a format as prescribed by the owner.

Special Conditions for this project:

Contractor has **until March 30, 2025** to complete the entire project.

As-Built Drawings:

Final retainage payment will be withheld until the Contractor has provided the Owner as-built drawings meeting the requirements specified herein.

Sales Tax Refund:

Final retainage payment shall be withheld until the Contractor has provided sufficient assistance, as determined by the Owner, to enable it to procure a sales tax refund for Georgia sales tax paid on materials purchased by the Contractor and installed by the Contractor and /or their sub-contractors

Dalton Utilities is a municipality of the State of Georgia and has an official Sales and Use Tax Certificate of Exemption.

Liens:

Final acceptance of the Work will not be granted and the retainage will not be due or payable until the Contractor has furnished the Owner proper and satisfactory evidence under oath that all claims for labor and materials employed or used in the construction of the Work under the Construction Contract have been settled, and that no legal claims can be filed against the Owner for such labor or materials.

Final Estimate:

Upon completion of all clean up, alterations and repairs required by the final inspection or operating test, the satisfactory completion of the operating test, and upon submitting proper and satisfactory evidence to the Owner that all claims have been settled, the Owner will issue a certificate of final acceptance of the Work. The Contractor shall then prepare his final estimate. After review and approval by the Owner, the payment shall then become due net 30 days.

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Acceptance of Final Estimate:

The acceptance of payment by the Contractor regarding the final estimate shall operate as a release to the Owner from all claims and liabilities to the Contractor for all Work done or materials furnished, or for any act of the Owner or its agents affecting the Work.

TECHNICAL SPECIFICATIONS

EROSION AND SEDIMENTATION CONTROLS

312500

SECTION 312500 – EROSION AND SEDIMENTATION CONTROLS

Scope:

This specification section covers the requirements for erosion, sedimentation, and pollution control during construction. During construction, temporary and permanent protective structures and measures as detailed in the following paragraphs shall be implemented and maintained by the Contractor to minimize erosion and sedimentation as a result of the work being performed.

General:

- A. The Contractor shall fully comply with the guidelines as specified in the Georgia Erosion and Sedimentation Control Act of 2003 (as amended).
- B. Land disturbance activity shall not commence until the Land Disturbance Permit has been obtained by the Owner from the Local Issuing Authority, provided that a permit is required for the project.
- C. The Contractor shall fully comply with the requirements of the Erosion, Sedimentation and Pollution Control Plan (the Plan) prepared for the Project and approved as a part of the Land Disturbance Permit obtained in item B above and shall sign a certification to that extent on the Plan. Where there are conflicts between the Plan and these specifications, the project specific Plan will control.
- D. The Contractor shall fully comply with the Georgia Department of Natural Resources Environmental Protection Division (EPD) General Permit for Stormwater Discharge associated with Construction of Infrastructure GAR1000002.
- E. The Contractor will assist Owner in preparing a Notice of Intent (NOI) and the project superintendent, who must be certified in accordance with “Certified Personnel” or “Certified Person” which means any person who has attended the Conservation Commission’s “Fundamentals Seminar” (Level 1A) and holds a certificate of successful completion of the training requirements stated in *Rules of the State Soil and Water Conservation Commission Chapter 600-8: Education and Training Certification Requirements for Persons Involved with Land Disturbing Activities* 600-8-1-.04 (2)(a) from the Conservation Commission in the area of inspection of best management practices (BMPs) on construction sites (BMPs are vegetative and structural measures to control and prevent erosion), will sign said NOI as the Operator. Contractor will not start land disturbing activities until 14 days after the NOI has been sent (postmarked) ***return receipt certified mail*** to EPD by Owner. A copy of the NOI and proof of certified mailing will be maintained onsite at all times as a part of the project paperwork.
- F. The Contractor will not start land disturbing activities until receiving proof or providing proof that the appropriate land disturbing fees have been submitted to EPD and to the local issuing authority.
- G. Use of erosion and sedimentation control measures shall be included in all permanent construction work and temporary construction work where necessary as a result of construction operations and where required in the Erosion, Sedimentation and Pollution Control Plan.
- H. The erosion and sedimentation controls shown on the Drawings of which the Erosion, Sedimentation and Pollution Control Plan is included and those in these Specifications are minimal requirements. The Contractor’s methods of construction may require additional erosion and sedimentation controls not indicated on the Drawings or in these Specifications. Any additional or different erosion control measures from what is in the Plan required due to the method of construction must be approved by the design professional, approved by the Local Issuing Authority, added to the Plan and approved by the Owner.

- I.** The Contractor shall be solely responsible for control of erosion within the Project site and prevention of sedimentation or pollution in any adjacent waterways.
- J.** The Contractor will assist Owner in preparing a Notice of Termination (NOT) and the project superintendent, who must be certified in accordance with “Certified Personnel” or “Certified Person” which means any person who has attended the Conservation Commission’s “Fundamentals Seminar” (Level 1A) and holds a certificate of successful completion of the training requirements stated in *Rules of the State Soil and Water Conservation Commission Chapter 600-8: Education and Training Certification Requirements for Persons Involved with Land Disturbing Activities* 600-8-1-.04 (2)(a) from the Conservation Commission in the area of inspection of best management practices (BMPs) on construction sites (BMPs are vegetative and structural measures to control and prevent erosion), will sign said NOT as the Operator.
- K.** The Contractor shall fully comply with Georgia’s Oil or Hazardous Material Spills or Releases Act. Any spill will be reported to the Owner immediately.
- L.** The Contractor will install stormwater management systems in accordance with the Plan and the contract documents, as well as any local permits.
- M.** The Contractor will install and maintain all other controls required under the Plan including controls related to waste disposal practices, off-site vehicle tracking, sanitary sewer and septic system regulations, petroleum spills and leaks, and concrete wash down procedures.

Submittals:

Submittals are required in accordance with this section to allow the Owner to review all aspects of the work under this specification and ensure the work is conducted in full accordance with the Plan and local, State and Federal requirements. A minimum of three copies of each submittal shall be provided to the Owner for review. The Contractor shall review and stamp all submittals prior to sending to the Owner and make the certification statement that the submittal meets the requirements of the contract documents. The Owner will return one copy of each submittal to Contractor stamped “No Exceptions Taken”, “Make Corrections Noted”, “Amend & Resubmit”, or “Rejected – See Remarks”.

For submittals that have been marked as “Amend & Resubmit” or “Rejected – See Remarks”, the Contractor shall provide at least three copies of the revised submittal. For these submittals, the Contractor shall reference the specification section, make the certification statement, note any deviations from the specification and list dates that it was previously submitted.

- A.** Complete shop drawings and manufacturer’s data shall be submitted to the Owner for all products to be used in erosion control measures or BMPs at the site.
- B.** The Contractor will submit to Owner the name of the project superintendent and proof that the person is certified in accordance with “Certified Personnel” or “Certified Person” which means any person who has attended the Conservation Commission’s “Fundamentals Seminar” (Level 1A) and holds a certificate of successful completion of the training requirements stated in 600-8-1-.04 (2)(a) from the Conservation Commission in the area of inspection of best management practices (BMPs) on construction sites (BMPs are vegetative and structural measures to control and prevent erosion).
- C.** The Contractor will submit to Owner a list of all proposed subcontractors on the project. All proposed subcontractors on the project that will have any involvement in land disturbing activities of any sort must be “Certified Subcontractors” which means any person who has attended the Conservation Commission’s “Awareness Seminar for Subcontractors” and holds a certificate of successful completion of the training requirements stated in 600-8-1-.04 (2)(d) from the Conservation Commission in the area of erosion and sediment control practices and processes in the state. Proof of this training must be submitted to the Owner.

- D.** The Contractor will submit to the Owner within 30 days of award of project and prior to any land disturbing activities, the fees associated with the project on the required EPD form for the amount of acreage to be disturbed, if applicable. Payment of fees associated with the NOI will also be made to local issuing authority prior to any land disturbing activities as required under the General Permit, if applicable.
- E.** The Contractor will submit to Owner a request for inspection by the design professional of the initial erosion control measures. This inspection must be performed seven days after installation of the initial erosion control measures, and a report or letter must be provided to the Contractor by the design professional summarizing the findings of the inspection and listing any deficiencies that must be corrected. All deficiencies identified by the design professional must be corrected within two business days of receipt of the report or letter by the Contractor. This report must be maintained as a part of the Contractor's onsite paperwork, and a copy of this report or letter must be submitted to the Owner for review and approval. In addition, proof that any noted deficiencies were corrected within two business days of receipt must be provided to the Owner.
- F.** The Contractor will submit to Owner copies of all inspections performed on the site in accordance with the section entitled Quality Assurance.
- G.** The Contractor will submit details on sampling including proposed sample point labels, geographic positioning system (GPS) coordinates for all proposed sample points shown in the Plan, proposed sampling personnel and certification information on those personnel, proposed sampling equipment, and proposed analytical equipment and result reporting forms. If Contractor plans to use a commercial laboratory for the required analytical testing, the name, location, and certification status of the proposed laboratory must be provided.
- H.** The Contractor will submit to Owner copies of all sampling results and reports for sampling performed at the site in accordance with the Plan. These results must be submitted to the Owner within five days of collection. The Owner will submit all sampling results to EPD by the fifteenth day of the month following the reporting period in accordance with the requirements in the General Permit, GAR100002.
- I.** The Contractor will provide to the Owner as-built drawings of all permanent stormwater management systems and controls constructed as a part of this project in accordance with Section 007213.

Quality Assurance:

The purpose of this section is to ensure that erosion control measures are effective in minimizing erosion, sedimentation, and pollution to State waters and that all measures taken fully comply with the approved Plan, and local, State and Federal requirements. The Contractor will have a Certified Person perform, at a minimum, the following inspections:

- A.** Daily inspections of all areas where petroleum products are stored, used, or handled; all locations where vehicles enter and leave the site; and the rain gage for the site.
- B.** Fourteen day inspections of disturbed areas that have not undergone final stabilization, areas used for storage of materials that have not undergone final stabilization, and structural control measures identified in the Plan.
- C.** End of storm inspections will be conducted after any storm producing 0.5 inches of rain or greater of disturbed areas that have not undergone final stabilization, areas used for storage of materials that have not undergone final stabilization, and structural control measures identified in the Plan.

- D. Monthly inspections of all areas that have undergone final stabilization until the NOT is filed with EPD.
- E. Any additional inspections required in the project specific Plan.

Based on the results of these inspections, the Contractor will have seven calendar days from the date of inspection to correct any deficiencies. Corrections to any deficiencies should be documented in the onsite paperwork.

To ensure compliance with these specifications and the Plan, the Owner will engage a “Certified Inspector” which means any person who has attended the Conservation Commission’s “Advanced Fundamentals Seminar” (Level 1B) and holds a certificate of successful completion of the training requirements stated in 600-8-1- .04 (2)(b) from the Conservation Commission to inspect land-disturbed areas for compliance with the state laws in the afore mentioned inspections.

Any deficiencies found by the Owner will be immediately brought to the attention of the Contractor. Correction of these deficiencies must be completed by the Contractor within five calendar days of identification.

The Owner must be made immediately aware of any inspections performed by the Local Issuing Authority or the EPD. Any compliance issues identified in any inspection by either of these entities will require the Contractor to **Stop Work** on all other work except correcting the deficiency identified. Certification that any such deficiency has been corrected must be submitted to the Owner within five days of the inspection.

In addition to inspections, the Contractor is required to perform sampling in accordance with the Plan. Sampling points identified in the Plan must be labeled prior to starting land disturbing activities. All sample locations should be marked with an approved sign with the writing “Dalton Utilities, Project Name, Sample # (from the Plan)”. The Contractor shall notify Owner of any outfalls not shown on the Plan. Owner shall have these outfalls added to the Plan by the design professional. Sampling points will be confirmed by Owner prior to land disturbing with the Contractor in the field. The Contractor is required to collect GPS coordinates for all sampling points in accordance with Section 007213.

All sampling by the Contractor will be performed in strict accordance with the Plan, methodology and test procedures in 40 CFR Part 136 and the guidance document entitled “NPDES Storm Water Sampling Guidance Document, EPA 833-B-92-001”. The Contractor is responsible for providing sampling and analytical equipment as required in the Plan. All monitoring results shall include at a minimum the sampling date, exact place, time of sampling, name of sampling personnel, analytical date, time of the analyses, personnel who performed the analyses, the analytical methods, and the results of the analyses, as well as any additional information required by the project specific Plan.

Products and Implementation:

The Contractor will implement Erosion, Sedimentation, and Pollution Control Plan (the Plan) in strict accordance with the Drawings and these Specifications and as required by the Owner and design professional. Any changes, amendments, deviations, additions, or other alterations from the Plan must be approved and certified in writing by the design professional. These changes will also require review and approval by the local issuing authority.

Products and methods not listed in these Specifications may be used by the Contractor if they meet the requirements of the Georgia Soil and Water Conservation Commission (GaSWCC) as outlined in the *Manual for Erosion and Sediment Control in Georgia* (as amended as of January 1 of the year in which the land disturbing activity is being conducted), are approved and certified by the design professional, are approved by the local issuing authority, are added to the Plan, and are approved prior to use by the Owner.

- A. Buffer Zones (Bf):** The Plan will show all buffer zones. At a minimum, buffers of 25 feet along the banks of all State waters must be maintained free of construction activity, as measured horizontally from the point where vegetation has been wrested by normal stream flow or wave action. Buffer zones will be, at a minimum, in accordance with the requirements of the *Manual for Erosion and Sediment Control in Georgia* (as amended as of January 1 of the year in which the land disturbing activity is being conducted), however, the Plan must be consulted as local buffer zones may be more stringent and these more stringent requirements, if applicable, will be shown in the project specific Plan. The Contractor will be required to mark these buffer zones in accordance with the Plan prior to starting work with flags or signs to be approved by Owner. The Contractor's employees and subcontractors will be educated as to the importance of avoiding any land disturbing activity inside the buffer zones. Where land disturbing activity is shown on the Plans in accordance with activities allowed in the buffer zone due to exemptions as outlined in the General Permit or in accordance with a buffer variance obtained by the Owner from the Georgia Environmental Protection Division, the Contractor will notify Owner prior to starting this work. All work in the buffer will be in strict accordance with the Plan. Repair of the buffer zone, in accordance with the Plan and any buffer variance documents, will be performed immediately upon completion of the work. One time water and sewer line crossings of State waters will be allowed in accordance with these specifications, the Plan, and as approved by Owner prior to initiating the crossing. All crossings must be made perpendicular to or within 25 degrees of perpendicular of the flow of the stream, creek or river. In addition, the width of disturbance for these crossings must be less than 50 feet. This 50 foot section of proposed disturbance must be marked by the Contractor in the field prior to beginning any work. The Owner will inspect the proposed crossing and the limits of disturbance prior to initiation of the work to ensure compliance with the Plan and the General Permit. For any crossing not meeting these requirements, a buffer variance will be required from the Georgia Environmental Protection Division before beginning any land disturbing activity in the buffer zone. In addition to a buffer variance, any crossings must also have a Pre-Construction Notification completed to the U.S. Army Corps of Engineers if deemed necessary by the owner.
- B. Disturbed Area Stabilization Options (Ds1):** The Contractor shall apply mulch to all exposed areas within 14 days of disturbance if the area or the season of the year does not allow stabilization with temporary seeding (Ds2). This BMP can only be used for stabilization of areas for less than six months. For this BMP, disturbed area stabilization must be in accordance with one of the following: dry straw or hay, wood waste, compost, or polyethylene. At a minimum, 90 percent of the disturbed area must be covered by one of the disturbed area stabilization alternatives. If straw, hay, wood waste or compost are used, it must be applied in a layer of between 2 and 4 inches thick, properly anchored and maintained. All disturbed areas along any pipelines shall be mulched as soon as possible after backfilling operations have been completed, but in no case shall this time period exceed 14 days.
- C. Disturbed Area Stabilization with Temporary Grassing (Ds2):** The Contractor shall apply temporary seeding to all exposed areas within 14 days of disturbance. Temporary grassing can be applied to rough graded areas that will be exposed for less than six months. If an area will be exposed for longer than six months, then permanent disturbed area stabilization will be performed. Temporary grassing for erosion control shall consist of planting temporary grass of a quick growing species such as millet (pearl or browntop), oats, rye, ryegrass, sudangrass, lovegrass or lespedeza (annual) suitable to the Mountain, Blue Ridge or Ridge and Valley Major Land Resource Area. The specific species to be planted should be as identified in the Plan and approved by the Owner. Planting dates, broadcast rates and methods, fertilizer, lime, mulch and periodic watering shall be as noted in the Plan. Seed, fertilizer, lime, mulch and periodic watering shall be applied in adequate quantities to assure a full, healthy ground cover over the entire disturbed area of construction operations. All materials shall be of first class quality. All disturbed areas along any pipelines shall be grassed as soon as possible after backfilling operations have been completed, but in no case shall this time period exceed 14 days.

D. Disturbed Area Stabilization with Permanent Grassing (Ds3): Permanent grassing will be installed once all soil disturbing activities at the site have been completed or if an area will not be disturbed further for in excess of six months. For pipeline installations, after completion of pipe laying operations, the Contractor shall grass disturbed areas immediately and within 14 days of completion of backfilling. All yards and ditches shall be returned to original condition or better within a timely fashion. The Contractor shall grass all areas that were disturbed by clearing or construction operations. Before seeding commences, the Contractor shall smooth the entire area with a drag and break up all clods. All deleterious material, large stones, roots, limbs, and other debris shall be removed to leave a smooth area suitable for mowing, use of a rock hound or similar piece of equipment may be required in order to achieve this standard. Grass species for permanent grassing shall match the existing grass species at the site before land disturbing activities commenced where work is in the road right of way. Permanent grassing for erosion control shall consist of planting grass such as Bermuda, Fescue, Lespedeza, Bahia or Lovegrass suitable to the Mountain, Blue Ridge or Ridge and Valley Major Land Resource Area. Rye grass seed may be required as part of the permanent grassing depending on the time of year. This requirement is at the owners discretion. The specific species to be planted should be as identified in the Plan and as approved by the Owner for the particular location and time of year. Planting dates, broadcast rates and methods, fertilizer, lime, mulch and periodic watering shall be as noted in the Plan. Seed, fertilizer, lime, mulch and periodic watering shall be applied in adequate quantities to assure a full, healthy ground cover over the entire disturbed area of construction operations. All materials shall be of first class quality.

- (1) Contractor shall submit data on percent germination and percent purity for all seed proposed for application. In addition, Contractor shall submit proposed bulk seeding rates, seeding method, inoculants (if applicable), mulch type and application rate, lime type and application rate, fertilizer type and application rate, proposed anchoring method, and any other data requested by Owner to confirm that permanent grassing implementation will meet minimum requirements in the Plan.
- (2) Agricultural lime meeting the specifications of the Georgia Department of Agriculture shall be spread at the rate of one to two tons per acre unless soil tests indicate lime is not required.
- (3) Mulch is required for all permanent grassing installations and shall be applied to achieve 100% soil cover. Dry straw or hay of good quality can be used for conventional seeding and shall be applied at a rate of 2 and ½ tons per acre. For hydraulic seeding, Contractor shall use wood cellulose mulch or wood pulp fiber at a rate of 500 pounds per acre followed by dry straw or hay at the above indicated rate. Mulch shall be applied within 24 hours of seeding and will be anchored.
- (4) Fertilizer including total Nitrogen, available Phosphoric Acid, and water-soluble Potash shall be applied as required in the Plan depending on the grass species and time of the year.
- (5) Grassing (by seeding) shall be completed as soon as practical after finish grading is completed in order to minimize erosion from rainfall and run-off. Any erosion occurring in grassed areas shall be immediately repaired.
- (6) Permanent seeding shall be done only if it can be completed within the appropriate planting season for the Mountain, Blue Ridge, and Valley and Ridge Major Land Resource Areas for the type of grass.
- (7) Seed, fertilizer, mulch and periodic watering shall be applied in adequate quantities to assure a satisfactory ground cover over the entire area of construction operations. A satisfactory stand of grass is defined as a full cover, over 100% of the soil surface

and seeded area, of live and growing grass with no bare spots and a density of at least 70 percent as determined by the Owner.

- (8) Permanent grassing along highway right-of-way shall also comply with Department of Transportation, State of Georgia, Standard Specifications Construction of Roads and Bridges, latest edition and any requirements of the local authority having jurisdiction over the road right of ways.
- (9) Permanent grassing through established pastures shall be by seeding with the same type of grass as was disturbed or, if acceptable to the property owner, seeding may be as recommended by the local Soil Conservation Agent as long as application methods, seeding rates, mulching rates, lime application rates, fertilizer application rates, and the other requirements meet the requirements for the type of grass required in the Plan and in *Manual for Erosion and Sediment Control in Georgia* (as amended as of January 1 of the year in which the land disturbing activity is being conducted).
- (10) Grassing may be by hydraulic or conventional seeding, but the method selected must be approved by the Owner.
- (11) Seed and fertilizer mix shall be as described above. All planting and seeding shall be watered thoroughly as soon as completed and shall be watered as necessary to provide continuous growth without setback until all growth from seed is thoroughly established.
- (12) Anchoring must be done immediately after the mulch is spread. Anchoring may be done by various means, one example is driving over the mulch with a piece of equipment. No additional payment shall be made for this process.

E. Disturbed Area Stabilization with Sodding (Ds4): Permanent sodding will be installed once all soil disturbing activities at the site have been completed or if an area will not be disturbed further for in excess of six months and as called for in the project specific Plan. For pipeline installations, after completion of pipe laying operations, the Contractor shall sod disturbed areas immediately and within 14 days of completion of backfilling. All yards and ditches shall be returned to original condition or better within a timely fashion. The Contractor shall sod all areas that were disturbed by clearing or construction operations where the Plan calls for sod or where sod was present before the area was disturbed. Before sodding commences, the Contractor shall smooth the entire area with a drag and break up all clods. All deleterious material, large stones, roots, limbs, and other debris (1" or larger in size) shall be removed to leave a smooth area suitable for sod installation. Grass species for permanent sodding shall match the existing sod at the site before land disturbing activities commenced where work is in the road right of way or on private property. Permanent sodding for erosion control shall consist of planting sod of either Bermuda or Tall Fescue depending on the planting season and the site specific requirements.

F. Silt Fence (Sd-1C): Unless otherwise noted in the project specific Plan, all silt fence installed shall be Type C silt fence. The Contractor shall submit product data to the Owner for approval for any silt fence proposed for installation on the project. Approved silt fence fabrics are listed in the Georgia Department of Transportation Qualified Products List #36 (QPL -36). Silt fence shall be constructed in areas as shown on the Plan and in additional locations as requested by the Owner. Installation shall be by trenching 6 inches below grade and putting in the silt fence with steel posts at 4 foot intervals. When sediment accumulates to a level of one half the height of the silt fence, maintenance must be performed by the Contractor to remove the accumulated sediment.

G. Check Dams (Cd-S and Cd-Hb): Check dams shall be placed as shown on the Plan and as requested by the Owner. A geotextile selected in accordance with AASHTO M288-96 Section 7.3 and approved by Owner shall be used under stone check dams. Stone check dams shall be constructed of graded 2-10 inch stone. The stone shall be placed such that it covers the entire

ditch or swale and the center of the stone check dam is lower than the edges. They shall be maintained at all times by removing sediment when it reaches one half the height of the dam. Hay bales shall only be used where called for in the Plan and approved by the Owner. If used, hay bales must be embedded a minimum of 4 inches into the existing ground surface. As with stone check dams, sediment must be removed from behind the hay bales when it reaches one half the height of the hay bale. If required by the owner, all check dams must be removed once final stabilization has occurred unless the check dam is called out to be a permanent hydraulic control measure on the design drawings.

- H. Construction Exit (Co):** Construction exits shall be constructed at all points of ingress and egress from the site as shown on the Plan. The location of the exit shall be excavated 3 inches below grade. A geotextile meeting the requirements of AASHTO M288-98 must be placed over the entire area. Stone in accordance with the National Stone Association R-2 (size range of 1.5 to 3.5 inch) will be placed over the geotextile to a thickness of at least 6 inches. The width of the exit will match the largest requirement for vehicular traffic on and off the site, but at a minimum, it will be 20 feet in width and the length will be as shown on the project specific Plan. Maintenance of the exit will be performed as needed on a daily basis to ensure that no tracking of materials from the project site onto the road occurs. Maintenance will include the addition of more stone as required to maintain a thickness of at least 6 inches of clean stone leaving the site.

- I. Rip-Rap:** The Contractor shall place rip-rap as required and directed by the Owner or Engineer.

- (1) **Materials:** Rip-rap shall be hard, durable rock, concrete rubble, or similar material weighing at least 150 lbs per cubic foot. Rip-rap shall consist of stone or bagged sand-cement to a thickness of approximately twelve inches (12"). Stone shall be hard quarry or field stone of such quality that it will not disintegrate on exposure to water or weathering. Stone shall range in weight from a minimum of 25 pounds to a maximum of 150 pounds with at least 50 percent of the pieces weighing more than 60 pounds. Rip-rap shall be reasonably well graded within the following limits established by the National Crushed Stone Association (NCSA):

Graded Rip-Rap Stone

NCSA No.	Size Inches (Square Openings)		
	Maximum	Average	Minimum
R-1	1-1/2	¾	#8
R-2	3	1-1/2	1
R-3	6	3	2
R-4	12	6	3
R-5	18	9	5
R-6	24	12	7
R-7	30	15	12

- (2) **Payment:** Rip-rap will be paid for on the basis of the number of square yards measured in place to the thickness specified.

- J. Limit of Progress:** The Owner will limit the area of excavation commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding and other such erosion, sedimentation and pollution control measures current in accordance with the schedule in the approved Plan. Should seasonal limitations make such coordination unrealistic, special erosion control measures shall be taken immediately to the extent feasible and justified. Any special erosion control measures will be taken only after approval of the Owner, the design professional, and the local issuing authority.

- K. Additional BMPs:** Specifications and requirements for any additional vegetative or structural BMPs are provided in the project specific Plan. Any vegetative or structural BMP shall meet the construction requirements listed in the *Manual for Erosion and Sediment Control in Georgia* (as amended as of January 1 of the year in which the land disturbing activity is being conducted).
- L. Payment:** Payment for erosion control programs shown on the drawings will be paid for at the unit prices bid. Otherwise the cost of the above work and all cost incidental thereto shall be included in the unit price bid for the item to which the work pertains.

END OF SECTION

UPPER COOSA MITIGATION BANK

90% WETLAND RESTORATION DESIGN PLANS

SHEET LIST

1	COVER
2	CONSTRUCTION NOTES
3	EXISTING CONDITIONS
4	PROPOSED OVERALL
5	PROPOSED CUT/FILL
6	WETLAND-VALLEY CHANNEL COMPLEX 1
7	WETLAND-VALLEY CHANNEL COMPLEX 2
8-9	MICROTOPOGRAPHIC MEANDER SCAR
10-11	MACROTOPOGRAPHIC MEANDER SCAR
12	FLOODPLAIN-RIVER CONNECTION
13-15	DETAILS
16	PLANTING PLAN
17-18	PLANTING PALETTE
19	SEEDING PLAN AND PALETTES



Designer:
Nutter and Associates, Inc.
360 Hawthorne Lane
Athens, GA 30606
(706) 354-7925

Owner:
Dalton Utilities
1200 V D Parrott Jr. Pkwy.
Dalton, GA 30721
(706) 278-1313



1	90% Design Plans	7/19/21
2		
3		
4		
5		
6		
No.	Drawn By/Checked By	Date
1	SM/AM-TG	7/19/21
2	SM/AM-TG	1/30/22
3		
4		
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7		
No.	Drawn By/Checked By	Date

Firm Name and Address
Nutter and
Associates, Inc.
360 Hawthorne Lane
Athens, GA 30606

Project Name and Address
Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, GA 30721

Project	17-105.00	Sheet	1
Date	07/26/2021		
Scale	NA		COVER

Construction Notes:

GENERAL NOTES:

THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH THE OWNER (DALTON UTILITIES) AND THE OWNER'S REPRESENTATIVE PRIOR TO BEGINNING CONSTRUCTION.

ALL WORK SHALL CONFORM TO THE CURRENT STANDARDS AND REGULATIONS SET FORTH BY THE STATE OF GEORGIA AND ANY LOCAL STANDARDS UNLESS INDICATED OTHERWISE BY THE CONTRACT DOCUMENTS OR SUBSEQUENT PLANS.

WORK SHALL OCCUR ONLY DURING THE PERMITTED TIME PERIOD AS APPROVED BY THE OWNER, OWNER'S REPRESENTATIVE, AND US ARMY CORPS OF ENGINEERS.

THE LOCATION OF ALL EQUIPMENT AND MATERIAL STAGING AREAS, HAUL ROADS, AND ACCESS POINTS TO BE LOCATED AS NOTED ON THESE PLANS. LIMITS OF CONSTRUCTION STAGING AREAS AND ACCESS ROADS SHOWN ON THESE PLANS ARE APPROXIMATE. LIMITS AND LOCATIONS TO BE COORDINATED WITH OWNER OR REPRESENTATIVE.

CONSTRUCTION ACTIVITIES SHALL PROGRESS FROM EAST TO WEST UNLESS OTHERWISE NOTED ON THESE PLANS OR AS DIRECTED BY THE DESIGNER.

CONTRACTOR TO DISPOSE OF ALL WASTE MATERIAL OFFSITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS.

ALL MECHANIZED EQUIPMENT OPERATED WITHIN THE PROJECT BOUNDARY SHALL BE INSPECTED REGULARLY AND MAINTAINED TO PREVENT CONTAMINATION OF STREAM WATERS FROM FUELS, LUBRICANTS, HYDRAULIC FLUIDS OR OTHER TOXIC MATERIALS. ANY EQUIPMENT REPAIRS, MAINTENANCE OR REFUELING ACTIVITIES SHALL ONLY BE DONE IN DESIGNATED AREAS.

CONSTRUCTION PERSONNEL SHOULD PARK ALL VEHICLES WITHIN THE LIMITS OF THE DESIGNATED CONSTRUCTION STAGING AREAS. ALL OTHER CONSTRUCTION EQUIPMENT AND VEHICLES SHOULD BE PARKED WITHIN THE CONSTRUCTION STAGING AREA WHEN NOT IN USE.

CONTRACTOR TO BE RESPONSIBLE FOR REPAIRS TO ANY DAMAGE TO EXISTING UTILITIES, INCLUDING BUT NOT LIMITED TO, OVERHEAD AND UNDERGROUND UTILITIES, CURB AND GUTTER, PAVEMENT, SIDEWALKS, STORM DRAINAGE SYSTEMS, SANITARY SEWER SYSTEMS, ACCESS ROADS, OR FENCING. ANY REQUIRED REPAIRS TO BE MADE IN ACCORDANCE WITH ANY AND ALL APPLICABLE STATE AND OR LOCAL MUNICIPALITY STANDARDS. THE CONTRACTOR SHALL CONSULT WITH THE "CALL BEFORE YOU DIG" TOLL-FREE NUMBER AT LEAST 48 HOURS PRIOR TO BEGINNING ANY EARTHWORK ACTIVITIES.

CONTRACTOR IS ADVISED TO USE CAUTION AND TO FOLLOW THE CONTRACT DOCUMENTS AS WELL AS ALL APPLICABLE REGULATIONS WITH REGARDS TO PEDESTRIAN AND BYSTANDER SAFETY.

ELEVATIONS:

TOPOGRAPHIC SURVEY COLLECTED BY SKYTEC, LLC. ON AUGUST 6, 2019 REFERENCED TO NAD83 GEORGIA STATE PLANE WEST US FEET NAVD83.

ALL ELEVATIONS SHOWN ON THESE PLANS ARE REFERENCED TO NAVD 88.

THE CONTRACTOR SHALL BE SUPPLIED WITH A 3D MODEL BY THE DESIGNER AND IS EXPECTED TO USE GPS TECHNOLOGY WITHIN EQUIPMENT. IF THE CONTRACTOR CHOOSES NOT TO USE MACHINE GPS, THEN ALL FIELD STAKING WILL BE CONDUCTED AT THE CONTRACTOR'S COST.

CONSTRUCTION MATERIALS:

LOCATION, ALIGNMENT, AND ELEVATION OF LOGS AND OTHER ROUGHNESS FEATURES ARE SUBJECT TO ADJUSTMENT BASED ON FIELD CONDITIONS AND MATERIAL SIZE.

ROCK AND LOGS WILL BE STAGED IN CONSTRUCTION STAGING AREAS UPON DELIVERY.

ALL APPROPRIATELY SIZED ON-SITE TREES REMOVED DURING THE RESTORATION CONSTRUCTION TO BE USED ON SITE AS DIRECTED BY THE DESIGNER.

CONSTRUCTION STAGING AREAS TO BE OF ADEQUATE SIZE TO PROVIDE SAFE AND ORGANIZED STORAGE FOR ROCK, AND LOGS, AS WELL AS ALL OTHER RELATED CONSTRUCTION MATERIALS AND EQUIPMENT.

ALL LOGS SHALL BE APPROXIMATELY 25% BURIED AND ANCHORED WITH NO LESS THAN 1 DUCKBILL ANCHOR AS SPECIFIED IN THESE PLANS.

SOILS AND STABILIZATION:

CONTRACTOR SHALL FOLLOW ALL REQUIREMENTS FOUND IN THE EROSION AND SEDIMENTATION CONTROL PLANS.

ALL DISTURBED AREAS TO BE SEEDED IMMEDIATELY AS SPECIFIED IN THE PROJECT SPECIFICATIONS.

ANY CUT TOPSOIL SHALL BE STOCKPILED AND USED IN SPECIFIED AREAS OF FILL AS THE TOP 12" OF MATERIAL.

CONTRACTOR SHALL KEEP ALL TOPSOIL STOCKPILED ON SITE SEPARATELY FROM OTHER SOIL MATERIALS.

EXISTING NON-NATIVE VEGETATION WITHIN THE PROPOSED LIMITS OF CONSTRUCTION TO BE REMOVED AS SPECIFIED IN THE PROJECT SPECIFICATIONS.

SITE ACCESS:

THE SITE SHALL BE ACCESSED FROM BOYLES MILL ROAD AT LAT/LONG 34.85427,-84.84467 AND AS DEPICTED IN THE MAP BELOW.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE RESTORATION OF ALL INGRESS/EGRESS POINTS TO PRE-CONSTRUCTION CONDITIONS FOLLOWING RESTORATION ACTIVITIES.

THIS SHALL INCLUDE PLACEMENT OF NEW GRAVEL AND ANY NECESSARY GRAVEL STABILIZATION STRUCTURES (GEOCELL, GEOGRID, ETC.)



1	90% Design Plans	7/19/21
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6		
No.	Drawn By/Checked By	Date
1	SM/AM-TG	7/19/21
2		
3		
4		
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No.	Drawn By/Checked By	Date

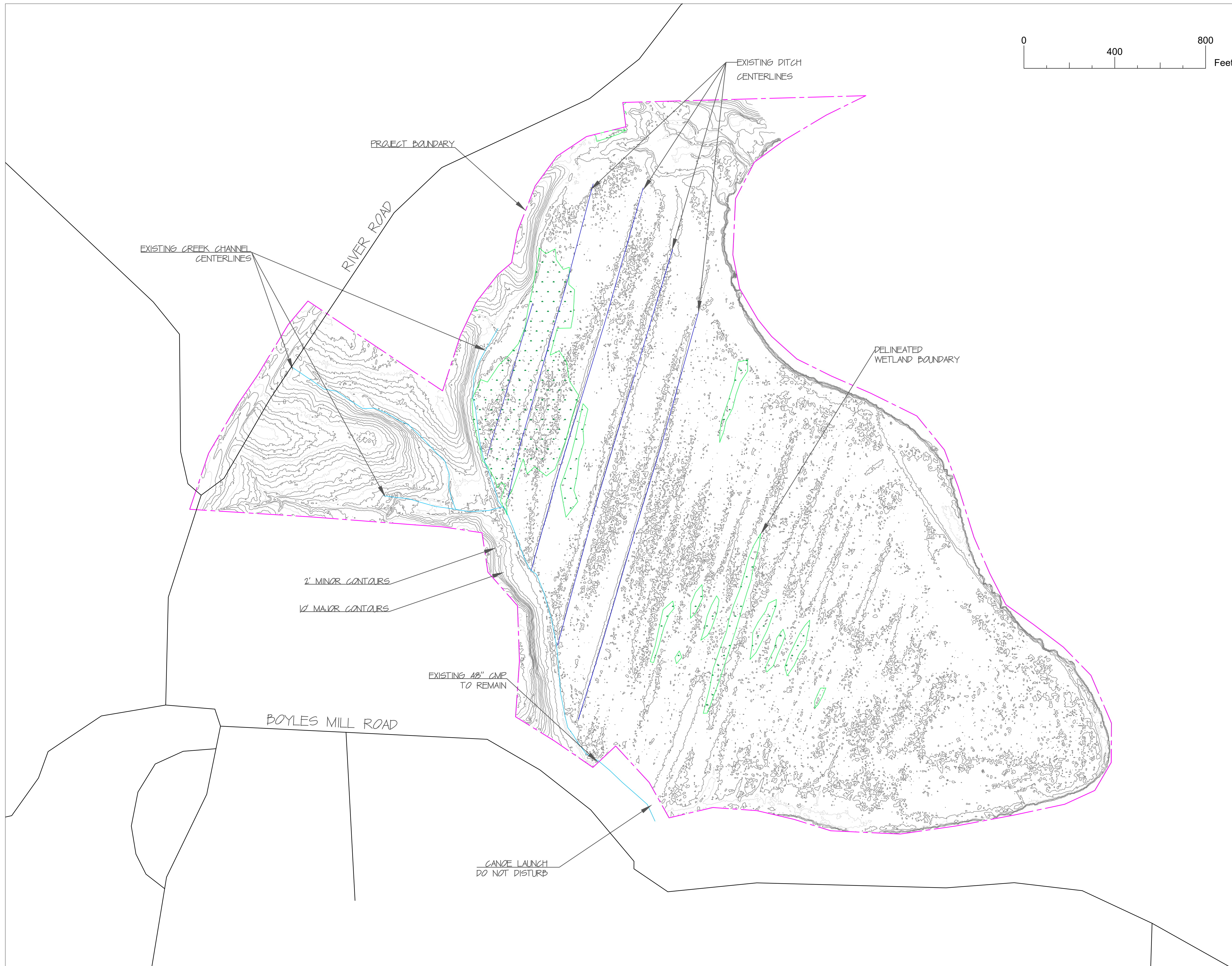
Firm Name and Address

Nutter and Associates, Inc.
360 Hawthorne Lane
Athens, GA 30606

Project Name and Address

Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, Ga 30721

Project	17-105	Sheet	2 NOTES
Date	07/26/2021		
Scale	NA		



General Notes










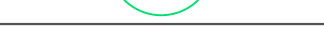





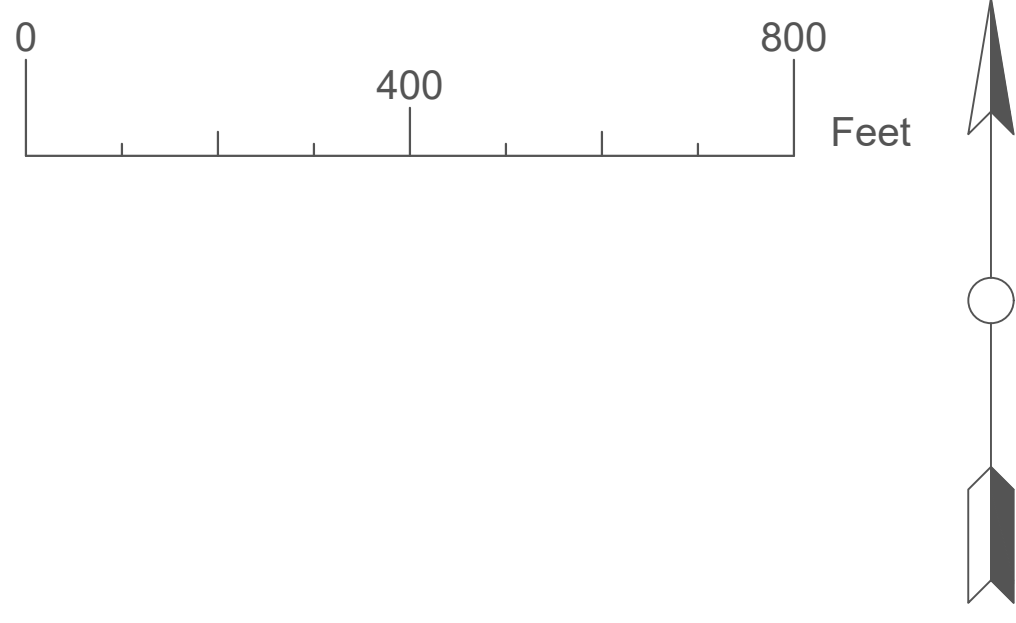
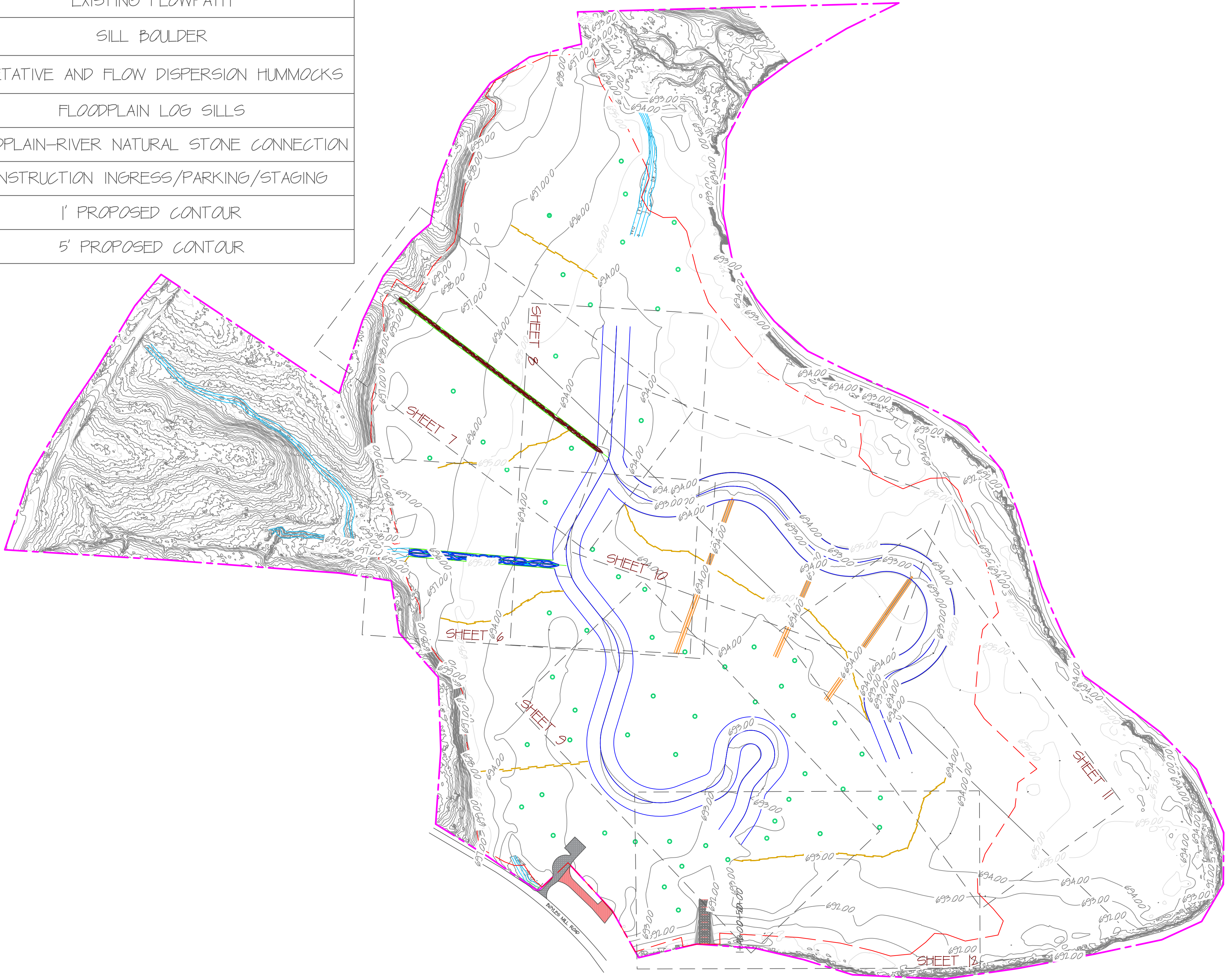
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No.	Drawn By/Checked By	Date

Firm Name and Address
Nutter and Associates, Inc.
360 Hawthorne Lane
Athens, GA 30606

Project Name and Address
Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, GA 30721


Project 17-105.00	Sheet 3 EXISTING
Date 7/16/2021	
Scale 1" = 200'	

LEGEND	
	PROJECT BOUNDARY
	APPROXIMATE LIMITS OF DISTURBANCE
	FLOODPLAIN MEANDERS
	SURFACE WATER DISPERSAL SWALE
	WETLAND-VALLEY CHANNEL COMPLEX
	EXISTING FLOWPATH
	SILL BOULDER
	VEGETATIVE AND FLOW DISPERSION HUMMOCKS
	FLOODPLAIN LOG SILLS
	FLOODPLAIN-RIVER NATURAL STONE CONNECTION
	CONSTRUCTION INGRESS/PARKING/STAGING
	1' PROPOSED CONTOUR
	5' PROPOSED CONTOUR



Elevation

General Notes



NUTTER+ASSOCIATES
ENVIRONMENTAL CONSULTANTS

1	90% Design Plans	
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Firm Name and Address

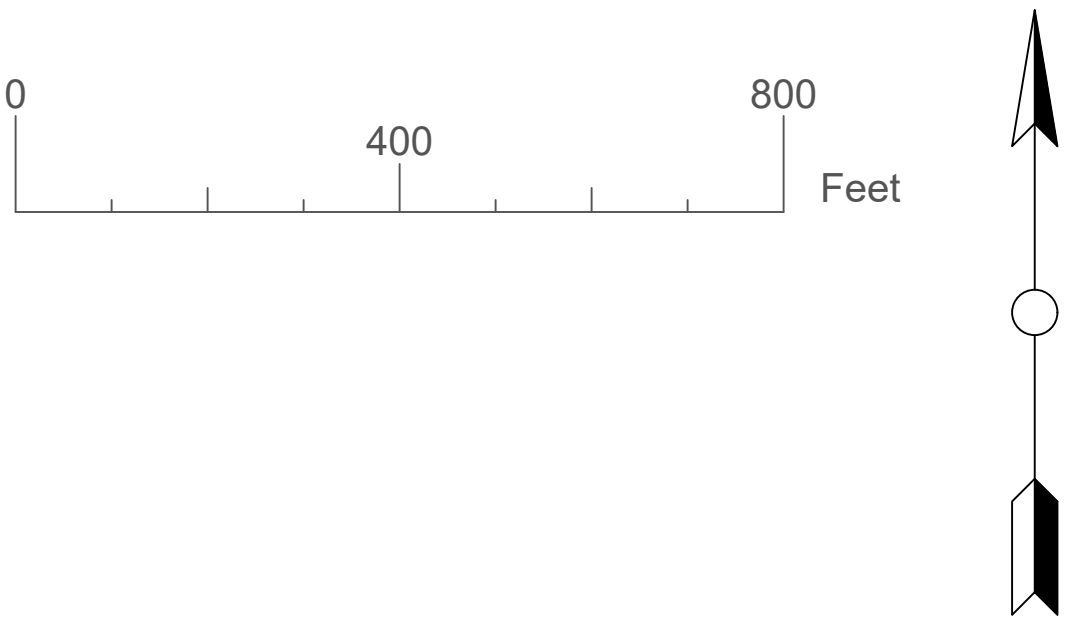
Nutter and Associates, Inc.
360 Hawthorne Lane
Athens, GA 30606

Project Name and Address

Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, Ga 30721

Project	17-105.00	Sheet	4
Date	1/27/2023		
Scale	1" = 200'		PROPOSED

LEGEND	
	PROJECT BOUNDARY
	APPROXIMATE LIMITS OF DISTURBANCE (~92-ACRES)
	CUT (41,369 CUBIC YARDS)
	FILL (36,260 CUBIC YARDS)




PROJECT BOUNDARY

LIMITS OF DISTURBANCE



General Notes



NUTTER+ASSOCIATES

ENVIRONMENTAL CONSULTANTS

1	90% Design Plans	7/19/21
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No.	Revision/Issue	Date
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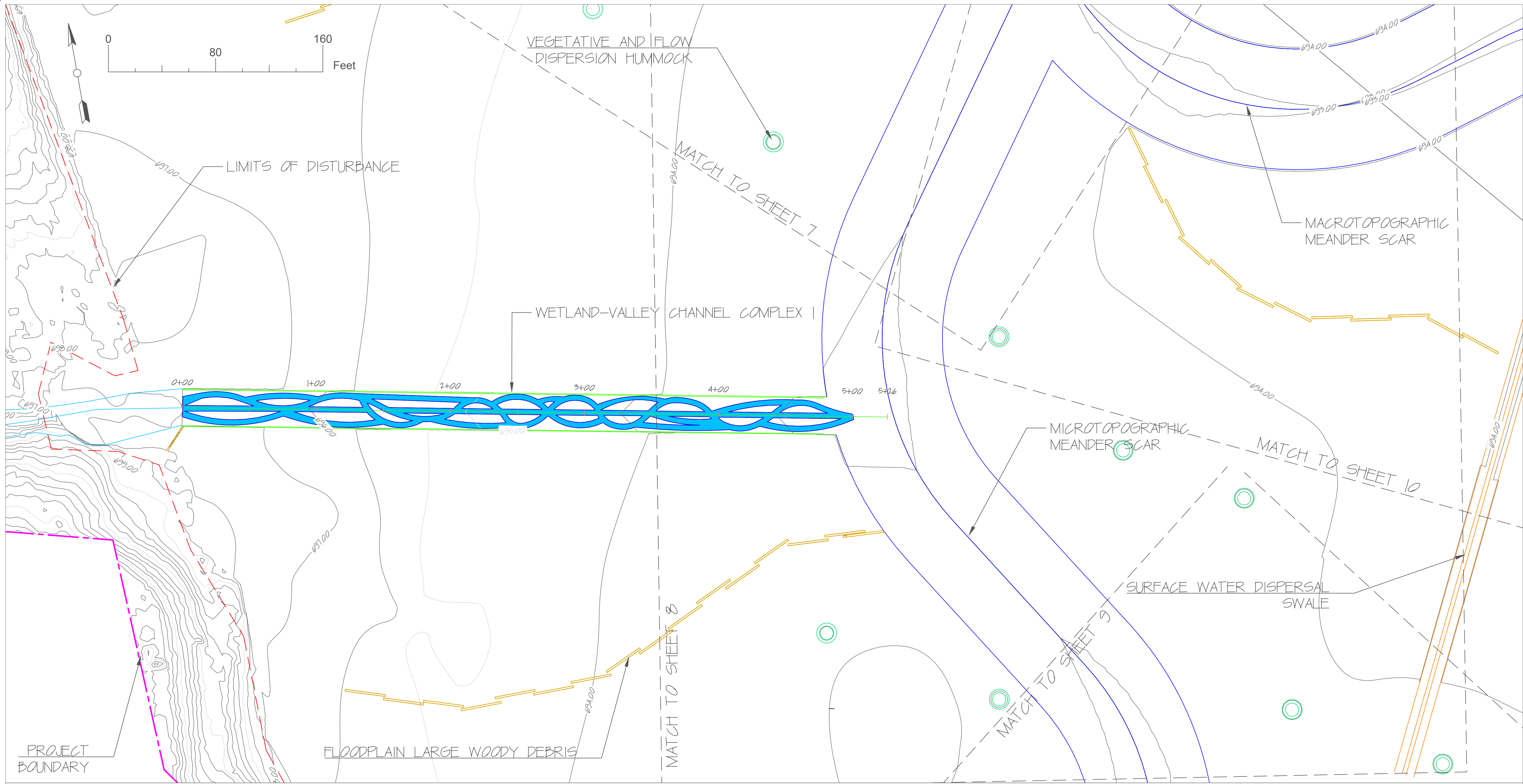
Firm Name and Address

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360 Hawthorne Lane
Athens, GA 30606

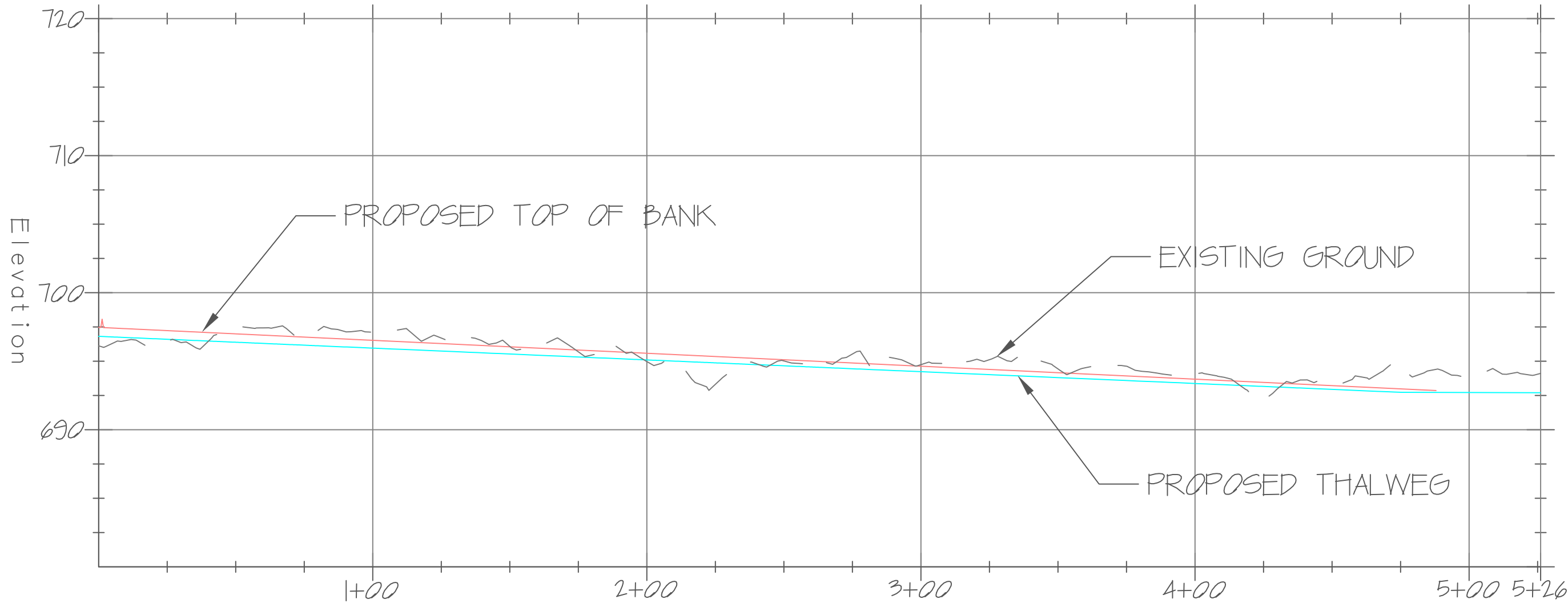
Project Name and Address

Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, Ga 30721

Project	17-105.00	Sheet	5
Date	7/19/2021		PROPOSED
Scale	1" = 200'		CUT/FILL



WETLAND-VALLEY CHANNEL COMPLEX I PROFILE



General Notes

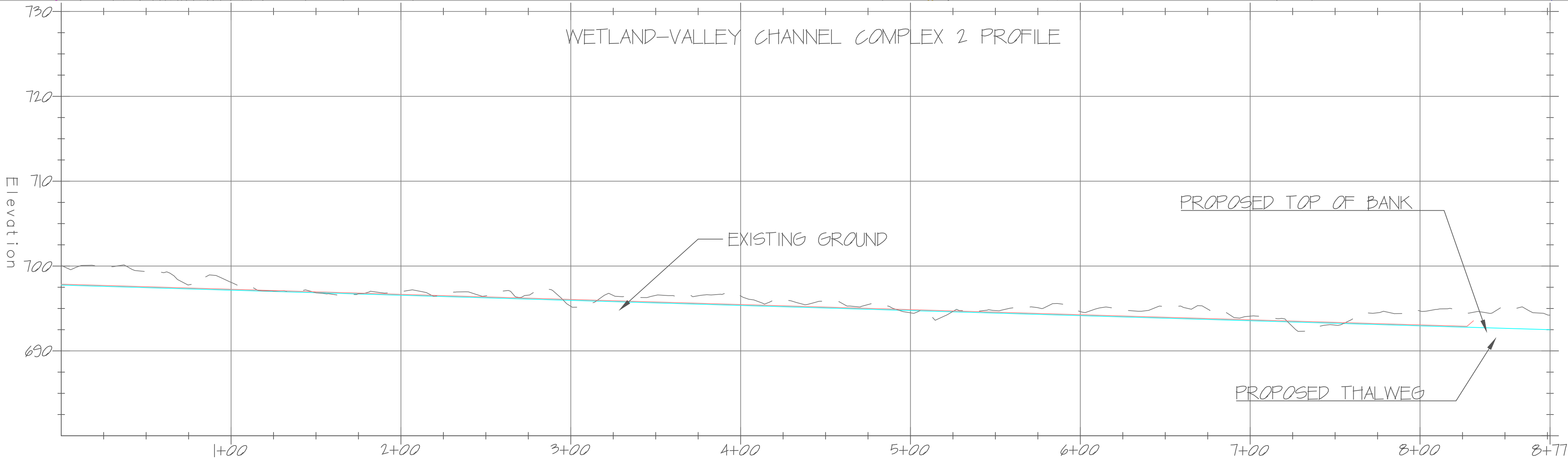


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No.	Drawn By/Checked By	Date

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Project Name and Address
Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, Ga 30721

Project	17-105.00	Sheet	6
Date	1/20/2023		
Scale	1" = 40'		PROPOSED



General Notes

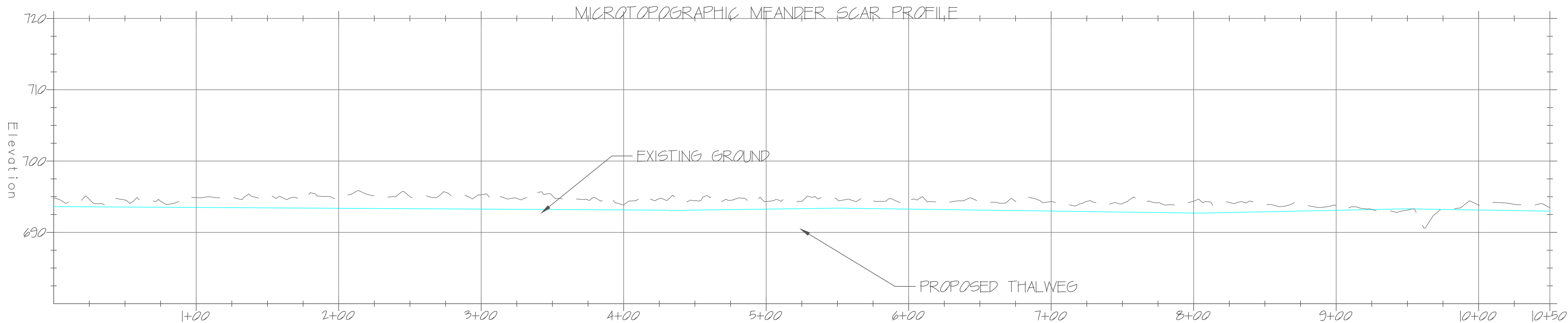
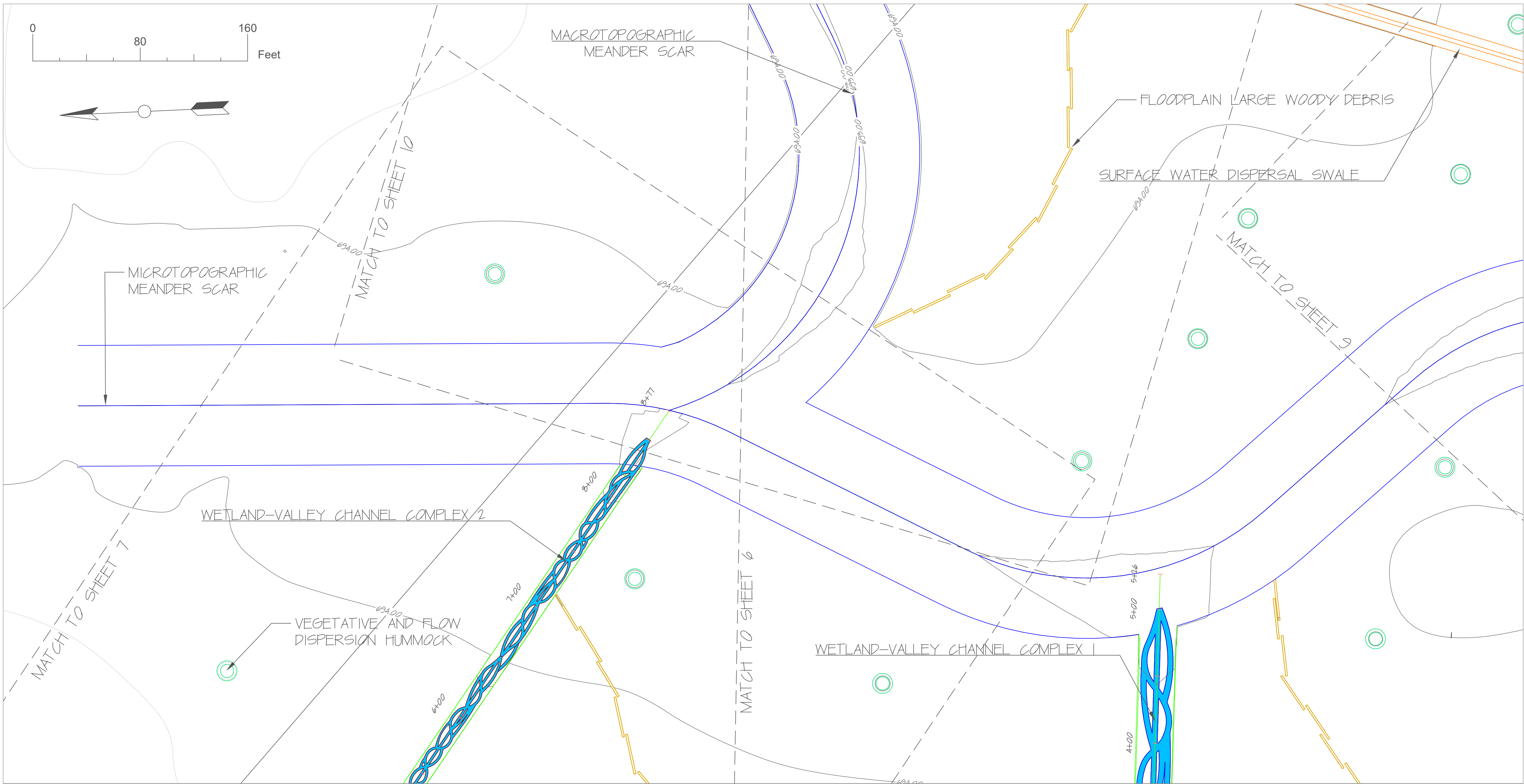


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No.	Drawn By/Checked By	Date

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Project Name and Address
Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, Ga 30721

Project	17-105.00	Sheet	7
Date	1/27/2023		
Scale	1" = 40'		PROPOSED



General Notes

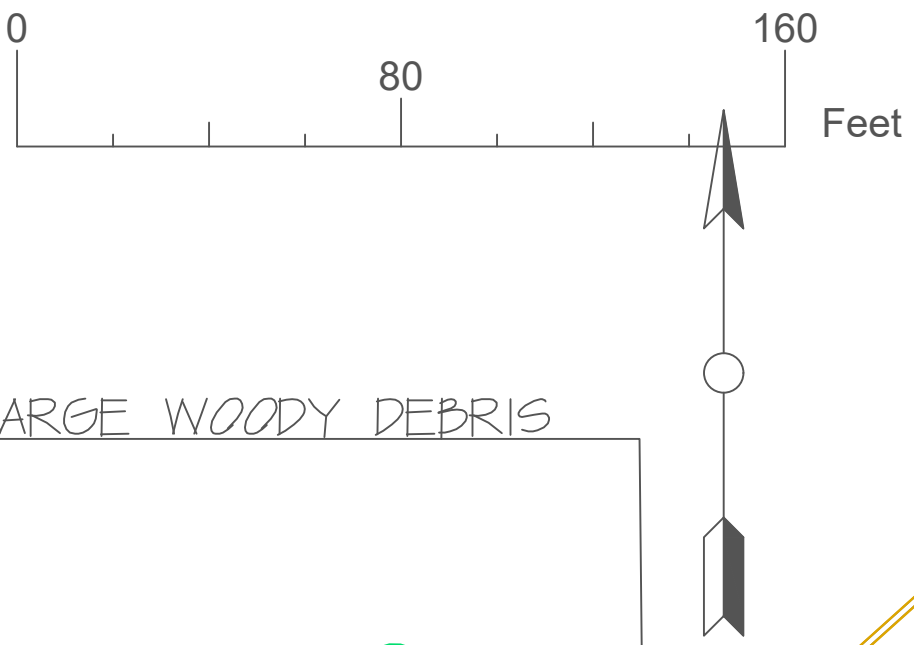
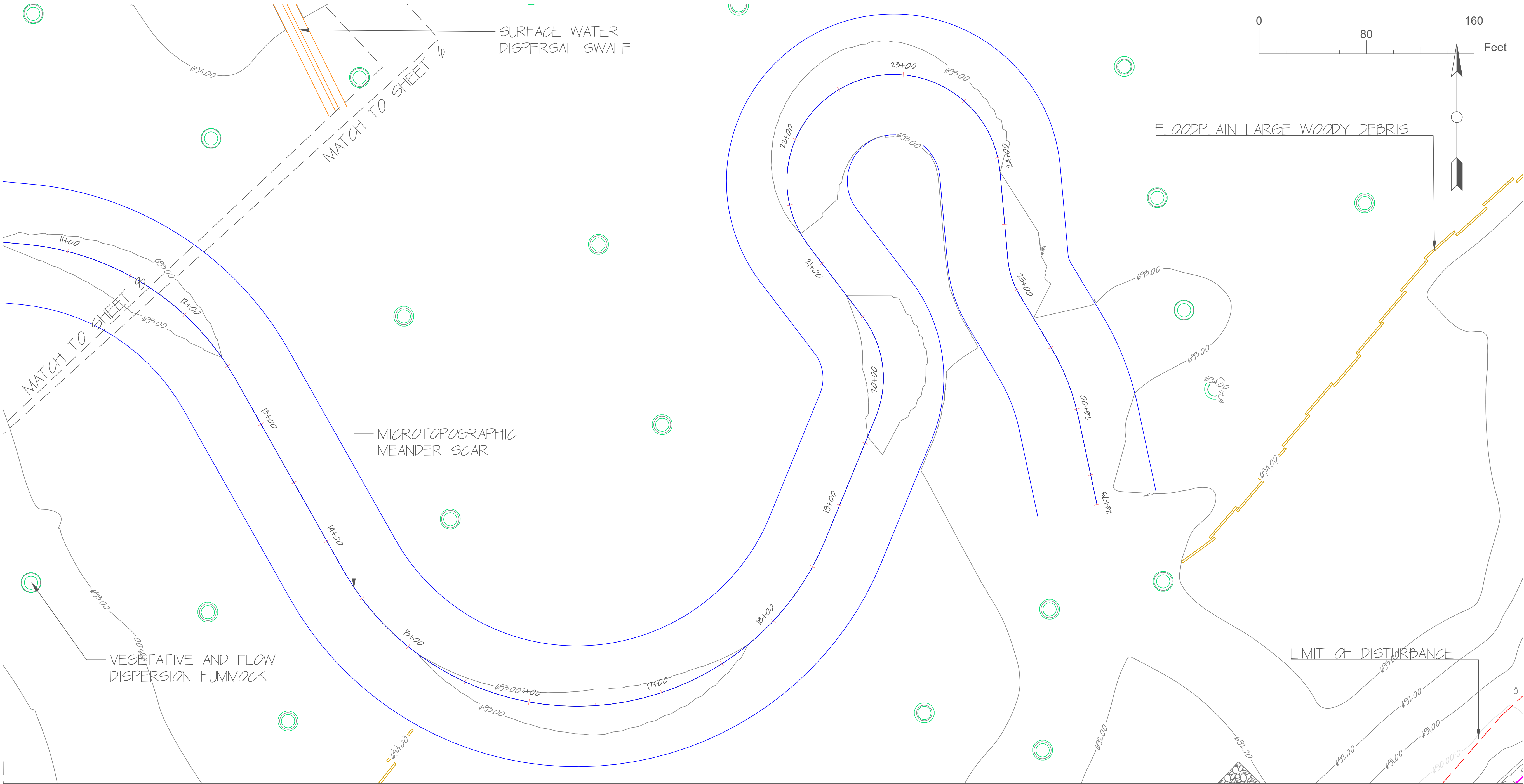


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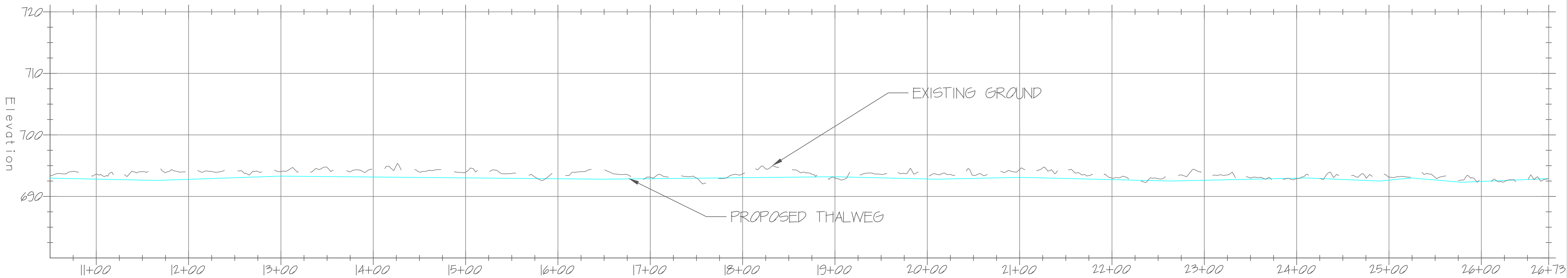
Firm Name and Address
Nutter and Associates, Inc.
360 Hawthorne Lane
Athens, GA 30606

Project Name and Address
Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, Ga 30721

Project	17-105.00	Sheet
Date	1/20/2023	8
Scale	1" = 40'	PROPOSED



MICROTOPOGRAPHIC MEANDER SCAR PROFILE



General Notes

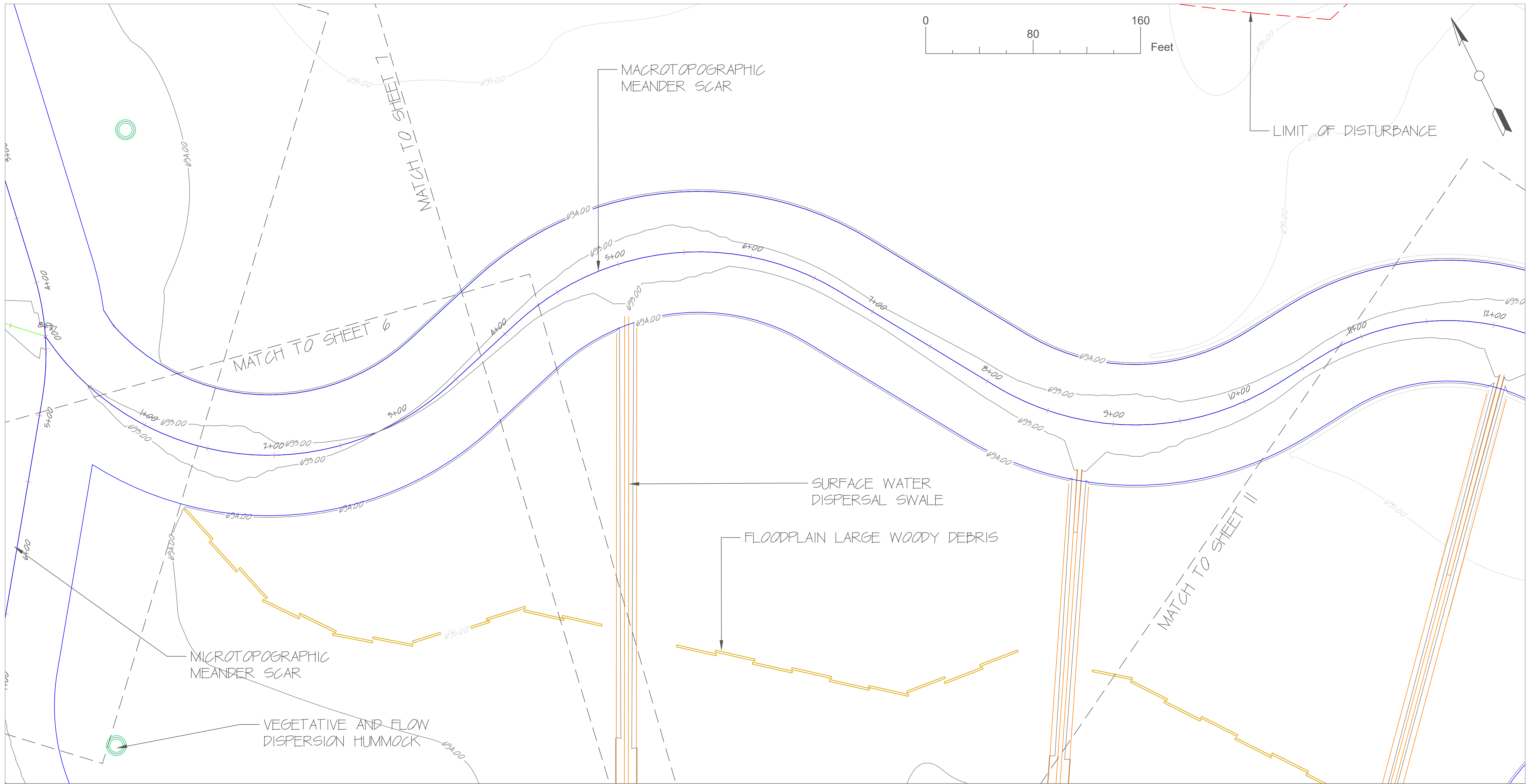


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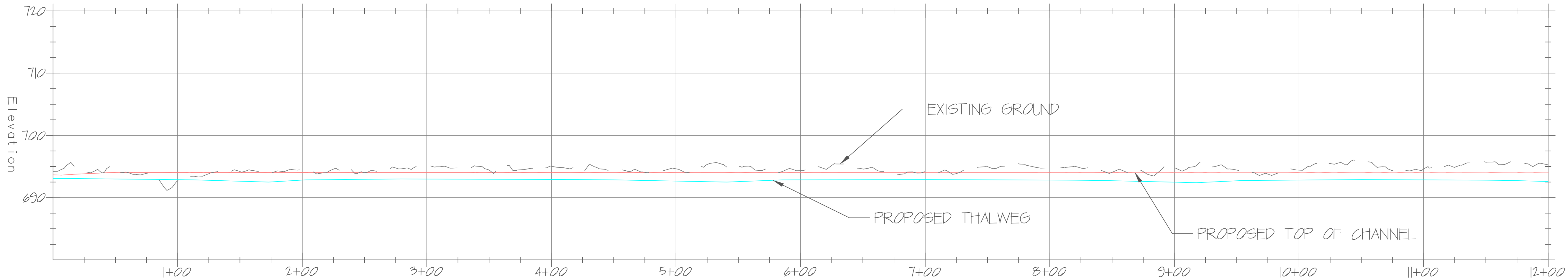
Firm Name and Address
Nutter and Associates, Inc.
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Athens, GA 30606

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Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, Ga 30721

Project	17-105.00	Sheet
Date	7/27/2021	9
Scale	1" = 40'	PROPOSED



MACROTOPOGRAPHIC MEANDER SCAR PROFILE



General Notes

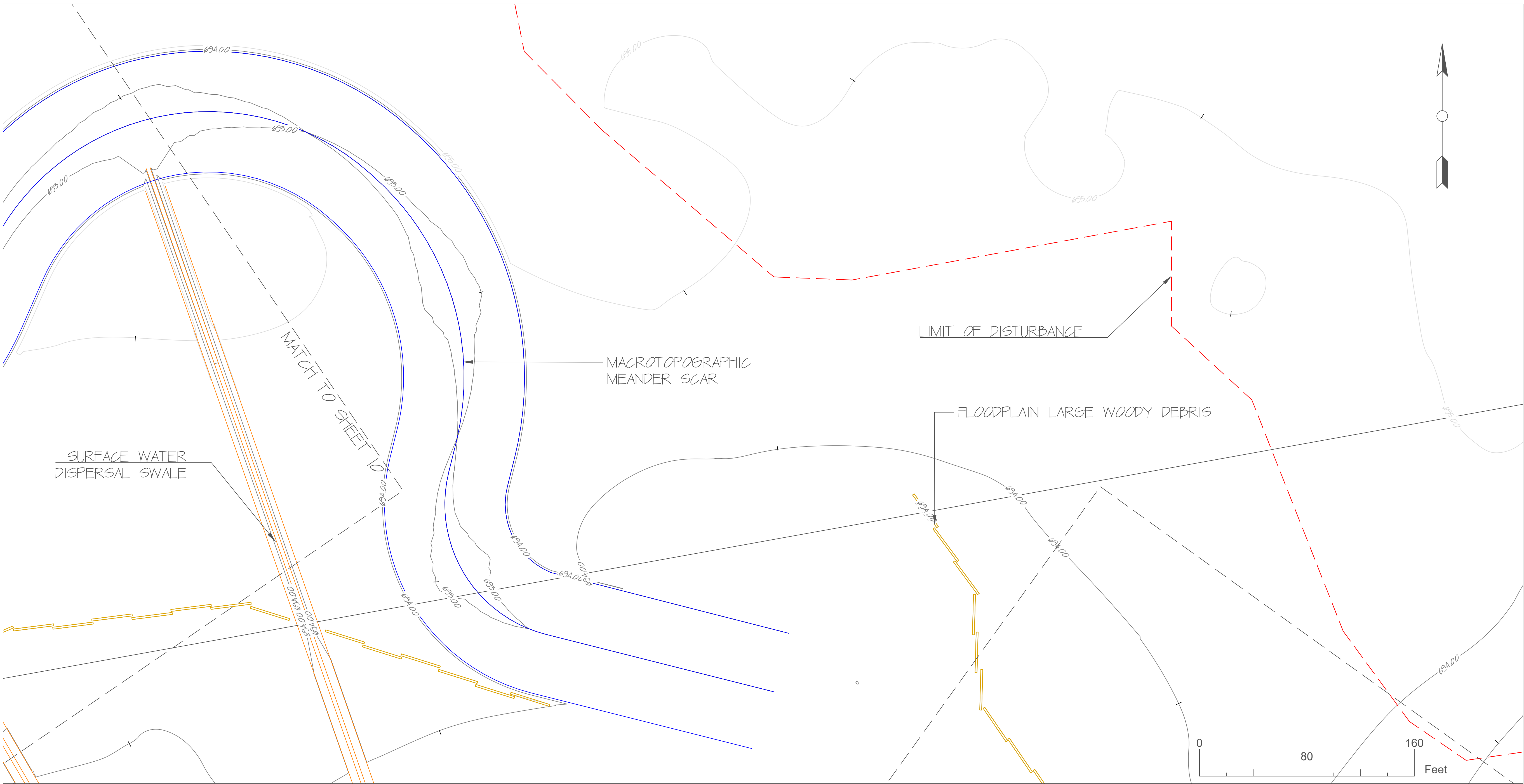


90% Design Plans		7/19/21
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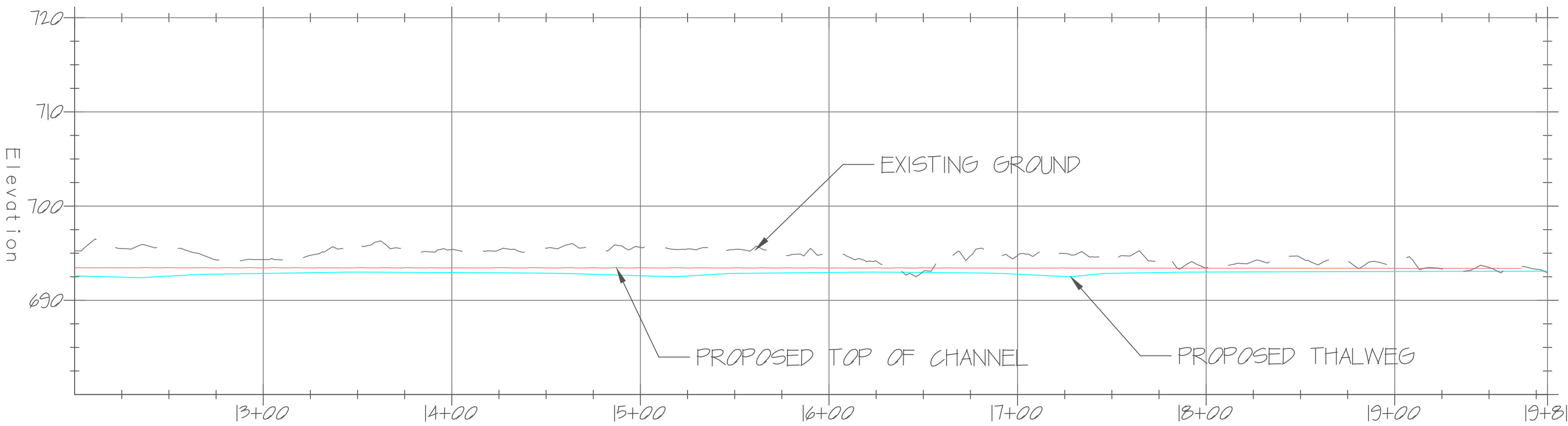
Firm Name and Address
Nutter and Associates, Inc.
360 Hawthorne Lane
Athens, GA 30606

Project Name and Address
Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, Ga 30721

Project 17-105.00	Sheet 10
Date 7/27/2021	PROPOSED
Scale 1" = 40'	



MACROTOPOGRAPHIC MEANDER SCAR PROFILE



General Notes

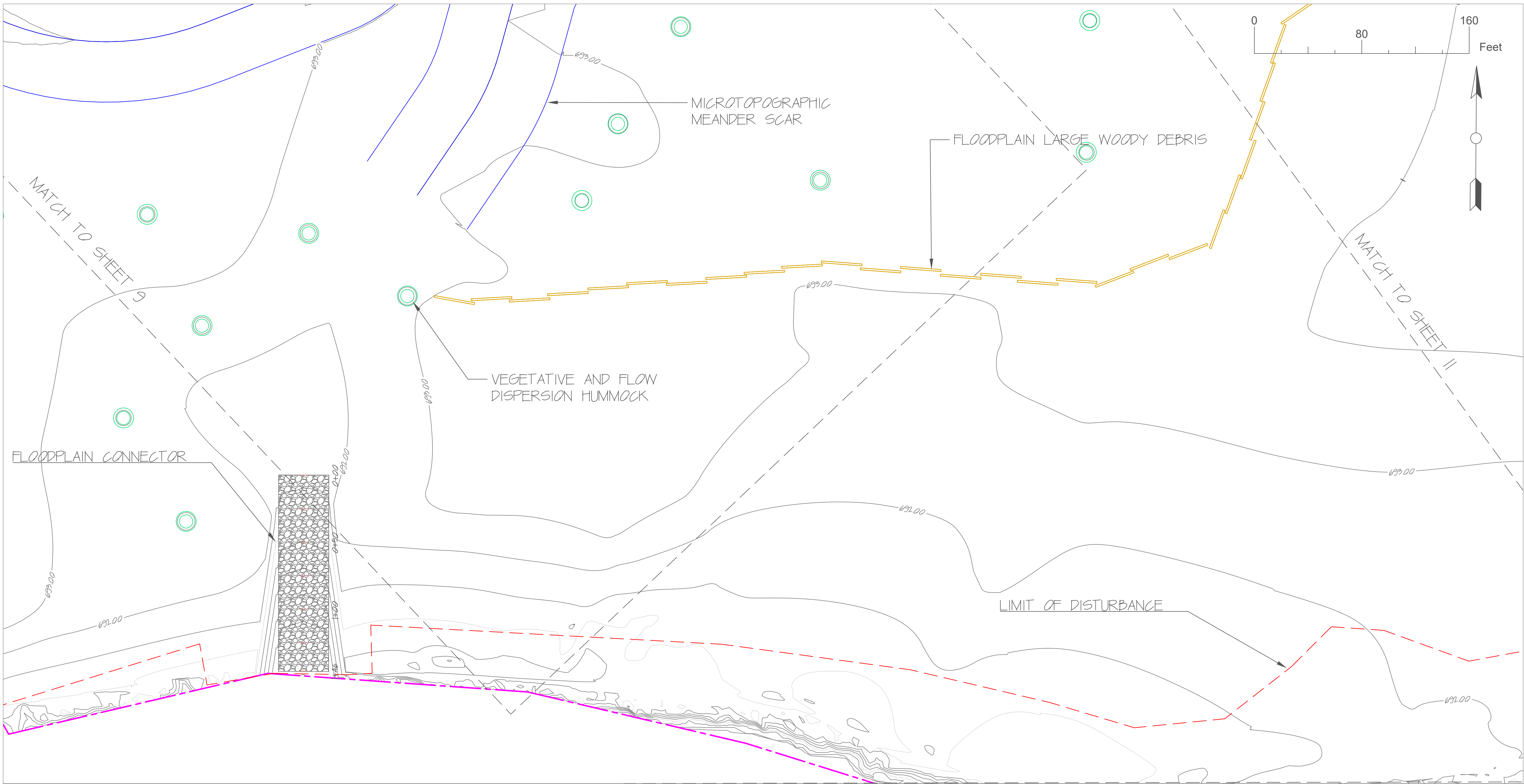


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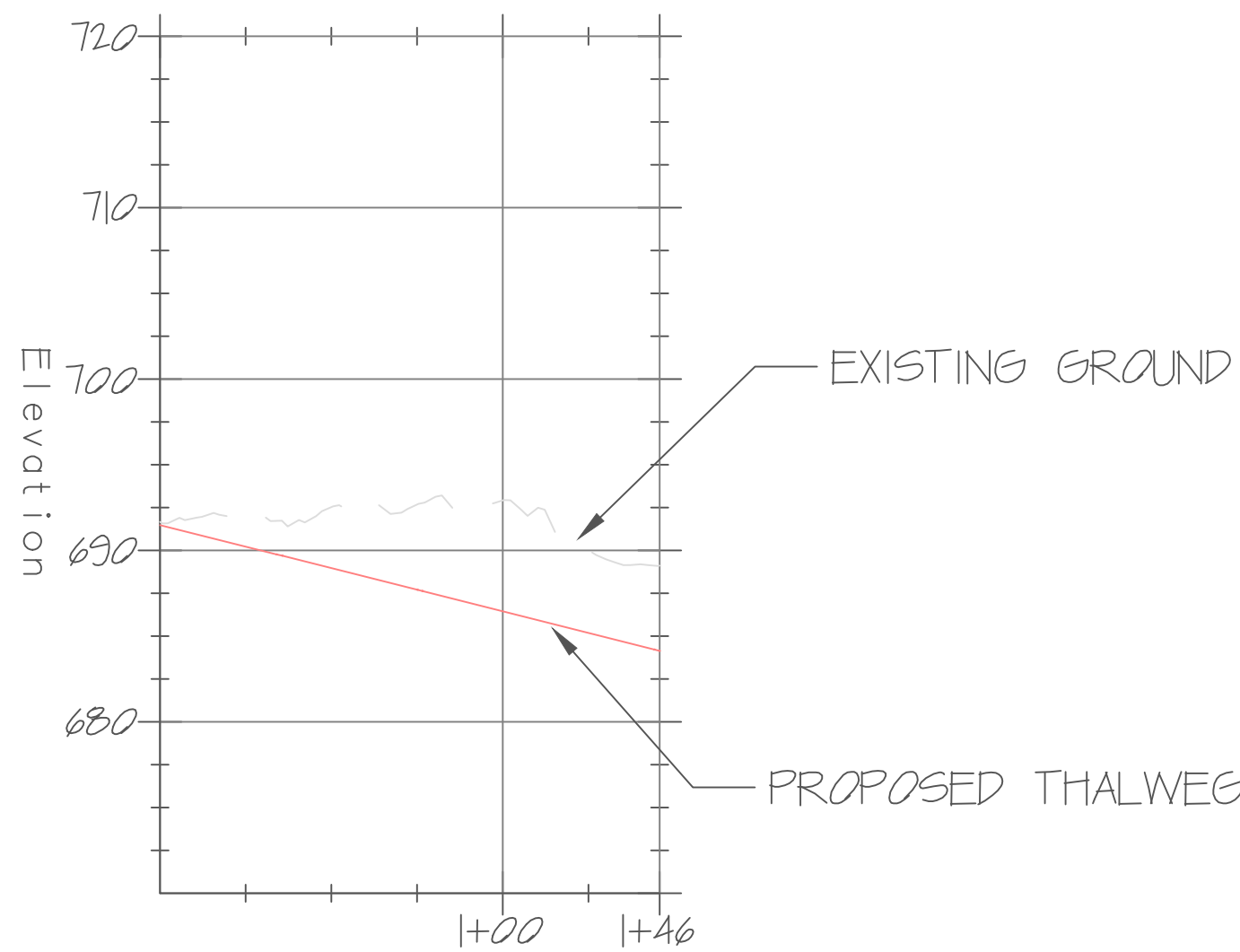
Firm Name and Address
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Athens, GA 30606

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Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, Ga 30721

Project 17-105.00	Sheet 11
Date 1/27/2023	PROPOSED
Scale 1" = 40'	



FLOODPLAIN CONNECTOR PROFILE



General Notes

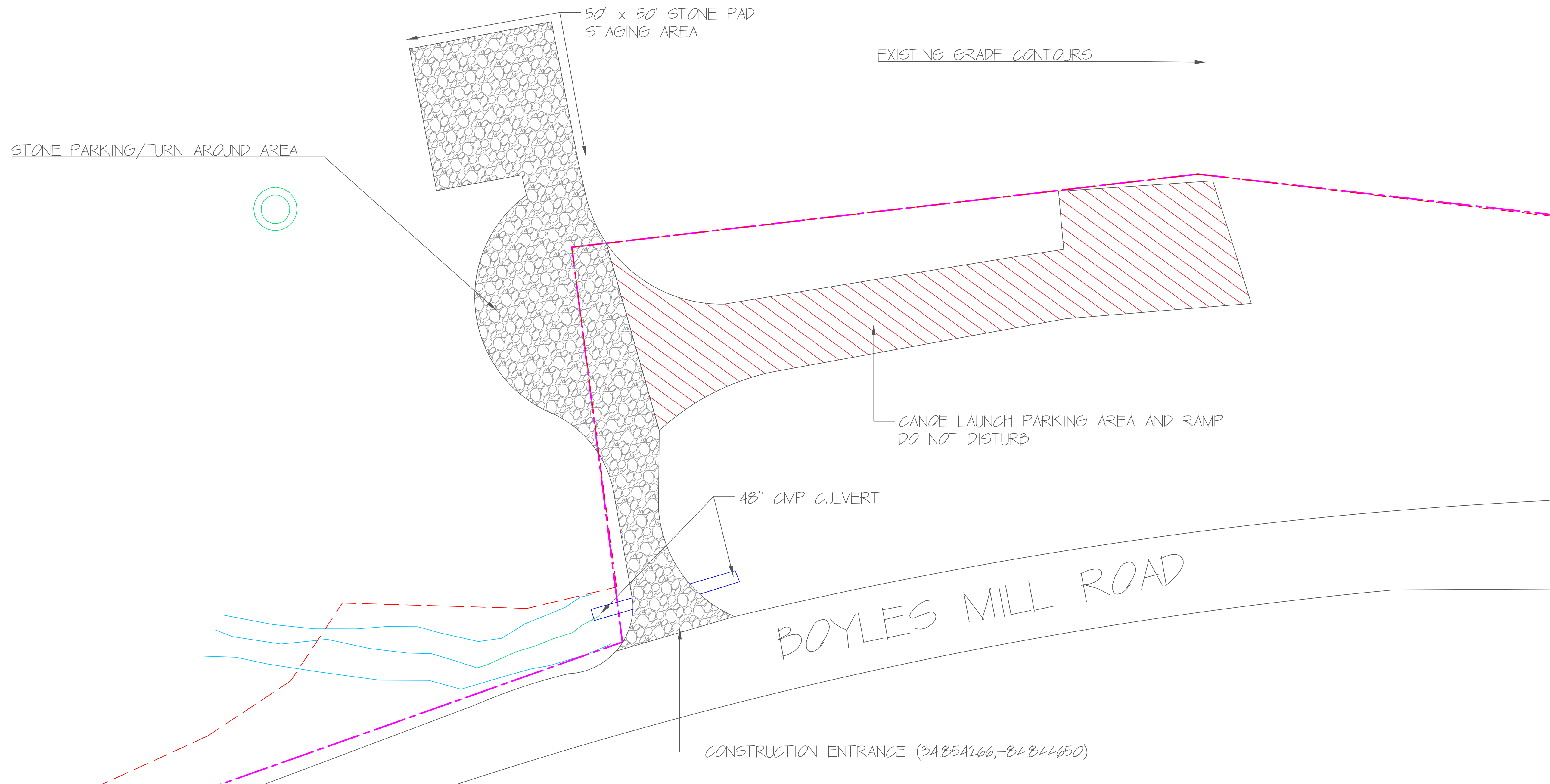


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360 Hawthorne Lane
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Project Name and Address
Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, Ga 30721

Project	17-105.00	Sheet
Date	1/30/2023	12
Scale	1" = 40'	PROPOSED



CONSTRUCTION INGRESS/EGRESS AND STAGING AREA NOTES:

THE PROPOSED CONSTRUCTION INGRESS/EGRESS IS A PUBLIC ACCESS AREA AND THE RIGHT OF WAY SHOULD BE GIVEN TO THE PUBLIC ACCESS IN SUCH INSTANCES.

FOR SEMI-TRAILERS OR LOW BOY TRAILERS, A FLAGGER SHOULD BE STATIONED ALONG BOYLES MILL ROAD DURING ENTERING AND EXITING.

NO PARKING IS ALLOWED WITHIN THE PUBLIC ACCESS PARKING LOT OR AREA.

STAGING AREA SHOULD HAVE 10 OUNCE NON-WOVEN GEOTEXTILE PLACED AT EXISTING GROUND GRADE (SEE DETAIL 1).

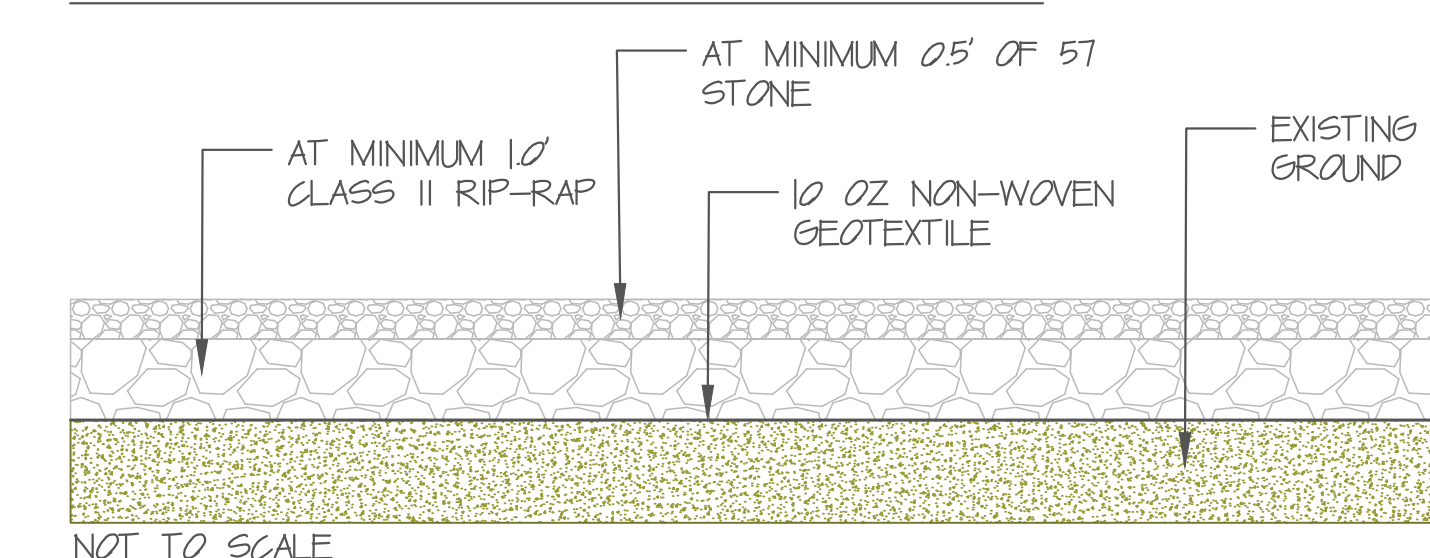
AT MINIMUM, 1.0 FEET OF CLASS II RIP-RAP SHOULD OVERLAY PROPOSED NON-WOVEN GEOTEXTILE (SEE DETAIL 1).

AT MINIMUM, 0.5 FOOT OF 57 STONE SHOULD BE PLACE ON TOP OF PROPOSED CLASS II RIP-RAP (SEE DETAIL 1).

ALL STONE AND GEOTEXTILE MATERIAL SHALL BE REMOVED UPON COMPLETION OF ALL RESTORATION ACTIVITIES.

ANY DISTURBANCE TO PUBLIC ACCESS AREA SHALL BE RETURNED TO PRE-EXISTING CONDITIONS AT THE EXPENSE OF THE CONTRACTOR.

1. CONSTRUCTION INGRESS/EGRESS AND STAGING AREA ROCK PAD DETAIL.



General Notes



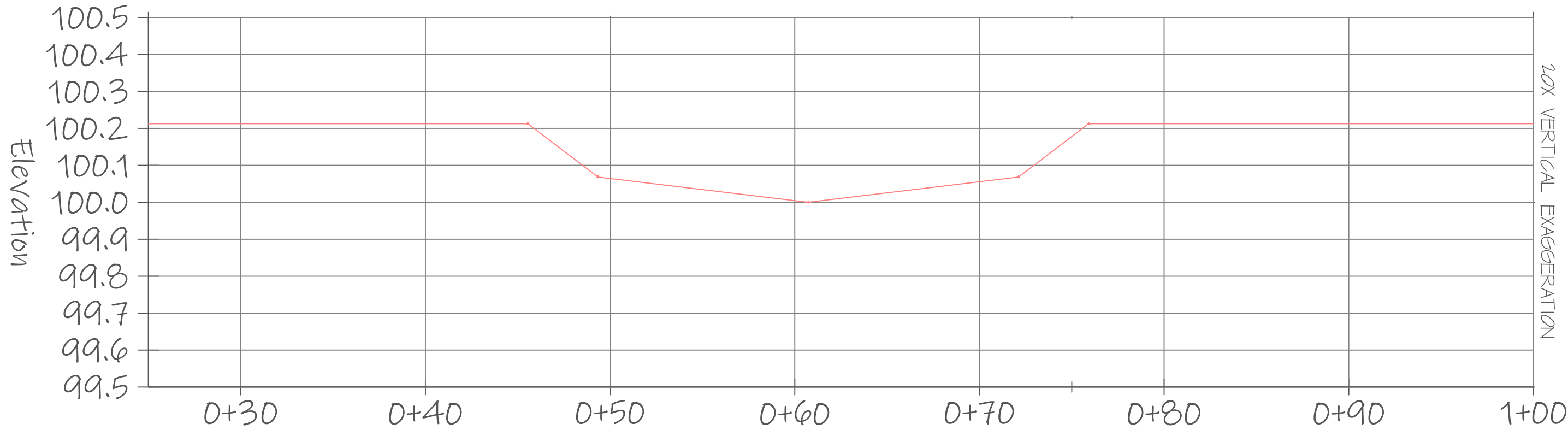
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No.	Drawn By/checked By	Date

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Athens, GA 30606

Project Name and Address
Dalton Utilities
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Dalton, Ga 30721

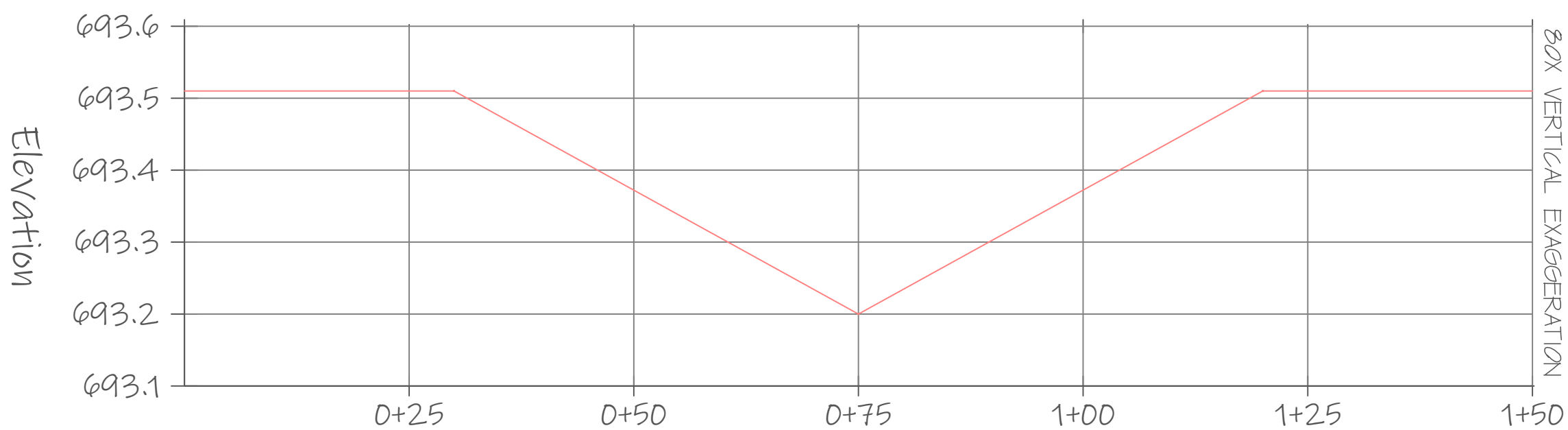
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Date	8/2/2021	13
Scale	1" = 40'	DETAILS

WETLAND-VALLEY CHANNEL COMPLEX | TYPICAL CROSS-SECTION



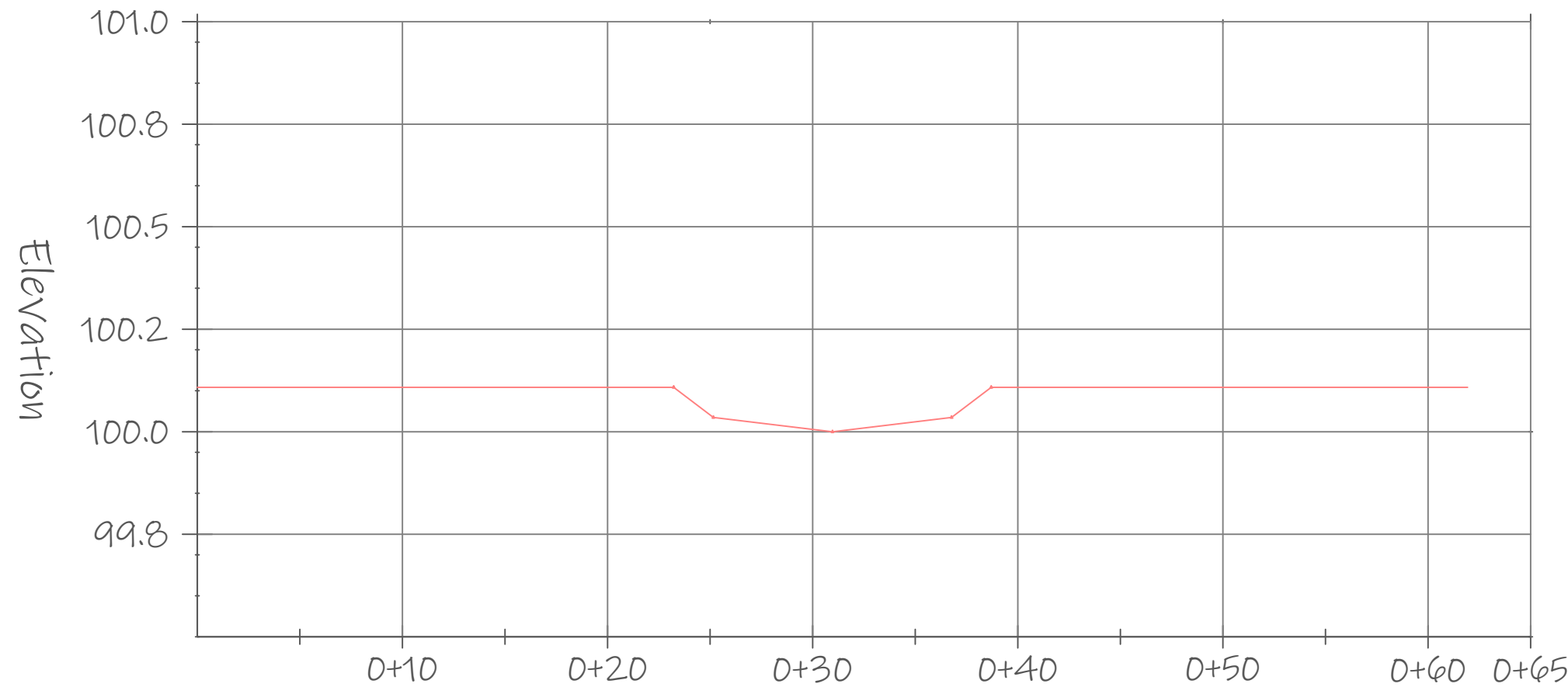
CROSS-SECTION CHARACTERISTIC	MEASUREMENT (FEET)
WETLAND-VALLEY CHANNEL WIDTH	30.4
WETLAND-VALLEY CHANNEL DEPTH	0.21

MICROTOPOGRAPHIC MEANDER SCAR TYPICAL CROSS-SECTION



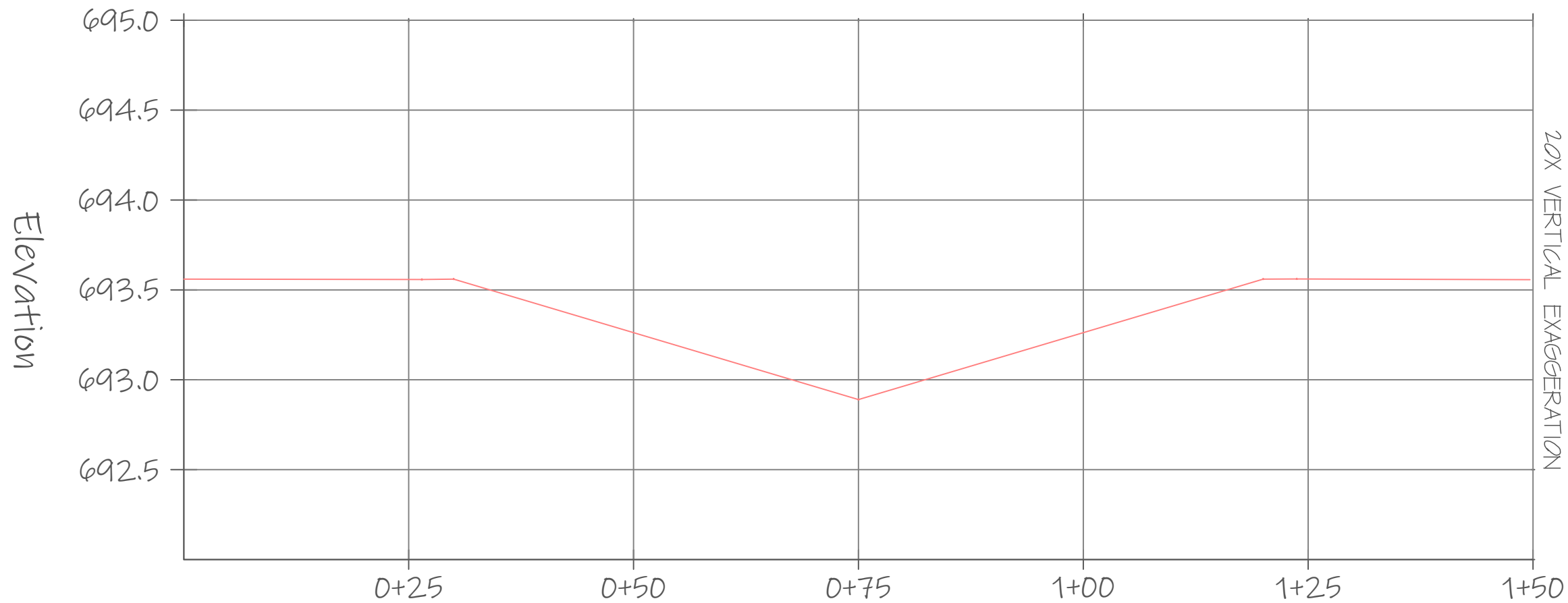
CROSS-SECTION CHARACTERISTIC	MEASUREMENT (FEET)
MEANDER SCAR WIDTH	90
MEANDER SCAR DEPTH	0.3

WETLAND-VALLEY CHANNEL COMPLEX 2 TYPICAL CROSS-SECTION



CROSS-SECTION CHARACTERISTIC	MEASUREMENT (FEET)
WETLAND-VALLEY CHANNEL WIDTH	15.5
WETLAND-VALLEY CHANNEL DEPTH	0.11

MACROTOPOGRAPHIC MEANDER SCAR TYPICAL CROSS-SECTION



CROSS-SECTION CHARACTERISTIC	MEASUREMENT (FEET)
MEANDER SCAR WIDTH	90
MEANDER SCAR DEPTH	0.67

General Notes



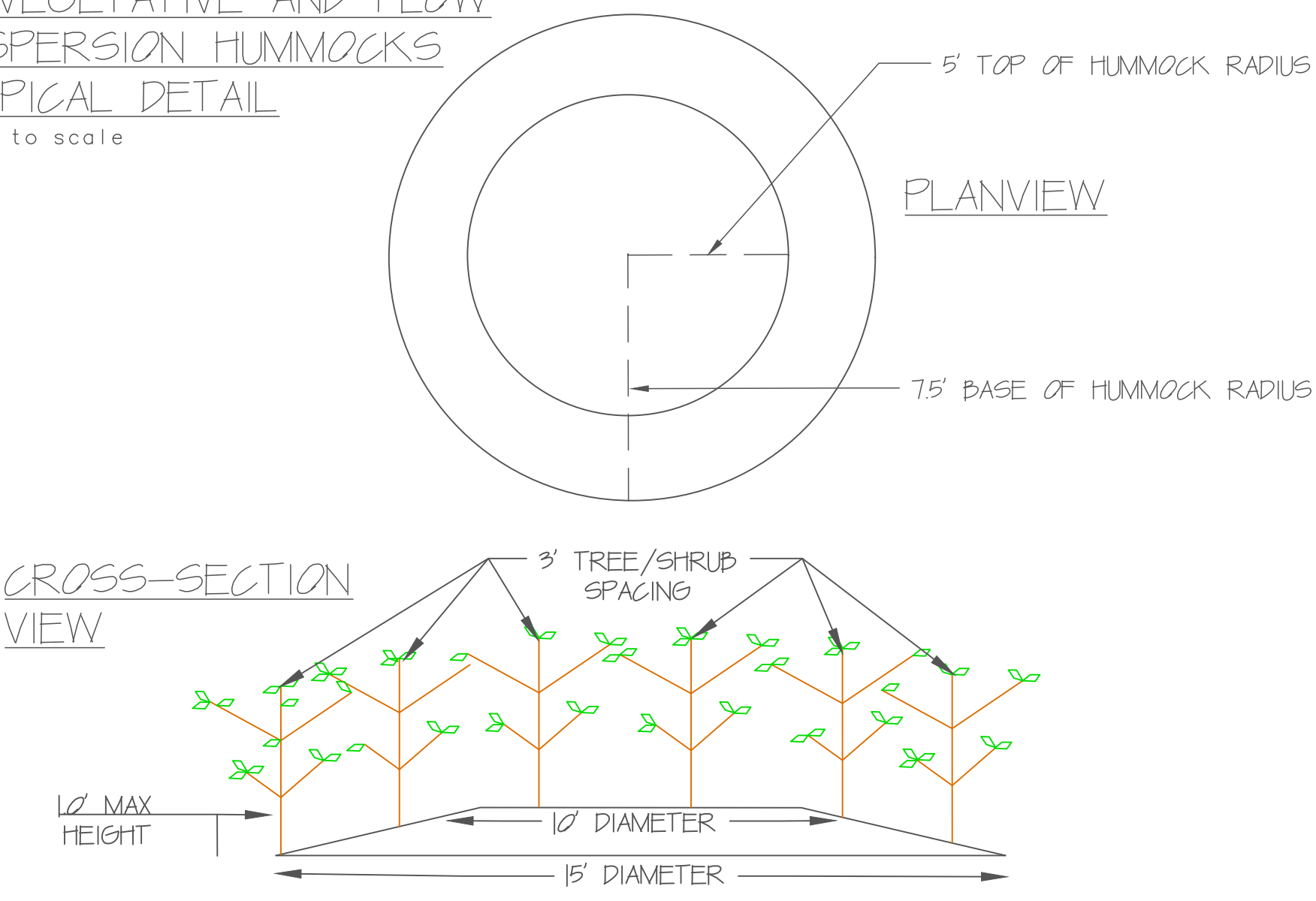
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No.	Drawn By/Checked By	Date

Firm Name and Address
Nutter and Associates, Inc.
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Athens, GA 30606

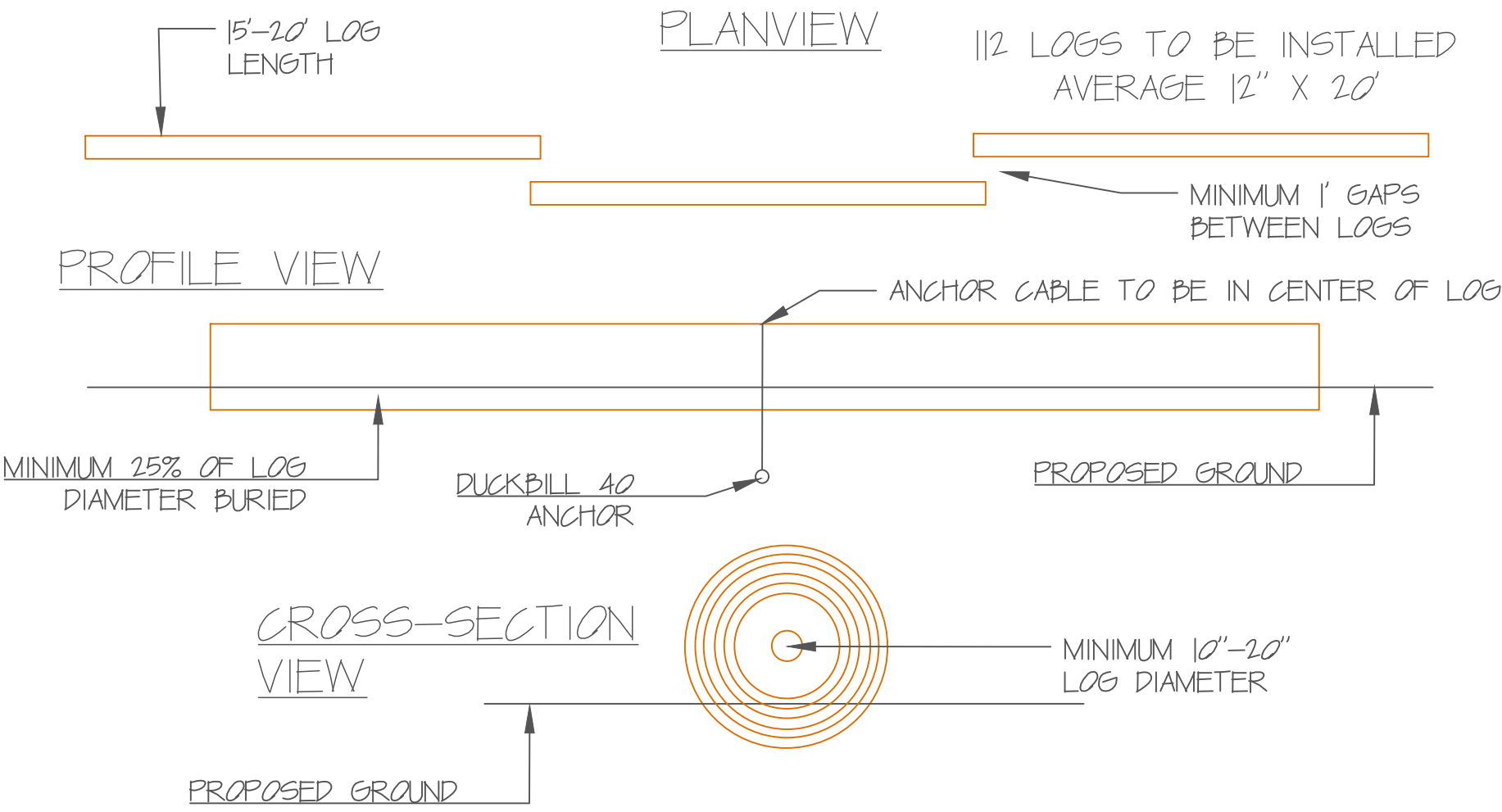
Project Name and Address
Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, Ga 30721

Project	17-105.00	Sheet	14
Date	1/30/2023		
Scale	1" = 40'		DETAILS

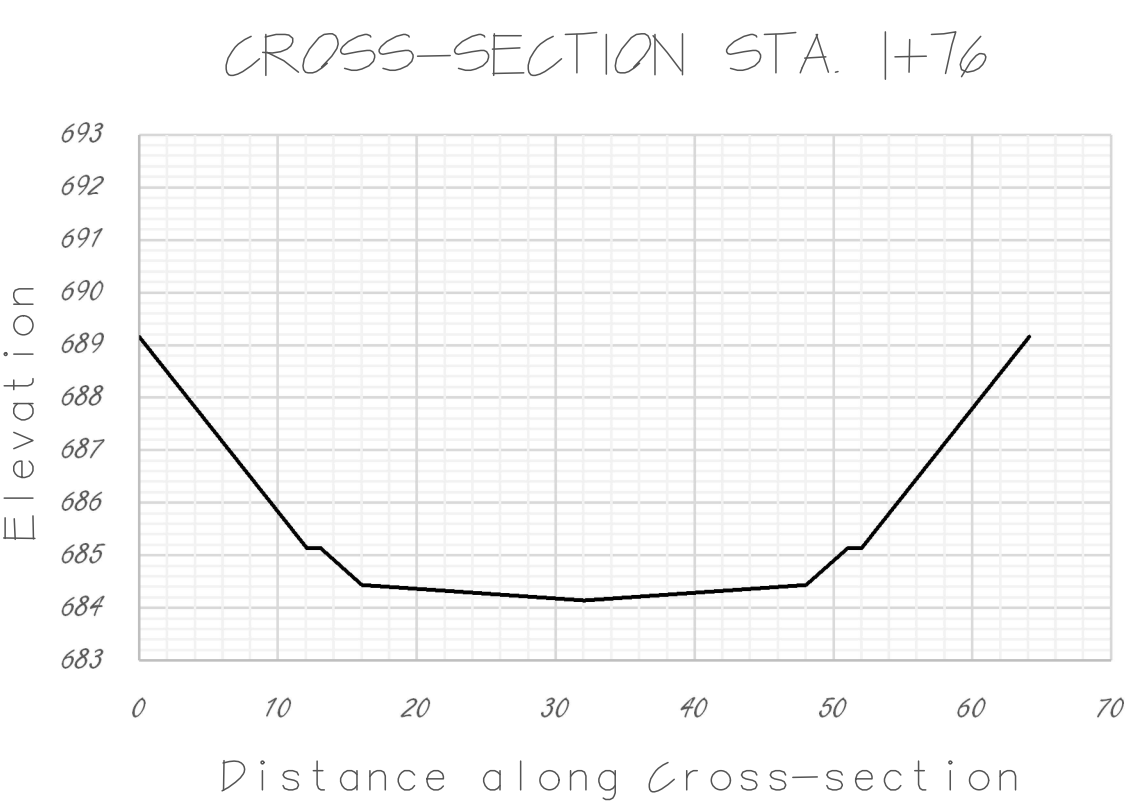
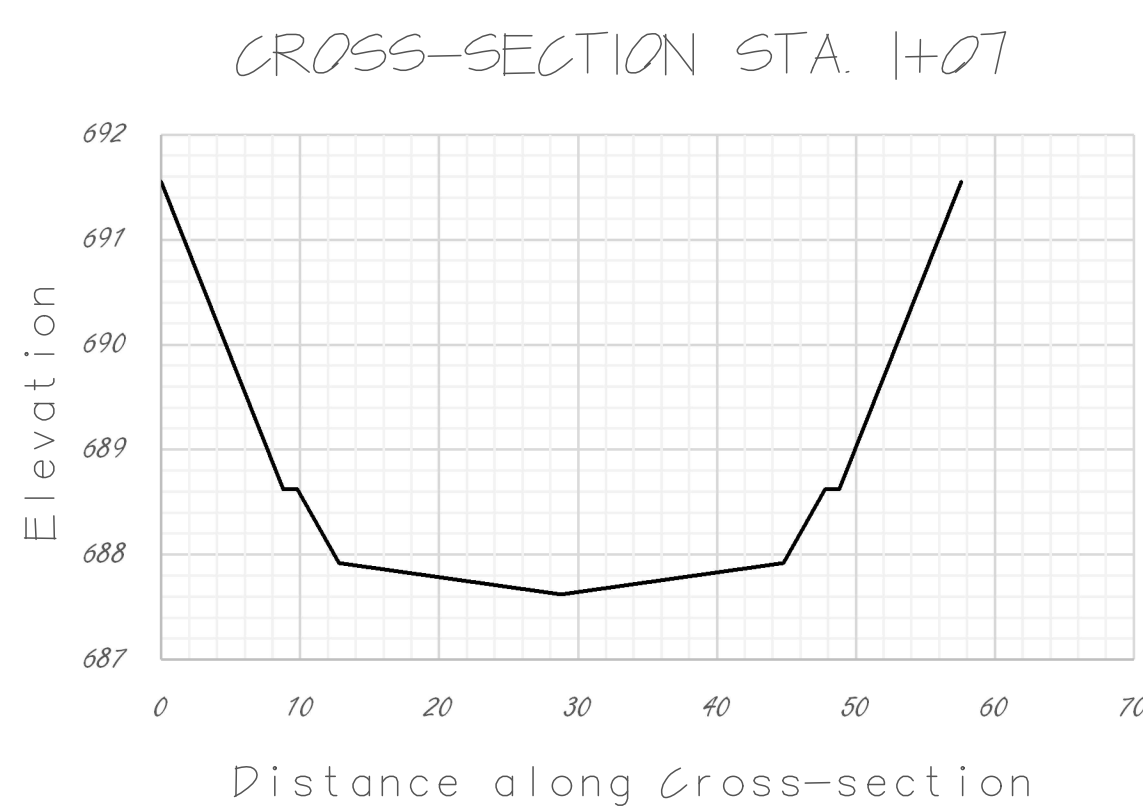
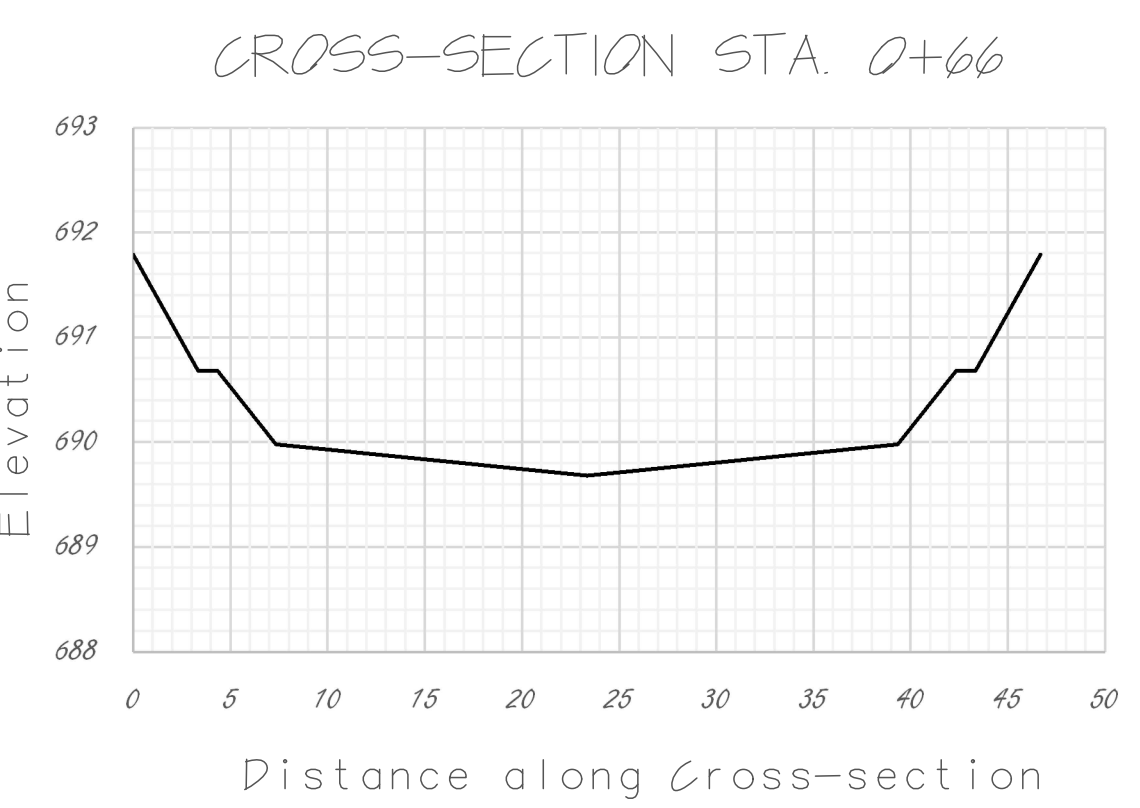
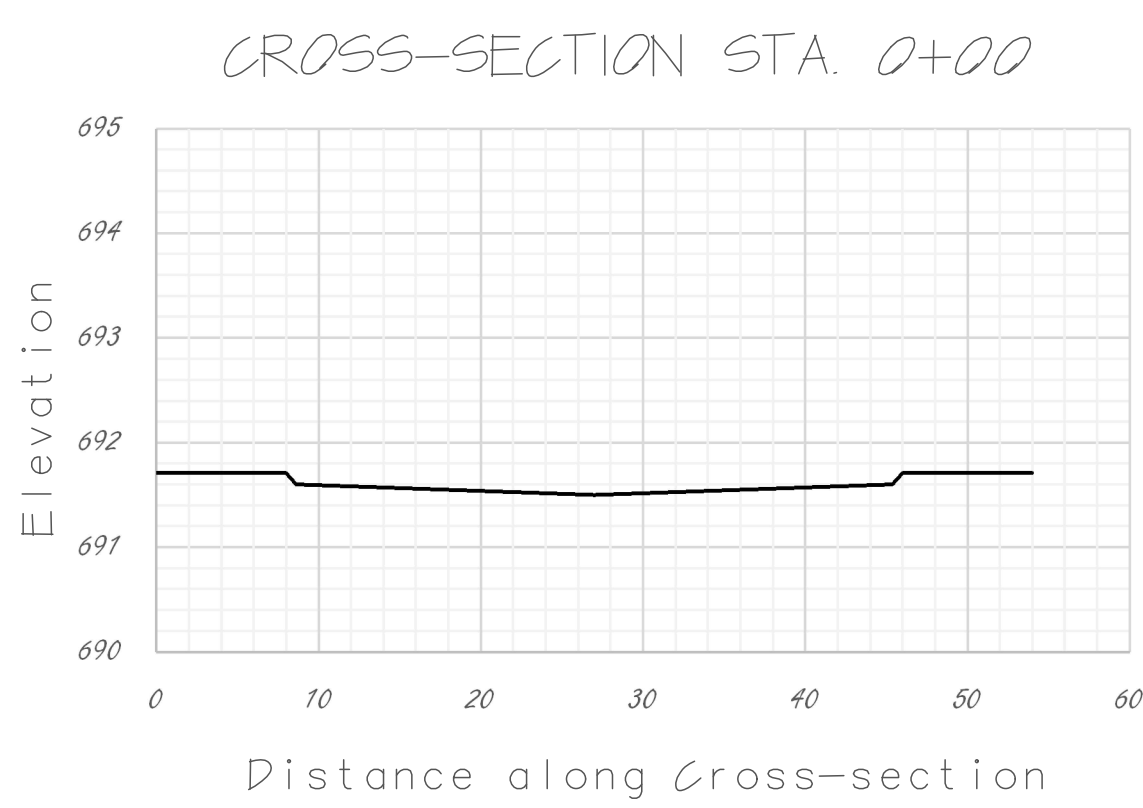
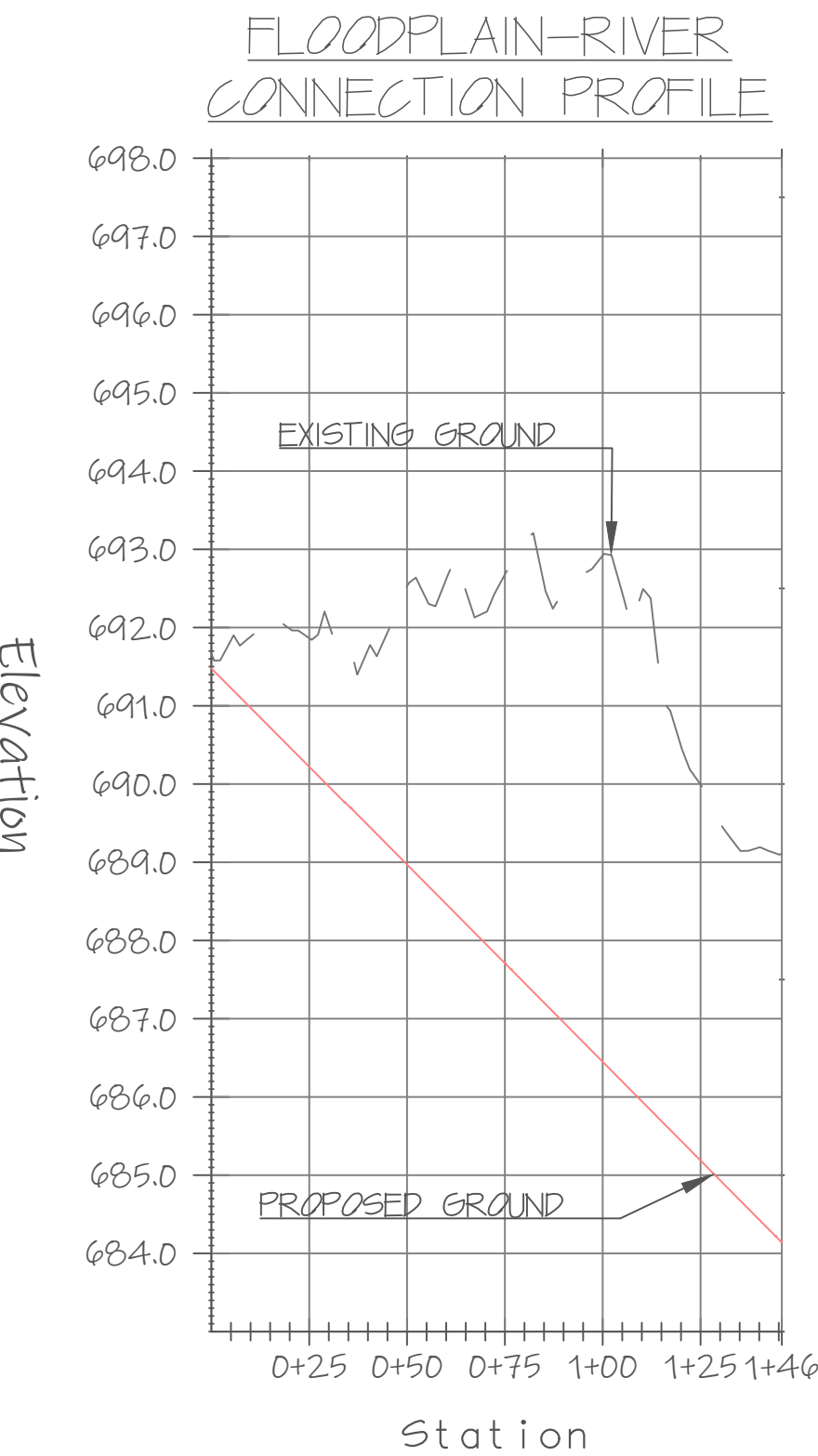
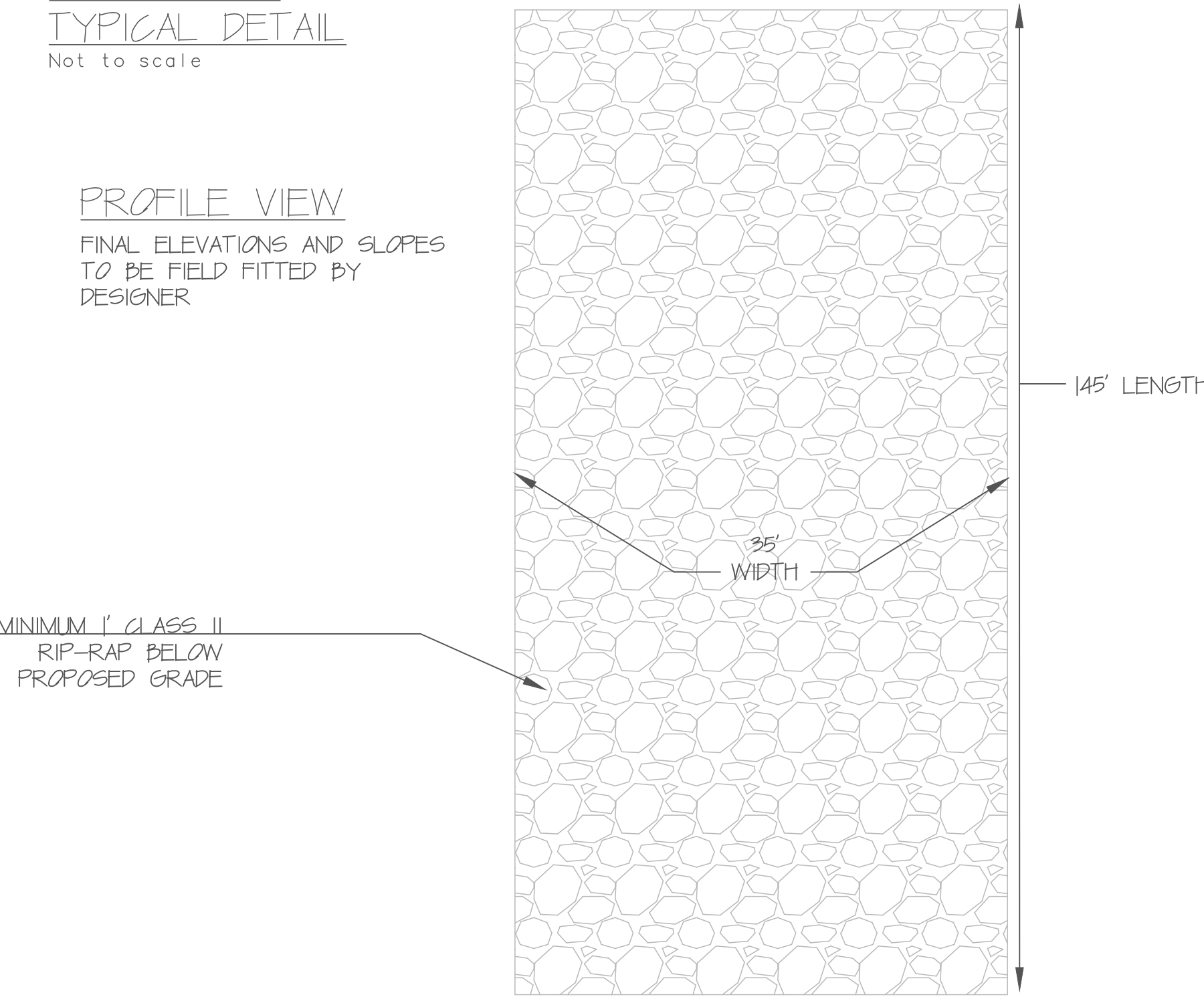
2-VEGETATIVE AND FLOW
DISPERSION HUMMOCKS
TYPICAL DETAIL
Not to scale



3-FLOODPLAIN LARGE WOODY DEBRIS DETAIL
Not to scale



4-FLOODPLAIN-RIVER
CONNECTION
TYPICAL DETAIL
Not to scale



General Notes



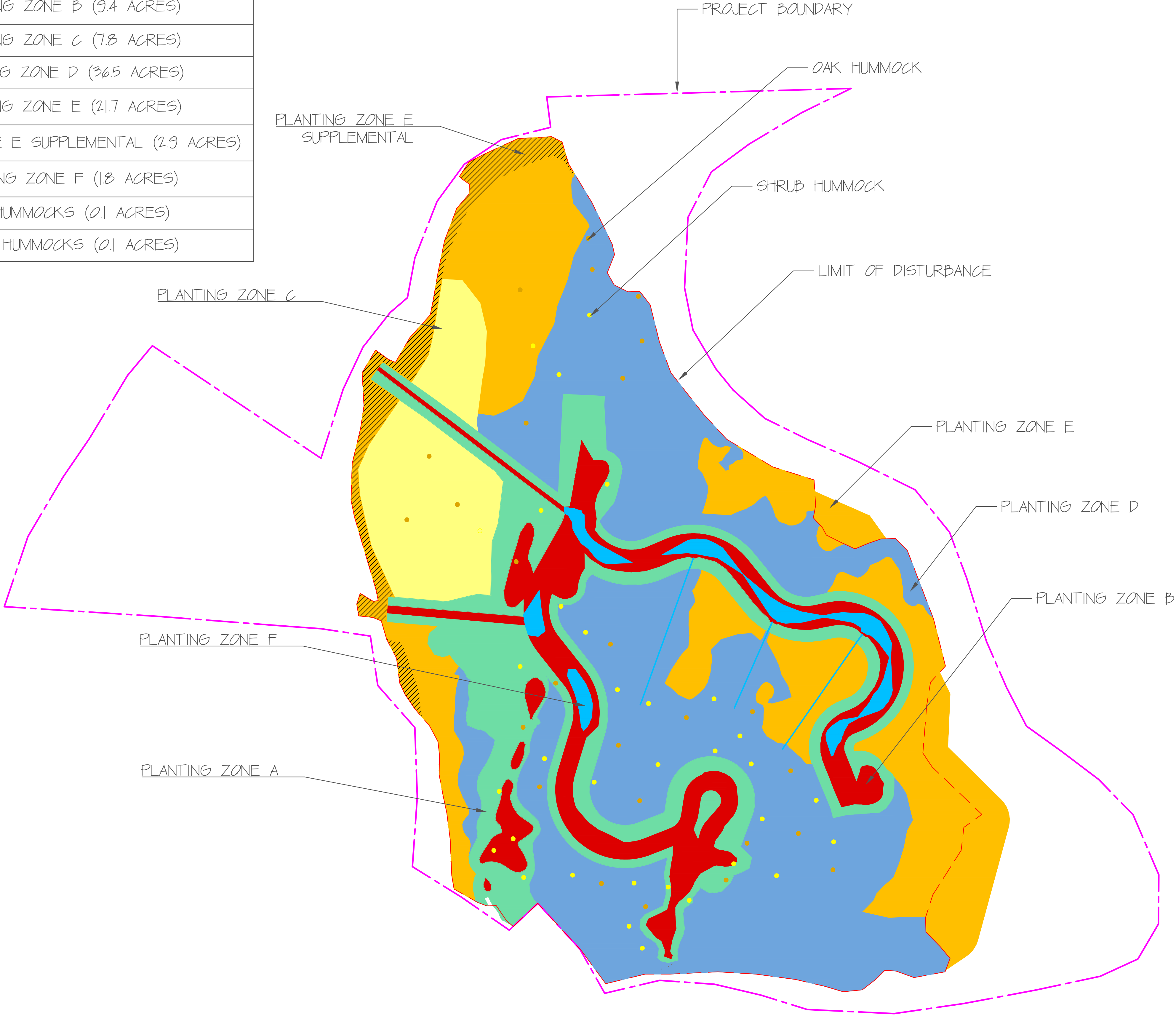
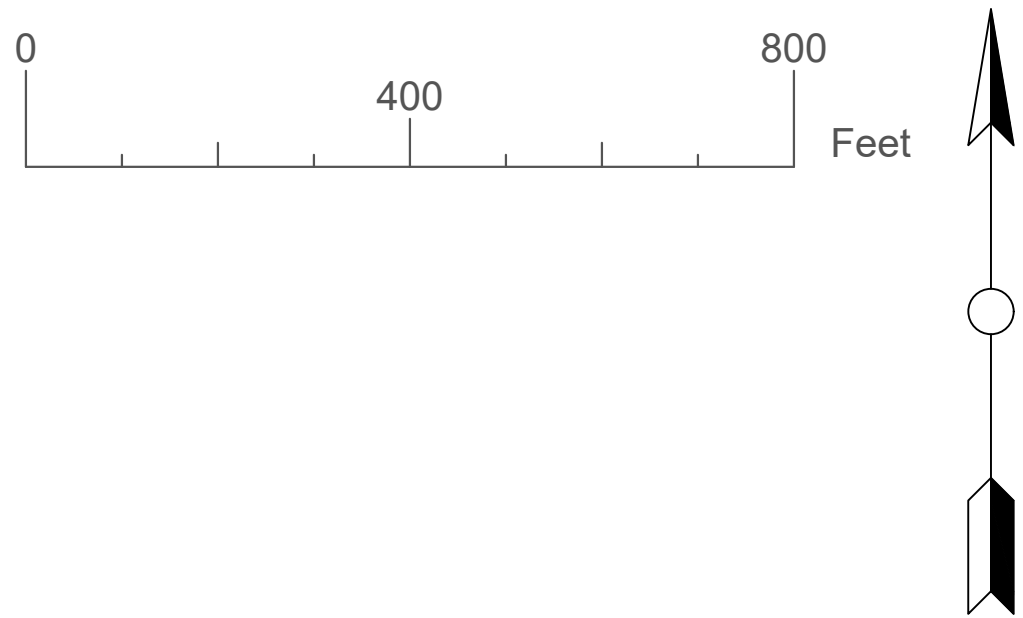
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No.	Drawn By/Checked By	Date

Firm Name and Address
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360 Hawthorne Lane
Athens, GA 30606

Project Name and Address
Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, Ga 30721

Project	17-105.00	Sheet	15
Date	1/30/2023		
Scale	1" = 40'		DETAILS

LEGEND	
	PROJECT BOUNDARY
	APPROXIMATE LIMITS OF DISTURBANCE
	PLANTING ZONE A (15.7 ACRES)
	PLANTING ZONE B (9.4 ACRES)
	PLANTING ZONE C (7.8 ACRES)
	PLANTING ZONE D (36.5 ACRES)
	PLANTING ZONE E (21.7 ACRES)
	PLANTING ZONE E SUPPLEMENTAL (2.9 ACRES)
	PLANTING ZONE F (1.8 ACRES)
	OAK HUMMOCKS (0.1 ACRES)
	SHRUB HUMMOCKS (0.1 ACRES)



General Notes

NUTTER+ASSOCIATES
ENVIRONMENTAL CONSULTANTS

	90% Design Plans	7/19/21
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No.	Revision/Issue	Date
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Firm Name and Address

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360 Hawthorne Lane
Athens, GA 30606

Project Name and Address

Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, Ga 30721

Project	17-105.00	Sheet	16
Date	8/2/2021		
Scale	1" = 200'		

PLANTING

WETLAND PLANTING ZONE A – 15.7 ACRES

SPECIES	COMMON NAME	WETLAND INDICATOR	STRATUM	SIZING	% OF ZONE STEMS	TOTAL STEMS
<i>Fraxinus pennsylvanica</i>	green ash	FACW	Tree	Recruited	NA	NA
<i>Alnus serrulata</i>	hazel alder	OBL	Shrub/Tree	Bare Root	25.0%	1,704
<i>Salix nigra</i>	black willow	OBL	Tree	Bare Root	20.0%	1,363
<i>Cornus amomum</i>	silky dogwood	FACW	Shrub	Bare Root	15.0%	1,022
<i>Platanus occidentalis</i>	American sycamore	FACW	Tree	Bare Root	10.0%	682
<i>Cephalanthus occidentalis</i>	common buttonbush	OBL	Shrub/Tree	1-gallon Container	10.0%	682
<i>Acer rubrum</i>	red maple	FAC	Tree	1-gallon Container	10.0%	682
<i>Ulmus americana</i>	American elm	FACW	Tree	Bare Root	5.0%	341
<i>Quercus michauxii</i>	swamp chestnut oak	FACW	Tree	Bare Root	5.0%	341

WETLAND PLANTING ZONE B – 9.4 ACRES

SPECIES	COMMON NAME	WETLAND INDICATOR	STRATUM	SIZING	% OF ZONE STEMS	TOTAL STEMS
<i>Fraxinus pennsylvanica</i>	green ash	FACW	Tree	Recruited	NA	NA
<i>Alnus serrulata</i>	hazel alder	OBL	Shrub/Tree	Bare Root	50.0%	1,410
<i>Salix nigra</i>	black willow	OBL	Tree	Bare Root	30.0%	846
<i>Cephalanthus occidentalis</i>	common buttonbush	OBL	Shrub/Tree	1-gallon Container	20.0%	564


WETLAND PLANTING ZONE C – 7.8 ACRES

SPECIES	COMMON NAME	WETLAND INDICATOR	STRATUM	SIZING	% OF ZONE STEMS	TOTAL STEMS
<i>Acer negundo</i>	boxelder	FAC	Tree	Recruited	NA	NA
<i>Fraxinus pennsylvanica</i>	green ash	FACW	Tree	Recruited	NA	NA
<i>Platanus occidentalis</i>	American sycamore	FACW	Tree	Bare Root	22.5%	764
<i>Acer rubrum</i>	red maple	FAC	Tree	1-gallon Container	17.5%	594
<i>Quercus michauxii</i>	swamp chestnut oak	FACW	Tree	Bare Root	12.5%	425
<i>Nyssa sylvatica</i>	blackgum	FAC	Tree	Bare Root	12.5%	425
<i>Betula nigra</i>	river birch	FACW	Tree	Bare Root	10.0%	340
<i>Populus deltoides</i>	eastern cottonwood	FAC	Tree	Bare Root	7.5%	255
<i>Salix nigra</i>	black willow	OBL	Tree	Bare Root	5.0%	170
<i>Cornus amomum</i>	silky dogwood	FACW	Shrub	Bare Root	5.0%	170
<i>Ulmus americana</i>	American elm	FACW	Tree	Bare Root	5.0%	170
<i>Alnus serrulata</i>	hazel alder	OBL	Shrub/Tree	Bare Root	2.5%	85

WETLAND PLANTING ZONE D – 36.5 ACRES

SPECIES	COMMON NAME	WETLAND INDICATOR	STRATUM	SIZING	% OF ZONE STEMS	TOTAL STEMS
<i>Acer negundo</i>	boxelder	FAC	Tree	Recruited	NA	NA
<i>Fraxinus pennsylvanica</i>	green ash	FACW	Tree	Recruited	NA	NA
<i>Acer rubrum</i>	red maple	FAC	Tree	1-gallon Container	20.0%	3,176
<i>Platanus occidentalis</i>	American sycamore	FACW	Tree	Bare Root	15.0%	2,382
<i>Nyssa sylvatica</i>	blackgum	FAC	Tree	Bare Root	15.0%	2,382
<i>Betula nigra</i>	river birch	FACW	Tree	Bare Root	10.0%	1,588
<i>Quercus michauxii</i>	swamp chestnut oak	FACW	Tree	Bare Root	10.0%	1,588
<i>Populus deltoides</i>	eastern cottonwood	FAC	Tree	Bare Root	5.0%	794
<i>Carpinus caroliniana</i>	American hornbeam	FAC	Shrub/Tree	Bare Root	5.0%	794
<i>Salix nigra</i>	black willow	OBL	Tree	Bare Root	5.0%	794
<i>Cornus amomum</i>	silky dogwood	FACW	Shrub	Bare Root	5.0%	794
<i>Ulmus americana</i>	American elm	FACW	Tree	Bare Root	5.0%	794
<i>Liquidambar styraciflua</i>	sweetgum	FAC	Tree	Bare Root	2.5%	397
<i>Alnus serrulata</i>	hazel alder	OBL	Shrub/Tree	Bare Root	2.5%	397

General Notes



NUTTER+ASSOCIATES
ENVIRONMENTAL CONSULTANTS

	90% Design Plans	7/19/21
2		
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6		
No.	Revision/Issue	Date
1	SM/AM-TG	7/19/21
2		
3		
4		
5		
6		
7		
No.	Drawn By/Checked By	Date

Firm Name and Address

Nutter and Associates, Inc.
360 Hawthorne Lane
Athens, GA 30606

Project Name and Address

Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, Ga 30721

Project	17-105.00	Sheet	17 PLANTING
Date	8/2/2021		
Scale	NA		

WETLAND PLANTING ZONE E – 21.7 ACRES

SPECIES	COMMON NAME	WETLAND INDICATOR	STRATUM	SIZING	% OF ZONE STEMS	TOTAL STEMS
<i>Acer negundo</i>	boxelder	FAC	Tree	Recruited	NA	NA
<i>Fraxinus pennsylvanica</i>	green ash	FACW	Tree	Recruited	NA	NA
<i>Platanus occidentalis</i>	American sycamore	FACW	Tree	Bare Root	20.0%	1,889
<i>Acer rubrum</i>	red maple	FAC	Tree	1-gallon Container	15.0%	1,417
<i>Betula nigra</i>	river birch	FACW	Tree	Bare Root	15.0%	1,417
<i>Nyssa sylvatica</i>	blackgum	FAC	Tree	Bare Root	15.0%	1,417
<i>Quercus michauxii</i>	swamp chestnut oak	FACW	Tree	Bare Root	10.0%	945
<i>Populus deltoides</i>	eastern cottonwood	FAC	Tree	Bare Root	5.0%	473
<i>Carpinus caroliniana</i>	American hornbeam	FAC	Shrub/Tree	Bare Root	5.0%	473
<i>Ulmus americana</i>	American elm	OBL	Tree	Bare Root	5.0%	473
<i>Liriodendron tulipifera</i>	tuliptree	FACU	Tree	Bare Root	5.0%	473
<i>Liquidambar styraciflua</i>	sweetgum	FAC	Tree	Bare Root	5.0%	473

WETLAND PLANTING ZONE E SUPPLEMENTAL – 2.9 ACRES

SPECIES	COMMON NAME	WETLAND INDICATOR	STRATUM	SIZING	% OF ZONE STEMS	ESTIMATED TOTAL STEMS
<i>Acer negundo</i>	boxelder	FAC	Tree	Recruited	NA	NA
<i>Fraxinus pennsylvanica</i>	green ash	FACW	Tree	Recruited	NA	NA
<i>Platanus occidentalis</i>	American sycamore	FACW	Tree	Bare Root	20.0%	144
<i>Acer rubrum</i>	red maple	FAC	Tree	1-gallon Container	15.0%	108
<i>Betula nigra</i>	river birch	FACW	Tree	Bare Root	15.0%	108
<i>Nyssa sylvatica</i>	blackgum	FAC	Tree	Bare Root	15.0%	108
<i>Quercus michauxii</i>	swamp chestnut oak	FACW	Tree	Bare Root	10.0%	72
<i>Populus deltoides</i>	eastern cottonwood	FAC	Tree	Bare Root	5.0%	36
<i>Carpinus caroliniana</i>	American hornbeam	FAC	Shrub/Tree	Bare Root	5.0%	36
<i>Ulmus americana</i>	American elm	OBL	Tree	Bare Root	5.0%	36
<i>Liriodendron tulipifera</i>	tuliptree	FACU	Tree	Bare Root	5.0%	36
<i>Liquidambar styraciflua</i>	sweetgum	FAC	Tree	Bare Root	5.0%	36

PLANTING ZONE F – 1.81 ACRES

SPECIES	COMMON NAME	WETLAND INDICATOR	STRATUM	SIZING	% OF ZONE STEMS	TOTAL STEMS
<i>Alnus serrulata</i>	hazel alder	OBL	Shrub/Tree	Bare Root	70.0%	378
<i>Salix nigra</i>	black willow	OBL	Tree	Bare Root	30.0%	162

OAK FLOW DISPERSION HUMMOCKS – 0.1 ACRES

SPECIES	COMMON NAME	WETLAND INDICATOR	STRATUM	SIZING	% OF ZONE STEMS	TOTAL STEMS
<i>Quercus phellos</i>	willow oak	FAC	Tree	1-gallon Container	20.0%	97
<i>Quercus michauxii</i>	swamp chestnut oak	FACW	Tree	1-gallon Container	20.0%	97
<i>Quercus pagoda</i>	cherrybark oak	FACW	Tree	1-gallon Container	20.0%	97
<i>Quercus nigra</i>	water oak	FAC	Tree	1-gallon Container	20.0%	97
<i>Quercus bicolor</i>	swamp white oak	FACW	Tree	1-gallon Container	20.0%	97

SHRUB FLOW DISPERSION HUMMOCKS – 0.1 ACRES

SPECIES	COMMON NAME	WETLAND INDICATOR	STRATUM	SIZING	% OF ZONE STEMS	TOTAL STEMS
<i>Alnus serrulata</i>	hazel alder	OBL	Tree	1-gallon Container	40.0%	252
<i>Cornus amomum</i>	silky dogwood	FACW	Tree	1-gallon Container	40.0%	252
<i>Sambucus canadensis</i>	American black elderberry	FACW	Tree	1-gallon Container	20.0%	126

PLANTING ZONES STEM SPACING

PLANTING ZONE	PLANT SPACING
ZONE A	10' X 10'
ZONE B	12' X 12'
ZONE C	10' X 10'
ZONE D	10' X 10'
ZONE E	10' X 10'
ZONE E SUPPLEMENTAL	AS NEEDED
ZONE F	12' X 12'
OAK HUMMOCK	3' X 3'
SHRUB HUMMOCK	3' X 3'

GENERAL PLANTING NOTES

ALL PLANTING MATERIAL SHOULD BE PLACED IN COLD STORAGE FOLLOWING HARVESTING AND DURING TRANSPORT TO PROJECT SITE.

COLD STORAGE SHOULD BE MAINTAINED AT 35 DEGREES FAHRENHEIT UNTIL ALL MATERIAL IS INSTALLED.

MATTOCK SLIT PLANTING SHOULD BE USED FOR INSTALLATION OF ALL BARE-ROOT MATERIALS.


SHOVEL OR POST HOLES SHOULD BE DUG FOR ALL 1-GALLON CONTAINER STEMS.

HOLES SHOULD BE TWICE THE DIAMETER AS THE STEM POT.

ROOT COLLARS SHOULD BE PLACED AT FINISHED GROUND ELEVATION FOR BOTH BARE ROOT AND CONTAINERIZED STEMS.

ALL PLANTING ZONES WILL BE MARKED BY THE DESIGNER FOLLOWING CONSTRUCTION ACTIVITIES.

General Notes



1	90% Design Plans	7/19/21
2		
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6		
No.	Revision/Issue	Date
1	SM/AM-TG	7/19/21
2		
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Boyles Mill Road
Dalton, Ga 30721

Project 17-105.00	Sheet 18 PLANTING
Date 8/2/2021	
Scale NA	

TEMPORARY SITE STABILIZATION COVER

SPECIES	COMMON NAME	APPLICATION RATE	PLANTING DATES	POSSIBLE TOTAL APPLICATION
<i>Secale cereale</i>	rye grain	30 lb/acre	August - May	2,760 lb.
<i>Urochloa ramosa</i>	browntop millet	10 lb/acre	May - August	920 lb.
<i>Chamaecrista fasciculata</i>	partridge pea	10 lb/acre	March - May	920 lb.
<i>Avena sativa</i>	oats	80 lb/acre	September - October	7,360 lb.
<i>Trifolium pratense</i>	red clover	10 lb/acre	September - October	920 lb.

PLANTING ZONES A, B, AND F PERMANENT SEED MIX

SPECIES	COMMON NAME	% of Mix
<i>Panicum clandestinum</i>	deertongue	24.5%
<i>Elymus virginicus</i>	Virginia wildrye	24.0%
<i>Andropogon gerardii</i>	big bluestem	19.6%
<i>Carex vulpinoidea</i>	fox sedge	15.0%
<i>Panicum virgatum</i>	switchgrass	8.0%
<i>Chamaecrista fasciculata</i>	partridge pea	4.0%
<i>Verbena hastata</i>	blue vervain	1.5%
<i>Heliopsis helianthoides</i>	oxeye sunflower	1.0%
<i>Juncus effusus</i>	soft rush	1.0%
<i>Agrostis perennans</i>	autumn bentgrass	0.8%
<i>Asclepias incarnata</i>	swamp milkwee	0.1%
<i>Aster novae-angliae</i>	New England aster	0.1%
<i>Eupatorium fistulosum</i>	Joe Pye weed	0.1%
<i>Eupatorium perfoliatum</i>	boneset	0.1%
<i>Monarda fistulosa</i>	wild bergamot	0.1%
<i>Pycnanthemum tenuifolium</i>	narrowleaf montainmint	0.1%

PLANTING ZONES D AND E PERMANENT SEED MIX

SPECIES	COMMON NAME	% of Mix
<i>Carex albolutescens</i>	greenwhite sedge	27.0%
<i>Panicum rigidulum</i>	redtop panicgrass	27.0%
<i>Elymus virginicus</i>	Virginia wildrye	15.8%
<i>Carex vulpinoidea</i>	fox sedge	11.0%
<i>Chasmanthium laux</i>	slender woodoats	9.0%
<i>Juncus effusus</i>	soft rush	3.0%
<i>Helianthus angustifolius</i>	narrowleaf sunflower	2.0%
<i>Upatorium coelstinum</i>	mistflower	1.0%
<i>Juncus tenuis</i>	path rush	1.0%
<i>Vernonia noveboracensis</i>	New York ironweed	0.8%
<i>Helenium autumnale</i>	common sneezeweed	0.7%
<i>Helenium flexuosum</i>	purplehead sneezeweed	0.7%
<i>Rhexia virginica</i>	Virginia meadowbeauty	0.5%
<i>Scirpus cyperinus</i>	woolgrass	0.5%

PLANTING ZONE C PERMANENT SEED MIX

SPECIES	COMMON NAME	% of Mix
<i>Carex vulpinoidea</i>	fox sedge	20.0%
<i>Elymus virginicus</i>	Virginia wildrye	20.0%
<i>Panicum clandestinum</i>	deertongue	15.0%
<i>Carex lupulina</i>	hop sedge	12.5%
<i>Carex lurida</i>	lurid sedge	12.5%
<i>Carex scoparia</i>	blunt broom sedge	11.5%
<i>Juncus effusus</i>	soft rush	5.0%
<i>Carex stipata</i>	awl sedge	2.0%
<i>Carex crinita</i>	fringed sedge	1.0%
<i>Scirpus cyperinus</i>	woolgrass	0.5%

PERMANENT SEED MIXES SEEDING RATES AND AMOUNTS

PLANTING ZONE MIX	APPLICATION RATE	TOTAL APPLICATION
PLANTING ZONES A, B, F MIX	20 LB/ACRE	538 LB.
PLANTING ZONE C MIX	20 LB/ACRE	156 LB.
PLANTING ZONES D AND E MIX	20 LB/ACRE	1,164 LB.

GENERAL SEEDING NOTES:

TEMPORARY SEEDING SHOULD BE CONDUCTED AS SPECIFIC AREAS AS DEMARCATED BY THE DESIGNER ARE COMPLETED.

ALL SEEDING SHOULD BE STRAWED WITH WEED FREE WHEAT STRAW.


TEMPORARY SEED MAY BE BROADCAST SEEDED.

PERMANENT SEEDING SHOULD BE CONDUCTED FOLLOWING ALL RESTORATION ACTIVITIES.

PERMANENT SEED MIXES SHOULD BE SEED DRILLED UNLESS SPECIFIED BY THE DESIGNER.

SEED MIXES MAY BE ADJUSTED THROUGH COORDINATION WITH THE DESIGNER.

General Notes



1

90% Design Plans

7/19/21

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No.

Revision/Issue

Date

1

SM/AM-TG

7/19/21

2

SM/AM-TG

1/30/22

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No.

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Athens, GA 30606

Project Name and Address

Dalton Utilities
Upper Coosa Mitigation Bank
Boyles Mill Road
Dalton, Ga 30721

Project

17-105.00

Date

8/2/2021

Scale

NA

Sheet

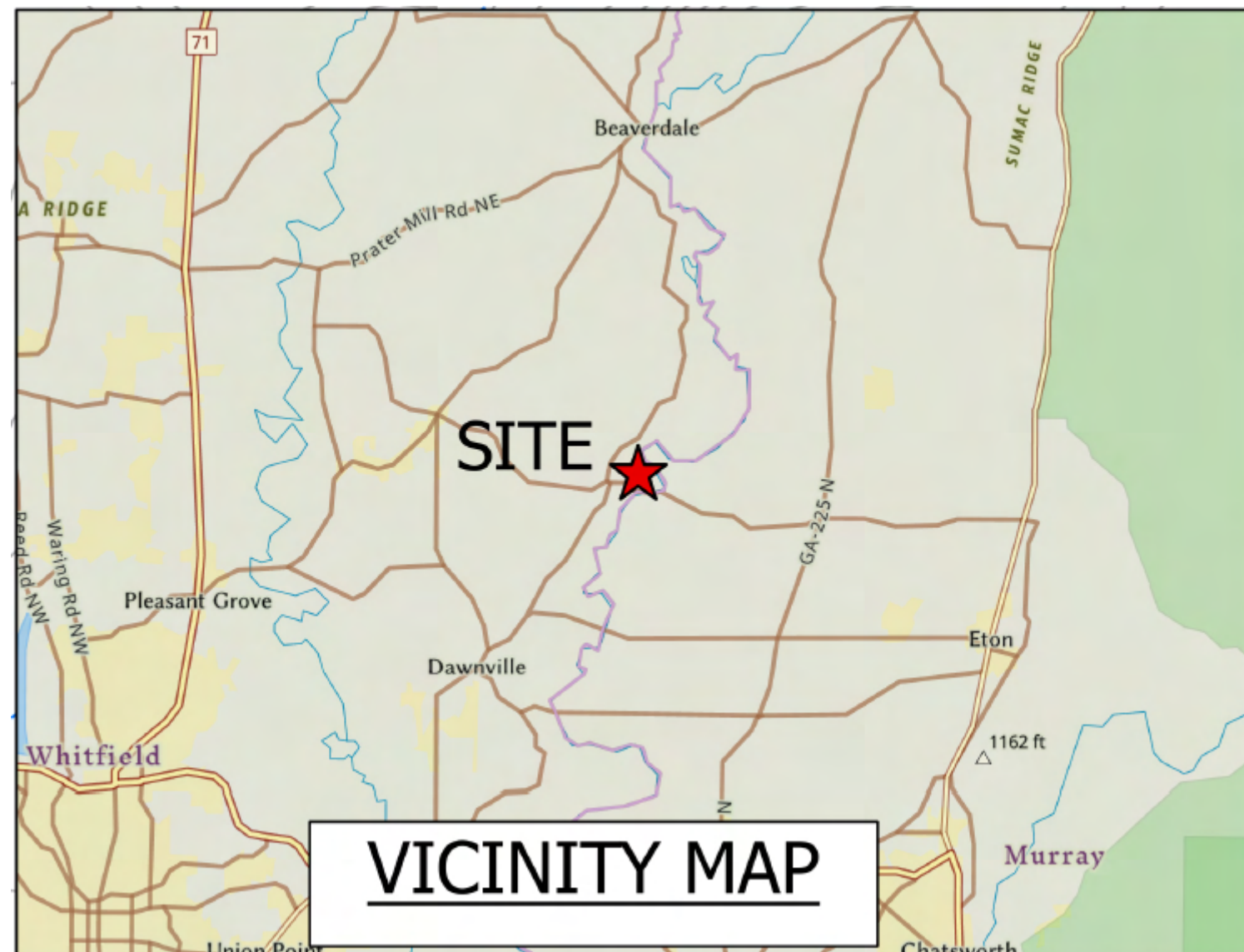
19

PLANTING

PLANTING.dwg

3/19/2007

Upper Coosa Mitigation Bank Wetland Restoration Erosion, Sedimentation, & Pollution Control Plans



SHEET INDEX

SHEET	TITLE
1	COVER SHEET
2	SOIL MAP
3	DRAINAGE BASIN & EXISTING SITE CONDITIONS
4	POST-RESTORATION SITE CONDITIONS
5-6	2022 GSWCC CHECKLIST
7	INITIAL PHASE SUB-DRAINAGE BASINS & STORAGE CALCULATIONS
8	INTERMEDIATE PHASE SUB-DRAINAGE BASINS & STORAGE CALCULATIONS
9	REFERENCE SHEET
10-11	EROSION CONTROL – INITIAL PHASE
12-13	EROSION CONTROL – INTERMEDIATE PHASE
14-16	EROSION CONTROL – FINAL PHASE
17-20	BMP DETAILS
21-23	BMP DRAWINGS
24	SITE RECORDS, LOCAL DEVELOPMENT REQUIREMENTS, AND ADDITIONAL EROSION AND SEDIMENTATION CONTROL NOTES

- RESTORATION DETAILS AND REQUIREMENTS:**
- Wetland restoration activities will be done in three separate areas (Areas 1, 2, and 3) to ensure the total disturbed acreage is below 50 acres at all times.
 - The initial perimeter control and sediment storage BMPs will be installed for all three areas as shown on Sheets 10 & 11 prior to the initiation of restoration activities. These BMPs will remain in place in all three areas undergoing restoration and/or enhancement until the site has reached final stabilization.
 - The intermediate phase (Sheets 12 & 13) includes additional BMPs as well as the valley grading, filling, and/or channel construction to be implemented for each restoration area to restore the entire site to historic conditions.
 - The planting plan for all three areas undergoing restoration is included in the final phase of the ESPCP (Sheets 14 & 15).
 - Restoration activities will be conducted subsequently in small sections in Area 1 to Area 3 and in dry conditions.
 - Within each restoration area, the existing vegetation will be left intact to the maximum extent practicable to further minimize disturbed areas undergoing restoration activities.
 - To further enhance the structural BMPs in each area undergoing restoration the existing buffer zone along the Conasauga River will be left intact during all restoration activities excluding a small area where a rock connect will be installed in Area 3.
 - Temporarily stabilize newly restored areas and implement daily temporary stabilization to the maximum extent to prevent the transport of sediment into existing and downstream waters.
 - Coconut blankets or coir matting shall be installed along all newly constructed channel banks including but not limited to the channels constructed in Area 1 to reconnect the wetland valley complex to upgradient streams or drainage areas, meander scars and surface water dispersion swales constructed in Area 2, and the riverbanks around the rock connect in Area 3.
 - Temporary and permanent streambank stabilization measures will also be implemented along the banks of all newly constructed channels within the restoration area.
 - Erosion control measures will be maintained at all times. If full implementation of the approved plan does not provide for effective erosion control, additional control measures shall be implemented to control or treat the sediment source.
 - Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding.
 - Temporarily stabilize all stockpile and soil staging areas as needed. Wrap all stockpiles in silt fence.
 - The escape of sediment from the site shall be prevented by the installation of erosion control measures and practices prior to or concurrent with land disturbing activities necessary for wetland restoration and/or enhancement.

DEVELOPMENT REFERENCES

PRIMARY PERMITTEE:
Dalton Utilities
1200 V.D. Parrott Jr. Parkway
Dalton, Georgia 30721

SITE CONTACT:
Leslie Rush
(706)529-1119
lrush@dutil.com

SECONDARY PERMITTEE:
None

TERTIARY PERMITTEE:
None

24 HOUR CONTACT:
Tony Greco
(706)206-8980
tgreco@nutterinc.com

LOCATION OF CONSTRUCTION EXIT:
34.854472, -84.844411

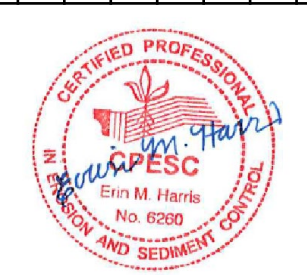


COVER SHEET

**Upper Coosa Mitigation Bank
Wetland Restoration**

Whitfield County, Georgia

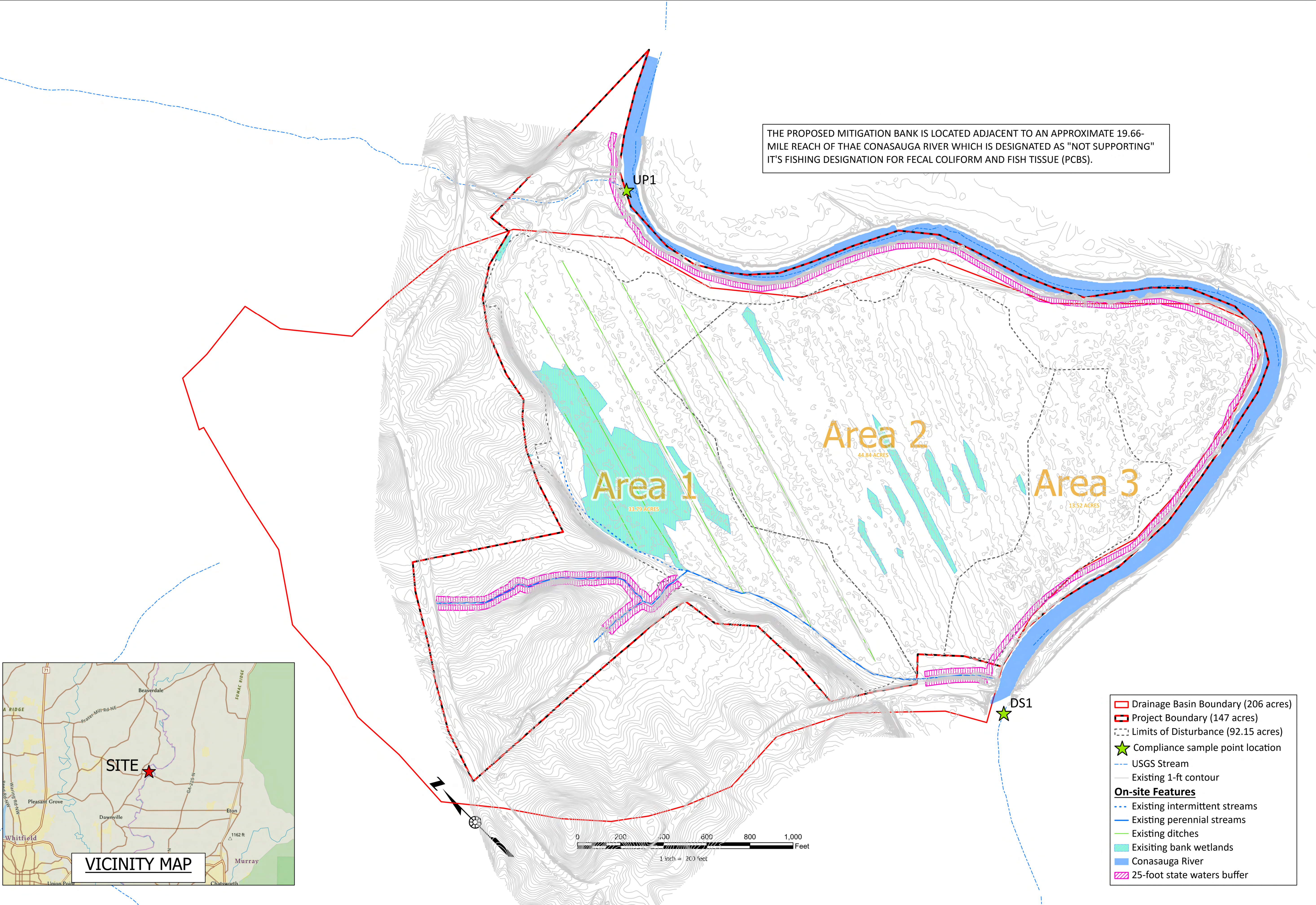
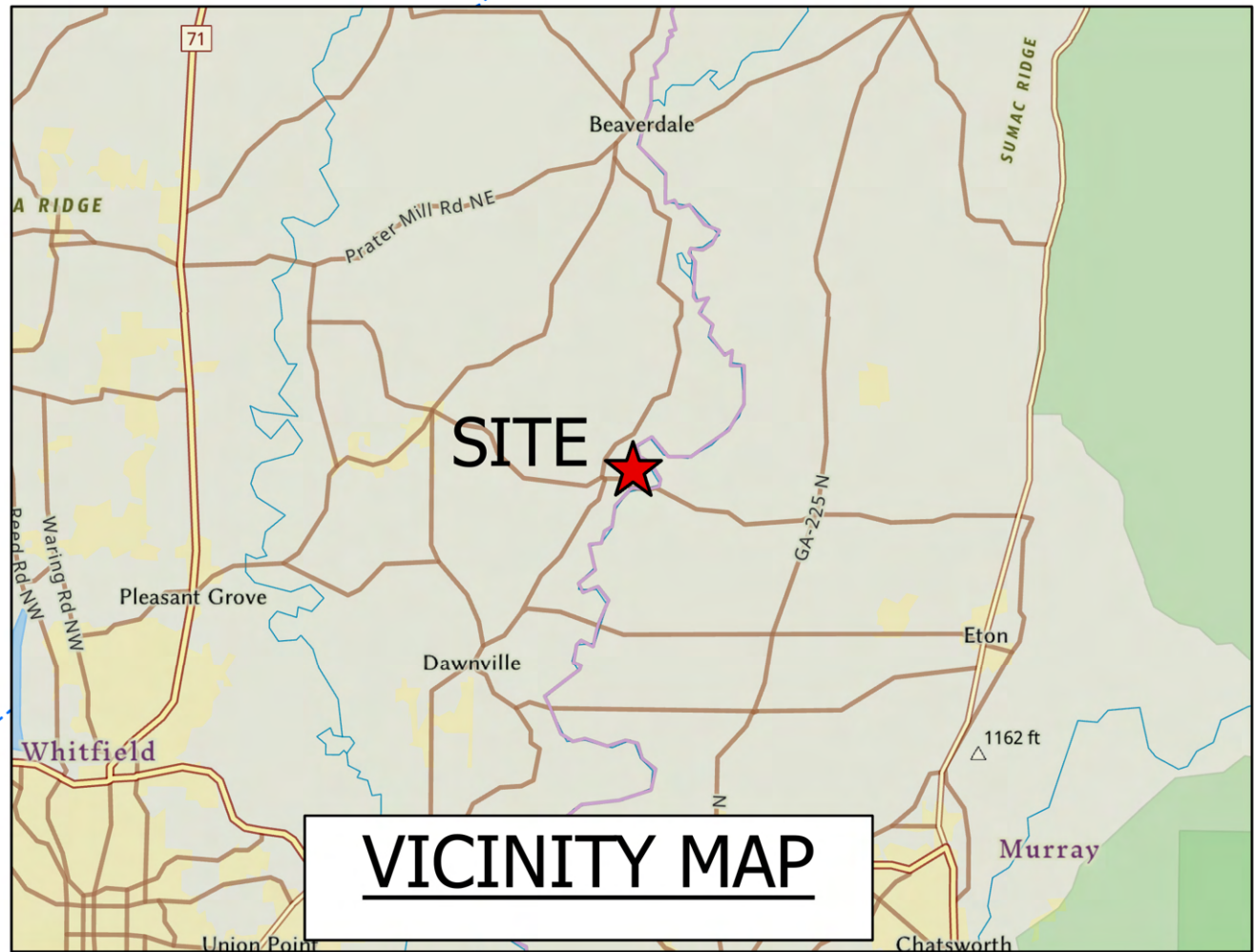
REVISIONS:



CPESC NO. 6260
GSWCC NO. 12924
EXPIRES: 07/08/2024
DATE: 06/05/2023

SHEET #

1



THE PROPOSED MITIGATION BANK IS LOCATED ADJACENT TO AN APPROXIMATE 19.66-MILE REACH OF THE CONASAUGA RIVER WHICH IS DESIGNATED AS "NOT SUPPORTING" ITS FISHING DESIGNATION FOR FECAL COLIFORM AND FISH TISSUE (PCBS).

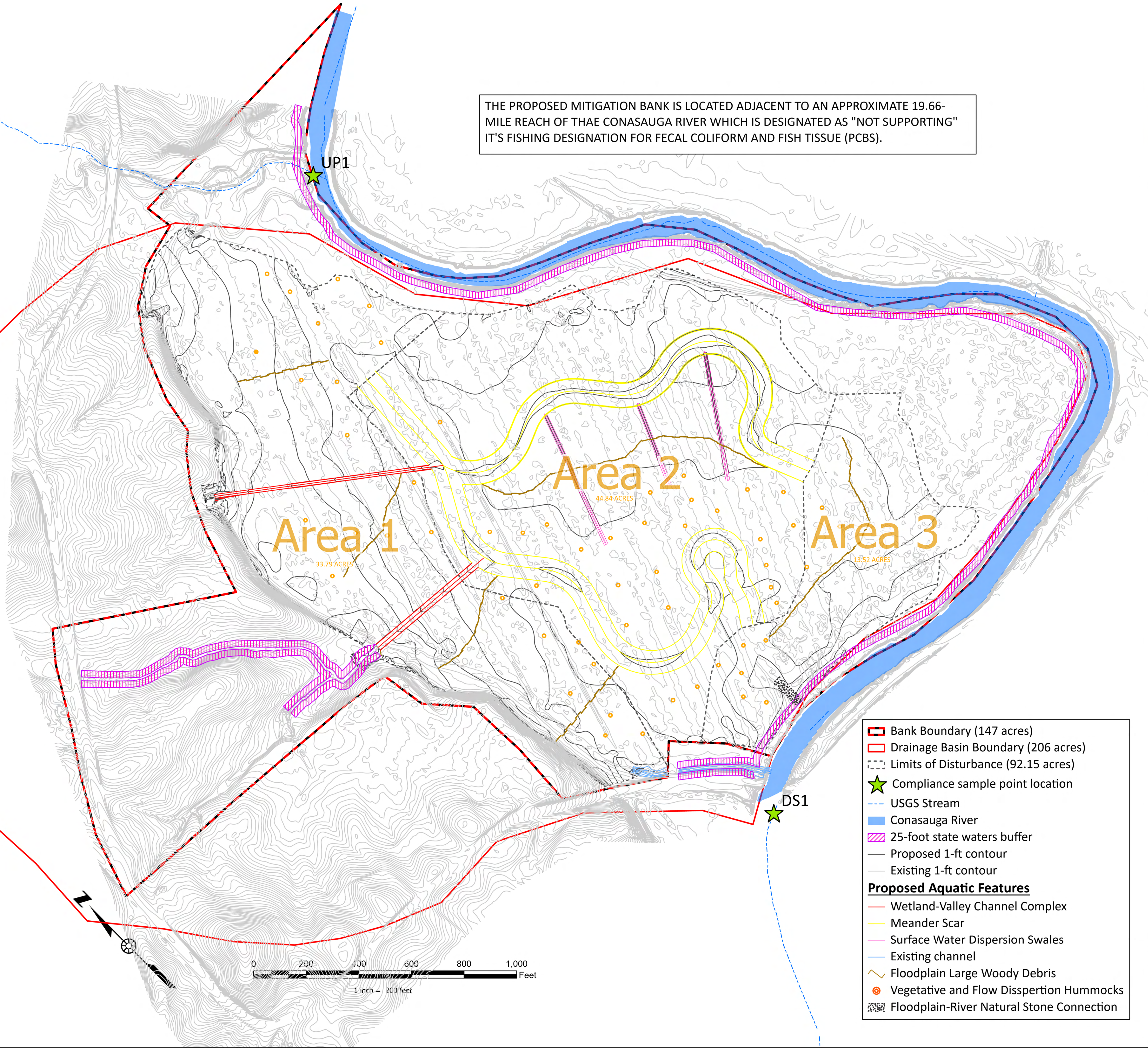
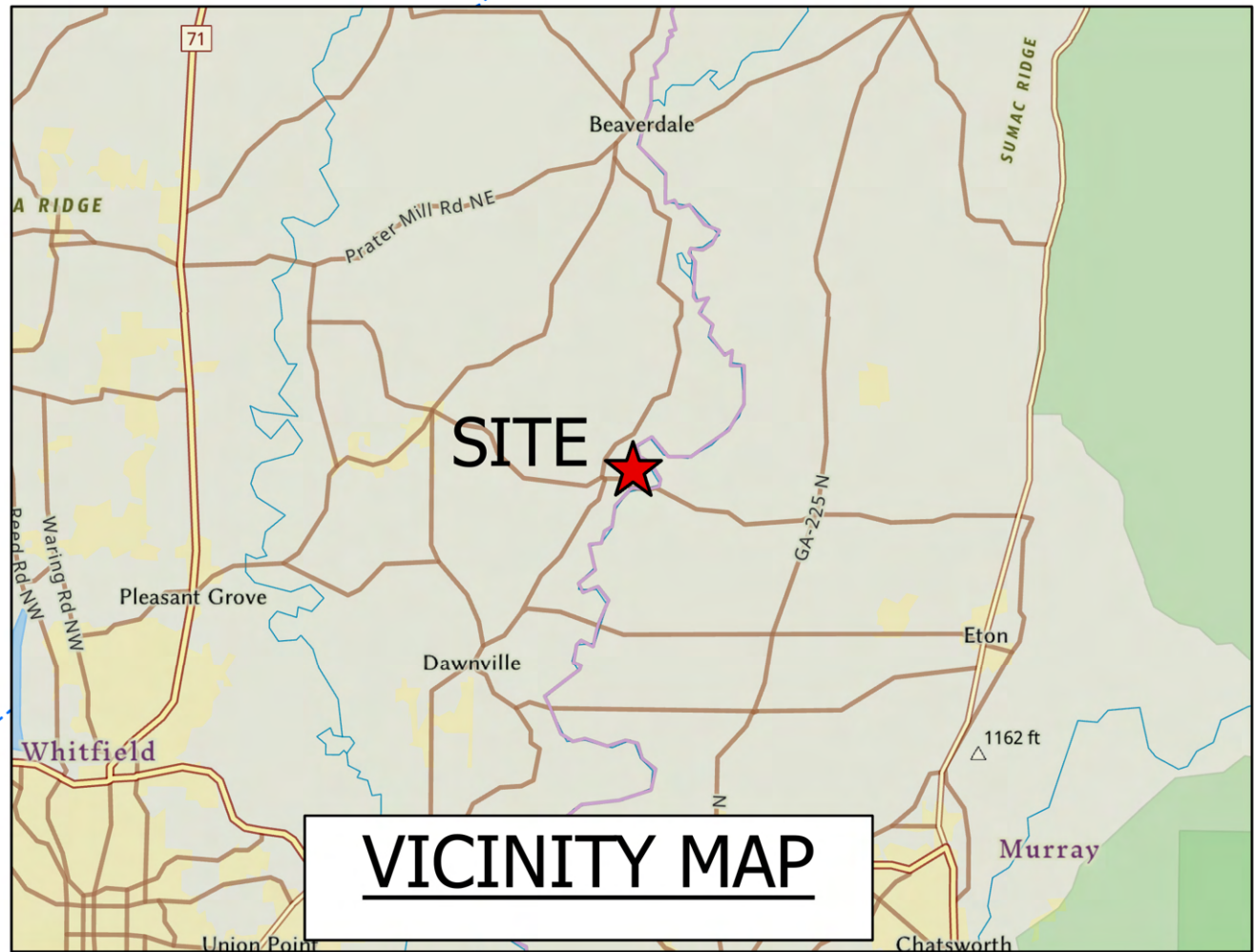
- Drainage Basin Boundary (206 acres)
- Project Boundary (147 acres)
- Limits of Disturbance (92.15 acres)
- Compliance sample point location
- USGS Stream
- Existing 1-ft contour
- On-site Features**
- Existing intermittent streams
- Existing perennial streams
- Existing ditches
- Existing bank wetlands
- Conasauga River
- 25-foot state waters buffer

PRE-CONSTRUCTION DRAINAGE BASIN

Upper Coosa Mitigation Bank Wetland Restoration Plan

Whitfield County, Georgia

REVISIONS:					



THE PROPOSED MITIGATION BANK IS LOCATED ADJACENT TO AN APPROXIMATE 19.66-MILE REACH OF THE CONASAUGA RIVER WHICH IS DESIGNATED AS "NOT SUPPORTING" ITS FISHING DESIGNATION FOR FECAL COLIFORM AND FISH TISSUE (PCBS).

- Bank Boundary (147 acres)
- Drainage Basin Boundary (206 acres)
- Limits of Disturbance (92.15 acres)
- Compliance sample point location
- USGS Stream
- Conasauga River
- 25-foot state waters buffer
- Proposed 1-ft contour
- Existing 1-ft contour
- Proposed Aquatic Features**
- Wetland-Valley Channel Complex
- Meander Scar
- Surface Water Dispersion Swales
- Existing channel
- Floodplain Large Woody Debris
- Vegetative and Flow Disspersion Hummocks
- Floodplain-River Natural Stone Connection

REVISIONS:					

[illegible]

#31 – 33 **STORMWATER SAMPLING, ANALYSIS, AND RECORDS (CONTINUED)**

5. **SAMPLING AND ANALYSIS OF RECEIVING WATER(S) OR OUTFALL(S)** BEYOND THE MINIMUM FREQUENCY STATED IN THIS PERMIT MUST BE REPORTED TO EPD AS SPECIFIED IN PART IV.E.

- ALL SAMPLING REPORTS SHALL INCLUDE THE FOLLOWING INFORMATION:
- A. THE RAINFALL AMOUNT, DATE, EXACT PLACE AND TIME OF SAMPLING OR MEASUREMENTS;
 - B. THE NAME(S) OF THE CERTIFIED PERSONNEL WHO PERFORMED THE SAMPLING AND MEASUREMENTS;
 - C. THE DATE(S) ANALYSES WERE PERFORMED;
 - D. THE TIME(S) ANALYSES WERE INITIATED;
 - E. THE NAME(S) OF THE CERTIFIED PERSONNEL WHO PERFORMED THE ANALYSES;
 - F. REFERENCES AND WRITTEN PROCEDURES, WHEN AVAILABLE, FOR THE ANALYTICAL TECHNIQUES OR METHODS USED;
 - G. THE RESULTS OF SUCH ANALYSES, INCLUDING THE BENCH SHEETS, INSTRUMENT READOUTS, COMPUTER DISKS OR TAPES, ETC., USED TO DETERMINE THESE RESULTS;
 - H. RESULTS WHICH EXCEED 1000 NTU SHALL BE REPORTED AS "EXCEEDS 1000 NTU;" AND,
 - I. CERTIFICATION STATEMENT THAT SAMPLING WAS CONDUCTED AS PER THE PLAN.

ALL WRITTEN CORRESPONDENCE REQUIRED BY THIS PERMIT SHALL BE SUBMITTED BY RETURN RECEIPT CERTIFIED MAIL (OR SIMILAR SERVICE) TO THE APPROPRIATE DISTRICT OFFICE OF THE EPD ACCORDING TO THE SCHEDULE IN APPENDIX A OF THIS PERMIT. THE PERMITTEE SHALL RETAIN A COPY OF THE PROOF OF SUBMITTAL AT THE CONSTRUCTION SITE OR THE PROOF OF SUBMITTAL SHALL BE READILY AVAILABLE AT A DESIGNATED LOCATION FROM COMMENCEMENT OF CONSTRUCTION UNTIL SUCH TIME AS A NOT IS SUBMITTED IN ACCORDANCE WITH PART VI.

- RETENTION OF RECORDS**
- THE PRIMARY PERMITTEE SHALL RETAIN THE FOLLOWING RECORDS AT THE CONSTRUCTION SITE OR THE RECORDS SHALL BE READILY AVAILABLE AT A DESIGNATED ALTERNATE LOCATION FROM COMMENCEMENT OF CONSTRUCTION UNTIL SUCH TIME AS A NOT IS SUBMITTED IN ACCORDANCE WITH PART VI:
- A. A COPY OF ALL NOTICES OF INTENT SUBMITTED TO EPD;
 - B. A COPY OF THE EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN REQUIRED BY THIS PERMIT;
 - C. THE DESIGN PROFESSIONAL'S REPORT OF THE RESULTS OF THE INSPECTION CONDUCTED IN ACCORDANCE WITH PART IV.A.5. OF THIS PERMIT;
 - D. A COPY OF ALL SAMPLING INFORMATION, RESULTS, AND REPORTS REQUIRED BY THIS PERMIT;
 - E. A COPY OF ALL INSPECTION REPORTS GENERATED IN ACCORDANCE WITH PART IV.D.4.A. OF THIS PERMIT;
 - F. A COPY OF ALL VIOLATION SUMMARIES AND VIOLATION SUMMARY REPORTS GENERATED IN ACCORDANCE WITH PART III.D.2. OF THIS PERMIT; AND,
 - G. DAILY RAINFALL INFORMATION COLLECTED IN ACCORDANCE WITH PART IV.D.4.A.(2). OF THIS PERMIT.

COPIES OF ALL NOTICES OF INTENT, NOTICES OF TERMINATION, INSPECTION REPORTS, SAMPLING REPORTS (INCLUDING ALL CALIBRATION AND MAINTENANCE RECORDS AND ALL ORIGINAL STRIP CHART RECORDINGS FOR CONTINUOUS MONITORING INSTRUMENTATION) OR OTHER REPORTS REQUESTED BY THE EPD, EROSION, SEDIMENTATION AND POLLUTION CONTROL PLANS, RECORDS OF ALL DATA USED TO COMPLETE THE NOTICE OF INTENT TO BE COVERED BY THIS PERMIT AND ALL OTHER RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED BY THE PERMITTEE WHO EITHER PRODUCED OR USED IT FOR A PERIOD OF AT LEAST THREE YEARS FROM THE DATE THAT THE NOT IS SUBMITTED IN ACCORDANCE WITH PART VI. OF THIS PERMIT. THESE RECORDS MUST BE MAINTAINED AT THE PERMITTEE'S PRIMARY PLACE OF BUSINESS OR AT A DESIGNATED ALTERNATE LOCATION ONCE THE CONSTRUCTION ACTIVITY HAS CEASED AT THE PERMITTED SITE. THIS PERIOD MAY BE EXTENDED BY REQUEST OF THE EPD AT ANY TIME UPON WRITTEN NOTIFICATION TO THE PERMITTEE.

#34 **NOT APPLICABLE**

NO OUTFALLS WILL BE SAMPLED. THE TURBIDITY OF THE RECEIVING WATER (CONASAUGA RIVER) SHALL NOT BE INCREASED BY MORE THEN 25 NTU.

#35 **DELINEATION OF SAMPLE LOCATIONS**

SEE SHEETS 2 – 4

#36 **BEST MANAGEMENT PRACTICES (BMPs)**

THE PURPOSE OF THIS PROJECT IS A WETLAND RESTORATION. THERE WILL BE NO MASS GRADING AND THE RESTORATION ACTIVITIES WILL BE DONE IN THREE SEPARATE AREAS KNOWN AS AREAS 1, 2, AND 3 ACCORDING TO THE APPROXIMATE PROJECT TIMELINE (SEE CHECKLIST ITEM 29).

DESCRIPTION OF SEDIMENT STORAGE REQUIREMENTS:

TO ATTAIN THE SEDIMENT STORAGE FOR THE ENTIRE RESTORATION PROJECT, SILT FENCE WILL BE INSTALLED WITHIN EACH AREA UNDERGOING RESTORATION. SEE SHEETS 7 AND 8 FOR THE LOCATION OF SILT FENCE WITHIN EACH SUB-DRAINAGE BASIN FOR THE INITIAL AND INTERMEDIATE PHASES, RESPECTIVELY.

IMPLEMENTATION OF ON-SITE BMPs HAS BEEN DIVIDED INTO THREE PHASES AS DESCRIBED BELOW:

INITIAL PHASE BMPs (SHEETS 10 & 11):

THE BMPs TO BE INSTALLED DURING THE INITIAL PHASE OF CONSTRUCTION INCLUDE THE CONSTRUCTION EXIT, SILT FENCE SEDIMENT BARRIER, AND TURBIDITY CURTAIN. THE ONLY AREAS THAT SHALL BE CLEARED OR GRUBBED DURING THE INITIAL PHASE IS THOSE NECESSARY FOR INSTALLATION OF THE INITIAL BMPs. THESE BMPs SHALL BE IN PLACE AND INSPECTED BY THE DESIGN PROFESSIONAL PRIOR TO THE INITIATION OF RESTORATION ACTIVITIES. THE EXISTING BUFFER ALONG THE CONASAUGA RIVER WILL ALSO BE MAINTAINED AS A VEGETATIVE BMP DURING ALL PHASES OF THE RESTORATION EXCLUDING A SMALL AREA NEEDED FOR INSTALLTION OF THE ROCK CONNECTION IN AREA 3.

INTERMEDIATE PHASE BMPs (SHEETS 12 & 13):

ONCE THE INITIAL BMPs HAVE BEEN PROPERLY INSTALLED AND INSPECTED BY THE DESIGN PROFESSIONAL, THE INTERMEDIATE PHASE WILL BE IMPLEMENTED. THIS PHASE INCLUDES GRADING ACTIVITIES NECESSARY TO RESTORE THE SITE TO HISTORIC CONDITIONS SUCH AS VALLEY GRADING, FILLING, AND CHANNEL CONSTRUCTION. THESE ACTIVITIES WILL BE DONE IN PHASES STARTING WITH AREA 1. EACH AREA UNDERGOING RESTORATION WILL BE TEMPORARILY STABILIZED TO THE MAXIMUM EXTENT PRACTICABLE PRIOR TO THE INITIATION OF THE SUBSEQUENT RESTORATION AREA. IN ADDITION TO THE INITIAL PHASE BMPs, THE INTERMEDIATE PHASE BMPs INCLUDE TEMPORARY MULCHING AND SEEDING, SLOPE AND/OR STREAMBANK STABILIZATION MEASURES, MAINTENANCE OF THE EXISTING BUFFER ZONE ALONG THE CONASAUGA RIVER, AND STONE AND/OR HAYBALE CHECK DAMS (IF NEEDED IN NEWLY CONSTRUCTED CHANNELS).

FINAL PHASE BMPs (SHEETS 14 & 15):

DISTURBED AREA STABILIZATION IN THE VALLEY AND STREAMBANK STABILIZATION IN NEWLY CONSTRUCTED CHANNELS WITH PERMEANT VEGETATION ARE THE ONLY PRACTICES PROPOSED FOR THE FINAL PHASE. ALL TEMPORARY BMPs SHALL REMAIN IN PLACE UNTIL THE SITE HAS REACHED FINAL STABILIZATION.

ADDITIONAL BMP NOTES AND DESCRIPTIONS, EROSION AND SEDIMENTATION CONTROL NOTES, AND WHITFIELD COUNTY REQUIREMENTS ARE DETAILED ON SHEET 23.

#37 **GRAPHIC SCALE AND NORTH ARROW**

SEE SHEETS 2 THROUGH 4 AND 7 THROUGH 15.

#38 **EXISTING AND PROPOSED CONTOURS**

SEE SHEETS 2 THROUGH 4 AND 7 THROUGH 15.

#39 – 40 **NOT APPLICABLE**

#41 **DELINEATION OF 25- AND 50-FOOT BUFFERS**

SEE SHEETS 3, 4, AND 10 THROUGH 13. STATE WATERS DETERMINATION LETTER ATTACHED TO SHEET 23.

#42 **DELINEATION OF WETLANDS AND STATE WATERS**

SEE SHEETS 10 THROUGH 13. STATE WATERS DETERMINATION LETTER ATTACHED TO SHEET 23.

#43 **DELINEATION & ACREAGE OF CONTRIBUTING BASIN**

TOTAL BASIN DRAINAGE AREA = ± 206 ACRES

SEE SHEETS 3 AND 4 FOR DELINEATION

#44 **HYDROLOGY STUDY AND DRAINAGE BASIN MAPS**

A HYDROLOGY STUDY IS NOT REQUIRED FOR THIS PROJECT. SEE SHEETS 3 AND 4 FOR PRE- AND POST- RESTORATION DRAINAGE BASINS.

#45 **ESTIMATION OF THE RUNOFF COEFFICIENT**

THE RUNOFF WAS DETERMINED FOR THE THREE AREAS UNDERGOING RESTORATION USING THE NRCS TR-55 METHODOLOGY. BELOW IS THE ESTIMATED RUNOFF ASSOCIATED WITH EACH AREA FOR BOTH PRE- AND POST- DEVELOPED CONDITIONS.

THE FOLLOWING EQUATIONS WERE USED TO ESTIMATE RUNOFF FOR BOTH PRE- AND POST-DEVELOPED CONDITIONS.

EQUATIONS:

$$Q = \frac{(P - 0.25)^2}{(P + 0.85)} \quad S = \left(\frac{1000}{CN} \right) - 10$$

where

Q = runoff (in)

P = rainfall (in)

S = potential maximum retention after runoff begins (in)

CN = curve number

AREA 1:					
CURRENT CONDITIONS					
1. RUNOFF CURVE NUMBER					
SOIL NAME AND HYDROLOGIC SOIL GROUP	COVER DESCRIPTION (cover type and hydrologic condition)	CURVE NUMBER (CN)	AREA (ACRES)	PRODUCT OF CN X AREA	
Holston, B	WOODS, GOOD CONDITION	55	4.29	236.0	
Chenneby, D	WOODS, GOOD CONDITION	77	0.21	16.2	
Townley, D	WOODS, GOOD CONDITION	77	2.33	179.4	
Docena - Conasauga Complex, D	WOODS, GOOD CONDITION	77	0.77	59.3	
Arkabutla, D	WOODS - GRASS COMBINATION, FAIR CONDITION	82	25.31	2,075.4	
	WOODS, GOOD CONDITION	77	0.88	67.8	
CN (WEIGHTED) =		TOTAL PRODUCT TOTAL AREA	= 2,634.0 33.79	= 78	TOTAL 33.79 2,634.0 USE CN= 78

2. RUNOFF						
RECURRANCE INTERVAL		STORM #1	STORM #2	STORM #3	STORM #4	
FREQUENCY	YEARS	2	10	10	100	
RAINFALL, P (24-HOUR)	INCHES	3.69	5.19	6.13	7.58	
RUNOFF, Q	INCHES	1.64	2.87	3.69	5.00	

POST-CONSTRUCTION CONDITIONS				
1. RUNOFF CURVE NUMBER				
SOIL NAME AND HYDROLOGIC SOIL GROUP	COVER DESCRIPTION (cover type and hydrologic condition)	CURVE NUMBER (CN)	AREA (ACRES)	PRODUCT OF CN X AREA
Holston, B	WOODS, GOOD CONDITION	55	4.29	236.0
Chenneby, D		77	0.21	16.2
Townley, D		77	2.33	179.4
Docena - Conasauga Complex, D		77	0.77	59.3
Arkabutla, D		77	26.19	2016.6

2. RUNOFF						
RECURRANCE INTERVAL		STORM #1	STORM #2	STORM #3	STORM #4	
FREQUENCY	YEARS	2	10	10	100	
RAINFALL, P (24-HOUR)	INCHES	3.69	5.19	6.13	7.58	
RUNOFF, Q	INCHES	1.39	2.53	3.31	4.58	

AREA 2:					
CURRENT CONDITIONS					
1. RUNOFF CURVE NUMBER					
SOIL NAME AND HYDROLOGIC SOIL GROUP	COVER DESCRIPTION (cover type and hydrologic condition)	CURVE NUMBER (CN)	AREA (ACRES)	PRODUCT OF CN X AREA	
Chenneby, D	WOODS - GRASS COMBINATION, FAIR CONDITION	82	0.20	16.4	
	WOODS, GOOD CONDITION	77	25.80	1,986.6	
Shellbluff, B	WOODS, GOOD CONDITION	55	0.43	23.7	
Arkabutla, D	WOODS - GRASS COMBINATION, FAIR CONDITION	82	18.41	1,509.6	
CN (WEIGHTED) =		TOTAL PRODUCT TOTAL AREA	= 3,536.3 44.84	= 79	TOTAL 44.84 3,536.3 USE CN= 79

2. RUNOFF						
RECURRANCE INTERVAL		STORM #1	STORM #2	STORM #3	STORM #4	
FREQUENCY	YEARS	2	10	10	100	
RAINFALL, P (24-HOUR)	INCHES	3.69	5.19	6.13	7.58	
RUNOFF, Q	INCHES	1.71	2.95	3.78	5.10	

POST-CONSTRUCTION CONDITIONS					
1. RUNOFF CURVE NUMBER					
SOIL NAME AND HYDROLOGIC SOIL GROUP	COVER DESCRIPTION (cover type and hydrologic condition)	CURVE NUMBER (CN)	AREA (ACRES)	PRODUCT OF CN X AREA	
Chenneby, D	WOODS, GOOD CONDITION	77	26.00	2,002.0	
Shellbluff, B		55	0.43	23.7	
Arkabutla, D		77	18.41	1,417.6	
		77	44.84	3,443.2	
CN (WEIGHTED) =		TOTAL PRODUCT TOTAL AREA		= 3,443.2 44.84 = 77	
		TOTAL		USE CN= 77	

2. RUNOFF						
RECURRANCE INTERVAL		STORM #1	STORM #2	STORM #3	STORM #4	
FREQUENCY	YEARS	2	10	10	100	
RAINFALL, P (24-HOUR)	INCHES	3.69	5.19	6.13	7.58	
RUNOFF, Q	INCHES	1.56	2.76	3.57	4.87	

AREA 3:					
CURRENT CONDITIONS					
1. RUNOFF CURVE NUMBER					
SOIL NAME AND HYDROLOGIC SOIL GROUP	COVER DESCRIPTION (cover type and hydrologic condition)	CURVE NUMBER (CN)	AREA (ACRES)	PRODUCT OF CN X AREA	
Chenneby, D	WOODS - GRASS COMBINATION, FAIR CONDITION	82	8.58	703.6	
	WOODS, GOOD CONDITION	77	0.52	40.0	
Shellbluff, B	WOODS - GRASS COMBINATION, FAIR CONDITION	65	0.82	53.3	
	WOODS, GOOD CONDITION	55	0.99	54.5	
Arkabutla, D	WOODS - GRASS COMBINATION, FAIR CONDITION	82	1.86	152.5	
	WOODS, GOOD CONDITION	77	0.75	57.8	
CN (WEIGHTED) =		TOTAL PRODUCT TOTAL AREA	= 1,061.6 13.52	= 79	TOTAL 13.52 1,061.6 USE CN= 79

2. RUNOFF						
RECURRANCE INTERVAL		STORM #1	STORM #2	STORM #3	STORM #4	
FREQUENCY	YEARS	2	10	10	100	
RAINFALL, P (24-HOUR)	INCHES	3.69	5.19	6.13	7.58	
RUNOFF, Q	INCHES	1.68	2.92	3.75	5.06	

POST-CONSTRUCTION CONDITIONS					
1. RUNOFF CURVE NUMBER					
SOIL NAME AND HYDROLOGIC SOIL GROUP	COVER DESCRIPTION (cover type and hydrologic condition)	CURVE NUMBER (CN)	AREA (ACRES)	PRODUCT OF CN X AREA	
Chenneby, D	WOODS, GOOD CONDITION	77	9.10	700.7	
Shellbluff, D		55	1.81	99.6	
Arkabutla, D		77	2.61	201.0	
		77	2.61	201.0	
CN (WEIGHTED) =		TOTAL PRODUCT TOTAL AREA		= 1,001.2 13.52	= 74
			TOTAL	13.52	1,001.2
				USE CN =	74

2. RUNOFF						
RECURRANCE INTERVAL		STORM #1	STORM #2	STORM #3	STORM #4	
FREQUENCY	YEARS	2	10	10	100	
RAINFALL, P (24-HOUR)	INCHES	3.69	5.19	6.13	7.58	
RUNOFF, Q	INCHES	1.38	2.52	3.30	4.56	

#46 **STORM-DRAIN PIPE AND WEIR VELOCITIES**

NOT APPLICABLE

#47 **SOIL SERIES FOR THE PROJECT SITE AND THEIR DELINEATION**

SEE SHEET 2

#48 **LIMITS OF DISTURBANCE FOR EACH AREA OF WETLAND RESTORATION**

SEE SHEETS 10 THROUGH 15

#49 **STORAGE CALCULATIONS**

A SUMMARY OF THE SEDIMENT STORAGE CALCULATIONS FOR THE ENTIRE RESTORATION SITE DURING THE INITIAL AND INTERMEDIATE PHASES IS INCLUDED BELOW.

SEE SHEET 7 FOR DETAILED SEDIMENT STORAGE CALCULATIONS FOR EACH RESTORATION SUBDRAINAGE BASIN FOR THE INITIAL PHASE AND SHEET 8 FOR THE INTERMEDIATE PHASE.

RESTORATION DETAILS			
TOTAL RESTORATION CONTRIBUTING DRAINAGE BASIN +/-	206 .20	ACRES	
TOTAL MITIGATION BANK AREA	214		
TOTAL DISTURBED AREA	92		
TOTAL BYPASS FLOW (INITIAL PHASE)	20 .83		
TOTAL BYPASS FLOW (INTERMEDIATE PHASE)	21		
MINIMUM STORAGE REQUIRED	67	CUBIC YARDS/ ACRE DRAINED	

INITIAL PHASE STORAGE REQUIREMENTS			
TOTAL RESTORATION CONTRIBUTING DRAINAGE BASIN +/-	206 .20	ACRES	
TOTAL BYPASS FLOW (INITIAL PHASE)	20 .83		
TOTAL INITIAL PHASE STORAGE AREA	185 .40		
MINIMUM STORAGE REQUIRED	12,421 .80	CUBIC YARDS	
STORAGE PROVIDED	2,803 .19		

INTERMEDIATE PHASE STORAGE REQUIREMENTS			
TOTAL RESTORATION CONTRIBUTING DRAINAGE BASIN +/-	206 .20	ACRES	
TOTAL BYPASS FLOW (INITIAL PHASE)	20 .93		
TOTAL INITIAL PHASE STORAGE AREA	185 .27		
MINIMUM STORAGE REQUIRED	12,413 .90	CUBIC YARDS	
STORAGE PROVIDED	4,481 .13		

JUSTIFICATION FOR NOT USING SEDIMENT BASINS, DETENTION PONDS, OR TRAPS

SEDIMENT BARRIERS SUCH AS SILT FENCE HAVE BEEN CHOSEN TO PROVIDE SEDIMENT STORAGE AND THE MINIMUM SEDIMENT STORAGE REQUIREMENT OF 67 CUBIC YARDS PER ACRE DRAINED IS NOT ATTAINABLE. THE OVERALL PURPOSE OF THE PROJECT IS TO RESTORE THE FLOODPLAIN AND WETLANDS WITHIN THE BANK BOUNDARY TO HISTORIC CONDITIONS. THE RESTORATION PROJECT HAS A NEED TO MINIMIZE IMPACTS TO THE EXISTING SITE VEGETATION AND SOILS. THE INSTALLATION OR CONSTRUCTION OF A TEMPORARY SEDIMENT BASIN, DETENTION POND, TEMPORARY SEDIMENT TRAP, AND/OR EXCAVATED SEDIMENT TRAP IS NOT APPROPRIATE FOR THE PROPOSED PROJECT. CONSTRUCTION OF TEMPORARY BASINS, TRAPS, OR DETENTION PONDS WOULD RESULT IN UNNECESSARY IMPACTS.

TO MINIMIZE IMPACTS TO THE EXISTING HYDRIC SOILS AND VEGETATION, SILT FENCE WILL BE USED TO PROVIDE SEDIMENT STORAGE FOR THE PROJECT. RESTORATION ACTIVITIES WILL BE CONDUCTED IN PHASES TO ENSURE A MINIMAL AMOUNT OF DISTURBED AREA. DAILY TEMPORARY AND STREAM BANK STABILIZATION MEASURES WILL BE IMPLEMENTED TO THE MAXIMUM EXTENT POSSIBLE TO PREVENT THE TRANSPORT OF SEDIMENT INTO EXISTING AND DOWNSTREAM WATERS. THE PLAN WILL ALSO RELY ON EXISTING SITE VEGETATION, BUFFER ZONES, AND WETLAND RESTORATION VEGETATIVE AND STRUCTURAL MEASURES TO ENHANCE ALL PROPOSED BMPs, AID IN THE DISSIPATION OF STORMWATER VELOCITY, AND TO MINIMIZE EROSION AND RESULTANT SEDIMENTATION.

JUSTIFICATION FOR REDUCED SEDIMENT STORAGE REQUIREMENTS

THE STORAGE CAPACITY OF THE SITE HAS BEEN REDUCED BASED ON THE EXISTING SITE CHARACTERISTICS AND NATURE OF THE CONSTRUCTION ACTIVITY. THE EXISTING VEGETATION AND BUFFER ZONE WILL REDUCE THE AREAS OF EXPOSED/BARE SOIL, ACT AS A VEGETATIVE BMP, AND HELP LOWER THE REQUIRED STORAGE FOR THE SITE. IN ADDITION, THE TOPOGRAPHY OF THE SITE IS LEVEL TO NEARLY LEVEL WITH VERY LITTLE VARIATION WITHIN THE RESTORATION AREAS.

BASED ON MY EXPERIENCE WITH SIMILAR PROJECTS AND ESPCP DESIGN, IT IS MY PROFESSIONAL OPINION THAT THIS IS THE BEST APPROACH FOR A PROJECT OF THIS NATURE.

#50 **LOCATION OF BMPs AND UNIFORM CODING SYSTEM WITH LEGEND**

SEE SHEETS 10 THROUGH 15 AND 21

#51 **DETAILED DRAWINGS FOR ALL STRUCTURAL PRACTICES**

SEE SHEETS 21 THROUGH 23

#52 **VEGETATIVE PLAN**

MAPS FOR EACH PLANTING ZONE ARE INCLUDED ON SHEETS 14 AND 15. DETAILS FROM THE MANUAL FOR DISTURBED AREA STABILIZATION WITH PERMANENT VEGETATION IS INCLUDED ON SHEET 17. SINCE THE PROJECT IS BEING PERMITTED BY THE US ARMY CORPS OF ENGINEERS (USACE) THE PLANTING REQUIREMENTS FOR THE RESTORATION DIFFER FROM THOSE OF THE MANUAL. SEE SHEET 16 FOR TABLES THAT LIST THE SPECIES AND PROPOSED PLANTING DENSITY FOR EACH ZONE DEPICTED ON SHEETS 14 AND 15.

EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN CHECKLIST									
STAND ALONE CONSTRUCTION PROJECTS									
SWDC: _____ Region 1 Limestone Valley									
Project Name: _____ Upper Coosa Mitigation Bank Wetland Restoration		Address: 12005 Boyles Road NE, Dalton, GA 30721							
City/Country: _____ Dalton / Wafford County	Date on Plans: _____ August 5, 2022								
Name & email of person filling out checklist: _____ Erin M. Harris, eharris@nusterninc.com									
Plan included									
Page #	Y/N	TO BE SHOWN ON ESD&PC PLAN							
5-6	Y	1. The applicable Erosion, Sedimentation and Pollution Control Plan Checklist established by the Commission as of January 1 of the year in which the land-disturbance activity was permitted. (The completed Checklist must be submitted with the ESD&PC Plan (it will not be reviewed))							
ALL	Y	2. Level of certification number issued by the Commission, signature and seal of the certified design professional. (Signature, seal and level if number must be on each sheet pertaining to ESD&PC Plan or the Plan will not be reviewed)							
N/A	N	3. Limits of disturbance shall be no greater than 50 acres at any one time without prior written authorization from the GAEPD District Office. If GAEPD approves the request to disturb 50 acres or more any one time, the Plan must include at least 6 of the BMPs listed in Appendix 1 of this checklist and the GAEPD approval letter. * (A copy of the written approval by GAEPD must be attached to the Plan or the Plan to be reviewed.)							
COVER	Y	4. The name and phone number of the 24-hour contact responsible for erosion, sedimentation and pollution controls.							
6-10-15	Y	5. Provide the name, address, email address, and phone number of primary permittee.							
COVER	Y	6. Note both disturbed and adjacent addresses of the project or phase under construction.							
COVER	Y	7. Provide the GPS location of the construction exit for the site. Give the Latitude and Longitude in decimal degrees.							
ALL	Y	8. Initial date of the Plan and the dates of any revisions made to the Plan including the entity who requested the revisions.							
S	Y	9. Description of the nature of construction activity and existing site conditions.							
1-4-7-9	Y	10. Provide vicinity map showing site's relation to surrounding areas. Include designation of special phase, if necessary.							
S	Y	11. Identify the project receiving waters and describe all sensitive adjacent areas including streams, lakes, residential areas, wetlands, marshlands, etc. which may be affected.							
S	Y	12. Design professional's certification statement and signature that the site was visited prior to development of the ESD&PC Plan as stated on Part IV page 19 of the permit.							
S	Y	13. Design professional's certification statement and signature that the permittee's ESD&PC Plan provides for an appropriate and comprehensive system of BMPs and sampling to meet permit requirements as stated on Part IV page 19 of the permit. *							
S	Y	14. Clearly note the statement that "The design professional who prepared the ESD&PC Plan is to inspect the installation of the initial sediment storage requirements and perimeter control BMPs within 7 days after installation." in accordance with Part IV A.5 page 25 of the permit. *							
S	Y	15. Clearly note the statement that "Non-emergency activities shall not be conducted within the 25 or 50-foot unbuffered stream buffers as measured from the point of worst-vegetated location or within 25-feet of the coastal marshland buffers as measured from the Jurisdictional Determination Line without first acquiring the necessary variances and permits."							
5-24	Y	16. Provide a description of any buffer encroachments and indicate whether a buffer variance is required.							
S	Y	17. Clearly note the statement that "Amendments/revisions to the ESD&PC Plan which have a significant effect on BMPs with a hydraulic component must be certified by the design professional." *							
S	Y	18. Clearly note the statement that "Waste materials shall not be discharged to waters of the State, except as authorized by a Section 404 permit."							
S	Y	19. Clearly note statement that "The escape of sediment from the site shall be prevented by the installation of erosion and sediment control measures and practices prior to land disturbing activities."							
S	Y	20. Clearly note statement that "Erosion control measures will be maintained at all times. If final implementation of the approved Plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implemented to control or treat the sediment source."							
S	Y	21. Clearly note the statement "Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding."							
3-5	N	22. Any construction activity which discharges storm water into an Impaired Stream Segment, or within 1 linear mile upstream of and within the same watershed as, any portion of a Block Impaired Segment, or within 1 linear mile comply with Part C. 1 of the permit. Include the completed Appendix 1 listing all the BMPs that will be used for those areas of the site which discharge to the Impaired Stream Segment. *							
N/A	N	23. In a TMDL Implementation Plan for sediment has been submitted for the Impaired Stream Segment (identified in Item 22 above) at least six months prior to final NCR, the ESD&PC Plan must address any site-specific conditions or requirements included in the TMDL Implementation Plan. *							
N/A	N	24. BMPs for concrete washdown of trucks, concrete mixer chutes, hoppers and the rear of the vehicles. Washout of the drum at the construction site is prohibited. *							
S	Y	25. Provide BMPs for the remediation of all petroleum spills and leaks.							
S	Y	26. Description of the measures that will be installed during the construction process to control pollutants in storm water that will occur after construction operations have been completed. *							
S	Y	27. Description of practices to provide cover for building materials and building products on site. *							
S	Y	28. Description of the practices that will be used to reduce the pollutants in storm water discharges. *							
S	Y	29. Description of location and/or timeline of the intended sequence of major activities which disturb soils for the major portions of the site (i.e., initial perimeter and sediment storage BMPs, clearing and grubbing activities, excavation activities, utility activities, temporary and final stabilization).							
S	Y	30. Provide complete requirements of Inspections and record keeping by the primary permittee. *							
5-6	Y	31. Provide complete requirements of Sampling Frequency and Reporting of sampling results. *							
5-6	Y	32. Provide complete details for Retention of Records as per Part IV F. of the permit. *							
5-6	Y	33. Description of analytical methods to be used to collect and analyze the samples from each location. *							
N/A	N	34. Appendix B rationale for NTU values at all sampling points where applicable. *							
2-4	Y	35. Delineate all sampling locations, perennial and intermittent streams and other water bodies into which storm water is discharged. *							
6	Y	36. A description of appropriate controls and measures that will be implemented at the construction site including: (1) initial sediment storage requirements and perimeter control BMPs; (2) intermediate grading and drainage BMPs, and (3) final BMPs. For construction sites where there will be no mass grading and the initial perimeter control BMPs, intermediate grading and drainage BMPs, and final BMPs are the same, the Plan may combine all of the BMPs into a single phase. *							
1-4-10-15	Y	37. Graphic scale and North arrow.							
1-4-10-15	Y	38. Existing and proposed contour lines with contour lines drawn at an interval in accordance with the following: <table><tr><th>Map Scale</th><th>Ground Slope</th><th>Contour Interval</th></tr><tr><td>1 inch = 1000' or larger scale</td><td>Flat 0 - 2% Rolling 2 - 8% Steep 8% +</td><td>0.5 or 1 1 or 2 2.5 or 10</td></tr></table>		Map Scale	Ground Slope	Contour Interval	1 inch = 1000' or larger scale	Flat 0 - 2% Rolling 2 - 8% Steep 8% +	0.5 or 1 1 or 2 2.5 or 10
Map Scale	Ground Slope	Contour Interval							
1 inch = 1000' or larger scale	Flat 0 - 2% Rolling 2 - 8% Steep 8% +	0.5 or 1 1 or 2 2.5 or 10							
N/A	N	39. Use of alternative BMPs whose performance has been documented to be equivalent to or superior to conventional BMPs as certified by a Design Professional (unless disapproved by GAEPD or the Georgia Soil and Water Conservation Commission). Please refer to the Alternative BMP Guidance Document bound at www.gawscw.georgia.gov.							
N/A	N	40. Use of alternative BMP for application to the Equivalent BMP List. Please refer to Appendix A-2 of the Manual for Erosion & Sediment Control for ESD&PC 2016 Edition. *							
1-4-10-15	Y	41. Delineation of the applicable 25-foot or 50-foot unbuffered borders adjacent to state waters and any additional buffers required by the Local Issuing Authority. Clearly note and delineate all areas of impact.							
3	Y	42. Delineation of on-site wetlands and all state waters located to and within 200 feet of the project.							
3-4	Y	43. Delineation and acreage of contributing drainage basins on the project.							
3-4	Y	44. Provide hydrology study and maps of drainage basins for both the pre- and post-developed conditions. *							
6	Y	45. An estimate of the runoff coefficient or peak discharge load of the site prior to and after construction activities are completed.							
N/A	N	46. Storm-drain pipe and weir velocities with appropriate outlet protection to accommodate discharges without erosion. Identify/Delineate all storm water discharge points.							
2	Y	47. Soil series for the project site and their delineation.							
10-15	Y	48. The limits of disturbance for each phase of construction.							
6-8	Y	49. Provide a minimum of 67 cubic yards of sediment per acre drained using a temporary sediment basin, retrofitted detention pond, and/or excavated inlet sediment traps for each common drainage location. Sediment storage volume must be in place prior to and during all land disturbance activities until final stabilization of the site has been achieved. A written justification explaining the design to use equivalent controls when a sediment basin is not attainable must be included in the Plan for each common drainage location in which a sediment basin is not provided. A written justification as to why 67 cubic yards of storage is not attainable must also be given. Worksheets from the Manual included for structural BMPs and all calculations used by the design professional to obtain the required sediment when using equivalent controls. When discharging from sediment basins and impoundments, perimeters are required to utilize outlet structures that withdraw water from the surface, unless infeasible. If outlet structures that withdraw water from the surface are not feasible, a written justification explaining this design must be included in the Plan.							
10-15	Y	50. Location of Best Management Practices that are consistent with and no less stringent than the Manual for Erosion and Sediment Control in Georgia. Use uniform coding symbols from the Manual, Chapter 5, with legends.							
21-25	Y	51. Provide detailed drawings for all structural practices. Specifications must, at a minimum, meet the guidelines set forth in the Manual for Erosion and Sediment Control in Georgia.							
14-17	Y	52. Provide vegetation plan, listing all temporary and permanent vegetative practices. Include species, planting dates and seeding, fertilizer, lime and mulching rates. Vegetative plan shall be site specific for appropriate time of the year that seeding will take place and for the appropriate geographic region of Georgia.							
* If using this checklist for a project that is less than 1 acre and not part of a common development, but within 200' of a perennial stream, the checklist items would be N/A.									
Effective January 1, 2023									

Subdrainage Basin	Total Drainage Area	Bypass Area	Total Storage Area	Average Slope Length Behind Silt Fence	Average Basin Slope	Convert from % Slope to Radians	Slope in Radians	Convert Slope from Radians to Degrees	Slope degrees	Calculate Sediment Storage Behind Silt Fence	Sediment Storage Behind Silt Fence feet	Convert to Area	Sediment Storage Area	Installed Silt Fence	Sediment Storage Provided	Sediment Storage Volume	Minimum Storage Required
	(acres)	(acres)	(acres)	(feet)	(%)								ft²	linear ft	ft³	yd³	yd³/acre
A	3.74	3.74	0.00	N/A	1.16	arctangent(0.016)=	0.0116	0.0116*(180/Pi)=	0.66	1/2*2.5*0=	0.00	N/A	0.00	0	0.0	0.0	0.0
B1	51.92	0.60	51.32	N/A	1.84	arctangent(0.0184)=	0.0184	0.0184*(180/Pi)=	1.05	1/2*2.5*0=	0.00	N/A	0.00	0	0.0	0.0	3,438.4
B2	47.86	0.00	47.86	453	1.87	arctangent(0.0187)=	0.0187	0.0187*(180/Pi)=	1.07	1/2*2.5*453=	566.25	566.25*sin(1.07)=	10.57	846	8,945.7	331.3	3,206.5
B3	45.30	3.50	41.80	421	1.88	arctangent(0.0188)=	0.0188	0.0188*(180/Pi)=	1.08	1/2*2.5*421=	526.25	526.253*sin(1.08)=	9.92	6,291	62,400.4	2,311.1	2,800.3
C	21.56	0.00	21.56	638	0.17	arctangent(0.0017)=	0.0017	0.0017*(180/Pi)=	0.10	1/2*2.5*638=	797.50	797.50*sin(0.10)=	1.39	1,324	1,842.9	68.3	1,444.4
D	35.85	12.99	22.86	470	0.10	arctangent(0.010)=	0.0010	0.0010*(180/Pi)=	0.06	1/2*2.5*470=	587.50	587.50*sin(0.06)=	0.62	4,059	2,497.2	92.5	1,531.6

Notes:

1. Calculations are based on a double row of silt fence and the total drainage area for each subdrainage basin minus any bypass flow.

2. Average slope length was determined using the average slope length of the disturbed area draining to the silt fence within each basin.

3. The full height of the silt fence (2.5 feet) was used to determine the total sediment storage.

4. Minimum sediment storage required was determined using the total storage area multiplied by 67 to account for bypass flow.

Storage Calculation Equations and Steps:

1. Convert % slope to degrees

arctangent (% slope) = slope in radians

slope to degrees = slope in radians * 180 / pi

2. Calculate Sediment Behind Silt Fence

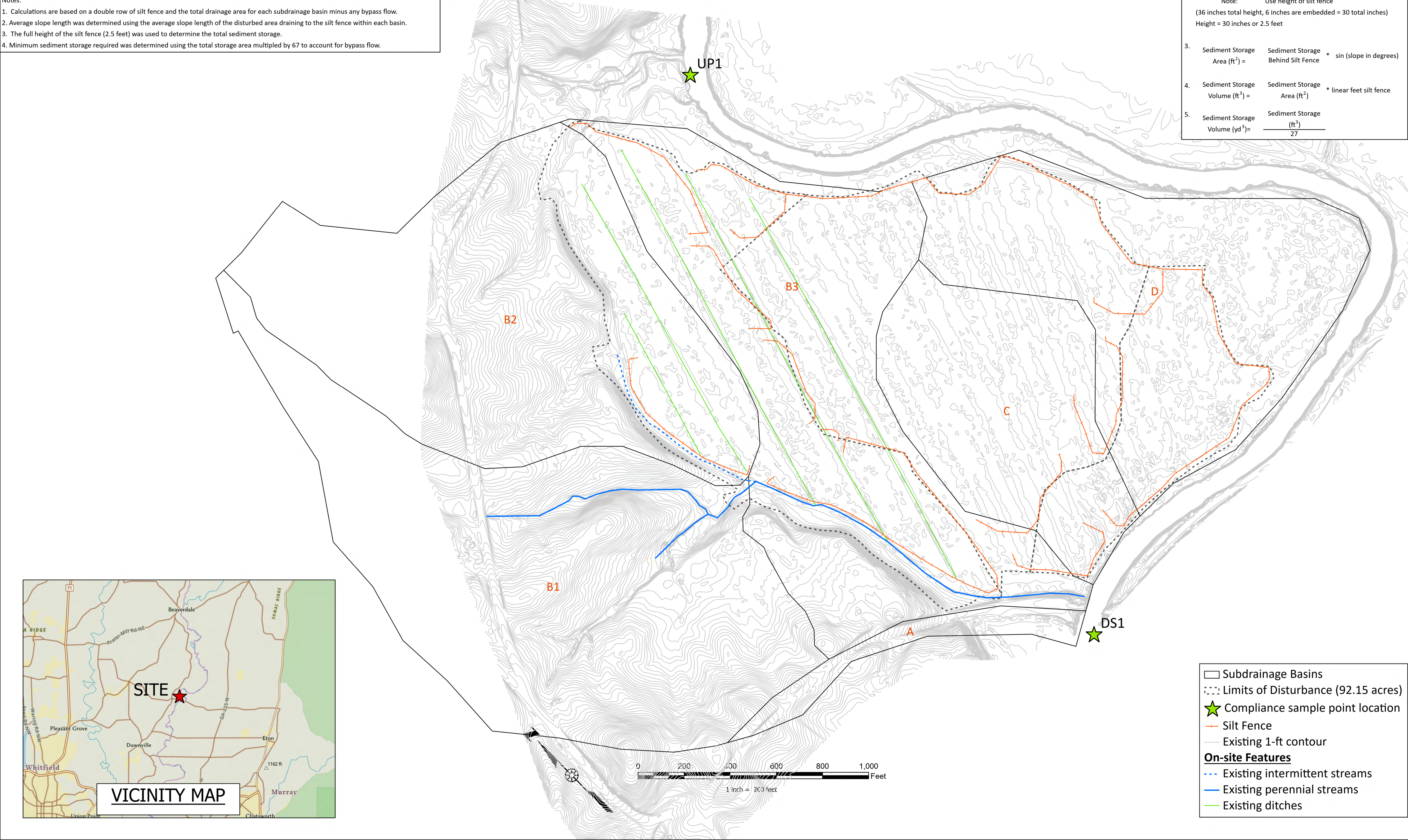
Sediment Behind Silt Fence = 1 / 2 * height of silt fence * max slope length

Note: Use height of silt fence (36 inches total height, 6 inches are embedded = 30 total inches) Height = 30 inches or 2.5 feet

3. Sediment Storage Area (ft²) = Sediment Storage Behind Silt Fence * sin (slope in degrees)


4. Sediment Storage Volume (ft³) = Sediment Storage Area (ft²) * linear feet silt fence

5. Sediment Storage Volume (yd³) = Sediment Storage (ft³) / 27



REVISIONS:					

CERTIFIED PROFESSIONAL



CPESC

Tim M. Hanks

No. 6260

CIVIL AND SEDIMENT CONTROL

CPESC NO. 6260
GSWCC NO. 12924
EXPIRES: 07/08/2024
DATE: 08/05/2022

7

Subdrainage Basin	Total Drainage Area	Bypass Area	Total Storage Area	Average Slope Length Behind Silt Fence	Average Basin Slope	Convert from % Slope to Radians	Slope in Radians	Convert Slope from Radians to Degrees	Slope	Calculate Sediment Storage Behind Silt Fence	Sediment Storage Behind Silt Fence	Convert to Area	Sediment Storage Area	Installed Silt Fence	Sediment Storage Provided	Sediment Storage Volume	Minimum Storage Required
	(acres)	(acres)	(acres)	(feet)	(%)						feet		ft²	linear ft	ft³	yd³	yd³/acre
A	3.36	3.36	0.00	N/A	1.17	arctangent(0.017)=	0.0117	0.0117*(180/Pi)=	0.67	1/2*2.5*0=	0.00	N/A	0.00	0	0.0	0.0	0.0
B	7.95	3.00	4.95	330	4.50	arctangent(0.0450)=	0.0450	0.0450*(180/Pi)=	2.58	1/2*2.5*330=	412.50	412.50*sin(2.58)=	18.57	1,351	25,085.9	929.1	331.6
C1	58.53	0.48	58.05	225	1.98	arctangent(0.0198)=	0.0198	0.0198*(180/Pi)=	1.13	1/2*2.5*225=	281.25	281.25*sin(1.13)=	5.55	644	3,572.0	132.3	3,889.1
C2	27.09	0.00	27.09	238	2.45	arctangent(0.0245)=	0.0245	0.0245*(180/Pi)=	1.40	1/2*2.5*238=	297.50	297.50*sin(1.408)=	7.27	664	4,826.3	178.8	1,814.8
C3	23.12	0.00	23.12	567	2.12	arctangent(0.0212)=	0.0212	0.0212*(180/Pi)=	1.21	1/2*2.5*567=	708.75	708.75*sin(1.21)=	14.97	920	13,769.3	510.0	1,549.3
C4	27.58	2.27	25.31	242	0.56	arctangent(0.0056)=	0.0056	0.0056*(180/Pi)=	0.32	1/2*2.5*242=	302.50	302.50*sin(0.32)=	1.69	2,513	4,245.6	157.2	1,696.0
C5	26.01	0.00	26.01	482	1.20	arctangent(0.0120)=	0.0120	0.0120*(180/Pi)=	0.69	1/2*1.25*482=	602.50	465*sin(0.69)=	7.26	3,005	21,803.1	807.5	1,742.4
C6	11.31	0.19	11.12	468	4.89	arctangent(0.0489)=	0.0489	0.0489*(180/Pi)=	2.80	1/2*1.25*468=	585.00	585*sin(2.80)=	28.58	1,453	41,522.5	1,537.9	745.1
D	21.32	11.70	9.62	385	0.64	arctangent(0.0064)=	0.0064	0.0064*(180/Pi)=	0.37	1/2*1.25*385=	481.25	481.25*sin(0.37)=	3.11	1,984	6,165.8	228.4	644.8

Notes:
1. Calculations are based on a double row of silt fence and the total drainage area for each subdrainage basin minus any bypass flow.
2. Average slope length was determined using the average slope length of the disturbed area draining to the silt fence within each basin.
3. The full height of the silt fence (2.5 feet) was used to determine the total sediment storage.
4. Minimum sediment storage required was determined using the total storage area multiplied by 67 to account for bypass flow.

Storage Calculation Equations and Steps:

1. Convert % slope to degrees
arctangent (% slope) = slope in radians

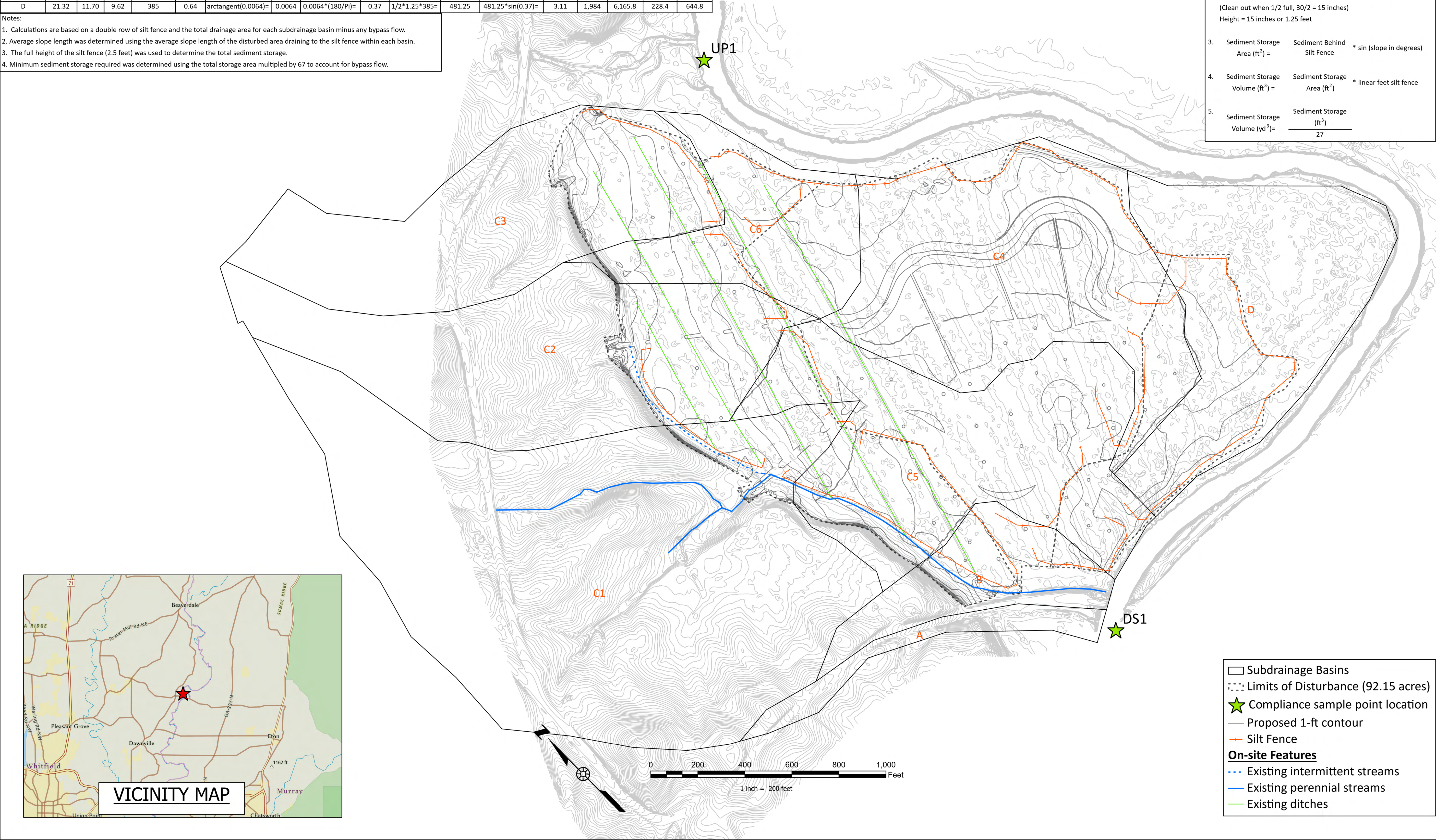
slope to degrees = slope in radians * $\frac{180}{\pi}$

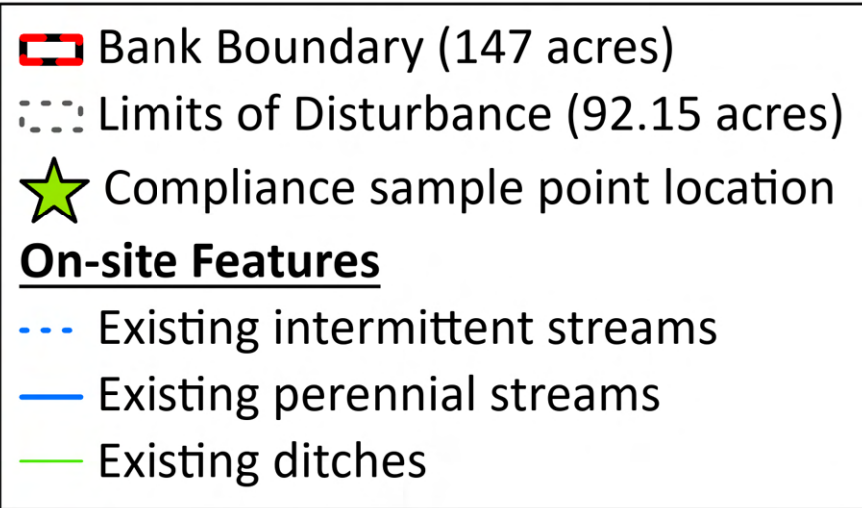
2. Calculate Sediment Behind Silt Fence
Sediment Behind Silt Fence = $\frac{1}{2}$ * height of silt fence * max slope length
Note: Use height of silt fence
(36 inches total height, 6 inches are embedded = 30 total inches)
(Clean out when 1/2 full, 30/2 = 15 inches)
Height = 15 inches or 1.25 feet

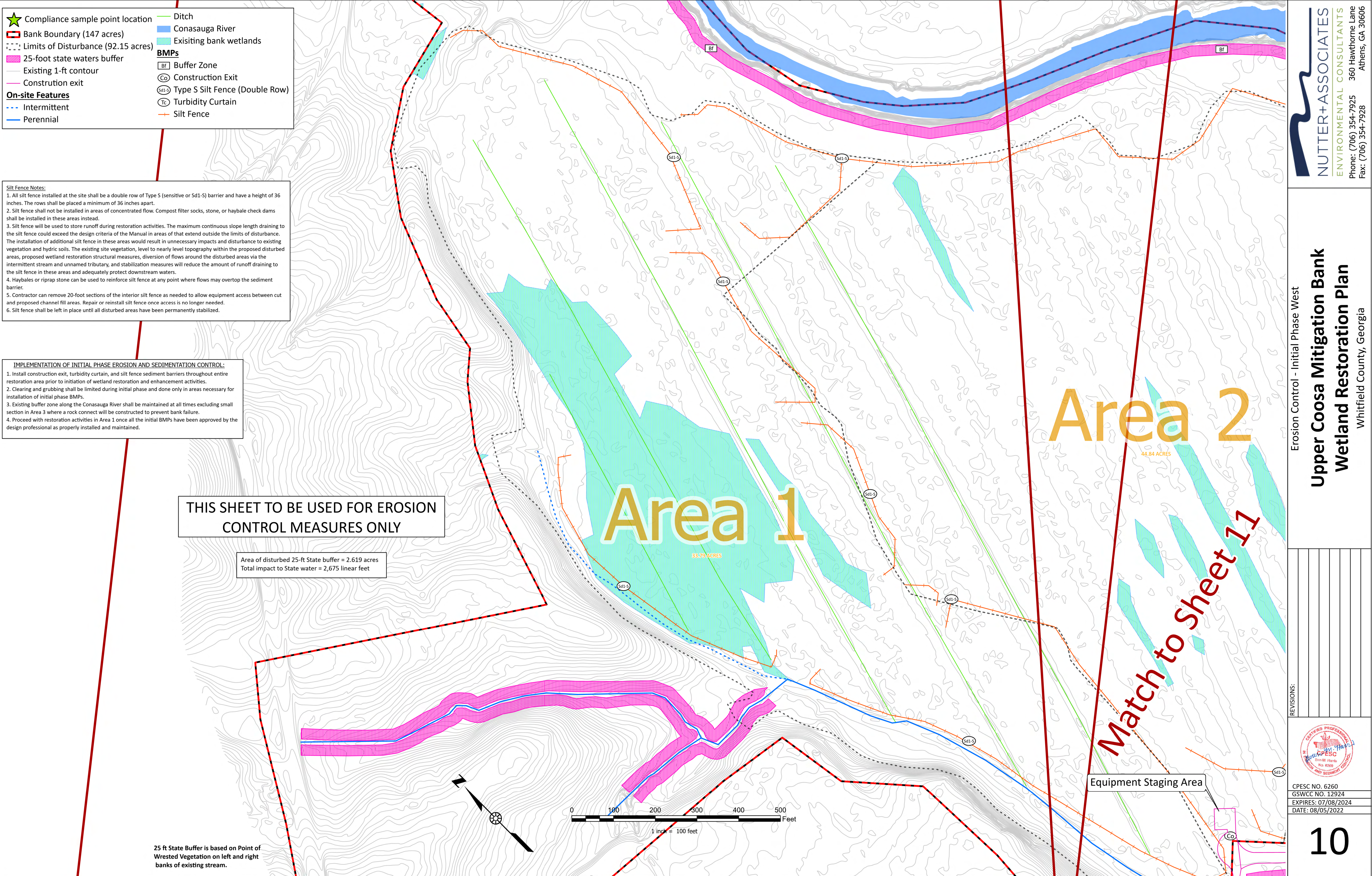
3. Sediment Storage Area (ft²) = Sediment Behind Silt Fence * sin (slope in degrees)

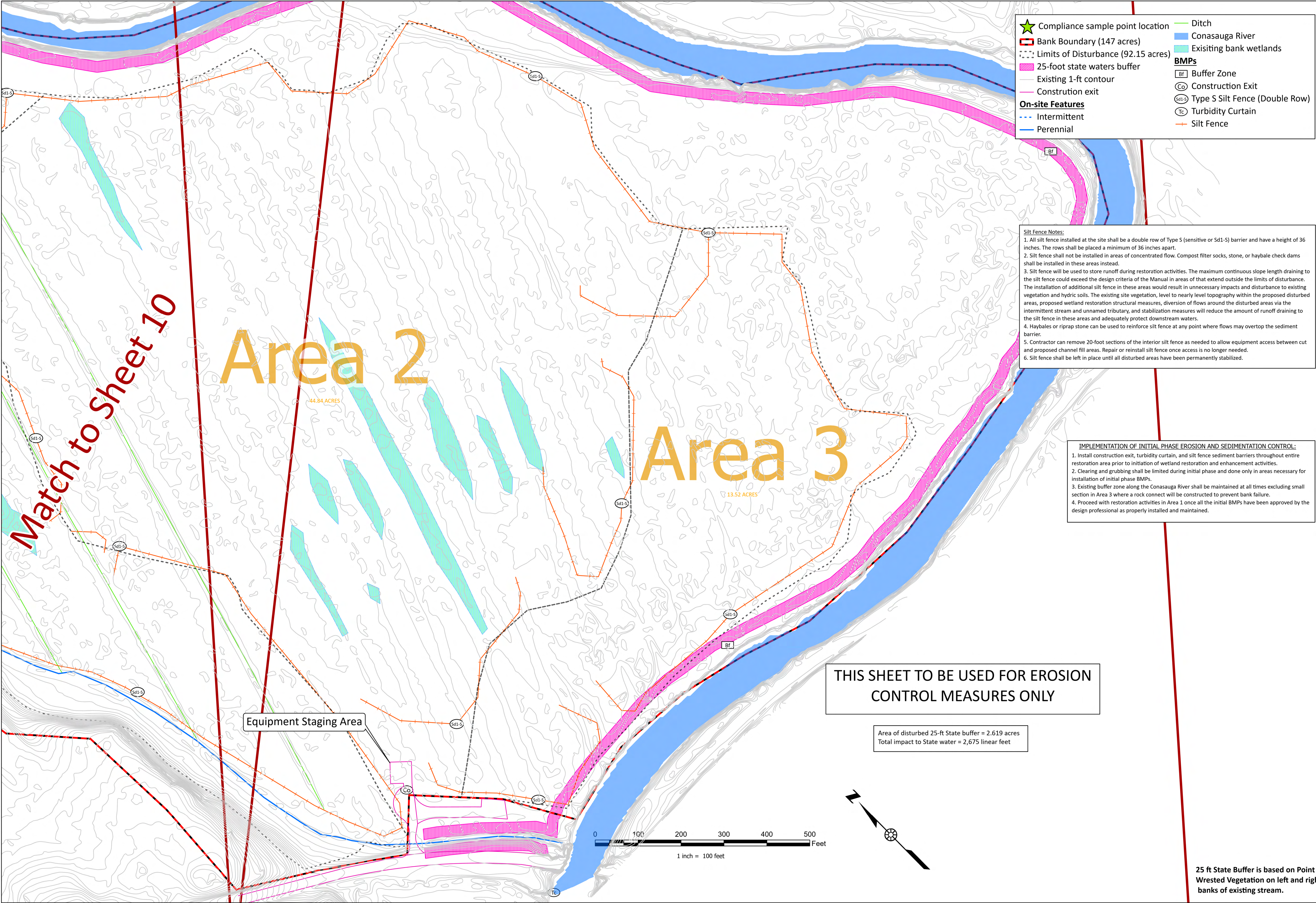
4. Sediment Storage Volume (ft³) = Sediment Storage Area (ft²) * linear feet silt fence

5. Sediment Storage Volume (yd³) = $\frac{\text{Sediment Storage (ft³)}}{27}$









Erosion Control - Initial Phase East

Upper Coosa Mitigation Bank

Wetland Restoration Plan

Whitfield County, Georgia

REVISIONS:



CPESC NO. 6260
GSWCC NO. 12924
EXPIRES: 07/08/2024
DATE: 08/05/2022

25 ft State Buffer is based on Point of
Wrested Vegetation on left and right
banks of existing stream.

★ Compliance sample point location

▬ Bank Boundary (147 acres)

⋯ Limits of Disturbance (92.15 acres)

▨ 25-foot state waters buffer

▭ Existing bank wetlands

— Proposed 1-ft contour

— Existing 1-ft contour

— Construction exit

On-site Features

— Existing ditches

⋯ Existing intermittent streams

— Existing perennial streams

Proposed Aquatic Features

— Wetland-Valley Channel Complex

— Existing channel

— Meander Scar

— Surface Water Dispersion Swales

— Floodplain Large Woody Debris

○ Vegetative and Flow Dissperton Hummocks

● Ditch plug

BMPs

▭ BF Buffer Zone

○ Co Construction Exit

○ Sd1-S Type S Silt Fence (Double Row)

○ Tc Turbidity Curtain

▭ Ds1 Disturbed Area Stabilization (With Mulching Only)

▭ Ds2 Disturbed Area Stabilization (With Temp Seeding)

○ Fr Filter Ring

▭ Sb Streambank Stabilization (Using Perm Vegetation)

▭ Ss Slope Stabilization

▭ Vg Valley Grading

▭ Filter Ring

— Silt Fence

Silt Fence Notes:

1. All silt fence installed at the site shall be a double row of Type S (sensitive or Sd1-S) barrier and have a height of 36 inches. The rows shall be placed a minimum of 36 inches apart.
2. Silt fence shall not be installed in areas of concentrated flow. Compost filter socks, stone, or haybale check dams shall be installed in these areas instead.
3. Silt fence will be used to store runoff during restoration activities. The maximum continuous slope length draining to the silt fence could exceed the design criteria of the Manual in areas of that extend outside the limits of disturbance. The installation of additional silt fence in these areas would result in unnecessary impacts and disturbance to existing vegetation and hydric soils. The existing site vegetation, level to nearly level topography within the proposed disturbed areas, proposed wetland restoration structural measures, diversion of flows around the disturbed areas via the intermittent stream and unnamed tributary, and stabilization measures will reduce the amount of runoff draining to the silt fence in these areas and adequately protect downstream waters.
4. Haybales or riprap stone can be used to reinforce silt fence at any point where flows may overtop the sediment barrier.
5. Contractor can remove 20-foot sections of the interior silt fence as needed to allow equipment access between cut and proposed channel fill areas. Repair or reinstall silt fence once access is no longer needed.
6. Silt fence shall be left in place until all disturbed areas have been permanently stabilized.

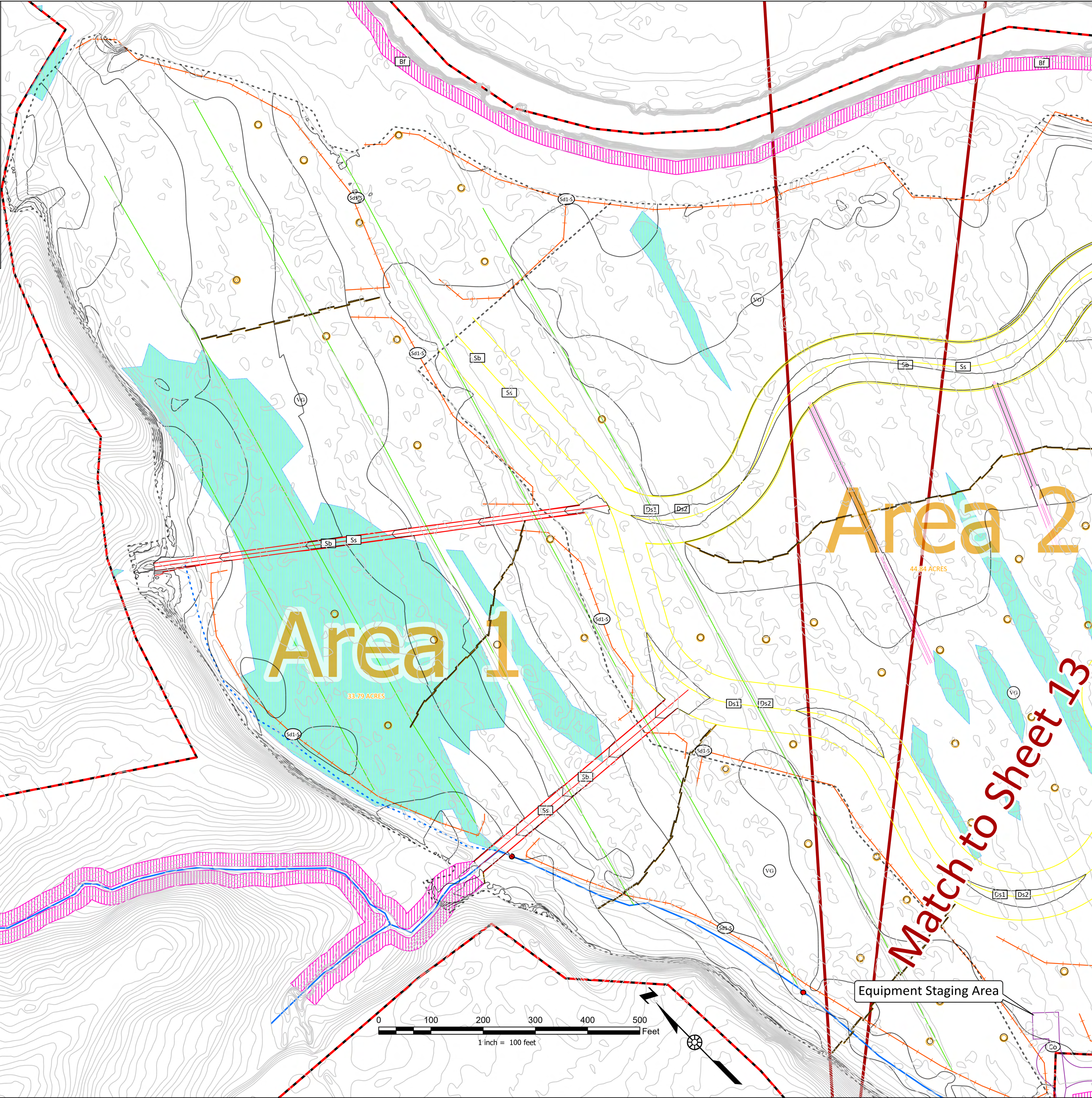
IMPLEMENTATION OF INTERMEDIATE PHASE OF EROSION CONTROL:

1. Initiate restoration activities beginning in Area 1 by conducting valley grading and construction of channels to restore hydrologic connection or surface water flow to the wetland-valley complex.
 2. Install coir matting on the banks of all newly constructed channels in Area 1 and implement temporary stabilization measures within the channels.
 3. Install haybale or stone check dams as needed following channel construction until temporary and/or permanent stabilization measures can be established.
 4. Install ditch plugs as needed in existing unnamed tributary in Area 1 prior to filling in the stream channel or diverting flow.
 5. Fill in stream channel of existing unnamed tributary in Area 1 once the channel is dry.
 6. Implement temporary stabilization measures in Area 1 prior to beginning restoration activities in Area 2.
 7. Initiate valley grading and construction of meander scars and water dispersion swales to restore floodplain to historic conditions in Area 2.
 8. Install coir matting on the banks of all newly constructed channels in Area 2.
9. Implement temporary stabilization measures prior to restoring hydrologic connection or surface water flow to newly constructed channels.
 10. Install haybale or stone check dams as needed in newly constructed channels in Area 2.
 11. Implement temporary stabilization measures in Area 2 prior to beginning restoration activities in Area 3.
 12. Once all of Area 2 has been temporarily stabilized to the maximum extent practicable and the filter ring has been installed, begin valley grading and installation of the rock connect along the riverbank in Area 3.
 13. Once restoration is completed in Area 3, temporarily stabilized the newly restored areas to the maximum extent practicable.
 14. Install coir matting along the riverbanks as needed to stabilize banks along each side of the rock connect structure.
 15. Maintain existing buffer zone, construction exit, turbidity curtain, sediment barriers, and check dams (if installed) throughout restoration activities.
 16. Temporarily stabilize newly restored areas and implement daily temporary stabilization measures to the maximum extent possible to prevent the transport of sediment.

THIS SHEET TO BE USED FOR EROSION CONTROL MEASURES ONLY

Area of disturbed 25-ft State buffer = 2,619 acres
Total impact to State water = 2,675 linear feet

25 ft State Buffer is based on Point of Wrested Vegetation on left and right banks of existing stream.



Erosion Control - Intermediate Phase West

Upper Coosa Mitigation Bank

Wetland Restoration Plan

Whitfield County, Georgia

REVISIONS:

REGISTERED PROFESSIONAL

ENVIRONMENTAL ENGINEER

CPESC

Tom M. Hanks

No. 4009

WATER AND SEWAGE CONTROL

CPESC NO. 6260
GSWCC NO. 12924
EXPIRES: 07/08/2024
DATE: 08/05/2022

Bank Boundary (147 acres)

Limits of Disturbance (92.15 acres)

Conasauga River

25-foot state waters buffer

Proposed 1-ft contour

Construction exit

Planting Zones

Planting Zone A

Planting Zone B

Planting Zone C

Planting Zone D

Planting Zone E

Planting Zone E Supplemental

Oak Hummocks

BMPs

BF Buffer Zone

Co Construction Exit

Sd1-S Type S Silt Fence (Double Row)

Tc Turbidity Curtain

Ds1 Disturbed Area Stabilization (With Mulching Only)

Ds2 Disturbed Area Stabilization (With Temp Seeding)

Fr Filter Ring

Sb Streambank Stabilization (Using Perm Vegetation)

Ss Slope Stabilization

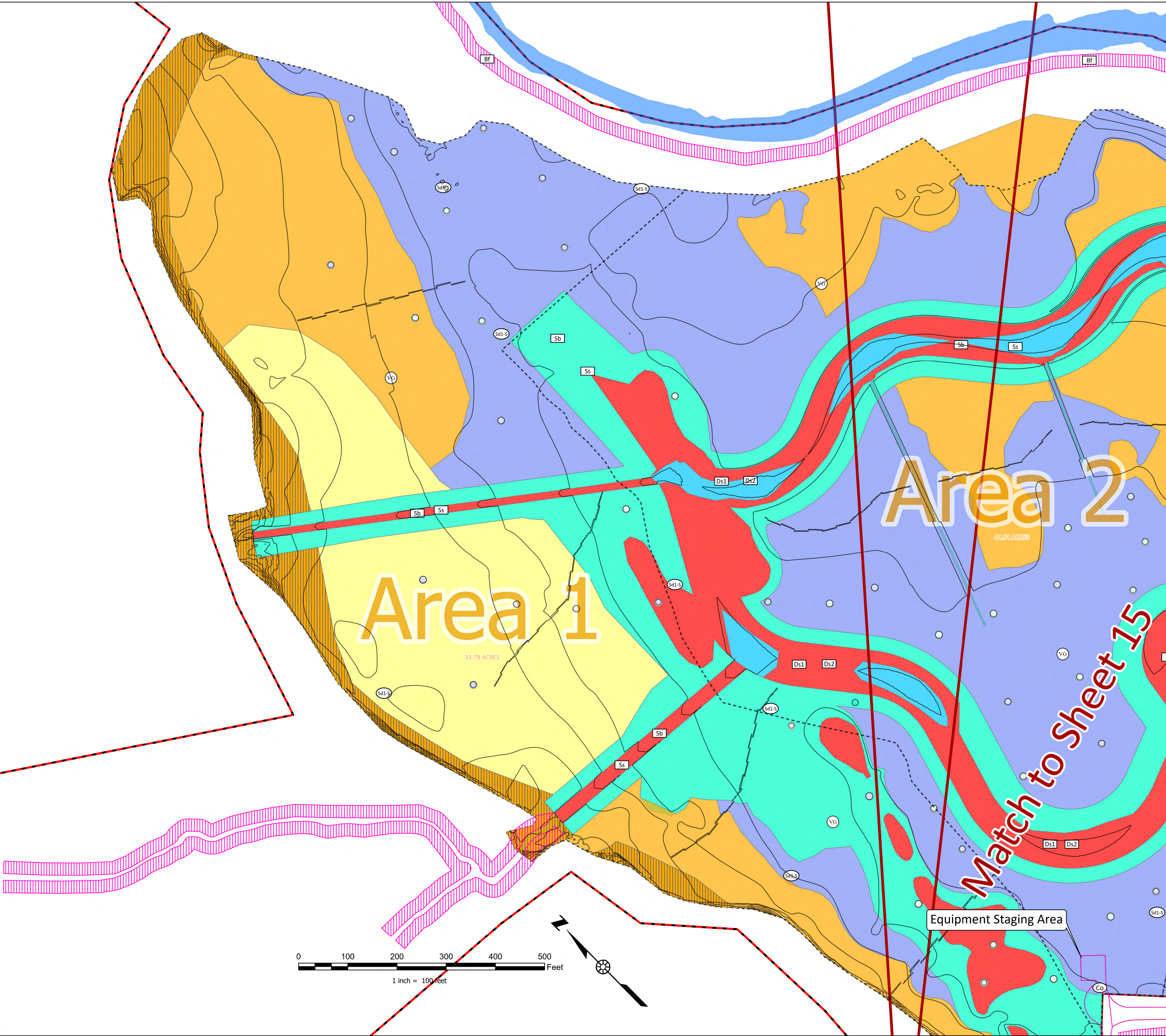
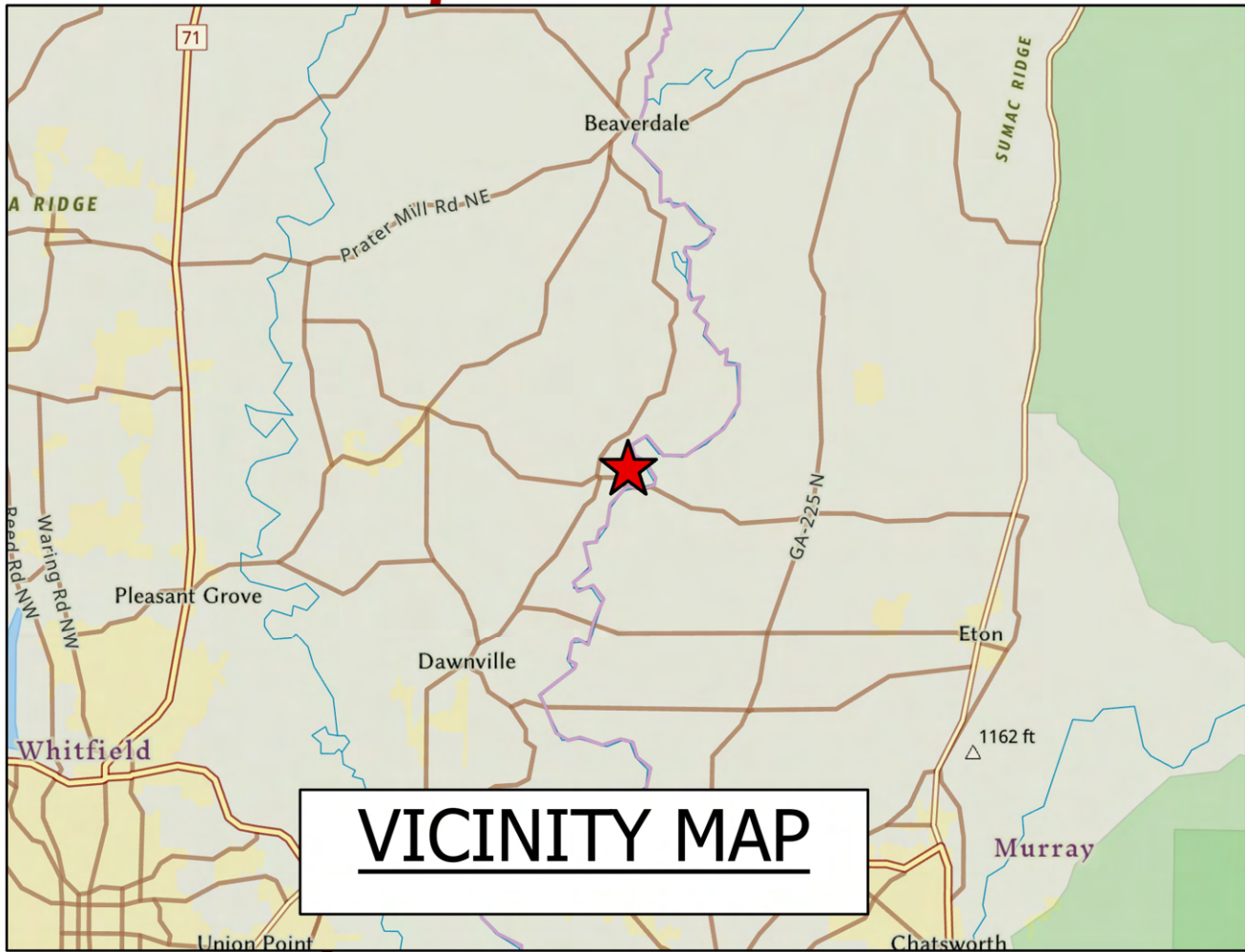
Vg Valley Grading

Shrub HummocksPlanting Zone F

Implementation of Final Phase Erosion and Sedimentation Control:
1. Implement final stabilization measures and planting plan.
2. Remove all temporary BMPs in areas that have reached final stabilization.

THIS SHEET TO BE USED FOR EROSION
CONTROL MEASURES ONLY

Area of disturbed 25-ft State buffer = 2.619 acres
Total impact to State water = 2,675 linear feet



NUTTER+ASSOCIATES

ENVIRONMENTAL CONSULTANTS

Phone: (706) 354-7925

Fax: (706) 354-7928

360 Hawthorne Lane

Athens, GA 30606

Erosion Control - Final Phase West

Upper Coosa Mitigation Bank

Wetland Restoration Plan

Whitfield County, Georgia

REVISIONS:

--	--	--	--	--	--	--	--	--	--

CERTIFIED PROFESSIONAL

Georgian

CPESC

State of Georgia

No. 6260

Professional Engineer

AND SECRETARY

CPESC NO. 6260

GSWCC NO. 12924

EXPIRES: 07/08/2024

DATE: 08/05/2022

14

DISTURBED AREA STABILIZATION WITH PERMANENT VEGETATION

NOTE – THE DETAILS FOR DISTURBED AREA STABILIZATION WITH PERMANENT VEGETATION HAVE BEEN MODIFIED FROM THE REQUIREMENTS OF THE MANUAL TO THOSE REQUIRED BY THE USACE FOR WETLAND MITIGATION BANKS

PERMANENT SEEDING

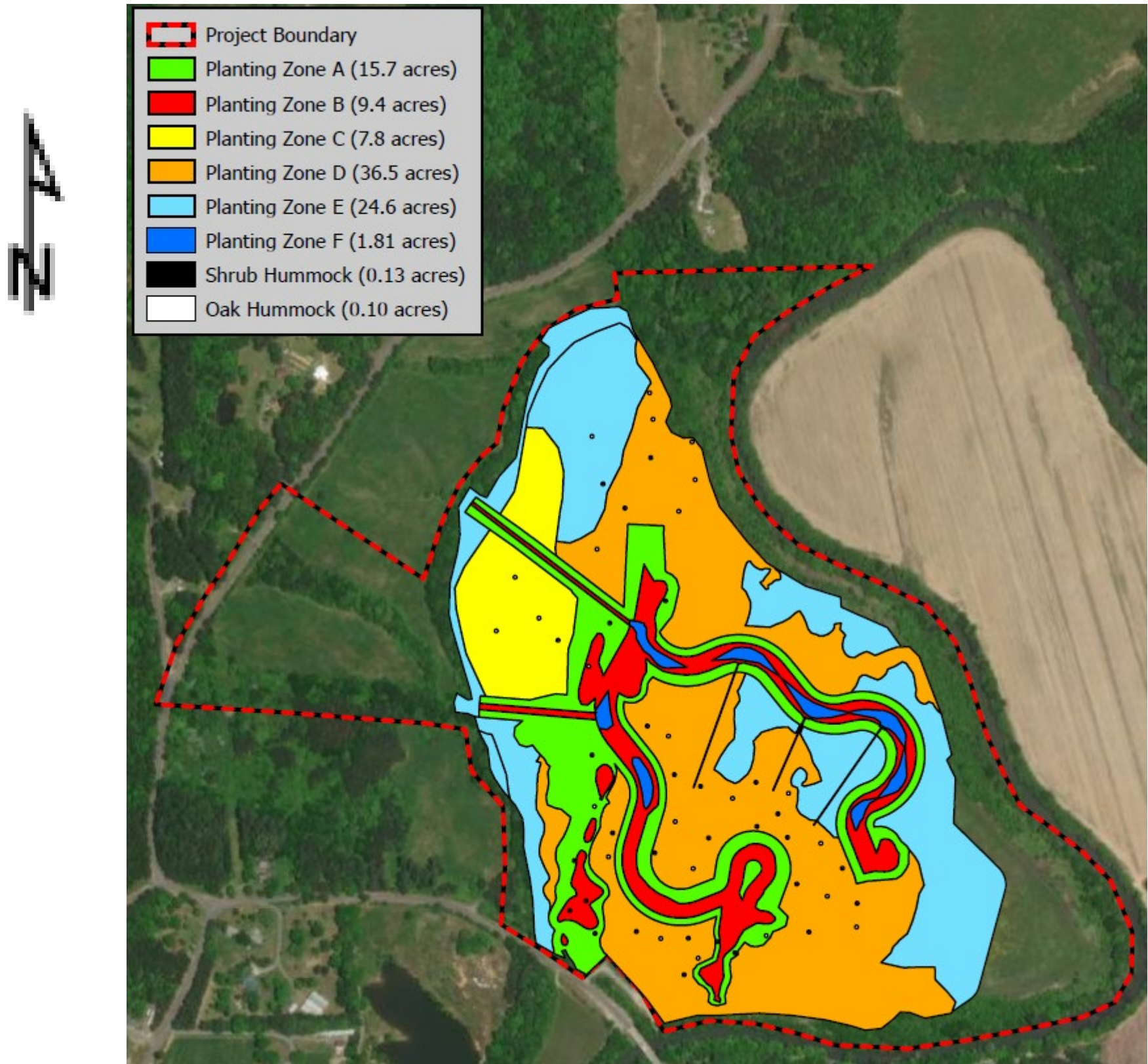
PERMANENT SEED FOR ZONES A, B, AND F		
SPECIES	COMMON NAME	% of Mix
Panicum clandestinum	deertongue	21.50%
Elymus virginicus	Virginia wildrye	20.00%
Andropogon gerardii	big bluestem	16.60%
Echinochloa crusgalli	Japanese millet	15.00%
Carex vulpinoidea	fox sedge	10.00%
Panicum virgatum	switchgrass	8.00%
Chamaecrista fasciculata	partridge pea	4.00%
Verbena hastata	blue vervain	1.50%
Heliopsis helianthoides	oxeye sunflower	1.00%
Juncus effusus	soft rush	1.00%
Agrostis perennans	autumn bentgrass	0.80%
Asclepias incarnata	swamp milkwee	0.10%
Aster novae-angliae	New England aster	0.10%
Eupatorium fistulosum	Joe Pye weed	0.10%
Eupatorium perfoliatum	boneset	0.10%
Monarda fistulosa	wild bergamot	0.10%
Pycnanthemum tenuifolium	narrowleaf montainmint	0.10%
PERMANENT SEED FOR ZONE C		
SPECIES	COMMON NAME	% of Mix
Carex vulpinoidea	fox sedge	20.00%
Elymus virginicus	Virginia wildrye	20.00%
Panicum clandestinum	deertongue	15.00%
Carex lupulina	hop sedge	12.50%
Carex lurida	lurid sedge	12.50%
Carex scoparia	blunt broom sedge	11.50%
Juncus effusus	soft rush	5.00%
Carex stipata	awl sedge	2.00%
Carex crinita	fringed sedge	1.00%
Scirpus cyperinus	woolgrass	0.50%
PERMANENT SEED FOR ZONES D AND E		
SPECIES	COMMON NAME	% of Mix
Carex albolutescens	greenwhite sedge	27.00%
Panicum rigidulum	redtop panicgrass	27.00%
Elymus virginicus	Virginia wildrye	15.80%
Carex vulpinoidea	fox sedge	11.00%
Chasmanthium laux	slender woodoats	9.00%
Juncus effusus	soft rush	3.00%
Helianthus angustifolius	narrowleaf sunflower	2.00%
Upatorium coelstinum	mistflower	1.00%
Juncus tenuis	path rush	1.00%
Vernonia noveboracensis	New York ironweed	0.80%
Helenium autumnale	common sneezeweed	0.70%
Helenium flexuosum	purplehead sneezeweed	0.70%
Rhexia virginica	Virginia meadowbeauty	0.50%
Scirpus cyperinus	woolgrass	0.50%



TREES AND SHRUBS

ZONE A					
SPECIES	COMMON NAME	STRATUM	SIZING	% OF ZONE STEMS	TOTAL STEMS
Fraxinus pennsylvanica	green ash	Tree	Recruited	NA	NA
Alnus serrulata	hazel alder	Shrub/Tree	Bare Root	25.00%	1,704
Salix nigra	black willow	Tree	Bare Root	20.00%	1,363
Cornus amomum	silky dogwood	Shrub	Bare Root	15.00%	1,022
Platanus occidentalis	American sycamore	Tree	Bare Root	10.00%	682
Cephalanthus occidentalis	common buttonbush	Shrub/Tree	1-gallon Container	10.00%	682
Acer rubrum	red maple	Tree	1-gallon Container	10.00%	682
Ulmus americana	American elm	Tree	Bare Root	5.00%	341
Quercus michauxii	swamp chestnut oak	Tree	Bare Root	5.00%	341
ZONE B					
SPECIES	COMMON NAME	STRATUM	SIZING	% OF ZONE STEMS	TOTAL STEMS
Fraxinus pennsylvanica	green ash	Tree	Recruited	NA	NA
Alnus serrulata	hazel alder	Shrub/Tree	Bare Root	50.00%	1,410
Salix nigra	black willow	Tree	Bare Root	30.00%	846
Cephalanthus occidentalis	common buttonbush	Shrub/Tree	1-gallon Container	20.00%	564
ZONE C					
SPECIES	COMMON NAME	STRATUM	SIZING	% OF ZONE STEMS	TOTAL STEMS
Acer negundo	boxelder	Tree	Recruited	NA	NA
Fraxinus pennsylvanica	green ash	Tree	Recruited	NA	NA
Platanus occidentalis	American sycamore	Tree	Bare Root	22.50%	764
Acer rubrum	red maple	Tree	1-gallon Container	17.50%	594
Quercus michauxii	swamp chestnut oak	Tree	Bare Root	12.50%	425
Nyssa sylvatica	blackgum	Tree	Bare Root	12.50%	425
Betula nigra	river birch	Tree	Bare Root	10.00%	340
Populus deltoides	eastern cottonwood	Tree	Bare Root	7.50%	255
Salix nigra	black willow	Tree	Bare Root	5.00%	170
Cornus amomum	silky dogwood	Shrub	Bare Root	5.00%	170
Ulmus americana	American elm	Tree	Bare Root	5.00%	170
Alnus serrulata	hazel alder	Shrub/Tree	Bare Root	2.50%	85
ZONE D					
SPECIES	COMMON NAME	STRATUM	SIZING	% OF ZONE STEMS	TOTAL STEMS
Acer negundo	boxelder	Tree	Recruited	NA	NA
Fraxinus pennsylvanica	green ash	Tree	Recruited	NA	NA
Acer rubrum	red maple	Tree	1-gallon Container	20.00%	3,176
Platanus occidentalis	American sycamore	Tree	Bare Root	15.00%	2,382
Nyssa sylvatica	blackgum	Tree	Bare Root	15.00%	2,382
Betula nigra	river birch	Tree	Bare Root	10.00%	1,588
Quercus michauxii	swamp chestnut oak	Tree	Bare Root	10.00%	1,588
Populus deltoides	eastern cottonwood	Tree	Bare Root	5.00%	794
Carpinus caroliniana	American hornbeam	Shrub/Tree	Bare Root	5.00%	794
Salix nigra	black willow	Tree	Bare Root	5.00%	794
Cornus amomum	silky dogwood	Shrub	Bare Root	5.00%	794
Ulmus americana	American elm	Tree	Bare Root	5.00%	794
Liquidambar styraciflua	sweetgum	Tree	Bare Root	2.50%	397
Alnus serrulata	hazel alder	Shrub/Tree	Bare Root	2.50%	397
ZONE E					
SPECIES	COMMON NAME	STRATUM	SIZING	% OF ZONE STEMS	TOTAL STEMS
Acer negundo	boxelder	Tree	Recruited	NA	NA
Fraxinus pennsylvanica	green ash	Tree	Recruited	NA	NA
Platanus occidentalis	American sycamore	Tree	Bare Root	20.00%	1,889
Acer rubrum	red maple	Tree	1-gallon Container	15.00%	1,417
Betula nigra	river birch	Tree	Bare Root	15.00%	1,417
Nyssa sylvatica	blackgum	Tree	Bare Root	15.00%	1,417
Quercus michauxii	swamp chestnut oak	Tree	Bare Root	10.00%	945
Populus deltoides	eastern cottonwood	Tree	Bare Root	5.00%	473
Carpinus caroliniana	American hornbeam	Shrub/Tree	Bare Root	5.00%	473
Ulmus americana	American elm	Tree	Bare Root	5.00%	473
Liriodendron tulipifera	tuliptree	Tree	Bare Root	5.00%	473
Liquidambar styraciflua	sweetgum	Tree	Bare Root	5.00%	473

PLANTING ZONES



ZONE E SUPPLEMENTAL					
SPECIES	COMMON NAME	STRATUM	SIZING	% OF ZONE STEMS	ESTIMATED TOTAL STEMS
Acer negundo	boxelder	Tree	Recruited	NA	NA
Fraxinus pennsylvanica	green ash	Tree	Recruited	NA	NA
Platanus occidentalis	American sycamore	Tree	Bare Root	20.00%	144
Acer rubrum	red maple	Tree	1-gallon Container	15.00%	108
Betula nigra	river birch	Tree	Bare Root	15.00%	108
Nyssa sylvatica	blackgum	Tree	Bare Root	15.00%	108
Quercus michauxii	swamp chestnut oak	Tree	Bare Root	10.00%	72
Populus deltoides	eastern cottonwood	Tree	Bare Root	5.00%	36
Carpinus caroliniana	American hornbeam	Shrub/Tree	Bare Root	5.00%	36
Ulmus americana	American elm	Tree	Bare Root	5.00%	36
Liriodendron tulipifera	tuliptree	Tree	Bare Root	5.00%	36
Liquidambar styraciflua	sweetgum	Tree	Bare Root	5.00%	36
ZONE F					
SPECIES	COMMON NAME	STRATUM	SIZING	% OF ZONE STEMS	TOTAL STEMS
Alnus serrulata	hazel alder	Shrub/Tree	Bare Root	70.00%	378
Salix nigra	black willow	Tree	Bare Root	30.00%	162
OAK HUMMOCKS					
SPECIES	COMMON NAME	STRATUM	SIZING	% OF ZONE STEMS	TOTAL STEMS
Quercus phellos	willow oak	Tree	1-gallon Container	20.00%	97
Quercus michauxii	swamp chestnut oak	Tree	1-gallon Container	20.00%	97
Quercus pagoda	cherrybark oak	Tree	1-gallon Container	20.00%	97
Quercus nigra	water oak	Tree	1-gallon Container	20.00%	97
Quercus bicolor	swamp white oak	Tree	1-gallon Container	20.00%	97
SHRUB HUMMOCKS					
SPECIES	COMMON NAME	STRATUM	SIZING	% OF ZONE STEMS	TOTAL STEMS
Alnus serrulata	hazel alder	Tree	1-gallon Container	40.00%	252
Cornus amomum	silky dogwood	Tree	1-gallon Container	40.00%	252
Sambucus canadensis	American black elderb	Tree	1-gallon Container	20.00%	126

PLANTING PLAN DETAILS

Upper Coosa Mitigation Bank
Wetland Restoration

Whitfield County, Georgia

REVISIONS:



CPESC No. 6260

GSWCC No. 12924

EXPIRES: 07/08/2024

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SHEET #

CHECK DAMS
CHECK DAMS—HAYBALES, STONE,
AND FILTER SOCKS

Cd-Hb

Cd-S

Cd-Fs

INSTALLED IF NEEDED IN DITCHES AND MEANDER SCARS. REQUIRES
PLAN REVISIONS PRIOR TO INSTALLATION.

DEFINITION

A TEMPORARY GRADE CONTROL STRUCTURE, OR DAM CONSTRUCTED ACROSS A SWALE, DRAINAGE DITCH, OR AREA OF CONCENTRATED FLOW.

PURPOSE

TO MINIMIZE EROSION RATE BY REDUCING THE VELOCITY OF STORMWATER IN AREAS OF CONCENTRATED FLOW.

CONDITIONS

THIS PRACTICE IS APPLICABLE FOR USE IN SMALL OPEN CHANNELS AND IS NOT TO BE USED IN A LIVE STREAM. SPECIFIC APPLICATIONS INCLUDE:

- TEMPORARY OR PERMANENT SWALES OR DITCHES IN NEED OF PROTECTION DURING ESTABLISHMENT OF GRASS LINING.
- TEMPORARY OR PERMANENT SWALES OR DITCHES THAT, DUE TO THEIR SHORT LENGTH OF SERVICE OR OTHER REASONS, CANNOT RECEIVE A PERMANENT NON-ERODIBLE LINING FOR AN EXTENDED PERIOD OF TIME.
- OTHER LOCATIONS WHERE SMALL LOCALIZED EROSION AND RESULTING SEDIMENTATION PROBLEMS EXIST.

DESIGN CRITERIA

CHECK DAMS SHOULD BE DESIGNED USING 2.0 CFS. FOR ANY FLOWS EXCEEDING 2.0 CFS, CHECK DAMS MAY BE USED IN CONJUNCTION WITH OTHER BMPs IN THE CHANNEL. DAM HEIGHT SHOULD BE 24 INCHES MAXIMUM MEASURED TO THE CENTER OF THE CHECK DAM.

DRAINAGE AREA

FOR STONE CHECK DAMS, THE DRAINAGE AREA SHALL NOT EXCEED TWO ACRES. FOR STRAW-BALE CHECK DAMS AND COMPOST FILTER SOCKS, THE DRAINAGE AREA SHALL NOT EXCEED ONE ACRE.

SIDE SLOPES

SIDE SLOPES SHALL BE 2:1 OR FLATTER.

SPACING

TWO OR MORE CHECK DAMS IN A SERIES SHALL BE USED FOR DRAINAGE AREAS GREATER THAN ONE (1) ACRE. MAXIMUM SPACING BETWEEN THE DAMS SHOULD BE SUCH THAT THE TOE OF THE UPSTREAM DAM IS AT THE SAME ELEVATION AS THE TOP OF THE DOWNSTREAM DAM.

GEOTEXTILES

A GEOTEXTILE SHOULD BE USED AS A SEPARATOR BETWEEN THE GRADED STONE AND THE SOIL BASE AND ABUTMENTS. THE GEOTEXTILE WILL PREVENT THE MIGRATION OF SOIL PARTICLES FROM THE SUBGRADE INTO THE GRADED STONE. THE GEOTEXTILE SHALL BE SELECTED/SPECIFIED IN ACCORDANCE WITH ASHFTO M288-06 SECTION 7.3, *SEPARATION REQUIREMENTS*, TABLE 3. GEOTEXTILES SHALL BE “SET” INTO THE SUBGRADE SOILS. THE GEOTEXTILE SHALL BE PLACED IMMEDIATELY ADJACENT TO THE SUBGRADE WITHOUT ANY VOIDS AND EXTEND FIVE FEET BEYOND THE DOWNSTREAM TOE OF THE DAM TO PREVENT SCOUR.

CONSTRUCTION SPECIFICATIONS
STRAW-BALE CHECK DAMS (Cd-HB)

STAKED AND EMBEDDED STRAW-BALES MAY BE USED AS TEMPORARY CHECK DAMS IN CONCENTRATED FLOW AREAS WHILE VEGETATION IS BECOMING ESTABLISHED. THEY SHALL NOT BE USED WHERE THE DRAINAGE AREA EXCEEDS ONE ACRE. STRAW-BALES SHOULD BE INSTALLED PER PLAN SPECIFICATIONS.

INSTALLATION

BALES SHOULD BE BOUND WITH WIRE OR NYLON STRING. TWINE BOUND BALES ARE LESS DURABLE. THE BALES SHOULD BE PLACED IN ROWS WITH BALE ENDS TIGHTLY ABUTTING THE ADJACENT BALES.

DOWNSTREAM ROW

DIG A TRENCH ACROSS THE SMALL CHANNEL, WIDE ENOUGH AND DEEP ENOUGH SO THE TOP OF THE ROW OF BALES PLACED ON THEIR LONG, WIDE SIDE IS LEVEL WITH THE GROUND. THE TOPS OF BALES ACROSS THE CENTER OF THE CHANNEL SHOULD ALL BE LEVEL AND SET AT THE SAME ELEVATION. PLACE THE BALES IN POSITION AND STAKE THEM ACCORDING TO THE INSTRUCTIONS BELOW.

UPSTREAM ROW

DIG ANOTHER TRENCH ACROSS THE SMALL CHANNEL, UPSTREAM AND IMMEDIATELY ADJACENT TO THE FIRST ROW OF BALES. THE TRENCH SHOULD BE WIDE ENOUGH TO ACCOMMODATE A ROW OF BALES SET VERTICALLY ON THEIR EDGE. THE TRENCH SHOULD BE DEEP ENOUGH SO THAT AT LEAST 6 INCHES OF EACH BALE IS BELOW GROUND STARTING WITH THE BALE IN THE CHANNEL BOTTOM. THE TRENCH SHOULD BE AS LEVEL AS POSSIBLE SO THAT THE TOPS OF THE BALES ACROSS THE CENTER ARE LEVEL AND WATER CAN FLOW EVENLY ACROSS THEM. CONTINUE THIS TRENCH UP THE SIDE SLOPES OF THE SMALL CHANNEL TO A POINT WHERE THE UNBURIED BOTTOM LONE OF THE HIGHEST BALE (POINT “C”, FIGURE 6-12.3) IS HIGHER THAN THE TOP OF THE BALES THAT ARE IN THE CENTER OF THE CHANNEL.

ANCHORAGE

DRIVE STANDARD 2 X 2 STAKES OR # 4 REBAR THROUGH THE BALES AND INTO THE GROUND 1 1/2 TO 2 FEET FOR ANCHORAGE. THE FIRST STAKE IN EACH BALE SHOULD BE DRIVEN TOWARD A PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER. REFENCE: COLORADO NRCS STRAW BALE CHECK DAM.

CONSTRUCTION SPECIFICATIONS
STONE CHECK DAMS (Cd-HB)

STONE CHECK DAMS SHOULD BE CONSTRUCTED OF GRADED SIZE 2-10 INCH STONE. MECHANICAL OR HAND PLACEMENT SHALL BE REQUIRED TO INSURE COMPLETE COVERAGE OF THE ENTIRE WIDTH OF THE DITCH OR SWALE AND THAT THE CENTER OF THE DAM IS LOWER THAN THE EDGES. **THE CENTER OF THE CHECK DAM MUST BE AT LEAST 9 INCHES LOWER THAN THE OUTER EDGES.**

CONSTRUCTION SPECIFICATIONS
COMPOST FILTER SOCKS CHECK DAMS (Cd-Fs)

THE FILTER SOCK SHOULD BE STAKED IN THE CENTER. IF THE COMPOST FILTER SOCK IS TO BE LEFT AS A PERMANENT FILTER OR PART OF THE NATURAL LANDSCAPE, IT MAY BE SEEDED AT TIME OF INSTALLATION FOR ESTABLISHMENT OF PERMANENT VEGETATION.

COMPOST FILTER MEDIA USED FOR COMPOST FILTER SOCK FILLER MATERIAL SHALL BE WEED FREE AND DERIVED FROM A WELL-DECOMPOSED SOURCE OF ORGANIC MATTER.

THE COMPOST SHALL BE PRODUCED USING AN AEROBIC COMPOSTING PROCESS MEETING CFR 503 REGULATIONS INCLUDING TIME AND TEMPERATURE DATA.

THE COMPOST SHALL BE FREE OF ANY REFUSE, CONTAMINANTS OR OTHER MATERIALS TOXIC TO PLANT GROWTH. NON-COMPOSTED PRODUCTS WILL NOT BE ACCEPTED.

TEST METHODS FOR THE ITEMS BELOW SHOULD FOLLOW US COMPOSTING COUNCIL TEST METHODS FOR THE EXAMINATION OF COMPOSTING AND COMPOST GUIDE-LINES FOR LABORATORY PROCEDURES:

- PH – 5.0-8.0 IN ACCORDANCE WITH TMECC 04.11-A, “ELECTROMETRIC PH DETERMINATIONS FOR COMPOST”.
- PARTICLE SIZE – 99% PASSING A 2-INCH (50 MM) SIEVE AND A MAXIMUM OF 40% PASSING A 3/8-INCH (~ 9.5 MM) SIEVE, IN ACCORDANCE WITH TMECC 02.02-B, “SAMPLE SIEVING FOR AGGREGATE SIZE CLASSIFICATION”. (NOTE - IN THE FIELD, PRODUCT COMMONLY IS BETWEEN ½ AND 2 INCHES (12.5 AND 50 MM) PARTICLE SIZE).
- MOISTURE CONTENT OF LESS THAN 60% IN ACCORDANCE WITH STANDARDIZED TEST METHODS FOR MOISTURE DETERMINATION.
- MATERIAL SHALL BE RELATIVELY FREE (<1% BY DRY WEIGHT) OF INERT OR FOREIGN MANMADE MATERIALS.
- SOCK CONTAINMENT SYSTEM FOR COMPOST FILTER MEDIA SHALL BE A PHOTODEGRADABLE OR BIODEGRADABLE KNITTED MESH MATERIAL AND SHOULD HAVE 1/8-TO 3/8-INCH (3.2 TO 9.5 MM) OPENINGS.

MAINTENANCE

PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED. SEDIMENT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF ONE-HALF THE ORIGINAL DAM HEIGHT OR BEFORE. IF THE AREA IS TO BE MOWED, CHECK DAMS SHALL BE REMOVED ONCE FINAL STABILIZATION HAS OCCURRED. OTHERWISE CHECK DAMS MAY REMAIN IN PLACE PERMANENTLY. AFTER REMOVAL, THE AREA BENEATH THE DAM SHALL BE SEEDED AND MULCHED IMMEDIATELY.

**DISTURBED AREA STABILIZATION
(MULCHING ONLY)**

DEFINITION

APPLYING PLANT RESIDUES OR OTHER SUITABLE MATERIALS, PRODUCED ON THE SITE IF POSSIBLE, TO THE SOIL SURFACE.

PURPOSE

- TO REDUCE RUOFF AND EROSION
- TO CONSERVE MOISTURE
- TO PREVENT SURFACE COMPACTION OR CRUSTING
- TO CONTROL UNDESIRABLE VEGETATION
- TO MODIFY SOIL TEMPERATURE
- TO INCREASE BIOLOGICAL ACTIVITY IN THE SOIL

REQUIREMENT FOR REGULATORY COMPLIANCE

MULCH OR TEMPORARY GRASSING SHALL BE APLIED TO ALL EXPOSED AREAS WITHIN 14 DAYS OF DISTURBANE. MULCH CAN BE USED AS A SINGULAR EROSION CONTROL DEVICE FOR UP TO SIX MONTHS, BUT IT SHALL BE APPLIED AS THE APPROPRIATE DEPTH, DEPENDING ON THE MATERIAL USED, ANCHORED AND HAVE A CONTINUOUS 90% COVER OR GREATER OF THE SOIL SURFACE.

MAINTENANCE SHALL BE REQUIRED TO MAINTAIN APPROPRIATE DEPTH AND 90% COVER. TEMPORARY VEGETATION MAY BE EMPLOYED INSTEAD OF MULCH IF THE AREA WILL REMAIN UNDISTURBED FOR LESS THAN SIX MONTHS.

IF ANY AREA WILL REMAIN UNDISTURBED FOR GREATER THAN SIX MONTHS, PERMANENT VEGETATIVE TECHNIQUES SHALL BE EMPLOYED. REFER TO **DS2 – DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)**, **DS3 – DISTURBED AREA STABILIZATION (WITH PERMANENT SODDING)**, AND **DS4 – DISTURBED AREA STABILIZATION (WITH SODDING)**.

SPECIFICATIONS:

MULCHING WITHOUT SEEDING

THIS STANDARD APPLIES TO GRADED OR CLEARED AREAS WHERE SEEDING MAY NOT HAVE SUITABLE GROWING SEASON TO PRODUCE AND EROSION RETARDANT COVER, BUT CAN BE STABILIZED WITH A MULCH COVER.

SITE PREPARATION

- GRADE TO PERMIT THE USE OF EQUIPMENT FOR APPLYING AND ANCHORING MULCH.
- INSTALL NEEDED EROSION CONTROL MEASURES AS REQUIRED SUCH AS DIKES, DIVERSIONS, BERMS, TERRACES AND SEDIMENT BARRIERS.
- LOOSEN COMPACT SOIL TO A MINIMUM OF 3 INCHES.

MULCHING MATERIALS

SELECT ON OF THE FOLLOWING MATERIALS AND APPLY AT THE DEPTH INDICATED:

- DRY STRAW OF HAY SHALL BE APPLIED AT A DEPTH OF 2 TO 4 INCHES PROVIDING COMPLETE SOIL COVERAGE. ONE ADVANTAGE OF THIS MATERIAL IS EASY APPLICATION.
- WOOD WASTE (CHIPS, SAWDUST OR BARK) SHALL BE APPLIED AT A DEPTH OF 2 TO 3 INCHES. ORGANIC MATERIAL FROM THE CLEARING STAGE OF DEVELOPMENT SHOULD REMAIN ON SITE, BE CHIPPED, AND APPLIED AS MULCH. THIS METHOD OF MULCHING CAN GREATLY REDUCE EROSION CONTROL COSTS.
- POLYETHYLENE FILM SHALL BE SECURED OVER BANKS OR STOCKPILED MATERIAL FOR TEMPORARY PROTECTION. THIS MATERIAL CAN BE SALVAGED AND RE-USED.

APPLYING MULCH

WHEN MULCH IS USED WITHOUT SEEDING, MULCH SHALL BE APPLIED TO PROVIDE FULL COVERAGE OF THE EXPOSED AREA.

- DRY STRAW OR HAY MULCH AND WOOD CHIPS SHALL BE APPLIED UNIFORMLY BY HAND OR MECHANICAL EQUIPMENT.
- IF THE AREA WILL EVENTUALLY BE COVERED WITH PERENNIAL VEGETATION, 20 – 30 POUNDS OF NITROGEN PER ACRE IN ADDITION TO THE NORMAL AMOUNT SHALL BE APPLIED TO OFFSET THE UPTAKE OF NITROGEN CAUSED BY THE DECOMPOSITION OF THE ORGANIC MULCHES.
- APPLY POLYETHYLENE FILM ON EXPOSED AREAS.

ANCHORING MULCH

- STRAW OR HAY MULCH CAN BE PRESSED INTO THE SOIL WITH A DISK HARROW WITH THE DISK SET STRAIGHT OR WITH A SPECIAL “PACKER DISK.” DISKS MAY BE SMOOTH OR SERRATED AND SHOULD BE 20 INCHES OR MORE IN DIAMETER AND 8 TO 12 INCHES APART. THE EDGES OF THE DISK SHOULD BE DULL ENOUGH NOT TO CUT THE MULCH BUT PRESS IT INTO THE SOIL, LEAVING MUCH OF IT IN AN ERECT POSITION. STRAW OR HAY MULCH SHALL BE ANCHORED IMMEDIATELY AFTER APPLICATION.

STRAW OR HAY MULCH SHALL BE ANCHORED IMMEDIATELY AFTER APPLICATION. STRAW OR HAY MULCH SPREAD WITH SPECIAL BLOWER-TYPE EQUIPMENT MAY BE ANCHORED. TACKIFIERS, BINDERS AND HYDRAULIC MULCH WITH TACKIFIER SPECIFICALLY DESIGNED FOR TACKING STRAW CAN BE SUBSTITUTED FOR EMULSIFIED ASPHALT. PLEASE REFER TO SPECIFICATION TAC-TACKIFIERS, PLASTIC MESH OR NETTING WITH MESH NO LARGER THAN ONE INCH BY ONE INCH SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.

- NETTING OF THE APPROPRIATE SIZE SHALL BE USED TO ANCHOR WOOD WASTE. OPENINGS OF THE NETTING SHALL NOT BE LARGER THAN THE AVERAGE SIZE OF THE WOOD WASTE CHIPS.
- POLYETHYLENE FILM SHALL BE ANCHOR TRENCHED AT THE TOP AS WELL AS INCREMENTALLY AS NECESSARY.

**DISTURBED AREA STABILIZATION
(TEMPORARY SEEDING)**

DEFINITION

THE ESTABLISHMENT OF TEMPORARY VEGETATIVE COVER WITH FAST GROWING SEEDLINGS FOR SEASONAL PROTECTION ON DISTURBED OR DENUDED AREAS.

PURPOSE

- TO REDUCE RUNOFF AND SEDIMENT DAMAGE OF DOWN STREAM RESOURCES
- TO PROTECT THE SOIL SURFACE FROM EROSION
- TO IMPROVE WILDLIFE HABITAT
- TO IMPROVE AESTHETICS
- TO IMPROVE TILTH, INFILTRATION AND AERATION AS WELL AS ORGANIC MATTER FOR PERMANENT PLANTINGS

REQUIREMENT FOR REGULATORY COMPLIANCE

MULCH OR TEMPORARY GRASSING SHALL BE APPLIED TO ALL EXPOSED AREAS WITHIN 14 DAYS OF DISTUR-BANCE. TEMPORARY GRASSING, INSTEAD OF MULCH, CAN BE APPLIED TO ROUGH GRADED AREAS THAT WILL BE EXPOSED FOR LESS THAN SIX MONTHS. IF AN AREA IS EXPECTED TO BE UNDISTURBED FOR LONGER THAN SIX MONTHS, PERMANENT PERENNIAL VEGETATION SHALL BE USED. IF OPTIMUM PLANTING CONDITIONS FOR TEMPO-RARY GRASSING IS LACKING, MULCH CAN BE USED AS A SINGULAR EROSION CONTROL DEVICE FOR UP TO SIX MONTHS BUT IT SHALL BE APPLIED AT THE APPROPRIATE DEPTH, ANCHORED, AND HAVE A CONTINUOUS 90% COVER OR GREATER OF THE SOIL SURFACE. REFER TO SPECIFICATION DS1-DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING).

CONDITIONS

TEMPORARY VEGETATIVE MEASURES SHOULD BE COORDINATED WITH PERMANENT MEASURES TO ASSURE ECONOMICAL AND EFFECTIVE STABILIZATION. MOST TYPES OF TEMPORARY VEGETATION ARE IDEAL TO USE AS COMPANION CROPS UNTIL THE PERMANENT VEGETATION IS ESTABLISHED. NOTE: SOME SPECIES OF TEMPORARY VEGETATION ARE NOT APPROPRIATE FOR COMPANION CROP PLANTINGS BECAUSE OF THEIR PO-TENTIAL TO OUT-COMPETE THE DESIRED SPECIES (E.G. ANNUAL RYEGRASS). CONTACT NRCS OR THE LOCAL SWCD FOR MORE INFORMATION.

SPECIFICATIONS:

GRADING AND SHAPING

EXCESSIVE WATER RUN-OFF SHALL BE REDUCED BY PROPERLY DESIGNED AND INSTALLED EROSION CONTROL PRACTICES SUCH AS CLOSED DRAINS, DITCHES, DIKES, DIVERSIONS, SEDIMENT BARRIERS AND OTHERS. NO SHAPING OR GRADING IS REQUIRED IF SLOPES CAN BE STABILIZED BY HAND-SEEDED VEGETATION OR IF HY-DRAULIC SEEDING EQUIPMENT IS TO BE USED.

SEEDBED PREPARATION

WHEN A HYDRAULIC SEEDER IS USED, SEEDBED PREPARATION IS NOT REQUIRED. WHEN USING CONVEN-TIONAL OR HAND-SEEDING, SEEDBED PREPARATION IS NOT REQUIRED IF THE SOIL MATERIAL IS LOOSE AND NOT SEALED BY RAINFALL WHEN SOIL HAS BEEN SEALED BY RAINFALL OR CONSISTS OF SMOOTH CUT SLOPES, THE SOIL SHALL BE PITTED, TRENCHED OR OTHERWISE SCARIFIED TO PROVIDE A PLACE FOR SEED TO LODGE AND GERMINATE.

LIME AND FERTILIZER

AGRICULTURAL LIME IS REQUIRED UNLESS SOIL TESTS INDICATE OTHERWISE. APPLY AGRICULTURAL LIME AT A RATE DETERMINED BY SOIL TEST FOR PH. QUICK ACTING LIME SHOULD BE INCORPORATED TO MODIFY PH DURING THE GERMINATION PERIOD. BIO STIMULANTS SHOULD ALSO BE CONSIDERED WHEN THERE IS LESS THAN 3% ORGANIC MATTER IN THE SOIL. GRADED AREAS REQUIRE LIME APPLICATION. SOILS MUST BE TESTED TO DETER-MINE REQUIRED AMOUNTS OF FERTILIZER AND AMENDMENTS. FERTILIZER SHOULD BE APPLIED BEFORE LAND PREPARATION AND INCORPORATED WITH A DISK, RIPPER, OR CHISEL ON SLOPES TOO STEEP FOR, OR INACCES-SIBLE TO EQUIPMENT, FERTILIZER SHALL BE HYDRAULICALLY APPLIED, PREFERABLY IN THE FIRST PASS WITH SEEDAND SOME HYDRAULIC MULCH, THEN TOPPED WITH THE REMAINING REQUIRED APPLICATION RATE.

SEEDING

SELECT A GRASS OR GRASS-LEGUME MIXTURE SUIT-ABLE TO THE AREA AND SEASON OF THE YEAR. SEED SHALL BE APPLIED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTI-PACKER-SEEDER, OR HYDRAULIC SEEDER (SLURRY INCLUDING SEED AND FERTILIZER). DRILL OR CULTIPACKER SEEDERS SHOULD NORMALLY PLACE SEED ONE-QUARTER TO ONE-HALF INCH DEEP. APPROPRIATE DEPTH OF PLANTING IS TEN TIMES THE SEED DIAMETER. SOIL SHOULD BE “RAKED” LIGHTLY TO COVER SEED WITH SOIL IF SEEDED BY HAND. SEE TABLE 6-4.1

MULCHING

TEMPORARY VEGETATION CAN, IN MOST CASES, BE ESTABLISHED WITHOUT THE USE OF MULCH, PROVIDED THERE IS LITTLE TO NO EROSION POTENTIAL. HOWEVER, THE USE OF MULCH CAN OFTEN ACCELERATE AND ENHANCE GERMINATION AND VEGETATION ESTABLISHMENT. MULCH WITHOUT SEEDING SHOULD BE CONSIDERED FOR SHORT TERM PROTECTION. REFER TO DS1 - DISTURBED AREA STABILIZATION (WITH MULCHING ONLY).

IRRIGATION

DURING TIMES OF DROUGHT, WATER SHALL BE APPLIED AT A RATE NOT CAUSING RUNOFF AND EROSION. THE SOIL SHALL BE THOROUGHLY WETTED TO A DEPTH THAT WILL INSURE GERMINATION OF THE SEED. SUBSEQUENT APPLICATIONS SHOULD BE MADE WHEN NEEDED.

**DISTURBED AREA STABILIZATION
(PERMANENT VEGETATION)**

DEFINITION

THE PLANTING OF PERENNIAL VEGETATION SUCH AS TREES, SHRUBS, VINES, GRASSES, OR LEGUMES ON EXPOSED AREAS FOR FINAL PERMANENT STABILIZATION. PERMANENT PERENNIAL VEGETATION SHALL BE USED TO ACHIEVE FINAL STABILIZATION

PURPOSE

- TO PROTECT THE SOIL SURFACE FROM EROSION
- TO REDUCE DAMAGE FROM SEDIMENT AND RUNOFF TO DOWN-STREAM AREAS
- TO IMPROVE WILDLIFE HABITAT AND VISUAL RESOURCES
- TO IMPROVE AESTHETICS

REQUIREMENT FOR REGULATORY COMPLIANCE

THIS PRACTICE SHALL BE APPLIED IMMEDIATELY TO ROUGH GRADED AREAS THAT WILL BE UNDISTURBED FOR LONGER THAN SIX MONTHS. THIS PRACTICE OR SODDING SHALL BE APPLIED IMMEDIATELY TO ALL AREAS AT FINALGRADE. FINAL STABILIZATION MEANS THAT ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED, AND THAT FOR UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES AND AREAS LOCATED OUTSIDE THE WASTE DISPOSAL LIMITS OF A LANDFILL CELL THAT HAS BEEN CERTIFIED BY THE EPD FOR WASTE DISPOSAL, 100% OF THE SOIL SURFACE IS UNIFORMLY COVERED IN PERMANENT VEGETATION WITH A DENSITY OF 70% OR GREATER, OR LANDSCAPED ACCORDING TO THE PLAN (UNIFORMLY COVERED WITH LAND-SCAPING MATERIALS IN PLANNED LANDSCAPED AREAS), OR EQUIVALENT PERMANENT STABILIZATION MEASURES. PERMANENT VEGETATION SHALL CONSIST OF, PLANTED TREES, SHRUBS, PERENNIAL VINES; OR A CROP OF PERENNIAL VEGETATION APPROPRIATE FOR THE REGION, SUCH THAT WITHIN THE GROWING SEASON A 70% COVERAGE BY PERENNIAL VEGETATION SHALL BE ACHIEVED. FINAL STABILIZATION APPLIES TO EACH PHASE OF CONSTRUCTION. FOR LINEAR CONSTRUCTION PROJECTS ON LAND USED FOR AGRICULTURAL OR SILVICULTURAL PURPOSES, FINAL STABILIZATION MAY BE ACCOMPLISHED BY STABILIZING THE DISTURBED LAND FOR ITS AGRICULTURAL OR SILVICULTURAL USE. UNTIL THIS STANDARD IS SATISFIED AND PERMANENT CONTROL MEASURES AND FACILITIES ARE OPERATIONAL, INTERIM STABILIZATION MEASURES AND TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL NOT BE REMOVED.

CONDITIONS

PERMANENT PERENNIAL VEGETATION IS USED TO PROVIDE A PROTECTIVE COVER FOR EXPOSED AREAS INCLUDING CUTS, FILLS, DAMS, AND OTHER DENUDED AREAS

PLANNING CONSIDERATIONS

- USE CONVENTIONAL PLANTING METHODS WHERE POSSIBLE.
- WHEN MIXED PLANTINGS ARE DONE DURING MARGINAL PLANTING PERIODS, COMPANION CROPS SHALL BE USED.
- NO-TILL PLANTING IS EFFECTIVE WHEN PLANTING IS DONE FOLLOWING A SUMMER OR WINTER ANNUAL COVER CROP. SERICEA LESPEDEZA PLANTED NO-TILL INTO STANDS OF RYE IS AN EXCELLENT PROCEDURE.
- BLOCK SOD PROVIDES IMMEDIATE COVER. IT IS ESPECIALLY EFFECTIVE IN CONTROLLING EROSION ADJACENT TO CONCRETE FLUMES AND OTHER STRUC-TURES. REFER TO SPECIFICATION DS4-DISTURBED AREA STABILIZATION (WITH SODDING).
- IRRIGATION SHOULD BE USED WHEN THE SOIL IS DRY OR WHEN SUMMER PLANTINGS ARE DONE.
- LOW MAINTENANCE PLANTS, AS WELL AS NATIVES, SHOULD BE USED TO ENSURE LONG-LASTING ERO-SION CONTROL.
- MOWING SHOULD NOT BE PERFORMED DURING THE QUAIL NESTING SEASON (MAY TO SEPTEMBER).
- WILDLIFE PLANTINGS SHOULD BE INCLUDED IN CRITICAL AREA PLANTINGS.

WILDLIFE PLANTINGS

COMMERCIALLY AVAILABLE PLANTS BENEFICIAL TO WILDLIFE SPECIES INCLUDE THE FOLLOWING:

MAST BEARING TREES

BEECH, BLACK CHERRY, BLACKGUM, CHESTNUT, CHINKAPIN, HACKBERRY, HICKORY, HONEY LOCUST, NATIVE OAK, PERSIMMON, SAWTOOTH OAK AND SWEETGUM. ALL TREES THAT PRODUCE NUTS OR FRUITS ARE FAVORED BY MANY GAME SPECIES. HICKORY PROVIDES NUTS USED MAINLY BY SQUIRRELS AND BEAR.

SHRUBS AND SMALL TREES

BAYBERRY, BICOLOR LESPEDEZA, CRABAPPLE, DOG-WOOD, HUCKLEBERRY OR NATIVE BLUEBERRY, MOUNTAIN LAUREL, NATIVE HOLLY, RED CEDAR, RED MULBERRY, SUMAC, WAX MYRTLE, WILD PLUM AND BLACKBERRY. PLANT IN PATCHES WITHOUT TALL TREES TO DEVELOP STABLE SHRUB COMMUNITIES. ALL PRODUCE FRUITS USED BY MANY KINDS OF WILDLIFE, EXCEPT FOR LESPEDEZA THAT PRODUCES SEEDS USED BY QUAIL AND SONGBIRDS.

GRASSES, LEGUMES, VINES AND TEMPORARY COVER
BAHIAGRASS, BERMUDAGRASS, GRASS-LEGUME MIXTURES, PARTRIDGE PEA, ANNUAL LESPEDEZA, OR-CHARDGRASS (FOR MOUNTAINS), BROWNTOP MILLET (FOR TEMPORARY COVER), AND NATIVE GRAPES. PROVIDES HERBACEOUS COVER IN CLEARINGS FOR A GAME BIRD BROOD-REARING HABITAT. APPROPRIATE LEGUMES SUCH AS VETCHES, CLOVERS, AND LESPEDEZAS MAY BE MIXED WITH GRASS, BUT THEY MAY DIE OUT AFTER A FEW YEARS.

CONSTRUCTION SPECIFICATIONS

GRADING AND SHAPING
GRADING AND SHAPING MAY NOT BE REQUIRED WHERE HYDRAULIC SEEDING AND FERTILIZING EQUIPMENT IS TO BE USED. VERTICAL BANKS SHALL BE SLOPED TO ENABLE PLANT ESTABLISHMENT.

WHEN CONVENTIONAL SEEDING AND FERTILIZING ARE TO BE DONE, GRADE AND SHAPE WHERE FEASIBLE AND PRACTICAL, SO THAT EQUIPMENT CAN BE USED SAFELY AND EFFICIENTLY DURING SEEDBED PREPARATION, SEEDING, MULCHING AND MAINTENANCE OF THE VEGETATION.

CONCENTRATIONS OF WATER THAT WILL CAUSE EXCESSIVE SOIL EROSION SHALL BE DIVERTED TO A SAFE OUTLET. DIVERSIONS AND OTHER TREATMENT PRACTICES SHALL CONFORM WITH THE APPROPRIATE STANDARDS AND SPECIFICATIONS

LIME AND FERTILIZER RATES AND ANALYSIS

AGRICULTURAL LIME IS REQUIRED AT THE RATE OF ONE TO TWO TONS PER ACRE UNLESS SOIL TESTS INDICATE OTHERWISE. GRADED AREAS REQUIRE LIME APPLICATION. IF LIME IS APPLIED WITHIN SIX MONTHS OF PLANTING PERMANENT PERENNIAL VEGETATION, ADDITIONAL LIME IS NOT REQUIRED. AGRICULTURAL LIME SHALL BE WITHIN THE SPECIFICATIONS OF THE GEORGIA DEPARTMENT OF AGRICULTURE.

LIME SPREAD BY CONVENTIONAL EQUIPMENT SHALL BE “GROUND LIMESTONE.” GROUND LIMESTONE IS CALCITIC OR DOLOMITIC LIMESTONE GROUND SO THAT 90 PERCENT OF THE MATERIAL WILL PASS THROUGH A 10-MESH SIEVE, NOT LESS THAN 50 PERCENT WILL PASS THROUGH A 50-MESH SIEVE AND NOT LESS THAN 25 PERCENT WILL PASS THROUGH A 100-MESH SIEVE.

FAST-ACTING LIME SPREAD BY HYDRAULIC SEEDING EQUIPMENT SHOULD BE “FINELY GROUND LIMESTONE” SPANNING FROM THE 180 MICRON SIZE TO THE 5 MICRON SIZE. FINELY GROUND LIMESTONE IS CALCITIC OR DOLOMITIC LIMESTONE GROUND SO THAT 95 PERCENT OF THE MATERIAL WILL PASS THROUGH A 100-MESH SIEVE.

DS3

IT IS DESIRABLE TO USE DOLOMITIC LIMESTONE IN THE SAND HILLS, SOUTHERN COASTAL PLAIN AND ATLANTIC COAST FLATWOODS MLRAS. (SEE FIGURE 6-4.1)

AGRICULTURAL LIME IS GENERALLY NOT REQUIRED WHERE ONLY TREES ARE PLANTED.

INITIAL FERTILIZATION, NITROGEN, TOPDRESSING, AND MAINTENANCE FERTILIZER REQUIREMENTS FOR EACH SPE-CIES OR COMBINATION OF SPECIES ARE LISTED IN TABLE 6-5.1.

LIME AND FERTILIZER APPLICATION

WHEN HYDRAULIC SEEDING EQUIPMENT IS USED, THE INITIAL FERTILIZER SHALL BE MIXED WITH SEED, INOCULANT (IF NEEDED), AND WOOD CELLULOSE OR WOOD PULP FIBER MULCH AND APPLIED IN A SLURR. THE INOCULANT, IF NEEDED, SHALL BE MIXED WITH THE SEED PRIOR TO BEING PLACED INTO THE HYDRAULIC SEEDER. THE SLURRY MIXTURE WILL BE AGITATED DURING APPLICATION TO KEEP THE INGREDIENTS THOROUGHLY MIXED. THE MIXTURE WILL BE SPREAD UNIFORMLY OVER THE AREA WITHIN ONE HOUR AFTER BEING PLACED IN THE HYDROSEEDER.

FINELY GROUND LIMESTONE CAN BE APPLIED IN THE MULCH SLURRY OR IN COMBINATION WITH THE TOP DRESSING.

WHEN CONVENTIONAL PLANTING IS TO BE DONE, LIME AND FERTILIZER SHALL BE APPLIED UNIFORMLY IN ONE OF THE FOLLOWING WAYS:

- APPLY BEFORE LAND PREPARATION SO THAT IT WILL BE MIXED WITH THE SOIL DURING SEEDBED PREPARATION.
- MIX WITH THE SOIL USED TO FILL THE HOLES, DISTRIBUTE IN FURROWS.
- BROADCAST AFTER STEEP SURFACES ARE SCARIFIED PITTED OR TRENCHED.
- A FERTILIZER PELLET SHALL BE PLACED AT ROOT DEPTH IN THE CLOSING HOLE BESIDE EACH PINE TREE SEEDLING.

PLANT SELECTION

REFER TO TABLES 6-4.1, 6-5.2, 6-5.3 AND 6-5.4 FOR APPROVED SPECIES. SPECIES NOT LISTED SHALL BE APPROVED BY THE STATE RESOURCE CONSERVATIONIST OF THE NATURAL RESOURCES CONSERVATION SERVICE BEFORE THEY ARE USED.

PLANTS SHALL BE SELECTED ON THE BASIS OF SPECIES CHARACTERISTICS, SITE AND SOIL CONDITIONS, PLANNED USE AND MAINTENANCE OF THE AREA; TIME OF YEAR OF PLANTING, METHOD OF PLANTING; AND THE NEEDS AND DESIRES OF THE LAND USER.

SOME PERENNIAL SPECIES ARE EASILY ESTABLISHED AND CAN BE PLANTED ALONE. EXAMPLES OF THESE ARE COMMON BERMUDA, TALL FESCUE, AND WEEPING LOVEGRASS.

OTHER PERENNIALS, SUCH AS BAHIA GRASS AND SERI-CEA LESPEDEZA, ARE SLOW TO BECOME ESTABLISHED AND SHOULD BE PLANTED WITH ANOTHER PERENNIAL SPE-CIES. THE ADDITIONAL SPECIES WILL PROVIDE QUICK COVER AND AMPLE SOIL PROTECTION UNTIL THE TARGET PERENNIAL SPECIES BECOME ESTABLISHED. FOR EXAMPLE, COMMON SEEDING COMBINATIONS ARE:

- 1) WEEPING LOVEGR-RASS WITH SERICEA LESPEDEZA (SCARIFIED); AND,
- 2) TALL FESCUE WITH SERICEA LESPEDEZA (UNSCARIFIED)

PLANT SELECTION MAY ALSO INCLUDE ANNUAL COMPANION CROPS. ANNUAL COMPANION CROPS SHOULD BE USED ONLY WHEN THE PERENNIAL SPECIES ARE NOT PLANTED DURING THEIR OPTIMUM PLANTING PERIOD. A COMMON MIXTURE IS BROWN TOP MILLET WITH COMMON BERMUDA IN MID-SUMMER. CARE SHOULD BE TAKEN IN SELECTING COMPANION CROP SPECIES AND SEEDING RATES BECAUSE ANNUAL CROPS WILL COMPETE WITH PERENNIAL SPECIES FOR WATER, NUTRIENTS, AND GROWING SPACE. A HIGH SEEDING RATE OF THE COMPANION CROP MAY PREVENT THE ESTABLISHMENT OF PERENNIAL SPECIES.

RYEGRASS SHALL NOT BE USED IN ANY SEEDING MIXTURES CONTAINING PERENNIAL SPECIES DUE TO ITS ABILITY TO OUT-COMPETE DESIRED SPECIES CHOSEN FOR PERMANENT PERENNIAL COVER.

SEED QUALITY

THE TERM “PURE LIVE SEED” IS USED TO EXPRESS THE QUALITY OF SEED AND IS NOT SHOWN ON THE LABEL. PURE LIVE SEED, PLS, IS EXPRESSED AS A PERCENT-AGE OF THE SEEDS THAT ARE PURE AND WILL GERMI-NATE. INFORMATION ON PERCENT GERMINATION AND PURITY CAN BE FOUND ON SEED TAGS. PLS IS DETER-MINED BY MULTIPLYING THE PERCENT OF PURE SEED WITH THE PERCENT OF GERMINATION; I.E.,

(PLS = % GERMINATION X % PURITY)

EXAMPLE:
COMMON BERMUDA SEED
70% GERMINATION, 80% PURITY
PLS = 56%

THE PERCENT OF PLS HELPS YOU DETERMINE THE AMOUNT OF SEED YOU NEED. IF THE SEEDING RATE IS 10 POUNDS PLS AND THE BULK SEED IS 56% PLS, THE BULK SEEDING RATE IS:

10 LBS. PLS/ACRE = 17.9 LBS/ACRE 56% PLS

YOU WOULD NEED TO PLANT 17.9 LBS/ACRE TO PROVIDE 10 LBS/ACRE OF PURE LIVE SEED.

SEEDBED PREPARATION

SEEDBED PREPARATION MAY NOT BE REQUIRED WHERE HYDRAULIC SEEDING AND FERTILIZING EQUIP-MENT IS TO BE USED (BUT IS STRONGLY RECOMMENDED FOR ANY SEEDING PROCESS, WHEN POSSIBLE). WHEN CONVENTIONAL SEEDING IS TO BE USED, SEED

BUFFER ZONE

Bf

DEFINITION

A STRIP OF UNDISTURBED, ORIGINAL VEGETATION, ENHANCED OR RESTORED EXISTING VEGETATION OR THE RE-ESTABLISHMENT OF VEGETATION SURROUNDING AN AREA OF DISTURBANCE OR BORDERING STREAMS, PONDS, WETLANDS, LAKES AND COASTAL WATERS.

PURPOSE

TO PROVIDE A BUFFER ZONE SERVING ONE OR MORE OF THE FOLLOWING PURPOSES:

- REDUCE STORM RUNOFF VELOCITIES
- ACT AS SCREEN FOR “VISUAL POLLUTION”
- REDUCE CONSTRUCTION NOISE
- IMPROVE AESTHETICS ON THE DISTURBED LAND
- FILTERING AND INFILTRATING RUNOFF
- COOLING RIVERS AND STREAMS BY CREATING SHADE PROVIDE FOOD AND COVER FOR WILDLIFE AND AQUATIC ORGANISMS
- FLOOD PROTECTION
- PROTECT CHANNEL BANKS FROM SCOUR AND EROSION

CONDITIONS

A NATURAL STRIP OF VEGETATION SHOULD BE PRE-SERVED AND, IF NEEDED, SUPPLEMENTED TO FORM THE BUFFER ZONE. THERE ARE TWO TYPES OF BUFFER ZONES.

GENERAL BUFFERS

A STRIP OF UNDISTURBED, ORIGINAL LAND SURROUNDING THE DISTURBED SITE. IT CAN BE USEFUL NOT ONLY TO FILTER AND INFILTRATE RUNOFF, BUT ALSO TO ACT AS A SCREEN FOR “VISUAL POLLUTION” AND REDUCE CONSTRUCTION NOISE. GENERAL BUFFERS MAY BE ENHANCED TO ACHIEVE DESIRED GOALS.

VEGETATED STREAM BUFFERS

BUFFERS BORDERING STREAMS ARE CRITICAL DUE TO THE INVALUABLE PROTECTION OF STREAMS FROM SEDIMENTATION. STREAM BUFFERS ARE ALSO USEFUL IN COOLING RIVERS AND PROVIDING FOOD AND COVER FOR WILDLIFE. REFER TO THE MINIMUM REQUIREMENTS IN ACT 599 (O.C.G.A. 1-7-1, ET. SEQ.) AND CHAPTERS 16 AND 18 OF THE NRCS ENGINEERING FIELD HAND-BOOK.

IN MOST CASES, THE BUFFER ZONE WILL BE INCORPORATED INTO THE PERMANENT VEGETATIVE COVER. REFER TO SPECIFICATION DS3 - DISTURBED AREA STABILIZATION (WITH PERMANENT VEGETATION).

DESIGN SPECIFICATIONS

IMPORTANT DESIGN FACTORS SUCH AS SLOPE, HYDROLOGY, WIDTH AND STRUCTURE SHALL BE CONSIDERED. WHILE GEORGIA’S ENVIRONMENTAL PROTECTION DIVISION ENFORCES MINIMUM STREAM BUFFER REQUIREMENTS, EXPANDING THE STREAM BUFFER WIDTH IS ALWAYS ENCOURAGED. IF ANY LAND-DISTURBING ACTIVITY, INCLUDING EXEMPT AND NON-EXEMPT PRACTICES, OCCURS WITHIN THE GA EPD MANDATED STREAM BUFFERS, CUT AND FILLS WITHIN THE BUFFER SHALL BE STABILIZED WITH APPROPRIATE MATTING OR BLANKET.

GENERAL BUFFERS

A WIDTH SHOULD BE SELECTED TO PERMIT THE ZONE TO SERVE THE PURPOSE(S) AS LISTED ABOVE. SUPPLE-MENTAL PLANTINGS MAY BE USED TO INCREASE THE EFFECTIVENESS OF THE BUFFER ZONE.

VEGETATED STREAM BUFFERS

THE STRUCTURE OF VEGETATED STREAM BUFFERS SHOULD BE CONSIDERED TO DETERMINE IF THE BUFFER MUST BE ENHANCED TO ACHIEVE THE NECESSARY GOALS. THE SIZE OF THE STREAM AS WELL AS THE TOPOGRAPHY OF THE AREA MUST BE CONSIDERED TO DETERMINE THE APPROPRIATE WIDTH OF THE VEGETATED STREAM BUFFER. A VEGETATED STREAM BUFFER OF 50 FEET OR GREATER CAN PROTECT WATERS FROM EXCESS SEDIMENTATION. THE BUFFER SHOULD BE INCREASED 2 FEET IN WIDTH FOR EVERY 1% SLOPE (MEASURED ALONG A LINE PERPENDICULAR TO THE STREAM BANK). SURFACE WATER POLLUTION CAN BE REDUCED WITH A 100 FOOT OR WIDER VEGETATIVE BUFFER.

A GENERAL MULTIPURPOSE RIPARIAN BUFFER CONSISTS OF THREE ZONES.

1. ZONE 1 THE FIRST 20 FEET NEAREST THE STREAM SHOULD CONSIST OF TREES SPACED 6-10 FEET APART.
2. ZONE 2 THE NEXT 10 FEET SHOULD CONSIST OF MANAGED FOREST.
3. ZONE 3 THE FOLLOWING 20 FEET SHOULD BE COMPRISED OF GRASSES.

THIS GENERAL MULTIPURPOSE DESIGN CONTAINS TREES AND SHRUBS THAT HELP TO STABILIZE STREAM BANKS AND GRASSES THAT SPREAD AND REDUCE THE FLOW FROM ADJACENT AREAS AS WELL AS INCREASE SETTLING AND IN-FILTRATION. SEE TABLES 6-1.1 AND 6-1.2 FOR SUGGESTED PLANT SPECIES.

IF THE IDEAL VEGETATED BUFFER WIDTH CANNOT BE ACHIEVED; NARROWER BUFFERS CAN STILL BE USED TO OBTAIN THE GOALS CONCERNING FOREST STRUCTURE AND RIPARIAN HABITAT. IF THIS IS THE CASE, SEVERAL DESIGN PRINCIPLES SHOULD BE CONSIDERED:

1. SHEET FLOW SHOULD BE ENCOURAGED AT THE EDGE OF THE VEGETATED STREAM BUFFER.
2. THE STRUCTURE OF THE BUFFER SHOULD CONSIST OF UNDER-STORY AND CANOPY SPECIES.
3. THE WIDTH SHOULD BE PROPORTIONAL TO THE WATERSHED AREA AND SLOPE.
4. NATIVE AND NON-INVASIVE PLANT SPECIES SHOULD BE USED.
5. DENSITY MUST BE CONSIDERED TO DETERMINE IF THE EXISTING BUFFER MUST BE ENHANCED TO ACHIEVE THE NECESSARY GOALS. VEGETATION MUST BE DENSE ENOUGH TO FILTER SEDIMENT AND PROVIDE DETRITAL NUTRIENTS FOR AQUATIC ORGANISMS.

STREAMBANK STABILIZATION TECHNIQUES MAY BE REQUIRED IF STEEP SLOPES AND HYDROLOGIC PATTERNS DEEM IT NECESSARY. REFER TO SPECIFICATION SB - STREAMBANK STABILIZATION (USING PERMANENT VEGETATION). VEGETATED STREAM BUFFERS ON STEEP SLOPES MAY NEED TO BE WIDER TO EFFECTIVELY FILTER OVERLAND FLOW. CORRIDORS SUBJECT TO INTENSE FLOODING MAY REQUIRE ADDITIONAL STREAMBANK STABILIZATION MEASURES.

PLANTING TECHNIQUES

PLANTINGS FOR BUFFER RE-ESTABLISHMENT AND ENHANCEMENT CAN CONSIST OF BARE ROOT SEEDLINGS, CONTAINER-GROWN SEEDLINGS, CONTAINER-GROWN PLANTS, AND BALLED AND BURLAPPED PLANTS. REFER TO TABLES 6-1.1 AND 6-1.2, AND WILDLIFE PLANTINGS IN DS3 - DISTURBED AREA STABILIZATION (WITH PERMANENT VEGETATION). STANDARD PERMANENT EROSION CONTROL GRASSES AND LEGUMES MAY BE USED IN DENUDED AREAS FOR QUICK STABILIZATION. REFER TO SPECIFICATION DS3 - DISTURBED AREA STABILIZATION (WITH PERMANENT VEGETATION). AVAILABILITY, COST, ASSOCIATED RISK, EQUIPMENT, PLANTING PROCEDURES, AND PLANTING DENSITY MUST BE CONSIDERED WHEN CHOOSING PLANTING TYPES.

SOIL PREPARATION AND MAINTENANCE ARE ESSENTIAL FOR THE ESTABLISHMENT OF PLANTED VEGETATION. SOIL FERTILITY, WEED CONTROL, HERBACEOUS COVER, AS WELL AS ADDITIONAL ASSOCIATED PRODUCTS MAY BE REQUIRED.

OPERATIONS AND MAINTENANCE

AREAS CLOSEST TO THE STREAM SHOULD BE MAINTAINED WITH MINIMAL IMPACT.

WATERING

DURING PERIODS OF DROUGHT AS WELL AS DURING THE INITIAL YEAR, WATERING MAY BE NECESSARY IN ALL BUFFER AREAS PLANTED FOR ENHANCEMENT.

WEED CONTROL

WEEDS CAN BE REMOVED BY HAND OR WITH CAREFUL SPRAYING.

REPLANTING

IT IS IMPERATIVE THAT THE STRUCTURE OF THE VEGETATED STREAM BUFFER BE MAINTAINED. IF THE BUFFER HAS BEEN PLANTED, IT IS SUGGESTED THAT THE AREA BE MONITORED TO DETERMINE IF PLANT MATERIAL MUST BE REPLACED. SEE TABLES 6-1.1 AND 6-1.2 FOR SUGGESTED PLANT SPECIES. PROVISIONS FOR THE PROTECTION OF NEW PLANTINGS FROM DESTRUCTION OR DAMAGE FROM BEAVERS SHALL BE INCORPORATED INTO THE PLAN.

FERTILIZER

IF APPROPRIATE VEGETATION IS CHOSEN, IT IS UN-LIKELY THAT FERTILIZER WILL BE NECESSARY.

LOCAL CONTACTS:

USDA NATURAL RESOURCES CONSERVATION SERVICE GEORGIA FORESTRY COMMISSION

Table 6-1.1 - Unrooted Hardwood Cuttings

Species	Region	Tolerance To Flooding	Tolerance To Drought	Tolerance To Deposition	Tolerance To Shade
Acer negundo					
Boxelder	C,P,M	H	H	H	L
Baccharis halimifolia					
Groundsel bush	C,P (lower)	M	M	H	L
Cornus amomum					
Silky dogwood	P,M	L	M	L	M
Cornus sericea					
Ssp. stolonifera					
Red osier dogwood	P,M	L	M	H	M
Crataegus sp.					
Hawthorn	C,P,M	M	H	L	L
Opulus deltoids					
Eastern cottonwood	C,P,M	M	M	H	L
Salix sp. interior					
Sandbar willow	C,P,M	H	L	H	L
Salix nigra					
Black willow	C,P,M	H	H	H	L
Salix purpurea					
Streamco willow	C,P,M	H	M	H	L
Salix x colletii					
Bankers willow	P,M	H	M	H	L
Sambucus canadensis					
American elderberry	P,M	H	M	M	M
Viburnum dentatum					
Arrowwood viburnum	C,P,M	M	M	M	M
Viburnum lentago					
Nannyberry viburnum	C,P,M	M	M	L	M

Legend

Tolerance to Flooding, Drought, Deposition, and Shade:

H = High
M = Medium
L = Low

Region:

C = Coastal
P = Piedmont
M = Mountain

ROOTING OF ALL SPECIES WILL BE IMPROVED IF NEARBY VEGETATION IS PRUNED TO INCREASE SUNLIGHT PENETRATION.

WHENEVER POSSIBLE, HARVEST HARDWOOD CUTTINGS AS CLOSE TO THE REPAIR SITE AS POSSIBLE. MANY OF THE ABOVE GROW NATURALLY ALONG STREAMS, IN ADJACENT WETLANDS, ALONG SEWER AND POWER LINE EASEMENTS, AND WHERE STREAMS ENTER LAKES AND ALONG LAKE SHORES. WILLOWS GENERALLY GROW PROFUSELY IN STORMWATER DETENTION PONDS IN URBAN AREAS.

ALWAYS OBTAIN PERMISSION FROM THE PROPERTY OWNER BEFORE HARVESTING PLANTS!

Table 6-1.2 - Native Plant Guide

NATIVE PLANT GUIDE FOR STREAMBANK PLANTING ROOTED STOCK

Species	Region	Stream Zone	Wildlife Value	Notes
Acer rubrum				
Red Maple	M,P,C	Tree	High seed and browse.	Rapid growth.
Alnus serrulata				
Smooth alder	M,P,C	Shrub	Moderate, Cover	Rapid growth. Stabilizes streambank. Sun.
Amorpha fruticosa				
False indigo	M,P,C	Shrub	Moderate	Sun.
Aronia arbutifolia				
Rhizomatous Colonial	M,P,C	Shrub	Moderate cover and food.	Shrub.
Red chokeberry				
Asimina triloba				
Pawpaw	M,P,C	Tree	Important food for fox and possum.	
Betula nigra				
River Birch	M,P,C	Tree	Good for cavity nester.	Full sun.
Carpinus caroliniana				
American hombeam	M,P,C	Tree	Low	Partial shade.
Carya cordiformis				
Piedmont hickory	P,C	Tree	Moderate, food	Wet bottoms.
Catalpa bignonioides				
Catalpa tree	P,C	Tree	Unknown	
Celtis laevigata				
Sugarberry	P,C	Tree	High food cover	Partial shade.
Celtis occidentalis				
Hackberry	P,C	Tree	High	Partial shade.
Cephalanthus Occidentalis				
Buttonbush	M,P,C	Shrub	Moderate, ducks and shorebirds are users. Nectar for hummingbirds.	Sun.
Chionanthus virginicus				
Fringe tree	P,C	Tree	Moderate	Tolerant of shade.
Clethra alnifolia				
Sweet pepperbush	P,C	Shrub	Moderate	Partial shade.
Cornus amomum				
Silky dogwood	M,P	Shrub	High, songbirds, Mammals	Good landscape value
Cornus stricta				
Swamp dogwood	M,P	Shrub	High	Shade tolerant.
Cornus florida				
Flowering dogwood	M,P,C	Tree	High, birds, food	Good bank stabilizer.
Cyrilla racemiflora				
Titi	C	Tree	Low	Good bank stabilizer in shade.
Diospyros Virginia				
Persimmon	M,P,C	Tree	Extremely high Mammals	Light shade.
Fraxinus caroliniana				
Carolina ash	C	Tree	Moderate	Extremely high
Fraxinus pennsylvanica				
Green ash	M,P,C	Tree	Low	Not shade tolerant.
Gleditsia aquatica				
Water locust	P,C	Tree	Low	Rapid growing.
Gleditsia triacanthos				
Honey locust	P,C	Tree	Low	Streambank grower.

Table 6-1.2 - Native Plant Guide - continued

Species	Region	Stream Zone	Wildlife Value	Notes
Hibiscus aculeatus				
Hibiscus				
Comfort root	C	Shrub	Unknown	Use on open level floodplain areas and Depression in C.
Hibiscus militaris				
Hibiscus				
Halberd-leaved Marshmallow	C	Shrub	Unknown	Use on open level floodplain areas and Depression in C.
Hibiscus lasiocarpus	C	Shrub	Unknown	Use on open level floodplain areas and Depression in C.
Hibiscus	C	Shrub	Unknown	Use on open level floodplain areas and Depression in C.
Hibiscus moscheutos	C	Shrub	Unknown	Use on open level floodplain areas and Depression in C.
Hibiscus	C	Shrub	Unknown	Use on open level floodplain areas and Depression in C.
Ilex coriacea				
Sweet Galiberry	C	Shrub	Unknown	Use on open level floodplain areas and Depression in C.
Ilex decidua				
Possumhaw	P,C	Shrub	High, food, nest sites.	Sun or shade.
Ilex glabra				
Bitter gallberry or Inkberry	C	Shrub	High	Stoloniferous. Sun to some shade.
Ilex opaca				
American holly	M,P,C	Tree	High, food, cover nests.	Prefers shade.
Ilex verticillata				
			High, cover and fruits for birds. Holds berries in winter.	Full sun to some shade seasonally flooded areas.
Winterberry	M,P	Shrub		
Ilex vomitoria				
Yaupon	C	Shrub	High, songbirds	Small tree, very adaptable, suckers.
Juglans nigra				
Black Walnut	M,P	Tree	Good	Temporarily flooded wetlands along
Juniperus virginiana				
Eastern red cedar	M,P,C	Tree	High, food	Tolerant to some shad in youth.
Leucothoe axillaris				
Leucothoe	C	Shrub	Low	Partial shade.
Lindera benzoin				
Common spicebush	M	Shrub	High, songbirds	Shade, acidic soils. Good Understory
Liriodendron tulipifera				
Tulip poplar	M,P	Tree	Low	Tolerant to partial shade.
Liquidambar styraciflua				
Sweetgum	M,P,C	Tree	Low	Partial shade.
Lyonia lucida				
Lyonia or Fetterbush	C	Shrub	Low	Sun.
Magnolia Virginia				
Sweetbay	P,C	Tree	Very low	Shade tolerant.
Myrica cerifera				
Southern wax myrtle	C	Shrub	Moderate	Light shade.
Nysssa ogechee				
Ogeechee lime	C	Tree	High, fruit, cavity nesters.	Wetland tree
Nysssa sylvatica				
Blackgum or sourgum	M,P,C	Tree	Moderate, seeds	Sun to partial shade.
Nysssa aquatica				
Swamp tupelo	C	Tree	High	Prefers shade.

Ostrya Virginiana	M,P,C	Tree	Moderate	Tolerant of all sunlight conditions.
Hophornbeam				
Persea borbonica				
Red bay	C	Tree	Good food, for quail and bluebirds.	Understory tree.
Pinus taeda				
Loblolly pine	P,C	Tree	Moderate	Poor sites.
Platanus occidentalis				
Sycamore	M,P,C	Tree	Low. Cavity Nesters	Transplants well. Rapid growth in full sun.
Populus deltoides				
Eastern cottonwood	M,P,C	Tree	High	Invasive roots. Rapid growth.
Quercus alba				
White oak	M,P,C	Tree	High, food	Prefers moist well drained soils.
Quercus laurifolia				
Swamp laurel oak	C	Tree	High	
Quercus lyrata				
Overcup oak	P,C	Tree	High	Sloughs & bottoms.
Quercus michauxii				
Wetter sites than white oak.				
Swamp chestnut oak	M,P,C	Tree	High	
Quercus nigra				
Water oak	M,P,C	Tree	High	
Quercus pagoda				
Cherrybark oak	M,P	Tree	High	
Quercus phellos				
Willow oak	M,P,C	Tree	High, mast	Full to partial sun.
Quercus shumardii				
Shumard oak	P,C	Tree	High	
Salix nigra				
Black willow	M,P,C	Shrub & Tree	Nesting	Rapid growth, full sun.
Rhododendron atlanticum				
Coast azalea	P,C	Shrub	Very low	Very fragrant suckers.
Rhododendron viscosum				
Swamp azalea	C	Shrub	Low	
Syrax american	C	Shrub	Unknown	
Taxodium distichum				
Bald cypress	C	Tree	Good perching site	Full sun.
Tsuga canadensis				
Eastern hemlock	M	Tree	Moderate	Tolerates all light conditions.
Viburnum nudum				
Swamp haw	M,P,C	Shrub	High	Shade tolerant

Legend

Region:

M = Mountains
P = Piedmont
C = Coastal Plain

FILTER RING

Fr

DEFINITION

A TEMPORARY STONE BARRIER CONSTRUCTED AT STORM DRAIN INLETS AND POND OUTLETS.

PURPOSE

THIS STRUCTURE REDUCES FLOW VELOCITIES, PREVENTING THE FAILURE OF OTHER SEDIMENT CONTROL DEVICES. IT ALSO HELPS PREVENT SEDIMENT FROM LEAVING THE SITE OR ENTERING DRAINAGE SYSTEMS, PRIOR TO PERMANENT STABILIZATION OF THE DISTURBED AREA.

CONDITIONS

FILTER RINGS SHALL BE USED IN CONJUNCTION WITH OTHER SEDIMENT CONTROL MEASURES, EXCEPT WHERE OTHER PRACTICES DEFINED IN THIS MANUAL ARE NOT APPROPRIATE (SUCH AS INLETS TO CONCRETE FLUMES). THEY CAN BE INSTALLED AT OR AROUND DEVICES SUCH AS INLET SEDIMENT TRAPS, TEMPORARY DOWNDRAIN INLETS, AND DETENTION POND RETROFITS TO PROVIDE ADDITIONAL SEDIMENT FILTERING CAPACITY.

DESIGN CRITERIA

FORMAL DESIGN IS NOT REQUIRED. THE FOLLOWING STANDARDS SHALL BE USED:

LOCATION

THE FILTER RING SHALL SURROUND ALL SIDES OF THE STRUCTURE RECEIVING RUNOFF FROM DISTURBED AREAS. IT SHOULD BE PLACED A MINIMUM OF FOUR FEET FROM THE STRUCTURE. THE RING IS NOT INTENDED TO SUBSTANTIALLY IMPOUND WATER, CAUSING FLOODING OR DAMAGE TO ADJACENT AREAS.

THE FILTER RING MAY ALSO BE PLACED BELOW STORM DRAINS DISCHARGING INTO DETENTION PONDS, CREATING A CENTRALIZED AREA, OR “FOREBAY”, FOR SEDIMENT ACCUMULATION. THIS PROVIDES FOR EASIER, MORE LOCALIZED CLEAN-OUT OF THE POND. IF UTILIZED ABOVE A RETROFIT STRUCTURE, IT SHOULD BE A MINIMUM OF 8 TO 10 FEET FROM THE RETROFIT.

STONE SIZE

WHEN UTILIZED AT INLETS WITH DIAMETERS LESS THAN 12 INCHES, THE FILTER RING SHALL BE CONSTRUCTED OF STONE NO SMALLER THAN 3-5 INCHES (15 - 30 LBS.).

WHEN UTILIZED AT PIPES WITH DIAMETERS GREATER THAN 12 INCHES, THE FILTER RING SHALL BE CONSTRUCTED OF STONE NO SMALLER THAN 10-15 INCHES (50 - 100 LBS.).

THE LARGER STONE CAN BE FACED WITH SMALLER FILTER STONE ON THE UPSTREAM SIDE FOR ADDED SEDIMENT FILTERING CAPABILITIES. HOWEVER, THE SMALLER FILTER STONE IS MORE PRONE TO CLOGGING, REQUIRING HIGHER MAINTENANCE.

HEIGHT

THE FILTER RING SHALL BE CONSTRUCTED AT A HEIGHT NO LESS THAN TWO FEET FROM GRADE.

CONSTRUCTION SPECIFICATIONS

MECHANICAL OR HAND PLACEMENT OF STONE SHALL BE REQUIRED TO UNIFORMLY SURROUND THE STRUCTURE TO BE SUPPLEMENTED. REFER TO APPENDIX C FOR ROCK RIPRAP SPECIFICATIONS. THE FILTER RING MAY BE CONSTRUCTED ON NATURAL GROUND SURFACE, ON AN EXCAVATED SURFACE, OR ON MACHINE COMPACTED FILL.

A COMMON FAILURE OF A FILTER RING IS CAUSED BY PLACING IT TOO CLOSE TO OR TOO HIGH ABOVE THE STRUCTURE IT IS ENHANCING. WHEN UTILIZED BELOW A STORM DRAIN OUTLET, IT SHALL BE PLACED SUCH THAT IT DOES NOT CREATE A CONDITION CAUSING WATER TO BACK-UP INTO THE STORM DRAIN AND INHIBIT THE FUNCTION OF THE STORM DRAIN SYSTEM.

MAINTENANCE

THE FILTER RING MUST BE KEPT CLEAR OF TRASH AND DEBRIS. THIS WILL REQUIRE CONTINUOUS MONITORING AND MAINTENANCE, WHICH INCLUDES SEDIMENT REMOVAL WHEN ONE-HALF FULL. STRUCTURES ARE TEMPORARY AND SHOULD BE REMOVED WHEN THE LAND-DISTURBING PROJECT HAS BEEN STABILIZED.

BMP DETAILS

Upper Coosa Mitigation Bank Wetland Restoration

Whitfield County, Georgia

REVISIONS:

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CPESC NO. 6260

GSWCC NO. 12924

EXPIRES: 07/08/2024

DATE: 08/05/2022

SHEET #

20



Know what's below. Call before you dig.

GEORGIA UNIFORM CODING SYSTEM

FOR SOIL EROSION AND SEDIMENT CONTROL PRACTICES

GEORGIA SOIL AND WATER CONSERVATION COMMISSION

STRUCTURAL PRACTICES

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Cd	CHECKDAM			A small temporary barrier or dam constructed across a wide, drainage ditch or area of concentrated flow.
Ch	CHANNEL STABILIZATION			Improving, constructing or stabilizing an open channel, existing stream, or ditch.
Co	CONSTRUCTION EXIT			A crushed stone pad located at the construction site exit to provide a place for removing mud from tires thereby protecting public streets.
Cr	CONSTRUCTION ROAD STABILIZATION			A gravel pad constructed as part of a construction plan including access roads, subdivision roads, parking areas and other on-site vehicle transportation routes.
Dc	STREAM DIVERSION CHANNEL			A temporary channel constructed to convey flow around a construction site while a permanent structure is being constructed.
Di	DIVERSION			An earth channel or dike located above, below or across a slope to divert runoff. This may be a temporary or permanent structure.
Dn1	TEMPORARY DOWNSTREAM STRUCTURE			A flexible conduit of heavy-duty fabric or other material designed to safely conduct surface runoff down a slope. This is temporary and inexpensive.
Dn2	PERMANENT DOWNSTREAM STRUCTURE			A paved chute, pipe, sectional conduit or similar material designed to safely conduct surface runoff down a slope.
Fr	FILTER RING			A temporary stone barrier constructed at storm drain inlets and pond outlets.
Ga	GABION			Rock filter baskets which are hand-placed into position forming soil stabilizing structures.
Gr	GRADE STABILIZATION STRUCTURE			Permanent structures installed to protect channels or waterways where otherwise the slope would be sufficient for the running water to form gullies.
Lv	LEVEL SPREADER			A structure to convert concentrated flow of water into less erosive sheet flow. This should be constructed only on undisturbed soils.
Rd	ROCK FILTER DAM			A permanent or temporary stone filter dam installed across small streams or drainage ways.
Re	RETAINING WALL			A wall installed to stabilize cut and fill slopes where maximum permissible slopes are not obtainable. Each situation will require special design.
Rt	RETRO FITTING			A device or structure placed in front of a permanent stormwater detention pond outlet structure to serve as a temporary sediment filter.
Sd1	SEDIMENT BARRIER			A barrier to prevent sediment from leaving the construction site. It may be sandbags, bales of straw or hay, brush, logs and poles, gravel, or a silt fence.
Sd2	INLET SEDIMENT TRAP			An impounding area created by excavating around a storm drain inlet. The excavated area will be filled and stabilized on completion of construction activities.
Sd3	TEMPORARY SEDIMENT BASIN			A basin created by excavation or a dam across a waterway. The surface water runoff is temporarily stored allowing the bulk of the sediment to drop out.
Sd4	TEMPORARY SEDIMENT TRAP			A small temporary pond that drains a disturbed area so that sediment can settle out. The principle feature distinguishing a temporary sediment trap from a temporary sediment basin is the lack of a pipe or riser.
Sk	FLOATING SURFACE SPINNER			A buoyant device that releases/drains water from the surface of sediment ponds, traps, or basins at a controlled rate of flow.
Spb	SEEP BERM			Linear control device constructed as a diversion perpendicular to the direction of runoff to enhance dissipation and infiltration, while creating multiple sedimentation chambers with the employment of intermediate dikes.

STRUCTURAL PRACTICES

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Sr	TEMPORARY STREAM CROSSING			A temporary bridge or culvert-type structure protecting a stream or watercourse from damage by crossing construction equipment.
St	STORMDRAIN OUTLET PROTECTION			A paved or short section of riprap channel at the outlet of a storm drain system preventing erosion from the concentrated runoff.
Su	SURFACE ROUGHENING			A rough soil surface with horizontal depressions on a contour or slopes left in a roughened condition after grading.
Tc	TURBIDITY CURTAIN			A floating or staked barrier installed within the water (it may also be referred to as a floating boom, silt barrier, or silt curtain).
Tp	TOPSIDING			The practice of stripping off the more fertile soil, storing it, then spreading it over the disturbed area after completion of construction activities.
Tr	TREE PROTECTION			To protect desirable trees from injury during construction activity.
Wt	VEGETATED WATERWAY OR STREAMWATER DIVERSION			Paved or vegetative water outlets for diversions, terraces, berms, dikes or similar structures.

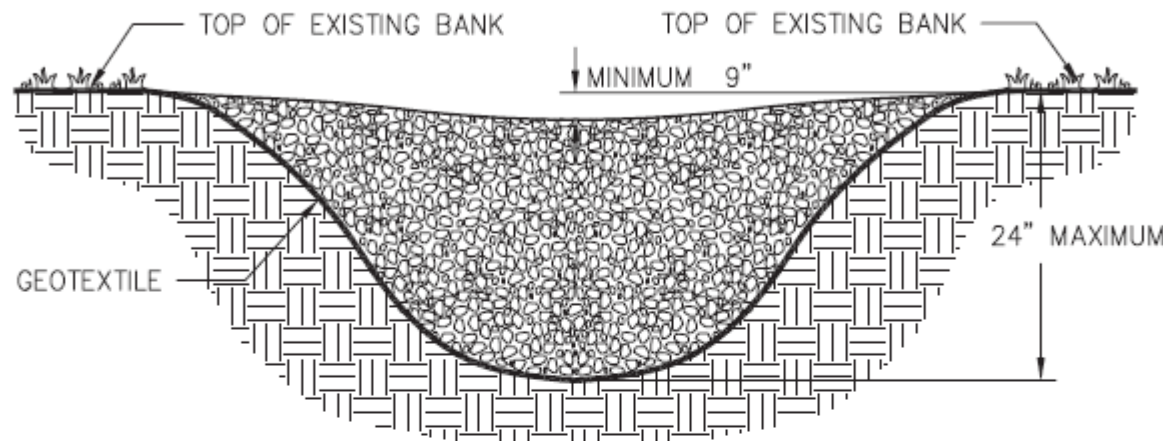
VEGETATIVE PRACTICES

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Bf	BUFFER ZONE			Strip of undisturbed original vegetation, enhanced or restored existing vegetation or the reestablishment of vegetation surrounding an area of disturbance or bordering streams.
Cs	COASTAL DUNE STABILIZATION (WITH VEGETATION)			Planting vegetation on dunes that are denuded artificially constructed, or re-nourished.
Ds1	DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)			Establishing temporary protection for disturbed areas where seedlings may not have a suitable growing season to produce an erosion retarding cover.
Ds2	DISTURBED AREA STABILIZATION (WITH TEMP SEEDING)			Establishing a temporary vegetative cover with fast growing seedlings on disturbed areas.
Ds3	DISTURBED AREA STABILIZATION (WITH PERM SEEDING)			Establishing a permanent vegetative cover such as trees, shrubs, vines, grasses, or legumes on disturbed areas.
Ds4	DISTURBED AREA STABILIZATION (SEEDING)			A permanent vegetative cover using seeds on highly erodible or critically eroded lands.
Du	DUST CONTROL ON DISTURBED AREAS			Controlling surface and air movement of dust on construction sites, roadways and similar sites.
Fl-Co	FLOCCULANTS AND COAGULANTS			Substance formulated to assist in the solids/liquid separation of suspended particles in solution.
Sb	STREAMBANK STABILIZATION (USING PERM VEGETATION)			The use of readily available native plant materials to maintain and enhance streambanks, or to prevent, or restore and repair small streambank erosion problems.
Ss	SLOPE STABILIZATION			A protective covering used to prevent erosion and establish temporary or permanent vegetation on steep slopes, shore lines, or channels.
Tac	TACKERS AND BINDERS			Substance used to anchor straw or hay much by causing the organic material to bind together.

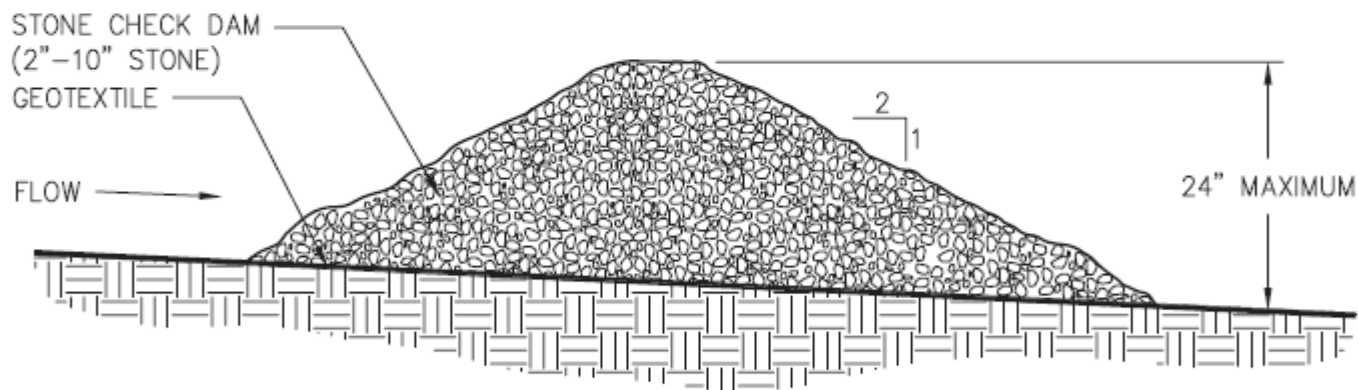
Cd-S

STONE CHECK DAM

CROSS SECTION



PROFILE VIEW

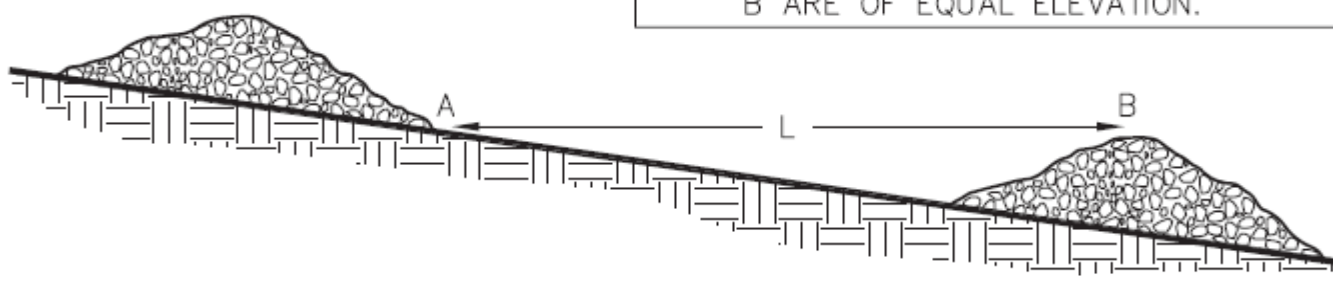


NOTES:

- CHECK DAMS ARE TO BE USED ONLY IN SMALL OPEN CHANNELS (THEY ARE NOT TO BE USED IN LIVE STREAMS).
- THE DRAINAGE AREA FOR STONE CHECK DAMS SHALL NOT EXCEED TWO ACRES.
- THE CENTER OF THE CHECK DAM MUST BE AT LEAST 9 INCHES LOWER THAN THE OUTER EDGES.
- THE DAM HEIGHT SHOULD BE A MAXIMUM OF 2 FEET FROM CENTER TO RIM EDGE.
- THE SIDE SLOPES OF THE CHECK DAM SHALL NOT EXCEED A 2:1 SLOPE.
- GEOTEXTILE SHALL BE USED TO PREVENT THE MITIGATION OF SUBGRADE SOIL PARTICLES INTO THE STONES (REFER TO AASHTO M288-96, SECTION 7.3, TABLE 3).

STONE CHECK DAM

SPACING BETWEEN CHECK DAMS

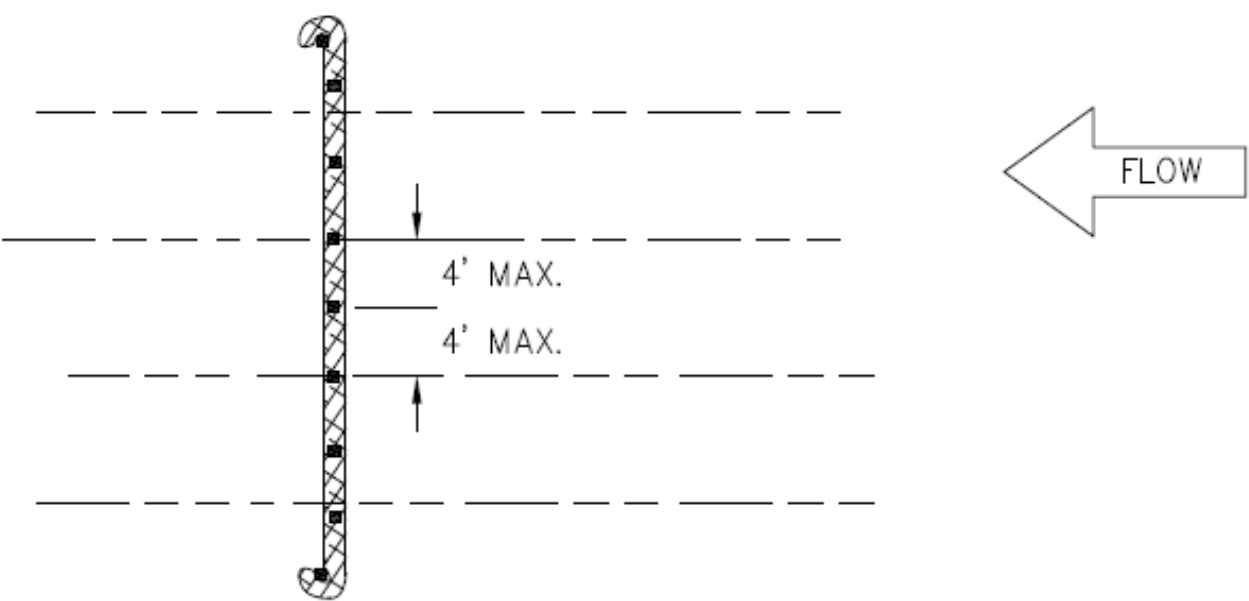


A = THE TOE OF THE UPSTREAM CHECK DAM.
B = TOP OF THE DOWNSTREAM CHECK DAM.
L = THE DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION.

COMPOST SOCKS FOR CHECK DAMS

Cd-Fs

TYPICAL PLAN



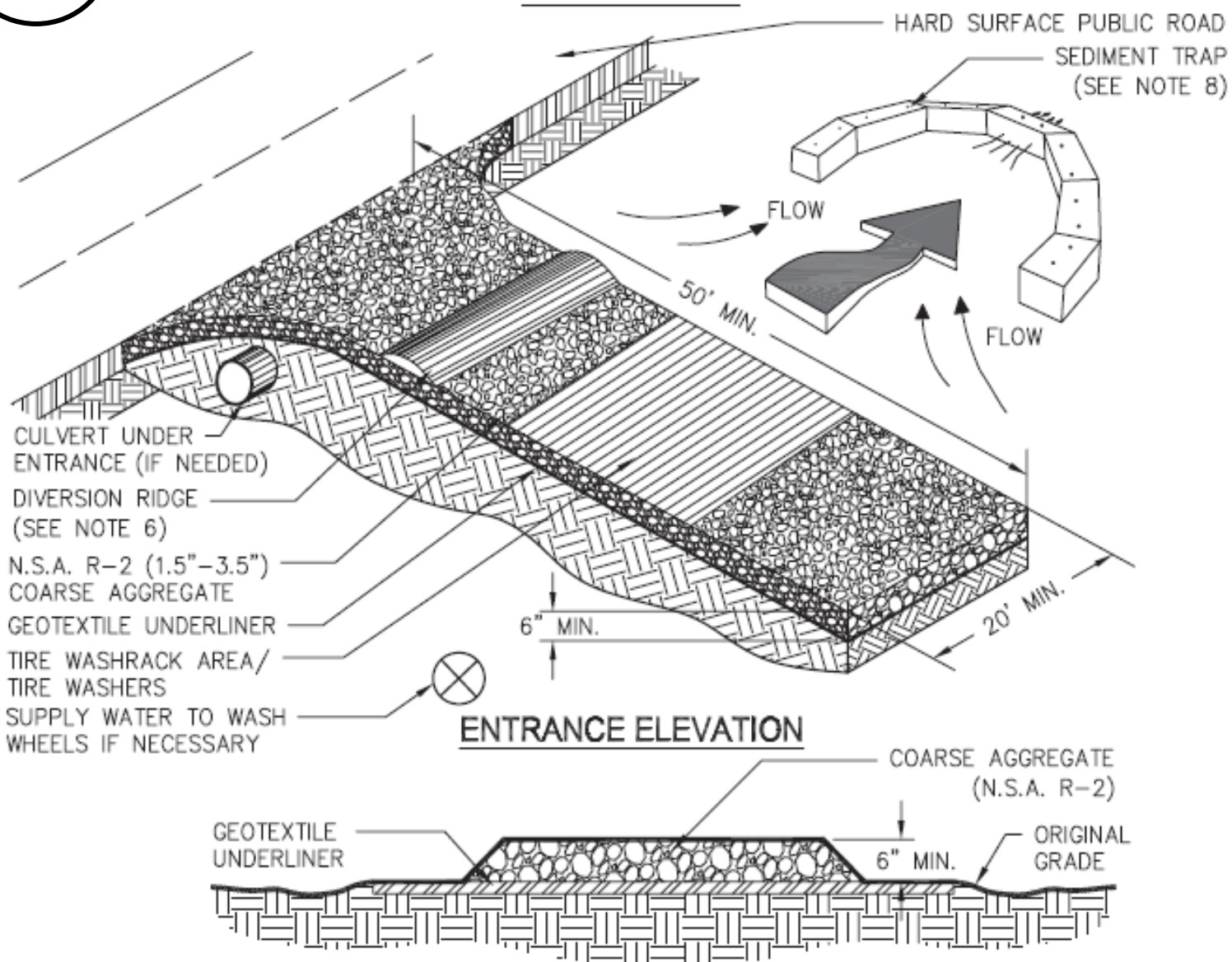
NOTES:

- ALL MATERIAL TO MEET SPECIFICATIONS.
- PLACE ONE STAKE AT THE CENTER OF THE DITCH/CHANNEL. ALSO PLACE STAKES AT THE BED/BANK JUNCTION AND AT END OF THE DEVICE NOT SPACED MORE THAN 4 FEET APART.
- SEDIMENT SHOULD BE REMOVED FROM BEHIND THE CHECK DAM ONCE THE ACCUMULATED HEIGHT HAS REACHED 1/2 THE HEIGHT OF THE CHECK DAM.
- CHECK DAMS CAN BE DIRECT SEEDDED AT THE TIME OF INSTALLATION.
- MINIMUM STAKING DEPTH FOR SAND, SILT, AND CLAY SHALL BE 18".

Co

CRUSHED STONE CONSTRUCTION EXIT

EXIT DIAGRAM



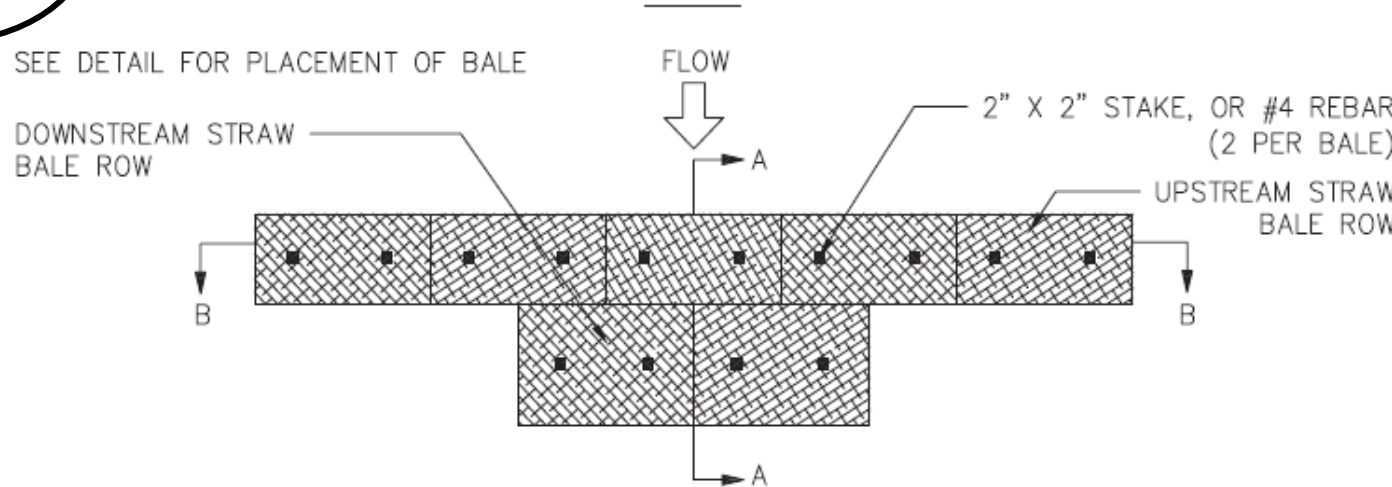
NOTES:

- AVOID LOCATING ON STEEP SLOPES OR AT CURVES ON PUBLIC ROADS.
- REMOVE ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FROM THE FOUNDATION AREA, GRADE, AND CROWN FOR POSITIVE DRAINAGE.
- AGGREGATE SIZE SHALL BE IN ACCORDANCE WITH NATIONAL STONE ASSOCIATION R-2 (1.5"-3.5" STONE).
- GRAVEL PAD SHALL HAVE A MINIMUM THICKNESS OF 6".
- PAD WIDTH SHALL BE EQUAL FULL WIDTH AT ALL POINTS OF VEHICULAR EGRESS, BUT NO LESS THAN 20'.
- A DIVERSION RIDGE SHOULD BE CONSTRUCTED WHEN GRADE TOWARD PAVED AREA IS GREATER THAN 2%.
- INSTALL PIPE UNDER THE ENTRANCE IF NEEDED TO MAINTAIN DRAINAGE DITCHES.
- WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN (DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE ENTRANCE TO A SEDIMENT CONTROL DEVICE).
- WASHRACKS AND/OR TIRE WASHERS MAY BE REQUIRED DEPENDING ON SCALE AND CIRCUMSTANCE. IF NECESSARY, WASHRACK DESIGN MAY CONSIST OF ANY MATERIAL SUITABLE FOR TRUCK TRAFFIC THAT REMOVE MUD AND DIRT.
- MAINTAIN AREA IN A WAY THAT PREVENTS TRACKING AND/OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

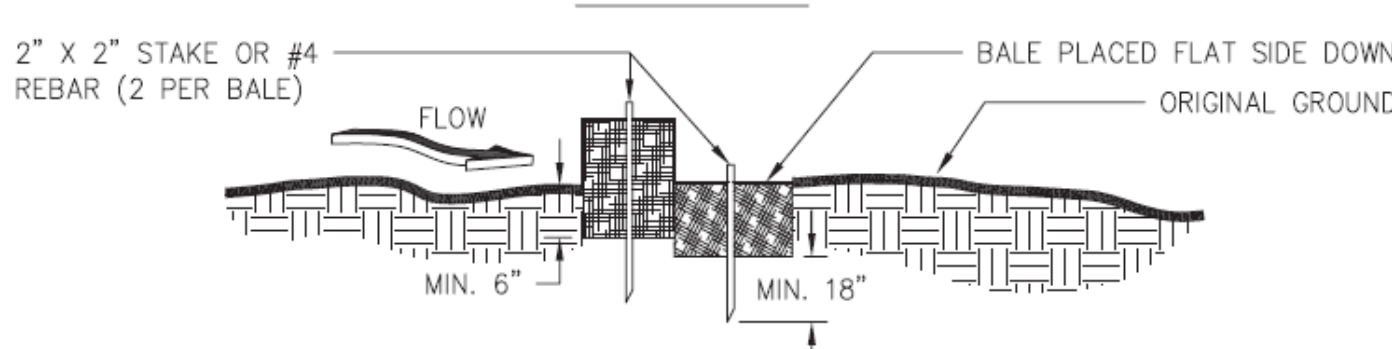
Cd-Hb

TYPICAL STRAW BALE CHECK DAM

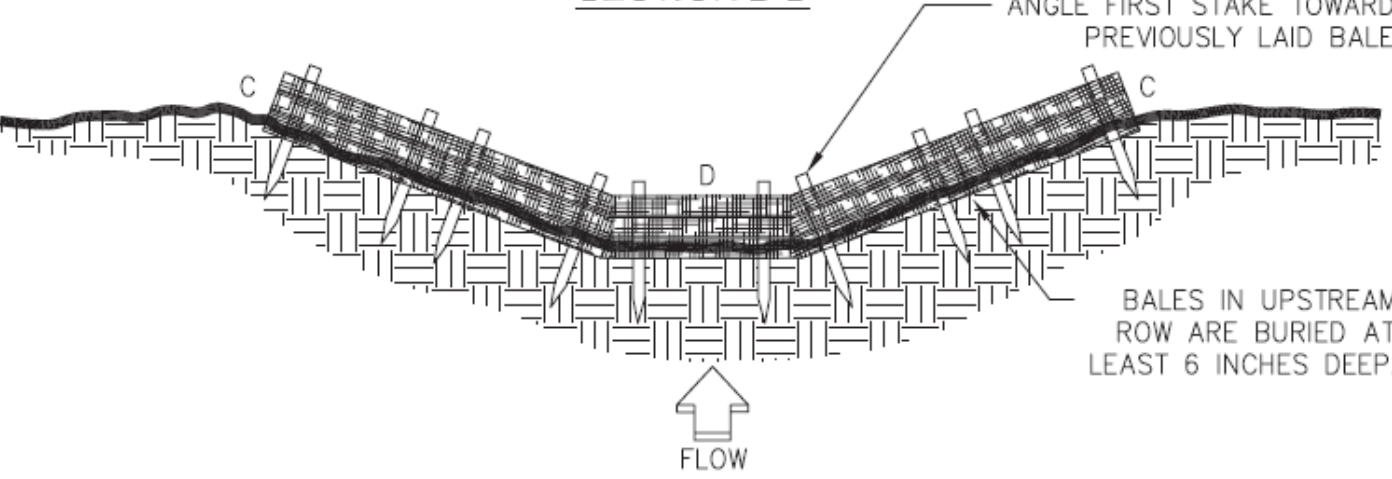
PLAN



SECTION A-A



SECTION B-B



NOTES:

- BALES SHOULD BE BOUND WITH WIRE OR NYLON STRING AND SHOULD BE PLACED IN ROWS WITH BALE ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
- REMOVE #4 REBAR AFTER STRAW BALES ARE NO LONGER IN PLACE.
- POINT C OF SECTION B-B SHOULD ALWAYS BE HIGHER THAN POINT D.
- STRAW-BALE CHECK DAMS SHALL NOT BE USED WHERE THE DRAINAGE AREA EXCEEDS ONE ACRE.

Restoration Activities:

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
VG	VALLEY GRADING			Areas historically manipulated by agricultural practices will be re-graded to re-establish natural valley contours.
DP	DITCH PLUG			Ditch plugs will be installed to prevent flow through historically excavated ditches to restore the natural hydrology of the wetlands.

THIS SHEET TO BE USED FOR EROSION
CONTROL MEASURES ONLY



BMP DRAWINGS

Upper Coosa Mitigation Bank
Wetland Restoration

Whitfield County, Georgia

REVISIONS:



CPESC No. 6260

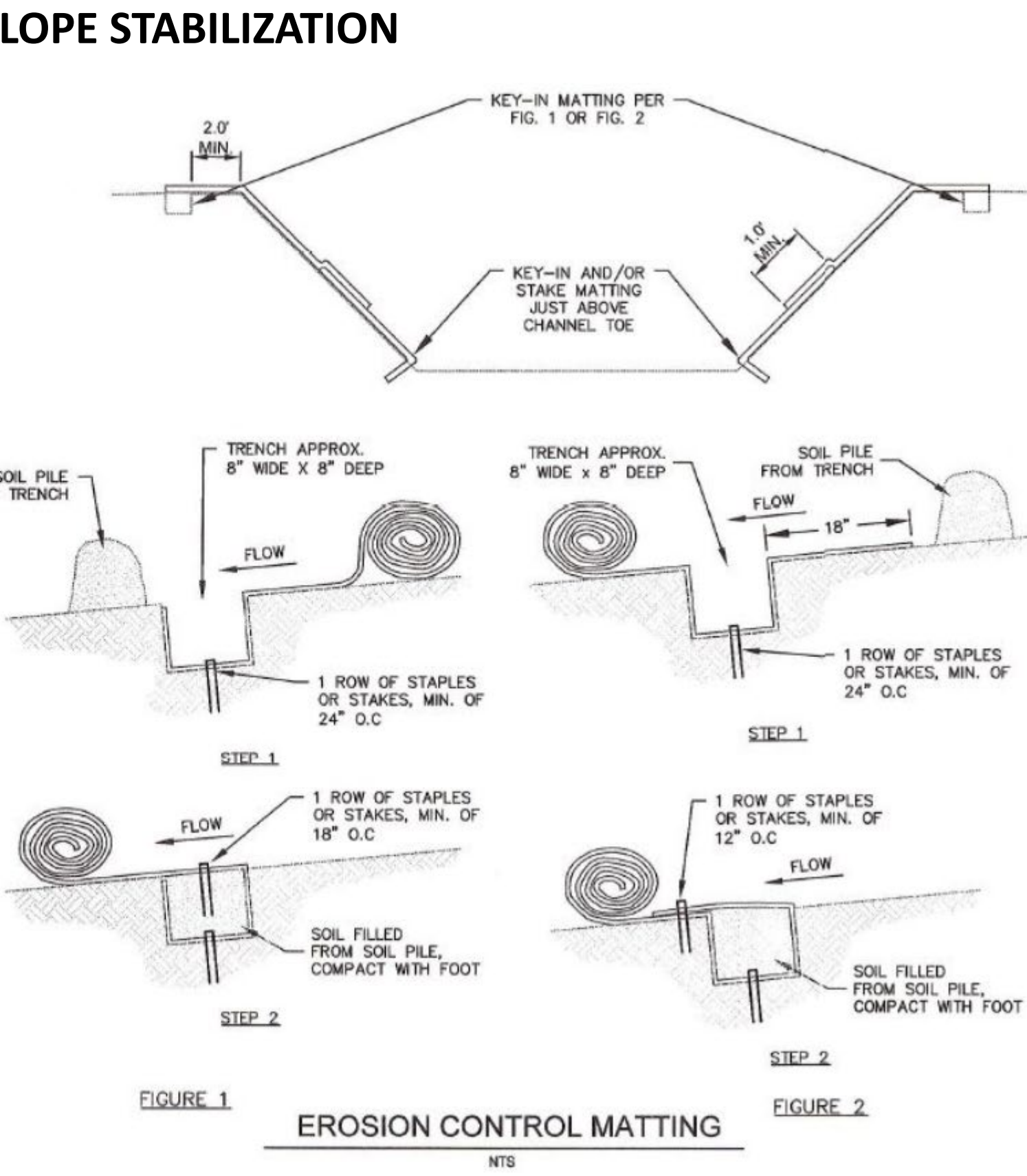
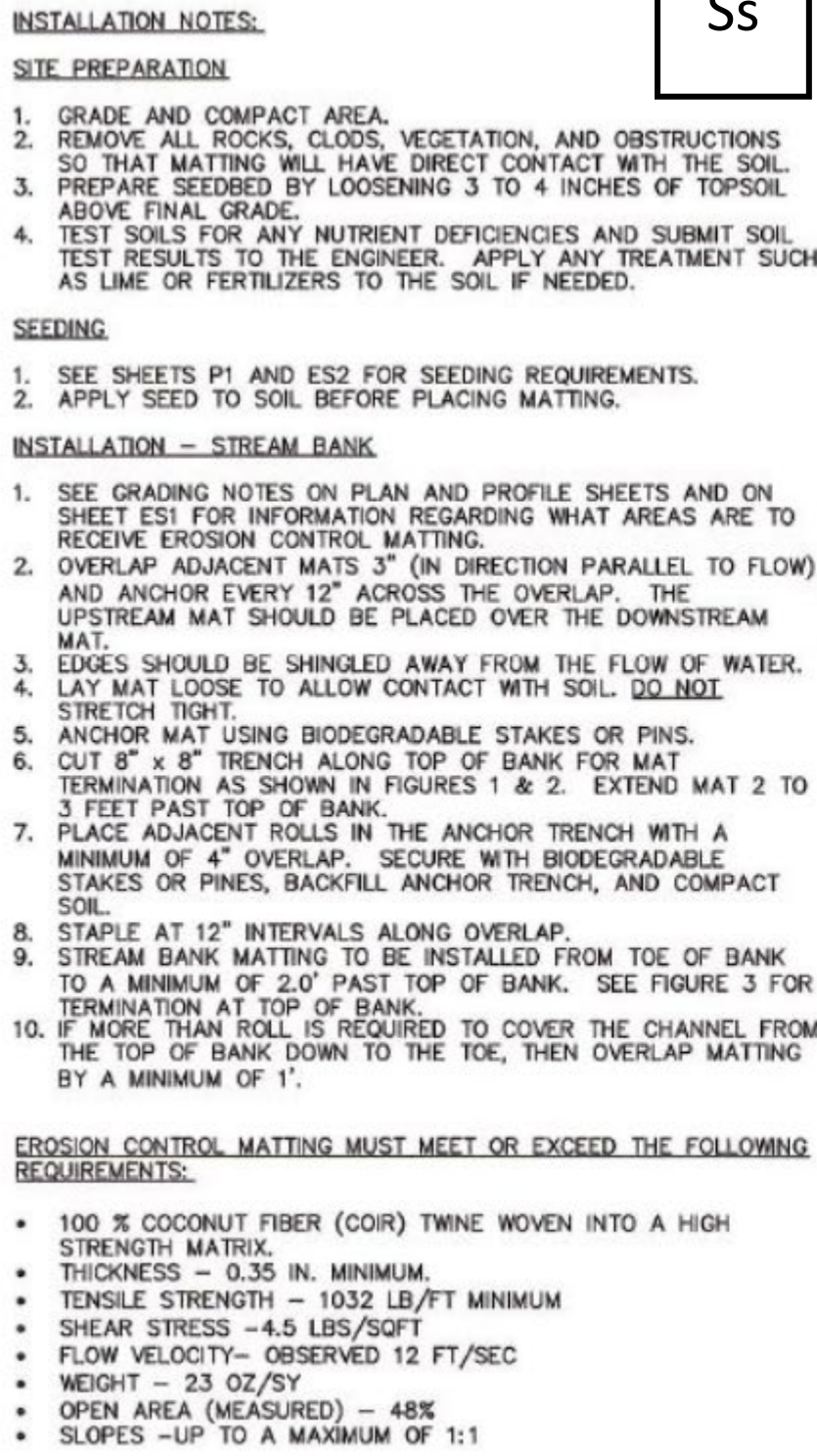
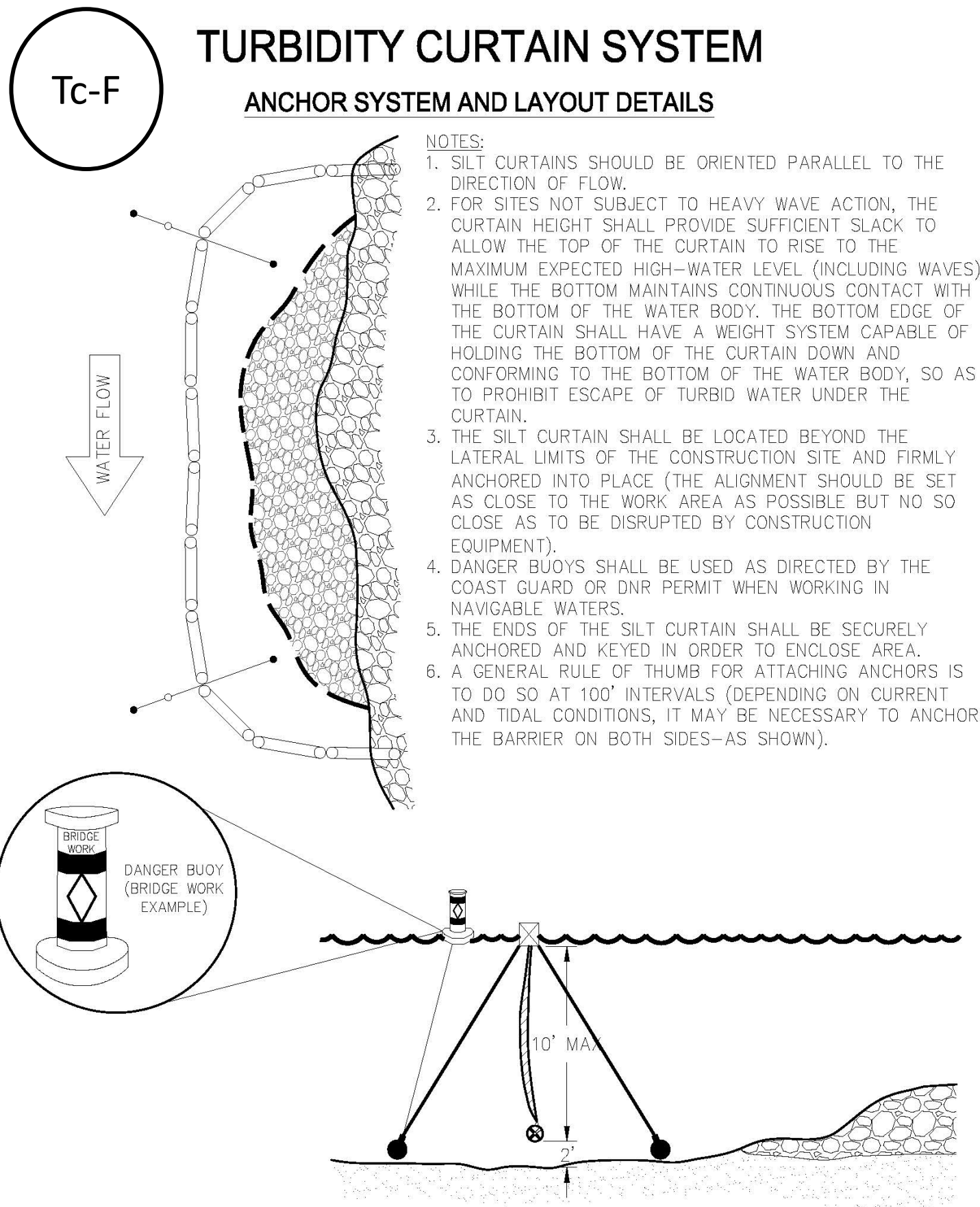
GSWCC No. 12924

EXPIRES: 07/08/2024

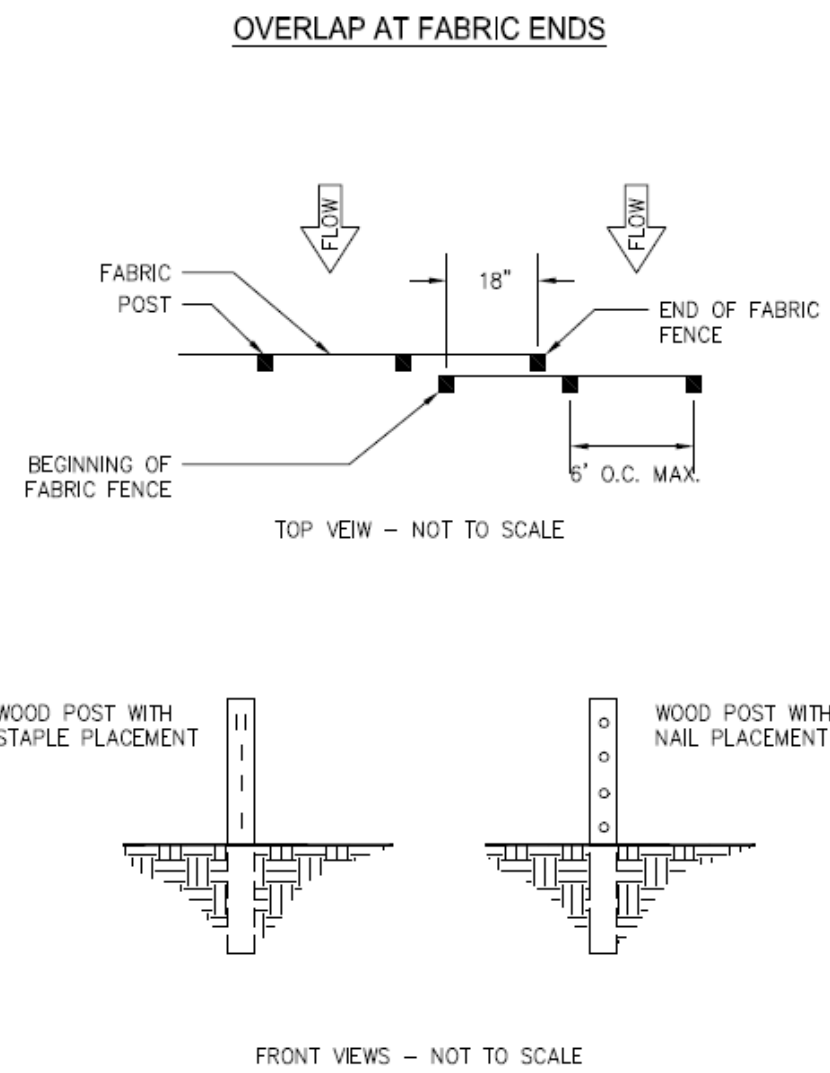
DATE: 08/05/2022

SHEET #

21



FASTENERS FOR SILT FENCES



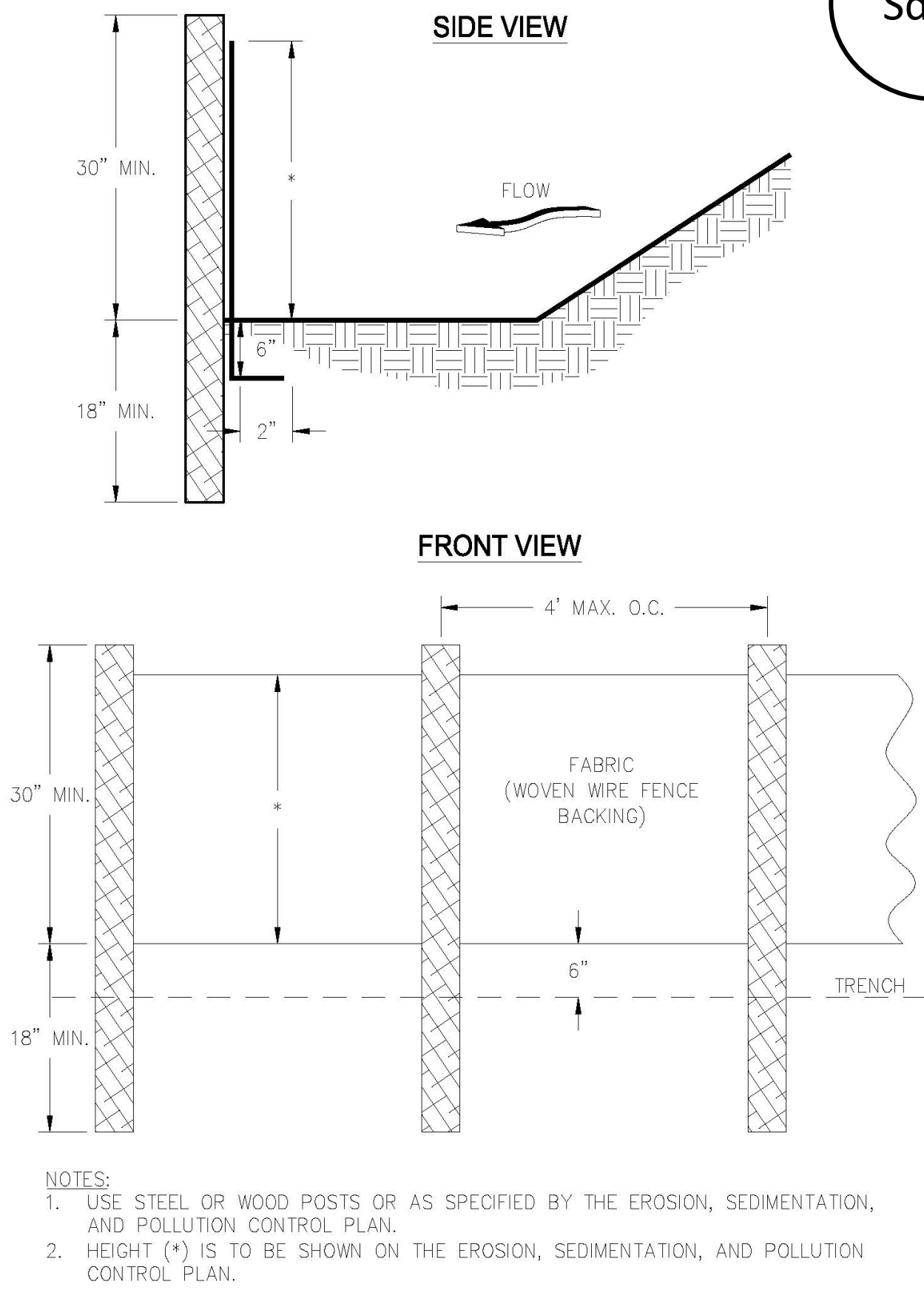
NOTES:

1. THE FABRIC AND WIRE SHOULD BE SECURELY FASTENED TO POSTS AND FABRIC ENDS MUST BE OVERLAPPED A MINIMUM OF 18" OR WRAPPED TOGETHER AROUND A POST TO PROVIDE A CONTINUOUS FABRIC BARRIER AROUND THE INLET.



Know what's below.
Call before you dig.

SILT FENCE - TYPE SENSITIVE

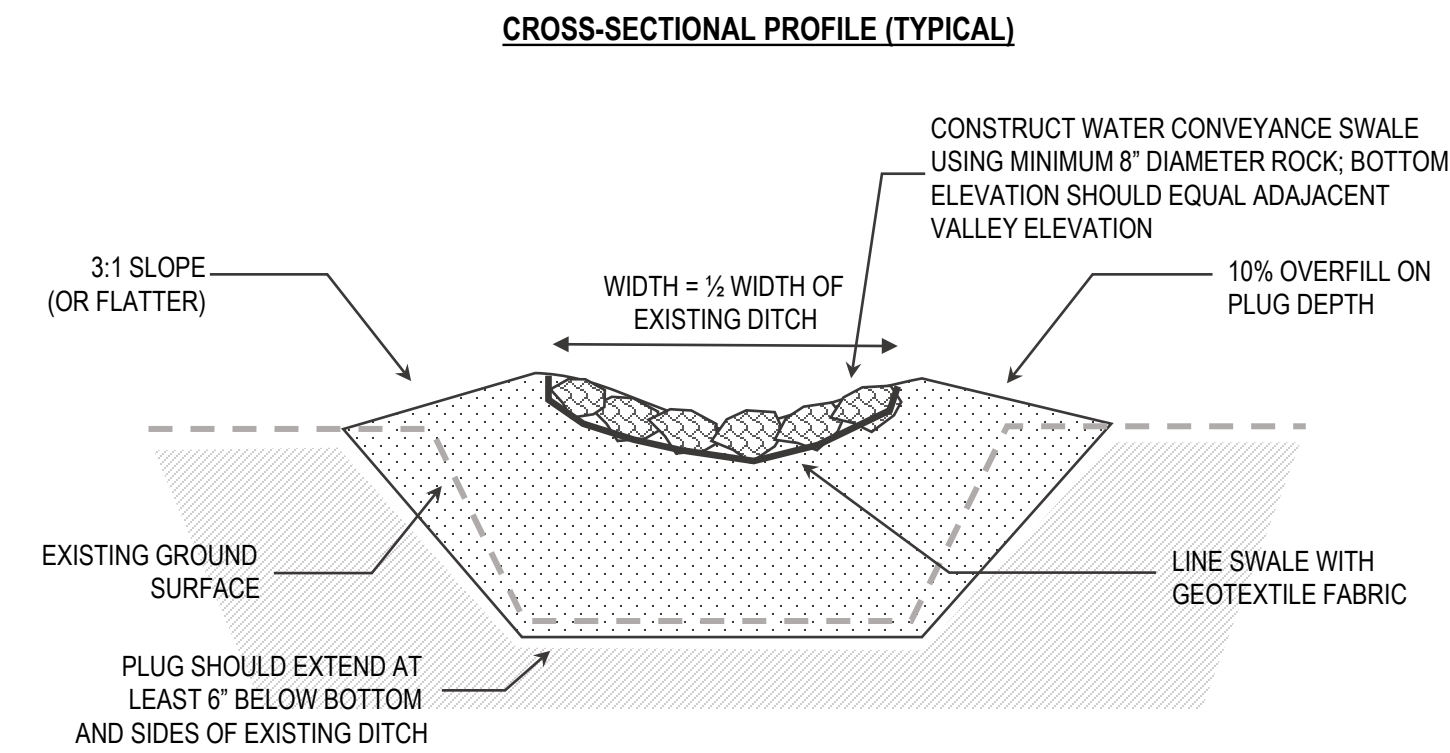


Sd1-S

DITCH PLUG

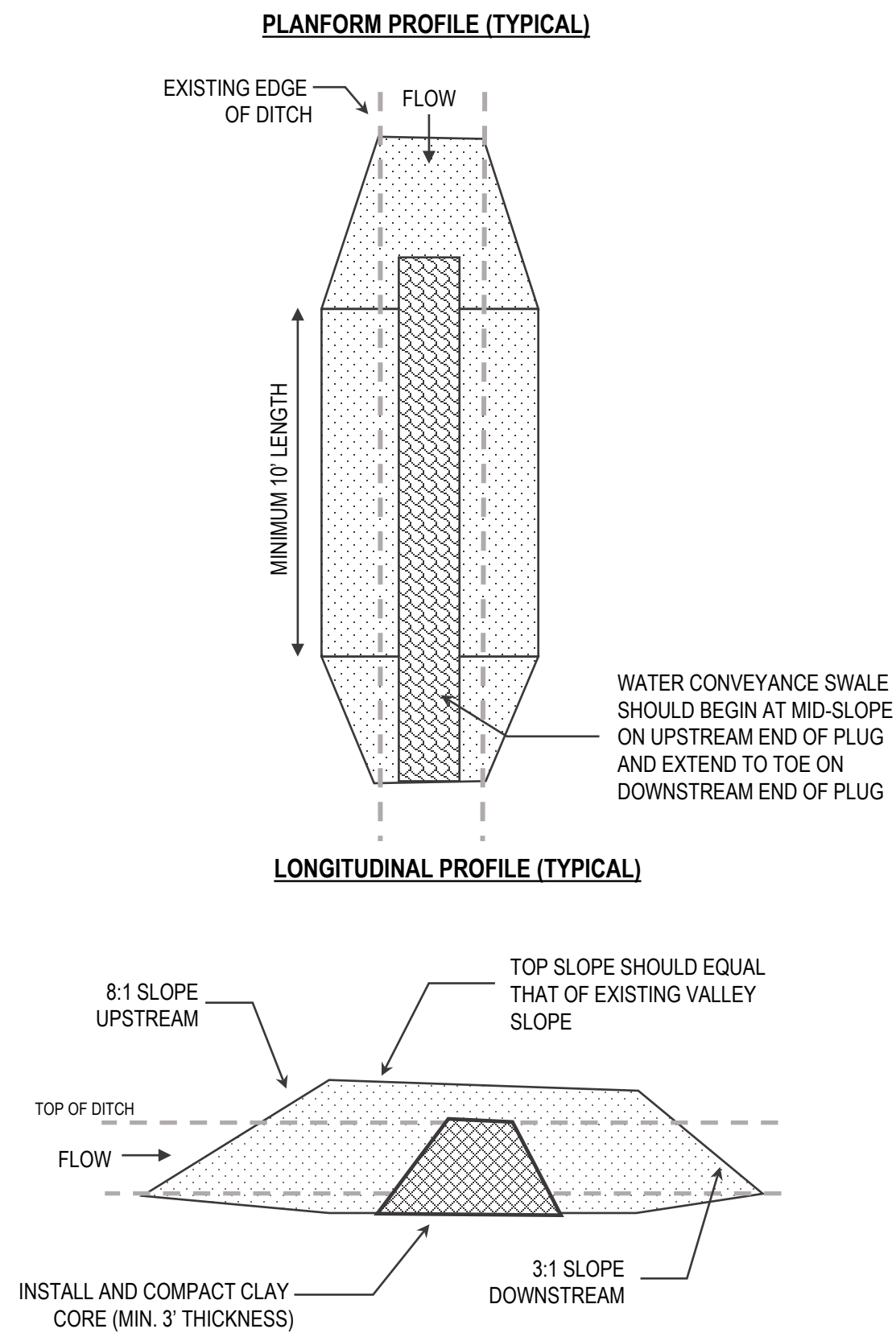
CONSTRUCTION DETAILS ONLY

NOT INTENDED FOR EROSION OR SEDIMENT CONTROL



NOTES

1. WOODY DEBRIS MAY BE USED WITHIN THE PLUG, BUT OUTSIDE OF THE CORE, TO AID IN LONG-TERM STABILITY.



BMP DRAWINGS

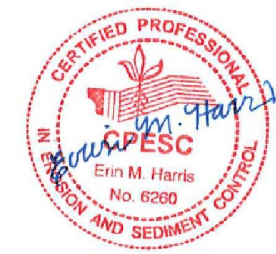
Upper Coosa Mitigation Bank

Wetland Restoration

Whitfield County, Georgia

REVISIONS:

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CPESC NO. 6260

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EXPIRES: 07/08/2024

DATE: 08/05/2022

SHEET #

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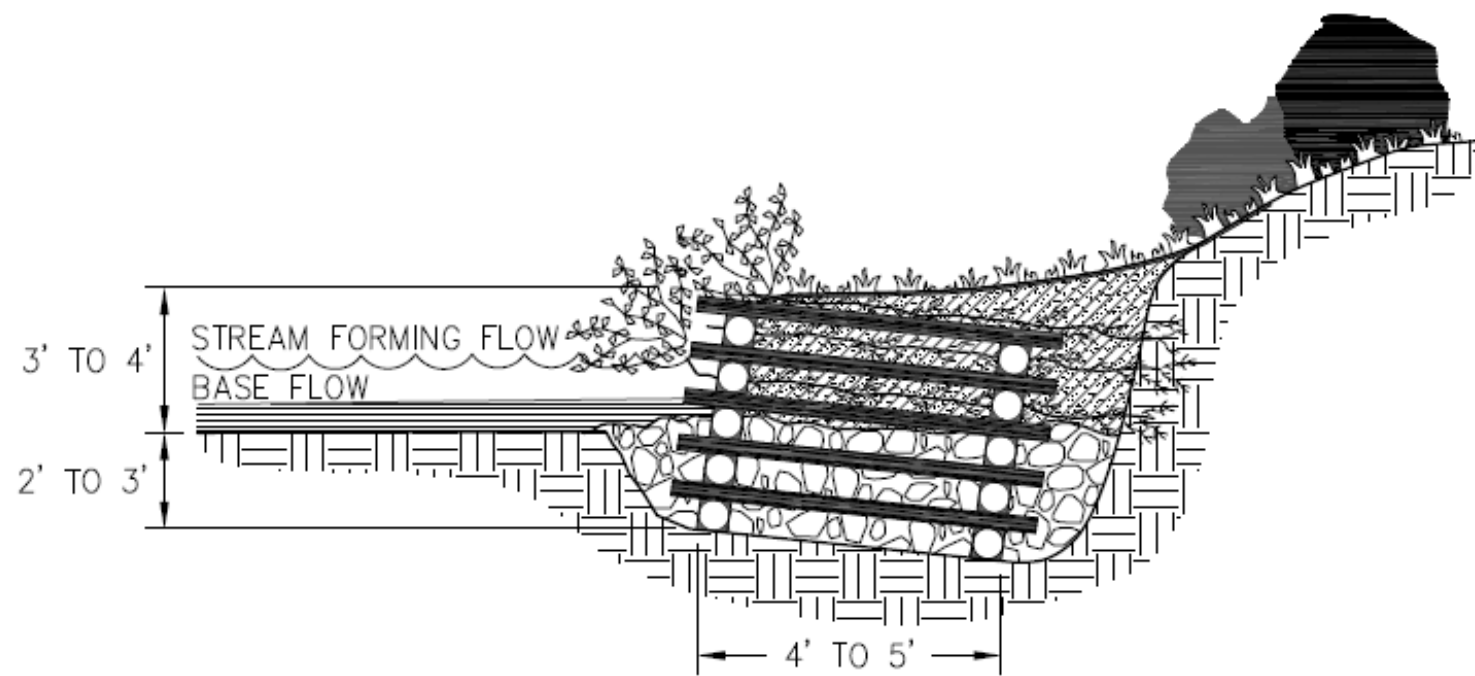
NUTTER+ASSOCIATES

ENVIRONMENTAL CONSULTANTS

360 Hawthorne Lane
Athens, GA 30606

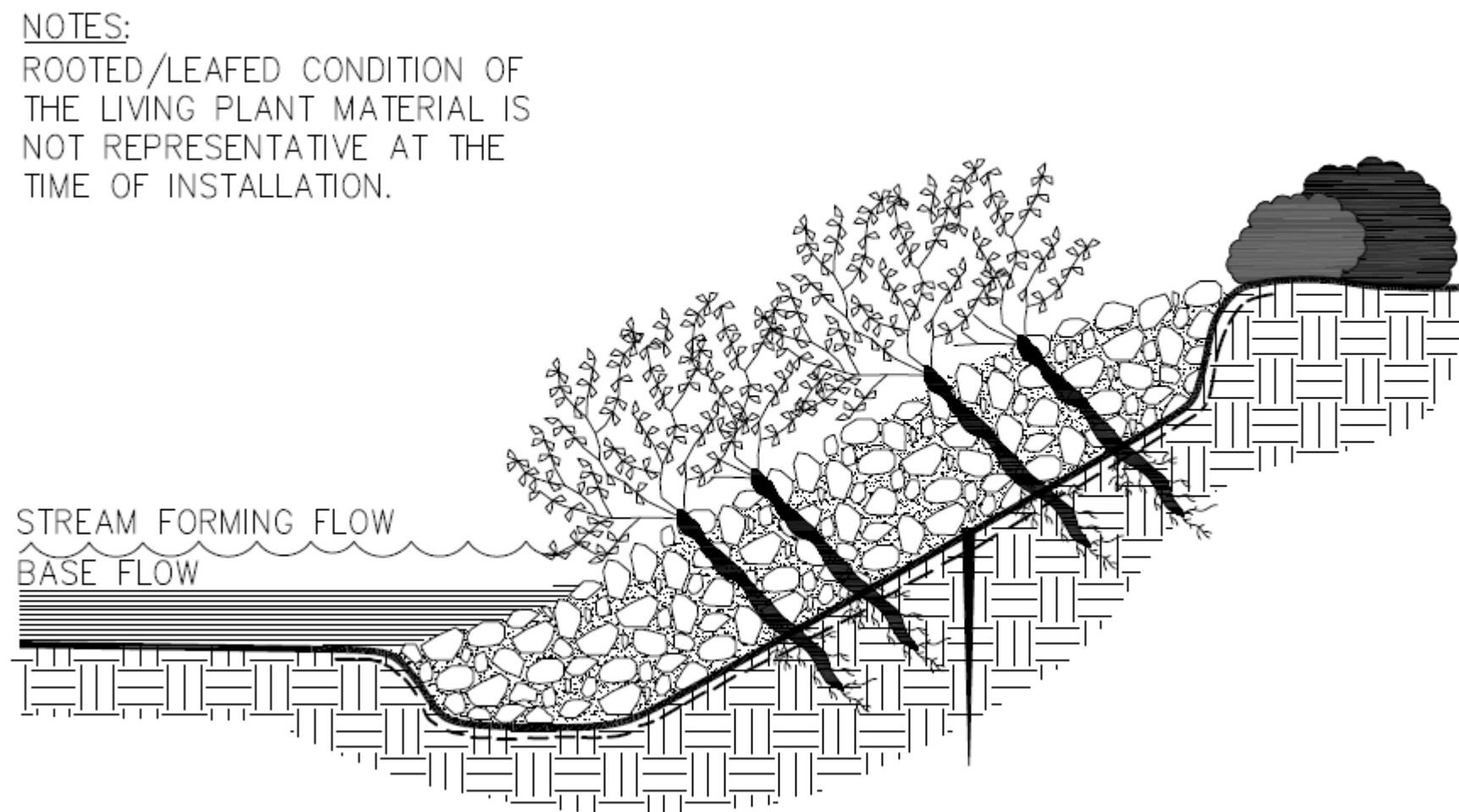
Phone: (706) 354-7925
Fax: (706) 354-7928

LIVE CRIBWALL CROSS-SECTION



- NOTES:
1. ROOTED/LEAFED CONDITION OF THE LIVING PLANT MATERIAL IS NOT REPRESENTATIVE OF THE TIME OF INSTALLATION.
 2. EACH COURSE SHALL BE SECURED TO THE PRECEDING COURSE WITH SPIKES OR REBARS (SIZE VARIES ACCORDING TO PROJECT).
 3. BACKFILL IN AND AROUND TIMBER CRIB WITH RIPRAP FROM BOTTOM OF EXCAVATION TO THE LOWER GROUND LEVEL (OR WHEN IN STREAM CHANNEL UP TO BASEFLOW).
 4. EACH TRANSVERSE LOG COURSE CONTAINS LIVE CUTTINGS FOLLOWED BY A LAYER OF TAMPED BACKFILL.
 5. EACH FACE LOG COURSE (FRONT AND REAR), AND THE AREA BEHIND THE STRUCTURE SHALL BE BACKFILLED AND HAND TAMPED.

JOINT PLANTING CROSS SECTION

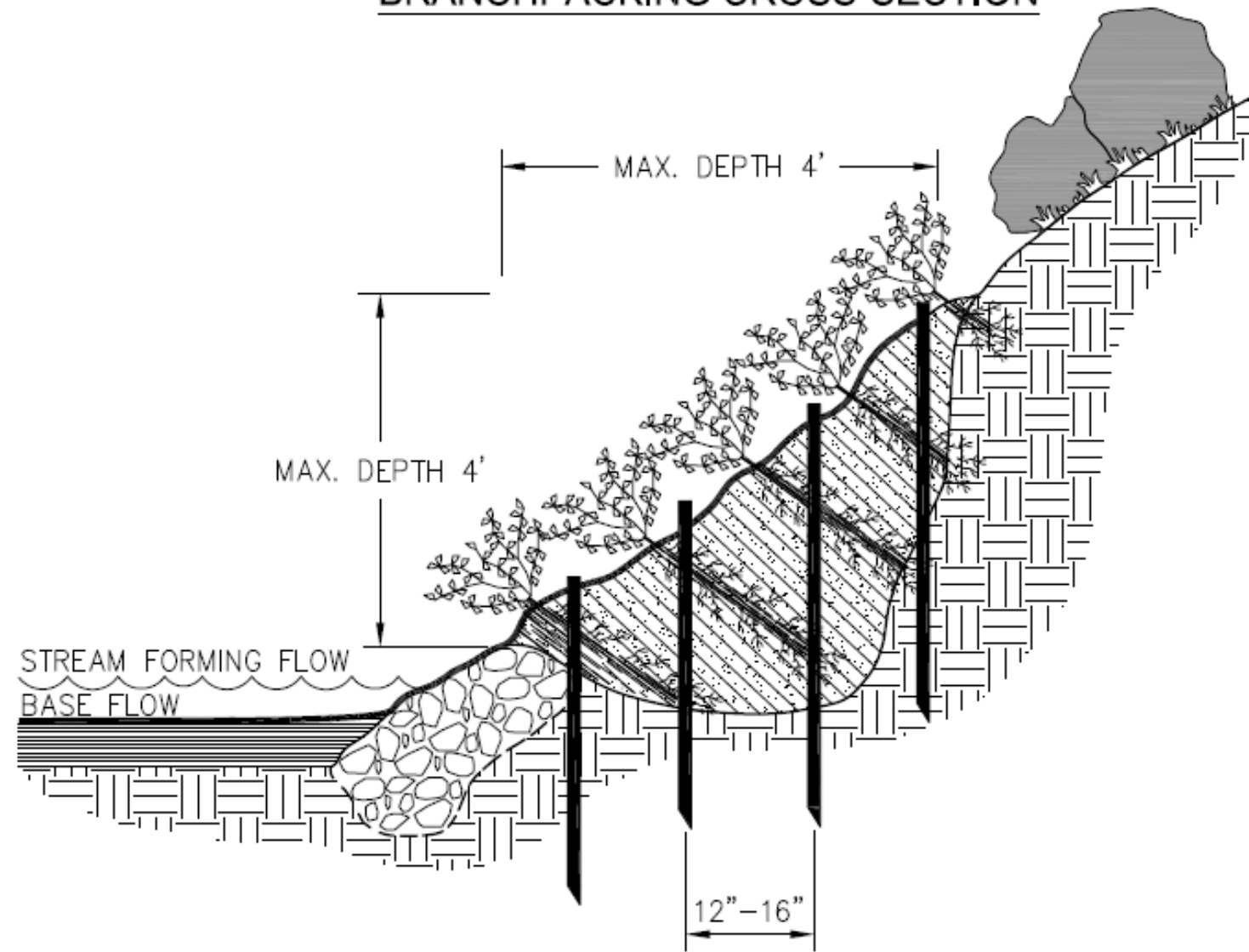


- NOTES:
- ROOTED/LEAFED CONDITION OF THE LIVING PLANT MATERIAL IS NOT REPRESENTATIVE AT THE TIME OF INSTALLATION.

STREAMBANK STABILIZATION

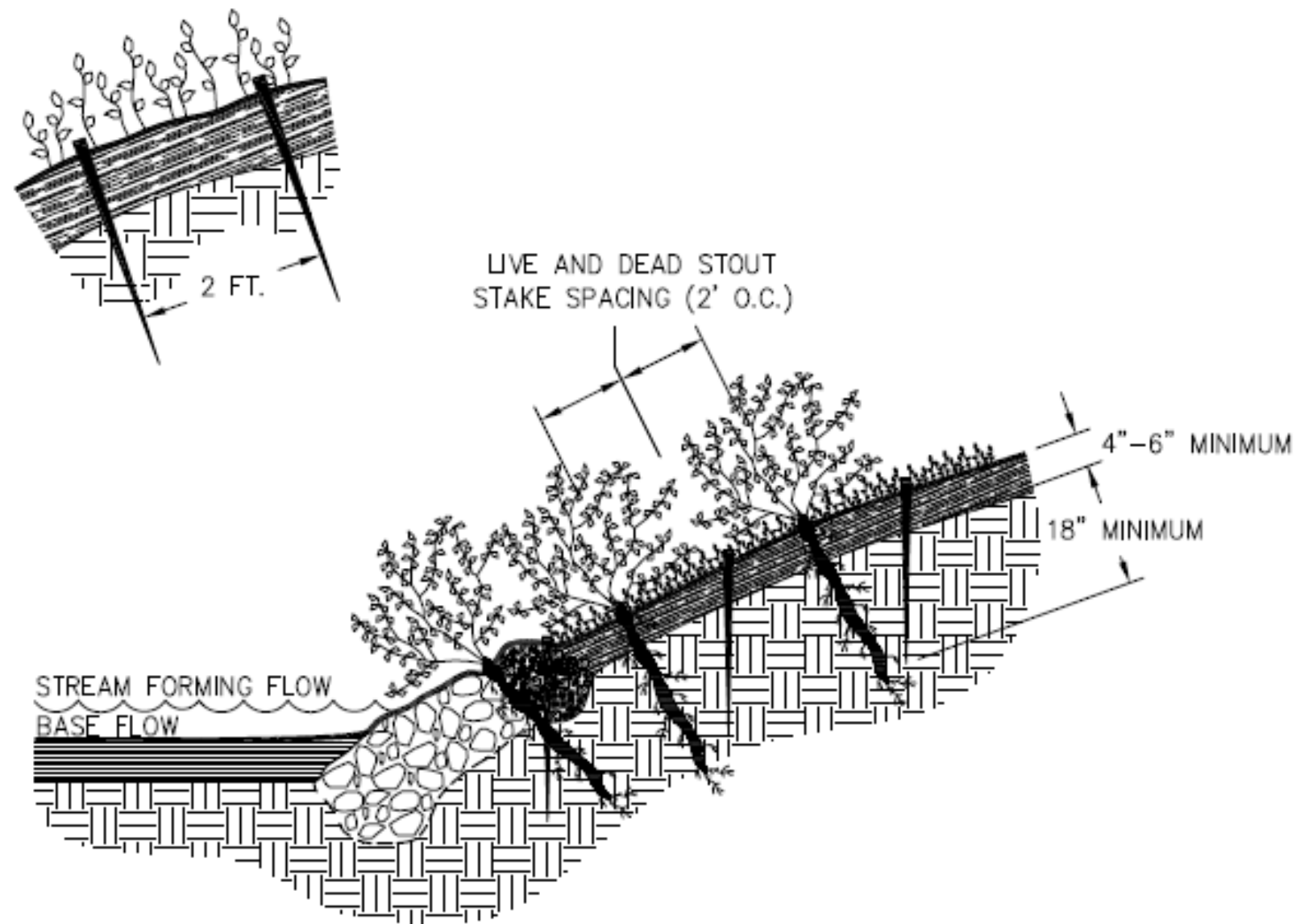
Sb

BRANCHPACKING CROSS-SECTION



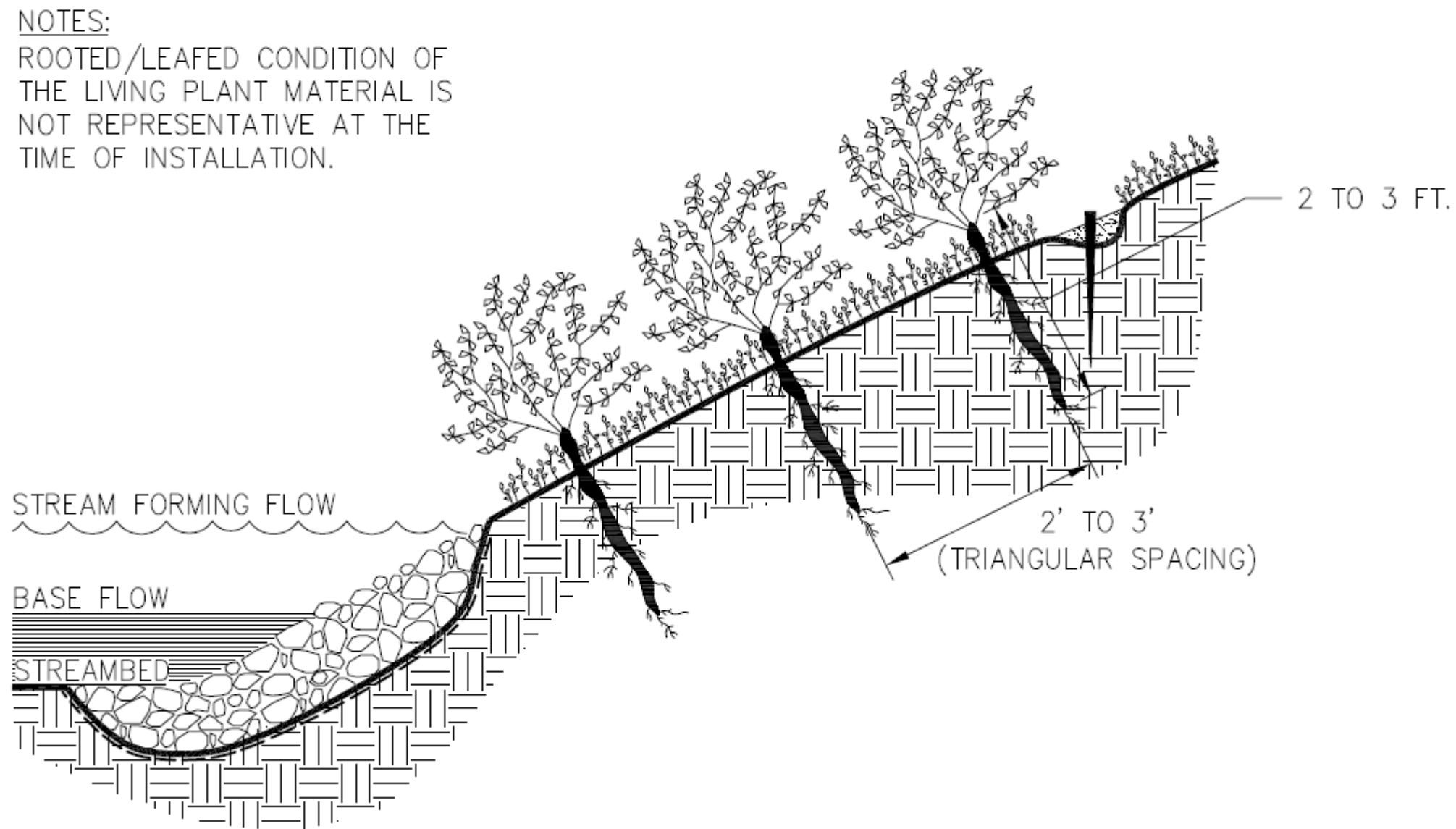
- NOTES:
1. ROOT/LEAFED CONDITION OF THE LIVING PLANT MATERIAL IS NOT REPRESENTATIVE OF THE TIME OF INSTALLATION.
 2. STARTING AT THE LOWEST POINT, DRIVE THE WOODEN POSTS VERTICALLY 3' TO 4' INTO THE GROUND AND SET THEM 12"-16" APART.
 3. A LAYER OF LIVING BRANCHES (4"-6" THICK) IS PLACED IN THE BOTTOM OF THE HOLE, BETWEEN THE VERTICAL POSTS. THEY SHALL BE PLACED IN A CRISSCROSS CONFIGURATION.
 4. THE FINAL INSTALLATION SHALL MATCH THE EXISTING SLOPE. BRANCHES SHOULD PROTRUDE ONLY SLIGHTLY FROM THE FILLED FACE.
 5. EACH LAYER OF BRANCHES SHALL BE FOLLOWED BY A 12" LAYER OF SOIL HAND TAMPED TO ENSURE CONTACT WITH THE BRANCH CUTTINGS.
 6. THE SOIL SHALL BE MOIST OR MOISTENED TO ENSURE THAT LIVE BRANCHES DO NOT DRY OUT.
 7. WHERE SPECIFIED, LIVE STAKES SHALL BE USED IN PLACE OF POSTS.

BRUSHMATTRESS CROSS-SECTION



- NOTES:
1. ROOTED/LEAFED CONDITION OF THE LIVING PLANT MATERIAL IS NOT REPRESENTATIVE AT THE TIME OF INSTALLATION.
 2. LAYERS SHALL BE COMPRISED OF LIVE QUICK-ROOTING SPECIES. SEE CONTRACT DOCUMENTS.
 3. FILL MATTRESS WITH SOIL AND EVENLY DISTRIBUTE TO APPROXIMATELY 4" MIN. IN DEPTH AND HAND TAMP.
 4. PLACE STAKES EVENLY OVER THE GRADED FACE USING 2' SQUARE SPACING. IF LIVE STAKES ARE SPECIFIED, ALTERNATE EVERY OTHER ONE WITH A DEAD STOUT STAKE.
 5. STRETCH 16 GAUGE GALVANIZED WIRE DIAGONALLY FROM ONE STAKE TO ANOTHER BY TIGHTLY WRAPPING WIRE AROUND STAKES, NO CLOSER THAN 6" FROM THE TOP OF STAKE. WIRE SHALL NOT BE ATTACHED TO LIVE STAKES. POUND STAKES TO COMPRESS MATTRESS.
 6. LIVE FASCINES AND LIVE STAKES ARE INSTALLED WHEN AND WHERE DIRECTED ON THE PLAN SHEET.

LIVE STAKING CROSS-SECTION

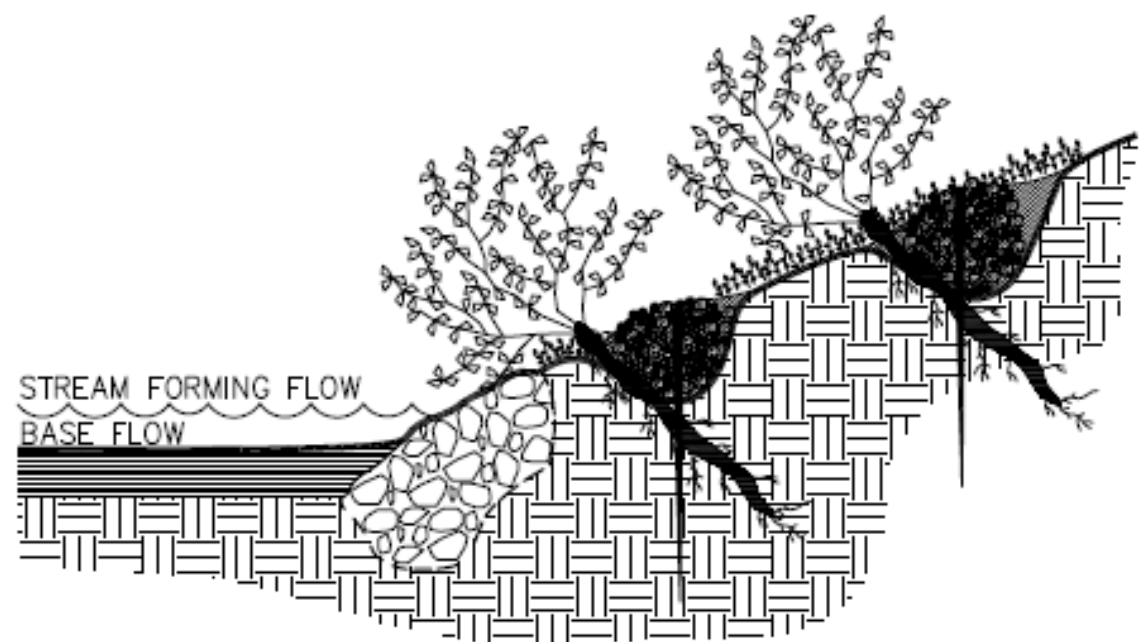


- NOTES:
- ROOTED/LEAFED CONDITION OF THE LIVING PLANT MATERIAL IS NOT REPRESENTATIVE AT THE TIME OF INSTALLATION.

FASCINE BUNDLE DETAIL



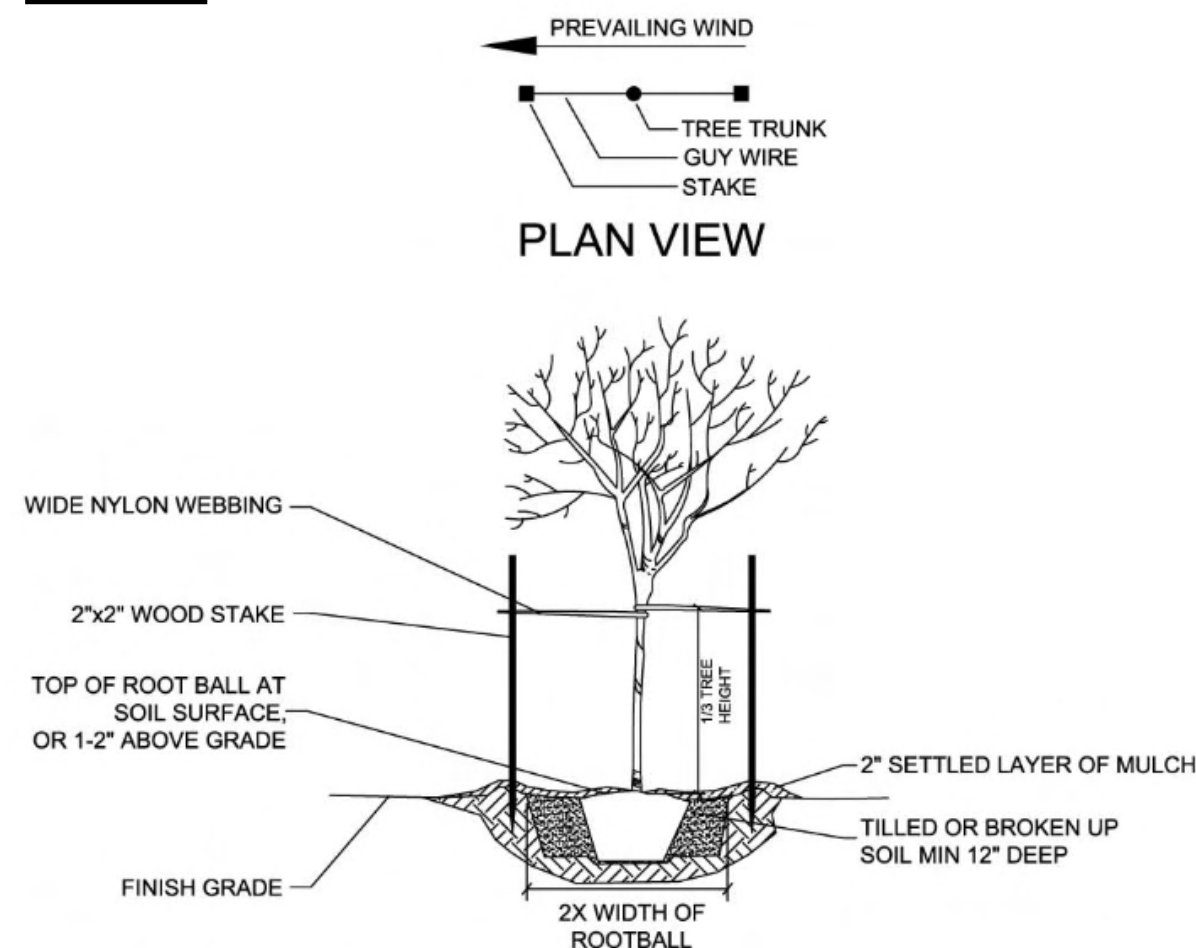
LIVE FASCINE CROSS-SECTION DETAIL



- NOTES:
1. ROOTED/LEAFED CONDITION OF THE LIVING PLANT MATERIAL IS NOT REPRESENTATIVE OF THE TIME OF INSTALLATION.
 2. LIVE FASCINES SHALL BE PREPARED FROM FRESHLY CUT DORMANT PLANTS AND INSTALLED WITHIN 8 HOURS OF THE TIME THE MATERIAL IS HARVESTED, UNLESS PROPERLY STORED.
 3. LIVE FASCINE SHALL BE OBTAINED FROM SOURCES APPROVED BY ENGINEER.
 4. LIVE FASCINES SHALL BE 4"-8" IN DIAMETER WITH MINIMUM 8' LENGTH.
 5. BEGINNING AT THE BASE OF THE SLOPE, A TRENCH SHALL BE DUG LARGE ENOUGH TO CONTAIN THE LIVE FASCINES. THE LIVE FASCINES SHALL BE PLACED IN THE TRENCH. WHERE ENDS MEET IN THE TRENCH, THE FASCINES SHALL OVERLAP BY 18".
 6. THE TRENCH SHALL BE BACKFILLED WITH MOIST SOIL AND HAND TAMPED. THE TOP OF THE FASCINE SHALL BE SLIGHTLY EXPOSED WHEN THE INSTALLATION IS COMPLETE AS SHOWN ON CROSS SECTION.
 7. SEED OR OTHER EROSION CONTROL MATERIAL SHALL BE USED BETWEEN THE FASCINE ROWS, AS SPECIFIED IN THE CONTRACT DOCUMENTS.
 8. LIVE FASCINE TRENCHES SHALL BE FROM 3' TO 8' APART, ACCORDING TO SLOPE AND/OR CONTRACT DOCUMENTS.

Ds3

FINAL STABILIZATION CONTAINERIZED PLANTING

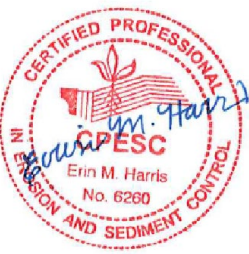


THIS SHEET TO BE USED FOR EROSION
CONTROL MEASURES ONLY

BMP DRAWINGS

Upper Coosa Mitigation Bank
Wetland Restoration
Whitfield County, Georgia

REVISIONS:



CPESC NO. 6260

GSWCC NO. 12924

EXPIRES: 07/08/2024

DATE: 08/05/2022

SHEET #

23

WHITEFIELD COUNTY SOIL EROSION AND SEDIMENTATION CONTROL REQUIREMENTS

MINIMUM REQUIREMENTS FOR EROSION, SEDIMENTATION AND POLLUTION CONTROL USING BEST MANAGEMENT PRACTICES

- (1) STRIPPING OF VEGETATION, REGRADING AND OTHER DEVELOPMENT ACTIVITIES SHALL BE CONDUCTED IN A MANNER SO AS TO MINIMIZE EROSION;
- (2) CUT-FILL OPERATIONS MUST BE KEPT TO A MINIMUM;
- (3) DEVELOPMENT PLANS MUST CONFORM TO TOPOGRAPHY AND SOIL TYPE SO AS TO CREATE THE LOWEST PRACTICABLE EROSION POTENTIAL;
- (4) WHENEVER FEASIBLE, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED AND SUPPLEMENTED;
- (5) THE DISTURBED AREA AND THE DURATION OF EXPOSURE TO EROSION ELEMENTS SHALL BE KEPT TO A PRACTICABLE MINIMUM;
- (6) DISTURBED SOIL SHALL BE STABILIZED AS QUICKLY AS PRACTICABLE;
- (7) TEMPORARY VEGETATION OR MULCHING SHALL BE EMPLOYED TO PROTECT EXPOSED CRITICAL AREAS DURING DEVELOPMENT;
- (8) PERMANENT VEGETATION AND STRUCTURAL EROSION CONTROL PRACTICES SHALL BE INSTALLED AS SOON AS PRACTICABLE;
- (9) TO THE EXTENT NECESSARY, SEDIMENT IN RUN-OFF WATER MUST BE TRAPPED BY THE USE OF DEBRIS BASINS, SEDIMENT BASINS, SILT TRAPS, OR SIMILAR MEASURES UNTIL THE DISTURBED AREA IS STABILIZED. AS USED IN THIS PARAGRAPH, A DISTURBED AREA IS STABILIZED WHEN IT IS BROUGHT TO A CONDITION OF CONTINUOUS COMPLIANCE WITH THE REQUIREMENTS OF O.C.G.A. § 12-7-1, ET SEQ.;
- (10) ADEQUATE PROVISIONS MUST BE PROVIDED TO MINIMIZE DAMAGE FROM SURFACE WATER TO THE CUT FACE OF EXCAVATIONS OR THE SLOPING OF FILLS;
- (11) CUTS AND FILLS MAY NOT ENDANGER ADJOINING PROPERTY;
- (12) FILLS MAY NOT ENCROACH UPON NATURAL WATERCOURSES OR CONSTRUCTED CHANNELS IN A MANNER SO AS TO ADVERSELY AFFECT OTHER PROPERTY OWNERS;
- (13) GRADING EQUIPMENT MUST CROSS FLOWING STREAMS BY MEANS OF BRIDGES OR CULVERTS EXCEPT WHEN SUCH METHODS ARE NOT FEASIBLE, PROVIDED, IN ANY CASE, THAT SUCH CROSSINGS ARE KEPT TO A MINIMUM;
- (14) LAND-DISTURBING ACTIVITY PLANS FOR EROSION, SEDIMENTATION AND POLLUTION CONTROL SHALL INCLUDE PROVISIONS FOR TREATMENT OR CONTROL OF ANY SOURCE OF SEDIMENTS AND ADEQUATE SEDIMENTATION CONTROL FACILITIES TO RETAIN SEDIMENTS ON-SITE OR PRECLUDE SEDIMENTATION OF ADJACENT WATERS BEYOND THE LEVELS SPECIFIED IN SUBSECTION (B)(2) OF THIS SECTION;
- (15) EXCEPT AS PROVIDED IN PARAGRAPH (16) AND (17) OF THIS SUBSECTION, THERE IS ESTABLISHED A 25-FOOT BUFFER ALONG THE BANKS OF ALL STATE WATERS, AS MEASURED HORIZONTALLY FROM THE POINT WHERE VEGETATION HAS BEEN WRESTED BY NORMAL STREAM FLOW OR WAVE ACTION, EXCEPT WHERE THE DIRECTOR DETERMINES TO ALLOW A VARIANCE THAT IS AT LEAST AS PROTECTIVE OF NATURAL RESOURCES AND THE ENVIRONMENT, WHERE OTHERWISE ALLOWED BY THE DIRECTOR PURSUANT TO O.C.G.A. § 12-2-8, WHERE A DRAINAGE STRUCTURE OR A ROADWAY DRAINAGE STRUCTURE MUST BE CONSTRUCTED, PROVIDED THAT ADEQUATE EROSION CONTROL MEASURES ARE INCORPORATED IN THE PROJECT PLANS AND SPECIFICATIONS, AND ARE IMPLEMENTED; OR WHERE BULKHEADS AND SEA WALLS ARE INSTALLED TO PREVENT SHORELINE EROSION ON LAKE OCONEE AND LAKE SINCLAIR; OR ALONG ANY EPHEMERAL STREAM. AS USED IN THIS PROVISION, THE TERM 'EPHEMERAL STREAM' MEANS A STREAM: THAT UNDER NORMAL CIRCUMSTANCES HAS WATER FLOWING ONLY DURING AND FOR A SHORT DURATION AFTER PRECIPITATION EVENTS; THAT HAS THE CHANNEL LOCATED ABOVE THE GROUNDWATER TABLE YEAR ROUND; FOR WHICH GROUND WATER IS NOT A SOURCE OF WATER; AND FOR WHICH RUNOFF FROM PRECIPITATION IS THE PRIMARY SOURCE OF WATER FLOW, UNLESS EXEMPTED AS ALONG AN EPHEMERAL STREAM, THE BUFFERS OF AT LEAST 25 FEET ESTABLISHED PURSUANT TO PART 6 OF ARTICLE 5, CHAPTER 5 OF TITLE 12, THE "GEORGIA WATER QUALITY CONTROL ACT", SHALL REMAIN IN FORCE UNLESS A VARIANCE IS GRANTED BY THE DIRECTOR AS PROVIDED IN THIS PARAGRAPH. THE FOLLOWING REQUIREMENTS SHALL APPLY TO ANY SUCH BUFFER:
- A. NO LAND-DISTURBING ACTIVITIES SHALL BE CONDUCTED WITHIN A BUFFER AND A BUFFER SHALL REMAIN IN ITS NATURAL, UNDISTURBED STATE OF VEGETATION UNTIL ALL LAND-DISTURBING ACTIVITIES ON THE CONSTRUCTION SITE ARE COMPLETED. ONCE THE FINAL STABILIZATION OF THE SITE IS ACHIEVED, A BUFFER MAY BE THINNED OR TRIMMED OF VEGETATION AS LONG AS A PROTECTIVE VEGETATIVE COVER REMAINS TO PROTECT WATER QUALITY AND AQUATIC HABITAT AND A NATURAL CANOPY IS LEFT IN SUFFICIENT QUANTITY TO KEEP SHADE ON THE STREAM BED; PROVIDED, HOWEVER, THAT ANY PERSON CONSTRUCTING A SINGLE-FAMILY RESIDENCE, WHEN SUCH RESIDENCE IS CONSTRUCTED BY OR UNDER CONTRACT WITH THE OWNER FOR HIS OR HER OWN OCCUPANCY, MAY THIN OR TRIM VEGETATION IN A BUFFER AT ANY TIME AS LONG AS PROTECTIVE VEGETATIVE COVER REMAINS TO PROTECT WATER QUALITY AND AQUATIC HABITAT AND A NATURAL CANOPY IS LEFT IN SUFFICIENT QUANTITY TO KEEP SHADE ON THE STREAM BED; AND
- B. THE BUFFER SHALL NOT APPLY TO THE FOLLOWING LAND-DISTURBING ACTIVITIES, PROVIDED THAT THEY OCCUR AT AN ANGLE, AS MEASURED FROM THE POINT OF CROSSING, WITHIN 25 DEGREES OF PERPENDICULAR TO THE STREAM; CAUSE A WIDTH OF DISTURBANCE OF NOT MORE THAN 50 FEET WITHIN THE BUFFER; AND ADEQUATE EROSION CONTROL MEASURES ARE INCORPORATED INTO THE PROJECT PLANS AND SPECIFICATIONS AND ARE IMPLEMENTED:
- (I) STREAM CROSSINGS FOR WATER LINES; OR
- (II) STREAM CROSSINGS FOR SEWER LINES; AND
- (16) THERE IS ESTABLISHED A 50 FOOT BUFFER AS MEASURED HORIZONTALLY FROM THE POINT WHERE VEGETATION HAS BEEN WRESTED BY NORMAL STREAM FLOW OR WAVE ACTION, ALONG THE BANKS OF ANY STATE WATERS CLASSIFIED AS "TROUT STREAMS" PURSUANT TO ARTICLE 2 OF CHAPTER 5 OF TITLE 12, THE "GEORGIA WATER QUALITY CONTROL ACT", EXCEPT WHERE A ROADWAY DRAINAGE STRUCTURE MUST BE CONSTRUCTED; PROVIDED, HOWEVER, THAT SMALL SPRINGS AND STREAMS CLASSIFIED AS TROUT STREAMS WHICH DISCHARGE AN AVERAGE ANNUAL FLOW OF 25 GALLONS PER MINUTE OR LESS SHALL HAVE A 25 FOOT BUFFER OR THEY MAY BE PIPED, AT THE DISCRETION OF THE LANDOWNER, PURSUANT TO THE TERMS OF A RULE PROVIDING FOR A GENERAL VARIANCE PROMULGATED BY THE BOARD, SO LONG AS ANY SUCH PIPE STOPS SHORT OF THE DOWNSTREAM LANDOWNER'S PROPERTY AND THE LANDOWNER COMPLIES WITH THE BUFFER REQUIREMENT FOR ANY ADJACENT TROUT STREAMS. THE DIRECTOR MAY GRANT A VARIANCE FROM SUCH BUFFER TO ALLOW LAND-DISTURBING ACTIVITY, PROVIDED THAT ADEQUATE EROSION CONTROL MEASURES ARE INCORPORATED IN THE PROJECT PLANS AND SPECIFICATIONS AND ARE IMPLEMENTED. THE FOLLOWING REQUIREMENTS SHALL APPLY TO SUCH BUFFER:
- A. NO LAND-DISTURBING ACTIVITIES SHALL BE CONDUCTED WITHIN A BUFFER AND A BUFFER SHALL REMAIN IN ITS NATURAL, UNDISTURBED, STATE OF VEGETATION UNTIL ALL LAND-DISTURBING ACTIVITIES ON THE CONSTRUCTION SITE ARE COMPLETED. ONCE THE FINAL STABILIZATION OF THE SITE IS ACHIEVED, A BUFFER MAY BE THINNED OR TRIMMED OF VEGETATION AS LONG AS A PROTECTIVE VEGETATIVE COVER REMAINS TO PROTECT WATER QUALITY AND AQUATIC HABITAT AND A NATURAL CANOPY IS LEFT IN SUFFICIENT QUANTITY TO KEEP SHADE ON THE STREAM BED: PROVIDED, HOWEVER, THAT ANY PERSON CONSTRUCTING A SINGLE-FAMILY RESIDENCE, WHEN SUCH RESIDENCE IS CONSTRUCTED BY OR UNDER CONTRACT WITH THE OWNER FOR HIS OR HER OWN OCCUPANCY, MAY THIN OR TRIM VEGETATION IN A BUFFER AT ANY TIME AS LONG AS PROTECTIVE VEGETATIVE COVER REMAINS TO PROTECT WATER QUALITY AND AQUATIC HABITAT AND A NATURAL CANOPY IS LEFT IN SUFFICIENT QUANTITY TO KEEP SHADE ON THE STREAM BED; AND
- B. THE BUFFER SHALL NOT APPLY TO THE FOLLOWING LAND-DISTURBING ACTIVITIES, PROVIDED THAT THEY OCCUR AT AN ANGLE, AS MEASURED FROM THE POINT OF CROSSING, WITHIN 25 DEGREES OF PERPENDICULAR TO THE STREAM; CAUSE A WIDTH OF DISTURBANCE OF NOT MORE THAN 50 FEET WITHIN THE BUFFER; AND ADEQUATE EROSION CONTROL MEASURES ARE INCORPORATED INTO THE PROJECT PLANS AND SPECIFICATIONS AND ARE IMPLEMENTED:
- (I) STREAM CROSSINGS FOR WATER LINES; OR
- (II) STREAM CROSSINGS FOR SEWER LINES; AND
- (17) THERE IS ESTABLISHED A 25 FOOT BUFFER ALONG COASTAL MARSHLANDS, AS MEASURED HORIZONTALLY FROM THE COASTAL MARSHLAND-UPLAND INTERFACE, AS DETERMINED IN ACCORDANCE WITH CHAPTER 5 OF TITLE 12 OF THIS TITLE, THE "COASTAL MARSHLANDS PROTECTION ACT OF 1970." AND THE RULES AND REGULATIONS PROMULGATED THEREUNDER, EXCEPT WHERE THE DIRECTOR DETERMINES TO ALLOW A VARIANCE THAT IS AT LEAST AS PROTECTIVE OF NATURAL RESOURCES AND THE ENVIRONMENT, WHERE OTHERWISE ALLOWED BY THE DIRECTOR PURSUANT TO CODE SECTION 12-2-8, WHERE AN ALTERATION WITHIN THE BUFFER AREA HAS BEEN AUTHORIZED PURSUANT TO CODE SECTION 12-5-286, FOR MAINTENANCE OF ANY CURRENTLY SERVICEABLE STRUCTURE, LANDSCAPING, OR HARDSCAPING, INCLUDING BRIDGES, ROADS, PARKING LOTS, GOLF COURSES, GOLF CART PATHS, RETAINING WALLS, BULKHEADS, AND PATIOS; PROVIDED, HOWEVER, THAT IF SUCH MAINTENANCE REQUIRES ANY LAND-DISTURBING ACTIVITY, ADEQUATE EROSION CONTROL MEASURES ARE INCORPORATED INTO THE PROJECT PLANS AND SPECIFICATIONS AND SUCH MEASURES ARE FULLY IMPLEMENTED, WHERE A DRAINAGE STRUCTURE OR ROADWAY DRAINAGE STRUCTURE IS CONSTRUCTED OR MAINTAINED; PROVIDED, HOWEVER, THAT IF SUCH MAINTENANCE REQUIRES ANY LAND-DISTURBING ACTIVITY, ADEQUATE EROSION CONTROL MEASURES ARE INCORPORATED INTO THE PROJECT PLANS AND SPECIFICATIONS AND SUCH MEASURES ARE FULLY IMPLEMENTED, ON THE LANDWARD SIDE OF ANY CURRENTLY SERVICEABLE SHORELINE STABILIZATION STRUCTURE, OR FOR THE MAINTENANCE OF ANY MANMADE STORM-WATER DETENTION BASIN, GOLF COURSE POND, OR IMPOUNDMENT THAT IS LOCATED ENTIRELY WITHIN THE PROPERTY OF A SINGLE INDIVIDUAL, PARTNERSHIP, OR CORPORATION; PROVIDED, HOWEVER, THAT ADEQUATE EROSION CONTROL MEASURES ARE INCORPORATED INTO THE PROJECT PLANS AND SPECIFICATIONS AND SUCH MEASURES ARE FULLY IMPLEMENTED. FOR THE PURPOSES OF THIS PARAGRAPH MAINTENANCE SHALL BE DEFINED AS ACTIONS NECESSARY OR APPROPRIATE FOR RETAINING OR RESTORING A CURRENTLY SERVICEABLE IMPROVEMENT TO THE SPECIFIED OPERABLE CONDITION TO ACHIEVE ITS MAXIMUM USEFUL LIFE. MAINTENANCE INCLUDES EMERGENCY RECONSTRUCTION OF RECENTLY DAMAGED PARTS OF A CURRENTLY SERVICEABLE STRUCTURE SO LONG AS IT OCCURS WITHIN A REASONABLE PERIOD OF TIME AFTER DAMAGE OCCURS. MAINTENANCE DOES NOT INCLUDE ANY MODIFICATION THAT CHANGES THE CHARACTER, SCOPE OR SIZE OF THE ORIGINAL DESIGN AND SERVICEABLE SHALL BE DEFINED AS USABLE IN ITS CURRENT STATE OR WITH MINOR MAINTENANCE BUT NOT SO DEGRADED AS TO ESSENTIALLY REQUIRE RECONSTRUCTION.
- A. NO LAND-DISTURBING ACTIVITIES SHALL BE CONDUCTED WITHIN A BUFFER AND A BUFFER SHALL REMAIN IN ITS NATURAL, UNDISTURBED, STATE OF VEGETATION UNTIL ALL LAND-DISTURBING ACTIVITIES ON THE CONSTRUCTION SITE ARE COMPLETED. ONCE THE FINAL STABILIZATION OF THE SITE IS ACHIEVED, A BUFFER MAY BE THINNED OR TRIMMED OF VEGETATION AS LONG AS A PROTECTIVE VEGETATIVE COVER REMAINS TO PROTECT WATER QUALITY AND AQUATIC HABITAT; PROVIDED, HOWEVER, THAT ANY PERSON CONSTRUCTING A SINGLE-FAMILY RESIDENCE, WHEN SUCH RESIDENCE IS CONSTRUCTED BY OR UNDER CONTRACT WITH THE OWNER FOR HIS OR HER OWN OCCUPANCY, MAY THIN OR TRIM VEGETATION IN A BUFFER AT ANY TIME AS LONG AS PROTECTIVE VEGETATIVE COVER REMAINS TO PROTECT WATER QUALITY AND AQUATIC HABITAT; AND
- B. THE BUFFER SHALL NOT APPLY TO CROSSINGS FOR UTILITY LINES THAT CAUSE A WIDTH OF DISTURBANCE OF NOT MORE THAN 50 FEET WITHIN THE BUFFER, PROVIDED, HOWEVER, THAT ADEQUATE EROSION CONTROL MEASURES ARE INCORPORATED INTO THE PROJECT PLANS AND SPECIFICATIONS AND SUCH MEASURES ARE FULLY IMPLEMENTED.
- C. THE BUFFER SHALL NOT APPLY TO ANY LAND-DISTURBING ACTIVITY CONDUCTED PURSUANT TO AND IN COMPLIANCE WITH A VALID AND EFFECTIVE LAND-DISTURBING PERMIT ISSUED SUBSEQUENT TO APRIL 22, 2014, AND PRIOR TO DECEMBER 31, 2015; PROVIDED, HOWEVER, THAT ADEQUATE EROSION CONTROL MEASURES ARE INCORPORATED INTO THE PROJECT PLANS AND SPECIFICATIONS AND SUCH MEASURES ARE FULLY IMPLEMENTED OR ANY LOT FOR WHICH THE PRELIMINARY PLAT HAS BEEN APPROVED PRIOR TO DECEMBER 31, 2015 IF ROADWAYS, BRIDGES, OR WATER AND SEWER LINES HAVE BEEN EXTENDED TO SUCH LOT PRIOR TO THE EFFECTIVE DATE OF THIS ACT AND IF THE REQUIREMENT TO MAINTAIN A 25 FOOT BUFFER WOULD CONSUME AT LEAST 18 PERCENT OF THE HIGH GROUND OF THE PLATTED LOT OTHERWISE AVAILABLE FOR DEVELOPMENT; PROVIDED, HOWEVER, THAT ADEQUATE EROSION CONTROL MEASURES ARE INCORPORATED INTO THE PROJECT PLANS AND SPECIFICATIONS AND SUCH MEASURES ARE FULLY IMPLEMENTED.
- D. ACTIVITIES WHERE THE AREA WITHIN THE BUFFER IS NOT MORE THAN 500 SQUARE FEET OR THAT HAVE A "MINOR BUFFER IMPACT" AS DEFINED IN 391-3-7-.01(R), PROVIDED THAT THE TOTAL AREA OF BUFFER IMPACTS IS LESS THAN 5,000 SQUARE FEET ARE DEEMED TO HAVE AN APPROVED BUFFER VARIANCE BY RULE. BANK STABILIZATION STRUCTURES ARE NOT ELIGIBLE FOR COVERAGE UNDER THE VARIANCE BY RULE AND NOTIFICATION SHALL BE MADE TO THE DIVISION AT LEAST 14 DAYS PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITIES.
- (D) NOTHING CONTAINED IN O.C.G.A. § 12-7-1 ET SEQ. SHALL PREVENT ANY LOCAL ISSUING AUTHORITY FROM ADOPTING RULES AND REGULATIONS, ORDINANCES, OR RESOLUTIONS WHICH CONTAIN STREAM BUFFER REQUIREMENTS THAT EXCEED THE MINIMUM REQUIREMENTS IN SUBSECTIONS (B) AND (C) OF THIS SECTION.
- (E) THE FACT THAT LAND-DISTURBING ACTIVITY FOR WHICH A PERMIT HAS BEEN ISSUED RESULTS IN INJURY TO THE PROPERTY OF ANOTHER SHALL NEITHER CONSTITUTE PROOF OF NOR CREATE A PRESUMPTION OF A VIOLATION OF THE STANDARDS PROVIDED FOR IN THIS CHAPTER OR THE TERMS OF THE PERMIT.

ADDITIONAL BMP NOTES AND DESCRIPTIONS:

1. WETLAND RESTORATION ACTIVITIES ARE BASED ON NATURAL DESIGN PRINCIPLES AND WILL INCLUDE MEASURES SUCH AS STREAMBANK STABILIZATION AND BANK MATTING ALONG ALL NEWLY CONSTRUCTED CHANNELS. PERMANENT CHANNELS WILL BE CONSTRUCTED TO RECONNECT THE HISTORIC WETLAND-VALLEY COMPLEX, RE-ESTABLISH MEANDER SCARS, AND CONVEY SURFACE WATER TO THE MEANDER SCARS THROUGH DISPERSION SWALES. OTHER WETLAND RESTORATION PRACTICES INCLUDE THE CONSTRUCTION OF VEGETATIVE AND FLOW DISPERSION HUMMOCKS, LARGE WOODY DEBRIS WITHIN THE FLOODPLAIN, AND A ROCK CONNECT STRUCTURE TO RECONNECT THE FLOODPLAIN TO THE RIVER AND PREVENT THE RIVERBANKS FROM HEAD CUTTING.
2. RESTORATION ACTIVITIES WILL BE CONDUCTED IN THREE AREAS. EACH AREA SHALL BE TEMPORARILY STABILIZED PRIOR TO THE INITIATION OF THE SUBSEQUENT AREA. RESTORATION ACTIVITIES WILL BE DONE IN DRY CONDITIONS.
3. DITCH PLUGS OR IMPERVIOUS DIKES WILL BE INSTALLED AND PUMPS WILL BE USED TO DIVERT STREAM FLOWS AROUND AREAS CURRENTLY UNDERGOING RESTORATION.
4. THE RESTORED CHANNELS WILL BE FULLY CONSTRUCTED AND STABILIZED PRIOR TO DIVERTING FLOWS FROM UPSTREAM CHANNELS. STREAMBANK STABILIZATION MEASURES WILL BE UTILIZED IN THE RESTORED CHANNELS.
5. DAILY TEMPORARY STABILIZATION MEASURES WILL BE IMPLEMENTED TO THE MAXIMUM EXTENT POSSIBLE TO PREVENT THE TRANSPORT OF SEDIMENT INTO EXISTING AND DOWNSTREAM WATERS.
6. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE RESTORATION ACTIVITIES HAVE TEMPORARILY CEASED OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION IN THAT PORTION OF THE SITE HAS BEEN TEMPORARILY OR PERMANENTLY CEASED. THE PROTOCOL MUST BE FOLLOWED EXCEPT WHEN:
- a) SNOW COVER OR OTHER ADVERSE WEATHER CONDITIONS PRECLUDES IMPLEMENTATION OF STABILIZATION MEASURES; OR,
- b) CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 21 DAYS FROM THE TIME ACTIVITIES CEASED (E.G. THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITIES IS CEASED IS LESS THAN 21 DAYS).
8. THE DISTURBED AREA AND THE DURATION OF EXPOSURE TO EROSION ELEMENTS SHALL BE KEPT TO A PRACTICABLE MINIMUM.
9. TEMPORARY VEGETATION OR MULCHING SHALL BE EMPLOYED TO PROTECT EXPOSED CRITICAL AREAS DURING RESTORATION ACTIVITIES.
10. PERMANENT VEGETATION AND STRUCTURAL EROSION MEASURES SHALL BE INSTALLED AS SOON AS PRACTICABLE.
11. APPROXIMATELY 2.619 ACRES OF DISTURBANCE TO THE EXISTING 25-FT STATE BUFFER WILL OCCUR, WHICH HAS BEEN APPROVED BY THE EPD. NO OTHER CONSTRUCTION ACTIVITIES SHALL BE CONDUCTED WITHIN A 25-FOOT BUFFER ALONG THE BANKS OF ALL STATE WATERS.

12. EXCEPT AS PROVIDED IN #11, NO CONSTRUCTION ACTIVITIES SHALL BE CONDUCTED WITHIN A BUFFER AND A BUFFER SHALL REMAIN IN ITS NATURAL, UNDISTURBED, STATE OF VEGETATION UNTIL ALL LAND-DISTURBING ACTIVITIES ON THE CONSTRUCTION SITE ARE COMPLETED. BETWEEN THE TIME FINAL STABILIZATION OF THE SITE IS ACHIEVED AND UPON THE SUBMITTAL OF A NOTICE OF TERMINATION, A BUFFER MAY BE THINNED OR TRIMMED OF VEGETATION AS LONG AS A PROTECTIVE VEGETATIVE COVER REMAINS TO PROTECT WATER QUALITY AND AQUATIC HABITAT, AND A NATURAL CANOPY IS LEFT IN SUFFICIENT QUANTITY TO KEEP SHADE ON THE STREAM BED.
13. VELOCITY DISSIPATION DEVICES SHALL BE PLACED AT DISCHARGE LOCATIONS AND ALONG THE LENGTH OF ANY OUTFALL CHANNEL FOR THE PURPOSE OF PROVIDING A NON-EROSIVE VELOCITY FLOW FROM THE STRUCTURE TO A WATER COURSE SO THAT THE NATURAL PHYSICAL AND BIOLOGICAL CHARACTERISTICS AND FUNCTIONS ARE MAINTAINED AND PROTECTED (E.G. NO SIGNIFICANT CHANGE IN HYDROLOGICAL REGIME OF THE RECEIVING WATERS).
14. ANY ABOVE GROUND STORAGE TANKS WILL BE SURROUNDED BY A CONTAINMENT STRUCTURE TO RETAIN ANY LEAKS OR SPILLS. THE AREA AROUND THE TANKS MUST BE ENCLOSED BY A DIKE WHICH EXCEEDS THE VOLUME CAPACITY OF THE LARGEST TANK IN THE BERMED AREA BY 10%. THERE SHALL BE A PIPE (2 INCH MINIMUM DIAMETER) WITH A MANUAL GATE VALVE WHICH ALLOWS RAINWATER DISCHARGE WHEN IT IS NEEDED. IN NO CASE SHALL RAINWATER BE ALLOWED TO STAND WITHIN THE CONTAINMENT AREA. IF THE COLLECTED RAINWATER IS POLLUTED WITH DIESEL FUEL, THE WATER SHALL BE PUMPED FROM THE CONTAMINATED STRUCTURE AND DISPOSED OF ACCORDING TO LOCAL, STATE, AND FEDERAL REGULATIONS.
15. WASTE DISPOSAL: NO SOLID MATERIALS, INCLUDING BUILDING MATERIALS WILL BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT. NO UNAUTHORIZED NON-STORMWATER DISCHARGES SHALL BE RELEASED OFF-SITE. DRUM WASH DISCHARGE, CONCRETE TRUCK WASHOUT, AND RINSE WATERS MUST BE CONTAINED AND REMOVED FROM THE SITE ACCORDING TO LOCAL, STATE, AND FEDERAL REGULATIONS.
16. ENSURE ALL WASTEWATER FROM CONSTRUCTION ACTIVITIES AND/OR CLEANING OPERATIONS ARE DISCHARGED INTO THE SANITARY SEWER SYSTEM, NOT THE STORM WATER SEWER SYSTEM. DO NOT DISCHARGE ANY WASTEWATER INTO THE STORM DRAINS. COLLECT WASTEWATERS FOR PROPER DISPOSAL AND/OR COORDINATE WITH APPROPRIATE SEWER FACILITIES TO ENSURE CLEANING OPERATIONS WOULD NOT AFFECT PLANT OPERATIONS IF WASTEWATERS WERE DISCHARGED INTO SEWER LINES.
18. SANITARY AND SEPTIC WASTES INCLUDE ON-SITE SANITARY FACILITIES; LOCATION OF THESE FACILITIES SHALL BE OUT OF HIGH FLOW AREAS. REGULAR SERVICING BY A QUALIFIED DOMESTIC WASTE HAULER IS REQUIRED.
19. VEHICLES TRACKING OF DIRT, SOILS, AND SEDIMENTS TO OFF-SITE AREAS AND THE GENERATION OF DUST SHALL BE MINIMIZED OR ELIMINATED TO THE MAXIMUM EXTENT PRACTICAL.
20. ALL LEAKS OR SPILLS OF MATERIALS WILL BE MITIGATED ACCORDING TO WRITTEN SPILL RESPONSE PROTOCOL SET FORTH IN THE PLAN.
21. ROUTINE SITE INSPECTIONS OF EROSION CONTROL MEASURES AND BMPs MUST BE CONDUCTED ACCORDING TO THE PROTOCOL SET FORTH IN THE PLAN.
22. ALL PERMITTEES SHALL ENSURE AND DEMONSTRATE THAT THEIR EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN IS IN COMPLIANCE WITH APPLICABLE STATE AND/OR LOCAL WASTE DISPOSAL, SANITARY SEWER, OR SEPTIC REGULATIONS.

EROSION AND SEDIMENTATION CONTROL NOTES:

1. PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES, THE LIMITS OF LAND DISTURBANCE SHALL BE CLEARLY AND ACCURATELY DEMARCATED WITH STAKES, RIBBONS, OR OTHER APPROPRIATE MEANS. THE LOCATION AND EXTENT OF ALL AUTHORIZED LAND DISTURBANCE ACTIVITY SHALL BE DEMARCATED FOR THE DURATION OF THE CONSTRUCTION ACTIVITY. NO LAND DISTURBANCE SHALL OCCUR OUTSIDE THE APPROVED LIMITS INDICATED ON THE APPROVED PLAN.
2. THE LOCATION OF SOME OF THE EROSION CONTROL DEVICES MAY HAVE TO BE ALTERED FROM THAT SHOWN ON THE APPROVED PLANS IF DRAINAGE PATTERNS DURING THE CONSTRUCTION ARE DIFFERENT FROM THE FINAL PROPOSED DRAINAGE PATTERNS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES DURING CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION IN ANY PHASE SHALL IMMEDIATELY BE REPORTED TO THE DESIGN PROFESSIONAL.
3. ALL NECESSARY MEASURES MUST BE TAKEN TO ENSURE THAT PROPERTIES ADJACENT TO THE PROJECT SITE REMAIN FREE OF MUD AND SILT. SILT FENCES MUST MEET STATE D.O.T. SPECIFICATIONS.
4. ALL FILL SLOPES SHALL HAVE A SILT FENCE AT THE TOE OF THE SLOPE.
5. THE CONTRACTOR SHALL REMOVE ACCUMULATED SILT WHEN THE SILT IS HALF THE HEIGHT OF THE SILT FENCE UTILIZED FOR EROSION CONTROL. THE SILT MUST BE DISPOSED OF ACCORDING TO APPLICABLE STATE AND/OR LOCAL REGULATIONS. ANY SILT STOCKPILED ON-SITE SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING AND WRAPPED IN SILT FENCE AND DISPOSED OF ACCORDINGLY.
6. SEDIMENT STORAGE THROUGH THE USE OF A SEDIMENT BASIN OR ALTERNATIVE BMPs IS NOT REQUIRED DUE TO THE NATURE OF THE PROJECT AND NEED TO MINIMIZE IMPACTS TO HYDRIC SOILS AND RESTORED AREAS. OTHER BMPs, THE RESTORATION OF THE HISTORIC WETLAND, AND RE-VEGETATION WILL BE IMPLEMENTED TO PREVENT SEDIMENT TRANSPORT. ADDITIONALLY, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED, AND SUPPLEMENTED WHERE POSSIBLE, WHICH HELPS REDUCE THE NEED FOR A TEMPORARY SEDIMENT BASIN.
7. A GEORGIA EPD STREAM BUFFER VARIANCE WILL BE ACQUIRED PRIOR TO PERFORMING LAND DISTURBING ACTIVITIES WITHIN THE STATE REQUIRED 25-FOOT VEGETATIVE BUFFER ADJACENT TO ALL STATE WATERS ON-SITE. SEE APPROVED BUFFER VARIANCE ON THIS SHEET.
8. FAILURE TO INSTALL, OPERATE, OR MAINTAIN ALL EROSION CONTROL MEASURES WILL RESULT IN ALL CONSTRUCTION BEING HALTED ON THE JOB SITE UNTIL SUCH MEASURES ARE CORRECTED ACCORDING TO STATE AND/OR LOCAL STANDARDS.
10. ALL CONTRACTORS FOR EROSION SEDIMENTATION AND POLLUTION CONTROL SHALL BE APPROVED BY THE AUTHORITY.
11. ADEQUATE PROVISIONS SHALL BE PROVIDED TO MINIMIZE DAMAGE FROM SURFACE WATER TO THE CUT FACE OF EXCAVATIONS OR THE SLOPING SURFACES OF FILLS.
12. FILLS SHALL NOT ENCROACH UPON NATURAL WATERCOURSES OR CONSTRUCTED CHANNELS IN A MANNER THAT WOULD ADVERSELY AFFECT OTHER PROPERTY OWNERS.
13. PROVISIONS SHALL BE PROVIDED FOR TREATMENT OR CONTROL OF ANY SOURCE OF SEDIMENTS AND ADEQUATE SEDIMENTATION CONTROL FACILITIES TO RETAIN SEDIMENTS ON SITE OR PRECLUDE SEDIMENTATION OF ADJACENT WATERS BEYOND THE LEVELS SPECIFIED IN THIS PERMIT.
14. BETWEEN THE TIME FINAL STABILIZATION OF THE SITE IS ACHIEVED AND UPON THE SUBMITTAL OF A NOTICE OF TERMINATION, A BUFFER MAY BE THINNED OR TRIMMED OF VEGETATION. A PROTECTIVE VEGETATIVE COVER MUST REMAIN TO PROTECT WATER QUALITY AND AQUATIC HABITAT AND A NATURAL CANOPY MUST BE LEFT IN SUFFICIENT QUANTITY TO KEEP SHADE ON THE STREAMBED.

AMENDMENTS TO THE EROSION, SEDIMENTATION, & POLLUTION CONTROL PLAN

THE OWNER OR OPERATOR MUST COMMUNICATE WITH THE CERTIFIED DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IF CURRENT BMPs AND EROSION CONTROL MEASURES ARE NOT EFFECTIVELY ELIMINATING OR MINIMIZING THE POLLUTANTS PRESENT IN STORMWATER DISCHARGES AT THE SITE. ANY SIGNIFICANT CHANGES MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL, AND THE ES&PC PLAN MUST BE UPDATED BY THE SAME. AMENDMENTS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON THE HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL.

A COPY OF THE ENTIRE ES&PC PLAN MUST BE RETAINED ON-SITE OR AT A REASONABLE ALTERNATIVE LOCATION SUCH AS A LOCAL OFFICE. EVERY PERMITTEE ASSOCIATED WITH THE PROJECT MUST BE PROVIDED A COPY OF THE ES&PC PLAN, AND IT IS IMPORTANT THAT THE PRIMARY PERMITTEE OBTAIN WRITTEN ACKNOWLEDGEMENT THAT A COPY OF THE ES&PC PLAN HAS BEEN OBTAINED BY A PERMITTEE(S).

STATE WATERS DETERMINATION



Whitfield County
Erosion / Stormwater Inspections
Office of County Engineer

9/29/2021

Nutter+Associates
Sean M. Miller, CERP
smiller@nutterinc.com

Re: Whitfield County Tax Parcel ID 10-320-01-000
State Waters Determination Letter

Dear Mr. Sean Miller:

Whitfield County performed a site visit to the above referenced tax parcel. This letter provides confirmation that the drainage features noted on the attached GIS map were determined to be warm water intermittent streams. The noted feature does require a 25 ft buffer per Whitfield County Code 5-73(15) subsection (a). The channels have wrested vegetation.

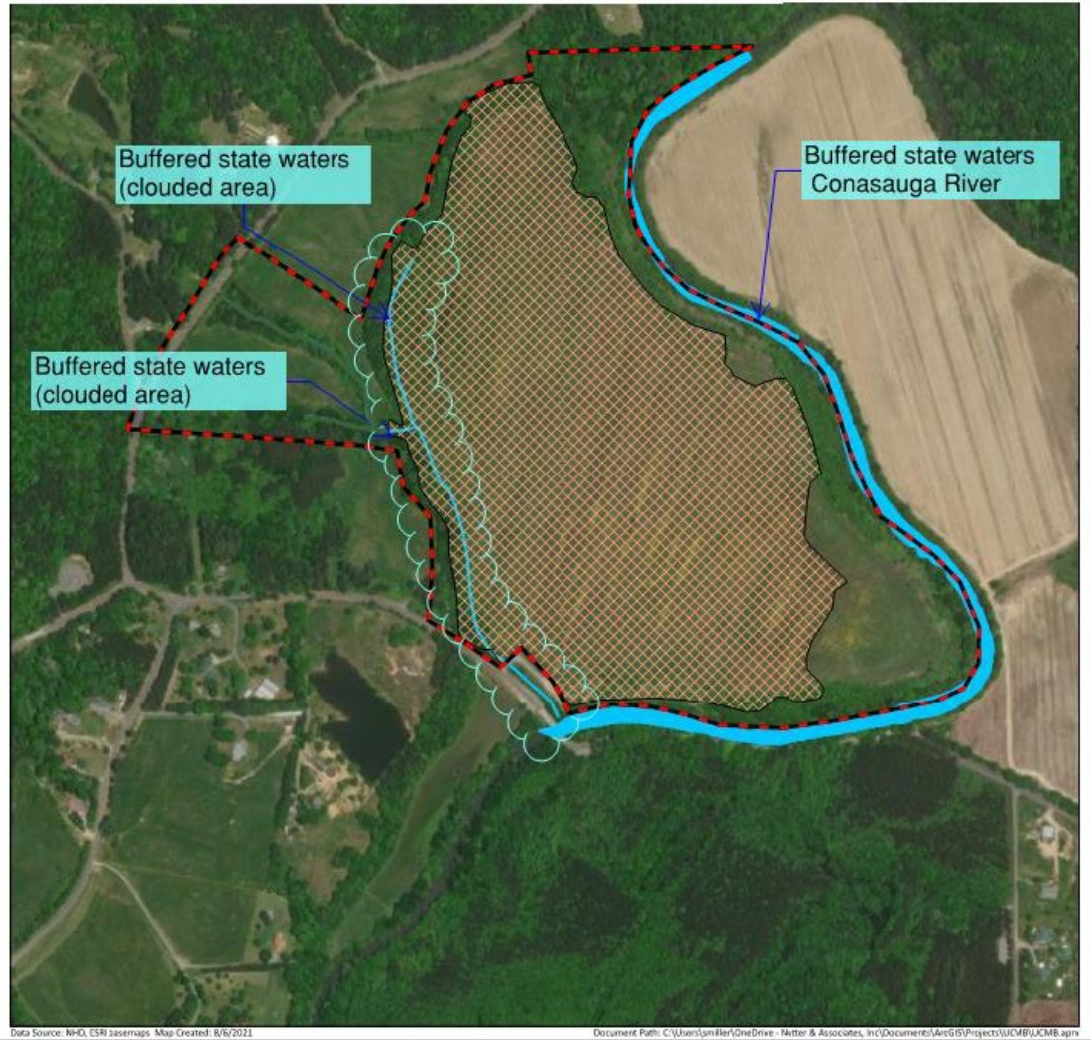
Please feel free to contact me if you have any further questions.

Sincerely,

Chris L. Hester
Stormwater Coordinator

cc: file

end. Parcel Map



STREAM BUFFER VARIANCE APPROVAL

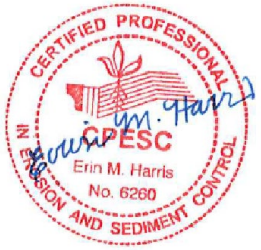
To be added upon receipt

SITE RECORDS, LOCAL REQUIREMENTS, & EROSION CONTROL NOTES

Upper Coosa Mitigation Bank
Wetland Restoration

Whitfield County, Georgia

REVISIONS:



CPESC NO. 6260

GSWCC NO. 12924

EXPIRES: 07/08/2024

DATE: 08/05/2022

SHEET #

24



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