Request for Qualifications / Request for Proposals

Upper Mobile Bay Beneficial Use Wetland Creation Site (Implementation) – Phase 1

Project 11810

September 2026

Issued By

ENGINEERING DEPARTMENT

ALABAMA PORT AUTHORITY

Douglas C. Otto, Director & CEO

Kay Ivey, Governor of Alabama

ALABAMA LICENSED No. 38080 PROFESSIONAL ENGINEER NICHOLAS C. COX

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REQUEST FOR QUALIFICATIONS & PROPOSALS

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INVITATION TO SUBMIT PROPOSALS

Sealed proposals will be received via courier to the Alabama Port Authority, 1400 Alabama State Docks Blvd, Room 216, Administration Building, Engineering Department, Mobile, AL 36602 by 12:00 PM, on Friday, October 23, 2026. Sealed proposals can also be hand delivered from 11:00 AM to 12:00 PM, on Friday, October 23, 2026, to the Alabama Port Authority in the International Trade Center building, 250 North Water Street, 1st Floor Killian Room, Mobile, AL. Faxed or electronic submitted proposals will not be accepted. Conditional proposals will not be accepted. The work consists principally of providing bonds, plant, labor, materials, equipment, and supervision necessary to furnish and perform all work associated with the Upper Mobile Bay Beneficial Use Wetlands Creation Site (Implementation) – Phase 1 Project.

The Project request for qualifications and proposals documents are available on the Alabama Port Authority website at https://alports.com/procurement/#bid-notices. You may contact the project manager, Wesley Jackson, for additional information at Wesley.Jackson@alports.com or (251) 441-7253. Prospective offerors MUST attend a MANDATORY Pre-Proposal meeting on Thursday, October 8, 2026, at 2:00 PM at the Alabama Port Authority International Trade Center, Killian Room, 250 North Water Street, Mobile AL, 36602.

A Guarantee will be required with each proposal as follows: At least five (5%) percent of the amount proposed, but in no event more than Ten Thousand ($10,000) Dollars, shall be furnished in the form of a certified check or bid bond payable to the Alabama Port Authority. A Performance Bond in an amount not less than the sum of the Contract will be required at the signing of the contract and, in addition, a bond in an amount not less than One Hundred (100%) percent of the contract price, insuring payment of all labor and material.

No proposals will be considered unless the offeror, whether resident or non-resident of Alabama, is properly licensed and qualified to perform the work described herein in accordance with all applicable laws of the State of Alabama. This shall include evidence of holding a current certificate to engage in general contracting in the State of Alabama, issued by the State of Alabama Licensing Board for General Contractors, Montgomery, Alabama, as required by Section 34-8-2, Code of Alabama (1975). Any contractor that desires to bid as a prime contractor must have at least one of the following major or specialty classifications of license per Section 230-X-1-.27 of the State of Alabama Licensing Board for General Contractors Administrative Code:

- Heavy and Railroad Construction
- Heavy / Railroad Specialty - Marine Construction
- Heavy / Railroad Specialty – Dredging

Out-of-state corporations shall furnish a certificate of authority to transact business in Alabama. Out of state limited liability companies shall provide proof of registration to transact business in this state. Prior to the award of the contract to a contractor having one or more employees in the State of Alabama, Alabama law requires that the contractor provide the Owner proof of enrollment in E-Verify (see www.uscis.gov/everify).

All prime Offerors and subcontractors must show active registration in www.SAM.gov for the purposes of confirming suspension status. The Alabama Port Authority will verify that the contractor or its principles, does not appear on the federal government's Federal Excluded Parties List prior to executing an agreement of contract with the entity.

No proposal shall be withdrawn for a period of ninety (90) days subsequent to the proposal deadline without the consent of the Owner. Any contract awarded under this solicitation will be subject to all applicable terms and conditions in 2 C.F.R. Part 200 (including Appendix II to Part 200). Any contract awarded under this Request for Proposals may be paid for in whole or in part with grant funding from the Gulf Coast Ecosystem Restoration Council ("RESTORE Council") and the Alabama Port Authority ("APA") under the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012 (RESTORE Act). Any contract resulting from this solicitation will be subject to the terms and conditions of the funding award, the RESTORE Act Financial Assistance Standard Terms and Conditions and Program-Specific Terms and Conditions, the Standard Sub-Award Terms and Conditions, the RESTORE Act, 33 U. S. C. 1321(t), Treasury Regulations 31 C. F. R. §34 et seq., including 31 C. F. R. §§ 34, Subpart D, all applicable terms and conditions in 2 C. F. R. Part 200 (including Appendix II to Part 200), and all other OMB circulars, executive orders or other federal laws or regulations, as applicable. Notwithstanding the above, neither APA nor RESTORE Council, or any of their agents, representatives, or employees, is or will be a party to this Request for Proposals or any resulting contract.

Further, any contractor awarded a contract under this Request for Proposals shall not be deemed to be an agent, representative, employee or servant of APA or RESTORE Council.

SUBCONTRACTORS: Documentation of compliance with the 2 C.F.R 200.321 requirements is a matter of contractor responsibility. Requirements and required documentation are outlined in the Required Attachments Section of the Contract Documents. Failure on the part of the contractor to submit proper documentation may cause the Owner to not execute or to terminate the contract.

DEBARMENT AND SUSPENSION: This contract and all lower-tier subcontracts will be covered by 31 C.F.R. Part 19. All offerors MUST register with SAM.gov to obtain a Unique Entity Identifier (UEI). The Owner will use SAM.gov to confirm the Offeror's debarment and suspension status.

The contractor and each subcontractor will also be required to register with SAM.gov and obtain a UEI prior to beginning work on this project. IT IS THE PRIME CONTRACTOR'S RESPONSIBILITY TO CONFIRM THAT NO SUBCONTRACTORS (OR THEIR PRINCIPALS) ARE ON THE EXCLUDED PARTIES LIST FOUND AT SAM.GOV.

Detailed information regarding the requirement to check Debarment and Suspension status is included in the Required Attachments Section of the Contract Documents.

Upper Mobile Bay Beneficial Use Wetland Creation Site (Implementation) – Phase 1
Request for Qualifications and Proposals
Alabama Port Authority
Project 11810

1.0 INTRODUCTION

The Engineering Department of the Alabama Port Authority (APA) will receive sealed proposals from qualified Contractors to provide bonds, labor, equipment, materials, and supervision for the construction of a 100–acre wetland creation cell located in northern Mobile Bay.

This is an **evaluation-based** Proposal. Award of the Contract will **not** be made strictly on lowest cost, but in accordance with Section 7.0.

To facilitate the review and award of a contract, the Request for Qualifications and Request for Proposals is combined into a single solicitation, hereafter referred to as Request for Proposals (RFP). Three (3) different schedules of prices are included with this solicitation. Contractors are encouraged to submit proposals for all three (3) schedules. However, Proposals for any individual schedule or combination of schedules will be considered.

1.1 Key Dates and Point of Contact

Mandatory Pre-Proposal Meeting: 2:00 P.M. CDT Thursday October 8, 2026. See Section 3.2 for more details.
RFP Submission deadline: 12:00 p.m. CDT on Friday October 23, 2026. See Section 5.0 for more details.

The Alabama Port Authority's Point of Contact is Wesley Jackson and can be reached by email at Wesley.Jackson@alports.com or by phone at (251) 441-7253.

2.0 SCOPE OF WORK

This project consists of constructing a containment dike for the placement of maintenance dredged material that will ultimately be converted into a wetland. The work generally includes constructing segmented breakwaters consisting of a combination of rock and sand berm along the west, south, and east sides of the containment area, an earthen containment dike along the north side, and weir boxes to control discharge.

Three (3) Schedules of Prices are included for this project. Schedule "A" requires an offsite sand source with a minimum D50 of 0.2 mm. Schedule "B" requires a sand sourced from the local borrow area as shown in the Drawings. Schedule "C" requires the use of geotubes and a sand source with a minimum D50 of 0.2 mm. Offerors should refer to the Drawings and Division V Specifications for the specific requirements associated with each schedule.

2.1 Bonds & Licensing Requirements

A Guarantee will be required with each proposal as follows: At least five (5%) percent of the proposal amount, but in no event more than Ten Thousand ($10,000) Dollars, shall be furnished in the form of a certified check or bid bond payable to the Alabama Port Authority. Performance and Payment bonds will be required at the signing of the contract in an amount not less than One Hundred (100%) percent of the contract price. Certificate of Insurance shall be as specified in DIVISION III SPECIAL PROVISIONS SP-11. The work performed under this contract shall not begin until the Contractor has submitted bonds and insurance in an acceptable form.

No proposal will be considered unless the Offeror, whether resident or non-resident of Alabama, is properly qualified to submit a proposal for this work in accordance with all applicable laws of the State of Alabama. This shall include evidence of holding a current license as required from the State Licensing Board for General Contractors, Montgomery, Alabama with the classification being **(H/RR) – Heavy/Railroad, (H/RR-S) - Marine Construction, or (H/RR-S) - Dredging.** In addition, non-residents of the State must show evidence of having qualified with the Secretary of State to transact business in AL.

3.0 PROCUREMENT SCHEDULE

3.1 Schedule of Events

APA currently anticipates conducting this procurement in accordance with the following list of milestones. This schedule is subject to change.

- Distribute Plans/Specifications posted to APA website — September 22, 2026
- Mandatory Pre-Proposal Meeting: — October 8, 2026
- Deadline to submit questions: — October 15, 2026
- APA Response to questions: — October 19, 2026
- RFP Submission: — October 23, 2026
- Short List Interview Date (If required): — October 30, 2026
- Notification of Intent to Award Date: — November 19, 2026
- Notice to Proceed (NTP): — December 21, 2026 **Estimated

3.2 Pre-Proposal Meeting

A mandatory Pre-Proposal Meeting is scheduled for 2:00 P.M. Thursday October 8, 2026 at the Alabama Port Authority International Trade Center, Killian Room, 250 North Water Street, Mobile, AL, 36602.

4.0 QUESTIONS & ADDENDA

All questions regarding retrieval of the contract documents or project inquiries should be directed to the APA Project Manager, Wesley Jackson at (251) 441-7253 or Wesley.Jackson@alports.com. Questions must be submitted via email by the deadline listed in Section 3.1. No requests for additional information, clarification or any other communication should be directed to any other individual.

APA's responses to questions for clarification shall be in writing and may be accomplished by an Addendum to this RFP. APA will not be bound by any oral communications, or written interpretations or clarifications that are not issued in writing or set forth in an Addendum.

Addenda, specifications, and plans will be sent out by email to Contractors that have been pre-qualified to submit proposals. The Offeror shall provide to APA the Acknowledgement of Revisions and/or Addenda set forth in the attached Cost Proposal, signed by the Respondent's Principal Officer with the submission of the RFP package.

5.0 PROPOSAL SUBMISSION REQUIREMENTS

Submission of a sealed proposal shall constitute that the Offeror's representatives have examined the project site, are familiar with existing conditions, have reviewed and understand all Contract Documents and requirements, and will comply with all applicable licensing and bonding requirements.

5.1 Submission Deadlines & Location

Respondents are solely responsible for timely delivery. Late submissions will not be opened and will be returned. Respondents shall furnish four (4) hardcopies and one (1) electronic copy on a USB drive in their submission package. All submissions, including hand-delivered packages, US Postal Service express mail, or private delivery service must be delivered to the following individual at the following address by 12:00 p.m. CDT on Friday, October 23, 2026.

Alabama Port Authority
Attn: Wesley Jackson
250 North Water Street
Mobile, AL 36602
(251) 441-7255

6.0 CONTENTS OF RFP SUBMISSION PACKAGE

A sealed parcel containing the Proposal shall be submitted by the date and time specified. The parcel must be clearly labeled to identify the RFP and the contents. Each Proposal shall include Sections 6.1 through 6.4 as defined herein. Offerors submitting proposals for multiple Schedules of Prices must provide a separate, complete Submission Package for each schedule. Although certain elements may be similar across schedules, the Alabama Port Authority (APA) requires fully independent, stand-alone packages for each schedule to support an efficient evaluation process.

To ensure an effective and consistent evaluation, Offerors must submit information in the order described below and clearly demonstrate their capability to successfully perform construction services for this project. It is the Contractor's responsibility to provide a complete, fully responsive submission for all requirements in this section. Proposal materials must be organized sequentially; disorganized submissions may be overlooked during evaluation and may negatively affect the Contractor's rating. Offers should be concise and address only the information requested in this section.

6.1 Cost Proposal (Attached)

Contractors are required to sign and submit the attached Cost Proposal document. This includes the following:

(a) Schedule of Prices filled in ink and all blank spaces in the form shall be fully filled
(b) Acknowledgment of Addenda
(c) Bid Bond
(d) Certificate of Compliance with Beason-Hammon Alabama Taxpayer & Citizen Protection Act
(e) RESTORE required Subcontractor Listing Form
(f) RESTORE required SF-LLL form
(g) If the Offeror is a corporation organized in a state other than Alabama, a certificate from the Secretary of State showing the corporation is qualified to transact business in Alabama

6.2 Past Performance Information

Offerors shall provide sufficient information to enable APA to understand and evaluate how the Offeror's experience contributes to the scope required to perform the work. Provide documentation and owner contact information for up to five (5) successfully completed projects of similar scope and complexity completed within the past ten (10) years. Offerors may include their subcontractor's experience if a significant portion of the work will be completed by that subcontractor.

If more than five (5) projects are submitted for evaluation, only the first five (5) projects presented will be evaluated. Offerors who submit fewer than (5) projects to demonstrate the company's ability to perform may be rated lower as the APA may have a higher level of confidence in the abilities of Offerors that provide multiple examples of successful performance of recent, relevant experience. The Past Performance section of the proposal shall not exceed ten (10) pages.

The information listed below shall be submitted for each project.

(a) Name of Project
(b) Location of Project
(c) Project Owner and reference contact information (email and phone number)
(d) General Scope of Project
(e) Your Role and Construction Type Work Your Company Self-Performed on site other than Construction Management Services
(f) Construction Cost of the single project
(g) Extent and Type of Work Subcontracted Out
(h) Construction Period- Start and Completion/Scheduled Completion Dates (Provide Month/Year)

6.3 Technical Approach

The Offeror must submit a technical approach narrative and a preliminary construction schedule, to explain their company's understanding of the project requirements and their capabilities to execute the

construction work required by the solicitation. Offerors should reference drawings and specifications for project information. The Technical Approach shall not exceed ten (10) pages. Address the following items, in a narrative format:

(a) A general work plan describing the major items of work and the means and methods that will be used to perform these items. Provide any logistical/site limitations under which work must be performed and how the Contractor plans to work through these limitations, types of work the Contractor intends to self-perform, and what quality control measures will be implemented to limit turbidity and overall sediment management.

(b) Identify what sources will be used for sand and rock procurement as well as logistical methods required to transport these materials to the project site.

(c) If the Offeror is submitting a proposal for Schedule of Prices C, which includes the use of geotubes, the technical approach must address methods for protecting the geotubes. See Division V for more information.

(d) Provide a preliminary construction schedule to demonstrate an understanding of the entire scope. The traditional CPM schedule will not count against the Technical Approach ten (10) page limitation.

6.4 Overall Management Approach

Submit an overall management approach narrative to explain capabilities to execute and manage the requirements of the RFP. The Overall Management Approach shall not exceed five (5) pages. Address the following items in narrative format:

(a) Describe the home office organizational structure and lines of authority. Discuss management positions and project team composition. Provide resumes for key personnel including the Principal-In-Charge, Project Manager, General Superintendent, Quality Control Manager, and Safety Manager. Resumes will not count against the Overall Management Approach five (5) page limitation.

(b) Provide a list of subcontractors intended to be used for the project including the scope of work to be performed for each.

(c) Provide a list of equipment required and available to complete the project.

7.0 EVALUATION OF RFP SUBMISSION & AWARD PROCESS

Written proposals will be evaluated by a selection committee established by APA. Members of the selection committee will independently review each of the proposals. The committee will then consensus score each proposal using the criteria listed below.

Costs / Price Evaluation: This Request for Proposal (RFP) solicitation is utilizing a "Best Value – Source Selection" evaluation approach. As such, the Alabama Port Authority (APA) seeks to award a contract to the competing offeror whose qualitatively and quantitatively evaluated proposal gives the greatest

confidence overall that the selected proposal offeror will best meet the defined and specified RFP requirements at an affordable, fair, and reasonable cost. Accordingly, the APA will review the proposed pricing schedule(s) of all competing offerors, in unison with, and in full consideration of how well each offeror's submitted proposal addresses the RFP's critically important technical evaluation factors. Therefore, each Offeror's proposed price / prices, will also be rated and scored, as part of the RFP's overall evaluation scheme, and will be thoroughly analyzed for fairness and reasonableness through the use of cost and/or price analysis.

The price analysis, considering fair market costs and pricing for similar work and scope, and utilizing APA's internal independent costs estimates, will also include checks for the appearance of unbalanced pricing. Unbalanced pricing exists when, despite an acceptable total evaluated price, the price of one or more contract line items is significantly over or understated as indicated by the application of cost or price analysis techniques. The APA may reject an offer as non-responsive if it is materially unbalanced. The price evaluation will document the fairness and reasonableness of each offeror's proposed price/costs. If adequate price competition exists, no additional cost information will be requested of the offerors. However, if at any time during this competition the APA determines that further analysis is needed, detailed cost breakdowns may be requested.

Non-Price/Price Trade-Off Analysis: In determining the awardee for this firm fixed price contract, the technical factor ratings will be used during the non-priced/price tradeoff analysis. After analysis of the Pricing Schedules and the Technical Evaluation Factors are completed, the APA will then consider the prices in connection with the technical evaluation factor ratings, comparing the relative advantages and disadvantages of the proposals and prices.

The APA, exercising prudent business judgment, will make the Final Contract Award Selection Decision. This decision will be based upon and document the APA's independent determination, as to which competitive proposal offers the overall best value, in terms of the offerors combined technical factor ratings and pricing. This may result in an award being made to higher rated, higher priced offeror where the decision is consistent with the solicitation's evaluation factors and the APA reasonably determines that the technical superiority and/or overall business approach and/or superior past performance of the non-priced factor ratings of the higher priced offeror outweigh the price differences and justifies the additional costs. This may also result in rejection of all offers and re-evaluation and/or cancellation of the RFP solicitation.

The evaluation system is as follows:

Evaluation Criteria	Points
Cost Proposal	200
Past Performance	300
Technical Approach	300
Overall Management Approach	200
Total	**1000**

APA may elect to interview any of the Offerors submitting prior to making a final scoring. Interviews, if conducted, will be limited to one (1) hour and will focus on the proposed schedule and approach to the Upper Mobile Bay Wetland Creation Site (Implementation) – Phase 1 construction.

8.0 RIGHTS AND OBLIGATIONS OF APA

In connection with this procurement, APA reserves to itself all rights (which rights shall be exercised by APA in its sole discretion) available to it under applicable law, including without limitation, the following, with or without cause and with or without notice:

- The right to cancel, withdraw, postpone or extend this RFP without incurring any obligations or liabilities.
- The right to modify all dates set or projected in this RFP.
- The right to suspend and terminate the procurement process for this RFP at any time.
- The right to issue addenda, supplements and modifications to this RFP.
- The right to respond to all, some, or none of the inquiries, questions and/or requests for clarification received relative to this RFP.
- The right to request clarifications from any Respondent, to reject any or all proposals, to waive minor informalities or irregularities, and to make an award in the best interest of the Port Authority.

APA assumes no obligations, responsibilities, and liabilities to reimburse all or part of the costs incurred or alleged to have incurred by parties considering a response to and/or responding to the RFP. All costs shall be borne solely by each Respondent.

9.0 CONTRACTOR COMPLIANCE

Before submitting the Proposal, the Offeror shall comply with the following:

a) The Cost Proposal shall be filled in ink on the form provided herein and all blank spaces in the form shall be fully filled. The signature shall be in long hand, and the complete form shall be without interlineations, alteration or erasure.

b) If the Offeror is a corporation organized in a state other than Alabama, attach to the Cost Proposal a certificate from the Secretary of State showing that the Corporation is qualified to transact business in Alabama.

c) Attach a certified check or Bid Bond in the amount of 5% of the Proposal, but not more than $10,000 made payable to the Alabama Port Authority.

d) Non-resident (out of state) Offerors shall attach all items included by DIVISION III SP-06.

e) Attach a copy of the State Contractor's License to Proposal.

f) Certificate of Compliance (pages 13-14 of this document).

g) RESTORE required Subcontractor Listing Form

h) RESTORE required SF-LLL form

COST PROPOSAL

Proposal of:

Address:

Date:

To: STATE OF ALABAMA, Alabama Port Authority, Mobile, Alabama

Gentlemen:

The undersigned, as Offeror, hereby declares that he has examined the site of the work and informed himself fully in regard to all conditions pertaining to the place where the work is to be done; that he has examined the plans and specifications for the work and contractual documents relative thereto, and has read all Special Provisions and Specifications furnished; and that he has satisfied himself relative to all aspects of the work to be performed and especially to those factors affecting cost, progress, or performance.

The Offeror proposes and agrees, if this proposal is accepted, to contract with the Owner in the form of contract specified, to furnish all necessary materials, equipment, tools, apparatus, means of transportation, labor and incidentals to perform in a satisfactory manner, the work described in the Contract Specifications for the Alabama Port Authority, for the prices listed below to complete:

PROJECT 11810
UPPER MOBILE BAY WETLAND CREATION SITE (IMPLEMENTATION) – PHASE 1
MOBILE, ALABAMA

In full and complete accordance with the shown, noted, described and reasonable intended requirements of the plans, specifications and contract documents to the full and entire satisfaction of the Owner with a definite understanding that no money will be allowed for extra work except as set forth in the attached contract documents.

It is agreed that the description under each item, being briefly stated, implies, although it does not mention, all incidentals and that the prices stated are intended to cover all such work materials and incidentals as constitute Offeror's obligation as described in the specifications and any details not specifically mentioned, but evidently included in the contract shall be compensated for the item which most logically includes it.

Offeror agrees that he will commence the work within the time allotted by the Contract Documents with an adequate force, plant, and equipment and that the work will be completed within time schedules outlined in Special Provisions Article SP-03.

Offeror accepts the provisions of the Contract Documents as to liquidated damages in the event of failure to complete the work on time.

The Offeror further agrees that, in case of failure on his part to execute the Contract and required bonds within ten (10) calendar days from the date written notice of award if mailed or otherwise delivered to the Offeror, the certified check or bid bond accompanying this proposal and the monies payable thereon shall be paid into the funds of the Owner not as penalty, but as a liquidation of a reasonable portion of

the damages incurred by the Owner due to the Offeror's failure to execute the Contract. **Items not specifically noted in the schedule of prices shall be considered ancillary to the project and be absorbed in the line items.**

SCHEDULE OF PRICES					
FORM A - D50>0.2 MM SAND; SEGMENTED BREAKWATERS WITH SAND BERM					
LINE ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	Total Cost
001	MOBILIZATION	1	LS		
002	CONSTRUCTION SURVEYING	1	LS		
003	NORTH DIKE CONSTRUCTION	4,175	LF		
004	BEDDING LAYER	15,600	TN		
005	UNDERLAYER STONE - ALDOT CLASS 2	22,100	TN		
006	GRADED ROCK RIPRAP - ALDOT CLASS 5	62,270	TN		
007	GEOTEXTILE	46,000	SY		
008	SAND BERM CONSTRUCTION	207,000	CY		
009	ENVIRONMENTAL PROTECTION AND TURBIDITY CONTROL	1	LS		
010	WEIR BOX	1	LS		
011	PERMANENT WARNING SIGNS	24	EA		
012	SUPPLEMENTAL TURBIDITY – TYPE II	1	100 LF-MONTH		
013	SUPPLEMENTAL TURBIDITY – BOTTOM SEALING	1	100 LF-MONTH		
014	DEMOBILIZATION	1	LS		
PRICE SCHEDULE "A" TOTAL COST					

SCHEDULE OF PRICES					
FORM B – LOCAL BORROW AREA; SEGMENTED BREAKWATERS WITH SAND BERM					
line ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	Total Cost
101	MOBILIZATION	1	LS		
102	CONSTRUCTION SURVEYING	1	LS		
103	NORTH DIKE CONSTRUCTION	4,175	LF		
104	BEDDING LAYER	15,600	TN		
105	UNDERLAYER STONE - ALDOT CLASS 2	22,100	TN		
106	GRADED ROCK RIPRAP - ALDOT CLASS 5	62,270	TN		
107	GEOTEXTILE	46,000	SY		
108	SAND BERM CONSTRUCTION	207,000	CY		
109	ENVIRONMENTAL PROTECTION AND TURBIDITY CONTROL	1	LS		
110	WEIR BOX	1	LS		
111	PERMANENT WARNING SIGNS	24	EA		
112	SUPPLEMENTAL TURBIDITY – TYPE II	1	100 LF-MONTH		
113	SUPPLEMENTAL TURBIDITY – BOTTOM SEALING	1	100 LF-MONTH		
114	DEMOBILIZATION	1	LS		
PRICE SCHEDULE "B" TOTAL COST					

SCHEDULE OF PRICES					
FORM C - D50>0.2 MM; GEOTUBE REVETMENT					
LINE ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	Total Cost
201	MOBILIZATION	1	LS		
202	CONSTRUCTION SURVEYING	1	LS		
203	NORTH DIKE CONSTRUCTION	4,240	LF		
204	BEDDING LAYER	14,000	TN		
205	GEOTUBE	20,000	LF		
206	GRADED ROCK RIPRAP - ALDOT CLASS 5	74,787	TN		
207	GEOTEXTILE	45,000	SY		
208	SAND BERM CONSTRUCTION	124,000	CY		
209	ENVIRONMENTAL PROTECTION AND TURBIDITY CONTROL	1	LS		
210	WEIR BOX	1	LS		
211	PERMANENT WARNING SIGNS	24	EA		
212	SUPPLEMENTAL TURBIDITY – TYPE II	1	100 LF-MONTH		
213	SUPPLEMENTAL TURBIDITY – BOTTOM SEALING	1	100 LF-MONTH		
214	DEMOBILIZATION	1	LS		
PRICE SCHEDULE "C" TOTAL COST					

I, the undersigned Offeror, hereby acknowledge receipt of the following addenda:

ADDENDUM NO.	DATE	ADDENDUM NO.	DATE
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Contractor's Signature:

Contractor Company_____

_____	_____	_____
Name	**Title**	**Date**

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, undersigned, _____

_____ as Principal, and _____ as Surety, are hereby held and bound unto The Alabama Port Authority as **OWNER** in the Penal sum of _____ for the payment of which will and truly be made, we hereby jointly and severally bind ourselves, successors and assigns. Signed, the _____ day of _____, 20___.

The Condition of the above obligation is such that whereas the Principal has submitted to the Alabama Port Authority a certain PROPOSAL, attached hereto and hereby made a part hereof to enter into a contract in writing, for the Upper Mobile Bay Wetland Creation Site (Implementation) – Phase 1 #11810.

NOW, THEREFORE,

(a) If said PROPOSAL shall be rejected, or

(b) If said PROPOSAL shall be accepted and the Principal shall execute and deliver a contract in the form of Contract attached hereto (Properly completed in accordance with said PROPOSAL) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said PROPOSAL, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its **BOND** shall in no way be impaired or affected by any extension of time within which the **OWNER** may accept such PROPOSAL; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal	
Surety	
By	

State of _____

County of _____

CERTIFICATE OF COMPLIANCE WITH THE BEASON-HAMMON ALABAMA TAXPAYER AND CITIZEN PROTECTION ACT (ACT 2011-535, as amended by Act 2012-491)

DATE: _____

RE Contract/Grant/Incentive (describe by number or subject):

_____by and between

_____(Contractor/Grantee) and

_____(State Agency, Department or Public Entity)

The undersigned hereby certifies to the State of Alabama as follows:

1. The undersigned holds the position of _____ with the Contractor/Grantee named above, and is authorized to provide representations set out in this Certificate as the official and binding act of that entity, and has knowledge of the provisions of THE BEASON-HAMMON ALABAMA TAXPAYER AND CITIZEN PROTECTION ACT (ACT 2011-535 of the Alabama Legislature, as amended by Act 2012-491) which is described herein as "the Act".

2. Using the following definitions from Section 3 of the Act, select and initial either (a) or (b), below, to describe the Contractor/Grantee's business structure.

   BUSINESS ENTITY. Any person or group of persons employing one or more persons performing or engaging in any activity, enterprise, profession, or occupation for gain, benefit, advantage, or livelihood, whether for profit or not for profit. "Business entity" shall include, but not be limited to the following:

   a. Self-employed individuals, business entities filing articles of incorporation, partnerships, limited partnerships, limited liability companies, foreign corporations, foreign limited partnerships, foreign limited liability companies authorized to transact business in this state, business trusts, and any business entity that registers with the Secretary of State.

   b. Any business entity that possesses a business license, permit, certificate, approval, registration, charter, or similar form of authorization issued by the state, any business entity that is exempt by law from obtaining such a business license and any business entity that is operating unlawfully without a business license.

   EMPLOYER. Any person, firm, corporation, partnership, joint stock association, agent, manager, representative, foreman, or other person having control or custody of any employment, place of employment, or of any employee, including any person or entity employing any person for hire within the State of Alabama, including a public employer. This term shall not include the occupant of a household contracting with another person to perform casual domestic labor within the household.

a. The Contractor/Grantee is a business entity or employer as those terms are defined in Section 3 of the Act.

b. The Contractor/Grantee is not a business entity or employer as those terms are defined in Section 3 of the Act.

3. As of the date of this Certificate, Contractor/Grantee does not knowingly employ an unauthorized alien within the State of Alabama and hereafter it will not knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama.

4. Contractor/Grantee is enrolled in E-Verify unless it is not eligible to enroll because of the rules of that program or other factors beyond its control.

Certified this____day of _____20_____

_____
Name of Contractor/Grantee/Recipient

By: _____

Its _____

The above Certification was signed in my presence by the person whose name appears above,

on this _____ day of _____20_____

WITNESS:

_____
Signature

_____
Printed Name of Witness

CONTRACT DOCUMENTS

DIVISION II
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PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That: _____
(Name of Contractor)

_____
(Address of Contractor)

_____
(City, State, Zip)

I, a(n)_____corporation, hereinafter called Principal, and
(state of domicile)

_____
(Name of Surety)

_____
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto the Alabama Port Authority hereinafter called OWNER, in the penal sum of_____DOLLARS, ($_____) (100% of the Contract Amount) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the_____day of_____, 20_, a copy of which is hereto attached and made a part hereof for the construction of:

UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE (IMPLEMENTATION) – PHASE 1 PROJECT
MOBILE BAY, ALABAMA

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the guaranty period, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may insure in making good any default, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the contract of the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed this_____day of_____, 20___.

ATTEST:

_____ Principal

_____ (Principal) Secretary (SEAL)

_____(s)

_____ (Witness as to Principal)

_____ (Address)

_____ Surety

ATTEST:

_____ (Surety) Secretary (SEAL)

_____ Witness as to Surety

BY: _____ Attorney-in-fact

_____ (Address)

_____ (Address)

NOTE: Date of BOND must not be prior to date of CONTRACT.
If CONTRACTOR is Partnership, all partners should execute BOND.

LABOR AND MATERIAL BOND

KNOW ALL MEN BY THESE PRESENTS:

That: _____
(Name of Contractor)

_____
(Address of Contractor)

_____
(City, State, Zip)

I, a(n)_____corporation, hereinafter called Principal, and
(state of domicile)

_____
(Name of Surety)

_____
(Address of Surety)

_____
(City, State, Zip)

hereinafter called Surety, are held and firmly bound unto the Alabama Port Authority hereinafter called OWNER, in the penal sum of_____DOLLARS, ($ _____) (100% of the Contract Amount) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that, the Principle entered into a certain contract with the OWNER, dated the_____day of_____, 20_, a copy of which is hereto attached and made a part hereof for the construction of:

UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE (IMPLEMENTATION) – PHASE 1 PROJECT
MOBILE, ALABAMA

NOW, THEREFORE, if the Principal shall promptly make payments to all persons, firms, SUBCONTRACTORS, and corporations furnishing materials or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, fuel, repairs on machinery, equipment and tools, consumer or used in connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor performed in such WORK whether by SUBCONTRACTOR or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the contract of the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed this_____day of_____, 20____.

ATTEST:

_____
Principal

_____
(Principal) Secretary

BY:_____(s)

(SEAL)

_____
Witness as to Surety Principal

_____
(Address)

_____
(Address)

_____

_____

_____
Surety

ATTEST:

_____
Witness as to Surety

BY: _____
Attorney-In-Fact

_____
(Address)

_____
(Address)

_____

_____

NOTE: Date of BOND must not be prior to date of CONTRACT.
If CONTRACTOR is Partnership, all partners should execute BOND.

ACKNOWLEDGEMENT FOR CHANGE ORDERS

TO: ALABAMA PORT AUTHORITY

RE: Upper Mobile Bay Beneficial Use Wetland Creation Site (Implementation) – Phase 1 Project

Gentlemen:

In order to avoid the necessity of extensive amendment to the referenced Contract, the undersigned hereby acknowledges that the following conditions are those for which change orders are allowed under the Bid law:

1. Unusual and difficult circumstances which arise during the course of the execution of the Contract which could not have been reasonably foreseen.
2. Where competitive bidding for the new work will be to the serious detriment of the Owner.
3. Emergencies arising during the course of work.
4. Changes or alterations provided for in the original proposal and original Contract.
5. The Contractor also acknowledges that he has read paragraph 50-04 (EXTRA WORK) and 60-17 of the (CLAIMS FOR ADJUSTMENT AND DISPUTES) of the General Provisions and agrees that "If for any reason the Contractor deems that additional compensation is due him for work or materials not clearly provided in the Contract, plans, or specifications or previously authorized as extra work, he shall notify the Engineer in writing of his intention to claim such additional compensation before he begins the work on which he bases his claim."

_____ BY: _____
CONTRACTOR

_____ _____
DATE TITLE

CONTRACT

THIS AGREEMENT, made and executed on this _____day of the month _____ of _____, Two Thousand and (20_____), by and between The Alabama Port Authority, and (contractor name)_____Contractor, domiciled in the state of_____, Party of the Second Part, and hereinafter designated as "CONTRACTOR," WITNESSETH, that in consideration of the covenants and agreements herein contained, to be performed by the parties hereto and of the payments hereinafter agreed to be made, it is mutually agreed as follows:

The CONTRACTOR shall and will provide and furnish all equipment and labor, and perform the work required to build, construct, and complete in a thorough and workmanlike manner, to the satisfaction of the Alabama Port Authority:

Project Name Upper Mobile Bay Beneficial Use Wetland Creation Site (Implementation) – Phase 1 Project
Project # 11810

Hereinafter called the project, for the base Contract price of _____ DOLLARS, ($_____) and all extra work in connection therewith, and in accordance with plans, specifications, and Proposal, which are made a part thereof as fully as is set out herein, and hereby becomes a part of this Contract.

It is agreed and understood that the Alabama Port Authority shall pay, and the Contractor shall receive, the full compensation for the work performed in accordance with the Specifications.

The project shall commence and will be completed in accordance with Paragraph SP-03 of Division III Special Provisions.

This contract shall become effective immediately upon, and as of the date all necessary parties hereto have approached and signed the same.

By signing this contract, the contracting parties affirm, for the duration of the agreement, that they will not violate federal immigration law or knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama. Furthermore, a contracting party found to be in violation of this provision shall be deemed in breach of the agreement and shall be responsible for all damages resulting therefrom.

IN WITNESS WHEREOF, the parties of these presents have executed this Agreement in the year and day first above written.

WITNESS: Alabama Port Authority

_____ BY:_____

WITNESS: Contractor Party of the Second Part

_____ BY:_____

RESTORE AND FEDERAL GRANT REQUIRED ATTACHMENTS

Required Attachments for RESTORE Spill Impact Component and Council-Selected Component (Bucket 2 & 3) Construction Contracts

Non-State and State Agency – Template version 5.5.2025

The "Required Attachments for RESTORE Spill Impact Component and Council-Selected Component Construction Contracts" is not intended to represent all requirements and obligations that may be applicable to contracts resulting from this solicitation. Any contract resulting from this solicitation will be subject to the terms and conditions of the funding award, the RESTORE Act Financial Assistance Standard Terms and Conditions and Program-Specific Terms and Conditions, the Standard Sub-Award Terms and Conditions, the RESTORE Act, 33 U. S. C. 1321(t), Treasury Regulations 31 C. F. R. §34 et seq., including 31 C. F. R. §§ 34, Subpart D, all applicable terms and conditions in 2 C. F. R. Part 200 (including Appendix II to Part 200), and all other OMB circulars, executive orders or other federal laws or regulations, as applicable. All of these terms and conditions apply to the Subrecipient and its Contractors, as well as any covered subcontractors or vendors whose work is funded as a result of this solicitation.

IT IS THE PRIME CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THESE TERMS AND CONDITIONS ARE INCORPORATED INTO EACH SUBCONTRACT WHOSE WORK IS FUNDED AS A RESULT OF THIS SOLICITATION.

Requirements applicable to any contract and/or subcontract issued as a result of this solicitation include, but are not limited to:

- CERTIFICATIONS RELATED TO RESTORE ACT SPILL IMPACT COMPONENT AND COUNCIL-SELECTED COMPONENT FUNDING

- RESTORE COUNCIL FINANCIAL ASSISTANCE STANDARD TERMS AND CONDITIONS

- Alabama Port Authority SUBAWARD GRANT AGREEMENT

- APPENDIX II TO 2 CFR PART 200: CONTRACT PROVISIONS FOR NON-FEDERAL ENTITY CONTRACTS UNDER FEDERAL AWARDS

- PROCUREMENT OF RECOVERED MATERIALS

- PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OF EQUIPMENT

- DOMESTIC PREFERENCES FOR PROCUREMENTS

- 2 CFR PART 200.321 SUBCONTRACTING LISTING FORM *(The winning Offeror MUST submit with required form documentation.)*

- FORM SF-LLL *(The winning Offeror MUST submit this form prior to Award; the Prime Contractor will be required to submit this form for each subcontract exceeding $100,000 upon subcontract execution.)*

CERTIFICATIONS RELATED TO RESTORE ACT SPILL IMPACT COMPONENT AND COUNCIL-SELECTED COMPONENT FUNDING

By submitting a bid for this contract, offerors expressly acknowledge that:

1) This project is funded in whole or in part with grant funding from the Gulf Coast Ecosystem Restoration (RESTORE) Council and the Alabama Department of Conservation and Natural Resources under the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012 (RESTORE Act);

2) Any contract resulting from this bid (including subcontracts) will be subject to the terms and conditions of said funding award, the RESTORE Council Financial Assistance Standard Terms and Conditions, the Alabama Port Authority Sub-Award Terms and Conditions, the RESTORE Act, 33 USC 1321(t), Treasury Regulations 31 CFR § 34 et seq., including 31 CFR §§ 34, Subparts E and F, all applicable terms and conditions in 2 CFR Part 200 (including Appendix II to Part 200), and all other OMB circulars, executive orders or other federal laws or regulations, as applicable.;

3) Any contract awarded (including subcontracts) will be subject to 31 CFR Part 19 – Governmentwide Debarment and Suspension (Nonprocurement); and,

4) Title VI of the Civil Rights Act of 1964 (42 USC §§ 2000d et seq.) and any Council regulations and policies promulgated pursuant to its authority prohibit discrimination on the grounds of race, color, or national origin under programs or activities receiving Federal financial assistance.

5) Any contract awarded (including subcontracts) will be subject to the laws and regulations of the United States and the State of Alabama.

The owner will not enter into a contract with a offeror, or the offeror's principals, if the offeror or its principals appear on the federal government's Excluded Parties List. Offerors hereby certify, by submission of a proposal, that neither it nor its principals are presently debarred, suspended, proposed for disbarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

Offerors must verify that any subcontractor (or the subcontractor's principals) does not appear on the federal government's Excluded Parties List prior to executing a subcontract with that entity. The Excluded Parties List is accessible at http://www.sam.gov.

Offerors must register with SAM.gov and obtain and activate a Unique Entity Identifier (UEI) prior to submitting a bid for this project. Each subcontractor will also be required to register with SAM.gov and obtain and activate a UEI prior to beginning work on the project. Active Sam.gov registration must be maintained throughout the project period of performance.

The offeror must include a term or condition in all lower-tier covered transactions (i.e., subcontracts) that the transaction is subject to 31 CFR Part 19 - Governmentwide Debarment and Suspension (Nonprocurement).

RESTORE COUNCIL

FINANCIAL ASSISTANCE STANDARD TERMS AND CONDITIONS

RESTORE Council STCs Final 8-18-2015.pdf (restorethegulf.gov)

APPENDIX II TO 2 CFR PART 200: CONTRACT PROVISIONS FOR NON-FEDERAL ENTITY CONTRACTS UNDER FEDERAL AWARDS

In addition to other provisions required by the Federal agency or non-Federal entity, all contracts made by the non-Federal entity under the Federal award must contain provisions covering the following, as applicable.

(A) Contracts for more than the simplified acquisition threshold, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.

(B) All contracts in excess of $10,000 must address termination for cause and for convenience by the non-Federal entity including the manner by which it will be effected and the basis for settlement.

~~(C) Equal Employment Opportunity. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."~~

~~(D) Davis-Bacon Act, as amended (40 USC 3141-3148). When required by Federal program legislation, all prime construction contracts in excess of $2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 USC. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 USC. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.~~

(E) Contract Work Hours and Safety Standards Act (40 USC 3701-3708). Where applicable, all contracts awarded by the non-Federal entity in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 USC 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 USC 3702 of

the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 USC 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

(F) Rights to Inventions Made Under a Contract or Agreement. If the Federal award meets the definition of "funding agreement" under 37 CFR §401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

(G) Clean Air Act (42 USC 7401-7671q.) and the Federal Water Pollution Control Act (33 USC 1251-1387), as amended—Contracts and subgrants of amounts in excess of $150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 USC 7401-7671q) and the Federal Water Pollution Control Act as amended (33 USC 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

(H) Debarment and Suspension (Executive Orders 12549 and 12689)—A contract award (see 2 CFR 180.220) must not be made to parties listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

(I) Byrd Anti-Lobbying Amendment (31 USC 1352)—Contractors that apply or bid for an award exceeding $100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 USC 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

(J) See §200.323.

(K) See §200.216.

(L) See §200.322.

PROCUREMENT OF RECOVERED MATERIALS

The prime contractor must comply with federal regulations regarding procurement of recovered materials found at 2 CFR §200.323.

2 CFR §200.323 requires the Project Owner and its contractors to comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

The following summary of products designated by 40 CFR Part 247 has been provided to assist in contractor compliance; however, compliance is the contractor's sole responsibility. Note that this listing is not all inclusive and one or more products may or may not be applicable to this scope of work for this construction contract. Contractors should refer to 40 CFR Part 247 for additional information.

<u>40 CFR §247.12 designates the following Construction Products:</u>

(a) Building insulation products, including the following items:

(1) Loose-fill insulation, including but not limited to cellulose fiber, mineral fibers (fiberglass and rock wool), vermiculite, and perlite;

(2) Blanket and batt insulation, including but not limited to mineral fibers (fiberglass and rock wool);

(3) Board (sheathing, roof decking, wall panel) insulation, including but not limited to structural fiberboard and laminated paperboard products, perlite composite board, polyurethane, polyisocyanurate, polystyrene, phenolics, and composites; and

(4) Spray-in-place insulation, including but not limited to foam-in-place polyurethane and polyisocyanurate, and spray-on cellulose.

(b) Structural fiberboard and laminated paperboard products for applications other than building insulation, including building board, sheathing, shingle backer, sound deadening board, roof insulating board, insulating wallboard, acoustical and non-acoustical ceiling tile, acoustical and non-acoustical lay-in panels, floor underlayments, and roof overlay (coverboard).

(c) Cement and concrete, including concrete products such as pipe and block containing:

(1) Coal fly ash;

(2) Ground granulated blast furnace slag (GGBF);

(3) Cenospheres; or

(4) Silica fume from silicon and ferrosilicon metal production.

(d) Carpet made from polyester fiber made from recovered materials for use in moderate-wear applications such as single-family housing and similar wear applications.

(e) Floor tiles and patio blocks containing recovered rubber or plastic.

(f) Shower and restroom dividers/partitions containing recovered plastic or steel.

(g) (1) Consolidated latex paint used for covering graffiti; and

(2) Reprocessed latex paint used for interior and exterior architectural applications such as wallboard, ceilings, and trim; gutter boards; and concrete, stucco, masonry, wood, and metal surfaces.

(h) Carpet cushion made from bonded polyurethane, jute, synthetic fibers, or rubber containing recovered materials.

(i) Flowable fill containing coal fly ash and/or ferrous foundry sands.

(j) Railroad grade crossing surfaces made from cement and concrete containing fly ash, recovered rubber, recovered steel, recovered wood, or recovered plastic.

(k) Modular threshold ramps containing recovered steel, rubber, or aluminum.

(l) Nonpressure pipe containing recovered steel, plastic, or cement.

(m) Roofing materials containing recovered steel, aluminum, fiber, rubber, plastic or plastic composites, or cement.

<u>40 CFR §247.13 designates the following Transportation Products:</u>

(a) Traffic barricades and traffic cones used in controlling or restricting vehicular traffic.

(b) Parking stops made from concrete or containing recovered plastic or rubber.

(c) Channelizers containing recovered plastic or rubber.

(d) Delineators containing recovered plastic, rubber, or steel.

(e) Flexible delineators containing recovered plastic.

40 CFR §247.14 designates the following Park and Recreation Products:

(a) Playground surfaces and running tracks containing recovered rubber or plastic.

(b) Plastic fencing containing recovered plastic for use in controlling snow or sand drifting and as a warning/safety barrier in construction or other applications.

(c) Park benches and picnic tables containing recovered steel, aluminum, plastic, or concrete.

(d) Playground equipment containing recovered plastic, steel, or aluminum.

40 CFR §247.15 designates the following Landscaping Products:

(a) Hydraulic mulch products containing recovered paper or recovered wood used for hydroseeding and as an over-spray for straw mulch in landscaping, erosion control, and soil reclamation.

(b) Compost made from recovered organic materials.

(c) Garden and soaker hoses containing recovered plastic or rubber.

(d) Lawn and garden edging containing recovered plastic or rubber.

(e) Plastic lumber landscaping timbers and posts containing recovered materials.

(f) Fertilizer made from recovered organic materials.

PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OF EQUIPMENT

The prime contractor must comply with federal regulations regarding prohibition on certain telecommunications and video surveillance services or equipment found at 2 CFR §200.216, which states:

(a) Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to:

(1) Procure or obtain covered telecommunications equipment or services;

(2) Extend or renew a contract to procure or obtain covered telecommunications equipment or services; or

(3) Enter into a contract (or extend or renew a contract) to procure or obtain covered telecommunications equipment or services.

(b) As described in section 889 of Public Law 115-232, "covered telecommunications equipment or services" means any of the following:

(1) Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

(2) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

(3) Telecommunications or video surveillance services provided by such entities or using such equipment.

(4) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

(c) For the purposes of this section, "covered telecommunications equipment or services" also include systems that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system.

(d) In implementing the prohibition under section 889 of Public Law 115-232, heads of executive agencies administering loan, grant, or subsidy programs must prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.

(e) When the recipient or subrecipient accepts a loan or grant, it is certifying that it will comply with the prohibition on covered telecommunications equipment and services in this section. The recipient or subrecipient is not required to certify that funds will not be expended on covered telecommunications equipment or services beyond the certification provided upon accepting the loan or grant and those provided upon submitting payment requests and financial reports.

(f) For additional information, see section 889 of Public Law 115-232 and §200.471.

DOMESTIC PREFERENCES FOR PROCUREMENTS

The prime contractor should, to the greatest extent practicable, provide a preference for the purchase, acquisition, or use of goods, products, or material produced in the United States (including, but not limited to, iron, aluminum, steel, cement and other manufactured products).

Additional information about federal regulations regarding domestic preferences for procurements can be found at 2 CFR §200.322, which states:

> (a) The non-Federal entity should, to the greatest extent practicable and consistent with law, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards, contracts, and purchase orders under Federal awards.
>
> (b) For purposes of this section:
>
> > (1) ‘‘Produced in the United States’’ means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.
> >
> > (2) ‘‘Manufactured products’’ means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

(c) Federal agencies providing Federal financial assistance for infrastructure projects must implement the Buy America preferences set forth in 2 CFR part 184.

The requirements of this section must be included in all contracts and subcontracts for work or products under this award pursuant to 2 CFR § 200.322 and Executive Order 14005 Ensuring the Future is Made in All of America by All of America’s Workers (January 25, 2021).

SUBCONTRACTING (2CFR 200.321)

Documentation of compliance with the following requirements is a matter of <u>contractor responsibility</u>. When subcontracting, the contractor must submit documentation to meet the requirements of 2. C. F. R. §200.321. Failure on the part of the contractor to submit proper documentation may cause the Owner not to execute or to terminate the contract.

Before the Notice of Award can be issued, the winning offeror will be required to submit either:

- A written certification that no subcontracts will be issued.

  - OR -

- The Subcontractor Listing Form detailing all subcontractors that will perform work on the project, including name, contact person, address, phone, and active UEI number.

SUBCONTRACTOR LISTING FORM *(v10/1/2026)*

The Contractor must submit this form to the Alabama Port Authority prior to contract execution and must update it for each sub-contractor performing any work resulting from this contract. If additional lines are needed, this form may be duplicated.

Subcontractor Name and Contact Person	Subcontractor Address and Phone Number	Subcontractor Active UEI	On Site during this period (Y/N)

COMPLETED BY: _____ **DATE:** _____

SF-LLL form can be found at:
https://www.grants.gov/forms/form-items-description/fid/670

This form is mandatory and shall be provided in the proposal package.

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SP-01 DESCRIPTION OF WORK

The work consists principally of providing bonds, labor, materials, equipment, supervision, insurance and incidentals necessary to construct the 100-acre wetland creation cell as indicated in the Contract Plans and Specifications.

SP-02 PURCHASE OF MATERIALS

The Alabama Port Authority will utilize its sales tax exemption status on this project.

The Contractor will be responsible for the purchase of all materials and will be required to apply for a sales and use tax certificate of exemption upon contract award.

Refer also to Section 20-14 (Purchase of Materials) of Division IV General Provisions.

SP-03 COMMENCEMENT AND COMPLETION

The Contractor will be required to commence work under this contract in accordance with DIVISION IV GENERAL PROVISIONS Article 90-02 (NOTICE TO PROCEED), to prosecute said

work with faithfulness and energy, and to complete the entire project within **350 calendar days** after receipt of Notice to Proceed. The time stated for final completion shall include final clean- up of all work sites. Failure to complete work on schedule shall initiate liquidated damages, which will be assessed in accordance with the provisions of Paragraph 20-13 (LIQUIDATED DAMAGES) of DIVISION IV, GENERAL PROVISIONS. In addition, liquidated damages referenced in DIVISION V, CONSTRUCTION SPECIFICATIONS, shall also be initiated.

SP-04 QUALIFICATION OF OFFERORS

In addition to the requirements of Article 20-01 and 20-03 of Division IV, GENERAL PROVISIONS, the Owner may make such investigations as he deems necessary to determine the ability of the Offeror to perform the work, and the Offeror shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any proposal if the evidence submitted by, or investigation of, such offeror fails to satisfy the Owner that such offeror is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein. Conditional proposals will not be accepted.

SP-05 ACCEPTANCE OR REJECTION OF PROPOSALS

The Authority reserves the right to accept or reject any or all proposals and to waive informalities. All offerors must be licensed to operate as contractors in the State of Alabama. Attention of offerors is directed to Chapter 8 of Title 23 of the Code of Alabama, 1975, and Amendments thereto, relating to the licensing of General Contractors. No proposal will be accepted from anyone except a qualified Contractor, licensed by the State Licensing Board for General Contractors. The license must have a classification appropriate for the work to be completed. In addition, non-residents of the State must show evidence of having qualified with the Secretary of State to do business in Alabama.

SP-06 NON-RESIDENT (OUT-OF-STATE) CONTRACTORS

Preference shall be given to resident contractors, and non-resident offerors domiciled in a state having laws granting preference to local contractors shall be awarded Alabama public contracts the same as

Alabama contractors offering under similar circumstances; and resident contractors in Alabama are to be granted preference over non-residents in awarding of contracts in the same manner and to the same extent as provided by the laws of the state of domicile of the non-resident.

Non-resident offerors must accompany any written proposal documents with a written opinion of any attorney at law licensed to practice law in such non-resident offerors' state of domicile, as to the preferences, if any or none, granted by the law of that state to its own business entities whose principal places of business are in that State in the letting of any or all public contracts.

SP-07 INDEMNIFICATION

To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, the Engineer, and their agents and employees from and against all claims, damages, losses, and expenses, including, but not limited to, attorney's fees arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss, or expense (1) is attributed to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom, and (2) is caused in whole or in part by any negligent act or omission 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, regardless of whether or not it is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity that would otherwise exist as to any party or person described in this Paragraph SP-07.

In any and all claims against the Owner, the Engineer or any of their 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 under this Paragraph SP-07, 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 workers' or workmen's compensation acts, or other employee benefits acts.

SP-08 SUPERVISION

The Contractor shall place a competent superintendent on the Project who shall have at least ten (10) years experience in the type of work being performed under this Contract. The Contractor shall also submit an organizational chart, which shall clearly show the Contractor's personnel assigned to the Project and the position that they hold. The chart shall also define the persons of contact with the Owner and the Engineer.

The Owner reserves the right to request changes in supervision for incompetent actions or other reasons of due cause. Once the Contractor is notified in writing of a request to replace the superintendent, he shall do so within five (5) calendar days of such request.

The Contractor's assigned superintendent shall have responsibility for the day-to-day operations of the work and shall be the on-site safety officer responsible for implementation of the Contractor's safety program unless another named person is so assigned.

The assigned superintendent shall remain on the Project site while work under the Contract is being performed. In the superintendent's absence from the site, another named person shall be responsible for all aspects of the work. Notification of the name of the individual shall be filed with the Owner and Engineer. The Contractor shall not reassign a superintendent without the acknowledgement and approval of the Owner.

SP-09 CONTRACTOR'S REPRESENTATIVE

A representative of the Contractor shall be on the site at all times when work is being conducted as required by paragraph 90-01 (SUBLETTING OF CONTRACT) of DIVISION IV. A telephone number should be given to the Engineer where he might contact the Representative after working hours in case of an emergency.

SP-10 METHOD OF PAYMENT

Payment will be made in accordance with the provisions of Paragraph 100-06 (PARTIAL PAYMENT) of DIVISION IV except that there will be no payment for materials on hand. Paragraph 100-07 (PAYMENT FOR MATERIALS ON HAND) is to be deleted in its entirety.

SP-11 INSURANCE

The following shall apply to Section 40 (Indemnification and Insurance Requirements) of Division IV General Provisions:

1) Delete 40-04 OWNER'S AND CONTRACTORS PROTECTIVE LIABILITY
2) Delete 40-08 RAILROAD PROTECTIVE LIABILITY
3) Delete 40-09 BUILDER'S RISK or INSTALLATION FLOATER
4) Delete 40-10 PROFESSIONAL LIABILITY COVERAGE

SP-12 TEMPORARY WATER

The responsibility shall be upon the Contractor to provide and maintain at his own expense an adequate supply of water of a quality suitable for his use for construction and domestic consumption. At his own expense, he shall install and maintain any necessary water supply connections and piping. However, he shall do so only at such locations and in such workmanship manner as may be authorized by the OWNER. Before final acceptance, temporary connections and piping installations by the Contractor shall be removed in a workmanship manner to the satisfaction of the OWNER.

SP-13 GUARANTEE

The Contractor shall furnish to the Alabama Port Authority a two (2) year written guarantee issued from the date of final acceptance. This guarantee shall cover any defective material or workmanship on the entire project. Erosion or damage to the sand berm, breakwaters, and northern dike after acceptance as a result of weather conditions is not subject to this guarantee.

SP-14 PROJECT SCHEDULE

The Contractor shall prepare a CPM Project Schedule and the schedule shall show all items of work necessary to bring the project to completion. The Contractor shall submit his Progress Schedule updated monthly to reflect the status of the work. These updates shall be submitted in conjunction with the monthly progress Payment Request.

SP-15 PORT ACCESS CREDENTIALS

The project site is not within the restricted APA facilities boundary, therefore individuals performing work on this project are NOT required to possess a TWIC Card, APA Badge, or APA Vehicle Decal. For information, APA's access policy is provided on the APA website.

SP-16 NOTICE TO OFFERORS REGARDING EMPLOYMENT PRACTICES

Effective October 1, 2011, the Beason-Hammon Alabama Taxpayer and Citizen Protection Act ("the Act") requires that any business entity contracting with or providing any grant or incentives to the state, including the Alabama Port Authority, certify compliance with the Act. All Offerors must certify such compliance by executing the enclosed Certificate of Compliance and returning it to the Alabama Port Authority along with proof of the offering company's enrollment in the E-Verify program with your proposal package. The following E-Verify website link is provided for convenience: http://www.dhs.gov/files/programs/gc_1185221678150.shtm.

SP-17 PUBLIC OPENING OF PROPOSALS

Delete Section 20-11 of Division IV.

SP-18 AWARD OF CONTRACT

Delete Section 30-01 and Section 30-02 of Division IV. The Contract shall be awarded as stated in Division I.

GENERAL PROVISIONS, CLAUSES, REQUIREMENTS AND COVENANTS

DIVISION IV
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SECTION 10 DEFINITIONS OF TERMS

Whenever the following terms are used in these specifications, in the Contract, in any documents or other instruments pertaining to construction where these specifications govern, the intent and meaning shall be interpreted as follows:

10-01 AASHTO

The American Association of State Highway and Transportation Officials, the successor association of AASHTO.

10-02 ACCESS ROAD

The right-of-way, the roadway and all improvements constructed thereon connecting the site of work to a public highway.

10-03 ADVERTISEMENT

A public announcement, as required by local law, inviting proposals for work to be performed and materials to be furnished.

10-04 ALDOT SPECS

The State of Alabama Department of Transportation Standard Specifications for Roads and Bridges, latest edition.

10-05 AISC

The American Institute of Steel Construction.

10-06 AREA

American Railway Engineering Association.

10-07 ASA

American Standards Association.

10-08 ASTM

The American Society for Testing and Materials.

10-09 AWARD

The acceptance, by the OWNER, of the successful offeror's proposal.

10-10 AWPI

American Wood Preservers Institute.

10-11 OFFEROR

Any individual, partnership, firm or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.

10-12 CALENDAR DAY

Every day shown on the calendar.

10-13 CHANGE ORDER

A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and Contract time adjustment, if any, for the

work affected by such changes. The work, covered by a change order, shall be within the scope of the Contract.

10-14 COMMERCE

The prime business of the OWNER, consisting of the transshipping and storage of goods and materials by highway, rail, barge, and ship.

10-15 CONSTRUCTION MANAGER

The individual, partnership, firm or corporation duly authorized by the OWNER to be responsible for construction management supervision of the Contract work and acting directly or through an authorized representative.

10-16 CONTRACT

The written agreement covering the work to be performed. The awarded Contract shall include, but is not limited to: The Advertisement; The Contract Form; The Proposal; The Performance Bond; The Payment Bond; any required insurance certificates; The Specifications; The Plans; Change Orders and any addenda issued to offerors.

10-17 CONTRACT ITEM (PAY ITEM)

A specific unit of work for which a price is provided in the Contract.

10-18 CONTRACT TIME

The number of calendar days or working days, stated in the special provisions, allowed for completion of the Contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the Contract shall be completed by that date.

10-19 CONTRACTOR

The individual, partnership, firm or corporation primarily liable for the acceptable performance of the work Contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the Contract work.

10-20 DEPARTMENT

The Alabama Port Authority.

10-21 DIRECTOR

The Director of the Alabama Port Authority, as constituted under the laws of Alabama.

10-22 ENGINEER

The individual, partnership, firm or corporation duly authorized by the OWNER to be responsible for Engineering supervision of the Contract work and acting directly or through an authorized representative.

10-23 EQUIPMENT

All machinery, together with the necessary supplies for upkeep and maintenance, and also all tools and apparatus necessary for the proper construction and acceptable completion of the work.

10-24 EXTRA WORK

An item of work not provided for in the awarded Contract is previously modified by change order or supplemental agreement, but which is found by the Engineer to be necessary to complete the work within the intended scope of the Contract as previously modified.

10-25 FEDERAL SPECIFICATIONS

The Federal Specifications and Standards, and supplements, amendments and indices thereto are prepared and issued by the General Services Administration of the Federal Government. They may be obtained from the Specifications Activity, Printed Materials Supply Division, Building 197, Naval Weapons Plant, Washington D.C. 20407.

10-26 FORCE ACCOUNT

The term used to describe a method of accounting which may be employed as a basis of payment to the Contractor for Extra Work.

10-27 INSPECTOR

An authorized representative of the Engineer assigned to make all necessary reviews of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.

10-28 INTENTION OF TERMS

Whenever, in these specifications or on the plans, the words “directed”, “required”, “permitted”, “ordered”, “designated”, “prescribed”, or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer is intended; and similarly, the words “approved”, “acceptable” “satisfactory”, or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer, subject to each case to the final determination of the OWNER.

Any reference to a specific requirement of a numbered paragraph of the Contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.

10-29 LABORATORY

The official testing laboratories of the OWNER or such other laboratories as may be designated by the Engineer.

10-30 MAJOR AND MINOR CONTRACT ITEMS

A major Contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 10 percent of the total amount of the awarded Contract. All other items shall be considered minor Contract items.

10-31 MATERIALS

Any substance specified for use in the construction of the Contract work.

10-32 NOTICE TO PROCEED

A written notice to the Contractor to begin the actual work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the Contract time begins.

10-33 OWNER

The term OWNER shall mean the State of Alabama acting by and through the Alabama Port Authority.

10-34 PAYMENT BOND

The approved form of security furnished by the Contractor and his surety as a guaranty that he will pay in full all bills and accounts for materials and labor used in the construction of the work.

10-35 PERFORMANCE BOND

The approved form of security furnished by the Contractor and his surety as a guaranty that the Contractor will complete the work in accordance with the terms of the Contract.

10-36 PLANS

The official drawings or exact reproductions, approved by the Engineer, which show the location, character, dimensions and details of the work to be done and which are to be considered as a part of the Contract, supplementary to the specifications.

10-37 PROJECT

The agreed scope of work for accomplishing specific development.

10-38 PROPOSAL

The written offer of the offeror (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.

10-39 PROPOSAL FORM

The approved, prepared form on which the OWNER requires that formal proposals be submitted for the work contemplated.

10-40 PROPOSAL GUARANTY

The security furnished with a proposal to guarantee that the offeror will enter into a Contract if his proposal is accepted by the OWNER.

10-41 SPECIAL PROVISIONS

Specific directions and provisions additional to these GENERAL PROVISIONS and to any CONSTRUCTION SPECIFICATIONS setting forth conditions or requirements of construction which are not satisfactorily covered by these GENERAL PROVISIONS or the CONSTRUCTION SPECIFICATIONS. SPECIAL PROVISIONS shall prevail over the GENERAL PROVISIONS and CONSTRUCTION SPECIFICATIONS because they set forth the final Contractual intent as to the matter involved.

10-42 SPECIFICATIONS

A part of the Contract containing the written directions and requirements for completing the Contract work. Standards for specifying materials or testing which are cited in the Contract specifications by reference shall have the same force and effect as if included in the Contract physically.

10-43 STATE

The State of Alabama, the Party of the First Part to the Contract, acting by and through the Alabama Port Authority.

10-44 STRUCTURES

Port facilities such as wharves, piers, dolphins, bridges, culverts, catch basins, inlets, retaining walls, cribbing, storm and sanitary sewer lines, water lines, under drains, electrical ducts, manholes, handholes, lighting fixtures and bases, transformers, flexible and rigid pavements,

buildings, vaults, and other man-made features of the port that may be encountered in the work and not otherwise classified herein.

10-45 SUBCONTRACTOR

Any properly qualified individual undertaking the performance of any part of the work under the terms of the Contract, by virtue of an agreement between himself and the Contractor, with the approval of the OWNER.

10-46 SUBGRADE

The soil which forms the pavement foundation.

10-47 SUPERINTENDENT

The Contractor's executive representative who is present on the work site during progress, authorized to receive and fulfill instructions from the Engineer, and who shall supervise and direct the construction.

10-48 SUPPLEMENTAL AGREEMENT

A written agreement between the Contractor and the OWNER covering: (1) work that would increase or decrease the total amount of the awarded Contract by not more than 10 percent; or any major Contract item, by more than 25 percent, such increased or decreased work being within the scope of the originally awarded Contract, or (2) work that is not within the scope of the originally awarded Contract.

10-49 SURETY

The corporate body, licensed under the laws of Alabama, bound with and for the Contractor for the acceptable performance of the Contract and also for the payment of all claims recoverable under the Contract Bonds.

10-50 WORK

The furnishing of all labor, materials, tools, equipment and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the Contract, plans and specifications.

10-51 WORKING DAY

A working day shall be any day other than a national legal holiday, Saturday, or Sunday, on which the normal working forces of the Contractor may proceed with regular work for at least 6 hours toward completion of the Contract. Unless work is suspended for causes beyond the Contractor's control, Saturdays, Sundays and national holidays on which the Contractor's forces engage in regular work, requiring the presence of an inspector, will be considered as working days.

SECTION 20 PROPOSAL REQUIREMENTS AND CONDITIONS

20-01 PREQUALIFICATION OF OFFERORS

Proposal forms will be issued only to prospective Offerors who are licensed under the terms of the existing State laws. If the applicant is a corporation organized in a state other than Alabama, it shall furnish a certificate from the Secretary of State showing that it is qualified to transact business in Alabama.

20-02 CONTENTS OF PROPOSAL FORMS

The OWNER shall furnish offerors with proposal forms. All papers bound with or attached to the proposal forms are necessary parts and must not be detached.

The plans, specifications, and other documents designated in the proposal form shall be considered a part of the proposal whether attached or not.

20-03 ISSUANCE OF PROPOSAL FORMS

The OWNER reserves the right to refuse to issue a proposal form to a prospective offeror should such offeror be in default for any of the following reasons:

(a) Failure to pay, or satisfactorily settle, all bills due for labor and materials on former Contracts in force with the OWNER.

(b) Contractor default under previous Contracts with the OWNER.

(c) Proposal withdrawal or Bid Bond forfeiture on previous project with the OWNER.

(d) Unsatisfactory work on previous Contract with the OWNER.

(e) Performance failure of manufacturer’s product or materials.

20-04 INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES

An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is the result of careful calculations and is believed to be correct. It is given only as a basis for comparison of proposals and the award of the Contract. The OWNER does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith; nor shall the offeror plead misunderstanding or deception because of such estimates of quantities, or of the character, location or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be increased or decreased as hereinafter provided in the subsection titled 50-02 ALTERATION OF WORK AND QUANTITIES of Division IV, without in any way invalidating the unit prices.

20-05 EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE

The offeror is expected to carefully examine the site of the proposed work, the proposal, plans, specifications, and Contract forms. He shall satisfy himself as to the character, quality, and quantities of work to be performed, materials to be furnished, and as to the requirements of the proposed Contract. The submission of a proposal shall be prima facie evidence that the offeror has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the proposed Contract, plans, and specifications.

Boring logs and other records of subsurface investigations and tests are available for inspection of offerors. It is understood and agreed that such subsurface information, whether included in the plans, specifications, or otherwise made available to the offeror, was obtained, and is intended for the OWNER's design and estimating purposes only. Such information has been made available for the convenience of all offerors. It is further understood and agreed that each

offeror is solely responsible for all assumptions, deductions, or conclusions which he may make or obtain from his examination of the boring logs and other records of subsurface investigations and tests that are furnished by the OWNER.

20-06 PREPARATION OF PROPOSAL

The offeror shall submit his proposal on the forms furnished by the OWNER. All blank spaces in the proposal forms must be correctly filled in where indicated for each and every item for which a quantity is given. The offeror shall state the price (written in ink or typed) both in words and numerals for which he proposed to do each pay item furnished in the proposal. The Department will check the gross sum given in the proposal and in case of error or discrepancy, the gross sum obtained by adding the products of the unit prices and the various estimated quantities listed in the proposal shall prevail and this shall be the Contract Price. In case of conflict between words and numerals, the words, unless obviously incorrect, shall govern.

The offeror shall sign his proposal correctly and in ink. If the proposal is made by an individual, his name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation the person signing the proposal shall give the name of the State under the laws of which the corporation was chartered and the name, titles, and business address of the president, secretary, and the treasurer. Anyone signing a proposal as an agent shall file evidence of his authority to do so and that the signature is binding upon the firm or corporation.

20-07 IRREGULAR PROPOSALS

Proposals shall be considered irregular for the following reasons:

(a) If the proposal is on a form other than that furnished by the OWNER, if the OWNER's form is altered, or if any part of the proposal form is detached.

(b) If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind which make the proposal incomplete, indefinite, or otherwise ambiguous.

(c) If the proposal does not contain a unit price for each pay item listed in the proposal, except in the case of authorized alternate pay items, for which the offeror is not required to furnish a unit price.

(d) If the proposal contains unit prices that are obviously unbalanced.

(e) If the proposal is not accompanied by the bid bond specified by the OWNER.

The OWNER reserves the right to reject any irregular proposal and the right to waive technicalities if such waiver is in the best interest of the OWNER and conforms to laws and ordinances pertaining to the letting of construction Contracts.

20-08 PROPOSAL GUARANTY

Each separate proposal shall be accompanied by a certified check, or other specified acceptable collateral, in the amount of 5% of the proposal price, but not more than $10,000. Such check, or collateral, shall be made payable to the Alabama Port Authority.

20-09 DELIVERY OF PROPOSAL

Each proposal submitted shall be placed in a sealed envelope plainly marked on the outside with the project description, Offeror's name and address, Contractor's License number, Contractor's Classification of License, and the time and date of proposal deadline. When sent by mail, preferably registered, the sealed proposal, marked as indicated above, should be enclosed in an additional envelope. No proposal will be considered unless received at the place specified in the advertisement before the time specified for opening all proposals.

Proposals received after the proposal deadline time shall be returned to the offeror unopened.

20-10 WITHDRAWAL OR REVISION OF PROPOSALS

A offeror may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the offeror's request for withdrawal is received by the OWNER in writing or by telegram before the time specified for proposal deadline. Revised proposals must be received at the place specified in the advertisement before the time specified for proposal deadline.

20-11 PUBLIC OPENING OF PROPOSALS

Proposals shall be opened, and read, publicly at the time and place specified in the advertisement. Offerors, their authorized agents, and other interested persons are invited to attend.

Proposals that have been withdrawn (by written or telegraphic request) or received after the time specified for opening proposals shall be returned to the offeror unopened.

20-12 DISQUALIFICATION OF OFFERORS

A offeror shall be considered disqualified for any of the following reasons:

(a) Submitting more than one proposal from the same partnership, firm or corporation under the same or different name.

(b) Evidence of collusion among offerors. Offerors participating in such collusion shall be disqualified as offerors for any future work of the OWNER.

(c) If the offeror is considered to be in “default” for any reason specified in the paragraph titled ISSUANCE OF PROPOSAL FORMS of this subsection.

(d) If the offeror has not complied with the provisions of the Laws of the State of Alabama concerning licensing of Contractors.

(e) If an out-of-state offeror has not qualified with the Secretary of State to do business in Alabama.

20-13 LIQUIDATED DAMAGES

Time is an essential element in the Contract. As the prosecution of the Work will inconvenience the public, obstruct traffic, and interfere with business, it is important that the work be pressed vigorously to completion. Also, the cost to the Department of the administration of the Contract, supervision, inspection, engineering, and in some cases maintenance of detours around or over the work under construction will be increased or decreased as the time occupied in the Work is lengthened or shortened. Therefore, exclusive of Sundays, national holidays, and other exceptions and extensions as detailed elsewhere in these Specifications for each day that the Work remains incomplete after the time specified in the Contract, or additional time that may be allowed by the Engineer for the completion of the work when extra or additional work is ordered by the Engineer, the amount specified in the following schedule shall be paid by the Contractor to the Department as liquidated damages for the loss sustained by the State because of failure of the Contractor to complete the work within the specified time.

SCHEDULE OF LIQUIDATED DAMAGES

Contract Proposal Price	Amount of Liquidated Damages per Day
$100,000 and less	$100.00
More than $100,000 and less than $250,000	150.00
$250,000 and less than $600,000	200.00
$600,000 or more	0.033% of Contract amount

20-14 PURCHASE OF MATERIALS

20-14.1 In accordance with the State of Alabama Statutes for **Sales Tax exemptions for a State Agency**, it is the intent of this Contract for the Alabama Port Authority (Owner) to reduce sales tax.

20-14.1.1 The Owner reserves the right to purchase all of the required materials or equipment to be used on this project which will become part of the realty.

20-14.1.2 The cost of the Materials and Equipment which will become part of the realty is to be included in the Proposal Price. Sales taxes, which will become part of the realty in accordance with the Alabama Statutes, are not to be included.

20-14.2 Materials and Equipment Responsibility

20-14.6.1 The General Contractor shall retain as part of his Proposal and Fee the following responsibilities for care, custody and control of the purchased Materials and Equipment.

.1 Insure that all Materials and Equipment purchased by the Owner are in complete accordance with the plans and specifications.

.2 Shop drawings and submittals.

.3 Scheduling.

.4 Shipment, receipt, unloading, inspection, storage and handling.

.5 Return of damaged Materials and Equipment.

.6 Filing of freight claims.

.7 Installation as required.

.8 Startup and testing as required per specifications.

.9 Warranty and maintenance as required per specifications.

.10 Training as required per specifications.

.11 Spare parts. Special tools and additional stock as required by the specifications.

.12 In the event the Contractor orders non-specified, wrong size or dimensioned Material or Equipment it will be his responsibility to replace such at no cost to the Owner.

SECTION 30 AWARD AND EXECUTION OF CONTRACT

30-01 CONSIDERATION OF PROPOSALS

After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit proposal prices. If a offeror's proposal contains a discrepancy between unit proposal prices written in words and unit proposal prices written in numbers, the unit price written in words shall govern.

Until the award of the Contract is made, the OWNER reserves the right to reject a offeror's proposal for any of the following reasons:

(a) If the proposal is irregular as specified in the subsection titled IRREGULAR PROPOSALS of Subsection 20.

(b) If the offeror is disqualified for any of the reasons specified in the subsection titled DISQUALIFICATION OF OFFERORS of Subsection 20.

In addition, until the award of a Contract is made, the OWNER reserves the right to reject any or all proposals; waive technicalities, if such waiver is in the best interest of the OWNER and is in conformance with applicable laws or regulations pertaining to the letting of construction Contracts; advertise for new proposals; or proceed with the work otherwise. All such actions shall promote the OWNER's best interests.

30-02 AWARD OF CONTRACT

The award of a Contract, if it is to be awarded, shall be made within 60 calendar days of the date specified for proposal deadline.

Award of the Contract shall be made by the OWNER to the lowest qualified offeror whose proposal conforms to the cited requirements of the OWNER.

30-03 CANCELLATION OF AWARD

The OWNER reserves the right to cancel the award without liability to the offeror, except return of proposal guaranty, at any time before a Contract has been fully executed by all parties and is approved by the OWNER in accordance with the paragraph titled APPROVAL OF CONTRACT of this subsection.

30-04 RETURN OF PROPOSAL GUARANTY

All proposal guaranties will be returned immediately after the award is made, at which time, the unsuccessful offerors' proposal guaranty will be returned. The successful offeror's proposal guaranty will be returned as soon as the OWNER receives the contract bonds as specified in the paragraph titled “REQUIREMENTS OF CONTRACT BONDS” of the subsection.

30-05 REQUIREMENTS OF CONTRACT BONDS

In order to insure the faithful performance of each and every condition, stipulation, and requirement of the Contract and to indemnify and save harmless the OWNER from any and all damages, either directly or indirectly, (arising out of any failure to perform same), the successful Offeror to whom the Contract is awarded shall, within ten (10) days from the date of award, furnish at his expense and file with the OWNER an acceptable Surety Bond in an amount equal to one hundred percent (100%) of the Contract Price of the Contract as awarded. Said Bond shall be made on the approved bond form, shall be furnished by a reputable surety company authorized to do business in the State of Alabama, shall be counter-signed by an authorized agent resident in the State who is qualified for the execution of such instruments, and shall be attached thereto power of attorney of the signing agent.

In case of default on the part of the Contractor, all expenses incident to ascertaining and collecting losses suffered by the OWNER under the Bond, including both Engineering and legal services, shall lie against the Contract Bond for Performance of the Work.

In addition thereto, the successful Offeror to whom the Contract is awarded shall, within ten (10) days, furnish at his expense and file with the OWNER an acceptable Surety Bond for Payment of Labor, Materials, and Supplies payable to the OWNER in an amount not less than one hundred percent (100%) of the Contract price with the obligation that the Contractor shall promptly make payment to all persons furnishing him or them with labor, materials, foodstuffs, or supplies for, or in, prosecution of the work including the payment of reasonable attorney's fees, incurred by successful claimants or plaintiffs in suits on said bond.

No surety bonds from any insurance company or bonding company which has a lower rating, in the Best Key Rating Guide, than A will be accepted.

30-06 EXECUTION OF CONTRACT

The successful offeror shall sign (execute) the necessary agreements for entering into the Contract and return such signed Contract to the OWNER, along with the fully executed surety bond or bonds specified in the paragraph titled REQUIREMENT OF CONTRACT BONDS of this subsection, within 10 calendar days from the date mailed or otherwise delivered to the successful offeror.

30-07 APPROVAL OF CONTRACT

Upon receipt of the Contract and Contract bond or bonds that have been executed by the successful offeror, the OWNER shall complete the execution of the Contract and return the fully executed Contract to the Contractor. Delivery of the fully executed Contract to the Contractor shall constitute the OWNER's approval to be bound by the successful offeror's proposal and the terms of the Contract.

30-08 FAILURE TO EXECUTE CONTRACT

Failure of the successful offeror to execute the Contract and furnish an acceptable surety bond or bonds within the 10 calendar day period specified in the paragraph titled “REQUIREMENTS OF CONTRACT BONDS” of this subsection shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidation of damages to the OWNER. The award may then be made to the next lowest qualified Offeror or the work may be re-advertised, or otherwise contracted as the Director may decide.

SECTION 40 INDEMNIFICATION AND INSURANCE REQUIREMENTS

40-01 INDEMNIFICATION

The Contractor shall assume all liability for and shall indemnify and save harmless the State of Alabama, the Alabama Port Authority and its officers and employees, and Engineer from all damages and liability for injury to any person or persons, and injury to or destruction of property, including the loss of use thereof, by reason of an accident or occurrence arising from operations under the Contract, whether such operations are performed by himself or by any subcontractor or by anyone directly or indirectly employed by either of them, occurring on or about the premises, or the ways and means adjacent, during the term of the Contract, or any extension thereof, and shall also assume the liability for injury and/or damages to adjacent or neighboring property by reason of work done under the Contract.

40-02 CONTRACTOR COVERAGE

The Contractor shall not commence work under the Contract until he has obtained all insurance required under the following paragraphs and until such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on his subcontract until all similar applicable insurance required of the subcontractor has been obtained and approved. If the subcontractor does not take out insurance in his own name, then the principal Contractor shall provide such insurance protection for subcontractor and his employees by endorsement to the Contractor's policies or by taking out separate policies in the name of the subcontractor.

40-03 COMMERCIAL GENERAL LIABILITY

The Contractor shall take out and maintain during the life of the Contract Commercial General Liability insurance, including Blanket Contractual and Completed Operations coverage, in an amount not less than **$15,000,000** for any one occurrence for bodily injury, including death, and property damage liability. Policy shall include endorsement identifying the Owner and Engineer as Primary and Non-contributory Additional Insureds as respects the Contractor's work for the Owner, to the extent required by written Contract, including a waiver of all rights of subrogation.

40-04 OWNER'S AND CONTRACTOR'S PROTECTIVE LIABILITY

The Contractor shall take out and maintain during the life of the Contract a separate Owner's and Contractor's Protective Liability policy in the names of the Owner and Engineer in an amount not less than $2,000,000. Policy shall be delivered to the Owner.

40-05 BUSINESS AUTOMOBILE LIABILITY

The Contractor shall take out and maintain during the life of the Contract Business Automobile Liability insurance covering owned, non-owned and hired vehicles in an amount not less than **$1,000,000** for any one occurrence for bodily injury, including death, and property damage liability. The Owner and Engineer shall be identified as Additional Insureds, to the extent required by written Contract.

40-06 WORKERS COMPENSATION

The Contractor shall take out and maintain during the life of the Contract Workers Compensation and Employers Liability insurance providing coverage under the Alabama Workers Compensation Act in an amount not less than that required by Alabama Law.

Where applicable, Contractor shall take out and maintain during the life of the Contract insurance providing coverage as required by Federal statute, including but not limited to U.S. Longshoremen and Harbor Workers Act (USL&H), Jones Act, and Railroad Federal Employers Liability Act (FELA).

40-07 OCEAN MARINE COVERAGE

In the event work involves the use of watercraft in the completion of the Contract, the Contractor shall provide Protection and Indemnity coverage, including crew, in an amount not less than $2,000,000 for each loss.

NOTE #1: Only the Contractor and/or Subcontractor using watercraft in the completion of its work shall be required to provide evidence of this coverage. In the event the Contractor subcontracts for this portion of the work, the Contractor shall not allow the subcontractor to commence work until such coverage has first been obtained by the subcontractor and approved by the Owner.

40-08 RAILROAD PROTECTIVE LIABILITY

In any case where the Contract involves work within 50 feet of an operating railroad track, the Contractor shall provide a Railroad Protective Liability policy in the name of the railroad whose right of way is involved. The limits of the policy shall be not less than $2,000,000 per occurrence with $6,000,000 aggregate.

NOTE #1: With the written approval of the Owner, in lieu of the Railroad Protective Liability policy, the Contractor may cause to be attached to its Commercial General Liability policy standard ISO endorsement, "Contractual Liability – Railroads" (CG 24 17). The railroad must be identified as an Additional Insured.

NOTE #2: Only the Contractor and/or Subcontractor performing the work within 50 feet of the railroad track shall be required to provide evidence of this coverage. In the event the Contractor subcontracts for this portion of the work, the Contractor shall not allow the subcontractor to commence work until such coverage has first been obtained by the subcontractor and approved by the Owner.

40-09 BUILDER'S RISK or INSTALLATION FLOATER

The Contractor shall take out and maintain during the life of the Contract Builder's Risk insurance or Installation Floater, written on an "All Risk" basis, insuring the work included in the Contract against all physical loss. The amount of insurance shall at all times be at least equal to the amount of the Contract. The policy shall be in the names of the Owner, Engineer, Contractor and "all Subcontractors," as their interests appear. Policy shall be provided to the Owner prior to commencement of work.

When changes in scope of work by written Change Order or aggregate Change Orders equal 15 percent of the total Contract, the amount of coverage provided in the Builder's Risk/Installation Floater policy shall be increased accordingly and evidence of increased coverage delivered to the Owner.

40-10 PROFESSIONAL LIABILITY COVERAGE

The Contractor shall take out and maintain during the life of the contract Professional Liability insurance including design with limits not less than $2,000,000 per occurrence.

40-11 PROOF OF CARRIAGE OF INSURANCE

The Contractor shall furnish to the Owner, in triplicate, Certificates of Insurance, signed by the licensed agent, evidencing the required coverage, along with letter of transmittal giving date of delivery. A copy of this letter shall also be delivered to the Engineer. The Owner reserves the right to require certified copies of any and all policies.

All coverage and bonds shall be provided by companies acceptable to the Owner. Each policy of insurance shall provide, either in body of the policy or by endorsement, that such policy cannot be substantially altered or cancelled without thirty (30) days' written notice to the Owner and insured.

40-12 CONTRACTOR POLLUTION LIABILITY

The Contractor shall maintain Contractors Pollution Liability (CPL) insurance covering claims arising out of pollution conditions caused by the Contractor's operations, including transportation, disposal, and completed operations. Coverage shall include third party bodily injury, property damage, environmental cleanup costs, defense expenses, and emergency response expenses. Limits not less than $5,000,000 per claim/ $10,000,000 aggregate.

- Coverage shall apply to:
- Sudden, accidental, and gradual pollution events
- On site and off site cleanup and remediation
- Transportation of materials, including spills during loading, unloading, and transit
- Non-Owned Disposal Sites
- Naturally occurring or project related pollutants, including sediment, silt, fuel, hydraulic fluids, and other contaminants
- The policy shall be written on an occurrence form where available. If written on a claims made basis, the Contractor shall provide extended reporting period coverage (tail coverage) of no less than three years after final completion

SECTION 50 SCOPE OF WORK

50-01 INTENT OF CONTRACT

The intent of the Contract is to provide for construction and completion, in every detail, of the work described. It is further intended that the Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, drawings, specifications, and terms of the Contract.

50-02 ALTERATION OF WORK AND QUANTITIES

The OWNER reserves and shall have the right to make such alterations in the work as may be necessary or desirable to complete the work originally intended in an acceptable manner.

Unless otherwise specified herein, the Engineer shall be and is hereby authorized to make such alterations in the work as may increase or decrease the originally awarded Contract quantities, provided that the aggregate of such alterations does not change the total Contract cost by more than 10% or the total cost of any major Contract item by more than 25 percent (total cost being based on the unit prices and estimated quantities in the awarded Contract). Alterations which do not exceed the 25 percent limitation shall not invalidate the Contract nor release the surety, and the Contractor agrees to accept payment for such alteration as if the altered work had been a part of the original Contract. These alterations, which are for work within the general scope of the Contract shall be covered by “Change Orders” issued by the Engineer. Change orders for altered work shall include extensions of Contract time where, in the Engineer's opinion, such extensions are commensurate with the amount and difficulty of added work.

Should the aggregate amount of altered work exceed the 25 percent limitation hereinbefore specified, such excess altered work shall be covered by supplemental agreement. If the OWNER and the Contractor are unable to agree on a unit adjustment for any Contract item that requires a supplemental agreement, the OWNER reserves the right to terminate the Contract with respect to the item and make other arrangement for its completion.

All supplemental agreements shall require consent of the Contractor's surety and separate performance and payment bonds.

50-03 OMITTED ITEMS

The Engineer may, in the OWNER's best interest, omit from the work any Contract item, except major Contract items. Major Contract items may be omitted by a supplemental agreement.

Such omission of Contract items shall not invalidate any other Contract provision or requirement.

Should a Contract item be omitted or otherwise ordered to be non-performed, the Contractor shall be paid for all work performed toward completion of such item prior to the date of the order to omit such item. Payment for work performed shall be in accordance with the paragraph titled PAYMENT FOR OMITTED ITEMS of Subsection 100.

50-04 EXTRA WORK

Should acceptable completion of the Contract require the Contractor to perform an item of work for which no basis of payment has been provided in the original Contract or previously issued change orders or supplemental agreements, the same shall be called Extra Work. Extra work that is within the general scope of the Contract shall contain agreed unit prices for performing the change order work in accordance with the requirements specified in the order and shall contain any adjustment to the Contract time that, in the Engineer's opinion, is necessary for completion of such extra work.

When determined by the Engineer to be in the OWNER's best interest, he may order the Contractor to proceed with extra work by force account as provided in the paragraph titled PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK of Subsection 100.

Extra work that is necessary for acceptable completion of the project but is not within the general scope of the work covered by the original Contract shall be covered by a Supplemental Agreement as hereinbefore defined in the paragraph titled SUPPLEMENTAL AGREEMENT of Subsection 10.

Any claim for payment of extra work that is not covered by written agreement (change order or supplemental agreement) shall be rejected by the OWNER.

50-05 MAINTENANCE OF COMMERCE

It is the explicit intention of the Contract that the safety of workers and vessels, as well as the Contractor's equipment and personnel, is the most important consideration.

It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of vessels in the waterfront areas of the port with respect to his own operations and the operations of all his Subcontractors as specified in the paragraph titled LIMITATION OF OPERATIONS of Subsection 90.

With respect to his own operations and the operations of all his Subcontractors, the Contractor shall provide marking, lighting, and other acceptable means of identifying: personnel; equipment; vehicles; storage areas; and any work area or condition that may be hazardous to the operation of fire rescue equipment, or maintenance vehicles at the port.

When the Contract requires the maintenance of vehicular traffic on an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the Contract, plans, and specifications, the Contractor shall keep such road, street, or highway open to all traffic and shall provide such maintenance as may be required to accommodate traffic.

The Contractor shall furnish, erect, and maintain barricades, warning signs, flagmen, and other traffic control devices in reasonable conformity with the manual of Uniform Traffic Control Devices for Streets and Highway (published by the United States Government Printing Office), unless otherwise specified herein. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets, or highways.

The Contractor shall make his own estimate of all labor, materials, equipment, and incidentals necessary for providing the maintenance of commerce and vehicular traffic as specified in this subsection.

The cost of maintaining the commerce and vehicular traffic specified in this subsection shall not be measured or paid for directly but shall be included in the various Contract items.

50-06 REMOVAL OF EXISTING STRUCTURES

All existing structures encountered within the established lines, grades, or grading sections shall be removed by the Contractor, unless such existing structures are otherwise specified to be relocated, adjusted up or down, salvaged, abandoned in place, reused in the work or to remain in place. The cost of removing such existing structures shall not be measured or paid for directly but shall be included in the various Contract items.

Should the Contractor encounter an existing structure (above or below ground) in the work for which the disposition is not indicated on the plan, the Engineer shall be notified prior to disturbing such structure. The disposition of existing structures so encountered shall be immediately determined by the Engineer in accordance with the provisions of the Contract.

Except as provided in the subsection titled RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK of this subsection, it is intended that all existing materials or structures that may be

encountered (within the lines, grades, or grading sections established for completion of the work) shall be utilized in the work as otherwise provided for in the Contract and shall remain the property of the OWNER when so utilized in the work.

50-07 RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK

Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines, grades, or grading sections, the use of which is intended by the terms of the Contract to be either embankment or waste, he may at his option either:

(a) Use such material in another Contract item, providing such use is approved by the OWNER and Engineer and is in conformance with the Contract specifications applicable to such use; or

(b) Remove such material from the site, upon written approval of the Engineer; or

(c) Use such material for his own temporary construction on site; or

(d) Use such material as intended by the terms of the Contract.

Should the Engineer approve the Contractor's wish to exercise option (a), (b), or (c), the Contractor shall be paid for the excavation or removal of such material at the applicable Contract price. The Contractor shall replace, at his own expense, such removed or excavated material with an agreed equal volume of material that is acceptable for use in constructing embankment, backfills, or otherwise to the extent that such replacement material is needed to complete the Contract work. The Contractor shall not be charged for the use of such material so used in the work or removed from the site.

Should the Engineer approve the Contractor's exercise of option (a), the Contractor shall be paid, at the applicable contact price, for furnishing and installing such material in accordance with requirements of the Contract item in which the material is used.

It is understood and agreed that the Contractor shall make no claim for delays by reason of his exercise of option (a), (b), or (c).

The Contractor shall not excavate, remove, or otherwise disturb any material, structure, or part of a structure which is located outside the lines, grades, or grading sections established for the work, except where such excavation or removal is provided for in the Contract, plans, or specifications.

50-08 FINAL CLEANING UP

Upon completion of the work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. He shall cut all brush and woods within the limits indicated and shall leave the site in a neat and presentable condition. Material cleared from the site and deposited on adjacent property will not be considered as having been disposed of satisfactorily unless the Contractor has obtained the written permission of such property OWNER.

SECTION 60 CONTROL OF WORK

60-01 AUTHORITY OF THE ENGINEER

The Engineer shall decide any and all questions which may arise as to the quality and acceptability of materials furnished, work performed, and as to the manner of performance and rate of progress of the work. He shall decide all questions which may arise as to the interpretation of the specifications or plans relating to the work, the fulfillment of the Contract on the part of the Contractor, and the rights of different Contractors on the project. The Engineer shall determine the amount and quality of the several kinds of work performed and materials furnished which are to be paid for under the Contract.

60-02 CONFORMITY WITH PLANS AND SPECIFICATIONS

All work and all materials furnished shall be in reasonably close conformity with the lines, grades, grading sections, cross sections, dimensions, material requirements, and testing requirements that are specified (including specified tolerances) in the Contract, plans, or specifications.

If the Engineer finds the materials furnished, work performed, or the finished product not within reasonably close conformity with the plans and specifications but that the portion of the work affected will, in his opinion, result in a finished product having a level of economy, durability, and workmanship acceptable to the OWNER, he will advise the OWNER of his determination that the affected work be accepted and remain in place.

In this event, the Engineer will document his determination and recommend to the OWNER a basis of acceptance which will provide for an adjustment in the Contract price for the affected portion of the work. The Engineer's determination and recommended Contract price adjustments will be based on good Engineering judgment and such tests or retests of the affected work as are, in his opinion, needed. Changes in the Contract price shall be covered by Contract modifications (change order or supplemental agreement) as applicable.

If the Engineer finds the materials furnished, work performed, or the finished product are not in reasonably close conformity with the plans and specifications and have resulted in an unacceptable finished product, the affected work or materials shall be removed and replaced or otherwise corrected by any at the expense of the Contractor in accordance with the Engineer's written orders.

For the purpose of this subsection, the term “reasonably close conformity” shall not be construed as waiving the Contractor's responsibility to complete the work in accordance with the Contract, plans and specifications. The term shall not be construed as waiving the Engineer's right to insist on strict compliance with the requirements of the Contract, plans, and specifications during the Contractor's prosecution of the work, when, in the Engineer's opinion, such compliance is essential to provide an acceptable finished portion of the work.

For the purpose of this subsection, the term “reasonably close conformity” is also intended to provide the Engineer with the authority to use good Engineering judgment in his determinations as to acceptance of work that is not in strict conformity but will provide a finished product equal to or better than that intended by the requirements of the Contract, plans and specifications.

60-03 COORDINATION OF CONTRACT, PLANS AND SPECIFICATIONS

The Contract, plans, specifications, and all referenced standards cited are essential parts of the Contract requirements. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, the Contractor shall not take advantage of any apparent error or omission on the plans or specifications. In the event the Contractor discovers any apparent error or

discrepancy, he shall immediately call upon the Engineer for his interpretation and decision, and such decision shall be final.

60-04 COOPERATION OF THE CONTRACTOR

The Contractor will be supplied with five (5) copies of each of the plans and specifications. He shall have available on the work at all times, one copy of each of the plans and specifications. Additional copies of plans and specifications may be obtained by the Contractor for the cost of reproduction.

The Contractor will give constant attention to the work to facilitate the progress thereof, and he shall cooperate with the Engineer and his inspectors and with other Contractors in every way possible. The Engineer shall allocate the work and designate the sequence of construction in case of controversy between Contractors. The Contractor shall have a competent superintendent on the work at all times who is fully authorized as his agent on the work. The superintendent shall be capable of reading and thoroughly understanding the plans and specifications and shall receive and fulfill instructions from the Engineer or his authorized representative.

60-05 COOPERATION BETWEEN CONTRACTORS

The OWNER reserves the right to Contract for and perform other or additional work on or near the work covered by this Contract.

When separate Contracts are let within the limits of any one project, Each Contractor shall conduct his work so as not to interfere with or hinder the progress or completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with his Contract and shall protect and save harmless the OWNER from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced by him because of the presence and operations or other Contractors working within the limits of the same project.

The Contractor shall arrange his work and shall place and dispose of the materials being used so as not to interfere with the operations of the other Contractors within the limits of the same project. He shall join his work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

60-06 CONSTRUCTION LAYOUT AND STAKES

The Contractor will establish horizontal and vertical control to be approved by the Engineer prior to the start of Work. The Contractor must furnish all stakes for the layout and construction of the Work. The Engineer will furnish any additional information, upon request of the Contractor, needed to layout and construct the work. The Contractor shall satisfy himself as to the accuracy of all measurements before constructing any permanent structure and shall not take advantage of any errors which may have been made in laying out the work. Such stakes and markings as the Engineer or Contractor may set for either his own or the Contractor's guidance shall be scrupulously preserved by the Contractor. In case of negligence on the part of the Contractor, or his employees, resulting in the destruction of such stakes or markings, an amount equal to the cost of replacing the same may be deducted from subsequent estimates due to the Contractor at the discretion of the OWNER.

60-07 AUTOMATICALLY CONTROLLED EQUIPMENT

Whenever batching or mixing plant equipment is required to be operated automatically under the Contract and a breakdown or malfunction of the automatic controls occurs, the equipment may be operated manually or by other methods for a period of 48 hours following the breakdown or

malfunction, provided this method of operations will produce results which conform to all other requirements of the Contract.

60-08 AUTHORITY AND DUTIES OF INSPECTORS

Inspectors employed by the OWNER shall be authorized to inspect work done and all materials furnished. Such inspection may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. Inspectors are not authorized to revoke, alter, or waive any provision of the Contract. Inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.

Inspectors employed by the OWNER are authorized to notify the Contractor or his representatives of any failure of the work or materials to conform to the requirements of the Contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the Engineer for his decision.

60-09 INSPECTION OF THE WORK

All materials and each part or detail of the work shall be subject to review by the Engineer. The Engineer shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the Engineer requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed.

After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be at the Contractor's expense.

Any work done or materials used without supervision or inspection by an authorized representative of the OWNER may be ordered removed and replaced at the Contractor's expense unless the OWNER's representative failed to inspect after having been given reasonable notice in writing that the work was to be performed.

Should the Contract work include relocation, adjustment, or any other modification to existing facilities, not the property of the (Contract) OWNER, authorized representatives of the owners of such facilities shall have the right to inspect such work. Such inspection shall in no sense make any facility owner a party to the Contract and shall in no way interfere with the rights of the parties to this Contract.

60-10 REMOVAL OF UNACCEPTABLE AND UNAUTHORIZED WORK

All work which does not conform to the requirements of the Contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the OWNER as provided in the paragraph titled CONFORMITY WITH PLANS AND SPECIFICATIONS of this subsection.

Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner in accordance with the provisions of the paragraph titled CONTRACTOR'S RESPONSIBILITY FOR WORK of Subsection 80.

No work shall be done without lines and grades having been established by the Contractor and subsequently approved by the Engineer. Work done contrary to the instructions of the Engineer,

work done beyond the lines shown on the plans or as given, except as herein specified, or any extra work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the Contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply forthwith with any order of the Engineer made under the provisions of this subsection, the Engineer will have authority to cause unacceptable work to be remedied, or removed and replaced, and unauthorized work to be removed, and to deduct the costs (incurred by the OWNER) from any monies due or to become due the Contractor.

60-11 LOAD RESTRICTIONS

The Contractor shall comply with all legal load restrictions in the hauling of materials on public roads beyond the limits of the work. A special permit will not relieve the Contractor of liability for damage which may result from the moving of material or equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. The hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor shall be responsible for all damage done by his hauling equipment and shall correct such damage at his own expense.

60-12 MAINTENANCE DURING CONSTRUCTION

The Contractor shall maintain the work during construction and until the work is accepted. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces so that the work is maintained in satisfactory condition at all times.

All costs of maintenance work during construction and before the project is accepted shall be included in the unit prices proposal on the various Contract items, and the Contractor will not be paid an additional amount for such work.

60-13 FAILURE TO MAINTAIN THE WORK

Should the Contractor at any time fail to maintain the work as provided in the paragraph titled MAINTENANCE DURING CONSTRUCTION of this subsection, the Engineer shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the urgency that exists.

Should the Contractor fail to respond to the OWNER's notification, the OWNER may suspend any work necessary for the OWNER to correct such unsatisfactory maintenance condition, depending on the urgency that exists. Any maintenance cost incurred by the OWNER, shall be deducted from monies due or to become due the Contractor.

60-14 PARTIAL ACCEPTANCE

If at any time during the prosecution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the OWNER, he may request the Engineer to make final inspection of that unit. If the Engineer finds upon inspection that the unit has been satisfactorily completed in compliance with the Contract, he may accept it as being completed, and the Contractor may be relieved of further responsibility for that unit.

Such partial acceptance and beneficial occupancy by the OWNER shall not void or alter any provision of the Contract or warranty.

60-15 FINAL CONSTRUCTION INSPECTION

Whenever the Engineer considers the work provided and contemplated by the Contract is nearing completion, or within ten (10) days after being notified by the Contractor that the work is completed, the Engineer will inspect all the work included in the Contract. If the Engineer finds that the work has not been satisfactorily completed at the time of such inspection, he shall inform the Contractor in writing as to the work to be done or the particular defects to be remedied to place the work in condition satisfactory for Final Construction Inspection. After the work has been satisfactorily completed the Engineer shall make the Final Construction Inspection.

60-16 FINAL ACCEPTANCE

Upon due notice from the Contractor of presumptive completion of the entire project, the Engineer and OWNER will make an inspection. If all construction provided for and contemplated by the Contract is found to be completed in accordance with the Contract, plans and specifications, such inspection shall constitute the final inspection. The Engineer shall notify the Contractor in writing of final acceptance as of the date of the final inspection.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the Engineer will give the Contractor the necessary instructions for correction of same, and the Contractor shall immediately comply with and execute such instructions. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such event, the OWNER will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

60-17 CLAIMS FOR ADJUSTMENT AND DISPUTES

If for any reason the Contractor deems that additional compensation is due him for work or materials not clearly provided for in the Contract, plans, or specifications or previously authorized as extra work, he shall notify the Engineer in writing of his intention to claim such additional compensation before he begins the work on which he bases the claim. If such notification is not given or the Engineer is not afforded proper opportunity by the Contractor for keeping strict account of actual cost as required, then the Contractor hereby agrees to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the OWNER has kept account of the cost of the work shall not in any way be construed as proving or substantiating the validity of the claim. When the work on which the claim for additional

compensation is based has been completed, the Contractor shall, within 10 calendar days, submit his written claim to the Engineer, who will present it to the OWNER for consideration.

Nothing in this subsection shall be construed as a waiver of the Contractor's right to dispute the final payment based on differences in measurements or computations.

SECTION 70 CONTROL OF MATERIALS

70-01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS

The materials used on the work shall conform to the requirements of the Contract, plans, and specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

In order to expedite the inspection and testing of materials, the Contractor shall furnish complete statements to the OWNER as to the origin, composition, and manufacture of all materials to be used in the work. Such statements shall be furnished promptly after execution of the Contract, but, in all cases, prior to delivery of such materials.

At the OWNER's option, materials may be approved at the source of supply before delivery is started. If it is found after trial sources of supply for previously approved materials do not produce specified products, the Contractor shall furnish materials from other sources.

70-02 SAMPLES, TESTS, AND CITED SPECIFICATIONS

All materials used in the work shall be inspected, tested, and approved by the Engineer before incorporation in the work. Any work in which untested materials are used without approval or written permission of the Engineer shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the Engineer, shall be removed at the Contractor's expense. Unless otherwise designated, tests in accordance with the cited standard methods of AASHTO or ASTM which are current on the date of advertisement for proposals will be made by and at the expense of the OWNER. Samples will be taken by a qualified representative of the OWNER. All materials being used are subject to inspection, test, or rejection at any time prior to or during incorporation into the work. Copies of all tests will be furnished to the Contractor's representative at his request.

70-03 CERTIFICATION OF COMPLIANCE

The Engineer may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's certificates of compliance stating that such materials or assemblies fully comply with the requirements of the Contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a certificate of compliance in which the lot is clearly identified.

Materials or assemblies used on the basis of certificates of compliance may be sampled and tested at any time and if found not to be in conformity with Contract requirements will be subject to rejection whether in place or not.

The form and distribution of certificates of compliance shall be as approved by the Engineer.

When a material or assembly is specified by “brand name or equal” and the Contractor elects to furnish the specified “brand name”, the Contractor shall be required to furnish the manufacturer's certificate of compliance for each lot of such material or assembly delivered to the work. Such certificate of compliance shall clearly identify Each lot delivered and shall certify as to:

(a) Conformance to the specified performance, testing, quality or dimensional requirements; and

(b) Suitability of the material or assembly for the use intended in the Contract work.

Should the Contractor propose to furnish an “or equal” material or assembly, he shall furnish the manufacturer's certificates of compliance as hereinbefore described for the specified brand name material or assembly. However, the Engineer shall be the sole judge as to whether the proposed “or equal” is suitable for use in the work.

70-04 PLANT INSPECTION

The Engineer or his authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for his acceptance of the material or assembly.

Should the Engineer conduct plant inspections, the following conditions shall exist:

(a) The Engineer shall have the cooperation and assistance of the Contractor and the producer with whom he has contracted the materials.

(b) The Engineer shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.

(c) If required by the Engineer, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Office or working space should be conveniently located with respect to the plant.

It is understood and agreed that the OWNER shall have the right to retest any material which has been tested and approved at the source of supply after it has been delivered to the site. The Engineer shall have the right to reject only material which, when retested, does not meet the requirements of the Contract, plans, or specifications.

70-05 ENGINEER'S FIELD OFFICE AND LABORATORY

When specified and provided for as a Contract item, the Contractor shall furnish a building for the exclusive use of the Engineer as a field office and field testing laboratory. The building shall be furnished and maintained by the Contractor, as specified herein, and shall become property of the Contractor when the Contract work is completed.

70-06 STORAGE OF MATERIALS

Materials shall be stored as to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be located so as to facilitate their prompt inspection. The Contractor shall coordinate the storage of all materials with the Engineer. Materials to be stored on OWNER's property shall not create an obstruction to commerce nor shall they interfere with the free and unobstructed movement of traffic. Unless otherwise shown on the plans, the storage of materials and the location of the Contractor's plant and parked equipment or vehicles shall be as directed by the Engineer. Private property shall not be used for storage purposes without written permission of the owner or lessee of such property. The Contractor shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the Contractor shall furnish the Engineer a copy of the property owner's permission.

All storage sites on private or owner's property shall be restored to their original condition by the Contractor at his entire expense, except as otherwise agreed to (in writing) by the owner or lessee of the property.

70-07 UNACCEPTABLE MATERIALS

Any material or assembly that does not conform to the requirements of the Contract, plans, or specifications shall be considered unacceptable and shall be rejected. The Contractor shall remove any rejected material or assembly from the site of the work, unless otherwise instructed by the Engineer.

No rejected material or assembly, the defects of which have been corrected by the Contractor, shall be returned to the site of the work until such time as the Engineer has approved its use in the work.

70-08 OWNER-FURNISHED MATERIAL

The Contractor shall furnish all materials required to complete the work, except those specified herein (if any) to be furnished by the OWNER. OWNER-furnished materials shall be made available to the Contractor at the location specified herein.

All cost of handling, transportation from the specified location to the site of work, storage, and installing OWNER-furnished materials shall be included in the unit price proposal for the Contract item in which such OWNER-furnished material is used.

After any OWNER-furnished material has been delivered to the location specified, the Contractor shall be responsible for any demurrage, damage, loss, or other deficiencies which may occur during the Contractor's handling, storage, or use of such OWNER-furnished material. The OWNER will deduct from any monies due or to become due the Contractor any cost incurred by the OWNER in making good such loss due to the Contractor's handling, storage, or use of OWNER-furnished materials.

70-09 RECEIVING MATERIALS AND EQUIPMENT

The Contractor shall be responsible for clerical salaries, office space and equipment rental, incidentals to receiving incoming shipments and deliveries of all materials and equipment. All material which must be protected from the elements will be properly and orderly stored in shelters provided by the Contractor. All goods and materials stored out of doors will be properly and orderly supported. The Contractor will be responsible for safeguarding all such goods and materials against loss due to damage and theft.

SECTION 80 LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

80-01 LAWS TO BE OBSERVED

The Contractor shall keep fully informed of all Federal and State laws, and local ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the OWNER and all his officers, agents, or servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself or his employees.

80-02 PERMITS, LICENSES, AND TAXES

The Contractor shall procure all permits and licenses, pay all charges, fees and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work.

80-03 PATENTED DEVICES, MATERIALS AND PROCESSES

If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, he shall provide for such use by suitable legal agreement with the patentee or owner, or a third party, from any and all claims for infringement by reason of the use of any such patented design, device, materials or process, or any trademark or copyright, and shall indemnify the OWNER for such costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the prosecution or after the completion of the work.

80-04 RESTORATION OF SURFACES DISTURBED BY OTHERS

The OWNER reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, or a utility service of another government agency at any time during the process of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the OWNER, such authorized work (by others) is noted in the plans.

Except as noted on the plans, the Contractor shall not permit any individual, firm, or corporation to excavate or otherwise disturb such utility services or facilities located within the limits of the work without the written permission of the Engineer.

Should the owner of public or private utility service, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the process of the work, the Contractor shall cooperate with such owners by arranging and performing the work in this Contract so as to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is noted on the plans. When ordered as extra work by the Engineer, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others, unless otherwise provided for in the Contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.

80-05 SANITARY, HEALTH, AND SAFETY PROVISIONS

The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements of the State and Local Board of Health, or of other bodies or tribunals having jurisdiction.

Attention is directed to Federal, State, and local laws, rules and regulations concerning construction safety and health standards. The Contractor shall not require any worker to work

in surroundings or under conditions which are unsanitary, hazardous, or dangerous to his health or safety.

80-06 PUBLIC CONVENIENCE AND SAFETY

The Contractor shall control his operations and those of his Subcontractors and all suppliers, to assure the least inconvenience to the public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of commerce and vehicular traffic with respect to his own operations and those of his Subcontractors and all suppliers in accordance with the paragraph titled MAINTENANCE OF COMMERCE of subsection 50, hereinbefore specified and shall limit such operations for the convenience and safety of the public, as specified in the paragraph titled LIMITATION OF OPERATIONS of subsection 90, hereinafter.

80-07 BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS

The Contractor shall furnish, erect, and maintain all barricades, warning signs, and markings for hazards necessary to protect the public and the work. When used during periods of darkness, such barricades, warning signs and hazard markings shall be suitably illuminated.

For vehicular and pedestrian traffic, the Contractor shall furnish, erect, and maintain barricades, warning signs, lights and other traffic control devices in reasonable conformity with the Manual of Uniform Traffic Control Devices for Streets and Highways (published by the United States Government Printing Office).

The Contractor shall furnish, erect, and maintain markings and associated lighting of open trenches, excavations, temporary stockpiles, and his parked construction equipment that may be hazardous to the operation of emergency fire rescue or maintenance vehicles.

The Contractor shall furnish and erect all barricades, warning signs, and markings for hazards prior to commencing work which requires such erection and shall maintain the barricades, warning signs, and markings for hazards until their dismantling is directed by the Engineer.

Open-flame type lights shall not be permitted.

80-08 USE OF EXPLOSIVES

When the use of explosives is necessary for the prosecution of the work, the Contractor shall exercise the utmost care not to endanger life or property, including new work. The Contractor shall be responsible for all damage resulting from the use of explosives.

All explosives shall be stored in a secure manner in compliance with all laws and ordinances, and all such storage places shall be clearly marked. Where no local laws or ordinances apply, storage shall be provided satisfactory to the Engineer and, in general, not closer than 1,000 feet from the work or from any building, road, or other place of human occupancy.

The Contractor shall notify Each property owner and public utility company having structures or facilities in proximity to the site of the work of his intention to use explosives. Such notice shall be given sufficiently in advance to enable them to take such steps as they may deem necessary to protect their property from injury.

80-09 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE

The Contractor shall be responsible for the preservation of all public and private property, and shall protect carefully from disturbance or damage all land monuments and property marks until the Engineer has witnessed or otherwise referenced their location and shall not move them until directed.

The Contractor shall be responsible for all damage or injury to property of any character, during the prosecution of the work, resulting from any act, omission, neglect, or misconduct in his manner or method of executing the work, or at any time due to defective work or materials, and said responsibility will not be released until the project shall have been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work or in consequence of the nonexecution thereof by the Contractor, he shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding, or otherwise restoring as may be directed, or he shall make good such damage or injury in any acceptable manner.

80-10 RESPONSIBILITY FOR DAMAGE CLAIMS

The Contractor shall indemnify and save harmless the Engineer and the OWNER and their officers, and employees from all suits, actions, or claims of any character brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or because of any act or through use of unacceptable materials in constructing the work; or because of any claims or amount recovered from any infringements of patent, trademark, or copyright; or from any claims or amount arising or recovered under the “Workman's Compensation Act” or any other law, ordinance, order or decree.

Money due the Contractor under and by virtue of his Contract as may be considered necessary by the OWNER for such purpose may be retained for the use of the OWNER or, in case no money is due, his surety may be held until such suit or suits, action or actions, claim or claims for injuries or damages as aforesaid shall have been settled and suitable evidence to that effect furnished to the OWNER, except that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence that he is adequately protected by public liability and property damage insurance.

80-11 THIRD PARTY BENEFICIARY CLAUSE

It is specifically agreed between the parties executing the Contract that it is not intended by any of the provisions of any part of the Contract to create the public or any member thereof a third party beneficiary or to authorize anyone not a party to the Contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the Contract.

80-12 OPENING SECTIONS OF THE WORK FOR OCCUPANCY

Should it be necessary for the Contractor to complete portions of the Contract work for the beneficial occupancy of the OWNER prior to completion of the entire Contract, such “phasing” of the work shall be as specified herein, and indicated on the plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified. The Contractor shall make his own estimate of the difficulties involved in arranging his work to permit such beneficial occupancy by the OWNER as described elsewhere in these specifications.

Upon completion of any portion of the work so described, such portion shall be accepted by the OWNER in accordance with the paragraph titled PARTIAL ACCEPTANCE of Subsection 60.

No portion of the work may be opened by the Contractor for use until ordered by the Engineer in writing. Should it become necessary to open a portion of the work to Docks traffic on a temporary or intermittent basis, such openings shall be made when, in the opinion of the Engineer, such portion of the work is in an acceptable condition to support the intended traffic. Temporary or intermittent openings are considered to be inherent in the work and shall not constitute either acceptance of the portion of the work so opened or a waiver of any provision of

the Contract. Any damage to the portion of the work so opened that is not attributable to traffic which is permitted by the OWNER shall be repaired by the Contractor at his expense.

The Contractor shall make his own estimate of the inherent difficulties involved in completing the work under the conditions herein described and shall not claim any added compensation by reason of delay or increased cost due to opening a portion of the Contract work.

80-13 CONTRACTOR'S RESPONSIBILITY FOR WORK

Until the Engineer's final written acceptance of the entire completed work excepting only those portions of the work accepted in accordance with the paragraph titled PARTIAL ACCEPTANCE of Subsection 60, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part due to the action of the elements or from any other cause, whether arising from the execution or from the nonexecution of the work. The Contractor shall rebuild, repair, store, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof.

If the work is suspended for any cause whatever, the Contractor shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor shall provide for normal drainage and shall erect necessary temporary structures, signs, or other facilities at his expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, seedings, and sodding, furnished under his Contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

80-14 CONTRACTOR'S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS

As provided in the paragraph titled RESTORATION OF SURFACES DISTURBED BY OTHERS of this subsection, the Contractor shall cooperate with the owner of any public or private utility service, or a utility service of another government agency that may be authorized by the OWNER to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control his operations to prevent the unscheduled interruption of such utility services and facilities.

To the extent that such public or private utility services, or utility services of another governmental agency are known to exist within the limits of the Contract work, the approximate locations have been indicated on the plans.

It is understood and agreed that the OWNER does not guarantee the accuracy or the completeness of the location information relating to existing utility services, facilities, or structures that may be shown on the plans or encountered in the work. Any inaccuracy or omission in such information shall not relieve the Contractor of his responsibility to protect such existing features from damage or unscheduled interruption of service.

It is further understood and agreed that the Contractor shall, upon execution of the Contract, notify the owners of all utility services or other facilities of his plan of operations. Such notification shall be in writing. In addition to the general written notifications hereinbefore provided, it shall be the responsibility of the Contractor to keep such individual owners advised of changes in his plan of operations that would affect such owners.

Prior to commencing the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify Each such owner of his plan or operation. If, in the Contractor's opinion, the owner's assistance is needed to locate the utility service or facility or the presence of a representative of the owner is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to

reach the utility owner no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the Engineer.

The Contractor's failure to give the two days' notice hereinabove provided shall be cause for the Engineer to suspend the Contractor's operations in the general vicinity of a utility service or facility.

Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use excavation methods acceptable to the Engineer within three (3) feet of such outside limits at such points as may be required to insure protection from damage due to the Contractor's operations.

Should the Contractor damage or interrupt the operations of a utility service or facility by accident or otherwise, he shall immediately notify the proper authority and the Engineer and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner and the Engineer continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.

The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to his operations whether or not due to negligence or accident. The OWNER reserves the right to deduct such costs from any monies due or which may become due the Contractor, or his surety.

80-15 FURNISHING RIGHTS-OF-WAY

The OWNER will be responsible for furnishing all rights-of-way upon which the work is to be constructed in advance of the Contractor's operations.

80-16 PERSONAL LIABILITY OF PUBLIC OFFICIALS

In carrying out any of the Contract provisions or in exercising any power or authority granted to him by this Contract, there shall be no liability upon the Engineer, his authorized representatives, or any official of the OWNER either personally or as an official of the OWNER. It is understood that in such a manner they act solely as agents and representatives of the OWNER.

80-17 NO WAIVER OF LEGAL RIGHTS

Upon completion of the work, the OWNER will expeditiously make a final inspection and notify the Contractor of final acceptance. Such final acceptance, however, shall not preclude or stop the OWNER from correcting any measurement, estimate or certificate made before or after completion of the work, nor shall the OWNER be precluded or stopped from recovering from the Contractor or his surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill his obligations under the Contract. A waiver on the part of the OWNER of any breach of any part of the Contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the Contract, shall be liable to the OWNER for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the OWNER's rights under any warranty or guaranty.

80-18 ENVIRONMENTAL PROTECTION

The Contractor shall comply with all Federal, State and local laws and regulations controlling pollution of the environment. He shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with silt runoff, fuels, oils, bitumen, chemicals, or other

harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

80-19 ARCHAEOLOGICAL AND HISTORICAL FINDINGS

Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

Should the Contractor encounter, during his operations, any building, part of a building, structure, or object which is incongruous with its surroundings, he shall immediately cease operations in that location and notify the Engineer. The Engineer will immediately investigate the Contractor's finding and will direct the Contractor to either resume his operations or to suspend operations as directed.

Should the Engineer order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate Contract modification (change order or supplemental agreement) as provided in the paragraph titled EXTRA WORK AND FORCE ACCOUNT WORK of Subsection 100. If appropriate, the Contract modification shall include an extension of Contract time in accordance with the paragraph titled DETERMINATION AND EXTENSION OF CONTRACT TIME of Subsection 90.

SECTION 90 PROSECUTION AND PROGRESS

90-01 SUBLETTING OF CONTRACT

The OWNER will not recognize any Subcontractor on the work. The Contractor shall at all times when work is in progress be represented either in person, by a qualified superintendent, or by other designated, qualified representative who is duly authorized to receive and execute orders of the Engineer.

Should the Contractor elect to assign his Contract, said assignment shall be concurred in by the surety, shall be presented for the consideration and approval of the OWNER. In case of approval, the Contractor shall file copies of all Subcontractors with the Engineer.

90-02 NOTICE TO PROCEED

The notice to proceed shall state the date on which it is expected the Contractor will begin the construction and from which date Contract time will be charged. If no such date is stated in the notice to proceed, Contract time will start on the date the notice to proceed is issued. The Contractor shall begin the work to be performed under the Contract within 10 days of the date set by the Engineer in the written notice to proceed, but in any event the Contractor shall notify the Engineer at least 24 hours in advance of the time actual construction operations will begin.

90-03 PROSECUTION AND PROGRESS

Unless otherwise specified, the Contractor shall submit his progress schedule for the Engineer's approval within 10 days after the effective day of the notice to proceed. The Contractor's progress schedule, when approved by the Engineer, may be used to establish major construction operations and to check on the progress of the work. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the contract.

If the Contractor falls significantly behind the submitted schedule, the Contractor shall, upon the Engineer's request, submit a revised schedule for completion of the work within the Contract time and modify his operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the prosecution of the work be discontinued for any reason, the Contractor shall notify the Engineer at least 24 hours in advance of resuming operations.

90-04 LIMITATION OF OPERATIONS

The Contractor shall control his operations and the operations of his Subcontractors and all suppliers so as to provide for the free and unobstructed movement of commerce in those areas adjacent to the work.

90-05 CHARACTER OF WORKERS, METHODS AND EQUIPMENT

The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the Contract, plans, and specifications.

All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

Any persons employed by the Contractor or by any Subcontractor who, in the opinion of the Engineer, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the Engineer, be removed forthwith by the Contractor

or Subcontractor employing such person, and shall not be employed again in any portion of the work without the approval of the Engineer.

Should the Contractor fail to remove such person or persons or fail to furnish suitable and sufficient personnel for the proper prosecution of the work, the Engineer may suspend the work by written notice until compliance with such orders is ascertained.

All equipment which is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet the requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the work shall be such that no injury to previously completed work, adjacent property, or existing facilities will result from its use.

When the methods and equipment to be used by the Contractor in accomplishing the work are not prescribed in the Contract, the Contractor is free to use any methods or equipment that will accomplish the work in conformity with the requirements of the Contract, plans and specifications.

When the Contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless others are authorized by the Engineer. If the Contractor desires to use a method or type of equipment other than specified in the Contract, he may request authority from the Engineer to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing the work in conformity with Contract requirements. If, after trial use on the substituted methods or equipment, the Engineer determines that the work produced does not meet Contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality or take such other corrective action as the Engineer may direct. No change will be made in basis of payment for the Contract items involved or in Contract time as a result of authorizing a change in methods or equipment under this subsection.

90-06 TEMPORARY SUSPENSION OF THE WORK

The Engineer shall have the authority to suspend the work wholly, or in part, for such period or periods as he may deem necessary, due to unsuitable weather, or such other conditions as are considered unfavorable for the prosecution of the work, or for such time as is necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the Contract.

In the event that the Contractor is ordered by the Engineer, in writing, to suspend work for some unforeseen cause not otherwise provided for in the Contract and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the effective date of the Engineer's order to suspend work to the effective date of the Engineer's order to resume the work. Claims for such compensation shall be filed with the Engineer within the time period stated in the Engineer's order to resume work. The Contractor shall submit with his claim information substantiating the amount shown on the claim. The Engineer will forward the Contractor's claim to the OWNER for consideration. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather, for suspensions made at the request of the Contractor, or for any other delay provided for in the Contract, plans, or specifications.

If it should become necessary to suspend work for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way. He shall take every precaution to prevent damage or deterioration of the work performed and provide for normal drainage of the work. The Contractor shall erect temporary structures where necessary to provide for traffic on, to, or from the site.

90-07 DETERMINATION AND EXTENSION OF CONTRACT TIME

The number of calendar or working days allowed for completion of the work shall be stated in the proposal and Contract and shall be known as the CONTRACT TIME.

Should the CONTRACT TIME require extension for reasons beyond the Contractor's control, it shall be adjusted as follows:

(a) CONTRACT TIME based on WORKING DAYS shall be calculated weekly by the Engineer. The Engineer will furnish the Contractor a copy of his weekly statement of the number of working days charged against the CONTRACT TIME during the week and the number of working days currently specified for completion of the Contract (the original CONTRACT TIME plus the number of working days, if any, that have been included in approved CHANGE ORDERS, or SUPPLEMENTAL AGREEMENTS covering EXTRA WORK).

The Engineer shall base his weekly statement of CONTRACT TIME charges on the following considerations:

(1) No time shall be charged for days on which the Contractor is unable to proceed with the principal item of work under construction at the time for at least 6 hours with the normal work force employed on such principal item. Should the normal work force be on a triple shift, 18 hours shall apply. Conditions beyond the Contractor's control such as strikes, lockouts, unusual delays in transportation, temporary suspension of the principal item of work under construction or temporary suspension of the entire work which have been ordered by the Engineer for reasons not the fault of the Contractor, shall not be charged against the CONTRACT TIME.

(2) The Engineer will not make charges against the CONTRACT TIME prior to the effective date of the notice to proceed.

(3) The Engineer will begin charges against the CONTRACT TIME on the first working day after the effective date of the notice to proceed.

(4) The Engineer will not make charges against the CONTRACT TIME after the date of final acceptance as defined in the paragraph titled FINAL ACCEPTANCE of Subsection 60.

(5) The Contractor will be allowed one week in which to file a written protest setting forth his objections to the Engineer's weekly statement. If no objection is filed within such specified time, the weekly statement shall be considered as acceptable to the Contractor.

(6) The CONTRACT TIME (state in the proposal) is based on the originally estimated quantities as described in the paragraph titled INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES of Subsection 20. Should the satisfactory completion of the Contract require performance of work in greater quantities than those estimated in the proposal, the CONTRACT TIME shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in CONTRACT TIME shall not consider either the cost of work or the extension of CONTRACT TIME that has been covered by change order or supplemental agreement and shall be made at the time of final payment.

(b) CONTRACT TIME based on CALENDAR DAYS shall consist of the number of calendar days stated in the Contract counting from the effective date of the notice to proceed and including all Saturdays, Sundays, holidays, and no work days. All calendar days elapsing between the effective dates of the Engineer's orders to suspend and resume all work, due to causes not the fault of the Contract, shall be excluded.

At the time of final payment, the CONTRACT TIME shall be increased in the same proportion as the cost that the actually completed quantities bear to the cost of the

originally estimated quantities in the proposal. Such increase in the CONTRACT TIME shall not consider either the cost of work of the extension of CONTRACT TIME that has been covered by a change order or supplemental agreement. Charges against the CONTRACT TIME will cease as of the date of final agreement.

(c) When the CONTRACT TIME is a specified completion date, it shall be the date on which all Contract work shall be substantially completed.

If the Contractor finds it impossible for reasons beyond his control to complete the work within the Contract time as specified, or as extended in accordance with the provisions of this subsection, he may, at any time prior to the expiration of the CONTRACT TIME as extended, make a written request to the Engineer for an extension of time setting forth the reasons which he believes will justify the granting of his request. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the Engineer finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, he may extend the time for completion in such amount as the conditions justify. The extended time for completion shall then be in full force and effect, the same as though it were the original time for completion.

90-08 FAILURE TO COMPLETE ON TIME

For each calendar day or working day, as specified in the Contract, that any work remains incomplete after the CONTRACT TIME (including all extensions and adjustments as provided in the paragraph titled DETERMINATION AND EXTENSION OF CONTRACT TIME of this Subsection) the sum specified in the Contract and proposal as liquidated damages will be deducted from any money due or to become due the Contractor or his surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages that will be incurred by the OWNER should the Contractor fail to complete the work in the time provided in his Contract.

The Contractor will not be charged with liquidated damages when delay in completion of the work is due to acts 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, or freight embargoes.

Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the OWNER of any rights under the Contract.

90-09 CONTRACT DEFAULT

The Contractor shall be considered in default of his Contract and such default will be considered as cause for the OWNER to terminate the Contract for any of the following reasons if the Contractor:

(a) Fails to begin the work under the Contract within the time specified in the “Notice to Proceed”; or

(b) Fails to perform the work or fails to provide sufficient workers, equipment or materials to assure completion of work in accordance with the terms of the Contract; or

(c) Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable; or

(d) Discontinues the prosecution of the work; or

(e) Fails to resume work which has been discontinued within a reasonable time after notice to do so; or

(f) Becomes insolvent or is declared bankrupt, or commits an act of bankruptcy or insolvency; or

(g) Allows any final judgment to stand against him unsatisfied for a period of 10 days; or

(h) Makes an assignment for the benefit of creditors; or

(i) For any other cause whatsoever, fails to carry on the work in an acceptable manner.

Should the Engineer consider the Contractor in default of the Contract for any reason hereinbefore, he shall immediately give written notice to the Contractor and the Contractor's surety as to the reasons for considering the construction in default and the OWNER's intentions to terminate the Contract.

If the Contractor or surety, within a period of 10 days after such notice, does not proceed in accordance therewith, then the OWNER will, upon written notification from the Engineer of the facts of such delay, neglect, or default and the Contractor's failure to comply with such notice, have full power and authority without violating the Contract, to take the prosecution of the work out of the hands of the Contractor. The OWNER may appropriate or use any or all materials and equipment that have been mobilized for use in the work and are acceptable and may enter into an agreement for the completion of said Contract according to the terms and provisions thereof, or use such other methods as in the opinion of the Engineer will be required for the completion of said Contract in an acceptable manner.

All costs and charges incurred by the OWNER, together with the cost of completing the work under Contract, will be deducted from any monies due or which may become due the Contractor. If such expense exceeds the sum which would have been payable under the Contract, then the Contractor and the surety shall be liable and shall pay to the OWNER the amount of such excess.

90-10 CONTRACT TERMINATION

The Owner may terminate the Contract, or any portion hereof, for just cause by written notice to the Contractor.

When the Contract, or any portion thereof, is terminated before completion of all items of work in the Contract, payment will be made for the actual number of units or items of work completed or started. No claims for loss of anticipated profits shall be considered.

Acceptable materials both in quantity and quality obtained or ordered by the Contractor that are not incorporated into the work shall, at the option of the Contractor, be purchased by the Owner at actual cost as shown by receipted bills and actual cost records. Delivery of the materials will be performed as designated by the Engineer.

Termination of the Contract, or a portion thereof, shall neither relieve the Contractor of his responsibilities for the completed work nor relieve his surety of its obligation for and concerning any just claim arising out of the work performed.

The costs incurred by the Contractor for mobilization, if applicable, shall be itemized and presented to the Owner. Rebates and refunds that are applicable shall be itemized, and the amount paid the Contractor shall be adjusted to reflect actual cost as shown by receipted bills and actual cost records.

The cost of demobilization of Contractor's equipment and other items pertaining to the expense of moving off the job site shall be itemized and supported by actual cost records and presented for payment. Demobilization as a percentage of the Contract amount, or portion thereof, shall not be paid.

Reimbursement for organization of the work and overhead expenses (when not otherwise included in the Contract) will be considered, the intent being that an equitable settlement will be made with the Contractor.

All of the above are subject to audit as specified by the Right to Audit, Paragraph 100-11.

SECTION 100 MEASUREMENT AND PAYMENT

100-01 MEASUREMENT OF QUANTITIES

All work completed under the Contract will be measured by the Engineer, or his authorized representatives, using United States Customary Units of Measurement.

The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the Contract will be those methods generally recognized as conforming to good Engineering practice.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally. Unless otherwise specified, transverse measurements for area computations will be the near dimensions shown on the plans or ordered in writing by the Engineer.

Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.

Unless otherwise specified, all Contract items which are measured by the Linear Foot shall be measured parallel to the base or alignment upon which such items are placed.

In computing volumes of excavation the average end area method or other acceptable methods will be used. Acceptability of another method will be decided by the Engineer.

The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fractions of inches.

The term “ton” will mean the short ton consisting of 2,000 pounds avoirdupois. All materials which are measured or proportioned by weights shall be weighed on accurate, approved scales by competent, qualified personnel at locations designated by the Engineer.

Material specified to be measured by the Cubic Yard shall be measured using AutoCAD surface-to-surface comparison based on pre-construction and construction progress surveys. Alternate calculation methods, such as end area method, may not be used unless approved in writing by the Engineer.

The term “Lump Sum” when used as an item of payment will mean complete payment for the work described in the Contract.

When a complete structure or structural unit (in effect, “Lump Sum” work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gage, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

When the estimated quantities for a specific portion of the work are designated as the pay quantities in the Contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portion of the work shown on the plans are revised by the Engineer. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.

100-02 SCOPE OF PAYMENT

The Contractor shall receive and accept compensation provided for in the Contract as full payment for furnishing all materials, for performing all work under the Contract in a complete

and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the prosecution thereof, subject to the provisions of the paragraph titled NO WAIVER OF LEGAL RIGHTS of Subsection 80.

When the “basis of payment” subsection of a technical specification requires that the Contract price (price proposal) include compensation for certain work or material essential to the item, this same work or material will not also be measured for payment under any other Contract item which may appear elsewhere in the Contract, plans, or specifications.

100-03 COMPENSATION FOR ALTERED QUANTITIES

When the accepted quantities of work vary from the quantities in the proposal, the Contractor shall accept as payment in full, so far as Contract items are concerned, payment at the original Contract price for the accepted quantities of work actually completed and accepted. No allowance, except as provided for in the paragraph titled ALTERATION OF WORK AND QUANTITIES of Subsection 50 will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor which results directly from such alterations or indirectly from his unbalanced allocation of overhead and profit among the Contract items, or from any other cause.

100-04 PAYMENT FOR OMITTED ITEMS

As specified in the paragraph titled OMITTED ITEMS of Subsection 50, the Engineer shall have the right to omit from the work (order nonperformance) any Contract item, except major Contract items, in the best interest of the OWNER.

Should the Engineer omit or order nonperformance of a Contract item or portion of such item from the work, the Contractor shall accept payment in full at the Contract prices for any work actually completed and acceptable prior to the Engineer's order to omit or not perform such Contract item.

Acceptable materials ordered by the Contractor or delivered on the work prior to the date of the OWNER's order will be paid for at the actual cost to the Contractor and shall thereupon become the property of the OWNER.

In addition to the reimbursement hereinbefore provided, the Contractor shall be reimbursed for all actual costs incurred for the purpose of performing the omitted Contract item prior to the date of the Engineer's order. Such additional costs incurred by the Contractor must be directly related to the deleted Contract item and shall be supported by certified statements by the Contractor as to the nature and amount of such costs.

100-05 PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK

Extra work, performed in accordance with the paragraph titled EXTRA WORK of Subsection 50, will be paid for at the Contract prices or agreed prices specified in the change order or supplemental agreement authorizing such extra work. When the change order or supplemental agreement authorizing the extra work requires that it be done by force account, such force account shall be measured and paid for as follows:

(a) Labor: For all labor (skilled and unskilled) and foremen in direct charge of a specific force account item, the Contractor shall receive the rate of wage (or scale) for every hour that such laborer or foreman is actually engaged in the specified force account work. Such wage (or scale) shall be agreed upon in writing before beginning the work.

The Contractor shall receive the actual costs paid to, or in behalf of, workers by reason of subsistence and travel allowances, health and welfare benefits, pension funds benefits or other benefits, when such amounts are required by collective bargaining agreement or other employment Contract generally applicable to the classes of labor employed on the work.

An amount equal to fifteen percent (15%) of the sum of the above items will also be paid the Contractor.

(b) Insurance and Taxes: For property damage, liability, and workmen's compensation insurance premiums, unemployment insurance contributions, and social security taxes on the force account work, the Contractor shall receive the actual cost, and to this cost (sum) 5 percent will be added. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such insurance and taxes.

(c) Materials: For materials accepted by the Engineer and used, the Contractor shall receive the actual cost of such materials delivered on the work, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth), to which cost (sum) 10 percent will be added.

(d) Equipment: For any machinery or special equipment (other than small tools) including fuel and lubricants, plus transportation costs, the use of which has been authorized by the Engineer, the Contractor shall receive the rental rates agreed upon in writing before such work is begun for the actual time that such equipment is committed to the work.

(e) Miscellaneous: No additional allowance will be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

(f) Comparison of Records: The Contractor and the Engineer shall compare records of the cost of force account work at the end of each day. Agreement shall be indicated by signature of the Contractor and Engineer or their duly authorized representatives.

(g) Statements: No payment will be made for work performing on a force account basis until the Contractor has furnished the Engineer with the duplicate itemized statements of the cost of such force account work detailed as follows:

(7) Name, classification, date, daily hours, total hours, rate and extension for each laborer and foreman.

(8) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

(9) Quantities of materials, prices, and extensions.

(10) Transportation of materials.

(11) Cost of property damage, liability and workmen's compensation insurance premiums, unemployment insurance contributions, and social security tax.

Statements shall be accompanied and supported by receipted invoice for all materials used and transportation charges. However, if materials used on the force account work are not specifically purchased for such work but are taken from the Contractor’s stock, then in lieu of the invoices the Contractor shall furnish an affidavit certifying that such materials were taken from his stock, that the quantity claimed, was actually used, and that the price and transportation claimed represent the actual cost provided above shall constitute full compensation for such work.

100-06 PARTIAL PAYMENT

Partial payments will be made once each month as the work progresses. Said payments will be based upon estimates prepared by the Contractor and approved by the Engineer of the value of the work performed and materials complete in place in accordance with the Contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with the subsection titled PAYMENT FOR MATERIALS ON HAND of this subsection.

No partial payment will be made when the amount due the Contractor since the last estimate is less than five hundred dollars.

From the total of the amount determined to be payable on a partial payment, 10 percent of such total amount will be deducted and retained by the OWNER until the final payment is made. The balance (90 percent) of the amount payable, less all previous payments, shall be certified for payment.

When not less than 95% of the work has been completed the Engineer may, at his discretion and without the consent of the surety, prepare an estimate from which will be retained an amount not less than twice the Contract value or estimated cost, whichever is greater, of the work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

It is understood and agreed that the Contractor shall not be entitled to demand or receive partial payment based on quantities or work in excess of those provided in the proposal or covered by approved change orders or supplemental agreements, except when such excess quantities have been determined by the Engineer to be a part of the final quantity for the item of work in question.

No partial payment shall bind the OWNER to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in the paragraph titled FINAL PAYMENT of this subsection.

100-07 PAYMENT FOR MATERIALS ON HAND

Partial payments, for projects which do not utilize the OWNER'S tax-exempt status, may be made to the extent of the delivered cost of materials to be incorporated in the work, provided that such materials meet the requirements of the Contract, plans, and specifications and are delivered to acceptable sites on the OWNER's property or at other sites in the vicinity that are acceptable to the OWNER. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

(a) The material has been stored or stockpiled in a manner acceptable to the Engineer at or on an approved site.

(b) The Contractor has furnished the Engineer with acceptable evidence of the quantity and quality of such stored or stockpiled materials.

(c) The Contractor has furnished the Engineer with satisfactory evidence that the material and transportation costs have been paid.

(d) The Contractor has furnished the OWNER legal title (free of liens or encumbrances of any kind) to the material so stored or stockpiled.

(e) The Contractor has furnished the OWNER evidence that the material so stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the work.

It is understood and agreed that the transfer of title and the OWNER's payment for such stored or stockpiled materials shall in no way relieve the Contractor of his responsibility for furnishing and placing such materials in accordance with the requirements of the Contract, plans, and specifications.

In no case will the amount of partial payments for materials on hand exceed the Contract price for such materials or the Contract price for the Contract item in which the material is intended to be used.

No partial payment will be made for stored or stockpiled living or perishable plant materials.

The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this subsection.

100-08 CONTRACT CLOSE-OUT

Subsequent to the final acceptance of this project by the Engineer, the following requirements must be satisfied by the Contractor before final payment can be made.

(a) The Contractor must publicly advertise the NOTICE OF COMPLETION furnished by the Engineer in accordance with Title 39, Code of Alabama, 1975.

(b) The Contractor must execute copies of CONTRACTOR'S AFFIDAVIT OF PAYMENT OF CLAIMS AND DEBTS on the form furnished by the Engineer.

(c) The Contractor must have his surety execute copies of CONSENT OF SURETY TO FINAL PAYMENT on the form furnished by the Engineer.

(d) The Contractor must furnish a letter on his letterhead acknowledging that acceptance of final payment by the Contractor constitutes a waiver of all claims, present or future, in connection with this project.

(e) The Contractor must furnish a written guarantee on his letterhead covering all defects in material and workmanship for a period of one (1) year commencing on the date of final acceptance.

(f) If any purchased items have been incorporated in the work, the Contractor must furnish a letter on his letterhead assigning those warranties to the OWNER. Copies of said warranties shall be bound in one binder and submitted along with the letter assignment.

(g) The Contractor must keep track of “as built” information and at the contract closeout provide one complete set of reproducible “as builts” covering all earthwork, utility routing, structural, mechanical, and electrical aspects of the work, including wiring schematics.

100-09 WITHHOLDING FOR CLAIMS AND LITIGATION

If at the time of Contract close-out, the project is subject to a claim or the Contractor is involved in litigation concerning the project, the OWNER reserves the right to:

(a) Refuse to close out the Contract retaining all monies unpaid until such time as all claims are dropped and litigation is resolved, or

(b) Refuse to close out the Contract, retaining enough money to cover the total of all outstanding claims and amounts claimed by litigation until such time as all claims are dropped and litigation is resolved, or

(c) Require the Contractor to post a letter of credit to each individual claimant or litigant and satisfactory to the claimant or litigant. Once such letters of credit have been posted and the OWNER is in receipt of written agreement from each individual claimant or litigant, the OWNER will proceed with Contract close-out and release of retainage in the normal manner.

100-10 FINAL PAYMENT

When the Contract work has been accepted in accordance with the requirements of the paragraph titled FINAL ACCEPTANCE of Subsection 60, and the paragraph titled Contract CLOSE-OUT above, the Engineer will prepare the final estimate of the items of work actually performed. The Contractor shall approve the Engineer's final estimate or advise the Engineer of his objections to the final estimate, which are based on disputes in measurements or computations of the final quantities to be paid under the Contract, as amended by change order or supplemental agreement. The Contractor and Engineer shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the

Contractor's receipt of the Engineer's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the Engineer's estimate under protest of the quantities in dispute and such disputed quantities shall be considered by the OWNER as a claim in accordance with the paragraph titled CLAIMS FOR ADJUSTMENT AND DISPUTES of Subsection 60.

After the Contractor has approved, or approved under protest, the Engineer's final estimate, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the Contract.

If the Contractor has filed a claim for additional compensation under the provisions of the paragraph titled CLAIMS FOR ADJUSTMENTS AND DISPUTES of Subsection 60 or under the provisions of this subsection, such claims will be considered by the OWNER in accordance with State laws or ordinances. Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid pursuant to a supplemental final estimate.

100-11 RIGHT OF AUDIT

Contractor's records which shall include but not be limited to accounting records (hard copy, as well as computer readable data if it can be made available), written policies and procedures; subcontract files (including proposals of successful and unsuccessful offerors, proposal recaps, etc.); original estimates; estimating work sheets; correspondence; change order files (including documentation covering negotiated settlements); backcharge logs and supporting documentation; general ledger entries detailing cash and trade discounts earned, insurance policies, rebates and dividends; and any other supporting evidence deemed necessary by the Owner to substantiate charges related to this Contract (all foregoing hereinafter referred to as “records”) shall be open to inspection and subject to audit and/or reproduction by Owner's agent or its authorized representative to the extent necessary to adequately permit evaluation and verification of (a) Contractor compliance with Contract requirements, (b) compliance with Owner's business ethics policies, and (c) compliance with provisions for pricing change orders, payment or claims submitted by the Contractor or any of their payees.

Such audits may require inspection and copying from time to time and at reasonable times and places of any and all information, materials and data of every kind and character, including without limitation, records, books, papers, documents, subscriptions, recordings, agreements, purchase orders, leases, Contracts, commitments, arrangements, notes, daily diaries, superintendent reports, drawings, receipts, vouchers and memoranda, and any and all other agreements, sources of information and matters that may in Owner's judgment have any bearing on or pertain to any matters, rights, duties or obligations under or covered by any Contract Document. Such records subject to audit shall also include, but not be limited to, those records necessary to evaluate and verify direct and indirect costs, (including overhead allocations) as they may apply to costs associated with this Contract.

The Owner or its designee shall be afforded access to all of the Contractor's records and shall be allowed to interview any of the Contractor's employees, pursuant to the provisions of this article throughout the term of this Contract and for a period of three (3) years after final payment or longer if required by law.

Contractor shall require all subcontractors, insurance agents, and material suppliers (payees) to comply with the provisions of this article by insertion of the requirements hereof in a written Contract agreement between Contractor and payee. Such requirements will also apply to Subcontractors and Sub-Subcontractors, etc. Contractor will cooperate fully and will cause all Related Parties and all of Contractor's subcontractors (including those entering into Lump Sum subcontracts) to cooperate fully in furnishing or in making available to Owner from time to time, whenever requested, in an expeditious manner, any and all such information, materials and data.

Owner's agent or its authorized representative shall have access to the Contractor's facilities, shall have access to the Subcontractor's facilities, shall have access to all necessary records, and shall be provided adequate and appropriate work space, in order to conduct audits in compliance with this article.

If an audit inspection or examination in accordance with this article, discloses overcharges (of any nature) by the Contractor to the Owner in excess of one percent (1%) of the total Contract billings, the actual cost of the Owner's audit shall be reimbursed to the Owner by the Contractor. Any adjustments and/or payments which must be made as a result of any such audit or inspection of the Contractor's invoices and/or records shall be made within a reasonable amount of time (not to exceed 90 days) from presentation of Owner's findings to Contractor.

CONSTRUCTION SPECIFICATIONS

DIVISION V
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SECTION 501

SCOPE OF WORK

PART 1 GENERAL

1.1 Description

The Work to be performed under these Plans and Specifications consists of furnishing all submittals, labor, materials, plant, equipment, tools, skills, services, and incidentals for performing all Work required for the Project as required by these Specifications and as shown on the Plans.

Work consists of mobilizing and demobilizing, conducting pre-construction surveys, construction surveys, and post-construction surveys, geotextile placement, graded rock riprap breakwater construction (if awarded), rock riprap revetment construction (if awarded), earthen dike construction, hydraulic dredging (if awarded), transport, and placement of dredged material, geotube installation and filling (if awarded), temporary and permanent signage installation, weir box installation, and erosion and turbidity control and environmental protection in accordance with these Specifications and in conformity to the lines, grades, and elevations shown on the Plans or as directed by the Engineer.

The major Work items for the Project are described in more detail in individual Construction Specifications.

1.2 Location of Work

Work on this Contract is located within upper Mobile Bay, Alabama, within waters owned by the Alabama Port Authority, as shown on the Plans.

1.3 Definitions

See General Conditions of the Contract.

1.4 Work to be Done

Contractor shall furnish all submittals, labor, materials, plant, equipment, tools, skills, services, and incidentals to complete Work required by these Specifications and as shown on the Plans.

Contractor shall perform the Work complete, in place, and ready for continuous service, and shall include repairs, testing, permits, cleanup, replacements and restoration required as a result of damages caused during this construction.

All labor, materials, plant, equipment, tools, skills, services, and incidentals which are reasonably and properly inferable and necessary for the proper completion of the Work in a substantial manner and in compliance with the requirements stated or implied by these Specifications or Plans shall be furnished and installed by Contractor without additional compensation, whether specifically indicated in the Contract Documents or not.

Contractor shall comply with all County, State, Federal, and other codes which are applicable to the proposed construction work.

1.5 Work Sequence

All Work to be done under the Contract shall be with minimum inconvenience to the public.

Coordinate the construction schedule and operations with Engineer and Owner.

1.6 Construction Areas

Coordinate use of Site under direction of Engineer.

Assume full responsibility for the protection and safekeeping of products under this Contract, stored on the Site.

Obtain and pay for the use of additional storage or work areas needed for operations.

1.7 Specifications

1.7.1 Specifications

Each Section of the Specifications consists of three parts: General, Products, and Execution. The General section contains general requirements which govern the Work, including Measurement and Payment details. The Products and Execution actions modify and supplement these by providing detailed requirements of the Work. Engineer shall clarify whenever there appears to be a conflict.

1.7.2 Intent

All Work called for in the Specifications applicable to the Contract but not shown on the Plans in their present form or vice versa shall be of like effect as if shown

or mentioned in both. Work not specified in either the Plans or in the Specifications but involved in carrying out their intent or in the complete and proper execution of the Work is required and shall be performed by Contractor as though it were specifically delineated or described.

The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any Work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used, and interpretation of these Specifications shall be made upon that basis.

1.7.3 Conflict between Plans and Specifications

Where an obvious conflict exists between the Plans and Specifications, Engineer shall decide which governs and Contractor shall comply with the decision. Such decision shall not be grounds for additional payment to Contractor, i.e., Contractor shall include the price of the most expensive alternative in his proposal.

1.8 Submittals

Refer to Section 504 Submittals.

1.9 Site Examination

Offerors are required to examine Site and make determinations of the existing conditions. Material such as logs, stumps, snags, tires, scrap, debris and other obstructions may be encountered. No separate payment for removal and disposal of these obstructions shall be made. No consideration shall be given to any claims for additional payments based on the failure of the Contractor to inspect the Sites and include Site conditions in their proposal pricing.

1.10 Pre-Construction Work Area Adjustment

The Owner reserves the right to make pre-construction work area adjustments including the geometry and/or alignment of the proposed breakwaters, northern dike, and sand berm pending the results of the pre-construction surveys.

1.11 Existing Features

The Contractor shall be responsible for investigating, locating and protecting all existing facilities, structures, services, flow lines, outfalls and pipelines on, above,

or under the surface of the area where filling operations, equipment transport, and all other construction activities are to be performed. The Owner will not be held responsible for damage to the Contractor's equipment, employees, Subcontractors, adjacent property owners, or anyone else connected with the project due to encountering objects above and below the water line. Existing features, where indicated on the Plans, are shown only to the extent such information was made available to or discovered by the Engineer during preparation of the Plans. There is no guarantee as to the accuracy or completeness of such information, and all responsibility for the accuracy and completeness is expressly disclaimed. If the Contractor fails to discover an underground installation and damages the same, he/she shall be responsible for the cost of the repair.

1.12 Work Hours

Work hours are permitted to be 24 hours per day. The Contractor shall indicate their anticipated work hours at the pre-construction conference and shall document this information within their Construction Access Plan. Contractor shall ensure all plant and equipment are marked and lit in accordance with USCG requirements for navigational safety.

1.13 Weather

The Contractor acknowledges and agrees that weather conditions shall not be an automatic cause for time extension. In order to document and claim days lost to inclement weather conditions, the Contractor shall, on a semi-monthly basis, submit a report to the Engineer, stating the time lost to inclement weather, within seven (7) calendar days of the end of the report period. The Engineer will review the report within seven (7) calendar days of receipt of the report and make recommendations for either acceptance or rejection of each claimed time period lost to inclement weather. The Owner will then instruct the Engineer to approve or reject the report. There shall be no additional compensation due to the Contractor for inclement weather days allowed hereunder.

The report for lost days due to inclement weather shall account for all days during the reporting period, including weekends and holidays. Claims for lost days on either weekends or holidays will not be considered. The reporting periods shall be from the first day of the month through and including the last day of the month. Lost time accounting shall be in one-half day increments.

Lost time shall be considered only if the weather occurrence is in excess of the normal weather patterns as established by the nearest office of the National Weather Service, U.S. Department of Commerce.

The following table defines the monthly anticipated adverse/inclement weather days that are expected to occur during the Contract and will constitute the baseline monthly weather time for evaluations. The schedule is based upon National Oceanic and Atmospheric Administration (NOAA) or similar data for the regional geographic area.

Monthly Anticipated Inclement Weather Days											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
5	5	4	4	4	5	7	7	5	3	3	4

Adverse/inclement weather days must prevent Work for fifty percent (50%) or more of the work day and delay work critical to the timely completion of the project. The number of actual adverse weather days shall be calculated chronologically from the first to the last day of each month.

Adverse/inclement weather such as tropical storms or cold front passage may result in abnormally low water conditions that imped the Work. Conditions that result in water levels at the nearest NOAA Coast Guard Sector Mobile water level gauge less than -1.5 ft NAVD 88 may be counted as an adverse/inclement weather day.

1.14 Permits

The Owner has secured the following permits for construction of the Work (see Appendix B). The Contractor is responsible for conducting the Work in accordance with the permits. These permits will include the following:

- USACE Permit, # SAM-2021-00246-DCH

The Contractor shall comply with all provisions contained in the USACE Permits and post a copy of the signed permits on the job site. Where dimensions or configurations conflict between the Plans and permit drawings, the dimensions or configuration shown on the Plans shall govern unless in violation of the permit.

The Contractor shall obtain, and pay for, all required building permits and other county or city construction and road use permits and comply with applicable laws and regulations regarding mobilization, transport of equipment, personnel and

supplies, and the construction and maintenance of temporary facilities including but not limited to: structures, storage sites, laydown areas, and construction utilities.

Pursuant to the requirements of ADEM admin. Code r. 335-8-2-.01, should cultural resources be encountered during the course of conducting the activities authorized in department of the army permit -- SAM-2021-00246-DCH, construction activities must cease and the USACE, the ADEM and the Alabama historical commission must be immediately notified of any historical, cultural, or archaeological resources that are discovered.

The Contractor shall comply with and implement the “Alabama Standard Manatee Construction Conditions” throughout project construction. In the event of an equipment strike, collision with and/or injury to a manatee as a result of project implementation, work shall cease and the permittee shall immediately contact the USACE at (251) 690-2658 and the U.S. Fish and Wildlife Service in Daphne (251) 441-5181.

1.15 Measurement and Payment

No separate measurement or payment will be made for the Work in this Section; all the costs of such Work shall be included in the prices proposed for the various items in the Contractor Proposal Form.

PART 2 MATERIALS

Not Used.

PART 3 EXECUTION

Not Used.

-- END OF SECTION --

SECTION 502

ORDER OF WORK

PART 1 GENERAL

1.1 Description

This section details the order of work, sequencing, and scheduling requirements. The submittals related to scheduling are also described.

1.2 Related Section

The provisions and intent of the Contract, including the General Provisions, Special Provisions, and Construction Specifications, apply to this Work as if specified in this section. Related Sections include the following:

- Section 501 Scope of Work
- Section 507 Mobilization and Demobilization

1.3 Submittals

All submittals shall be made in accordance with Section 504 Submittals. Submittals for this Section shall include the following:

A. Preliminary Progress Schedule

B. Updated Progress Schedule

1.4 Construction Sequence

A. General

1. Construction shall proceed continuously from mobilization to completion. Planned or unplanned shutdown periods exceeding fourteen (14) consecutive calendar days shall not be permitted without written approval of the Engineer.

2. The Contractor shall prepare and submit a Work Plan describing the proposed construction sequence, means and methods, equipment, and anticipated production rates. Construction activities identified herein shall be performed generally in the specified order, unless

otherwise approved by the Engineer based on the accepted Work Plan. The Contractor may propose a different construction sequence that maximizes construction efficiency for the Engineer to review. The following Sequence of Work shall be followed unless otherwise approved by Engineer.

B. Sequence of Work:
   1. Pre-Construction Survey
      i. Perform the pre-construction survey in accordance with the Contract Drawings and Specifications.
      ii. Submit survey results to the Engineer for review and approval prior to commencement of on-site construction activities.
   2. Mobilization
      i. Mobilization of materials, plant, and equipment shall not occur until the pre-construction survey has been approved by the Engineer, unless otherwise directed by the Engineer.
   3. Geotextile Placement
      i. Stake breakwater or rock revetment/geotube extents sufficiently for the placement of the geotextile.
      ii. Place geotextile and stake/anchor in place.
      iii. Contractor is not required to stake all rock revetment/geotube extents and place all geotextile at once. Staking may be completed in segments as the work progresses.
   4. Breakwater or Revetment/Geotube Staking
      i. After placement of geotextile, complete staking of breakwater or revetment/geotube alignments, toe locations, and grade controls as specified in the Specification prior to placement of rock or geotube.
      ii. Contractor is not required to complete all breakwater or revetment/geotube staking at once. Staking may be completed in segments as the work progresses.
   5. Breakwater or Revetment/Geotube Construction
      i. Construct the breakwaters or revetment/geotube in accordance with the Specifications.
      ii. Breakwater or revetment/geotube construction shall be initiated prior to commencement of sand berm construction. If constructed in parallel, breakwater or revetment/geotube construction shall remain at least 300 ft ahead of sand berm construction (for wave protection and containment purposes) unless otherwise approved by Engineer.
   6. Northern Dike Staking

i. Stake the northern dike alignment, slopes, and grade controls as required by the Specifications prior to commencement of northern dike construction.
ii. The Contractor is not required to complete staking for the full northern dike alignment prior to commencing construction, provided staking is maintained sufficiently in advance of construction operations.

7. Northern Dike Construction
   i. Northern dike construction may occur concurrently with breakwater (or revetment/geotube) construction and sand berm construction.
   ii. Northern dike construction shall comply with the specific sequencing requirements of Section 508 Northern Dike Construction, which requires the dike to be constructed in three separate lifts.
8. Sand Berm Staking
   i. Stake the sand berm alignment and grade controls as required by the Specifications prior to hydraulic fill placement.
   ii. Contractor is not required to complete staking of the full sand berm alignment prior to commencing hydraulic fill placement operations, provided staking is maintained sufficiently in advance of construction activities and is adequate to control fill placement.
9. Sand Berm Construction
   i. Placement of sand berm fill material shall not commence until breakwater construction has progressed to an extent deemed acceptable by the Engineer as stated in item 5 above to provide adequate containment and wave attenuation for the planned fill placement operations.
   ii. The Work Plan shall identity proposed sequencing of breakwater (or revetment/geotube) completion in advance of hydraulic fill placement.
10. Weir Box Construction and Installation
    i. Construct and install the weir box at the location and elevations indicated in the Drawings.
    ii. The weir box may be installed once the portion of the breakwater and sand berm construction is complete within the weir box footprint for at least thirty (30) calendar days. This includes the temporary sand berm as shown on the Plans.
11. Signage Installation
    i. Install all required project signage upon completion of

breakwater and northern dike constriction activities.

12. Post-Construction Survey
    i. Perform the post-construction survey in accordance with the Specifications.
    ii. Submit survey results to the Engineer for review and approval prior to final acceptance.
13. Demobilization
    i. Demobilization shall not occur until all punch list items identified on the Certificate of Substantial Completion have been satisfactorily addressed, unless otherwise approved by the Engineer.

C. The Contractor shall determine sequence for all other construction items outside of these requirements within the confines of the Contract Time set forth in the Contract unless otherwise restricted by the Specifications.

1.5 Progress Schedule

Preliminary progress schedule shall be submitted to the Engineer in accordance with the Specifications other applicable requirements.

The Progress Schedule shall be updated and submitted prior to each bi-weekly construction progress meeting and with each Application for Payment.

A. The Contractor shall develop and submit a written Progress Schedule which provides for an orderly progression of the Work, submittals, tests, and deliveries in order to complete the Work within the specified Milestones and Contract Time including, but not limited to:
    1. The anticipated date(s) for site layout, surveying, and staking.
    2. The anticipated initiation of delivery of materials and equipment, and construction operations in the Work Area.
    3. The estimated duration and beginning and ending dates of individual construction operations to include the beginning and end dates of the following construction milestones:
        i. Pre-Construction Surveys
        ii. Mobilization
        iii. Breakwater (or revetment/geotube) Construction
        iv. Northern Dike Construction
        v. Sand Berm Construction
        vi. Weir Box Installation
        vii. Post Construction Surveys
        viii. Demobilization

B. The Contractor shall develop and submit a written work sequence detailing the proposed order of Work as it relates to construction of this project.

C. The Progress Schedule submitted shall reflect the sequence requirements in Paragraph 1.4.

1.6 Measure and Payment

No separate measurement or payment will be made for the Work in this Section; all the costs of such Work shall be included in the prices proposed for the various items in the Contractor Bid Form under Base Schedule of Values.

PART 2 MATERIALS

Not Used.

PART 3 EXECUTION

Not Used.

-- END OF SECTION --

SECTION 503

PROJECT MEETINGS

PART 1 GENERAL

1.1 Scope

This Section summarizes the project meetings and requirements of the Contractor throughout construction.

1.2 Pre-Construction Conference

A pre-construction conference shall be held by Contractor, Owner, and Engineer, and other appropriate personnel prior to starting construction on the date specified in the Specifications. This conference shall serve to establish a mutual understanding of the Work to be performed, the elements of the Progress Schedule and Work Plan, expectations for bi-weekly progress meetings, the Plans and Specifications, processing Applications for Payment, and any other items of concern. A Site visit may be required after the pre-construction conference.

1.3 Definitions

See General Conditions of the Contract.

1.4 Progress Meetings and Reports

Bi-weekly construction meetings will be held on-site in the field office (see Section 505 Field Office and Site Access). Bi-weekly construction meetings may be held virtually at the direction of the Owner or Engineer. Attendance may include the Engineer, Inspector, Owner, and Contractor. Subcontractors should not be included in the bi-weekly construction meetings unless requested by Owner or Engineer. For the meetings, the Contractor shall provide an updated schedule in Microsoft Project, Primavera or similar scheduling software able to show the project components and available float. The date and time of the reoccurring meeting will be determined at the pre-construction conference. The bi-weekly meetings will cover construction progress, submittals, RFI's, potential Field/Change Orders, a two (2) week outlook, Site visit, and other items as necessary. Meeting dates and times may be scheduled at different times if necessary at the direction of the Engineer or Owner and agreed to by the Contractor.

1.5 Payment

There will be no separate payment for project meetings. Contractor costs incurred for project meetings as detailed in this Section shall be included in the Contract Lump Sum Price for Contract Item No. 001 – Mobilization and Demobilization, Contract Item No. 101 – Mobilization and Demobilization, or Contract Item No. 201 – Mobilization and Demobilization.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

-- END OF SECTION --

SECTION 504

SUBMITTALS

PART 1 GENERAL

1.1 Scope

This Section summarizes the Submittal requirements of the Contractor throughout construction.

1.2 Definitions

See General Conditions of the Contract.

1.3 Schedule of Submittals

The Contractor shall submit a Schedule of Submittals, in writing, to the Engineer, at the pre-construction conference for review and approval. The Schedule of Submittals shall be reviewed and approved by the Engineer prior to initiating any Work. This document shall include, but is not limited to, a schedule of required Submittals listed in the Specifications (including required notifications), with reference to the Construction Specification sections, the time requirements for Contractor's expected delivery, the Engineer's review of the Submittals, and the performance of related construction activities.

1.4 Approval of Submittals

The approval of Submittals shall not be construed as a complete check but shall indicate only that the general method of construction, work scheduling, and other information are satisfactory. Approval shall not relieve the Contractor of the responsibility for any error which may exist, as the Contractor is responsible for the dimensions, layout, and satisfactory construction of all Work as indicated and specified. After Submittals have been approved, resubmittal for the purpose of changing the approved Work Plan, Progress Schedule, designated acceptance segments, or for any other reason, shall not be given consideration unless accompanied by an explanation as to why a change is necessary. The period of review for Submittal shall include at least seven (7) calendar days.

1.5 Disapproved Submittals

The Contractor shall make all corrections required and promptly furnish a corrected Submittal to the Engineer as specified for the initial Submittal. If the Contractor considers any correction indicated on the Submittal(s) to constitute a change to the Contract, notice shall be given at the same time to the Engineer. Period of review for each resubmittal is the same as for the initial Submittal.

1.6 Withholding of Payment

Payment for any part of the Work accomplished by the Contractor, including transportation of the Contractor's plant to or from the Site, will not be made if required approvals for all parts of the Work have not been obtained.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 General

The Contractor shall submit all items required and specified in these Specifications, and as may be required by other portions of the Work. Proposed deviations from the Contract requirements shall be clearly identified. The required Submittals shall be listed in the Contractor's Work Plan and on the Contractor's Submittal Register. Dimensions and units of weights and measures used on all Submittals shall be the same as indicated and specified. Each Submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements.

3.2 Work Plan

The Contractor shall submit the Work Plan to the Engineer no less than seven (7) calendar days prior to the pre-construction conference. The contents of the Work Plan as they apply to specific areas of Work are detailed in the corresponding Specifications section.

3.3 Daily Progress Report

The Contractor shall record the following daily information on Daily Progress Reports:

A. Date and signature of the author of the report

B. Quantity of all contract items that are fabricated, delivered, installed, dredged/excavated, backfilled, constructed, damaged, replaced, etc. The amounts of materials shall be expressed in the units stated in the proposal;

C. Field notes of all surveys

D. List of equipment, Subcontractors, and Contractor personnel (and job title) on site. The operation time and standby time shall be estimated for each piece of equipment.

E. A brief description of any Change Orders, Field Orders, Claims, clarifications, or amendments

F. Weather conditions (adverse weather day, wind speed and direction, temperature, wave height, precipitation, etc.)

G. The amount of time lost to severe weather or personnel injury, etc.

H. Notes regarding compliance with the Progress Schedule

I. Visitor log (Instructions for format will be furnished by the Field Engineer);

J. Turbidity control data

K. Figure depicting the daily construction advance and approximate elevations.

The daily progress reports shall be submitted to the Engineer by 2pm (CST) the following day in digital format (Adobe Acrobat® Format, or approved equal). The typical form for Daily Progress Reports shall be developed by the Contractor and submitted at the pre-construction conference. The Contractor shall make any edits to the Daily Progress Report as requested by Engineer.

-- END OF SECTION --

SECTION 505

FIELD OFFICE AND PROJECT SITE ACCESS

PART 1 GENERAL

1.1 Scope

This Section details Contractor requirements for providing a field office and discusses Site access throughout construction.

1.2 Definitions

See General Conditions of the Contract.

1.3 Field Office

Contractor shall provide a construction office or Engineer approved alternative at or near the Site for the duration of the Work. The construction office shall have electrical power with sufficient 110-volt electrical outlets to operate office equipment and be equipped with a desk and chair for use by Inspector. Access to internet shall be provided by Contractor. Internet service shall have minimum three (3) Mbps upload speeds. The office shall be provided with sanitary facilities, lighting, heat, and air conditioning. The construction office shall be on a barge, and to the extent practical the barge shall be situated within viewing distance of the work activities in progress such that the Inspector, Owner, and/or Engineer may readily observe the work activities in progress. Contractor is required to obtain all necessary permits and/or written agreements related to the construction office.

1.4 Site Access

1.4.1 Vessel for Engineer and Inspector Site Visits

Contractor shall at all times provide prompt and safe access to the Site for the Owner, Engineer, and/or Inspector for construction inspection and observation.

Contractor shall at all times have at the project site a sea-worthy vessel capable of safely holding a minimum of five (5) persons. The boat shall be equipped with an outboard motor (90 horsepower minimum) and have the necessary equipment on board to pass all United States Coast Guard (USCG) requirements. The boat does not need to be for the specific use of Engineer or Inspector but shall be made available within two (2) hours when requested. Contractor shall provide

any necessary fuel and a properly licensed and qualified operator for the boat when requested by Engineer, Owner, or Inspector. Contractor shall be given a minimum 2-hour notice before requesting use of the boat.

1.4.2 Vessel for Supplemental Turbidity Monitoring

The Inspector may conduct supplemental turbidity monitoring throughout construction. See Section 506 Turbidity Control and Environmental Protection for additional details and monitoring frequencies. The Contractor shall provide a sea-worthy vessel, operator, fuel, and all necessary safety equipment for use by the Inspector in conducting supplemental turbidity monitoring.

The Contractor shall include the Inspector's use of the vessel in its construction planning and daily operations. No additional compensation will be provided for vessel standby time, interruptions, delays, reduced production rates, equipment downtime, or other impacts resulting from the Inspector's use of the vessel for project related monitoring and inspection activities. Such use shall not constitute grounds for a claim for delay, disruption, inefficiency, or additional compensation.

The Inspector will make reasonable efforts to coordinate and schedule anticipated supplemental turbidity monitoring activities during the bi-weekly construction meetings. However, changing site conditions, environmental concerns, construction activities, or observed exceedances may necessitate supplemental monitoring outside of the anticipated schedule. In such cases, the Contractor shall provide the required vessel, properly licensed and qualified operator, fuel, and safety equipment within two (2) hours of notification. The provision of the vessel for unscheduled monitoring shall be considered incidental to the Work and shall not be grounds for a claim for additional compensation, time extension, or impacts to production.

1.5 Crab Traps

Commercial crab traps located within or adjacent to the Work area shall not be disturbed, removed, or relocated except as specified herein. Upon identification of a commercial crab trap that may interfere with construction activities, the Contractor shall promptly notify Engineer of the trap location. Engineer will coordinate with the Alabama Marine Resources Division and, as necessary, the trap owner to facilitate removal or relocation of the trap.

If a commercial crab trap is located within the immediate area of active construction and presents an obstruction to the Work scheduled for that day, the Contractor may temporarily relocate the trap a sufficient distance to safely

perform the Work. Any such relocation shall be performed in a manner that minimizes disturbance to the trap, its contents, float, buoy, identification markings, and rigging. The trap shall be moved only the minimum distance necessary to clear the active work area and placed in a location where it can be readily recovered by the owner. The Contractor shall document the original and relocated positions of the trap and provide such information to the Engineer as soon as practicable. Permanent relocation or disposal of commercial crab traps will not be permitted unless specifically authorized by the Engineer.

1.6 Payment

Contractor costs incurred for the field office and Site access related items shall be included in the Contract Lump Sum Price for Contract Item No. 001 – Mobilization and Demobilization, Contract Item No. 101 – Mobilization and Demobilization, or Contract Item No. 201 – Mobilization and Demobilization, whichever is awarded.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

-- END OF SECTION --

SECTION 506

TURBIDITY CONTROL AND ENVIRONMENTAL PROTECTION

Part 1 General

1.1 Scope

This Section covers all Work necessary to comply with the requirements of the Owner and Contractor furnished permits and all applicable Federal, State, and local laws governing this Work and for implementing, installing, and maintaining all required Best Management Practices (BMPs).

Contractor is responsible for turbidity control and environmental protection within the regulations of the project Permit, and State and Federal regulations. This includes furnish, install, maintain, monitor, relocate as necessary, and remove all turbidity control measures required to satisfy applicable permit conditions, regulatory requirements, and the Contractor's means and methods. This item includes all labor, materials, equipment, inspections, repairs, replacements, anchoring systems, incidental adjustments, and maintenance required to achieve compliance with turbidity limits and water quality requirements. The Contractor shall be responsible for implementing turbidity control measures of sufficient extent and effectiveness to perform the Work in compliance with permit requirements.

1.1.1 Supplemental Turbidity Control

Owner may also request supplemental turbidity control in excess of that described in Paragraph 1.1. This scope would include all labor, materials, equipment, inspections, repairs, replacements, anchoring systems, incidental adjustments, and maintenance of supplemental turbidity control measures beyond those required to satisfy permit, regulatory, or Contract requirements.

Owner-directed supplemental turbidity control shall be used only when directed by the Owner for turbidity control measures that exceed permit, regulatory, or Contract requirements as determined by Owner/Engineer. Supplemental measures would include either additional Type II or bottom sealing type turbidity curtains authorized in writing by the Owner.

1.2 References

Contractor shall comply with the provisions in permits, Best Management Practices, and applicable State and Federal laws and regulations, including but not limited to the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, Fish and Wildlife Coordination Act (FWCA), and/or any conditions established by the Alabama Department of Environmental Management (ADEM), National Marine Fisheries Service (NMFS), and the United States Fish and Wildlife Service (USFWS).

Alabama Department of Transportation and Development (ALDOT) Publications

- ALDOT Standard Specifications for Highway Construction (2026)

1.3 Permits

The Owner has secured the following permits for construction of the Work (Appendix B). The Contractor is responsible for conducting the Work in accordance with the permits. These permits include the following:

- USACE Permit, # SAM-2021-00246-DCH

The Contractor shall comply with all provisions contained in the USACE permits and post a copy of the signed permits at the job site. Where dimensions or configurations conflict between the Plans and permit drawings, the dimensions or configuration shown on the Plans shall govern unless in violation of the permit.

The Contractor shall have the yellow Notice of Authorization posted at the Site at all times. The Contractor shall have a printed copy of the permit and its general and special conditions available at the Site at all times.

The Contractor shall obtain, and pay for, all required building permits and other county or city construction and road use permits and comply with applicable laws and regulations regarding mobilization, transport of equipment, materials, personnel and supplies, and the construction and maintenance of temporary facilities including but not limited to structures, storage sites, laydown areas, and construction utilities.

1.4 Submittals

Submit the following in accordance with Section 504 Submittals:

- Work Plan – Turbidity Control and Environmental Protection Section
- Daily Report – Turbidity Control and Environmental Protection Section

Engineer approval of Turbidity Control and Environmental Protection Section in the Work Plan does not indicate compliance, and Contractor is ultimately responsible for maintaining Water Quality and Environmental Protection compliance with applicable State and Federal laws and regulations.

1.4.1 Work Plan – Turbidity Control and Environmental Protection

Within seven (7) calendar days of the pre-construction meeting, Contractor shall provide a plan detailing the turbidity control and monitoring plan and environmental protections as specified herein and in the permit as part of the overall Work Plan. This section shall include, but is not limited to, the following items:

- Turbidity testing methodology and equipment
- Northern dike turbidity control plan
- Sand berm turbidity control plan
- Documentation of cultural resource avoidance and no bottom disturbance areas and requirements
- Other BMPs to be utilized as applicable

1.4.2 Daily Report – Turbidity Control and Environmental Protection

Contractor shall prepare and maintain a turbidity control and environmental protection section within their daily report and furnish copies daily to Engineer. A copy of the form prescribed for recording the required information and any further instructions on the preparation of the report shall be furnished prior to the pre-construction meeting. The daily report shall include:

- Coordinates of daily background and compliance sample
- Time of samples
- Water depths at sample locations
- Distance and direction of samples from turbidity source
- Turbidity readings in NTU

- Date and time of latest turbidimeter calibration
- General weather conditions
- Threatened or endangered species observed
- Cultural resources encountered

1.5 Measurement and Payment

1.5.1 Measurement

No specific unit of measurement will apply to Contract Item No. 009 – Environmental Protection / Turbidity Control, Contract Item No. 109 – Environmental Protection / Turbidity Control or Contract Item No. 209 – Environmental Protection / Turbidity Control, whichever is awarded.

Measurement for Contract Unit Price for Item No. 012, Contract Unit Price for Item No. 112, or Contract Unit Price for Item No. 212, whichever is awarded, shall be for each 100 linear feet of Type II turbidity curtain installed, for each month they are installed.

Measurement for Contract Unit Price for Item No. 013, Contract Unit Price for Item No. 113, or Contract Unit Price for Item No. 213, whichever is awarded, shall be for each 100 linear feet of bottom sealing turbidity curtain installed, for each month they are installed.

1.5.2 Payment

All costs associated with turbidity control and environmental protection shall be paid for at the Contract Lump Sum Price for Contract Item No. 009 – Environmental Protection / Turbidity Control, Contract Item No. 109 – Environmental Protection / Turbidity Control, or Contract Item No. 209 – Environmental Protection / Turbidity Control, whichever is awarded.

Supplemental turbidity control measures directed by the Owner and exceeding Contract, permit, or regulatory requirements will be measured and paid for under the applicable supplemental turbidity pay item. All costs associated with supplemental Type II turbidity control shall be paid at the Contract Unit Price for Contract Item No. 012, Contract Item No. 112, or Contract Item No. 212, whichever is awarded. All costs associated with supplemental bottom-sealing turbidity control shall be paid at the Contract Unit Price for Contract Item No. 013, Contract Item No. 113, or Contract Item No. 213, whichever is awarded.

No supplemental turbidity control payment will be made for turbidity control measures required to correct Contractor deficiencies, address damage caused by Contractor operations, or otherwise satisfy the Contractor's responsibility to perform the Work in accordance with the Contract. Costs associated with corrective actions resulting from permit exceedances, equipment damage, improper installation, inadequate maintenance, or failure of Contractor-selected means and methods shall be borne solely by the Contractor and shall not be compensated under the supplemental turbidity control pay items.

1.5.3 Partial / Progress Payment

The Lump Sum Contract Item No. 009 – Environmental Protection / Turbidity Control, Contract Item No. 109 – Environmental Protection / Turbidity Control, or Contract Item No. 209 – Environmental Protection / Turbidity Control, whichever is awarded, will be paid according to the estimated percentage of Work completed. This amount shall be full compensation for completed in-place Work. For each Application for Payment, the Contractor shall estimate the percent of the Lump Sum Price that has been completed. The Engineer shall review this percentage when reviewing the monthly Application for Payment. The Engineer reserves the right to adjust the percentage as they see fit.

Part 2 Materials

2.1 General

The Contractor shall submit a list of all products to be used as part of the turbidity control and environmental protection activities in the Work Plan. Contractor shall consider products, practices, and measures for erosion and turbidity control as described in the *2018 Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas* which are applicable or appropriate to this Project.

2.2 Turbidity Curtains

2.2.1 Type II Turbidity Curtains

Turbidity curtains used to control turbidity may either be proposed by Contractor for approval by Engineer, or may be Type II from ALDOT Special Drawing Number ESC-501. Turbidity curtains shall be devices manufactured specifically for use in containing sediment suspended in water. All materials used for the turbidity curtains shall comply with the requirements shown on the Plans and the manufacturer's recommendations for the intended application.

2.2.2 Bottom Sealing Turbidity Curtains

Owner may request the use of a bottom sealing type turbidity curtain system specifically designed to contain and control the migration of suspended sediments generated during in-water construction, dredging, excavation, demolition, or similar activities.

The curtain system shall consist of high-strength geotextile filtration fabric, continuous flotation elements, ballast and anchoring components, and an impermeable bottom sealing skirt configured to maintain continuous contact with the substrate under varying water levels and current conditions. The system shall be capable of withstanding site-specific hydraulic, tidal, wave, and vessel-induced loading while preventing unfiltered flow beneath the curtain. Materials shall be resistant to ultraviolet degradation, puncture, abrasion, and marine exposure, and shall be suitable for the project duration. Curtain design, fabrication, and installation shall be based on site conditions, including water depths, currents, bathymetry, and sediment characteristics, to achieve effective turbidity containment and compliance with applicable water quality requirements.

Part 3 Execution

3.1 General

All debris or deleterious material resulting from construction of the Project shall be removed daily from the Site and prevented from entering waters of the State of Alabama.

Work shall be conducted in a manner that causes little or no adverse environmental impact to adjacent areas. If at any time, as a result of Project activities, water quality violations develop (including equipment leaks or spills), operations associated with the problems shall cease, the Contractor shall

immediately correct the problem and contact the appropriate authorities. The Engineer shall be notified of the problem as soon as possible after notification of the first responder. Contractor may only restart operations after the issue has been resolved. Notification hierarchy is as follows:

1. Contractor contacts emergency services as required
2. Contractor contacts appropriate authorities immediately
3. Contractor notifies Engineer within one (1) hour
4. Engineer may direct additional notifications

The Contractor must allow USACE and ADEM and other regulatory representatives or Owner-approved representatives to inspect the construction activity at any time deemed necessary to ensure that construction is being or has been accomplished in accordance with the terms and conditions of these permits.

3.2 Protection of Environmental Resources

The environmental resources within the Site shall be protected during the entire period of this Contract. The Contractor shall confine Work to areas defined by the Plans. Environmental protection shall be as stated in the following paragraphs.

3.3 Protection of Land Resources

Land resources for this Project may be identified at the Sunflower DMPA, or other borrow sources.

Prior to mobilization, Contractor shall coordinate with Engineer/Owner and may be required to conduct a pre-construction survey to identify trees, vegetation, and sensitive land resources within the Site. Contractor shall prepare a map showing protected areas and obtain written approval from Engineer and Owner before starting work.

The Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and landforms without explicit written permission from the Engineer and Owner. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. Where such special emergency use is permitted, the Contractor shall provide

effective protection for land and vegetation resources at all times as defined in the following subparagraphs.

The Contractor is responsible for maintaining area drainage within any land areas during construction.

3.4 Protection of Water Resources

The Contractor shall keep construction activities under surveillance, management and control to avoid pollution of surface and ground waters.

If temporary embankments, temporary bridges, matting, falsework, debris, or other obstructions are placed during construction operations that are not part of the finished Work, these obstructions shall immediately be cleared from the waterways or as directed by Owner/Engineer. Operations to remove the obstructions shall be started immediately, within one (1) hour of the completion of the work activities that required the obstruction of the waterway.

3.5 Protection of Fish and Wildlife Resources

A. The Contractor shall keep construction activities under surveillance, management and control to minimize interference with, disturbance to and damage of fish and wildlife. Species that require specific attention along with measures for their protection will be listed in the Work Plan by the Contractor prior to beginning of construction operations.

B. The Contractor shall comply with the National Historic Preservation Act Standard Conditions.

C. The Contractor shall comply with the Standard Manatee Conditions for in-water activities. In the event of an equipment strike, collision with and/or injury to a manatee as a result of project implementation, work shall cease and the Contractor shall immediately notify the Engineer. The Engineer shall immediately notify the U.S. Fish and Wildlife Service.

D. The Contractor shall comply with the National Marine Fisheries Service's Sea Turtle, Small tooth Sawfish, and Gulf Sturgeon Construction Conditions.

E. The Contractor shall implement the National Marine Fisheries Service Southeast Region's *Measures for Reducing Entrapment Rick to Protected Species* (2012), *Protected Species Construction Conditions* (2021), and

Vessel Strike Avoidance Measures (2021) during project construction. If a protected species is seen within 100 yards of the active daily construction operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a protected species. Operation of any mechanical construction equipment shall cease immediately if a protected species is seen within a 50 foot radius of the equipment. Activities may not resume until the species has departed the project area of its own volition.

F. Turbidity shall be monitored during all construction activities to include hydraulic dredging, construction of the sand berm, construction of the northern dike, and construction of the breakwaters. The discharge flow from hydraulic dredging or hydraulic placement of imported fill shall be completely contained with earthen containment dikes, breakwaters, turbidity curtains, or another method presented in the contractors work plan and approved by the Engineer.

3.6 Protection of Cultural Resources

A. All construction activities including pipelaying, excavating, dredging, anchoring, spudding, or other subsurface ground disturbance are prohibited within 164 feet (50 m) of the “No Bottom Disturbance Areas” as shown in the Plans. The Contractor shall place the avoidance areas in a propriety GPS system used by the Contractor as navigation hazards.

B. Contractor shall not transit or perform construction activities within the “Obstruction Avoidance Area” as shown on the Plans. All construction activities including pipelaying, excavating, dredging, anchoring, spudding, or other subsurface ground disturbance are prohibited within 328 feet (100 m) of the “Obstruction Avoidance Area” as shown on the Plans. The Contractor shall place the avoidance areas in a propriety GPS system used by the Contractor as navigation hazards.

C. Should historic properties, archaeological material, or cultural resources be encountered during project activities, all work shall cease and the Engineer shall be notified immediately. The Engineer shall notify the USACE Mobile District. If any archaeological or cultural materials are discovered during the project undertaking, the Contractor shall not disclose this information to the public or the media in any manner. Discoveries of archaeological material will be kept private and confidential.

3.7 Construction Debris

The Contractor shall collect and properly dispose all trash and construction debris in accordance with all local and state solid waste management regulations and practices. No construction waste material shall be buried on the Project Site. The Contractor shall store all waste materials in approved metal dumpsters, or other containers approved by the Engineer. The dumpster shall be emptied as necessary or as required by local and state regulation, and the contents hauled away for proper disposal. The Contractor shall submit dumpster disposal tickets to Engineer for verification.

3.8 Equipment Maintenance

The Contractor's equipment used in excavation and filling operations shall be inspected, cleaned, and maintained to prevent loss of petroleum products.

3.9 Erosion and Sediment Maintenance

A. Best Management Practices (BMPs): Contractor shall employ BMPs to minimize environmental impacts. BMPs must be included in the Work Plan to be approved by Engineer.

B. All excavation and fill activities shall be conducted in a manner that will minimize turbidity and control suspended sediment to comply with the water quality requirement of the Owner and Contractor furnished permits. If it becomes apparent that turbidity levels are exceeding the maximum levels identified in the permits, alternative excavation methods and excavated material disposal methods shall be utilized as directed by the Owner/Engineer. These alternative systems may require the use of BMP's such as a turbidity curtain, or other appropriate BMP's approved by the Owner/Engineer, to contain highly turbid water.

C. Burn-off: Burn-off of ground cover is not permitted.

3.10 Turbidity

3.10.1 General

The turbidity of any effluent leaving the Site shall be minimized. Turbidity monitoring shall be completed to ensure compliance with ADEM Regulations. At no point in time shall the turbidity, as measured at the Compliance Point outside of the Mixing Zone, be 50 Nephelometric Turbidity Units (NTU) greater than

Background turbidity. The following define the Discharge Point, Mixing Zone, Compliance Point, and Background.

- The Discharge Point is either:
  - the location of the dredging activity during dredging by bucket dredge or backhoe, or.
  - the location where the effluent discharges from the fill area into the surrounding waters during hydraulic offloading
- Mixing Zone is defined here as any point within 400 feet of the location of the dredging or placement activity. The mixing zone is also referred to as the Discharge Information Zone (DIZ) by ADEM.
- The Compliance Point is defined here as a location immediately outside the Mixing Zone, 400 to 500 feet from the location of a dredging or placement activity.
- Background is defined here as any location 1,500 feet from the discharge point that represents water quality conditions undisturbed by dredging activities, outside of any visible plume, and should generally be up-current from the dredging activities, as determined at the time of monitoring.

The Contractor shall submit the planned turbidity monitoring locations and schedule to the Engineer for approval prior to the start of any dredging operations. Engineer will review and provide a response within seven (7) calendar days. The Contractor shall allow the Inspector to oversee turbidity measuring activities when requested.

3.10.2 Turbidity Monitoring Schedule

Background and Compliance Turbidity levels shall be measured at three vertical locations within the water column:

1) surface
2) mid-depth, and
3) at a point no more than 1-ft above the water bottom.

For measurements in water depths less than four feet (4'), a measurement may be taken at only one vertical location at mid-depth. The Compliance point shall be reviewed and the location changed as necessary any time the location of dredging activity changes. Turbidity levels shall be measured at the Compliance point and at the Background point and shall be collected within 15 minutes of each other

approximately once per day during dredging operations, and whenever a visibly noticeable turbidity plume is identified and discrete turbidity measurements are requested by the Engineer or Inspector. During excavation operations the Daily Report shall clearly note the daily turbidity measurements, including: brand and model of the turbidity meter, Easting and Northing of the Compliance and Background points, the water depth at the collection location, the water temperature, the date and time of measurements, the dredge status (working, not working), the name of the collector, the wind velocity and direction, the current velocity (to nearest 1 feet per second) and direction, and other appropriate weather conditions. Turbidity shall be collected with a calibrated turbidity meter and reported in NTU. The turbidity meter shall be calibrated according to unit instructions within one month of the commencement of dredging, and at least once a month thereafter during the project. The turbidity meter shall be cleaned and the calibration verified before each day's sampling, and after each time the instrument is turned on, using a turbidity "standard" that is different from the one used during calibration. The collector shall sign/initial all data, certifying that measurements were taken per procedure and to attest to the accuracy, precision and authenticity of each day's sampling data.

3.10.3 Engineer Supplemental Turbidity Monitoring

The Engineer or Inspector will collect additional turbidity monitoring data to augment the data collection of the Contractor. If at any time the Engineer's or Contractor's turbidity measurements exceed compliance, corrective actions shall be taken in accordance with these specifications.

In general, the Engineer will perform supplemental turbidity monitoring at intervals of approximately five (5) calendar days to obtain ground-truth turbidity data for correlation with satellite imagery. Supplemental monitoring shall consist of a minimum of four (4) discrete turbidity measurements. To minimize duplication of effort, up to two (2) of these measurements may consist of the Contractor's compliance and background monitoring locations. The Engineer will make reasonable efforts to coordinate anticipated supplemental monitoring activities in advance; however, changing site conditions, environmental concerns, construction activities, observed exceedances, or other project-related factors may necessitate supplemental monitoring outside of the anticipated schedule. When a visible turbidity plume is present, the Engineer may collect additional measurements within and adjacent to the plume and may document plume conditions using drone imagery.

The Engineer will make reasonable efforts to minimize use of the Contractor's vessel and associated personnel during supplemental monitoring activities. Requirements pertaining to the Contractor's provision of vessel access and support are provided in Section 505 Field Office and Site Access.

3.10.4 Excessive Turbidity Measures

The following measures shall be taken whenever turbidity levels exceed the standards stated above, which indicates a violation of state water quality standards, though not necessarily a violation of the permit:

A. Immediately cease all excavation, sidecasting, dredging, or discharge operations that may be contributing to the water quality violation. Cessation of dredging, excavation, or discharge operations shall continue until monitoring indicates that turbidity levels are meeting the Water Quality Standard;

B. Notify the Engineer within 24 hours of the time the violation is first detected. The notification shall include a description of the corrective actions taken or proposed to be taken and the turbidity values (background, compliance and the difference) of the violation;

C. Modify the work procedures that were responsible for the violation such as reducing the dredge rate and/or installing additional BMPs or repairing any non-functioning turbidity containment devices;

D. Work shall not resume until one (1) monitoring event conducted at least one hour after the monitoring violation confirm that turbidity readings are in compliance with the Water Quality Standard.

E. If turbidity levels consistently exceed the standards (as determined by the Engineer), Contractor shall reevaluate turbidity control methods through coordination with the Engineer and implement updated measures at no additional cost to the Owner.

3.11 Supplemental Turbidity Control

As directed by Owner/Engineer, supplemental turbidity controls shall be installed within three (3) calendar days. Contractor shall coordinate with Engineer on installation locations and any anchoring, sequencing, or other construction methods. Contractor shall generally install supplemental turbidity controls in

accordance with the manufacturer's recommendations. The turbidity controls shall be maintained to ensure functionality throughout the period specified by the Owner/Engineer.

Contractor shall inspect supplemental turbidity control measures at least daily during active construction operations and after significant storm events, or other events that may affect performance. Promptly repair or replace damaged components.

Contractor shall modify, relocate, or expand supplemental turbidity control systems as directed by the Owner to address changing site conditions, sequencing requirements, or water quality concerns. This shall be included in the Contract Unit Price and shall be at no additional cost to the Owner.

Upon completion of the directed supplemental turbidity work, remove supplemental turbidity control measures from the site.

-- END OF SECTION --

SECTION 507

MOBILIZATION AND DEMOBILIZATION

Part 1 GENERAL

1.1 Scope

Mobilization consists of preparatory Work and operations, including those necessary for movement of personnel, equipment, materials, supplies and incidentals to and within the Site; the establishment of offices, buildings, and other facilities necessary for the Work on the Project; the cost of bonds and any required insurance; submittals, notifications and other pre-construction activities or expenses necessary for start of the Work. Mobilization shall include the installation of temporary warning signs and/or buoys (see Section 510 Signage).

Demobilization consists of operations necessary to remove all equipment, materials, temporary facilities, and personnel from the Site upon project completion or termination. Demobilization shall include removal of all equipment, materials, and temporary structures, removal of temporary pipelines and conveyance systems, cleanup of staging areas and temporary facilities, restoration of Site to conditions acceptable to Owner/Engineer, and any other activities or expenses necessary to close out the Work.

1.2 Payment for Mobilization and Demobilization

All costs connected with the mobilization and demobilization of all Contractor equipment and personnel, including plant and all other equipment, and including installation and removal of dredge pipeline, will be paid for at the Contract Lump Sum Price for Contract Item No. 001 – Mobilization and Contract Item No. 014 Demobilization; Contract Item No. 101 – Mobilization and Contract Item No. 114 Demobilization; or Contract Item No. 201 – Mobilization and Contract Item No. 214 Demobilization, whichever are awarded.

1.3 Arbitrary Mobilization by Contractor

The Owner will pay for only one mobilization and demobilization to the Site, and as such will pay for these, whichever is awarded, only once. Should the Contractor demobilize prior to completing the Project (as determined by Engineer), such demobilization and subsequent remobilization shall be at no additional cost to the

Owner. This includes any mobilization and demobilization efforts for weather events, which are at no additional cost to the Owner.

1.4 Justification of Mobilization and Demobilization Costs

Contractor shall submit a schedule of mobilization and demobilization efforts for justification of process payments. In the event the mobilization or demobilization cost in an Application for Payment does not bear a reasonable relation to the amount of work for mobilization and demobilization in the Contract, the Engineer may require the Contractor to produce cost data to justify the amount in the application for payment. Failure to justify such cost to the satisfaction of the Engineer will result in payment of actual mobilization costs, as determined by the Engineer at the completion of mobilization. The remainder of the line item after the payment of the mobilization costs will be paid upon acceptance of the Work and removal of all equipment and unused materials from the Site. The determination of the Engineer is not subject to appeal.

1.5 Staging Area

Staging areas and access thereto for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by the Contractor. As necessary, Contractor is responsible for identifying staging area(s), acquiring access permissions, including coordination with property owner(s) and acquiring necessary local permits. Contractor shall be responsible for additional costs associated with the staging area(s) as necessary to complete the Work, including but not limited to any necessary permits for electrical, sewer, and water for the construction field office and Site access (see Section 505 Field Office and Site Access), or other needs.

The Contractor is encouraged to research current bathymetric elevations within Mobile Bay. Contours from a Rowe Engineering survey performed August 2021 are shown on the Plans, however, this is a dynamic coastal zone, and conditions may have changed since the survey was performed. Updated Mobile River and Upper Harbor ship channel surveys may be available at the USACE eHydro website:

https://www.sam.usace.army.mil/Missions/Spatial-Data-Branch/eHYDRO/

1.6 Submittals

Submittals to Engineer under this Section include the following:

A. Work Plan

B. Notice to Mariners

C. Daily Reports

1.6.1 Work Plan

Contractor shall complete and submit a Work Plan at least seven (7) Calendar days prior to the pre-construction meeting. Further details pertaining to the Work Plan for each line item are included in more detail in the Construction Specifications.

Work Plan items shall include but are not limited to the following:

A. Stated understanding of the Work.

B. Contractor requests for modification of Site work limits.

C. Field equipment, methodology and software to be used for survey data collection, post-processing and calculation of quantities, and Work layout.

D. Proposed staging and laydown area(s), including location, and any necessary improvements to these areas.

E. Sequence for mobilization.

F. Layout and sequence for breakwaters (if applicable)

G. Layout and sequence for temporary containment or training dikes

H. Layout and sequence for northern dike construction

I. Layout and sequence for sand berm construction

J. Layout and sequence for hydraulic dredging (if applicable) including detailed information on pipeline alignment

K. Layout and sequence for importing fill material (if applicable) including detailed information on hydraulic offloading, pipeline alignment(s), offloading locations, barge staging location(s), and facilities and methodologies for excavation of imported fill if utilizing an USACE Disposal Area

L. Layout and sequence for revetment (if applicable)

M. Layout and sequence for geotubes (if applicable)

N. Project Schedule

O. Sequence for demobilization.

1.6.2 Notice to Mariners

Contractor shall provide the USACE – Mobile District and the United States Coast Guard (USCG) a work schedule for any water-based construction operation thirty (30) calendar days prior to any water-based work so that a Notice to Mariners can be issued. A copy of this correspondence shall be provided to Engineer. If any significant changes to water-based construction operations occur during construction, Contractor shall provide an updated Notice to Mariners as described above. If any objects are encountered on the water bottom which could present a hazard to navigation, Contractor shall notify the USCG, Engineer, and any other pertinent agencies immediately so that the Mobile District and USCG can issue a Notice to Mariners.

Engineer will provide contact information for USACE – Mobile District and USCG within one (1) business day of request.

1.6.3 Daily Reports

Contractor shall submit daily reports during mobilization and demobilization of the project. The Contractor's daily reports during mobilization and demobilization shall include:

A. The date Notice to Proceed was issued
B. Equipment delivered and removed from site each day
C. Details of any pipeline work operations
    a. Vessels engaged in the work
    b. Amount of pipeline placed or removed from site

c. Location of pipeline placed or removed from site

D. Date of anticipated start of Work (mobilization)
E. Date of anticipated completion of demobilization
F. Delivery of materials to site to include rocks, geotextile, geotubes, signs, weir box components, and plants
G. Detailed delays in Work each day
H. Details of pre- and post-construction survey efforts

1.7 Environmental Protection during Mobilization and Demobilization

Contractor shall comply with all environmental protection requirements per Section 506 (Turbidity Control and Environmental Protection) during mobilization and demobilization activities. This shall include staging area environmental controls, equipment delivery environmental controls, and environmental monitoring as needed.

Part 2 Materials

Not Used.

Part 3 Execution

Not Used.

-- END OF SECTION --

SECTION 508

NORTHERN DIKE CONSTRUCTION

Part 1 General

1.1 Scope

The Work covered by this Section consists of furnishing all submittals, labor, materials, plant, equipment, tools, skills, services, and incidentals and performing all operations required to construct the northern dike as shown in the Plans. Conformance to environmental protection, public safety and navigational conditions per the Project permits and applicable regulations are included. All Work shall be performed in accordance with the Federal and State permits to be issued for the Project, as well as the United States Coast Guard (USCG) regulations.

1.2 Definitions

See General Conditions of the Contract.

1.3 Character of Materials

Appendix A contains subsurface information from within the area to be utilized for Northern Dike construction. Contractor shall review the geotechnical information and understand how the character of those materials may affect the work performed under this Section. The Contractor shall generally anticipate encountering loose to medium silty sands, sandy silts, and intermittent soft clay and shell. Contractor may also encounter other minor debris or rubbish. Contractor shall examine the reports, the Site and history of similar work in the area, and decide for themselves the character of the materials and the measures necessary to perform the Work within the required schedule as well as safeguard their personnel, equipment, and the public. Local minor variations in the subsurface materials are to be expected and, if encountered, will not be considered as being materially different. If at any time during mechanical dredging and dike construction operations the Contractor believes the material to be significantly different than the collected data indicates and construction according to the Plans and Specifications is not believed to be feasible, the Contractor shall notify the Engineer immediately.

1.4 Submittals

Submit the following in accordance with Section 504 Submittals:

- Work Plan – Northern Dike Construction section
- Surveys (Section 521 Construction Surveying – Segmented Breakwaters or Section 531 Construction Surveying – Geotube Revetment, as applicable to the awarded Schedule of Prices, for surveying details.)
- Daily Report – Northern Dike Construction section

1.4.1 Work Plan – Northern Dike Construction

Within seven (7) calendar days of the pre-construction meeting, Contractor shall provide a plan detailing northern dike construction methods and construction sequencing to Engineer as part of the overall Work Plan. This section shall include, but is not limited to, the following items:

- Construction schedule
- List of plant and equipment to be utilized
- Concurrence that plant and equipment shall be marked and lighted according to USCG regulations
- A descriptive plan for constructing the Northern dike, including phasing for lifts detailed in this Specification
- Turbidity control plan
- Acceptance segment layout

1.4.2 Daily Report – Northern Dike Construction

Contractor shall prepare and maintain a daily report and furnish copies daily to Engineer. A copy of the form prescribed for recording the required information and any further instructions on the preparation of the report will be furnished prior to the pre-construction meeting. Contractor shall also furnish the following items to Engineer as requested during dredging operations.

- Estimated daily quantity of placed material.
- Northern dike station within which material is placed.
- Borrow ditch excavation general location and stationing.

1.4.3 Surveys

Refer to Section 521 Construction Surveying – Segmented Breakwaters or Section 531 Construction Surveying – Geotube Revetment Surveying for surveying Submittals and details.

1.5 Order of Work

Northern dike construction operations shall be performed in a continuous and orderly manner. Northern dike construction shall proceed in such a manner that turbidity requirements of the project are achieved, as described in Section 506 Turbidity Control and Environmental Protection.

The Work shall proceed in northern dike acceptance segments of no less than 250 feet in length. Contractor may submit a request for different acceptance segment lengths to Engineer for approval.

There are no required stations and construction progress directions to begin northern dike construction. However, there are required lifts. See Part 3 of this specification for more details. Contractor shall consider existing water bottom elevations, seasonal water levels, and weather conditions when completing their Work Plan.

1.6 Acceptance

Acceptance of Contract Item No. 003 – Northern Dike Construction, Contract Item No. 103 – Northern Dike Construction, or Contract Item No. 203 – Northern Dike Construction, whichever is awarded, shall be based on the crest elevation, crest width, and side slopes of the constructed dike. The northern dike will be accepted in three (3) phases: Lift 1, Lift 2, and Lift 3.

Lift 1 shall be accepted when the top elevation of the northern dike is between zero feet (0.0’) and plus one feet (+1.0’) NAVD 88, the top (crest) width is approximately sixty feet (60 ft), and the full bottom width of the northern dike has been placed.

Lift 2 shall be accepted when the top elevation of the northern dike is between plus three feet (+3.0’) and plus four feet (+4.0’) NAVD 88 and the top width is approximately forty feet (40 ft).

Lift 3 shall be considered for acceptance once the crest elevation and crest width of the constructed dike meets the lines, grades, and elevations shown on the

Plans. The crest elevation of the Northern Dike shall be plus six feet (+6 ft) NAVD 88 with a vertical tolerance of plus or minus one-half foot (+/-0.5 ft) and the crest width shall be at least thirty feet (30 ft). Side slopes shall be no steeper than 1V:3H.

Work before Final Payment is released shall include the removal of all Contractor equipment, all markings and stakes placed by Contractor for the control of their Work, and clean-up of all trash and debris from the Site and all areas affected by Contractor's operations.

1.7 Measurement and Payment

1.7.1 Measurement

Measurement for Contract Item No. 003 – Northern Dike Construction, Contract Item No. 103 – Northern Dike Construction, Contract Item No. 203 – Northern Dike Construction, whichever is awarded, shall be based on the linear feet of accepted dike along the alignment as shown by construction progress surveys (see Section 521 Construction Surveying – Segmented Breakwaters or Section 531 Construction Surveying – Geotube Revetment). The surveying specification generally states that Lift 1 and Lift 2 construction progress surveys shall consist of one longitudinal profile survey along the centerline alignment of the northern dike, with transects across the dike perpendicular to the alignment every 500 ft. The Lift 3 construction progress surveys shall consist of a longitudinal profile survey along the centerline alignment of the northern dike, and transects across the dike perpendicular to the alignment every 100 ft.

1.7.2 Payment

Payment for northern dike construction shall be at the Contract Unit Price for Contract Item No. 003 – Northern Dike Construction, Contract Item No. 103 – Northern Dike Construction, Contract Item No. 203 – Northern Dike Construction, whichever is awarded. Price and payment shall constitute full compensation for furnishing all plant, equipment, labor, materials, tools, incidentals, and completing northern dike construction operations for satisfactory placement of the mechanically dredged material and performing all Work as specified herein. There will be no payment for placing quantities in excess of the lines, grades, and elevations shown in the Drawings and/or state in the Specifications.

Any required maintenance of the northern dike prior to the acceptance of Lift 3 shall be the sole responsibility of the Contractor at no additional cost to the Owner.

1.7.3 Partial Payment

The Contractor may request partial payments on a monthly basis. The quantity of linear feet of placed material included in the partial payment shall be determined by the progress surveys as described in Section 521 Construction Surveying – Segmented Breakwaters or Section 531 Construction Surveying – Geotube Revetment, for the sand berm areas that are submitted by the Contractor and approved by the Engineer. Only segments accepted by the Engineer shall be eligible for partial payment.

Thirty percent (30%) of the Contract Unit Price per linear foot will be paid to the Contractor for Lift 1 of the northern dike that is constructed and accepted.

Thirty percent (30%) of the Contract Unit Price per linear foot will be paid to the Contractor for Lift 2 of the northern dike that is constructed and accepted.

The remaining forty percent (40%) of the Contract Unit Price per linear foot will be paid to the Contractor for Lift 3 of the northern dike that is constructed and accepted.

Costs associated with the construction of the Northern dike including shaping of material excavated from the Borrow Ditch and maintaining the Northern dike throughout final acceptance shall be included in the Contract Unit Price for Contract Item No. 003 – Northern Dike Construction, Contract Item No. 103 – Northern Dike Construction, Contract Item No. 203 – Northern Dike Construction, whichever is awarded.

Part 2 Materials

2.1 Borrow Material

The borrow material for northern dike construction shall be obtained from the primary and secondary borrow ditches as shown on Plans.

The material is generally loose to medium silty sands, sandy silts, soft clay, and shell; however, Contractor shall complete their own examination and make their own conclusions related to material types and how that material may influence constructability prior to determining their Work Plan. Any material within the borrow ditches shall be considered suitable for construction of the norther dikes, there are no restrictions on gradation or material type. Contractor shall notify Engineer

immediately (within 1 calendar day) if material differs significantly than indicated by the soil borings. Contractor shall not treat local minor variations as a material change order.

2.2 Unsuitable Material

If Contractor encounters material they consider to be unsuitable for construction of the northern dike, such that the dike is not constructable to the lines, grades, and elevations, or if the unsuitable material would result in lack of structural integrity, they shall notify the Engineer immediately (within 1 calendar day). Contractor shall shift borrow/excavation operations until they encounter suitable material. Any additional costs for double-handling material in order to avoid using unsuitable material are the responsibility of the Contractor, at no additional cost to the Owner.

2.3 Material Stability During Placement

There are no specifications for compaction or post-placement treatment of the material. The material is expected to self-weight consolidate and strengthen over time.

Part 3 Execution

3.1 General

The Contractor shall use an environmentally acceptable method that will complete the Work in accordance with the Drawings, Specifications, and Permit. The northern dike shall be constructed as shown on the Drawings.

Excavation of the borrow ditches and placement of material into the northern dike shall be completed mechanically. Hydraulic excavation and placement is not allowed for this Contract Item.

3.2 Source Material and Borrow Area Prioritization

The Contractor shall utilize material excavated from the primary borrow ditch and the secondary borrow ditch shown on the Drawings. It is expected that both the primary and secondary borrow ditches will be required to complete the northern dike. The primary borrow ditch shall be the primary source of material to the extent practical based on contractor equipment, means, and methods. Contractor may utilize the secondary borrow ditch as approved by the Engineer based on required

borrow volumes and/or equipment reach and production limitations to minimize double handling material.

3.3 Construction Sequence

The Contractor shall construct the northern dike in three (3) lifts. One lift shall be considered one horizontal layer of dike fill placed across full alignment and accepted as a phase before subsequent lift placement. The staged construction sequence is intended to facilitate progressive foundation improvement and accommodate the gradual application of embankment loads during dike construction.

Each lift shall be extended across the full footprint and entire alignment of the northern dike prior to placement of the next lift. After completion and acceptance of a lift over the full alignment, the Contractor shall return to the initial station and begin placement of the subsequent lift. Leapfrogging lifts or otherwise advancing localized segments of the northern dike to higher elevations ahead of the remainder of the alignment will not be permitted without written approval of the Engineer. This construction sequence is intended to provide a uniform rate of loading and promote consistent consolidation and strength development of the foundation soils.

Lift sequencing and timing shall generally be dependent on the time required to complete the previous lift. There shall be no additional wait time required between lifts if constructed according to the above sequence. Once a previous lift is completed and accepted, Contractor may initiate work on the subsequent lift.

If the Contractor proposes to construct the northern dike using multiple crews operating simultaneously at different locations along the alignment, the proposed construction sequence shall be clearly documented in the Contractor's Work Plan and submitted to the Engineer for review prior to commencement of Work. The Work Plan shall identity the anticipated rate of advancement, the limits of each work area, and the sequence of lift placement. Based on the proposed construction approach, the Engineer may establish minimum elapsed time requirements between placement of successive lifts to provide for uniform foundation soil consolidation and strength development.

3.4 Northern Dike Dimensions

3.4.1 Lift 1

The Contractor shall construct Lift 1 across the full width of the proposed northern dike and to an elevation between zero feet (0.0') and plus one foot (+1.0') NAVD 88. At that elevation, the crest width should be approximately sixty feet (60 ft).

3.4.2 Lift 2

The Contractor shall construct Lift 2 across the full width of the proposed northern dike and to an elevation of between plus three feet (+3.0') and plus four feet (+4.0') NAVD 88. At that elevation, the crest width should be approximately forty feet (40 ft).

3.4.3 Lift 3

The Contractor shall construct Lift 3 and perform final grading such that the northern dike meets the lines, grades, and elevations shown on the Drawings. The crest elevation shall be plus six feet (+6.0') NAVD 88, the crest width shall be at least thirty feet (30 ft), and the side slopes shall be no steeper than 1V:3H.

The approximate northern dike fill density range is twenty-two cubic yards per linear foot (22 CY/LF) to thirty cubic yards per linear foot (30 CY/LF) based on the neat-line fill template as shown in the Drawings. This is provided for information only, and Contractor should not rely on this information to determine their price.

3.5 Method of Construction

The northern dike shall be constructed utilizing a marsh buggy, barge mounted excavator, or clamshell/bucket dredge. The material for the northern dike shall be excavated from the primary and secondary borrow ditches and placed within the dike template. The Contractor shall use any environmentally acceptable method that will complete the Work in accordance with the Plans and Specifications.

If the northern dike is constructed in a manner inconsistent with the Plans and Construction Specifications, Contractor is responsible for any dike failures that may occur during construction and shall add material as needed to complete the northern dike. This may include but is not limited to construction of lifts that are

higher than specified, insufficient time between lifts, excavating too far into the dike stability bench, or steeper slopes than specified.

The Contractor shall submit the method and equipment intended to be used to construct the northern dike as part of the Work Plan to be approved by the Engineer.

3.6 Turbidity

The mechanical placement of material within the northern dike may result in an increase in turbidity within the waters surrounding the discharge point during construction. Contractor shall follow turbidity control requirements set forth in Section 506 Turbidity Control and Environmental Protection.

After construction any of the three planned dike lifts, environmental conditions such as wind or waves may result in leaching/erosion of fine-grained materials resulting in a turbidity plume. These turbidity plumes that occur outside of material placement/active construction are not the responsibility of the Contractor. However, Owner may direct Contractor to control these turbidity plumes per Section 506 Turbidity Control and Environmental Protection.

3.7 Maintenance

The Contractor is required to maintain and repair the northern dike as needed so they perform their intended function during the Work. Should the northern dike fail in any location during this Work period, the Contractor shall repair the northern dike at the Contractor's expense, and at no additional cost to the Owner. Once Lift 3, the final lift, of the northern dike is constructed and accepted, the Contractor will no longer be responsible for maintenance of the northern dike at their own cost.

-- END OF SECTION --

SECTION 509

IMPORTED FILL

Part 1 GENERAL

1.1 Scope

The Work covered by this Section consists of furnishing all submittals, labor, material, plant, equipment, tools, skills, services, and incidentals and performing all operations required for obtaining and transporting sandy fill material to be utilized for the sand berm construction, as shown in the Plans. A pre-approved source, the Sunflower Disposal Area (DA), is available through an agreement between the U.S. Army Corps of Engineers (USACE) Mobile District and the Contractor. Details for utilizing the pre-approved source are included in this Specification. Additionally, the Contractor may propose an alternative source for imported fill material. Alternative sources shall meet the requirements in Part 2 of this Specification and shall be approved by the Owner and Engineer.

Conformance to environmental protection, public safety, and navigational conditions per the permits (Appendix B) and applicable regulations is included. All work shall be performed in accordance with the Federal and State permits issued for the project, as well as the United States Coast Guard (USCG) regulations.

1.2 Definitions

See General Conditions of the Contract.

1.3 References

Publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by basic designation only.

American Society for Testing and Materials (ASTM) Publications

- D 1429 Standard Test Methods for Specific Gravity of Water and Brine
- D 3370 Standard Practices for Sampling Water from Flowing Process Streams

1.4 Plant and Equipment

Plant and equipment employed on the excavation and transporting of sandy material shall be in satisfactory operating condition, capable of safely and efficiently performing the Work as indicated. Equipment and machinery, including dredge(s), conveyor(s), barges, pipelines, and supporting plant to be employed on the Work, shall be kept in good condition at all times.

A listing of all excavation and transportation plant, equipment and machinery, navigation monitoring systems, and all supporting plant utilized to accomplish the Work, shall be submitted and subject to inspection and approval by the Owner, Engineer, or approved Resident Project Representative and kept in good condition at all times. The listing shall include year and manufacturer, operational capacities, safety features, operating and licensing requirements for operators, and a description where and how the item of equipment or plant will be employed in the Work. All floating plant and working platforms shall meet OSHA/USCG requirements for worker safety. No reduction in the capacity of the plant, once inspected and approved to be sufficient for employment on the Work by Engineer shall be made except by written permission of Engineer. The measure of the "Capacity of Plant" shall be its actual performance on the work to which these Specifications apply.

1.5 Surveys

Refer to Section 521 Construction Surveying – Segmented Breakwaters or Section 531 Construction Surveying – Geotube Revetment, as applicable to the awarded Schedule of Prices, for surveying details.

1.6 Submittals

Submit the following:

A. Work Plan – Imported Fill Operation Plan Section

B. Daily Report – Imported Fill Section

C. Certified Weight Tickets

D. Barge Displacement Table Calculations

E. Any survey Submittals specified in Section 521 Construction Surveying – Segmented Breakwaters or Section 531 Construction Surveying – Geotube Revetment

1.7 Work Plan

The Contractor shall submit a Work Plan, in writing, to the Engineer seven (7) calendar days prior to the pre-construction conference for review and approval. The Work Plan shall be reviewed and approved by the Engineer prior to mobilization to the Site. The Work Plan shall include, but not be limited to, the following:

A. Descriptive plan for obtaining, loading, and transporting sand materials to the Site as applicable.

B. Construction access including assessing the Sunflower DA (if applicable)

C. Description of construction sequencing methods including site preparation, stockpiling, transporting, and offloading as applicable.

D. Surveying plan (Section 521 Construction Surveying – Segmented Breakwaters or Section 531 Construction Surveying – Geotube Revetment)

E. Quality control testing plan.

1.8 Sunflower Disposal Area

The Sunflower DA is a pre-approved source for imported fill material. The Contractor shall enter into the required agreement with the USACE Mobile District to obtain access to this source. The Contractor shall be responsible for ensuring that the material mined from the DA meets all of the Imported Fill Specifications.

The agreement for removal of the sandy dredged material (Appendix C) shall be executed by the Contractor and the Mobile District prior to accessing the Sunflower DA. The Owner and Engineer will assist in the coordination for executing the agreement. Contact information for the USACE Mobile District is:

Valerie Morrow

Dredge Material Program Manager

Valerie.m.morrow@usace.army.mil

251-690-2484

Entering into the agreement gives the Contractor permission to access the Sunflower DA by way of the Tombigbee River and remove material at no cost (for the material only). In order to access the Sunflower DA by land, the Contractor shall make an agreement with the private landholder where the access road is located. The USACE and Owner will assist the Contractor in contacting the private landholder if the Contractor wishes to access the site by land. Contractor should note that the land based access road floods once the river stage is above approximately thirty feet (30') measured at the National Water Prediction Service's Tombigbee River near Leroy gauge (NWSLI: LRYA1).

https://water.noaa.gov/gauges/lrya1

Tombigbee River water levels and current velocities vary seasonally and due to regional precipitation events; Contractor shall familiarize themselves with fluctuations in water levels and plan work accordingly. Contractor downtime due to water levels in the Tombigbee River are the responsibility of the Contractor alone, at no additional cost to the Owner.

1.9 Measurement and Payment

1.9.1 Barge Displacement Table

The Contractor shall develop a certified barge displacement table for measurement and tracking of imported fill quantities and include it in the Work Plan. The table shall be approved by the Engineer. It shall show the name and/or number, dimensions, name of owner, and name of fabricator for each barge. The Contractor shall furnish a dimensioned drawing or sketch of each barge that is sufficient to verify the barge displacement table. The drawings shall show, at a minimum, the length, width, and depth of the barge, and dimensions of rake(s). All new or modified barges shall be field checked for current dimensions by the Contractor in the presence of the Engineer or the Resident Project Representative. Each table shall contain the freeboard of the barge in feet and tenths from zero (0) to the full depth of the barge and the corresponding gross displacement to the nearest ton.

Each barge shall be suitably marked with two displacement gaging lines along each side of the barge. Each gaging line shall be painted perpendicular to the edge of the barge and be no less than four (4) inches wide and one (1) foot long on both the deck and side of the barge. Barges with rakes shall have the displacement gaging lines placed at each corner of the box section between the rakes. If a barge

has a box end or ends, the gaging lines shall be placed approximately four (4) feet from the box end. The freeboard will be measured at the four (4) gauging locations and the displacement determined from the average of the measurements. The displacement shall be determined before and after the barge is unloaded and the difference between these values shall be the quantity delivered. Freeboard measurements before and after the barge is loaded must be documented with timestamped digital photos to be submitted along with each barge displacement ticket.

If the barge tables were originally furnished for fresh water and the barge displacement measurements are being taken in salt water, the Contractor has the option to obtain water samples and determine the densities or unit weights of the water. Water sampling shall be performed concurrently with the measurements of the barges, both when fully loaded and empty. Water samples shall be taken by the Contractor and witnessed by the Engineer. The water samples shall be taken in accordance with ASTM D 3370 (practice A-Grade Sample) at depths of four (4) and eight (8) feet in the area where measurements are made using a “Polypro” 2000 ml. water sampler or approved equal.

Densities shall be tested by a certified testing laboratory according to ASTM D 1429 (Method D-Hydrometer Method). After review and approval of the test results by the Engineer, the average of the densities will be used to adjust the measurements. A unit weight of 62.45 pounds/cubic foot is standard for fresh water. If the Contractor does not obtain water samples and densities, then no adjustments will be applied to the displacement table and sand quantities.

The Engineer shall accept barge displacement tickets as measured at the loading facility and accompanied by timestamped digital photos documenting freeboard measurements. The Engineer shall be provided an opportunity to be on-site at the loading facility to field check the barge displacement measurements.

1.9.2 Measurement

Import fill quantities will be measured with barge measurements and weigh tickets as applicable, however payment for imported fill will not be based on imported quantities. These measurements and tickets shall be provided for information only (FIO). Payment for imported fill shall be included in the Contractor’s Unit Price for Contract Item No. 008 – Sand Berm Construction, Contract Item No. 108 – Sand Berm Construction, Contract Item No. 205 – Geotube, and Contract Item No. 208

– Sand Berm Construction, whichever are awarded, and shall be based on in-place fill quantities. See the specification sections below for more details:

Contract Item	**Specification Section**
Contract Item No. 008 – Sand Berm Construction	Section 520 Sand Berm – Segmented Breakwaters
Contract Item No. 108 – Sand Berm Construction	Section 520 Sand Berm – Segmented Breakwaters
Contract Item No. 205 – Geotube	Section 532– Geotubes
Contract Item No. 208 – Sand Berm Construction	Section 530 Sand Berm – Geotube Revetment

1.9.3 Payment

There shall be no separate payment for importing fill material. Payment for imported fill shall be included in the Contractor's Unit Price for Contract Item No. 008 – Sand Berm Construction, Contract Item No. 108 – Sand Berm Construction, Contract Item No. 205 – Geotube, and Contract Item No. 208 – Sand Berm Construction, whichever are awarded.

Part 2 PRODUCTS

2.1 Sand Berm Fill Material

All sand berm fill material is to be sourced, purchased, transported, and placed by the Contractor. Fill material shall be well graded sand or poorly graded Sand as defined by the Unified Soil Classification System where:

- 50% or more passes the #4 sieve size
- 10% or less passes the #200 sieve size
- D50 is equal to 0.2 mm or greater

The Contractor is responsible for locating suitable sandy material. Any impacts from loading, transporting, or placing unsuitable fill (losses, clogged geotubes, etc) are the responsibility of the Contractor alone, at no additional cost to the Owner.

The Contractor shall ensure all material is free of woody debris, trash, and vegetation that could impact hydraulic offloading operations.

The Contractor shall submit a gradation test of the imported fill for Engineer's review prior to construction and after every 50,000 cubic yards placed, unless the fill is from a pre-approved source.

2.2 Sunflower DA

The USACE Sunflower DA is a pre-approved source of material for construction of the Sand Berm or for filling geotubes. Contractor shall ensure material meets the specifications and testing may be required as requested by the Engineer.

2.3 Alternative Source

Contractor may propose alternative material sources. To be approved:

1. Submittal Requirements (must be submitted with Work Plan)
    a. Location and description of proposed source
    b. Borrow area survey showing extent and volume
    c. Material samples with gradation testing (ASTM D6913)
    d. Certification that material meets Paragraph 2.1 requirements
    e. Environmental assessment
    f. Transportation logistics plan
2. Owner/Engineer Review
    a. Verify compliance with material specifications
    b. Assess environmental impacts
    c. Evaluate transportation feasibility

d. Determine impacts to project schedule/cost

3. Approval Conditions

   a. Owner/Engineer approval required in writing

   b. Approval may include conditions (testing frequency, transport restrictions)

   c. Contractor bears all costs for proposed source evaluation

   d. If source approved, Contractor proceeds at own risk

   e. If source rejected, Contractor shall use Sunflower DA or propose new source

4. During Construction

   a. If source material degrades during the project, Contractor shall notify Engineer within 24 hours.

Part 3 EXECUTION

3.1 Sunflower Special Provisions

The Contractor shall adhere to the provisions outlined in the USACE Sunflower DA agreement for removal of dredge disposal material (Appendix C). Any penalties for violating the provisions shall be the sole responsibility of the Contractor.

3.1.1 Material Excavation

The Contractor shall maintain material containment throughout the excavation work.

The Contractor shall review the geotechnical information and understand how the character of those materials may affect the work. If at any time during excavation the material varies significantly from the representative soil samples shown in Appendix A, the Contractor shall immediately notify the Engineer via phone and email.

Contractor shall plan and execute excavation operations to maximize the quantity of sandy material removed from within the DA.

3.1.2 Material Loading

There are two pipeline corridors at the Sunflower DA from the river to the material placement area. The Contractor may clear and grub within the pipeline corridors as needed for their operations provided that all clearing and grubbing occurs above jurisdictional high water elevation (JMW) and within the general existing limits of the corridors.

Contractor shall also be allowed to place sand within the pipeline corridors as needed, at no additional cost to Owner.

3.1.3 Completion of Work

The Contractor shall regrade material within the Sunflower DA as necessary once excavation work is complete to maintain positive drainage to the weir box. This shall be verified by visual inspection and LiDAR survey.

Contractor shall remove all plant, equipment, trash, debris, and other objects brought to the site by the Contractor upon completion of the excavation work.

3.1.4 Land Based Access

The Contractor shall adhere to any agreements or provisions made with the private landholder for land based access to the Sunflower DA. Any penalties, fines, or legalities associated with the Contractor's agreement with the private landholder shall be the sole responsibility of the Contractor.

3.2 Equipment

The Contractor shall provide a proposed list of equipment in the Work Plan which will be used to excavate, load, and transport imported fill material. This list shall include the type (Drag Bucket, etc.), number of each type, and capacity (Cubic Yards, etc.) of the equipment.

3.3 Field Quality Control

Contractor shall establish and maintain quality control for the fill import operations Work and all other operations in connection with the Work in the field to assure

compliance with the Contract. Contractor shall inspect for compliance with Contract requirements and record the inspection of all operations including but not limited to the following:

A. All equipment used in the Work is approved and in satisfactory working condition.

B. Checks to ensure safe work practices around the public are performed at all times as specified.

C. All results of inspections shall be documented with photographs as necessary to document the conditions of field quality. The results and supporting data from any inspections shall be recorded and provided by Contractor in the Daily Report of Dredging Operations.

3.4 Daily Reporting Requirements

Contractor shall prepare and maintain a Daily Report and furnish copies daily to Engineer. A copy of the form prescribed for recording the required information and any further instructions on the preparation of the report will be furnished at the pre-construction conference. Contractor shall also furnish the following items to Engineer as requested during dredging operations:

1) Copy of operations/production log

2) Volume estimates of material removed from the DA

3) Photos of material placed to visually inspect material quality

3.5 Data for Engineer's Project Completion Report

A Project Completion Report will be completed by Engineer after completion of the construction activities. Data required for the report shall be provided by the Contractor to Engineer, and may include, but may not be limited to the following information:

- a list of all major equipment used to construct the Project.
- a narrative discussing the construction sequences and activities, and, if applicable, any problems encountered and solutions.
- a list and description of any safety-related issues or accidents reported during the life of the Project.

- any additional pertinent data or information.

Data shall be provided to Engineer within 14 calendar days of any request by Engineer.

--END OF SECTION--

SECTION 510

SIGNAGE

PART 1 GENERAL

1.1 Scope

The Contractor shall provide all submittals, labor, materials, plant, equipment, tools, skills, services, and incidentals necessary to furnish, install and maintain the temporary warning signs or buoys, and permanent warning signs, as well as remove and properly dispose of the temporary warning signs upon direction from the Engineer following completion of the Work.

1.1.1 Temporary Warning Signs

The Contractor shall install and maintain United States Coast Guard (USCG) approved temporary navigation warning signs or buoys per USCG requirements to indicate hazards to navigation due to floating dredge pipelines, submerged pipeline crossings, or other temporary obstructions from construction activities. Temporary signage shall be installed immediately upon mobilization to the Site. Temporary signs shall be left in-place until the preliminary notice of Substantial Completion but shall be removed prior to final payment.

1.1.2 Permanent Warning Signs

The Contractor shall procure, transport, and construct USCG approved permanent warning signs to indicate hazards to navigation due to the rock breakwaters.

1.2 Sign Details

1.2.1 Temporary Warning Signs

Each of the temporary warning signs shall be a high visibility buoy that meets the minimum standards of the U.S. Coast Guard as detailed in CFR 33 CFR 62, 33 CFR 64 and 33 CFR 72.05 Volume II. Lighted high visibility buoys must have lights that flash white or yellow at four second intervals and have two sources of power.

High visibility buoys must have the crossed diamond shaped information mark with "Danger Keep Out" as the explanation outside the diamond. High visibility buoys

must be secured in place with an anchor, chain, shackle, plate assembly or other method so as to prevent movement during extreme weather events and tidal action. Prior to placement of the high visibility buoys, submit the proposed buoy location map for approval. The location map must show the approximate location of each high visibility buoy. When installation is complete submit an updated buoy location map with buoy locations and water depths identified. Buoys will be installed to encompass the base contract features of dike construction and the sand borrow area.

1.2.2 Permanent Warning Signs

Unless otherwise approved, the permanent warning signs shall be as follows. Permanent warning signs shall be constructed of the materials and to the dimensions required as shown in the Drawings. Sign shall be three (3) feet by three (3) feet and consist of 0.125-inch-thick marine grade aluminum with white sheeting on one side. A three (3) inch orange retroreflective border shall be on the sign face. Lettering and additional requirements are shown in the Drawings. Contractor shall submit certifications showing accordance with the material requirements for the treated timber pile, aluminum plate signage, hardware, and reflective tape prior to installation of the permanent warning signs.

The permanent warning sign shall have a marine warning light affixed to the top of the sign in a highly visible manner. Each of the lights shall meet the minimum standards of the U.S. Coast Guard as detailed in CFR Title 33, Subpart 66.01-11 and Subpart 67.30 for Class “C” structures.

- Range: 1 to 2 Nautical Mile
- Intensity: 1 candela for range of 1 nautical mile
- Lens: Clear
- Slow Flash: 2.5 sec
- Visibility: 360º Horizon
- Color: White

1.3 Quality Assurance

The sign vendor shall have professional experience in the type of work required.

Sign finishes for temporary warning signs shall resist weathering such that the sign does not fade or wash out during scheduled construction period.

Sign finishes for permanent warning signs shall resist weathering and meet requirements described in the Private Aids to Navigation Permit (U.S. Coast Guard, Pending).

1.4 Measurement and Payment

1.4.1 Temporary Warning Signs

All costs associated with the Work for temporary warning signs, including but not limited to procurement, fabrication, transportation, installation, maintenance and removal of the temporary warning signs shall be included in the Contract Lump Sum Price for Contract Item No. 001 – Mobilization and Demobilization, Contract Item No. 101 – Mobilization and Demobilization, or Contract Item No. 201 – Mobilization and Demobilization, whichever is awarded.

1.4.2 Permanent Warning Signs

All costs associated with the Permanent Warning Signs, including but not limited to procurement, fabrication, transportation, installation and maintenance during construction activities shall be included within the Contract Unit Price for Contract Item No. 011 – Permanent Warning Signs.

Payment for permanent warning signage shall be at the Contract Unit Price for Contract Item No. 011 – Permanent Warning Signs, Contract Item No. 111 – Permanent Warning Signs, or Contract Item No. 211 – Permanent Warning Signs, whichever is awarded. Contractor shall be allowed to invoice a percentage of installed signage on a monthly basis.

PART 2 MATERIALS

2.1 Sign Materials

2.1.1 Temporary Warning Sign

Each of the temporary warning signs shall meet the minimum standards of the U.S. Coast Guard, including retroreflective face color, dimensions and accompanying marine signal lightning requirements.

2.1.2 Permanent Warning Sign

Pile shall consist of ASTM D25 twelve inch (12”) inch diameter by minimum forty feet (40’) long treated timber pile with seven inch (7”) minimum tip width, with a 2.5 Chromated Copper Arsenate (CCA) retention value. The top of the pile shall be cut at a minimum of a forty-five degree (45º) angle. Hardware shall consist of three (3) one-half inch (0.50”) diameter A307 (HDG) dome head bolts with ogee washer and nut. Nuts shall be tack welded to bolts. Marine signal lights should be self-contained, solar powered, white light, with a 2.5 second flash, and 1 to 2 nautical mile visibility.

PART 3 EXECUTION

3.1 Temporary Warning Signs

A. Contractor shall coordinate temporary warning sign and warning light design, location, and placement with the USCG.

B. Inspect the signs and lights throughout construction on a daily basis.

C. Maintain the signs and lights throughout construction, including lens cleaning and battery replacement as required. Maintenance shall be performed within 12 hours of the identification of an issue with a warning sign or light.

3.2 Permanent Warning Signs

A. Contractor shall coordinate permanent warning sign and warning light design, location, and placement with the USCG.

B. Drive piles such that the elevation of the top of the pile is at +10.0 ft NAVD88 ± 0.5 ft.

C. Install signs in the locations shown on the Contract Drawings, at least twenty (20) ft from the edge of the breakwater toe.

D. Affix the sign to the timber pile with the hardware as shown on the Contract Drawings. Orient the sign such that the face of the sign faces outward from the site, towards the bay.

E. Install signs at a maximum 500 ft spacing per USCG requirements.

F. Maintain the pile, sign, and warning light throughout construction.

-- END OF SECTION --

SECTION 511

WEIR BOX

PART 1 GENERAL

1.1 Scope

The work covered by this Section consists of furnishing all submittals, labor, materials, plant, equipment, tools, skills, services, and incidentals and performing all operations required to complete all components of the weir box structure shown in the Plans. The weir box structure consists of all site work, concrete footings, weir box, pre-fabricated walkway, HDPE pipes, and all connections shown on the Plans.

This parent specification discusses the overall scope of the weir box structure, including acceptance, measurement and payment.

1.1 Related Sections

Section 512 – Cast-in-Place Concrete

Section 513 – Pre-Engineered Walkway

Section 514 – Miscellaneous Metals

Section 515 – Heavy Timber Construction

Section 516 – Coating of Steel Structures

Section 517 – Weir Box Discharge Piping

1.2 Definitions

See General Conditions of the Contract.

1.3 References

See related Specifications Sections in Paragraph 1.1.

1.4 Submittals

See related Specifications Sections in Paragraph 1.1.

1.5 Acceptance

Work for Contract Item 010 Weir Box, Contract Item 110 Weir Box, or Contract Item 210 Weir Box, whichever is awarded, will be accepted when all components of the weir box have been constructed in accordance with the Plans and the Construction Specifications. Acceptance will be based on verification that the weir box, including all civil, structural, piping, and appurtenant components have been constructed in accordance with the Plans and Specifications and is capable of conveying water from the wetland creation cell to the receiving waters as intended.

1.6 Measurement and Payment

Work for Contract Item 010 Weir Box, Contract Item 110 Weir Box, or Contract Item 210 Weir Box, whichever is awarded, will be measured per each (EA). Measurement shall include one (1) complete, in-place, and operational weir box installation as shown on the Plans.

No separate measurement shall be made for concrete, reinforcing steel, structural steel, piping, coatings, excavation, testing, or incidental work associated with the weir box unless specifically identified as separate bid items.

Payment for Item 010 Weir Box, Item 110 Weir Box, or Item 210 Weir Box, whichever is awarded, shall be made at the Contract Unit Price per Each. The unit price shall constitute full compensation for all submittals, labor, materials, plant, equipment, tools, skills, services, and incidentals and performing all operations required to provide a complete and operational weir box as detailed in the Plans and Specifications.

No separate payment will be made for individual components required to complete the weir box.

PART 2 MATERIALS

See Part 2 Materials within the related Specifications Sections in Paragraph 1.1.

PART 3 EXECUTION

3.1 Quality Control

Contractor shall verify dimensions, elevations, and conditions prior to installation. Contractor shall report conditions that would adversely affect installation to the Engineer within one (1) business day after discovery.

3.2 Installation

Install the weir box in accordance with the Plans, manufacturer recommendations, and referenced specifications. Install embedded items true to line and grade. Maintain dimensional tolerances necessary for proper operation. Provide all seals, anchors, supports, and accessories required for a complete installation.

-- END OF SECTION --

SECTION 512

CAST-IN-PLACE CONCRETE

Part 1 – GENERAL

1.1 Scope

The work covered by this Section consists of furnishing all submittals, labor, materials, plant, equipment, tools, skills, services, and incidentals and performing all operations required to complete cast-in-place concrete work as shown on the Plans and as herein specified or directed by the Engineer.

This work shall include but is not limited to:

1. Weir box structure foundations
2. Weir box concrete pipe collars and infill
3. Concrete foundations for the walkways.

1.2 Related Sections

A. Section 514 Miscellaneous Metals

1.3 References

The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M182	Burlap Cloth Made from Jute or Kenaf and Cotton Mats
AASHTO M194	Chemical Admixtures for Concrete
AASHTO T259	Resistance of Concrete to Chloride Ion Penetration

American Concrete Institute (ACI)

ACI 117	Tolerances for Concrete Construction and Materials
ACI 211.1	Selecting Proportions for Normal, Heavyweight, and Mass Concrete
ACI 301	Specifications for Concrete Construction
ACI 302.1R	Guide for Concrete Floor and Slab Construction
ACI 304R	Guide for Measuring, Mixing, Transporting, and Placing Concrete
ACI 304.2R	Placing Concrete by Pumping Methods

ACI 305R	Guide to Hot Weather Concreting
ACI 306.1	Cold Weather Concreting
ACI 308	Guide to Curing Concrete
ACI 318	Building Code Requirements for Structural Concrete
ACI 347	Guide to Formwork for Concrete
ACI SP-66	Detailing Manual

ASTM International (ASTM)

ASTM A615	Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM C31	Making and Curing Concrete Test Specimens in the Field
ASTM C33/C33M	Concrete Aggregates
ASTM C 39/C39M	Compressive Strength of Cylindrical Concrete Specimens
ASTM C94	Ready-Mixed Concrete
ASTM C143	Slump of Hydraulic Cement Concrete
ASTM C150/C150M	Portland Cement
ASTM C171	Sheet Materials for Curing Concrete
ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C231	Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C260	Air-Entraining Admixtures for Concrete
ASTM C295/C295M	Petrographic Examination of Aggregates for Concrete
ASTM C309	Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C311/C311M	Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete
ASTM C494	Chemical Admixtures for Concrete
ASTM C595	Blended Hydraulic Cements
ASTM C618	Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

ASTM C666	Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
ASTM C881	Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C989/C989M	Slag Cement for Use in Concrete and Mortars
ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM C1107/C1107M	Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM C1157/C1157M	Standard Performance Specification for Hydraulic Cement
ASTM C1218	Water-Soluble Chloride in Mortar and Concrete
ASTM C1260	Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C1567	Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)
ASTM C1602/C1602M	Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D5759	Standard Guide for Characterization of Coal Fly Ash and Clean Coal Combustion Fly Ash for Potential Uses

American Welding Society (AWS)

AWS D1.4	Structural Welding Code – Reinforcing Steel

Concrete Reinforcing Steel Institute (CRSI)

CRSI MSP-1	Manual of Standard Practice

1.4 Definitions

A. "Cementitious material" as used herein shall include all portland cement, pozzolan, fly ash, ground granulated blast-furnace slag, and silica fume.

B. "Chemical admixtures" are materials in the form of powder or fluids that are added to the concrete to give it certain characteristics not obtainable with plain concrete mixes.

C. "Supplementary cementing materials" (SCM) include coal fly ash, silica fume, granulated blast-furnace slag, natural or calcined pozzolans, and ultra-fine coal

ash when used in such proportions to replace the portland cement that result in improvement to sustainability and durability and reduced cost.

D. "Design strength" (f'c) is the specified compressive strength of concrete at time(s) specified in this section to meet structural design criteria.

E. "Mass Concrete" is any concrete system that approaches a maximum temperature of 158 degrees F within the first 72 hours of placement. In addition, it includes all concrete elements with a section thickness of 3 feet or more regardless of temperature.

F. "Mixture proportioning" is the process of designing concrete mixture proportions to enable it to meet the strength, service life and constructability requirements of the project while minimizing the initial and life-cycle cost.

G. "Mixture proportions" are the masses or volumes of individual ingredients used to make a unit measure (cubic meter or cubic yard) of concrete.

H. "Pozzolan" is a siliceous or siliceous and aluminous material, which in itself possesses little or no cementitious value but will, in finely divided form and in the presence of moisture, chemically react with calcium hydroxide at ordinary temperatures to form compounds possessing cementitious properties.

I. "Workability (or consistency)" is the ability of a fresh (plastic) concrete mix to fill the form/mould properly with the desired work (vibration) and without reducing the concrete's quality. Workability depends on water content, chemical admixtures, aggregate (shape and size distribution), cementitious content and age (level of hydration).

1.5 Submittals

A. Submit the following in accordance with these Specifications. Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals

B. Certifications, test reports and other submittals shall show the appropriate AASHTO or ASTM test(s) for each material.

C. Submit the following shop drawings for approval:

1. Reinforcing drawings, prior to fabrication, showing reinforcing steel placement, schedules, sizes, grades, and splicing and bending details. Drawings shall show support details including types, sizes, and spacing.

2. Form drawings showing details of formwork, joints supports, studding and shoring, and sequence of form and shoring removal.

3. Lift drawings showing all dimensions, pour locations and designations, location of horizontal and vertical construction joints, concrete volumes, and locations of embedded items.

D. Work Plans

1. The Contractor shall submit to the Engineer details of the equipment, materials, methods, and procedures for the following items:
   a. Concrete Pumping (if used)
   b. Cold Weather Concreting
   c. Hot Weather Concreting
   d. Concrete Finishing
   e. Concrete Curing
2. Approval by the Engineer will not relieve the Contractor of his responsibility to perform work in accordance with these Specifications.

E. Concrete Mix Design

1. Thirty days minimum prior to concrete placement, submit a mix design for each strength and type of concrete. Certify using an independent commercial testing laboratory, that proportioning of mix is in accordance with ACI 211.1 for the specified strength and is based on data, which has been determined by laboratory testing during the last twelve (12) months.
2. Submit a complete list of materials including type, brand, source, and amount; of cement, ground slag, and admixtures; and applicable reference specifications.
3. All materials used in the trial mix design shall be identical to those used in production. In case the source, brand or characteristic properties of the ingredients are varied during the term of the Contract, submit revised mix design and all relative submittals.
4. Submit laboratory test reports and manufacturer's certificates for all ingredients attesting to conformance with specifications.
5. Submit certificates stating that each admixture is compatible with all other materials in the mix design.
6. Submit manufacturer's catalog data and mixing instructions for all admixtures.

F. Submit manufacturer's data, test reports, certifications, and installation instructions for all materials, including but not limited to:

1. Concrete repair materials

2. Curing Compounds
3. Epoxy Bonding Compound
4. Form materials and location of use
5. Form accessories
6. Form release agents
7. Mill test reports for reinforcing (tests on each heat, showing chemical and physical analysis).

G. Concrete Test Reports

1. Air content
2. Compressive strength tests
3. Slump
4. Temperature

H. Qualifications

1. Concrete Field Technician
2. Independent Testing Laboratory

1.1 Quality Assurance/Control

A. Concrete admixtures shall be manufactured by a firm with a minimum of five (5) years experience in the production similar admixtures.

B. Formwork and falsework design calculations

C. Welding Procedures and Qualifications

1. Welders shall be qualified in accordance with AWS D1.4.
2. Submit copies of the welding procedure specifications and procedure qualification test results for each type of welding required. Approval of any procedure does not relieve the Contractor of the responsibility for producing acceptable welds.
3. Before assigning welders or welding operators to the work, submit their names, together with certification that each individual is performance qualified as specified. Do not start welding work prior to procedure qualification. The certification shall state the type of welding and positions for which each is qualified, the code and procedure under which each is qualified, date qualified, and the firm and individual certifying the qualification tests.

D. Contractor's representative performing field quality control testing and preparing test samples shall, as a minimum, possess current certification as an ACI Concrete Field Technician – Grade I.

E. Independent Testing Laboratory Qualifications for Concrete Qualification Testing: The Contractor-provided concrete testing laboratory shall have the necessary equipment and experience to accomplish required testing. The laboratory shall meet the requirements of ASTM C1077 and be Cement and Concrete Reference Laboratory (CCRL) inspected.

1.7 Modification Of References

A. Accomplish work in accordance with ACI publications except as modified herein. Consider the advisory or recommended provisions to be mandatory, as though the word "shall" had been substituted for the words "should" or "could" or "may," wherever they appear. Interpret reference to the "Building Official," the "Structural Engineer," and the "Architect/Engineer" to mean Engineer.

1.8 Delivery, Handling, And Storage

A. Do not deliver concrete until forms, reinforcement, embedded items, and chamfer strips are in place and ready for concrete placement. Conform to ACI 301 for job site storage of materials. Protect materials from contaminants such as grease, oil, and dirt. Ensure materials are clearly identified.

1.9 Measurement and Payment

A. There is no separate measurement and payment for cast-in-place concrete. Contractor costs for cast-in-place concrete shall be included in Contract Item 010 – Weir Box, Contract Item 110 – Weir Box, or Contract Item 210 – Weir Box, whichever is awarded. See Section 511 – Weir Box Structure. Contractor costs shall include all formwork, reinforcing steel, anchor bolts installation, joints, curing, testing, concrete work, and all incidentals.

Part 2 – PRODUCTS

2.1 Concrete Materials

A. Cementitious Materials: For exposed concrete, use one manufacturer and one source for each type of cement, ground slag, fly ash, and pozzolan.

1. Fly Ash

a. ASTM C618, Class F, except that the maximum allowable loss on ignition shall not exceed 6 percent. Class F fly ash for use in mitigating Alkali-Silica Reactivity shall have a Calcium Oxide (CaO) content of less than 8 percent and a total equivalent alkali content less than 1.5 percent.

b. Add with cement. Fly ash content shall be a minimum of 20 percent by weight of cementitious material, provided the fly ash does not reduce the amount of cement in the concrete mix below the minimum requirements of local building codes. Where the use of fly ash cannot meet the minimum level, provide the maximum amount of fly ash permittable that meets the code requirements for cement content. Report the chemical analysis of the fly ash in accordance with ASTM C311/C311M. Evaluate and classify fly ash in accordance with ASTM D5759.

2. Raw or Calcined Natural Pozzolan: Natural pozzolan shall be raw or calcined and conform to ASTM C618, Class N, including the optional requirements for uniformity and effectiveness in controlling Alkali-Silica reaction and shall have an ignition loss not exceeding 3 percent. Class N pozzolan for use in mitigating Alkali-Silica Reactivity shall have a Calcium Oxide (CaO) content of less than 13 percent and total equivalent alkali content less than 3 percent.

3. Ground Granulated Blast-Furnace Slag: ASTM C989/C989M, Grade 100. Slag content shall be a minimum of 40 percent by weight of cementitious material.

4. Portland Cement: Provide cement that conforms to ASTM C150/C150M, Type II, with tri-calcium aluminates (C3A) content less than 10 percent and a maximum cement-alkali content of 0.80 percent Na2Oe (sodium oxide) equivalent. Use one brand and type of cement for formed concrete having exposed-to-view finished surfaces.

5. Blended Cements: Blended cement shall conform to ASTM C595/C595M and ASTM C1157/C1157M, Type IP or IS, including the optional requirement for mortar expansion and consist of a mixture of ASTM C150/C150M Type I, or Type II cement and a complementary cementing material. The slag added to the Type IS blend shall be ASTM C989/C989M ground granulated blast-furnace slag. The pozzolan added to the Type IP blend shall be ASTM C618 Class F and shall be interground with the cement clinker. The manufacturer shall state in writing that the amount of pozzolan in the finished cement will not vary more than plus or minus 5 mass percent of the finished cement from lot-to-lot or within a lot. The percentage and type of mineral admixture used in the blend shall not change from that submitted for the aggregate evaluation and mixture proportioning.

B. Aggregates:

1. Conforming to Section 801 and Section 802 of the ALDOT Specifications. ASTM C33/C33M, except as modified herein. Furnish aggregates for exposed concrete surfaces from one source. Provide aggregates that do not contain any substance which may be deleteriously reactive with the

alkalies in the cement. Submit test report showing compliance with ASTM C33/C33M.

2. Fine and coarse aggregates shall show expansions less than 0.08 percent at 28 days after casting when testing in accordance with ASTM C1260. Should the test data indicate an expansion of 0.08 percent or greater, reject the aggregate(s) or perform additional testing using ASTM C1567 using the Contractor's proposed mix design. In this case, include the mix design low alkali portland cement and one of the following supplementary cementitious materials:

   a. GGBF slag at a minimum of 40 percent of total cementitious

   b. Fly ash or natural pozzolan at a minimum of total cementitious of:

      1) 30 percent if (SiO_2 plus Al_2O_3 plus Fe_2O_3) is 65 percent or more

      2) 25 percent if (SiO_2 plus Al_2O_3 plus Fe_2O_3) is 70 percent or more,

      3) 20 percent if (SiO_2 plus Al_2O_3 plus Fe_2O_3) is 80 percent or more

      4) 15 percent if (SiO_2 plus Al_2O_3 plus Fe_2O_3) is 90 percent or more.

   If a combination of these materials is chosen, the minimum amount shall be a linear combination of the minimum amounts above. Include these materials in sufficient proportion to show less than 0.08 percent expansion at 28 days after casting when tested in accordance with ASTM C1567.

3. Aggregates shall not possess properties or constituents that are known to have specific unfavorable effects in concrete when tested in accordance with ASTM C295/C295M.

C. Admixtures

1. Calcium chloride or any other admixtures containing chloride salts shall not be used.

2. Six month and one year compressive and flexural strength tests are not required for admixtures.

3. Accelerating: ASTM C494, Type C

4. Air Entraining: ASTM C260 and shall consistently entrain the air content in the specified ranges under field conditions.

5. High Range Water Reducer (Superplasticizer): ASTM C494, Type F or G. The admixture shall contain no chlorides, amines, sugar, urea, foaming agents, or air entraining agents and shall meet the requirements of AASHTO M194, with the following exceptions:

a. The water content shall be a maximum of 85 percent of that of the control, and the durability factor shall be a minimum of 90 when tested in accordance with ASTM C666, Procedure B. Air entrained concrete containing the admixture shall have no more than 1½ percent weight loss after 300 freeze-thaw cycles.

b. Chloride permeability within a depth of ½ inch to 1 inch shall be a maximum of 226 ppm after 200 days ponding when tested in accordance with AASHTO T259.

c. The admixture shall be added at the job site in liquid form as recommended by the manufacturer.

6. Retarding: ASTM C494, Type D

D. Water: Water shall comply with the requirements of ASTM C1602/C1602M. Minimize the amount of water in the mix. Improve workability by adjusting the grading rather than by adding water. Water shall be potable, free from injurious amounts of oils, acids, alkalis, salts, organic materials, or other substances deleterious to concrete. Submit test report showing water complies with ASTM C1602/C1602M.

E. Nonshrink Grout: ASTM C1107/C1107M.

F. Biodegradable Form Release Agent: Provide form release agent that is colorless, biodegradable. Provide product that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces. Provide form release agent that does not contain diesel fuel, petroleum-based lubricating oils, waxes, or kerosene. Submit documentation indicating type of biobased material in product and biobased content

2.2 Reinforcing Steel

A. Reinforcing steel for all concrete shall be deformed billet-steel and shall conform to ASTM A615, Grade 60.

2.3 Accessories

A. Accessories shall conform to the ACI Detailing Manual SP-66.

B. Wire ties shall be 16 gauge or heavier black annealed steel wire.

2.4 Supports

A. Bar supports for formed surfaces shall be designed and fabricated in accordance with CRSI MSP-1 and shall be steel or precast concrete blocks.

B. Precast concrete blocks shall not be less than 4 inches square when supporting reinforcement on the ground. Precast concrete blocks shall have compressive strength equal to that of the surrounding concrete.

2.5 Concrete Mix

A. Concrete mixes shall be proportioned in accordance with ACI 211.1, ACI 301, ACI 318, and ACI 304.2R except as otherwise specified.

B. The water-soluble chloride ion concentrations in hardened concrete between 28 and 42 days shall not exceed 0.15 when tested in accordance with ASTM C 1218.

C. The compressive strength (f'c) of the concrete for each portion of the structure(s) shall be as indicated on the Contract Drawings and specified in the following table:

PROPERTY	'	'	Concrete Foundations	'
28-Day Compressive Strength, ASTM C39/C39M (psi)	-	-	[1] 5000	-
-	-	-	-	-
Coarse Aggregate Size No. (ASTM C33/C33M)	-	-	[3] 57 or 67	-
Water-Cement Ratio (by weight)	-	-	0.45	-
Design Slump (inch)	-	-	[2] 4	-
Air Entrainment (%)	-	-	6.5 +1,-1.5	-
Calcium Nitrite Corrosion Inhibitor	-	-	NO	-

[1] Required Average Strength of Mix Design: The selected mixture shall produce an average compressive strength exceeding the specified strength by the amount indicated on ACI 301. When a concrete production facility has a record of at least

15 consecutive tests, the standard deviation shall be calculated and the required average compressive strength shall be determined in accordance with ACI 301. When a concrete production facility does not have a suitable record of tests to establish a standard deviation, the required average strength shall be as follows: For f'c between 3,000 and 5,000 psi, required compressive strength (f'cr) shall be 1,200 psi plus f'c.

[2] Final slump may be increased to 8 inches when superplasticizers are used.

[3] The combined aggregates shall be well graded from the coarsest to the finest with not more than 18 percent nor less than 8 percent of the combined aggregate retained on any individual sieve with the exceptions that the No. 50 may have less than 8 percent retained, sieves finer than No. 50 shall have less than 8 percent retained, and the coarsest sieve may have less than 8 percent retained.

2.6 Epoxy Bonding Compound

A. Epoxy bonding compounds shall conform to ASTM C881.

B. Provide Type I for bonding hardened concrete to hardened concrete; Type II for bonding freshly mixed concrete to hardened concrete; and Type III as a binder in epoxy mortar or concrete, or for use in bonding skid-resistant materials to hardened concrete. Provide Grade 1 or 2 for horizontal surfaces and Grade 3 for vertical surfaces. Provide Class A if placement temperature is below 40 degrees F; Class B if placement temperature is between 40 and 60 degrees F; or Class C if placement temperature is above 60 degrees F.

2.7 Materials For Curing Concrete

A. Burlap: AASHTO M182, Class 1, 2, or 3.

B. Impervious Sheeting: ASTM C171, except that polyethylene sheeting shall not be used.

C. Membrane forming curing compounds: shall conform to ASTM C309, Type 1-D or 2.

2.8 Form Materials

A. Forms

1. Forms shall be wood, steel, or other approved concrete form material.
2. Retain-in-place or stay-in-place metal forms are not permitted

B. Form Ties

1. Form ties shall be factory-fabricated metal ties, shall be of the removable or internal disconnecting or snap-off type, and shall be of a design that will not permit form deflection and will not spall concrete upon removal.
2. Solid backing shall be provided for each tie.

3. Except where removable tie rods are used, ties shall not leave holes in the concrete surfaces less than ¼ inch or more than 1 inch deep and not more than 1 inch in diameter.
4. Removable tie rods shall not be more than 1½ inches in diameter.

C. Form Releasing Agents

1. Form releasing agents shall be commercial formulations that will not bond with, stain, or adversely affect concrete surfaces.
2. Agents shall not impair subsequent treatment of concrete surfaces depending upon bond or adhesion nor impede the wetting of surfaces to be cured with water.

Part 3 – EXECUTION

3.1 Placement of Forms

A. Provide forms, shoring, and scaffolding for concrete placement in accordance with ACI 301 Section 2 and 5 and ACI 347 with the following additions:

1. Forms shall conform to the shape, lines, grades, and dimensions of the concrete as called for on the Contract Drawings. They shall be mortar tight, and sufficiently rigid to maintain the desired position and shape during and after placing concrete. Surfaces of metal forms shall be free from irregularities, dents, and sags. Lumber used in forms for exposed surfaces shall be evenly matched and free from loose knots and other imperfections that would produce defects on the finished concrete surfaces. Used lumber may be used if it conforms to the above.
2. Forms shall be capable of producing a surface, which meets the requirements of the type of finish specified herein.
3. All formwork shall be provided with adequate cleanout openings to permit inspection and easy cleaning after reinforcing steel has been placed. Where possible, these openings shall be on the side of the unexposed surfaces.
4. Form ties shall be of a type, which will conform to the reinforcing steel clearance requirements given in the Contract Drawings. Form ties that are to be completely withdrawn shall be coated with a nonstaining bond breaker. Wire ties will not be permitted.
5. Forms shall not be reused if there is any evidence of surface wear and tear or defects, which would impair the quality of the surface. Surfaces of forms to be reused shall be cleaned of mortar from previous concreting and of all other foreign material before reuse.

6. Forms shall not be reused if there is any evidence of surface wear and tear or defects, which would impair the quality of the surface. Surfaces of forms to be reused shall be cleaned of mortar from previous concreting and of all other foreign material before reuse.
7. Except as otherwise shown, external corners that will be exposed shall be chamfered by moldings placed in the forms.

3.2 Preparation

A. When bonding lifts or pours, apply a thin coat of epoxy bonding compound to dry, clean surfaces. Scrub compound into the surface with a stiff-bristle brush. Place concrete while compound is stringy. Do not permit compound to harden prior to concrete placement. Follow manufacturer's instructions regarding safety and health precautions when working with epoxy resins.

B. The inside of the forms shall be coated with non-staining mineral oil or other approved material. Where oil is used, it shall be applied before the reinforcing steel is placed. All excess oil or other approved material shall be removed before placing concrete.

C. Before depositing concrete, all debris, ice, and water shall be removed from the spaces to be occupied by the concrete. Any flow or water into such spaces shall be diverted through proper side drains to a sump, or be removed by other approved methods, which will avoid washing the freshly placed concrete.

D. Before pouring any concrete, the Contractor shall ascertain that all the work under the other Sections of the Contract which pass through the concrete, such as fittings, pipes, sleeves, anchors, frames, bolts, plates, expansion joint angles, inserts, conduits and any other items normally required but not shown, have been set in place. Plumb anchor bolts, check location, and elevation. Temporarily fill voids in sleeves with readily removable material to prevent the entry of concrete.

3.3 Joints

A. Construction Joints: Locate joints to least impair strength. Continue reinforcement across joints unless otherwise indicated.

3.4 Batching, Measuring, Mixing And Transporting Concrete

A. Batching, measuring, mixing, and transporting concrete shall conform to ASTM C94, ACI 301, ACI 302.1R, and ACI 304R, except as modified herein.

B. Batching equipment shall be such that the concrete ingredients are consistently measured within the following tolerances: one percent for cement and water, two percent for aggregate, and three percent for admixtures. Furnish mandatory batch ticket information for each load of ready mix concrete.

C. Measuring: Make measurements at intervals as specified in Paragraph 3.14.

D. Mixing: Machine mix concrete. Begin mixing within 30 minutes after the cement has been added to the aggregates. Place concrete within 90 minutes of either addition of mixing water to cement and aggregates or addition of cement to aggregates if the air temperature is less than 85 degrees F. Reduce mixing time and place concrete within 60 minutes if the air temperature is greater than 85 degrees F except as follows: if set retarding admixture is used and slump requirements can be met, limit for placing concrete may remain at 90 minutes. Additional water may be added, provided that both the specified maximum slump and water-cement ratio are not exceeded. When additional water is added, additional 30 revolutions of the mixer at mixing speed is required. If the entrained air content falls below the specified limit, add a sufficient quantity of admixture to bring the entrained air content within the specified limits. Dissolve admixtures in the mixing water and mix in the drum to uniformly distribute the admixture throughout the batch.

E. Transporting: Transport concrete from the mixer to the forms as rapidly as practicable. Prevent segregation or loss of ingredients. Clean transporting equipment thoroughly before each batch. Do not use aluminum pipe or chutes. Remove concrete, which has segregated in transporting, and dispose of as directed.

3.5 Placing Reinforcing Steel

A. All reinforcing steel shall be placed accurately in the positions shown on the Contract Drawings or as directed by the Engineer. If bars are moved more than one bar diameter to avoid interference with other reinforcement, conduits, or other embedded items, the resulting arrangement of the bars, including additional bars required to meet structural requirements, shall be approved by the Engineer before concrete is placed. Cutting and bending shall be in accordance with ACI 318.

B. All reinforcing steel shall be secured in place true to the lines and grades indicated by the use of metal or concrete supports, spacers and ties as approved by the Engineer. Supports shall be of sufficient strength to maintain the reinforcing steel in place throughout the concreting operation. Supports shall be used in such a manner that they will not be exposed on the face of nor in any way discolor or be noticeable in the surface of the finished concrete.

C. Substitution of different size bars will be permitted only when approved by the Engineer. No additional compensation will be allowed for substituting larger size bars in lieu of the bars specified.

D. Splices of reinforcement shall conform to ACI 318 and shall be made only as required or indicated.

1. All lap splices be Class 'B' tension lap splices in accordance with ACI 318. Lapped bars shall not be spaced farther apart than one-fifth the required lap length or 6 inches, whichever is less. Lap splices shall not be used for bars larger than No. 11.

E. All main reinforcing steel shall have the following minimum cover except as noted otherwise on the Contract Drawings:

1. Concrete cast against and permanently exposed to earth ..... 3"
2. Concrete exposed to water or earth:

   Top of foundations ..... 2"

   Sides of foundations ..... 2"

The above dimensions shall be measured from the face of the reinforcing steel to the face of the forms.

F. All reinforcing steel shall be secured in place true to the lines and grades indicated by the use of metal or concrete supports, spacers and ties as approved by the Engineer. Supports shall be of sufficient strength to maintain the reinforcing steel in place throughout the concreting operation. Supports shall be used in such a manner that they will not be exposed on the face of nor in any way discolor or be noticeable in the surface of the finished concrete. Metal accessories for exposed concrete surfaces shall be galvanized.

G. All reinforcing steel shall be fully placed, secured, and approved by the Engineer before any concrete is placed.

3.6 Placing Concrete

A. When all the other provisions of this Section have been met and the Contractor is ready to place concrete, the Engineer shall be notified. No concrete shall be deposited before the Inspector has inspected and approved the reinforcing steel and other work in place and given permission in writing on a prepared form to proceed. Do not place concrete when weather conditions prevent proper placement and consolidation; in uncovered areas during periods of precipitation; or in standing water.

B. The concrete shall be conveyed from the mixer and placed in the following manner so that there shall be no separation of the various ingredients. Concrete discharging from the mixer shall not be chuted directly into the hopper, bucket, or concrete cart. The concrete shall be discharged down a chute into a baffled downpipe, dropping vertically the minimum distance necessary to fill the hopper, bucket, or concrete cart. Concrete being chuted into a form shall discharge into a baffled downpipe and then drop vertically the minimum clear distance necessary to avoid clogging the downpipe. Concrete

discharging from a conveyor belt or side opening hopper or bucket shall drop vertically through a baffled downpipe or a vertical hopper or bucket opening. Chuting of concrete for distances greater than 20 feet will not be allowed.

C. Concrete shall be deposited as nearly as possible in its final position to avoid segregation due to rehandling or flowing. Concrete shall be placed in the form by dumping against the face of concrete already in place and not by dumping away from concrete already in place. Concrete placed in forms deeper than 3 feet shall be dumped into a hopper feeding into a vertical drop chute and then falling free only the minimum clear distance necessary to avoid stopping the downpipe. The Contractor shall submit to the Engineer any method of placing and conveying concrete that deviates in any manner from the preceding specification for approval before any such methods are used to place concrete on the job.

D. At the discretion of the Engineer, the provisions specified above for conveying and placing concrete may be modified to suit conditions encountered in the field.

E. All concrete shall be placed with the aid of approved mechanical vibrating equipment. Vibration, unless otherwise approved, shall be transmitted directly through the concrete and in no case through the forms, or through the reinforcing. The duration of vibration at any location shall be the minimum required to produce thorough compaction. Vibration shall be supplemented by forking or spading by hand adjacent to the forms on exposed faces, or as required. Furnish a spare vibrator on the job site whenever concrete is placed.

3.7 Removal of Forms

A. Forms shall be removed preventing injury to the concrete and ensuring the complete safety of the structure. Formwork for columns, walls, side of beams and other parts not supporting the weight of concrete may be removed when the concrete has attained sufficient strength to resist damage from the removal operation but not before at least 24 hours has elapsed since concrete placement.

B. The Engineer may order the forms to remain in place for a longer period than that considered to be sufficient in the judgment of the Contractor. However, should the Engineer acquiesce in the removal of forms by the Contractor, the Engineer assumes no responsibility and the Contractor is in no manner relieved of his responsibility of such removal. All formwork shall be removed before completion of this Contract.

3.8 Finishing

A. The Contractor shall notify the Engineer upon removal of forms. The Inspector shall inspect newly stripped surfaces, any portion of which, in the judgement of

the Engineer, is damaged beyond repair shall be removed and recast at no additional cost to the Owner. Those surfaces to be repaired shall be repaired in a manner approved by the Engineer.

B. Horizontal Surfaces

1. Finish types shall be as defined in ACI 301.

a. Foundation surfaces shall receive a floated finish.

b. Surfaces receiving subsequent bonded overlays or lifts shall be given a raked scratch surface.

c. Step slab shall receive light broom finish.

C. Vertical Surfaces

1. Finish types shall be as defined in ACI 301.

2. Surfaces shall receive a rough-form finish.

3.9 Curing and Protection

A. Concrete curing shall be in accordance with ACI 301 and ACI 308 unless otherwise specified.

B. Begin curing immediately following form removal. Avoid damage to concrete from vibration created by pile driving, movement of equipment in the vicinity, disturbance of formwork or protruding reinforcement, and any other activity resulting in ground vibrations. Protect concrete from injurious action by sun, rain, flowing water, frost, mechanical injury, tire marks, and oil stains. Do not allow concrete to dry out from time of placement until the expiration of the specified curing period. If forms are removed prior to the expiration of the curing period, provide another curing procedure specified herein for the remaining portion of the curing period. Provide moist curing for those areas receiving liquid chemical sealer-hardener or epoxy coating.

C. Membrane Curing Compound: Do not use membrane curing compounds on surfaces exposed to public view, corrosion inhibitor treated concrete, on any surface to be painted, where coverings are to be bonded to the concrete, or on concrete to which other concrete is to be bonded.

D. Moist Curing: Remove water without erosion or damage to the structure.

1. Ponding or Immersion: Continually immerse the concrete throughout the curing period. Water shall not be more than 20 degrees F less than the temperature of the concrete. For temperatures between 40- and 50-degrees F, increase the curing period by 50 percent.

2. Fog Spraying or Sprinkling: Apply water uniformly and continuously throughout the curing period. For temperatures between 40- and 50-degrees F, increase the curing period by 50 percent.
3. Pervious Sheeting: Completely cover surface and edges of the concrete with two thicknesses of wet sheeting. Overlap sheeting 6 inches over adjacent sheeting. Sheeting shall be at least as long as the width of the surface to be cured. During application, do not drag the sheeting over the finished concrete or over sheeting already placed. Wet sheeting thoroughly and keep continuously wet throughout the curing period.
4. Protection of Treated Surfaces: Prohibit pedestrian and vehicular traffic and other sources of abrasion at least 72 hours

E. Curing Periods: ACI 301 Section 5. Provide a minimum of 7 days of wet curing period. Begin curing immediately after placement. Protect concrete from premature drying, excessively hot temperatures, and mechanical injury; and maintain minimal moisture loss at a relatively constant temperature for the period necessary for hydration of the cement and hardening of the concrete. The materials and methods of curing shall be subject to approval by the Engineer.

3.10 Tolerances

A. Comply with tolerances of ACI 117.

3.11 Pumping Concrete

A. Pumping of concrete shall conform to the requirements of ACI 304R and ACI 304.2R.

B. Pumping shall not result in separation or loss of materials nor cause interruptions sufficient to permit loss of plasticity between successive increments. Loss of slump in pumping equipment shall not exceed 2 inches. Concrete shall not be conveyed through pipe made of aluminum or aluminum alloy. Rapid changes in pipe sizes shall be avoided. Maximum size of coarse aggregate shall be limited to 33 percent of the diameter of the pipe. Maximum size of well-rounded aggregate shall be limited to 40 percent of the pipe diameter. Samples for testing shall be taken at both the point of delivery to the pump and at the discharge end.

3.12 Cold Weather Concreting

A. Cold weather concreting shall conform to the requirements of ACI 306.1

B. Adequate protection of concrete against damage by frost during the making and early curing period is absolutely essential whenever the atmospheric

temperature is below 40 degrees F or whenever the temperature may fall below 40 degrees F within 24 hours after placement.

C. The Contractor shall provide and have on the job ready to install, adequate facilities for enclosing the freshly placed concrete and heating the enclosure for the period November 1 to April 1.

D. The mixing water and aggregates shall be heated by steam coils or other devices so that the concrete during mixing is kept above a minimum temperature of 65 degrees F.

E. Concrete when placed in the forms shall have a minimum temperature of 55 degrees F. Freshly laid concrete and the surrounding atmosphere shall be maintained at a temperature of 50 degrees F or greater for a period of 48 hours after placement.

F. A permanent temperature record shall be kept for the days on which protection is required as specified in Paragraph B above, showing the date, hour, outside temperature and temperature within the enclosure to show the most favorable or unfavorable conditions to which the concrete is subjected. The Contractor shall furnish maximum and minimum thermometers or recording thermometers for this purpose. A copy of the temperature record shall be sent to the Engineer at the close of each day's work.

G. Tarpaulins supported on horses or other framework shall follow closely the placing of the concrete so that only a few feet of the finished work is exposed to the outside atmosphere at any one time. Tarpaulins shall be arranged so that heated air can circulate freely in the space between the tarpaulin and the freshly placed concrete.

H. Within the enclosure, means for artificial heating shall be provided as well as maintain the temperatures specified continuously and with a reasonable degree of uniformity in all parts of the enclosure.

   1. The Contractor shall provide adequate fire protection accessible at all times where heating is in progress and shall maintain watchmen or other attendants to keep the heating units in continuous operation. All heating appliances shall be vented.

   2. Heating appliances shall not be placed in a manner as to endanger formwork or centering or expose any area of concrete to drying out or other injury due to excessive temperatures.

I. The use of salts, chemicals, or other foreign material in the mix to lower the freezing point of the concrete is prohibited.

3.13 Hot Weather Concreting

A. Hot weather concreting shall conform to the requirements of ACI 305R.

B. Concrete shall be protected during placement, finishing, and curing in hot weather to minimize the formation of plastic shrinkage cracks.

C. Concrete, when placed in the forms, shall have a maximum temperature of 90°F. Mixing water shall be chilled as required to maintain the temperature of the concrete below this unit.

D. Forms shall be wetted prior to placement of concrete. Fog spraying may be used to cool the air, cool the forms and reinforcing steel ahead of placement and to lessen the amount of evaporation from the concrete surface before and after finishing.

3.14 Field Quality Control and Concrete Testing

A. Concrete Testing: The making of all concrete specimens, slump, temperature, and air content tests shall be performed by an ACI Certified Field Technician. Laboratory testing of cast-in-place concrete shall be done by the Contractor-furnished and Engineer-approved laboratory.

B. Test Specimens: The Contractor shall supply all concrete, compression test molds, tamping rods, trowel, metal or glass covers, slump cone, storage box and sand necessary for making test specimens as outlined herein. The Contractor shall make, cure, and remove from molds and transport to the testing laboratory, five (5) specimens for each sample in accordance with ASTM C31 and ASTM C172.

C. Compressive Strength Tests: Make five test cylinders for each set of tests in accordance with ASTM C31. Precautions shall be taken to prevent evaporation and loss of water from the specimen. Samples for strength tests of each mix design of concrete placed each day shall be taken not less than once a day, nor less than once for each 100 cubic yards of concrete, nor less than once for each 5000 square feet of surface area for slabs or walls. For the entire project, take no less than five sets of samples and perform strength tests for each mix design of concrete placed. Each strength test result shall be the average of two cylinders from the same concrete sample tested at 28 days.

D. Test Reports: Contractor shall fill in data on concrete test sample form. When tests have been conducted, the Contractor shall furnish the results of the tests with all pertinent data to the Engineer.

E. Deficiencies and Remedial Action: In the event that concrete strength test results do not meet the acceptance criteria specified in ACI 301, additional tests of concrete shall be performed at the sole expense of the Contractor. In the event that tests of concrete in place do not meet the acceptance criteria

specified, those portions of the structure affected as determined by the Engineer shall be removed and replaced in a manner acceptable to the Engineer at no additional expense to the Owner.

F. Slump Tests: The Contractor shall check the consistency of concrete by means of slump tests conducted in accordance with ASTM C143. The maximum slump may be increased as specified with the addition of an approved admixture provided the water-cement ratio is not exceeded. Perform tests at commencement of concrete placement, when test cylinders are made, and for each batch of concrete.

G. Air Content Test: The Contractor shall test the air content in accordance with ASTM C231. The air content test shall be made at the same time as specified for slump tests.

H. Temperature: Concrete temperature shall be taken and recorded at the same time as specified for slump tests.

– END OF SECTION –

SECTION 513

PRE-ENGINEERED WALKWAY

Part 1 – GENERAL

1.1 Scope

A. The work includes the design, furnishing of all material and equipment, and the performing of all labor necessary to complete the design, fabrication and installation of Pre-Engineered Walkways as schematically depicted on the Contract Drawings and as herein specified or directed by the Engineer.

B. This scope establishes the general requirements for design, materials, and testing of Pre-Engineered Walkway systems to be used for access to and from the Dike/Weir box Structure.

C. This scope covers only the general requirements of Pre-Engineered Walkway design, fabrication, and erection. The specific requirements of each assembly and component shall be provided with the information that will be part of the submitted design and detail information.

D. The Pre-Engineered Walkway systems shall be designed to function in the physical and environmental conditions that they will undergo at the site, including but not limited to marine exposure, applied loads, temperature, snow, ice, and wind, and provide all fixtures and fittings to accommodate installation in the locations indicated in the Contract Drawings.

1.2 Related Sections

A. Section 514 Miscellaneous Metals

1.3 References

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

B. The Aluminum Association (AA)

Aluminum Design Manual

C. American Welding Society (AWS)

AWS D1.1/D1.1M Structural Welding Code – Steel

AWS D1.2 Structural Welding Code - Aluminum

AWS QC1 AWS Certification of Welding Inspectors

D. ASTM International (ASTM)

ASTM A123/A123M	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A780	Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM A500/A500M	Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A572/A572M	Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
ASTM F3125/F3125M	Standard Specification for High strength structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum, Tensile Strength, Inch and Metric Dimensions

E. Research Council on Structural Connections of the Engineering Foundation (RCSC)

F. Society of Automotive Engineers International (SAE)

SAE AMS-QQ-A-200B	General Specification for Aluminum Alloys, Bar, Rod, Shapes, Structural Shapes, Tube, and Wire, Extruded

G. American Institute of Steel Construction (AISC)

	Manual of Steel Construction, Fourteenth Edition
AISC 360	Specifications for Structural Steel Buildings 16th Edition

1.4 Qualified Suppliers

A. The Contractor shall provide the following documentation for their proposed pre-engineered walkway manufacturer / supplier:

1. Product Literature: Documentation to verify performance history and to ensure the proposed manufacturer / supplier will be in compliance with these specifications. Documentation shall include:

   a. Representative design calculations

   b. Representative drawings

   c. Splicing and erection procedures

   d. Warranty information

   e. Inspection and Maintenance procedures

   f. AISC Shop Certification

   g. Welder Qualifications

2. Proposed suppliers shall have at least five (5) years of experience designing and fabricating pre-engineered walkway structures and a minimum of five (5) successful projects, of similar or larger size and value, each of which has been in service at least three (3) years. List the location, walkway or bridge size, owner, and a contact for reference for each project.

1.5 Submittals

A. Submit the following in accordance with these Specifications. Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals.

1. Shop Drawings
   a. Walkways
2. Product Data
   a. Lifting inserts and devices
3. Design Data
   a. Walkway Design Computations
4. Certificates
   a. Steel Materials
   b. Aluminum Materials
   c. Bolting Materials
   d. Fabrication
   e. Welding Certificates
   f. Welding Inspector Certificates
5. Test Reports
   a. Aluminum
   b. Fasteners
   c. Steel
6. Manufacturer Qualification

1.6 Quality Control

A. Walkway Performance: Provide walkways of prefabricated aluminum or structural steel for platform access, including connections at dike side foundation and weir box structure. Walkway shall be designed in accordance

with "Specifications for Aluminum Structures", AA, latest edition, or AISC, using allowable strength design (ASD) method.

1. Walkways shall have a minimum clear walkway width of 3.5 feet, and an overall outside width not to exceed 5.0 feet. Length of walkways shall be as indicated on the drawings. Walkways shall have continuous handrails that are a minimum of 3.5 feet above the walking surface, but not to exceed 3.75 feet.
2. Walking surface shall be skid resistant.
3. Provide skid-resistant transition plates between end of walkway and landing surfaces.
4. Provide for bearing supports, including one fixed and one expansion assembly for each span.
5. Contact between aluminum and dissimilar metals and concrete shall be avoided, except for the use of compatible stainless steel pins. Where potential for galvanic corrosion exists, the aluminum shall be isolated from direct contact with other metals or concrete by use of suitable non-conducting insulators or bushings.

B. Walkway Design

1. Walkway systems shall be designed for the following load conditions as a minimum. Load cases shall be combined based upon their probability of simultaneous occurrence, and in accordance with applicable codes and standards. Calculations shall be performed for wind loads both parallel and perpendicular to the walkway.
2. Structural design of the walkway structure(s) shall be performed by or under the direct supervision of a licensed professional engineer and done in accordance with recognized engineering practices and principles. The engineer shall be licensed to practice in New Jersey and will sign and seal the design calculations and fabrication drawings

C. Design Loads: In considering design and fabrication issues, this structure shall be assumed to be statically loaded. No dynamic analysis is required nor shall fabrication issues typically considered for dynamically loaded structures be considered for this walkway.

1. Dead Load: The walkway structure shall be designed considering its own dead load (superstructure and original decking) only. No additional dead loading need be considered.
2. Uniform Live Load
   a. Pedestrian Live Load

1) Main Members: Main supporting members, including girders, trusses and arches shall be designed for a pedestrian live load of 100 pounds per square foot of walkway area. The pedestrian live load shall be applied to those areas of the walkway to produce maximum stress in the member being designed.

2) Secondary Members: Walkway decks and supporting floor systems, including secondary stringers, floor beams and their connections to main supporting members shall be designed for a live load of 100 pounds per square foot, with no reduction allowed.

3. Concentrated Loads: The walkway superstructure, floor system and decking shall be designed for each of the following point load conditions:

   a. A concentrated load of 1000 pounds placed on any area 2.5 ft x 2.5 ft square.

4. Wind Load: Wind pressures shall be determined based on ASCE 7-16 with an ultimate wind speed of not less than 153 mph.

   a. Horizontal Forces

      1) The walkway(s) shall be designed for a wind load on the full vertical projected area of the walkway as if enclosed. The wind load shall be applied horizontally at right angles to the longitudinal axis of the structure.

      2) The wind loading shall be considered both in the design of the lateral load bracing system and in the design of the truss vertical members, floor beams and their connections.

   b. Overturning Forces: The effect of forces tending to overturn structures shall be calculated assuming that the wind direction is at right angles to the longitudinal axis of the structure. In addition, an upward force shall be applied at the windward quarter point of the transverse superstructure width.

5. Top Chord/Railing Loads: The top chord, truss verticals, and floor beams shall be designed for lateral wind loads (per paragraph titled “Horizontal Forces”) and for any loads required to provide top chord stability; however, in no case shall the load be less than 50 pounds per lineal foot or a 200 pound point load, whichever produces greater stresses, applied in any direction at any point along the top chord or at the top of the safety system (42" or 54" above deck level), if higher than the top chord.

D. Design Limitations

   1. Deflection

a. Vertical Deflection

1) The vertical deflection of the main trusses due to service pedestrian live load shall not exceed 1/400 of the span.

2) The vertical deflection of cantilever spans of the structure due to service pedestrian live load shall not exceed 1/300 of the cantilever arm length.

3) The deflection of the floor system members (floor beams and stringers) due to service pedestrian live load shall not exceed 1/360 of their respective spans.

b. Horizontal Deflection: The horizontal deflection of the structure due to lateral wind loads shall not exceed 1/500 of the span under an 85 MPH (25 PSF) wind load.

2. Minimum Thickness of Metal: The minimum thickness of all structural steel members shall be 3/16 inch nominal and be in accordance with the AISC Manual of Steel Constructions' "Standard Mill Practice Guidelines". For ASTM A500/A500M tubing, the section properties used for design shall be per the AISC Steel Construction Manual.

E. Governing Design Codes/References: Structural members shall be designed in accordance with recognized engineering practices and principles as follows:

1. Structural Steel Allowable Strength Design (ASD)

a. American Institute of Steel Construction (AISC)

b. Structural steel design shall be in accordance with AISC 360

2. Welded Tubular Connections

a. AISC 360 Chapter K

b. All welded tubular connections shall be checked, when within applicable limits, for the limiting failure modes outlined in the ANSI/AWS D1.1/D1.1M Structural Welding Code

c. When outside the "validity range" defined in these design guidelines, the following limit states or failure modes (but not limited to) shall be checked:

1) Chord face plastification

2) Punching shear (through main member face)

3) Material failure

(a) Tension failure of the web member

(b) Local buckling of a compression web member

4) Weld failure

(a) Allowable stress based on "effective lengths"

(b) “Ultimate" capacity

5) Local buckling of a main member face

6) Main member failure:

(a) Web or sidewall yielding

(b) Web or sidewall crippling

(c) Web or sidewall buckling

(d) Overall shear failure

d. All tubular joints shall be plain unstiffened joints (made without the use of reinforcing plates) except as follows:

1) Floor beams hung beneath the lower chord of the structure may be constructed with or without stiffener (or gusset) plates, as required by design.

2) Floor beams that frame directly into the truss verticals (H-Section walkways) may be designed with or without end stiffening plates as required by design.

3) Where chords, end floor beams and in high profiles the top end struts weld to the end verticals, the end verticals (or connections) may require stiffening to transfer the forces from these members into the end vertical.

4) Truss vertical to chord connections.

NOTE: The effects of fabrication tolerances shall be accounted for in the design of the structure. Special attention shall be given to the actual fit-up gap at welded truss joints.

3. Aluminum: Aluminum members shall be designed in accordance with Specification for Aluminum Structures, AA, latest edition using Allowable Stress Design.

4. Bolted Splices

a. American Institute of Steel Construction (AISC) and the Research Council on Structural Connections of the Engineering Foundation (RCSC).

b. Bolted splice design shall be in accordance with Section J3 of AISC 360. Splices shall be designed for the actual load in the member but in no case for less than 50% of the effective strength of the member.

c. Bolted field splices shall be located on the walkway to produce a structure which can be economically shipped and erected. Splices along the length of the walkway (in chords and diagonals) shall be placed at the approximate midpoint of a bay (between two panel points). Splices across the width of the walkway (in floor beams and wind braces) may be used, when necessary, to keep the overall structure width within reasonable limits for shipping.

1.7 Delivery And Storage

A. Lift and support walkways at the lifting and supporting points indicated on the shop drawings. Store walkways off the ground. Protect from weather, marring, damage, and overload.

1.8 Quality Assurance

A. Drawing Information: Submit drawings indicating complete information for the fabrication, handling, and erection of the walkways. Drawings shall not be reproductions of contract drawings. Design drawings of walkways (including connections) shall be prepared and sealed by a registered professional engineer and submitted for approval prior to fabrication. The drawings shall indicate, as a minimum, the following information:

1. Walkway system layout
2. Connections walkways and other construction
3. Material properties of all materials used
4. Lifting and assembly requirements
5. Erection sequence and handling requirements
6. All loads used in design (such as live, dead, wind, handling, and erection)
7. Bracing/shoring required

B. Design Calculations

1. Submit calculations reflecting design conforming to requirements of paragraph entitled "Walkway Design". Design calculations (including connections) shall be prepared and sealed by a registered professional engineer in the state where the project is located and submitted for approval prior to fabrication.
2. Camber: The walkway shall have a vertical camber dimension at midspan equal to 100% of the full dead load deflection.

C. Structural Calculations: Structural calculations for the walkway superstructure shall be submitted by the walkway manufacturer and reviewed by the approving engineer. The calculations shall include all design information necessary to determine the structural adequacy of the walkway. The calculations shall include the following:

1. All AISC checks for axial, bending and shear forces in the critical member of each truss member type (i.e. top chord, bottom chord, floor beam, vertical, etc.)
2. Checks for the critical connection failure modes for each truss member type (i.e. vertical, diagonal, floor beam, etc.) Special attention shall be given to all welded tube-on-tube connections (see section 3.3.2 for design check requirements).
3. All bolted splice connections.
4. Main truss deflection checks.
5. Deck design.

NOTE: The analysis and design of triangulated truss walkways shall account for moments induced in members due to joint fixity where applicable. Moments due to both truss deflection and joint eccentricity must be considered.

E. Welder and welding inspector certifications shall be in compliance with AWS standard qualification tests.

1.9 Measurement and Payment

A. There is no separate measurement and payment for the pre-engineered walkway. Contractor costs for the pre-engineered walkway shall be included in Contract Item 010 – Weir Box, Contract Item 110 – Weir Box, or Contract Item 210 – Weir Box, whichever is awarded. See Section 511 – Weir Box Structure. Contractor costs shall include design, fabrication, transport, erection, and all other work described in this Section and shown on the Plans including all labor, materials, services, and equipment necessary to complete the work in every respect to the satisfaction of the Engineer.

Part 2 – PRODUCTS

2.1 Walkways

A. Aluminum: Aluminum alloy shall be 6061-T6. Extruded in accordance with the applicable requirements of SAE AMS-QQ-A-200B.

B. Steel: ASTM A500/A500M Grade B, ASTM A572/A572M, Grade 50.

C. Stainless Steel: Type 316 L.

D. Insulators: MIL-I-24768/14. Bushings or separation sheets shall be a minimum of 1/16 in thickness.

E. Bolts: ASTM F3125, hot-dip galvanized.

2.2 Finishes

A. Steel Galvanizing

1. Steel galvanizing shall be in accordance with ASTM A 123 or ASTM A 153 as applicable. Galvanize all walkway steel items as specified herein. Hot-dip galvanize items specified to be zinc-coated after fabrication where practicable.

2. Repair of Zinc-Coated Surfaces: Repair damaged surfaces with galvanizing repair method and paint conforming to ASTM A 780 or by application of stick or thick paste material specifically designed for repair of galvanizing, as approved by the Designer. Clean areas to be repaired and remove slag from welds. Heat surfaces to which sticks or paste material is applied, with a torch to a temperature sufficient to melt the metallics in stick or paste; spread molten material uniformly over surfaces to be coated and wipe off excess material.

B. Steel Cleaning and Painting

1. Surface Preparation: Prepare galvanized surfaces to be painted and/or coated in accordance with coating manufacturer's recommendations. Wash cleaned surfaces, which have become contaminated with rust, dirt, oil, grease, or other contaminants with solvents until thoroughly clean. Galvanized walkways shall be brush-off blast cleaned in accordance with SP-SP 7 and cleaned of any grease or other foreign matter with a suitable degreaser before applying coatings.

2. Priming and Intermediate Coat: Shop apply one coat of primer and one coat of intermediate coat in accordance with manufacturer's printed instructions. Primer and intermediate coat shall be in a Cycloaliphatic Amine Epoxy, Carboline Carboguard 890, or approved equal, applied to a DFT of 4-6 mils, in accordance with the manufacturer's recommendations.

3. Top Coat: Shop apply one coat or more top coats as needed to provide complete coverage, in accordance with manufacturer's printed instructions. Top coat shall be an Acrylic Aliphatic Polyurethane, Carboline Carbothane 134 HS, or approved equal, applied to a DFT of 2 mils, in accordance with the manufacturer's recommendations. Color: Safety Yellow.

C. Aluminum Finish: Shall be manufacturer's standard, free of marks, abrasions, and similar surface defects.

D. Decking shall be non-slip grating or approved equal. Transition plates shall have a non-slip surface.

Part 3 – EXECUTION

3.1 Fabrication

A. General Requirements

1. Drain Holes: When the collection of water inside a structural tube is a possibility, either during construction or during service, the tube shall be provided with a drain hole at its lowest point to let water out.

2. Welds

a. Special attention shall be given to developing sufficient weld throats on tubular members. Fillet weld details shall be in accordance with AWS D1.1/D1.1M, Section 3.9 (See AWS Figure 3.2). Unless determined otherwise by testing, the loss factor "Z" for heel welds shall be in accordance with AWS Table 2.8. Fillet welds that run onto the radius of a tube shall be built up to obtain the full throat thickness. The maximum root openings of fillet welds shall not exceed 3/16" in conformance with AWS D1.1/D1.1M, Section 5.22. Weld size or effective throat dimensions shall be increased in accordance with this same section when applicable (i.e. fit-up gaps> 1/16").

b. The fabricator shall have verified that the throat thickness of partial joint penetration groove welds (primarily matched edge welds or the flare-bevel-groove welds on underhung floor beams) shall be obtainable with their fit-up and weld procedures. Matched edge welds shall be "flushed" out when required to obtain the full throat or branch member wall thickness.

c. For full penetration butt welds of tubular members, the backing material shall be fabricated prior to installation in the tube so as to be continuous around the full tube perimeter, including corners. Backing may be of four types:

1) A "box" welded up from four (4) plates.

2) Two "channel" sections, bent to fit the inside radius of the tube, welded together with full penetration welds.

3) A smaller tube section which slides inside the spliced tube.

4) A solid plate cut to fit the inside radius of the tube.

d. Corners of the "box" backing, made from four plates, shall be welded and ground to match the inside corner radii of the chords. The solid plate option shall require a weep hole either in the chord wall above the

"high side" of the plate or in the plate itself. In all types of backing, the minimum fit-up tolerances for backing shall be maintained at the corners of the tubes as well as across the "flats".

e. Aluminum welding shall be in accordance with AWS D1.2/D1.2M.

f. Field spliced steel shall be fully bolted with ASTM F3125 type 3 high-strength bolts in accordance with ASTM F3125.

3.2 Delivery And Erection

A. Delivery shall made to a location nearest the site which is easily accessible to normal over-the-road tractor/trailer equipment. All trucks delivering walkway materials shall be unloaded at the time of arrival.

B. The manufacturer shall provide detailed, written instruction in the proper lifting procedures and splicing procedures (if required). The method and sequence of erection shall be the responsibility of the Contractor.

C. The walkway manufacturer shall provide written inspection and maintenance procedures to be followed by the walkway owner.

– END OF SECTION –

SECTION 514

MISCELLANEOUS METALS

Part 1 – GENERAL

1.1 Scope

A. The work covered by this Section includes the furnishing of all material and equipment and the performing of all labor to complete fabrication and installation of miscellaneous metal fabrications and Structural steel systems including, materials, installation, workmanship, fabrication, assembly, erection, inspection, quality control, and testing shall be provided in accordance with AISC 360 Chapter N as shown on the Contract Drawings and as herein specified or directed by the Engineer.

B. This work shall include but is not limited to:

1. Weir box
2. Ladders
3. Handrails
4. Metal Deck Grating
5. Cover Plates at Outfall Pipes
6. Steel Outfall Pipes
7. Slip on metal flanges at Outfall Pipes & HDPE Pipe Splice

1.2 Related Work

A. Section 512 Cast-in-Place Concrete

B. Section 513 Pre-Engineered Walkway

1.3 References

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

B. American National Standards Institute (ANSI)

ANSI B18.2.1	Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head and Lag Screws (Inch Series)
ANSI B18.2.2	Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)

ANSI B18.6.2	Square Head Set Screws and Slotted Headless Set Screws (Inch Series)
ANSI B18.6.3	Machine Screws, Tapping Screws, and Metallic Drive Screws (Inch Series)
ANSI B18.21.1	Washers: Helical Spring-Lock, Tooth Lock and Plain Washers (Inch Series)
ANSI B18.22.1	Washers: Helical Spring-Lock, Tooth Lock and Plain Washers (Inch Series)

C. American Society of Mechanical Engineers (ASME)

ASME BPVC SEC II-C	Boiler and Pressure Vessel Code: Section II: Materials – Part C: Specifications for Welding Rods, Electrodes, and Filler Metals

D. American Institute of Steel Construction (AISC)

AISC 360	Structural Steel Buildings

E. ASTM International (ASTM)

ASTM A 36	Carbon Structural Steel
ASTM A 53	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
ASTM A 123	Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 153	Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 572	High-Strength Low-Alloy Columbium-Vanadium Structural Steel
ASTM A 687	High-Strength Nonheaded Steel Bolts and Studs
ASTM A 780	Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM A 992	Structural Steel Shapes
ASTM F1554	Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength
ASTM F3125/F3125M	Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength

F. American Welding Society, Inc. (AWS)

AWS D1.1 Structural Welding Code Steel

AWS QC1 AWS Certification of Welding Inspectors

G. National Association of Architectural Metal Manufacturers (NAAMM)

NAAMM MBG 531 Metal Bar Grating Manual

H. Steel Structures Painting Council (SSPC)

SSPC-SP 1 Solvent Cleaning

SSPC-SP 6 Commercial Blast Cleaning

I. Research Council on Structural Connections of the Engineering Foundation (RSCS)

1.4 Submittals

A. Submit the following in accordance with these Specifications. Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals.

B. Drawings

1. Weir box Structure
2. Handrails
3. Ladders
4. Metal Deck Grating
5. Cover Plates at Outfall Pipes
6. Steel Outfall Pipes
7. Slip on metal flanges at Outfall Pipes & HDPE Pipe Splice

C. Statements

1. Welding procedure qualifications
2. Nondestructive examination (NDE) procedures
3. NDE personnel certification procedures
4. Welding Inspector certification

D. Welding Procedures and Qualifications

1. Specifications and Test Results: Submit copies of the welding procedure specifications and procedure qualification test results for each type of welding required. Approval of any procedure does not relieve the Contractor of the responsibility for producing acceptable welds.

2. Certification: Before assigning welders or welding operators to the work, submit their names, together with certification that each individual is performance qualified as specified. Do not start welding work prior to procedure qualification. The certification shall state the type of welding and positions for which each is qualified, the code and procedure under which each is qualified, date qualified, and the firm and individual certifying the qualification tests. Welder qualification certificates shall bear the approval of the certified welding inspector.

E. Certificates

1. Adhesive anchors
2. Anchor bolts
3. Structural carbon steel
4. High strength bolts and nuts

F. Certifications, test procedures, and other submittals shall show the appropriate ASTM test(s) for each material.

G. Records

1. Weld Identifications: Submit a list of the welder's names and symbol for each welder. To identify welds, submit written records indicating the location of welds made by each welder or welding operator.

1.5 Qualification Of Welders

A. Qualify welders in accordance with AWS D1.1 using procedures, materials, and equipment of the type required for the work.

1.6 Quality Assurance

A. Procedures: Develop and qualify procedures for welding metals included in the work. Do not start welding until welding procedures, welders, and welding operators have been qualified. Perform qualification testing by a testing laboratory approved by the Engineer. Notify the Engineer at least 24 hours in advance of the time and place of the tests. When practicable, perform the qualification tests at or near the work site. Maintain current records of the test results obtained in welding procedure, welding operator/welder performance qualifications, and nondestructive examination (NDE) procedures. These records shall be readily available at the site for examination by the Engineer. Qualify the procedures for making transition welds between different materials or between plates or pipes of different wall thicknesses. The choice of welding process shall be the responsibility of the Contractor.

B. Previous Qualifications: Welding procedures, welders, and welding operators previously qualified by test may be accepted for the work without requalification provided that the following conditions are fulfilled:

1. Copies of welding procedures, procedures qualification test records, and welder and welding operator performance qualification test records are submitted and approved in accordance with the paragraph entitled "Submittals".

2. Testing was performed by an approved testing laboratory or technical consultant or by the Contractor's approved quality control organization. The welding procedures, welders, and welding operators were qualified in accordance with AWS D1.1, and base materials, filler materials, electrodes, equipment, and processes conformed to the applicable requirements of this specification.

3. The requirements of paragraph entitled "Welder and Welding Operator Performance Qualification for renewal of qualification were met, and records showing name of employer and period of employment using the process for which qualified are submitted as evidence of conformance.

C. Performance: The Contractor shall be responsible for the quality of joint preparation, welding, and examination. Clearly identify and record materials used in the welding operations. The examination and testing defined in this specification area minimum requirements. Provide additional examination and testing as necessary to achieve the quality required.

1. Welding Procedures Qualification: Qualification of the welding procedures for each group of materials to be welded is required as indicated in AWS D1.1. Record in detail and qualify the "Welding Procedure Specification" for every welding procedure proposed. Qualification for each welding procedure shall conform to the requirements of AWS Standards and to this specification. The welding procedures shall specify end preparation for weld, including cleaning, alignments, and root openings. Preheat, interpass temperature control, and postheat treatment of welds shall be as required by AWS, unless otherwise indicated or specified. Welding procedure qualifications shall be identified individually and referenced on the shop drawings or suitably keyed to the contract drawings.

2. Welder and Welding Operator Performance Qualification: Qualify each welder and welding operator assigned to work covered by this specification by performance tests using equipment, positions, procedures, base metals, and electrodes or bare filler wires from the same specification, classification, or group number that will be encountered on his assignment. Welders or welding operators who make acceptable procedure qualification tests will be considered performance-qualified for the welding procedure used.

Determine performance qualification in accordance with AWS D1.1 and as specified.

3. Renewal of Qualification: Requalification of a welder or welding operator shall be required under one or any combination of the following conditions:
   a. When a welder or welding operator has not used the specific welding process for a period of three (3) months. The period may be extended to six (6) months if the welder has been employed on another welding process.
   b. There is specific reason to question the welder's ability to make welds that will meet the requirements of the specifications.
   c. The welder or welding operator was qualified by an employer other than those firms performing work under this contract and a qualification test has not been taken within the preceding 12 months. Renewal of qualification under this condition need be made on only a single test joint of any thickness, position, or material to reestablish qualification for any thickness, position, or material for which the welder or welding operator had qualified previously.
4. Qualification of Inspection and Nondestructive Examination (NDE) Personnel: Qualify Inspection and nondestructive examination personnel in accordance with the following requirements:
   a. Welding Inspector Certification: Qualify welding inspectors in accordance with AWS QC1.
   b. NDE Personnel Certification Procedures: Certify NDE personnel and establish a written procedure for the control and administration of NDE personnel training, examination, and certification. Base procedures on appropriate specific and general guidelines of training and experience recommended by ASNT SNT-TC-1A, Supplement C-Ultrasonic.

1.7 Delivery, Storage, And Protection

A. Protect from corrosion, deformation, and other types of damage. Store items in an enclosed area free from contact with soil and weather. Remove and replace damaged items with new items.

B. Weld Material: Deliver filler metals, electrodes, fluxes, and other welding materials to the site in manufacturer's original packages and store in a dry space until used. Label and design packages properly to give maximum protection from moisture and to assure safe handling.

1.8 Environmental

A. Do not perform welding when the quality of the completed weld could be impaired by the prevailing work or weather conditions. The Engineer will determine when the weather or working conditions are unsuitable for welding.

1.9 Measurement and Payment

A. There is no separate measurement and payment for the weir box, ladders, handrails, metal deck grating, cover plates at outfall pipes, steel outfall pipes, or slip on flanges, or other miscellaneous metal work related to the Weir Box Structure. Contractor costs for miscellaneous metal work shall be included in Contract Item 010 – Weir Box, Contract Item 110 – Weir Box, or Contract Item 210 – Weir Box, whichever is awarded. See Section 511 – Weir Box Structure. Contractor costs shall include all fabrication, galvanizing, assembly, erection, and testing.

Part 2 – PRODUCTS

2.1 Materials

A. Anchor Bolts, Nuts and Washers

1. Adhesive Anchor Bolts: HILTI RE 500 V3 or approved equal.
2. Anchor bolts shall conform to ASTM F1554 Grade 55, unless otherwise noted. Where exposed, shall be of the same material, color, and finish as the metal to which applied.
3. Bolts, Nuts, Studs and Rivets: ASMC/ANSI B18.2.2 and ASTM A 687 or ASTM F 3125 Grade A 325, as noted.
4. Screws: ANSI B18.2.1, ANSI B18.6.2, and ANSI B18.6.3.
5. Washers: Provide plain washers to conform to ANSI B18.22.1. Provide beveled washers for American Standard beams and channels, square or rectangular, tapered in thickness, and smooth. Provide lock washers to conform to ANSI B18.21.1.

B. Steel Pipe: ASTM A 53, Type E or S, Grade B and AWS D1.1

C. Miscellaneous Steel Plates and Structural Shapes: Wide flange ASTM A 992, angles, channels, misc. shapes, and plates ASTM A 572 Grade 50 – Unless otherwise noted

2.2 Fabrication Finishes

A. Galvanize: Anchor bolts, grating fasteners, washers, and parts or devices necessary for proper installation, unless indicated otherwise.

B. Galvanizing

1. Bolts, Nuts, and Washers: ASTM A 153, Class C or D as applicable.

2. Handrails, Hanging Platforms, Walkway, and Plates and Structural Shapes: ASTM A 123, Thickness Grade 100.
3. Hot-dip galvanized items specified to be zinc-coated, after fabrication where practicable.

C. Surface Preparation: Blast clean surfaces in accordance with SSPC-SP6. Clean surfaces which become contaminated with rust, dirt, oil, grease, or other contaminants with solvents in accordance with SSPC-SP1. Steel to be embedded in concrete shall be free of dirt and grease.

D. Repair of Zinc-Coated Surfaces: Repair damaged surfaces with galvanizing repair method and paint conforming to ASTM A 780 or by the application of stick or thick paste material specifically designed for repair of galvanizing, as approved by the Engineer. Clean areas to be repaired and remove the slag from the welds. Heat surfaces to which stick or paste material is applied, with a torch to a temperature sufficient to melt the metallics in stick or paste; spread the molten material uniformly over surfaces to be coated and wipe the excess material off.

E. Nonferrous Metal Surfaces: Protect by plating, anodic, or organic coatings.

2.3 Miscellaneous Plates And Shapes

A. Provide for items that do not form a part of the structural steel framework, such as miscellaneous mountings, frames, and connections. Provide with connections and fastener welds as indicated.

2.4 Welding Materials

A. Comply with ASME BPVC SEC II-C. Welding equipment, electrodes, welding wire, and fluxes shall be capable of producing satisfactory welds when used by a qualified welder or welding operator using qualified welding procedures.

2.5 Floor Gratings

A. Design steel grating in accordance with NAAM MBG 531 for bar type gratings. Galvanize steel floor gratings.

1. Design floor gratings to support a stress live load of 100 pounds per square foot for the spans indicated, with maximum deflection of L/240.
2. In accordance with NAAMM MBG 531, band edges of grating with bars of the same size as the bearing bars. Weld banding in accordance with the manufacturer's standard for trim. Design tops of bearing bars, cross or intermediate bards to be in the same plane and to match grating finish.
3. Anchor gratings to structural members with bolts, toggle bolts, or expansion shields and bolts or otherwise in accordance with manufacturer's recommended system.

4. Provide slip resistant surface finishes.

Part 3 – EXECUTION

3.1 Installation

A. Install items at locations indicated, according to manufacturer's instructions. Items listed below require additional procedures.

3.2 Anchorage, Fastenings, And Connections

A. Provide anchorage where necessary for fastening miscellaneous metal items securely in place. Include for anchorage not otherwise specified or indicated, expansion shields or adhesive anchors for concrete; machine and carriage bolts for steel. Do not use wood plugs in any material. Provide non-ferrous attachments for non-ferrous metal. Make exposed fastenings of compatible materials, generally matching in color and finish, to which fastenings are applied. Conceal fastenings where practicable.

3.3 Built-In Work

A. Form for anchorage metal work built-in with concrete or masonry, or provide with suitable anchoring devices as indicated or as required. Furnish metal work in ample time for securing in place as the work progresses.

3.4 Bolted Construction

A. Install according to AISC 360 Chapter N. High strength bolts shall be pretensioned in accordance with RCSC Specifications.

B. Field treat damaged galvanized finish with two coats of high zinc dust oxide paint, cold galvanizing compounds or approved equal conforming to the requirements of ASTM A 780. In addition, all exposed threaded surfaces shall be painted with two coats of high zinc dust oxide paint after installation of unit.

3.5 Welding

A. Perform welding, welding inspection, and corrective welding, in accordance with AWS D1.1 unless noted below. Use continuous welds on all exposed connections. Grind visible welds smooth in the finished installation.

B. Welding: Do not deviate from applicable codes, approved procedures, and approved shop drawings without prior written approval from the Engineer. Materials or components with welds made off the site will not be accepted if the welding does not conform to the requirements of this specification unless otherwise specified. Assign each welder or welding operator an identifying number, letter, or symbol that shall be used to identify his welds. Each welder or welding operator shall apply his mark adjacent to his weld using an approved rubber stamp or felt-tipped marker with permanent, weatherproof ink or other approved methods that do not deform the metal. For seam welds, place

identification marks adjacent to the welds at 3-foot intervals. Confine identification by die stamps or electric etchers to the weld reinforcing crown, preferably in the finished crater.

C. Welding Operators: Perform welding in accordance with qualified procedures using qualified welders and welding operators.

3.6 Examinations And Tests

A. Visual and nondestructive examinations shall be performed by an AWS-certified welding inspector paid for by the Contractor to detect surface and internal discontinuities in completed welds. The services of a qualified commercial inspection or testing laboratory or technical consultant shall be approved by the Engineer. Visually examine welds and ultrasonic examination shall be required as specified. When examination and testing indicate defects in a weld joint, a qualified welder shall repair the weld in accordance with the Paragraph 3.8 of this Section.

B. Visual Examination: Visually examine 100 percent of welds as follows:

1. Before Welding - for compliance with requirements for joint preparation, placement of backing rings or consumable inserts, alignment and fit-up and cleanliness.
2. During Welding - for conformance to the qualified welding procedure.
3. After Welding - for cracks, contour and finish, bead reinforcement, undercutting, overlap, and size of filet welds.

C. Nondestructive Examination: NDE shall be in accordance with written procedures. Procedures for ultrasonic tests and methods shall conform to AWS D1.1. The approved procedure shall be demonstrated to the satisfaction of the Engineer's QA personnel. In addition to the information required in AWS, the written procedures shall include:

1. Timing of the nondestructive examination in relation to the welding operations.
2. Safety precautions.

D. 25 Percent NDE: All steel welding shall be subjected to 25 Percent NDE unless noted otherwise. Additional testing may be required if unsatisfactory results are obtained.

3.7 Acceptable Standards

A. Visual: The following indications are unacceptable:

1. Cracks – external surface
2. Undercut on surface which is greater than 1/32 inch (1.0 mm) deep.

3. Lack of fusion on surface.
4. Convexity of filet weld surface greater than 10 percent of longest leg plus 0.03 inch (1.0 mm).
5. Concavity in fillet welds greater than 1/16 inch (2.0 mm).
6. Fillet weld size less than indicated or greater than 1-1/4 times the minimum specified filet leg length.

B. Ultrasonic Examination: Linear type discontinuities are unacceptable if the amplitude exceeds the reference level and discontinuities have lengths which exceed the following:

1. ¾-inch (19.0 mm)
2. Discontinuities are interpreted to be cracks, lack of fusion, and incomplete penetration are unacceptable regardless of length.

3.8 Corrections And Repairs

A. Remove defects and replace welds as specified. Repair defects discovered between weld passes before additional weld material is deposited. Wherever a defect is removed, a repair by welding is not required, the affected area shall be blended into the surrounding surface eliminating sharp notches, crevices, or corners. After defect removal is complete and before rewelding, reexamine the area by the same test methods which first revealed the detect to ensure that the defect has been eliminated. After rewelding, reexamine the repaired area by the same test methods originally used for that area. For repairs to base material, the minimum examination shall be the same as required for but welds. Indication of a defect shall be regarded as a defect unless reevaluation by NDE or by surface conditioning shows that no unacceptable indications are present. The use of foreign material to mask, fill in, seal or disguise welding defects will not be permitted.

3.9 Field Quality Control

A. Perform field tests, and provide labor, equipment, and incidentals required for testing. The Engineer shall be notified in writing of defective welds, within 7 working days of the date of the weld inspection.

B. Welds

1. Visual Inspection: AWS D1.1. Furnish the services of AWS-certified welding inspectors for fabrication and erection inspection and testing and verification inspections. Welding inspectors shall visually inspect and mark welds, including fillet weld and returns.
2. Non Destructive Testing: AWS D1.1. Test locations shall be as indicated. If more than 20 percent of welds made by a welder contain defects identified

by testing, then all welds made by that welder shall be tested by radiographic or ultrasonic testing, as approved by the Engineer. When all welds made by an individual welder are required to be tested, magnetic particle testing shall be used only in areas inaccessible to either radiographic or ultrasonic testing. Retest defective areas after repair.

– END OF SECTION –

SECTION 515

HEAVY TIMBER CONSTRUCTION

PART 1 - GENERAL

1.1 SCOPE

A. The work covered by this Section includes the furnishing of all material and equipment, and the performing of all labor to complete the heavy timber construction as shown on the Contract Drawings and as herein specified or directed by the Engineer.

B. This work shall include but is not limited to:

1. Weir Boards

1.2 RELATED SECTIONS

A. Section 514 Miscellaneous Metals

1.3 REFERENCES

A. The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

B. American Institute of Timber Construction (AITC)

AITC 108	Standard for Heavy Timber Construction

C. American National Standards Institute (ANSI)

ANSI B18.2.2	Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)
ANSI B18.22.1	Washers: Helical Spring-Lock, Tooth Lock, and Plain Washers (Inch Series)

D. ASTM International (ASTM)

ASTM A 36	Carbon Structural Steel
ASTM A 123	Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 153	Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 307	Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength

ASTM A 780	Repair of Damaged and Uncoated Areas of Hot-Dipped Galvanized Coatings

E. American Wood Preserver's Association (AWPA)

AWPA C1	All Timber Products – Preservative Treatment by Pressure Process
AWPA C2	Lumber, Timber, Bridge Ties and Mine Ties – Preservative Treatment by Pressure Process
AWPA C18	Standard for Pressure Treated Material in Marine Construction
AWPA M4	Standard for the Care of Preservative-Treated Wood Products

1.4 SUBMITTALS

A. Submit the following in accordance with these Specifications. Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals.

B. Certifications, test procedures, and other submittals shall show the appropriate ASTM or AWPA standard(s) for each material.

C. Submit manufacturer's data, test reports, certifications, and installation instructions for all materials, including but not limited to:

1. Hardware including steel shapes and fasteners
2. Treated timber materials
3. Timber preservative

D. Shop drawings detailing fabrication and erection of each timber system indicated. Include plans, elevations, sections, and details of members of their connection. Show anchorage and accessory items.

E. Submit certification by treating plant that required treatments comply with specified standards.

1.5 QUALITY ASSURANCE

A. Comply with AITC 108.

B. Timber is to be graded in accordance with Southern Pine Inspection Bureau "Grading Rules" or West Coast Lumber Inspection Bureau "Standard Grading Rules for West Coast Lumber."

1.6 PROJECT CONDITIONS

A. Field Measurements: All timber framing must be measured for accurate fit in the field prior to fabrication. Avoid cutting members to fit in the field after treatment has been applied wherever possible.

1.9 Measurement and Payment

A. There is no separate measurement and payment for the weir boards. Contractor costs for weir boards shall be included in Contract Item 010 – Weir Box, Contract Item 110 – Weir Box, or Contract Item 210 – Weir Box, whichever is awarded. See Section 511 – Weir Box Structure. Contractor costs shall include all purchase, transport, fabrication, assembly, erection, and testing.

PART 2 - PRODUCTS

2.1 MATERIAL

A. Lumber and Timber

1. General: Comply with the grading rules of grading agency for species of timber used. Southern Pine Inspection Bureau (SPIB), West Coast Lumber Inspection Bureau (WCLIB).
2. Solid Sawn: Provide solid, rough sawn (undressed) lumber and timbers of stress-rated Southern Pine. Weir Boards to be Non-Dense Select Structural Grade with the following minimum stress values:
   a. Members size 4”x 4” (dry service conditions)
      1) Bending: 1850 psi
      2) Shear parallel to the grain: 175 psi
      3) Compression perpendicular to the grain: 480 psi
   b. Members size 4”x 6” (dry service conditions)
      1) Bending: 1850 psi
      2) Shear parallel to the grain: 175 psi
      3) Compression perpendicular to the grain: 480 psi
3. Framing members to be identified by the grade mark of a recognized association or independent inspection agency using the specific grading requirements of the association recognized as covering the species used. The association or independent inspection agency shall be certified by the American Lumber Standards Committee.

4. Treat by the full-cell process using ammoniacal copper arsenate (ACA), ammoniacal copper zinc arsenate (ACZA), chromated copper arsenate (CCA) to a net retention of 2.50 pounds per cubic foot in accordance with AWPA C1, AWPA C2 and AWPA C18 for treated lumber and timbers.

B. Hardware

1. Hardware shall include bolts with nuts and washers, nails, spikes, and other metal fastenings.
2. Bolts: ASTM A 307
3. Nuts: ANSI B 18.2.2
4. Washers: ANSI B 18.22.1
5. Steel Plates and Pipe Straps: ASTM A 36
6. All hardware, except stainless, shall be hot-dip galvanized in accordance with ASTM A 123 and ASTM A 153, as applicable.

PART 3 – EXECUTION

3.1 CUTTING

A. Avoid extra cutting of timber members after treatment wherever possible. Where members must be cut during erection, apply a heavy brush coat of the same treatment complying with AWPA M4.

3.2 GALVANIZED SURFACES

A. Repair damaged surfaces with galvanizing repair method and paint conforming to ASTM A 780 or by the application of stick or thick paste material specifically designed for repair of galvanizing, as approved by the Engineer. Clean areas to be repaired and remove the slag from the welds. Heat surfaces to which stick or paste material is applied, with a torch to a temperature sufficient to melt the metallics in stick or paste; spread the molten material uniformly over surfaces to be coated and wipe the excess material off.

3.3 FASTENING

A. Use washers of the size and type specified under all bolt heads and nuts in contact with wood. Burr threads of all bolts after nuts have been finally tightened. Vertical bolts shall have nuts on the lower end. All bolts shall have sufficient additional threading to allow for splits or cracks or existing members to be pulled together adequately.

– END OF SECTION –

SECTION 516

COATING OF STEEL STRUCTURES

Part 1 - GENERAL

1.1 Scope

A. Coating of steel waterfront structures consists of the installation of a coating component to protect steel from corrosion.

1.2 Related Work

A. Section 514 Miscellaneous Metals

1.3 References

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only. Unless otherwise indicated, the most recent edition of the publication, including any revisions, shall be used.

B. American Institute of Steel Construction (AISC)

AISC SPE	Sophisticated Paint Endorsement

C. ASTM International (ASTM)

ASTM D7091	Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nondestructive Coatings Applied to Non-Ferrous Metals
ASTM E376	Measuring Coating Thickness by Magnetic-Field or Eddy-Current (Electromagnetic) Test Methods

D. National Association of Corrosion Engineers (NACE)

NACE RP0188	Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrate

E. The Society for Protective Coatings (SSPC)

SSPC PS 12.01	One Coat Zinc-Rich Painting System
SSPC Paint 20	Zinc-Rich Primers (Type I, Inorganic, and Type II, Organic)
SSPC Paint 36	Two-Component Weatherable Aliphatic Polyurethane Topcoat, Performance-Based
SSPC QP 3	Evaluating Qualifications of Shop Painting Applicators

SSPC SP 1 Solvent Cleaning

SSPC SP 10/NACE No. 2 Near-White Blast Cleaning

1.4 Submittals

A. Submit the following in accordance with these Specifications. Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals.

B. Product Data

1. Coating material manufacturer's data
2. Coating material manufacturer's application instructions

C. Procedures

1. Coating repair procedures
2. Quality control procedures

D. Inspection Reports

1. Dry film thickness measurements
2. Holiday test results

E. Certificates

1. Shop coating contractor qualifications
2. Shop coating inspector qualifications

1.5 Quality Assurance

A. Shop coating Contractor shall possess a current SSPC QP 3 or AISC SPE certification. Application of coating in the shop and in the field shall be done under the supervision of an experienced coating inspector. Contractor shall submit Coating Manufacturer / Installer dry film thickness measurements and holiday testing results prior to delivery of steel pile or pipe to site. Contractor shall visually inspect steel pile and pipe for damaged coating prior to installation. Testing and inspection shall be in accordance with paragraph titled "Quality Control" of this section.

1.6 Environmental Conditions

A. Start work only when ambient and curing temperatures are within limits of coating manufacturer's recommendations and at least 5 degrees F above dew point temperature. Do not clean or apply exterior coatings when damp or exposed to foggy, rainy, or snowy weather, when relative humidity is outside the humidity ranges required by the coating manufacturer, when metallic surface temperature is less than 5 degrees above the dew

point of the surrounding air, or when surface temperature is below 45 degrees F or over 95 degrees F, unless approved by the Owner's Representative.

1.7 Safety And Health Precautions

A. Materials listed in this section contain coal tar pitch volatiles, which are toxic. Follow safety procedures as recommended by the manufacturer. Work in a well-ventilated area. Provide, and require workers to use impervious clothing, gloves, face shields (8-inch minimum), and other appropriate protective clothing necessary to prevent eye and skin contact with coating materials. Keep coatings away from heat, sparks, and flame.

1.8 Measurement and Payment

A. There is no separate measurement and payment for the coating of steel structures. Contractor costs for coating of steel structures shall be included in Contract Item 010 – Weir Box, Contract Item 110 – Weir Box, or Contract Item 210 – Weir Box, whichever is awarded. See Section 511 – Weir Box Structure. Contractor costs shall include all labor, materials, services, and equipment necessary to complete the work to the satisfaction of the Engineer.

Part 2 - PRODUCTS

2.1 Coating Systems

A. Coating: Provide catalyst component for coating specific for the system. Use thinners which are compatible with the coating. Provide the coating systems specified herein or an approved equal.

B. Organic Zinc-Rich Primer (Carboline Carbozinc® 859 or approved equivalent)
   1. System: SSPC PS 12.01
   2. Paints: SSPC Paint 20, Type II (Organic)

C. Epoxy-Polyamide (Carboline Carboguard® 60 or approved equivalent)
   1. Color: Dark Gray

D. Acrylic Polyurethane (Carboline Carbothane® 134 or approved equivalent)
   1. Paints: SSPC Paint 36
   2. Color: Black

Part 3 - EXECUTION

3.1 Cleaning And Preparation Of Surfaces

A. Solvent Cleaning: SSPC SP 1. Remove visible oil or grease first by scraper. Then remove the remaining oil and grease by wiping or scrubbing the surface

with rags or brushes wetted with solvent. Use clean solvent and clean rags or brushes for the final wiping.

B. Power Tool Cleaning: SSPC SP3. Use power tools like power wire brushing, power sanding, or power grinding to remove loose contaminants, rust, paint, and other contaminants that may be detrimental to coating application. Avoid creating sharp ridges, burrs, or sharp cuts. Avoid creating sharp ridges, burrs, or sharp cuts.

C. Blast Cleaning: SSPC SP 10/NACE No. 2. After solvent cleaning, complete surface preparation by near-white blast cleaning. Remove residual dust from blasted surface by blowing with dry, oil-free air, vacuuming, or sweeping. Provide surface profile of at least 1 1/2-mil thickness.

D. Additional Preparation: After blast cleaning, surface imperfections that remain shall be removed as necessary to provide a holiday free coating. After blast cleaning and any additional preparation, remove visible oil, grease, and drawing and cutting compounds by solvent cleaning in accordance with SSPC SP 1.

3.2 Proportioning And Mixing Of Coating System

A. Proportioning of Organic Zinc-Rich Primer System: Mix and thin in accordance with manufacturer's recommendations.

B. Proportioning of Epoxy-Polyamide System: Proportion per manufacturer's recommendations.

C. Mixing of Epoxy-Polyamide System: Mix per manufacturer's recommendations.

3.3 Coating Application

A. Apply primer coating to dry surfaces not more than 4 hours after near-white blast cleaning. Apply coats of each system so that finished surfaces are free from runs, sags, brush marks, and variations in color.

B. Application Method: Allow previous coat to dry to tack-free condition but not more than 72 hours before applying next coat. Under conditions of direct sunlight or elevated ambient temperatures of 90 degrees F or greater, limit inter-coat drying period to a maximum of 24 hours.

C. Repair of Defects: Repair detected coating holidays, thin areas, and exposed areas damaged prior to or during installation by surface treatment and application of additional coating or by manufacturer's recommendations. Allow a period of at least 72 hours to pass following final coat before placing in immersion service.

D. Coal Tar Epoxy-Polyamide System: Apply a minimum of two (2) coats, each coat at a dry film thickness (DFT) of no less than 8-mils.

E. Dry Film Thickness: Provide total system minimum dry film thickness of 16 mils. Measure using a magnetic gage.

3.4 Surfaces To Be Coated

A. All Weir Box Steel Framing, including rolled steel shapes, steel outfall pipes and plates.

B. All surfaces of the steel framing where the coating is damaged or removed for welding the steel outfall pipe and its cover plate to the columns, shall be prepared to SSPC SP 3 standards and re-coated with the same product as the original coating.

3.5 Quality Control

A. Holiday Testing: Prior to shipping, test 100% of coated surfaces for holidays in total coating system in accordance with NACE RP0188. Noted holidays shall be repaired in accordance with the Manufacturer's procedures.

B. Dry Film Thickness: After repair of holidays, measure dry film thickness using a magnetic dry film thickness gage in accordance with ASTM D7091 and ASTM E376. If any region of coated surface has insufficient coating thickness or holidays, the coating on that region shall be repaired with an approved coal tar epoxy product. Re-measure after an additional coat is applied, if necessary to meet minimum coating thickness requirements.

C. Test Results: Submit report of coating test results. Note defective areas and corrective measures taken.

– END OF SECTION –

SECTION 517

WEIR BOX DISCHARGE PIPING

Part 1 GENERAL

1.1 Scope

The work covered by this Section consists of furnishing all submittals, labor, materials, plant, equipment, tools, skills, services, and incidentals and performing all operations required to complete the weir box discharge piping system as required by the Contract. The Work shall include:

A. Furnish and Install High Density Polyethylene (HDPE) Pipe

B. Furnish and Install Pipe Fittings

1.2 References

Publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by basic designation only. Unless otherwise indicated the most recent edition of the publication, including any revisions, shall be used.

American Society for Testing and Materials (ASTM) Publications

- D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3))
- D2321 Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
- D 3350 Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
- F 714 Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter
- F 2620 Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings

Alabama Department of Transportation and Development (ALDOT) Publications

- ALDOT Standard Specifications for Highway Construction (2022)

American Association of State Highway and Transportation Officials (AASHTO) Publications

- M 294 Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter

1.3 Submittals

Note that approval of submittals by the Engineer shall not be construed as relieving the Contractor from responsibility for compliance with the Specifications nor from responsibility of errors of any sort in the submittals. Submittals to the Engineer under this section include the following:

- HDPE Pipe and piping fixtures product data and shop drawings
- Product data and shop drawings detailing the connection of the HDPE piping to the proposed weir box structures and the HDPE pipes

Submittals shall include pipe and fitting, aggregate gradation and texts, precast junction box shop drawings and anti-seep collar.

1.4 Delivery, Storage, and Handling

Materials delivered to site shall be inspected for damage, unloaded, and stored with a minimum of handling. Materials shall not be stored directly on the ground. The inside of pipes and fittings shall be kept free of dirt and debris. Before, during, and after installation, plastic pipe and fittings shall be protected from any environment that would result in damage or deterioration to the material. Keep a copy of the manufacturer's instructions available at the construction site at all times and follow these instructions unless directed otherwise by the Engineer. Solvents, solvent compounds, lubricants, elastomeric gaskets, and any similar materials required to install plastic pipe shall be stored in accordance with the manufacturer's recommendations and shall be discarded if the storage period exceeds the recommended shelf life. Solvents in use shall be discarded when the recommended pot life is exceeded.

Materials shall be handled in a manner that ensures delivery to the trench in sound, undamaged condition. Pipe shall be carried to the trench, not dragged or rolled.

1.5 Acceptance

There is no separate acceptance for the work in this Section. The

1.6 Measurement and Payment

There is no separate measurement and payment for the discharge pipe. Contractor costs for the discharge pipe shall be included in Contract Item 010 – Weir Box, Contract Item 110 – Weir Box, or Contract Item 210 – Weir Box, whichever is awarded. See Section 511 – Weir Box Structure. Contractor costs shall include all fabrication, galvanizing, assembly, erection, and testing, including any fusion welding, flanges, and connection hardware.

Part 2 PRODUCTS

2.1 HDPE Pipe

All HDPE Pipe is to be provided by the Contractor. High Density Polyethylene (HDPE) discharge pipes shall have a diameter of 36 inches and shall conform to either ASTM F714 or AASHTO M294, Type S. Maximum DR value shall be 17.

- Materials used for the manufacture of polyethylene pipe and fittings shall be PE 3608 high density polyethylene meeting cell classification 345464C for black per ASTM D3350; and shall be listed in the name of the pipe and fitting Manufacturer in PPI (Plastics Pipe Institute) TR-4, 2010; with a standard grade HDB rating of 160 psi at 73°F. The manufacturer shall certify that the materials used to manufacture pipe and fittings meet these requirements. The fitting material may be gray or black.
- Polyethylene pipe shall be manufactured in accordance with ASTM F714 and shall be so marked. Each production lot of material or pipe shall be tested for melt index, density and for black pipe, % carbon. Each production lot of pipe shall be tested for dimensions and ring tensile strength.
- Fabricated fittings shall be made by heat fusion joining specially machined shapes cut from pipe, polyethylene sheet stock, or molded fittings. Fabricated fittings shall be rated for internal pressure service at least equal to the full- service pressure rating of the mating pipe.
- Polyethylene flange adapters shall be made with sufficient through-bore length to be clamped in a butt fusion-joining machine without the use of a stub-end holder. The sealing surface of the flange adapter shall be

machined with a series of small v-shaped grooves (serrations) to promote gasketless sealing, or restrain the gasket against blowout.

- Back-up rings & flange bolts. Flange adapters shall be fitted with convoluted ductile iron backup rings. The back-up ring bore shall be chamfered or radiused to provide clearance to the flange adapter radius. Flange bolts and nuts shall be Grade 2 or higher.

Part 3 EXECUTION

3.1 General

The Contractor shall be responsible for verifying all field conditions as shown on the Contract Drawings.

3.2 Excavation Through Dike

Excavation through the dike shall conform to the Plans and all applicable codes. Where necessary, trench walls shall be shored or reinforced, and all necessary precautions shall be taken to ensure a safe working environment. The grade and slope of the pipe trench shall be as shown on the drawings.

3.3 Pipe Foundation and Bedding

The bedding surface for the pipe shall provide a firm foundation of uniform density throughout the entire length of the pipe. Compaction shall be in accordance with ASTM D698. When rock is encountered, it shall be removed and replaced with a minimum 8 inch select backfill. When unsuitable foundation material is encountered, it shall be removed and replaced with select backfill for the full width of the trench. The middle of the bedding equal to 1/3 of the pipe outside diameter shall be loosely placed, with the remainder compacted to a minimum of 90% standard proctor density.

3.4 Heat Fusion Joining

Joints between plain end pipes and fittings shall be made by butt fusion using procedures that are in accordance with ASTM F2620. The Contractor shall ensure that persons making heat fusion joints have received training in the recommended procedure. The Contractor shall maintain records of trained personnel and shall certify that training was received not more than 12 months before commencing construction. External and internal beads shall not be removed.

Butt fusion of unlike wall thickness. Butt fusion shall be performed between pipe ends, or pipe ends and fitting outlets that have the same outside diameter and are not different in wall thickness by more than one Standard DR. Transitions between unlike wall thickness greater than one SDR shall be made with a transition nipple (a short length of the heavier wall pipe with one end machined to the lighter wall) or by mechanical means or electrofusion.

3.4.1 Fusion Quality

The Contractor shall ensure the field set-up and operation of the fusion equipment, and the fusion procedure used by the Contractor's fusion operator while on site. Upon request by the Owner, the Contractor shall verify field fusion quality by making and testing a trial fusion. The trial fusion shall be allowed to cool completely; then test straps shall be cut out and bent strap tested in accordance with ASTM F2620. If the bent strap test of the trial fusion fails at the joint, the field fusions represented by the trial fusion shall be rejected. Equipment

The Contractor shall provide a proposed list of equipment in the Work Plan which will be used to construct the rock breakwaters and the geotextile layers. This list shall include the type (Drag Bucket, etc.), number of each type, and capacity (Cubic Yards, etc.) of the equipment.

3.5 Flanged Connections

Polyethylene pipe and fittings may be joined together by means of flanged connections (flange adapters and back-up rings). In such case, the installation instructions of the joining device manufacturer shall be observed. The HDPE pipe shall be joined to the steel pipe at the weir box structure using a flanged connection.

Flange connections shall be installed in accordance with the Manufacturer's recommended procedure. Flanges shall be centered and aligned to each other before assembling and tightening bolts. HDPE pipe at the weir box should be fitted with a butt fused flange adapter and with a bolted plate with an air-tight gasket. In no case shall flange bolts be used to draw the connection into alignment. Bolt threads shall be lubricated, and flat washers should be used under the nuts. Bolts shall be evenly tightened according to the tightening pattern and torque step recommendations of the Manufacturer. At least 1 hour after initial assembly, flange connections shall be re-tightened following the tightening pattern and torque step

recommendations of the Manufacturer. The final tightening torque shall be as recommended by the Manufacturer.

3.6 Placing Pipe and Pipe Handling

A. Submit printed copies of the manufacturer's recommendations for installation procedures of the material being placed, prior to installation. Only proper suitable tools and appliances for the safe convenient handling and laying of pipes and fittings shall be used. Prior to pipe installation construct bedding foundation to grade along the entire length of pipe to be installed.
B. When lifting with slings, only wide fabric choker slings capable of safely carrying the load shall be used to lift, move, or lower pipe and fittings. Wire rope and chain are prohibited. Slings shall be of sufficient capacity for the load and shall be inspected before use. Worn or damaged equipment shall not be used.
C. Each pipe shall be thoroughly examined before being laid; defective or damaged pipe shall not be used. Plastic pipe shall be protected from exposure to direct sunlight prior to laying, if necessary, to maintain adequate pipe stiffness and meet installation deflection requirements. Pipelines shall be laid to the grades and alignment indicated.
D. Pipe shall not be laid in water, and pipe shall not be laid when trench conditions or weather are unsuitable for such work. Diversion of drainage or dewatering of trenches during construction shall be provided as necessary.

3.7 Backfilling

E. After the pipe has been properly bedded, sand fill shall be placed along both sides of pipe in lifts of 4- to 6-inches. The filter stone haunch and backfill shall be brought up evenly on both sides of pipe for the full length of pipe. This method of filling shall continue until the fill has reached the design elevation as for the dike construction, as shown in the Contract Documents. Tests for density shall be made as necessary to ensure conformance to the compaction requirements specified below.
F. When compacting by rolling or operating heavy equipment parallel with the pipe, displacement of or injury to the pipe shall be avoided. Movement of construction machinery over the Pipe System at any stage of construction

shall be at the Contractor's risk. Any damaged pipe shall be repaired or replaced.

--END OF SECTION--

SECTION 520

SAND BERM – SEGMENTED BREAKWATERS

Part 1 General

1.1 Scope

The Work covered by this Section consists of furnishing all submittals, labor, material, plant and equipment, and performing all operations required for conducting pre- and post-placement surveys and placing the dredged or imported material to construct the sand berm within the limits specified in the Plans. Conformance to environmental protection, public safety and navigational conditions per the permits (Appendix B) and applicable regulations is included. All work shall be performed in accordance with the Federal and State permits issued for the project, as well as the United State Coast Guard (USCG) regulations.

1.2 Definitions

See General Conditions of the Contract.

1.3 References

None.

1.4 Character of Materials

Appendix A, “Geotechnical Information”, contains subsurface information from within the local borrow area and Sunflower DA. Contractor shall review the geotechnical information and understand how the character of those materials may affect the placement of dredged material. Contractor means and methods for placement of dredged material shall be designed to control the dredged fill to the approximate lines and grades, and within the elevation ranges specified on the Drawings.

If at any time during dredging and sand berm construction operations the dredge material varies significantly from the representative soil samples collected from the borrow area borings, then Contractor shall immediately notify Engineer via phone and email. Dredge material shall be considered significantly different if it has >50% fines (< #200 sieve).

1.5 Submittals

Submit the following in accordance with Section 504 Submittals:

- Work Plan – Sand Berm Construction section
- Surveys (Section 521 Construction Surveying – Segmented Breakwaters)
- Daily Report – Sand Berm Construction section

1.5.1 Work Plan – Sand Berm Construction

Within seven (7) calendar days of the pre-construction meeting, Contractor shall provide a plan detailing sand berm construction methods and construction sequencing to Engineer as part of the overall Work Plan. The Sand Berm Construction section shall include, but is not limited to, the following items:

- Construction schedule
- List of plant and equipment to be utilized
- Plant, equipment and barge staging locations as applicable
- Proposed locations for offload barge, booster pumps, and pipelines
- Concurrence that plant and equipment shall be marked and lighted according to USCG regulations
- Sediment control plan detailing proposed methods for managing sediment in breakwater gaps and along the interior of the sand berm
- Turbidity control plan
- Acceptance segment layout

1.5.2 Daily Report – Sand Berm Construction

- Contractor shall prepare and maintain a Daily Report and furnish copies daily to Engineer. A copy of the form prescribed for recording the required information and any further instructions on the preparation of the Report will be furnished prior to the pre-construction meeting. Contractor shall also furnish the following items to Engineer as requested during dredging operations:

- Estimated daily quantity of placed dredged material.

- Sand berm area stationing within which dredged material is being placed.

1.5.3 Surveys

Refer to Section 521 Construction Surveying – Segmented Breakwaters for surveying Submittals and details.

1.6 Order of Work

Sand berm construction operations shall be performed in a continuous and orderly manner. Sand berm construction shall proceed in such a manner that effluent from hydraulic placement operations does not exceed turbidity requirements of the project permits, as described in Section 506 Turbidity Control and Environmental Protection.

The Work for the sand berm shall proceed in construction acceptance segments of no less than 500 feet in length. Contractor may submit a different acceptance segment length from the Engineer for approval.

Sand berm construction shall only occur along already constructed and accepted breakwater segments.

There is not a required station or direction to begin sand berm construction. However, Contractor shall consider existing water bottom elevations, seasonal water levels and weather conditions, and pumping distances when completing their Work Plan.

1.7 Acceptance

The sand berm acceptance sections will be accepted by the Engineer once the constructed sand berm achieves compliance with the lines, grades, elevations and

tolerances shown in the Drawings and Specifications. Acceptance will be based on the sand berm construction progress surveys a minimum of seven (7) calendar days after fill placement. The Owner or Engineer may require the Contractor to fill any deficient sand berm sections to the minimum template elevation.

Acceptance segments shall be no less than 250 feet in length along the sand berm alignment. The volume contained in each segment shall be calculated if the progress survey elevations are accepted by the Engineer. Volume calculations shall be submitted to the Engineer for verification.

A limitation of the 7-Day minimum requirement for sand berm progress surveys is that the fill must support a survey rod with a 6-inch diameter disk without the survey rod sinking more than three (3) inches below top of grade prior to progress surveys for acceptance. Sand berm segments may not be surveyed for acceptance until this requirement is met unless otherwise approved by the Engineer.

Work before Final Payment is released shall include the removal of all Contractor equipment, all markings and stakes placed by Contractor for the control of their Work, and clean-up of all trash and debris from the Site and all areas affected by Contractor's operations.

1.7.1 Tolerance

Prior to acceptance of a segment, unless otherwise accepted by the Engineer, sand berm fill placement must be within a vertical tolerance of one-half foot above or below the fill template (±0.5') – subject to a minimum of 95% of the design volume between pay profile transects. Any material placed more than 0.5 feet above the template may be left in place at the discretion of the Engineer; however, this material will not be included in the pay quantities.

Unless otherwise accepted by the Engineer, sand berm fill placement slopes above MSL must be between a 1V:5H slope and 1V:3H slope. Any material placed shallower than 1V:5H may be left in place at the discretion of the Engineer; however, this material will not be included in the pay quantities.

Compensatory slope adjustments below MSL shall be utilized for sand berm fill placement below MSL as described in these specifications.

Payment will be authorized only for sand placement (a) within the fill template plus tolerances (±0.5'), (b) for slope tolerances above MSL as described in these

specifications, and (c) for compensatory slope adjustment below MSL as described in these specifications. The Owner or Engineer will be authorized to require the Contractor to refill any deficient segment of sand berm to at least meet the template within the vertical tolerances. The Owner will withhold payment for those segments of sand berm (segments between pay profiles) which do not meet the minimum fill requirement until the appropriate fill placement, grading, and shaping have been completed by the Contractor.

1.8 Measurement and Payment

1.8.1 Measurement

Measurement for Contract Item No. 008 – Sand Berm Construction or Contract Item No. 108 – Sand Berm Construction, whichever is awarded, shall be based on the calculated difference between the pre-construction surface and construction progress surface, minus the volume of material placed outside of the template. These computations shall be completed in AutoCAD Civil3D software, using the TIN volume surface methodology for comparing two separate TIN surfaces.

The Contractor shall perform volume computations, and payment will be based on the quantities calculated. The Engineer will independently compute volumes to verify quantities and use other calculation methods as needed. The volumes calculated by the Engineer and independent surveyor must be within five percent (5%) before payment is approved by the Engineer.

Using AutoCAD Civil3D, the pre-construction surface will be constructed with the pre-construction survey data, and will include the as designed breakwaters. The construction progress surface shall be constructed with the up-to-date process survey data. The bay-side fill edge is the location where the fill meets the breakwaters (based on the design, not as-built breakwater surfaces). The interior edge of the fill template is along the working points shown on the Drawings at the toe of the 1V:5H fill slope. The pre-construction surface will be compared to the construction progress surface to calculate the gross fill volume, and placement volumes outside the fill template and tolerances shown on the Drawings and these Specifications will be deducted from the gross fill volume to calculate the payment (net) volume.

Separate volume calculation methodologies, such as the average end area method, shall only be used as approved by the Engineer.

The Engineer reserves the right to perform Quality Assurance Surveys, at the expense of the Owner or Engineer, to verify survey results. The Quality Assurance Surveys may also be completed along transects that differ from the pay survey transects, to ensure that the sand berm elevation is within the acceptable vertical tolerance along the entire sand berm area. In addition, the Engineer may complete LiDAR surveys of the completed sand berm to determine if any part of the sand berm is grossly outside the acceptable vertical tolerance. Quality Assurance survey data shall be provided to the Contractor upon request.

If the Contractor elects to excavate material within the sand berm template to construct temporary containment or training dikes, there shall be no additional payment for volume placed to fill the excavated areas. In other words, measurement will be based on the calculated difference between the pre-construction survey performed prior to any excavation, and progress surveys.

1.8.1.1 Compensatory Slope Adjustment

Below MSL the Contractor shall place the material to the design slope of the placement section to the extent practical. A modified compensating slope will be utilized for measurement and payment of material placed below MSL; the Contractor will be paid for all material placed between a vertical line struck through the intersection of the design template and the MSL and a vertical line struck through the intersection of the design toe of slope and the existing water bottom, provided that the total quantity for the individual section is not greater than 110% of the design quantity for the section. Contractor shall ensure that at least 90% and no greater than 110% of the design volume in CY/LF is placed at each station. If the material placed within allowable template is below 90% of the CY/LF of the design volume the Contractor may be required to return to that station and place additional material. If the material placed within the allowable template plus tolerances exceeds 110% of the design volume in CY/LF, the Contractor shall not be paid for the overage above 110%.

1.8.2 Payment

Payment for sand berm construction shall be at the Contract Unit Price for Contract Item No. 008 – Sand Berm Construction or Contract Item No. 108 – Sand Berm Construction, whichever is awarded. Price and payment shall constitute full compensation for furnishing all plant, equipment, labor, materials, tools, incidentals, and completing sand berm construction operations for satisfactory placement of the dredged or imported material within the sand berm template and

performing all Work as specified herein. There will be no payment for placing quantities in excess of the lines, grades, elevations shown in the Drawings and/or stated in the Specifications except as stated here.

The total payment quantity for Contract Item No. 008 – Sand Berm Construction and Contract Item No. 108 – Sand Berm Construction, whichever is awarded, shall not exceed the extended proposal price unless otherwise approved by Owner. If the calculated sand berm area volumes based on the pre-construction surveys are different than the calculated design sand berm volumes shown on the Drawings, Engineer and Owner reserve the right to modify the layout or target elevation/tolerance such that the total payment quantity does not exceed the extended price.

1.8.3 Partial Payments

The Contractor may request partial payments on a monthly basis. The quantity of placed material included in the partial payment shall be determined by the progress surveys as described in Section 521 Construction Surveying – Segmented Breakwaters, for the sand berm areas that are submitted by the Contractor and approved by the Engineer.

Part 2 Products

2.1 Sand

Sandy material to construct the Sand Berm shall be sourced from one of the following. No other sources shall be acceptable.

a. Local Borrow Area – see Plans and Section 522 Dredging
b. Sunflower DA – see Plans and Section 509 Imported Fill
c. Other Engineer approved Imported Fill – see Section 509 Imported Fill

Part 3 Execution

3.1 Placement of Sand Berm Fill Material

3.1.1 General

The sand berm fill material shall be deposited by hydraulic pipeline or mechanically in the sand berm placement area sections to the lines, grades, and elevations indicated in the Contract Documents. Discharge of hydraulic dredged material

slurry will only be allowed within the sand berm fill area defined by working points as shown on the Drawings.

The fill placement must be uniform with minimal ridges, humps, or depressions. Uniformity shall be determined visually, any surface elevation variation shall not exceed plus or minor one foot (±1.0'), ridges/humps greater than one foot (>1.0') shall be graded smooth, and depressions greater than one foot (>1.0') deep over a contiguous area of more than 100 sf shall be filled.

The Contractor may construct internal training dikes, at their discretion, at locations within or immediately surrounding the sand berm fill area. Spreader and pocket pipe or other measures may be used as necessary to prevent gullying and erosion.

3.1.2 Staking

Grade stakes shall be installed and accepted by the Engineer along the sand berm alignment in accordance with Section 521 Construction Surveying – Segmented Breakwaters prior to the start of sand berm construction operations.

3.1.3 Containment of Discharge and Fill Material

During hydraulic placement operations, the sand berm area shall be contained as necessary such that the location, rate, and contents of the effluent from sand berm construction can be controlled by the Contractor so that at no time shall sediment be transported bayward of the breakwaters. This shall include any mud-waving which may occur, such that the mud-wave remains on the interior of the breakwaters and sand berm area.

The Contractor shall install a baffle (diffusion) plate, spreader pipes, pocket pipes, or other approved apparatus to the discharge end of the pipeline (as necessary) that allows for precise control of the placement of the hydraulic fill material and increases the settlement rate of the material to the maximum extent possible. Temporary control/training dikes shall be constructed as necessary to control and direct the slurry.

3.1.3.1 Temporary Containment

Contractor may construct temporary containment or training dikes as necessary along the interior of the sand berm alignment or within breakwater gaps to control fill placement. Means and methods for providing temporary containment shall be

determined by the Contractor and submitted in the Work Plan to be approved by the Engineer. Temporary containment within breakwater gaps may remain in place post-construction if incorporated into the work within lines, grades, and elevations. Responsibility and cost for maintenance of temporary containment and training dikes shall be borne by the Contractor at no additional cost to the Owner. Payment for temporary containment measures shall be included in the Contract Unit Price for Contract Item No. 008 – Sand Berm Construction or Contract Item No. 108 – Sand Berm Construction, whichever is awarded.

If the fill material does not stack sufficiently to allow the sand berm interior slope to be within tolerance, then temporary training dikes or containment may be required to achieve the acceptable sand berm template.

Contractor alone is responsible for losses of material in areas with no containment, or areas with temporary containment, and Contractor shall account for losses in the Contract Unit Price for Contract Item No. 008 – Sand Berm Construction or Contract Item No. 108 – Sand Berm Construction, whichever is awarded.

If the breakwaters settle prior to sand berm construction such that there is insufficient freeboard, then the Contractor shall control the hydraulic placement to minimize losses over the low areas in the breakwaters. This may include temporary placement of material (sourced from the interior of the sand berm or at least twenty (20) feet bayward of the breakwater toe) on top of the breakwaters to provide containment. Any material placed on top of the breakwaters shall be degraded and placed interior of the breakwaters and graded level prior to final acceptance unless otherwise directed by the Engineer.

3.1.3.2 Effluent and Turbidity Control

All attempts shall be made to control the dredge effluent in a manner that requires the effluent water to travel a sufficient distance to increase sedimentation within the sand berm areas and to minimize turbidity of the effluent prior to returning to the exterior body of water. The Contractor shall minimize the loss of fines from the sand berm construction to minimize the turbidity in surrounding waters. Contractor shall comply with the terms and conditions of Environmental Permits (Appendix B) as applicable. Turbidity monitoring shall be completed by the Contractor and Engineer as stated in Section 506 Turbidity Control and Environmental Protection.

3.1.4 Improperly Placed Fill Material

The requirements and methods of dredged material placement for this Contract have been planned in accordance with Environmental Permits (Appendix B) obtained for the scheduled Work. Any material that is deposited other than in locations designated or in a manner not approved by Engineer is in violation of the Environmental Permit. Additionally, Contractor may be required to remove such misplaced material and deposit it where directed by Engineer at no additional cost to the Owner; this shall be completed within five (5) calendar days of direction by Engineer. Contractor will be required to compensate Owner for any costs, fines or other expenses related to permit violations resulting from Contractor negligence in complying with permits for the Project.

3.1.5 Pipeline Markings

The Contractor shall provide, as a part of their overall Work Plan for approval, drawings showing locations of temporary alignment routes of pipelines, placement of booster pumps if used in the work, and proposed location of temporary ramps (to be constructed by the Contractor) over the pipeline for construction access if necessary. All plant, equipment, and pipeline shall be marked and lighted in accordance USCG regulations. Any deviation from the approved plan will require approval in writing from the Engineer.

3.2 Field Quality Control

The Contractor shall establish and maintain quality control for the sand berm construction work, and other operations in connection with the work in the field to assure compliance with the Contract. Contractor shall inspect for compliance with Contract requirements and record the inspection of all operations including but not limited to the following:

A. Sand berm construction operations are confined within the limits of the designated work area.

B. Adequate control is provided to prevent unnecessary loss of material either towards the bay or the interior of the site via effluent flow and to ensure that the construction activity does not violate project permits.

C. The pipeline is periodically inspected for leakage as specified.

D. All joints of the discharge pipeline are tight, sound, and in a safe condition.

E. All equipment used in the Work is approved and in satisfactory working condition.

F. Checks to ensure safe work practices around structures and the public are performed at all times as specified.

G. Checks conducted for proper lines, grades, and elevations in finished sand berm area including proper grading and elimination of undrained pockets and abrupt humps.

H. Ensure all equipment and construction materials have been removed from completed Work segments.

I. All results of inspections shall be documented with video tapings, narrative explanations and photographs as necessary to document the conditions of field quality. The results and supporting data shall be recorded and provided by the Contractor in the Daily Report of Operations.

3.3 Data for Engineer's Project Completion Report

A project completion report may be completed by Engineer after completion of the construction activities. Data required for the report shall be provided by Contractor to Engineer, and may include, but not limited to the following information.

1. a narrative discussing the construction sequences and activities, and, if applicable, any problems encountered and solutions.

2. a list and description of any construction Change Orders issued, if applicable.

3. a list and description of any safety-related issues or accidents reported during the life of the Project.

4. a table listing significant construction dates beginning with request for proposals and ending with final acceptance of the Project.

5. digital data including the as-built drawings, and survey data.

6. any additional pertinent data or information.

Data shall be provided to Engineer within fourteen (14) calendar days of any request by Engineer.

-- END OF SECTION --

SECTION 521

CONSTRUCTION SURVEYING – SEGMENTED BREAKWATERS

Part 1 General

1.1 Scope

The Work covered by this Section consists of furnishing the Submittals, labor, materials, plant, equipment, tools, skills, services, and incidentals, and performing operations required for performing topographic, hydrographic, and magnetometer construction surveying.

Work to be performed pertaining to this Section within the Site and includes:

- Pre-Construction surveys
- Construction Progress surveys
- Post-Construction surveys

1.2 Definitions

See General Conditions of the Contract.

1.3 References

The publications listed below form a part of this Specification to the extent referenced.

EM 1110-2-1003(2013) Hydrographic Surveying Manual; Change 1 2004

1.4 List of Surveys

1.4.1 General

Pre-construction surveys are required to be conducted prior to the commencement of Work. Pre-construction surveys shall be completed within thirty (30) calendar days after the pre-construction meeting, and prior to the start of work on site.

Construction progress surveys are required for progress surveys, acceptance, measurement, and also for the layout and staking of the Work to be completed.

Post-construction surveys include as-built surveys of the completed Work.

The Engineer reserves the right to perform Quality Assurance Surveys, at the expense of the Owner, to verify survey results.

1.4.2 Pre-Construction Surveys

Pre-construction surveys shall be performed of the breakwater areas, sand berm construction areas, northern dike construction area, northern dike borrow ditches, local borrow area (if utilized), imported fill source (if USACE Disposal Area), and dredge pipeline corridors.

1.4.3 Construction

Construction progress surveys shall be completed as-needed for the bedding stone (if utilized), underlayer stone, riprap armor stone, sand berm, northern dike, weir box, northern dike borrow ditches, and the local borrow area (as needed) for acceptance and measurement for payment applications.

Construction progress surveys for layout of the Work and staking shall be performed in accordance with Paragraph 3.4.2.1 of this Specifications Section.

1.4.4 Post-Construction Surveys

As-built surveys shall be completed for the breakwaters, sand berm, northern dike, local borrow area (if utilized), imported fill source (if USACE Disposal Area), and weir box.

1.5 Submittals

Submit the following in accordance with Section 504 Submittals:

A. Work Plan – Construction Surveying Section

B. Daily Report – Construction Surveying Section

C. Engineer Notification at least three (3) calendar days prior to surveys

D. Pre-Construction Surveys (Data and Survey Report)

E. Progress Survey(s) (Data and Survey Report)

F. Breakwater Staking Surveys (Data only)

G. Sand Berm Staking Surveys (Data only)

H. Northern Dike Staking Surveys (Data only)

I. Weir Box Staking Surveys (Data Only)

J. As-Built Survey (Data and Survey Report)

Survey submittals shall be provided to Engineer within ten (10) calendar days after completion of the survey.

1.5.1 Work Plan

Contractor shall submit a Survey Plan as part of the overall Work Plan, including but not limited to:

- Proposed surveying transects
- Proposed sand berm acceptance segments
- Proposed northern dike acceptance segments
- Methodology for surveying all breakwater features (bedding, underlayer, and armor stone)
- Methodology for surveying the sand berm
- Methodology for surveying the northern dike
- Methodology for staking (materials, elevation markings)
- Methodology for correcting for tidal fluctuations and vessel pitch, roll and heave in hydrographic surveys
- Name and Affiliation of Independent Professional Land Surveyor (licensed professional) registered in the State of Alabama to be used on the Project

1.6 Survey Drawings

Plan-view and cross-section plots shall be provided with Survey Report Submittals. Survey Submittals shall be clear, legible, and well organized. Drawings not meeting the requirements of these Specifications will be rejected, which may cause delays in payment to Contractor. Construction Progress Survey Submittals shall accompany monthly payment applications. Survey data shall be referenced to the project coordinates and datums shown on the Drawings and referenced within

these Specifications. All plots shall contain title blocks and clearly display the following information:

A. Project name

B. Professional Land Surveyor's seal, signature, and affiliation

C. Date(s) survey was performed

D. Location and description of survey control

E. Location and description of submerged and/or underground hazards or obstructions

F. Vertical and horizontal datums

G. Sheet numbers

H. Name of Contractor

I. Drawing scale(s)

J. Transducer frequency (as applicable)

K. Description of submittal

1.7 Quality Assurance

Prior to commencing surveying activities, Contractor shall provide Engineer a Survey Plan as part of the overall Work Plan that coordinates surveying activities with construction sequence.

All survey plots submitted shall be certified by an independent Licensed Professional Land Surveyor (licensed professional) registered in the State of Alabama and employed by a firm registered to perform land surveys in the State of Alabama. Prior to commencing surveying activities, Contractor shall provide name and affiliation of licensed professional surveyor to be used on the Project.

For hydrographic surveys, the transducer frequency used for all surveys shall be consistent. All hydrographic surveys must be corrected for tidal fluctuations, waves, yaw, pitch and roll of the boat during the survey.

Survey Submittals shall be corrected to the horizontal and vertical datums listed in these Specifications and shown on the Drawings.

1.8 Notification prior to Commencement of Surveying Activities

Contractor shall notify Engineer in writing at least three (3) calendar days prior to the commencement of surveying activities so that Engineer or Resident Project Representative may have the opportunity to accompany the survey crew and witness the Work.

1.9 Measurement and Payment

Costs associated with the Work for construction surveying shall be included in the Contract Lump Sum Price for payment of Contract Item 002 – Construction Surveying or Contract Item 102 – Construction Surveying, whichever is awarded. For each monthly pay application, Contractor shall estimate the percent of the lump sum survey cost that has been completed. Engineer shall review this percentage when reviewing the monthly pay application. Engineer reserves the right to adjust the percentage as they see fit. Price and payment shall constitute full compensation for furnishing all plant, equipment, labor, materials, tools, and incidentals for complete construction surveying operations and performing all Work as specified herein. There shall be no additional payment for duplicate surveys that are required by the Engineer due to not meeting these specifications or if the relevant Work item was not accepted and is required to be resurveyed.

1.9.1 Partial / Progress Payment

The Lump Sum Contract Item 002 – Construction Surveying or Contract Item 102 – Construction Surveying, whichever is awarded, will be paid according to the estimated percentage of Work completed. This amount shall be full compensation for completed in-place Work. For each Application for Payment, the Contractor shall estimate the percent of the Lump Sum Price that has been completed. The Engineer shall review this percentage when reviewing the monthly Application for Payment. The Engineer reserves the right to adjust the percentage as they see fit.

Part 2 Products

Not Used.

Part 3 Execution

3.1 Coordinates and Datums

Survey data shall reference the North American Datum of 1983 (NAD 83), Alabama West Zone, U.S. Survey Feet for horizontal control, and the North American Vertical Datum of 1988 (NAVD 88), with orthometric heights calculated using Geoid 12A, U.S. Survey Feet for vertical control.

Horizontal and vertical control shall be established with a temporary benchmark, or as otherwise approved by Engineer. Survey control shall be described in Contractor's Work Plan. Costs for setting the temporary benchmark shall be included in the Contract Lump Sum Price for Contract Item 002 – Construction Surveying and Contract Item 102 – Construction Surveying.

3.2 Survey Data Format

Hydrographic survey data shall be provided in a text file, with Easting, Northing, and Elevation.

Topographic survey data shall be provided in a text file, with Point number, Northing, Easting, Elevation, and Description (PNEZD) formatting. The point description shall be one of the following:

A. Center of crest (breakwater, northern dike, and sand berm)

B. Crest (breakwater, northern dike, and sand berm)

C. Edge of crest (breakwater, northern dike, and sand berm)

D. Borrow Bottom (local borrow area and northern dike borrow ditches)

E. Side slope (breakwater, northern dike, sand berm, local borrow area, and northern dike ditches)

F. Toe of slope (breakwater, northern dike, and sand berm)

G. Top of Slope (local borrow area and northern dike borrow ditches)

Failure to properly label survey points will result in Engineer requiring Contractor to re-survey, at no additional cost to Owner.

Survey data files shall have at minimum the project name, construction phase, survey area, survey type and survey date in the file name, for example:

- UpperMobileBay_PreConstruction_Breakwater_Hydro_2027-01-16.txt
- UpperMobileBay_Progress_Breakwater_Topo_2027-01-25.txt

3.3 Survey Equipment and Accuracy

Surveys shall be conducted by real-time kinematic global positioning system (RTK GPS). A sufficient number of points shall be taken along the survey transects to accurately represent the general shape and average trend of the constructed lines and grades. Transect intervals are specified for each project feature. Point spacing requirements vary as detailed in this and other specifications sections. Point spacing shall be discussed in Contractor's Survey Plan.

Contractor shall maintain RTK GPS survey equipment and personnel with operating knowledge of the equipment on site at all times throughout the completion of the Work so that spot checks of Work can be completed as directed by the Engineer or Resident Project Representative.

3.3.1 Topographic Surveys

Topographic survey equipment shall have a minimum vertical and positional accuracy of one-tenth (0.1) of a foot. A six (6) inch diameter metal plate shall be attached to the bottom of a survey/stadia rod weighing no greater than 8 pounds to prevent the rod from sinking below ground level. Hydrographic and topographic surveys shall overlap by a minimum of 25 feet at all interfaces between land and water. Where hydrographic survey equipment is not feasible for use in shallow water depths, topographic survey methodology shall be used to survey the water bottoms.

LiDAR technology may not be used for surveying unless specifically written in this Specification or otherwise approved by the Engineer on a case-by-case basis; LiDAR will generally only be considered for solid earthen materials (examples: sand berm, completed northern dike) that are completely free of standing water. LiDAR will only be accepted with a plan for ground-truthing. Any proposed LiDAR surveying of areas with vegetation or standing water will not be approved by the Engineer.

3.3.2 Hydrographic Surveys

Hydrographic survey equipment shall have a minimum vertical accuracy of one-tenth (0.1) of a foot ± 0.1% of depth and a minimum horizontal accuracy of one-tenth (0.1) of a foot. Hydrographic surveys collected on board vessels must be differentially corrected to the referenced datum for tidal fluctuations and vessel pitch, roll and heave. Hydrographic and topographic surveys shall overlap by a minimum of 25 feet at all interfaces between land and water.

3.3.3 Magnetometer Surveys

Magnetometer survey equipment shall have a minimum accuracy of 3 gammas throughout its operational range.

3.4 Survey Timing and Performance

3.4.1 Pre-Construction Surveys

Pre-construction surveys shall be completed within the local borrow area (if utilized), imported fill source (if USACE Disposal Area), breakwater construction area, sand berm construction areas, northern dike construction areas, northern dike borrow ditches, dredging pipeline corridors, and any specified overlap. The pre-construction survey shall include hydrographic surveys, topographic surveys where required due to water depth, and magnetometer surveys.

Pre-construction hydrographic, topographic, and magnetometer surveys shall be used to verify the existing conditions of the placement areas and borrow areas prior to construction and as a baseline for comparison to construction progress surveys for acceptance. Drawings of the plan views and sections shall be developed from this survey by Contractor and provided to Engineer as part of the Survey Submittal. The potential hazards or obstructions shall be plotted on the initial Survey Drawing Submittal. Engineer or Owner shall not be held responsible for any damage to Contractor's equipment or other losses incurred by Contractor due to impacts with obstructions not identified from the pre-construction survey. Obstructions identified by Contractor shall be probed and appropriately marked throughout construction according to United States Coast Guard (USCG) standards.

Pre-construction surveys shall be performed no more than thirty (30) calendar days prior to mobilization.

3.4.1.1 Local Borrow Area and Northern Dike Borrow Ditches

Pre-construction hydrographic and magnetometer surveys of the local borrow area and northern dike borrow ditches shall provide one hundred foot (100 ft) minimum spaced cross-sections. The surveyed elevation points across the cross-section shall not exceed ten foot (10 ft) spacing and the width of the cross-sections shall extend fifty feet (50 ft) beyond entire width of these excavation areas.

3.4.1.2 Breakwaters, Sand Berm, and Northern Dike

Pre-construction hydrographic and topographic surveys of the breakwaters, sand berm, and northern dike construction areas shall be along the alignment of the relevant feature as shown in the Drawings. Transects shall be one hundred foot (100 ft) minimum spaced cross-sections along the alignment shown in the Drawings. Surveyed transects shall extend one hundred feet (100 ft) past the interior toe of the sand berm to one hundred feet (100 ft) past the exterior toe of the breakwaters. For the northern dike and northern dike borrow ditches one set of surveys shall be submitted that encompasses both areas and extends fifty feet (50 ft) beyond the upper slope of the northern dike borrow ditches.

3.4.1.3 Imported Fill Site

If the Contractor is importing fill from a USACE Disposal Area, a pre-construction LiDAR survey shall be conducted of the entire disposal area prior to the commencement of Work. Additionally, Contractor shall document the state of the disposal area, access roads, and pipeline corridors extensively through photographs and videos prior to starting Work. A representative of the USACE, the Owner, and/or the Engineer may wish to conduct a site walkthrough with the Contractor when photographs are taken. This should be coordinated during the pre-construction meeting.

3.4.2 Construction Progress Surveys

Progress surveys of the Work shall be completed and submitted with Applications for Payment. Progress surveys shall be used to track construction progress for payment of Contract Items. Progress surveys shall include topographic surveys of completed breakwaters and sand berm dikes. Data collected during progress surveys shall not be considered as part of the as-built survey unless otherwise approved by the Engineer. Owner shall not be liable if a storm or damage impacts the site between completion of the Work and the accepted progress survey

performance date. Survey drawings with plan views and sections shall be developed for progress surveys and provided to Engineer as part of the Application for Payment.

3.4.2.1 Staking Survey

Prior to commencement of breakwater, sand berm, northern dike, and weir box construction, stakes shall be installed in order to verify and adjust alignments if deemed necessary by Engineer. Contractor shall survey the locations of each stake and provide the locations to the Engineer.

Staking may be staged with actual progress of Work contingent upon Engineer's review of Contractor's Work Plan.

The Contractor shall install grade stakes within each relevant work area to monitor fill elevations and extents. The staking shall clearly indicate the design elevations, lines, grades, and tolerances of the relevant work feature. The staking shall be embedded at least five feet (5 ft) into the water bottom at a depth sufficient to resist the stakes being moved by fill material placement, weather, or tides. The grade stakes shall be surveyed and maintained throughout construction to ensure that fill material is placed at the correct elevations. The minimum required locations stakes are to be installed are the coordinates provided in the coordinate tables on the Drawings. Contractor may proposed additional stakes as they deem necessary for successfully completing the Work in accordance with the Drawings and Specifications. The Contractor may remove the staking upon acceptance of the relevant acceptance segment. The Contractor shall be responsible for removing all staking after construction is completed.

3.4.2.2 Breakwaters

The breakwaters shall be surveyed at transects located every fifty feet (50 ft) along the alignment of each breakwater. Transects shall also be placed at the beginning of the crest and at the end of the crest. Breakwater progress surveys shall extend at least twenty feet (20 ft) from the toe of each side of the breakwater. Point spacing shall be as detailed in this and other specifications sections or at grade changes greater than three inches (3"). Contractor must ensure that the surveyor records the point descriptions specified in Paragraph 3.2 of this Specification for survey submittals to be approved.

Construction progress surveys of the bedding stone (if utilized), underlayer stone, and armor stone shall be performed no earlier than one (1) Day following placement, but no more than ten (10) calendar days after the completion of each feature. Each feature within the breakwaters shall be surveyed and accepted prior to placement of the next feature.

3.4.2.3 Sand Berm

The sand berm shall be surveyed at transects located every one hundred feet (100 ft) along the alignment of the sand berm. Transects shall also be placed in the center of each breakwater gap. Sand berm progress surveys shall extend at least one hundred feet (100') beyond the toe of the interior side of the sand berm and at least one hundred feet (100') beyond the toe of the bayward side in breakwater gaps. Point spacing shall be no greater than ten feet (10'), at grade changes greater than three inches (3"). Contractor must ensure that the surveyor records the point descriptions specified in Paragraph 3.2 of this Specification for survey submittals to be approved.

Construction progress surveys of the sand berm shall be performed no earlier than seven (7) calendar days upon completion of each acceptance segment. In addition to the seven (7) Day period for surveys, the fill must be able to support a survey rod with a six inch (6") diameter disk without the survey rod sinking more than three inches (3") below top of grade prior to progress surveys for acceptance. The sand berm may not be surveyed for acceptance/payment until these requirements are met unless otherwise approved by the Engineer.

3.4.2.4 Northern Berm

Lift 1 and lift 2 of the northern dike shall be surveyed at one transect along the alignment of the northern dike and transects across the northern dike every 400 feet to spot check crest widths. If the northern dike material is in a state that it is not safe for a topographic survey to be conducted along the alignment, LiDAR technology may be utilized upon the approval of the Engineer. The crest elevation of the northern dike must be subaerial at the time of survey for LiDAR technology to be approved by the Engineer. If LiDAR technology is to be used to survey the crest elevation, then topographic or hydrographic points must also be collected every 400 feet along the alignment to confirm material has been placed to the full width of the northern dike.

Construction progress surveys for lift 1 and lift 2 of the northern dike shall be performed no earlier than ten (10) calendar days upon completion of each acceptance segment.

Lift 3 of the northern dike shall be surveyed at transects located every one hundred feet (100 ft) along the alignment of the northern dike. Northern dike lift 3 progress surveys shall extend at least to the bottom of the borrow ditches. Transects may extend to fifty feet (50 ft) beyond the borrow ditches so that the transects may serve as both northern dike and northern dike borrow ditches progress surveys. Point spacing shall be no greater than ten feet (10 ft) and at grade changes greater than three inches (3”). Contractor must ensure that the surveyor records the point descriptions specified in Paragraph 3.2 of this Specification for survey submittals to be approved.

Construction progress surveys for lift 3 of the northern dike shall be performed no earlier than ten (10) calendar days upon completion of each acceptance segment. In addition to the ten (10) Day period for surveys, the fill must be able to support a survey rod with a six inch (6”) diameter disk without the survey rod sinking more than three inches (3”) below top of grade prior to progress surveys for acceptance. The northern dike may not be surveyed for acceptance/payment until these requirements are met unless otherwise approved by the Engineer.

3.4.2.5 Weir Box

Once the weir box is installed, a survey shall be performed to record the invert elevations and the pipe locations to inform the shop drawings.

3.4.3 Post-Construction Surveys

After construction is complete, an as-built survey of the breakwaters, sand berm, northern dike, northern dike borrow ditches, local borrow area (if utilized), and imported fill site (if a USACE Disposal Area) shall be performed. The as-built surveys shall be performed no more than thirty (30) calendar days after completion of the Work, or as otherwise approved by Engineer.

Final payment will not be received by Contractor until the post-construction survey is completed and accepted by Engineer. Post-construction survey transects shall reoccupy pre-construction transects. Minimum spacing of transects, maximum spacing of survey points, and extents of transects shall be as defined above for pre-construction and progress surveys. The imported fill site, if a USACE Disposal

Area, shall be surveyed with LiDAR technology. Photographs or a final walkthrough of the imported fill site may be required at the direction of the Owner or Engineer.

-- END OF SECTION --

SECTION 522

DREDGING

PART 1 GENERAL

1.1 Scope

The Work covered by this Section consists of furnishing all Submittals, labor, material, suitable plant and equipment, and performing all operations required for dredging/excavating and transport of dredged material.

Conformance to environmental protection, public safety and navigational conditions per the permits and applicable regulations is included.

Operations shall be performed in accordance with the Federal and State permits issued for the Project, as well as the United States Coast Guard (USCG) regulations.

Work to be performed pertaining to this Section includes:

- Dredging material from within the horizontal and vertical extents of the Local Borrow Area as shown on the Plans, and transporting dredged material via hydraulic dredge pipeline for construction of the Sand Berm at the locations shown on the Drawings.

1.2 Definitions

See General Conditions of the Contract.

1.3 References

The publications listed below form a part of this Specification to the extent referenced.

- USCG *Rule 27 (d): Vessels Not Under Command or Restricted in Their Ability to Maneuver*.

1.4 Plant and Equipment

Plant and equipment employed on the dredging/excavation Work shall be in satisfactory operating condition, capable of safely and efficiently performing the Work as indicated. Equipment and machinery, including dredge(s), pipelines, and

supporting plant to be employed on the Work, shall be kept in good condition at all times.

A listing of all dredging plant, equipment and machinery hydraulic pipeline dredges, navigation monitoring systems, and all supporting plant utilized to accomplish the Work, shall be submitted and subject to inspection and approval by the Owner, Engineer, or approved Inspector and kept in good condition at all times. The listing shall include year and manufacturer, operational capacities, safety features, operating and licensing requirements for operators, and a description where and how the item of equipment or plant will be employed in the Work. All floating plant and working platforms shall meet OSHA/USCG requirements for worker safety. Any leaks or deficiencies shall be promptly and properly repaired. No reduction in the capacity of the plant, once inspected and approved to be sufficient for employment on the Work by Engineer shall be made except by written permission of Engineer. The measure of the "Capacity of Plant" shall be its actual performance on the work to which these Specifications apply.

1.4.1 National Dredging Quality Management Program

The permit requires the work under this contract to use the National Dredging Quality Management Program (DQM) to monitor the dredge's status at all times during the contract and to manage data history. Dredge plant and equipment shall have a current certification from DQM.

1.5 Character of Materials

Appendix A, "Geotechnical Information", contains subsurface information from within the Site and area to be dredged. Contractor should generally anticipate encountering silty/clayey sands underlain by layers of sandy clay and clay. Contractor may also encounter other debris or rubbish. Contractor is expected to examine the reports, the Site and history of similar work in the area and decide for themselves the character of the materials and the measures necessary to perform the Work within the required schedule as well as safeguard their personnel, equipment and the public. Local minor variations in the subsurface materials are to be expected and, if encountered, will not be considered as being materially different. If at any time during dredging and hydraulic fill placement operations the Contractor believes the material to be significantly different than the data collection indicates and construction according to the Plans and Specifications is not believed to be feasible, the Contractor shall notify the Engineer and Owner immediately.

1.6 Submittals

Submittals to Engineer under this Section include the following:

- Work Plan - Dredging Operation Plan Section
- Notice to Mariners
- Surveys
- Listing of Dredge Plant and Equipment
- Daily Report – Dredging Section

1.6.1 Dredging Operation Plan

Within seven (7) calendar days of the pre-construction meeting, Contractor shall submit a plan detailing plant and equipment, sequence of dredging, dredging methods, dredging controls, dredge pipeline type and location. This should be a part of the overall Work Plan.

1.6.2 Notice to Mariners

Contractor shall submit a copy of Notice to Mariners at the same time sent to Eighth Coast Guard District – Sector Mobile.

USCG Sector Mobile

1500 15th St, Mobile, AL 36615

(251) 441-5720

1.6.3 Surveys

Reference Section 521 Construction Surveying – Segmented Breakwaters for survey submittals.

1.6.4 Daily Report – Dredging Section

During construction the Contractor's Daily Report is due to the Engineer by 2:00 P.M. (CST) on the following day. For all dredging activities the daily report will include at a minimum:

- Start and stop stations of dredging
- Estimated volume of material dredged
- The working and delay hours of the day
- Details of any delays encountered in the day
- A narrative describing the day's work

1.7 Obstruction Identification

Contractor is required to complete a magnetometer survey of the borrow area during pre-construction surveying. If a magnetic anomaly is identified in the borrow area, the Contractor is responsible for identifying, removing, and disposing of the object or avoiding the object during dredging.

Contractor may encounter obstructions or other debris or rubbish within the borrow area that has not been identified and may pose a hazard to navigation. Contractor shall advise Engineer immediately of any obstructions or other debris of this nature that is encountered.

1.8 Acceptance

There is no separate acceptance, as related to payment for Contract Items, for dredging. However, material removed during dredging shall be within the horizontal and vertical limits of the borrow area as shown on the Plans. No removal of material shall occur outside of the horizontal limits, or below the vertical limits. Contractor alone is responsible for any fines for removal of material outside of the permitted limits of the borrow area. The permitted limits are the horizontal boundaries and maximum dredge depth shown in the Plans.

1.9 Measurement and Payment

1.9.1 Measurement

Dredging quantities will be measured with progress surveys of the borrow area, however payment for dredging will not be based on dredged quantities. Payment for dredging shall be included in the Contractor's Unit Price for Contract Item No. 108 – Sand Berm Construction which shall be based on in-place fill quantities; see Section 520 Sand Berm – Segmented Breakwaters for details.

1.9.2 Payment

There shall be no separate payment for hydraulic dredging, payment shall be included in Contract Item No. 108 – Sand Berm Construction, which is based on

the quantity of fill material in-place (Section 520 Sand Berm – Segmented Breakwaters).

1.10 Quality Assurance

Engineer reserves the right to complete Quality Assurance surveys of the borrow area. Quality Assurance surveys will be completed independently by Engineer (at no additional cost to Contractor). Quality Assurance survey data shall be provided to Contractor upon request.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 General

Contractor shall perform the dredging within the local borrow area and transport the dredged material via hydraulic pipeline and deposit the material within the sand berm template shown on the Drawings. Dredge pipeline may be floating or submerged with a direct dredge pipeline route between the borrow area and the sand berm area.

Dredge pipeline and supporting plant and equipment shall at all times be properly marked and/or lighted as required by USCG.

During hydraulic dredging activities, Contractor shall only dredge material from within the borrow area as indicated on the Drawings. Under no circumstances shall material be obtained from outside the established limits of the borrow area.

The condition of the borrow area, at the time of the latest survey, is depicted on the Drawings; however, due to natural changes in bathymetry, the actual elevations at the time of the Work may vary from the elevations indicated.

3.2 Required Dredging Prism, and Side Slopes

The dredging limits are shown on the Drawings.

The permitted maximum dredge depth is to a water bottom elevation of -20.0 ft NAVD 88. Contractor alone is responsible for any fines or penalties associated with dredging deeper than the permitted maximum dredge depth. No material shall be removed below -20.0 ft NAVD 88, although material may be disturbed below -20.0 ft NAVD 88. The as-built borrow area survey should show water bottom elevations of -20.0 ft NAVD 88 or shallower.

Borrow area side slopes shall be no steeper than 3H:1V.

3.3 Dredging Order of the Borrow Area

Contractor shall perform dredging operations within the borrow area in a continuous fashion. Dredge cuts shall be designed to maximize the quantity of sandy material removed from within the dredge template. Dredge cuts which result in inefficient successive or adjacent dredge cuts, such as leaving a thin cut face, or narrow cut, are the responsibility of the Contractor and shall not result in claims of insufficient quantity of material to complete the Work.

3.4 Improperly Obtained Dredge Material

The requirements and methods of dredged material removal for this contract have been planned in accordance with Environmental Permits (Appendix B) obtained. Any material dredged outside of the horizontal or vertical limits of the borrow area is in violation of the Environmental Permit. Additionally, Contractor may be required to backfill such areas of material removed, from outside the limits, as directed by Engineer at the Contractor's expense. Contractor will be required to compensate Owner for any costs, fines or other expenses related to permit violations resulting from Contractor negligence in complying with permits for the Project.

3.5 Dredge Lighting and Warning Signs

Dredge shall exhibit the lights and shapes prescribed in USCG *Rule 27 (d): Vessels Not Under Command or Restricted in Their Ability to Maneuver*.

3.6 Field Quality Control

Contractor shall establish and maintain quality control for the dredging operations Work and all other operations in connection with the Work in the field to assure compliance with the Contract. Contractor shall inspect for compliance with Contract requirements and record the inspection of all operations including but not limited to the following:

A. No dredging is performed outside of the permitted borrow area.

B. The pipeline is periodically inspected for leakage as specified.

C. All joints of the discharge pipeline are tight, sound, and in a safe condition.

D. All equipment used in the Work is approved and in satisfactory working condition.

E. Checks to ensure safe work practices around the public are performed at all times as specified.

F. All results of inspections shall be documented with photographs as necessary to document the conditions of field quality. The results and supporting data from any inspections shall be recorded and provided by Contractor in the Daily Report of Dredging Operations.

3.7 Daily Reporting Requirements

Contractor shall prepare and maintain a Daily Report and furnish copies daily to Engineer. A copy of the form prescribed for recording the required information and any further instructions on the preparation of the report will be furnished at the pre-construction conference. Contractor shall also furnish the following items to Engineer as requested during dredging operations:

1) Copy of dredge operations/production log

2) Volume estimates of material removed from the local borrow area

3) Photos of material placed to visually inspect material quality

4) Data that documents dredge pressure readings and any density meter readings of the sediment and slurry being transported through the pipeline.

3.8 Data for Engineer's Project Completion Report

A Project Completion Report will be completed by Engineer after completion of the construction activities. Data required for the report shall be provided by the Contractor to Engineer, and may include, but may not be limited to the following information:

- a list of all major dredging equipment used to construct the Project.
- pipeline data including pipeline pressures and any density meter data.
- a narrative discussing the construction sequences and activities, and, if applicable, any problems encountered and solutions.
- a list and description of any dredging-related safety-related issues or accidents reported during the life of the Project.
- a table listing significant dredging dates beginning with request for proposals and ending with final acceptance of the Project.

- digital data including the borrow area survey data.
- any additional pertinent data or information.

Data shall be provided to Engineer within fourteen (14) calendar days of any request by Engineer.

-- END OF SECTION --

SECTION 523

ROCK RIPRAP BREAKWATERS

Part 1 GENERAL

1.1 Scope

The Work covered by this Section consists of furnishing all submittals, labor, material, plant, equipment, tools, skills, services, and incidentals and performing all operations required for constructing the graded rock riprap breakwaters, including installation of geotextile, as specified in the Plans. Conformance to environmental protection, public safety and navigational conditions per the permits (Appendix B) and applicable regulations is included. All work shall be performed in accordance with the Federal and State permits issued for the project, as well as the United States Coast Guard (USCG) regulations.

1.2 References

Publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by basic designation only.

American Society for Testing and Materials (ASTM) Publications

- C 535 Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
- C 88 Soundness of Aggregates of Use of Sodium Sulfate or Magnesium Sulfate
- C 97 Absorption and Bulk Specific Gravity of Dimension Stone
- C 127 Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
- D 75 Standard Practice for Sampling Aggregates
- D 3740 Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
- D 5519 Standard Test Method for Particle Size Analysis of Natural and Man-Made Riprap Materials
- D 6092 Standard Practice for Specifying Standard Sizes of Stone for Erosion Control

- D 6473 Standard Test Method For Specific Gravity And Absorption of Rock For Erosion Control
- E 329 Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction
- D 3370-18 Standard Practices for Sampling Water from Flowing Process Streams
- D 1429 Specific Gravity of Water and Brine

Alabama Department of Transportation and Development (ALDOT) Publications

- ALDOT Standard Specifications for Highway Construction (2026)

American Association of State Highway and Transportation Officials (AASHTO) Publications

- T 85 Specific Gravity of Coarse Aggregate

1.3 Measurement and Payment

1.3.1 Barge Displacement Table

The Contractor shall develop a certified barge displacement table for measurement and payment of graded rock riprap and underlayer stone and include it in the Work Plan. The table shall be approved by the Engineer. It shall show the name and/or number, dimensions, name of owner, and name of fabricator for each barge. The Contractor shall furnish a dimensioned drawing or sketch of each barge that is sufficient to verify the barge displacement table. The drawings shall show, at a minimum, the length, width, and depth of the barge, and dimensions of rake(s). All new or modified barges shall be field checked for current dimensions by the Contractor in the presence of the Engineer or the Inspector. Each table shall contain the freeboard of the barge in feet and tenths from zero (0) to the full depth of the barge and the corresponding gross displacement to the nearest ton.

Each barge shall be suitably marked with two displacement gaging lines along each side of the barge. Each gaging line shall be painted perpendicular to the edge of the barge and be no less than four (4) inches wide and one (1) foot long on both the deck and side of the barge. Barges with rakes shall have the displacement gaging lines placed at each corner of the box section between the rakes. If a barge

has a box end or ends, the gaging lines shall be placed approximately four (4) feet from the box end. The freeboard will be measured at the four (4) gauging locations and the displacement determined from the average of the measurements. The displacement shall be determined before and after the barge is unloaded and the difference between these values shall be the quantity delivered. Freeboard measurements before and after the barge is loaded must be documented with timestamped digital photos to be submitted along with each barge displacement ticket.

If the barge tables were originally furnished for fresh water and the barge displacement measurements are being taken in salt water, the Contractor has the option to obtain water samples and determine the densities or unit weights of the water. Water sampling shall be performed concurrently with the measurements of the barges, both when fully loaded and empty. Water samples shall be taken by the Contractor and witnessed by the Engineer. The water samples shall be taken in accordance with ASTM D 3370 (practice A-Grade Sample) at depths of four (4) and eight (8) feet in the area where measurements are made using a “Polypro” 2000 ml. water sampler or approved equal.

Densities shall be tested by a certified testing laboratory according to ASTM D 1429 (Method D-Hydrometer Method). After review and approval of the test results by the Engineer, the average of the densities will be used to adjust the measurements. A unit weight of 62.45 pounds/cubic foot is standard for fresh water. If the Contractor does not obtain water samples and densities, then no adjustments will be applied to the displacement table and rock quantities.

The Engineer shall accept barge displacement tickets as measured at the loading facility and accompanied by timestamped digital photos documenting freeboard measurements. The Engineer shall be provided an opportunity to be on-site at the loading facility to field check the barge displacement measurements.

1.3.2 Bedding Stone

The Engineer estimates up to one foot (1.0’) of construction settlement (due to immediate settlement and/or displacement of soft material) after placement of the underlayer stone and graded rock riprap. To accommodate this anticipated settlement, the Contractor may, at its option, place up to one foot (1.0’) of sacrificial foundation material consisting of the least-cost suitable stone material available, including crushed concrete (free of rebar), quarry run stone, No. 4 stone, or other

Engineer-approved material, prior to placement of the specified underlayer stone and graded rock riprap. The sacrificial material is intended to penetrate, displace, or settle into the foundation soils upon placement of the underlayer and armor stone to the final lines, grades, and elevations.

The estimated quantity shown on the Schedule of Prices and Plans is based on an in-place bulk unit weight of rock equal to 1.5 tons per cubic yard.

If crushed concrete is used for the sacrificial foundation material, payment shall be adjusted to maintain an equivalent in-place volume basis. The Contract unit price for graded rock riprap is based on a bulk density of 1.50 tons per cubic yard. If approved crushed concrete riprap has a demonstrated bulk density greater than 1.50 tons per cubic yard, the payable quantity shall be adjusted by the ratio of 1.50 tons per cubic yard divided by the approved crushed concrete bulk density (tons per cubic yard). The adjusted quantity shall be multiplied by the Contract Unit Price to determine payment. No additional compensation shall be allowed for increased tonnage resulting solely from the higher bulk density of the substituted crushed concrete material.

Payment Quantity = Delivered Tons × (1.50 ÷ Approved Crushed Concrete bulk density in tons/cy)

Payment for this work will be made by tonnage for placed bedding stone at the Contract Unit Price per ton for Contract Item No. 004 – Bedding Layer or Contract Item No. 104 – Bedding Layer, whichever is awarded. The unit of measurement for the rock shall be the short ton (2,000 pounds). Quantities will be computed to the nearest whole ton using the Barge Displacement Table as specified in paragraph 1.3.1 of this Section, or other method approved by Engineer.

At the Site, the Contractor shall measure the weight of the bedding stone by barge displacement prior to unloading any rock from the barge. The Engineer or Inspector will verify this measurement prior to payment. No payment will be made for any unauthorized or non-conforming placement of bedding stone. The Contractor shall provide the Engineer with certified weight tickets issued by the stone quarry for each barge. The certified weight tickets will not be used for payment, but no payment shall be made until Engineer has reviewed the certified weight tickets.

The total payment tonnage for this contract shall not exceed the total awarded tonnage in the Contract.

The Contractor will not be paid for any extra tonnage of bedding stone that is received at the Site than was awarded in the Contract. If bedding stone tonnage in excess of the Contract tonnage is received at the Site, the Contractor may choose to place the stone at the Site at the direction of the Engineer, at no additional cost to the Owner, or remove the stone from the Site, at no additional cost to the Owner.

1.3.3 Underlayer Stone

Payment for this work will be made by tonnage for placed underlayer stone at the Contract Unit Price per ton for Contract Item No. 005 – Underlayer Stone or Contract Item No. 105 – Underlayer Stone, whichever is awarded. The unit of measurement for the underlayer stone shall be the short ton (2,000 pounds). Quantities will be computed to the nearest whole ton using the Barge Displacement Table as specified in paragraph 1.3.1 of this Section, or other method approved by Engineer.

At the Site, the Contractor shall measure the weight of the underlayer stone by barge displacement prior to unloading any rock from the barge. The Engineer or Inspector will verify this measurement prior to payment. No payment will be made for any unauthorized or non-conforming placement of underlayer stone. The Contractor shall provide the Engineer with certified weight tickets issued by the stone quarry for each barge. The certified weight tickets will not be used for payment, but no payment shall be made until Engineer has reviewed the certified weight tickets.

If the calculated underlayer stone tonnage based on the pre-construction survey is different than the calculated design tonnage based on the design survey, the Engineer reserves the right to modify the extents of underlayer stone such that the design tonnage is not exceeded by the Contractor. The Engineer reserves the right to increase or decrease the necessary tonnage of underlayer stone based on the pre-construction survey.

The Contractor will not be paid for any extra tonnage of underlayer stone that is received at the Site than was awarded in the Contract. If underlayer stone tonnage in excess of the Contract tonnage is received at the Site, the Contractor may choose to place the stone at the Site at the direction of the Engineer, at no

additional cost to the Owner, or remove the stone from the Site, at no additional cost to the Owner.

The estimated quantity shown on the Schedule of Prices and Plans is based on an in-place bulk unit weight of rock equal to 1.5 tons per cubic yard.

1.3.4 Graded Rock Riprap

Payment for this work will be made by tonnage for placed rock that conforms to the lines, grades and elevations of the rock breakwaters shown on the Plans at the Contract Unit Price per ton for Contract Item No. 006 – Graded Rock Riprap or Contract Item No. 106 – Graded Rock Riprap, whichever is awarded. The unit of measurement for the rock shall be the short ton (2,000 pounds). Quantities will be computed to the nearest whole ton using the Barge Displacement Table as specified in Paragraph 1.3.1 of this Section. At the Site, the Contractor shall measure the weight of the rock by barge displacement prior to unloading any rock from the barge. The Engineer will verify this measurement prior to payment. No payment will be made for any unauthorized or non-conforming placement of rock. The Contractor shall provide the Engineer with certified weight tickets issued by the stone quarry for each barge. The certified weight tickets will not be used for payment, but no payment shall be made until Engineer has reviewed the certified weight tickets.

If the calculated rock tonnage based on the pre-construction survey is different than the calculated design tonnage based on the design survey, the Engineer reserves the right to modify the extents of any of the rock breakwater areas such that the design rock tonnage is not exceeded by the Contractor. Further, the Engineer reserves the right to increase or decrease the necessary tonnage of rock based on the pre-construction survey.

The estimated quantity shown on the Schedule of Prices and Plans is based on an in-place bulk unit weight of rock equal to 1.5 tons per cubic yard.

1.3.5 Geotextile

Any associated costs incurred by the Contractor for procurement, transport, and installation of this item should be included within the Contract Unit Price for Contract Item No. 007 – Geotextile or Contract Item No. 107 – Geotextile, whichever is awarded. The estimated quantity given on the Schedule of Prices and Plans is the total length of the segmented breakwater feature, including gaps

between segmented breakwaters, multiplied by a geotextile width of sixty feet (60'). Where curves are present in the overall feature, the outside dimension is used for length measurement. Measurement for payment will be completed using the same method.

The Contractor shall determine the actual quantity of geotextile required for procurement, including all necessary overlaps, seams, and geotextile extending beyond the breakwater toes. Necessary overlaps, seams, extra length of geotextile extending beyond the breakwater toes, securing pins and associated material, equipment, and operations will not be measured separately for payment. All costs associated with furnishing and installing these materials shall be included in the contract unit price. No payment will be made for geotextiles replaced because of waste, contamination, damage, repair, or due to Contractor fault or negligence.

1.4 Acceptance

1.4.1 Bedding Stone

The bedding stone placed for breakwater construction will be accepted by the Engineer when it has been placed to an overall average thickness of one foot (1.0'), and the contract tonnage has been placed, unless otherwise approved by Engineer. The placed thickness shall be measured relative to the approved pre-construction survey and verified by construction progress surveys. Bedding stone shall be distributed across the full design footprint of the breakwater as shown in the Plans. Acceptance will be based on a comparison of the pre-construction survey and construction progress survey data demonstrating that the required bedding stone thickness has been achieved within the breakwater footprint. Localized deficiencies in bedding stone thickness, excessive high spots, incomplete coverage of the design footprint, or failure to extend to the plan alignment limits may require grading, redistribution of material from high areas to deficient areas, and/or placement of additional bedding stone, as directed by the Engineer, at no additional cost to the Owner.

For purposes of acceptance, bedding stone quantities that have displaced into the foundation soils or settled below the pre-construction mudline within the design footprint of the breakwater shall be credited toward the required bedding stone thickness, provided the construction progress survey demonstrates that the material was placed within the breakwater footprint shown on the Plans.

The Contractor shall not place underlayer stone or armor stone in a reach until the bedding stone in that reach has been accepted by the Engineer.

1.4.2 Underlayer Stone Acceptance

The underlayer stone placed for breakwater construction shall be accepted by the Engineer if the underlayer stone achieves compliance with the lines, grades, elevations and tolerances in the Plans and Specifications. Acceptance shall be based on the breakwaters construction progress surveys. The Engineer may require the Contractor to remove rock or place additional rock as necessary in order to achieve compliance.

1.4.3 Graded Rock Riprap Acceptance

The graded rock riprap placed for breakwater construction shall be accepted by the Engineer if the breakwaters achieve compliance with the lines, grades, elevations and tolerances in the Plans and Specifications. Acceptance shall be based on the breakwaters construction progress surveys. The Engineer may require the Contractor to remove rock or place additional rock as necessary in order to achieve compliance.

1.5 Tolerances

1.5.1 Bedding Stone

The bedding stone shall be placed with a maximum vertical tolerance equal to plus one half foot (+0.5 ft). The footprint may not exceed the proposed footprint of the breakwaters. For sections not meeting the specified tolerance, the Contractor may be required to place additional stone or regrade sections at the discretion of the Engineer at no additional cost to the Owner.

1.5.2 Underlayer Stone

The underlayer stone shall be placed according to the cross-sections shown on the Plans with a maximum vertical tolerance for the crest elevation equal to plus or minus one half feet (+/-0.5 ft). The crest width may not exceed seven feet (7 ft). Side slope shall be between 2H:1V and 2.5H:1V on the bayward slope. Side slopes shall be between 1.5H:1V and 2H:1V on the interior slope.

For sections not meeting the specified tolerance, the Contractor may be required to place additional stone or regrade sections at the discretion of the Engineer at no additional cost to the Owner. If the sections exceed the maximum tolerance and require additional rock to be purchased by the Contractor, all costs associated with purchase, transport, and placing additional rock or redistributing rock shall be at no additional cost to the Owner.

1.5.3 Graded Rock Riprap

The graded rock riprap breakwaters shall be placed according to the cross-sections shown on the Plans with a maximum vertical tolerance for the crest elevation equal to plus or minus one half feet (+/-0.5 feet). The crest width may not exceed seven feet (7 ft). Side slope shall be 2.5H:1V with a tolerance between 2H:1V and 3H:1V on the bayward slope. Side slopes shall be 2H:1V with a tolerance between 1.5H:1V and 2.5H:1V on the interior slope. Payment for armor stone placed in excess of the plan quantity but within the allowable positive tolerance shall be limited to 3,000 tons. Any additional armor stone required or placed beyond 3,000 tons shall be the sole responsibility of the Contractor and shall not be measured for payment or otherwise compensated.

For sections not meeting the specified tolerance, the Contractor may be required to place additional stone or regrade sections at the discretion of the Engineer at no additional cost to the Owner. If the sections exceed the maximum tolerance and require additional rock to be purchased by the Contractor, all costs associated with purchase, transport, and placing additional rock or redistributing rock shall be at no additional cost to the Owner.

1.6 Surveys

Refer to Section 521 Construction Surveying – Segmented Breakwaters for surveying details.

1.7 Staking

Refer to Section 521 Construction Surveying – Segmented Breakwaters for surveying details.

1.8 Submittals

Submit the following:

A. Work Plan

B. Daily Report – Breakwater Section

C. Rock Certified Weight Tickets

D. Barge Displacement Table Calculations

E. Product specifications for graded rock riprap, underlayer stone, geotextile, and geogrid

F. Certified test reports for geotextile and geogrid

G. Product samples for geotextile and geogrid, and manufacturer's letter of conformance to the specification

H. Any survey Submittals specified in Section 521 Construction Surveying – Segmented Breakwaters

1.9 Work Plan

The Contractor shall submit a Work Plan, in writing, to the Engineer seven (7) calendar days prior to the pre-construction conference for review and approval. The Work Plan shall be reviewed and approved by the Engineer prior to mobilization to the Site. The Work Plan shall include, but not be limited to, the following:

A. Descriptive plan for obtaining, delivering, and placing stone materials at the Site as applicable.

B. Construction access including assessing the Project Site and use of Contractor Site Access Areas.

C. Description of construction sequencing methods including Site preparation, geotextile installation, and stone installation, as applicable.

D. Surveying plan including proposed surveying transects (pre-construction survey, progress surveys, and post-construction survey).

E. Quality control testing plan.

F. Description of proposed barge offloading operation for stone materials, as applicable.

Part 2 PRODUCTS

2.1 Graded Rock Riprap

All graded rock riprap is to be provided by the Contractor. The graded rock riprap shall not disintegrate upon exposure to the elements or be easily broken from handling and shall be reasonably free from earth and other foreign materials; the graded rock riprap shall not be sedimentary.

- When tested in accordance with AASHTO T 85, the solid weight of stone shall be at least 165 pounds per cubic foot (2490 kg/cu m) unless otherwise approved by Engineer.
    - As an alternative, when tested in accordance with ASTM C 97, the specific gravity shall be at least 2.64.
- The least dimension of any individual stone shall be at least 1/3 its maximum dimension.
- Each shipment of stone shall be reasonably well graded within.
- The rock faces shall be roughly angular, not rounded in shape.
- Field stone, rectangular block stone, slabs, and rounded boulders will not be accepted.
- When tested as specified in ASTM C 88, the stone shall show a soundness of less than 18 percent for 5 cycles, using sodium sulphate, and shall be suitable in all other respects for the purpose intended.
- It shall have a percentage wear less than 20% loss for 500 revolutions by the Los Angeles Test, ASTM C 535.
- It shall have less than 2% absorption when tested as specified in ASTM C 127.

2.1.1 Quarries

The Contractor shall inform Engineer of proposed source of materials at least 2 weeks prior to commencing Work.

In order to gain acceptance, the Contractor shall obtain and test samples of the rock for gradation under the supervision of the Engineer. The Engineer shall accept the rock if the test results comply with this specification. The Engineer shall be allowed to visit the quarry to observe the excavation, sorting, and/or loading process if they choose.

2.1.2 Gradation

All rock riprap shall be Class 5 graded riprap (GRR) as specified by Section 814 RIPRAP MATERIALS of the Alabama Department of Transportation Standard Specifications for Highway Materials, 2026 edition. The GRR shall be reasonably well graded ranging from 2000 pounds and down. The GRR shall meet the following gradation. Approximate stone dimensions are provided for information only. The gradation shall be evaluated by weight. For reference, the spherical and cubic dimensions are provided in the table below.

Table 2.1 Rock Riprap Gradation

Stone Size (lbs)	Spherical Diameter (ft)	Cubic Side Dimension (ft)	Maximum % of Stone Smaller
2000	2.9	2.3	90%
1000	2.3	1.9	50%
200	1.4	1.1	25%

Control of gradation will be by visual inspection either at the source, or Site or both. The Engineer reserves the right to verify the gradation of any shipment by testing two uniform size random samples. The equipment, labor and cost for testing the samples shall be provided by the Contractor.

2.2 Underlayer Stone

2.2.1 Gradation

All underlayer stone is to be provided by the Contractor. The underlayer stone shall not disintegrate upon exposure to the elements or be easily broken from handling and shall be reasonably free from earth and other foreign materials.

- When tested in accordance with AASHTO T 85, the solid weight of stone shall be at least 165 pounds per cubic foot (2490 kg/cu m) unless otherwise approved by Engineer.
    - As an alternative, when tested in accordance with ASTM C 97, the specific gravity shall be at least 2.64.
- The least dimension of any individual stone shall be at least 1/3 its maximum dimension.
- Each shipment of stone shall be reasonably well graded within.
- The rock faces shall be roughly angular, not rounded in shape.
- Field stone, rectangular block stone, slabs, and rounded boulders will not be accepted.
- When tested as specified in ASTM C 88, the stone shall show a soundness of less than 18 percent for 5 cycles, using sodium sulphate, and shall be suitable in all other respects for the purpose intended.
- It shall have a percentage wear less than 20% loss for 500 revolutions by the Los Angeles Test, ASTM C 535.
- It shall have less than 2% absorption when tested as specified in ASTM C 127.

2.2.2 Quarries

The Contractor shall inform Engineer of proposed source of materials at least 2 weeks prior to commencing Work.

In order to gain acceptance, the Contractor shall obtain and test samples of the rock for gradation under the supervision of the Engineer. The Engineer shall accept the rock if the test results comply with this specification. The Engineer shall be allowed to visit the quarry to observe the excavation, sorting, and/or loading process if they choose. If the underlayer stone is sourced from the same quarry as the graded rock riprap, one suite of specified test results shall be sufficient for submittal. If the underlayer stone is sourced from a different quarry, then the Contractor shall submit underlayer test results in accordance with this section.

2.2.3 Gradation

All underlayer stone shall be Class 2 graded riprap (GRR) as specified by Section 814 RIPRAP MATERIALS of the Alabama Department of Transportation Standard Specifications for Highway Materials, 2026 edition. The GRR shall be reasonably well graded ranging from 2000 pounds and down. The GRR shall meet the following gradation. Approximate stone dimensions are provided for information

only. The gradation shall be evaluated by weight. For reference, the spherical and cubic dimensions are provided in the table below.

Table 2.2 Underlayer Stone Gradation

Stone Size (lbs)	Spherical Diameter (ft)	Cubic Side Dimension (ft)	Maximum % of Stone Smaller
200	1.4	1.1	90%
80	0.9	0.7	50%
10	0.5	0.4	10%

Control of gradation will be by visual inspection either at the source, or Site or both. The Engineer reserves the right to verify the gradation of any shipment by testing two uniform size random samples. The equipment, labor and cost for testing the samples shall be provided by the Contractor.

2.3 Geotextile

2.3.1 Materials

The geotextile to be placed below the bedding stone (if utilized) or underlayer stone and graded rock riprap shall be Mirafi HP570 or approved equal based on:

- Maximum Apparent Opening Size (AOS) of #30 U.S. Sieve
- Minimum Tensile Strength (at ultimate) in the Material Direction (MD) of 4,200 lbs/ft and in the Cross-Direction (CD) of 4,200 lbs/ft.

2.3.2 Submittals

Manufacturing Certificate: All geotextiley will be accepted on the following basis. At least thirty (30) calendar days prior to installation, the Contractor shall furnish to the Engineer, in duplicates, a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the materials. The certificate

shall contain the signer's title, the name and address of the Contractor, the contract number, and the Project name and location. The mill certificate or affidavit shall attest that the materials meet the chemical, physical, and manufacturing requirements in this specification. Accompanying the certificate/affidavit, the Contractor shall submit a one (1) foot by one (1) foot sample of the geotextile to the Engineer.

2.3.3 Panel Layout

The Contractor shall include a panel layout in the Work Plan. The Contractor shall allow the Engineer a minimum of seven (7) calendar days for review and approval prior to fabrication of the geotextile panels.

- The geotextile beneath the bedding stone (if utilized) or underlayer stone and graded rock riprap shall have a material (roll) direction oriented parallel to the centerline of the breakwaters.

Part 3 EXECUTION

3.1 Dimensions

Breakwaters shall be constructed to the lines, grades and elevations shown on the Plans. All breakwaters shall be constructed as follows:

- +6.0ft NAVD 88 crest elevation
- 7 feet crest width
- 2.5H:1V front (bayward) slope
- 2H:1V back (interior) slope

3.2 Geotextile

Once the staking layout and the geotextile product specifications have been approved by the Engineer, the Contractor shall place the geotextile as indicated on the Plans. Contractor shall maintain the layer until the rock breakwaters are completed and accepted according to the Plans and these Specifications.

3.2.2 Installation

The geotextile shall be placed in continuous overlapped panels below and parallel to the centerline of the rock breakwater and to the lines and grades shown on the Plans. The Contractor shall prepare the surface to receive the geotextile, ensuring

the surface is relatively smooth and free of obstructions, depressions, debris, soft or low-density pockets of material, and stone, which could damage the geotextile during placement. At the time of installation, the geotextile shall be rejected if defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. The geotextile shall always be protected during construction to ensure the geotextiles original chemical and physical properties are unchanged.

The geotextile shall extend beyond the toe of the rock structure by approximately one foot (1'). Adjacent panels of geotextile shall have a minimum of three feet (3') of overlap to maintain alignment during placement of the rock. Care shall be taken to ensure that geotextile panels do not separate during construction. All wrinkles and sags shall be stretched out immediately before rock is placed on the geotextile. The Work shall be scheduled so that it is completely covered with a layer of rock by the end of each workday and failure to do so shall require replacement of geotextile.

The geotextile shall be protected from damage during placement of stone. This shall be accomplished by limiting the height of drop to less than one (1) foot for the first lift. In the event the stone placement damages the geotextile, the stone shall be placed directly on the geotextile to the extent practical, with minimal drop distance. Any geotextile rejected or damaged shall be replaced by the Contractor at no additional cost to the Owner. The Contractor shall also submit a geotextile panel placement plan for each site and the corresponding factory sewn panel dimensions. The Contractor shall allow the Engineer a minimum of seven (7) calendar days for review and approval of the placement plan, prior to geotextile fabrication.

3.3 Bedding Stone Placement

Contractor shall place the bedding stone within the lines and thickness as stated in this Specification. Any bedding stone placed outside the vertical or horizontal limits of the bedding stone cross sections or at improper grades will not be paid.

After underlayer stone for each breakwater is placed, Contractor shall survey the underlayer stone as described in Section 521 Construction Surveying – Segmented Breakwaters.

3.4 Underlayer Stone Placement

Contractor shall place the underlayer stone within the lines, grades, and elevations as indicated in the Plans. Any underlayer stone placed outside the vertical or horizontal limits of the underlayer stone cross sections or at improper grades will not be paid for and shall be requested to be regraded or removed as directed by the Engineer at the Contractor's expense.

After underlayer stone for each breakwater is placed, Contractor shall survey the underlayer stone as described in Section 521 Construction Surveying – Segmented Breakwaters.

3.5 Graded Rock Riprap Placement

As soon as practical following placement of the underlayer stone, armor stone shall be placed to the lines and grades indicated on the Contract Drawings. The riprap armor stone shall be individually placed with a rock grab, bucket with a thumb, orange peel grab, grapple, crane, or similar equipment. The stone shall not be dropped or tipped into position, but shall be placed piece by piece into the layer and shall be interlocked or keyed in juxtaposition with adjacent armor stones by rotating or setting them for maximum contact based on their angular shape with no continuous void through two armor layers where waves could work against inner layers of rock work and cause damage. Armor stone shall not be dropped from a height greater than 2 feet above the underlayer stone surface. Compaction of the armor stone will not be required.

Any rock placed outside the vertical or horizontal limits of the breakwater cross sections or at improper grades will not be paid for and shall be requested to be regraded or removed as directed by the Engineer at the Contractor's expense.

The finished riprap surface shall be free from objectional high or low spots, or pockets of small stones and clusters of larger stones. The finished surface shall be relatively uniform in appearance and elevation or slope. In order to achieve uniformity and solid seating of stone, Contractor shall move stone extending above tolerance with equipment as necessary to achieve allowable elevations, where low spots exist along the crest, Contractor shall place additional rock as necessary to achieve uniformity.

3.6 Construction Access

Excavating flotation access channels outside of the project area is not allowed under the permit. However, Contractor may excavate floatation access in the interior sides of the breakwaters. If Contractor excavates floatation access in the interior side of the breakwaters, Contractor shall maintain a minimum twenty foot (20') bench of undisturbed material between the proposed toe of the breakwater and the top of slope of the flotation access channel. Contractor shall stake the twenty foot (20') bench for field verification. If the stake has fallen in the water due to excavation outside of the specified limits, Contractor shall document and notify Engineer so the breakwater footprint may be shifted appropriately to avoid slope stability issues. Contractor shall be responsible for controlling turbidity during flotation access excavation within permit requirements. Contractor shall backfill the flotation access channel upon completion of breakwater construction and prior to placement of sand berm material. See Section 520 Sand Berm – Segmented Breakwaters for more details.

The Contractor shall exercise caution when accessing the Site as areas nearby are heavily used by commercial and recreational boat traffic during all periods of the year.

3.7 Equipment

The Contractor shall provide a proposed list of equipment in the Work Plan which will be used to construct the rock breakwaters and the geotextile layers. This list shall include the type (Drag Bucket, etc.), number of each type, and capacity (Cubic Yards, etc.) of the equipment.

3.8 Losses

The Contractor is responsible to reclaim and utilize all rock that is lost during shipment or construction as directed by the Engineer or Inspector.

3.9 Warning Signs

Warning signs shall be installed within seven (7) calendar days of completion of all breakwaters in accordance with Section 510 Signage or as otherwise directed by the Engineer.

--END OF SECTION--

SECTION 530

SAND BERM – GEOTUBE REVETMENT

Part 1 General

1.1 Scope

The Work covered by this Section consists of furnishing all submittals, labor, material, plant and equipment, and performing all operations required for conducting pre- and post-placement surveys and placing the dredged or imported material to construct the sand berm within the limits specified in the Plans. Conformance to environmental protection, public safety and navigational conditions per the permits (Appendix B) and applicable regulations is included. All work shall be performed in accordance with the Federal and State permits issued for the project, as well as the United States Coast Guard (USCG) regulations.

1.2 Definitions

See General Conditions of the Contract.

1.3 References

Not applicable for this section.

1.4 Character of Materials

Appendix A, “Geotechnical Report”, contains subsurface information from within the Sunflower DA. Contractor shall review the geotechnical information and understand how the character of those materials may affect the placement of dredged material. Contractor means and methods for placement of dredged material shall be designed to control the dredged fill to the approximate lines and grades, and within the elevation ranges specified on the Plans. If at any time during dredging and sand berm construction operations the dredge material varies significantly from the representative soil samples collected from the borrow area borings, then Contractor shall immediately notify Engineer via phone and email.

1.5 Submittals

Submit the following in accordance with Section 504 Submittals:

- Work Plan – Sand Berm Construction section
- Surveys (Section 531 Construction Surveying – Geotube Revetment)

- Daily Report – Sand Berm Construction section

1.5.1 Work Plan – Sand Berm Construction

Within seven (7) calendar days of the pre-construction meeting, Contractor shall provide a plan detailing sand berm construction methods and construction sequencing to Engineer as part of the overall Work Plan. The Sand Berm Construction section shall include, but is not limited to, the following items:

- Construction schedule
- List of plant and equipment to be utilized
- Plant, equipment and barge staging locations as applicable
- Proposed locations for offload barge, booster pumps, and pipelines
- Concurrence that plant and equipment shall be marked and lighted according to USCG regulations
- Sediment control plan detailing proposed methods for managing sediment along the interior of the sand berm
- Turbidity control plan
- Acceptance segment layout

1.5.2 Daily Report – Sand Berm Construction

Contractor shall prepare and maintain a Daily Report and furnish copies daily to Engineer. A copy of the form prescribed for recording the required information and any further instructions on the preparation of the Report will be furnished prior to the pre-construction meeting. Contractor shall also furnish the following items to Engineer as requested during dredging operations:

- Estimated daily quantity of placed dredged material.

- Sand berm area stationing within which dredged material is being placed.

1.5.3 Surveys

Refer to Section 531 Construction Surveying – Geotube Revetment for surveying submittals and details.

1.6 Order of Work

Sand berm construction operations shall be performed in a continuous and orderly manner. Sand berm construction shall proceed in such a manner that effluent from hydraulic placement operations does not exceed turbidity requirements of the project permits, as described in Section 506 Turbidity Control and Environmental Protection.

The Work for the sand berm shall proceed in sand berm construction acceptance segments of no less than 250 feet in length. Contractor may submit a different acceptance segment length from the Engineer for approval.

Sand berm construction shall only occur along already constructed and accepted geotubes segments. The sand berm construction shall also lag behind the geotube construction as stated in Specification Section 502.

There is not a required station or direction to begin sand berm construction. However, Contractor shall consider existing water bottom elevations, seasonal water levels and weather conditions, and pumping distances when completing their Work Plan.

1.7 Acceptance

The sand berm acceptance sections will be accepted by the Engineer once the constructed sand berm achieves compliance with the lines, grades, elevations and tolerances shown in the Plans and Construction Specifications. Acceptance will be based on the sand berm construction progress surveys a minimum of seven (7) calendar days after fill placement. The Owner or Engineer may require the Contractor to fill any deficient sand berm sections to the minimum template elevation.

Acceptance segments shall be no less than 500 feet in length along the sand berm alignment. The volume contained in each segment shall be calculated if the progress survey elevations are accepted by the Engineer. Volume calculations shall be submitted to the Engineer for verification.

A limitation of the 7-Day minimum requirement for sand berm progress surveys is that the fill must support a survey rod with a 6-inch diameter disk without the survey rod sinking more than three (3) inches below top of grade prior to progress surveys for acceptance. Sand berm segments may not be surveyed for acceptance until this requirement is met unless otherwise approved by the Engineer.

Work before Final Payment is released shall include the removal of all Contractor equipment, all markings and stakes placed by Contractor for the control of their Work, and clean-up of all trash and debris from the Site and all areas affected by Contractor's operations.

1.7.1 Tolerance

Prior to acceptance of a segment section, unless otherwise accepted by the Engineer, sand berm fill placement must be within a vertical tolerance of one-half foot above or below the fill template (±0.5') – subject to a minimum of 95% of the design volume between pay profile transects. Any material placed more than 0.5 feet above the template may be left in place at the discretion of the Engineer; however, this material will not be included in the pay quantities.

Unless otherwise accepted by the Engineer, sand berm fill placement slopes above MSL must be between a 1V:5H slope and 1V:3H slope. Any material placed shallower than 1V:5H may be left in place at the discretion of the Engineer; however, this material will not be included in the pay quantities.

Compensatory slope adjustments below MSL shall be utilized for sand berm fill placement below MSL as described in these specifications.

Payment will be authorized only for sand placement (a) within the fill template plus tolerances (±0.5'), (b) for slope tolerances above MSL as described in these specifications, and (c) for compensatory slope adjustment below MSL as described in these specifications. The Owner or Engineer will be authorized to require the Contractor to refill any deficient segment of sand berm to at least meet the template within the vertical tolerances. The Owner will withhold payment for those segments of sand berm (segments between pay profiles) which do not meet the minimum fill requirement until the appropriate fill placement, grading, and shaping have been completed by the Contractor.

1.8 Measurement and Payment

1.8.1 Measurement

Measurement for Contract Item No. 208 – Sand Berm Construction shall be based on the calculated difference between the pre-construction surface and construction progress surface, minus the volume of material placed outside of the template.

These computations shall be completed in AutoCAD Civil3D software, using the TIN volume surface methodology for comparing two separate TIN surfaces.

The Contractor shall perform volume computations, and payment will be based on the quantities calculated. The Engineer will independently compute volumes to verify quantities and use other calculation methods as needed. The volumes calculated by the Engineer and independent surveyor must be within five percent (5%) before payment is approved by the Engineer.

Using AutoCAD Civil3D, the pre-construction surface will be constructed with the pre-construction survey data, and will include the as constructed and surveyed geotubes and revetment. The construction progress surface shall be constructed with the up-to-date process survey data. The bay-side fill edge is the location where the fill meets the revetment. The interior edge of the fill template is along the working points shown on the Plans at the toe of the 1V:5H fill slope. The pre-construction surface will be compared to the construction progress surface to calculate the gross fill volume, and placement volumes outside the fill template and tolerances shown on the Plans and these Specifications will be deducted from the gross fill volume to calculate the payment (net) volume.

Separate volume calculation methodologies, such as the average end area method, shall only be used as approved by the Engineer.

The Engineer reserves the right to perform Quality Assurance Surveys, at the expense of the Owner or Engineer, to verify survey results. The Quality Assurance Surveys may also be completed along transects that differ from the pay survey transects, to ensure that the sand berm elevation is within the acceptable vertical tolerance across the entire sand berm area. In addition, the Engineer may complete LiDAR surveys of the completed sand berm to determine if any part of the sand berm is grossly outside the acceptable vertical tolerance. Quality Assurance survey data shall be provided to the Contractor upon request.

If the Contractor elects to excavate material within the sand berm template to construct temporary containment or training dikes, there shall be no additional payment for volume placed to fill the excavated areas. In other words, measurement will be based on the calculated difference between the pre-construction survey performed prior to any excavation, and progress surveys.

1.8.1.1 Compensatory Slope Adjustment

Below MSL the Contractor will make their best effort to place the material to the design slope of the placement section. A modified compensating slope will be utilized for measurement and payment of material placed below MSL; the Contractor will be paid for all material placed between a vertical line struck through the intersection of the design template and the MSL and a vertical line struck through the intersection of the design toe of slope and the existing water bottom, provided that the total quantity for the individual section is not greater than 110% of the design quantity for the section. Contractor will ensure that at least 90% and no greater than 110% of the design volume in CY/LF is placed at each station. If the material placed within allowable template is below 90% of the CY/LF of the design volume the Contractor may be required to return to that station and place additional material. If the material placed within the allowable template plus tolerances exceeds 110% of the design volume in CY/LF, the Contractor shall not be paid for the overage above 110%.

1.8.2 Payment

Payment for sand berm construction shall be at the Contract Unit Price for Contract Item No. 208 – Sand Berm Construction. Price and payment shall constitute full compensation for furnishing all plant, equipment, labor, materials, tools, incidentals, and completing sand berm construction operations for satisfactory placement of the dredged or imported material within the sand berm template and performing all Work as specified herein. There will be no payment for placing quantities in excess of the lines, grades, elevations shown in the Plans and/or stated in the Specifications except as stated here.

The total payment quantity for Contract Item No. 208 – Sand Berm Construction shall not exceed the extended proposal price unless otherwise approved by Owner. If the calculated sand berm area volumes based on the pre-construction surveys are different than the calculated design sand berm volumes shown on the Plans, Engineer and Owner reserve the right to modify the layout or target elevation/tolerance such that the total payment quantity does not exceed the extended price.

1.8.3 Partial Payments

The Contractor may request partial payments on a monthly basis. The quantity of placed material included in the partial payment shall be determined by the progress surveys as described in Section 531 Construction Surveying – Geotube

Revetment, for the sand berm areas that are submitted by the Contractor and approved by the Engineer.

Part 2 Products

2.1 Imported Fill

Fill material for sand berm construction shall be imported from an Engineer approved source (Specifications Section 509 Imported Fill).

Part 3 Execution

3.1 Placement of Sand Berm Fill material

3.1.1 General

The sand berm fill material shall be deposited by hydraulic pipeline or mechanically in the sand berm placement area sections to the lines, grades, and elevations indicated in the Contract Documents. Discharge of hydraulic dredge material slurry will only be allowed within the sand berm fill area defined by working points as shown on the Plans. To the extent practical, the fill placement must be uniform with minimal ridges, humps, or depressions. The Contractor may construct internal training dikes, at their discretion, at locations within or immediately surrounding the sand berm fill area. Spreader and pocket pipe or other measures may be used as necessary to prevent gullying and erosion.

3.1.2 Staking

Grade stakes shall be installed and accepted by the Engineer along the sand berm alignment in accordance with Section 531 Construction Surveying – Geotube Revetment prior to the start of sand berm construction operations.

3.1.3 Containment of Discharge and Fill Material

During hydraulic placement operations, the sand berm area shall be contained as necessary such that the location, rate, and contents of the effluent from sand berm construction can be controlled by the Contractor so that at no time shall sediment be transported bayward of the revetment. This shall include any mud-waving which may occur, such that the mud-wave remains on the interior of the geotubes and sand berm area.

The Contractor shall install a baffle (diffusion) plate, spreader pipes, pocket pipes, or other approved apparatus to the discharge end of the pipeline (as necessary) that allows for precise control of the placement of the hydraulic fill material and increases the settlement rate of the material to the maximum extent possible.

3.1.3.1 Temporary Containment

Contractor may construct temporary containment or training dikes as necessary along the interior of the sand berm alignment or within breakwater gaps to control fill placement. Means and methods for providing temporary containment shall be determined by the Contractor and submitted in the Work Plan to be approved by the Engineer. Temporary containment within breakwater gaps may remain in place post-construction if incorporated into the work within lines, grades, and elevations. Responsibility and cost for maintenance of temporary containment and training dikes shall be born by the Contractor at no additional cost to the Owner. Payment for temporary containment measures shall be included in the Contract Unit Price for Contract Item No. 208 – Sand Berm Construction.

If the fill material does not stack sufficiently to allow the sand berm interior slope to be within tolerance, then temporary training dikes or containment may be required to achieve the acceptable sand berm template.

Contractor alone is responsible for losses of material in areas with no containment, or areas with temporary containment, and this should be accounted for in the Contract Unit Price for Contract Item No. 208 – Sand Berm Construction.

If the revetment or geotubes settle prior to sand berm construction such that there is insufficient freeboard, then the Contractor shall control the hydraulic placement to minimize losses over the low areas in the revetment. This may include temporary placement of material (sourced from the interior of the sand berm on top of the revetment to provide containment. Any material placed on top of the revetment shall be degraded and placed interior of the revetment and graded level prior to final acceptance unless otherwise directed by the Engineer.

3.1.3.2 Effluent and Turbidity Control

All attempts should be made to control the dredge effluent in a manner that requires the effluent water to travel a sufficient distance to increase sedimentation within the sand berm areas and to minimize turbidity of the effluent prior to returning to the exterior body of water. The Contractor shall work to minimize the

loss of fines from the sand berm construction to minimize the turbidity in surrounding waters. Contractor shall comply with the terms and conditions of Environmental Permits (Appendix B) as applicable. Turbidity monitoring shall be completed by the Contractor and Engineer as stated in Specification Section 506 Turbidity Control and Environmental Protection.

3.1.4 Improperly Placed Fill Material

The requirements and methods of dredged material placement for this Contract have been planned in accordance with Environmental Permits (Appendix B) obtained for the scheduled Work. Any material that is deposited other than in locations designated or in a manner not approved by Engineer is in violation of the Environmental Permit. Additionally, Contractor may be required to remove such misplaced material and deposit it where directed by Engineer at no additional cost to the Owner. Contractor will be required to compensate Owner for any costs, fines or other expenses related to permit violations resulting from Contractor negligence in complying with permits for the Project.

3.1.5 Pipeline Markings

The Contractor shall provide, as a part of their overall Work Plan for approval, drawings showing locations of temporary alignment routes of pipelines, placement of booster pumps if used in the work, and proposed location of temporary ramps (to be constructed by the Contractor) over the pipeline for construction access if necessary. All plant, equipment, and pipeline shall be marked and lighted in accordance USCG regulations. Any deviation from the approved plan will require approval in writing from the Engineer.

3.2 Field Quality Control

The Contractor shall establish and maintain quality control for the sand berm construction work, and other operations in connection with the work in the field to assure compliance with the Contract. Contractor shall inspect for compliance with Contract requirements and record the inspection of all operations including but not limited to the following:

A. Sand berm construction operations are confined within the limits of the designated work area.

B. Adequate control is provided to prevent unnecessary loss of material either towards the bay or the interior of the site via flow and to ensure that the construction activity does not violate project permits.

C. The pipeline is periodically inspected for leakage as specified.

D. All joints of the discharge pipeline are tight, sound, and in a safe condition.

E. All equipment used in the Work is approved and in satisfactory working condition.

F. Checks to ensure safe work practices around structures and the public are performed at all times as specified.

G. Checks conducted for proper lines, grades, and elevations in finished sand berm area including proper grading and elimination of undrained pockets and abrupt humps.

H. Ensure all equipment and construction materials have been removed from completed Work segments.

I. All results of inspections shall be documented with video tapings, narrative explanations and photographs as necessary to document the conditions of field quality. The results and supporting data shall be recorded and provided by the Contractor in the Daily Report of Operations.

3.3 Data for Engineer's Project Completion Report

A project completion report may be completed by Engineer after completion of the construction activities. Data required for the report shall be provided by Contractor to Engineer, and may include, but not limited to the following information.

1. a narrative discussing the construction sequences and activities, and, if applicable, any problems encountered and solutions.

2. a list and description of any construction Change Orders issued, if applicable.

3. a list and description of any safety-related issues or accidents reported during the life of the Project.

4. a table listing significant construction dates beginning with request for proposals and ending with final acceptance of the Project.

5. digital data including the as-built drawings, and survey data.

6. any additional pertinent data or information.

Data shall be provided to Engineer within 14 calendar days of any request by Engineer.

-- END OF SECTION --

SECTION 531

CONSTRUCTION SURVEYING – GEOTUBE REVETMENT

Part 1 General

1.1 Scope

The Work covered by this Section consists of furnishing the Submittals, labor, materials, plant, equipment, tools, skills, services, and incidentals, and performing operations required for performing topographic, hydrographic, and magnetometer construction surveying.

Work to be performed pertaining to this Section within the Site and includes:

- Pre-Construction surveys
- Construction Progress surveys
- Post-Construction surveys

1.2 Definitions

See General Conditions of the Contract.

1.3 References

The publications listed below form a part of this Specification to the extent referenced.

EM 1110-2-1003(2013) Hydrographic Surveying Manual; Change 1 2004

1.4 List of Surveys

1.4.1 General

Pre-construction surveys are required to be conducted prior to the commencement of Work. Pre-construction surveys should be completed within thirty (30) calendar days after the pre-construction meeting, and prior to the start of work on site.

Construction progress surveys are required for progress surveys, acceptance, measurement, and also for the layout and staking of the Work to be completed.

Post-construction surveys include as-built surveys of the completed Work.

The Engineer reserves the right to perform Quality Assurance Surveys, at the expense of the Owner, to verify survey results.

1.4.2 Pre-Construction Surveys

Pre-construction surveys shall be performed of the geotubes areas, revetment areas, sand berm construction areas, northern dike construction area, northern dike borrow ditches, imported fill source (if USACE Disposal Area), and dredge pipeline corridors.

1.4.3 Construction

Construction progress surveys shall be completed as-needed for the geotubes, riprap armor stone, sand berm, northern dike, weir box, and the northern dike borrow ditches for acceptance and measurement for payment applications.

Construction progress surveys for layout of the Work and staking shall be performed in accordance with Paragraph 3.4.2.1 of this Specifications Section.

1.4.4 Post-Construction Surveys

As-built surveys shall be completed for the revetment, sand berm, northern dike, imported fill source (if USACE Disposal Area), and weir box.

1.5 Submittals

Submit the following in accordance with Section 504 Submittals:

A. Work Plan – Construction Surveying Section

B. Daily Report – Construction Surveying Section

C. Engineer Notification at least 3 calendar days prior to surveys

D. Pre-Construction Surveys (Data and Survey Report)

E. Progress Survey(s) (Data and Survey Report)

F. Geotube Staking Surveys (Data only)

G. Revetment Staking Surveys (Data only)

H. Sand Berm Staking Surveys (Data only)

I. Northern Dike Staking Surveys (Data only)

J. Weir Box Staking Surveys (Data Only)

K. As-Built Survey (Data and Survey Report)

Survey submittals shall be provided to Engineer within ten (10) calendar days after completion of the survey.

1.5.1 Work Plan

Contractor shall submit a Survey Plan as part of the overall Work Plan, including but not limited to:

- Proposed surveying transects
- Proposed sand berm acceptance segments
- Proposed northern dike acceptance segments
- Methodology for surveying the geotubes
- Methodology for surveying the revetment
- Methodology for surveying the sand berm
- Methodology for surveying the northern dike
- Methodology for staking (materials, elevation markings)
- Methodology for correcting for tidal fluctuations and vessel pitch, roll and heave in hydrographic surveys
- Name and Affiliation of Independent Professional Land Surveyor (licensed professional) registered in the State of Alabama to be used on the Project

1.6 Survey Drawings

Plan-view and cross-section plots shall be provided with Survey Report Submittals. Survey Submittals shall be clear, legible, and well organized. Drawings not meeting the requirements of these Specifications will be rejected, which may cause delays in payment to Contractor. Construction Progress Survey Submittals shall accompany monthly payment applications. Survey data shall be referenced to the project coordinates and datums shown on the Drawings and referenced within

these Specifications. All plots shall contain title blocks and clearly display the following information:

A. Project name

B. Professional Land Surveyor's seal, signature, and affiliation

C. Date(s) survey was performed

D. Location and description of survey control

E. Location and description of submerged and/or underground hazards or obstructions

F. Vertical and horizontal datums

G. Sheet numbers

H. Name of Contractor

I. Drawing scale(s)

J. Transducer frequency (as applicable)

K. Description of submittal

1.7 Quality Assurance

Prior to commencing surveying activities, Contractor shall provide Engineer a Survey Plan as part of the overall Work Plan that coordinates surveying activities with construction sequence.

All survey plots submitted shall be certified by an independent Licensed Professional Land Surveyor (licensed professional) registered in the State of Alabama and employed by a firm registered to perform land surveys in the State of Alabama. Prior to commencing surveying activities, Contractor shall provide name and affiliation of licensed professional surveyor to be used on the Project.

For hydrographic surveys, the transducer frequency used for all surveys shall be consistent. All hydrographic surveys must be corrected for tidal fluctuations, waves, yaw, pitch and roll of the boat during the survey.

Survey Submittals shall be corrected to the horizontal and vertical datums listed in these Specifications and shown on the Drawings.

1.8 Notification prior to Commencement of Surveying Activities

Contractor shall notify Engineer in writing at least three (3) calendar days prior to the commencement of surveying activities so that Engineer or Resident Project Representative may have the opportunity to accompany the survey crew and witness the Work.

1.9 Measurement and Payment

Costs associated with the Work for construction surveying shall be included in the Contract Lump Sum Price for payment of Contract Item 202 – Construction Surveying. For each monthly pay application, Contractor shall estimate the percent of the lump sum survey cost that has been completed. Engineer shall review this percentage when reviewing the monthly pay application. Engineer reserves the right to adjust the percentage as they see fit. Price and payment shall constitute full compensation for furnishing all plant, equipment, labor, materials, tools, and incidental for complete construction surveying operations and performing all Work as specified herein. There shall be no additional payment for duplicate surveys that are required by the Engineer due to not meeting these specifications or if the relevant Work item was not accepted and is required to be resurveyed.

1.9.1 Partial / Progress Payment

The Lump Sum Contract Item 202 – Construction Surveying will be paid according to the estimated percentage of Work completed. This amount shall be full compensation for completed in-place Work. For each Application for Payment, the Contractor shall estimate the percent of the Lump Sum Price that has been completed. The Engineer shall review this percentage when reviewing the monthly Application for Payment. The Engineer reserves the right to adjust the percentage as they see fit.

Part 2 Products

Not Used.

Part 3 Execution

3.1 Coordinates and Datums

Survey data shall reference the North American Datum of 1983 (NAD 83), Alabama West Zone, U.S. Survey Feet for horizontal control, and the North American Vertical Datum of 1988 (NAVD 88), with orthometric heights calculated using Geoid 12A, U.S. Survey Feet for vertical control.

Horizontal and vertical control shall be established with a temporary benchmark, or as otherwise approved by Engineer. Survey control shall be described in Contractor's Work Plan. Costs for setting the temporary benchmark shall be included in the Contract Lump Sum Price for Contract Item 202 – Construction Surveying.

3.2 Survey Data Format

Hydrographic survey data shall be provided in a text file, with Easting, Northing, and Elevation.

Topographic survey data shall be provided in a text file, with Point number, Northing, Easting, Elevation, and Description (PNEZD) formatting. The point description shall be one of the following:

A. Center of crest (geotubes, revetment, northern dike, and sand berm)

B. Crest (geotubes, revetment, northern dike, and sand berm)

C. Edge of crest (geotubes, revetment, northern dike, and sand berm)

D. Borrow Bottom (northern dike borrow ditches)

E. Side slope (revetment, northern dike, sand berm, and northern dike ditches)

F. Toe of slope (geotubes, revetment, northern dike, and sand berm)

G. Top of Slope (northern dike borrow ditches)

Failure to properly label survey points will result in Engineer requiring Contractor to re-survey, at no additional cost to Owner.

Survey data files shall have at minimum the project name, construction phase, survey area, survey type and survey date in the file name, for example:

- UpperMobileBay_PreConstruction_Revetment_Hydro_2027-01-16.txt
- UpperMobileBay_Progress_Revetment_Topo_2027-01-25.txt

3.3 Survey Equipment and Accuracy

Surveys shall be conducted by real-time kinematic global positioning system (RTK GPS). A sufficient number of points shall be taken along the survey transects to accurately represent the general shape and average trend of the constructed lines and grades. Transect intervals are specified for each project feature. Point spacing requirements vary as detailed in this and other Specifications sections. Point spacing shall be discussed in Contractor's Survey Plan.

Contractor shall maintain RTK GPS survey equipment and personnel with operating knowledge of the equipment on site at all times throughout the completion of the Work so that spot checks of Work can be completed as directed by the Engineer or Resident Project Representative.

3.3.1 Topographic Surveys

Topographic survey equipment shall have a minimum vertical and positional accuracy of one-tenth (0.1) of a foot. A six (6) inch diameter metal plate shall be attached to the bottom of a survey/stadia rod weighing no greater than 8 pounds to prevent the rod from sinking below ground level. Hydrographic and topographic surveys shall overlap by a minimum of 25 feet at all interfaces between land and water. Where hydrographic survey equipment is not feasible for use in shallow water depths, topographic survey methodology shall be used to survey the water bottoms.

LiDAR technology may not be used for surveying unless specifically written in this Specification or otherwise approved by the Engineer on a case-by-case basis.

3.3.2 Hydrographic Surveys

Hydrographic survey equipment shall have a minimum vertical accuracy of one-tenth (0.1) of a foot ± 0.1% of depth and a minimum horizontal accuracy of one-tenth (0.1) of a foot. Hydrographic surveys collected on board vessels must be differentially corrected to the referenced datum for tidal fluctuations and vessel

pitch, roll and heave. Hydrographic and topographic surveys shall overlap by a minimum of 25 feet at all interfaces between land and water.

3.3.3 Magnetometer Surveys

Magnetometer survey equipment shall have a minimum accuracy of 3 gammas throughout its operational range.

3.4 Survey Timing and Performance

3.4.1 Pre-Construction Surveys

Pre-construction surveys shall be completed within the imported fill source (if USACE Disposal Area), geotube and revetment construction area, sand berm construction areas, northern dike construction areas, northern dike borrow ditches, dredging pipeline corridors, and any specified overlap. The pre-construction survey shall include hydrographic surveys, topographic surveys where required due to water depth, and magnetometer surveys.

Pre-construction hydrographic, topographic, and magnetometer surveys shall be used to verify the existing conditions of the placement areas and borrow areas prior to construction and as a baseline for comparison to construction progress surveys for acceptance. Drawings of the plan views and sections shall be developed from this survey by Contractor and provided to Engineer as part of the Survey Submittal. The potential hazards or obstructions shall be plotted on the initial Survey Drawing Submittal. Engineer or Owner shall not be held responsible for any damage to Contractor's equipment or other losses incurred by Contractor due to impacts with obstructions not identified from the pre-construction survey. Obstructions identified by Contractor shall be probed and appropriately marked throughout construction according to United States Coast Guard (USCG) standards.

Pre-construction surveys shall be performed no more than thirty (30) calendar days prior to start of construction.

3.4.1.1 Northern Dike Borrow Ditches

Pre-construction hydrographic and magnetometer surveys of the northern dike borrow ditches shall provide one hundred foot (100 ft) minimum spaced cross-sections. The surveyed elevation points across the cross-section shall not exceed

ten foot (10 ft) spacing and the width of the cross-sections shall extend fifty feet (50 ft) beyond entire width of these excavation areas.

3.4.1.2 Northern Dike

Pre-construction hydrographic and topographic surveys of the sand berm, and northern dike construction areas shall be along the alignment of the relevant feature as shown in the Drawings. Transects shall be one hundred foot (100 ft) minimum spaced cross-sections along the alignment shown in the Drawings. Surveyed transects shall extend one hundred feet (100 ft) past the interior toe of the sand berm to one hundred feet (100 ft) past the exterior toe of the breakwaters. For the northern dike and northern dike borrow ditches one set of surveys shall be submitted that encompasses both areas and extends fifty feet (50 ft) passed the upper slope of the northern dike borrow ditches.

3.4.1.3 Geotubes/Revetment and Sand Berm

The geotube, revetment, and sand berm construction area shall be surveyed at transects located every fifty feet (50 ft) along the alignment. Revetment progress surveys shall extend at least twenty feet (20 ft) from the toe of the revetment. Point spacing shall be as detailed in this and other specifications sections or at grade changes greater than three inches (3”). Contractor must ensure that the surveyor records the point descriptions specified in Paragraph 3.2 of this Specification for survey submittals to be approved.

Construction progress surveys of the revetment shall be performed no earlier than one (1) Day following placement, but no more than ten (10) calendar days after the completion of the revetment.

3.4.1.4 Imported Fill Site

If the Contractor is importing fill from an USACE Disposal Area, a pre-construction LiDAR survey shall be conducted of the entire disposal area prior to the commencement of Work. Additionally, Contractor shall document the state of the disposal area, access roads, and pipeline corridors extensively through photographs and videos prior to starting Work. A representative of the USACE, the Owner, and/or the Engineer may wish to conduct a site walkthrough with the Contractor when photographs are taken. This should be coordinated during the pre-construction meeting.

3.4.2 Construction Progress Surveys

Progress surveys of the Work shall be completed and submitted with Applications for Payment. Progress surveys shall be used to track construction progress for payment of Contract Items. Progress surveys shall include topographic surveys of completed geotubes, revetment and sand berm dikes. Data collected during progress surveys shall not be considered as part of the as-built survey unless otherwise approved by the Engineer. Owner shall not be liable if a storm or damage impacts the site between completion of the Work and the accepted progress survey performance date. Survey drawings with plan views and sections shall be developed for progress surveys and provided to Engineer as part of the Application for Payment.

3.4.2.1 Staking Survey

Prior to commencement of geotubes, revetment, sand berm, northern dike, and weir box construction, stakes shall be installed in order to verify and adjust alignments if deemed necessary by Engineer. Contractor shall survey the locations of each stake and provide the locations to the Engineer.

Staking may be staged with actual progress of Work contingent upon Engineer's review of Contractor's Work Plan.

The Contractor shall install grade stakes within each relevant work area to monitor fill elevations and extents. The staking shall clearly indicate the design elevations, lines, grades, and tolerances of the relevant work feature. The staking shall be embedded at least five feet (5 ft) into the water bottom at a depth sufficient to resist the stakes being moved by fill material placement, weather, or tides. The grade stakes shall be surveyed and maintained throughout construction to ensure that fill material is placed at the correct elevations. The minimum required locations stakes are to be installed are the coordinates provided in the coordinate tables on the Drawings. Contractor may proposed additional stakes as they deem necessary for successfully completing the Work in accordance with the Drawings and Specifications. The Contractor may remove the staking upon acceptance of the relevance acceptance segment. The Contractor shall be responsible for removing all staking after construction is completed.

3.4.2.2 Geotubes

The geotubes shall be surveyed at transects located every fifty feet (50 ft) along the alignment of the geotubes. Geotube progress surveys shall extend at least twenty feet (20 ft) from the toe of each side of the breakwater. Point spacing shall be as detailed in this and other Specifications sections or at grade changes greater than three inches (3”). Contractor must ensure that the surveyor records the point descriptions specified in Paragraph 3.2 of this Specification for survey submittals to be approved.

Construction progress surveys of the geotubes shall be performed no earlier than one (1) calendar day following placement, but no more than ten (10) calendar days after the completion of each feature.

3.4.2.3 Revetment

The revetment shall be surveyed at transects located every fifty feet (50 ft) along the alignment. Revetment progress surveys shall extend at least twenty feet (20 ft) from the toe of the revetment. Point spacing shall be as detailed in this and other specifications sections or at grade changes greater than three inches (3”). Contractor must ensure that the surveyor records the point descriptions specified in Paragraph 3.2 of this Specification for survey submittals to be approved.

Construction progress surveys of the revetment shall be performed no earlier than one (1) calendar day following placement, but no more than ten (10) calendar days after the completion of the revetment.

3.4.2.4 Sand Berm

The sand berm shall be surveyed at transects located every one hundred feet (100’) along the alignment of the sand berm. Sand berm progress surveys shall extend at least one hundred feet (100’) beyond the toe of the interior side of the sand. Point spacing shall be no greater than ten feet (10’), at grade changes greater than three inches (3”). Contractor must ensure that the surveyor records the point descriptions specified in Paragraph 3.2 of this Specification for survey submittals to be approved.

Construction progress surveys of the sand berm shall be performed no earlier than seven (7) calendar days upon completion of each acceptance segment. In addition to the seven (7) Day period for surveys, the fill must be able to support a survey

rod with a six inch (6”) diameter disk without the survey rod sinking more than three inches (3”) below top of grade prior to progress surveys for acceptance. The sand berm may not be surveyed for acceptance/payment until these requirements are met unless otherwise approved by the Engineer.

3.4.2.5 Northern Berm

Lift 1 and lift 2 of the northern dike shall be surveyed at one transect along the alignment of the northern dike and transects across the northern dike every 400 feet to spot check crest widths. If the northern dike material is in a state that it is not safe for a topographic survey to be conducted along the alignment, LiDAR technology may be utilized upon the approval of the Engineer. The crest elevation of the northern dike must be subaerial at the time of survey for LiDAR technology to be approved by the Engineer. If LiDAR technology is to be used to survey the crest elevation, then topographic or hydrographic points must also be collected every 400 feet along the alignment to confirm material has been placed to the full width of the northern dike.

Construction progress surveys for lift 1 and lift 2 of the northern dike shall be performed no earlier than ten (10) calendar days upon completion of each acceptance segment.

Lift 3 of the northern dike shall be surveyed at transects located every one hundred feet (100 ft) along the alignment of the northern dike. Northern dike lift 3 progress surveys shall extend at least to the bottom of the borrow ditches. Transects may extend to fifty feet (50 ft) beyond the borrow ditches so that the transects may serve as both northern dike and northern dike borrow ditches progress surveys. Point spacing shall be no greater than ten feet (10 ft) and at grade changes greater than three inches (3”). Contractor must ensure that the surveyor records the point descriptions specified in Paragraph 3.2 of this Specification for survey submittals to be approved.

Construction progress surveys for lift 3 of the northern dike shall be performed no earlier than ten (10) calendar days upon completion of each acceptance segment. In addition to the ten (10) Day period for surveys, the fill must be able to support a survey rod with a six inch (6”) diameter disk without the survey rod sinking more than three inches (3”) below top of grade prior to progress surveys for acceptance. The northern dike may not be surveyed for acceptance/payment until these requirements are met unless otherwise approved by the Engineer.

3.4.2.6 Weir Box

Once the weir box is installed, a survey shall be performed to record the invert elevations and the pipe locations to inform the shop drawings.

3.4.3 Post-Construction Surveys

After construction is complete, an as-built survey of the geotubes, revetment, sand berm, northern dike, northern dike borrow ditches, local borrow area (if utilized), and imported fill site (if an USACE Disposal Area) shall be performed. The as-built surveys shall be performed no more than thirty (30) calendar days after completion of the Work, or as otherwise approved by Engineer.

Final payment will not be received by Contractor until the post-construction survey is completed and accepted by Engineer. Post-construction survey transects shall reoccupy pre-construction transects. Minimum spacing of transects, maximum spacing of survey points, and extents of transects shall be as defined above for pre-construction and progress surveys. The imported fill site, if an USACE Disposal Area, shall be surveyed with LiDAR technology. Photographs or a final walkthrough of the imported fill site may be required at the direction of the Owner or Engineer.

-- END OF SECTION --

SECTION 532

GEOTUBES

Part 1 General

1.1 Scope

The Work covered by this Section consists of furnishing all submittals, labor, materials, plant, equipment, transportation, testing, quality control, and incidentals necessary to design, supply, install, fill, protect, survey, and complete the Geotube System shown on the Plans. Conformance to environmental protection, public safety and navigational conditions per the permits (Appendix B) and applicable regulations is included. All work shall be performed in accordance with the Federal and State permits issued for the project, as well as the United States Coast Guard (USCG) regulations.

The Geotube System consists of two (2) geotextile tubes having a nominal circumference of thirty feet (30') placed side-by-side as the bottom course and one (1) geotextile tube having a nominal circumference of thirty feet (30') placed on top of the lower tubes as the upper course. The completed system shall conform to the overall width and elevations indicated on the Plans.

The Contractor shall be solely responsible for selecting the geotube manufacturer, geotube product, filling methodology, seams, closure systems, ports, installation techniques, and all other means and methods necessary to provide a stable and functional geotube system that meets the requirements of these Specifications.

A rock riprap revetment will be constructed on the bayward side of the Geotube System. The Contractor shall be responsible for protecting the geotubes from puncture, tearing, abrasion, and damage during placement of the rock riprap revetment.

1.2 Definitions

See General Conditions of the Contract.

- Geotube System: a tubular geotextile containment system filled with hydraulic or mechanical fill material and installed in the configuration shown on the Plans.

- Protective Layer: A geotextile, cushion layer, sacrificial layer, bedding layer, or other protective material installed to prevent puncture of damage to the geotubes during construction.

1.3 References

The latest edition of the following standards shall apply:

GRI Test Method GT10, "Test Methods, Properties and Frequencies for High Strength Geotextile Tubes used as Coastal and Riverine Structures."

GRI Test Method GT11, "Installation of Geotextile Tubes used for Coastal and Riverine Structures."

GRI Test Method GT12(a), "Test Methods and Properties for Nonwoven Geotextiles used as Protection (or Cushioning) Materials."

Where conflicts exist between the referenced standards and these Specifications, the requirements of these Specifications shall govern.

1.4 Character of Materials

Appendix A, "Geotechnical Report", contains subsurface information from within the Sunflower DA. Contractor shall review the geotechnical information and understand how the character of those materials may affect the filling of the geotubes. If at any time during dredging and geotubes filling operations the dredge material varies significantly from the representative soil samples collected from the borrow area borings, then Contractor shall immediately notify Engineer via phone and email.

1.5 Submittals

Submit the following in accordance with Section 504 Submittals:

- Work Plan – Geotube section
- Surveys (Section 531 Construction Surveying – Geotube Revetment)
- Daily Report – Geotube Construction section
- Geotube manufacturer product data
- Geotube material specifications
- Quality control testing documentation
- Manufacturer installation guidelines

- Geotube layout drawings
- Geotube seam details
- Proposed puncture protection system

1.5.1 Work Plan – Geotube

Within seven (7) calendar days of the pre-construction meeting, Contractor shall provide a Geotube System Plan to Engineer as part of the overall Work Plan. The geotube section shall include, but is not limited to, the following items:

- Geotube manufacturer and product name
- Geotubes geometry and fill sequence
- Geotube filling procedures
- Fill material characteristics (if not utilizing the pre-approved USACE Disposal Area)
- Anticipated fill pressures
- Seaming and closure procedures
- Survey procedures
- Proposed methods for preventing puncture of damage during riprap placement
- Repair procedures for damaged geotubes
- Proposed equipment and construction sequencing
- Construction schedule
- List of plant and equipment to be utilized
- Proposed locations for offload barge, booster pumps, and pipelines
- Concurrence that plant and equipment shall be marked and lighted according to USCG regulations
- Acceptance segment layout

1.5.2 Proposed Protection Plan

As part of the Work Plan section, the Contractor shall submit a Geotube Protection Plan describing the methods used to prevent puncture, abrasion, tearing, or impact damage to the geotubes during rock placement operations. The Geotube Protection Plan shall include:

- Proposed protective materials
- Thicknesses and placement methods

- Rock placement procedures
- Maximum drop heights
- Equipment to be utilized
- Repair procedures

1.5.3 Daily Report – Geotube

Contractor shall prepare and maintain a Daily Report and furnish copies daily to Engineer. A copy of the form prescribed for recording the required information and any further instructions on the preparation of the Report will be furnished prior to the pre-construction meeting. The Daily Report shall include but is not limited to:

- Description of geotube work performed that day
- Estimated daily quantity of material placed within the geotube
- Geotube area stationing within which installation is taking place.

1.5.4 Surveys

Refer to Section 531 Construction Surveying – Geotube Revetment for surveying submittals and details.

1.6 Order of Work

The Geotube System shall be constructed in a continuous and orderly manner.

The Contractor shall first install the geotextile under the proposed geotube and revetment footprint. Then, install two lower geotubes and fill them to the extent necessary to achieve the design section shown on the Plans. Following installation and acceptance of the lower geotubes, the Contractor shall install and fill the upper geotube.

Placement of the rock riprap revetment or sand berm shall not begin until the Engineer has accepted the geotube installation and approved the Contractor's proposed puncture protection measures..

1.7 Acceptance

Each geotube shall be accepted by the Engineer when:

- The geotube has been installed within the plan alignment limits shown on the Plans. The horizontal tolerance is ±2.0 ft (2.0').

- The geotube has a fill height of five feet (5.0') with a vertical tolerance of ±0.5 feet (0.5').

The overall geotube system will be accepted by the Engineer when:

- The completed system achieves the required lines, grades, and elevations shown on the Plans.
- The overall height of the geotube system is ten feet (10.0') with a vertical tolerance of ±0.5 feet (0.5').
- All required testing and submittal requirements have been satisfied.
- Any damaged areas have been repaired.
- The Contractor has demonstrated that the system remains functional following riprap and sand berm placement.

Acceptance shall be based on the geotube construction progress surveys. Localized deficiencies, misalignment, excessive deformation, damage, or inadequate fill shall be corrected by the Contractor at no additional cost to the Owner.

Work before Final Payment is released shall include the removal of all Contractor equipment, all markings and stakes placed by Contractor for the control of their Work, and clean-up of all trash and debris from the Site and all areas affected by Contractor's operations.

1.8 Measurement and Payment

1.8.1 Geotube Measurement and Payment

Measurement for Contract Item No. 205 – Geotube shall be based on the surveyed and accepted linear feet of geotubes installed along the alignment shown in the Plans. Measurement is per linear feet per tube. Measurement is not based on the nominal length of geotube installed.

Ninety percent (95%) of the Contract Unit Price per linear foot of geotube shall be paid upon individual geotube acceptance. The remaining ten percent (5%) shall be paid upon demonstration that the geotube system remains functional following riprap and sand berm placement.

No separate payment will be made for puncture protection systems, repair activities, settlement-related adjustments, additional fill required to achieve design geometry, or replacement of damaged geotubes.

1.8.2 Woven Geotextile Measurement and Payment

Any associated costs incurred by the Contractor for procurement, transport, and installation of this item should be included within the Contract Unit Price for Contract Item No. 207 – Geotextile. The estimated quantity given on the Schedule of Prices and Plans is the total length of the geotube feature multiplied by a geotextile width of sixty feet (60'). Where curves are present in the overall feature, the outside dimension is used for length measurement. Measurement for payment will be completed using the same method.

The Contractor shall determine the actual quantity of geotextile required for procurement, including all necessary overlaps, seams, and geotextile extending beyond the geotube and revetment toes. Necessary overlaps, seams, extra length of geotextile extending beyond the breakwater toes, securing pins and associated material, equipment, and operations will not be measured separately for payment. All costs associated with furnishing and installing these materials shall be included in the contract unit price. No payment will be made for geotextiles replaced because of waste, contamination, damage, repair, or due to Contractor fault or negligence.

1.8.3 Partial Payments

The Contractor may request partial payments on a monthly basis. The quantity of placed material included in the partial payment shall be determined by the progress surveys as described in Section 531 Construction Surveying – Geotube Revetment, for the geotube and geotextile areas that are submitted by the Contractor and approved by the Engineer.

Part 2 Products

2.1 Geotextile Tube/Geotube System

The Contractor shall be responsible for selecting and supplying a Geotube System capable of safely accommodating all anticipated installation loads, pumping pressures, seam stresses, stacking loads, settlement, environmental loads, and rock revetment loads associated with the completed revetment section.

Submission of manufacturer product information does not relieve the Contractor of responsibility for the performance of the Geotube System.

2.1.1 Materials

The geotubes system shall be furnished by a manufacturer with a minimum of five (5) years of documented experience in the design and fabrication of geotextile tube containment systems in the coastal environment. Evidence of this shall be documented in the Work Plan.

The geotubes shall be fabricated from a woven or composite geotextile specifically manufactured for hydraulic containment applications. The fabric shall conform to Table 1(a) in the referenced GT10 for “aggressive” conditions. If the manufacturer’s quality control guide is more stringent and the product is certified accordingly, it must be followed in like manner. The geotextile shall be UV stabilized and warranted by the manufacturer for a minimum exposed service life of ten (10) years. Documentation demonstrating long-term resistance to ultraviolet degradation shall be submitted with the product data.

Geotubes shall be factory fabricated and delivered as complete units. Field fabrication of primary structural seams will not be permitted unless specifically approved by the Engineer.

The Contractor shall submit seam construction details, thread specifications, seam strengths, and quality control procedures used during fabrication. The minimum seam strength shall be adequate to withstand all filling and operational loads and shall not be less than 90 percent of the specified wide-width tensile strength of the geotextile.

The Geotubes shall include fill ports of sufficient number, spacing, and size to permit controlled and uniform filling operations. Proposed fill port spacing and details shall be included in the Contractor's submittal package and Work Plan.

2.1.2 Hydraulic Properties

The geotube fabric shall possess hydraulic properties sufficient to permit dewatering while retaining the fill material.

Hydraulic testing shall be performed in accordance with:

- GT10 for water flow rate.

Test results shall be submitted for Engineer review prior to installation.

2.1.3 Submittals

The Contractor shall demonstrate that the selected geotubes system is suitable for the anticipated fill material, filling pressures, installation conditions, foundation conditions, and long-term exposure conditions.

Manufacturing Certificate: All geosynthetics will be accepted on the following basis. At least thirty (30) calendar days prior to installation, the Contractor shall furnish to the Engineer, in duplicates, a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the materials. The certificate shall contain the signer's title, the name and address of the Contractor, the contract number, and the Project name and location. The mill certificate or affidavit shall attest that the materials meet the chemical, physical, and manufacturing requirements in this specification. Accompanying the certificate/affidavit, the Contractor shall submit the test results and a one (1) foot by one (1) foot sample of the geotextile to the Engineer.

2.2 Woven Geotextile for Scour Protection

2.2.1 Materials

The geosynthetic to be placed below the bedding stone (if utilized) or underlayer stone and graded rock riprap revetment shall be Mirafi HP570 or approved equal based on:

- Maximum Apparent Opening Size (AOS) of #30 U.S. Sieve
- Minimum Tensile Strength (at ultimate) in the Material Direction (MD) of 4,200 lbs/ft and in the Cross-Direction (CD) of 4,200 lbs/ft.

2.2.2 Submittals

Manufacturing Certificate: All geosynthetics will be accepted on the following basis. At least thirty (30) calendar days prior to installation, the Contractor shall furnish to the Engineer, in duplicates, a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the materials. The certificate shall contain the signer's title, the name and address of the Contractor, the contract

number, and the Project name and location. The mill certificate or affidavit shall attest that the materials meet the chemical, physical, and manufacturing requirements in this specification. Accompanying the certificate/affidavit, the Contractor shall submit a one (1) foot by one (1) foot sample of the geotextile to the Engineer.

2.2.3 Panel Layout

The Contractor shall include a panel layout in the Work Plan. The Contractor shall allow the Engineer a minimum of seven (7) calendar days for review and approval prior to fabrication of the geotextile panels.

- The geotextile beneath the geotube and graded rock riprap shall have a material (roll) direction oriented parallel to the centerline of the geotubes.

2.3 Cushion and Protection Materials

The Contractor shall determine the need for and type of protective materials required between the Geotube System and the riprap revetment.

Protective materials may include nonwoven geotextiles, geocomposite cushions, sacrificial stone layers, bedding layers, or other Engineer-accepted systems.

If a nonwoven geotextile is proposed as puncture protection, the Contractor shall evaluate and document the cushioning performance of the proposed material using GRI GT12(a) testing and shall demonstrate that the proposed protection system is suitable for the anticipated rock sizes, placement methods, and loading conditions.

2.4 Fill Material

Fill material placed within the geotubes shall be suitable for geotubes filling operations and shall be compatible with the selected geotubes system.

The Contractor shall be responsible for determining any limitations on fill gradation, fines content, slurry concentration, or other parameters necessary for successful filling and dewatering.

Part 3 Execution

3.1 Surface Preparation

Prior to deployment of the geotextile and geotubes, the Contractor shall remove or otherwise address objects that could damage the geotextile, including debris or other obstructions. Raking or combing may be necessary to remove any undesired objects.

3.2 Installation

Install the geotubes in accordance with the approved Work Plan and manufacturer's recommendations.

The Contractor shall establish grade control and alignment control sufficient to construct the Geotube System within the elevations shown on the Plans. No geotubes shall be filled until the tube has been deployed and secured in its intended alignment.

The Contractor shall implement procedures to prevent movement, twisting, flotation, migration, or displacement of the geotubes during filling operations.

The Contractor shall implement means and methods necessary to prevent damage to the geotubes during handling, deployment, filling, and subsequent construction activities.

3.3 Filling Operations

Geotubes shall be filled in a controlled manner to achieve the intended geometry and stability. The Contractor shall fill the geotubes to achieve the cross-sectional configuration shown on the Plans. The bottom geotubes shall provide stable support for the upper geotube without excessive deformation, flattening, or lateral displacement. The final geometry shall be sufficient to support construction of the overlying revetment and adjacent work shown on the Plans.

The Contractor shall monitor filling pressures and filling sequences to prevent overstressing of the fabric or seams.

Overfilling that results in seam damage, distortion, instability, or other defects shall be corrected at no additional cost to the Owner.

Contractor shall follow BMPs given in the Procedure section of GT11.

3.4 Protection During Riprap Placement

The Contractor shall determine and implement appropriate measures to protect the geotubes from puncture, tearing, abrasion, and other damage during placement of the rock riprap revetment.

The proposed protection measures shall be documented in the Work Plan and submitted to the Engineer for review prior to commencement of riprap placement.

Engineer review of the proposed protection system shall not relieve the Contractor of responsibility for the performance of the Geotube System.

3.5 Repairs

The Contractor shall be solely responsible for repairing or replacing any geotube damaged during transportation, handling, installation, filling operations, settlement, rock placement, or any other construction activity.

Repair methods shall be submitted to the Engineer and shall be consistent with the geotube manufacturer's recommendations.

All repairs, additional materials, testing, inspections, and rework required to restore damaged geotubes shall be performed at no additional cost to the Owner.

Engineer acceptance of repairs shall not relieve the Contractor of responsibility for geotube performance.

3.6 Field Quality Control

The Contractor shall establish and maintain quality control for the sand berm construction work, and other operations in connection with the work in the field to assure compliance with the Contract. Contractor shall inspect for compliance with Contract requirements and record the inspection of all operations including but not limited to the following:

A. Verification of geotube alignment.

B. Verification of geotube elevations.

C. Inspection of seams and closures.

D. Monitoring of filling operations.

E. Documentation of repairs.

F. Inspection for punctures and construction damage.

G. Verification of protective layer installation.

H. Verification of conditions following rock placement.

I. The pipeline is periodically inspected for leakage as specified.

J. All joints of the discharge pipeline are tight, sound, and in a safe condition.

K. All equipment used in the Work is approved and in satisfactory working condition.

L. Checks to ensure safe work practices around structures and the public are performed at all times as specified.

M. All results of inspections shall be documented with video tapings, narrative explanations and photographs as necessary to document the conditions of field quality. The results and supporting data shall be recorded and provided by the Contractor in the Daily Report.

3.7 Data for Engineer's Project Completion Report

A project completion report may be completed by Engineer after completion of the construction activities. The Contractor shall provide all requested testing documentation, shop drawings, repair records, survey data, as-built information, and other information necessary for preparation of the Engineer's Project Completion Report.

Data shall be provided to Engineer within 14 calendar days of any request by Engineer.

-- END OF SECTION --

SECTION 533

ROCK RIPRAP REVETMENT

Part 1 GENERAL

1.1 Scope

The Work covered by this Section consists of furnishing all submittals, labor, material, plant, equipment, tools, skills, services, and incidentals and performing all operations required for constructing the graded rock riprap revetment, including installation of geotextile and geogrid, as specified in the Plans. Conformance to environmental protection, public safety and navigational conditions per the permits (Appendix B) and applicable regulations is included. All work shall be performed in accordance with the Federal and State permits issued for the project, as well as the United States Coast Guard (USCG) regulations.

1.2 References

Publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by basic designation only.

American Society for Testing and Materials (ASTM) Publications

- C 535 Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
- C 88 Soundness of Aggregates of Use of Sodium Sulfate or Magnesium Sulfate
- C 97 Absorption and Bulk Specific Gravity of Dimension Stone
- C 127 Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
- D 75 Standard Practice for Sampling Aggregates
- D 3740 Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
- D 5519 Standard Test Method for Particle Size Analysis of Natural and Man-Made Riprap Materials
- D 6092 Standard Practice for Specifying Standard Sizes of Stone for Erosion Control

- D 6473 Standard Test Method For Specific Gravity And Absorption of Rock For Erosion Control
- E 329 Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction
- D 3370-18 Standard Practices for Sampling Water from Flowing Process Streams
- D 1429 Specific Gravity of Water and Brine

Alabama Department of Transportation and Development (ALDOT) Publications

- ALDOT Standard Specifications for Highway Construction (2026)

American Association of State Highway and Transportation Officials (AASHTO) Publications

- T 85 Specific Gravity of Coarse Aggregate

1.3 Measurement and Payment

1.3.1 Barge Displacement Table

The Contractor shall develop a certified barge displacement table for measurement and payment of graded rock riprap and underlayer stone and include it in the Work Plan. The table shall be approved by the Engineer. It shall show the name and/or number, dimensions, name of owner, and name of fabricator for each barge. The Contractor shall furnish a dimensioned drawing or sketch of each barge that is sufficient to verify the barge displacement table. The drawings shall show, at a minimum, the length, width, and depth of the barge, and dimensions of rake(s). All new or modified barges shall be field checked for current dimensions by the Contractor in the presence of the Engineer or the Inspector. Each table shall contain the freeboard of the barge in feet and tenths from zero (0) to the full depth of the barge and the corresponding gross displacement to the nearest ton.

Each barge shall be suitably marked with two displacement gaging lines along each side of the barge. Each gaging line shall be painted perpendicular to the edge of the barge and be no less than four (4) inches wide and one (1) foot long on both the deck and side of the barge. Barges with rakes shall have the displacement gaging lines placed at each corner of the box section between the rakes. If a barge has a box end or ends, the gaging lines shall be placed approximately four (4) feet

from the box end. The freeboard will be measured at the four (4) gauging locations and the displacement determined from the average of the measurements. The displacement shall be determined before and after the barge is unloaded and the difference between these values shall be the quantity delivered. Freeboard measurements before and after the barge is loaded must be documented with timestamped digital photos to be submitted along with each barge displacement ticket.

If the barge tables were originally furnished for fresh water and the barge displacement measurements are being taken in salt water, the Contractor has the option to obtain water samples and determine the densities or unit weights of the water. Water sampling shall be performed concurrently with the measurements of the barges, both when fully loaded and empty. Water samples shall be taken by the Contractor and witnessed by the Engineer. The water samples shall be taken in accordance with ASTM D 3370 (practice A-Grade Sample) at depths of four (4) and eight (8) feet in the area where measurements are made using a “Polypro” 2000 ml. water sampler or approved equal.

Densities shall be tested by a certified testing laboratory according to ASTM D 1429 (Method D-Hydrometer Method). After review and approval of the test results by the Engineer, the average of the densities will be used to adjust the measurements. A unit weight of 62.45 pounds/cubic foot is standard for fresh water. If the Contractor does not obtain water samples and densities, then no adjustments will be applied to the displacement table and rock quantities.

The Engineer shall accept barge displacement tickets as measured at the loading facility and accompanied by timestamped digital photos documenting freeboard measurements. The Engineer shall be provided an opportunity to be on-site at the loading facility to field check the barge displacement measurements.

1.3.2 Bedding Stone

The Engineer estimates up to one foot (1.0’) of construction settlement (due to immediate settlement and/or displacement of soft material) after placement of the underlayer stone and graded rock riprap. To accommodate this anticipated settlement, the Contractor may, at its option, place up to one foot (1.0’) of sacrificial foundation material consisting of the least-cost suitable stone material available, including crushed concrete (free of rebar), quarry run stone, No. 4 stone, or other Engineer-approved material, prior to placement of the specified underlayer stone and graded rock riprap. The sacrificial material is intended to penetrate, displace,

or settle into the foundation soils upon placement of the underlayer and armor stone to the final lines, grades, and elevations.

The estimated quantity shown on the Schedule of Prices and Plans is based on an in-place bulk unit weight of rock equal to 1.5 tons per cubic yard.

If crushed concrete is used for the sacrificial foundation material, payment shall be adjusted to maintain an equivalent in-place volume basis. The Contract unit price for graded rock riprap is based on a bulk density of 1.50 tons per cubic yard. If approved crushed concrete riprap has a demonstrated bulk density greater than 1.50 tons per cubic yard, the payable quantity shall be adjusted by the ratio of 1.50 tons per cubic yard divided by the approved crushed concrete bulk density (tons per cubic yard). The adjusted quantity shall be multiplied by the Contract Unit Price to determine payment. No additional compensation shall be allowed for increased tonnage resulting solely from the higher bulk density of the substituted crushed concrete material.

Payment Quantity = Delivered Tons × (1.50 ÷ Approved Crushed Concrete bulk density in tons/cy)

Payment for this Contract Item will be made by tonnage for placed bedding stone at the Contract Unit Price per ton for Contract Item No. 004 – Bedding Layer or Contract Item No. 104 – Bedding Layer, whichever is awarded. The unit of measurement for the rock shall be the short ton (2,000 pounds). Quantities will be computed to the nearest whole ton using the Barge Displacement Table as specified in paragraph 1.3.1 of this Section, or other method approved by Engineer.

At the Site, the Contractor shall measure the weight of the bedding stone by barge displacement prior to unloading any rock from the barge. The Engineer or Inspector will verify this measurement prior to payment. No payment will be made for any unauthorized or non-conforming placement of bedding stone. The Contractor shall provide the Engineer with certified weight tickets issued by the stone quarry for each barge. The certified weight tickets will not be used for payment, but no payment shall be made until Engineer has reviewed the certified weight tickets.

The total payment tonnage for this contract shall not exceed the total awarded tonnage in the Contract.

The Contractor will not be paid for any extra tonnage of bedding stone that is received at the Site than was awarded in the Contract. If bedding stone tonnage in excess of the Contract tonnage is received at the Site, the Contractor may choose to place the stone at the Site at the direction of the Engineer, at no additional cost to the Owner, or remove the stone from the Site, at no additional cost to the Owner.

1.3.3 Graded Rock Riprap

Payment for this Contract Item will be made by tonnage for placed rock that conforms to the lines, grades and elevations of the rock revetment shown on the Plans at the Contract Unit Price per ton for Contract Item No. 206 – Graded Rock Riprap. The unit of measurement for the rock shall be the short ton (2,000 pounds). Quantities will be computed to the nearest whole ton using the Barge Displacement Table as specified in Paragraph 1.3.1 of this Section. At the Site, the Contractor shall measure the weight of the rock by barge displacement prior to unloading any rock from the barge. The Engineer will verify this measurement prior to payment. No payment will be made for any unauthorized or non-conforming placement of rock. The Contractor shall provide the Engineer with certified weight tickets issued by the stone quarry for each barge. The certified weight tickets will not be used for payment, but no payment shall be made until Engineer has reviewed the certified weight tickets.

If the calculated rock tonnage based on the pre-construction survey is different than the calculated design tonnage based on the design survey, the Engineer reserves the right to modify the extents of any of the rock revetment areas such that the design rock tonnage is not exceeded by the Contractor. Further, the Engineer reserves the right to increase or decrease the necessary tonnage of rock based on the pre-construction survey.

The estimated quantity shown on the Schedule of Prices and Plans is based on an in-place bulk unit weight of rock equal to 1.5 tons per cubic yard.

1.4 Acceptance

The graded rock riprap placed for revetment construction shall be accepted by the Engineer if the revetment achieve compliance with the lines, grades, elevations and tolerances in the Plans and Construction Specifications. Acceptance shall be based on the revetment construction progress surveys. The Engineer may require the Contractor to remove rock or place additional rock as necessary in order to achieve compliance.

1.5 Tolerances

1.5.1 Graded Rock Riprap

The graded rock riprap revetment shall be placed according to the cross-sections shown on the Plans with a maximum vertical tolerance for the crest elevation equal to plus or minus one half feet (+/-0.5 feet). The crest width may not exceed seven feet (7 ft). Side slope shall be between 2.5H:1V with a tolerance of 2H:1V and 3H:1V on the bayward slope. Payment for armor stone placed in excess of the plan quantity but within the allowable positive tolerance shall be limited to 3,000 tons. Any additional armor stone required or placed beyond 3,000 tons shall be the sole responsibility of the Contractor and shall not be measured for payment or otherwise compensated.

For sections not meeting the specified tolerance, the Contractor may be required to place additional stone or regrade sections at the discretion of the Engineer at no additional cost to the Owner. If the sections exceed the maximum tolerance and require additional rock to be purchased by the Contractor, all costs associated with purchase, transport, and placing additional rock or redistributing rock shall be at no additional cost to the Owner.

1.6 Surveys

Refer to Section 531 Construction Surveying – Geotube Revetment for surveying details.

1.7 Staking

Refer to Section 531 – Construction Surveying – Geotube Revetment for surveying details.

1.8 Submittals

Submit the following:

A. Work Plan – Revetment Section

B. Daily Report – Revetment Section

C. Rock Certified Weight Tickets

D. Barge Displacement Table Calculations

E. Product specifications for graded rock riprap

F. Any survey Submittals specified in Section 531 – Construction Surveying – Geotube Revetment

1.9 Work Plan

The Contractor shall submit a Work Plan, in writing, to the Engineer seven (7) calendar days prior to the pre-construction conference for review and approval. The Work Plan shall be reviewed and approved by the Engineer prior to mobilization to the Site. The Work Plan shall include, but not be limited to, the following:

A. Descriptive plan for obtaining, delivering, and placing stone materials at the Site as applicable.

B. Construction access including assessing the Project Site and use of Contractor Site Access Areas.

C. Description of construction sequencing methods including Site preparation, stockpiling, and stone installation, as applicable.

D. Surveying plan including proposed surveying transects (pre-construction survey, progress surveys, and post-construction survey).

E. Quality control testing plan.

F. Description of proposed barge offloading, offloading operation, or truck haul routes for stone materials, as applicable.

Part 2 PRODUCTS

2.1 Graded Rock Riprap

All graded rock riprap is to be provided by the Contractor. The graded rock riprap shall not disintegrate upon exposure to the elements or be easily broken from handling and shall be reasonably free from earth and other foreign materials.

- When tested in accordance with AASHTO T 85, the solid weight of stone shall be at least 155 pounds per cubic foot (2490 kg/cu m) unless otherwise approved by Engineer.
    - As an alternative, when tested in accordance with ASTM C 97, the specific gravity shall be at least 2.64.

- The least dimension of any individual stone shall be at least 1/3 its maximum dimension.
- Each shipment of stone shall be reasonably well graded within.
- The rock faces shall be roughly angular, not rounded in shape.
- Field stone, rectangular block stone, slabs, and rounded boulders will not be accepted.
- When tested as specified in ASTM C 88, the stone shall show a soundness of less than 18 percent for 5 cycles, using sodium sulphate, and shall be suitable in all other respects for the purpose intended.
- It shall have a percentage wear less than 20% loss for 500 revolutions by the Los Angeles Test, ASTM C 535.
- It shall have less than 2% absorption when tested as specified in ASTM C 127.

2.1.1 Quarries

The Contractor shall inform Engineer of proposed source of materials at least 2 weeks prior to commencing Work.

In order to gain acceptance, the Contractor shall obtain and test samples of the rock for gradation under the supervision of the Engineer. The Engineer shall accept the rock if the test results comply with this Specification. The Engineer shall be allowed to visit the quarry to observe the excavation, sorting, and/or loading process if they choose.

2.1.2 Gradation

All rock riprap shall be Class 5 graded riprap (GRR) as specified by Section 814 RIPRAP MATERIALS of the Alabama Department of Transportation Standard Specifications for Highway Materials, 2026 edition. The GRR shall be reasonably well graded ranging from 2000 pounds and down. The GRR shall meet the following gradation. Approximate stone dimensions are provided for information only. The gradation shall be evaluated by weight. For reference, the spherical and cubic dimensions are provided in the table below.

Table 2.1 Rock Riprap Gradation

Stone Size (lbs)	Spherical Diameter (ft)	Cubic Side Dimension (ft)	Maximum % of Stone Smaller
2000	2.9	2.3	90%
1000	2.3	1.9	50%
200	1.4	1.1	25%

Control of gradation will be by visual inspection either at the source, or Site or both. The Engineer reserves the right to verify the gradation of any shipment by testing two uniform size random samples. The equipment, labor and cost for testing the samples shall be provided by the Contractor.

Part 3 EXECUTION

3.1 Dimensions

The revetment shall be constructed to the lines, grades and elevations shown on the Plans. The revetment shall be constructed as follows:

- +6 ft NAVD 88 crest elevation
- 7 feet crest width
- 2.5H:1V front (bayward) slope

3.2 Graded Rock Riprap Placement

As soon as practical following placement of the underlayer stone, armor stone shall be placed to the lines and grades indicated on the Contract Drawings. The riprap armor stone shall be individually placed with a rock grab, bucket with a thumb, orange peel grab, grapple, crane, or similar equipment. The stone shall not be dropped or tipped into position, but shall be placed piece by piece into the layer and shall be interlocked or keyed in juxtaposition with adjacent armor stones by rotating or setting them for maximum contact based on their angular shape with no continuous void through two armor layers where waves could work against inner

layers of rock work and cause damage. Armor stone shall not be dropped from a height greater than 2 feet above the underlayer stone surface. Compaction of the armor stone will not be required.

Any rock placed outside the vertical or horizontal limits of the breakwater cross sections or at improper grades will not be paid for and shall be requested to be regraded or removed as directed by the Engineer at the Contractor's expense.

The finished riprap surface shall be free from objectional high or low spots, or pockets of small stones and clusters of larger stones. The finished surface shall be relatively uniform in appearance and elevation or slope. In order to achieve uniformity and solid seating of stone, Contractor shall move stone extending above tolerance with equipment as necessary to achieve allowable elevations. Where low spots exist along the crest, Contractor shall place additional rock as necessary to achieve uniformity.

3.3 Construction Access

The Contractor shall exercise caution when accessing the Site as areas nearby are heavily used by commercial and recreational boat traffic during all periods of the year.

3.4 Equipment

The Contractor shall provide a proposed list of equipment in the Work Plan which will be used to construct the rock revetment. This list shall include the type (Drag Bucket, etc.), number of each type, and capacity (Cubic Yards, etc.) of the equipment.

3.5 Losses

The Contractor is responsible to reclaim and utilize all rock that is lost during shipment or construction as directed by the Engineer or Inspector.

3.6 Warning Signs

Warning signs shall be installed within seven (7) calendar days of completion of all revetment in accordance with Section 510 Signage or as otherwise directed by the Engineer.

--END OF SECTION--

APPENDIX A: GEOTECHNICAL INFORMATION

GEOTECHNICAL ENGINEERING TESTING, INC.

~ Geotechnical Evaluations ~ Construction Materials Testing ~ Geosciences ~ Infrastructure Management Services ~

FIELD AND LABORATORY TEST DATA REPORT

ALABAMA STATE PORT AUTHORITY
UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE (PLANNING) PROJECT

MOBILE, ALABAMA

Professional Services Since 1974

904 Butler Drive, Mobile, AL 36693

251.666.7197 FAX: 251.666.7380

www.geoengr.com

Geotechnical Engineering-Testing, Inc.

PROFESSIONAL ENGINEERS

Geotechnical Evaluations - Geosciences - Construction Materials - Pavement Management

January 12, 2021

Mary Beth Sullivan, P.E.
Project Manager
Moffat & Nichol
5 Dauphin St., Suite 100
Mobile, AL 36602

Re: Upper Mobile Bay Beneficial Use Wetland Creation Site (Planning) Project

Dear Ms. Sullivan:

Geotechnical Engineering-Testing, Inc. (GET) has completed the authorized soils explorations and laboratory testing services planned for the geotechnical engineering studies for the proposed Upper Mobile Bay Beneficial Use Wetland Creation Site (Planning) Project in Mobile, Alabama. The soils explorations for this project have included 105 exploratory soil test borings, visual descriptions of the soils encountered, and laboratory tests on selected soil samples. The final geotechnical report will be issued as the project design develops further.

The procedures for the field exploration and laboratory testing programs utilized on this project are summarized in the following sections of this report.

The locations of the borings performed for this project were selected by Moffat & Nichol and GET personnel. The soils explorations for this project included performing 105 soil test borings; 88 borings were performed within the area of proposed Beneficial Use (BU) area (borings B-1 through B-88) and 17 borings performed within potential Source areas identified as the McDuffie Berth (borings MI-B1 through MI-B8), the Container Berth (borings APM-B1 through APM-B4), Pinto Island (borings PINTO-B1 through PINTO-B4) and south of Little Sand Island (borings LSI-B1 and LSI-B2). Boring locations were established in the field using a hand-held GPS device. Approximate soil boring locations within the BU Area are shown on a copy of the Site Plan included in Appendix A of this report.

The soils explorations within the proposed BU Area were performed to depths of about 20 to 80 ft below the mudline. Mudline typically varied between about 4 and 12 ft below the water surface in this area. Borings performed within the various source areas were performed to depths of about 20 ft below the mudline. Mudline typically varied between about 20 and 45 ft below the water surface adjacent the dock structures. The soil borings were performed by GET and Challenger Engineering & Testing drill crews with barge-mounted SIMCO 2400 core-boring rigs.

Boring operations will be conducted in general accordance with standard procedures for boring and sampling soils. The boreholes were performed by installing steel casing and advancing the boring using the rotary wash technique. When using the mud rotary wash technique, a bentonite slurry drilling fluid was

circulated through the boreholes to transport soil cuttings to the surface and to stabilize the walls and bottoms of the boreholes. Standard penetration tests were performed and split spoon soil samples were generally collected at 2.5 ft center-to-center intervals from the mudline to a depth of about 20 ft below the mudline, from about 20 ft below the mudline to the boring termination depth, split spoon soil samples were generally collected at 5 ft center-to-center intervals. Where compressible cohesive samples were encountered, thin-walled tubes were pushed and soil samples were collected. Depths where samples were collected and the results of the standard penetration tests are shown on the Logs of Boring included in Appendix B of this report.

Split spoon samples collected during the boring operations were visually described, logged, placed in moisture tight plastic bags, and, along with the sealed tube sample, transported to the laboratory. At the laboratory, all samples were visually examined by a senior geotechnical technician supervised by the project geotechnical engineer of record to confirm or adjust field classifications.

The soil borings provided with this report are representative of subsurface conditions at their respective locations and for their respective vertical reaches. However, local variations characteristic of the subsurface materials of the region are anticipated and may be encountered during construction. The boring logs and related information are based on the driller's logs and visual examination of selected samples in the laboratory. The delineation between soil types shown on the logs is approximate and the description represents the interpretation of subsurface conditions at the designated boring locations on the particular date drilled.

The laboratory testing program included performing physical laboratory soil mechanics tests on selected soil samples that were recovered from the borings. The testing program consisted of grain size analyses, water content, unit weight, liquid and plastic limits, undrained triaxial shear strength (with and without pore pressure measurements) and consolidated undrained triaxial shear strength (with pore pressure measurements), specific gravity, and one-dimensional consolidation testing.

Test results are shown on the Logs of Boring opposite the respective samples tested and attached test reports. Tests were performed in general accordance with applicable laboratory soil testing standards and are shown in Appendix C of this report.

Please contact Curt Doyle, P.E. if you have any questions or if you need additional information.

Sincerely,

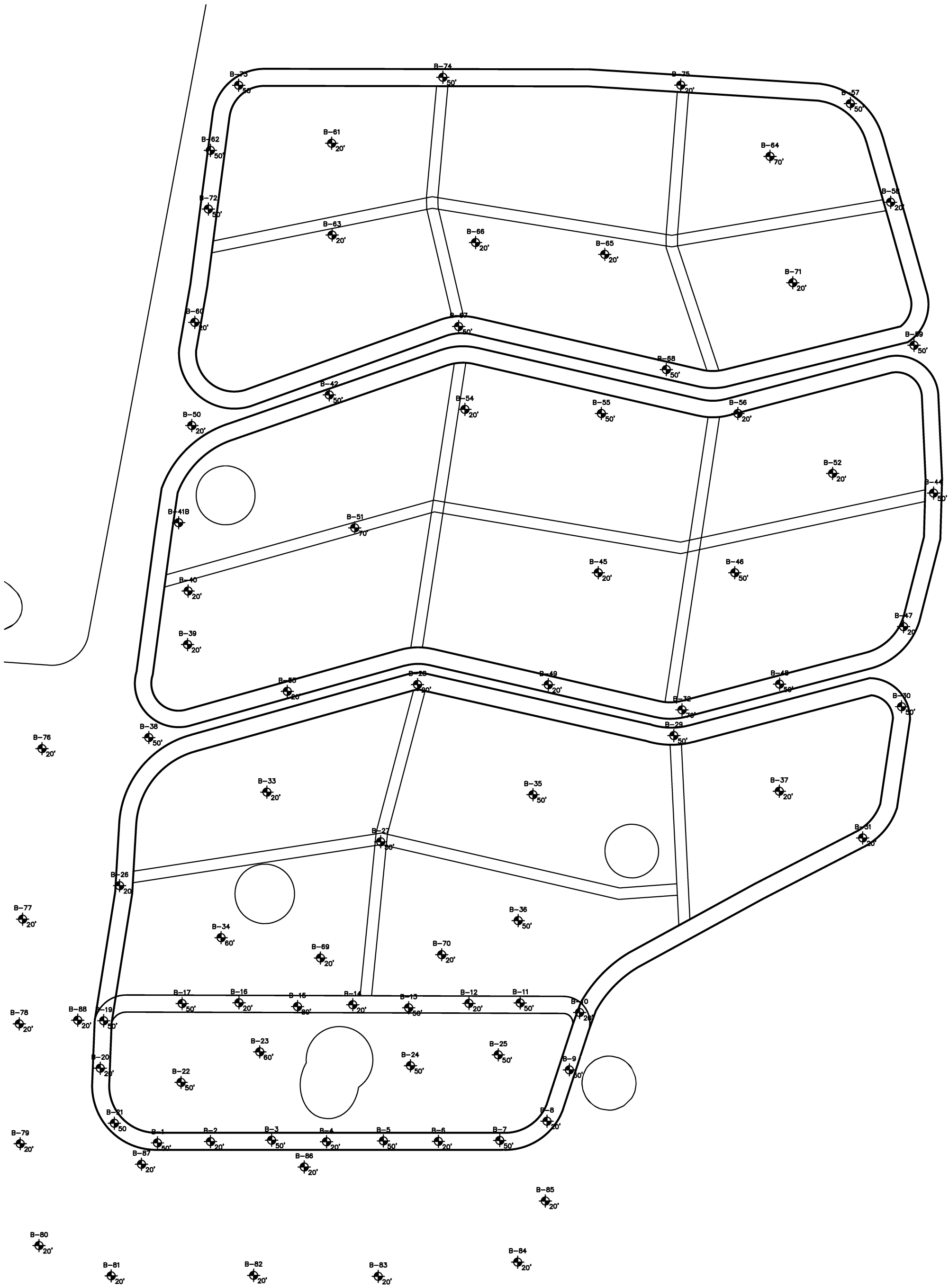
GEOTECHNICAL ENGINEERING-TESTING, INC.

Curt Doyle, P.E.
Principal Engineer
Alabama License No. 25733
Date: 1/12/2022

ALABAMA LICENSED No. 25733 PROFESSIONAL ENGINEER LYNN C. DOYLE, II

APPENDIX A

BORING LOCATION PLAN (BENEFICIAL USE AREA)



PROPOSED BENEFICIAL USE AREA
APPROXIMATE BORING LOCATIONS

APPENDIX B

BORING LOGS

PROJECT NAME:

G.E.T. PROJ. NUMBER:

PROJECT LOCATION:

DRILL RIG:

DRILL METHOD:

DRILL CREW:

DATE DRILLED:

BORING DEPTH: 0 FT.

BORING ELEV.:

DATUM:

WATER DEPTH:

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: LEGEND

BORING LOCATION:

DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	S.P.T. N_c	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
0		TOPSOIL		N_f - Standard penetration test value determined in the field - ASTM D1586 (WOH indicates penetration of sampler under weight of 104 lb hammer)	Nc - Standard penetration test value of sand corrected for overburden by Peck-Hansen-Thornburn, 1974	w.c. % - Percent water content based on dry soil weight	L.L. - Liquid Limit	P.I. - Plasticity Index	Unit Wt., pcf - Dry unit weight of soil, pounds per cubic ft	% Minus #200 - Percent by weight of soils finer than #200 sieve	c - Cohesion, tons per square ft Φ- Angle of Internal fiction, degrees s - Vane shear strength, tons per square ft c*- Values measure with a pocket penetrometer	Classification according to the Unified Classification System
5		SAND										
10		CLAY										
15		SILT										
20		GRAVEL										
25		ORGANICS										
30		PEAT										
35		SILTY SAND (EXAMPLE OF A SOIL MIXTURE)										
40		SPLIT-SPOON SAMPLE (STANDARD PENETRATION TEST)										
45		UNDISTURBED TUBE SAMPLE										
50		SAMPLE NOT RECOVERED										
55		VANE SHEAR										
		B.T. @ 0 FT										
60												
65												
70												

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/29/21

BORING DEPTH: 50 FT.

BORING ELEV.: -6.3 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: RS,BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-1

BORING LOCATION:
N30° 38.0681'
W88° 00.7451'

N: 231111 **E:** 1807342

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
			Very loose to loose dark gray silty clayey sand	2	3							
-10												
	5			3	3	56				62.3		
			Soft to medium consistency dark gray sandy clay w/ trace shell	4	5							
-15												
	10			T-1		54	53	34	66	77.3	c=0.07	CH
			Soft dark gray clay	5	4	40						
-20												
	15		Loose dark gray clayey sand	6	5							
			Soft dark gray clay w/ sand	7	4							
-25												
	20		Soft dark gray clay	8	3							
-30												
	25			9	8							
-35												
	30			10	6							
				T-2								
-40			Medium & stiff consistency dark gray clay	11	4	77						
	35											
-45												
	40			12	10							
				T-3		82	102	81	52	95.8		CH
-50												
	45			13	7	84						

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/29/21

BORING DEPTH: 50 FT.

BORING ELEV.: -6.3 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: RS,BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-1

BORING LOCATION:
N30° 38.0681'
W88° 00.7451'

N: 231111 **E:** 1807342

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Medium & stiff consistency dark gray clay									
-55				14	10							
	50		B.T. @ 50 FT									
-60												
	55											
-65												
	60											
-70												
	65											
-75												
	70											
-80												
	75											
-85												
	80											
-90												
	85											
-95												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/23/21

BORING DEPTH: 21 FT.

BORING ELEV.: -5.2 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-2

BORING LOCATION:
N30° 38.0702'
W88° 00.6563'

N: 231122 **E:** 1807808

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very loose to loose dark gray silty sand	1	3	41				30.0		
				2	3							
-10	5		Soft dark gray sandy clay	3	4	36				63.2		
				4	5							
-15	10		Loose dark gray silty sand	T-1		41	33	7	77	43.9	c=0.08 Ø=0°	SM
				5	3							
-20	15		Very loose to loose dark gray silty clayey sand	6	7	34				46.3		
				7	6							
-25	20			8	7							
			B.T. @ 21 FT									
-30	25											
-35	30											
-40	35											
-45	40											
-50	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/22/21

BORING DEPTH: 50 FT.

BORING ELEV.: -6.2 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-3

BORING LOCATION:
N30° 38.0726'
W88° 00.5538'

N: 231134 **E:** 1808345

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	3							
			Very loose to loose dark gray silty clayey sand	2	6							
-10												
	5		Soft to medium consistency dark gray sandy clay w/ trace shell	3	5	42	32	11		64.8		CL
				4	5							
-15			Medium consistency dark gray sandy silt									
	10			T-1		42	40	14	78	73.4	c=0.05 Ø=6°	
			Loose dark gray silty clayey sand w/ trace wood	5	5							
-20												
	15			6	3	43						
			Very loose to loose dark gray silty clayey sand	7	5							
-25												
	20			8	4							
-30				9	5	79						
	25											
			Medium consistency dark gray clay									
-35				10	6							
	30											
				T-2		31	NP	NP	88	25.0		SM
-40				11	5							
	35											
-45				12	5							
	40		Medium consistency dark gray clay									
				T-3								
-50				13	5	86						
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/22/21

BORING DEPTH: 50 FT.

BORING ELEV.: -6.2 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-3

BORING LOCATION:
N30° 38.0726'
W88° 00.5538'

N: 231134 **E:** 1808345

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Medium consistency dark gray clay									
-55			Stiff dark gray clay	14	10							
	50		B.T. @ 50 FT									
-60	55											
-65	60											
-70	65											
-75	70											
-80	75											
-85	80											
-90	85											
-95	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/26/21

BORING DEPTH: 21 FT.

BORING ELEV.: -6.3 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-4

BORING LOCATION:
N30° 38.0707'
W88° 00.4617'

N: 231121 **E:** 1808828

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH	41				61.2		
			Very soft dark gray sandy clay w/ trace shell	2	WOH							
-10	5		Soft dark gray clay	3	4	54	38	19		89.3		CL
-15				4	3							
	10			T-1		41	37	14	76	60.1	c=0.00 Ø=10°	CL
-20			Soft to medium consistency dark gray sandy clay w/ trace roots	5	4							
	15			6	3							
-25				7	4	36				60.6		
	20			8	5							
			B.T. @ 21 FT									
-30	25											
-35	30											
-40	35											
-45	40											
-50	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/15/21

BORING DEPTH: 60 FT.

BORING ELEV.: -5.8 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-5

BORING LOCATION:
N30° 38.07231'
W88° 00.3663'

N: 231128 **E:** 1809328

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very loose dark gray silty sand w/ trace shell	1	2	42	31	4		41.5		SM
				2	3							
-10	5			3	2	44				51.7		
			Very soft to soft dark gray sandy silt w/ trace shell	4	4							
-15	10			5	2	39				50.3		
				6	2							
-20	15			7	5							
			Loose dark gray clayey sand	8	6							
-25	20											
-30	25			9	3							
-35	30			10	4						c*=0.13	
			Soft dark gray clay									
-40	35			11	3							
-45	40			12	2							
-50	45			13	2	80	106	75	26	95.4	c=0.10	CH

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/15/21

BORING DEPTH: 60 FT.

BORING ELEV.: -5.8 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-5

BORING LOCATION:
N30° 38.07231'
W88° 00.3663'

N: 231128 **E:** 1809328

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45											
-55	50		Soft dark gray clay	14	3							
-60	55			15	4							
-65	60		Stiff dark brown organic clay	16	9	190	245	134		50.1		OH
			B.T. @ 60 FT									
-70	65											
-75	70											
-80	75											
-85	80											
-90	85											
-95	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/28/21

BORING DEPTH: 21 FT.

BORING ELEV.: -5.5 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-6

BORING LOCATION:
N30° 38.0721'
W88° 00.2741'

N: 231124 **E:** 1809811

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
				2	3	41				58.4		
-10	5			3	4							
				4	4	39				60.3		
-15	10		Very soft to medium consistency dark gray sandy silt w/ trace shell	T-1		36	30	4	83	56.0	c=0.25 Ø=0°	ML
				5	2	39				55.6		
-20	15			6	5							
				7	6							
-25	20			8	6							
			B.T. @ 21 FT									
-30	25											
-35	30											
-40	35											
-45	40											
-50	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/23/21

BORING DEPTH: 50 FT.

BORING ELEV.: -6.6 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-7

BORING LOCATION:
N30° 38.0738'
W88° 00.1711'

N: 231132 **E:** 1810351

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Soft dark gray clay	1	2	76	49	26		84.0		CL
-10				2	3							
	5			3	4	40				53.0		
-15				4	5							
	10			T-1		37	39	16	77	64.0	c=0.16 Ø=38°	CL
-20				5	5							
	15		Soft to medium consistency dark gray sandy clay w/ trace wood & shell	6	4							
-25				7	4	44				59.2		
	20			8	4							
-30				9	5							
	25											
-35				10	6							
	30			T-2								
-40				11	5							
	35		Medium to stiff dark gray clay									
-45				12	4							
	40			T-3		90	81	58	48	99.0		CH
-50				13	8	87						
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/23/21

BORING DEPTH: 50 FT.

BORING ELEV.: -6.6 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-7

BORING LOCATION:
N30° 38.0738'
W88° 00.1711'

N: 231132 **E:** 1810351

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Medium to stiff dark gray clay									
-55				14	9							
	50		B.T. @ 50 FT									
-60												
	55											
-65												
	60											
-70												
	65											
-75												
	70											
-80												
	75											
-85												
	80											
-90												
	85											
-95												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/15/21

BORING DEPTH: 16.5 FT.

BORING ELEV.: -6.3 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-8

BORING LOCATION:
N30° 38.1019'
W88° 00.0921'

N: 231301 **E:** 1810766

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	3	49	33	6		56.9		ML
-10				2	3							
	5		Soft to medium consistency dark gray sandy silt w/ trace shell & wood	3	5	40				53.0		
-15				4	7							
	10			5	6	49	38	8		62.0		ML
-20			Soft dark gray sandy silty clay	6	3							
	15			7	3							
			B.T. @ 16.5 FT									
-25												
	20											
-30												
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/26/21

BORING DEPTH: 50 FT.

BORING ELEV.: -6.8 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-9A

BORING LOCATION:
N30° 38.1767'
W88° 00.0549'

N: 231753 **E:** 1810963

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
-10				2	3							
	5			3	5	42				58.1		
			Soft to medium consistency dark gray sandy silt									
-15				4	4							
	10			T-1		41	38	3	76	56.1	c=0.02 Ø=10°	ML
-20				5	4							
	15			6	3							
			Soft to medium consistency dark gray silty sandy clay w/ trace wood & shell									
-25				7	5	41				62.5		
	20			8	4							
			Medium consistency dark gray sandy clay									
-30				9	5							
	25											
-35				10	2	52						
	30		Soft dark gray clay w/ trace wood									
				T-2								
-40				11	5							
	35											
-45												
			Medium to stiff dark gray clay	12	6							
	40											
				T-3		87	112	82	49	99.4		CH
-50												
				13	5							
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/26/21

BORING DEPTH: 50 FT.

BORING ELEV.: -6.8 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-9A

BORING LOCATION:
N30° 38.1767'
W88° 00.0549'

N: 231753 **E:** 1810963

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Medium to stiff dark gray clay									
-55				14	9							
	50		B.T. @ 50 FT									
-60												
	55											
-65												
	60											
-70												
	65											
-75												
	70											
-80												
	75											
-85												
	80											
-90												
	85											
-95												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/27/21

BORING DEPTH: 50 FT.

BORING ELEV.: -6.5 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-9B

BORING LOCATION:
N30° 38.1708'
W88° 00.0567'

N: 231718 **E:** 1810954

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2	40				68.7		
-10				2	3							
	5			3	5							
-15			Soft to medium consistency dark gray sandy silt	4	4							
	10			T-1		40	39	13	80	60.8		ML
-20				5	4							
	15			6	3							
-25				7	5							
	20			8	4							
-30			Medium consistency dark gray sandy clay	9	5							
	25											
-35				10	2							
	30		Medium consistency dark gray clay									
-40				T-2								
	35			11	4	83						
-45			Stiff dark gray & brown clay w/ organics	12	5							
	40											
-50				T-3								
	45			13	4							

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/27/21

BORING DEPTH: 50 FT.

BORING ELEV.: -6.5 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-9B

BORING LOCATION:
N30° 38.1708'
W88° 00.0567'

N: 231718 **E:** 1810954

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Stiff dark gray & brown clay w/ organics									
-55				14	9	111						
	50		B.T. @ 50 FT									
-60												
	55											
-65												
	60											
-70												
	65											
-75												
	70											
-80												
	75											
-85												
	80											
-90												
	85											
-95												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/15/21

BORING DEPTH: 19 FT.

BORING ELEV.: -6.3 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-10

BORING LOCATION:
N30°38.2598'
W88° 00.0383'

N: 232257 **E:** 1811053

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very loose dark gray silty sand	1	3							
-10			Soft dark gray & black sandy organic silt	2	2	98	NP	NP		51.6		OL
	5		Loose very dark gray silty, clayey sand	3	4							
-15			Loose & very loose dark gray silty sand w/ traces of shell	4	6	41	NP	NP		45.7		SM
	10			5	3							
-20			Medium consistency dark gray sandy silt	6	5	40	35	9		59.2		ML
	15		Very loose dark gray clayey sand	7	3							
-25			Medium consistency dark gray sandy clay w/ trace of organics	8	5							
	20		B.T. @ 19 FT									
-30												
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/27/21

BORING DEPTH: 50 FT.

BORING ELEV.: -5.7 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-11

BORING LOCATION:
N30° 38.2735'
W88° 00.1381'

N: 232342 **E:** 1810530

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
				2	4	46				55.6		
-10	5		Very soft to soft dark gray sandy silt w/ trace shell									
				3	4							
				4	4	43				53.1		
-15	10			T-1		68	41	17	59	62.1		CL
			Soft to medium consistency dark gray sandy clay	5	2							
-20	15			6	4							
				7	3							
-25	20			8	4	38				53.3		
			Medium consistency dark gray sandy silt									
-30	25			9	4							
-35	30			10	5						c*=0.10	
				T-2		75	80	59	56	99.5		CH
-40	35			11	4						c*=0.10	
-45	40			12	6							
				T-3								
-50	45			13	7							

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/27/21

BORING DEPTH: 50 FT.

BORING ELEV.: -5.7 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-11

BORING LOCATION:
N30° 38.2735'
W88° 00.1381'

N: 232342 **E:** 1810530

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45											
-55	50		Stiff gray clay B.T. @ 50 FT	14	9							
-60	55											
-65	60											
-70	65											
-75	70											
-80	75											
-85	80											
-90	85											
-95	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/22/21

BORING DEPTH: 21 FT.

BORING ELEV.: -4.6 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-12

BORING LOCATION:
N30° 38.2724'
W88° 00.2240'

N: 232338 **E:** 1810080

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
-5	0			1	3							
				2	5	38				39.7		
-10	5		Loose dark gray silty sand w/ trace shells	3	6							
				4	6	34				38.1		
-15	10			T-1		40	26	NP	78	60.7	c=0.15 Ø=0°	ML
			Medium consistency dark gray sandy silt w/ trace organics	5	6							
-20	15			6	2							
			Very loose to loose dark gray silty sand w/ trace shell	7	4	32				43.8		
-25	20			8	4							
			B.T. @ 21 FT									
-30	25											
-35	30											
-40	35											
-45	40											
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/28/21

BORING DEPTH: 50 FT.

BORING ELEV.: -5.6 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-13

BORING LOCATION:
N30° 38.2657'
W88° 00.3249'

N: 232299 **E:** 1809550

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very loose dark gray silty sand	1	2							
			Soft dark gray clay	2	3	53				88.2		
-10	5			3	5							
			Loose to very loose dark gray silty sand w/ trace shell	4	5	43				38.7		
-15	10			T-1								
				5	3							
-20	15			6	4							
				7	2	39				66.7		
-25	20		Soft to medium consistency dark gray sandy clay	8	4							
-30	25			9	6							
-35	30			10	3							
				T-2		81	97	75	52	99.3		CH
-40	35		Soft to stiff dark gray clay	11	2							
-45	40			12	6						c*=0.13	
				T-3								
-50	45			13	6	87	112	86		97.3		CH

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/28/21

BORING DEPTH: 50 FT.

BORING ELEV.: -5.6 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-13

BORING LOCATION:
N30° 38.2657'
W88° 00.3249'

N: 232299 **E:** 1809550

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Soft to stiff dark gray clay									
-55	50		B.T. @ 50 FT	14	9							
-60	55											
-65	60											
-70	65											
-75	70											
-80	75											
-85	80											
-90	85											
-95	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/19/21

BORING DEPTH: 21 FT.

BORING ELEV.: -4.3 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-14

BORING LOCATION:
N30° 38.2696'
W88° 00.4188'

N: 232326 **E:** 1809059

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
-5	0		Soft dark gray sandy clay	1	3							
				2	4	38				36.6		
-10	5		Loose dark gray silty sand	3	5							
				4	4	38	29	3		45.3		SM
-15	10		Very loose dark gray clayey sand	T-1	-	46	32	9	75	49.2		SC
				5	3							
-20	15		Very loose & loose dark gray silty sand	6	5	41	34	6		40.5		SM
				7	4							
-25	20		Loose dark gray silty clayey sand	8	7							
			B.T. @ 21 FT									
-30	25											
-35	30											
-40	35											
-45	40											
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/5/21

BORING DEPTH: 80 FT.

BORING ELEV.: -5.5 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-15

BORING LOCATION:
N30° 38.2676'
W88° 00.5100'

N: 232310 **E:** 1808573

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft dark gray silty sandy clay	1	2							
				2	3	35				64.7		
-10	5		Soft to medium consistency dark gray sandy silt	3	3							
				4	6	43	NP	NP		52.1		ML
-15	10			5	2							
			Very loose to lose dark gray silty sand	6	4							
-20	15			7	4	38				35.8		
				8	5							
-25	20		Loose dark gray silty clayey sand	9	8							
-30	25		Very loose gray silty sand	10	WOH							
				T-1		60	73	54	64	97.7		CH
-35	30			11	WOH							
-40	35		Very soft to soft dark gray clay	12	2						c*=0.10	
				T-2								
-45	40											
-50	45			13	2	79						

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/5/21

BORING DEPTH: 80 FT.

BORING ELEV.: -5.5 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-15

BORING LOCATION:
N30° 38.2676'
W88° 00.5100'

N: 232310 **E:** 1808573

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45			T-3								
			Very soft to soft dark gray clay									
-55	50			14	WOH	67	80	55		89.6		CH
-60	55		Medium consistency dark gray clay	15	2	45						
				T-4		50	42	22	70	93.4		CL
-65	60			16	5	57						
-70	65		Medium to stiff dark brown organic clay w/ some sand	17	9	110						
-75	70			18	7	128	201	148		42.4		SC
-80	75		Stiff brown organic clay	19	10							
			Soft greenish gray clay									
-85	80			20	4	49	87	65		80.4		CH
			B.T. @ 80 FT									
-90	85											
-95	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/14/21

BORING DEPTH: 19 FT.

BORING ELEV.: -4.8 FT.

DATUM: MLLW

WATER DEPTH: 6'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-16

BORING LOCATION:
N30° 38.2718'
W88° 00.6096'

N: 232343 **E:** 1808059

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
-5	0			1	2							
			Very loose dark gray silty sand w/ clay & shell	2	2							
-10	5			3	3	42	NP	NP		26.0		SM
				4	3							
-15	10			5	6	43	31	8		48.3		SM
			Very loose & loose dark gray silty sand	6	2							
-20	15			7	2	38	NP	NP		49.8		SM
				8	2							
			B.T. @ 19 FT									
-25	20											
-30	25											
-35	30											
-40	35											
-45	40											
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/19/21

BORING DEPTH: 50 FT.

BORING ELEV.: -2.5 FT.

DATUM: MLLW

WATER DEPTH: 5'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-17

BORING LOCATION:
N30° 38.2703'
W88°00.7050'

N: 232336 **E:** 1807559

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very loose dark gray & black silty sand	1	3	39				25.9		
-5			Soft to medium consistency dark gray clay	2	3	80				94.6		
	5			T-4		31	NP	NP	88	33.0	c=1.84 Ø=0°	SM
				3	3							
-10			Very loose dark gray silty sand	4	5							
	10			5	3	34	NP	NP		16.7		SM
-15				T-1	-							
			Very loose dark gray silty sand w/ clay	6	3							
	15											
-20			Medium consistency dark gray sandy clay	7	5							
	20			8	2							
-25												
	25			9	4	51						
-30												
	30			10	5							
-35			Soft & medium consistency dark gray clay	T-2	-							
	35			11	4							
-40												
	40			12	7	72						
-45				T-3	-							
	45			13	3							

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/19/21

BORING DEPTH: 50 FT.

BORING ELEV.: -2.5 FT.

DATUM: MLLW

WATER DEPTH: 5'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-17

BORING LOCATION:
N30° 38.2703'
W88°00.7050'

N: 232336 **E:** 1807559

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Soft & medium consistency dark gray clay									
-50			Stiff dark gray clay	14	10	47	65	46		89.6		CH
	50		B.T. @ 50 FT									
-55												
	55											
-60												
	60											
-65												
	65											
-70												
	70											
-75												
	75											
-80												
	80											
-85												
	85											
-90												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/16/21

BORING DEPTH: 50 FT.

BORING ELEV.: -3.6 FT.

DATUM: MLLW

WATER DEPTH: 5'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-19

BORING LOCATION:
N30° 38.2448'
W88° 00.8363'

N: 232185 **E:** 1806870

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
-5			Very loose dark gray silty sand w/ trace of shell	2	4	39				41.7		
	5			3	5							
-10			Loose dark gray clayey sand w/ trace of shell	4	4	40				29.9		
	10			T-1	-	38	32	11	81	32.1	c=0.27 Ø=10°	SC
-15				5	4							
	15			6	6	47	28	6		45.1		SC-SM
-20			Loose & very loose dark gray silty clayey sand	7	3							
	20			8	4							
-25				9	4							
	25											
-30				10	6	49						
	30											
-35				T-2	-	57	55	33	65	96.6		CH
			Soft & medium consistency dark gray clay	11	7							
	35											
-40				12	3	62						
	40											
-45				T-3	-							
	45			13	6							

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/16/21

BORING DEPTH: 50 FT.

BORING ELEV.: -3.6 FT.

DATUM: MLLW

WATER DEPTH: 5'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-19

BORING LOCATION:
N30° 38.2448'
W88° 00.8363'

N: 232185 **E:** 1806870

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Soft & medium consistency dark gray clay									
-50			Stiff dark gray clay	14	10	76						
	50		B.T. @ 50 FT									
-55												
	55											
-60												
	60											
-65												
	65											
-70												
	70											
-75												
	75											
-80												
	80											
-85												
	85											
-90												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/26/21

BORING DEPTH: 21 FT.

BORING ELEV.: -5.2 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-20

BORING LOCATION:
N30° 38.1761'
W88° 00.8417'

N: 231768 **E:** 1806839

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft dark gray sandy silt	1	WOH	115				50.8		
				2	2							
-10	5		Very loose to loose dark gray to gray silty sand	3	2	39	27	5		39.7		SM
				4	3							
-15	10			T-1		37	34	34		52.6		ML
				5	4							
-20	15		Medium consistency dark gray sandy silt	6	5	42				60.8		
				7	6							
-25	20			8	5							
			B.T. @ 21 FT									
-30	25											
-35	30											
-40	35											
-45	40											
-50	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/14/21

BORING DEPTH: 55 FT.

BORING ELEV.: -6.0 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-21

BORING LOCATION:
N30° 38.0962'
W88° 00.8176'

N: 231284 **E:** 1806963

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
				2	2	43	35	15		67.8		CL
-10	5			3	2							
			Very soft dark gray sandy clay	4	2	38				61.2		
-15	10			T-1		41	36	13	78	70.5	c=0.20 Ø=15°	CL
				5	2							
-20	15			T-2		50	50	29	71	87.5	c=0.08	CH
				6	3	57						
-25	20			7	4							
-30	25			8	5							
-35	30		Soft & medium consistency dark gray silty clay	9	2							
-40	35			10	2	77						
-45	40			11	2							
-50	45			12	6							

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/14/21

BORING DEPTH: 55 FT.

BORING ELEV.: -6.0 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-21

BORING LOCATION:
N30° 38.0962'
W88° 00.8176'

N: 231284 **E:** 1806963

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Soft & medium consistency dark gray silty clay									
-55	50		Medium consistency dark brown & black clay w/ organics	13	6							
-60	55		Stiff dark gray clay	14	9	40	53	32		87.9		CH
			B.T. @ 55 FT									
-65	60											
-70	65											
-75	70											
-80	75											
-85	80											
-90	85											
-95	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/29/21

BORING DEPTH: 50 FT.

BORING ELEV.: -5.1 FT.

DATUM: MLLW

WATER DEPTH: 6'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-22

BORING LOCATION:
N30° 38.1558'
W88° 00.7060'

N: 231642 **E:** 1807550

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
				2	3	43				51.5		
-10	5		Very soft & medium consistency dark gray sandy silt	3	5							
				4	4	47				51.4		
-15	10			5	3	43				47.7		
			Very loose dark gray clayey sand	6	4							
-20	15			T-1		36	29	9	80	63.8	c=0.11	CL
			Medium consistency dark gray sandy clay	7	7							
-25	20			8	2							
-30	25			9	7							
				T-2		70	95	73	58	98.2		CH
-35	30			10	6							
			Stiff dark gray clay									
-40	35			11	8							
				T-3								
-45	40			12	9							
-50	45			13	8						c*=0.13	

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/29/21

BORING DEPTH: 50 FT.

BORING ELEV.: -5.1 FT.

DATUM: MLLW

WATER DEPTH: 6'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-22

BORING LOCATION:
N30° 38.1558'
W88° 00.7060'

N: 231642 **E:** 1807550

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Stiff dark gray clay									
-55	50		B.T. @ 50 FT	14	10							
-60	55											
-65	60											
-70	65											
-75	70											
-80	75											
-85	80											
-90	85											
-95	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/2/21

BORING DEPTH: 60 FT.

BORING ELEV.: -5.6 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-23

BORING LOCATION:
N30° 38.2004'
W88° 00.5741'

N: 231909 **E:** 1808242

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft to soft dark gray sandy silt	1	2							
				2	3	46				57.6		
-10	5		Very loose to loose dark gray silty sand w/ trace shell	3	4							
				4	3	42				44.6		
-15	10			5	4							
				6	3	41				58.5		
-20	15		Medium consistency dark gray sandy silt	7	4							
				8	3							
-25	20			9	5							
-30	25			10	4							
			Medium to stiff dark gray sandy clay	T-1								
-35	30			11	6						c*=0.13	
-40	35			12	4							
			Medium consistency dark gray clay	T-2		82	100	69	1	96.4		CH
-45	40											
-50	45			13	7							

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/2/21

BORING DEPTH: 60 FT.

BORING ELEV.: -5.6 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-23

BORING LOCATION:
N30° 38.2004'
W88° 00.5741'

N: 231909 **E:** 1808242

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45			T-3		50	83	39	71	93.6		MH
-55	50			14	7							
			medium to stiff dark gray silt									
-60	55			15	10						c*=0.13	
				T-4								
-65	60			16	10	50						
			B.T. @ 60 FT									
-70	65											
-75	70											
-80	75											
-85	80											
-90	85											
-95	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/3/21

BORING DEPTH: 50 FT.

BORING ELEV.: -5.5 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-24

BORING LOCATION:
N30° 38.1810'
W88° 00.3215'

N: 231786 **E:** 1809566

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
			Soft dark gray clay	2	2	55				88.8		
-10	5			3	4							
			Loose dark gray silty sand	4	4	47				46.2		
-15	10			5	6							
				6	4	38				54.4		
-20	15		Loose dark gray sandy silt	7	4							
				T-1		36	35	7	82	65.6	c=0.18	ML
-25	20			8	4							
-30	25			9	6							
			Medium consistency dark gray sandy clay	T-2								
-35	30			10	6							
-40	35			11	6						c*=0.13	
				T-3								
			Medium to stiff dark gray clay									
-45	40			12	8	82						
-50	45			13	8							

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/3/21

BORING DEPTH: 50 FT.

BORING ELEV.: -5.5 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-24

BORING LOCATION:
N30° 38.1810'
W88° 00.3215'

N: 231786 **E:** 1809566

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Medium to stiff dark gray clay									
-55	50		B.T. @ 50 FT	14	10							
-60	55											
-65	60											
-70	65											
-75	70											
-80	75											
-85	80											
-90	85											
-95	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/4/21

BORING DEPTH: 48.5 FT.

BORING ELEV.: -6.4 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-25

BORING LOCATION:
N30° 38.1978'
W88° 00.1737'

N: 231884 **E:** 1810341

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
-10				2 T-4	3	61 39	40	13	80	62.8 82.0	c=0.32 ∅=34°	ML
	5			3	2							
-15				4	3	43				53.7		
	10		Soft to medium consistency dark gray sandy silt w/ trace shell	5	4							
-20				6	6	37				60.5		
	15			7	6							
-25				8	4							
	20		Loose dark gray clayey sand	9	6							
-30				10	6							
	25		Medium consistency dark gray sandy clay	T-1								
-35				11	7							
	30											
-40				12	4						c*=0.13	
	35			T-2								
-45			Medium consistency dark gray clay									
	40											
-50				13	7	79						
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/4/21

BORING DEPTH: 48.5 FT.

BORING ELEV.: -6.4 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-25

BORING LOCATION:
N30° 38.1978'
W88° 00.1737'

N: 231884 **E:** 1810341

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Medium consistency dark gray clay	T-3		100	114	86	45	98.5		CH
-55			B.T. @ 48.5 FT									
	50											
-60												
	55											
-65												
	60											
-70												
	65											
-75												
	70											
-80												
	75											
-85												
	80											
-90												
	85											
-95												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/4/21

BORING DEPTH: 21 FT.

BORING ELEV.: -5.5 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-26

BORING LOCATION:
N30° 38.4409'
W88° 00.8106'

N: 233373 **E:** 1807009

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
			Soft dark gray sandy silt	2	3	31				59.2		
-10	5		Very loose dark gray silty sand	3	2	38				26.8		
			Soft dark gray sandy clay	4	3							
-15	10			T-1		32				31.2		
			Loose dark gray silty sand	5	4							
-20	15			6	4							
			Loose dark gray silty clayey sand	7	5							
-25	20			8	8							
			B.T. @ 21 FT									
-30	25											
-35	30											
-40	35											
-45	40											
-50	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/10/21

BORING DEPTH: 60 FT.

BORING ELEV.: -4.7 FT.

DATUM: MLLW

WATER DEPTH: 6'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-27

BORING LOCATION:
N30° 38.5064'
W88° 00.3731'

N: 233759 **E:** 1809304

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
-5	0			1	WOH							
			Very soft dark gray sandy clay	2	2	55				59.9		
-10	5			3	1							
				4	7							
-15	10		Loose to very loose dark gray silty sand w/ trace shell	5	2	30				10.5		
				6	WOH							
-20	15			T-1		33	38	14	83	73.2	c=0.12 Ø=22°	CL
				7	2							
-25	20			8	WOH							
			Very soft dark gray clay									
-30	25			9	2						c*=0.10	
				T-2								
-35	30			10	2							
-40	35			11	WOH	70					c*=0.13	
			Very soft to soft gray to dark gray clay w/ trace organics near 35 ft	T-3		79	116	91	53	98.9		CH
-45	40			12	WOH							
	45			13	WOH	72	96	69		94.2		CH

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/10/21

BORING DEPTH: 60 FT.

BORING ELEV.: -4.7 FT.

DATUM: MLLW

WATER DEPTH: 6'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-27

BORING LOCATION:
N30° 38.5064'
W88° 00.3731'

N: 233759 **E:** 1809304

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
-50	45											
-55	50			14	2							
			Very soft to soft gray to dark gray clay w/ trace organics near 35 ft									
-60	55			15	2	49					c*=0.15	
-65	60			16	4							
			B.T. @ 60 FT									
-70	65											
-75	70											
-80	75											
-85	80											
-90	85											
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/19/21

BORING DEPTH: 21 FT.

BORING ELEV.: -7.2 FT.

DATUM: MLLW

WATER DEPTH: 9'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-28

BORING LOCATION:
N30° 38.7342'
W88° 00.3124'

N: 235142 **E:** 1809628

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft dark gray silty clay	1	WOH							
-10			Very loose brown silty sand	2	WOH	40				32.6		
	5			3	8							
-15			Loose gray silty sand w/ traces of shell & dark brown organic silt lense around 8 ft	4	4	54				23.4		
	10			T-1		37	28	8	83	81.5	c=0.20	CL
-20			Very soft dark gray silty clay w/ trace of shell	5	WOH							
	15			6	WOH							
-25			Very soft dark gray sandy clay	7	WOH							
	20		Very soft dark gray silty clay	8	WOH							
			B.T. @ 21 FT									
-30												
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/17/21

BORING DEPTH: 60 FT.

BORING ELEV.: -11.4 FT.

DATUM: MLLW

WATER DEPTH: 13'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-29

BORING LOCATION:
N30° 38.6613'
W87° 59.8776'

N: 234687 **E:** 1811906

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very loose dark greenish gray silty sand	1	2							
-15			Very soft dark gray clay & wood	2	WOH	108				83.6		
	5		Very loose dark greenish gray silty sand w/ trace of shell	3	WOH							
-20				4	WOH	37				47.7		
	10		Very soft dark greenish gray sandy silt	T-1		40	38	10	81	64.0	c=0.28 Ø=8°	ML
-25			Very soft dark gray clay	5	WOH							
	15			6	WOH	47				91.7		
-30				7	WOH							
	20			8	WOH							
-35				9	WOH							
	25			T-2		80	84	63	53	99.2		CH
-40				10	WOH							
	30		Very soft to soft dark greenish gray clay									
-45				11	WOH							
	35			T-3								
-50				12	WOH							
	40											
-55				13	WOH	79	91	68		98.9		CH
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/17/21

BORING DEPTH: 60 FT.

BORING ELEV.: -11.4 FT.

DATUM: MLLW

WATER DEPTH: 13'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-29

BORING LOCATION:
N30° 38.6613'
W87° 59.8776'

N: 234687 **E:** 1811906

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45											
-60	50		Very soft to soft dark greenish gray clay	14	2							
-65	55			15	4						c*=0.13	
-70	60		Medium consistency dark greenish gray silty clay	16	6	98	131	91		96.7	c*=0.18	CH
			B.T. @ 60 FT									
-75	65											
-80	70											
-85	75											
-90	80											
-95	85											
-100	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/19/21

BORING DEPTH: 55 FT.

BORING ELEV.: -9.2 FT.

DATUM: MLLW

WATER DEPTH: 11'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-30

BORING LOCATION:
N30° 38.7057'
W87° 59.5005'

N: 234947 **E:** 1813883

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0											
-10			Very soft dark gray clay	1	WOR							
			Very soft dark gray sandy clay w/ trace of shell	2	WOH	49	60	37	81	81.1	c=0.13	CH
				T-4		41				78.9		
	5											
-15				3	WOH							
			Very loose dark gray silty sand w/ trace of shell	4	WOH	39				44.9		
	10											
-20			Very soft dark gray sandy clay	5	WOH							
				6	WOH							
	15											
-25				T-1		53	36	15	69	92.0	c=0.03 Ø=3°	CL
			Very soft dark gray clay w/ trace of wood around 18 ft	7	WOH							
	20											
-30				8	WOH							
				9	WOH							
	25											
-35				T-2								
				10	WOH						c*=0.13	
	30											
-40												
			Very soft dark greenish gray clay	11	WOH							
	35											
-45				T-3								
				12	WOH							
	40											
-50												
	45			13	WOH							

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/19/21

BORING DEPTH: 55 FT.

BORING ELEV.: -9.2 FT.

DATUM: MLLW

WATER DEPTH: 11'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-30

BORING LOCATION:
N30° 38.7057'
W87° 59.5005'

N: 234947 **E:** 1813883

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
-55	45		Very soft dark greenish gray clay	14	WOH						c*=0.13	
-60	50		Stiff dark gray organic clayey sand w/ wood lenses	15	9	165	219	151		30.9	c*=0.20	SC
-65	55		B.T. @ 55 FT									
-70	60											
-75	65											
-80	70											
-85	75											
-90	80											
-95	85											
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/17/21

BORING DEPTH: 21 FT.

BORING ELEV.: -11.2 FT.

DATUM: MLLW

WATER DEPTH: 13'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-31

BORING LOCATION:
N30° 38.5151'
W87° 59.5647'

N: 233793 **E:** 1813541

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft dark gray clay w/ silty sand lens	1	WOH							
-15				2	WOH	54				70.9		
	5		Very loose dark gray silty sand w/ trace of shell	3	WOH	41				49.1		
-20				4	WOH							
	10		Very soft dark gray sandy silt	T-1		36	41	15	82	81.0	c=0.14 Ø=0°	ML
-25			Very soft dark gray sandy clay	5	WOH							
	15			6	WOH							
-30			Very soft dark gray clay	7	WOH							
	20			8	WOH							
			B.T. @ 21 FT									
-35	25											
-40	30											
-45	35											
-50	40											
-55	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/11/21

BORING DEPTH: 58.5 FT.

BORING ELEV.: -7.9 FT.

DATUM: MLLW

WATER DEPTH: 9'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-32

BORING LOCATION:
N30° 38.3771'
W87° 59.8604'

N: 234919 **E:** 1811953

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-10				2	WOH							
	5			T-5		43	44	18	76	85.0	c=0.21 Ø=0°	CL
				3	WOH	128				47.8		
-15			Very soft dark gray sandy clay w/ trace shell	4	WOH	37				52.0		
	10			5	WOH	41				68.1		
-20				6	WOH							
	15			7	WOH							
-25				8	WOH							
	20			9	WOH	57						
-30				10	WOH							
	25											
-35				T-1								
	30			11	WOH							
-40			Very soft dark gray clay									
	35			12	WOH							
-45				T-2								
	40			13	WOH	81	92	63		99.4		CH
-50												
	45			14	WOH							

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/11/21

BORING DEPTH: 58.5 FT.

BORING ELEV.: -7.9 FT.

DATUM: MLLW

WATER DEPTH: 9'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-32

BORING LOCATION:
N30° 38.3771'
W87° 59.8604'

N: 234919 **E:** 1811953

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45											
-55				T-3								
				15	WOH							
	50											
-60			Very soft dark gray clay									
				16	WOH							
	55											
-65				T-4		58	67	40	65	89.9		CH
			B.T. @ 58.5 FT									
	60											
-70												
	65											
-75												
	70											
-80												
	75											
-85												
	80											
-90												
	85											
-95												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/4/21

BORING DEPTH: 21 FT.

BORING ELEV.: -3.6 FT.

DATUM: MLLW

WATER DEPTH: 5'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-33

BORING LOCATION:
N30° 38.5777'
W88° 00.5642'

N: 234196 **E:** 1808304

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very loose dark gray clayey sand w/ trace shell	1	2							
-5				2	3	34				29.1		
	5			3	4							
-10				4	4	30				35.3		
	10		Very loose to loose dark gray silty sand	T-1								
-15				5	6							
	15			6	7	34				24.4		
-20				7	7							
	20		Loose dark gray silty clayey sand	8	6							
-25			B.T. @ 21 FT									
	25											
-30												
	30											
-35												
	35											
-40												
	40											
-45												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/9/21

BORING DEPTH: 60 FT.

BORING ELEV.: -5.3 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-34

BORING LOCATION:
N30° 38.3663'
W88° 00.6401'

N: 232916 **E:** 1807901

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
			Very loose dark gray silty sand	2	WOH	35				35.2		
-10	5			3	2							
				4	2							
-15	10		Very soft dark gray sandy silt w/ trace shell	5	3	40				70.8		
				6	WOH							
-20	15			T-1								
			Soft to very soft dark gray sandy clay	7	2	45						
-25	20			8	WOH							
-30	25			9	WOH							
				T-2		60	67	48	63	97.8		CH
-35	30			10	2							
			Very soft to medium consistency dark gray clay									
-40	35			11	WOH	73						
				T-3		83	93	66	52	94.1		CH
-45	40			12	2							
-50	45			13	WOH						c*=0.13	

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/9/21

BORING DEPTH: 60 FT.

BORING ELEV.: -5.3 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-34

BORING LOCATION:
N30° 38.3663'
W88° 00.6401'

N: 232916 **E:** 1807901

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45											
-55	50			14	4							
			Very soft to medium consistency dark gray clay									
-60	55			15	WOH	75						
-65	60			16	6							
			B.T. @ 60 FT									
-70	65											
-75	70											
-80	75											
-85	80											
-90	85											
-95	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/10/21

BORING DEPTH: 65 FT.

BORING ELEV.: -6.3 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-35

BORING LOCATION:
N30° 38.5756'
W88° 00.1180'

N: 234173 **E:** 1810643

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very loose dark gray silty sand	1	WOH	39				49.9		
-10			Very loose dark gray clayey sand	2	1						c*=0.13	
	5		Very loose dark gray silty sand w/ trace shell	3	2	34				31.8		
-15				4	2							
	10		Very soft dark gray silty sandy clay	5	WOH	40				64.4		
-20			Very soft gray silty sandy clay	6	2							
	15			T-1		43	47	25	79	88.2	c=0.13 Ø=0°	CL
-25			Very loose dark gray silty clayey sand w/ trace shell	7	2							
	20		Very soft dark gray sandy clay	8	WOH							
-30				9	2							
	25		Very loose dark gray silty sand	T-2		32	33	8	92	45.8		SM
-35				10	2							
	30											
-40				11	WOH							
	35		Very soft to soft gray to dark gray clay	T-3								
-45				12	WOH							
	40											
-50				13	WOH							
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/10/21

BORING DEPTH: 65 FT.

BORING ELEV.: -6.3 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-35

BORING LOCATION:
N30° 38.5756'
W88° 00.1180'

N: 234173 **E:** 1810643

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45											
-55	50			14	2	65						
-60	55		Very soft to soft gray to dark gray clay	15	3							
-65	60			16	3							
-70	65		Stiff dark brown organic clay	17	9	130	220	145		29.1	c*=0.38	OH
			B.T. @ 65 FT									
-75	70											
-80	75											
-85	80											
-90	85											
-95	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/13/21

BORING DEPTH: 70 FT.

BORING ELEV.: -6.1 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-36

BORING LOCATION:
N30° 38.3929'
W88° 00.1418'

N: 233066 **E:** 1810513

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
			Very soft dark gray sandy clay	2	WOH	46				69.7		
-10	5			3	1							
			Very loose dark gray silty clayey sand w/ trace shell	4	WOH	42				40.6		
-15	10			5	WOH							
				6	WOH	38						
-20	15		Very soft dark gray sandy clay	T-1								
				7	WOH							
-25	20			8	WOH							
-30	25			9	WOH	59					c*=0.10	
				T-2								
-35	30			10	WOH							
			Very soft dark gray clay w/ trace wood near 20 ft									
-40	35			11	WOH							
				T-3		73	94	75	56	99.3		CH
-45	40			12	WOH							
-50	45			13	WOH						c*=0.13	

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/13/21

BORING DEPTH: 70 FT.

BORING ELEV.: -6.1 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: RS, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-36

BORING LOCATION:
N30° 38.3929'
W88° 00.1418'

N: 233066 **E:** 1810513

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45											
-55	50			14	1	59	82	60		79.1		CH
-60	55		Very soft dark gray clay w/ trace wood near 20 ft	15	1						c*=0.13	
-65	60			16	2	44	57	34		84.4		CH
-70	65		Medium consistency black organic clay	17	7	208					c*=0.38	
-75	70		Stiff gray clay w/ black organics	18	15	138	162	115		58.6		CH
			B.T. @ 70 FT									
-80	75											
-85	80											
-90	85											
-95	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/17/21

BORING DEPTH: 21 FT.

BORING ELEV.: -12.6 FT.

DATUM: MLLW

WATER DEPTH: 14'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-37

BORING LOCATION:
N30° 38.5824'
W87° 59.7050'

N: 234204 **E:** 1812808

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft dark gray clay w/ silty sand lenses	1	WOH							
-15				2	WOH	77				43.8		
	5		Very loose dark greenish gray silty sand	3	WOH	38				43.6		
-20				4	WOH							
	10		Very soft sandy silt	T-1		37	39	11	82	78.0	c=0.30 Ø=0°	ML
-25				5	WOH							
	15			6	WOH							
-30			Very soft dark gray clay w/ traces of wood	7	WOH							
	20			8	WOH	72	62	38		99.4		CH
			B.T. @ 21 FT									
-35												
	25											
-40												
	30											
-45												
	35											
-50												
	40											
-55												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/20/21

BORING DEPTH: 50 FT.

BORING ELEV.: -6.2 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-38

BORING LOCATION:
N30° 38.6561'
W88° 00.7628'

N: 234676 **E:** 1807266

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
-10				2	2	40				25.7		
	5			3	3							
			Very loose dark gray silty sand w/ traces of shell									
-15				4	2	40				39.3		
	10			T-1								
				5	2							
-20												
	15			6	WOH							
			Very soft dark gray sandy silt w/ trace of wood									
				7	WOH	42				62.8		
-25												
	20		Very loose dark gray silty, clayey sand	8	WOH							
-30				9	WOH						c*=0.13	
	25											
				T-2								
-35				10	WOH							
	30											
			Very soft dark gray to greenish gray clay									
-40				11	WOH	71						
	35											
				T-3								
-45				12	WOH							
	40											
			Medium to stiff dark greenish gray clay									
-50				13	7						c*=0.13	
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/20/21

BORING DEPTH: 50 FT.

BORING ELEV.: -6.2 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-38

BORING LOCATION:
N30° 38.6561'
W88° 00.7628'

N: 234676 **E:** 1807266

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Medium to stiff dark greenish gray clay									
-55				14	9						c*=0.18	
	50		B.T. @ 50 FT									
-60												
	55											
-65												
	60											
-70												
	65											
-75												
	70											
-80												
	75											
-85												
	80											
-90												
	85											
-95												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/12/21

BORING DEPTH: 21 FT.

BORING ELEV.: -3.3 FT.

DATUM: MLLW

WATER DEPTH: 5'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-39

BORING LOCATION:
N30° 38.7912'
W88° 00.6986'

N: 235494 **E:** 1807607

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	3							
-5			Very loose dark gray silty sand	2	4	35	NP	NP		18.1		SM
	5			3	2							
-10				4	5	33	NP	NP		17.4		SM
	10		Loose dark gray silty sand w/ trace shell	5	4							
-15				6	2	39	38	16		58.2		CL
	15		Very soft dark gray sandy clay w/ trace shell	7	2							
-20				T-1								
	20		Soft dark gray sandy clay	8	2							
-25			B.T. @ 21 FT									
	25											
-30												
	30											
-35												
	35											
-40												
	40											
-45												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/12/21

BORING DEPTH: 23.5 FT.

BORING ELEV.: -3.1 FT.

DATUM: MLLW

WATER DEPTH: 5'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-40

BORING LOCATION:
N30° 38.8689'
W88° 00.6981'

N: 235965 **E:** 1807611

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	4	33	NP	NP		19.4		SM
-5			Loose dark gray silty sand w/ trace shell	2	4							
	5			3	5	34	NP	NP		19.0		SM
-10				4	5							
	10		Loose dark gray silty sand	5	4	31	NP	NP		18.0		SM
-15				6	4							
	15		Soft dark gray sandy clay	7	2	36	34	11		51.8		CL
-20				8	2						c*=0.07	
	20		Soft dark gray clay w/ trace shell	T-1		51	60	40	71	96.0	c=0.14	CH
-25				9	2						c*=0.03	
			B.T. @ 23.5 FT									
	25											
-30												
	30											
-35												
	35											
-40												
	40											
-45												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/19/21

BORING DEPTH: 21 FT.

BORING ELEV.: -3.5 FT.

DATUM: MLLW

WATER DEPTH: 5'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-41

BORING LOCATION:
N30° 38.9653'
W88° 00.7386'

N: 236566 **E:** 1807397

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
-5			Very loose dark gray silty clayey sand w/ trace of shell	2	2							
	5			3	4	32				19.4		
-10			Very loose dark greenish gray silty sand	4	3							
	10			T-1		34	32	8	86	50.0	c=0.23 Ø=0°	ML
-15			Soft greenish gray sandy silt	5	4	37				57.3		
	15			6	WOH							
-20			Very loose greenish gray silty sand	7	WOH							
	20		Very loose dark greenish gray silty clayey sand	8	WOH							
-25			B.T. @ 21 FT									
	25											
-30												
	30											
-35												
	35											
-40												
	40											
-45												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/7/21

BORING DEPTH: 21 FT.

BORING ELEV.: -3.6 FT.

DATUM: MLLW

WATER DEPTH: 5'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-41B

BORING LOCATION:
N30° 38.9679'
W88° 00.7393'

N: 236566 **E:** 1807397

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft dark gray clay	1	WOH							
-5				2	WOH							
	5		Very loose dark gray silty sand	3	2							
-10				4	2							
	10		Very loose gray fine sand w/ silt & trace of shell	5	2							
-15				6	2							
	15		Very soft dark gray sandy clay	T-1								
-20				7	2							
	20			8	2							
-25			B.T. @ 21 FT									
	25											
-30												
	30											
-35												
	35											
-40												
	40											
-45												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/2/21

BORING DEPTH: 60 FT.

BORING ELEV.: -6.5 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-42

BORING LOCATION:
N30° 39.1543'
W88° 00.4627'

N: 237689 **E:** 1808852

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
			Very soft gray clay									
-10				2	WOH							
	5			3	2							
			Very loose dark gray silty sand w/ shell & clay									
-15				4	4	27				23.4		
	10			5	4							
			Very loose dark gray silty sand w/ trace of shell									
-20				6	4							
	15			7	WOH							
				T-1		35	28	3	86	67.3	c=0.24	ML
-25			Very soft dark gray sandy silt	8	WOH							
	20											
-30				9	WOH							
	25											
				T-2								
-35				10	WOH							
	30											
-40			Very soft dark gray clay	11	WOH	68					c*=0.18	
	35											
				T-3								
-45				12	WOH							
	40											
-50				13	WOH							
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/2/21

BORING DEPTH: 60 FT.

BORING ELEV.: -6.5 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-42

BORING LOCATION:
N30° 39.1543'
W88° 00.4627'

N: 237689 **E:** 1808852

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Very soft dark gray clay									
-55	50			14	3	59					c*=0.15	
			Soft dark gray clay w/ trace of wood									
-60	55			15	4						c*=0.15	
-65	60		Medium consistency dark brown organic clay w/ small amount of wood	16	7						c*=0.20	
			B.T. @ 60 FT									
-70	65											
-75	70											
-80	75											
-85	80											
-90	85											
-95	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/23/21

BORING DEPTH: 70 FT.

BORING ELEV.: -6.8 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-44

BORING LOCATION:
N30° 39.0158'
W88° 59.4484'

N: 236826 **E:** 1814164

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very loose gray clayey sand	1	WOR							
-10				2	WOR	51				68.5		
	5		Very soft greenish gray sandy silt	T-4		38	37	10	79	70.0	c=0.12 Ø=0°	ML
				3	WOH							
-15			Very loose greenish gray silty clayey sand	4	WOH	37				49.1		
	10			5	WOH							
			Very soft greenish gray sandy clay									
-20				6	WOH							
	15			7	WOH							
				T-1		63	52	27	62	98.7	c=0.11	CH
-25			Very soft greenish gray clay	8	WOH							
	20											
-30				9	WOH							
	25											
				T-2								
-35				10	WOH							
	30											
-40			Very soft to soft dark gray clay	11	2						c*=0.10	
	35											
				T-3								
-45				12	2						c*=0.13	
	40											
-50				13	2							
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/23/21

BORING DEPTH: 70 FT.

BORING ELEV.: -6.8 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-44

BORING LOCATION:
N30° 39.0158'
W88° 59.4484'

N: 236826 **E:** 1814164

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45											
-55			Very soft to soft dark gray clay									
	50			14	3							
-60												
	55			15	4						c*=0.13	
			Soft to very soft greenish gray clay									
-65												
	60			16	WOH							
-70												
	65			17	6						c*=0.20	
			Medium consistency greenish gray & dark brown organic clay & peat									
-75												
	70			18	4						c*=0.18	
			B.T. @ 70 FT									
-80												
	75											
-85												
	80											
-90												
	85											
-95												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 6/26/21

BORING DEPTH: 20 FT.

BORING ELEV.: -8.4 FT.

DATUM: MLLW

WATER DEPTH: 10'

DRILL CREW: ES, BT, RS, PK(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-45

BORING LOCATION:
N30° 38.8980'
W88° 00.0103'

N: 236125 **E:** 1811217

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very loose dark greenish gray silty sand	1	WOH	30	33	9		30.1		SM
-10			Very loose dark greenish gray silty, clayey sand	2	2	36	37	15		39.2		SC
	5			3	2	33	NP	NP		29.7		SM
-15			Very loose gray silty sand	4	2							
	10			5	WOH	39	40	18		74.5	c*=0.06	CL
-20			Very soft dark gray clay w/ some sand	T-1		51	46	25	69	94.5	c=0.09	CL
	15			6	WOH							
-25			Very soft dark gray clay	7	WOH	63						
	20			8	WOH							
-30			B.T. @ 20 FT									
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 6/30/21

BORING DEPTH: 50 FT.

BORING ELEV.: -9.0 FT.

DATUM: MLLW

WATER DEPTH: 10'

DRILL CREW: ES, BT, SM, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-46

BORING LOCATION:
N30° 38.8989'
W87°59.7814'

N: 236125 **E:** 1812417

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-10			Very loose black & dark gray silty sand	2	2	36	31	7		36.0		SM
	5			3	2	37	31	4		50.0		ML
-15				4	2							
	10			5	WOH	49						
-20			Very soft dark gray sandy silt									
				T-1								
	15			6	2							
-25				T-2								
	20			7	2							
-30												
	25		Soft & medium consistency dark gray clay w/ shell	8	5							
-35												
	30			9	2							
-40												
	35			10	2						c*=0.13	
-45			Soft dark gray clay	T-3		55	73	48		65.4		CH
	40			11	3	47	58	38				
-50												
	45		Wood	12	4							

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 6/30/21

BORING DEPTH: 50 FT.

BORING ELEV.: -9.0 FT.

DATUM: MLLW

WATER DEPTH: 10'

DRILL CREW: ES, BT, SM, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-46

BORING LOCATION:
N30° 38.8989'
W87°59.7814'

N: 236125 **E:** 1812417

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45											
-55			Soft greenish gray clay									
				13	4							
	50		B.T. @ 50 FT									
-60												
	55											
-65												
	60											
-70												
	65											
-75												
	70											
-80												
	75											
-85												
	80											
-90												
	85											
-95												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/18/21

BORING DEPTH: 21 FT.

BORING ELEV.: -11.2 FT.

DATUM: MLLW

WATER DEPTH: 13'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-47

BORING LOCATION:
N30° 38.8219'
W88° 59.4978'

N: 235651 **E:** 1813900

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
			Very soft dark gray clay									
				2	WOH	55				96.7		
-15												
	5			3	WOH							
			Very soft dark gray sandy clay									
				4	WOH							
-20												
	10											
			Very soft dark gray sandy silt	T-1		38	38	11	83	58.6	c=0.24	ML
				5	WOH							
-25												
	15			6	WOH	55	64	30				
			Very soft dark gray silty clay									
				7	WOH							
-30												
	20			8	WOH							
			B.T. @ 21 FT									
-35												
	25											
-40												
	30											
-45												
	35											
-50												
	40											
-55												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/18/21

BORING DEPTH: 60 FT.

BORING ELEV.: -11.3 FT.

DATUM: MLLW

WATER DEPTH: 13'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-48

BORING LOCATION:
N30° 38.7378'
W87° 59.7052'

N: 235146 **E:** 1812811

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft dark gray clay w/ sand lenses & traces of wood	1	WOH							
-15				2	WOH	38				41.0		
	5		Very loose dark gray silty sand	3	WOH							
-20				4	WOH	41				40.1		
	10		Very loose dark gray silty clayey sand	5	WOH							
-25			Very soft dark gray silty clay	6	WOH							
	15			T-1								
-30				7	WOH							
	20			8	WOH							
-35				9	WOH							
	25			T-2								
-40				10	WOH							
	30		Very soft dark greenish gray clay									
-45				11	WOH							
	35			T-3								
-50				12	WOH	88	87	62		99.4		CH
	40											
-55				13	WOH							
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/18/21

BORING DEPTH: 60 FT.

BORING ELEV.: -11.3 FT.

DATUM: MLLW

WATER DEPTH: 13'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-48

BORING LOCATION:
N30° 38.7378'
W87° 59.7052'

N: 235146 **E:** 1812811

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45											
-60	50		Very soft dark greenish gray clay	14	2	57					c*=0.15	
-65	55			15	2						c*=0.25	
-70	60		Medium consistency dark grayish brown organic clay	16	8	145	192	131		53.3		CH
			B.T. @ 60 FT									
-75	65											
-80	70											
-85	75											
-90	80											
-95	85											
-100	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/18/21

BORING DEPTH: 21 FT.

BORING ELEV.: -7.8 FT.

DATUM: MLLW

WATER DEPTH: 9'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-49

BORING LOCATION:
N30° 38.7352'
W88° 00.0933'

N: 235140 **E:** 1810777

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very loose dark gray silty, clayey sand	1	WOH							
-10			Very soft dark brown organic clay	2	WOH	193						
	5		Very soft dark gray sandy clay w/ trace of shell	3	2							
-15			Very loose dark gray silty sand w/ brown organic silt	4	2	111				40.0		
	10			T-1								
-20			Very loose dark gray silty sand w/ shell	5	WOH							
	15		Very soft dark gray sandy clay	6	WOH							
-25			Very soft dark gray clay	7	WOH							
	20			8	WOH							
-30			B.T. @ 21 FT									
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/7/21

BORING DEPTH: 21.5 FT.

BORING ELEV.: -7.5 FT.

DATUM: MLLW

WATER DEPTH: 9'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-50

BORING LOCATION:
N30° 39.1090'
W88°00.6931'

N: 237420 **E:** 1807644

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
-10				2	WOH	36	NP	NP		19.4		SM
	5		Very loose dark brown to dark gray silty sand	3	3							
-15				4	2	34	NP	NP		15.5		SM
	10			5	3							
-20			Very loose dark gray to gray silty clayey sand w/ trace shell	6	2	34	28	6		43.2		SC-SM
	15		Very loose dark gray clayey sand w/ trace shell	7	2							
-25			Soft dark gray clay w/ trace shell	T-1		41	47	25	81	81.6	c=0.01 Ø=11°	CL
	20			8	2	48	46	25		88.2		CL
-30			B.T. @ 21.5 FT									
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/24/21

BORING DEPTH: 80 FT.

BORING ELEV.: -6.2 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-51

BORING LOCATION:
N30° 38.9616'
W88° 00.4189'

N: 236520 **E:** 1809076

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft gray & brown silty clay w/ organics	1	2							
-10				2	WOH							
	5		Loose & very loose dark gray silty sand w/ traces of shell	3	4	32				24.1		
-15				4	10							
	10		Soft dark gray sandy silt	5	3	29				62.0		
-20			Very loose greenish gray silty clayey sand	6	WOH							
	15			7	WOH							
-25			Very soft greenish gray sandy clay	8	WOH							
	20			9	WOH							
-30				10	WOH	50	62	44		97.0		CH
	25			T-1								
-35				11	3	67						
	30		Very soft & soft dark gray clay									
-40				12	WOH							
	35			T-2								
-45												
	40											
-50				13	2	64	78	61		79.0		CH
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/24/21

BORING DEPTH: 80 FT.

BORING ELEV.: -6.2 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-51

BORING LOCATION:
N30° 38.9616'
W88° 00.4189'

N: 236520 **E:** 1809076

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45			T-3								
-55	50		Very soft & soft dark gray clay	14	4							
-60	55			15	3							
				Refusal								
-65	60		Stiff greenish gray clay w/ wood	16	10							
-70	65			17	4	49	84	61		97.2		CH
-75	70		Soft greenish gray clay w/ wood lenses	18	3							
-80	75			19	2	45						
-85	80		Very dense gray silty sand w/ clay & trace of organics	20	52							
			B.T. @ 80 FT									
-90	85											
-95	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/7/21

BORING DEPTH: 21 FT.

BORING ELEV.: -9.9 FT.

DATUM: MLLW

WATER DEPTH: 11'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-52

BORING LOCATION:
N30° 39.0433'
W87° 59.6172'

N: 236996 **E:** 1813280

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
-10	0		Soft dark gray sandy, silty clay	1	4							
			Soft greenish gray clay	2	4						c*=0.75	
-15	5		Soft dark gray sandy silt	3	3	38				55.0		
			Very soft dark gray sandy clay	4	WOH							
-20	10			5	WOH							
			Very soft dark gray silty clay	6	WOH	56	75	54		92.7		CH
-25	15			T-1								
			Very soft dark gray clay	7	WOH							
-30	20			8	WOH							
			B.T. @ 21 FT									
-35	25											
-40	30											
-45	35											
-50	40											
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/19/21

BORING DEPTH: 21 FT.

BORING ELEV.: -4.2 FT.

DATUM: MLLW

WATER DEPTH: 6'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-53

BORING LOCATION:
N30° 38.7240'
W88° 00.5308'

N: 235082 **E:** 1808483

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Soft gray sandy clay	1	3							
-5				2	2	34				28.4		
	5		Very loose dark gray silty sand									
-10				3	2							
			Very loose dark gray silty sand w/ shell	4	2	28				25.4		
	10										c=0.56	
-15				T-1		32	30	7	87	34.7	Ø=0°	SM
				5	2							
	15		Very loose dark gray silty sand w/ traces of shell	6	WOH							
-20				7	WOH	40				33.7		
	20		Very soft dark gray sandy clay	8	WOH							
-25			B.T. @ 21 FT									
	25											
-30												
	30											
-35												
	35											
-40												
	40											
-45												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/7/21

BORING DEPTH: 21.5 FT.

BORING ELEV.: -5.2 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-54

BORING LOCATION:
N30° 39.1341'
W88° 00.2352'

N: 237562 **E:** 1810044

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	3	36	NP	NP		21.7		SM
				2	4							
-10	5		Very loose to loose dark gray silty sand	3	5	34	NP	NP		21.9		SM
				4	4							
-15	10			5	2	35	NP	NP		33.9		SM
			Very loose dark gray silty sand w/ trace shell	6	2							
-20	15		Soft dark gray sandy clay	7	2	38	37	14		72.5		CL
				T-1		57	58	38	66	91.8	c=0.08	CH
-25	20		Soft dark gray clay	8	2							
			B.T. @ 21.5 FT									
-30	25											
-35	30											
-40	35											
-45	40											
-50	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 6/24/21

BORING DEPTH: 50 FT.

BORING ELEV.: -9.0 FT.

DATUM: MLLW

WATER DEPTH: 11'

DRILL CREW: ES, BT, RS, PK(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-55

BORING LOCATION:
N30° 39.1291'
W88° 00.0062'

N: 237526 **E:** 1811244

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very loose dark greenish gray clayey sand	1	2	44	31	9		45.0		SC
-10			Firm dark gray silty sand	2	2	48	37	12		41.8		SM
	5			3	3	30	29	8		24.5		SC
-15			very loose dark gray clayey sand	4	2							
	10			5	WOH	41						
-20				6	1	43						
	15			T-1		46	55	36	76	90.1	c=0.15	CH
-25				8	2	53	66	41		92.0		CH
	20			T-2								
-30				9	WOH	72					c*=0.02	
	25											
-35			Very soft & soft dark gray silty clay	T-3		73	98	69	56	99.4		CH
	30			10	3						c*=0.04	
-40												
	35			11	2						c*=0.05	
-45												
	40			12	2	80					c*=0.05	
-50												
	45			13	2						c*=0.06	

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 6/24/21

BORING DEPTH: 50 FT.

BORING ELEV.: -9.0 FT.

DATUM: MLLW

WATER DEPTH: 11'

DRILL CREW: ES, BT, RS, PK(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-55

BORING LOCATION:
N30° 39.1291'
W88° 00.0062'

N: 237526 **E:** 1811244

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45											
-55			Very soft & soft dark gray silty clay									
				14	2						c*=0.05	
	50		B.T. @ 50 FT									
-60												
	55											
-65												
	60											
-70												
	65											
-75												
	70											
-80												
	75											
-85												
	80											
-90												
	85											
-95												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/8/21

BORING DEPTH: 21.5 FT.

BORING ELEV.: -7.2 FT.

DATUM: MLLW

WATER DEPTH: 9'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-56

BORING LOCATION:
N30° 39.1300'
W87°59.7772'

N: 237526 **E:** 1812444

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very loose dark gray silty sand	1	2							
-10			Very loose dark gray silty clayey sand	2	2	40	34	6		33.4		SM
	5			3	2							
-15			Very loose dark gray silty clayey sand w/ trace shell	4	2	38	32	6		35.6		SM
	10			5	2							
-20			Soft dark gray sandy clay	6	2	39	36	13		65.0	c*=0.06	CL
	15			7	2						c*=0.05	
-25			Soft dark gray silt	T-1		66	65	21	61	97.4		MH
	20		Soft dark gray clay	8	2	74	62	37		96.7	c*=0.02	CH
			B.T. @ 21.5 FT									
-30												
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: BARGE-SIMCO

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/10/21

BORING DEPTH: 55 FT.

BORING ELEV.: -1.8 FT.

DATUM: MLLW

WATER DEPTH: 3.5'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-57

BORING LOCATION:
N30° 39.5784'
W87° 59.5914'

N: 240251 **E:** 1813433

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOR							
-5				2	WOR							
	5		Very loose fine gray silty sand	3	WOR	34				25.5		
-10				4	WOR							
	10			5	5							
-15				6	WOH							
	15		Very soft dark gray sandy silt	T-1		39	38	13	82	76.0	c=0.17 Ø=0°	ML
-20				7	WOH							
	20											
-25			Very soft dark gray sandy clay	T-2								
	25											
-30				8	WOH							
	30											
-35				T-3								
	35		Very soft dark greenish gray clay									
-40				9	1							
	40											
-45				10	1							
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: BARGE-SIMCO

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/10/21

BORING DEPTH: 55 FT.

BORING ELEV.: -1.8 FT.

DATUM: MLLW

WATER DEPTH: 3.5'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-57

BORING LOCATION:
N30° 39.5784'
W87° 59.5914'

N: 240251 **E:** 1813433

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45											
-50			Very soft dark greenish gray clay	11	2							
	50											
-55			Stiff dark greenish gray clay	12	22	83				86.8		
	55		B.T. @ 55 FT									
-60												
	60											
-65												
	65											
-70												
	70											
-75												
	75											
-80												
	80											
-85												
	85											
-90												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/7/21

BORING DEPTH: 21 FT.

BORING ELEV.: -5.4 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-58

BORING LOCATION:
N30° 39.4376'
W87° 59.5226'

N: 239384 **E:** 1813787

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
				2	WOH							
-10	5		Very loose dark gray sandy silty clayey sand	T-2								
				3	WOH	39				45.3		
				4	WOH							
-15	10			5	WOH							
				6	WOH							
-20	15		Very soft dark gray clay w/ traces of wood	T-1								
				7	WOH	56						
-25	20			8	WOH							
			B.T. @ 21 FT									
-30	25											
-35	30											
-40	35											
-45	40											
-50	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: BARGE-SIMCO

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/9/21

BORING DEPTH: 50 FT.

BORING ELEV.: -6.2 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-59

BORING LOCATION:
N30° 39.2274'
W87° 59.4816'

N: 238126 **E:** 1813992

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft dark gray silty clay w/sand	1	WOR							
-10			Very soft dark gray sandy clay	2	WOR	55				61.1		
	5		Very loose dark gray silty sand w/trace clay	3	WOH							
-15				4	4							
	10			5	WOH							
-20				T-1								
	15			6	WOR							
-25				7	WOH							
	20		Very soft dark gray sandy clay									
-30				T-2								
	25											
-35				8	WOH							
	30											
-40				T-3								
	35											
-45				9	2							
	40		Firm to dense dark greenish gray fine to medium sand with silt									
-50				10	22							
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: BARGE-SIMCO

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/9/21

BORING DEPTH: 50 FT.

BORING ELEV.: -6.2 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-59

BORING LOCATION:
N30° 39.2274'
W87° 59.4816'

N: 238126 **E:** 1813992

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Firm to dense dark greenish gray fine to medium sand with silt									
-55				11	34							
	50		B.T. @ 50 FT									
-60												
	55											
-65												
	60											
-70												
	65											
-75												
	70											
-80												
	75											
-85												
	80											
-90												
	85											
-95												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/13/21

BORING DEPTH: 21.5 FT.

BORING ELEV.: -3.0 FT.

DATUM: MLLW

WATER DEPTH: 4'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-60

BORING LOCATION:
N30° 39.2587'
W88° 00.6889'

N: 238328 **E:** 1807670

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
-5				2	2							
	5			3	4	49	NP	NP		19.8		SM
-10			Very loose dark gray silty sand	4	4							
	10			5	2	32	NP	NP		17.5		SM
-15				6	3							
	15			7	4	33	NP	NP		11.5		SP-SM
-20			Loose to very loose dark gray sand w/ silt & trace shell	8	5							
	20			9	2							
-25			B.T. @ 21.5 FT									
	25											
-30												
	30											
-35												
	35											
-40												
	40											
-45												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: BARGE-SIMCO

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/14/21

BORING DEPTH: 20 FT.

BORING ELEV.: -2.9 FT.

DATUM: MLLW

WATER DEPTH: 4'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-61

BORING LOCATION:
N30° 39.5184'
W88° 00.4584'

N: 239904 **E:** 1808872

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOR							
-5				2	WOR	34				36.9		
	5			3	2							
-10				4	6							
	10		Very loose & loose gray silty sand w/trace wood fragments & organics	5	4	33				12.3		
-15				6	3							
	15			7	2							
-20												
	20		Very loose gray silty sand w/some clay lenses	8	1	38				43.6		
			B.T. @ 20 FT									
-25												
	25											
-30												
	30											
-35												
	35											
-40												
	40											
-45												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/10/21

BORING DEPTH: 60 FT.

BORING ELEV.: -4.4 FT.

DATUM: MLLW

WATER DEPTH: 6'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-62

BORING LOCATION:
N30° 39.5084'
W88° 00.0664'

N: 239840 **E:** 1807807

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
-5	0		Very soft dark gray silty clay	1	WOH							
				2	WOH	53				84.4		
-10	5		Very loose dark gray silty, clayey sand w/ trace of shell	3	WOH							
				T-1								
-15	10			4	2							
			Very loose & loose dark gray silty sand w/ traces of shell & wood	5	5	31				31.1		
-20	15			6	2							
				T-2								
-25	20			7	WOH							
			Very soft dark gray sandy clay									
-30	25			8	WOH	42						
-35	30			9	WOH							
-40	35		Very soft to soft dark gray clay	10	WOH							
-45	40			11	WOH	75						
	45			12	WOH							

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/10/21

BORING DEPTH: 60 FT.

BORING ELEV.: -4.4 FT.

DATUM: MLLW

WATER DEPTH: 6'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-62

BORING LOCATION:
N30° 39.5084'
W88° 00.0664'

N: 239840 **E:** 1807807

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
-50	45			T-3		76	81	60		93.8		CH
				13	2							
-55	50		Very soft to soft dark gray clay									
				14	4							
-60	55											
			Medium consistency very dark gray organic silt	15	7	103	183	117		86.7		MH
-65	60		B.T. @ 60 FT									
-70	65											
-75	70											
-80	75											
-85	80											
-90	85											
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/13/21

BORING DEPTH: 19 FT.

BORING ELEV.: -3.5 FT.

DATUM: MLLW

WATER DEPTH: 5'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-63

BORING LOCATION:
N30° 39.3862'
W88° 00.4593'

N: 239095 **E:** 1808877

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
-5			Very loose dark gray silty sand w/ trace shell	2	2	35	NP	NP		35.0		SM
	5			3	2							
-10				4	7	37	NP	NP		28.6		SM
	10		Loose dark gray silty sand w/ trace shell	5	6							
-15				6	3	33	NP	NP		8.5		SP-SM
	15		Very loose to loose dark gray sand w/ silt	7	3							
-20				8	4							
	20		B.T. @ 19 FT									
-25												
	25											
-30												
	30											
-35												
	35											
-40												
	40											
-45												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/3/21

BORING DEPTH: 70 FT.

BORING ELEV.: -4.9 FT.

DATUM: MLLW

WATER DEPTH: 6'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-64

BORING LOCATION:
N30° 39.5031'
W87° 59.7216'

N: 239786 **E:** 1812730

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
-5	0		Very loose dark gray silty sand	1	3							
				2	4	42				60.1		
-10	5			3	WOH							
				4	2	42				53.5		
-15	10			5	2							
			Very loose dark gray sandy silt w/ trace shell	6	2							
-20	15			7	WOH	38				51.4		
				8	3							
-25	20			9	2							
-30	25		Very soft dark gray sandy clay	10	WOH							
				T-1								
-35	30			11	4							
			Soft dark gray silty clay									
-40	35			12	4							
				T-2								
-45	40		Medium to soft consistency dark gray clay									
	45			13	4							

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/3/21

BORING DEPTH: 70 FT.

BORING ELEV.: -4.9 FT.

DATUM: MLLW

WATER DEPTH: 6'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-64

BORING LOCATION:
N30° 39.5031'
W87° 59.7216'

N: 239786 **E:** 1812730

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
-50	45											
				T-3								
				14	6							
-55	50											
			Medium to soft consistency dark gray clay									
				15	2						c*=0.13	
-60	55											
				T-4								
				16	3							
-65	60											
				17	16						c*=0.38	
-70	65		Very stiff greenish gray clay w/ traces of wood									
				18	16						c*=0.25	
-75	70		B.T. @ 70 FT									
-80	75											
-85	80											
-90	85											
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/13/21

BORING DEPTH: 21 FT.

BORING ELEV.: -7.3 FT.

DATUM: MLLW

WATER DEPTH: 9'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-65

BORING LOCATION:
N30° 39.3599'
W088°00.0018'

N: 238925 **E:** 1811274

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very loose dark gray silty sand	1	2	37				28.9		
-10			Loose dark gray silty clayey sand	2	4							
	5			3	2	34	25	2		28.4		SM
-15			Very loose dark gray silty sand w/ trace shell	4	3							
	10			5	2	34	29	5		38.9		SM
-20			Soft dark gray sandy silt	6	2							
	15		Soft dark gray silt	T-1		54	53	23	70	94.7	c=0.10	MH
-25				7	2	54	61	39		93.8	c*=0.13	CH
			Soft dark gray clay									
	20			8	4							
			B.T. @ 21 FT									
-30												
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/2/21

BORING DEPTH: 20 FT.

BORING ELEV.: -6.5 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-66

BORING LOCATION:
N30° 39.3763'
W88° 00.2186'

N: 239029 **E:** 1810138

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft dark gray silty clay	1	WOH							
-10				2	WOH							
	5		Very loose dark gray silty sand w/ trace of shell	3	2	33				20.4		
-15			Very loose gray silty sand w/ dark brown organic clay lense	4	4							
	10		Very loose gray silty sand w/ traces of shell	5	4							
-20				6	2	32				21.8		
	15		Very loose dark gray silty clayey sand	7	WOH							
				T-1		39	37	17	81	85.0	c=0.20	CL
-25			Very soft dark gray silty clay	8	WOH							
	20		B.T. @ 20 FT									
-30												
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/9/21

BORING DEPTH: 55 FT.

BORING ELEV.: -5.4 FT.

DATUM: MLLW

WATER DEPTH: 6'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-67

BORING LOCATION:
N30° 39.2544'
W88° 00.2463'

N: 238291 **E:** 1809989

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft dark gray clay	1	WOH							
			Very soft dark gray sandy silty clay w/ trace of shell	2	WOH	42						
-10	5		Very loose dark gray silty clayey sand w/ trace of shell	3	WOH							
				T-1		39	NP	NP	82	13.0	c=3.51 Ø=0°	SM
-15	10			4	6	30						
			Loose to very loose dark gray silty sand	5	2							
-20	15			T-2								
				6	2							
-25	20		Very loose dark gray silty clayey sand	7	WOH							
-30	25		Very soft dark gray sandy clay	8	WOH	39						
-35	30			9	WOH							
-40	35		Very soft dark gray clay	10	WOH							
-45	40			11	1							
-50	45			12	1							

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/9/21

BORING DEPTH: 55 FT.

BORING ELEV.: -5.4 FT.

DATUM: MLLW

WATER DEPTH: 6'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-67

BORING LOCATION:
N30° 39.2544'
W88° 00.2463'

N: 238291 **E:** 1809989

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Very soft dark gray clay									
				T-3								
-55	50			13	4							
			Soft to medium consistency dark gray clay									
-60	55			14	7	57	79	64		76.4		CH
			B.T. @ 55 FT									
-65	60											
-70	65											
-75	70											
-80	75											
-85	80											
-90	85											
-95	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/9/21

BORING DEPTH: 50 FT.

BORING ELEV.: -7.4 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-68

BORING LOCATION:
N30° 39.1933'
W87° 59.8976'

N: 237912 **E:** 1811815

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-10			Very soft dark gray silty clay w/ sand	2	WOH							
	5			3	WOH							
-15			Very soft dark gray sandy silt	T-1		33	27	1	88	52.3	c=0.55 Ø=0°	ML
	10			4	WOH	36				45.5		
-20			Very loose dark gray silty clayey sand w/ traces of shell	5	WOH							
	15			T-2		40	44	23	80	78.0	c=0.15	CL
-25			Very soft dark gray silty clay	6	WOH						c*=0.13	
	20			7	WOH							
-30												
	25			8	WOH	53						
-35												
	30			9	WOH							
-40			Very soft dark gray clay									
	35			10	WOH							
-45												
	40			11	WOH							
-50												
	45			12	WOH	76					c*=0.13	

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/9/21

BORING DEPTH: 50 FT.

BORING ELEV.: -7.4 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-68

BORING LOCATION:
N30° 39.1933'
W87° 59.8976'

N: 237912 **E:** 1811815

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45											
-55			Very soft dark gray clay	T-3								
			Medium consistency dark gray clay	13	8						c*=0.13	
	50		B.T. @ 50 FT									
-60												
	55											
-65												
	60											
-70												
	65											
-75												
	70											
-80												
	75											
-85												
	80											
-90												
	85											
-95												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/3/21

BORING DEPTH: 21 FT.

BORING ELEV.: -5.6 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-69

BORING LOCATION:
N30° 38.3371'
W88° 00.4731'

N: 232735 **E:** 1808775

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Soft dark gray clay	1	2							
			Soft dark gray sandy silt	2	3	51	29	4		56.8		ML
-10	5		Very loose to loose dark gray silty clayey sand	3	3	39				41.5		
				4	6							
-15	10		Medium consistency dark gray sandy silt	T-1		42	26	1	80	64.1		ML
				5	4							
-20	15		Loose dark gray silty sand	6	6							
			Loose dark gray clayey sand w/ trace shell near 20 ft	7	4							
-25	20			8	6							
			B.T. @ 21 FT									
-30	25											
-35	30											
-40	35											
-45	40											
-50	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/4/21

BORING DEPTH: 21 FT.

BORING ELEV.: -5.4 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, RS, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-70

BORING LOCATION:
N30° 38.3427'
W88° 00.2696'

N: 232765 **E:** 1809842

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very loose dark gray silty sand w/ trace shell & organics	1	2							
				2	3	47				43.1		
-10	5			3	2							
			Very loose dark gray silty clayey sand	4	3	41				49.6		
-15	10			T-1								
				5	6	38				37.3		
-20	15		Loose & firm dark gray silty sand w/ trace shell near 13 ft & 18 ft	6	12							
				7	8							
-25	20			8	-							
			B.T. @ 21 FT									
-30	25											
-35	30											
-40	35											
-45	40											
-50	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/7/21

BORING DEPTH: 21 FT.

BORING ELEV.: -5.4 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-71

BORING LOCATION:
N30° 39.3201'
W87° 59.6861'

N: 238676 **E:** 1812927

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft dark gray sandy clay	1	WOH							
				2	WOH	41				51.6		
-10	5			3	WOH							
			Very soft dark gray sandy silt w/ traces of shell	4	1	36				51.0		
-15	10			5	WOH							
				6	WOH	38						
-20	15		Very soft dark gray sandy clay	T-1								
				7	WOH							
-25	20		Very soft dark gray clay	8	WOH						c*=0.13	
			B.T. @ 21 FT									
-30	25											
-35	30											
-40	35											
-45	40											
-50	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: BARGE-SIMCO

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/14/21

BORING DEPTH: 65 FT.

BORING ELEV.: -1.5 FT.

DATUM: MLLW

WATER DEPTH: 3.6 FT.

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-72

BORING LOCATION:
N30° 39.4212'
W88° 00.6672'

N: 239324 **E:** 1807789

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOR							
-5				2	WOR							
	5			3	WOH	26				14.0		
-10				4	WOH							
	10		Very loose gray fine silty sand	5	2							
-15				6	2							
	15			7	3	41				11.9		
-20				8	2							
	20											
-25				9	WOH							
	25		Very soft dark gray sandy clay									
-30				T-1								
	30											
-35				T-2								
	35		Very loose dark gray clayey sand									
-40				T-3								
	40		Very loose dark gray silty sand									
-45			Soft dark gray sandy clay w/ trace shell	10	4							
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: BARGE-SIMCO

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/14/21

BORING DEPTH: 65 FT.

BORING ELEV.: -1.5 FT.

DATUM: MLLW

WATER DEPTH: 3.6 FT.

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-72

BORING LOCATION:
N30° 39.4212'
W88° 00.6672'

N: 239324 **E:** 1807789

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Soft dark gray sandy clay w/ trace shell									
-50	50			11	9							
-55	55		Soft greenish gray clay	12	4	38				84.8		
-60	60		Loose greenish gray clayey sand	13	8							
-65	65		Dense light greenish gray sand	14	42	28				9.4		
			B.T. @ 65 FT									
-70	70											
-75	75											
-80	80											
-85	85											
-90	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: BARGE-SIMCO

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/13/21

BORING DEPTH: 60 FT.

BORING ELEV.: -2.1 FT.

DATUM: MLLW

WATER DEPTH: 3.9'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-73

BORING LOCATION:
N30° 39.6036'
W88° 00.6144'

N: 240413 **E:** 1808056

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOR							
-5				2	WOH	32				21.7		
	5			3	WOH							
-10				4	3							
	10		Very loose dark gray fine silty sand	5	4							
-15				6	3	37				11.9		
	15			7	3							
-20				8	3							
	20											
-25				9	1							
	25											
-30				T-1								
	30											
-35			Very soft gray sandy clay	T-2								
	35											
-40				T-3								
	40											
-45			Loose greenish gray silty sand	10	3							
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: BARGE-SIMCO

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/13/21

BORING DEPTH: 60 FT.

BORING ELEV.: -2.1 FT.

DATUM: MLLW

WATER DEPTH: 3.9'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-73

BORING LOCATION:
N30° 39.6036'
W88° 00.6144'

N: 240413 **E:** 1808056

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45		Loose greenish gray silty sand									
-50												
	50		Soft gray sandy clay w/ trace organics	11	3							
-55												
	55			12	8	281						
			Very soft brown clay w/ wood									
-60												
	60			13	2	106						
			B.T. @ 60 FT									
-65												
	65											
-70												
	70											
-75												
	75											
-80												
	80											
-85												
	85											
-90												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: BARGE-SIMCO

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/12/21

BORING DEPTH: 60 FT.

BORING ELEV.: -3.4 FT.

DATUM: MLLW

WATER DEPTH: 5'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-74

BORING LOCATION:
N30° 39.6168'
W88° 00.2754'

N: 240483 **E:** 1809851

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-5			Very loose dark gray silty sand	2	WOH	29				15.6		
	5		Very loose dark gray clayey sand with silt	3	WOH							
-10				4	WOH							
	10		Very loose dark gray fine silty sand	5	2							
-15			Very loose dark gray fine clayey sand with silt	6	1	43				36.1		
	15			T-1		38	43	22	84	77.1	c=0.17 Ø=0°	CL
-20				T-2								
	20											
-25												
	25		Very soft gray to dark gray sandy clay	7	WOH							
-30				T-3								
	30											
-35												
	35			8	WOH							
-40												
	40		Very soft gray clay	9	WOR							
-45												
	45		Very soft to soft dark greenish gray clay w/ organics	10	5							

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: BARGE-SIMCO

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/12/21

BORING DEPTH: 60 FT.

BORING ELEV.: -3.4 FT.

DATUM: MLLW

WATER DEPTH: 5'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-74

BORING LOCATION:
N30° 39.6168'
W88° 00.2754'

N: 240483 **E:** 1809851

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	45											
-50												
			Very soft to soft dark greenish gray clay w/ organics	11	3	79						
	50											
-55												
				12	5							
	55											
-60			Stiff to very stiff greenish gray clay									
				13	9							
	60		B.T. @ 60 FT									
-65												
	65											
-70												
	70											
-75												
	75											
-80												
	80											
-85												
	85											
-90												
	90											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/7/21

BORING DEPTH: 21 FT.

BORING ELEV.: -6.6 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-75

BORING LOCATION:
N30° 39.6062'
W87° 59.8755'

N: 240414 **E:** 1811942

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
			Very soft dark gray sandy silt									
-10				2	WOH	56				75.1		
	5			3	WOH	32				34.7		
			Very loose dark gray silty sand w/ trace of shell									
-15				4	WOH							
	10		Very soft dark gray sandy silt	5	WOH	36				59.0		
-20				6	WOH							
	15			T-1								
			Very soft dark gray silty clay									
-25				7	WOH							
	20			8	WOH							
			B.T. @ 21 FT									
-30												
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/28/21

BORING DEPTH: 21.5 FT.

BORING ELEV.: -6.6 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-76

BORING LOCATION:
N30° 38.6393'
W88° 00.9419'

N: 234578 **E:** 1806326

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-10				2	WOH	40				29.6		
	5		Very loose dark gray silty sand	3	4							
-15				4	4	42				27.7		
	10			5	2							
-20				6	WOH							
	15		Very soft dark gray silty sandy clay	7	WOH							
-25				8	WOH							
	20		Very soft dark gray silty clay w/small amount wood	9	WOH							
			B.T. @ 21.5 FT									
-30	25											
-35	30											
-40	35											
-45	40											
-50	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/28/21

BORING DEPTH: 21 FT.

BORING ELEV.: -7.1 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-77

BORING LOCATION:
N30° 38.3917'
W88° 00.9729'

N: 233078 **E:** 1806157

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft dark gray silty sandy clay	1	WOH							
-10				2	WOH	49						
	5		Very soft dark gray clayey silty sand	T-1		29	27	6		26.9		SC-SM
-15				3	WOH							
	10			4	WOH	79						
-20			Very soft dark gray silty sandy clay	5	WOH							
	15			6	WOH							
-25				7	WOH							
			Very soft dark gray silty clay									
	20			8	WOH	58						
			B.T. @ 21 FT									
-30												
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/28/21

BORING DEPTH: 21 FT.

BORING ELEV.: -6.2 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-78

BORING LOCATION:
N30° 38.2397'
W88° 00.9778'

N: 232157 **E:** 1806127

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH	69				52.6		
-10			Very soft dark gray sandy silt	2	WOH							
	5			T-1		40	31	6		64.7		ML
-15			Very loose sark gray silty clayey sand	3	WOH							
	10			4	WOH							
			Very soft dark gray silty sandy clay w/trace shell	5	WOH							
-20												
	15			6	WOH							
			Very soft dark gray silty clay	7	WOH	52						
-25												
	20			8	WOH							
			B.T. @ 21 FT									
-30												
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/29/21

BORING DEPTH: 21 FT.

BORING ELEV.: -7.6 FT.

DATUM: MLLW

WATER DEPTH: 9'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-79

BORING LOCATION:
N30° 38.0653'
W88° 00.9756'

N: 231100 **E:** 1806134

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft dark gray silty sandy clay w/ trace shell & wood	1	WOH							
-10				2	WOH							
	5			T-1		44	42	21		53.8		CL
			Very soft dark gray silty sandy clay									
-15				3	WOH							
	10			4	WOH	41						
-20				5	WOH							
	15			6	WOH							
			Very soft dark gray silty sandy clay w/ trace organics & shell									
-25				7	WOH	50						
	20			8	WOH							
			B.T. @ 21 FT									
-30												
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/29/21

BORING DEPTH: 21 FT.

BORING ELEV.: -6.7 FT.

DATUM: MLLW

WATER DEPTH: 8'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-80

BORING LOCATION:
N30° 37.9180'
W88° 00.9430'

N: 230206 **E:** 1806301

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
			Very soft dark gray silty sandy clay w/shell									
-10				2	WOH							
	5			T-1		47	42	23		58.6		CL
				3	WOH							
-15												
	10		Very soft dark gray silty sandy clay	4	WOH							
				5	WOH							
-20												
	15			6	WOH	54	56	34		95.9		CH
			Very soft dark gray clay	7	WOH							
-25												
	20			8	WOH							
			B.T. @ 21 FT									
-30												
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/30/21

BORING DEPTH: 21 FT.

BORING ELEV.: -7.6 FT.

DATUM: MLLW

WATER DEPTH: 9'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-81

BORING LOCATION:
N30° 37.8740'
W88° 00.8218'

N: 229937 **E:** 1806935

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-10			Very soft dark gray silty sandy clay	2	WOH							
	5			T-1								
-15			Very soft dark gray silty sandy clay w/trace wood	3	WOH							
	10			4	WOH							
-20				5	WOH							
			Very soft dark gray silty sandy clay									
	15			6	WOH							
-25				7	WOH							
	20		Very soft dark gray silty clay	8	WOH							
			B.T. @ 21 FT									
-30												
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/30/21

BORING DEPTH: 21 FT.

BORING ELEV.: -7.7 FT.

DATUM: MLLW

WATER DEPTH: 9'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-82

BORING LOCATION:
N30° 37.8762'
W88° 00.5828'

N: 229944 **E:** 1808188

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-10				2	WOH							
	5		Very soft dark gray silty sandy clay	T-1								
-15				3	WOH							
	10		Very soft dark gray silty sandy clay w/organics & shell	4	WOH							
-20				5	WOH							
	15			6	WOH							
-25			Very soft dark gray silty sandy clay	7	WOH							
	20			8	2							
-30			B.T. @ 21 FT									
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/30/21

BORING DEPTH: 21 FT.

BORING ELEV.: -7.8 FT.

DATUM: MLLW

WATER DEPTH: 9'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-83

BORING LOCATION:
N30° 37.8755'
W88° 00.3737'

N: 229935 **E:** 1809284

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-10			Very soft dark gray silty clay	2	WOH							
	5			T-1								
-15				3	WOH							
	10			4	WOH							
-20				5	WOH							
			Very soft dark gray silty sandy clay									
	15			6	WOH							
-25				7	WOH							
	20			8	2							
			B.T. @ 21 FT									
-30												
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 9/30/21

BORING DEPTH: 21 FT.

BORING ELEV.: -8.0 FT.

DATUM: MLLW

WATER DEPTH: 9'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-84

BORING LOCATION:
N30° 37.8970'
W88° 00.1396'

N: 230060 **E:** 1810511

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft dark gray silty sandy clay	1	WOH							
-10				2	WOH							
	5		Very soft dark gray silty clay	T-1								
-15				3	WOH							
	10			4	WOH							
-20				5	WOH							
	15		Very soft dark gray silty sandy clay	6	WOH							
-25				7	WOH							
	20			8	WOH							
-30			B.T. @ 21 FT									
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 10/1/21

BORING DEPTH: 21 FT.

BORING ELEV.: -7.7 FT.

DATUM: MLLW

WATER DEPTH: 9'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-85

BORING LOCATION:
N30° 37.9859'
W88° 00.0939'

N: 230598 **E:** 1810753

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very loose dark gray silty clayey sand	1	WOH							
-10				2	WOH							
	5			T-1								
-15				3	WOH							
	10		Very soft dark gray silty sandy clay	4	WOH							
-20				5	WOH							
	15			6	WOH							
-25				7	WOH							
	20		Very soft dark gray clay	8	WOH							
			B.T. @ 21 FT									
-30												
	25											
-35												
	30											
-40												
	35											
-45												
	40											
-50												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 10/7/21

BORING DEPTH: 21 FT.

BORING ELEV.: -5.7 FT.

DATUM: MLLW

WATER DEPTH: 6'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-86

BORING LOCATION:
N30° 38.0341'
W88° 00.4988'

N: 230899 **E:** 1808632

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH						c*=0.13	
				2	WOH							
-10	5		Very soft dark gray silty sandy clay w/trace shell	T-1								
				3	WOH							
-15	10			4	WOH							
				5	WOH							
-20	15		Very soft dark clay silty sandy clay w/trace shell	6	WOH							
				7	WOH							
-25	20			8	WOH							
			B.T. @ 21 FT									
-30	25											
-35	30											
-40	35											
-45	40											
-50	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 10/7/21

BORING DEPTH: 21 FT.

BORING ELEV.: -5.7 FT.

DATUM: MLLW

WATER DEPTH: 6'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-87

BORING LOCATION:
N30° 38.0370'
W88° 00.7712'

N: 230923 **E:** 1807202

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
				2	WOH							
-10	5			T-1								
			Very soft dark gray silty sandy clay	3	WOH							
-15	10			4	WOH							
				5	WOH							
-20	15			6	WOH							
			Very soft dark gray silty clay	7	WOH							
-25	20		Very soft dark gray clay	8	WOH							
			B.T. @ 21 FT									
-30	25											
-35	30											
-40	35											
-45	40											
-50	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 10/7/21

BORING DEPTH: 21 FT.

BORING ELEV.: -5.5 FT.

DATUM: MLLW

WATER DEPTH: 6'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: B-88

BORING LOCATION:
N30° 38.2455'
W88° 00.8799'

N: 232190 **E:** 1806641

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0		Very soft dark gray clay	1	WOH							
				2	WOH							
-10	5		Very soft dark gray sandy clay w/trace shell	T-1								
				3	WOH							
-15	10		Very loose dark gray silty sand	4	WOH							
			Very soft dark gray sandy clay	5	WOH							
-20	15			6	WOH							
			Very soft dark gray clay	7	WOH							
-25	20			8	WOH							
			B.T. @ 21 FT									
-30	25											
-35	30											
-40	35											
-45	40											
-50	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 10/1/21

BORING DEPTH: 21 FT.

BORING ELEV.: -4.6 FT.

DATUM: MLLW

WATER DEPTH: 6'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: LSI-B1

BORING LOCATION:
N30° 39.4117'
W88° 01.5918'

N: 239277 **E:** 1802943

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
-5	0			1	WOH							
				2	WOH							
-10	5			3	2	27				10.9		
				4	3							
-15	10		Very loose dark brown & gray silty sand	5	2	26				25.2		
				6	2							
-20	15			7	2	25				14.3		
				8	2							
-25	20		Very loose gray sand	9	2	27				3.3		SP
			B.T. @ 21 FT									
-30	25											
-35	30											
-40	35											
-45	40											
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 10/1/21

BORING DEPTH: 21 FT.

BORING ELEV.: -5.6 FT.

DATUM: MLLW

WATER DEPTH: 7'

DRILL CREW: ES, BT, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: LSI-B2

BORING LOCATION:
N30° 39.2130'
W88° 01.5712'

N: 238072 **E:** 1803045

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
				2	WOH							
-10	5		Very loose dark gray silty clayey sand	T-1								
				3	WOH							
-15	10		Very loose dark gray silty sand	4	3	26				17.9		
				5	WOH							
-20	15		Very loose dark gray silty clayey sand	6	1	32				35.0		
				7	2							
-25	20		Very loose dark gray silty sand	8	2							
			B.T. @ 21 FT									
-30	25											
-35	30											
-40	35											
-45	40											
-50	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/2/21

BORING DEPTH: 20 FT.

BORING ELEV.: -40.3 FT.

DATUM: MLLW

WATER DEPTH: 42'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: APM-B1

BORING LOCATION:
N30° 40.2510'
W88° 02.0724'

N: 244376 **E:** 1800448

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
				2	WOH	149				75.6		
-45	5		Very soft black & gray clay with some sand	3	WOH							
				4	WOH							
-50	10			5	WOH	146				81.9		
			Very soft greenish gray clay									
			Firm yellowish brown sand w/ silt & trace pea gravel	6	11							
-55	15		Dense yellowish brown sand w/ silt	7	40							
			Firm yellowish brown sand w/ silt									
-60	20		Stiff greenish gray clay	8	16							
			B.T. @ 20 FT									
-65	25											
-70	30											
-75	35											
-80	40											
-85	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/30/21

BORING DEPTH: 20 FT.

BORING ELEV.: -38.8 FT.

DATUM: MLLW

WATER DEPTH: 40.2'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: APM-B2

BORING LOCATION:
N30° 40.1472'
W88° 02.0382'

N: 243746 **E:** 1800624

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-40				2	WOH							
	5		Very soft black & gray clay	3	WOH							
-45				4	WOH	226				73.0		
	10			5	WOH							
-50			Very soft black & gray sandy clay	6	WOH							
	15		Firm yellowish brown sand w/ silt	7	29							
-55			Firm light brown sand	8	21							
	20		B.T. @ 20 FT									
-60												
	25											
-65												
	30											
-70												
	35											
-75												
	40											
-80												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/29/21

BORING DEPTH: 20 FT.

BORING ELEV.: -42.4 FT.

DATUM: MLLW

WATER DEPTH: 44'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: APM-B3

BORING LOCATION:
N30° 40.0332'
W88° 01.9992'

N: 243054 **E:** 1800825

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-45				2	WOH							
	5		Very soft black & gray clay	3	WOH	208				77.1		
-50				4	WOH							
	10			5	WOH							
-55				6	17	22				5.4		
	15		Firm brownish yellow sand w/ silt	7	20							
-60			Very dense brownish yellow sand w/ silt & trace pea gravel	8	51							
	20		B.T. @ 20 FT									
-65												
	25											
-70												
	30											
-75												
	35											
-80												
	40											
-85												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/29/21

BORING DEPTH: 20 FT.

BORING ELEV.: -43.3 FT.

DATUM: MLLW

WATER DEPTH: 45'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: APM-B4

BORING LOCATION:
N30° 39.9204'
W88° 01.9626'

N: 242369 **E:** 1801014

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-45				2	WOH	173				62.8		
	5		Very soft black & gray sandy clay	3	WOH							
-50				4	WOH	177				67.1		
	10			5	19							
-55			Very stiff gray sandy clay w/ pieces of decayed wood	6	36							
	15			7	45							
-60			Dense gray to brownish yellow sand w/ silt & trace pea gravel	8	34							
	20		B.T. @ 20 FT									
-65												
	25											
-70												
	30											
-75												
	35											
-80												
	40											
-85												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 6/14/21

BORING DEPTH: 19 FT.

BORING ELEV.: -20.5 FT.

DATUM: MLLW

WATER DEPTH: 22'

DRILL CREW: ES, BT, SM, CG(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: MI-B1

BORING LOCATION:
N30° 39.8254'
W88° 01.9419'

N: 241793 **E:** 1801120

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	8							
			Loose dark gray sand w/ trace shell and gravel	2	5	25	NP	NP		5.3		SP-SM
-25	5		Very loose gravel with sand	3	2							
			Very loose dark gray silty sand	4	4							
-30	10			5	7	16	NP	NP		5.8		GP-GM
			Loose gravel, sand and some silt	6	6							
-35	15			7	7							
			Medium consistency dark gray clay	8	7						c*=0.40	
-40	20		B.T. @ 19 FT									
-45	25											
-50	30											
-55	35											
-60	40											
-65	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/28/21

BORING DEPTH: 20 FT.

BORING ELEV.: -31.6 FT.

DATUM: MLLW

WATER DEPTH: 33'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: MI-B2

BORING LOCATION:
N30° 39.7260'
W88° 01.9380'

N: 241191 **E:** 1801137

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
			Very loose black & gray sandy gravel & shell									
-35				2	2	20				5.7		
	5		Loose black & gray sandy gravel & shell w/ clay	3	7							
-40				4	14							
			Firm gray sand w/ gravel & shell									
	10			5	14	23				5.5		
-45				6	48							
	15		Dense to very dense light yellowish brown & light yellowish blue sand w/ trace pea gravel	7	42	24				6.5		
-50				8	51							
	20		B.T. @ 20 FT									
-55												
	25											
-60												
	30											
-65												
	35											
-70												
	40											
-75												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/28/21

BORING DEPTH: 20 FT.

BORING ELEV.: -43.6 FT.

DATUM: MLLW

WATER DEPTH: 45'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: MI-B3

BORING LOCATION:
N30° 39.6396'
W88° 01.9338'

N: 240667 **E:** 1801157

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-45				2	WOH	197				59.9		
	5			3	WOH							
-50				4	WOH	228				97.5		
	10		Very soft black & gray clay w/ organics and trace pea gravel near 16 ft	5	WOH							
-55				6	WOH							
	15			7	WOH							
-60				8	20							
	20		Firm light brown sand w/ trace pea gravel									
-65			B.T. @ 20 FT									
	25											
-70												
	30											
-75												
	35											
-80												
	40											
-85												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/27/21

BORING DEPTH: 20 FT.

BORING ELEV.: -41.7 FT.

DATUM: MLLW

WATER DEPTH: 43.5'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: MI-B4

BORING LOCATION:
N30° 39.5154'
W88° 01.9512'

N: 239914 **E:** 1801062

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-45				2	WOH							
	5			3	WOH	193				95.6		
-50			Very soft black & gray clay w/ some organics	4	WOH							
	10			5	WOH							
-55				6	WOH							
	15			7	WOH							
-60			Very loose gray sand w/ silt	8	2							
	20		Very soft light greenish gray clay									
			B.T. @ 20 FT									
-65												
	25											
-70												
	30											
-75												
	35											
-80												
	40											
-85												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/26/21

BORING DEPTH: 20 FT.

BORING ELEV.: -42.0 FT.

DATUM: MLLW

WATER DEPTH: 44'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: MI-B5

BORING LOCATION:
N30° 39.4134'
W88° 01.9554'

N: 239296 **E:** 1801037

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-45				2	WOH	136				77.0		
	5			3	WOH							
-50			Very soft black & gray clay w/ trace wood near 16 ft	4	WOH							
	10			5	WOH	149				93.2		
-55				6	WOH							
	15			7	WOH							
-60			Stiff black & gray clay w/ some shell	8	13							
	20		B.T. @ 20 FT									
-65												
	25											
-70												
	30											
-75												
	35											
-80												
	40											
-85												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/26/21

BORING DEPTH: 20 FT.

BORING ELEV.: -41.1 FT.

DATUM: MLLW

WATER DEPTH: 43'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: MI-B6

BORING LOCATION:
N30° 39.3150'
W88° 01.9530'

N: 238700 **E:** 1801047

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
				2	WOH							
-45	5			3	WOH							
-50			Very soft black & gray clay w/ some organics	4	WOH	205				92.6		
	10			5	WOH							
-55				6	WOH							
	15			7	WOH							
-60			Very dense gray clayey sand w/ some gravel & concrete rubble	8	50/0.3							
	20		B.T. @ 20 FT									
-65	25											
-70	30											
-75	35											
-80	40											
-85	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/27/21

BORING DEPTH: 20 FT.

BORING ELEV.: -41.6 FT.

DATUM: MLLW

WATER DEPTH: 43'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: MI-B7

BORING LOCATION:
N30° 39.1842'
W88° 01.9590'

N: 237907 **E:** 1801012

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-45				2	WOH	236				94.7		
	5			3	WOH							
-50			Very soft black & gray clay w/ some organics	4	WOH							
	10			5	WOH	179				93.8		
-55				6	WOH							
	15			7	WOH							
-60			Firm gray sand	8	15							
	20		B.T. @ 20 FT									
-65												
	25											
-70												
	30											
-75												
	35											
-80												
	40											
-85												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 7/27/21

BORING DEPTH: 20 FT.

BORING ELEV.: -21.6 FT.

DATUM: MLLW

WATER DEPTH: 23'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER: MI-B8

BORING LOCATION:
N30° 39.0702'
W88° 01.9734'

N: 237216 **E:** 1800933

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-25				2	WOH							
	5			3	WOH	73				81.5		
-30				4	WOH							
	10		Very soft black & gray clay w/ some decayed wood between 16 ft & 20 ft	5	WOH							
-35				6	WOH							
	15			7	WOH							
-40				8	WOH							
	20		B.T. @ 20 FT									
-45												
	25											
-50												
	30											
-55												
	35											
-60												
	40											
-65												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/2/21

BORING DEPTH: 20 FT.

BORING ELEV.: -26.1 FT.

DATUM: MLLW

WATER DEPTH: 28'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER:
PINTO-B1

BORING LOCATION:
N30° 40.2930'
W88° 01.8978'

N: 244627 **E:** 1801364

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
				2	WOH							
-30	5			3	WOH	118				86.6		
				4	WOH							
-35			Very soft black & gray clay									
	10			5	WOH							
				6	WOH							
-40	15			7	WOH							
-45			Firm light brown sand w/ some pea gravel	8	16	23				3.3		SP
	20		B.T. @ 20 FT									
-50	25											
-55	30											
-60	35											
-65	40											
-70	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/6/21

BORING DEPTH: 20 FT.

BORING ELEV.: -42.9 FT.

DATUM: MLLW

WATER DEPTH: 45'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER:
PINTO-B2

BORING LOCATION:
N30° 40.1862'
W88° 01.8216'

N: 243977 **E:** 1801760

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	WOH							
-45				2	WOH							
	5		Very soft black & gray clay w/ trace wood/ organics near 10 ft	3	WOH	212				82.8		
-50				4	WOH							
	10			5	WOH							
-55				6	14							
	15		Firm black & gray sand w/ clay lenses	7	14							
-60			Firm light brown & gray sand w/ trace shell	8	28							
	20		B.T. @ 20 FT									
-65												
	25											
-70												
	30											
-75												
	35											
-80												
	40											
-85												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE

G.E.T. PROJ. NUMBER: 21-126

PROJECT LOCATION: MOBILE, ALABAMA

DRILL RIG: SIMCO 2400

DRILL METHOD: MUD ROTARY

REMARKS:

DATE DRILLED: 8/3/21

BORING DEPTH: 20 FT.

BORING ELEV.: -23.4 FT.

DATUM: MLLW

WATER DEPTH: 25.5'

DRILL CREW: CET, VJT(LOGGER)

GEOTECHNICAL ENGINEERING TESTING, INC.

BORING NUMBER:
PINTO-B3

BORING LOCATION:
N30° 40.0746'
W88° 01.7622'

N: 243299 **E:** 1802069

ELEV IN FEET	DEPTH IN FEET	LOG	DESCRIPTION	SAMPLE NO.	S.P.T. N_f	W.C. %	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.I.	DRY UNIT WT. pcf	% MINUS #200	SHEAR STRENGTH tsf	UNIFIED CLASS
	0			1	2							
-25			Very soft to soft greenish gray clayey sand	2	4	31				48.1		
	5		Medium greenish gray & red clay w/ some sand	3	7						c*=0.70	
-30			Firm light greenish gray sand	4	12							
	10			5	51							
-35				6	37							
	15		Very dense to dense light greenish gray & light gray sand	7	30	20				5.5		
-40												
	20		Firm light gray sand	8	17							
-45			B.T. @ 20 FT									
	25											
-50												
	30											
-55												
	35											
-60												
	40											
-65												
	45											

NOTE: The stratification lines shown represent the approximate boundary between soil types and the transition may be gradual. The groundwater level stated is for conditions at the time of boring and the level may fluctuate large amounts for other conditions or seasons.

Reviewed By:

MOD DEEP BORING LOG W/O NC & N-E & ELEV 21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22

APPENDIX C

LABORATORY TEST REPORTS

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 231111 **E:** 1807342	B-1	3	5.5	56				0.5	37.2	62.3				
N: 231111 **E:** 1807342	B-1	T-1	10.0	54	53	19	34	0.0	22.7	77.3				CH
N: 231111 **E:** 1807342	B-1	5	12.5	40										
N: 231111 **E:** 1807342	B-1	11	34.0	77										
N: 231111 **E:** 1807342	B-1	T-3	41.5	82	102	21	81	0.0	4.2	40.0	55.8	0.001	2.721	CH
N: 231111 **E:** 1807342	B-1	13	44.0	84										
N: 231122 **E:** 1807808	B-2	1	0.5	41				0.3	69.7	30.0		0.087		
N: 231122 **E:** 1807808	B-2	3	5.5	36				0.0	36.8	63.2				
N: 231122 **E:** 1807808	B-2	T-1	10.0	41	33	26	7	0.2	55.9	36.1	7.7	0.079		SM
N: 231122 **E:** 1807808	B-2	6	15.0	34				4.0	49.7	37.5	8.7	0.078		
N: 231134 **E:** 1808345	B-3		4.5		30	13	17							
N: 231134 **E:** 1808345	B-3	3	5.5	42	32	21	11	0.0	35.2	45.8	19.1	0.047		CL
N: 231134 **E:** 1808345	B-3	T-1	10.0	42	40	26	14	0.0	26.6	56.1	17.4	0.041		
N: 231134 **E:** 1808345	B-3	6	15.0	43										
N: 231134 **E:** 1808345	B-3	9	24.0	79										
N: 231134 **E:** 1808345	B-3	T-2	31.5	31	NP	21	NP	0.0	75.0	25.0		0.224	2.457	SM

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 231134 **E:** 1808345	B-3	13	44.0	86										
N: 231121 **E:** 1808828	B-4	1	0.5	41				3.7	35.1	61.2				
N: 231121 **E:** 1808828	B-4	3	5.5	54	38	19	19	0.0	10.7	89.3				CL
N: 231121 **E:** 1808828	B-4	T-1	10.0	41	37	23	14	0.0	39.9	41.2	18.9	0.053		CL
N: 231121 **E:** 1808828	B-4	7	17.5	36				0.0	39.4	60.6				
N: 231128 **E:** 1809328	B-5	1	0.5	42	31	27	4	0.0	58.5	41.5		0.08		SM
N: 231128 **E:** 1809328	B-5	3	5.5	44				0.0	48.3	51.7				
N: 231128 **E:** 1809328	B-5	5	10.5	39				0.0	49.7	50.3				
N: 231128 **E:** 1809328	B-5	13	44.0	80	106	31	75			95.4				CH
N: 231128 **E:** 1809328	B-5	16	59.0	190	245	111	134			50.1				OH
N: 231124 **E:** 1809811	B-6	2	3.0	41				0.0	41.6	58.4				
N: 231124 **E:** 1809811	B-6	4	8.0	39				0.0	39.7	60.3				
N: 231124 **E:** 1809811	B-6	T-1	10.0	36	30	26	4	0.0	44.0	48.3	7.7	0.066		ML
N: 231124 **E:** 1809811	B-6	5	12.5	39				0.0	44.4	55.6				
N: 231132 **E:** 1810351	B-7	1	0.5	76	49	23	26	0.0	16.0	63.5	20.5	0.028		CL
N: 231132 **E:** 1810351	B-7	3	5.5	40				0.0	47.0	53.0				

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 231132 **E:** 1810351	B-7	T-1	10.0	37	39	23	16	0.0	36.0	53.2	10.7	0.057		CL
N: 231132 **E:** 1810351	B-7	7	17.5	44				0.0	40.8	59.2				
N: 231132 **E:** 1810351	B-7	T-3	41.5	90	81	23	58	0.0	1.0	99.0			2.571	CH
N: 231132 **E:** 1810351	B-7	13	44.0	87										
N: 231301 **E:** 1810766	B-8	1	0.5	49	33	27	6	0.4	42.7	56.9				ML
N: 231301 **E:** 1810766	B-8	3	5.5	40				0.2	46.8	53.0				
N: 231301 **E:** 1810766	B-8	5	10.5	49	38	30	8	0.0	38.0	62.0				ML
N: 231753 **E:** 1810963	B-9A	3	5.5	42				0.2	41.6	58.1				
N: 231753 **E:** 1810963	B-9A	T-1	10.0	41	38	35	3	0.0	43.9	48.1	8.0	0.065		ML
N: 231753 **E:** 1810963	B-9A	7	17.5	41				0.9	36.6	62.5				
N: 231753 **E:** 1810963	B-9A	10	29.0	52										
N: 231753 **E:** 1810963	B-9A	T-3	41.5	87	112	30	82	0.0	0.6	41.2	58.2		2.705	CH
N: 231718 **E:** 1810954	B-9B	1	0.5	40				0.2	31.2	56.5	12.2	0.05		
N: 231718 **E:** 1810954	B-9B	T-1	10.0	40	39	26	13	0.1	39.1	48.7	12.1	0.059	2.664	ML
N: 231718 **E:** 1810954	B-9B	11	34.0	83										
N: 231718 **E:** 1810954	B-9B	14	49.0	111										

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 232257 **E:** 1811053	B-10	2	3.0	98	NP	67	NP	0.0	48.4	51.6				OL
N: 232257 **E:** 1811053	B-10	4	8.0	41	NP	NP	NP	0.0	54.3	45.7		0.078		SM
N: 232257 **E:** 1811053	B-10	6	13.0	40	35	26	9	0.0	40.8	59.2				ML
N: 232342 **E:** 1810530	B-11	2	3.0	46				0.8	43.6	40.2	15.4	0.062		
N: 232342 **E:** 1810530	B-11	4	8.0	43				4.4	42.5	53.1				
N: 232342 **E:** 1810530	B-11	T-1	10.0	68	41	24	17	0.6	37.3	40.7	21.4	0.051	2.681	CL
N: 232342 **E:** 1810530	B-11	8	20.0	38				0.0	46.7	53.3				
N: 232342 **E:** 1810530	B-11	T-2	31.5	75	80	21	59	0.0	0.5	52.7	46.8	0.003	2.716	CH
N: 232338 **E:** 1810080	B-12	2	3.0	38				2.1	58.2	39.7		0.081		
N: 232338 **E:** 1810080	B-12	4	8.0	34				2.1	59.8	38.1		0.082		
N: 232338 **E:** 1810080	B-12	T-1	10.0	40	26	26	NP	0.0	39.3	52.3	8.4	0.062		ML
N: 232338 **E:** 1810080	B-12	7	17.5	32				5.4	50.9	43.8		0.079		
N: 232299 **E:** 1809550	B-13	2	3.0	53				0.0	11.8	51.4	36.8	0.006		
N: 232299 **E:** 1809550	B-13	4	8.0	43				0.0	61.3	38.7		0.081		
N: 232299 **E:** 1809550	B-13	7	17.5	39				0.0	33.3	53.4	13.3	0.048		
N: 232299 **E:** 1809550	B-13	T-2	31.5	81	97	22	75	0.1	0.6	53.5	45.8	0.003	2.732	CH

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 232299 **E:** 1809550	B-13	13	44.0	87	112	26	86	0.0	2.7	97.3				CH
N: 232326 **E:** 1809059	B-14	2	3.0	38				1.5	61.9	36.6		0.088		
N: 232326 **E:** 1809059	B-14	4	8.0	38	29	26	3	0.0	54.7	45.3		0.08		SM
N: 232326 **E:** 1809059	B-14	T-1	10.0	46	32	23	9	0.4	50.4	30.7	18.5	0.076	2.643	SC
N: 232326 **E:** 1809059	B-14	6	15.0	41	34	28	6	2.6	56.9	40.5		0.086		SM
N: 232310 **E:** 1808573	B-15	2	3.0	35				0.0	35.3	51.2	13.5	0.053		
N: 232310 **E:** 1808573	B-15	4	8.0	43	NP	NP	NP	0.0	47.9	32.7	19.4	0.069		ML
N: 232310 **E:** 1808573	B-15	7	15.5	38				0.0	64.2	35.8		0.083		
N: 232310 **E:** 1808573	B-15	T-1	26.5	60	73	19	54	0.0	2.3	67.4	30.3	0.011	2.672	CH
N: 232310 **E:** 1808573	B-15	13	44.0	79										
N: 232310 **E:** 1808573	B-15	14	49.0	67	80	25	55	0.0	10.4	89.6				CH
N: 232310 **E:** 1808573	B-15	15	54.0	45										
N: 232310 **E:** 1808573	B-15	T-4	56.5	50	42	20	22	0.0	6.6	57.4	35.9	0.007	2.69	CL
N: 232310 **E:** 1808573	B-15	16	59.0	57										
N: 232310 **E:** 1808573	B-15	17	64.0	110										
N: 232310 **E:** 1808573	B-15	18	69.0	128	201	53	148	0.0	57.6	42.4		0.193		SC

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 232310 **E:** 1808573	B-15	20	79.0	49	87	22	65	0.0	19.6	80.4				CH
N: 232343 **E:** 1808059	B-16	3	5.5	42	NP	NP	NP	0.0	74.0	26.0		0.093		SM
N: 232343 **E:** 1808059	B-16	5	10.5	43	31	23	8	0.2	51.5	48.3		0.077		SM
N: 232343 **E:** 1808059	B-16	7	15.5	38	NP	NP	NP	0.0	50.2	49.8		0.075		SM
N: 232336 **E:** 1807559	B-17	1	0.5	39				0.4	73.7	25.9		0.103		
N: 232336 **E:** 1807559	B-17	2	3.0	80				0.0	5.4	94.6				
N: 232336 **E:** 1807559	B-17	T-4	5.0	31	NP	NP	NP	0.0	67.0	26.6	6.4	0.094		SM
N: 232336 **E:** 1807559	B-17	5	10.5	34	NP	NP	NP	7.1	76.2	16.7		0.108		SM
N: 232336 **E:** 1807559	B-17	9	24.0	51										
N: 232336 **E:** 1807559	B-17	12	39.0	72										
N: 232336 **E:** 1807559	B-17	14	49.0	47	65	19	46	0.0	10.4	89.6				CH
N: 232185 **E:** 1806870	B-19	2	3.0	39				0.0	58.3	41.7		0.082		
N: 232185 **E:** 1806870	B-19	4	8.0	40				0.0	70.1	29.9		0.093		
N: 232185 **E:** 1806870	B-19	T-1	10.0	38	32	21	11	0.1	67.8	22.7	9.4	0.094		SC
N: 232185 **E:** 1806870	B-19	6	15.0	47	28	22	6	0.0	54.9	45.1		0.079		SC-SM
N: 232185 **E:** 1806870	B-19	10	29.0	49										

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 232185 **E:** 1806870	B-19	T-2	31.5	57	55	22	33	0.0	3.4	64.2	32.5	0.01	2.614	CH
N: 232185 **E:** 1806870	B-19	12	39.0	62										
N: 232185 **E:** 1806870	B-19	14	49.0	76										
N: 231768 **E:** 1806839	B-20	1	0.5	115				0.0	49.2	50.8				
N: 231768 **E:** 1806839	B-20	3	5.5	39	27	22	5	0.7	59.6	39.7		0.085		SM
N: 231768 **E:** 1806839	B-20	T-1	10.0	37	34	NP	34	0.0	47.4	43.0	9.6	0.07		ML
N: 231768 **E:** 1806839	B-20	6	15.0	42				0.0	39.2	60.8				
N: 231284 **E:** 1806963	B-21	2	3.0	43	35	20	15	0.0	32.2	67.8				CL
N: 231284 **E:** 1806963	B-21	4	8.0	38				0.0	38.8	61.2				
N: 231284 **E:** 1806963	B-21	T-1	10.0	41	36	23	13	0.0	29.5	59.2	11.3	0.048		CL
N: 231284 **E:** 1806963	B-21	T-2	14.5	50	50	21	29	0.0	12.5	70.1	17.4	0.029	2.601	CH
N: 231284 **E:** 1806963	B-21	6	17.0	57										
N: 231284 **E:** 1806963	B-21	10	34.0	77										
N: 231284 **E:** 1806963	B-21	14	54.0	40	53	21	32	0.0	12.1	87.9				CH
N: 231642 **E:** 1807550	B-22	2	3.0	43				0.0	48.5	34.7	16.8	0.07		
N: 231642 **E:** 1807550	B-22	4	8.0	47				0.0	48.6	35.5	15.9	0.07		

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

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PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 231642 **E:** 1807550	B-22	5	10.5	43				0.7	51.6	34.4	13.2	0.077		
N: 231642 **E:** 1807550	B-22	T-1	15.0	36	29	20	9	0.1	36.1	52.0	11.8	0.057	2.674	CL
N: 231642 **E:** 1807550	B-22	T-2	26.5	70	95	22	73	0.0	1.8	52.2	46.1	0.003	2.693	CH
N: 231909 **E:** 1808242	B-23	2	3.0	46				0.0	42.4	36.2	21.4	0.051		
N: 231909 **E:** 1808242	B-23	4	8.0	42				0.0	55.4	34.1	10.4	0.079		
N: 231909 **E:** 1808242	B-23	6	13.0	41				0.7	40.7	45.5	13.1	0.059		
N: 231909 **E:** 1808242	B-23	T-2	36.5	82	100	31	69	0.0	3.6	46.9	49.5	0.002	2.732	CH
N: 231909 **E:** 1808242	B-23	T-3	46.5	50	83	44	39	0.0	6.4	57.2	36.4	0.006	2.752	MH
N: 231909 **E:** 1808242	B-23	16	59.0	50										
N: 231786 **E:** 1809566	B-24	2	3.0	55				0.0	11.2	53.8	35.0	0.009		
N: 231786 **E:** 1809566	B-24	4	8.0	47				0.0	53.8	37.2	9.0	0.077	2.623	
N: 231786 **E:** 1809566	B-24	6	13.0	38				1.4	44.2	45.6	8.8	0.068		
N: 231786 **E:** 1809566	B-24	T-1	17.5	36	35	28	7	0.0	34.4	56.2	9.4	0.055	2.662	ML
N: 231786 **E:** 1809566	B-24		26.0	58										
N: 231786 **E:** 1809566	B-24	12	39.0	82										
N: 231884 **E:** 1810341	B-25	2	3.0	61				0.0	37.2	49.7	13.1	0.054		

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 231884 **E:** 1810341	B-25	T-4	4.0	39	40	27	13	0.0	18.0	68.1	13.9	0.043		ML
N: 231884 **E:** 1810341	B-25	4	8.0	43				0.3	46.0	44.3	9.4	0.067		
N: 231884 **E:** 1810341	B-25	6	13.0	37				0.0	39.5	51.5	9.0	0.06		
N: 231884 **E:** 1810341	B-25	13	44.0	79										
N: 231884 **E:** 1810341	B-25	T-3	46.5	100	114	28	86	0.0	1.5	47.8	50.7	0.002	2.724	CH
N: 233373 **E:** 1807009	B-26	2	3.0	31				0.0	40.8	59.2				
N: 233373 **E:** 1807009	B-26	3	5.5	38				0.3	72.8	26.8		0.097		
N: 233373 **E:** 1807009	B-26	T-1	10.0	32				7.3	61.5	19.6	11.6	0.099		
N: 233759 **E:** 1809304	B-27	2	3.0	55				0.0	40.1	36.4	23.5	0.026		
N: 233759 **E:** 1809304	B-27	5	10.5	30				15.9	73.6	8.5	2.0	0.095		
N: 233759 **E:** 1809304	B-27	T-1	15.0	33	38	24	14	0.0	26.8	56.5	16.7	0.042		CL
N: 233759 **E:** 1809304	B-27	11	34.0	70										
N: 233759 **E:** 1809304	B-27	T-3	36.5	79	116	25	91	0.0	1.1	59.5	39.4	0.004	2.728	CH
N: 233759 **E:** 1809304	B-27	13	44.0	72	96	27	69	0.0	5.8	94.2				CH
N: 233759 **E:** 1809304	B-27	15	54.0	49										
N: 235142 **E:** 1809628	B-28	2	3.0	40				0.0	67.4	25.1	7.6	0.092		

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 235142 **E:** 1809628	B-28	4	8.0	54				20.4	56.2	23.4		0.138		
N: 235142 **E:** 1809628	B-28	T-1	10.0	37	28	20	8	0.0	18.5	73.4	8.1	0.048		CL
N: 234687 **E:** 1811906	B-29	2	3.0	108				6.0	10.5	53.0	30.5	0.009		
N: 234687 **E:** 1811906	B-29	4	8.0	37				0.2	52.1	47.7		0.077		
N: 234687 **E:** 1811906	B-29	T-1	10.0	40	38	28	10	0.0	36.0	53.9	10.1	0.049		ML
N: 234687 **E:** 1811906	B-29	6	15.0	47				0.0	8.3	91.7				
N: 234687 **E:** 1811906	B-29	T-2	26.5	80	84	21	63	0.0	0.8	55.3	43.9	0.004	2.721	CH
N: 234687 **E:** 1811906	B-29	13	44.0	79	91	23	68	0.0	1.1	98.9				CH
N: 234687 **E:** 1811906	B-29	16	59.0	98	131	40	91	0.0	3.3	96.7				CH
N: 234947 **E:** 1813883	B-30	2	3.0	49				0.0	18.9	81.1				
N: 234947 **E:** 1813883	B-30	T-4	4.0	41	60	23	37	0.0	21.1	61.7	17.3	0.043		CH
N: 234947 **E:** 1813883	B-30	4	8.0	39				3.4	51.7	36.4	8.4	0.078		
N: 234947 **E:** 1813883	B-30	T-1	15.0	53	36	21	15	0.0	8.0	67.4	24.7	0.022		CL
N: 234947 **E:** 1813883	B-30	15	54.0	165	219	68	151	0.3	68.7	30.9		0.237		SC
N: 233793 **E:** 1813541	B-31	2	3.0	54				0.0	29.1	70.9				
N: 233793 **E:** 1813541	B-31	3	5.5	41				1.3	49.6	49.1		0.076		

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 233793 **E:** 1813541	B-31	T-1	10.0	36	41	26	15	0.0	19.0	66.6	14.4	0.039		ML
N: 234919 **E:** 1811953	B-32	T-5	5.0	43	44	26	18	0.0	15.0	68.5	16.5	0.022		CL
N: 234919 **E:** 1811953	B-32	3	5.5	128				0.0	52.2	47.8		0.09		
N: 234919 **E:** 1811953	B-32	4	8.0	37				2.1	45.9	52.0				
N: 234919 **E:** 1811953	B-32	5	10.5	41				0.0	31.9	68.1				
N: 234919 **E:** 1811953	B-32	9	20.5	57										
N: 234919 **E:** 1811953	B-32	13	39.0	81	92	29	63	0.0	0.6	99.4				CH
N: 234919 **E:** 1811953	B-32	T-4	56.5	58	67	27	40	0.0	10.1	56.4	33.4	0.007	2.71	CH
N: 234196 **E:** 1808304	B-33	2	3.0	34				0.0	70.9	20.5	8.6	0.088		
N: 234196 **E:** 1808304	B-33	4	8.0	30				0.0	64.7	35.3		0.085		
N: 234196 **E:** 1808304	B-33	6	15.0	34				0.2	75.4	17.0	7.4	0.092		
N: 232916 **E:** 1807901	B-34	2	3.0	35				1.3	63.5	35.2		0.087		
N: 232916 **E:** 1807901	B-34	5	10.5	40				0.0	29.2	57.0	13.8	0.046	2.671	
N: 232916 **E:** 1807901	B-34	7	17.5	45										
N: 232916 **E:** 1807901	B-34	T-2	26.5	60	67	19	48	0.0	2.2	61.4	36.4	0.007	2.711	CH
N: 232916 **E:** 1807901	B-34	11	34.0	73										

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 232916 **E:** 1807901	B-34	T-3	36.5	83	93	27	66	0.0	5.9	39.5	54.6	0.001	2.711	CH
N: 232916 **E:** 1807901	B-34	15	54.0	75										
N: 234173 **E:** 1810643	B-35	1	0.5	39				0.0	50.1	49.9		0.076		
N: 234173 **E:** 1810643	B-35	3	5.5	34				12.6	55.6	31.8		0.093		
N: 234173 **E:** 1810643	B-35	5	10.5	40				0.0	35.6	51.1	13.4	0.051		
N: 234173 **E:** 1810643	B-35	T-1	15.0	43	47	22	25	0.0	11.8	69.7	18.5	0.035		CL
N: 234173 **E:** 1810643	B-35	T-2	26.5	32	33	25	8	2.9	51.3	39.7	6.1	0.078	2.664	SM
N: 234173 **E:** 1810643	B-35	14	49.0	65										
N: 234173 **E:** 1810643	B-35	17	64.0	130	220	75	145	0.0	70.9	29.1		0.255		SM
N: 233066 **E:** 1810513	B-36	2	3.0	46				0.0	30.3	49.6	20.1	0.04		
N: 233066 **E:** 1810513	B-36	4	8.0	42				2.3	57.1	40.6		0.081		
N: 233066 **E:** 1810513	B-36	6	13.0	38										
N: 233066 **E:** 1810513	B-36	9	24.0	59										
N: 233066 **E:** 1810513	B-36	T-3	36.5	73	94	19	75	0.0	0.7	53.6	45.7	0.003	2.731	CH
N: 233066 **E:** 1810513	B-36	14	49.0	59	82	22	60	0.0	20.9	79.1				CH
N: 233066 **E:** 1810513	B-36	16	59.0	44	57	23	34	0.0	15.6	84.4				CH

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 233066 **E:** 1810513	B-36	17	64.0	208										
N: 233066 **E:** 1810513	B-36	18	69.0	138	162	47	115	0.0	41.4	58.6				CH
N: 234204 **E:** 1812808	B-37	2	3.0	77				0.0	56.2	43.8		0.082		
N: 234204 **E:** 1812808	B-37	3	5.5	38				0.3	56.1	43.6		0.079		
N: 234204 **E:** 1812808	B-37	T-1	10.0	37	39	28	11	0.0	22.0	66.9	11.1	0.039		ML
N: 234204 **E:** 1812808	B-37	8	20.0	72	62	24	38	0.0	0.6	99.4				CH
N: 234676 **E:** 1807266	B-38	2	3.0	40				0.4	73.9	14.3	11.4	0.1		
N: 234676 **E:** 1807266	B-38	4	8.0	40						39.3		0.086		
N: 234676 **E:** 1807266	B-38	7	17.5	42				0.0	37.2	47.9	14.8	0.051		
N: 234676 **E:** 1807266	B-38	11	34.0	71										
N: 235494 **E:** 1807607	B-39	2	3.0	35	NP	NP	NP	0.1	81.8	18.1		0.116		SM
N: 235494 **E:** 1807607	B-39	4	8.0	33	NP	NP	NP	0.7	81.9	17.4		0.121		SM
N: 235494 **E:** 1807607	B-39	6	13.0	39	38	22	16	0.0	41.8	58.2				CL
N: 235965 **E:** 1807611	B-40	1	0.5	33	NP	NP	NP	0.0	80.6	19.4		0.121		SM
N: 235965 **E:** 1807611	B-40	3	5.5	34	NP	NP	NP	0.0	81.0	19.0		0.119		SM
N: 235965 **E:** 1807611	B-40	5	10.5	31	NP	NP	NP	0.6	81.3	18.0		0.128		SM

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 235965 **E:** 1807611	B-40	7	15.5	36	34	23	11	0.0	48.2	51.8				CL
N: 235965 **E:** 1807611	B-40	T-1	20.0	51	60	20	40	0.0	4.0	65.0	31.0	0.013	2.636	CH
N: 236566 **E:** 1807397	B-41	3	5.5	32				0.0	80.6	11.4	8.0	0.122	2.6603	
N: 236566 **E:** 1807397	B-41	T-1	10.0	34	32	24	8	0.0	50.0	41.3	8.7	0.075		ML
N: 236566 **E:** 1807397	B-41	5	12.5	37				0.0	42.7	57.3				
N: 237689 **E:** 1808852	B-42	4	8.0	27				18.1	58.5	14.1	9.3	0.143		
N: 237689 **E:** 1808852	B-42	T-1	16.5	35	28	25	3	0.0	32.7	57.9	9.4	0.054		ML
N: 237689 **E:** 1808852	B-42	11	34.0	68										
N: 237689 **E:** 1808852	B-42	14	49.0	59										
N: 236826 **E:** 1814164	B-44	2	3.0	51				0.0	31.5	68.5			2.6627	
N: 236826 **E:** 1814164	B-44	T-4	5.0	38	37	27	10	0.0	30.0	59.9	10.1	0.04		ML
N: 236826 **E:** 1814164	B-44	4	8.0	37				0.0	50.9	49.1		0.076		
N: 236826 **E:** 1814164	B-44	T-1	16.5	63	52	25	27	0.0	1.3	85.7	13.0	0.026		CH
N: 236125 **E:** 1811217	B-45	1	0.5	30	33	24	9	0.0	69.9	30.1		0.097		SM
N: 236125 **E:** 1811217	B-45	2	3.0	36	37	22	15	0.0	60.8	39.2		0.087		SC
N: 236125 **E:** 1811217	B-45	3	5.5	33	NP	NP	NP	5.2	65.1	29.7		0.094		SM

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 236125 **E:** 1811217	B-45	5	10.5	39	40	22	18	0.0	25.5	74.5				CL
N: 236125 **E:** 1811217	B-45	T-1	12.5	51	46	21	25	0.0	5.5	69.5	24.9	0.021	2.637	CL
N: 236125 **E:** 1811217	B-45	7	17.5	63										
N: 236125 **E:** 1812417	B-46	2	3.0	36	31	24	7	0.0	64.0	36.0		0.086		SM
N: 236125 **E:** 1812417	B-46	3	5.5	37	31	27	4	0.0	50.0	50.0				ML
N: 236125 **E:** 1812417	B-46	5	10.5	49										
N: 236125 **E:** 1812417	B-46	T-3	36.5	55	73	25	48	8.2	26.4	27.4	37.9	0.008		CH
N: 236125 **E:** 1812417	B-46	11	39.0	47	58	20	38							
N: 235651 **E:** 1813900	B-47	2	3.0	55				0.0	3.3	96.7				
N: 235651 **E:** 1813900	B-47	T-1	10.0	38	38	27	11	0.0	41.4	58.6				ML
N: 235651 **E:** 1813900	B-47	6	15.0	55	64	34	30							
N: 235146 **E:** 1812811	B-48	2	3.0	38				0.0	59.0	41.0		0.082		
N: 235146 **E:** 1812811	B-48	4	8.0	41				1.7	58.3	29.4	10.7	0.082		
N: 235146 **E:** 1812811	B-48	12	39.0	88	87	25	62	0.0	0.6	99.4				CH
N: 235146 **E:** 1812811	B-48	14	49.0	57										
N: 235146 **E:** 1812811	B-48	16	59.0	145	192	61	131	0.0	46.7	53.3				CH

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 235140 **E:** 1810777	B-49	2	3.0	193										
N: 235140 **E:** 1810777	B-49	4	8.0	111				2.9	57.0	33.9	6.2	0.091		
N: 237420 **E:** 1807644	B-50	2	3.0	36	NP	NP	NP	0.2	80.5	19.4		0.12		SM
N: 237420 **E:** 1807644	B-50	4	8.0	34	NP	NP	NP	0.0	84.5	15.5		0.134		SM
N: 237420 **E:** 1807644	B-50	6	13.0	34	28	22	6	0.0	56.8	43.2		0.081		SC-SM
N: 237420 **E:** 1807644	B-50	T-1	18.0	41	47	22	25	0.0	18.4	62.1	19.5	0.037		CL
N: 237420 **E:** 1807644	B-50	8	20.5	48	46	21	25	0.0	11.8	88.2				CL
N: 236520 **E:** 1809076	B-51	3	5.5	32				6.1	69.8	24.1		0.125		
N: 236520 **E:** 1809076	B-51	5	10.5	29				0.0	38.0	62.0			2.7056	
N: 236520 **E:** 1809076	B-51	10	24.0	50	62	18	44	0.0	3.0	97.0				CH
N: 236520 **E:** 1809076	B-51	11	29.0	67										
N: 236520 **E:** 1809076	B-51	13	44.0	64	78	17	61	14.2	6.8	79.0				CH
N: 236520 **E:** 1809076	B-51	17	64.0	49	84	23	61	0.0	2.8	97.2				CH
N: 236520 **E:** 1809076	B-51	19	74.0	45										
N: 236996 **E:** 1813280	B-52	3	5.5	38				0.0	45.0	46.4	8.6	0.067		
N: 236996 **E:** 1813280	B-52	6	13.0	56	75	21	54	0.0	7.3	92.7				CH

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

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PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 235082 **E:** 1808483	B-53	2	3.0	34				0.0	71.6	20.3	8.1	0.095		
N: 235082 **E:** 1808483	B-53	4	8.0	28				10.6	64.0	17.8	7.6	0.109		
N: 235082 **E:** 1808483	B-53	T-1	10.0	32	30	23	7	0.0	65.3	28.4	6.3	0.087		SM
N: 235082 **E:** 1808483	B-53	7	17.5	40				0.0	66.3	33.7		0.09		
N: 237562 **E:** 1810044	B-54	1	0.5	36	NP	NP	NP	2.8	75.5	21.7		0.125		SM
N: 237562 **E:** 1810044	B-54	3	5.5	34	NP	NP	NP	0.3	77.7	21.9		0.122		SM
N: 237562 **E:** 1810044	B-54	5	10.5	35	NP	NP	NP	1.0	65.1	33.9		0.09		SM
N: 237562 **E:** 1810044	B-54	7	16.0	38	37	23	14	0.0	27.5	72.5				CL
N: 237562 **E:** 1810044	B-54	T-1	18.0	57	58	20	38	0.0	8.2	63.9	27.8	0.014	2.632	CH
N: 237526 **E:** 1811244	B-55	1	0.5	44	31	22	9	0.4	54.6	45.0		0.08		SC
N: 237526 **E:** 1811244	B-55	2	3.0	48	37	25	12	1.3	56.9	41.8		0.083		SM
N: 237526 **E:** 1811244	B-55	3	5.5	30	29	21	8	27.5	47.9	24.5		0.102		SC
N: 237526 **E:** 1811244	B-55	5	10.5	41										
N: 237526 **E:** 1811244	B-55	6	13.0	43										
N: 237526 **E:** 1811244	B-55	T-1	15.0	46	55	19	36	0.0	9.9	66.8	23.3	0.029		CH
N: 237526 **E:** 1811244	B-55	8	18.0	53	66	25	41	3.8	4.1	92.0				CH

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

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PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 237526 **E:** 1811244	B-55	9	24.0	72										
N: 237526 **E:** 1811244	B-55	T-3	26.5	73	98	29	69	0.0	0.6	54.2	45.1	0.003	2.692	CH
N: 237526 **E:** 1811244	B-55	12	39.0	80										
N: 237526 **E:** 1812444	B-56	2	3.0	40	34	28	6	1.8	64.7	33.4		0.091		SM
N: 237526 **E:** 1812444	B-56	4	8.0	38	32	26	6	0.4	64.0	35.6		0.089		SM
N: 237526 **E:** 1812444	B-56	6	13.0	39	36	23	13	0.0	35.0	65.0				CL
N: 237526 **E:** 1812444	B-56	T-1	18.0	66	65	44	21	0.0	2.6	61.1	36.3	0.008	2.71	MH
N: 237526 **E:** 1812444	B-56	8	20.5	74	62	25	37	0.3	3.0	96.7				CH
N: 240251 **E:** 1813433	B-57	3	5.5	34				0.0	74.5	25.5		0.096		
N: 240251 **E:** 1813433	B-57	T-1	15.0	39	38	25	13	0.0	24.0	59.4	16.6	0.041		ML
N: 240251 **E:** 1813433	B-57	12	54.0	83				0.0	13.2	86.8				
N: 239384 **E:** 1813787	B-58	3	5.5	39				0.0	54.7	45.3		0.107		
N: 239384 **E:** 1813787	B-58		10.0	38	NP	NP	NP	0.0	52.0	40.6	7.4	0.077		SM
N: 239384 **E:** 1813787	B-58	7	17.5	56										
N: 238126 **E:** 1813992	B-59	2	3.0	55				0.7	38.2	61.1				
N: 238328 **E:** 1807670	B-60	3	5.5	49	NP	NP	NP	0.0	80.2	19.8		0.13		SM

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 238328 **E:** 1807670	B-60	5	10.5	32	NP	NP	NP	0.0	82.5	17.5		0.134		SM
N: 238328 **E:** 1807670	B-60	7	15.5	33	NP	NP	NP	0.5	88.0	11.5		0.146		SP-SM
N: 239904 **E:** 1808872	B-61	2	3.0	34				0.0	63.1	36.9		0.178		
N: 239904 **E:** 1808872	B-61	5	10.5	33				0.0	87.7	12.3		0.17		
N: 239904 **E:** 1808872	B-61	8	19.0	38				0.0	56.4	43.6		0.106		
N: 239840 **E:** 1807807	B-62	2	3.0	53				0.0	15.6	84.4				
N: 239840 **E:** 1807807	B-62	5	12.5	31				3.0	65.9	22.4	8.7	0.092		
N: 239840 **E:** 1807807	B-62	8	24.0	42										
N: 239840 **E:** 1807807	B-62	11	39.0	75										
N: 239840 **E:** 1807807	B-62	T-3	46.5	76	81	21	60	0.0	6.2	46.1	47.6	0.002	2.669	CH
N: 239840 **E:** 1807807	B-62	15	59.0	103	183	66	117	0.0	13.3	86.7				MH
N: 239095 **E:** 1808877	B-63	2	3.0	35	NP	NP	NP	0.0	65.0	35.0		0.091		SM
N: 239095 **E:** 1808877	B-63	4	8.0	37	NP	NP	NP	13.4	58.0	28.6		0.109		SM
N: 239095 **E:** 1808877	B-63	6	13.0	33	NP	NP	NP	0.0	91.5	8.5		0.16		SP-SM
N: 239786 **E:** 1812730	B-64	2	3.0	42				0.0	39.9	60.1				
N: 239786 **E:** 1812730	B-64	4	8.0	42				2.4	44.1	40.5	13.0	0.066		

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 239786 **E:** 1812730	B-64	7	15.5	38				0.1	48.5	41.3	10.1	0.072		
N: 238925 **E:** 1811274	B-65	1	0.5	37				0.0	71.1	28.9		0.095		
N: 238925 **E:** 1811274	B-65	3	5.5	34	25	23	2	3.3	68.2	28.4		0.097		SM
N: 238925 **E:** 1811274	B-65	5	10.5	34	29	24	5	0.3	60.8	38.9		0.082		SM
N: 238925 **E:** 1811274	B-65	T-1	15.0	54	53	30	23	0.0	5.3	69.0	25.7	0.015		MH
N: 238925 **E:** 1811274	B-65	7	17.5	54	61	22	39	0.0	6.2	93.8				CH
N: 239029 **E:** 1810138	B-66	3	5.5	33				5.6	74.0	16.5	3.9	0.133		
N: 239029 **E:** 1810138	B-66	6	13.0	32				0.0	78.2	14.8	7.0	0.116		
N: 239029 **E:** 1810138	B-66	T-1	16.5	39	37	20	17	0.0	15.0	85.0				CL
N: 238291 **E:** 1809989	B-67	2	3.0	42										
N: 238291 **E:** 1809989	B-67	T-1	7.5	39	NP	NP	NP	0.0	87.0	12.6	0.4	0.147		SM
N: 238291 **E:** 1809989	B-67	4	10.0	30										
N: 238291 **E:** 1809989	B-67	8	24.0	39										
N: 238291 **E:** 1809989	B-67	14	54.0	57	79	15	64	0.0	23.6	76.4				CH
N: 237912 **E:** 1811815	B-68	T-1	7.5	33	27	26	1	0.1	47.7	43.8	8.5	0.071		ML
N: 237912 **E:** 1811815	B-68	4	10.0	36				0.0	54.5	45.5		0.078		

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 237912 **E:** 1811815	B-68	T-2	14.5	40	44	21	23	0.0	22.0	60.2	17.8	0.036	2.6583	CL
N: 237912 **E:** 1811815	B-68	8	24.0	53										
N: 237912 **E:** 1811815	B-68	12	44.0	76										
N: 232735 **E:** 1808775	B-69	2	3.0	51	29	25	4	0.0	43.2	38.1	18.7	0.055		ML
N: 232735 **E:** 1808775	B-69	3	5.5	39				1.6	56.9	41.5		0.082	2.685	
N: 232735 **E:** 1808775	B-69	T-1	10.0	42	26	25	1	0.0	35.9	41.3	22.8	0.043	2.677	ML
N: 232735 **E:** 1808775	B-69		13.0	36				0.0	54.6	45.4		0.078		
N: 232765 **E:** 1809842	B-70	2	3.0	47				0.5	56.5	43.1		0.08		
N: 232765 **E:** 1809842	B-70	4	8.0	41				0.0	50.4	37.5	12.1	0.075		
N: 232765 **E:** 1809842	B-70	5	12.5	38				4.1	58.6	37.3		0.084		
N: 238676 **E:** 1812927	B-71	2	3.0	41				3.3	45.1	36.4	15.2	0.07		
N: 238676 **E:** 1812927	B-71	4	8.0	36				0.0	49.0	41.5	9.5	0.073	2.6956	
N: 238676 **E:** 1812927	B-71	6	13.0	38										
N: 239324 **E:** 1807789	B-72	3	5.5	26				0.0	86.0	14.0		0.149		
N: 239324 **E:** 1807789	B-72	7	15.5	41				0.0	88.1	11.9		0.165		
N: 239324 **E:** 1807789	B-72	12	54.0	38				0.0	15.2	84.8				

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 239324 **E:** 1807789	B-72	14	64.0	28				0.2	90.4	9.4		0.334		
N: 240413 **E:** 1808056	B-73	2	3.0	32				0.0	78.3	21.7		0.129		
N: 240413 **E:** 1808056	B-73	6	13.0	37				0.0	88.1	11.9		0.186		
N: 240413 **E:** 1808056	B-73	12	54.0	281										
N: 240413 **E:** 1808056	B-73	13	59.0	106										
N: 240483 **E:** 1809851	B-74	2	3.0	29				0.0	84.4	15.6		0.407		
N: 240483 **E:** 1809851	B-74	6	13.0	43				0.0	63.9	36.1		0.089		
N: 240483 **E:** 1809851	B-74	T-1	15.0	38	43	21	22	0.0	22.9	57.9	19.1	0.034		CL
N: 240483 **E:** 1809851	B-74	11	49.0	79										
N: 240414 **E:** 1811942	B-75	2	3.0	56				0.0	24.9	56.5	18.6	0.034		
N: 240414 **E:** 1811942	B-75	3	5.5	32						34.7		0.089		
N: 240414 **E:** 1811942	B-75	5	10.5	36				0.0	41.0	47.2	11.8	0.059		
N: 234578 **E:** 1806326	B-76	2	3.0	40				0.0	70.4	29.6		0.104		
N: 234578 **E:** 1806326	B-76	4	8.0	42				1.1	71.2	15.4	12.3	0.126		
N: 233078 **E:** 1806157	B-77	2	3.0	49										
N: 233078 **E:** 1806157	B-77	T-1	5.0	29	27	21	6	0.0	73.1	18.7	8.2	0.098		SC-SM

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 233078 **E:** 1806157	B-77	4	10.0	79										
N: 233078 **E:** 1806157	B-77	8	20.0	58										
N: 232157 **E:** 1806127	B-78	1	0.5	69				0.0	47.4	52.6				
N: 232157 **E:** 1806127	B-78	T-1	5.0	40	31	25	6	0.0	35.3	54.5	10.2	0.056	2.6965	ML
N: 232157 **E:** 1806127	B-78	7	17.5	52										
N: 231100 **E:** 1806134	B-79	T-1	5.0	44	42	21	21	0.0	46.2	33.9	19.9	0.064	2.7218	CL
N: 231100 **E:** 1806134	B-79	4	10.0	41										
N: 231100 **E:** 1806134	B-79	7	17.5	50										
N: 230206 **E:** 1806301	B-80	T-1	5.0	47	42	19	23	0.0	41.4	43.6	15.0	0.057	2.7105	CL
N: 230206 **E:** 1806301	B-80	6	15.0	54	56	22	34	0.0	4.1	95.9				CH
N: 239277 **E:** 1802943	LSI-B1	3	5.5	27				0.0	89.1	10.9		0.185		
N: 239277 **E:** 1802943	LSI-B1	5	10.5	26						25.2		0.299		
N: 239277 **E:** 1802943	LSI-B1	7	15.5	25				0.8	84.9	14.3		0.177		
N: 239277 **E:** 1802943	LSI-B1	9	20.5	27				0.0	96.7	3.3		0.556		SP
N: 238072 **E:** 1803045	LSI-B2		5.5	27				0.0	82.3	9.8	7.9	0.158		
N: 238072 **E:** 1803045	LSI-B2	4	10.0	26				0.0	82.1	17.9		0.16		

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 238072 **E:** 1803045	LSI-B2	6	15.0	32				0.2	64.8	35.0		0.102		
N: 244376 **E:** 1800448	APM-B1	2	3.0	149				0.0	24.4	44.3	31.3	0.008		
N: 244376 **E:** 1800448	APM-B1	5	10.5	146				0.0	18.1	43.1	38.8	0.005		
N: 243746 **E:** 1800624	APM-B2	4	8.0	226				0.0	27.0	39.5	33.4	0.008		
N: 243054 **E:** 1800825	APM-B3	3	5.5	208				0.0	22.9	44.9	32.3	0.008		
N: 243054 **E:** 1800825	APM-B3	6	13.0	22				0.0	94.6	5.4		0.33		
N: 242369 **E:** 1801014	APM-B4	2	3.0	173				0.0	37.2	39.0	23.8	0.022		
N: 242369 **E:** 1801014	APM-B4	4	8.0	177				0.0	32.9	40.7	26.4	0.014		
N: 241793 **E:** 1801120	MI-B1	2	3.0	25	NP	NP	NP	28.8	65.8	5.3		0.408		SP-SM
N: 241793 **E:** 1801120	MI-B1	5	10.5	16	NP	NP	NP	63.1	31.0	5.8		7.497		GP-GM
N: 241191 **E:** 1801137	MI-B2	2	3.0	20				44.9	49.3	5.7		3.869		
N: 241191 **E:** 1801137	MI-B2	5	10.5	23				16.6	77.8	5.5		2.197		
N: 241191 **E:** 1801137	MI-B2	7	15.5	24				0.0	93.5	6.5		0.279		
N: 240667 **E:** 1801157	MI-B3	2	3.0	197				0.0	40.1	37.8	22.1	0.033		
N: 240667 **E:** 1801157	MI-B3	4	8.0	228				0.0	2.5	97.5				
N: 239914 **E:** 1801062	MI-B4	3	5.5	193				0.0	4.4	60.0	35.6	0.005		

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

Boring Location	Boring No.	Sample ID	Depth (ft)	Water Content (%)	Atterberg Limits			% Gravel	% Sand	% Passing 200 (if hydrometer data available)		D_{50} (mm)	Specific Gravity (SG)	USCS
					LL	PL	PI			% Silt	% Clay			
N: 239296 **E:** 1801037	MI-B5	2	3.0	136				5.9	17.0	47.5	29.5	0.014		
N: 239296 **E:** 1801037	MI-B5	5	10.5	149						64.7	28.5	0.012		
N: 238700 **E:** 1801047	MI-B6	4	8.0	205				0.0	7.4	55.9	36.7	0.005		
N: 237907 **E:** 1801012	MI-B7	2	3.0	236				0.0	5.3	50.7	44.0	0.004		
N: 237907 **E:** 1801012	MI-B7	5	10.5	179				0.0	6.2	55.3	38.5	0.005		
N: 237216 **E:** 1800933	MI-B8	3	5.5	73				0.0	18.5	58.9	22.6	0.03		
N: 244627 **E:** 1801364	PINTO-B1	3	5.5	118				0.0	13.4	48.3	38.3	0.006		
N: 244627 **E:** 1801364	PINTO-B1	8	19.0	23				2.3	94.4	1.6	1.7	0.341		SP
N: 243977 **E:** 1801760	PINTO-B2	3	5.5	212				0.0	17.2	46.2	36.7	0.006		
N: 243299 **E:** 1802069	PINTO-B3	2	3.0	31				0.0	51.9	17.8	30.3	0.084		
N: 243299 **E:** 1802069	PINTO-B3	7	15.5	20				0.1	94.5	1.9	3.6	0.317		

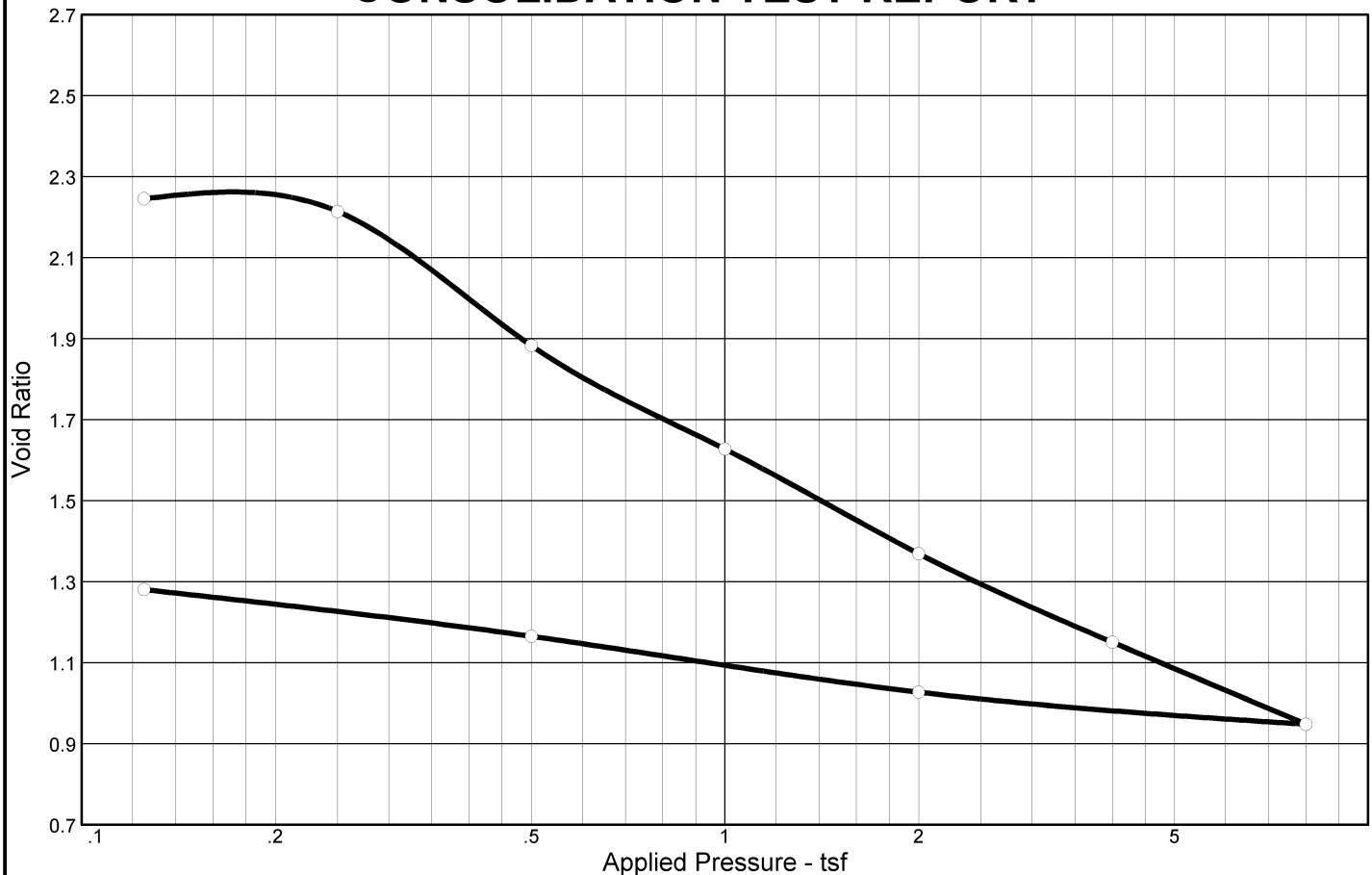
SOIL CLASSIFICATION SUMMARY - N-E - SG 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

SOIL CLASSIFICATION SUMMARY

GET PROJECT NUMBER: 21-126
PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
COUNTY: MOBILE

CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.01	0.005								

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
99.0 %	81.8 %	52.3	102	81	2.721		0.04	2.247

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-6(89

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-1, T-3 **Elev./Depth:** 41.5'-43.5'

Remarks:

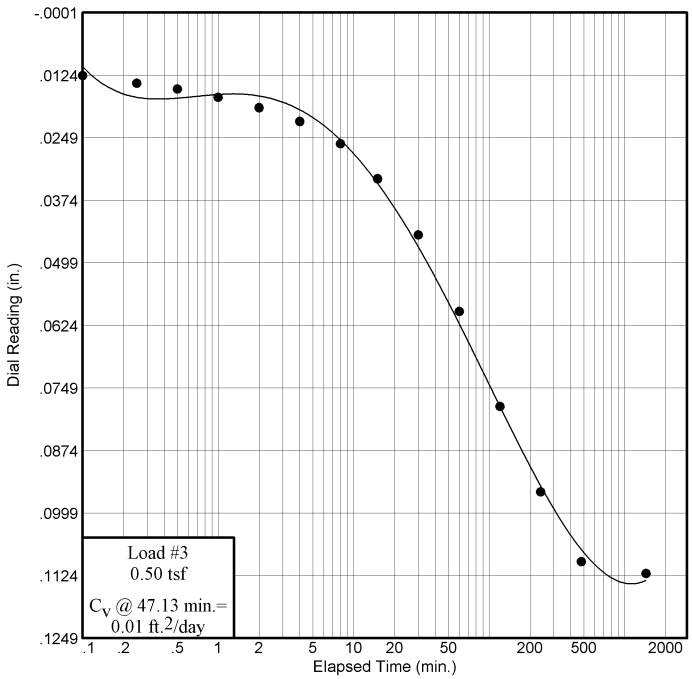
Geotechnical Engineering-Testing, Inc.

Mobile, AL

Figure

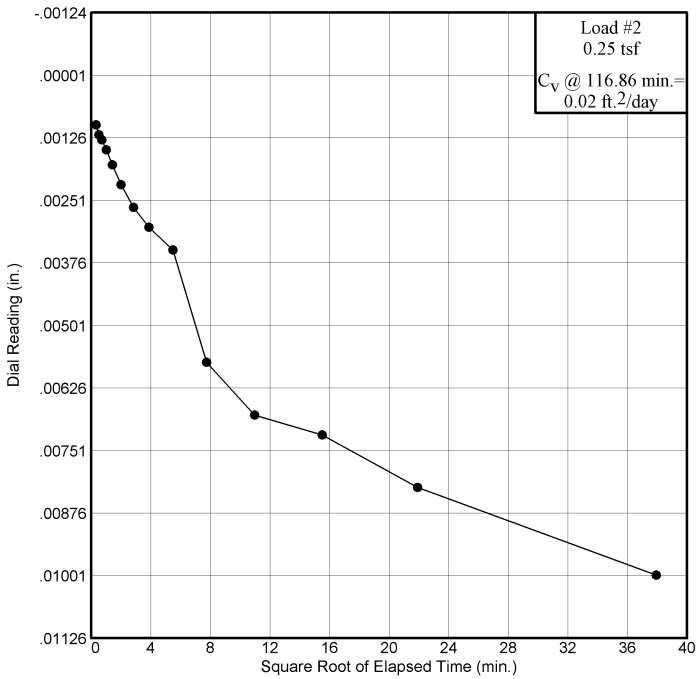
Dial Reading vs. Time

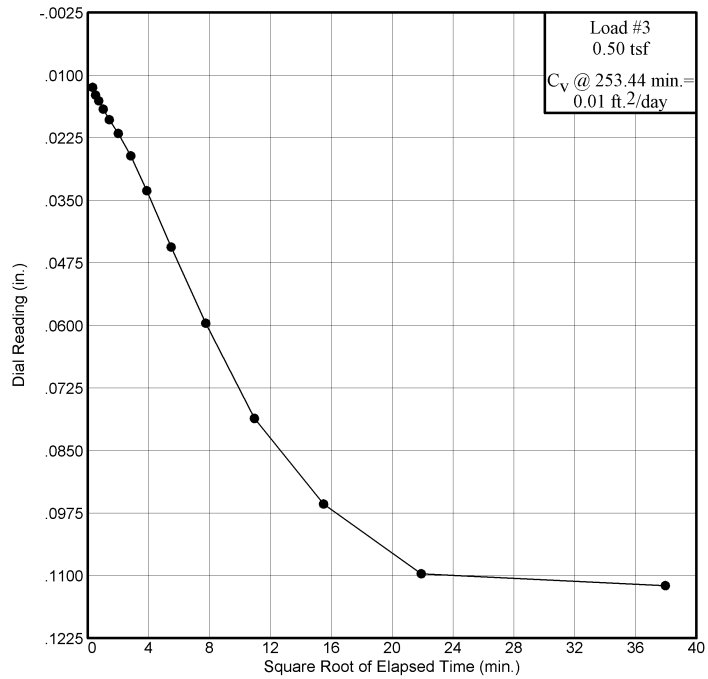
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-1, T-3 Elev./Depth: 41.5'-43.5'



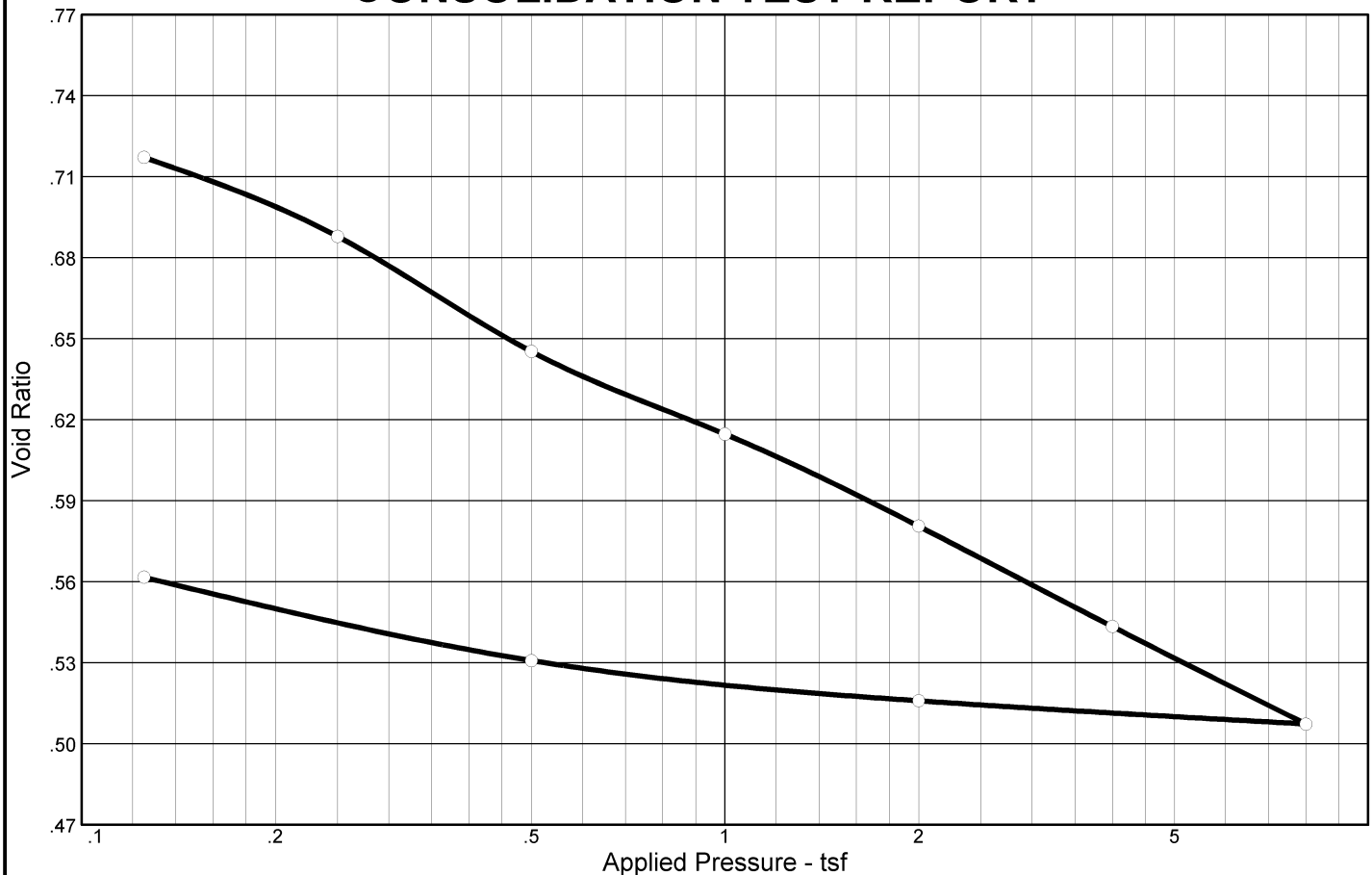
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-1, T-3 Elev./Depth: 41.5'-43.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	0.22									
3	0.50	2.90									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
100.3 %	30.7 %	87.6	NP	NP	2.457		0.64	0.751

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray with tarce Yellow Silty Sand	SM	A-2-4(0)

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-3, T-2 **Elev./Depth:** 31.5'-33.5'

Remarks:

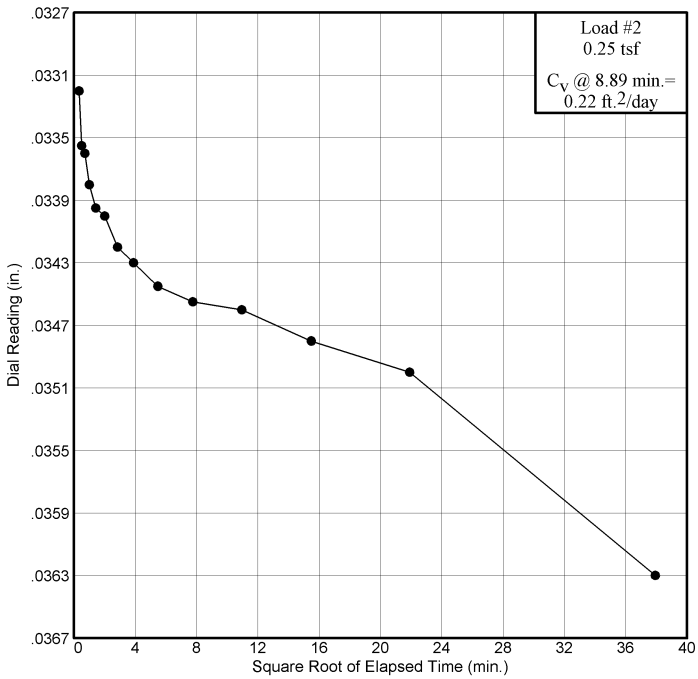
Geotechnical Engineering-Testing, Inc.

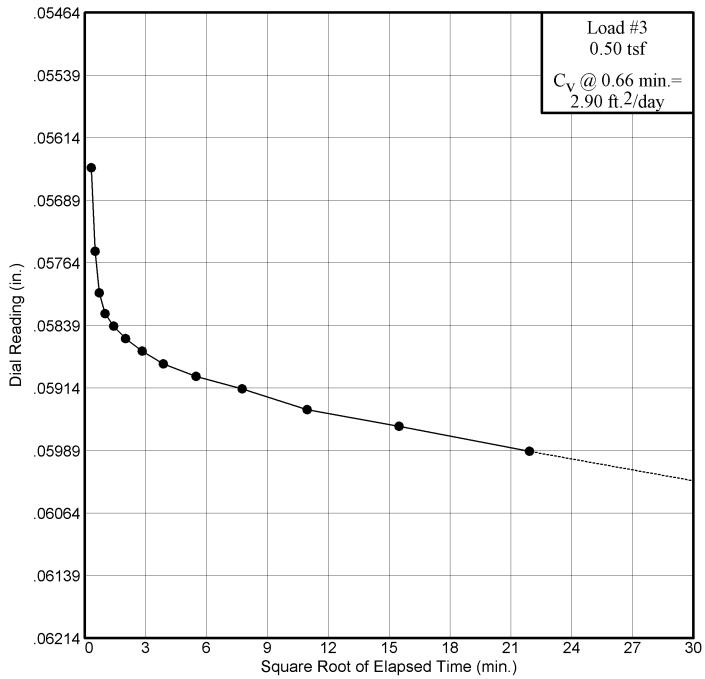
Mobile, AL

Figure

Dial Reading vs. Time

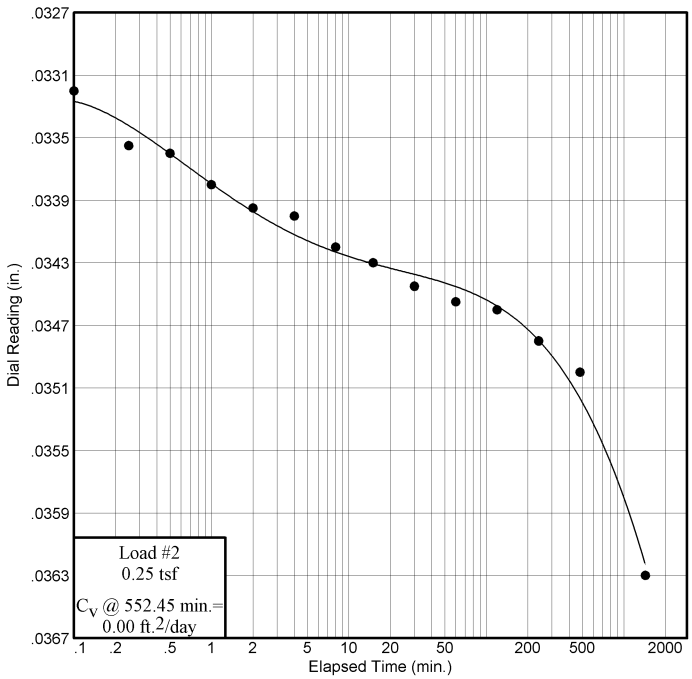
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-3, T-2 Elev./Depth: 31.5'-33.5'

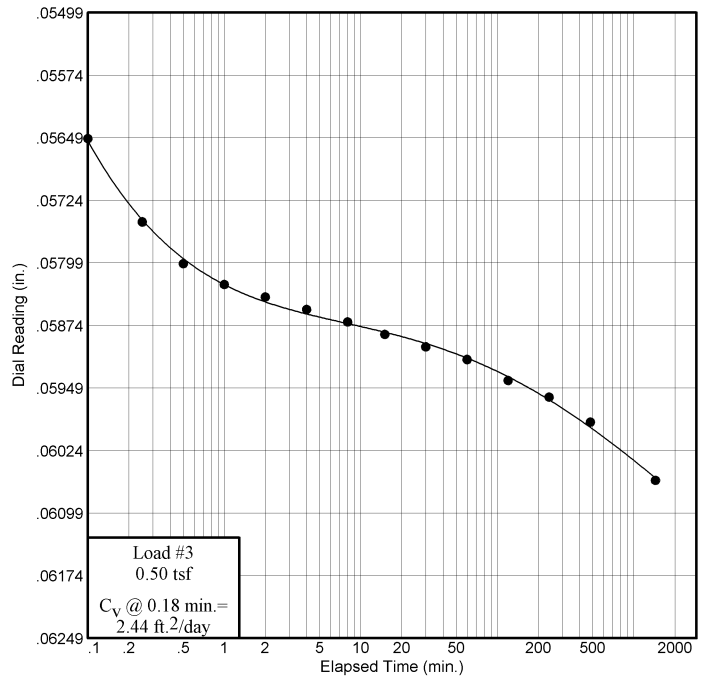




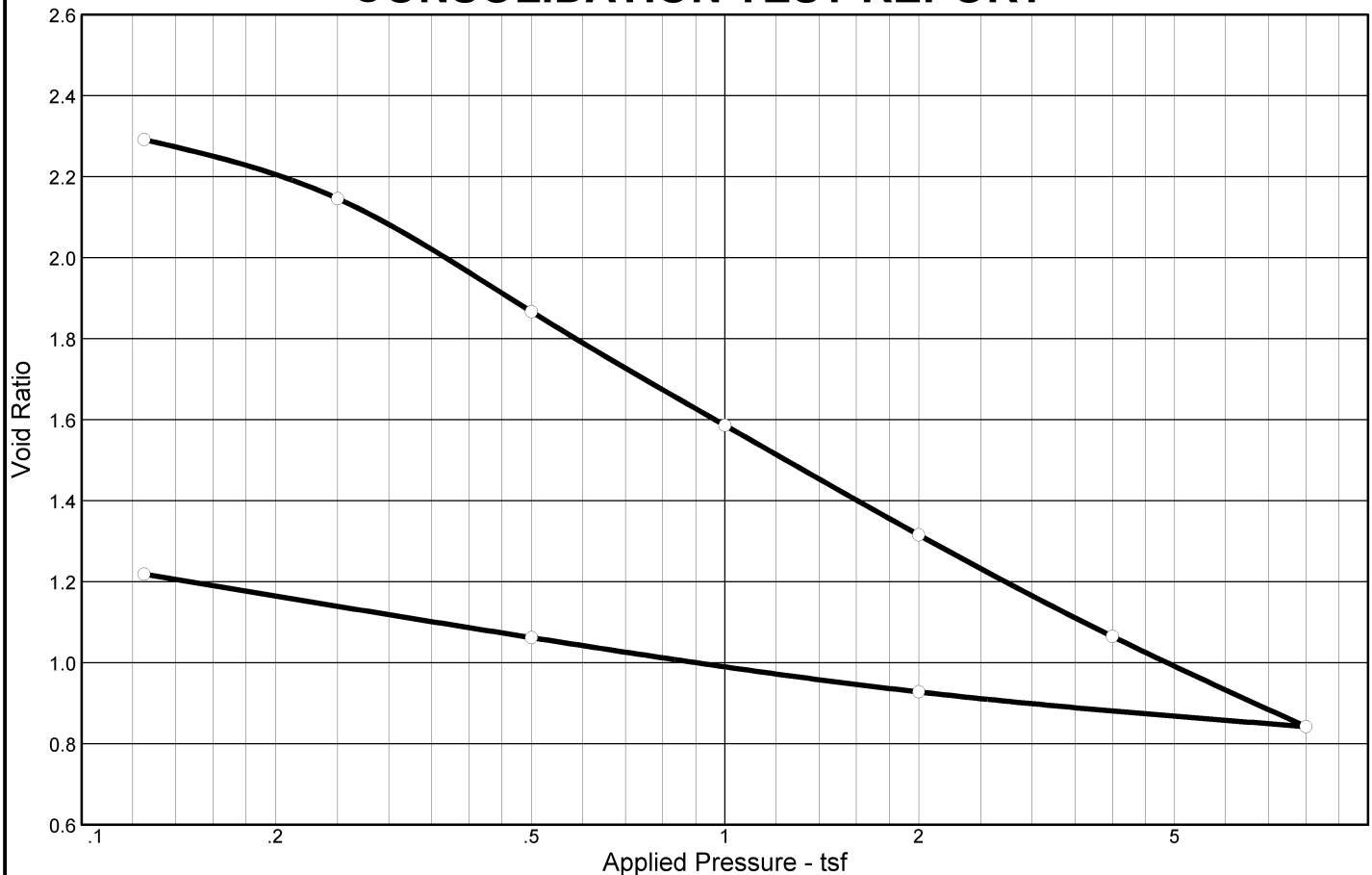
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-3, T-2 Elev./Depth: 31.5'-33.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	0.02									
3	0.50	0.01									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
99.8 %	90.1 %	48.3	81	58	2.571		0.07	2.321

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-6(66

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-7, T-3 **Elev./Depth:** 41.5'-43.5'

Remarks:

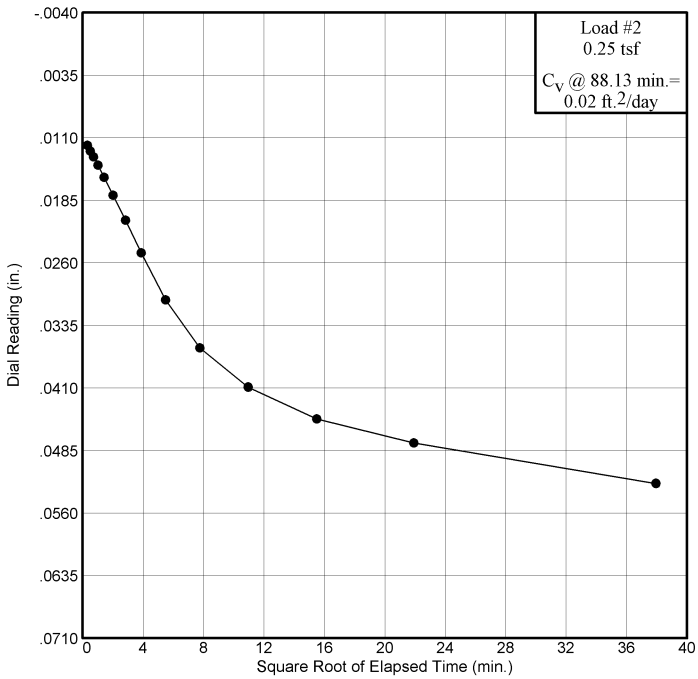
Geotechnical Engineering-Testing, Inc.

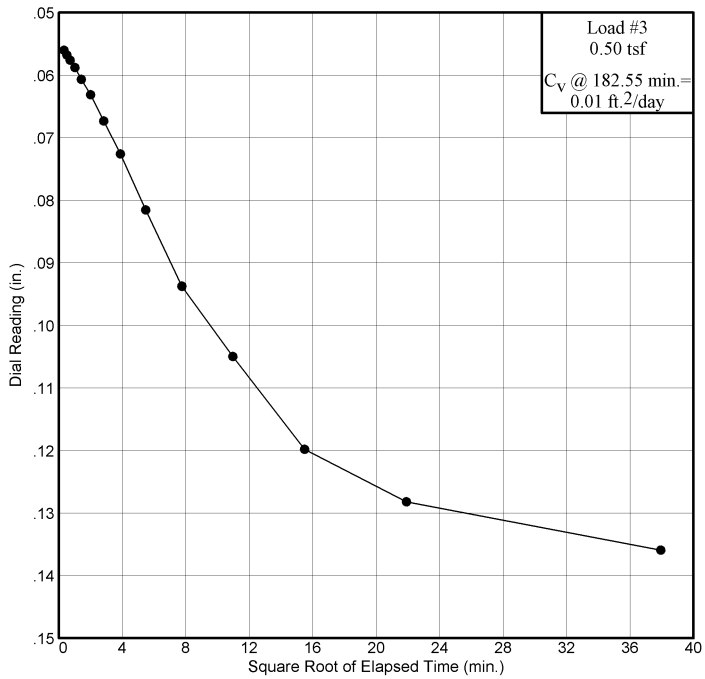
Mobile, AL

Figure

Dial Reading vs. Time

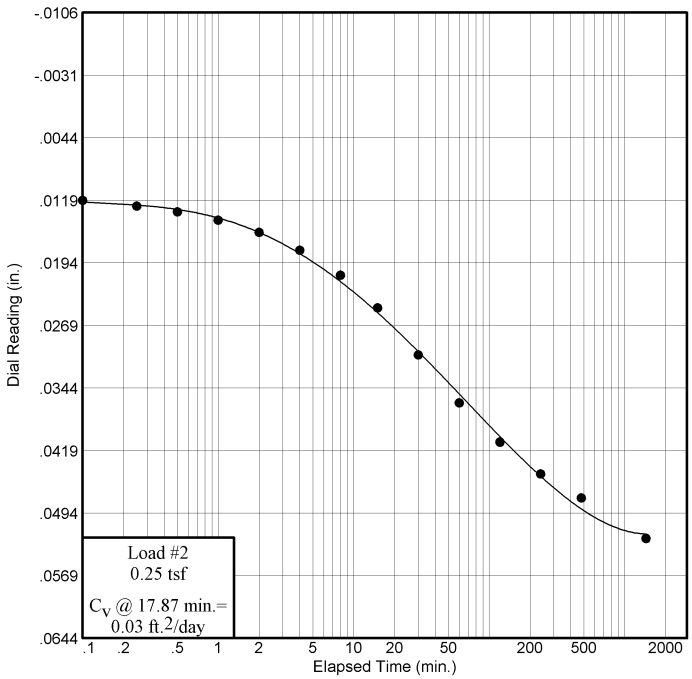
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-7, T-3 Elev./Depth: 41.5'-43.5'

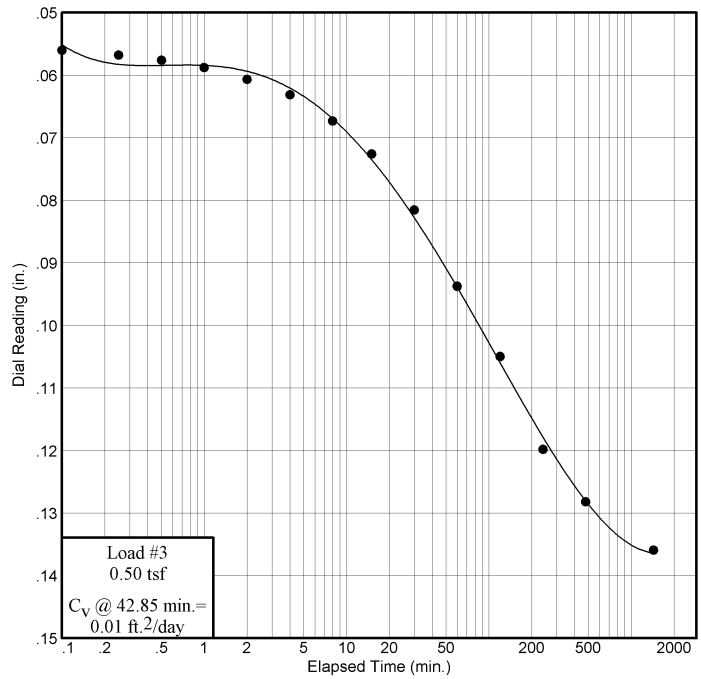




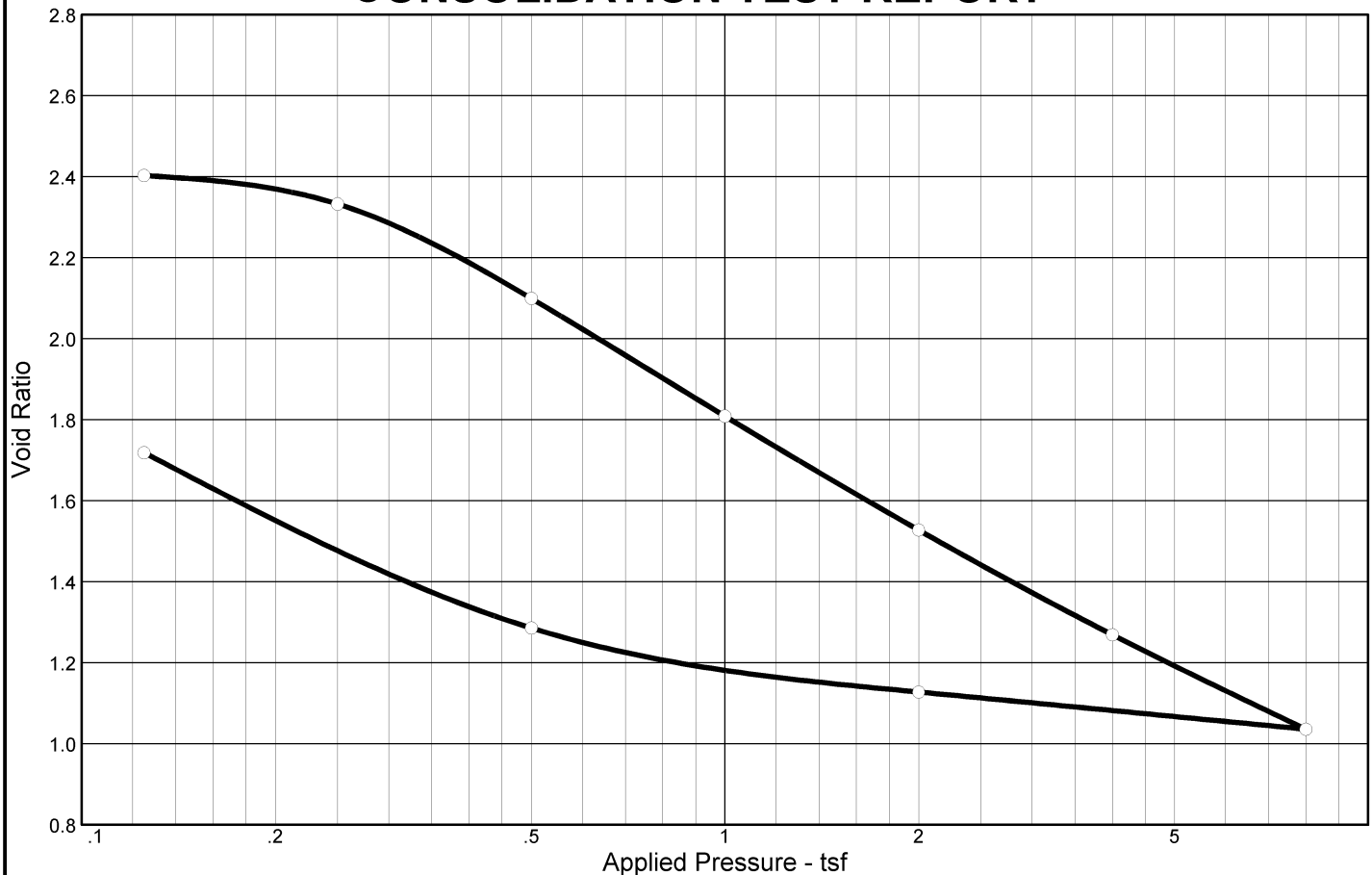
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-7, T-3 Elev./Depth: 41.5'-43.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	0.01	0.005								
3	0.50	0.01	0.004								

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
97.5 %	87.1 %	49.4	112	82	2.705		0.14	2.415

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-5(96

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-9A, T-3 **Elev./Depth:** 41.5'-43.5'

Remarks:

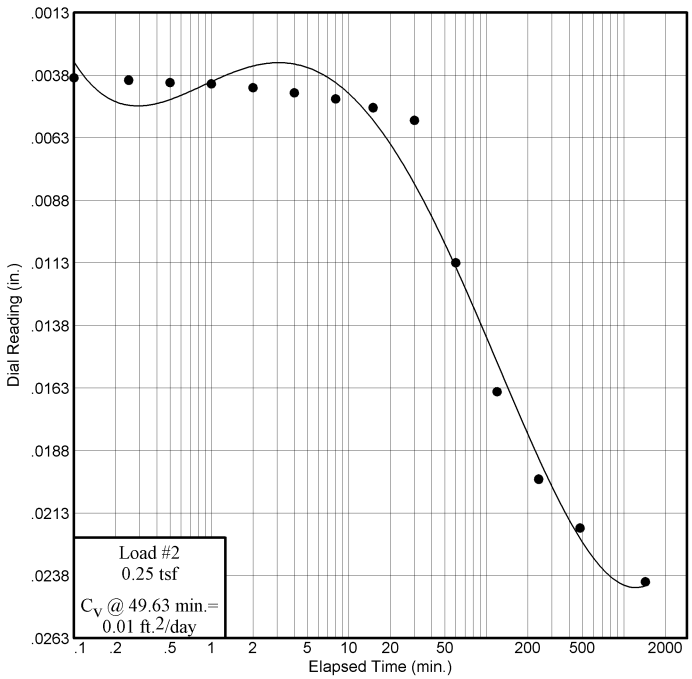
Geotechnical Engineering-Testing, Inc.

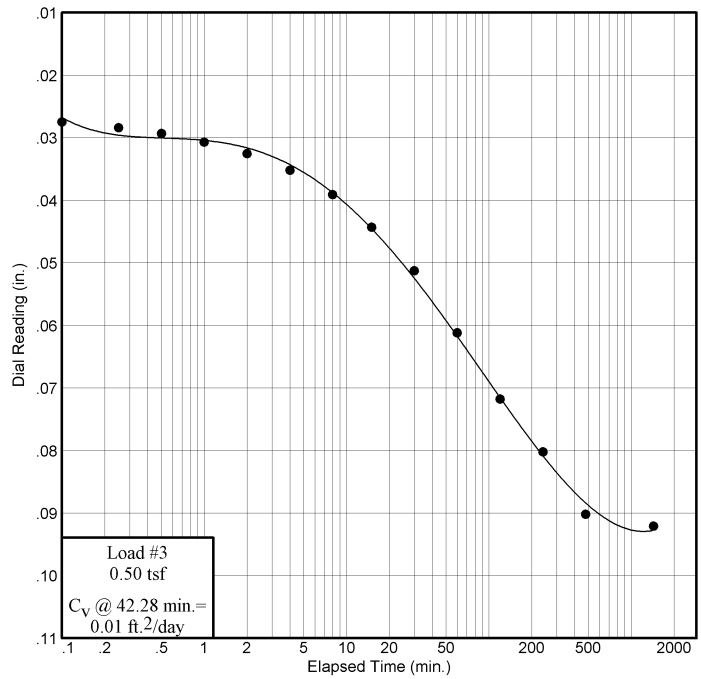
Mobile, AL

Figure

Dial Reading vs. Time

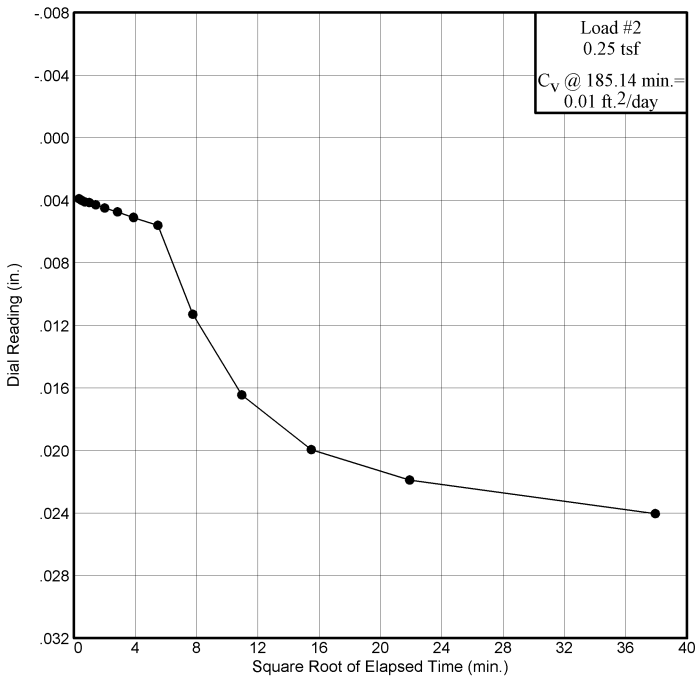
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-9A, T-3 Elev./Depth: 41.5'-43.5'

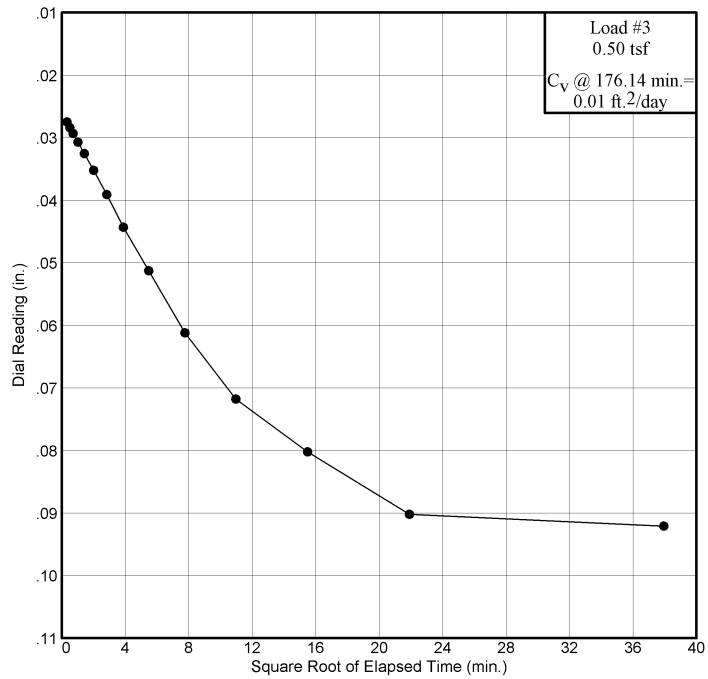




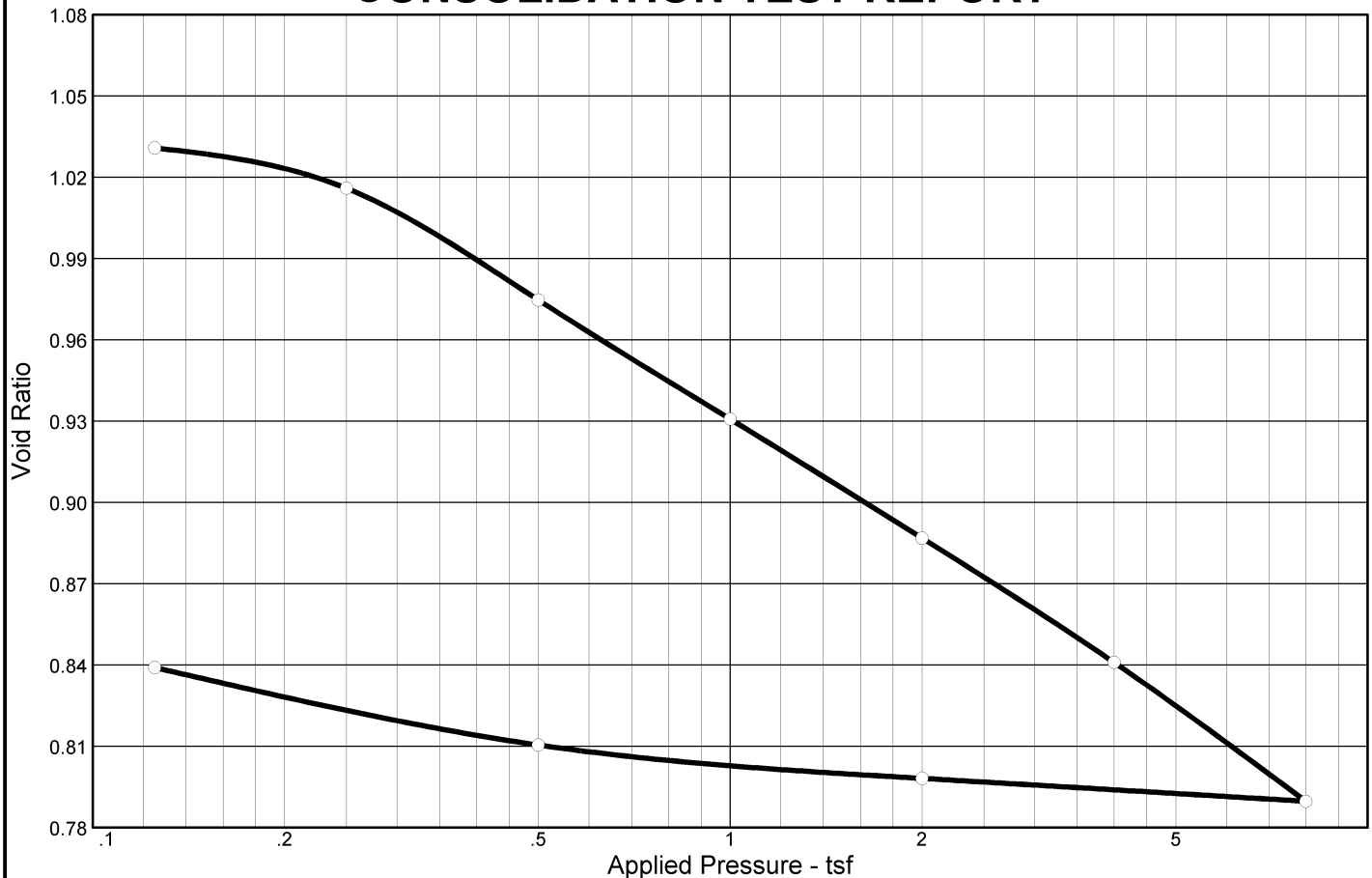
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-9A, T-3 Elev./Depth: 41.5'-43.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	0.01	0.002								
3	0.50	1.63	0.003								

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
98.6 %	39.9 %	80.0	39	13	2.664		0.45	1.080

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Silt	ML	A-6(6)

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-9B, T-1 **Elev./Depth:** 10.0'-12.0'

Remarks:

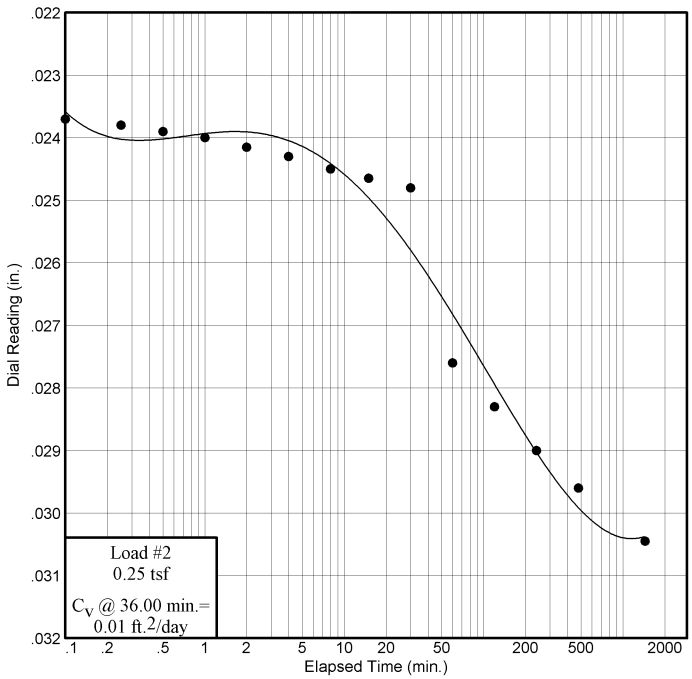
Geotechnical Engineering-Testing, Inc.

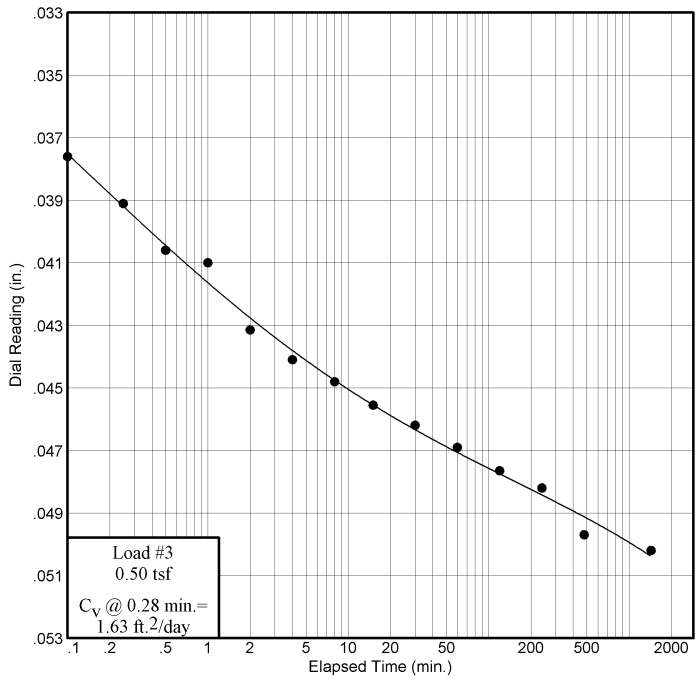
Mobile, AL

Figure

Dial Reading vs. Time

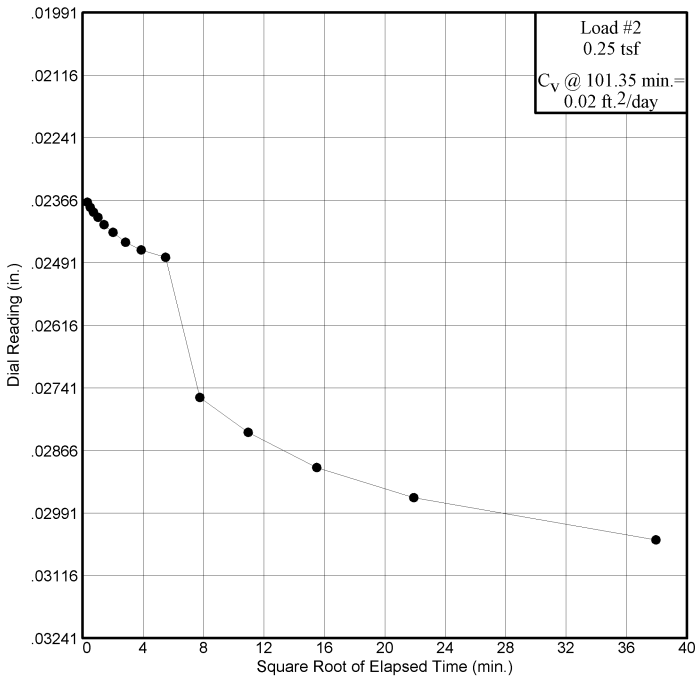
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-9B, T-1 Elev./Depth: 10.0'-12.0'

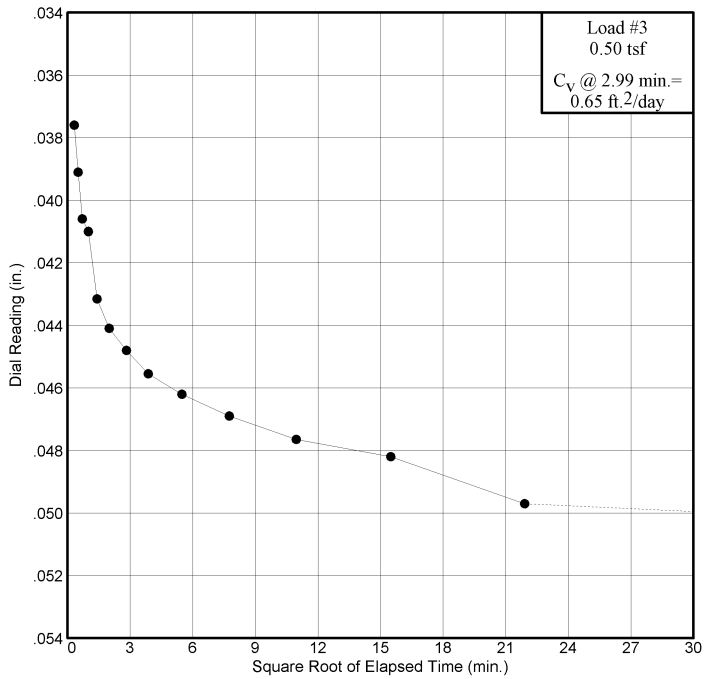




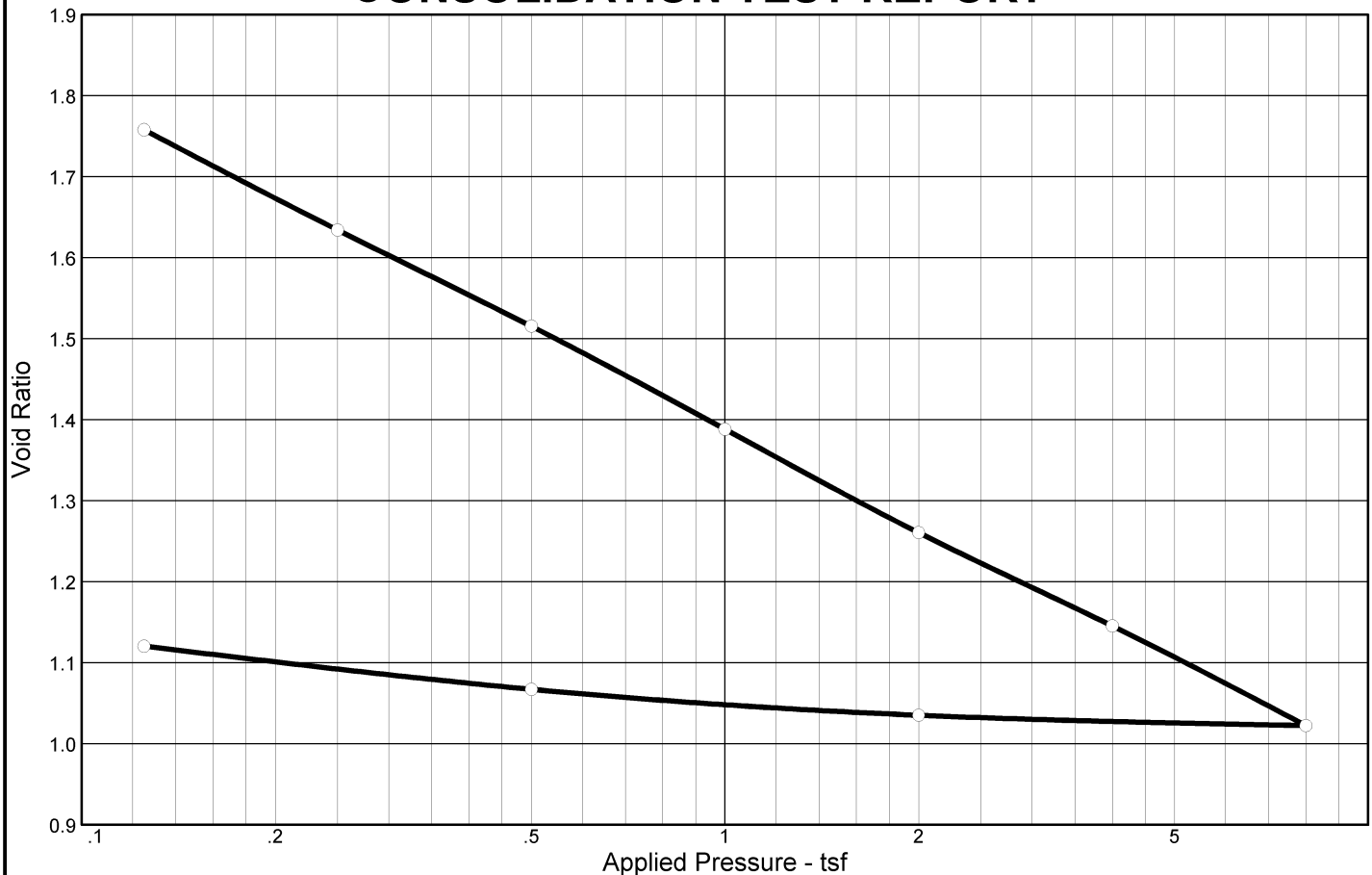
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-9B, T-1 Elev./Depth: 10.0'-12.0'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	0.00									
3	0.50	0.04									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
99.5 %	68.2 %	59.0	41	17	2.681		2.24	1.838

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray with little Dark Bluish Gray Lean Clay with Sand	ML	A-6(6)

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-11, T-1 **Elev./Depth:** 10.0'-12.0'

Remarks:

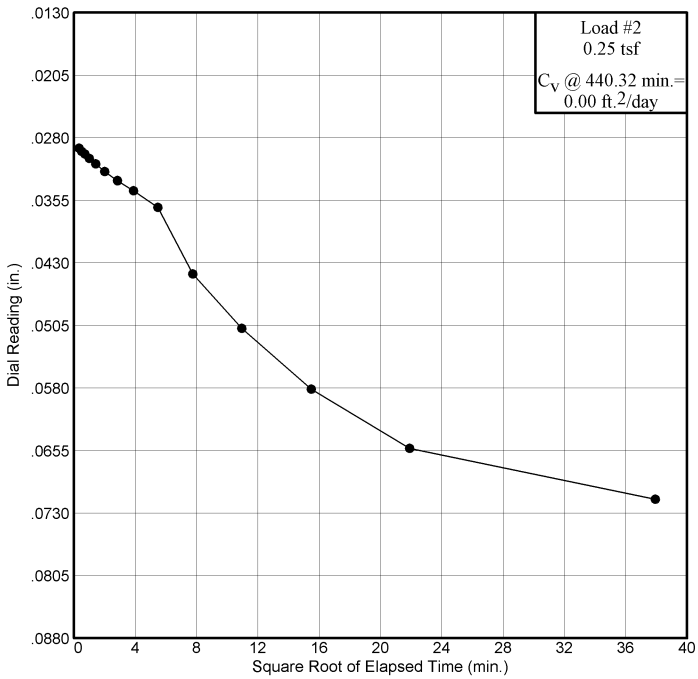
Geotechnical Engineering-Testing, Inc.

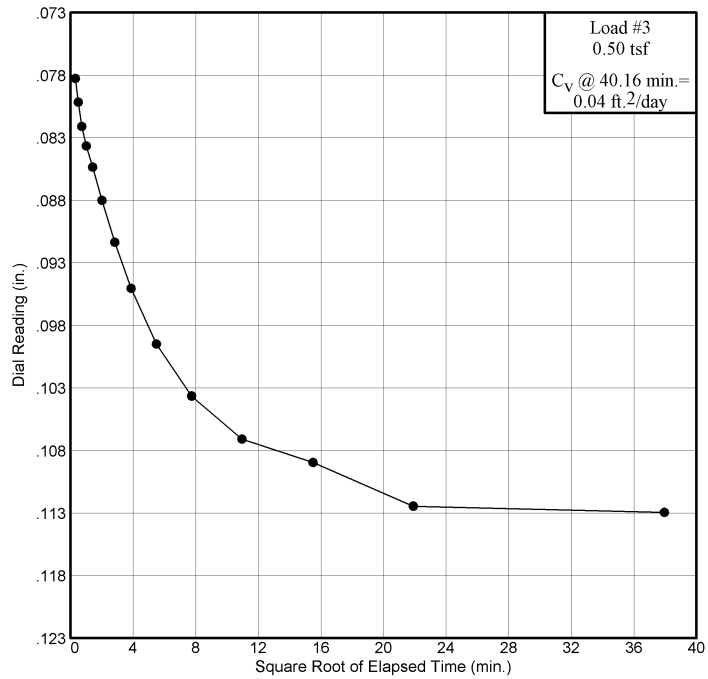
Mobile, AL

Figure

Dial Reading vs. Time

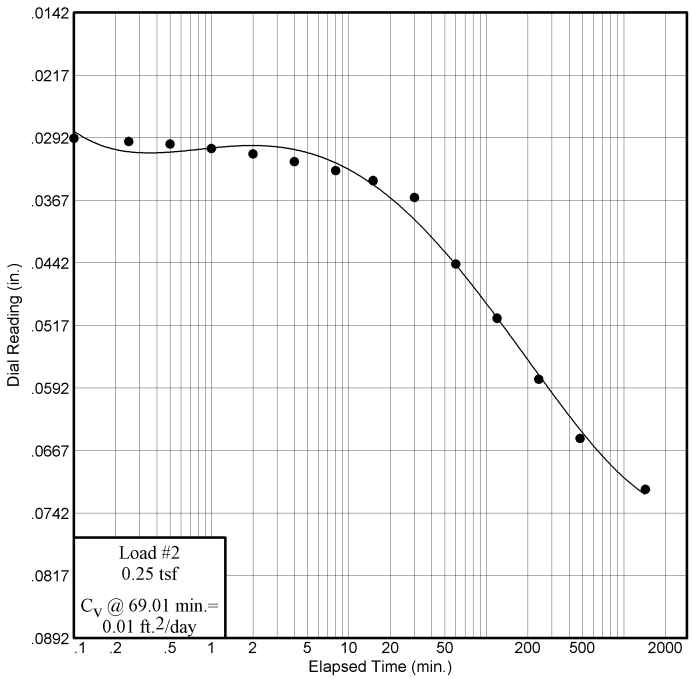
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-11, T-1 Elev./Depth: 10.0'-12.0'

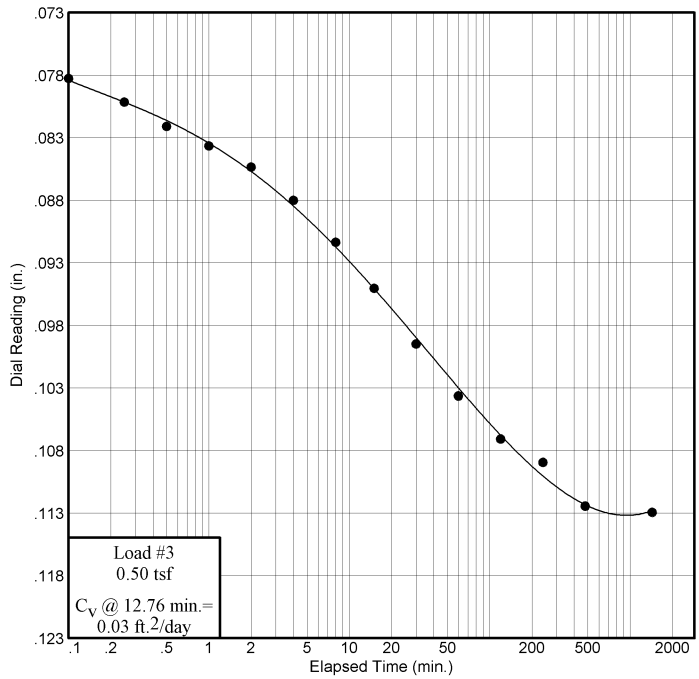




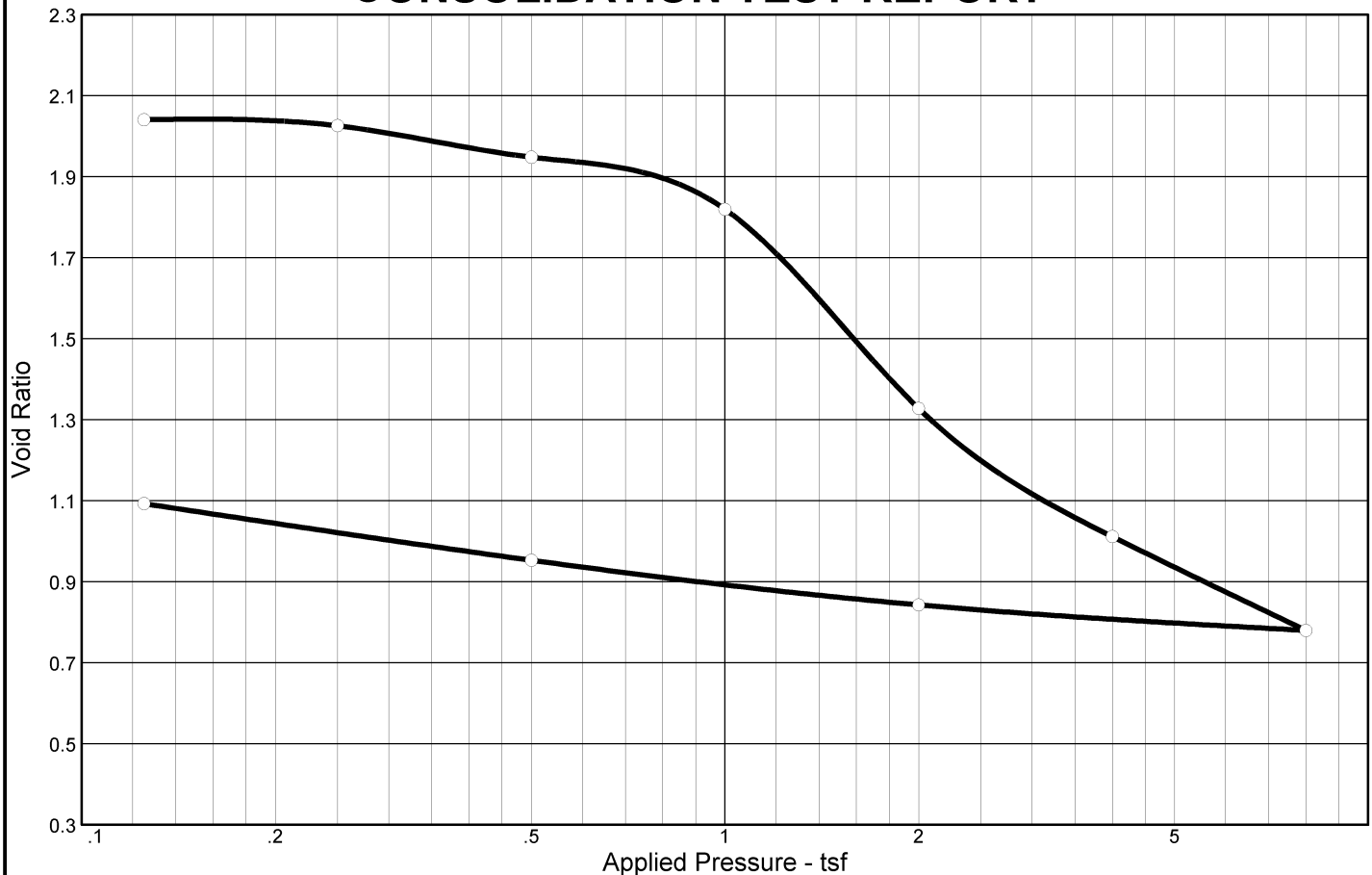
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-11, T-1 Elev./Depth: 10.0'-12.0'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	0.04									
3	0.50	0.10									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
99.4 %	74.8 %	55.7	80	59	2.716		0.13	2.044

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-6(86

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-11, T-2 **Elev./Depth:** 31.5'-33.5'

Remarks:

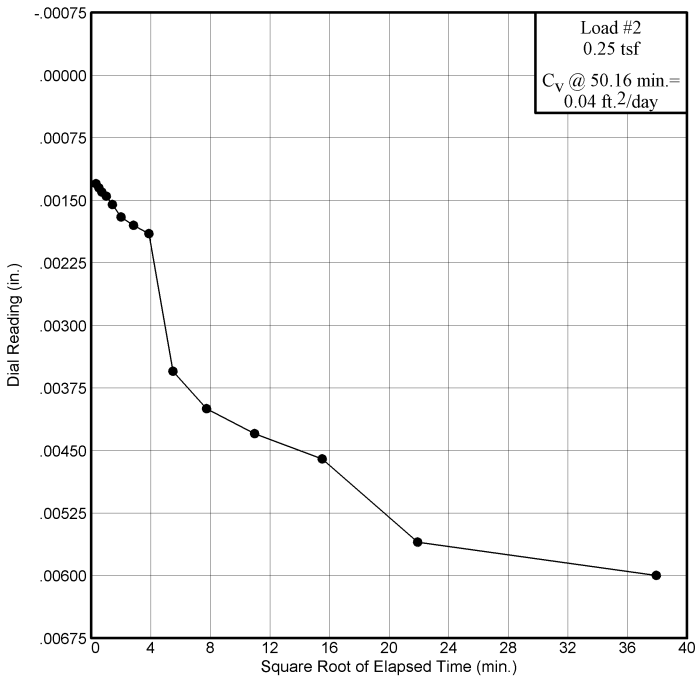
Geotechnical Engineering-Testing, Inc.

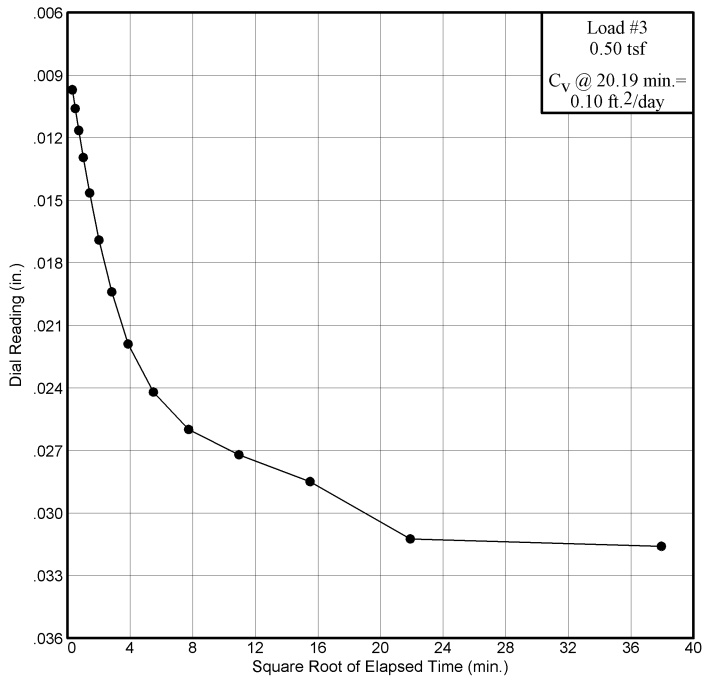
Mobile, AL

Figure

Dial Reading vs. Time

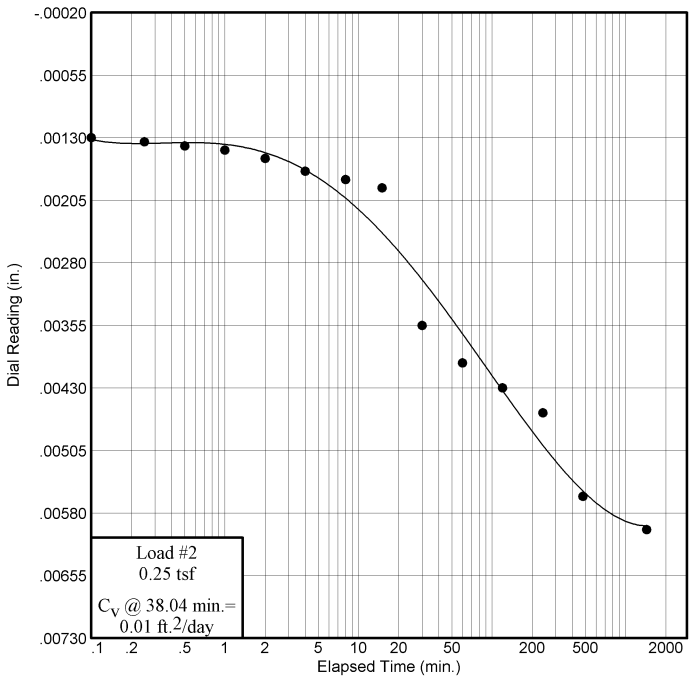
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-11, T-2 Elev./Depth: 31.5'-33.5'

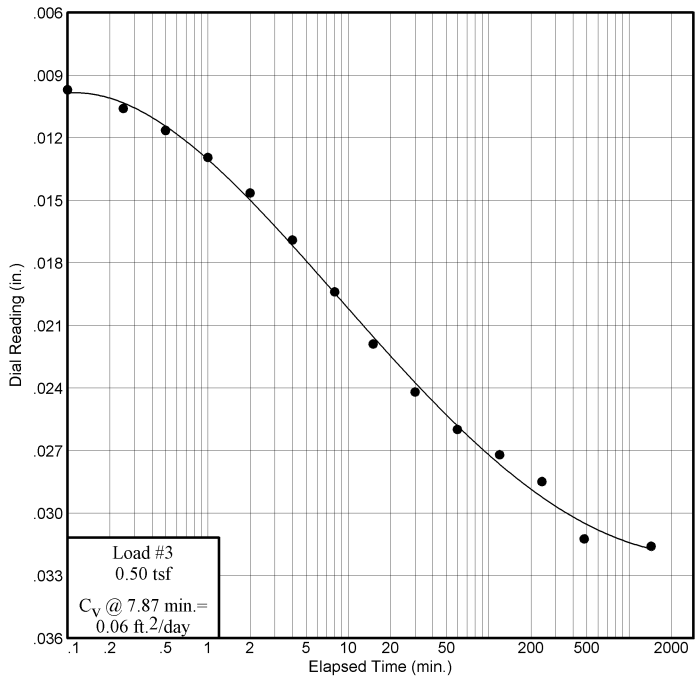




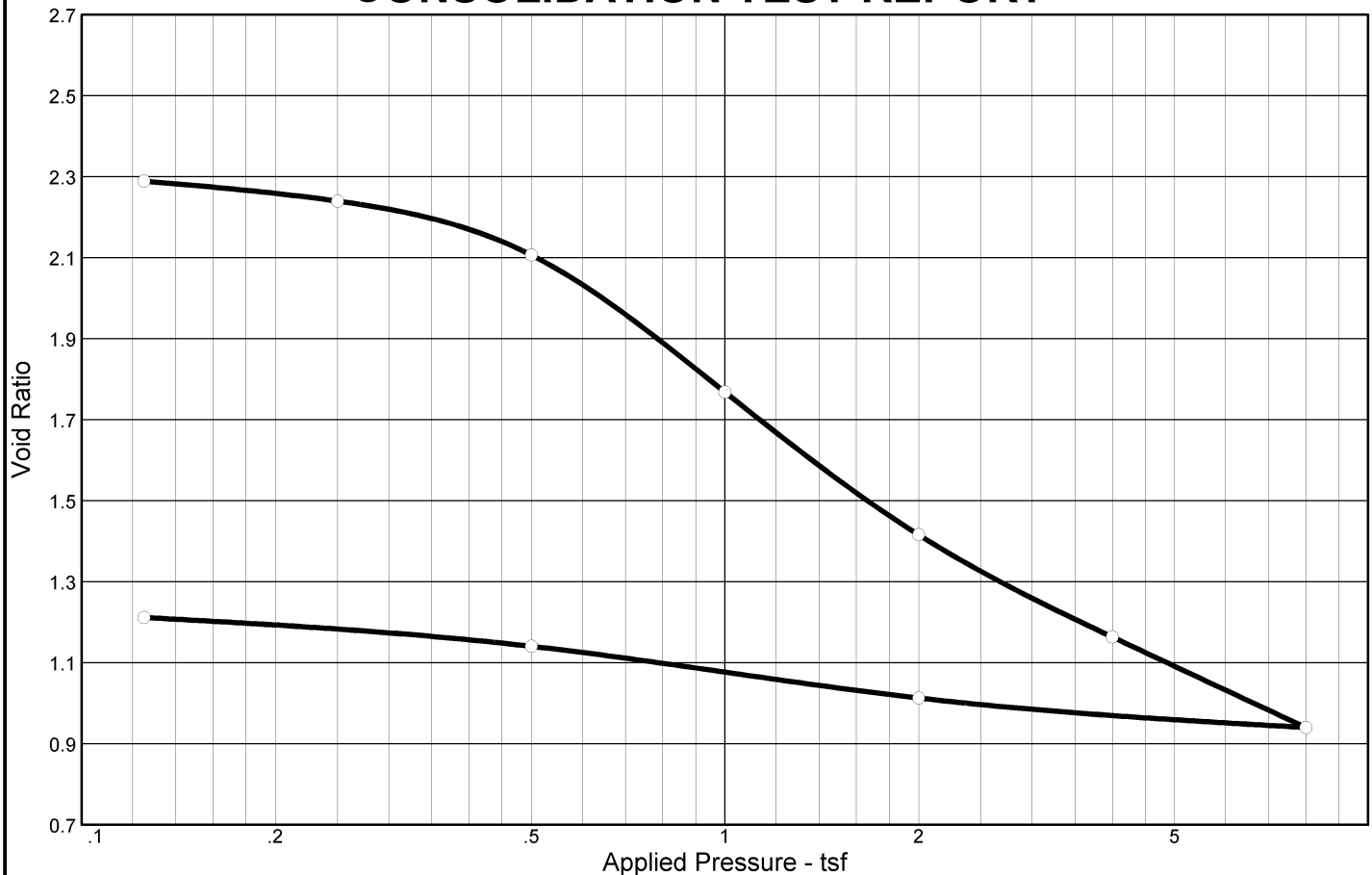
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-11, T-2 Elev./Depth: 31.5'-33.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	0.03									
3	0.50	0.05									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
97.0 %	81.4 %	51.8	97	75	2.732		0.09	2.292

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-6(86

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-13, T-2 **Elev./Depth:** 31.5'-33.5'

Remarks:

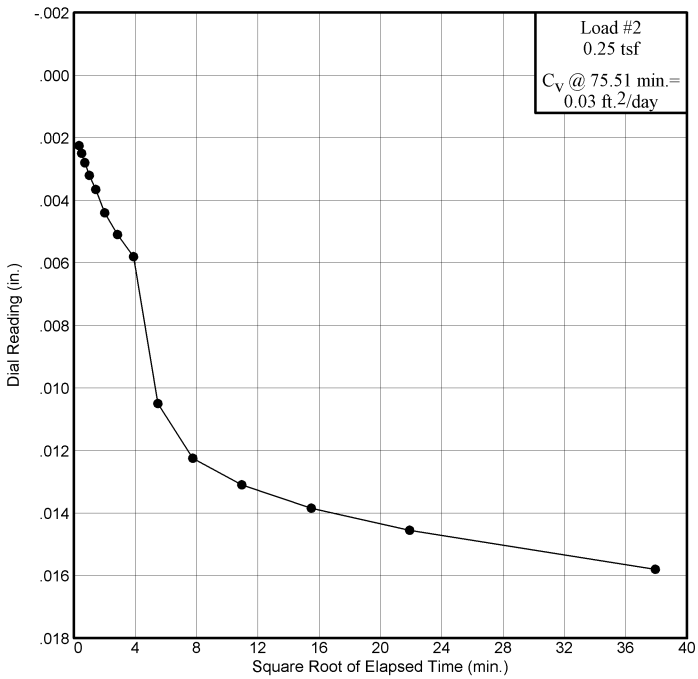
Geotechnical Engineering-Testing, Inc.

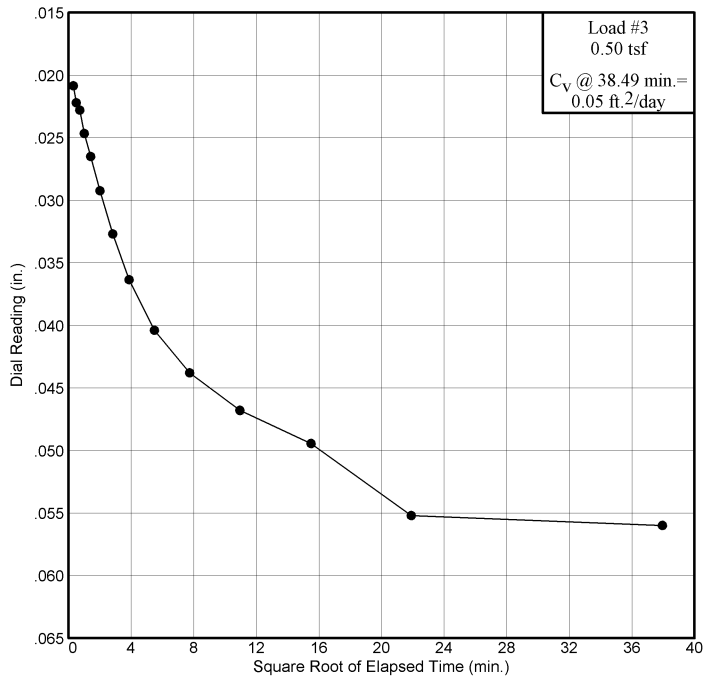
Mobile, AL

Figure

Dial Reading vs. Time

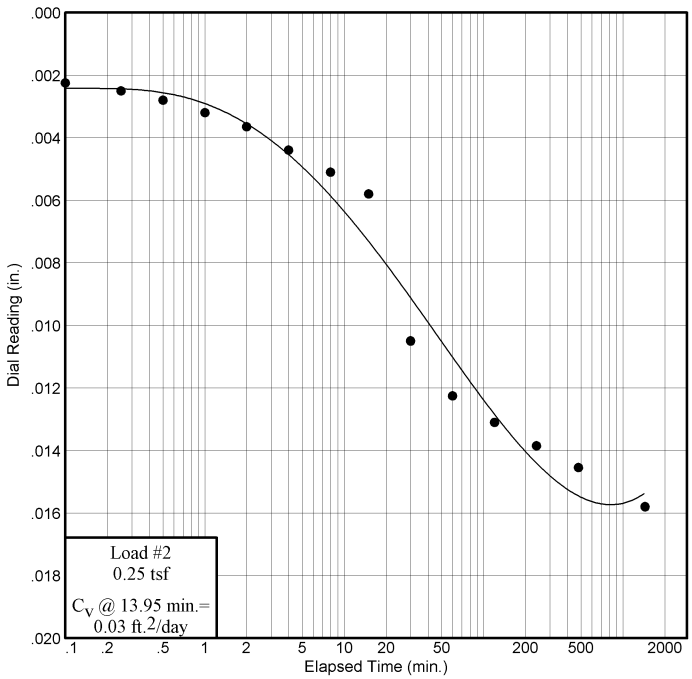
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-13, T-2 Elev./Depth: 31.5'-33.5'

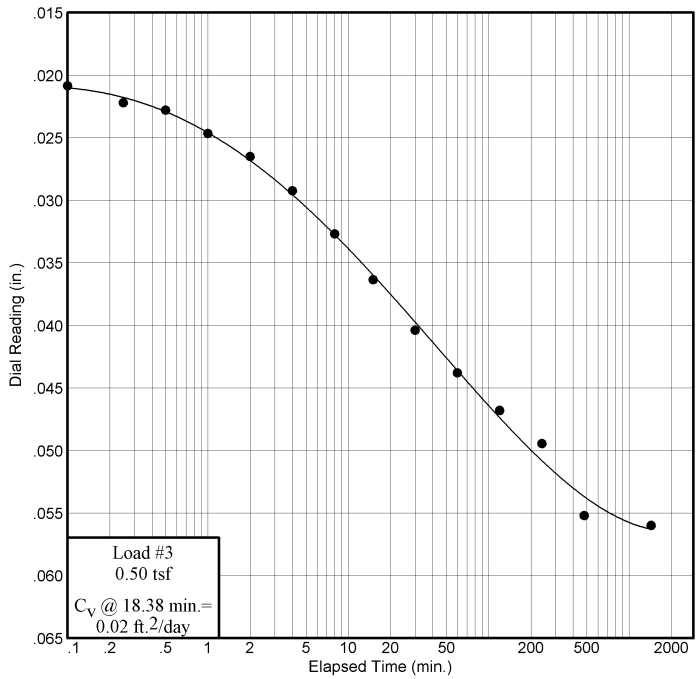




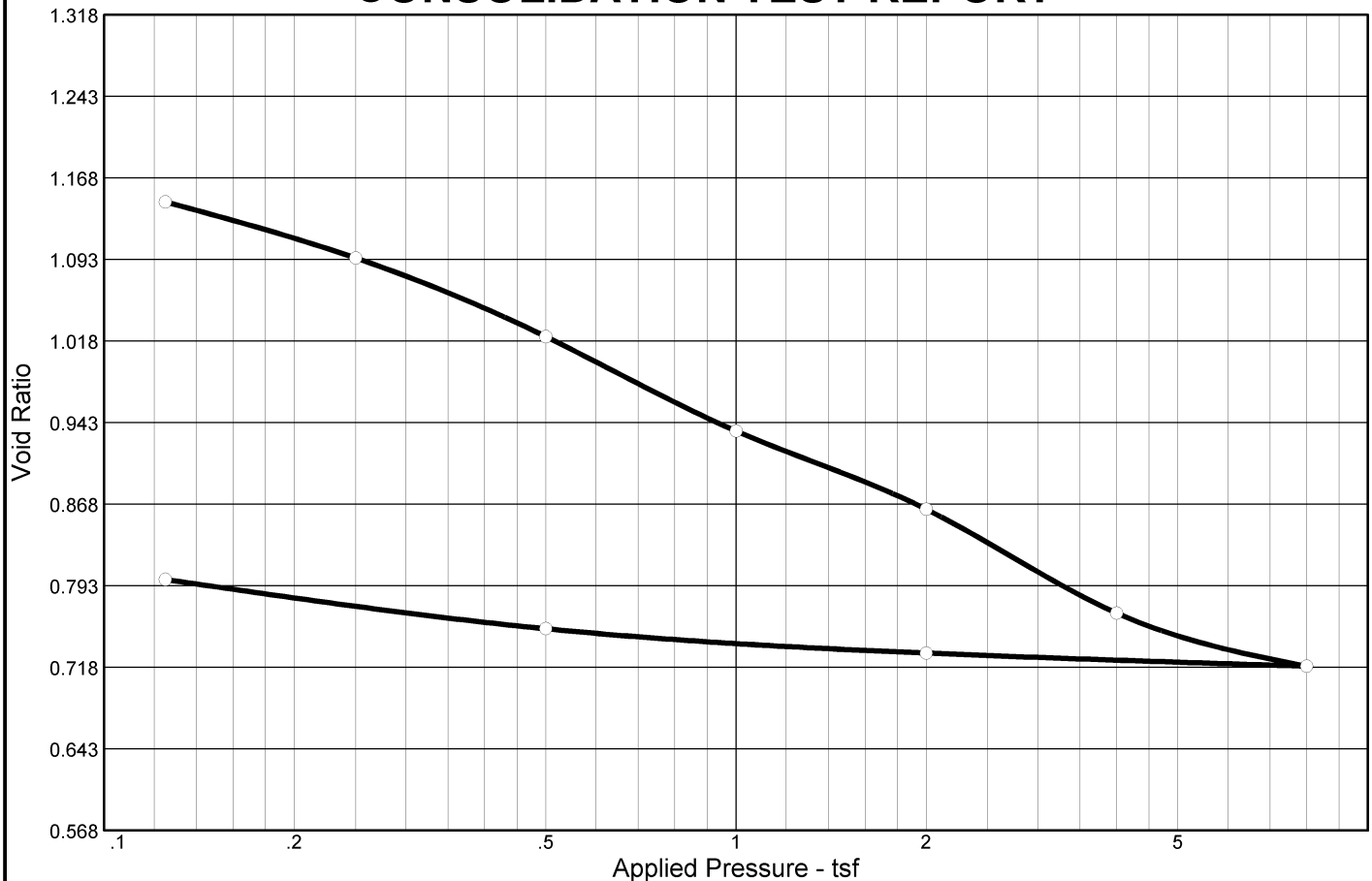
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-13, T-2 Elev./Depth: 31.5'-33.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	0.66									
3	0.50	0.36									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
101.4 %	46.1 %	75.0	32	9	2.643		1.83	1.201

MATERIAL DESCRIPTION	USCS	AASHTO
Gray Clayey Sand	SC	A-4(2)

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-14, T-1 **Elev./Depth:** 10.0'-12.0'

Remarks:

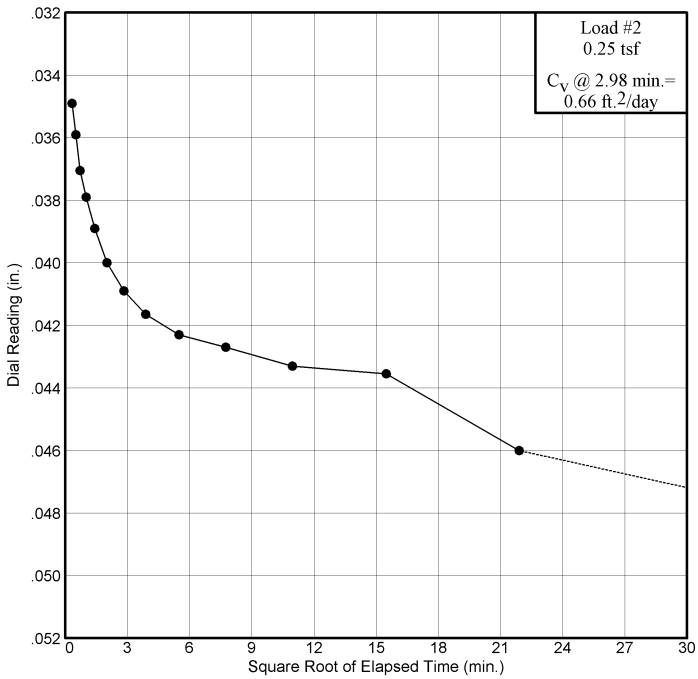
Geotechnical Engineering-Testing, Inc.

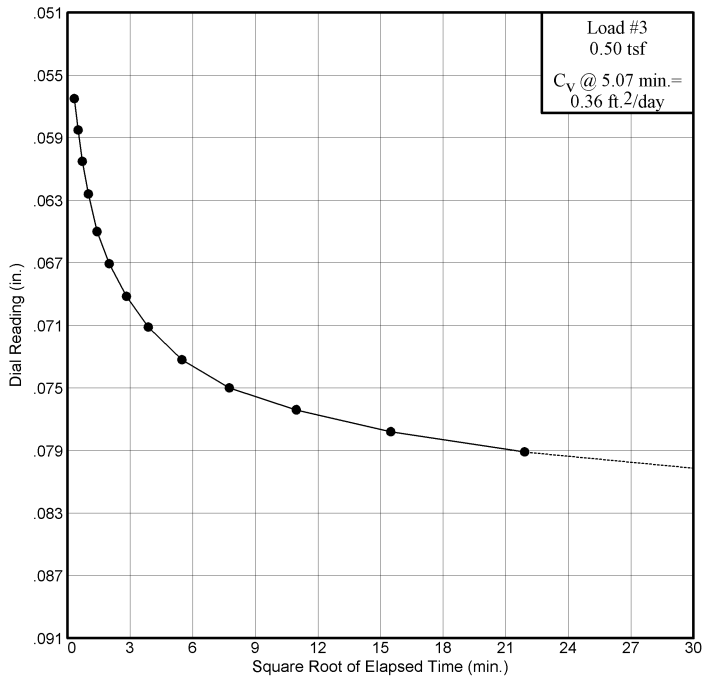
Mobile, AL

Figure

Dial Reading vs. Time

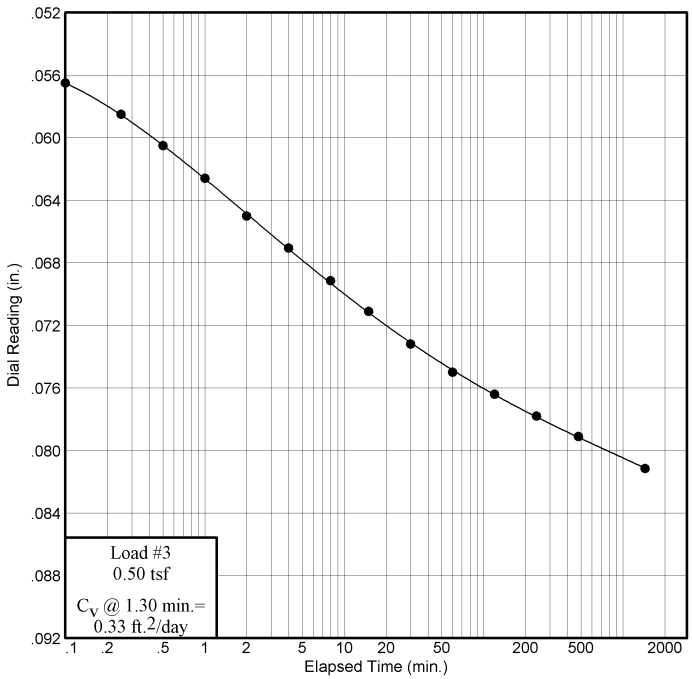
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-14, T-1 Elev./Depth: 10.0'-12.0'



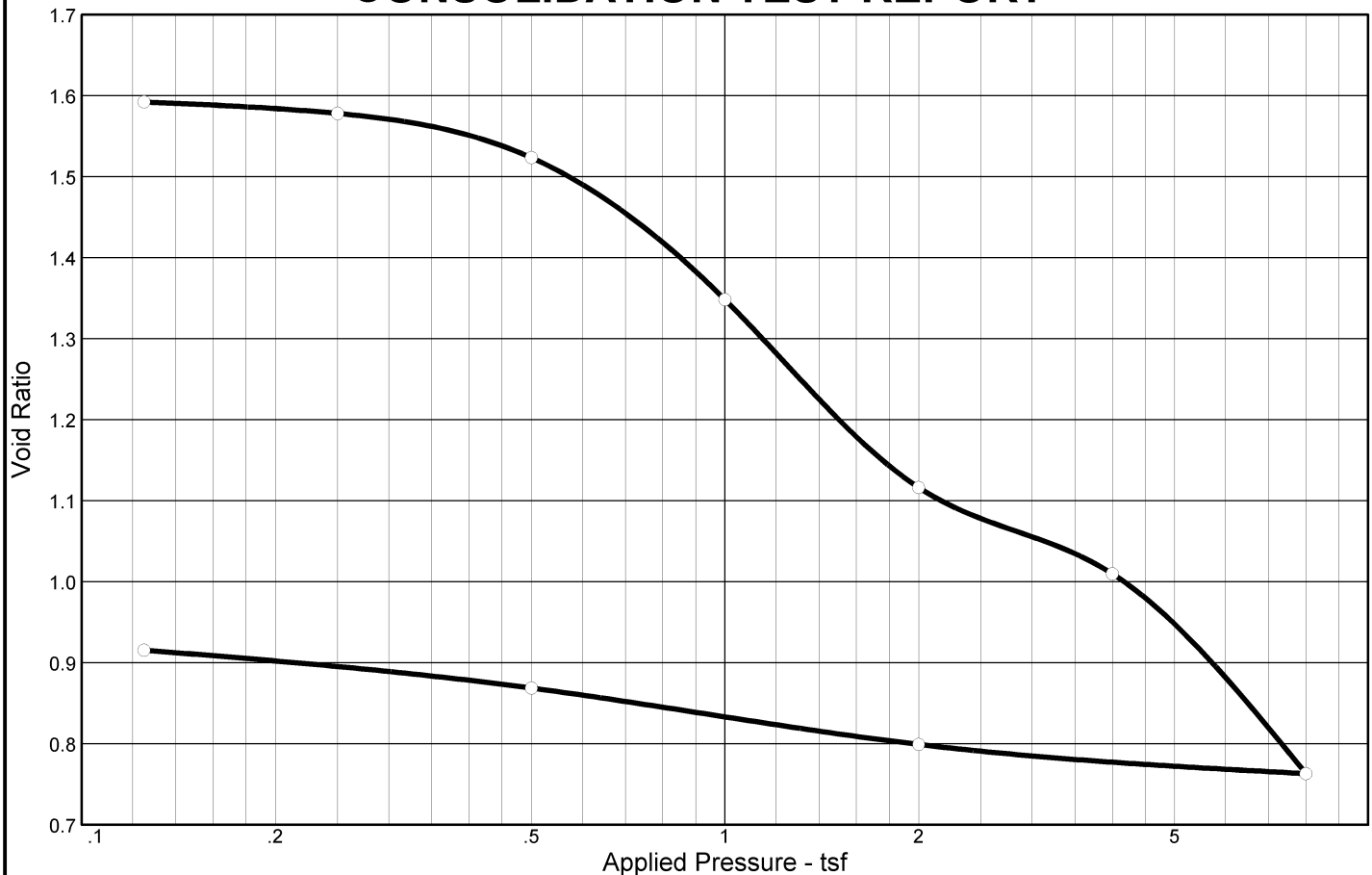


Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-14, T-1 Elev./Depth: 10.0'-12.0'



CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	0.41									
3	0.50	0.18									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
100.4 %	59.9 %	64.3	73	54	2.672		3.92	1.594

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-6(60

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-15, T-1 **Elev./Depth:** 26.5'-28.5'

Remarks:

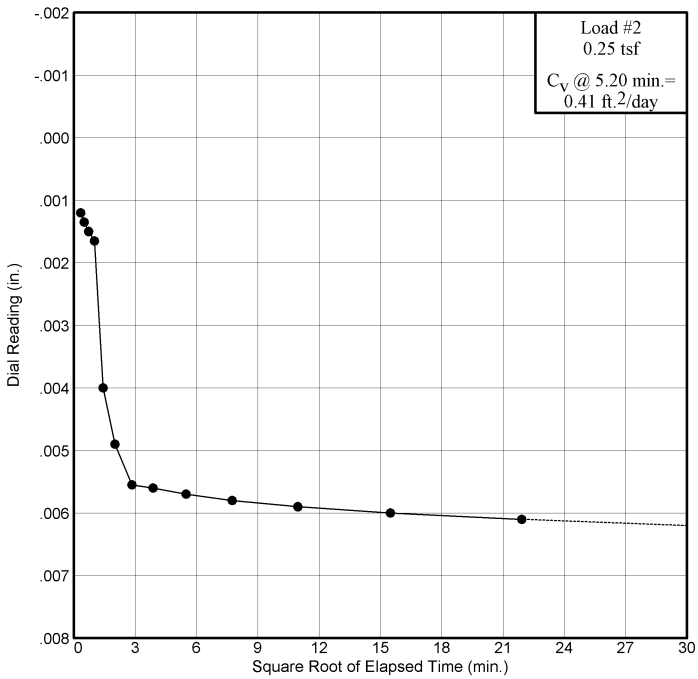
Geotechnical Engineering-Testing, Inc.

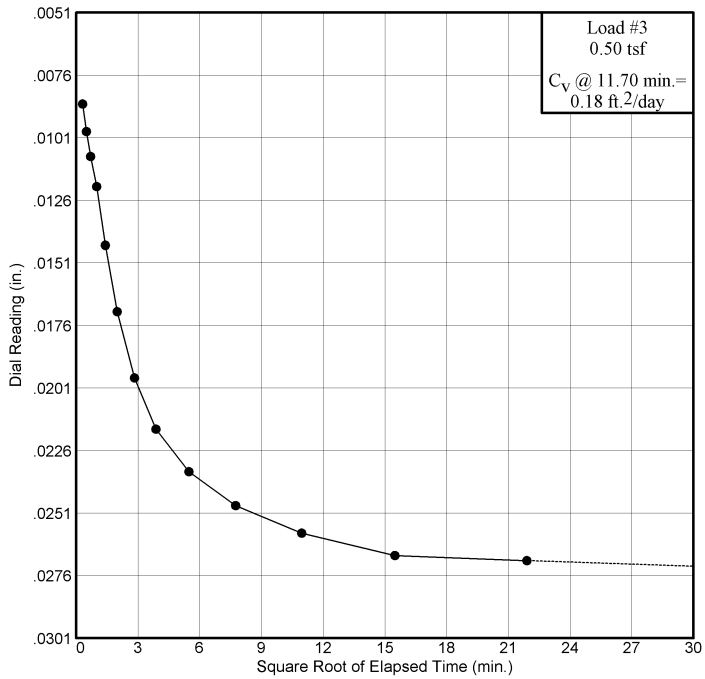
Mobile, AL

Figure

Dial Reading vs. Time

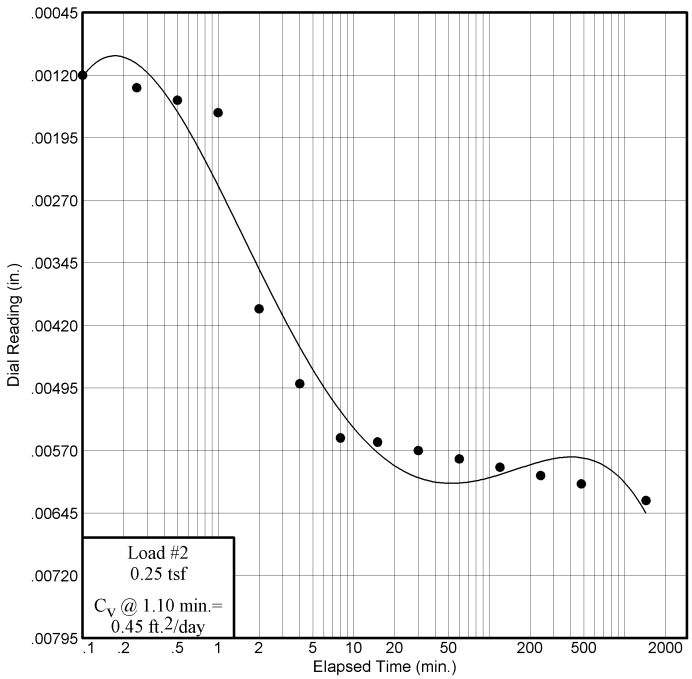
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-15, T-1 Elev./Depth: 26.5'-28.5'

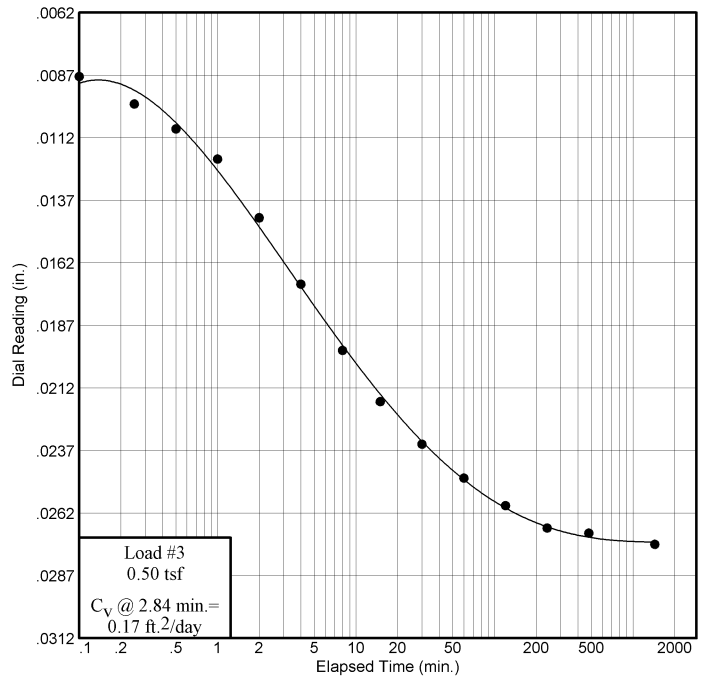




Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-15, T-1 Elev./Depth: 26.5'-28.5'





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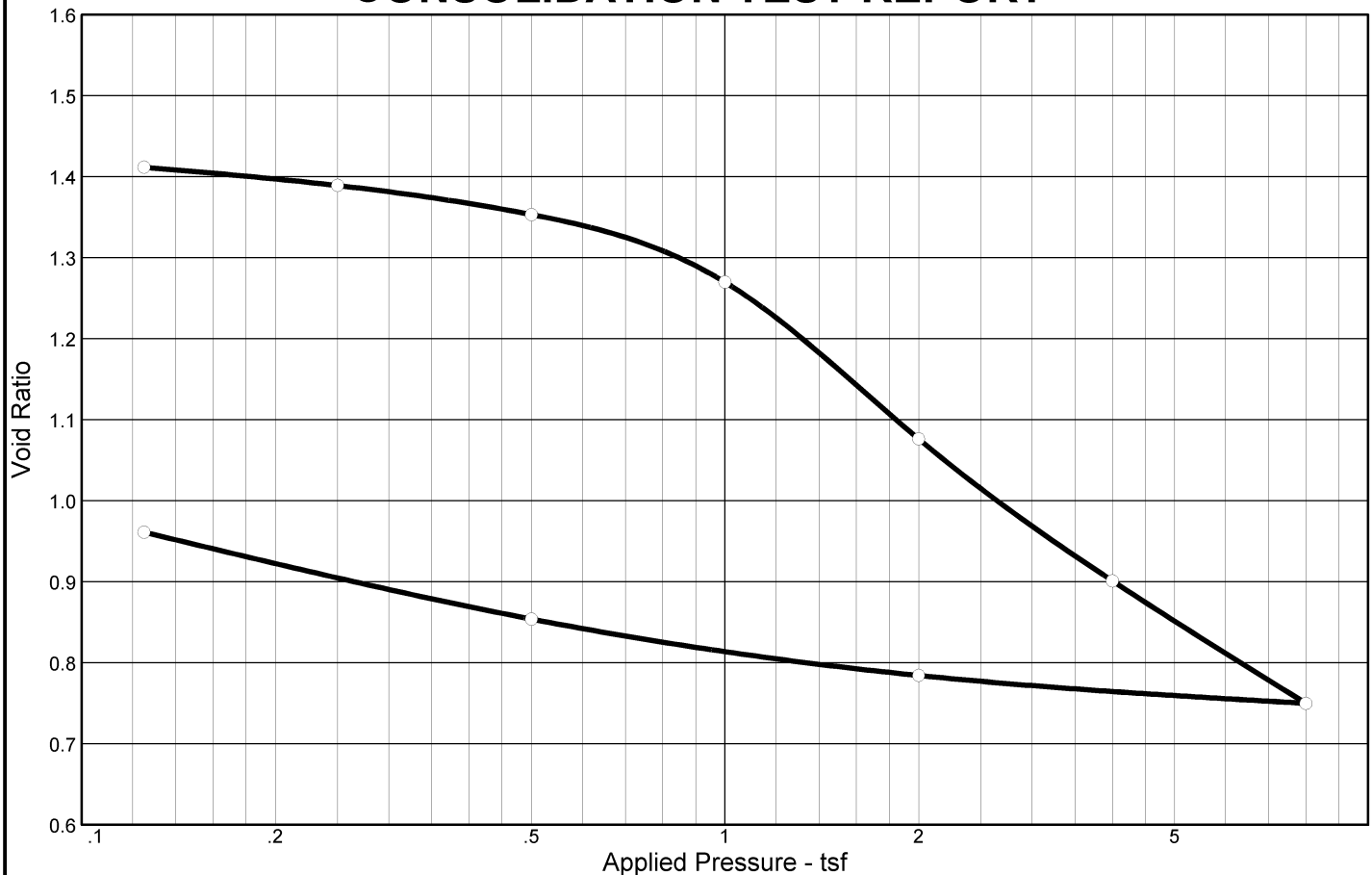


Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	0.18									
3	0.50	0.64									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
94.7 %	49.7 %	69.6	42	22	2.69		0.54	1.413

MATERIAL DESCRIPTION	USCS	AASHTO
Gray Lean Clay	CL	A-7-6(22

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-15, T-4 **Elev./Depth:** 56.5'-58.5'

Remarks:

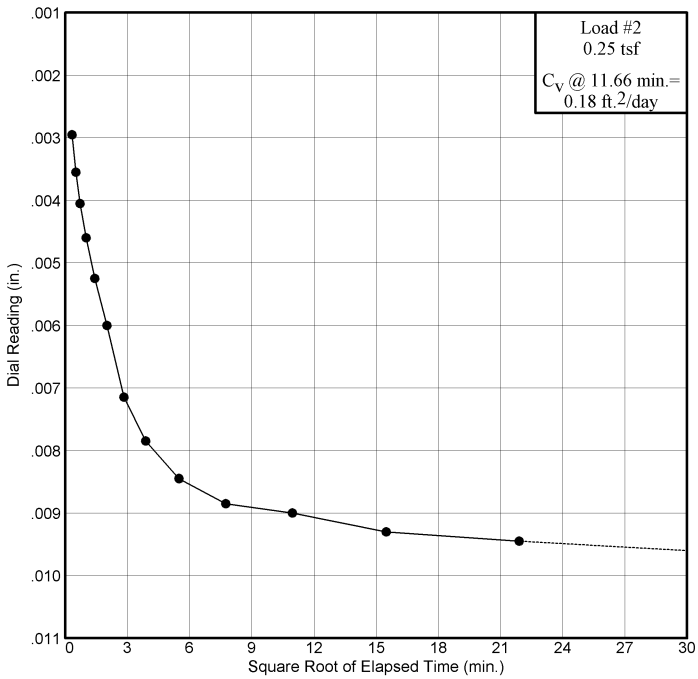
Geotechnical Engineering-Testing, Inc.

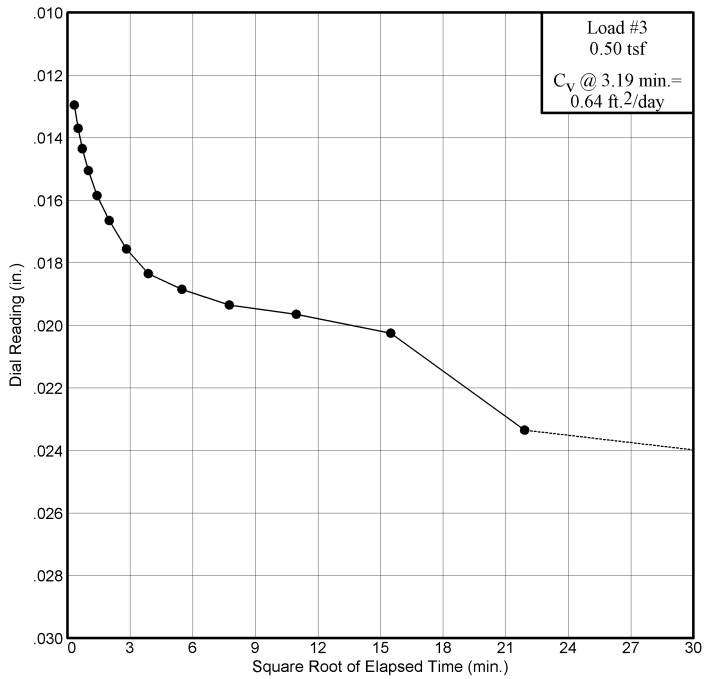
Mobile, AL

Figure

Dial Reading vs. Time

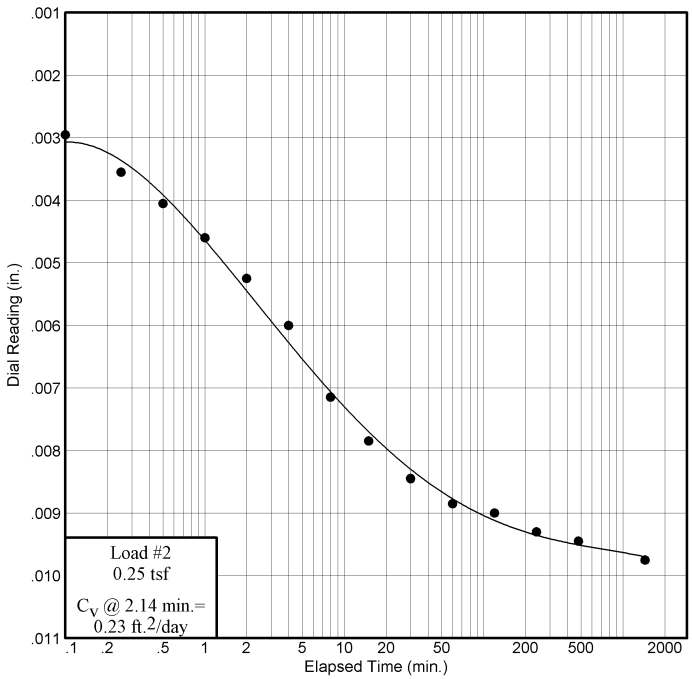
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-15, T-4 Elev./Depth: 56.5'-58.5'

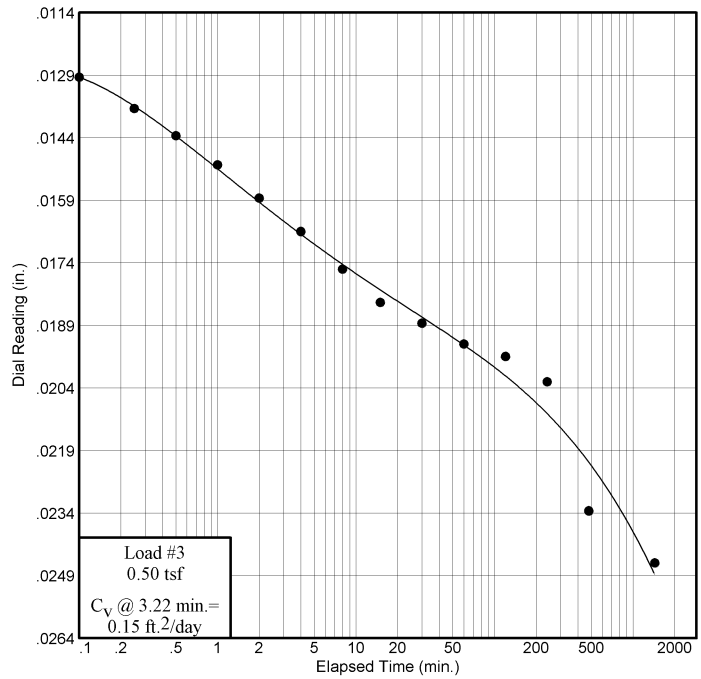




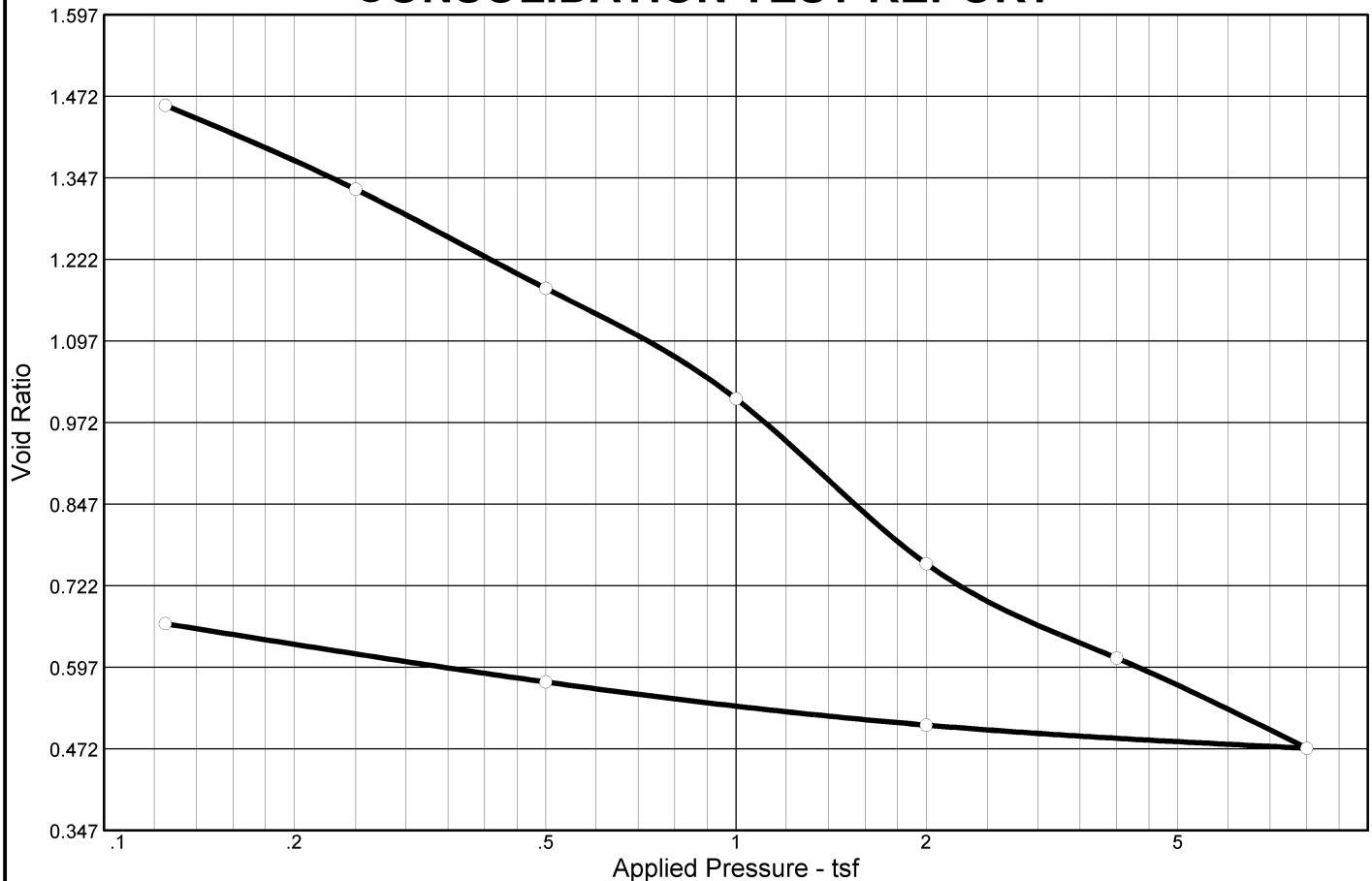
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-15, T-4 Elev./Depth: 56.5'-58.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	0.03									
3	0.50	0.01									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
99.4 %	56.8 %	65.5	55	33	2.614		1.97	1.493

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-6(36

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-19, T-2 **Elev./Depth:** 41.5'-43.5'

Remarks:

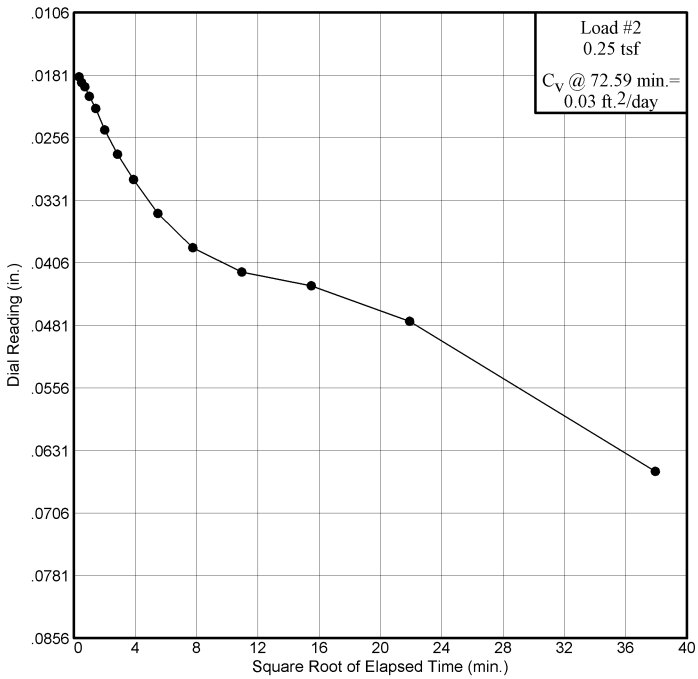
Geotechnical Engineering-Testing, Inc.

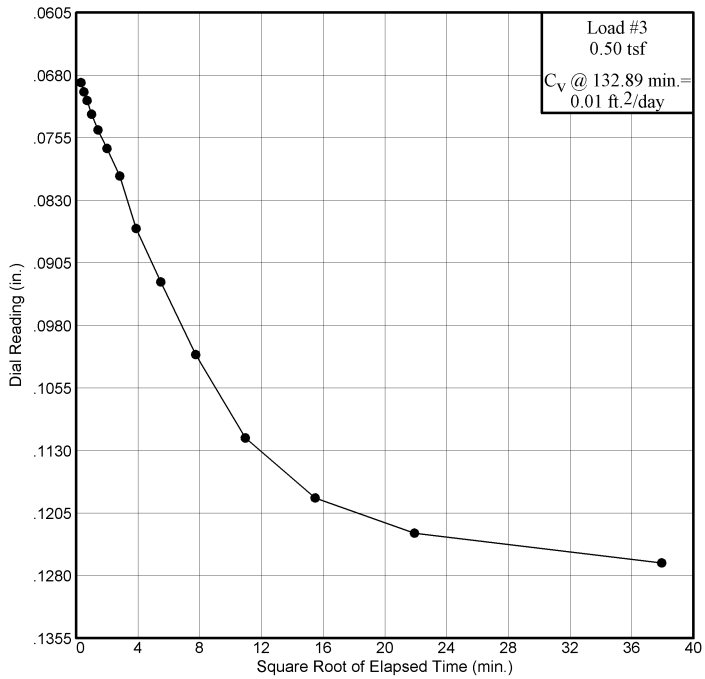
Mobile, AL

Figure

Dial Reading vs. Time

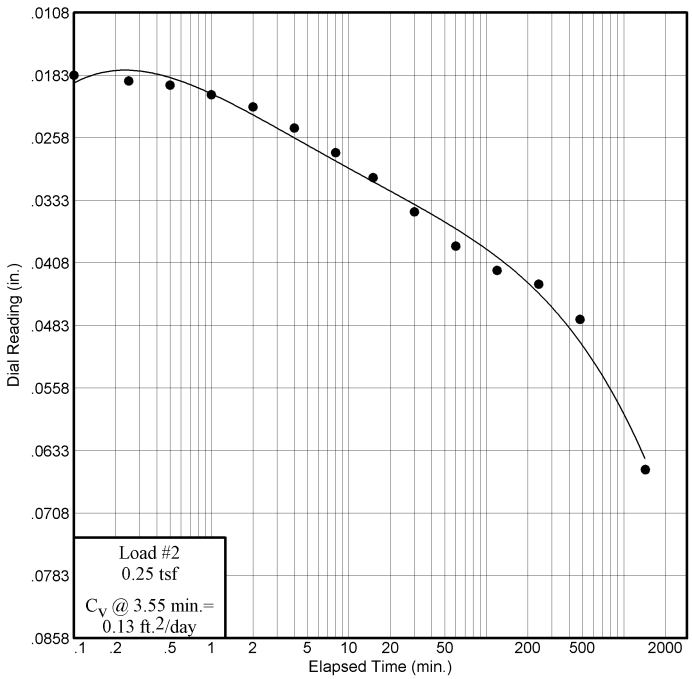
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-19, T-2 Elev./Depth: 41.5'-43.5'

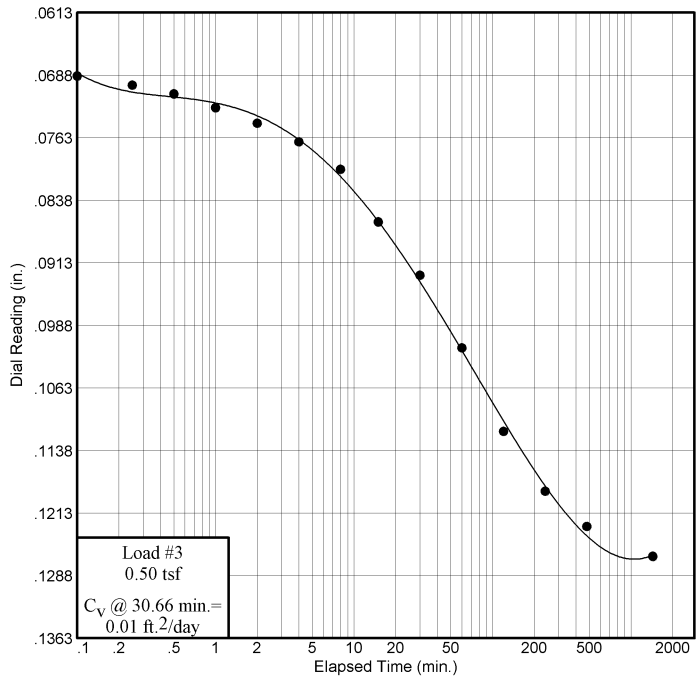




Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-19, T-2 Elev./Depth: 41.5'-43.5'





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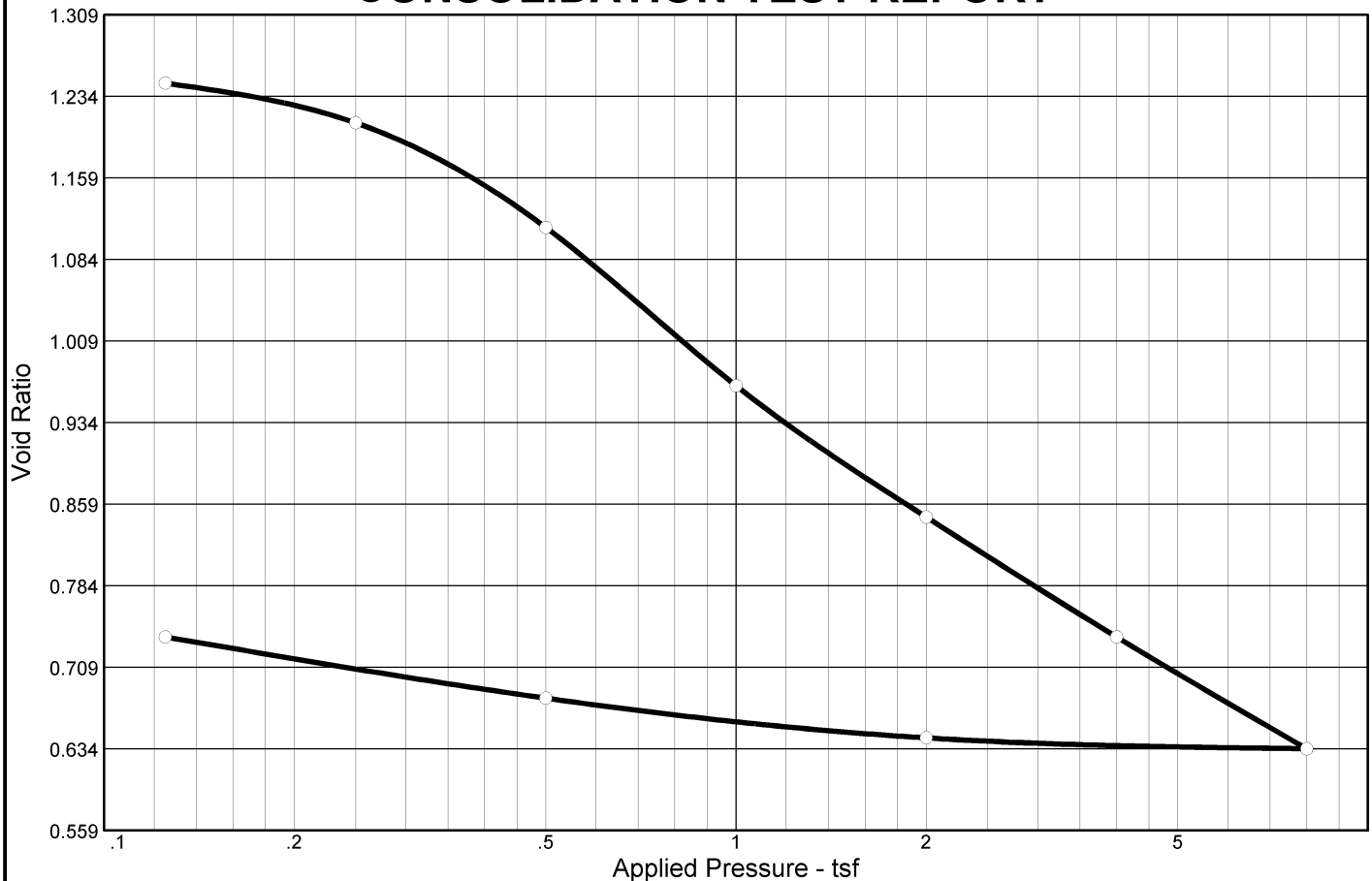


Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	0.10									
3	0.50	0.04									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
101.5 %	49.7 %	71.4	50	29	2.601		0.14	1.275

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-6(27

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-21, T-2 **Elev./Depth:** 14.5'-16.5'

Remarks:

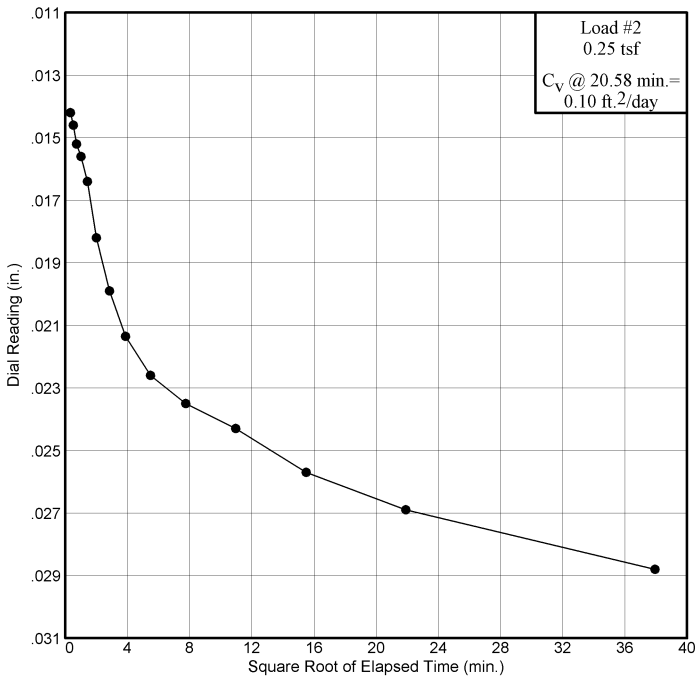
Geotechnical Engineering-Testing, Inc.

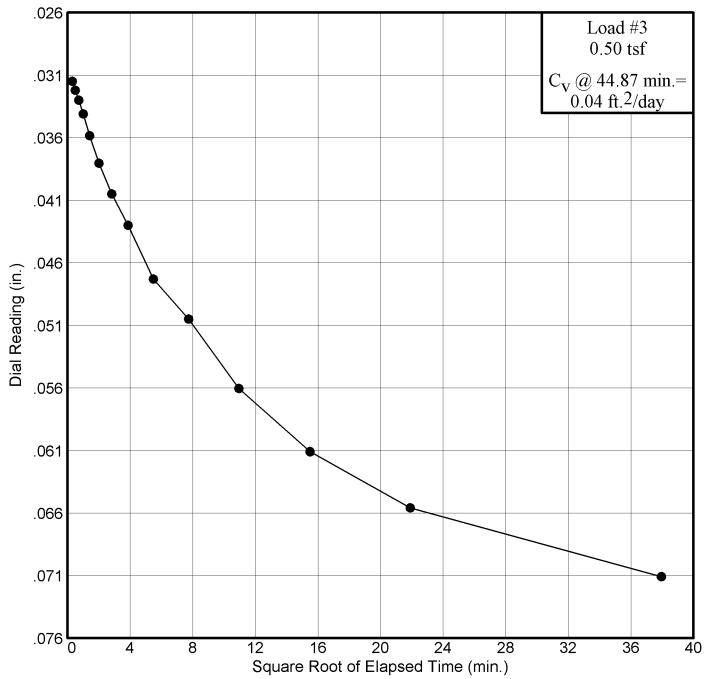
Mobile, AL

Figure

Dial Reading vs. Time

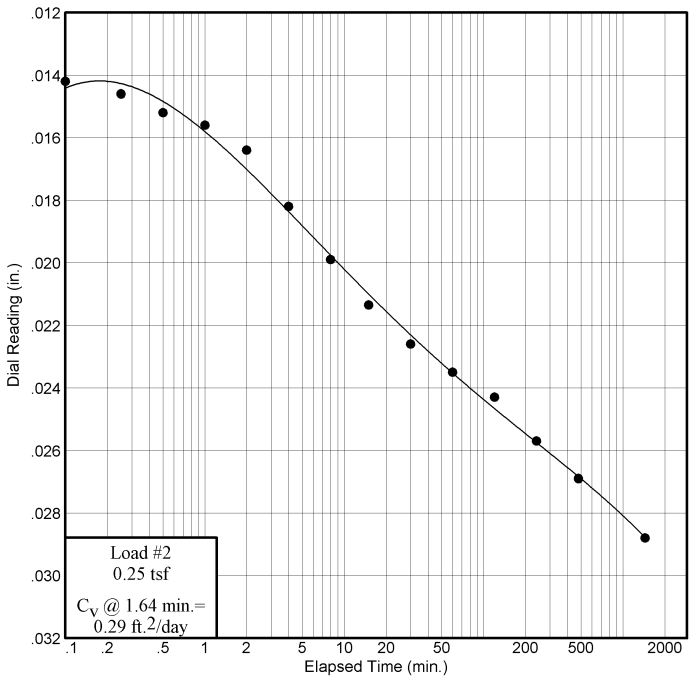
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-21, T-2 Elev./Depth: 14.5'-16.5'

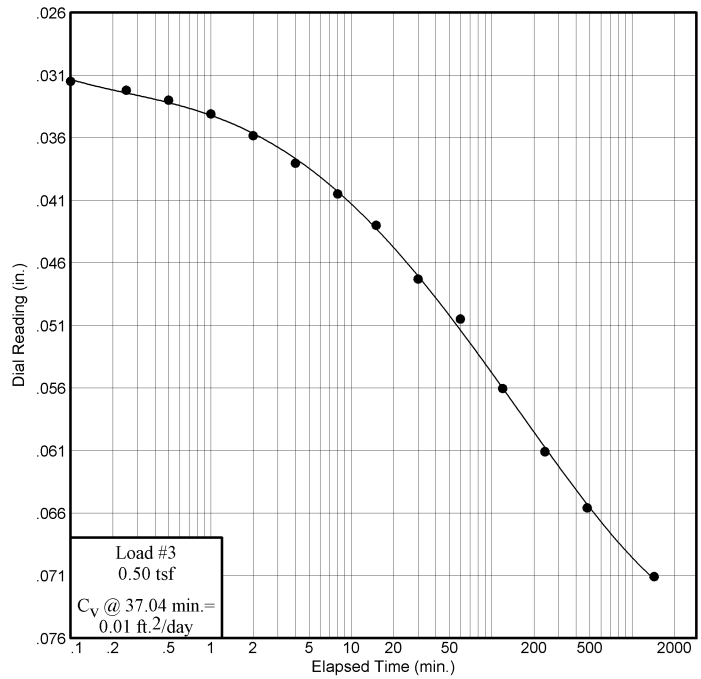




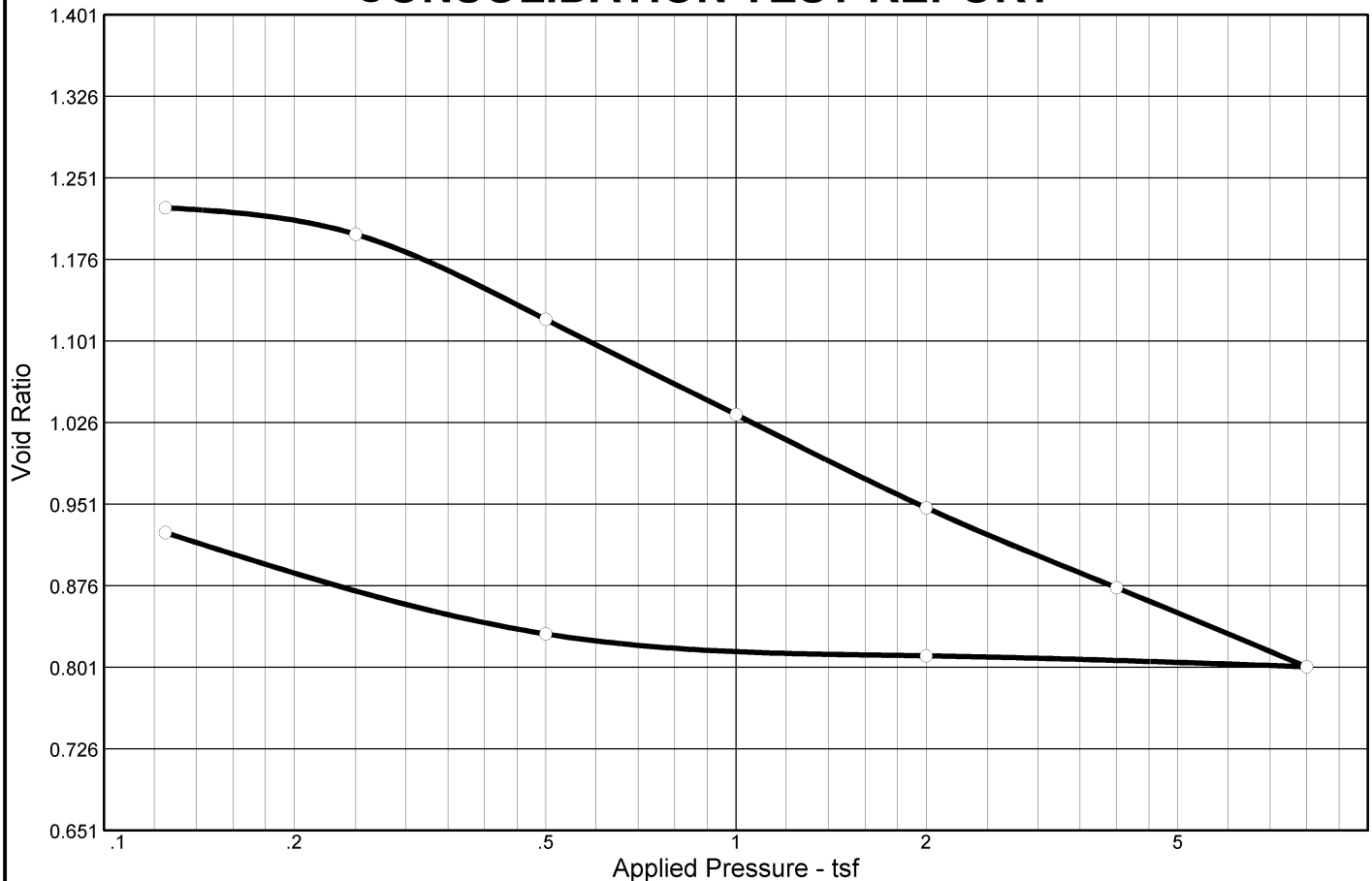
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-21, T-2 Elev./Depth: 14.5'-16.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.42									
4	1.00	0.64									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
97.1 %	44.5 %	75.0	29	9	2.674		0.15	1.224

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Sandy Lean Clay	CL	A-4(4)

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-22, T-1 **Elev./Depth:** 15.0'-17.0'

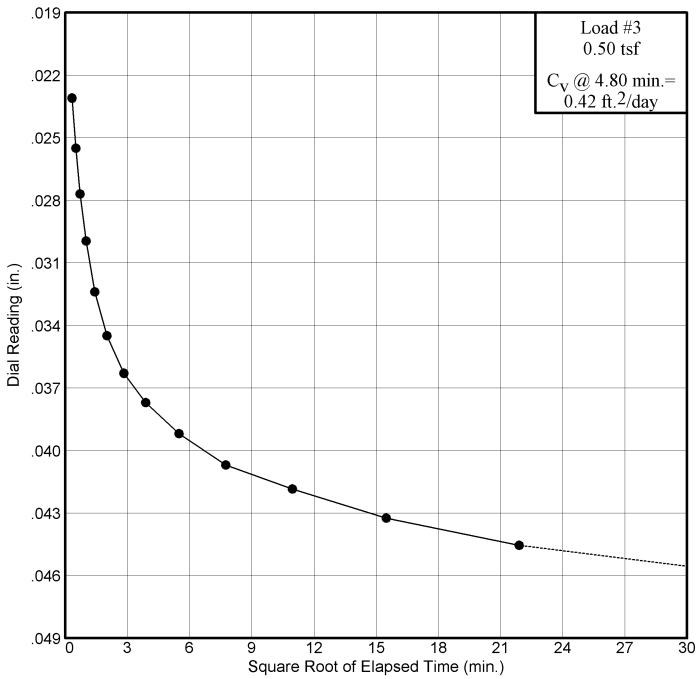
Remarks:
10-14-2021
GRAVEL: 0.1 %, SAND: 36.1 %
SILT: 52.0 %, CLAY 11.8 %

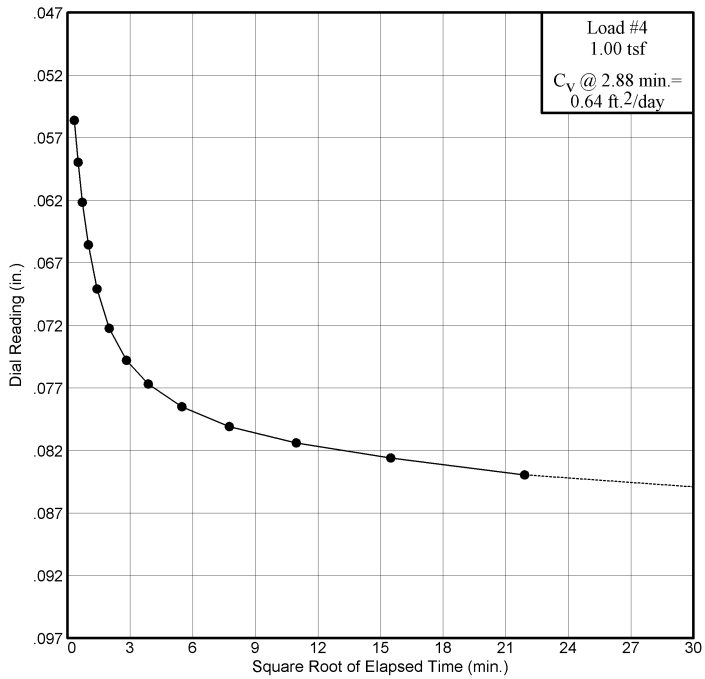
Geotechnical Engineering-Testing, Inc.
Mobile, AL

Figure

Dial Reading vs. Time

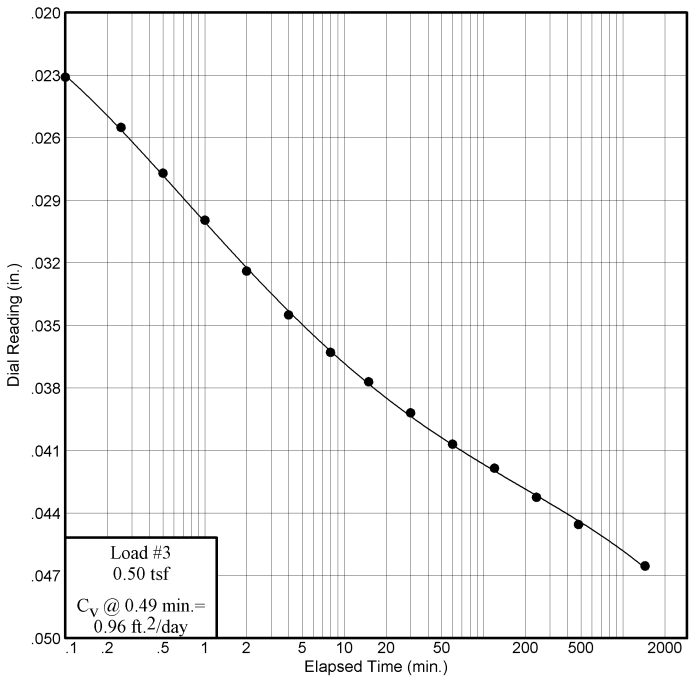
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-22, T-1 Elev./Depth: 15.0'-17.0'

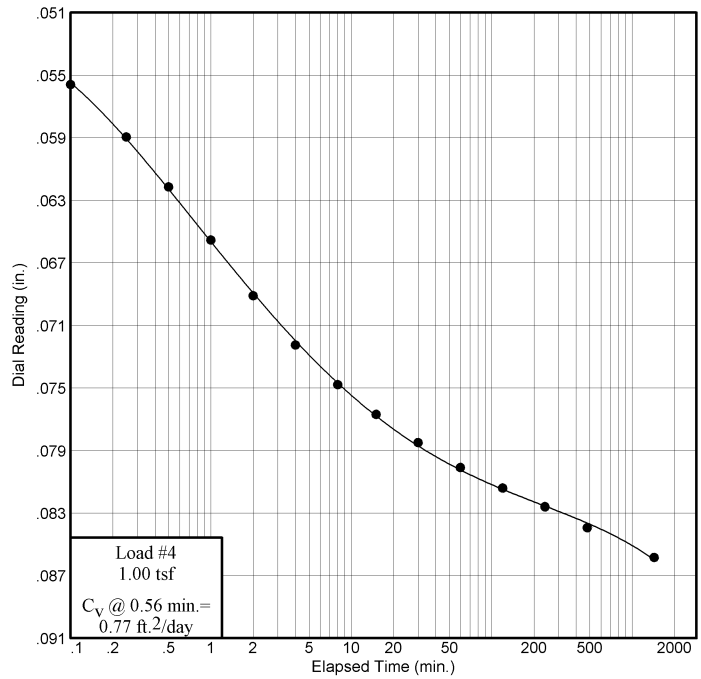




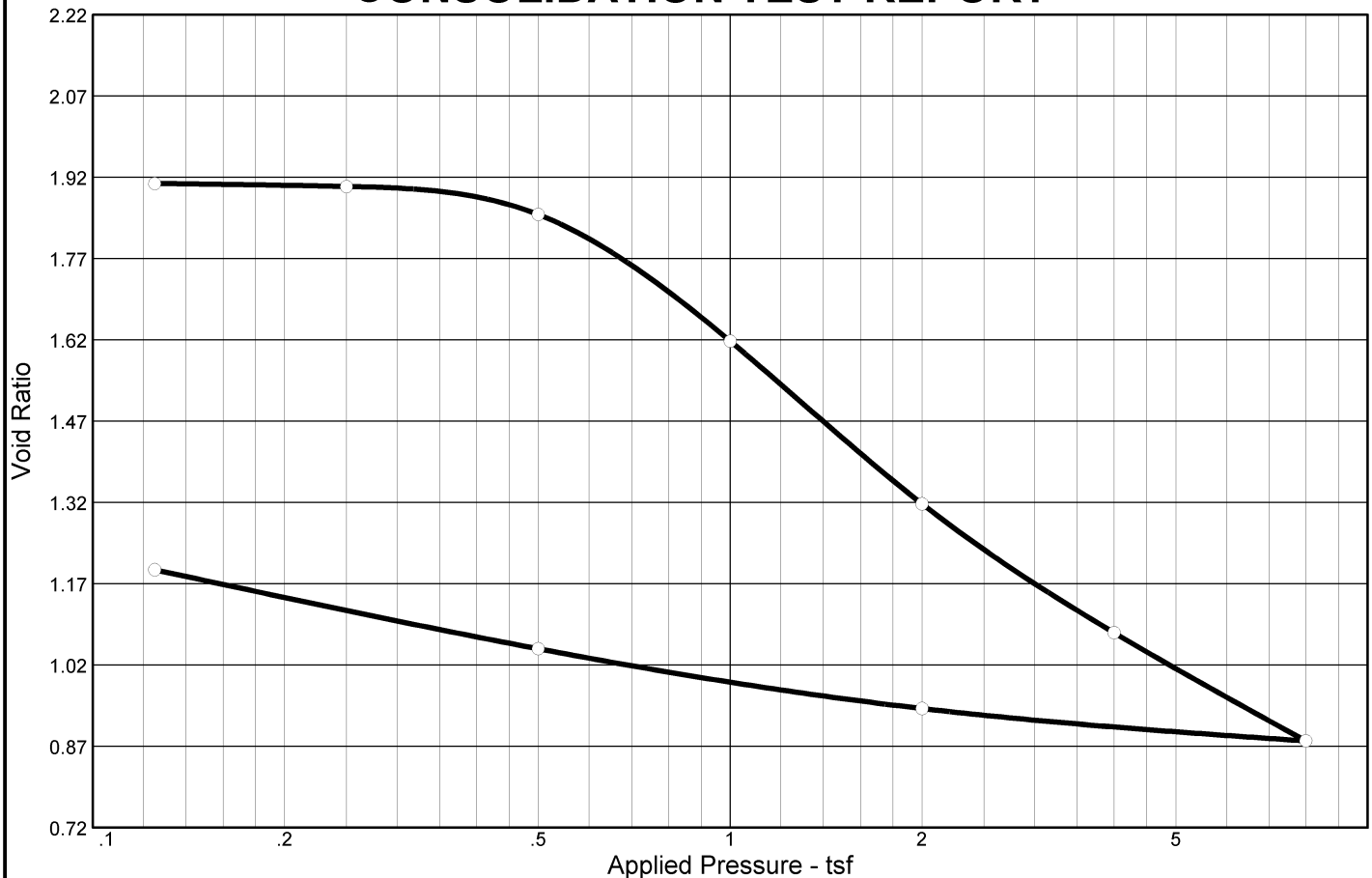
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-22, T-1 Elev./Depth: 15.0'-17.0'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.08									
4	1.00	0.02									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
101.1 %	71.7 %	57.8	95	73	2.693		0.19	1.909

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-6(82

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-22, T-2 **Elev./Depth:** 26.5'-28.5'

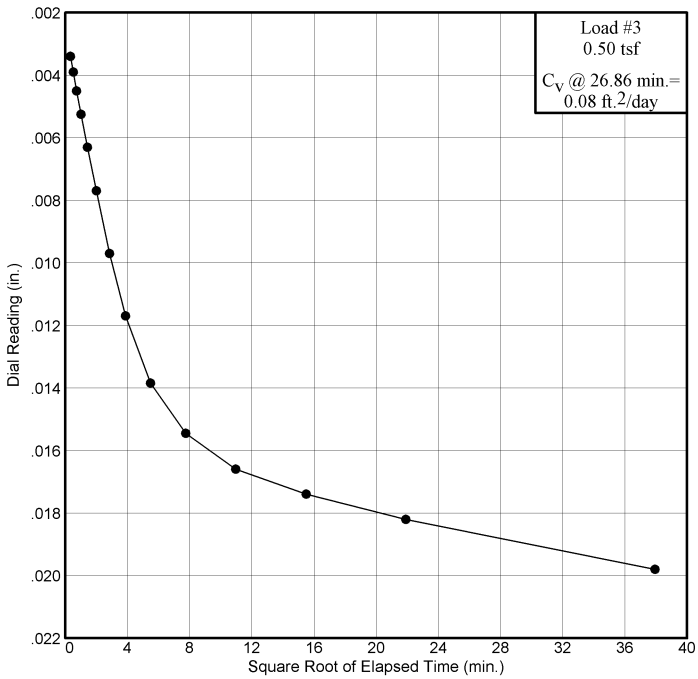
Remarks:
10-14-2021
GRAVEL: 0.0 %, SAND: 1.8 %
SILT: 52.2 %, CLAY: 46.1 %

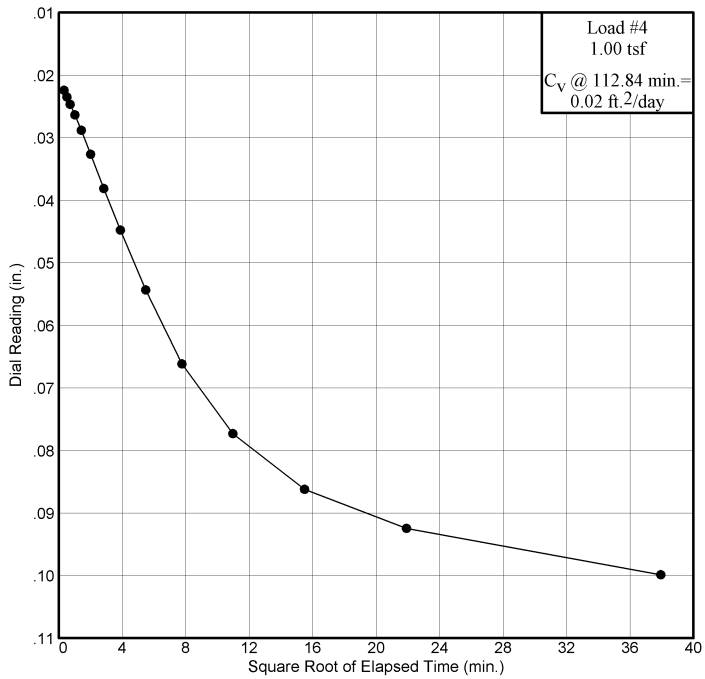
Geotechnical Engineering-Testing, Inc.
Mobile, AL

Figure

Dial Reading vs. Time

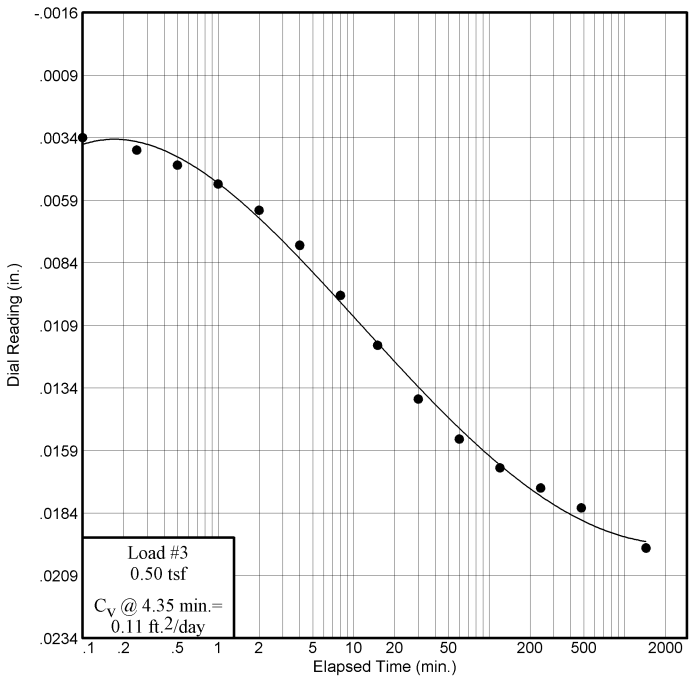
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-22, T-2 Elev./Depth: 26.5'-28.5'

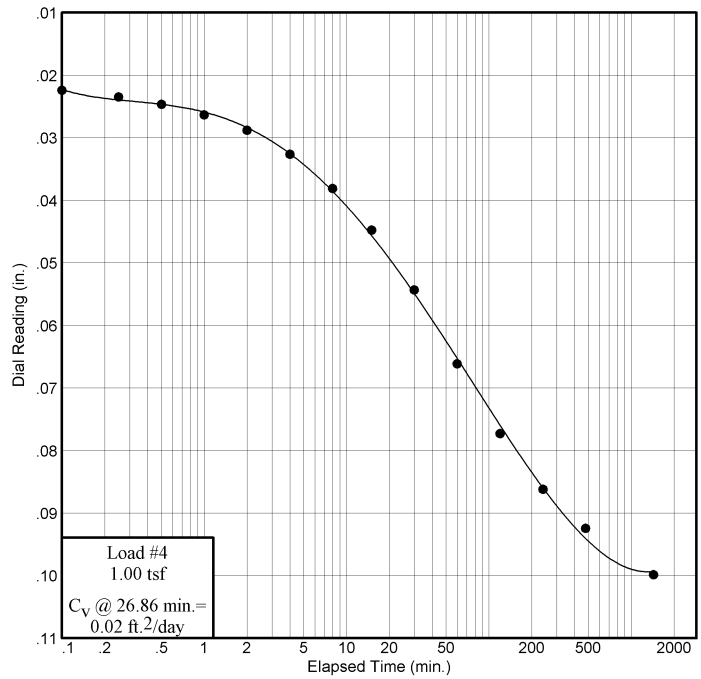




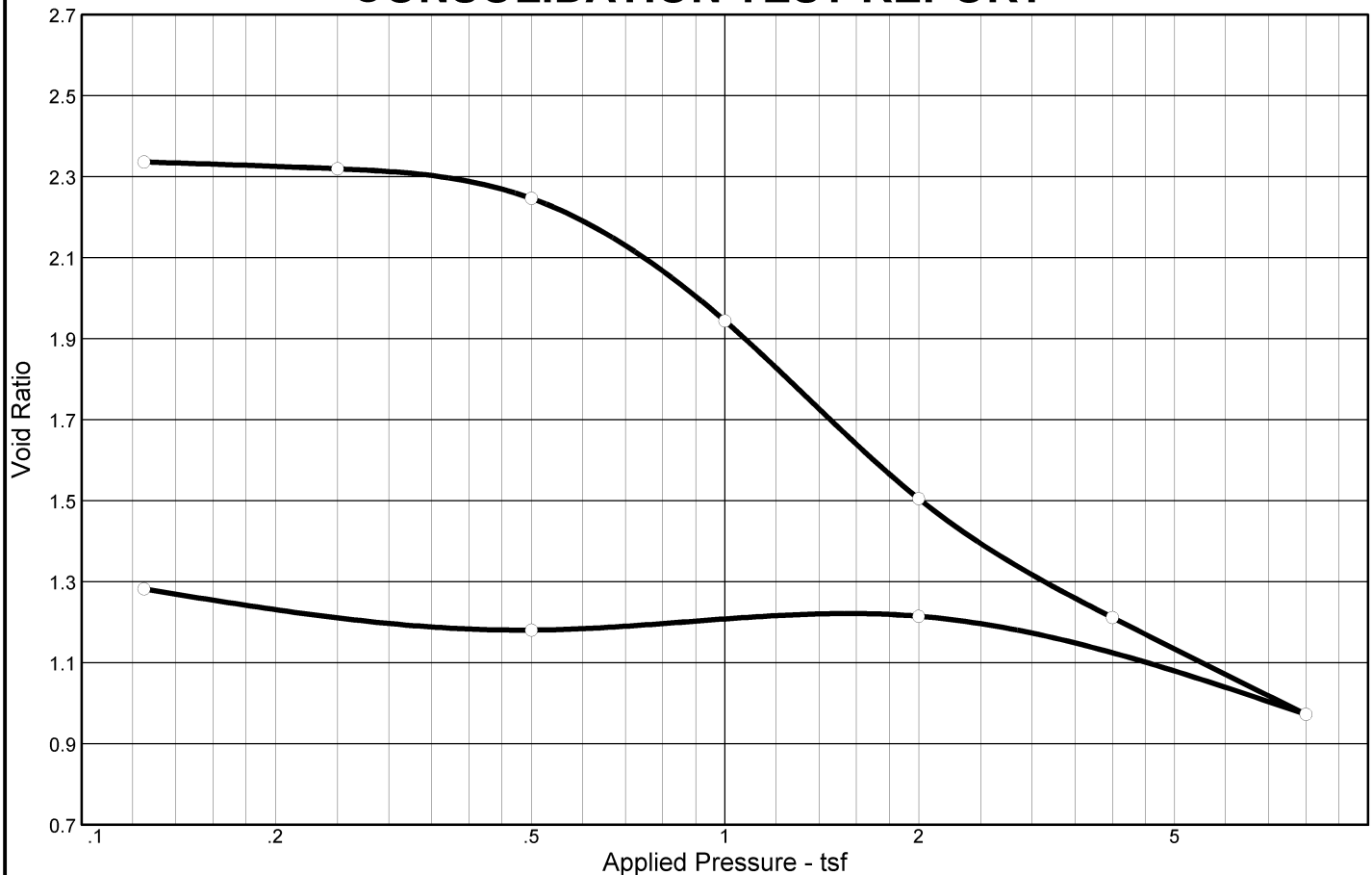
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-22, T-2 Elev./Depth: 26.5'-28.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.21									
4	1.00	0.02									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
96.5 %	82.5 %	51.1	82	31	2.732		0.12	2.336

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-5(78

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-23, T-2 **Elev./Depth:** 36.5' - 38.5'

Remarks:

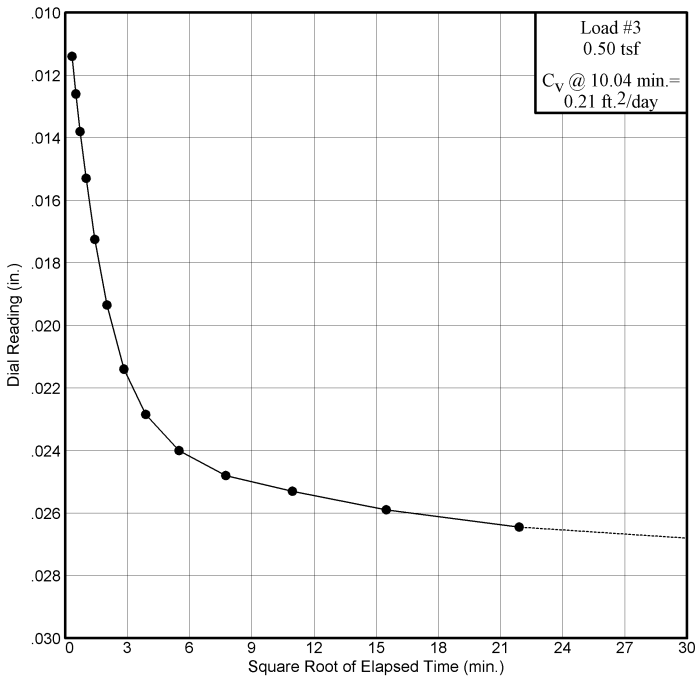
Geotechnical Engineering-Testing, Inc.

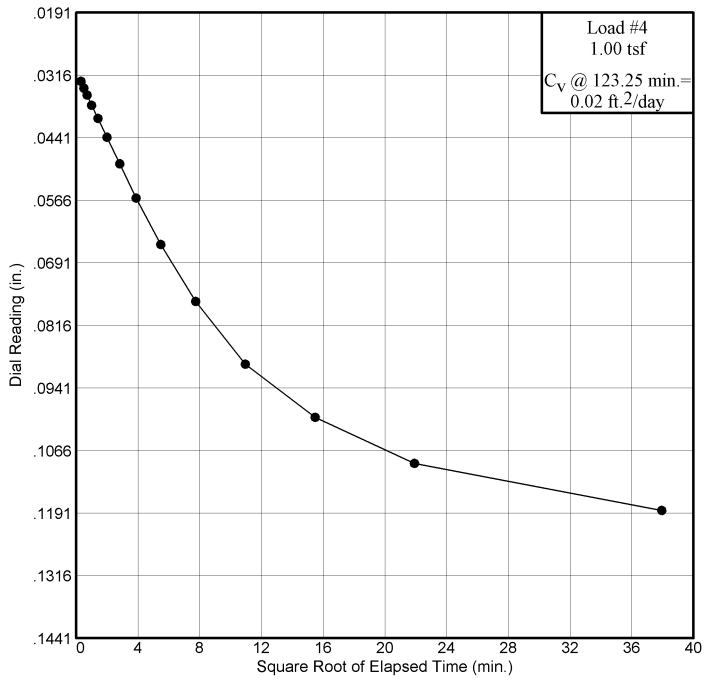
Mobile, AL

Figure

Dial Reading vs. Time

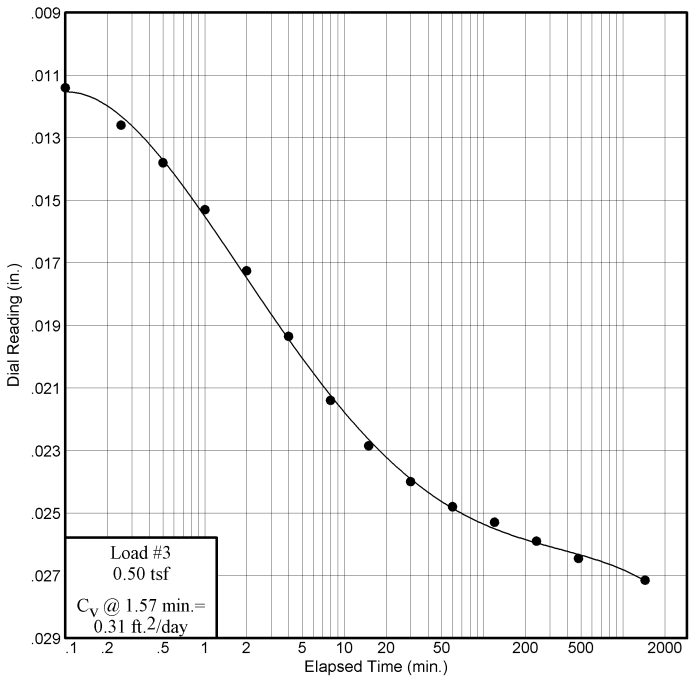
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-23, T-2 Elev./Depth: 36.5' - 38.5'

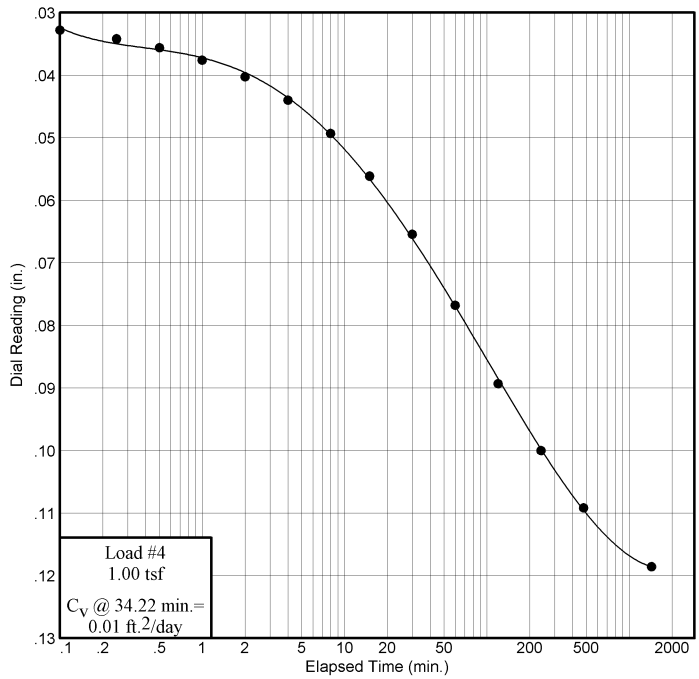




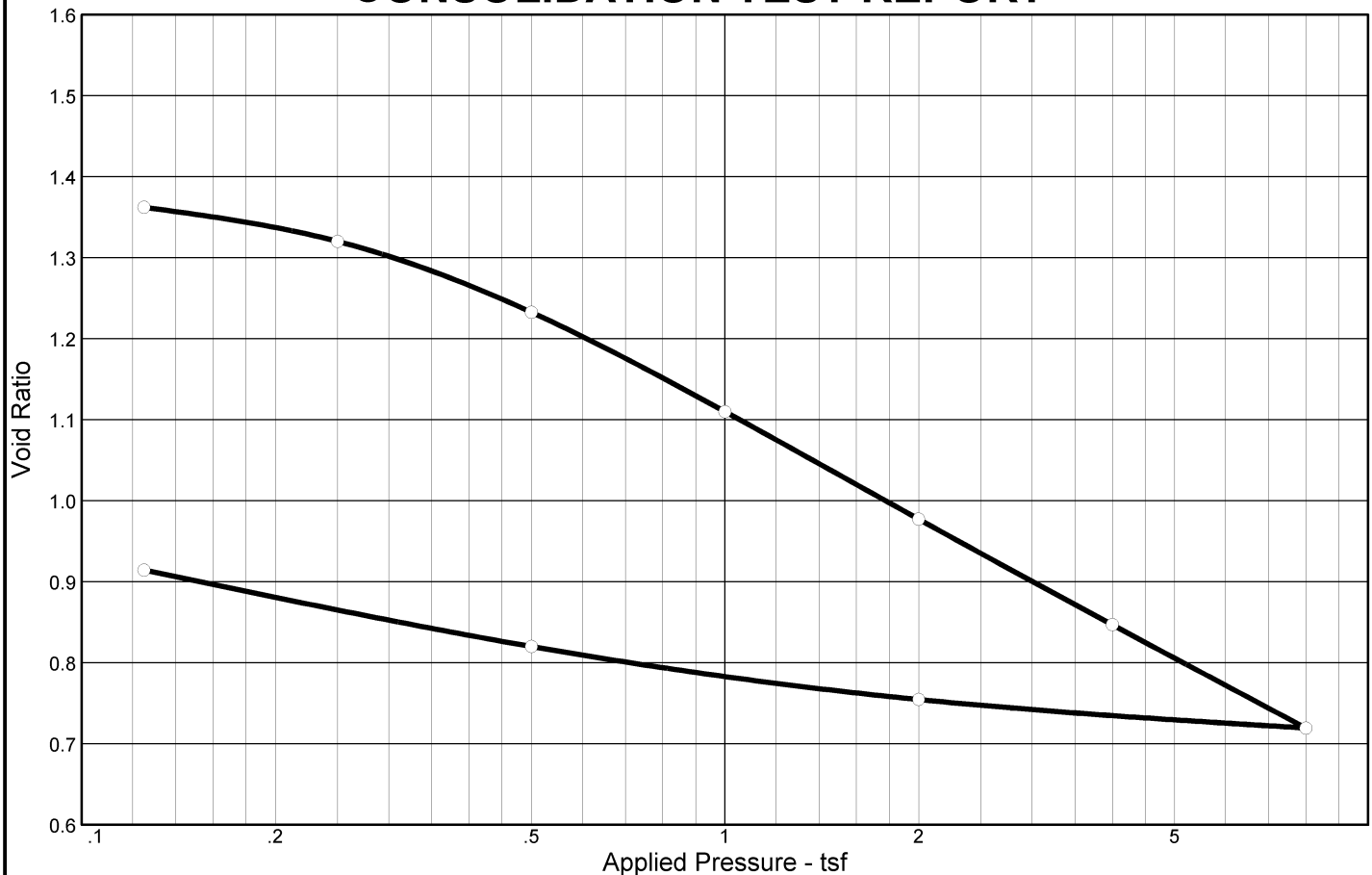
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-23, T-2 Elev./Depth: 36.5' - 38.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.01									
4	1.00	0.01									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
96.9 %	48.2 %	72.5	83	39	2.752		0.32	1.368

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Silt	MH	A-7-5(47

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-23, T-3 **Elev./Depth:** 46.5'-48.5'

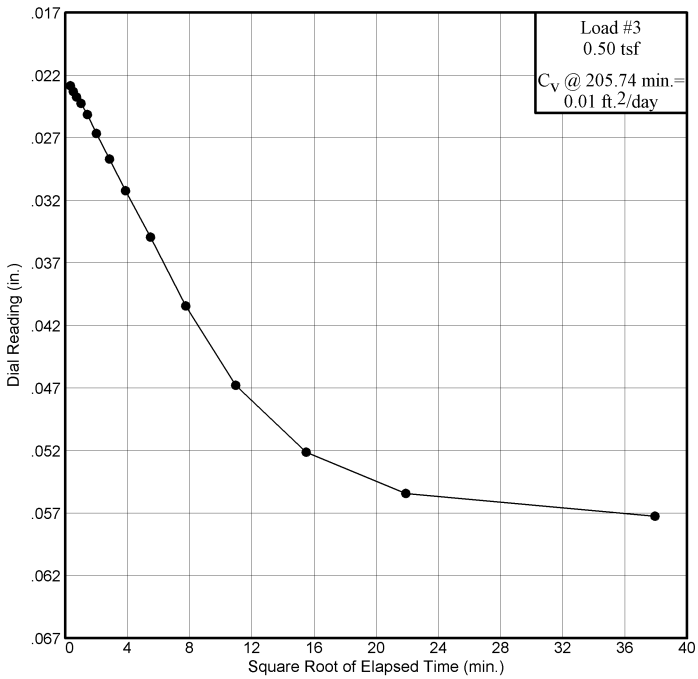
Remarks:
10-14-2021
GRAVEL: 0.0 %, SAND: 6.4 %
SILT: 57.2 %, CLAY: 36.4 %

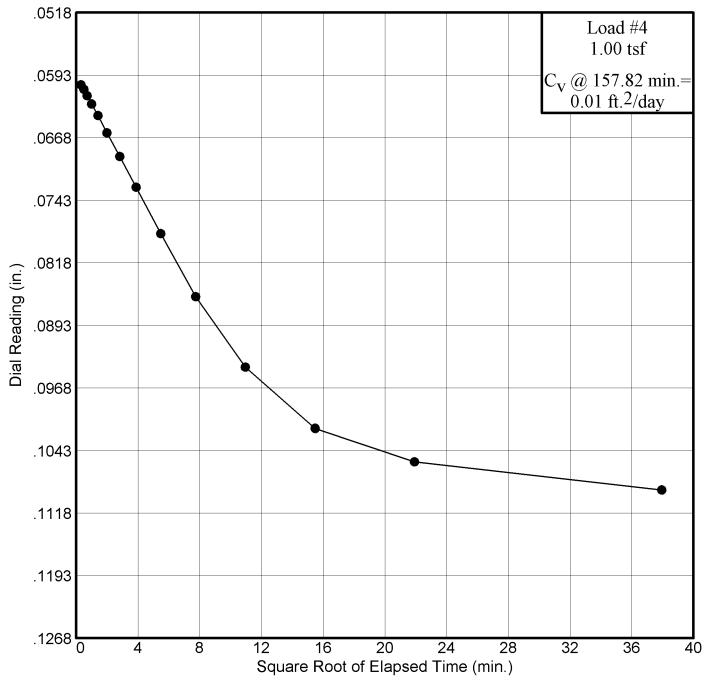
Geotechnical Engineering-Testing, Inc.
Mobile, AL

Figure

Dial Reading vs. Time

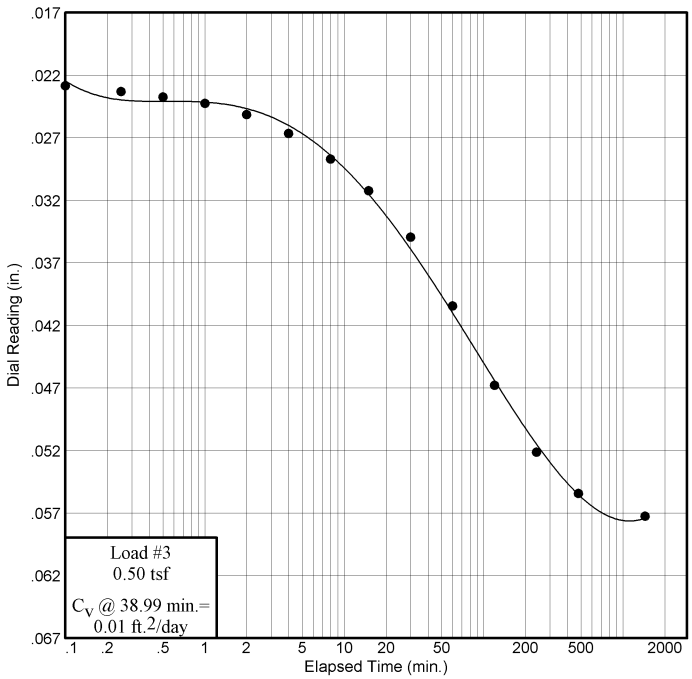
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-23, T-3 Elev./Depth: 46.5'-48.5'

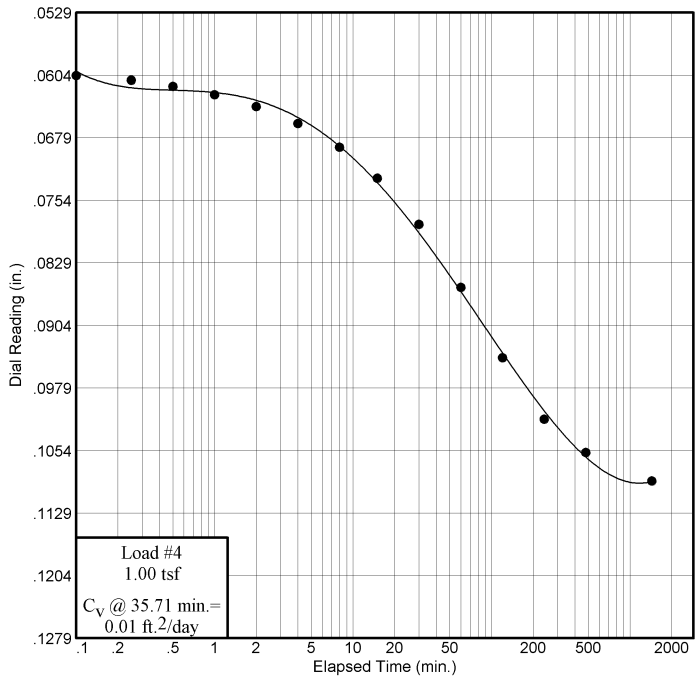




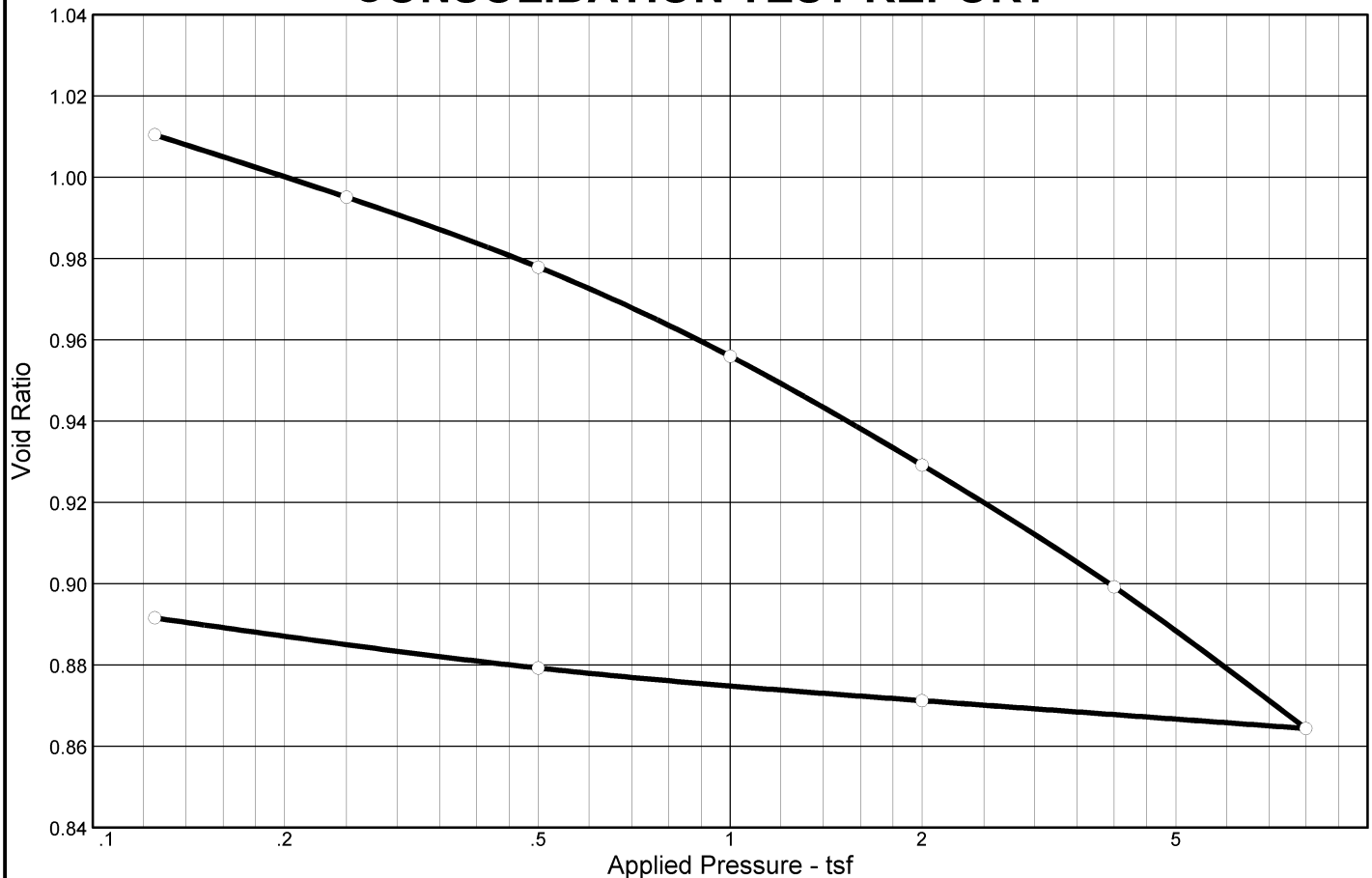
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-23, T-3 Elev./Depth: 46.5'-48.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.38									
4	1.00	0.43									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
90.6 %	34.8 %	82.2	35	7	2.662		1.05	1.022

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Silt	ML	A-4(4)

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-24, T-1 **Elev./Depth:** 17.5'-19.5'

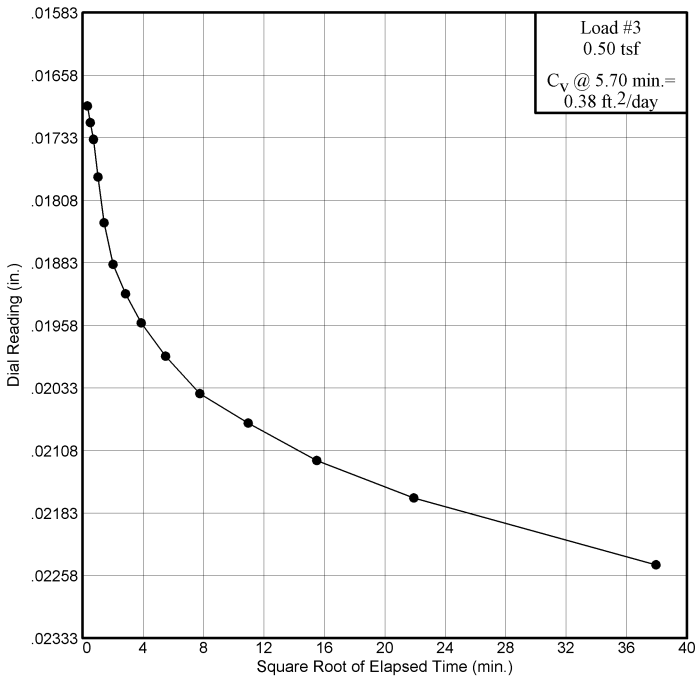
Remarks:
10-14-2021
GRAVEL: 0.0 %, SAND: 34.4 %
SILT: 56.2 %, CLAY: 9.4 %

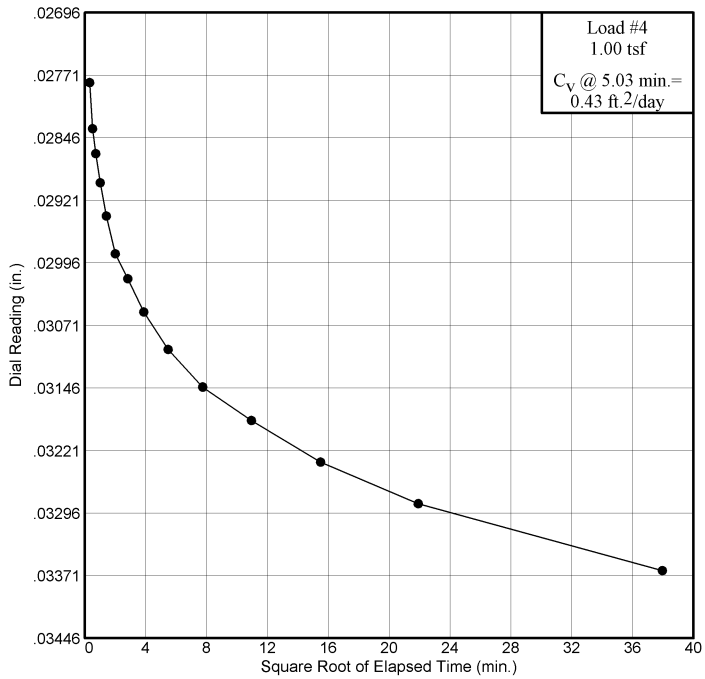
Geotechnical Engineering-Testing, Inc.
Mobile, AL

Figure

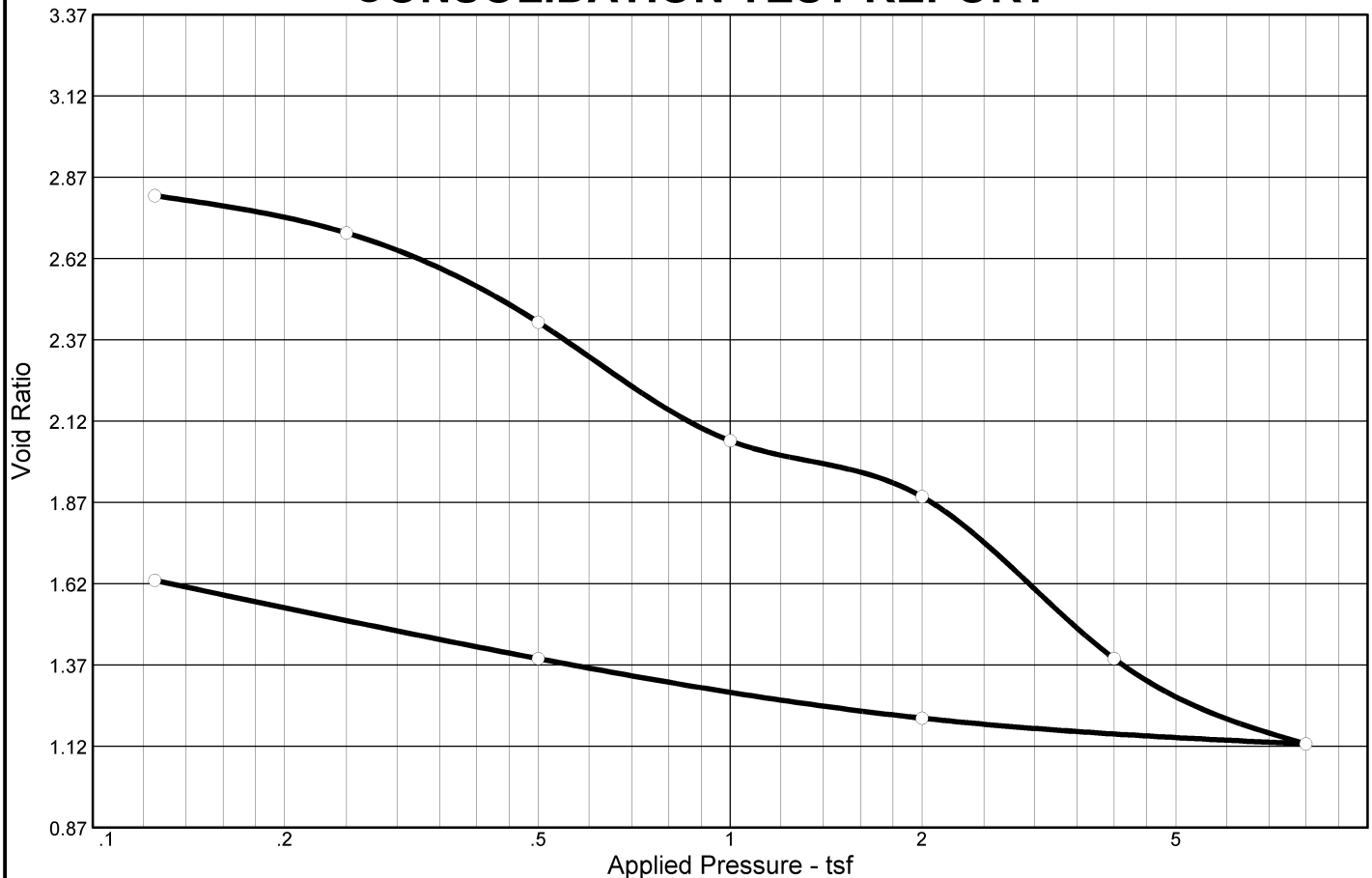
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-24, T-1 Elev./Depth: 17.5'-19.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.02									
4	1.00	0.01									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
97.1 %	100.4 %	44.6			2.724		0.17	2.817

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray		

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-25, T-3 **Elev./Depth:** 46.5' - 48.5'

Remarks:

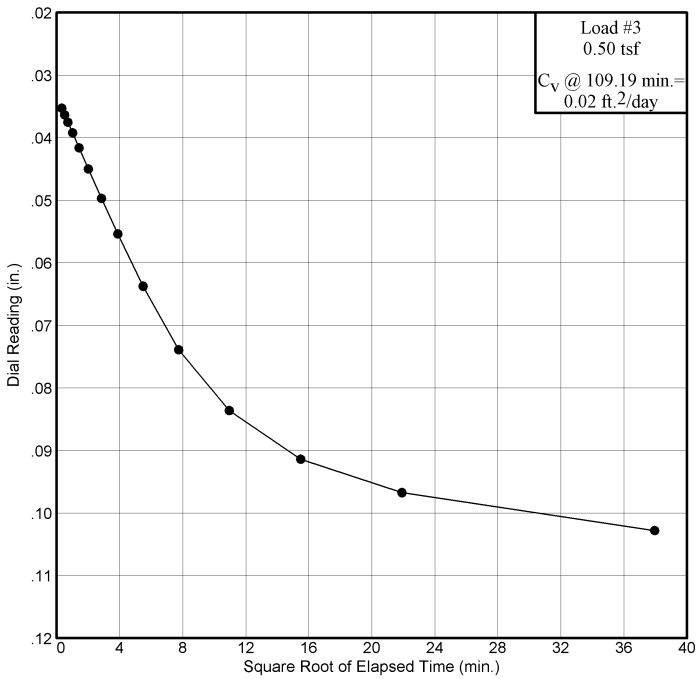
Geotechnical Engineering-Testing, Inc.

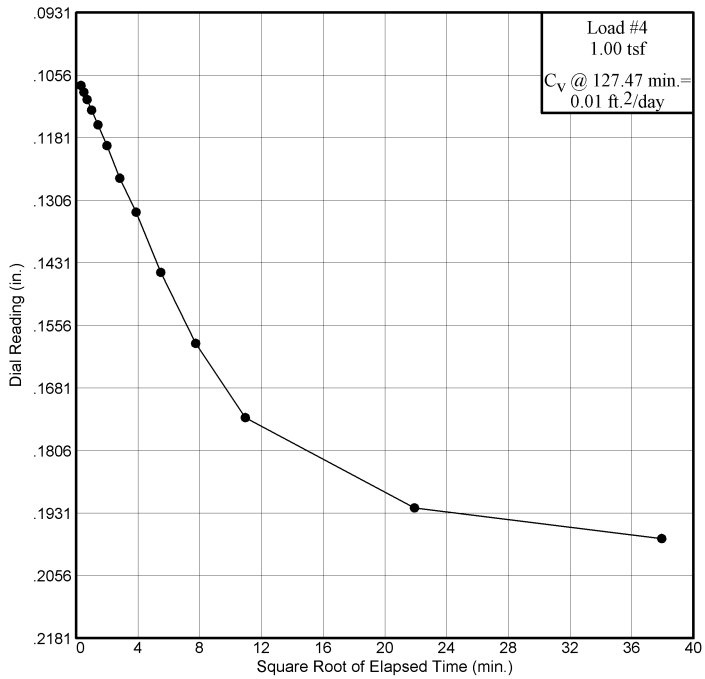
Mobile, AL

Figure

Dial Reading vs. Time

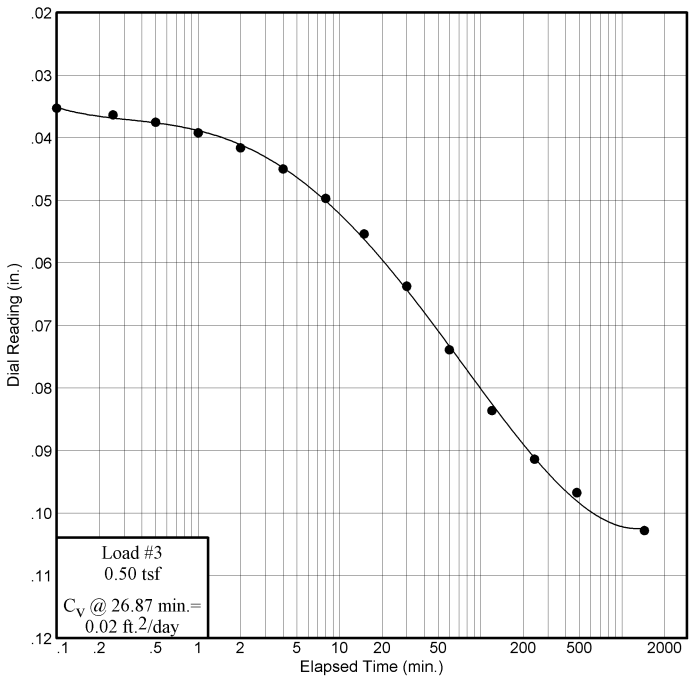
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-25, T-3 Elev./Depth: 46.5' - 48.5'

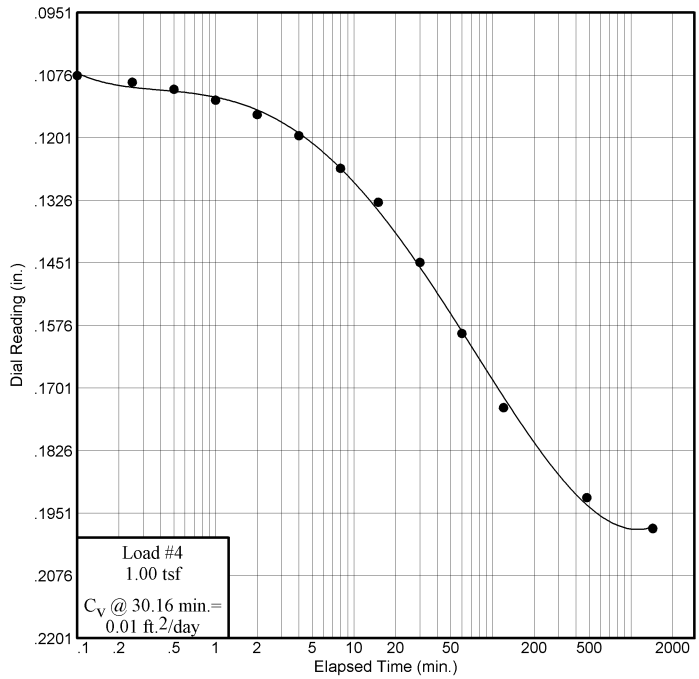




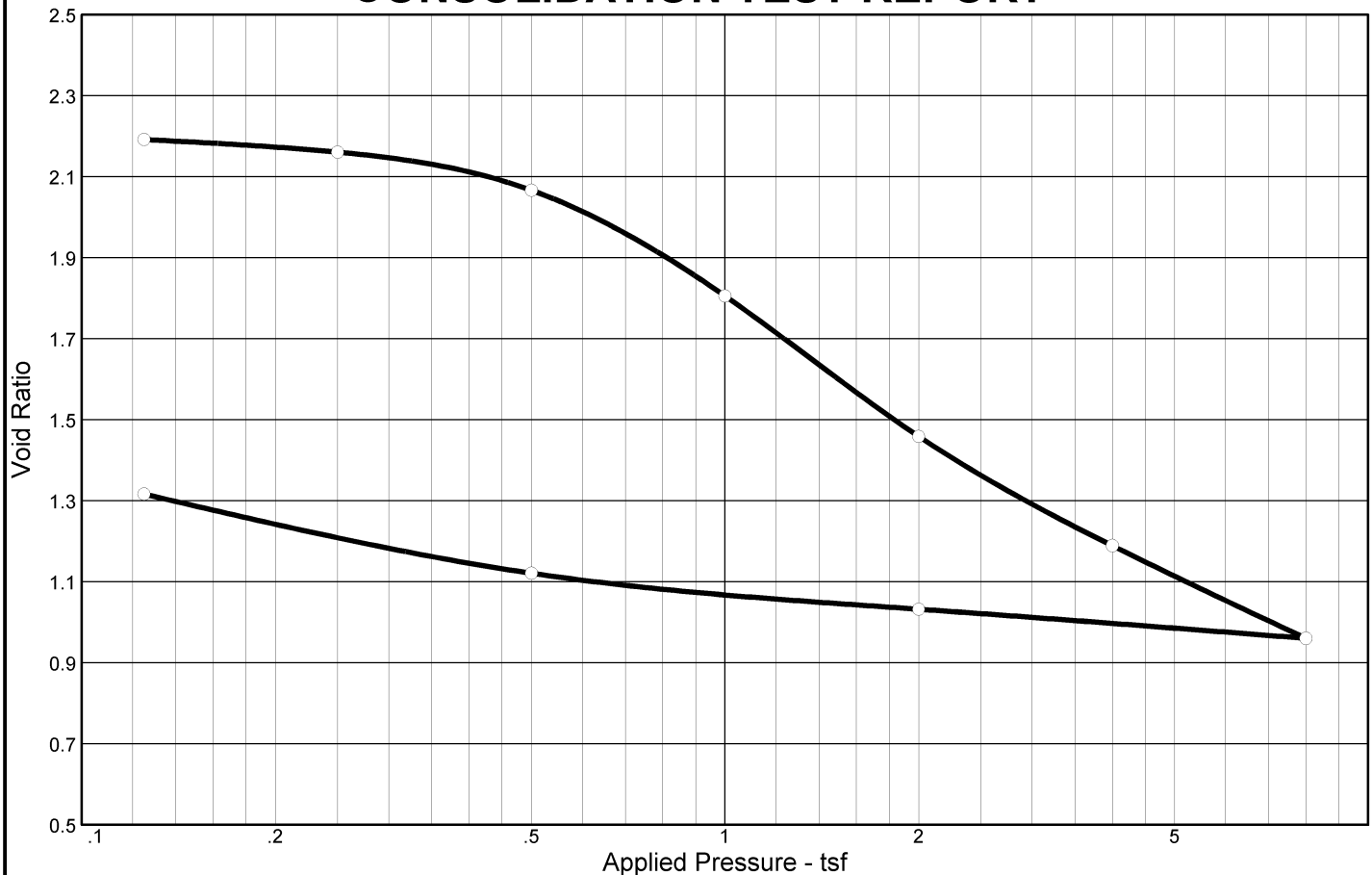
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-25, T-3 Elev./Depth: 46.5' - 48.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.07									
4	1.00	0.02									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
98.8 %	79.5 %	53.3	116	91	2.728		0.19	2.195

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-6105

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-27, T-3 **Elev./Depth:** 36.5' - 38.5'

Remarks:

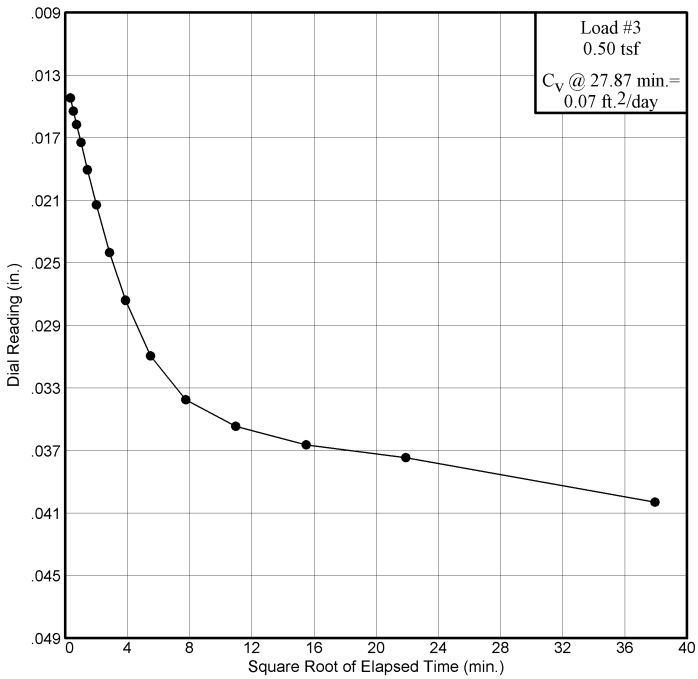
Geotechnical Engineering-Testing, Inc.

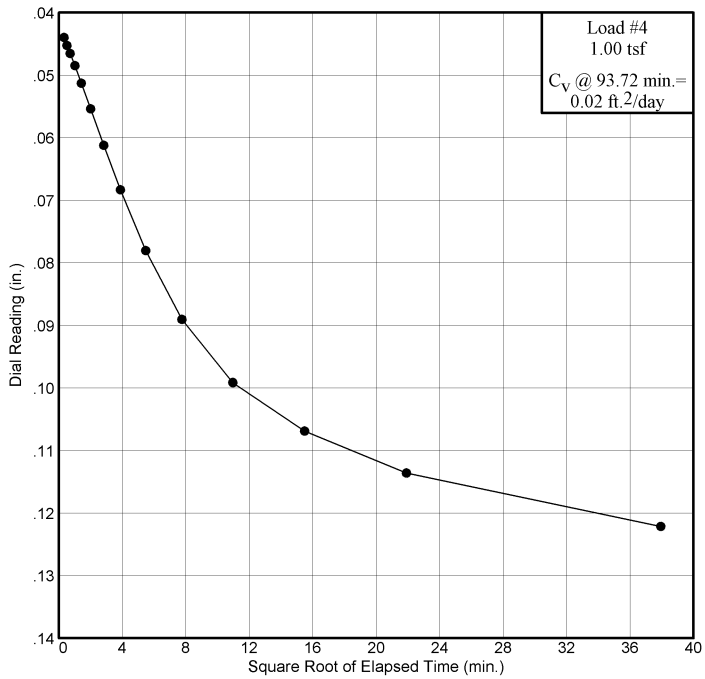
Mobile, AL

Figure

Dial Reading vs. Time

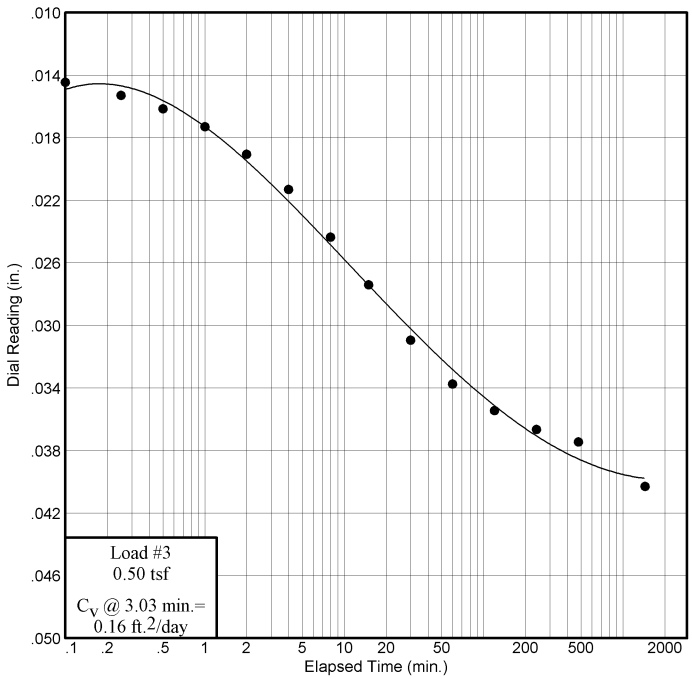
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-27, T-3 Elev./Depth: 36.5' - 38.5'

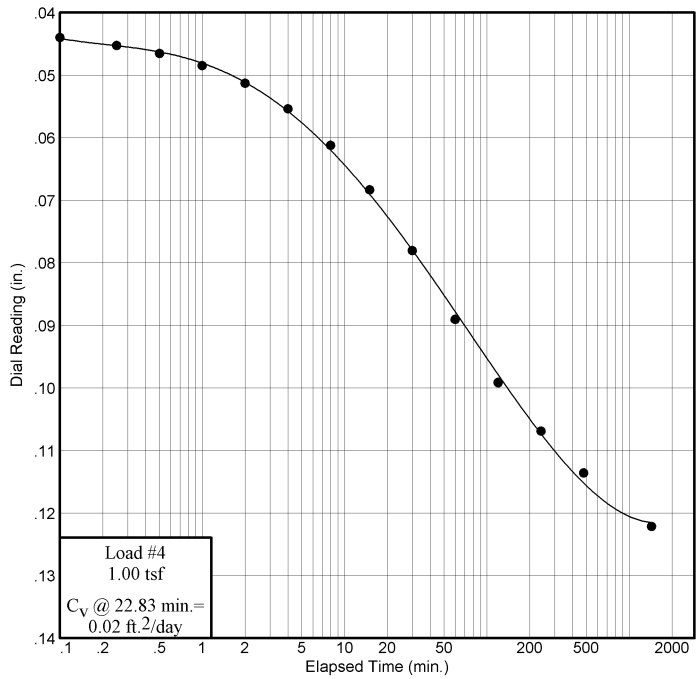




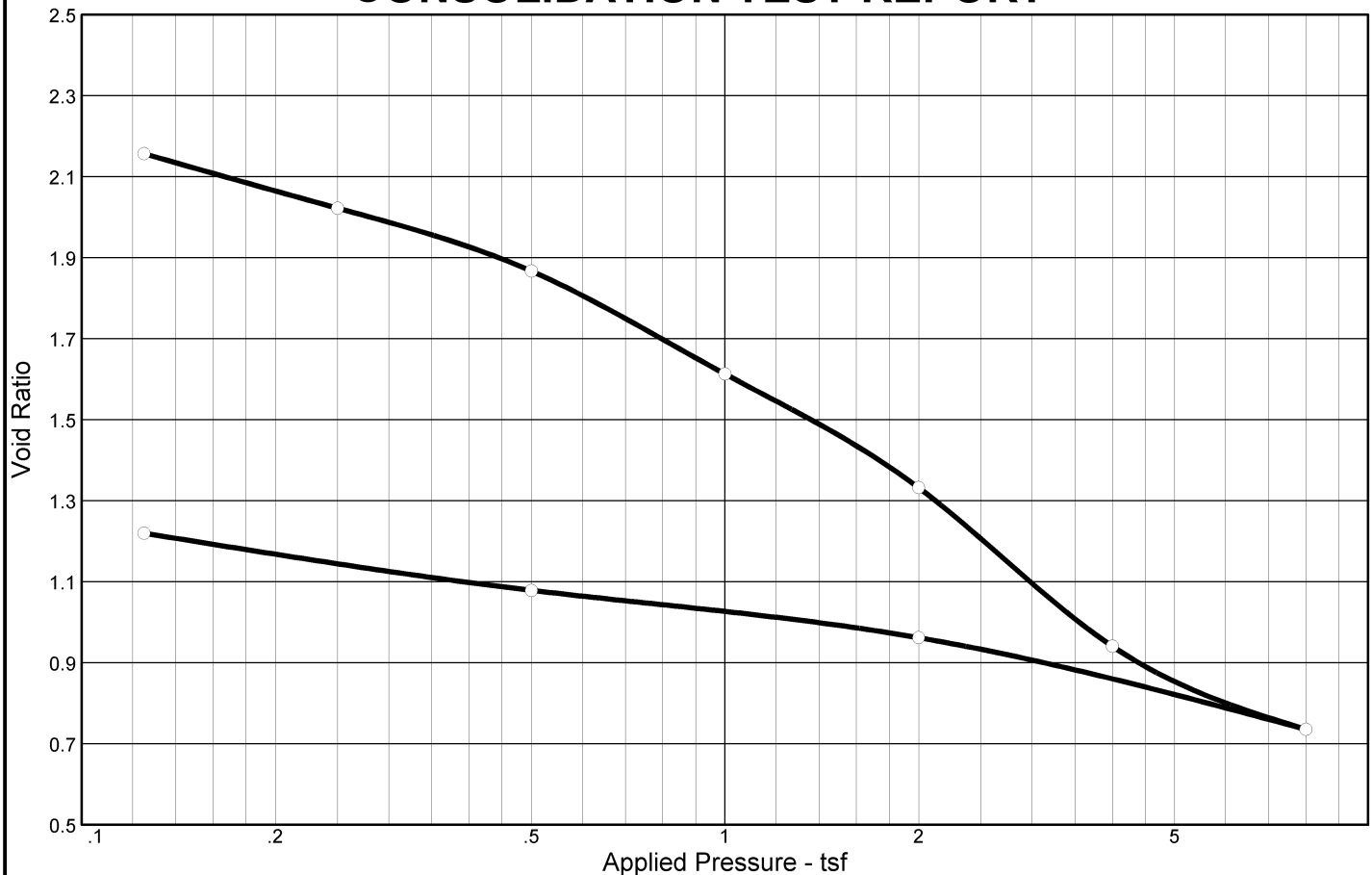
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-27, T-3 Elev./Depth: 36.5' - 38.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.02									
4	1.00	0.01									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
99.1 %	80.2 %	53.1	84	63	2.721		2.06	2.202

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-6(71

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-29, T-2 **Elev./Depth:** 26.5' - 28.5'

Remarks:

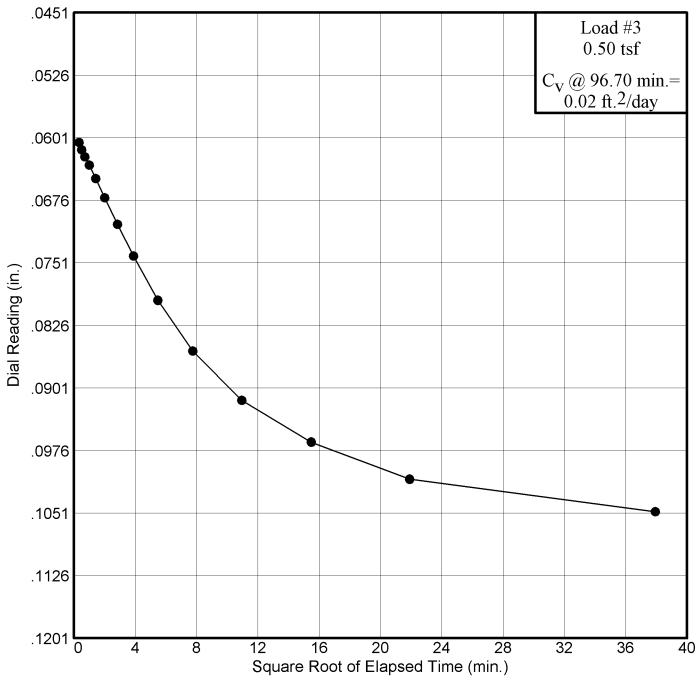
Geotechnical Engineering-Testing, Inc.

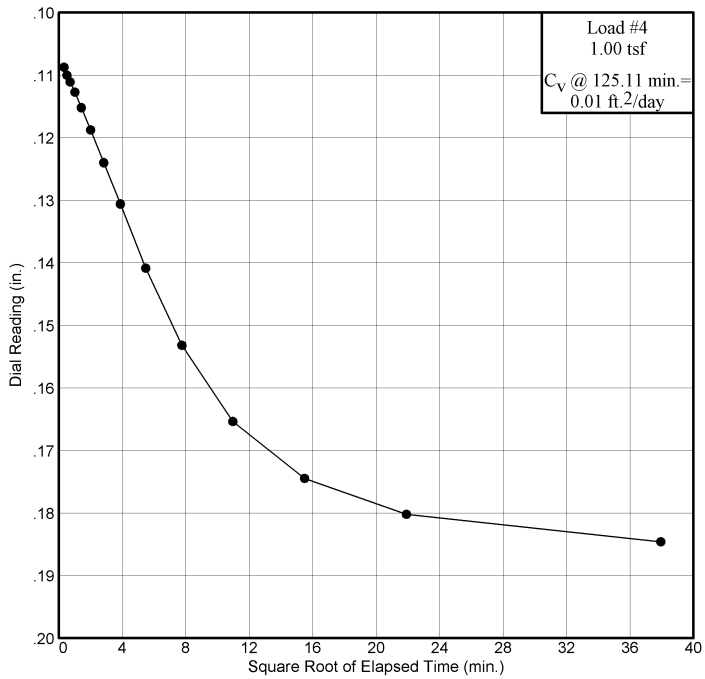
Mobile, AL

Figure

Dial Reading vs. Time

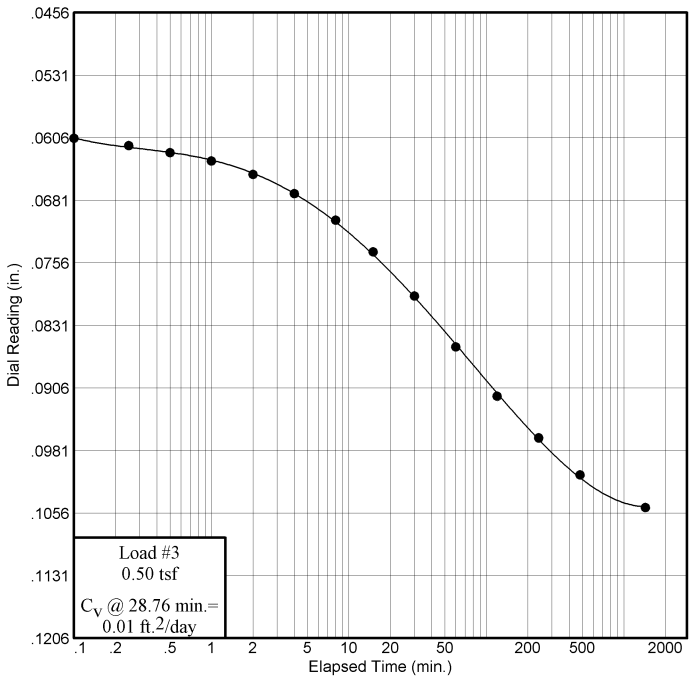
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-29, T-2 Elev./Depth: 26.5' - 28.5'

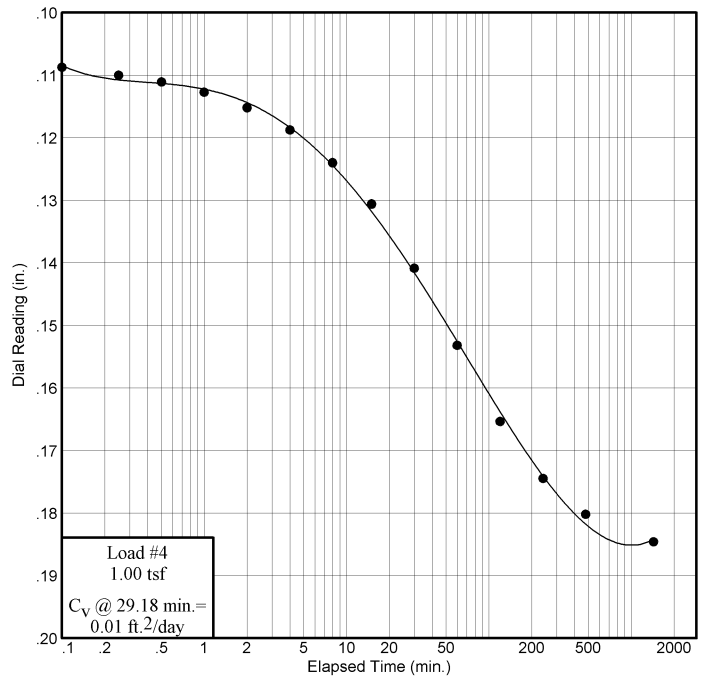




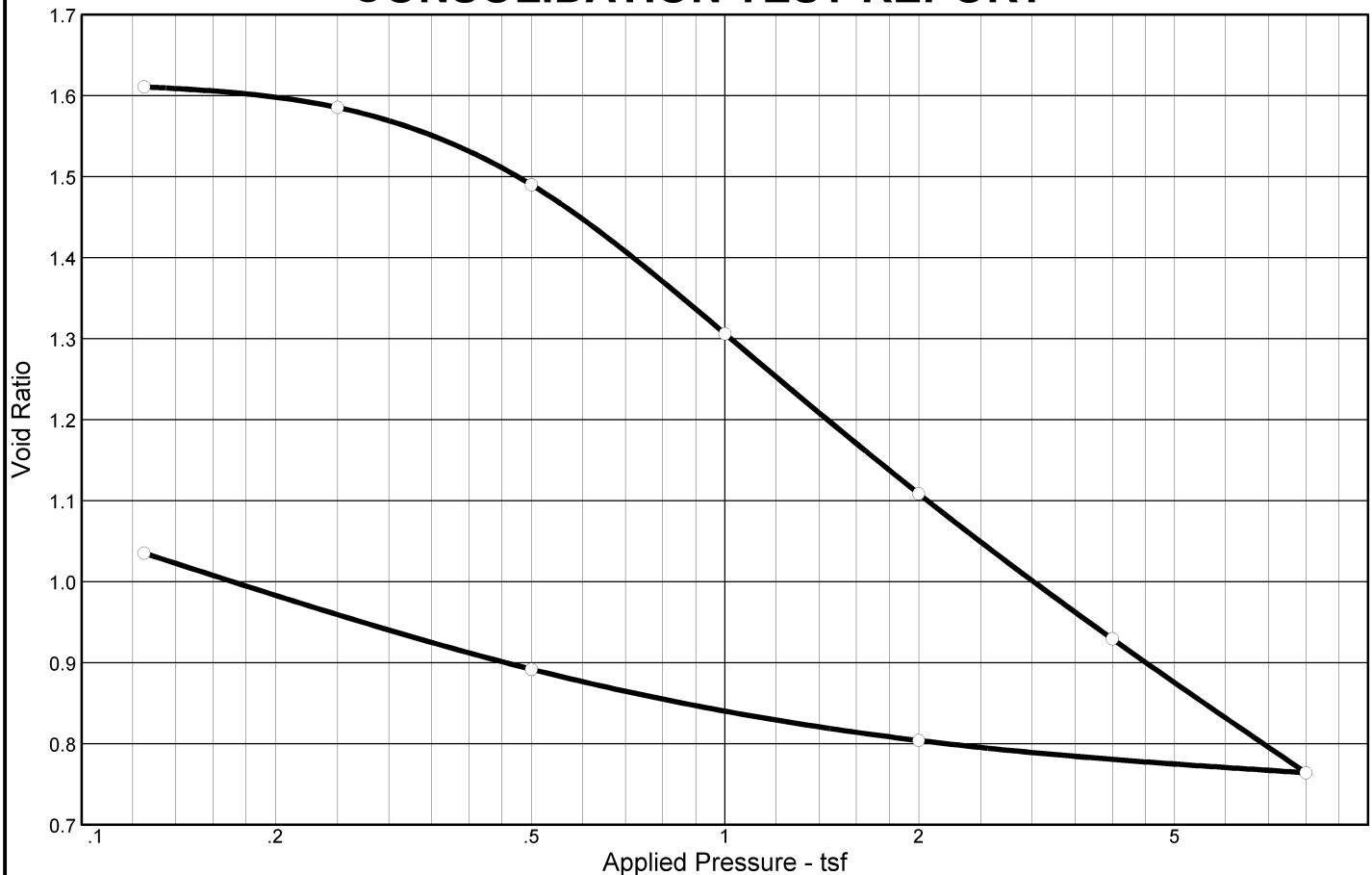
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-29, T-2 Elev./Depth: 26.5' - 28.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.03									
4	1.00	0.01									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
97.5 %	58.0 %	64.8	67	40	2.710		0.27	1.613

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-6(41

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-32, T-4 **Elev./Depth:** 56.5'-58.5'

Remarks:

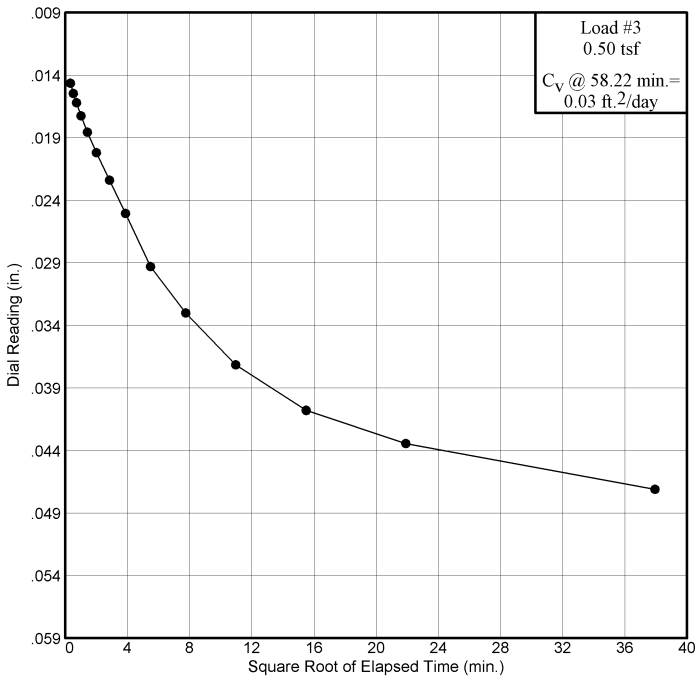
Geotechnical Engineering-Testing, Inc.

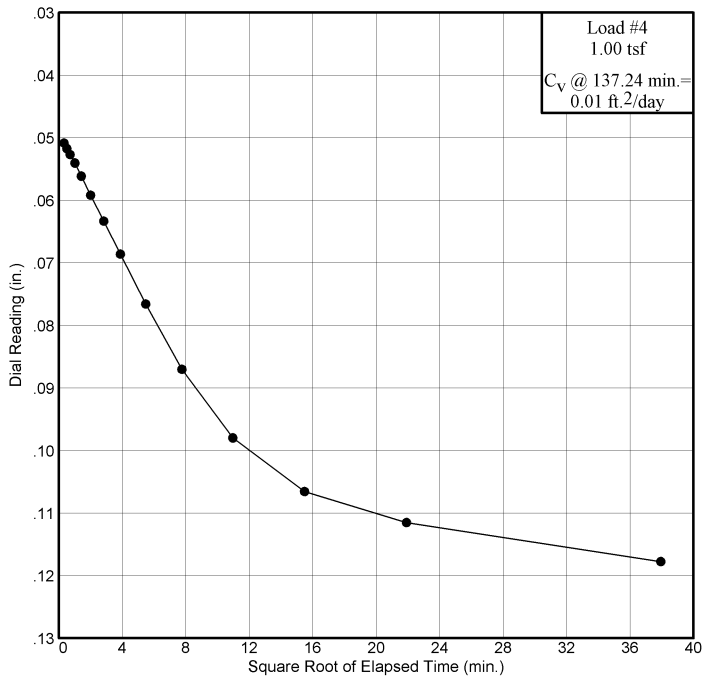
Mobile, AL

Figure

Dial Reading vs. Time

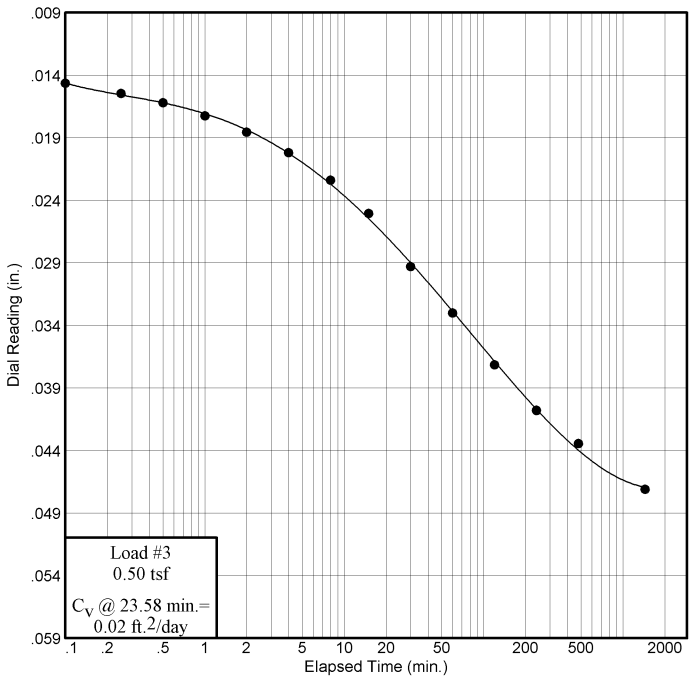
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-32, T-4 Elev./Depth: 56.5'-58.5'

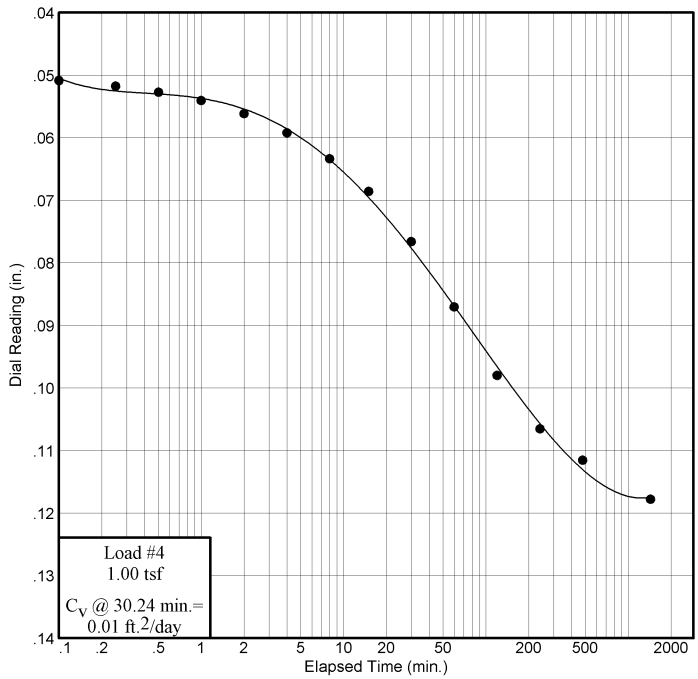




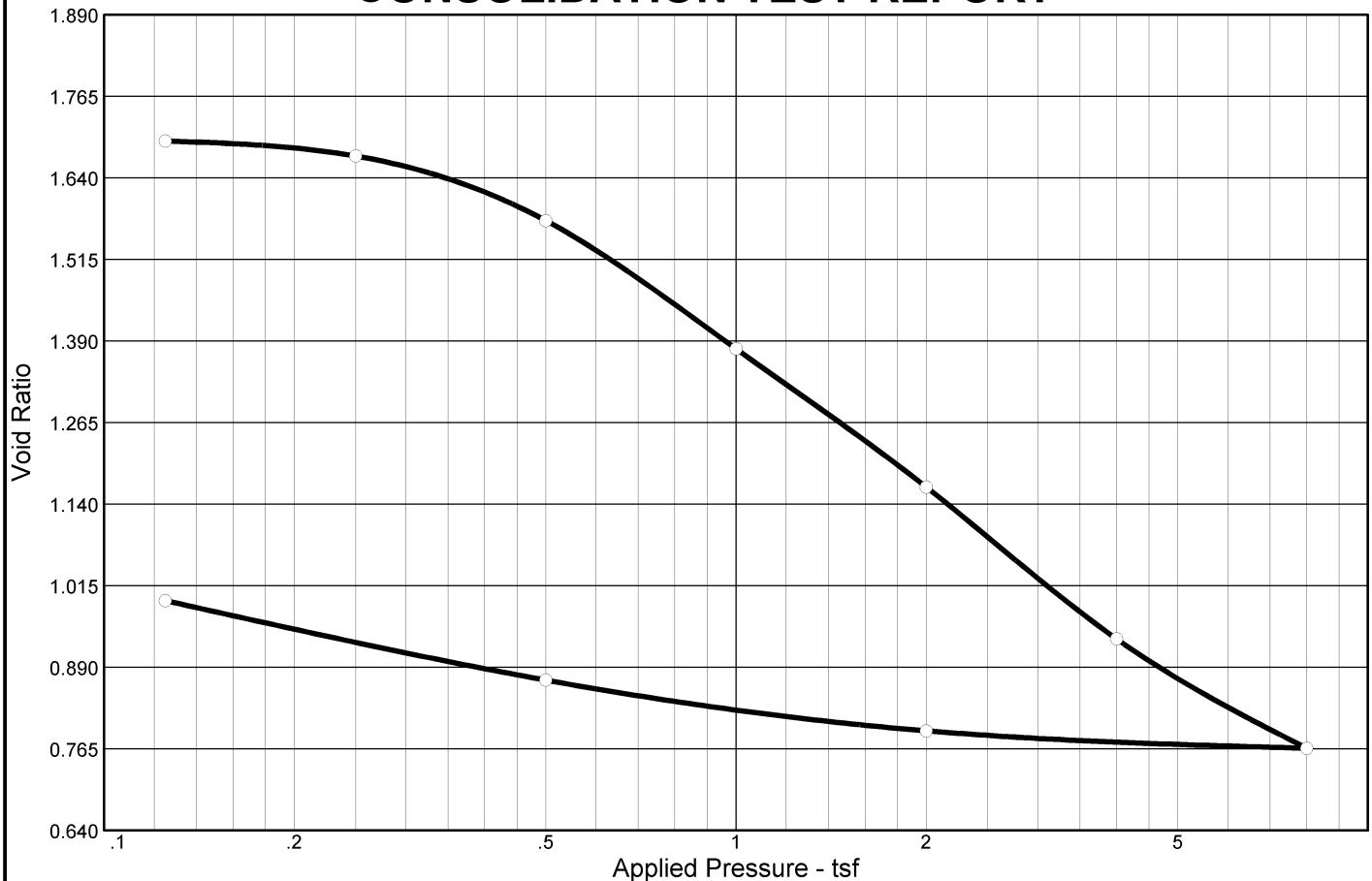
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-32, T-4 Elev./Depth: 56.5'-58.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.05									
4	1.00	0.02									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
99.4 %	62.5 %	62.6	67	48	2.711		0.14	1.703

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-6(53

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-34, T-2 **Elev./Depth:** 26.5'-28.5'

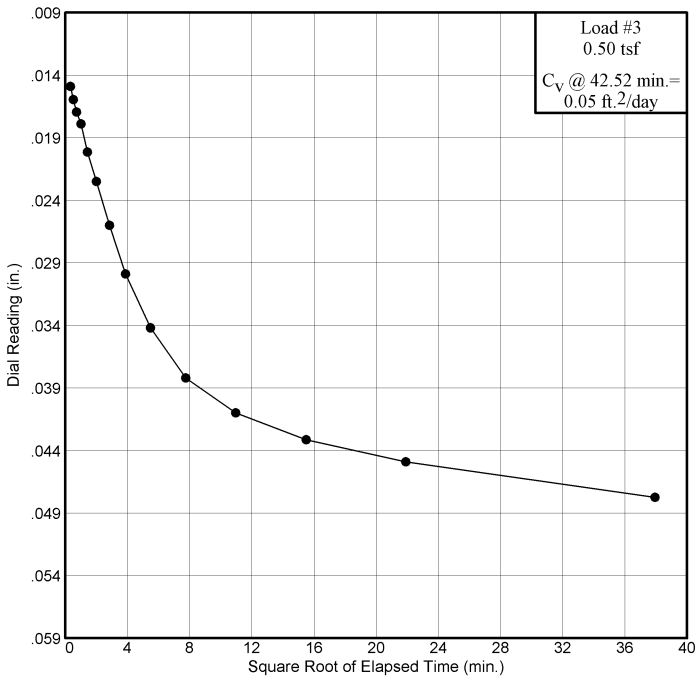
Remarks:
10-14-2021
GRAVEL: 0.0 %, SAND: 2.2 %
SILT: 61.4 %, CLAY: 36.4 %

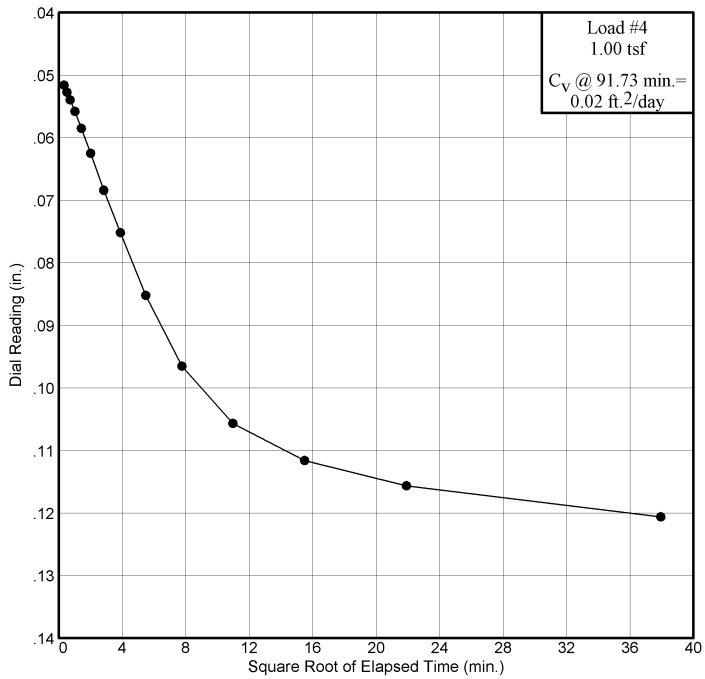
Geotechnical Engineering-Testing, Inc.
Mobile, AL

Figure

Dial Reading vs. Time

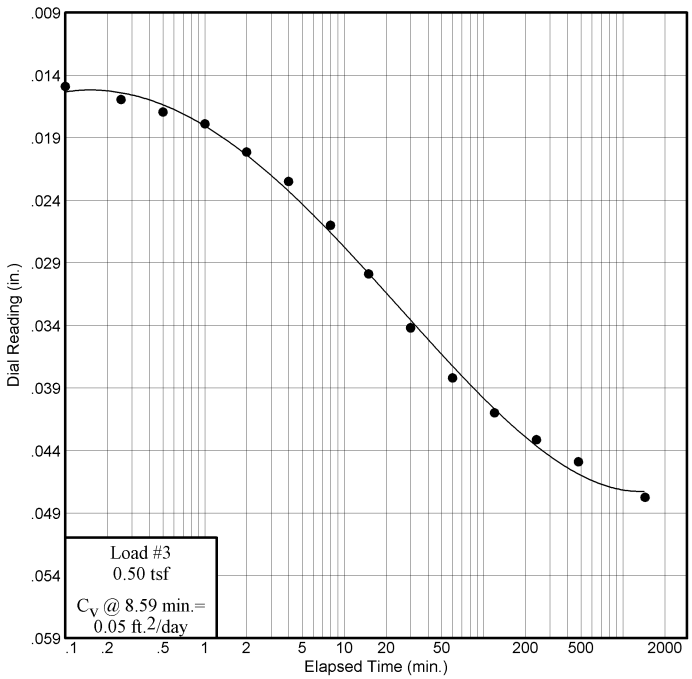
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-34, T-2 Elev./Depth: 26.5'-28.5'

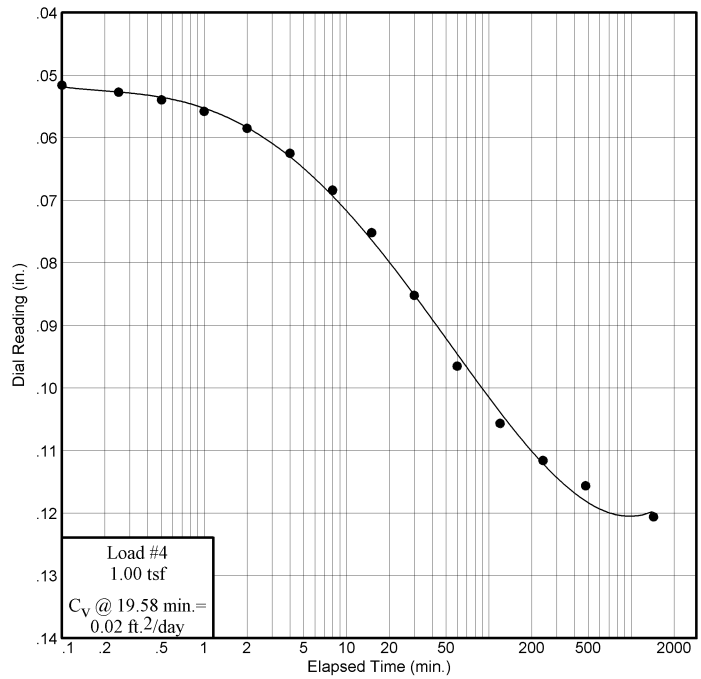




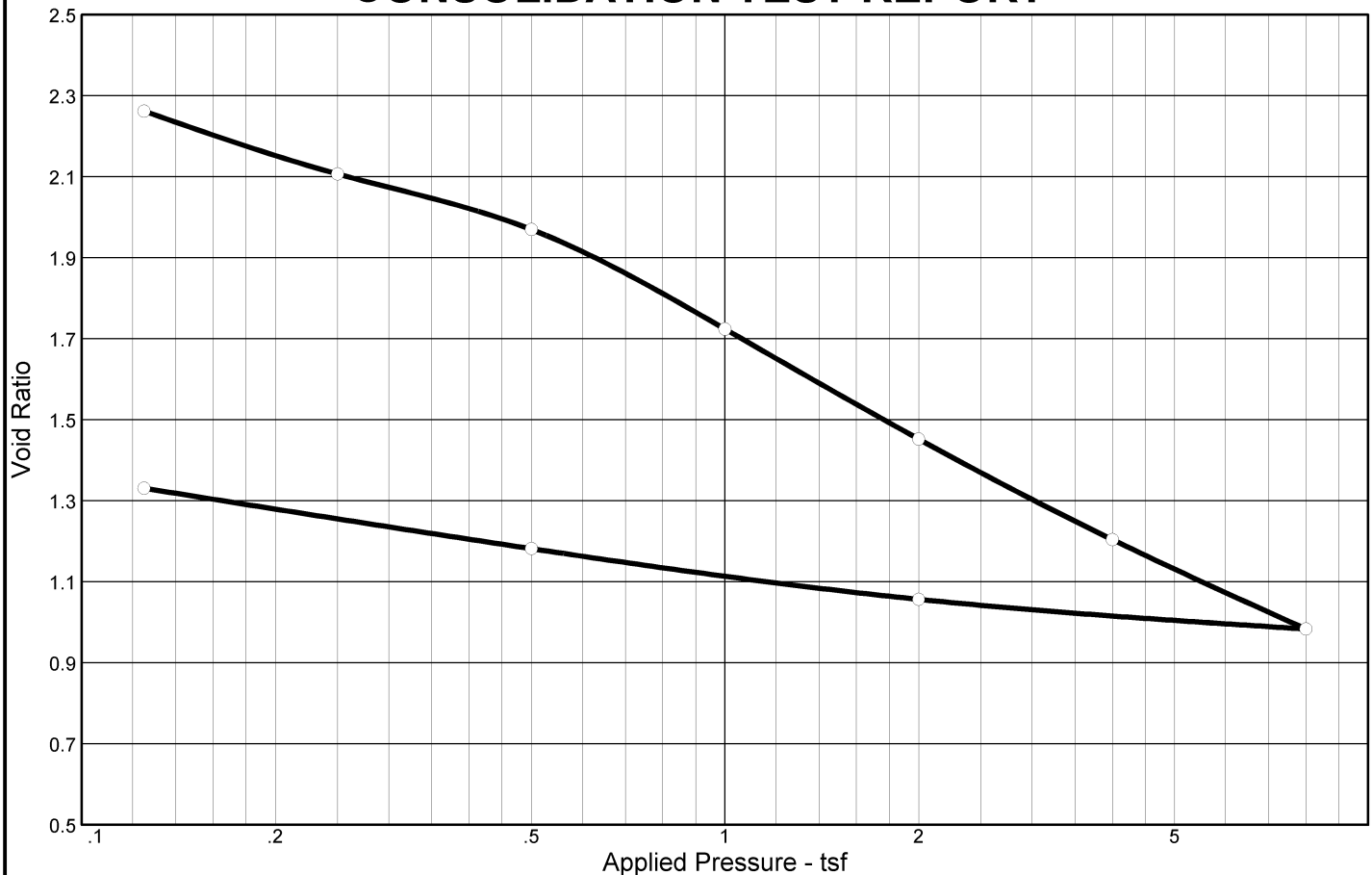
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-34, T-2 Elev./Depth: 26.5'-28.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.02									
4	1.00	0.01									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
99.7 %	83.3 %	51.8	93	66	2.711		0.27	2.265

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-6(72

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-34, T-3 **Elev./Depth:** 36.5'-38.5'

Remarks:

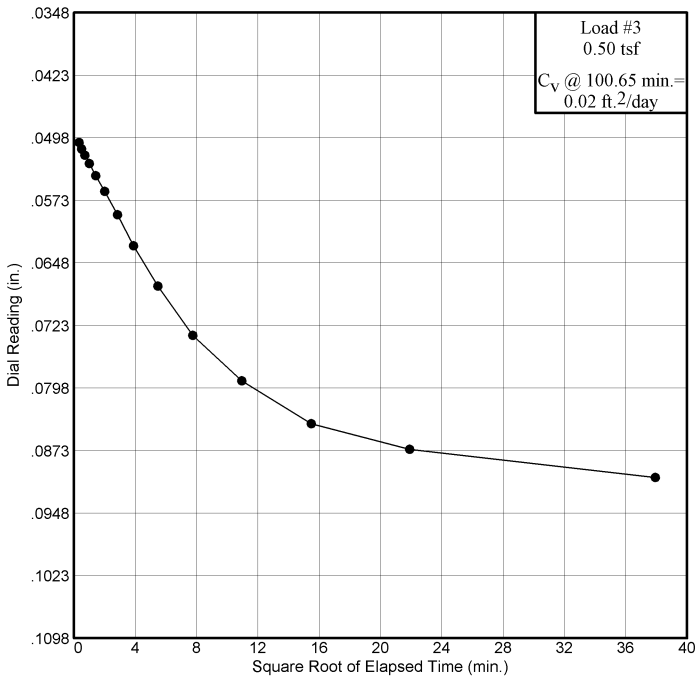
Geotechnical Engineering-Testing, Inc.

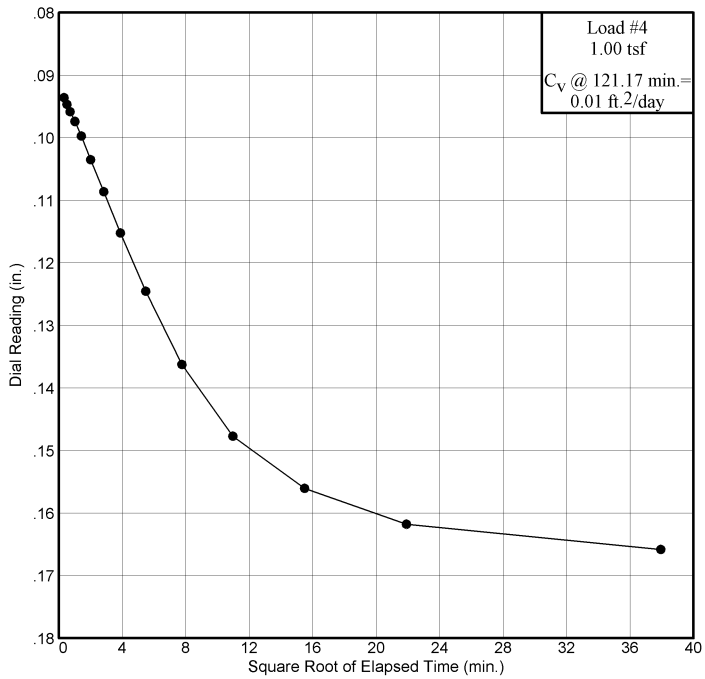
Mobile, AL

Figure

Dial Reading vs. Time

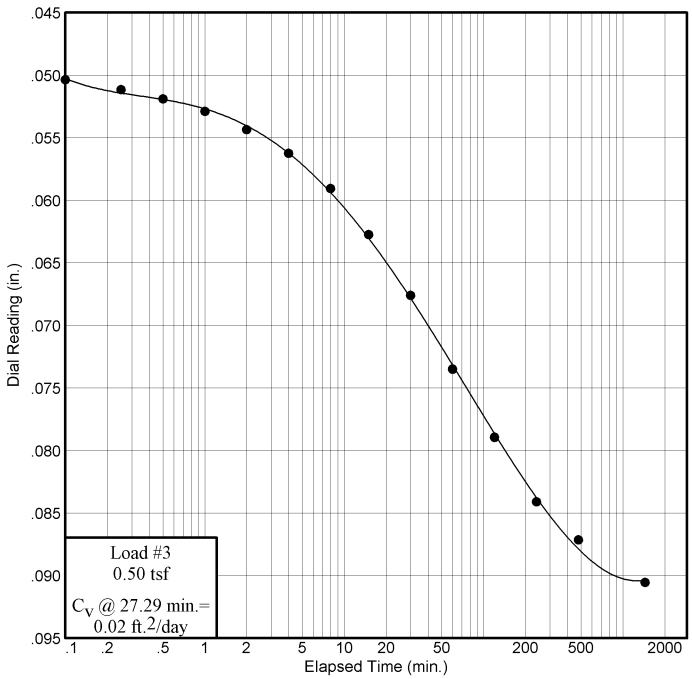
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-34, T-3 Elev./Depth: 36.5'-38.5'

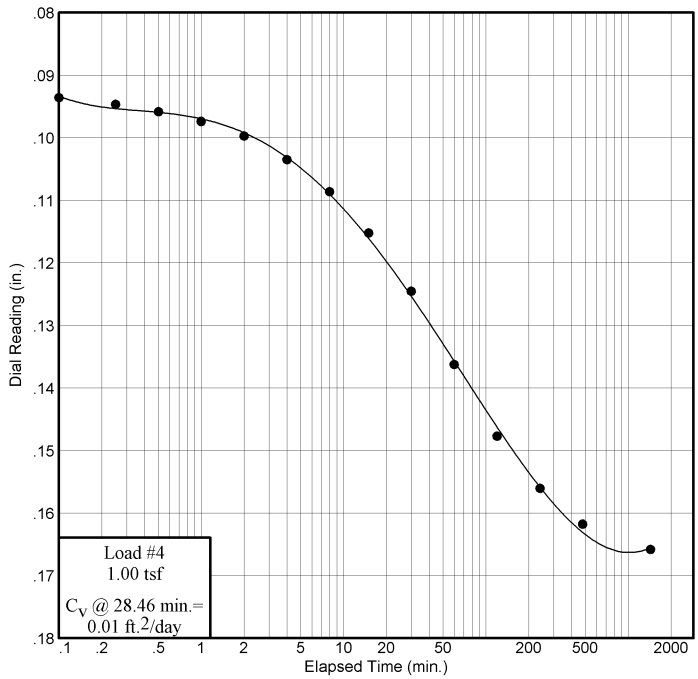




Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-34, T-3 Elev./Depth: 36.5'-38.5'





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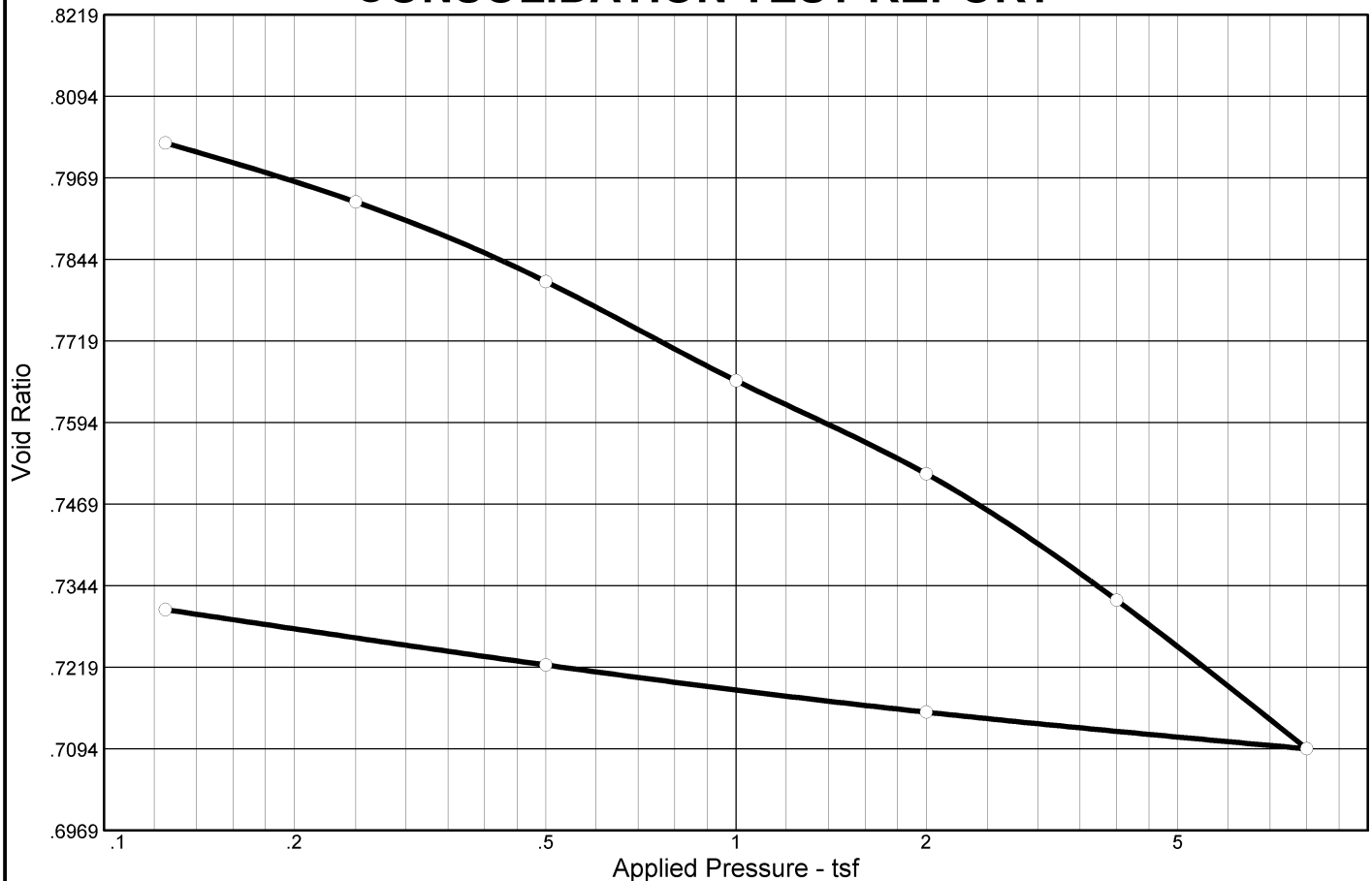


Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.44									
4	1.00	0.37									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
105.2 %	31.9 %	92.0	33	8	2.664		2.39	0.807

MATERIAL DESCRIPTION	USCS	AASHTO
Gray Silty Sand	SM	A-4(1)

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-35, T-2 **Elev./Depth:** 26.5' - 28.5'

Remarks:

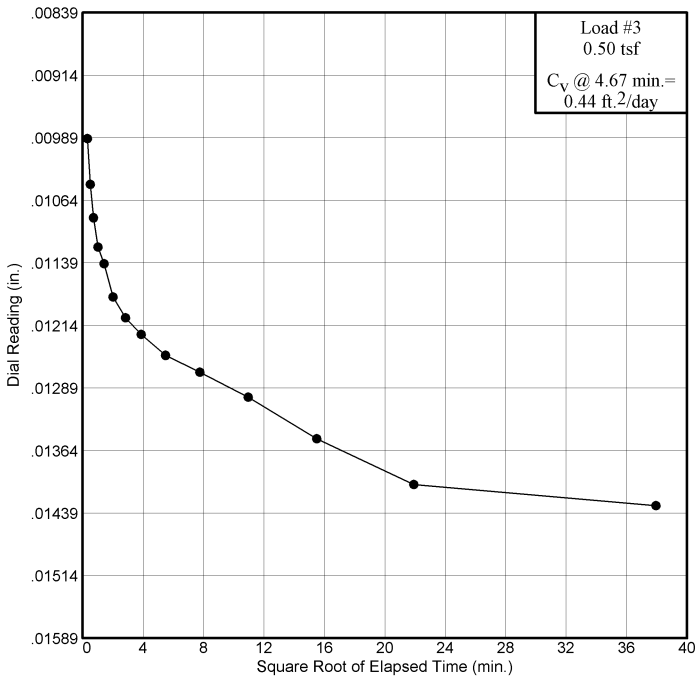
Geotechnical Engineering-Testing, Inc.

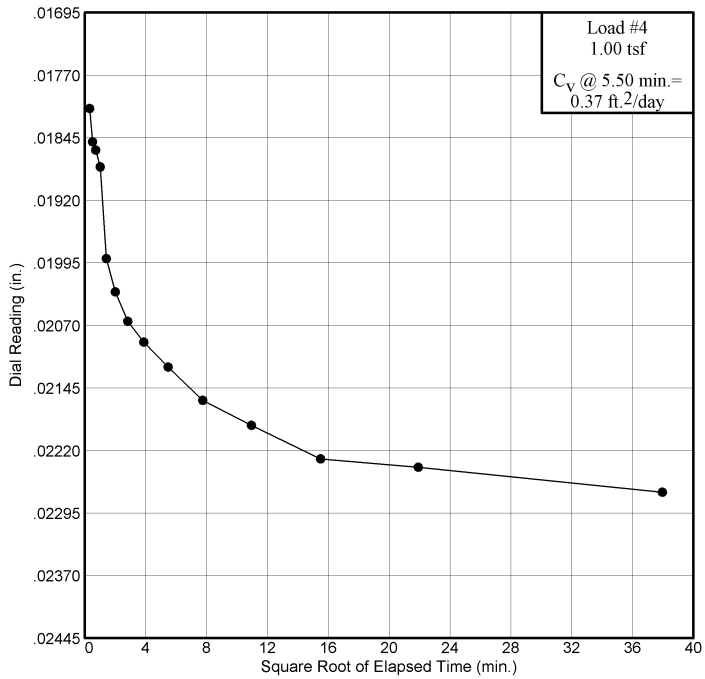
Mobile, AL

Figure

Dial Reading vs. Time

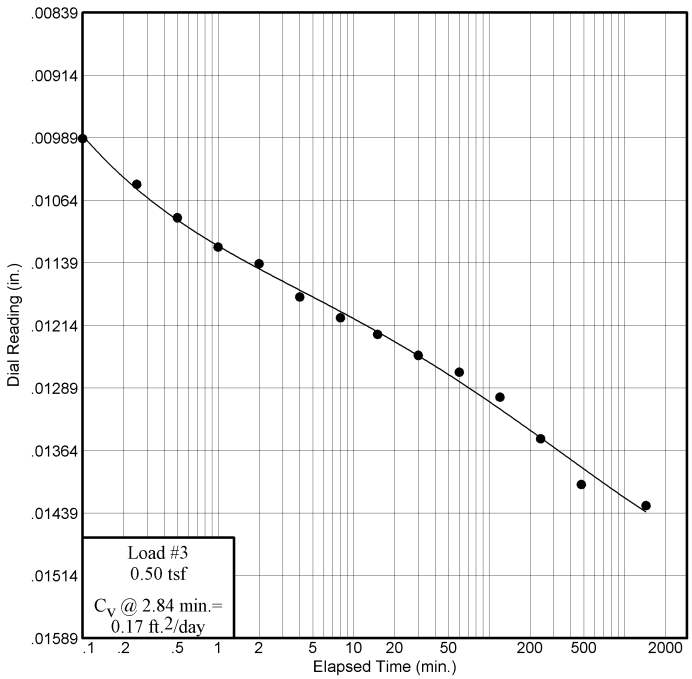
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-35, T-2 Elev./Depth: 26.5' - 28.5'



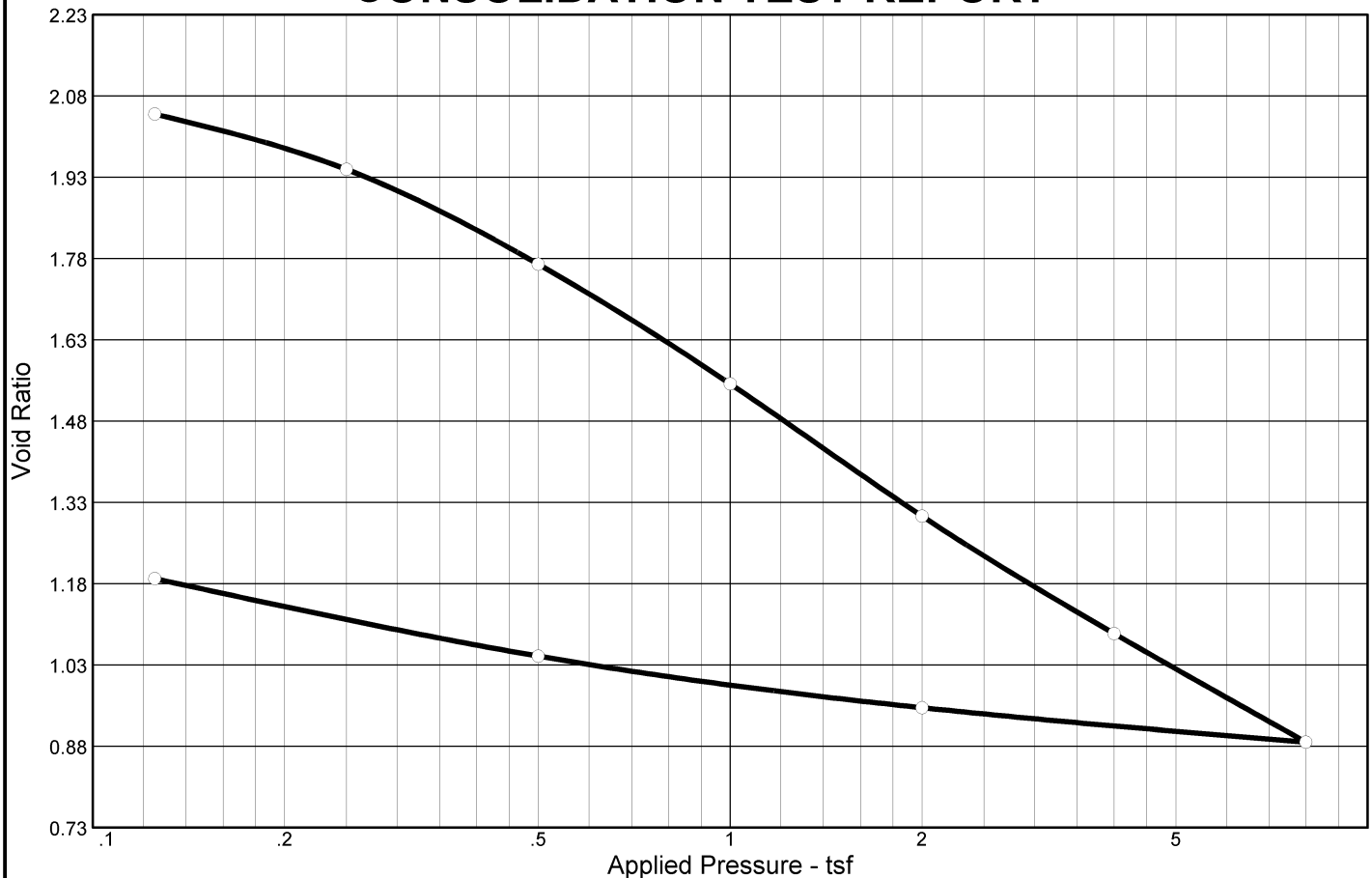


Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-35, T-2 Elev./Depth: 26.5' - 28.5'



CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.02									
4	1.00	0.01									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
97.7 %	73.4 %	55.9	94	75	2.731		0.18	2.053

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-6(85

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-36, T-3 **Elev./Depth:** 36.5' - 38.5'

Remarks:

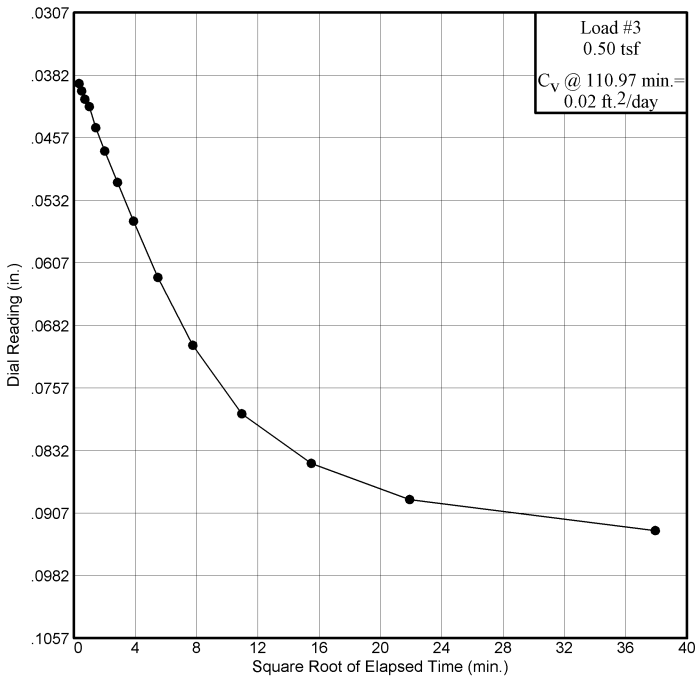
Geotechnical Engineering-Testing, Inc.

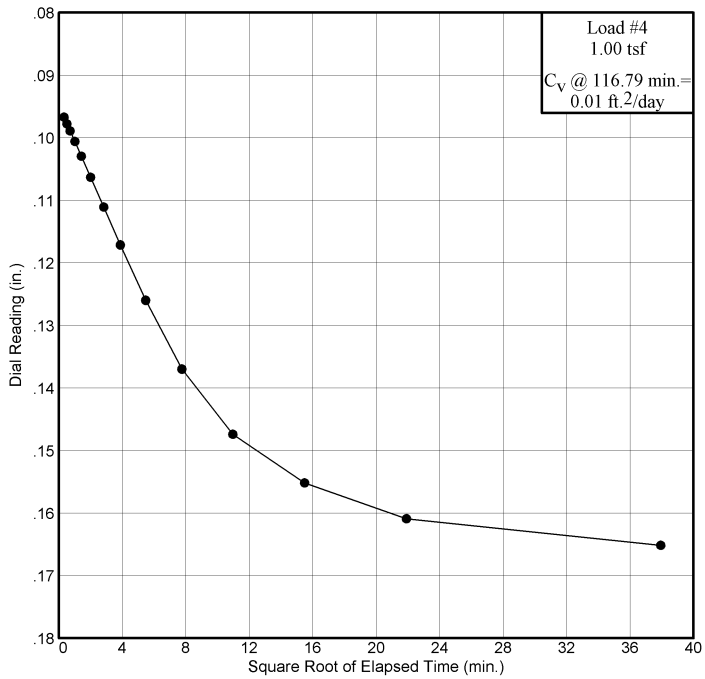
Mobile, AL

Figure

Dial Reading vs. Time

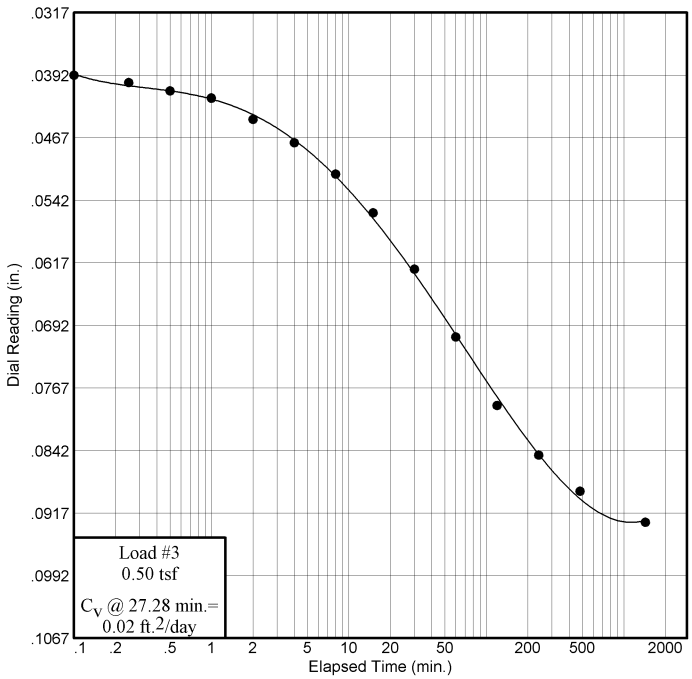
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-36, T-3 Elev./Depth: 36.5' - 38.5'

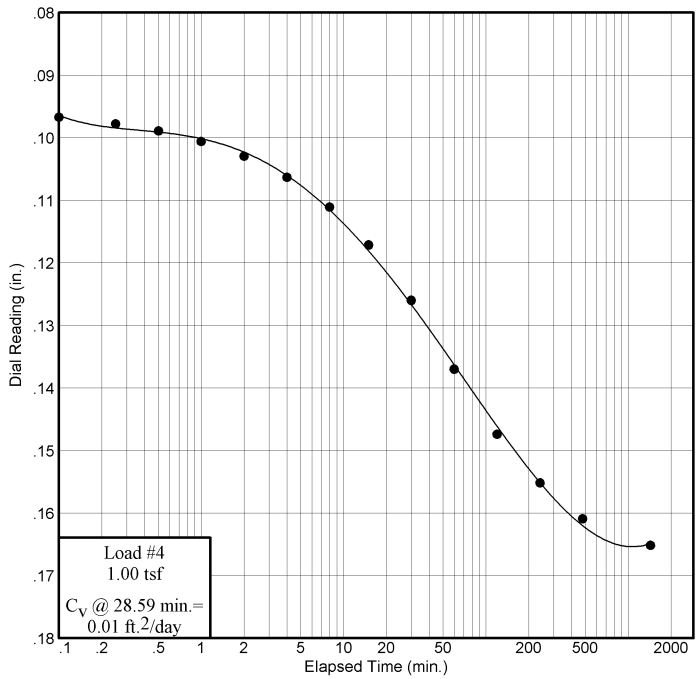




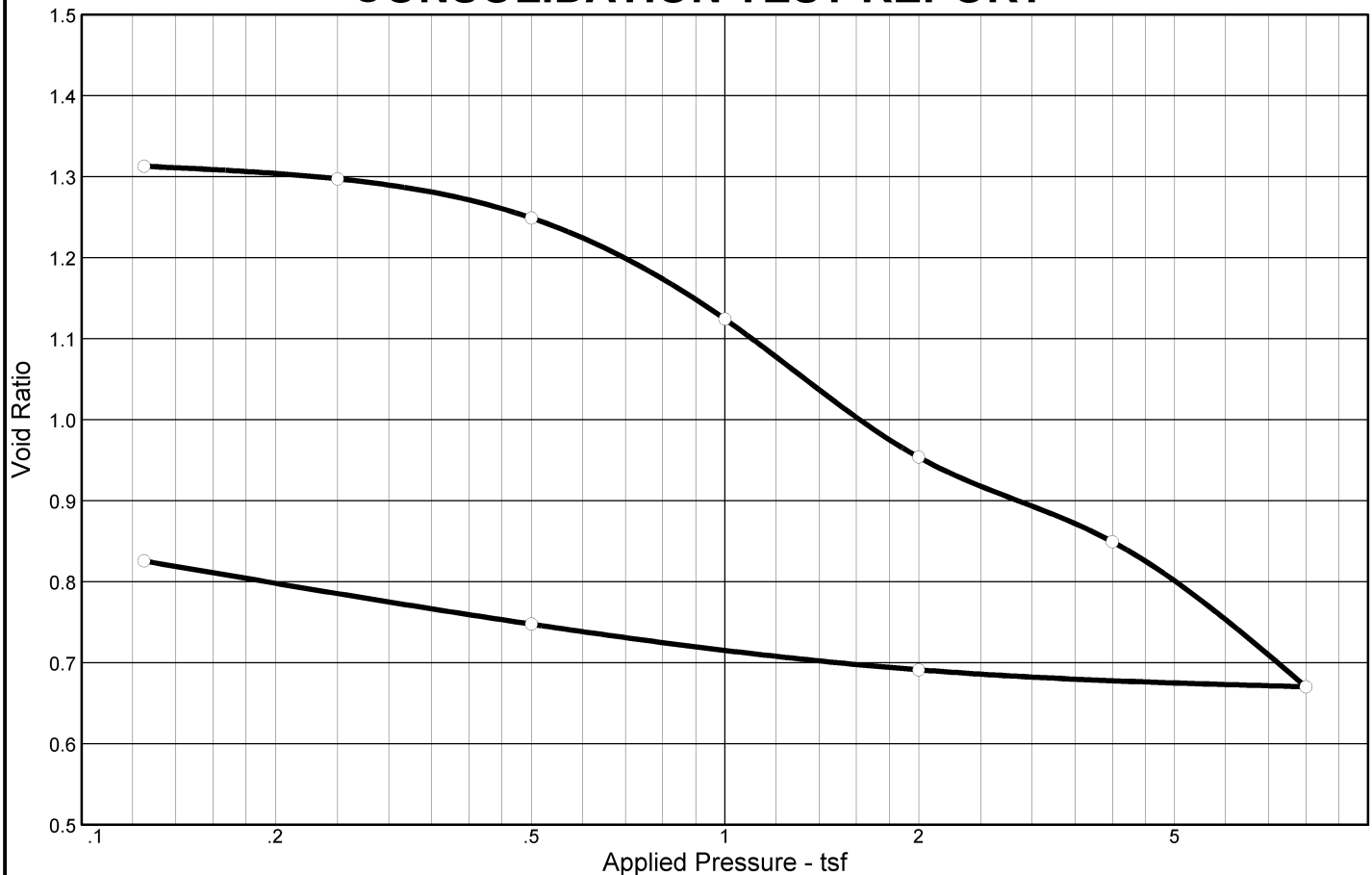
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-36, T-3 Elev./Depth: 36.5' - 38.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	0.13									
3	0.50	0.08									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
101.9 %	50.9 %	71.1	60	40	2.636		3.45	1.315

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-6(43

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-40, T-1 **Elev./Depth:** 20.0'-22.0'

Remarks:

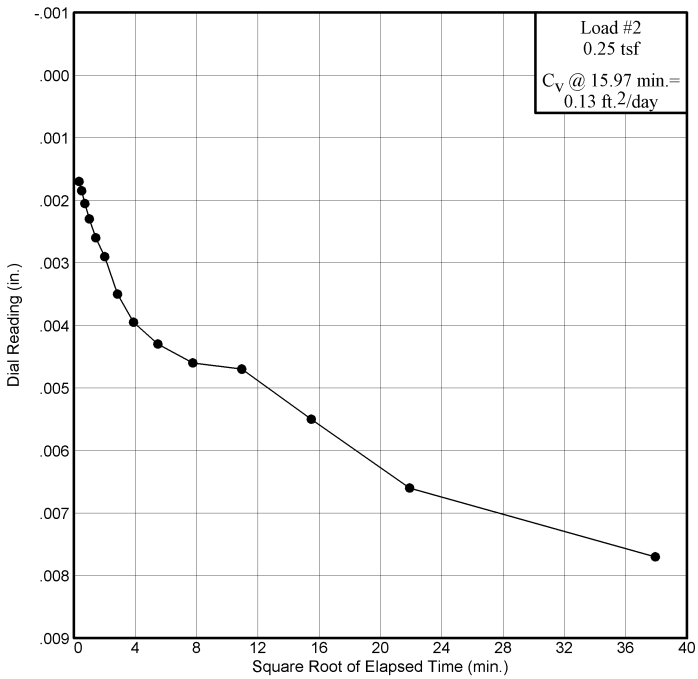
Geotechnical Engineering-Testing, Inc.

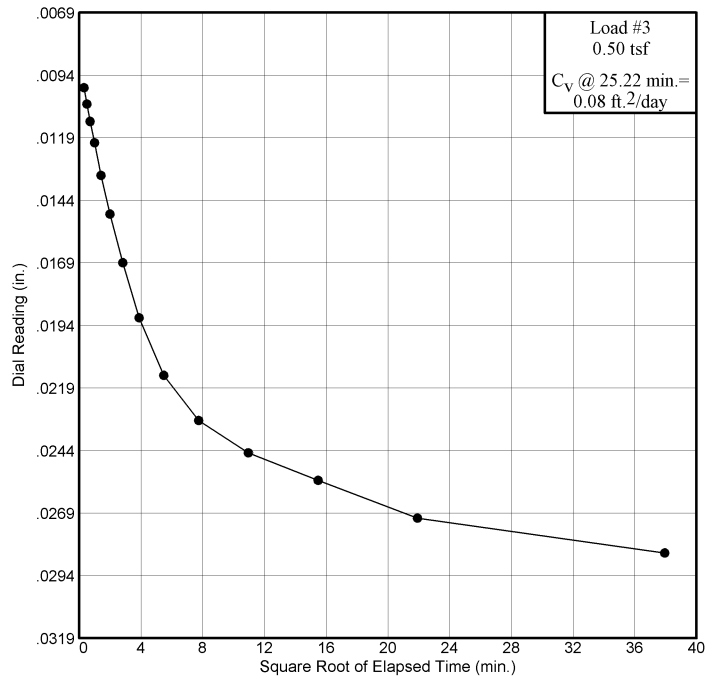
Mobile, AL

Figure

Dial Reading vs. Time

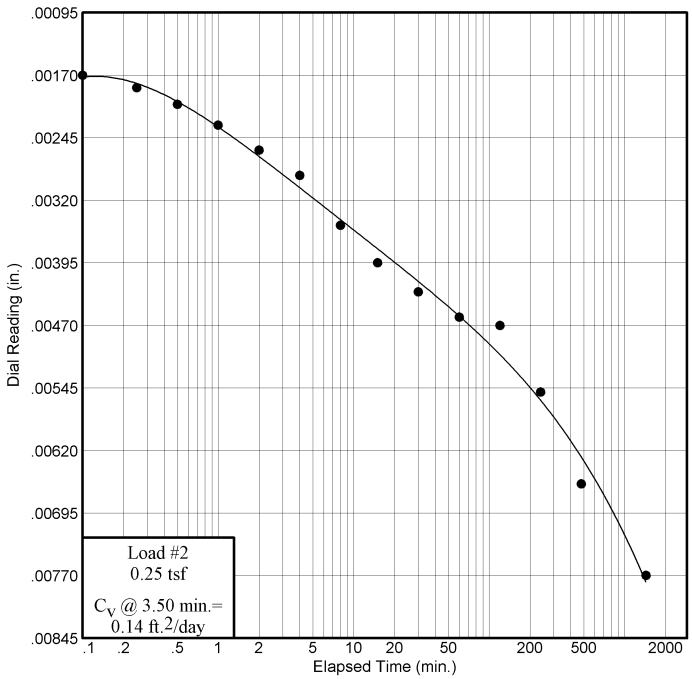
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-40, T-1 Elev./Depth: 20.0'-22.0'

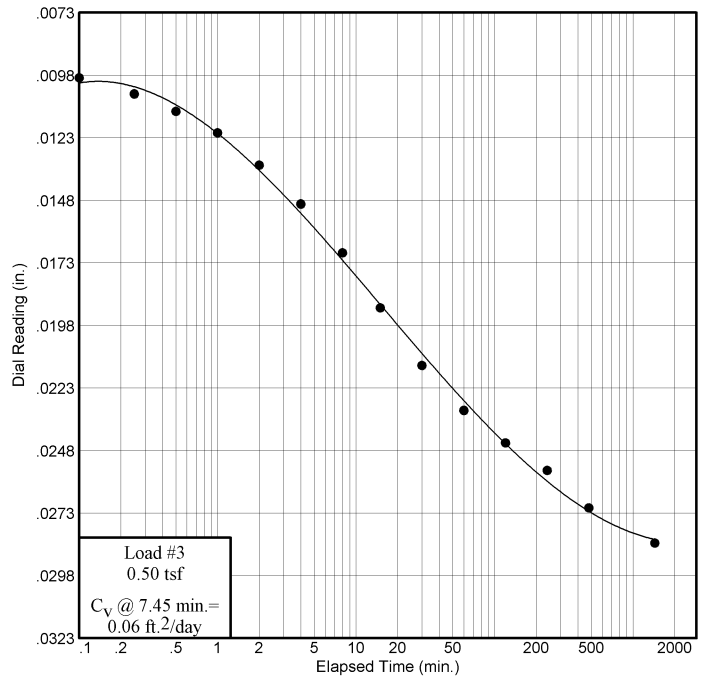




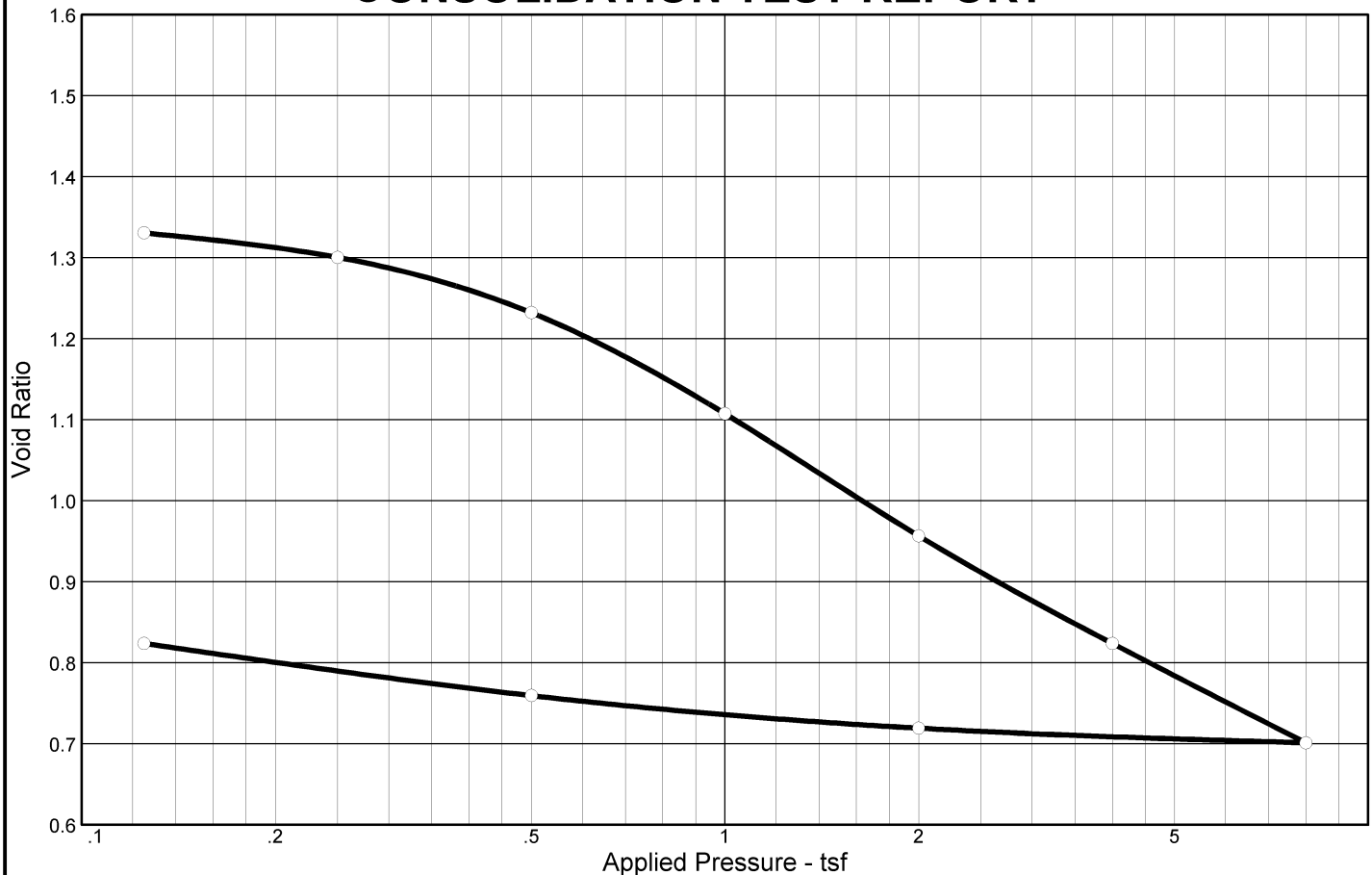
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-40, T-1 Elev./Depth: 20.0'-22.0'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	0.24									
3	0.50	0.14									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
98.3 %	51.1 %	69.4	46	25	2.637		0.34	1.371

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Lean Clay	CL	A-7-6(25

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-45, T-1 **Elev./Depth:** 12.5'-14.5'

Remarks:

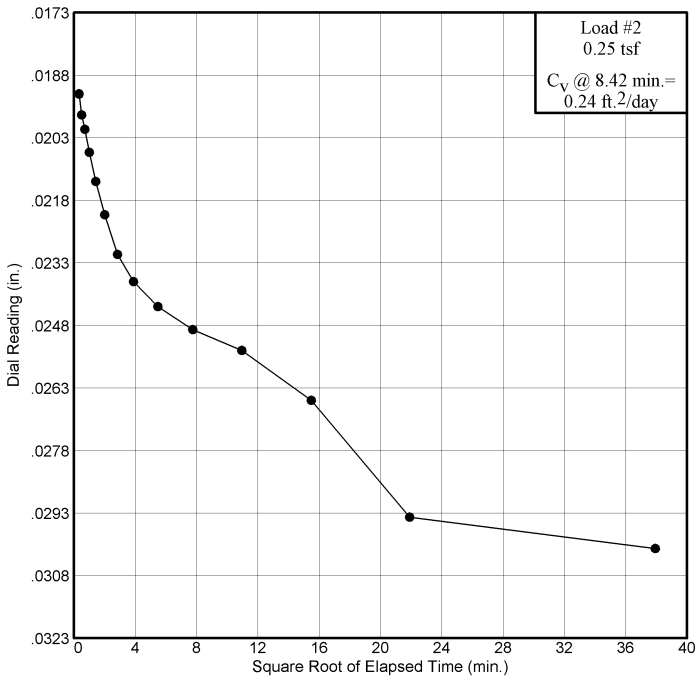
Geotechnical Engineering-Testing, Inc.

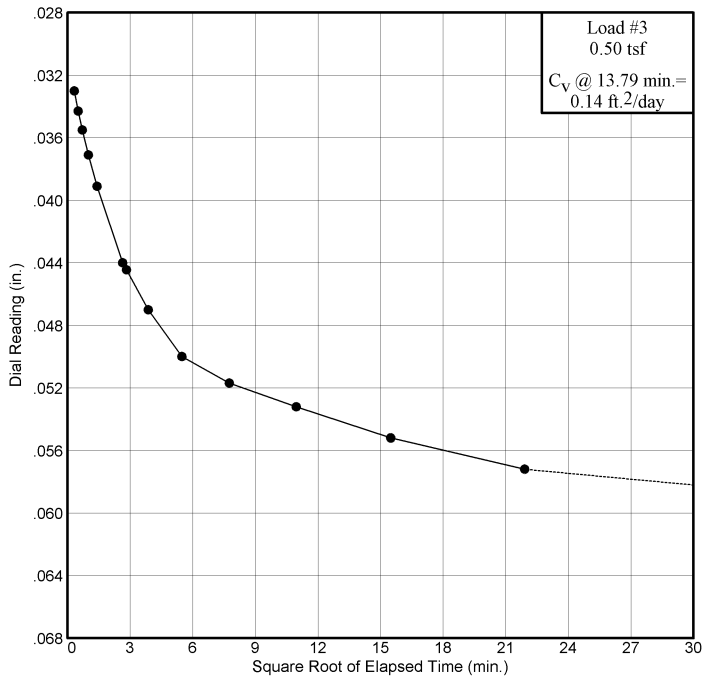
Mobile, AL

Figure

Dial Reading vs. Time

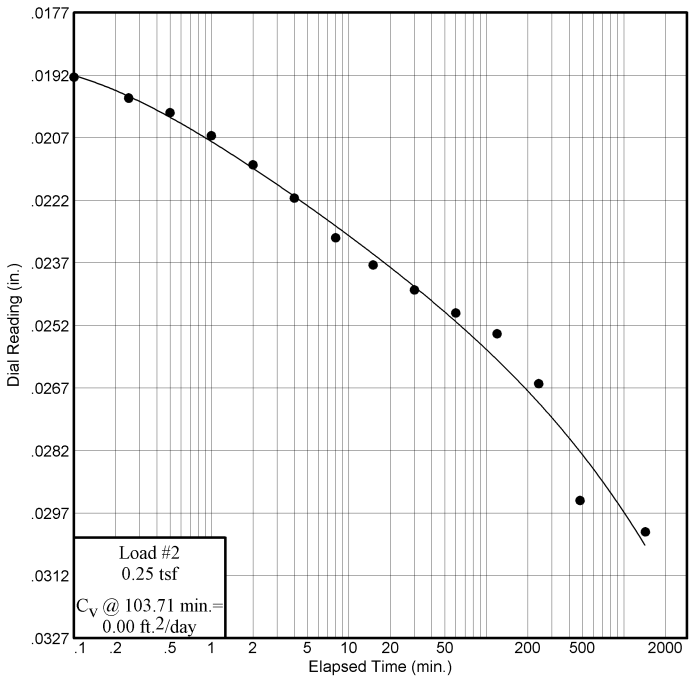
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-45, T-1 Elev./Depth: 12.5'-14.5'

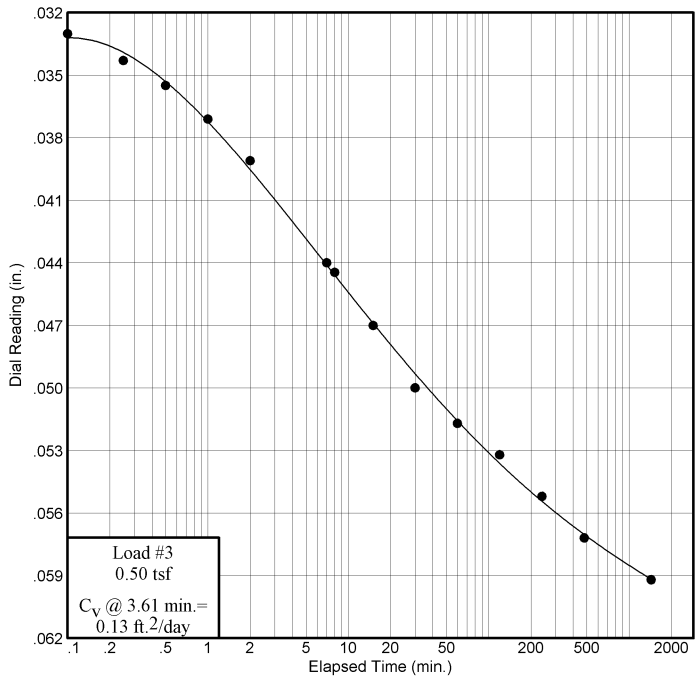




Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-45, T-1 Elev./Depth: 12.5'-14.5'





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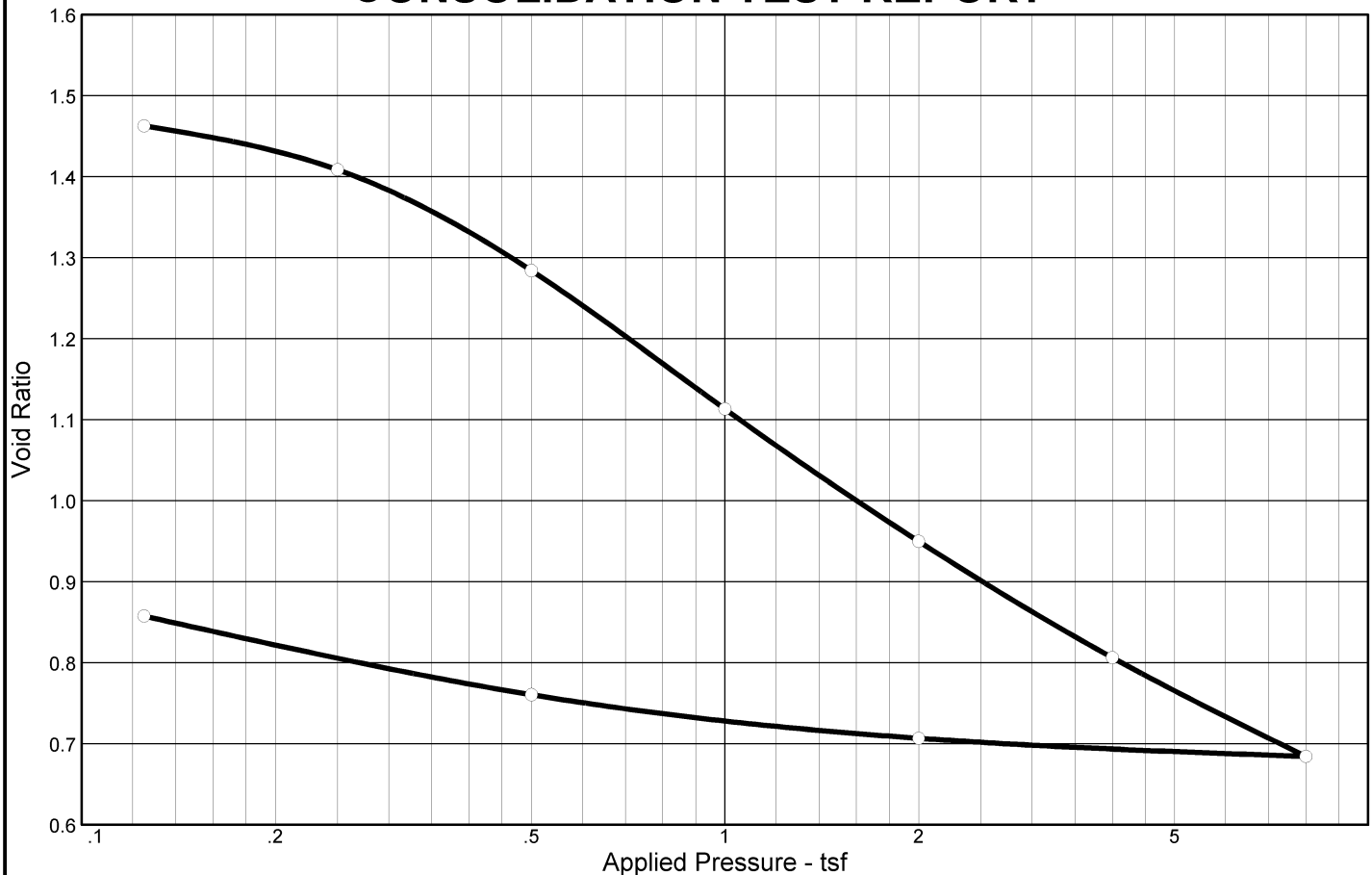


Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
2	0.25	0.12									
3	0.50	0.05									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
100.6 %	56.9 %	66.1	58	38	2.632		0.09	1.487

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay		

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-54, T-1 **Elev./Depth:** 18.0'-20.0'

Remarks:

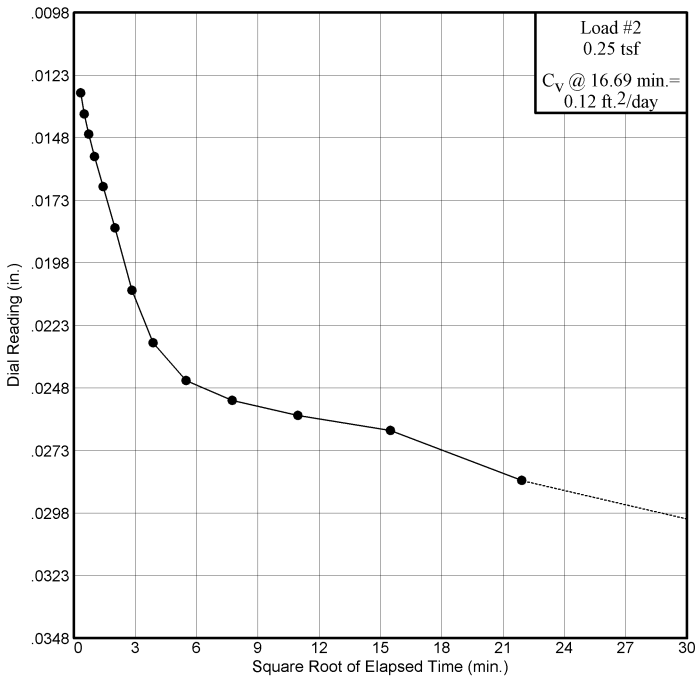
Geotechnical Engineering-Testing, Inc.

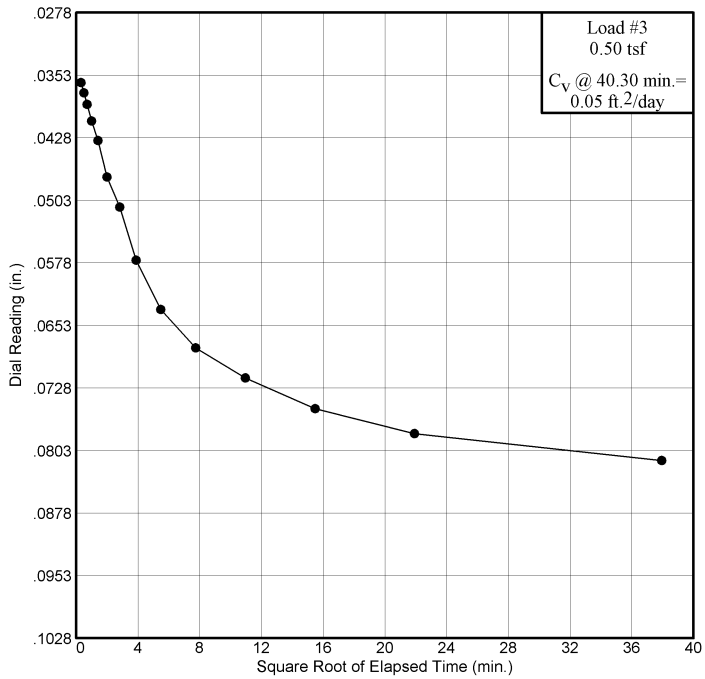
Mobile, AL

Figure

Dial Reading vs. Time

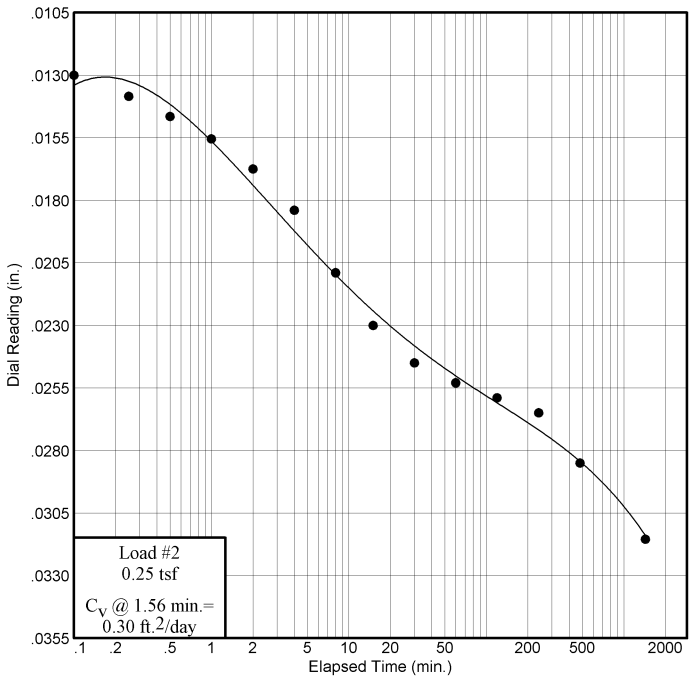
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-54, T-1 Elev./Depth: 18.0'-20.0'

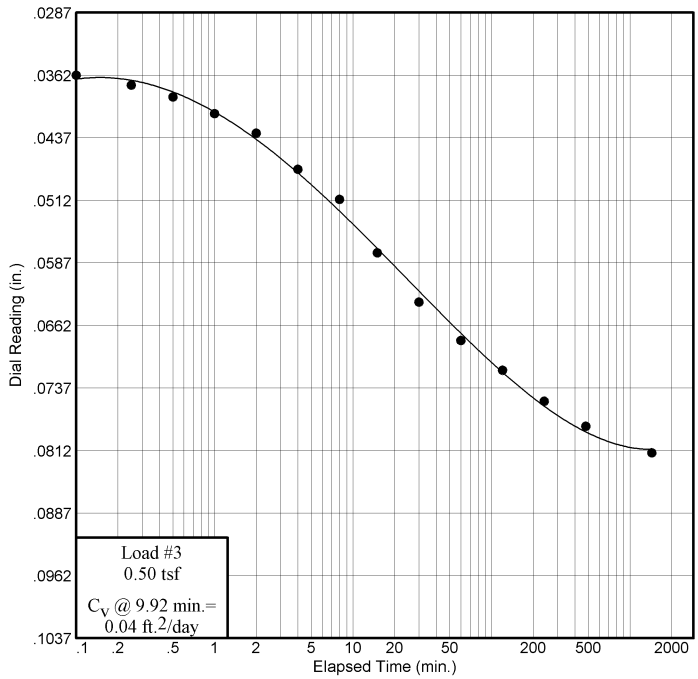




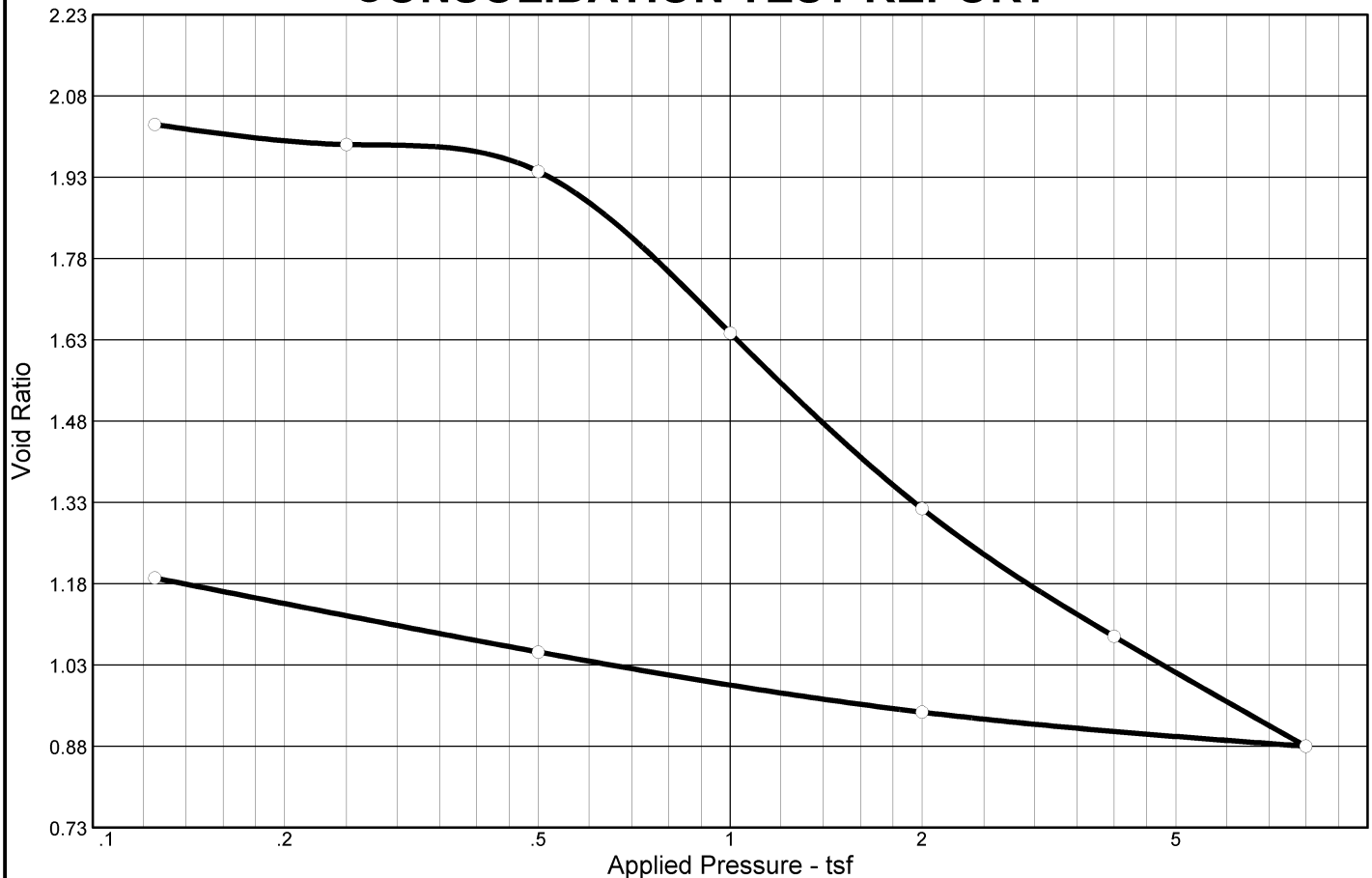
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-54, T-1 Elev./Depth: 18.0'-20.0'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.10									
4	1.00	0.01									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
99.2 %	74.9 %	55.4	98	69	2.692		0.12	2.034

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Fat Clay	CH	A-7-6(81

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-55, T-3 **Elev./Depth:** 26.5'-28.5'

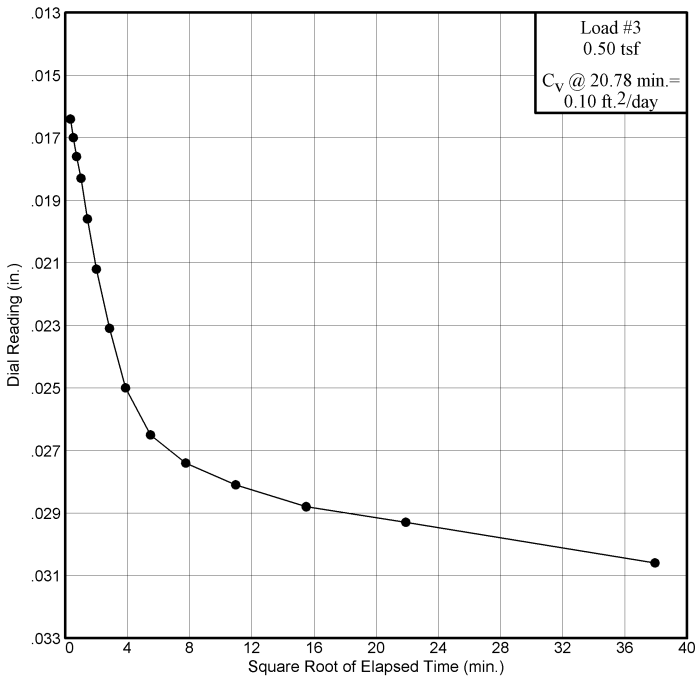
Remarks:
10-14-2021
GRAVEL: 0.0 %, SAND: 0.6 %
SILT: 54.2 %, CLAY: 45.1 %

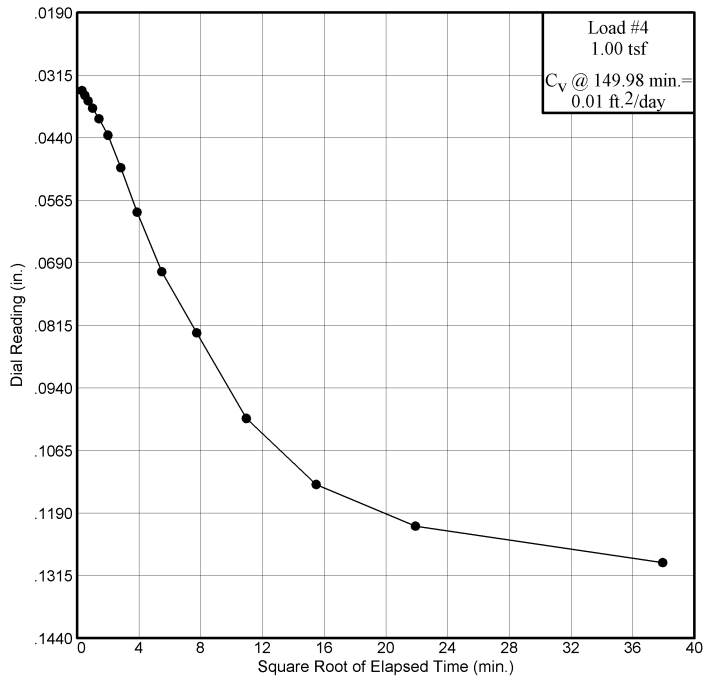
Geotechnical Engineering-Testing, Inc.
Mobile, AL

Figure

Dial Reading vs. Time

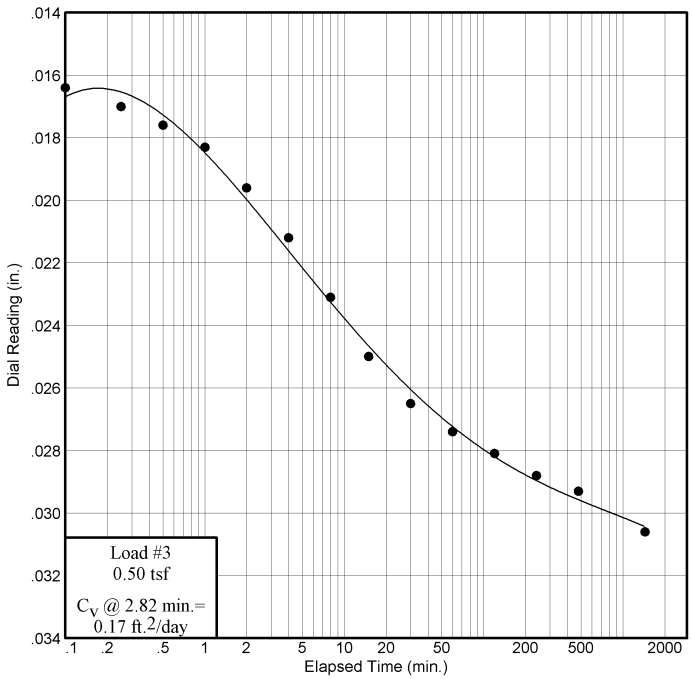
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-55, T-3 Elev./Depth: 26.5'-28.5'

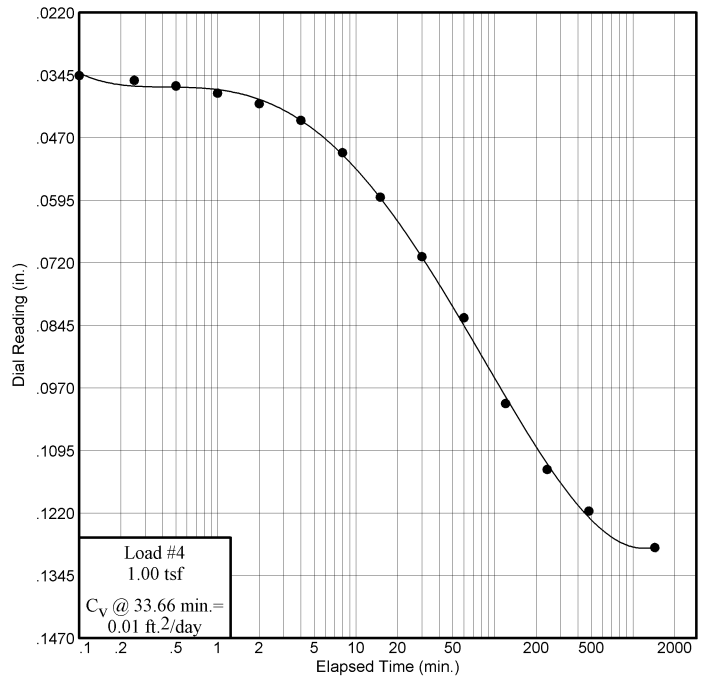




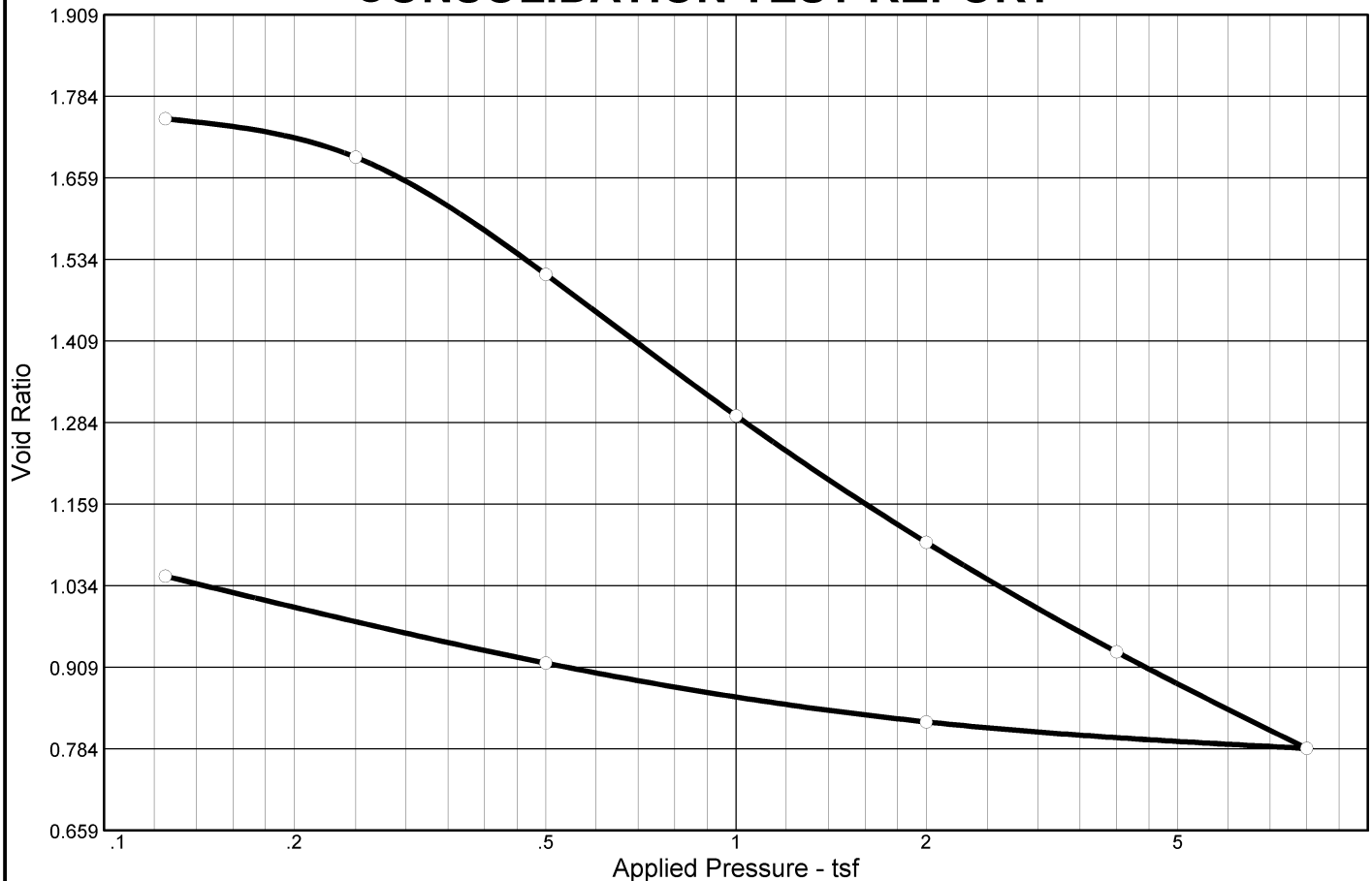
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-55, T-3 Elev./Depth: 26.5'-28.5'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.01									
4	1.00	0.01									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
101.1 %	65.9 %	61.2	65	21	2.710		0.06	1.766

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Silt	MH	A-7-5(29

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-56, T-1 **Elev./Depth:** 18.0'-20.0'

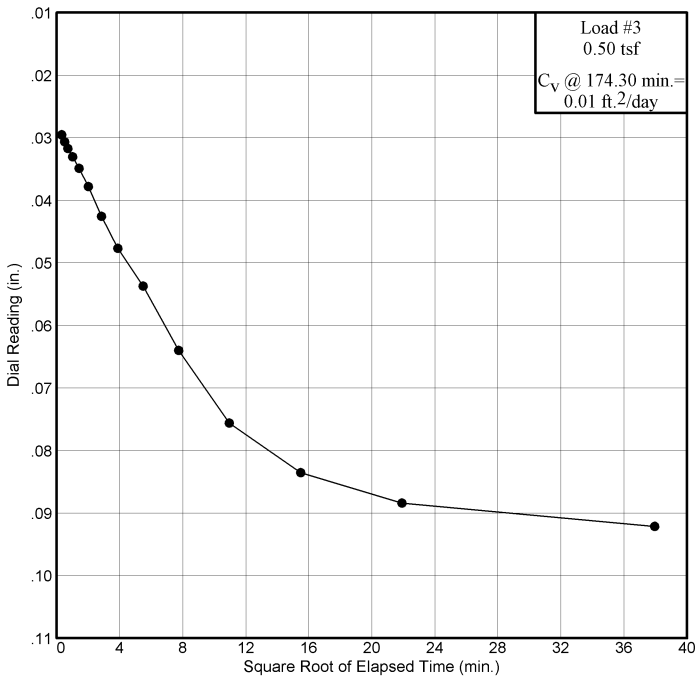
Remarks:
10-14-2021
GRAVEL: 0.0 %, SAND: 2.6 %
SILT: 61.1 %, CLAY: 36.3 %

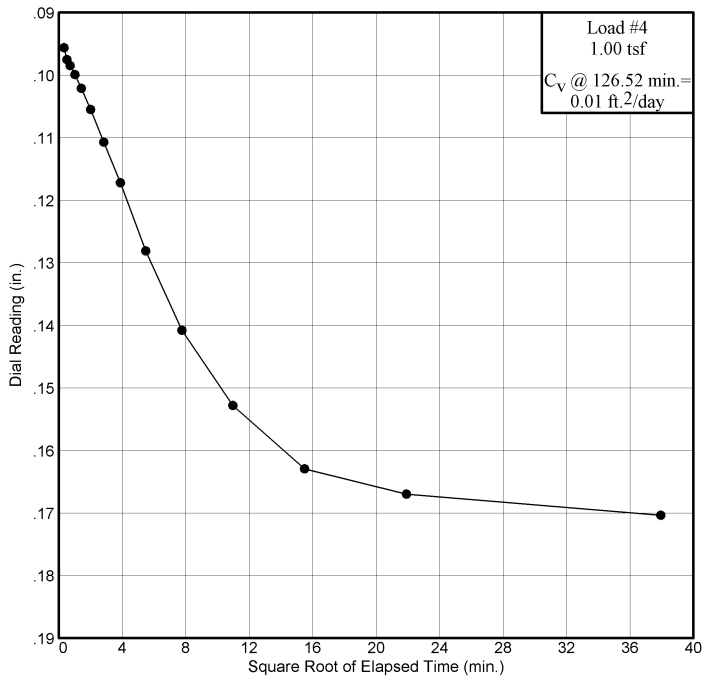
Geotechnical Engineering-Testing, Inc.
Mobile, AL

Figure

Dial Reading vs. Time

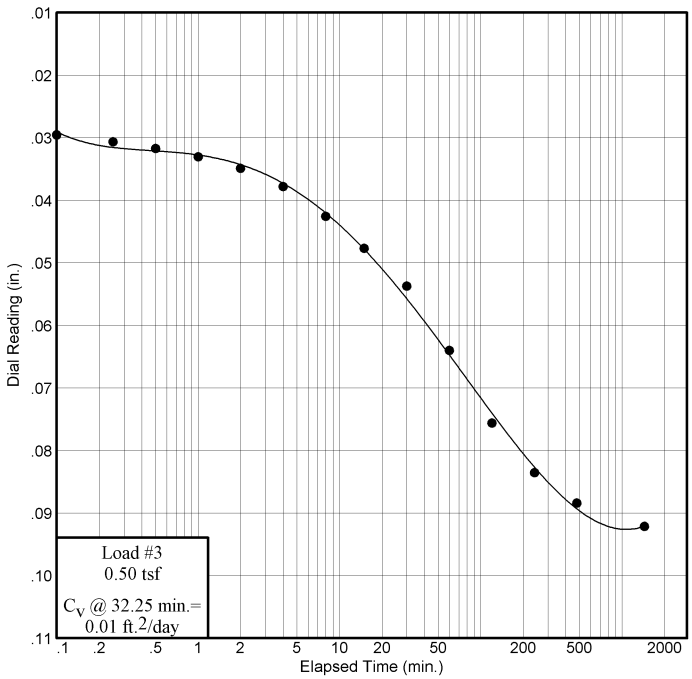
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-56, T-1 Elev./Depth: 18.0'-20.0'

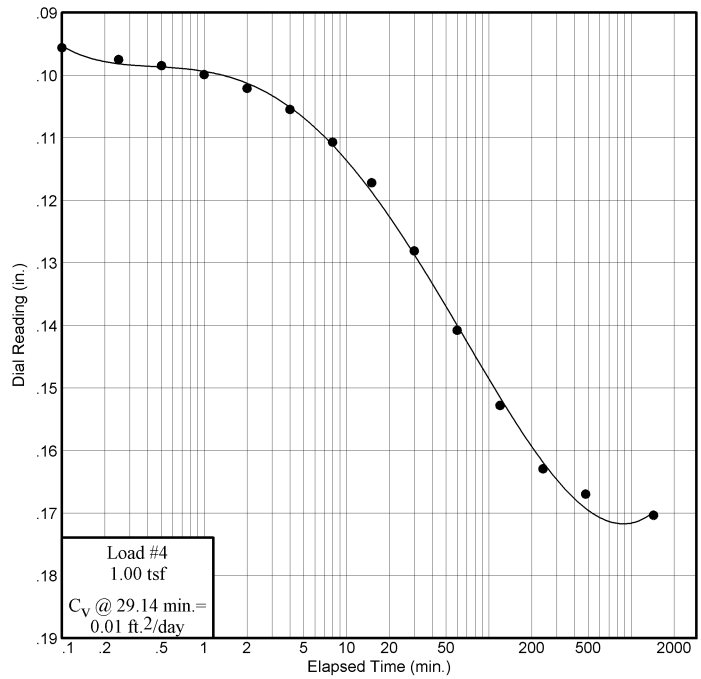




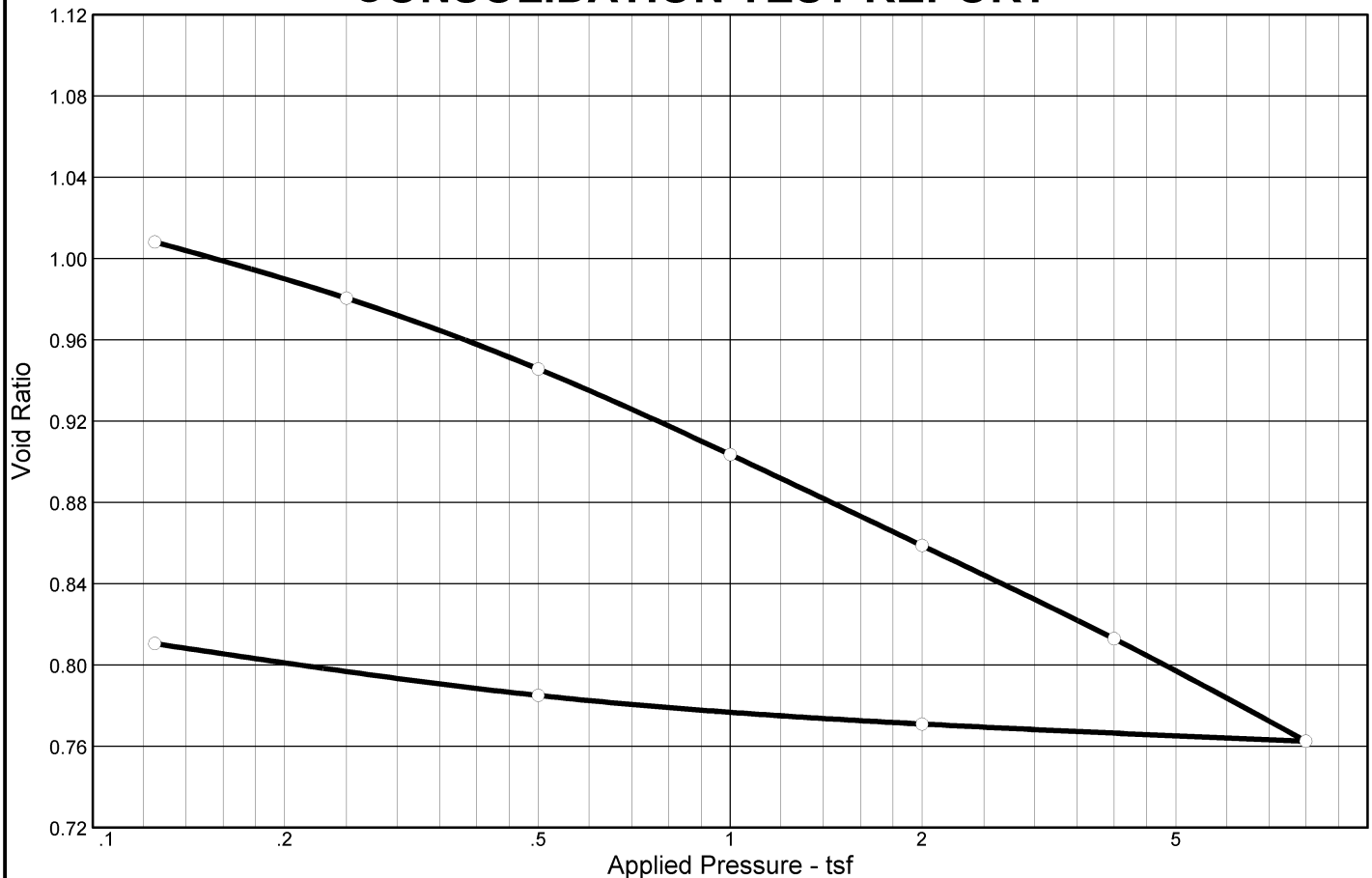
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-56, T-1 Elev./Depth: 18.0'-20.0'





CONSOLIDATION TEST REPORT



Coefficients of Consolidation and Secondary Consolidation

No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α	No.	Load (tsf)	C_v (ft.^{2}/day)	C_α
3	0.50	0.75									
4	1.00	0.76									

Natural Saturation	Natural Moisture	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	Initial Void Ratio
96.5 %	37.0 %	82.5	26	1	2.677		0.51	1.026

MATERIAL DESCRIPTION	USCS	AASHTO
Bluish Gray Silt	ML	A-4(0)

Project No. 21-126 **Client:**

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

Source: **Sample No.:** B-69, T-1 **Elev./Depth:** 10.0'-12.0'

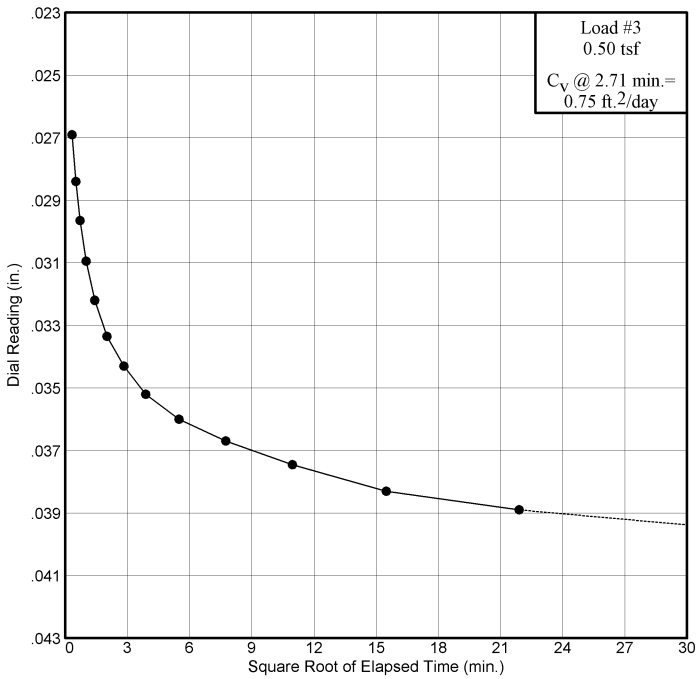
Remarks:
10-14-2021
GRAVEL: 0.0 %, SAND: 35.9 %
SILT: 41.3 %, CLAY: 22.8 %

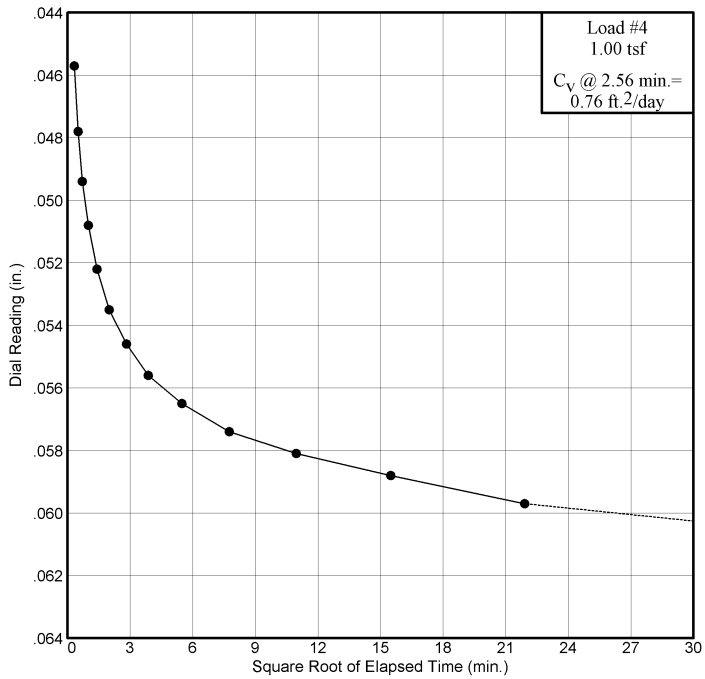
Geotechnical Engineering-Testing, Inc.
Mobile, AL

Figure

Dial Reading vs. Time

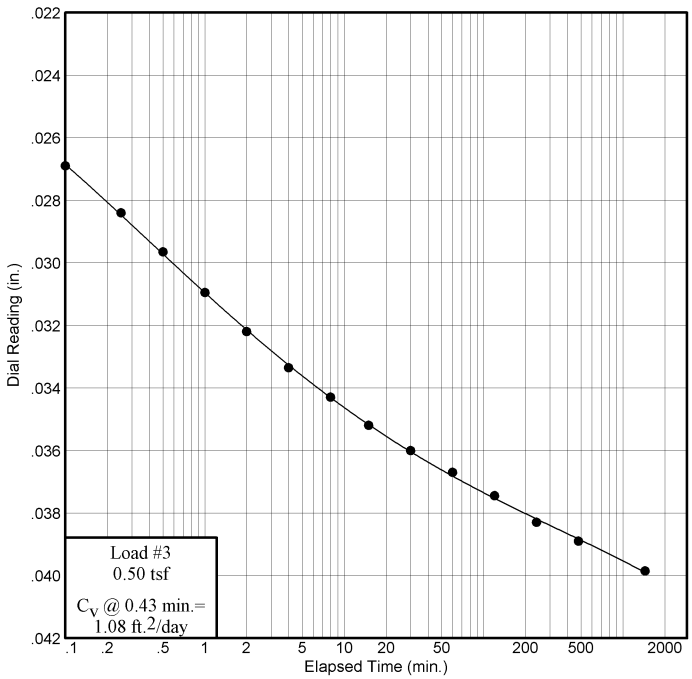
Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-69, T-1 Elev./Depth: 10.0'-12.0'

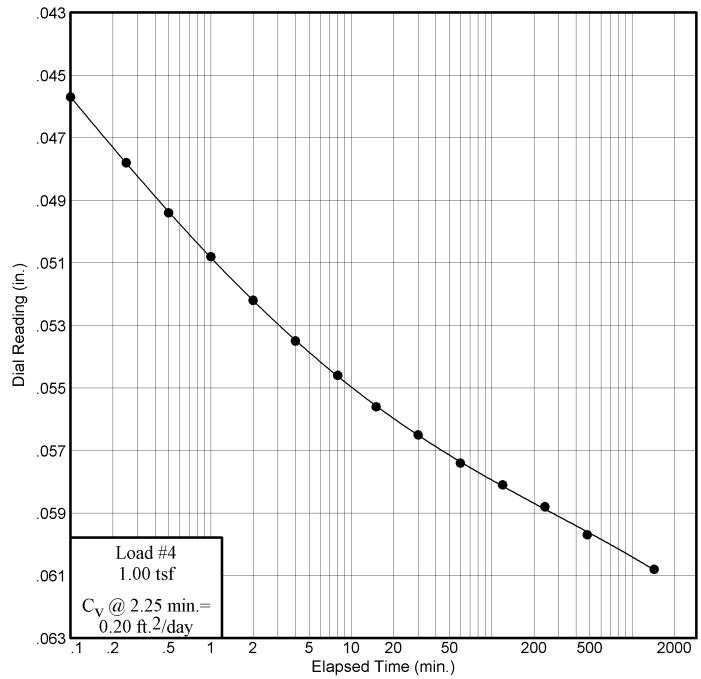


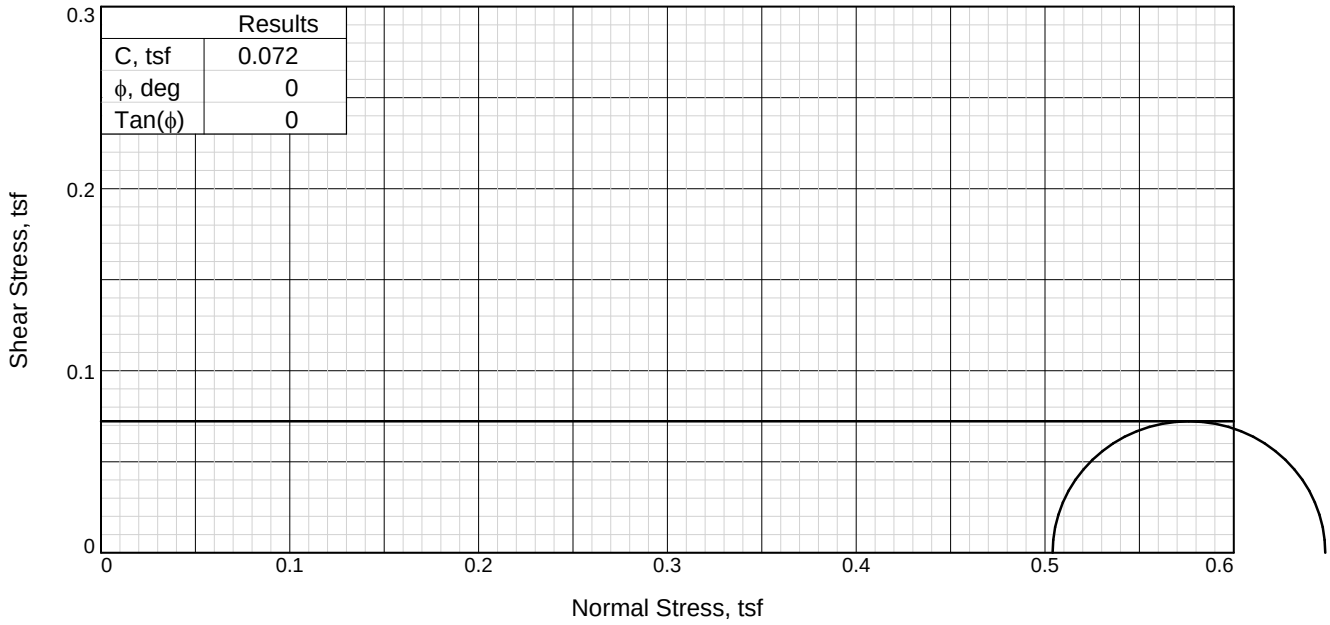


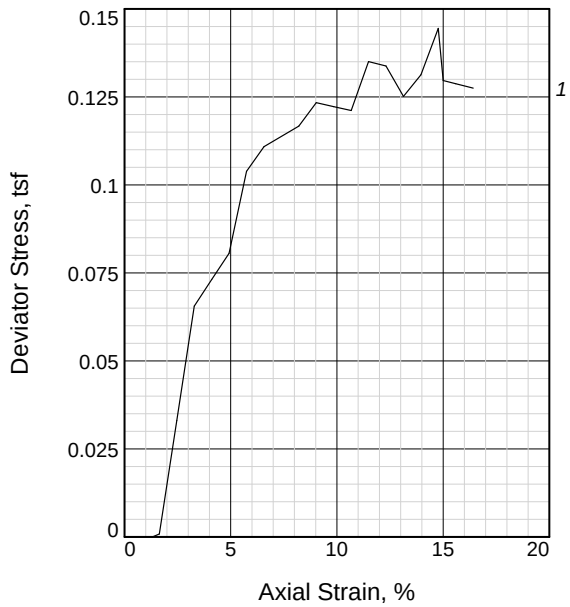
Dial Reading vs. Time

Project No.: 21-126
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Source: Sample No.: B-69, T-1 Elev./Depth: 10.0'-12.0'









Sample No.		1
Initial	Water Content, %	56.0
	Dry Density, pcf	65.7
	Saturation, %	97.1
	Void Ratio	1.5471
	Diameter, in.	1.40
	Height, in.	3.05
At Test	Water Content, %	57.7
	Dry Density, pcf	65.7
	Saturation, %	100.0
	Void Ratio	1.5471
	Diameter, in.	1.40
	Height, in.	3.05
Strain rate, in./min.		0.03
Back Pressure, psi		0.00
Cell Pressure, psi		7.00
Fail. Stress, tsf		0.14
Strain, %		14.8
Ult. Stress, tsf		0.14
Strain, %		
σ_1 Failure, tsf		0.65
σ_3 Failure, tsf		0.50

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Bluish Gray Fat Clay with Black Organics
LL= 53 **PL=** 19 **PI=** 34
Assumed Specific Gravity= 2.68
Remarks: 11-24-2021
GRAVEL: 0.0 %, SAND: 22.7 %, FINES: 77.3 %

Figure _____

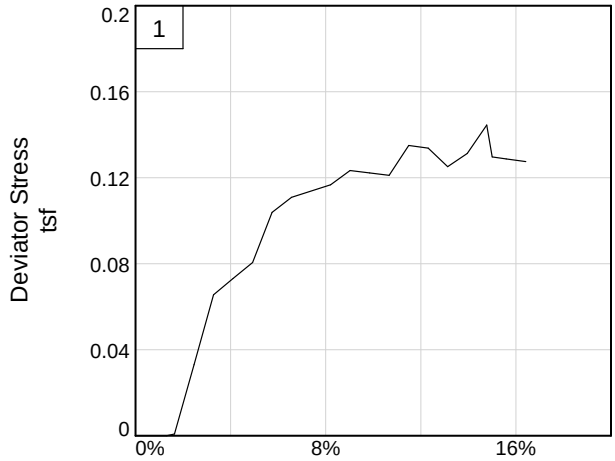
Client:

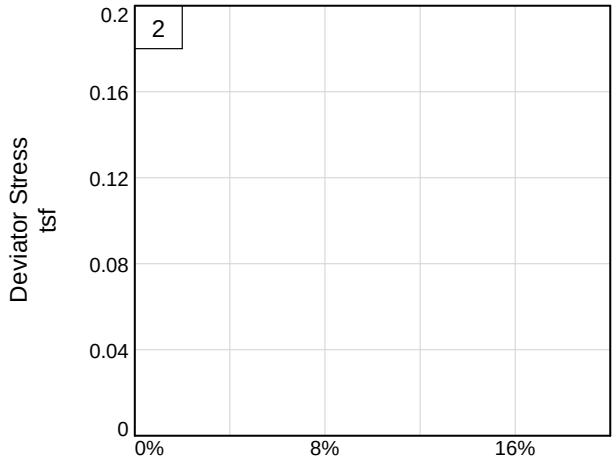
Project: A.S.P.A. UPPER BAY MARSH RESTORATION MOBILE COUNTY, ALABAMA
Sample Number: B-1, T-1 **Depth:** 10.0'-12.0'

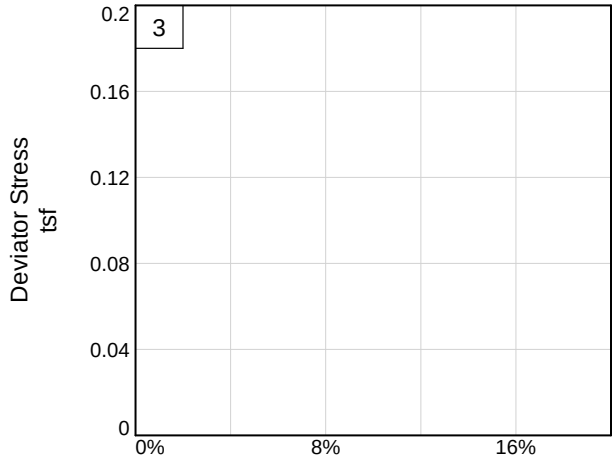
Proj. No.: 21-126 **Date Sampled:** 7-29-2021

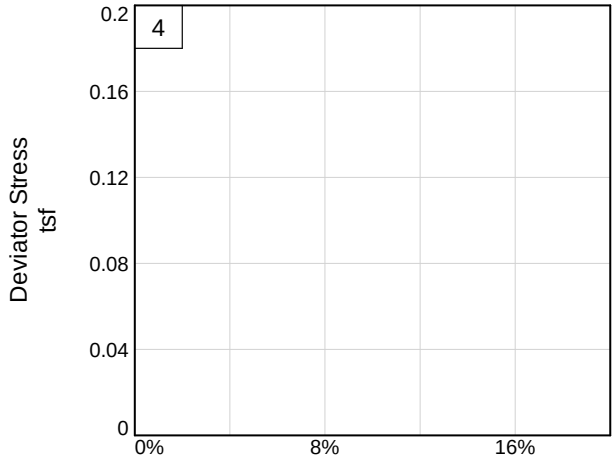
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

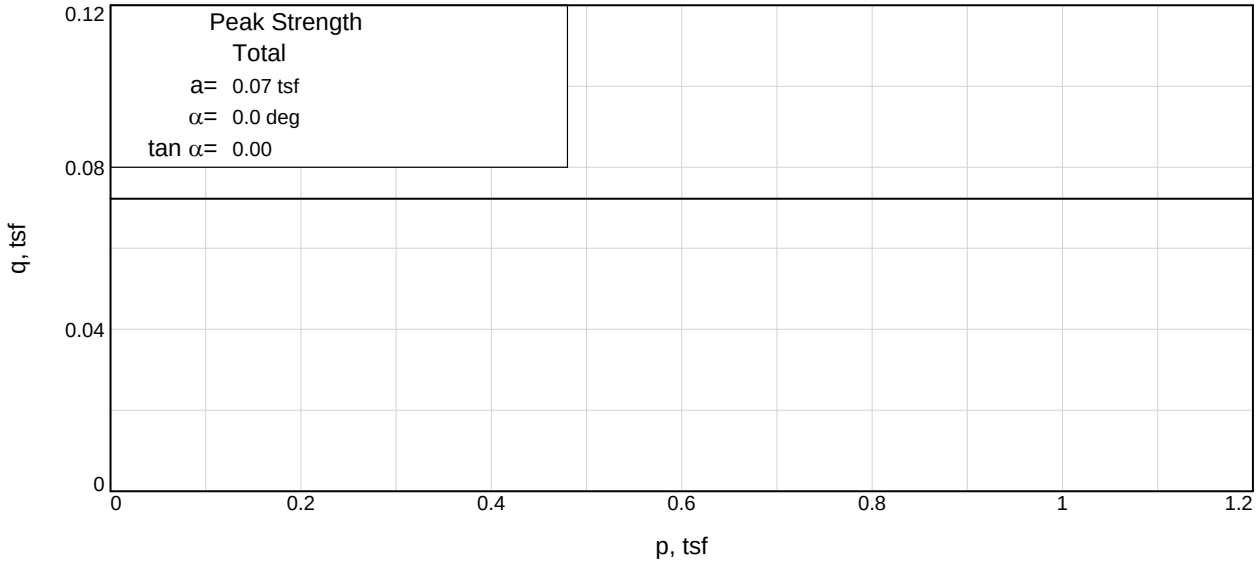
Tested By: RGP











Client:

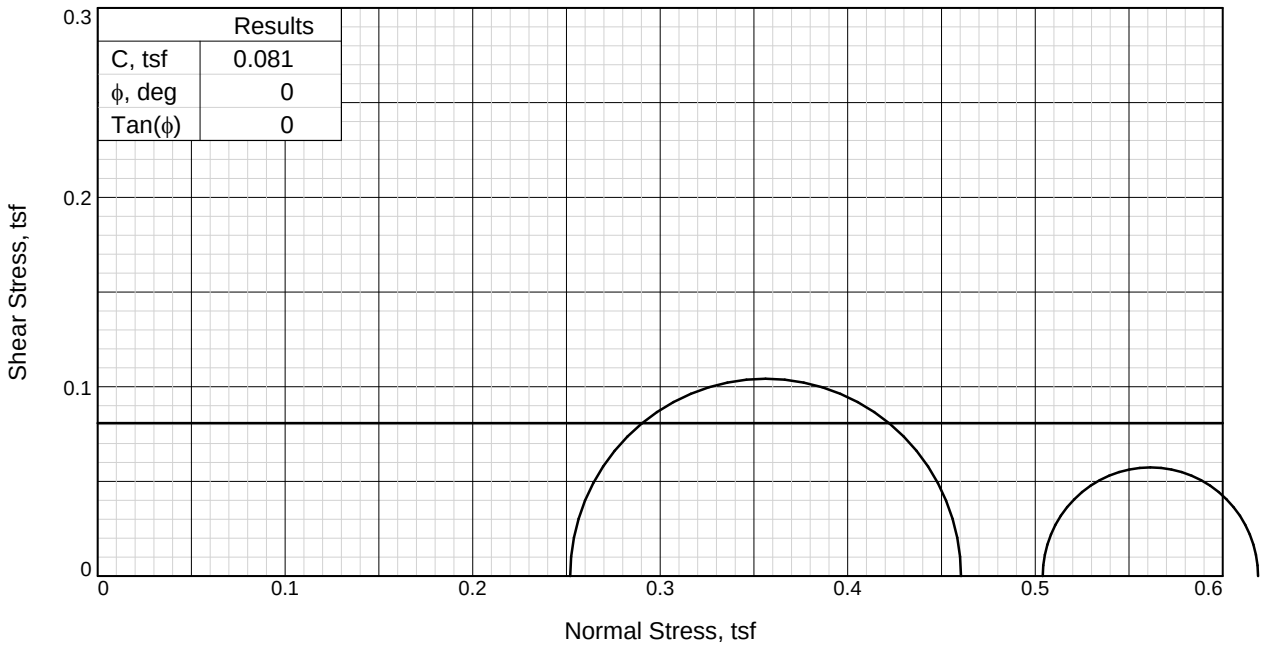
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

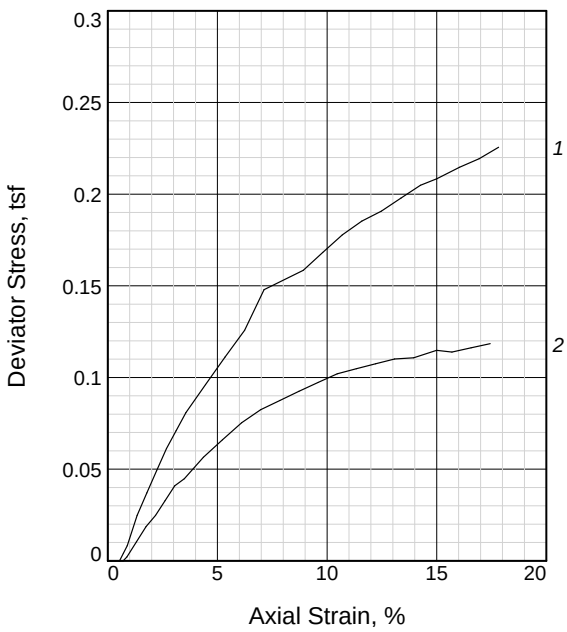
Depth: 10.0'-12.0' **Sample Number:** B-1, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: RGP





Sample No.		1	2
Initial	Water Content, %	37.8	45.7
	Dry Density, pcf	82.0	72.6
	Saturation, %	97.6	93.8
	Void Ratio	1.0391	1.3047
	Diameter, in.	2.80	2.81
	Height, in.	5.61	5.73
At Test	Water Content, %	38.8	48.7
	Dry Density, pcf	82.0	72.6
	Saturation, %	100.0	100.0
	Void Ratio	1.0391	1.3047
	Diameter, in.	2.80	2.81
	Height, in.	5.61	5.73
Strain rate, in./min.		0.06	0.06
Back Pressure, psi		0.00	0.00
Cell Pressure, psi		3.50	7.00
Fail. Stress, tsf		0.21	0.11
Strain, %		15.0	15.0
Ult. Stress, tsf		0.23	0.12
Strain, %			
σ_1 Failure, tsf		0.46	0.62
σ_3 Failure, tsf		0.25	0.50

Type of Test:
Unconsolidated Undrained

Sample Type: Undisturbed

Description: Bluish Gray and Gray Silty Sand

LL= 33 **PL=** 26 **PI=** 7

Assumed Specific Gravity= 2.68

Remarks: Two points only.

Client:

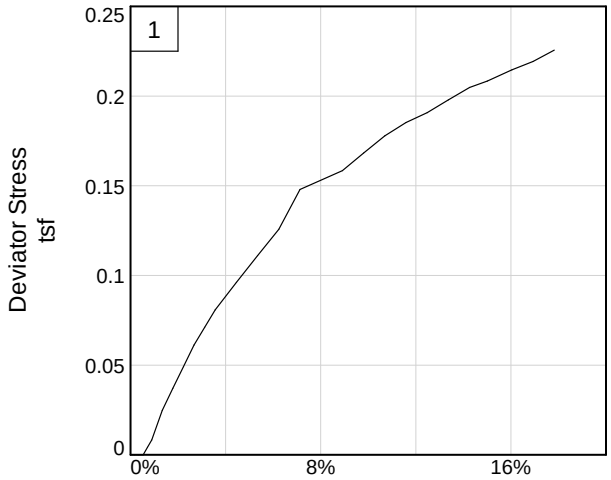
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA

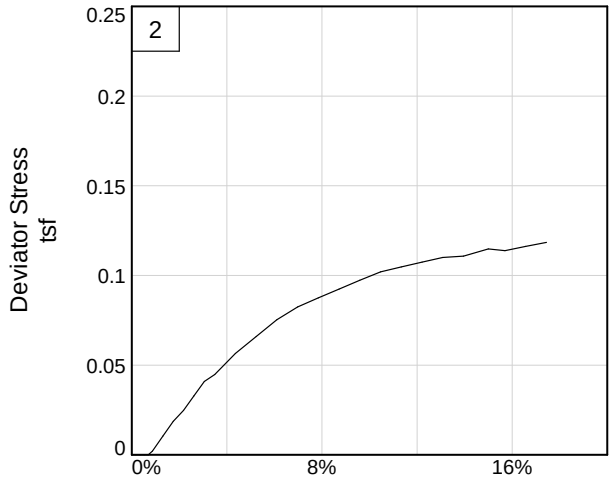
Sample Number: B-2, T-1 **Depth:** 10.0'-12.0'

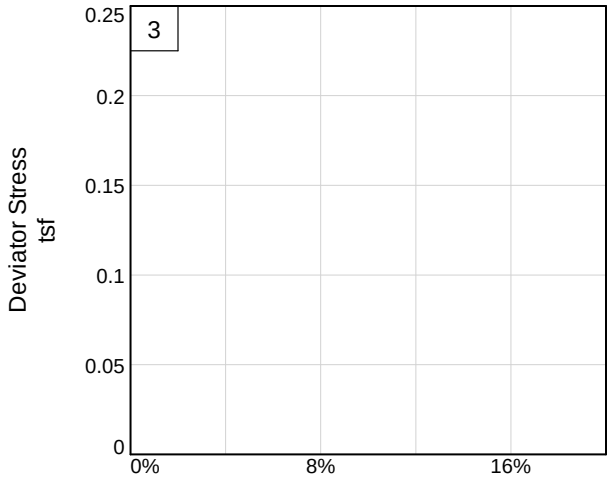
Proj. No.: 21-126 **Date Sampled:** 11-18-2021

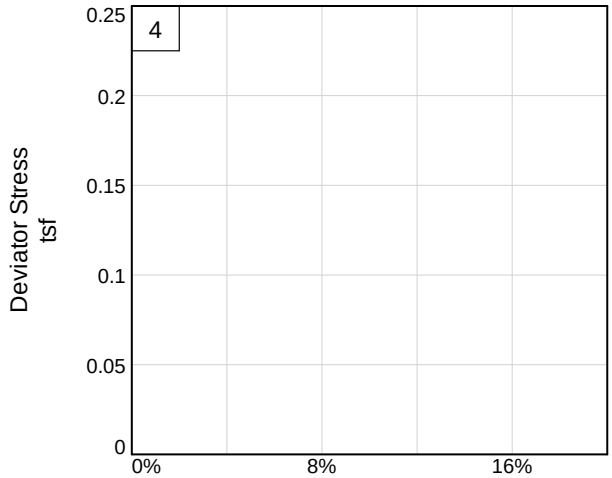
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

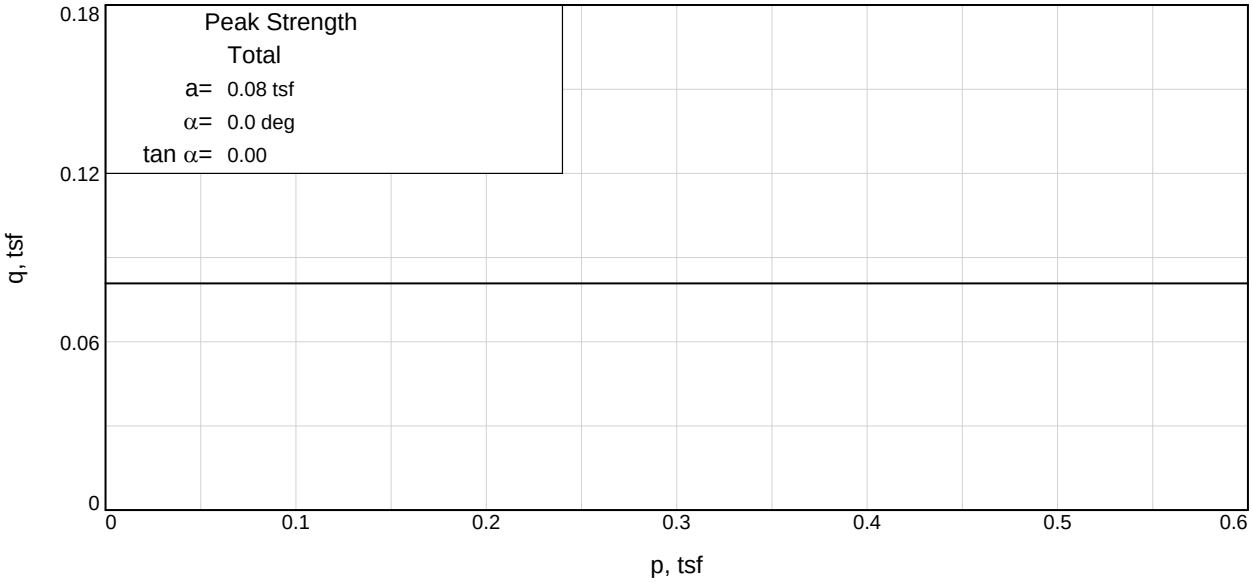
Figure _____











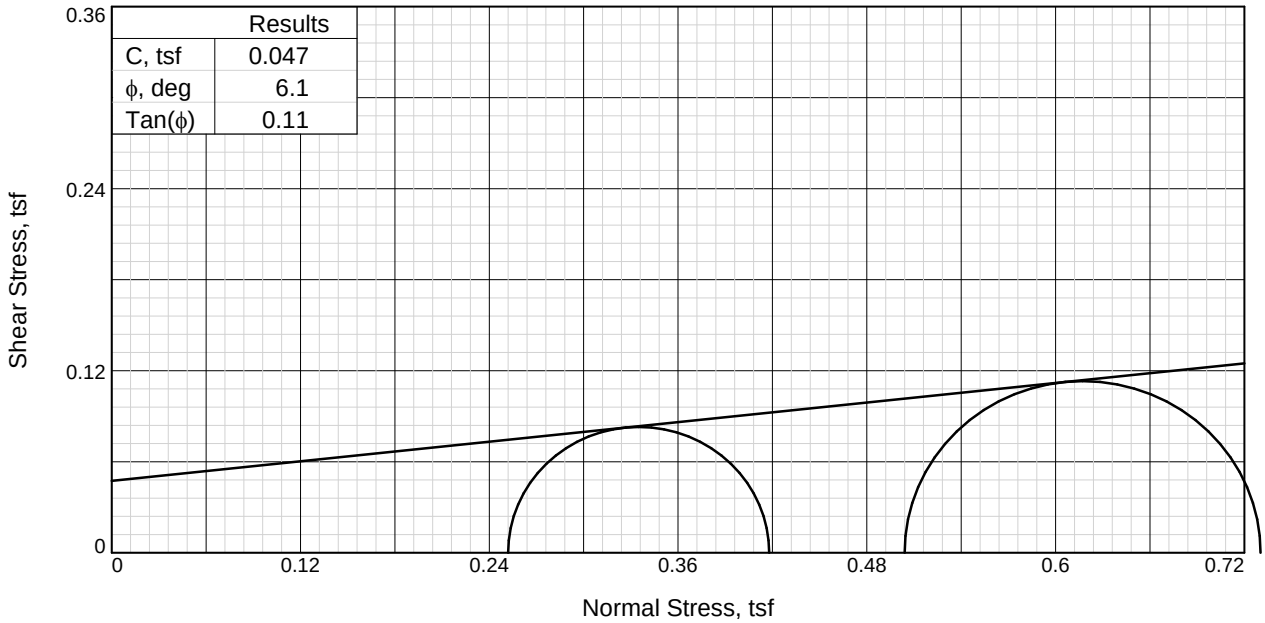
Client:

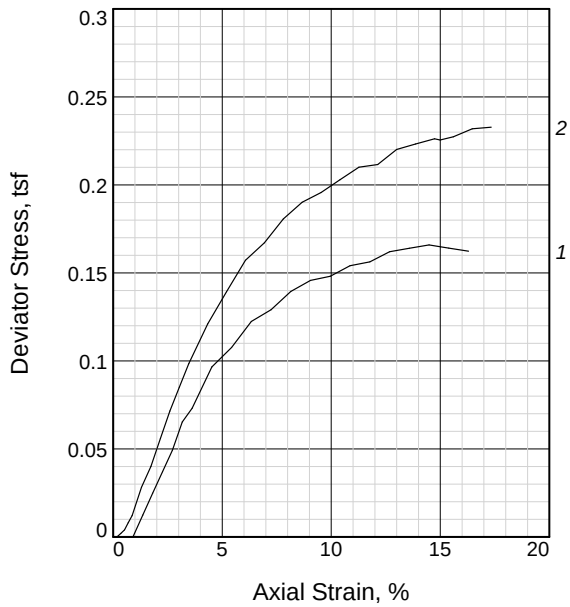
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

Depth: 10.0'-12.0' **Sample Number:** B-2, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.





Sample No.		1	2
Initial	Water Content, %	46.7	40.8
	Dry Density, pcf	73.8	80.0
	Saturation, %	98.9	99.9
	Void Ratio	1.2664	1.0983
	Diameter, in.	2.81	2.82
	Height, in.	5.52	5.77
At Test	Water Content, %	47.3	40.8
	Dry Density, pcf	73.8	80.0
	Saturation, %	100.0	100.0
	Void Ratio	1.2664	1.0983
	Diameter, in.	2.81	2.82
	Height, in.	5.52	5.77
Strain rate, in./min.		0.06	0.06
Back Pressure, psi		0.00	0.00
Cell Pressure, psi		3.50	7.00
Fail. Stress, tsf		0.17	0.23
Strain, %		14.5	14.7
Ult. Stress, tsf		0.17	0.23
Strain, %			
σ_1 Failure, tsf		0.42	0.73
σ_3 Failure, tsf		0.25	0.50

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Gray Lean Clay

LL= 40 **PL=** 26 **PI=** 14
Assumed Specific Gravity= 2.68
Remarks: TWO POINTS ONLY.

Figure _____

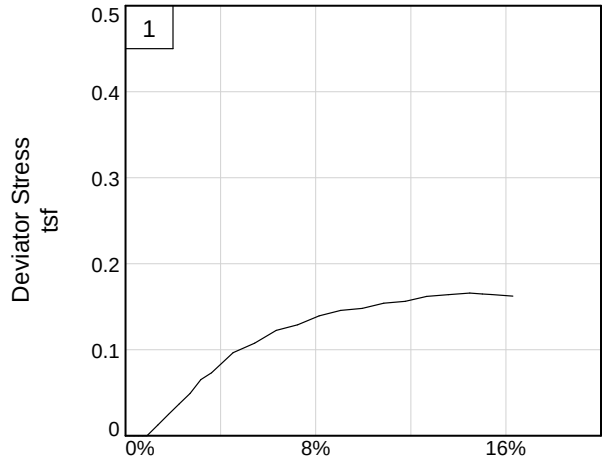
Client:

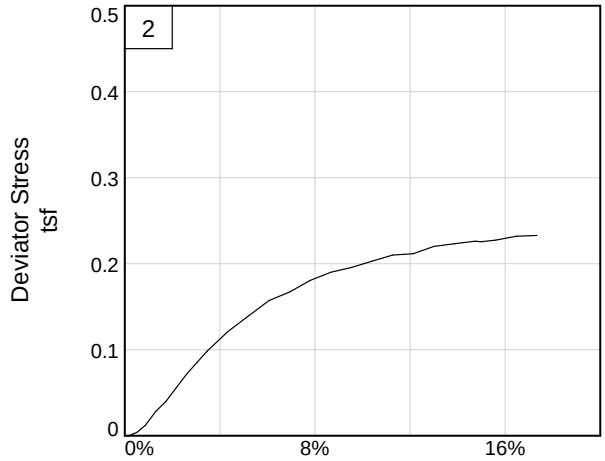
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-3, T-1 **Depth:** 10.0'-12.0'

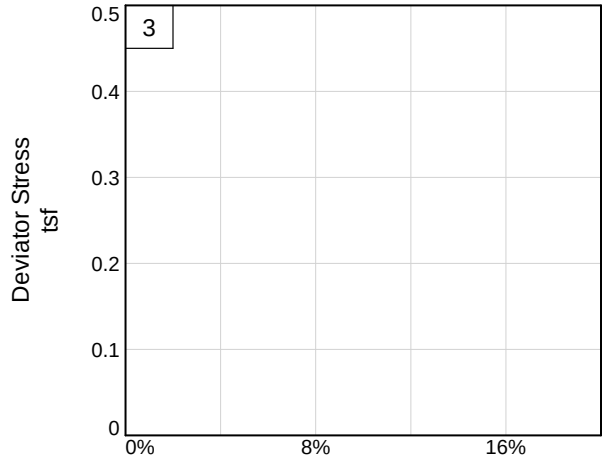
Proj. No.: 21-126 **Date Sampled:** 11-19-2021

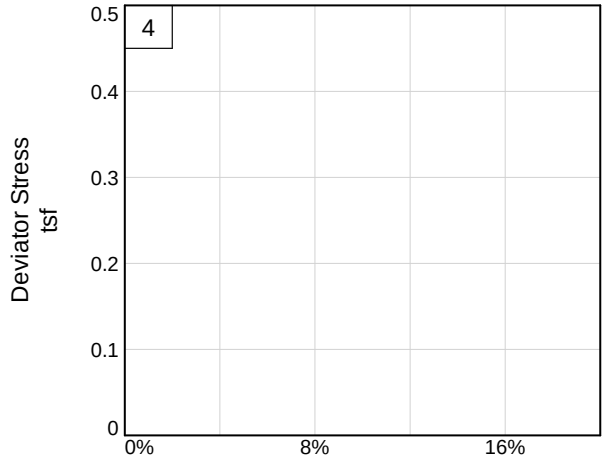
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

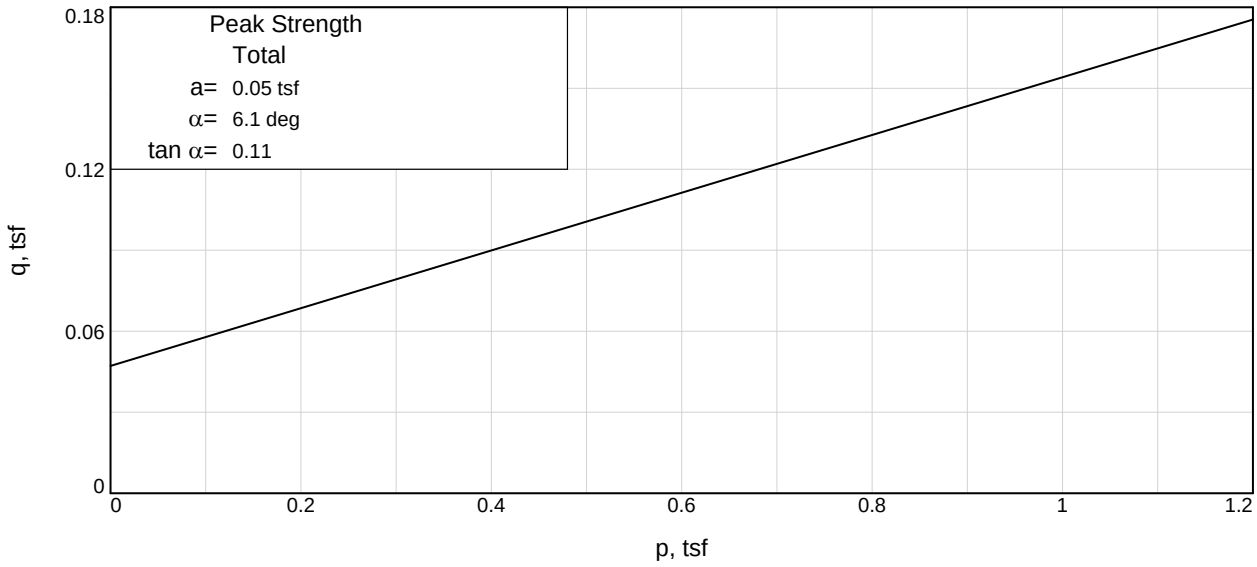
Tested By: RGP











Client:

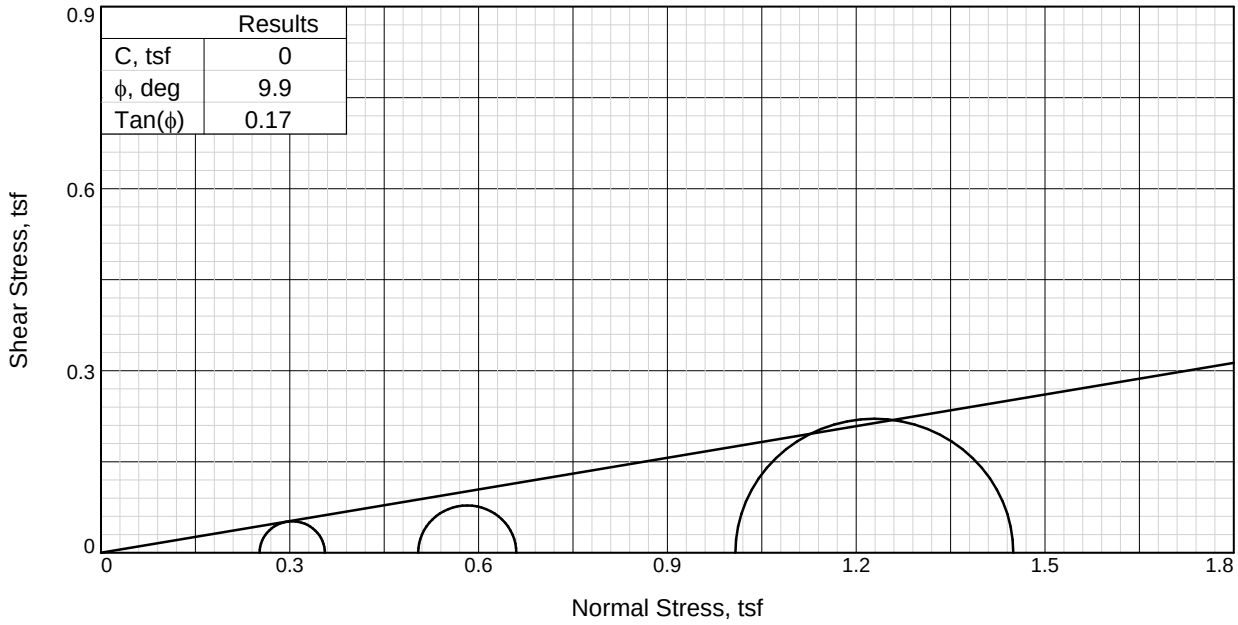
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

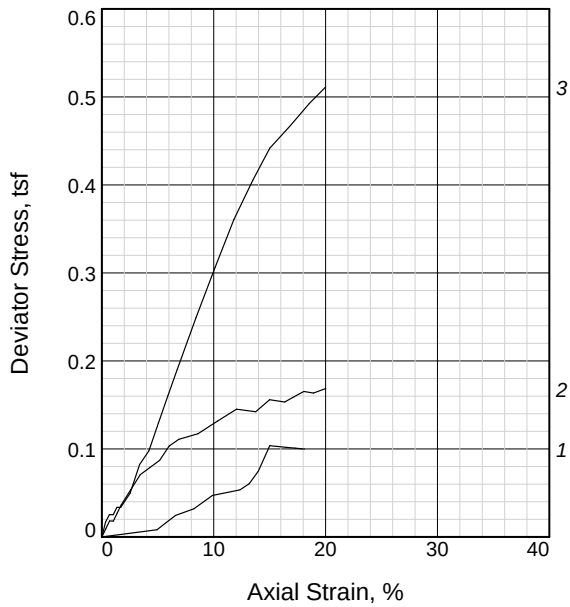
Depth: 10.0'-12.0' **Sample Number:** B-3, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: RGP





Sample No.		1	2	3
Initial	Water Content, %	46.9	43.8	37.6
	Dry Density, pcf	73.3	72.9	79.3
	Saturation, %	98.1	90.7	90.9
	Void Ratio	1.2816	1.2944	1.1092
	Diameter, in.	1.41	1.42	1.43
	Height, in.	3.08	3.08	3.03
At Test	Water Content, %	44.0	34.7	36.2
	Dry Density, pcf	76.8	86.7	84.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.1784	0.9301	0.9695
	Diameter, in.	1.38	1.34	1.40
	Height, in.	3.04	2.91	2.97
Strain rate, in./min.		0.03	0.03	0.03
Back Pressure, psi		0.00	0.00	0.00
Cell Pressure, psi		3.50	7.00	14.00
Fail. Stress, tsf		0.10	0.16	0.44
Strain, %		15.0	15.0	15.0
Ult. Stress, tsf		0.10	0.16	0.44
Strain, %				
σ_1 Failure, tsf		0.36	0.66	1.45
σ_3 Failure, tsf		0.25	0.50	1.01

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Gray Lean Clay

LL= 37 **PL=** 23 **PI=** 14
Assumed Specific Gravity= 2.68
Remarks:

Figure _____

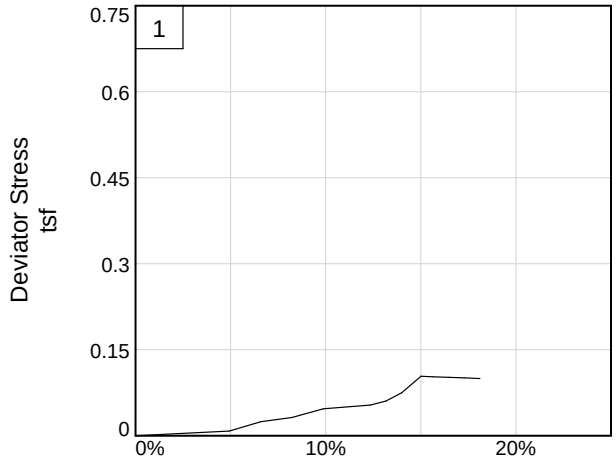
Client:

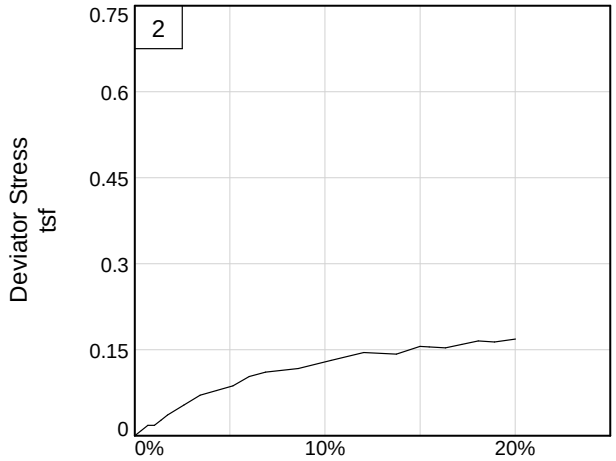
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-4, T-1 **Depth:** 10.0'-12.0'

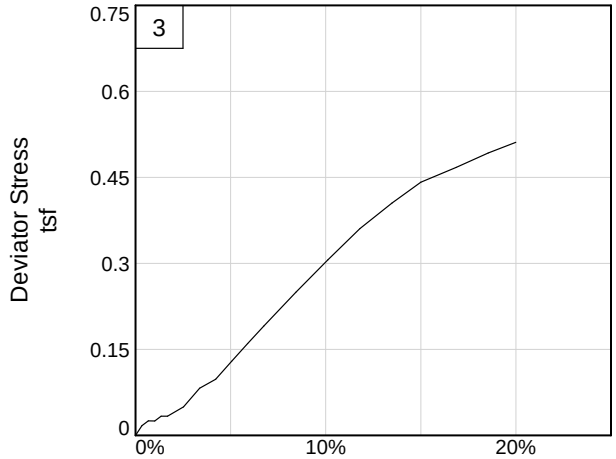
Proj. No.: 21-126 **Date Sampled:** 10-20-2021

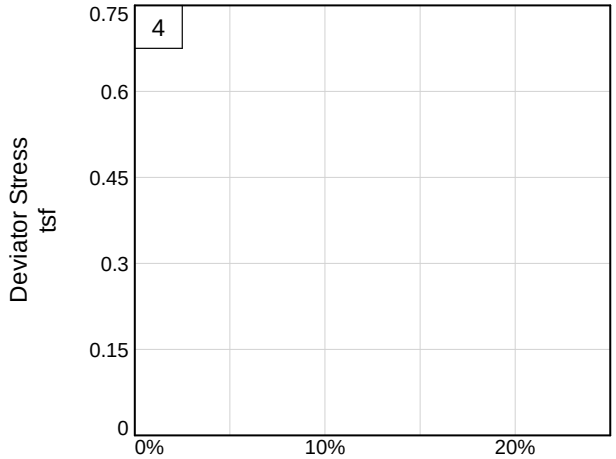
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

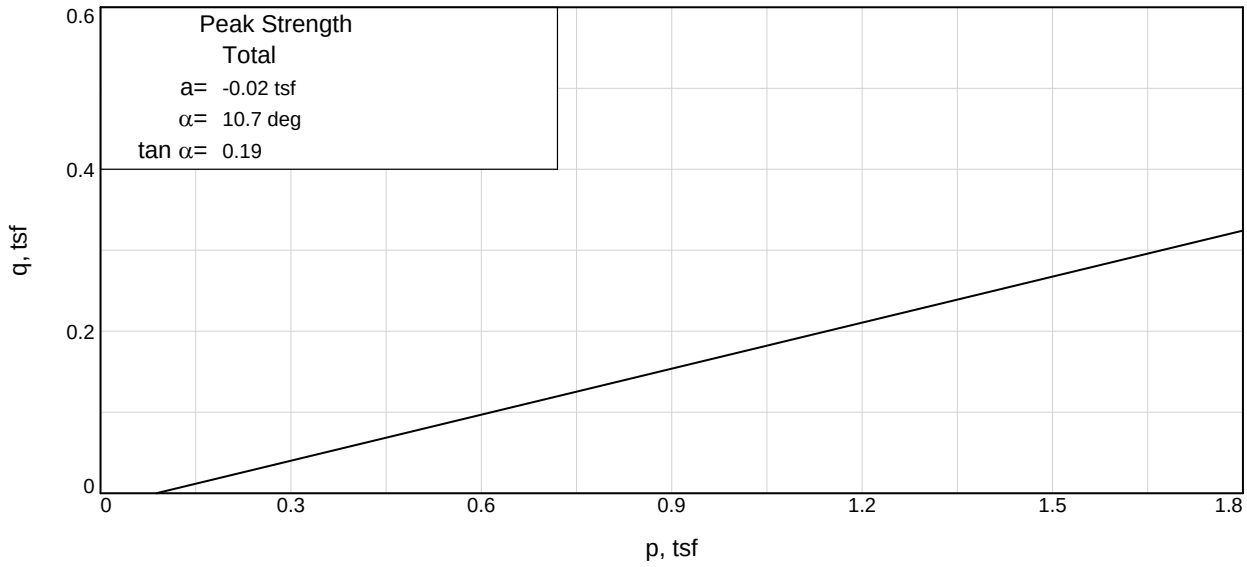
Tested By: RGP











Client:

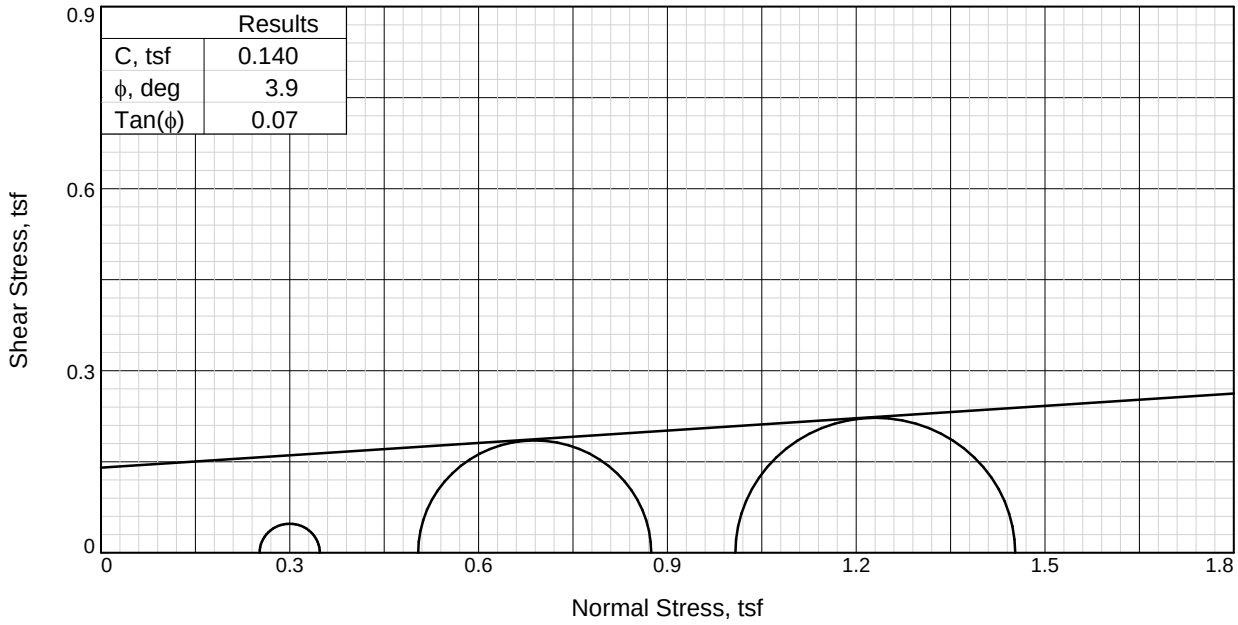
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

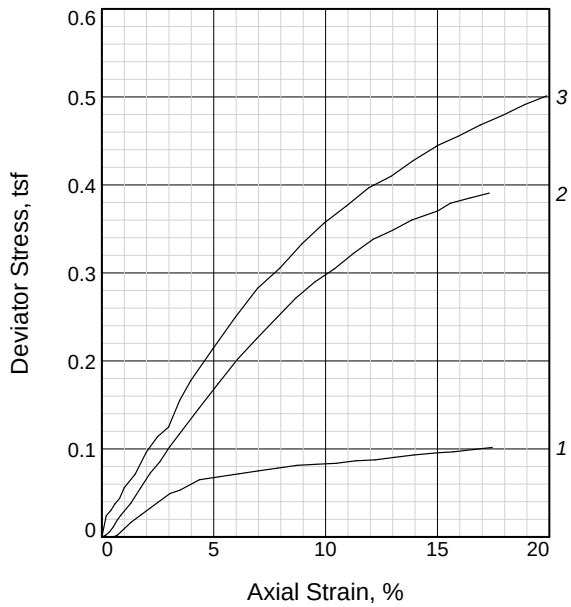
Depth: 10.0'-12.0' **Sample Number:** B-4, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: RGP





Sample No.		1	2	3
Initial	Water Content, %	51.3	39.0	38.0
	Dry Density, pcf	70.1	80.3	75.8
	Saturation, %	99.2	96.6	84.5
	Void Ratio	1.3853	1.0831	1.2065
	Diameter, in.	2.81	2.81	2.75
	Height, in.	5.74	5.77	5.03
At Test	Water Content, %	51.3	40.4	45.0
	Dry Density, pcf	70.4	80.3	75.8
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.3753	1.0831	1.2065
	Diameter, in.	2.81	2.81	2.75
	Height, in.	5.73	5.77	5.03
Strain rate, in./min.		0.06	0.06	0.06
Back Pressure, psi		0.00	0.00	0.00
Cell Pressure, psi		3.50	7.00	14.00
Fail. Stress, tsf		0.10	0.37	0.44
Strain, %		15.0	15.0	15.0
Ult. Stress, tsf		0.10	0.39	0.50
Strain, %				
σ_1 Failure, tsf		0.35	0.87	1.45
σ_3 Failure, tsf		0.25	0.50	1.01

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Gray Lean Silt

LL= 38 **PL=** 35 **PI=** 3
Assumed Specific Gravity= 2.68
Remarks:

Client:

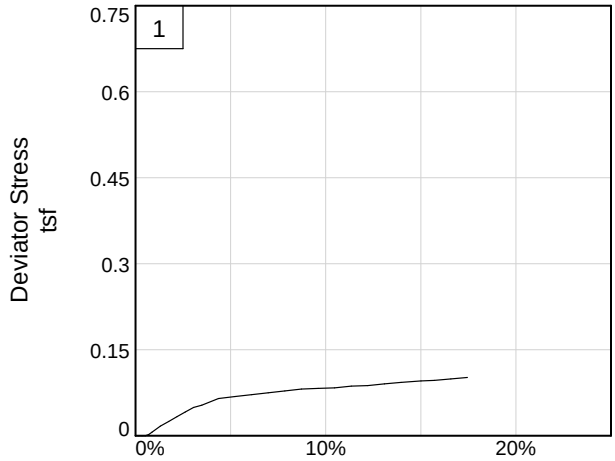
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-9A, T-1 **Depth:** 10.0'-12.0'

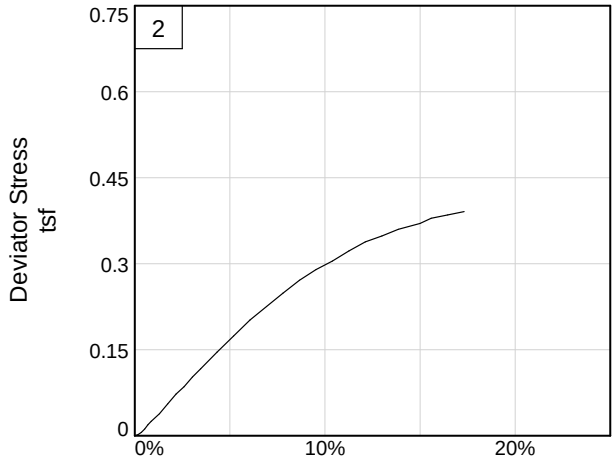
Proj. No.: 21-126 **Date Sampled:**

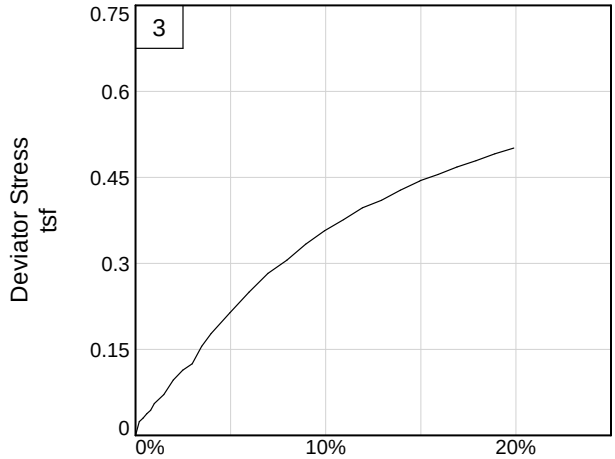
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

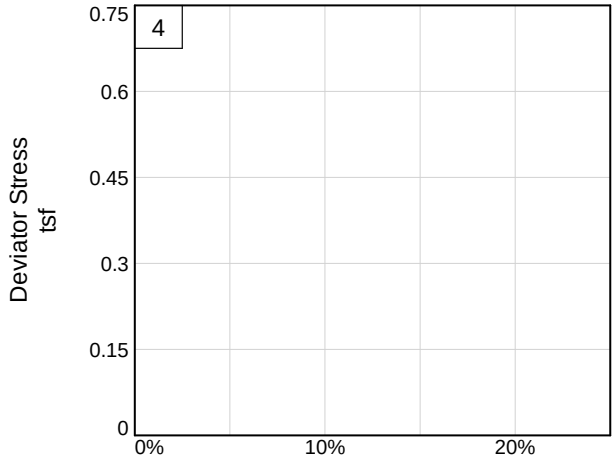
Figure _____

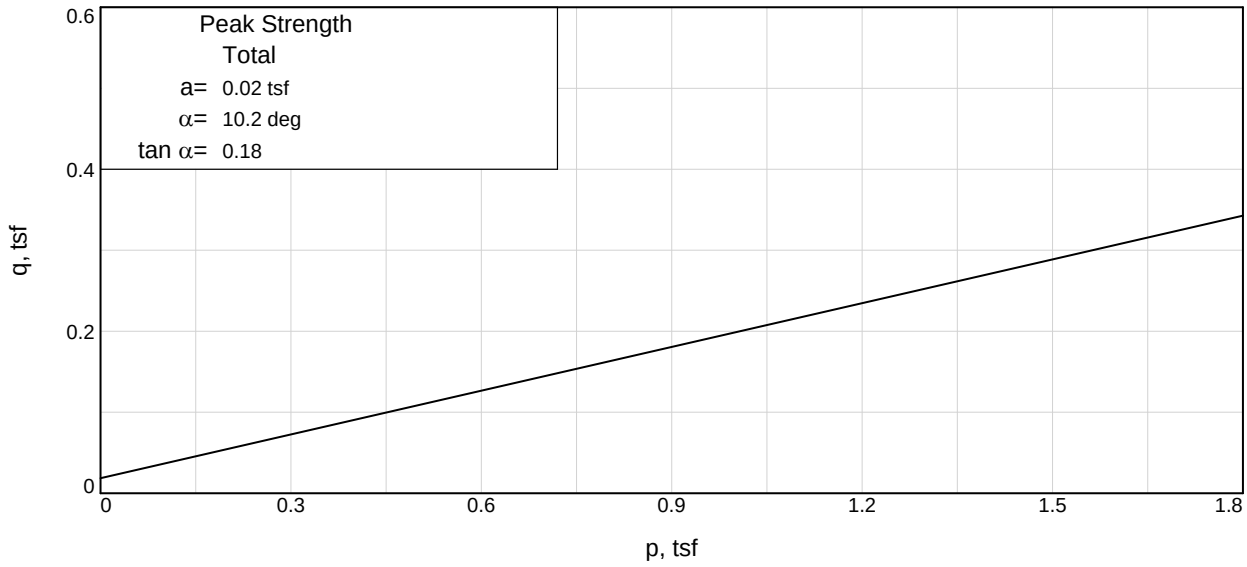
Tested By: RGP











Client:

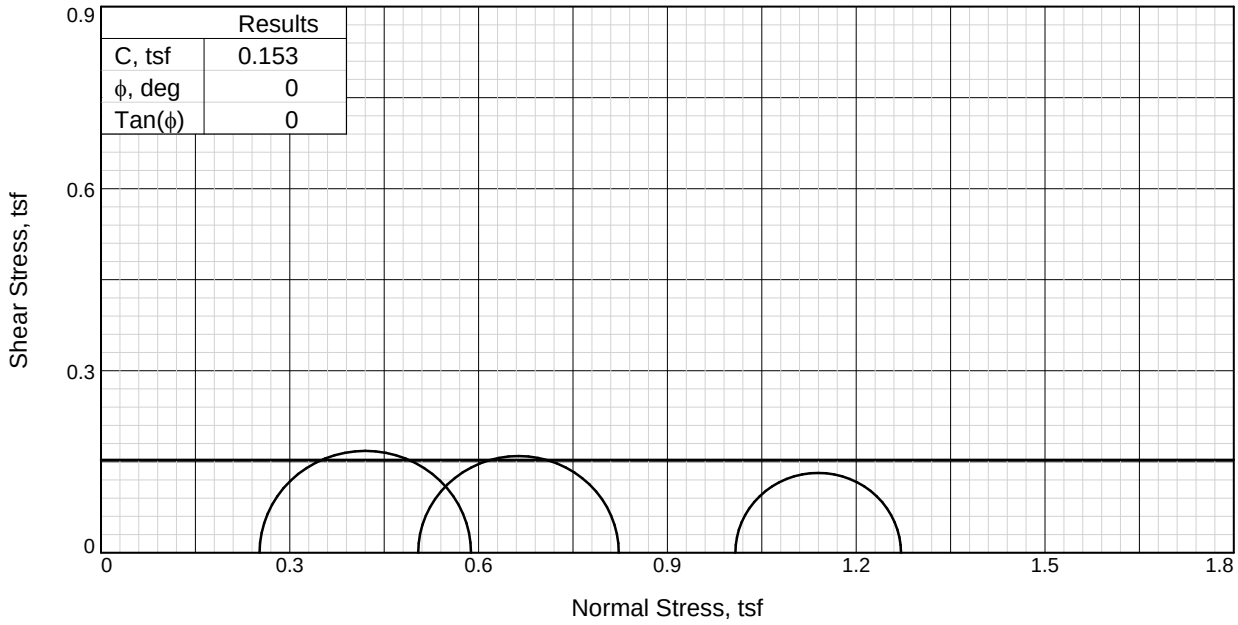
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

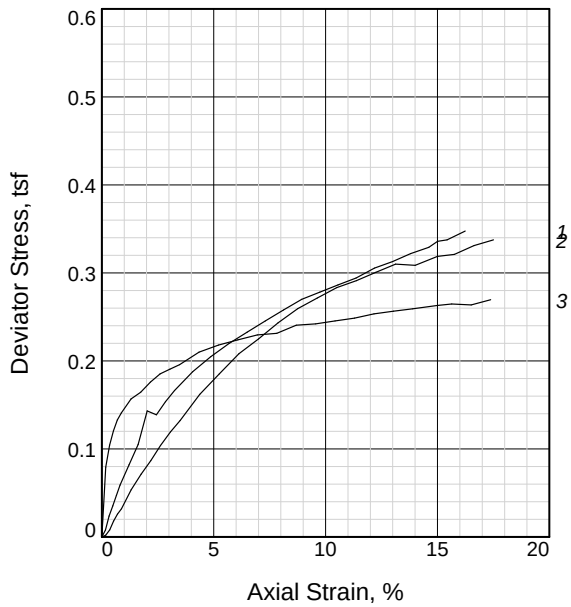
Depth: 10.0'-12.0' **Sample Number:** B-9A, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: RGP





Sample No.		1	2	3
Initial	Water Content, %	39.4	38.5	43.9
	Dry Density, pcf	75.8	80.4	76.3
	Saturation, %	87.7	95.5	98.5
	Void Ratio	1.2059	1.0799	1.1938
	Diameter, in.	2.81	2.79	2.77
	Height, in.	6.16	5.72	5.77
At Test	Water Content, %	45.0	40.2	44.1
	Dry Density, pcf	75.8	80.6	76.7
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.2059	1.0766	1.1813
	Diameter, in.	2.81	2.79	2.77
	Height, in.	6.16	5.71	5.76
Strain rate, in./min.		0.06	0.06	0.06
Back Pressure, psi		0.00	0.00	0.00
Cell Pressure, psi		3.50	7.00	14.00
Fail. Stress, tsf		0.34	0.32	0.26
Strain, %		15.0	15.0	15.0
Ult. Stress, tsf		0.35	0.34	0.27
Strain, %				
σ_1 Failure, tsf		0.59	0.82	1.27
σ_3 Failure, tsf		0.25	0.50	1.01

Type of Test:
Unconsolidated Undrained
Sample Type: 26Undisturbed
Description: Gray Lean Silt

LL= 26 **PI=** NP
Assumed Specific Gravity= 2.68
Remarks:

Figure _____

Client:

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-12, T-1 **Depth:** 10.0'-12.0'

Proj. No.: 21-126 **Date Sampled:** 11-15-2021

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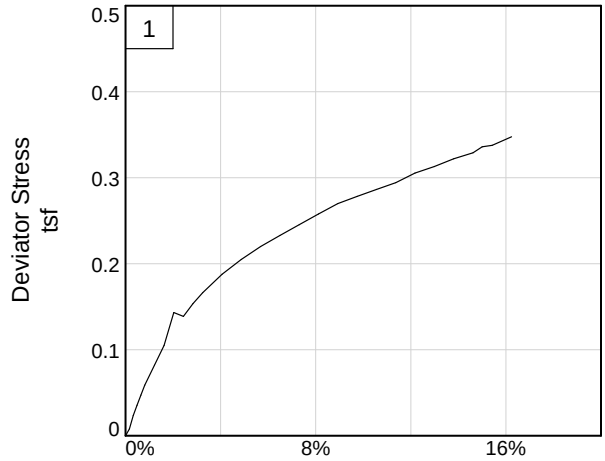
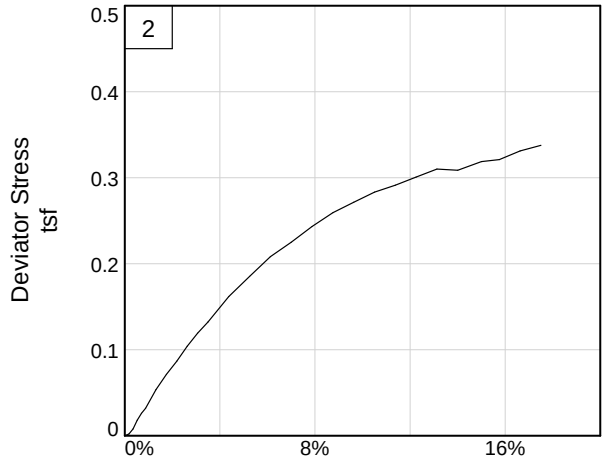
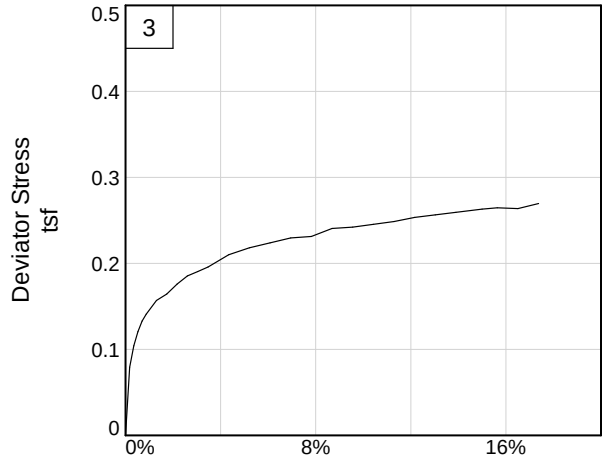
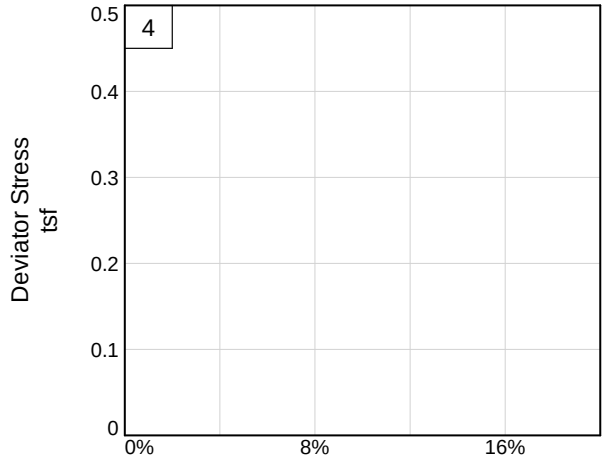
Geotechnical Engineering-Testing, Inc.
Mobile, AL

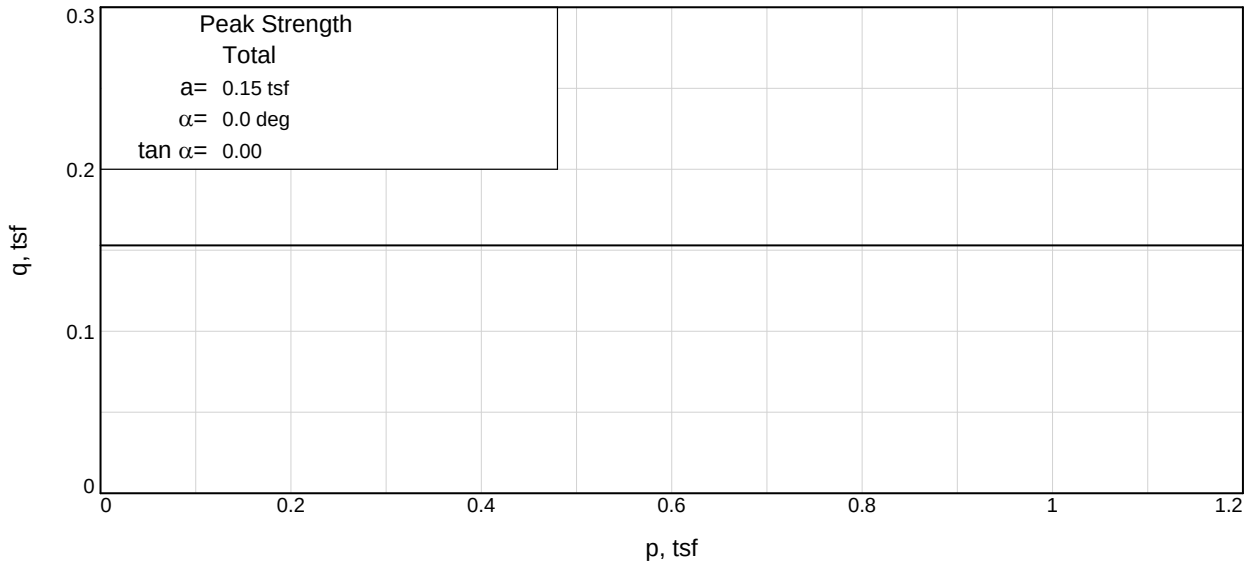
Tested By: RGP











Client:

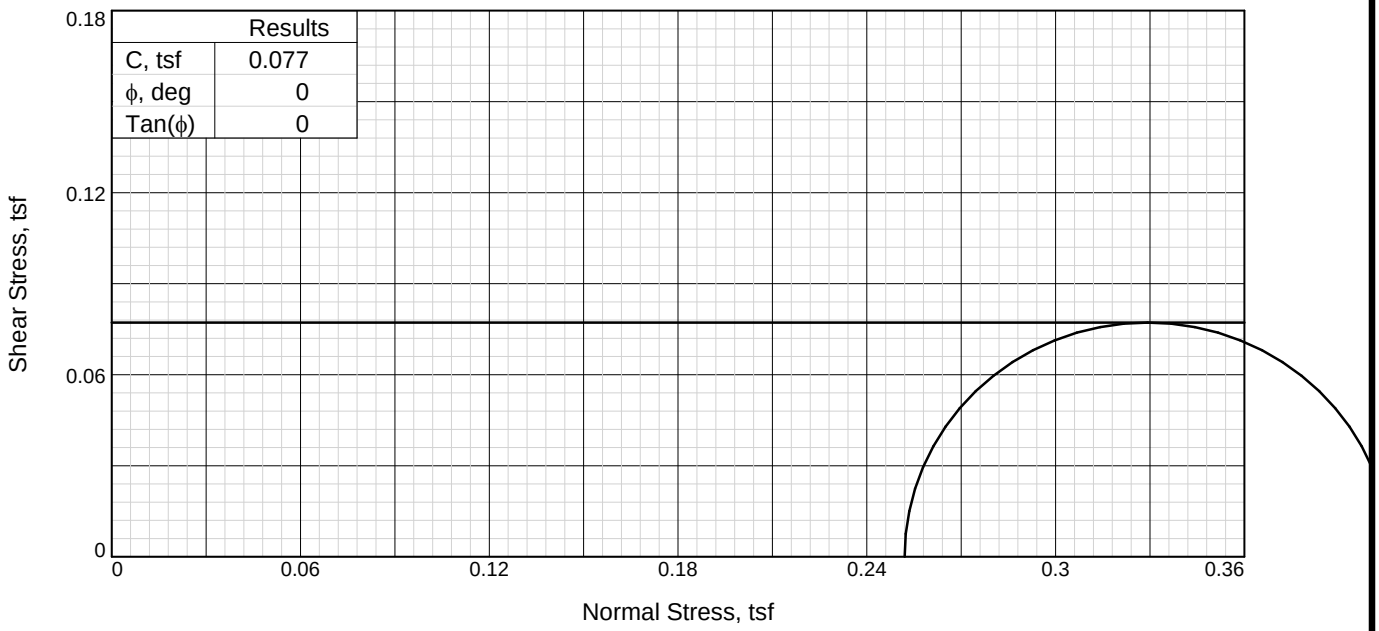
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

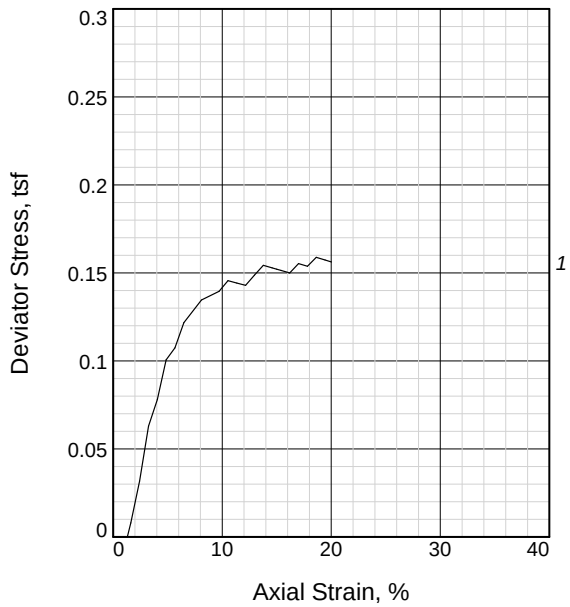
Depth: 10.0'-12.0' **Sample Number:** B-12, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: RGP





Sample No.		1
Initial	Water Content, %	47.4
	Dry Density, pcf	74.2
	Saturation, %	103.6
	Void Ratio	1.1896
	Diameter, in.	1.40
	Height, in.	3.09
At Test	Water Content, %	45.6
	Dry Density, pcf	74.3
	Saturation, %	100.0
	Void Ratio	1.1853
	Diameter, in.	1.39
	Height, in.	3.09
Strain rate, in./min.		0.03
Back Pressure, psi		0.00
Cell Pressure, psi		3.50
Fail. Stress, tsf		0.15
Strain, %		13.8
Ult. Stress, tsf		0.15
Strain, %		
σ_1 Failure, tsf		0.41
σ_3 Failure, tsf		0.25

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Bluish Gray Fat Clay

LL= 50 **PL=** 21 **PI=** 29
Assumed Specific Gravity= 2.60091
Remarks:

Client:

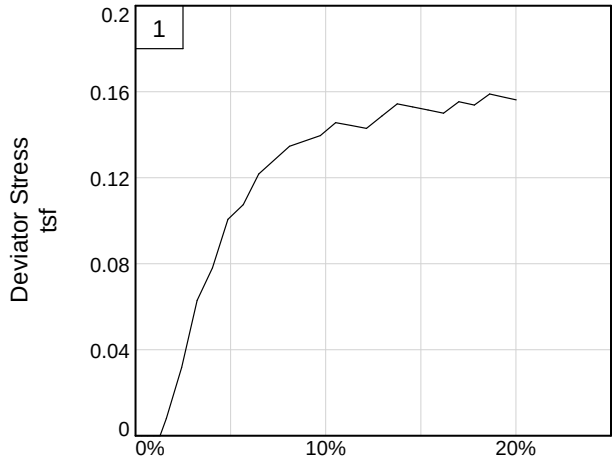
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-21, T-2 **Depth:** 14.5'-16.5'

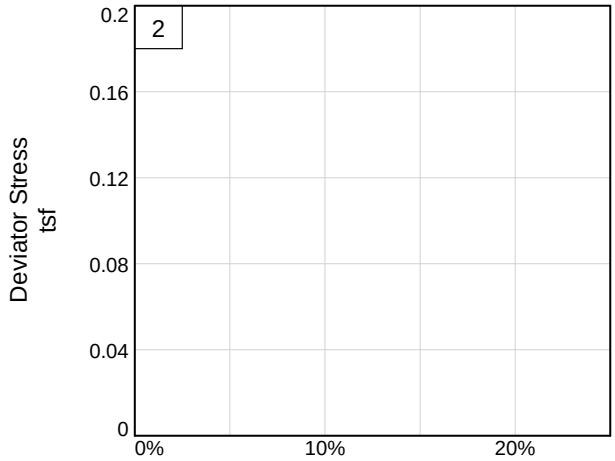
Proj. No.: 21-126 **Date Sampled:** 08-26-2021

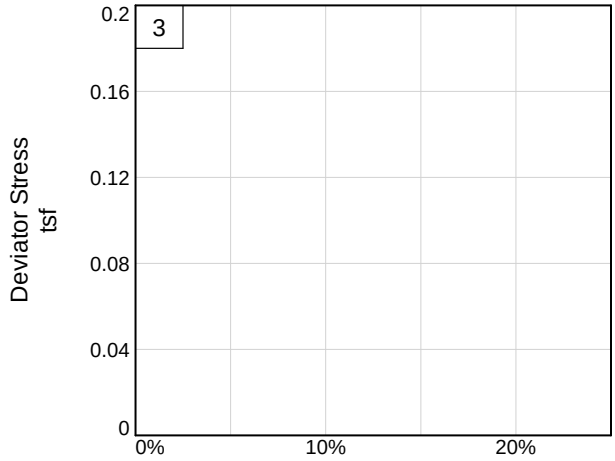
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

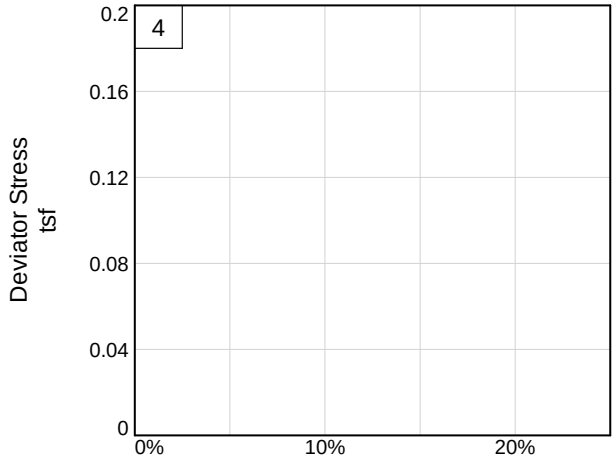
Figure _____

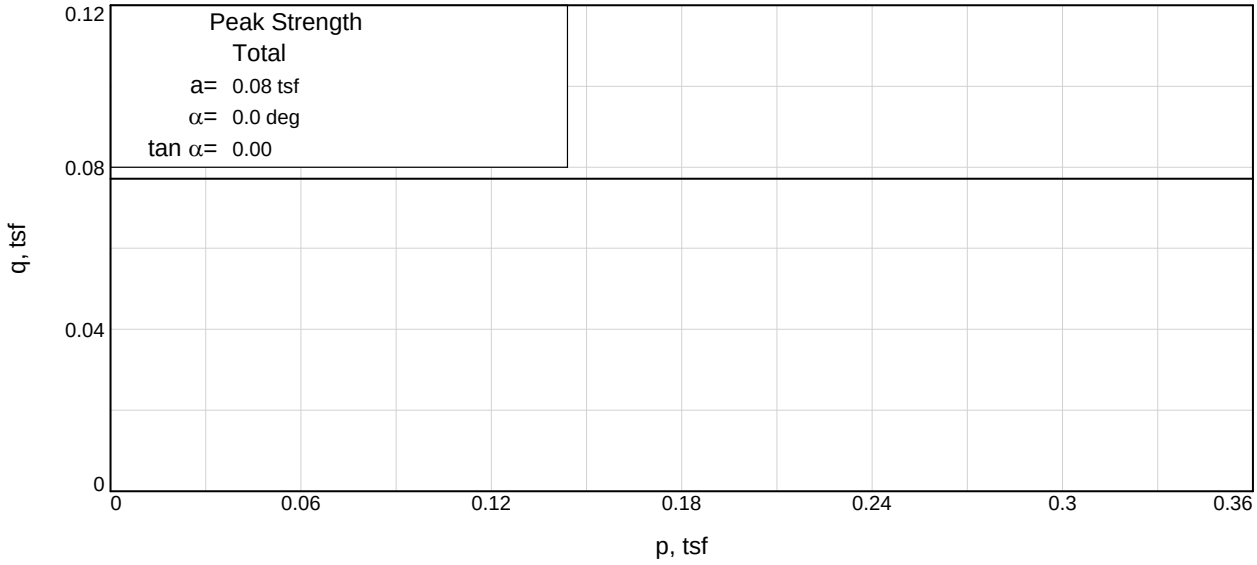
Tested By: RGP











Client:

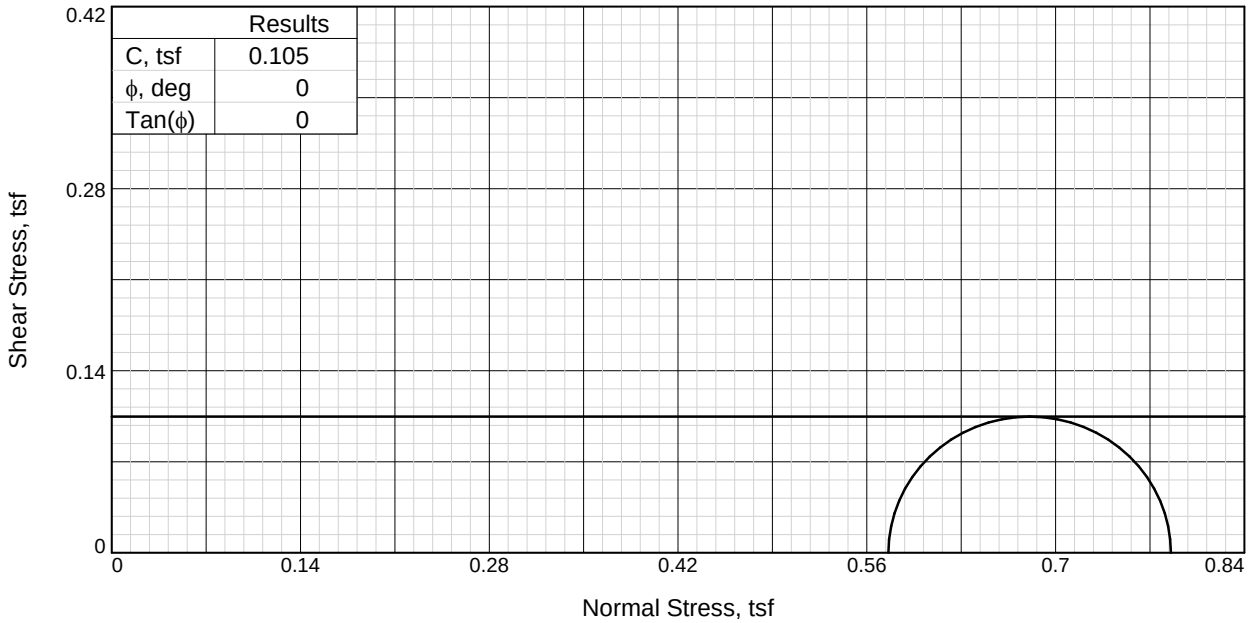
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

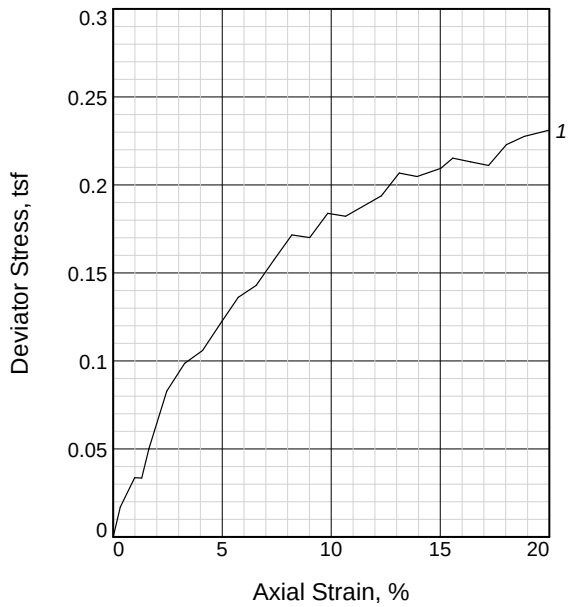
Depth: 14.5'-16.5' **Sample Number:** B-21, T-2

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: RGP





Sample No.		1
Initial	Water Content, %	42.5
	Dry Density, pcf	76.8
	Saturation, %	96.8
	Void Ratio	1.1777
	Diameter, in.	1.41
	Height, in.	3.07
At Test	Water Content, %	42.1
	Dry Density, pcf	78.7
	Saturation, %	100.0
	Void Ratio	1.1269
	Diameter, in.	1.40
	Height, in.	3.05
Strain rate, in./min.		0.03
Back Pressure, psi		0.00
Cell Pressure, psi		8.00
Fail. Stress, tsf		0.21
Strain, %		15.0
Ult. Stress, tsf		0.21
Strain, %		
σ_1 Failure, tsf		0.79
σ_3 Failure, tsf		0.58

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Bluish Gray Sandy Lean Clay

LL= 29 **PL=** 20 **PI=** 9
Assumed Specific Gravity= 2.68
Remarks: 10-20-2021
GRAVEL: 0.1 %, SAND: 36.1 %
SILT: 52.0 %, CLAY: 11.8 %

Figure _____

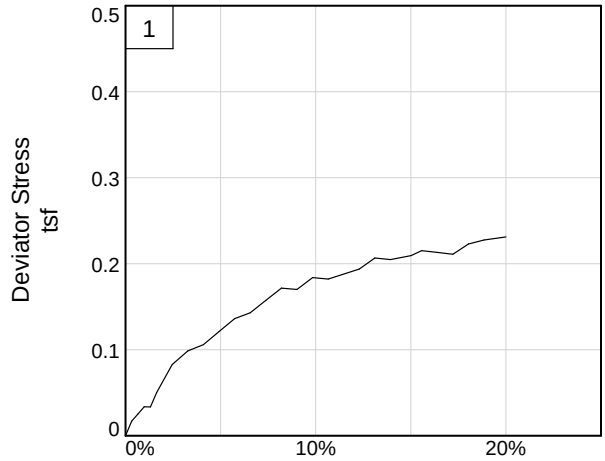
Client:

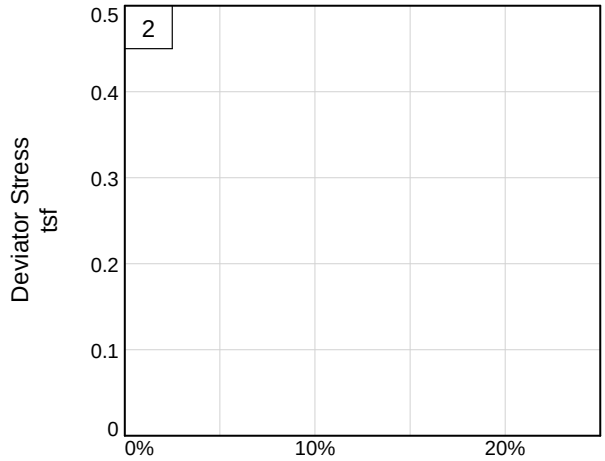
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-22, T-1 **Depth:** 15.0'-17.0'

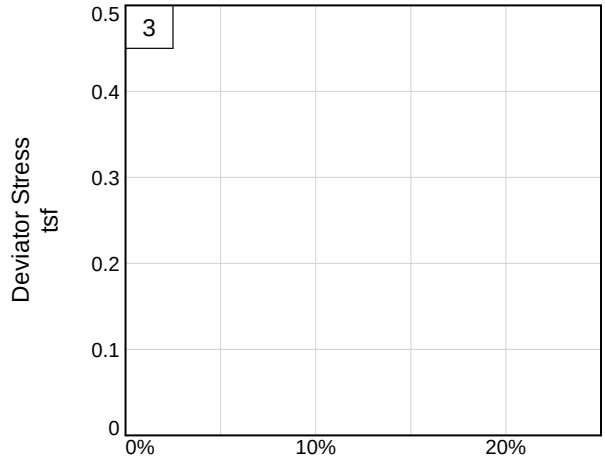
Proj. No.: 21-126 **Date Sampled:** 7-29-2021

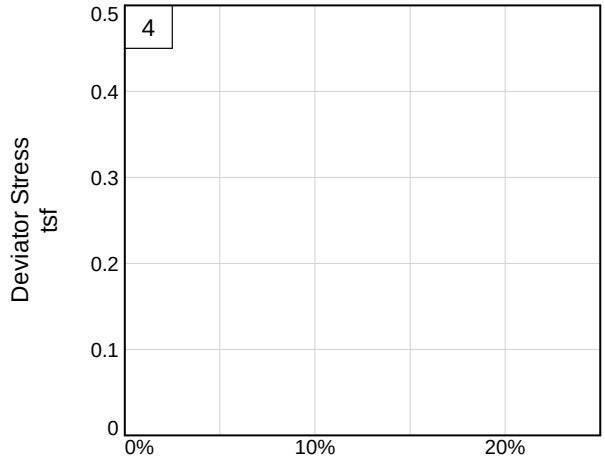
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

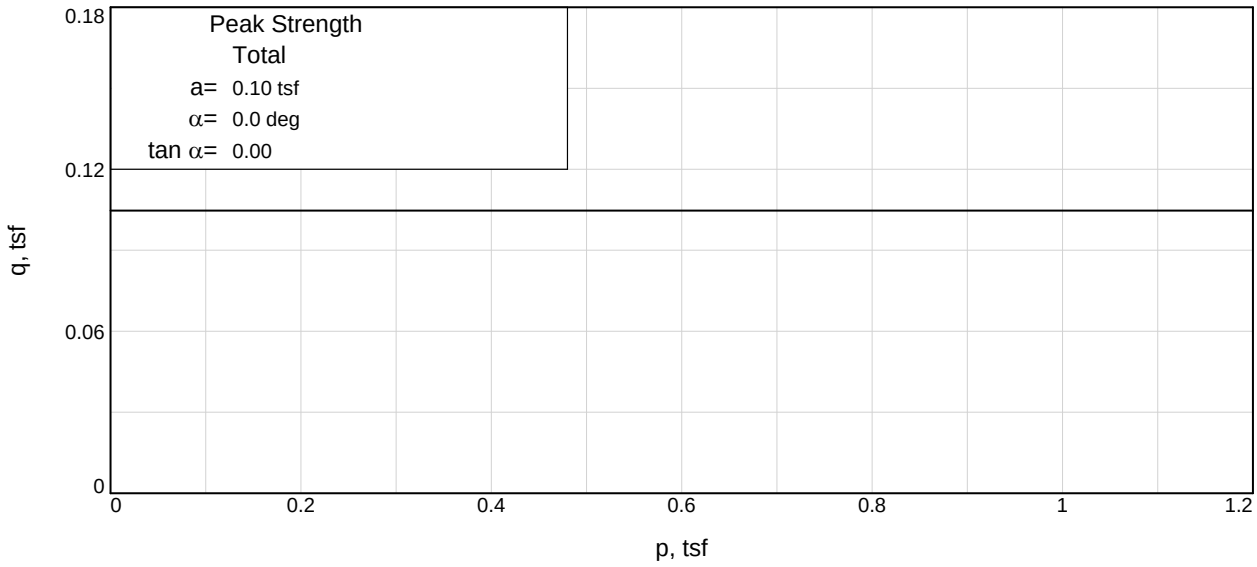
Tested By: RGP











Client:

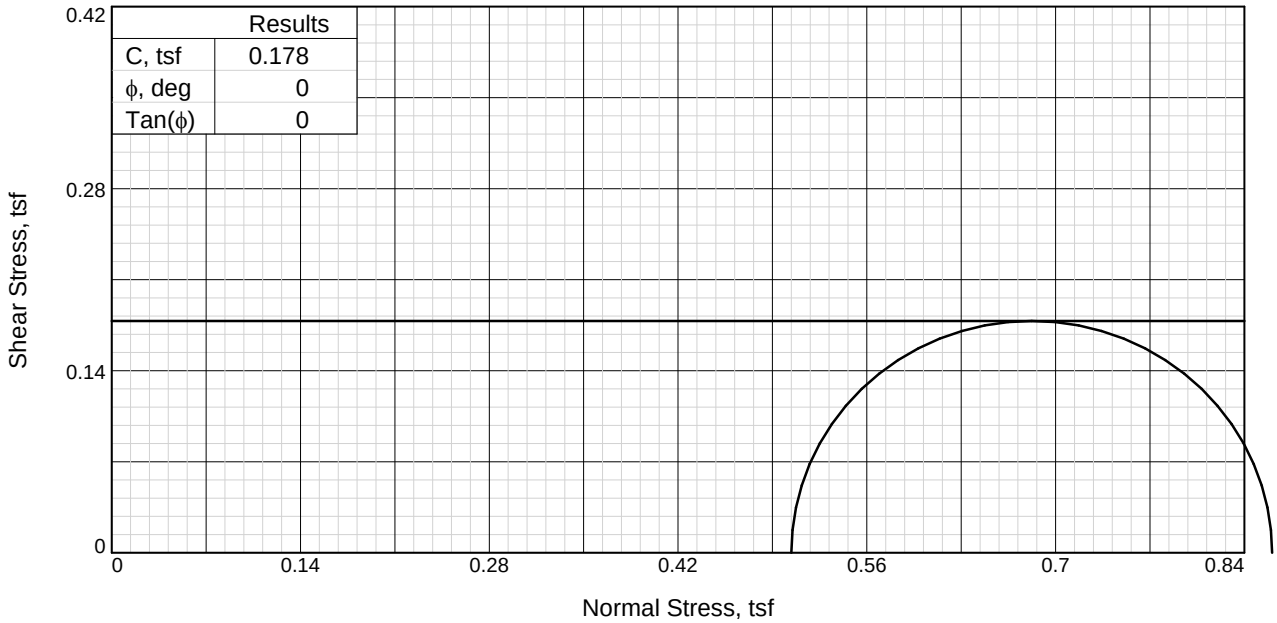
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

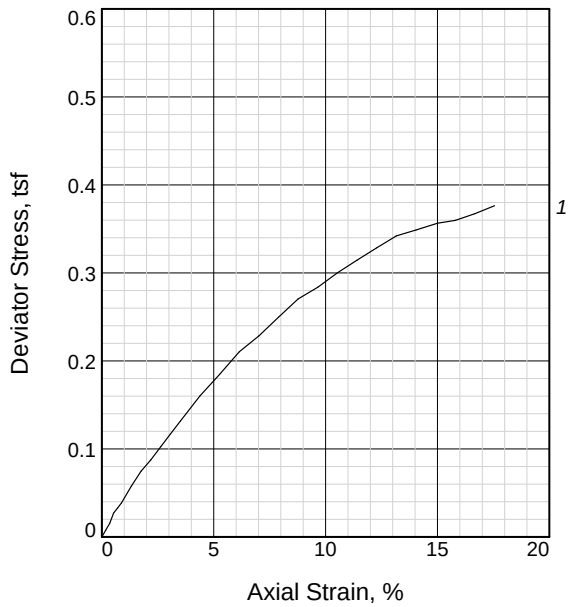
Depth: 15.0'-17.0' **Sample Number:** B-22, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: RGP





Sample No.		1
Initial	Water Content, %	36.8
	Dry Density, pcf	82.7
	Saturation, %	97.1
	Void Ratio	1.0097
	Diameter, in.	2.82
	Height, in.	5.70
At Test	Water Content, %	37.9
	Dry Density, pcf	82.7
	Saturation, %	100.0
	Void Ratio	1.0097
	Diameter, in.	2.82
	Height, in.	5.70
Strain rate, in./min.		0.06
Back Pressure, psi		0.00
Cell Pressure, psi		7.00
Fail. Stress, tsf		0.36
Strain, %		15.0
Ult. Stress, tsf		0.38
Strain, %		
σ_1 Failure, tsf		0.86
σ_3 Failure, tsf		0.50

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Bluish Gray Silt

LL= 35 **PL=** 28 **PI=** 7
Assumed Specific Gravity= 2.662
Remarks:

Client:

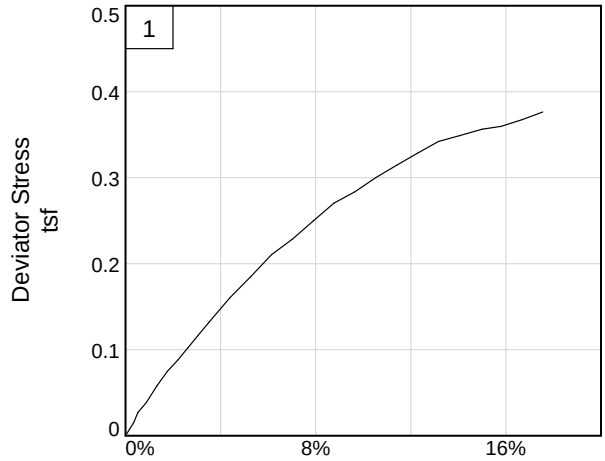
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-24, T-1 **Depth:** 17.5'-19.5'

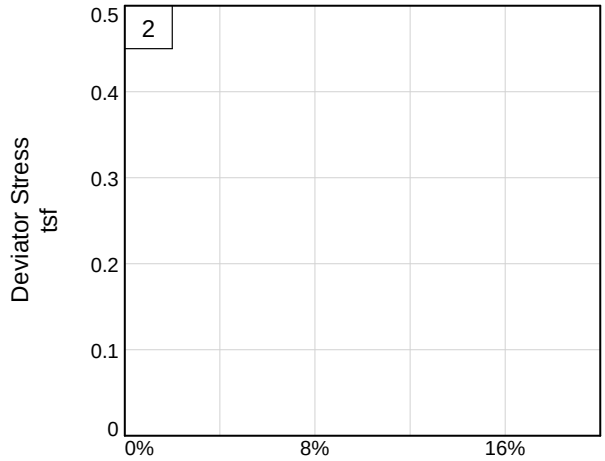
Proj. No.: 21-126 **Date Sampled:** 12-02-2021

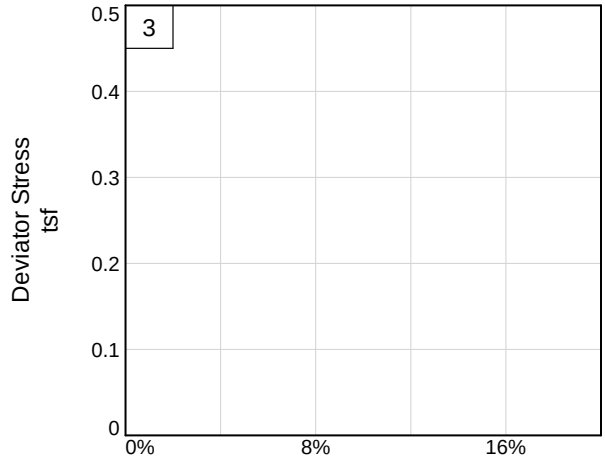
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

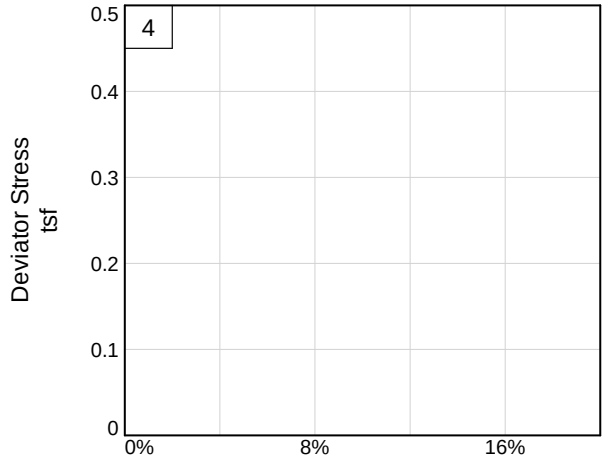
Figure _____

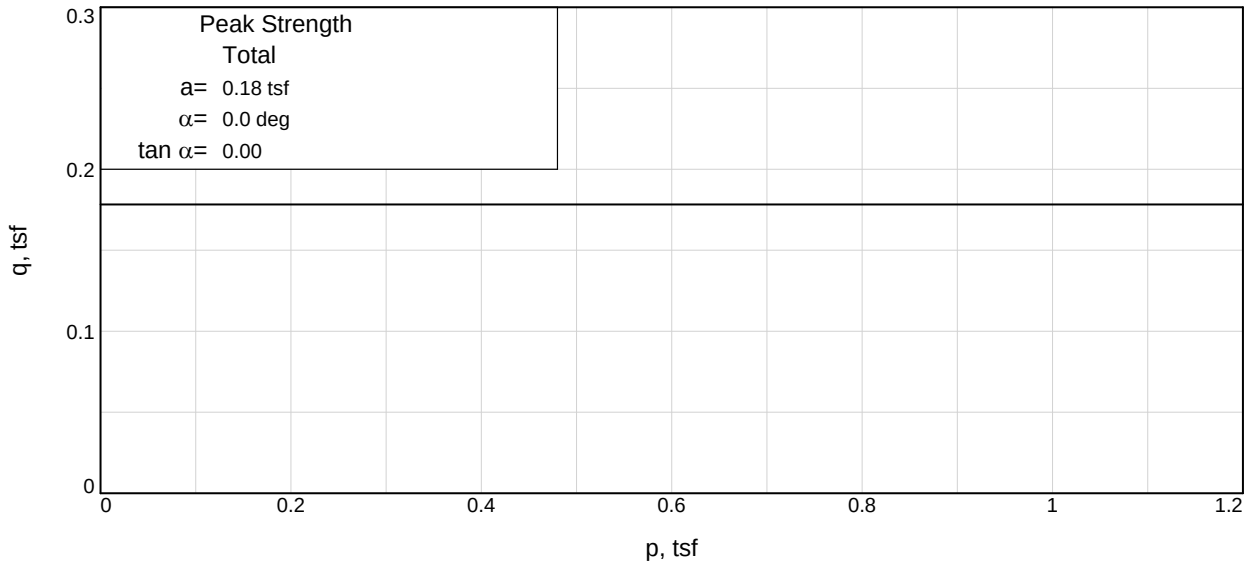
Tested By: RGP











Client:

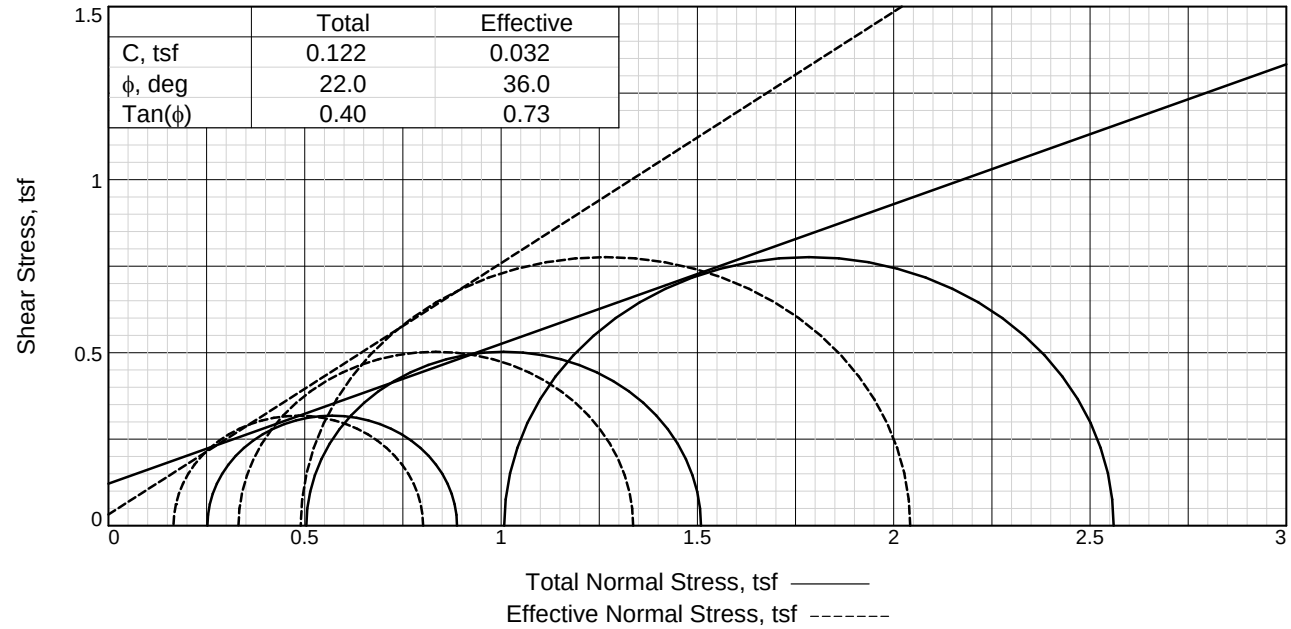
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

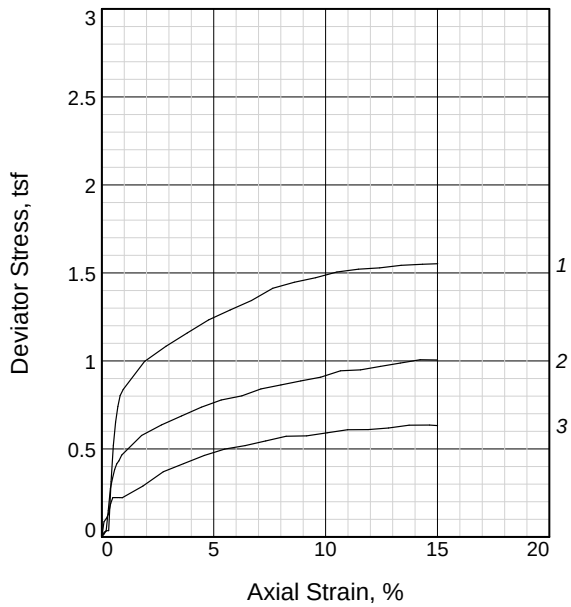
Depth: 17.5'-19.5' **Sample Number:** B-24, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: RGP





Sample No.		1	2	3
Initial	Water Content, %	43.7	39.4	41.9
	Dry Density, pcf	76.9	80.0	78.2
	Saturation, %	99.6	96.9	98.5
	Void Ratio	1.1769	1.0910	1.1387
	Diameter, in.	1.41	1.41	1.39
	Height, in.	3.14	3.18	3.07
At Test	Water Content, %	28.3	38.7	41.5
	Dry Density, pcf	95.1	82.1	79.2
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7597	1.0370	1.1116
	Diameter, in.	1.32	1.39	1.39
	Height, in.	2.93	3.15	3.06
Strain rate, in./min.		0.00	0.00	0.00
Eff. Cell Pressure, psi		14.00	7.00	3.50
Fail. Stress, tsf		1.55	1.01	0.64
Total Pore Pr., tsf		1.96	1.61	1.53
Strain, %		15.0	15.0	14.6
Ult. Stress, tsf		1.55	1.01	0.64
Total Pore Pr., tsf		1.96	1.61	1.53
Strain, %		15.0	15.0	14.6
$\bar{\sigma}_1$ Failure, tsf		2.04	1.34	0.80
$\bar{\sigma}_3$ Failure, tsf		0.49	0.33	0.17

Type of Test:
CU with Pore Pressures
Sample Type: Undisturbed
Description: Gray Lean Clay

LL= 38 **PL=** 24 **PI=** 14
Assumed Specific Gravity= 2.68
Remarks:

Figure _____

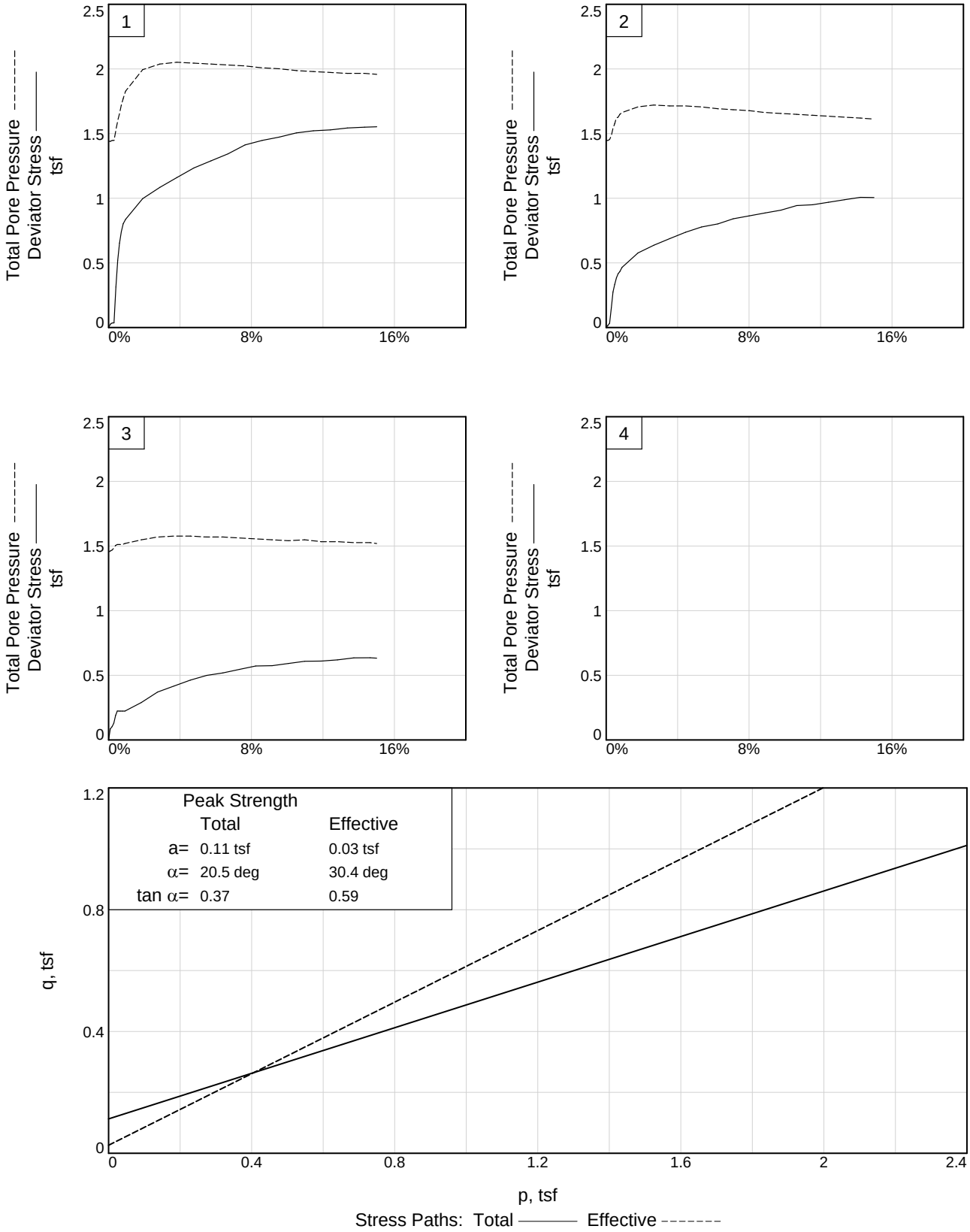
Client:

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-27, T-1 **Depth:** 15.0'-17.0'

Proj. No.: 21-126 **Date Sampled:** 11-18-2021

TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

Tested By: RGP



Client:

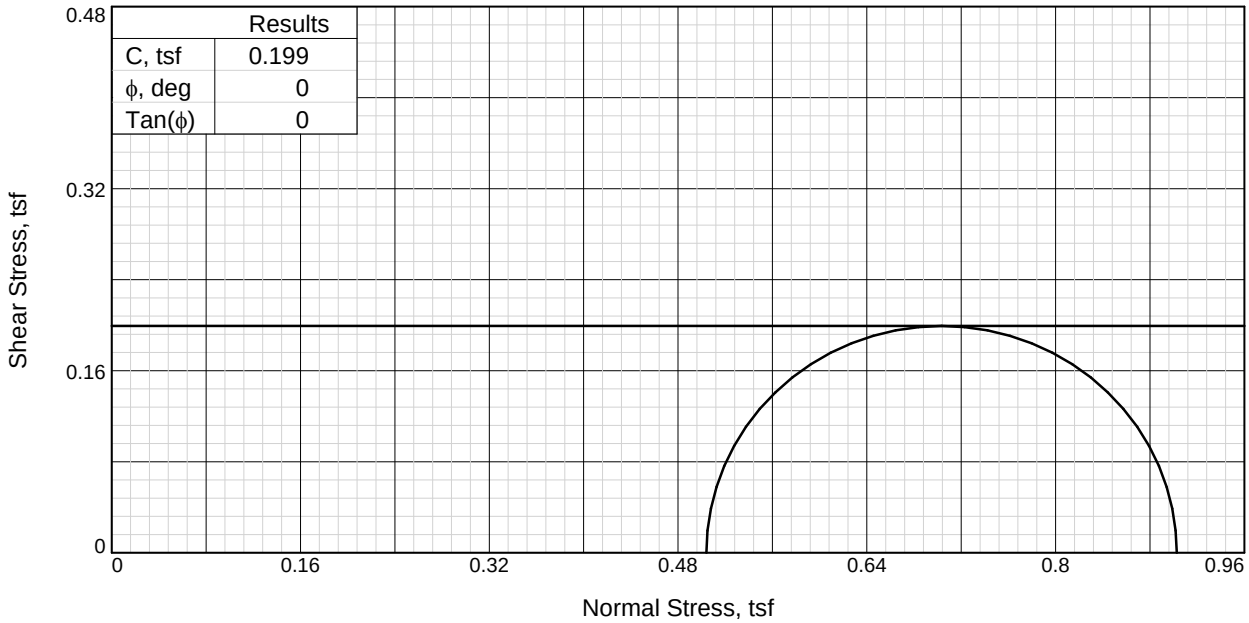
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

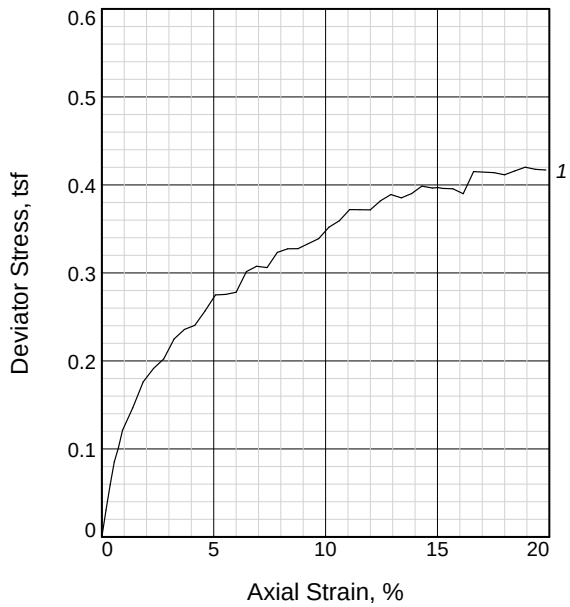
Depth: 15.0'-17.0' **Sample Number:** B-27, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: RGP





Sample No.		1
Initial	Water Content, %	33.7
	Dry Density, pcf	85.3
	Saturation, %	94.1
	Void Ratio	0.9609
	Diameter, in.	2.75
	Height, in.	5.43
At Test	Water Content, %	35.4
	Dry Density, pcf	85.8
	Saturation, %	100.0
	Void Ratio	0.9501
	Diameter, in.	2.75
	Height, in.	5.42
Strain rate, in./min.		0.06
Back Pressure, psi		0.00
Cell Pressure, psi		7.00
Fail. Stress, tsf		0.40
Strain, %		14.3
Ult. Stress, tsf		0.42
Strain, %		
σ_1 Failure, tsf		0.90
σ_3 Failure, tsf		0.50

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Dark Gray Silty Lean Clay
BULGING: TYPEI-A
LL= 28 **PL=** 20 **PI=** 8
Assumed Specific Gravity= 2.68
Remarks: 12/16/21

Client:

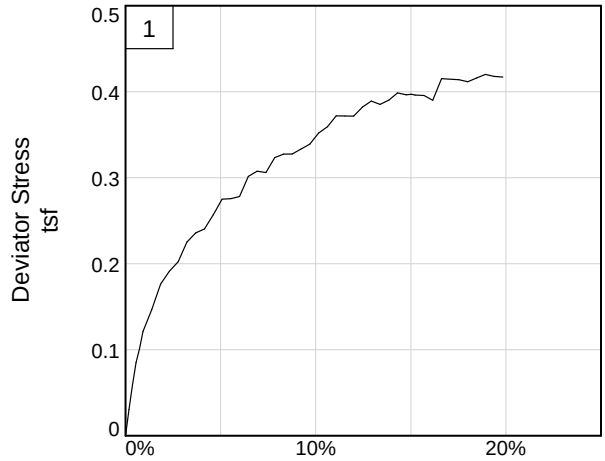
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-28, T-1 **Depth:** 10.0'-12.0'

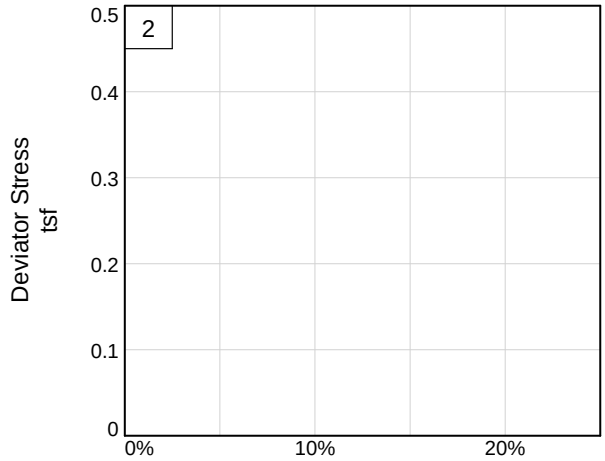
Proj. No.: 21-126 **Date Sampled:**

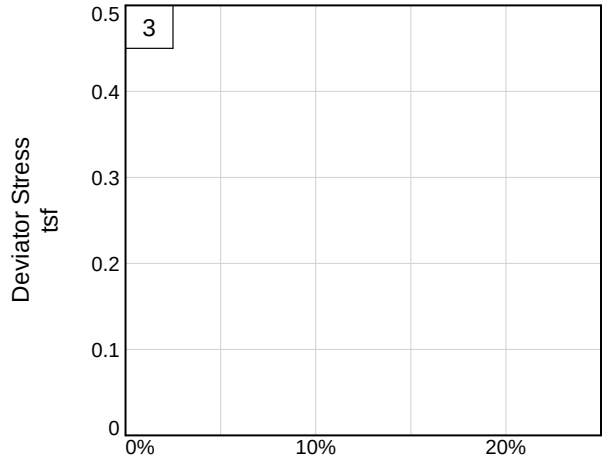
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

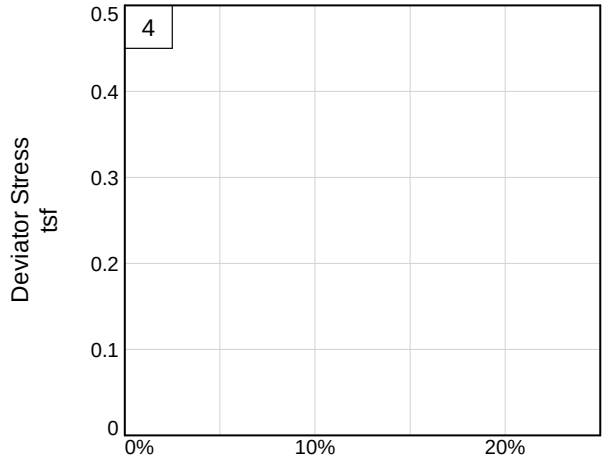
Figure _____

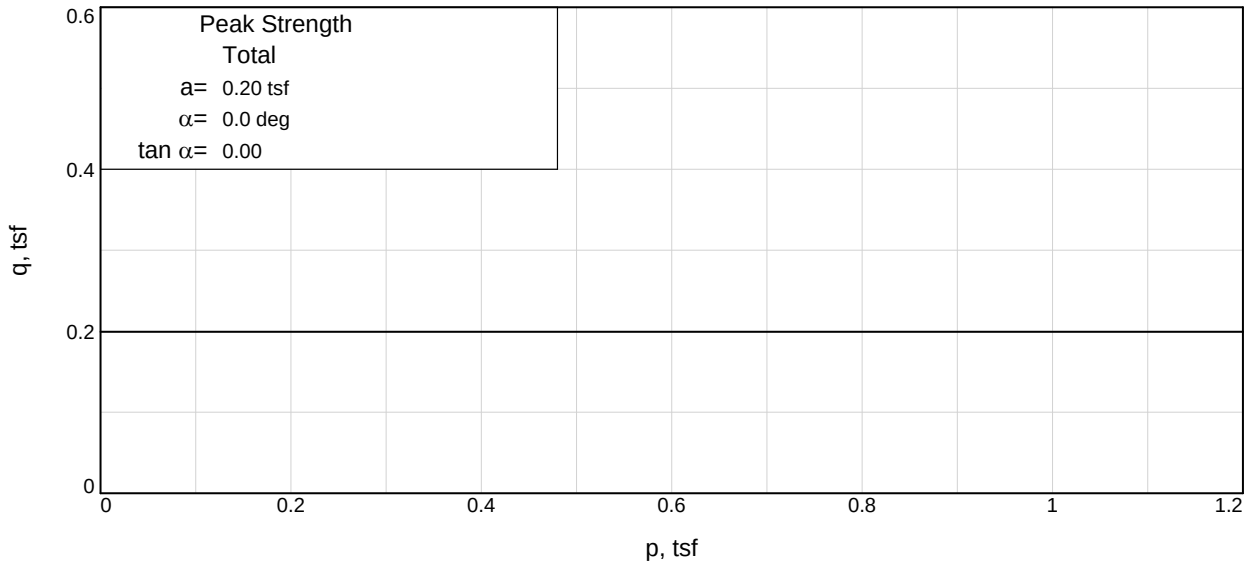
Tested By: JH











Client:

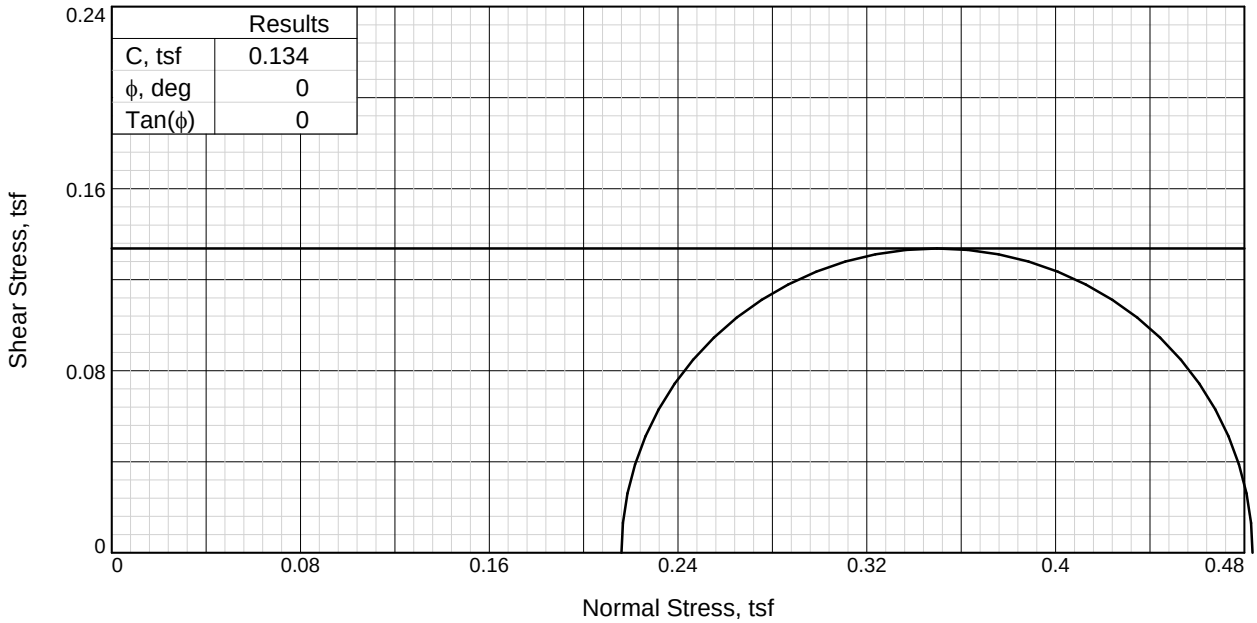
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

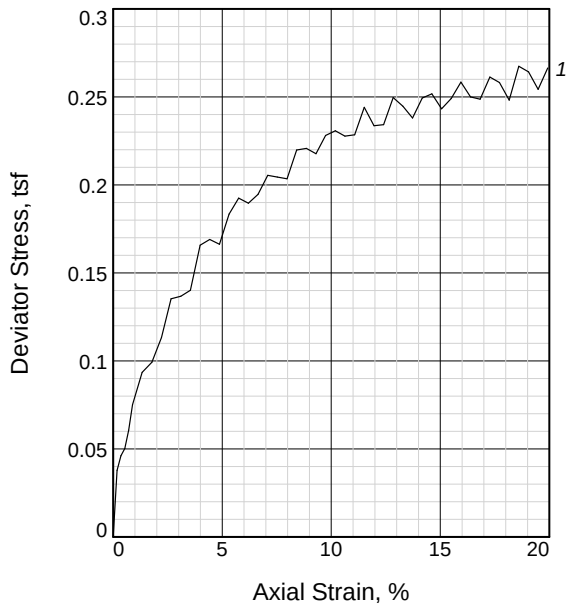
Depth: 10.0'-12.0' **Sample Number:** B-28, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: JH





Sample No.		1
Initial	Water Content, %	37.4
	Dry Density, pcf	83.5
	Saturation, %	99.9
	Void Ratio	1.0031
	Diameter, in.	2.73
	Height, in.	5.67
At Test	Water Content, %	36.5
	Dry Density, pcf	84.6
	Saturation, %	100.0
	Void Ratio	0.9777
	Diameter, in.	2.72
	Height, in.	5.65
Strain rate, in./min.		0.06
Back Pressure, psi		0.00
Cell Pressure, psi		3.00
Fail. Stress, tsf		0.27
Strain, %		18.6
Ult. Stress, tsf		
Strain, %		
σ_1 Failure, tsf		0.48
σ_3 Failure, tsf		0.22

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Dark Gray Fat Clay

LL= 60 **PL=** 23 **PI=** 37
Assumed Specific Gravity= 2.68
Remarks: 12/17/21
TYPE I-A

Figure _____

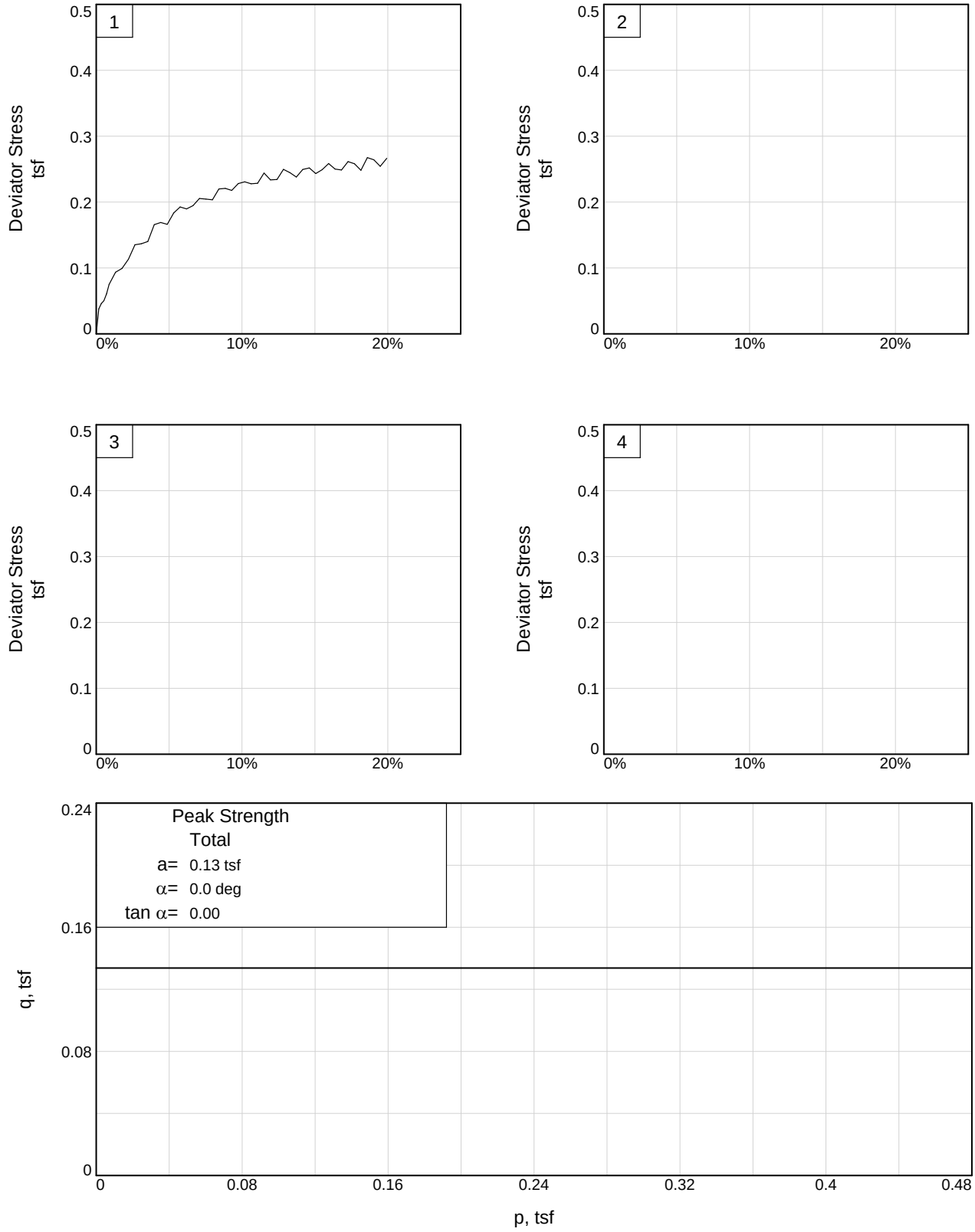
Client:

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-30, T-4 **Depth:** 4.0'-6.0'

Proj. No.: 21-126 **Date Sampled:**

TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

Tested By: JH



Client:

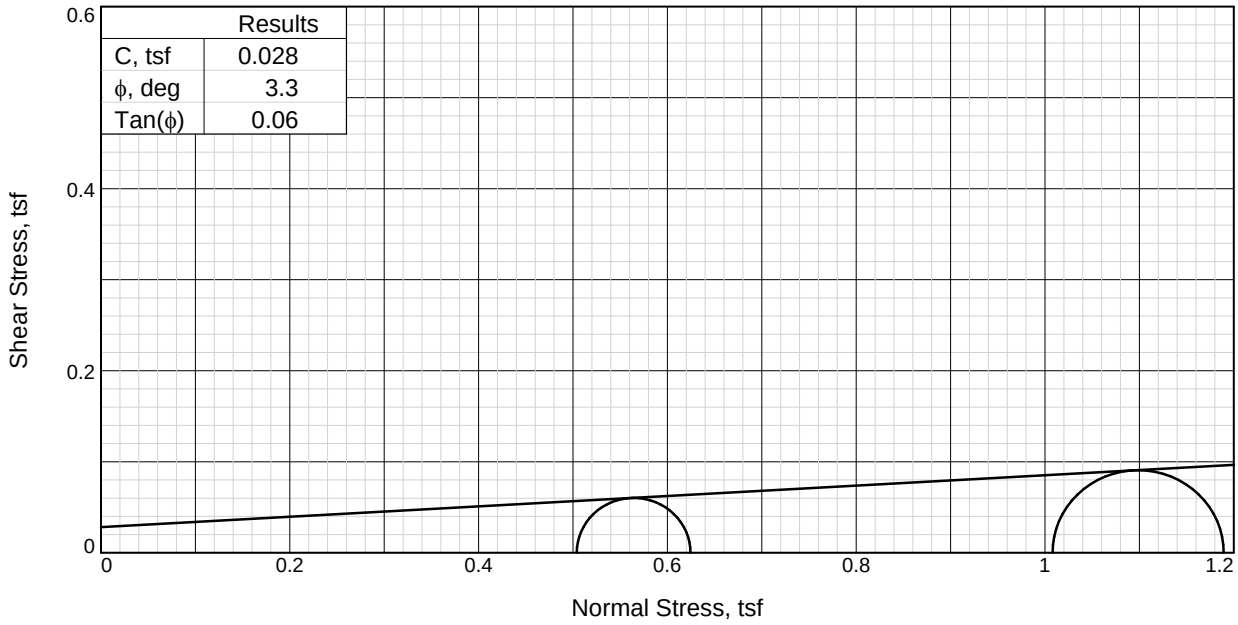
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

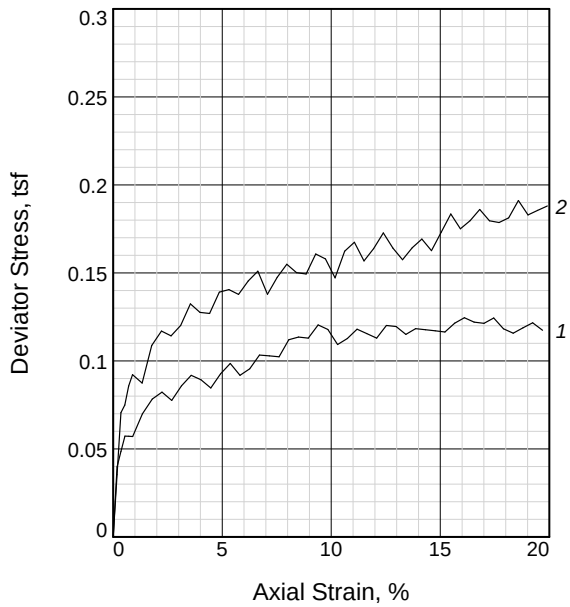
Depth: 4.0'-6.0' **Sample Number:** B-30, T-4

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: JH





Sample No.		1	2
Initial	Water Content, %	52.3	50.1
	Dry Density, pcf	69.0	70.1
	Saturation, %	98.3	96.9
	Void Ratio	1.4255	1.3854
	Diameter, in.	2.75	2.76
	Height, in.	5.60	5.66
At Test	Water Content, %	52.6	51.2
	Dry Density, pcf	69.4	70.5
	Saturation, %	100.0	100.0
	Void Ratio	1.4093	1.3734
	Diameter, in.	2.74	2.75
	Height, in.	5.59	5.65
Strain rate, in./min.		0.06	0.06
Back Pressure, psi		0.00	0.00
Cell Pressure, psi		7.00	14.00
Fail. Stress, tsf		0.12	0.18
Strain, %		9.4	18.1
Ult. Stress, tsf		0.12	0.19
Strain, %			
σ_1 Failure, tsf		0.62	1.19
σ_3 Failure, tsf		0.50	1.01

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Dark Gray Silty Lean Clay

LL= 36 **PL=** 21 **PI=** 15
Assumed Specific Gravity= 2.68
Remarks: 12/21/21
#1 I-A, #2 I-A, #3 I-A

Figure _____

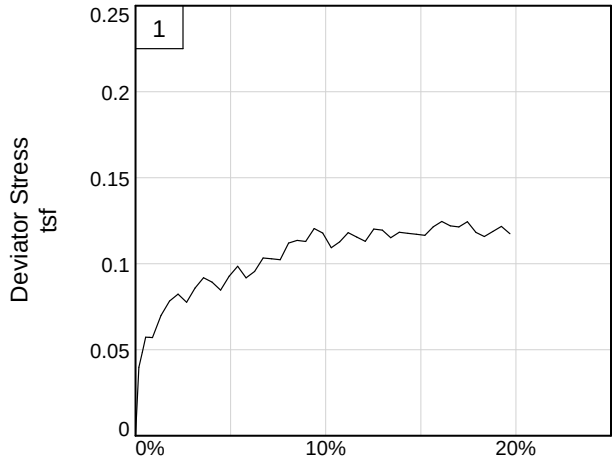
Client:

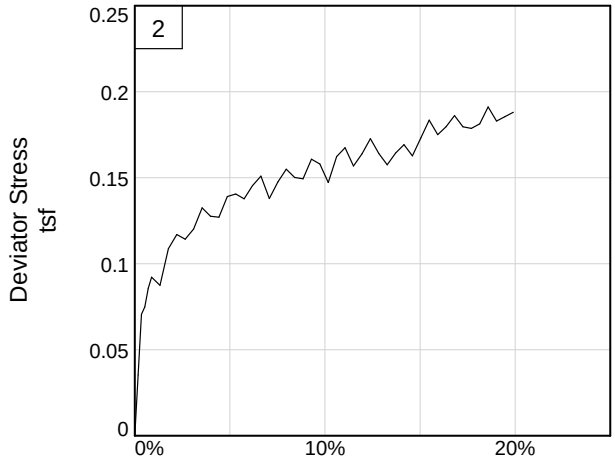
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-30,T-1 **Depth:** 15.0'-17.0'

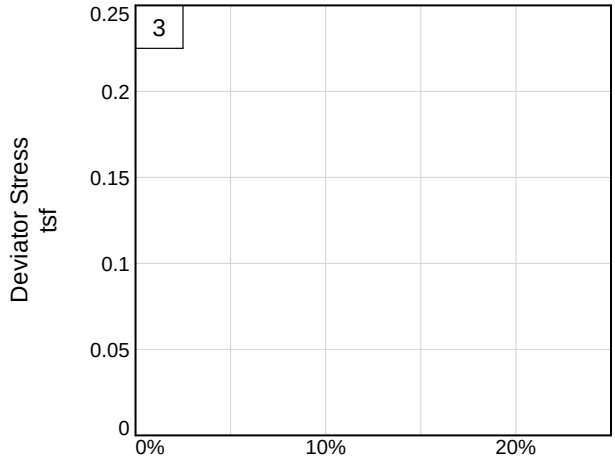
Proj. No.: 21-126 **Date Sampled:**

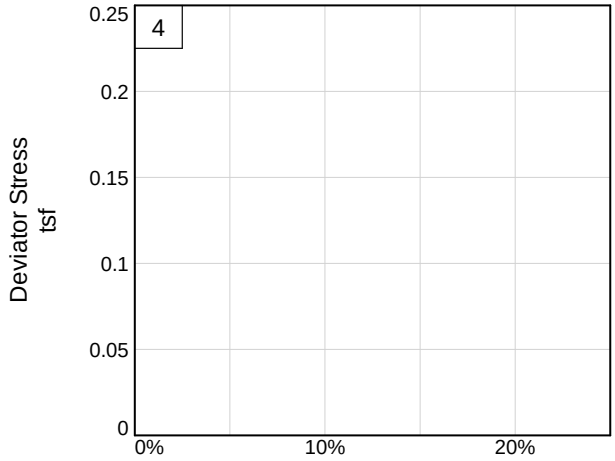
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

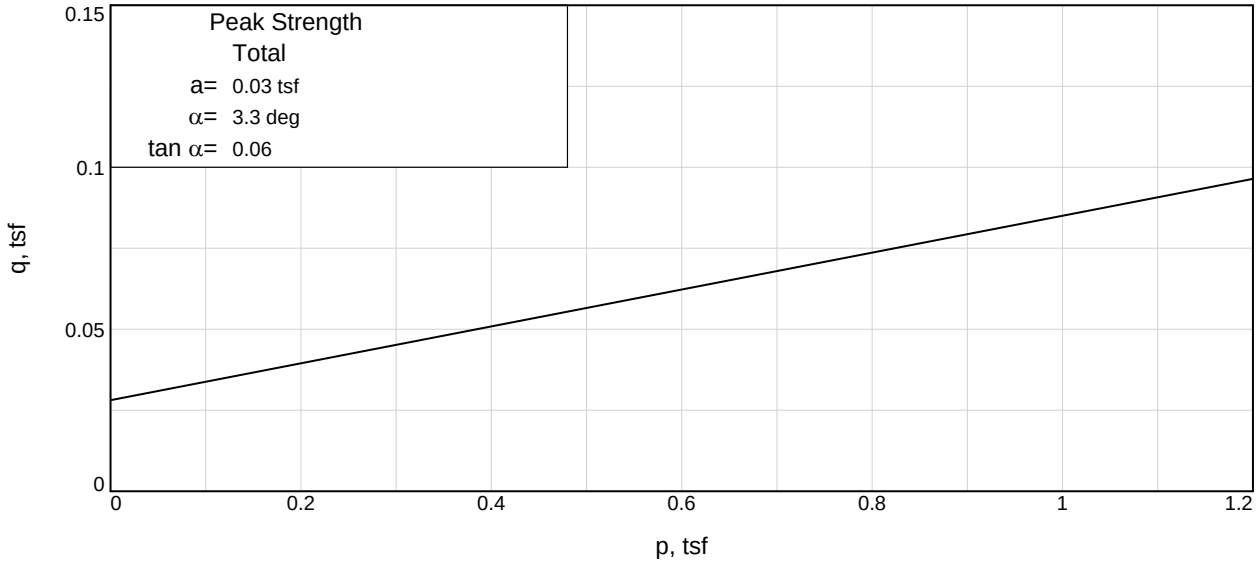
Tested By: JH











Client:

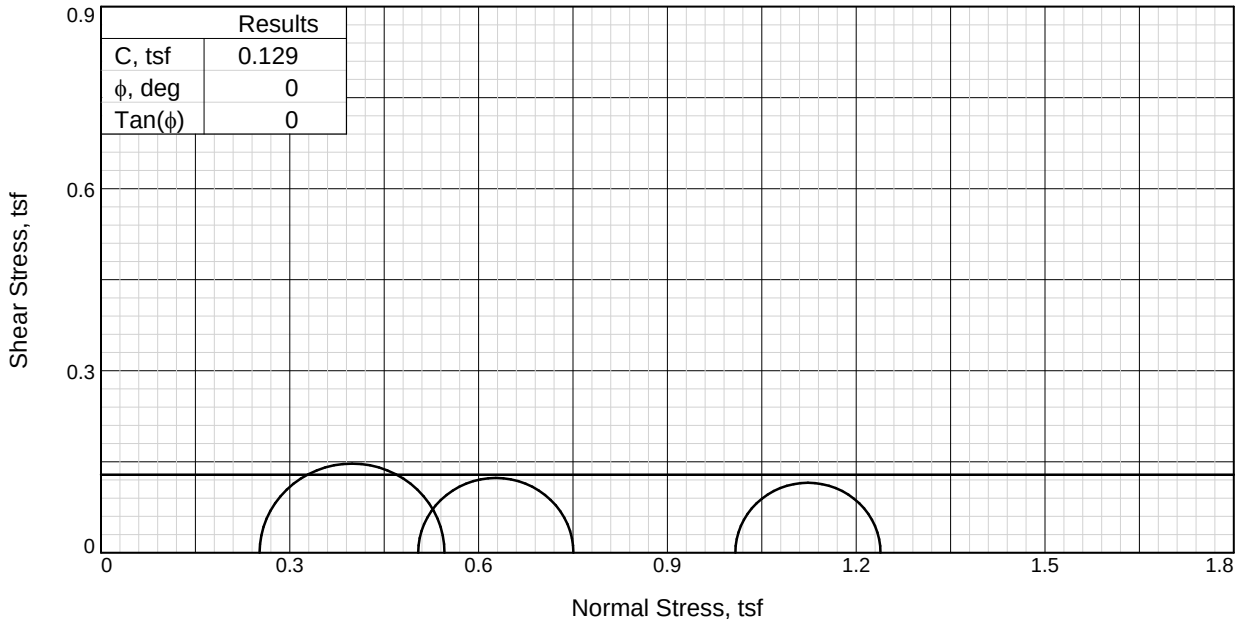
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

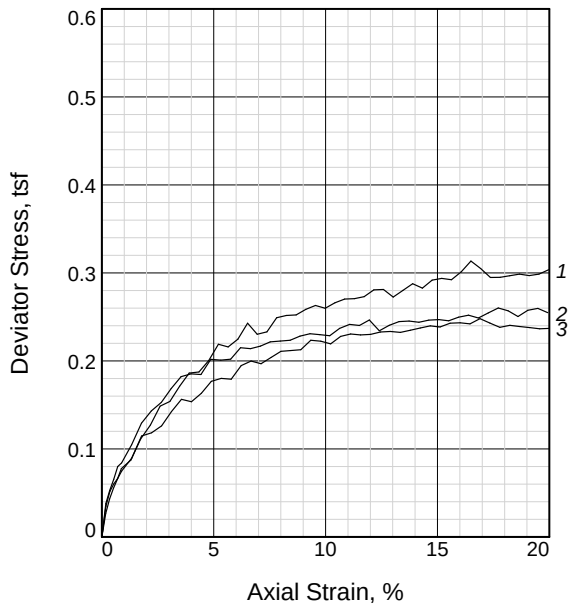
Depth: 15.0'-17.0' **Sample Number:** B-30,T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: JH





Sample No.		1	2	3
Initial	Water Content, %	39.3	42.0	42.0
	Dry Density, pcf	82.5	79.6	79.0
	Saturation, %	100.0	99.9	98.5
	Void Ratio	1.0780	1.1530	1.1687
	Diameter, in.	2.77	2.76	2.76
	Height, in.	5.76	5.65	5.63
At Test	Water Content, %	39.3	41.7	42.1
	Dry Density, pcf	82.5	79.9	79.5
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.0780	1.1450	1.1549
	Diameter, in.	2.77	2.76	2.75
	Height, in.	5.76	5.65	5.62
Strain rate, in./min.		0.06	0.06	0.06
Back Pressure, psi		0.00	0.00	0.00
Cell Pressure, psi		3.50	7.00	14.00
Fail. Stress, tsf		0.29	0.25	0.23
Strain, %		15.2	12.0	11.1
Ult. Stress, tsf		0.31	0.25	0.24
Strain, %				
σ_1 Failure, tsf		0.55	0.75	1.24
σ_3 Failure, tsf		0.25	0.50	1.01

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Dark Gray Lean Clay

LL= 47 **PL=** 22 **PI=** 25
Assumed Specific Gravity= 2.745
Remarks: 12/22/21
#1 I-C, #2 I-A, #3 I-A

Figure _____

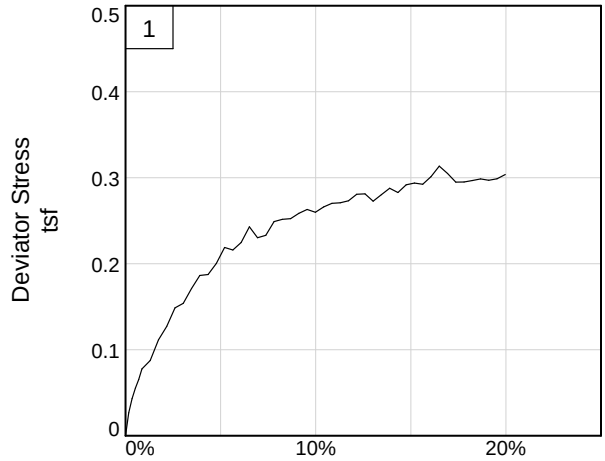
Client:

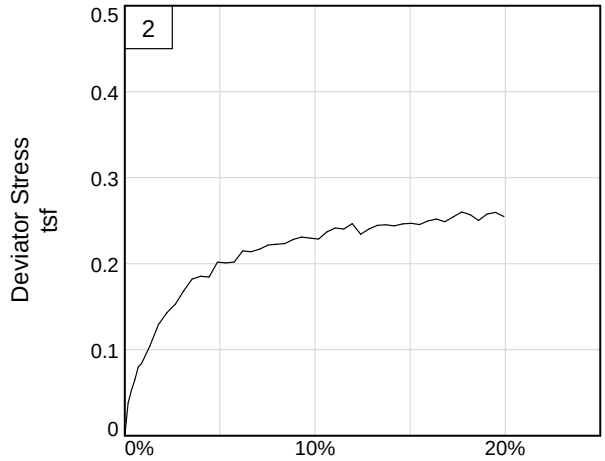
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-35, T-1 **Depth:** 15.0'-17.0'

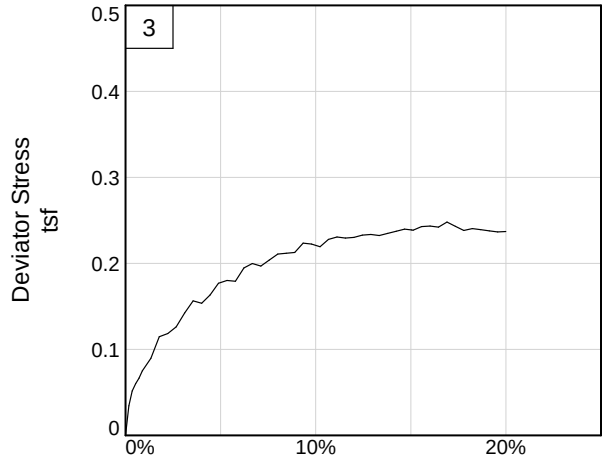
Proj. No.: 21-126 **Date Sampled:**

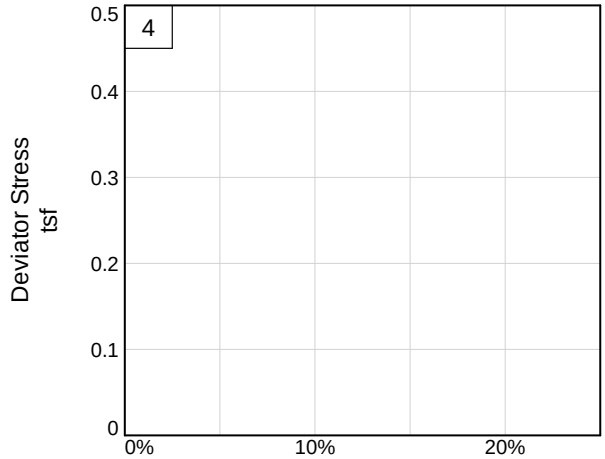
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

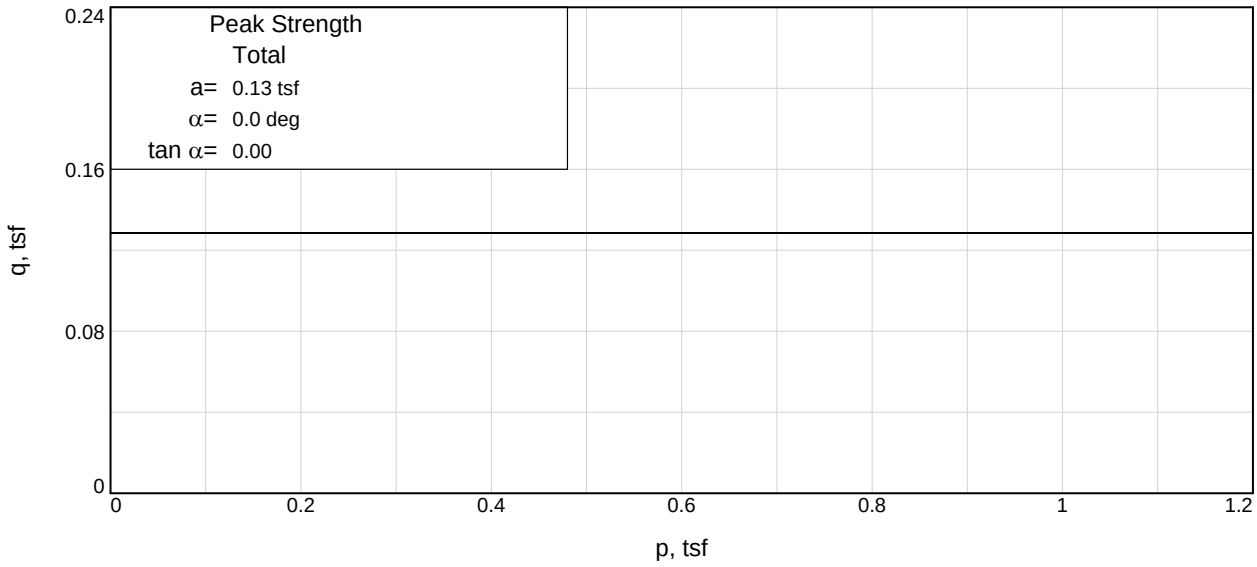
Tested By: JH











Client:

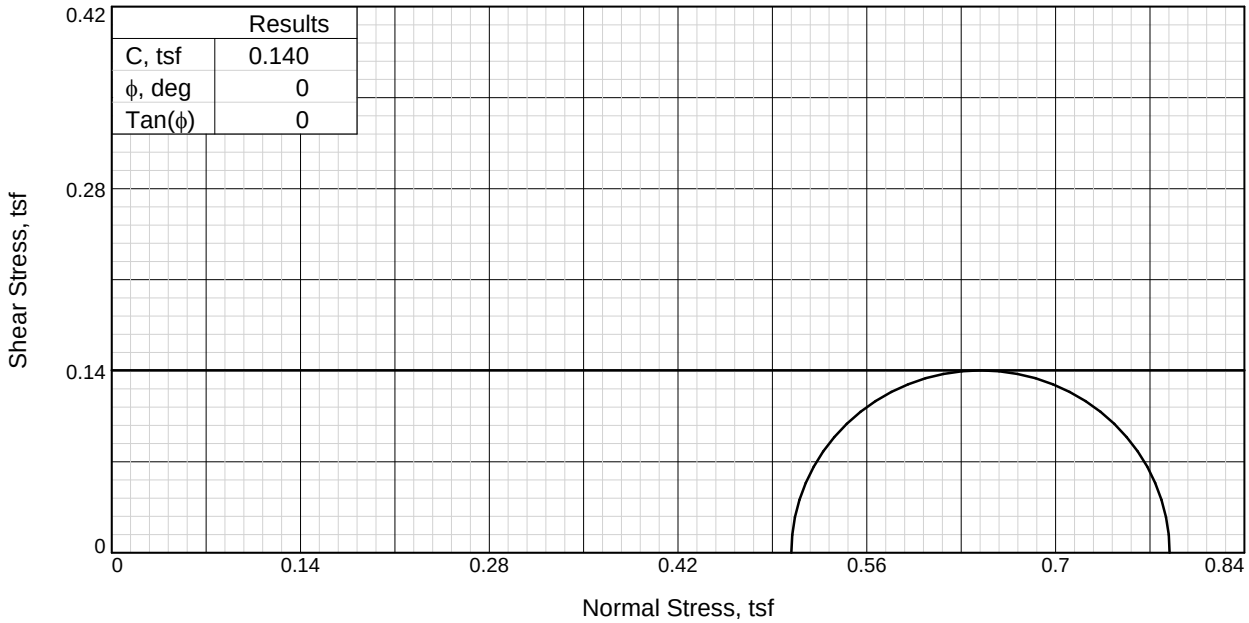
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

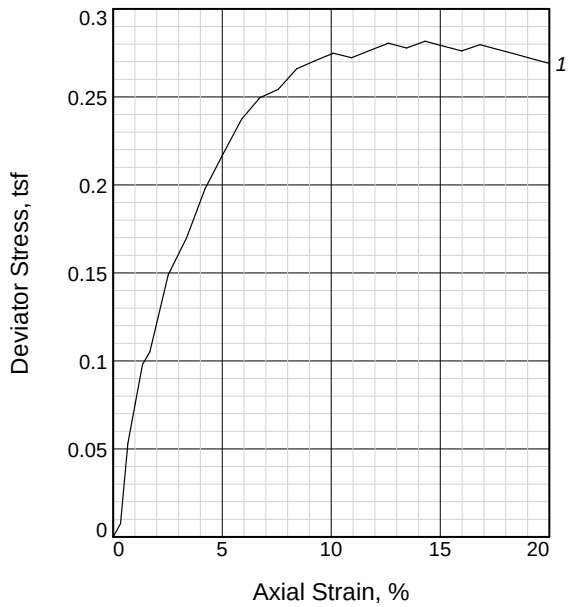
Depth: 15.0'-17.0' **Sample Number:** B-35, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: JH





Sample No.		1
Initial	Water Content, %	46.1
	Dry Density, pcf	75.2
	Saturation, %	102.3
	Void Ratio	1.1890
	Diameter, in.	1.40
	Height, in.	2.97
At Test	Water Content, %	45.1
	Dry Density, pcf	75.2
	Saturation, %	100.0
	Void Ratio	1.1890
	Diameter, in.	1.40
	Height, in.	2.97
Strain rate, in./min.		0.03
Back Pressure, psi		0.00
Cell Pressure, psi		7.00
Fail. Stress, tsf		0.28
Strain, %		12.6
Ult. Stress, tsf		0.28
Strain, %		
σ_1 Failure, tsf		0.78
σ_3 Failure, tsf		0.50

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Bluish Gray Fat Clay

LL= 60 **PL=** 20 **PI=** 40
Assumed Specific Gravity= 2.63562
Remarks:

Figure _____

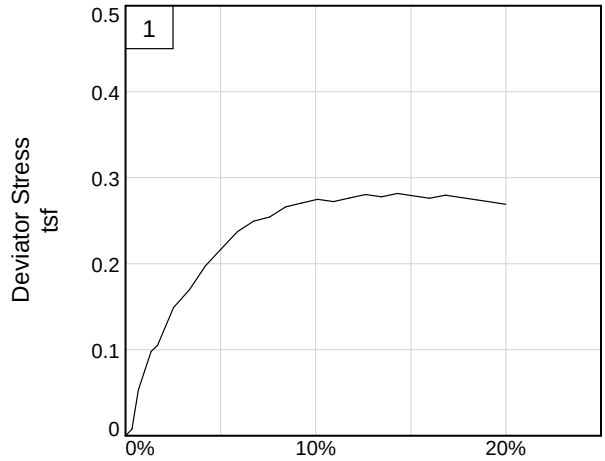
Client:

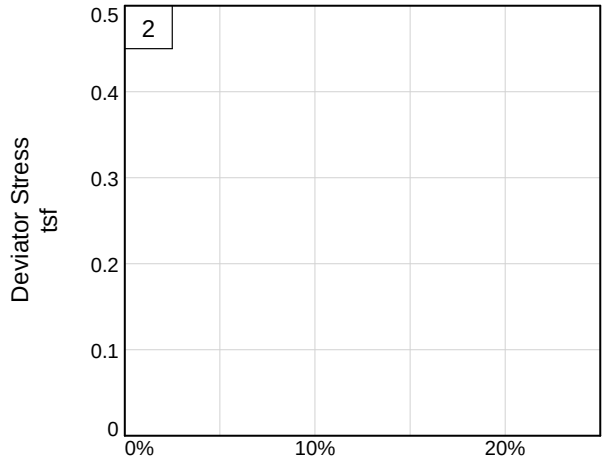
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-40, T-1 **Depth:** 20.0'-22.0'

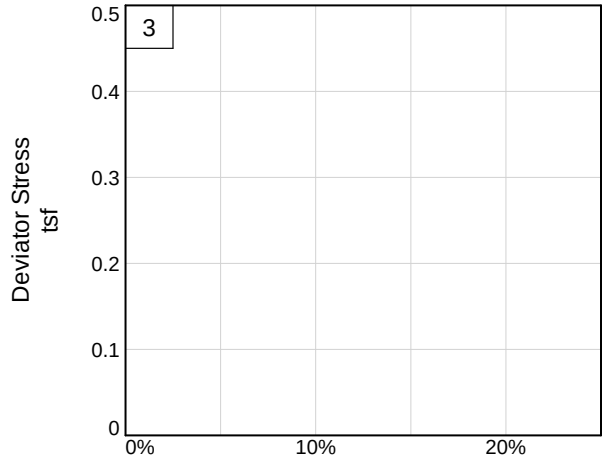
Proj. No.: 21-126 **Date Sampled:** 08-26-2021

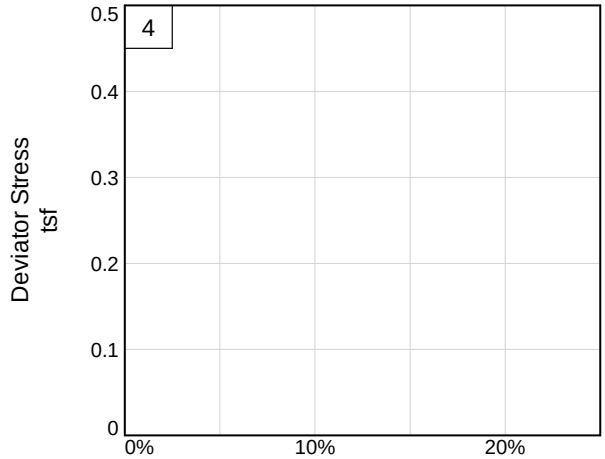
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

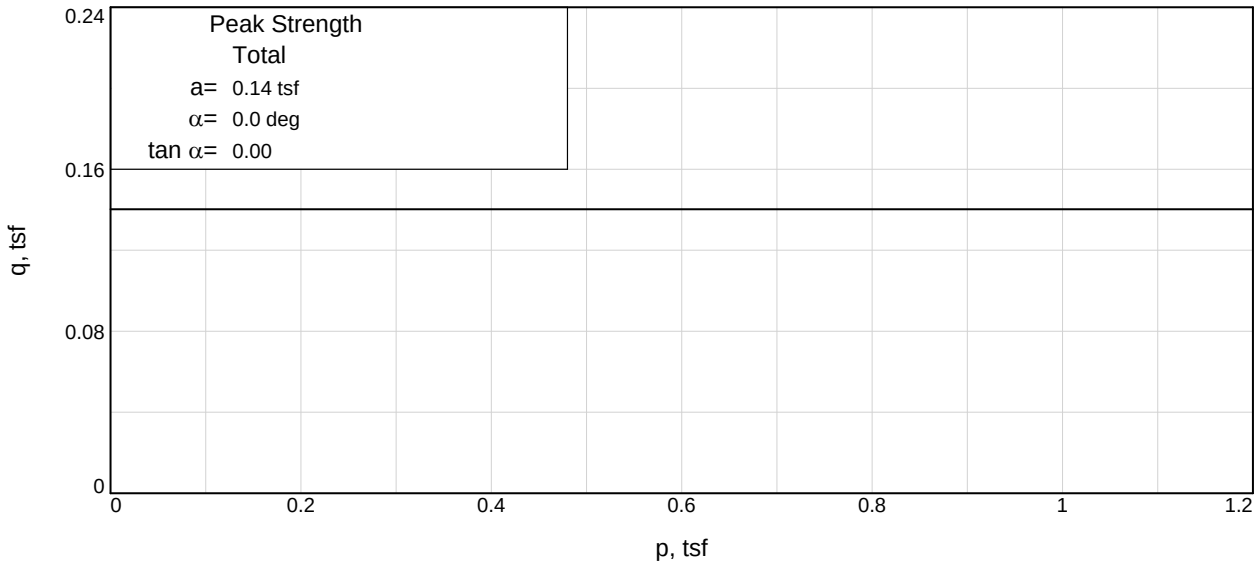
Tested By: RGP











Client:

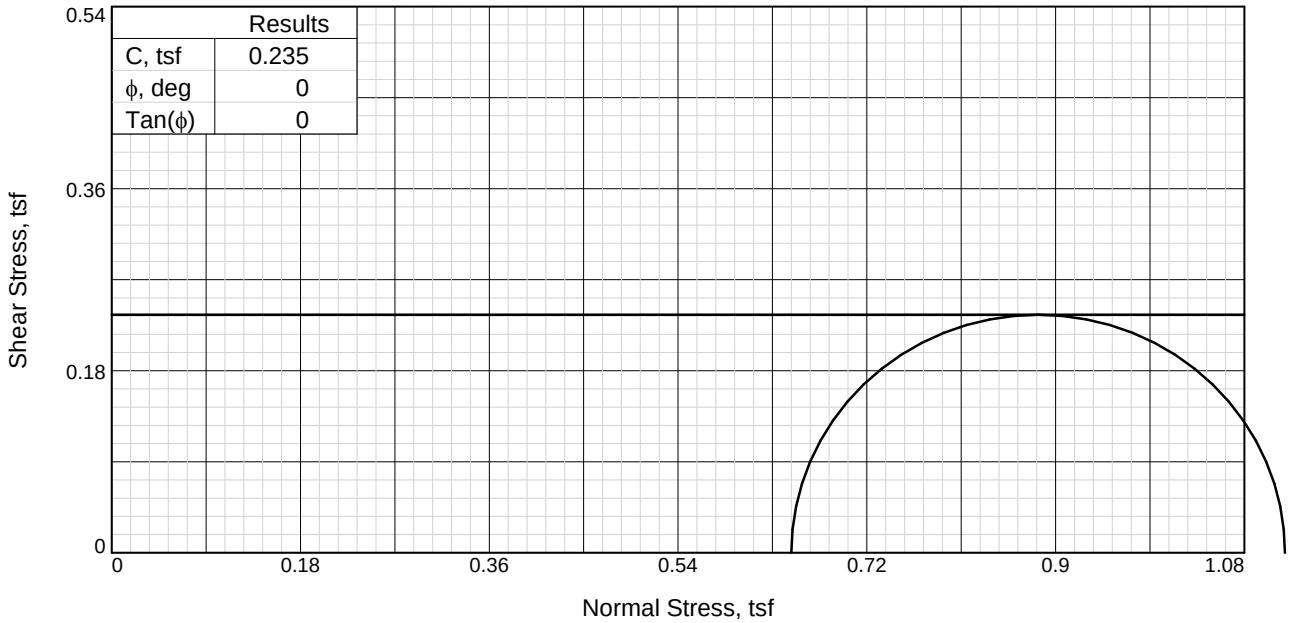
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

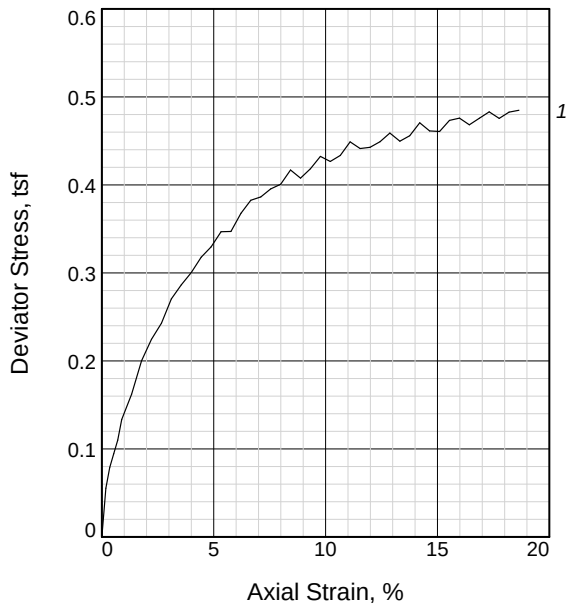
Depth: 20.0'-22.0' **Sample Number:** B-40, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: RGP





Sample No.		1
Initial	Water Content, %	34.4
	Dry Density, pcf	86.3
	Saturation, %	98.3
	Void Ratio	0.9386
	Diameter, in.	2.77
	Height, in.	5.63
At Test	Water Content, %	35.0
	Dry Density, pcf	86.3
	Saturation, %	100.0
	Void Ratio	0.9386
	Diameter, in.	2.77
	Height, in.	5.63
Strain rate, in./min.		0.06
Back Pressure, psi		0.00
Cell Pressure, psi		9.00
Fail. Stress, tsf		0.47
Strain, %		14.2
Ult. Stress, tsf		0.48
Strain, %		
σ_1 Failure, tsf		1.12
σ_3 Failure, tsf		0.65

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Dark Gray Lean Silt

LL= 28 **PL=** 25 **PI=** 3
Assumed Specific Gravity= 2.68
Remarks: 12/16/21
BULGING: TYPE I-C

Figure _____

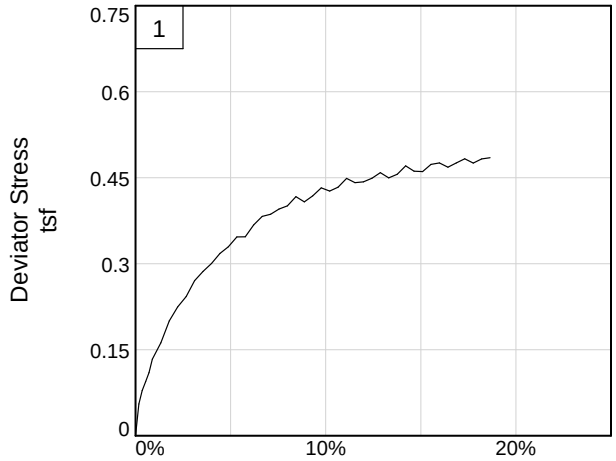
Client:

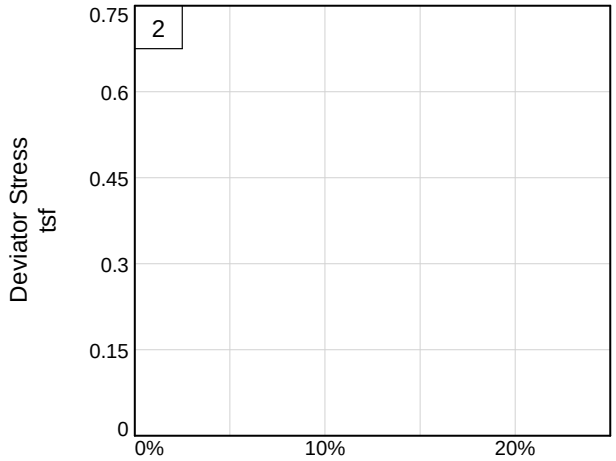
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-42, T-1 **Depth:** 16.5'-18.5'

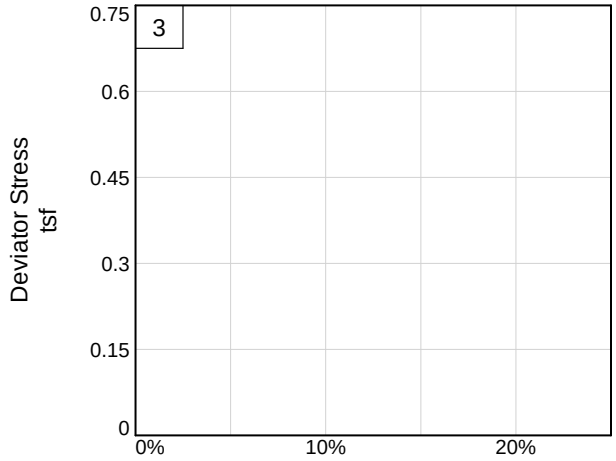
Proj. No.: 21-126 **Date Sampled:**

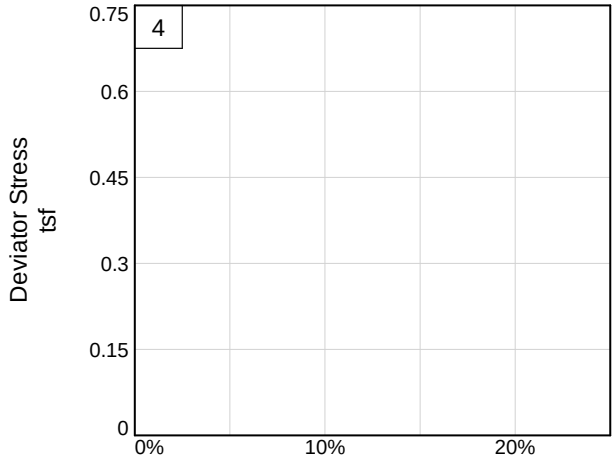
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

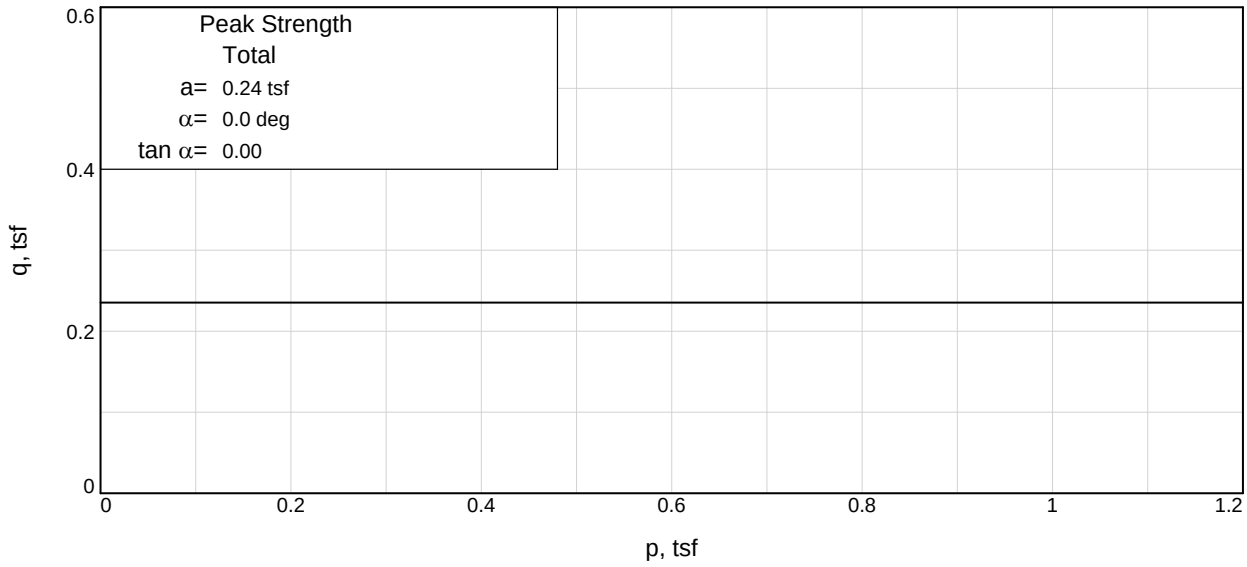
Tested By: JH











Client:

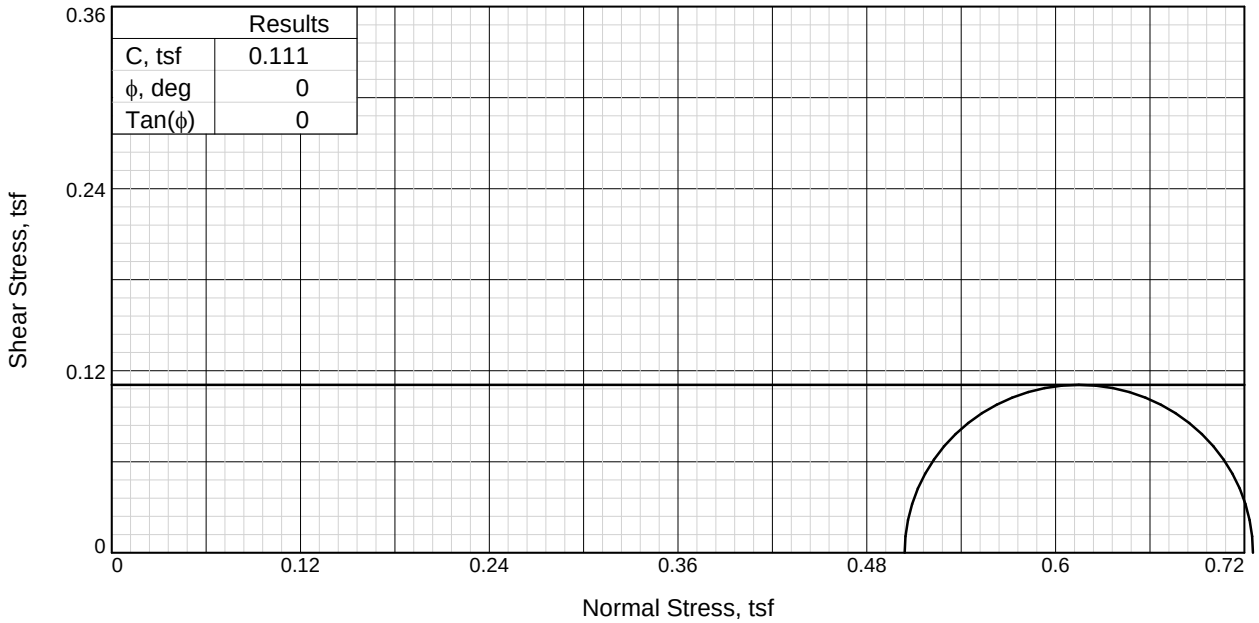
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

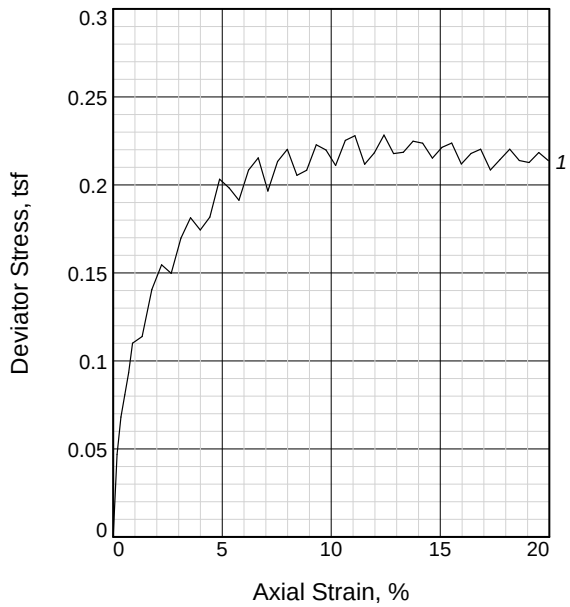
Depth: 16.5'-18.5' **Sample Number:** B-42, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: JH





Sample No.		1
Initial	Water Content, %	59.3
	Dry Density, pcf	63.3
	Saturation, %	96.6
	Void Ratio	1.6443
	Diameter, in.	2.77
	Height, in.	5.64
At Test	Water Content, %	61.4
	Dry Density, pcf	63.3
	Saturation, %	100.0
	Void Ratio	1.6443
	Diameter, in.	2.77
	Height, in.	5.64
Strain rate, in./min.		0.06
Back Pressure, psi		0.00
Cell Pressure, psi		7.00
Fail. Stress, tsf		0.22
Strain, %		15.1
Ult. Stress, tsf		0.22
Strain, %		
σ_1 Failure, tsf		0.73
σ_3 Failure, tsf		0.50

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Dark Gray Silty Fat Clay

Assumed Specific Gravity= 2.68
Remarks: 12/15/21

Figure _____

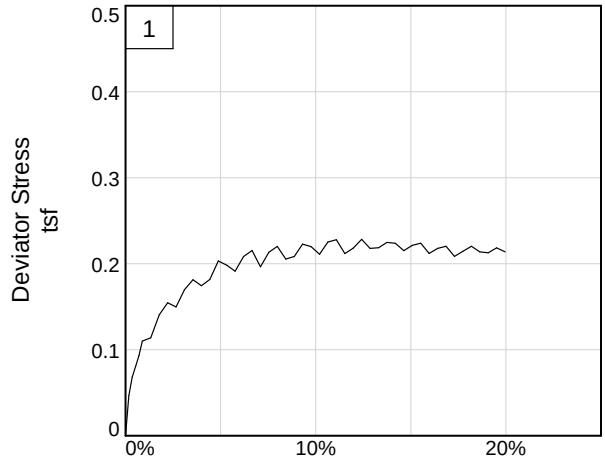
Client:

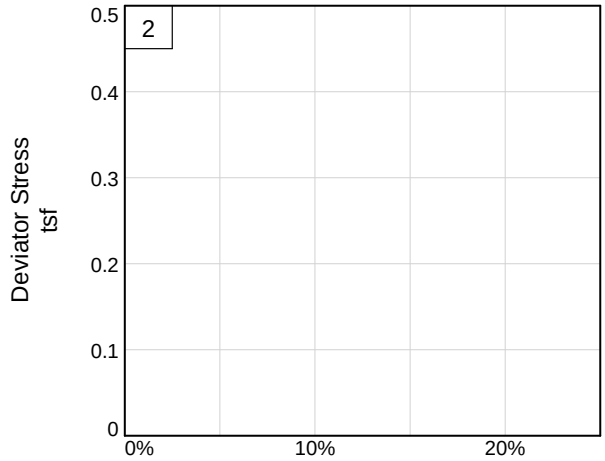
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-44, T-1 **Depth:** 16.5'-18.5'

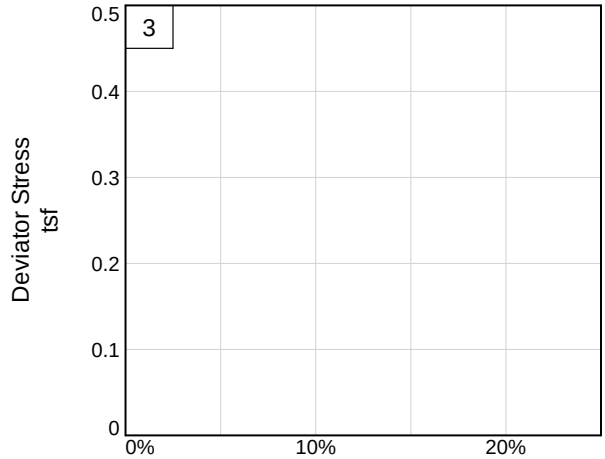
Proj. No.: 21-126 **Date Sampled:**

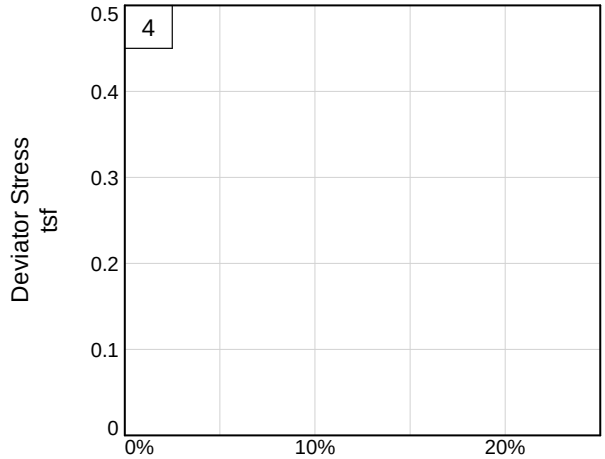
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

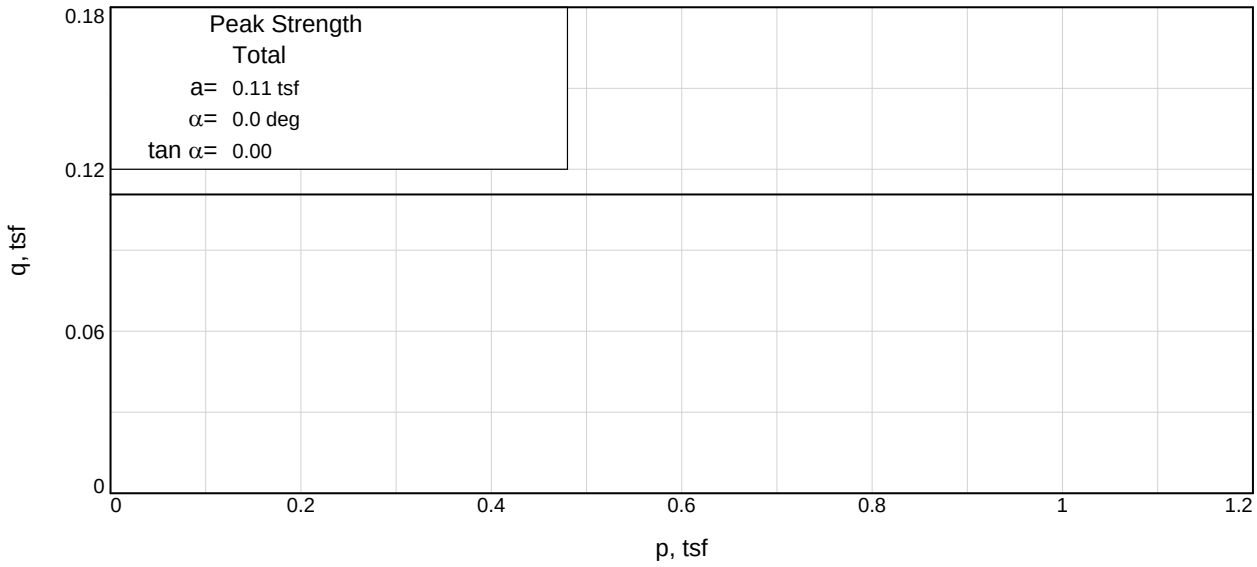
Tested By: JH











Client:

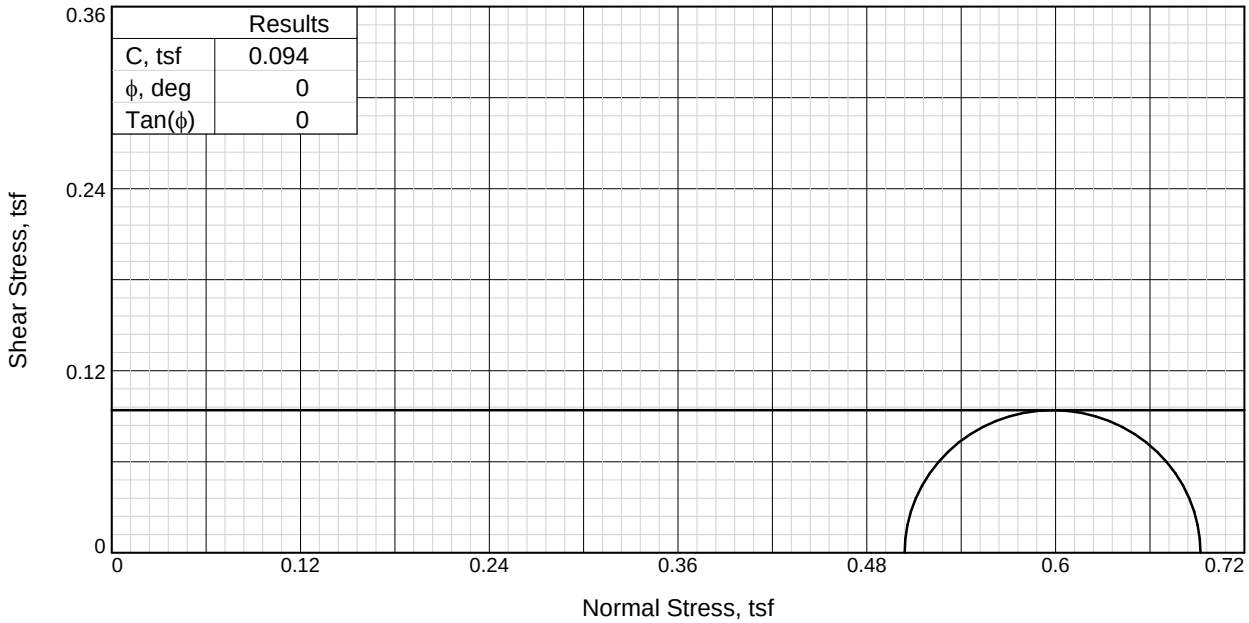
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

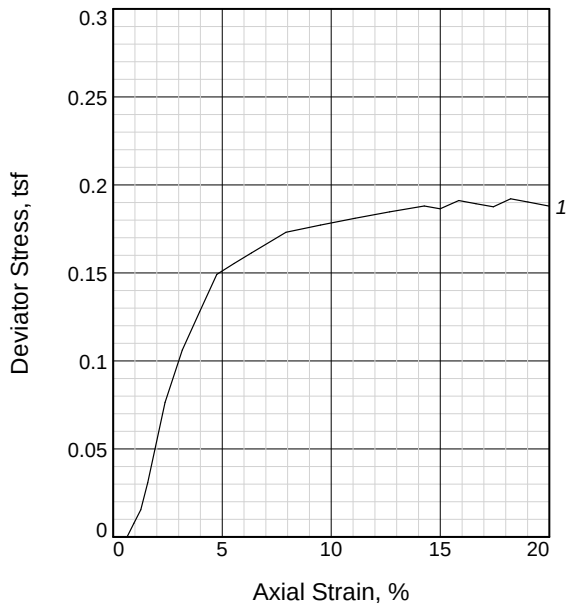
Depth: 16.5'-18.5' **Sample Number:** B-44, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: JH





Sample No.		1
Initial	Water Content, %	48.0
	Dry Density, pcf	72.2
	Saturation, %	98.8
	Void Ratio	1.2797
	Diameter, in.	1.40
	Height, in.	3.16
At Test	Water Content, %	48.5
	Dry Density, pcf	72.2
	Saturation, %	100.0
	Void Ratio	1.2797
	Diameter, in.	1.40
	Height, in.	3.16
Strain rate, in./min.		0.03
Back Pressure, psi		0.00
Cell Pressure, psi		7.00
Fail. Stress, tsf		0.19
Strain, %		14.3
Ult. Stress, tsf		0.19
Strain, %		
σ_1 Failure, tsf		0.69
σ_3 Failure, tsf		0.50

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Bluish Gray Lean Clay

LL= 46 **PL=** 21 **PI=** 25
Specific Gravity= 2.637
Remarks:

Client:

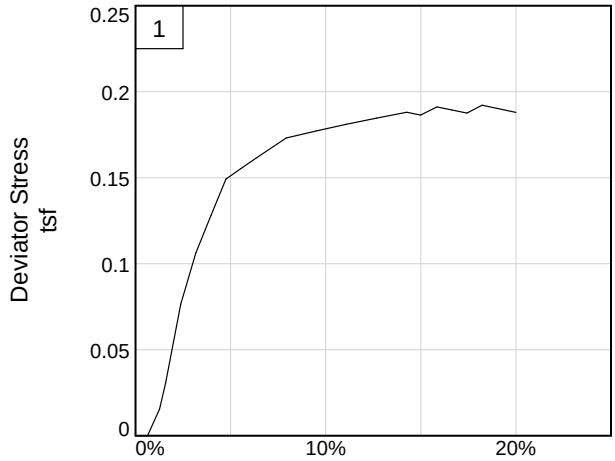
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-45, T-1 **Depth:** 12.5'-14.5'

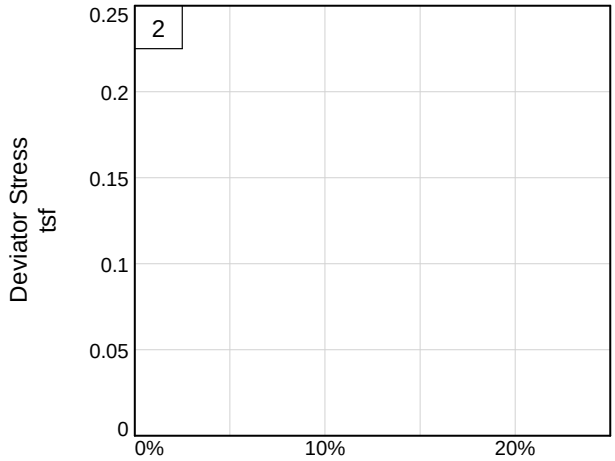
Proj. No.: 21-126 **Date Sampled:** 09-01-2021

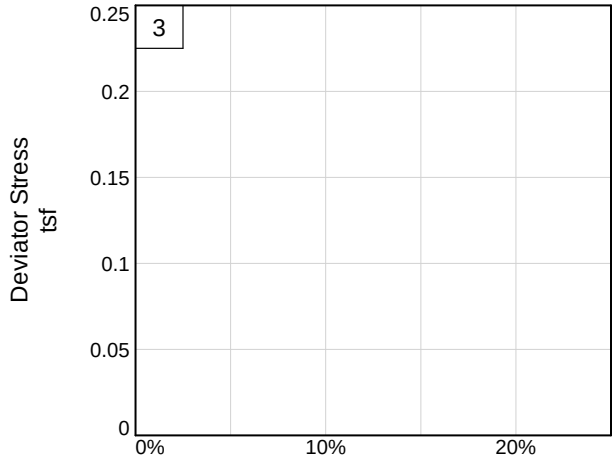
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

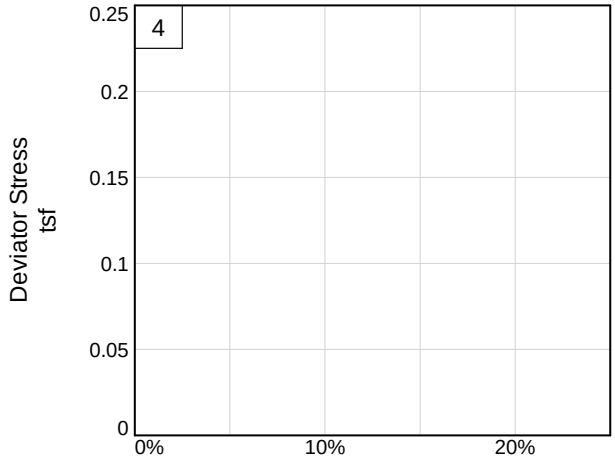
Figure _____

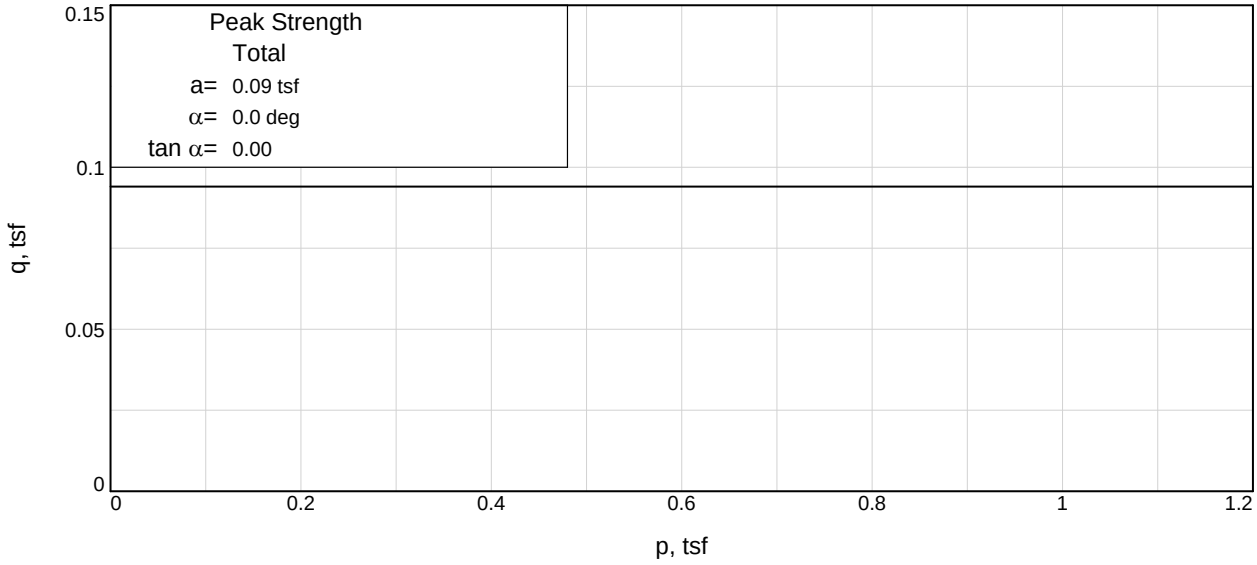
Tested By: RGP











Client:

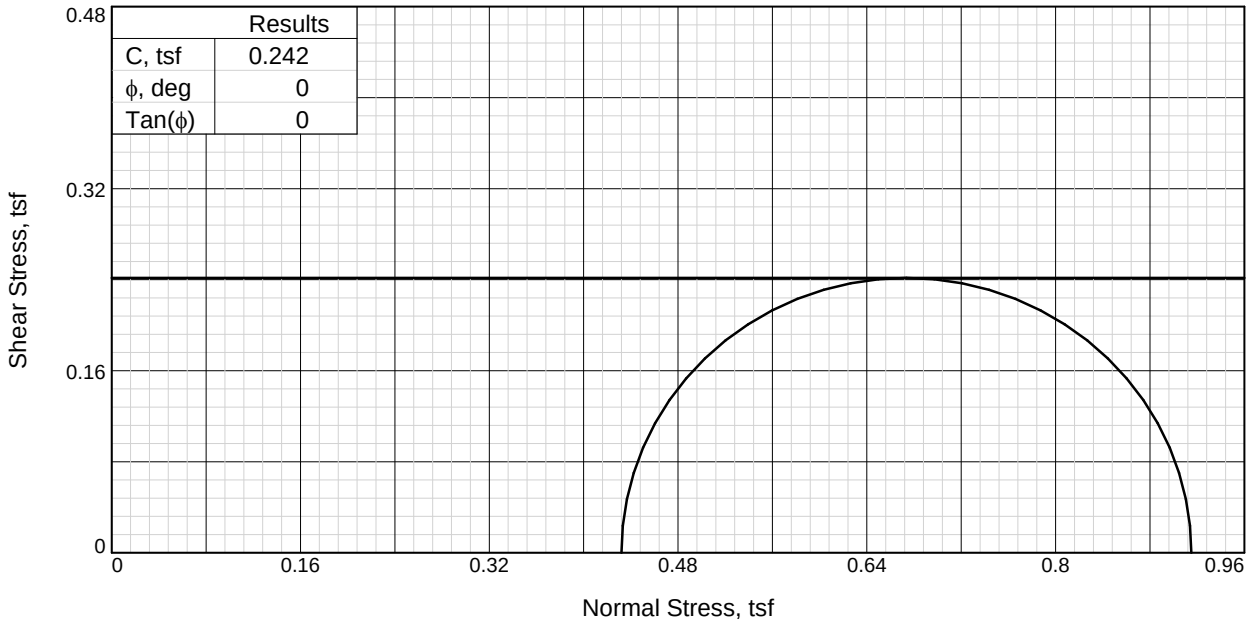
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

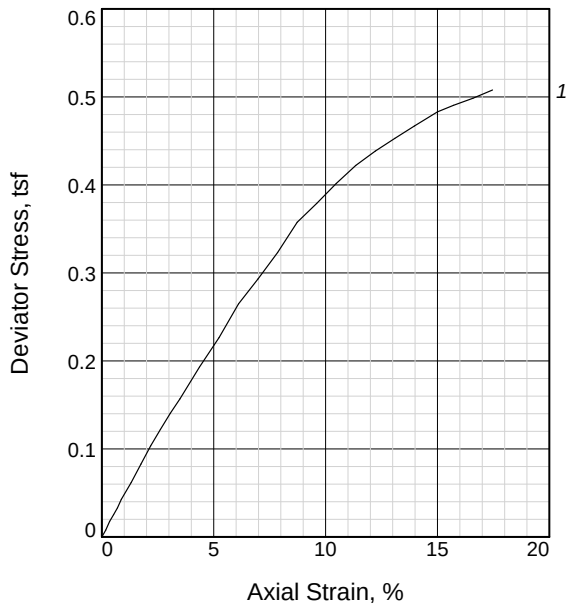
Depth: 12.5'-14.5' **Sample Number:** B-45, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: RGP





Sample No.		1
Initial	Water Content, %	38.0
	Dry Density, pcf	83.1
	Saturation, %	99.7
	Void Ratio	1.0280
	Diameter, in.	2.77
	Height, in.	5.73
At Test	Water Content, %	38.1
	Dry Density, pcf	83.1
	Saturation, %	100.0
	Void Ratio	1.0280
	Diameter, in.	2.77
	Height, in.	5.73
Strain rate, in./min.		0.06
Back Pressure, psi		0.00
Cell Pressure, psi		6.00
Fail. Stress, tsf		0.48
Strain, %		15.0
Ult. Stress, tsf		0.51
Strain, %		
σ_1 Failure, tsf		0.92
σ_3 Failure, tsf		0.43

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Bluish Gray Lean Silt

LL= 38 **PL=** 27 **PI=** 11
Assumed Specific Gravity= 2.70
Remarks:

Client:

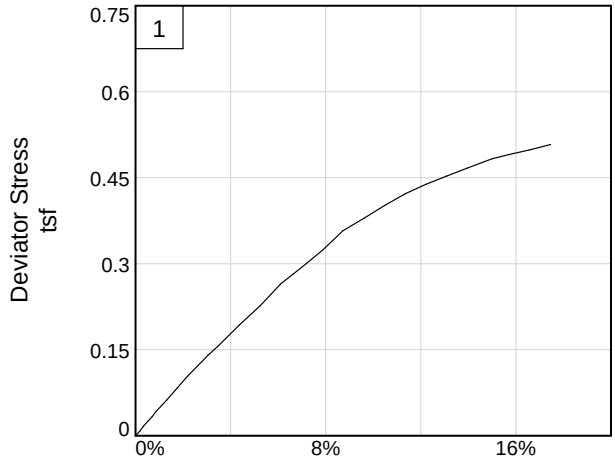
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-47, T-1 **Depth:** 10.0'-12.0'

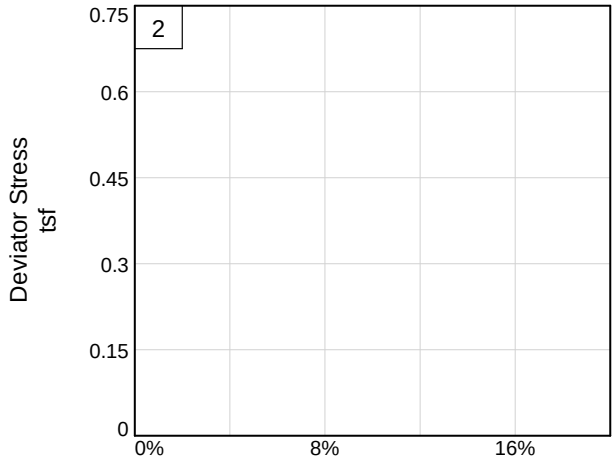
Proj. No.: 21-126 **Date Sampled:** 12-02-2021

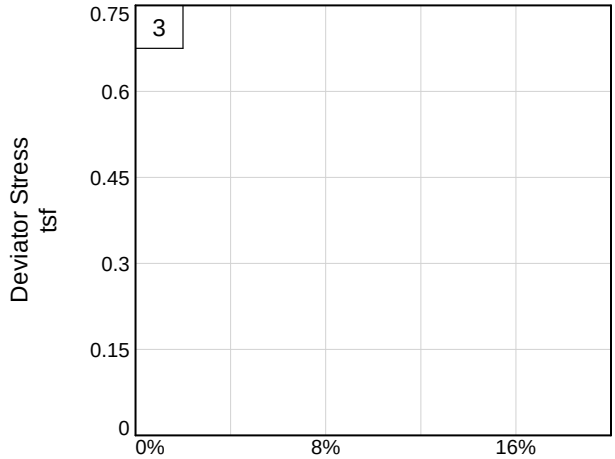
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

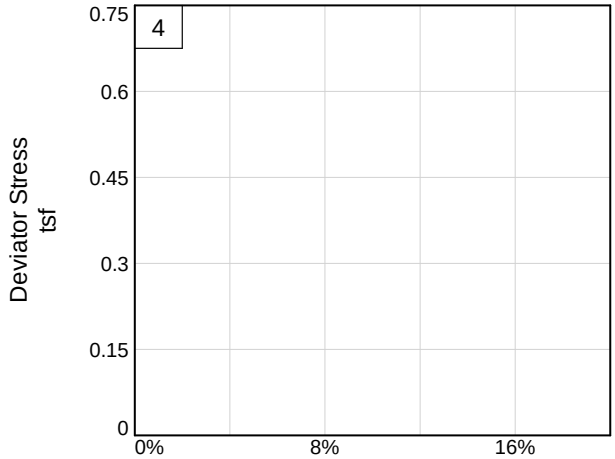
Figure _____

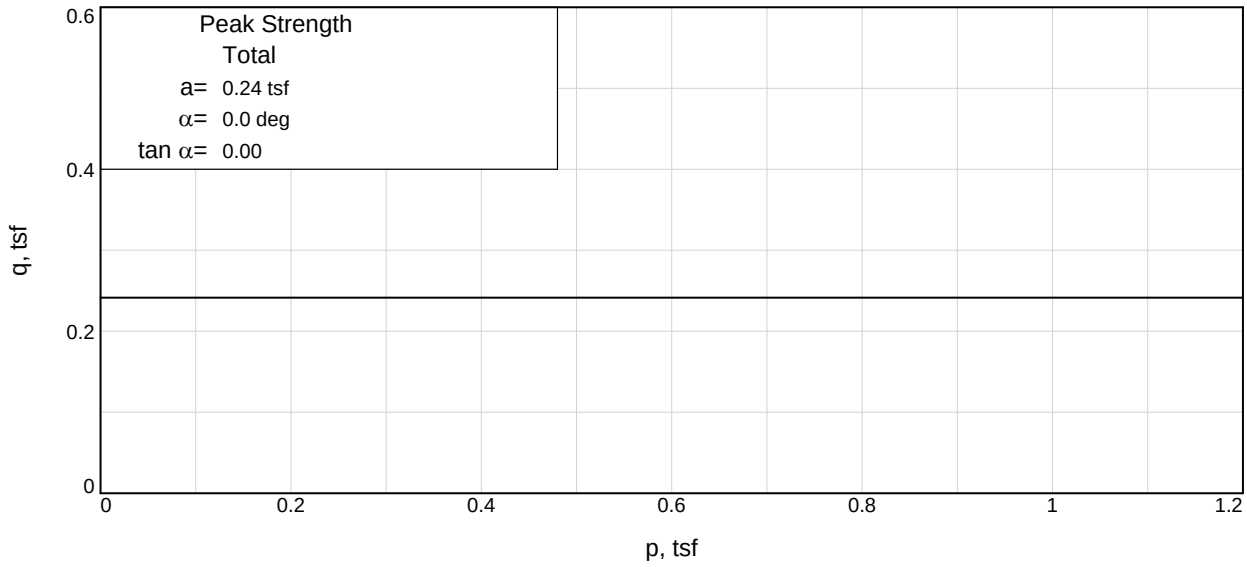
Tested By: RGP











Client:

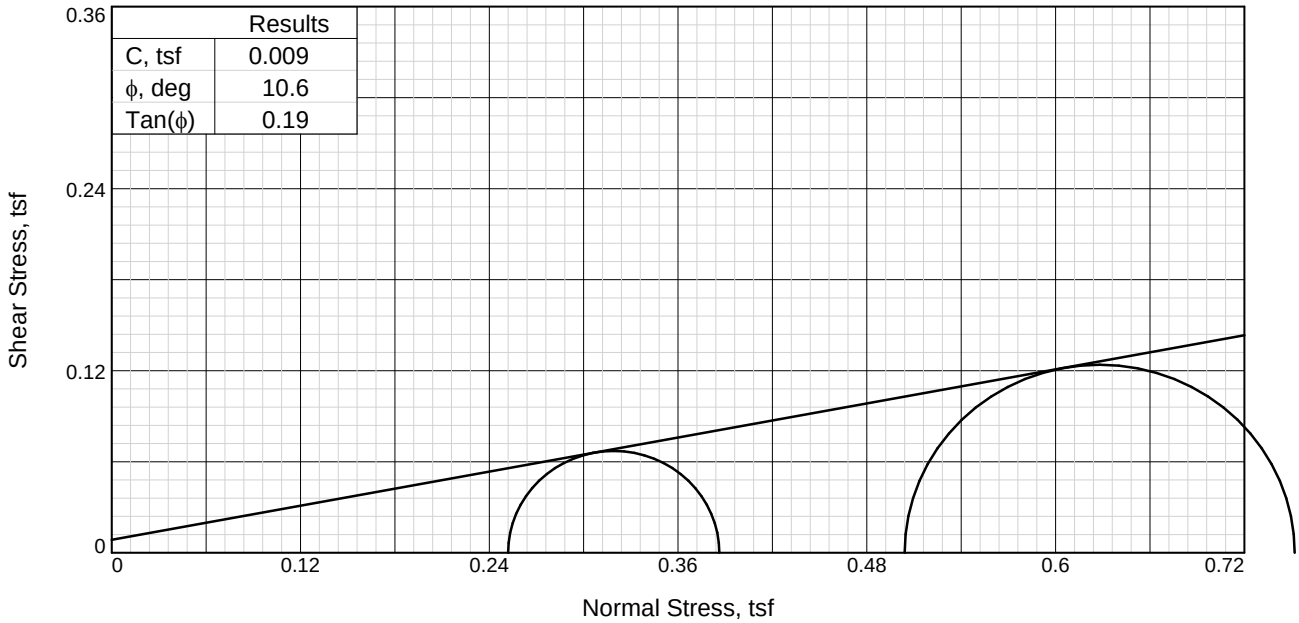
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

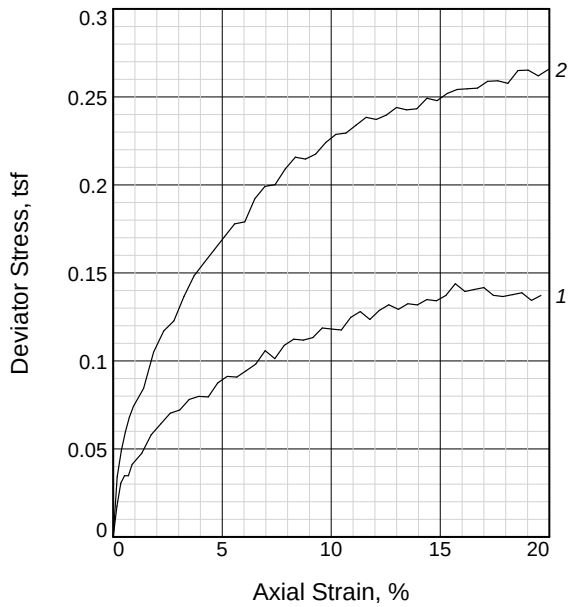
Depth: 10.0'-12.0' **Sample Number:** B-47, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: RGP





Sample No.		1	2
Initial	Water Content, %	41.6	38.5
	Dry Density, pcf	79.0	83.3
	Saturation, %	99.6	100.0
	Void Ratio	1.1189	1.0578
	Diameter, in.	2.75	2.75
	Height, in.	5.72	5.39
At Test	Water Content, %	42.3	38.5
	Dry Density, pcf	78.4	83.3
	Saturation, %	100.0	100.0
	Void Ratio	1.1345	1.0561
	Diameter, in.	2.76	2.75
	Height, in.	5.74	5.39
Strain rate, in./min.		0.06	0.06
Back Pressure, psi		0.00	0.00
Cell Pressure, psi		3.50	7.00
Fail. Stress, tsf		0.13	0.25
Strain, %		14.8	14.8
Ult. Stress, tsf		0.14	0.26
Strain, %			
σ_1 Failure, tsf		0.39	0.75
σ_3 Failure, tsf		0.25	0.50

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Dark Gray Silty Lean Clay

LL= 47 **PL=** 22 **PI=** 25
Assumed Specific Gravity= 2.68
Remarks: 12/28/21
#1 I-A, #2 I-A.
#3 Collapsed upon extraction

Figure _____

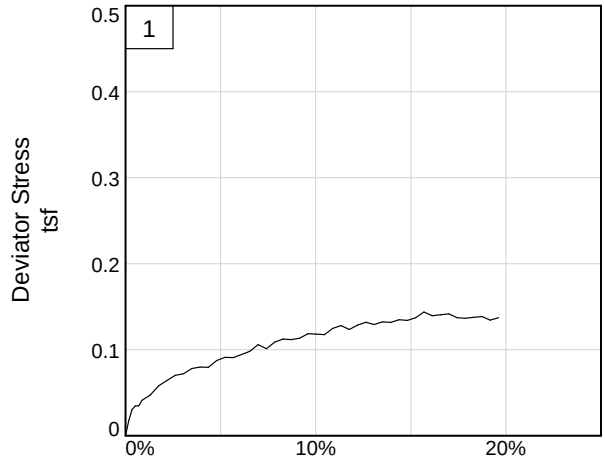
Client:

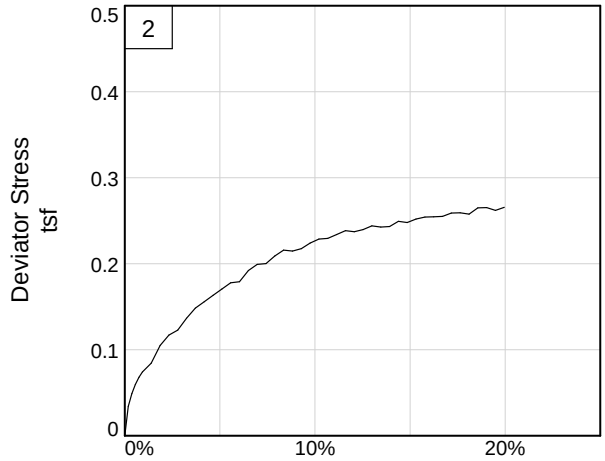
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-50, T-1 **Depth:** 18.0'-20.0'

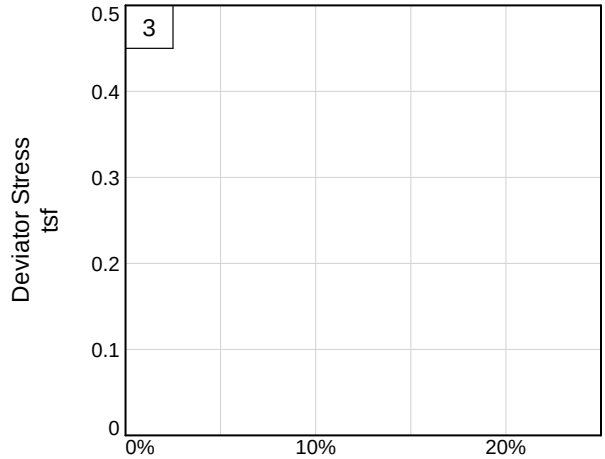
Proj. No.: 21-126 **Date Sampled:**

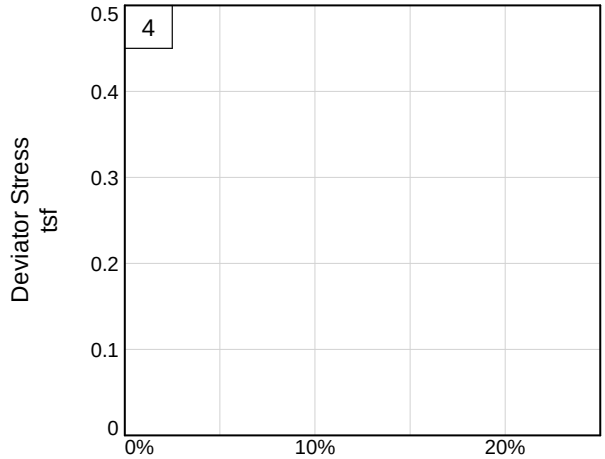
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

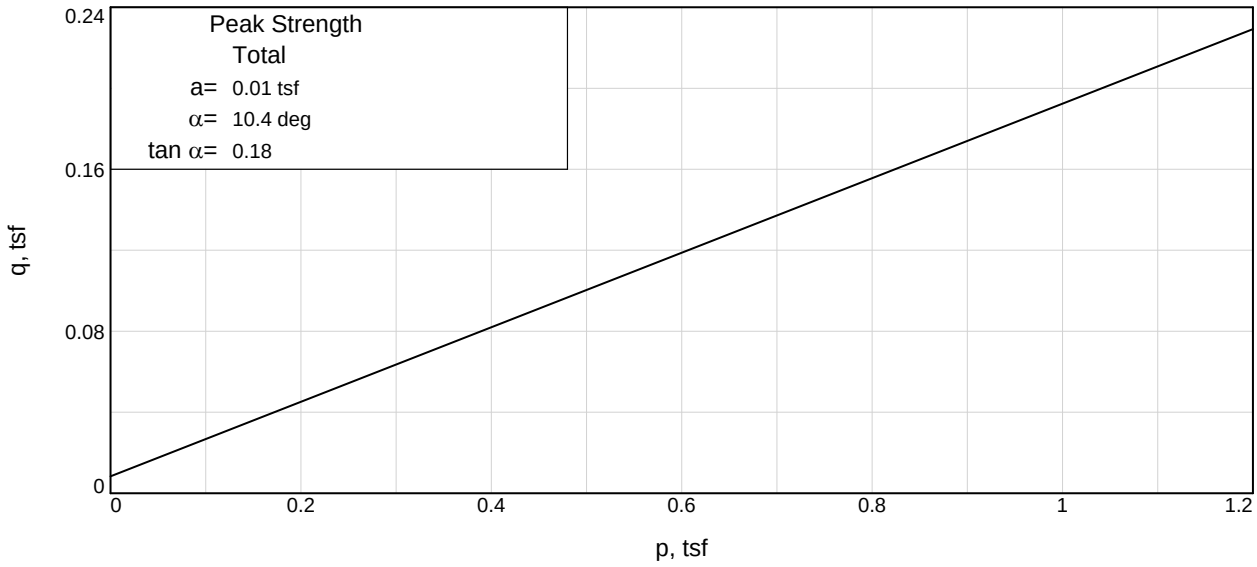
Tested By: JH











Client:

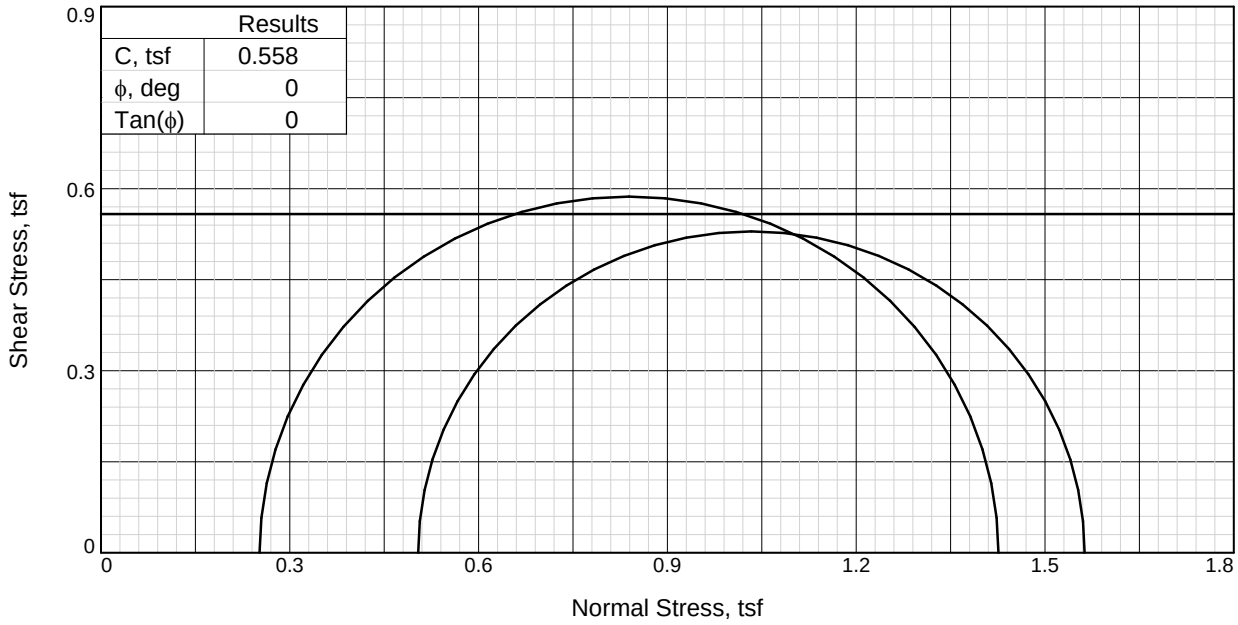
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

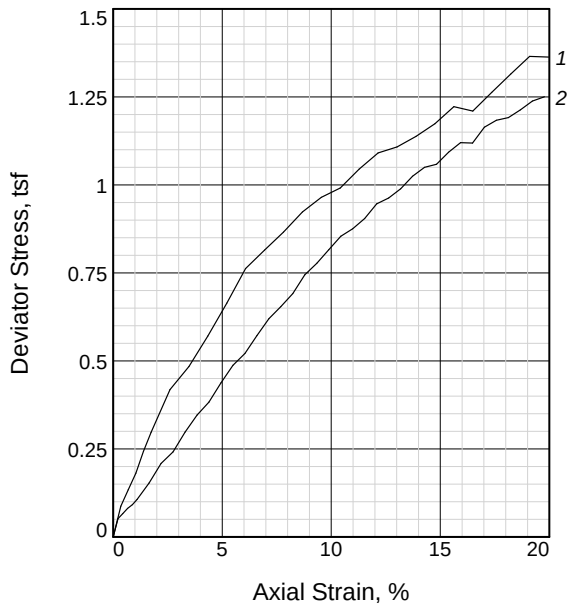
Depth: 18.0'-20.0' **Sample Number:** B-50, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: JH





Sample No.		1	2
Initial	Water Content, %	29.4	29.8
	Dry Density, pcf	80.2	88.7
	Saturation, %	72.6	90.1
	Void Ratio	1.0856	0.8872
	Diameter, in.	1.42	2.78
	Height, in.	2.91	4.55
At Test	Water Content, %	38.4	33.1
	Dry Density, pcf	82.5	88.7
	Saturation, %	100.0	100.0
	Void Ratio	1.0279	0.8872
	Diameter, in.	1.41	2.78
	Height, in.	2.88	4.55
Strain rate, in./min.		0.03	0.06
Back Pressure, psi		0.00	0.00
Cell Pressure, psi		3.50	7.00
Fail. Stress, tsf		1.17	1.06
Strain, %		14.8	14.8
Ult. Stress, tsf		1.37	1.25
Strain, %			
σ_1 Failure, tsf		1.43	1.56
σ_3 Failure, tsf		0.25	0.50

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Dark Gray Silty Sand

LL= 30 **PL=** 23 **PI=** 7
Assumed Specific Gravity= 2.68
Remarks: 12/20/21
BULGING:#1 I-C, #2 I-A

Figure _____

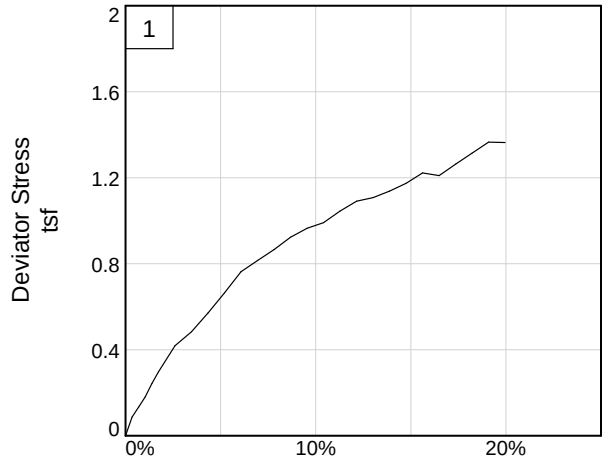
Client:

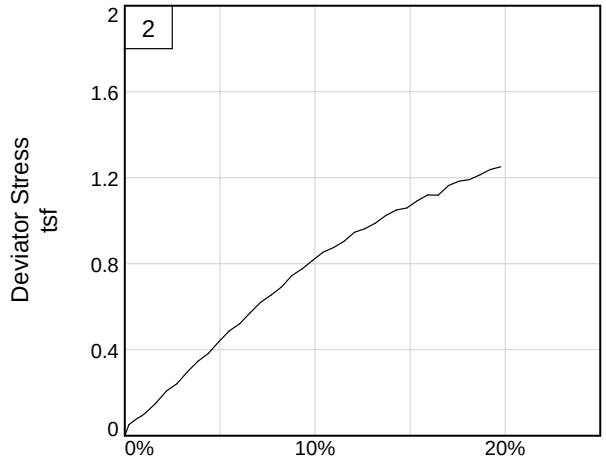
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-53, T-1 **Depth:** 10.0'-12.0'

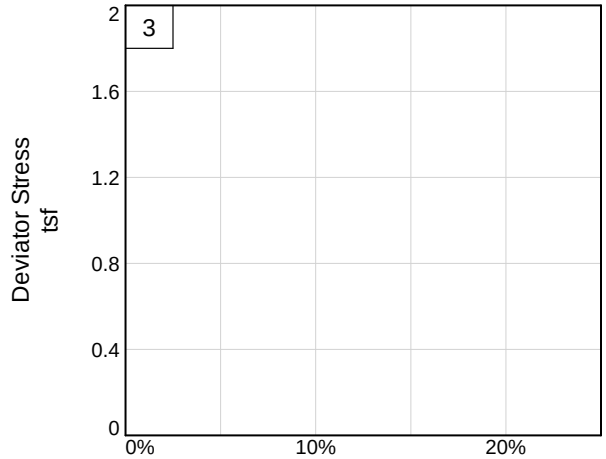
Proj. No.: 21-126 **Date Sampled:**

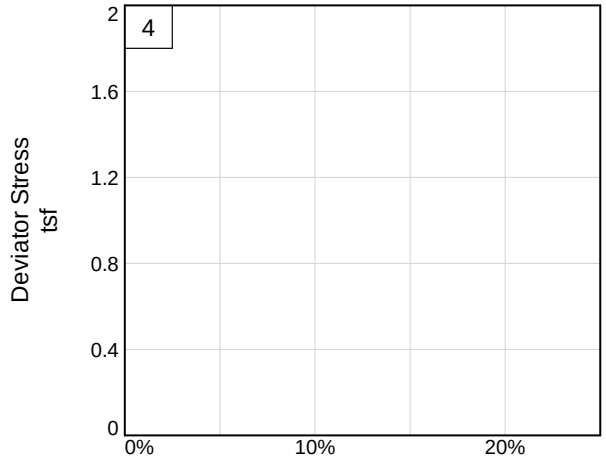
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

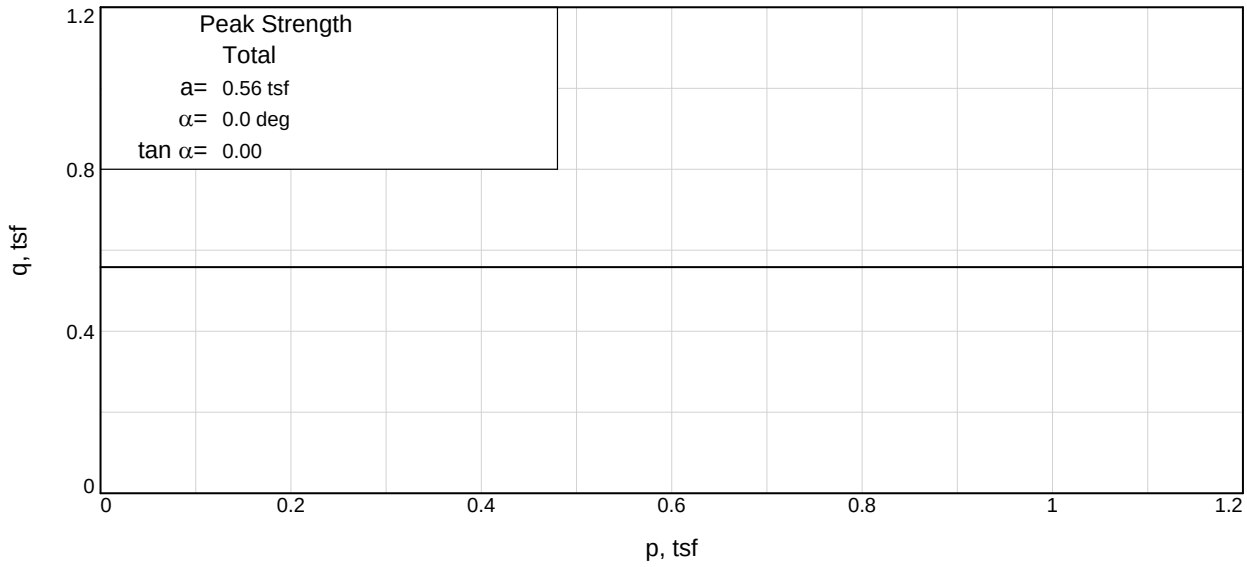
Tested By: JH











Client:

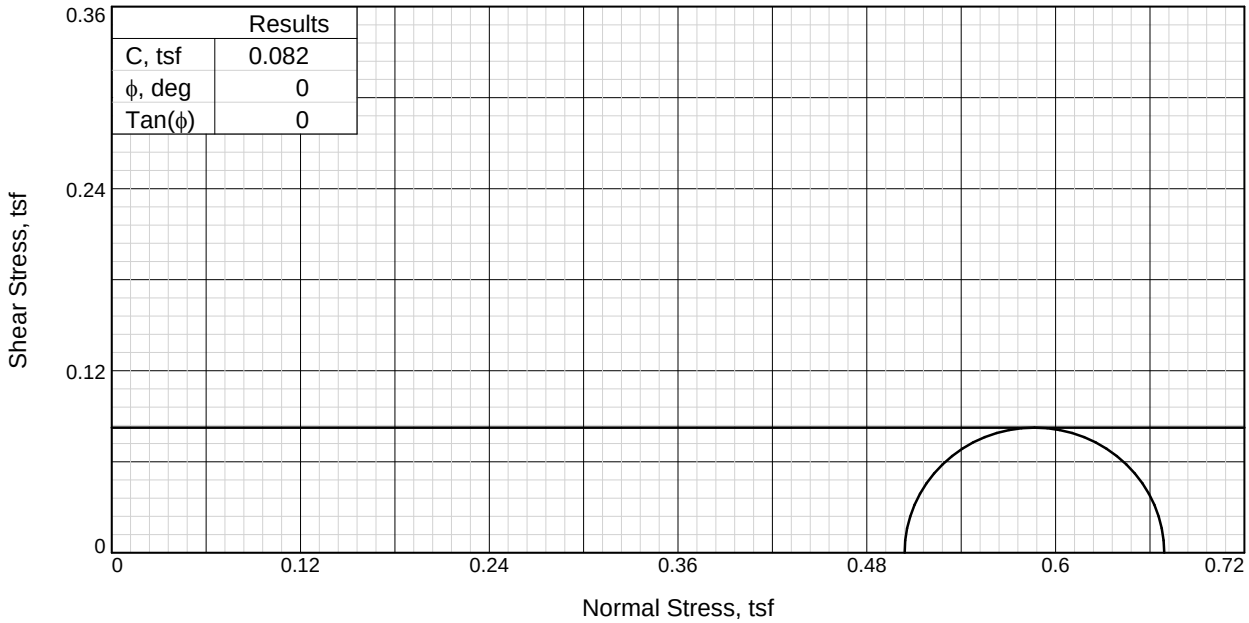
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

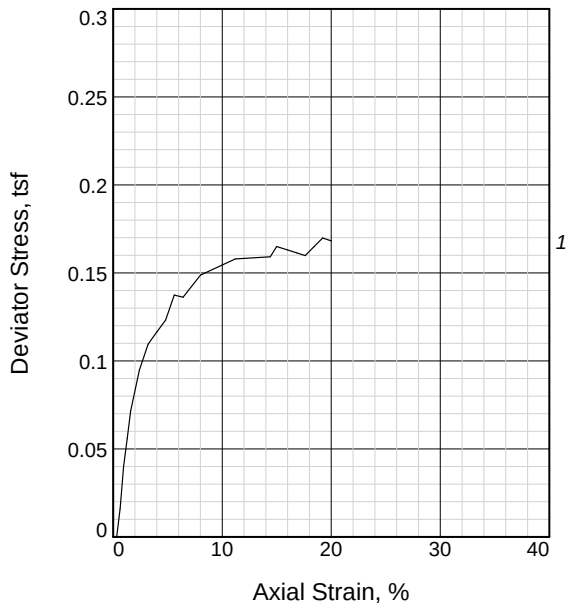
Depth: 10.0'-12.0' **Sample Number:** B-53, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: JH





Sample No.		1
Initial	Water Content, %	47.5
	Dry Density, pcf	73.6
	Saturation, %	100.0
	Void Ratio	1.2702
	Diameter, in.	1.39
	Height, in.	3.12
At Test	Water Content, %	47.5
	Dry Density, pcf	73.6
	Saturation, %	100.0
	Void Ratio	1.2702
	Diameter, in.	1.39
	Height, in.	3.12
Strain rate, in./min.		0.03
Back Pressure, psi		0.00
Cell Pressure, psi		7.00
Fail. Stress, tsf		0.16
Strain, %		15.0
Ult. Stress, tsf		0.16
Strain, %		
σ_1 Failure, tsf		0.67
σ_3 Failure, tsf		0.50

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Bluish Gray Fat Clay

LL= 58 **PL=** 20 **PI=** 38
Assumed Specific Gravity= 2.675
Remarks:

Figure _____

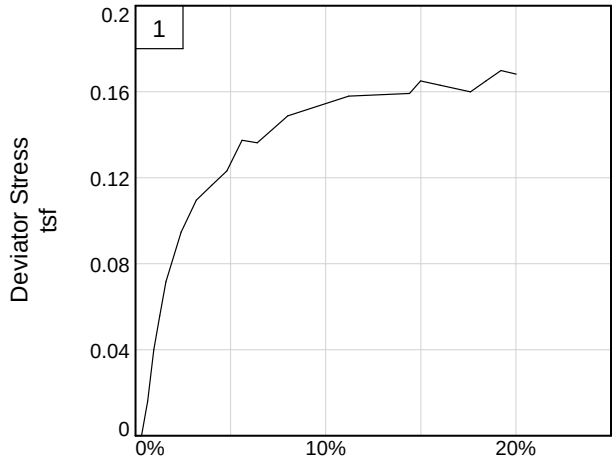
Client:

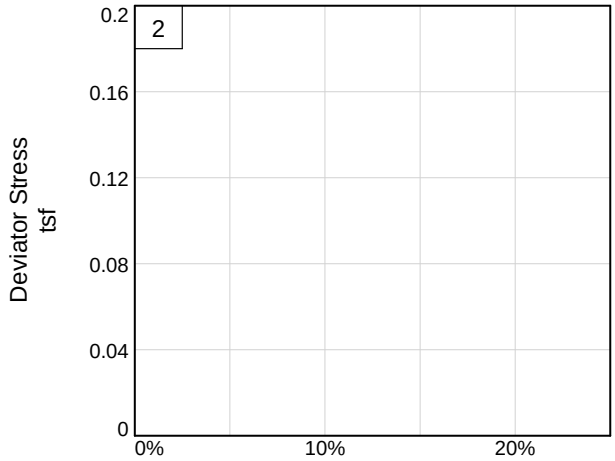
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-54, T-1 **Depth:** 18.0'-20.0'

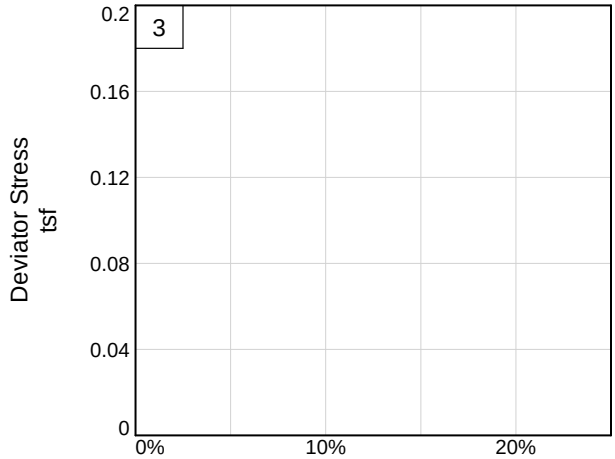
Proj. No.: 21-126 **Date Sampled:** 09-01-2021

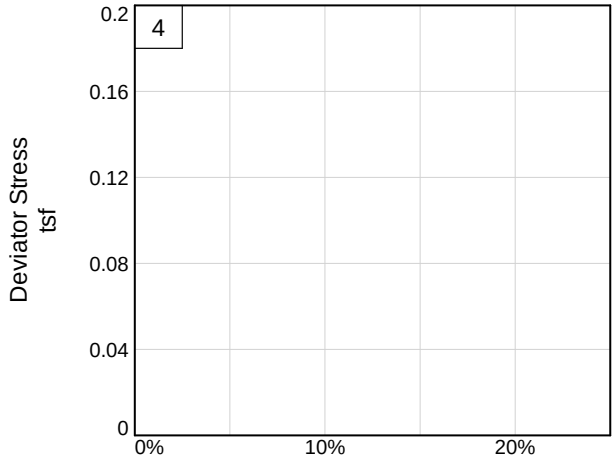
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

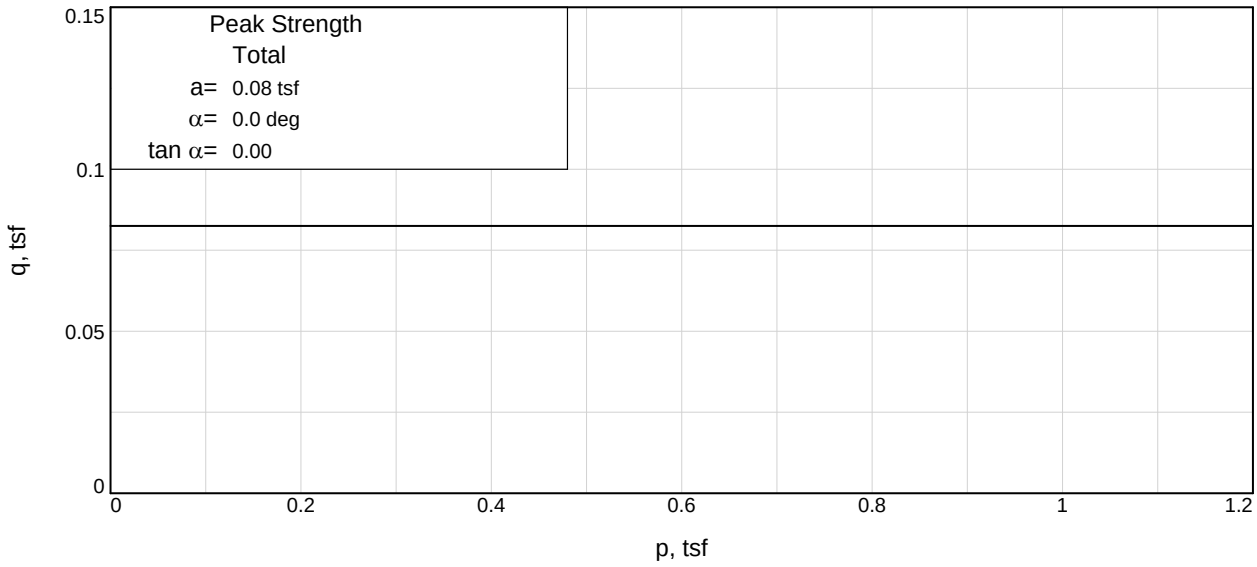
Tested By: RGP











Client:

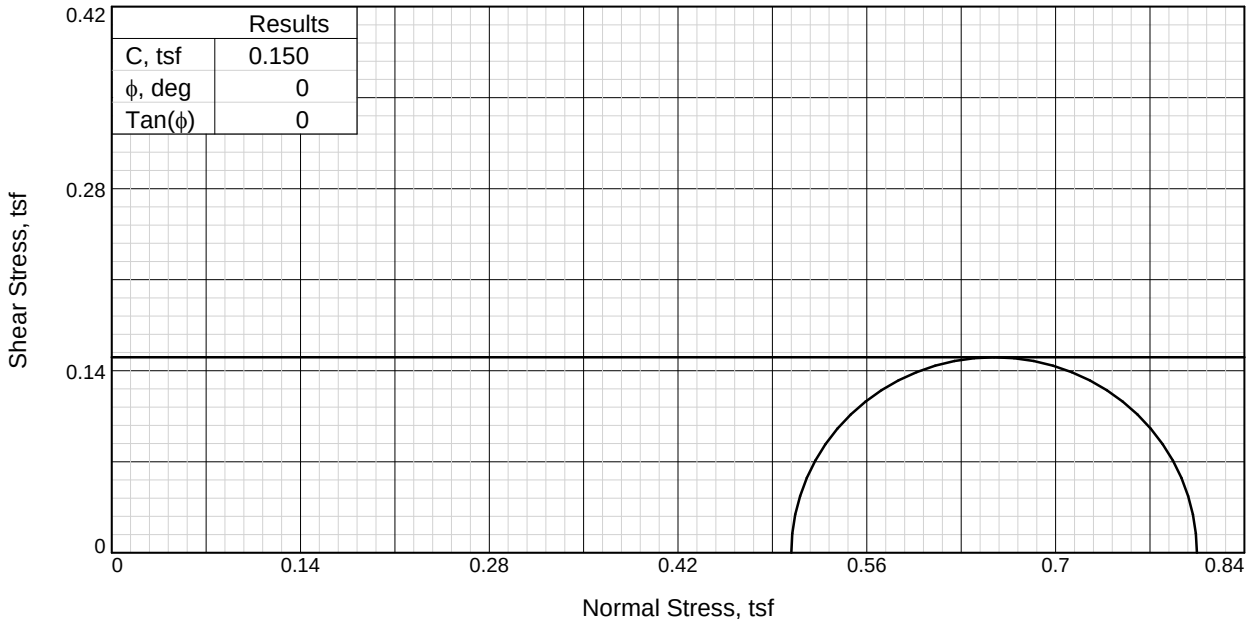
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

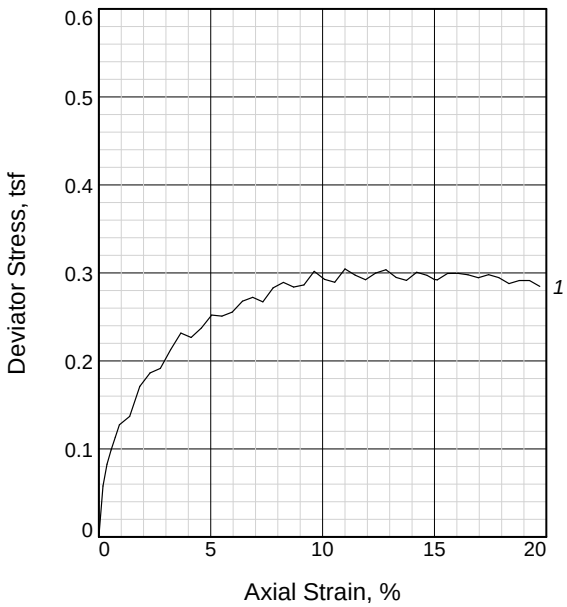
Depth: 18.0'-20.0' **Sample Number:** B-54, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: RGP





Sample No.		1
Initial	Water Content, %	45.6
	Dry Density, pcf	76.5
	Saturation, %	100.0
	Void Ratio	1.2684
	Diameter, in.	2.76
	Height, in.	5.45
At Test	Water Content, %	45.6
	Dry Density, pcf	76.5
	Saturation, %	100.0
	Void Ratio	1.2684
	Diameter, in.	2.76
	Height, in.	5.45
Strain rate, in./min.		0.06
Back Pressure, psi		0.00
Cell Pressure, psi		7.00
Fail. Stress, tsf		0.30
Strain, %		14.2
Ult. Stress, tsf		0.30
Strain, %		
σ_1 Failure, tsf		0.80
σ_3 Failure, tsf		0.50

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Dark Gray Silty fat Clay

LL= 55 **PL=** 19 **PI=** 36
Assumed Specific Gravity= 2.78
Remarks: 12/18/21
FRACTURE: TYPE II-C

Figure _____

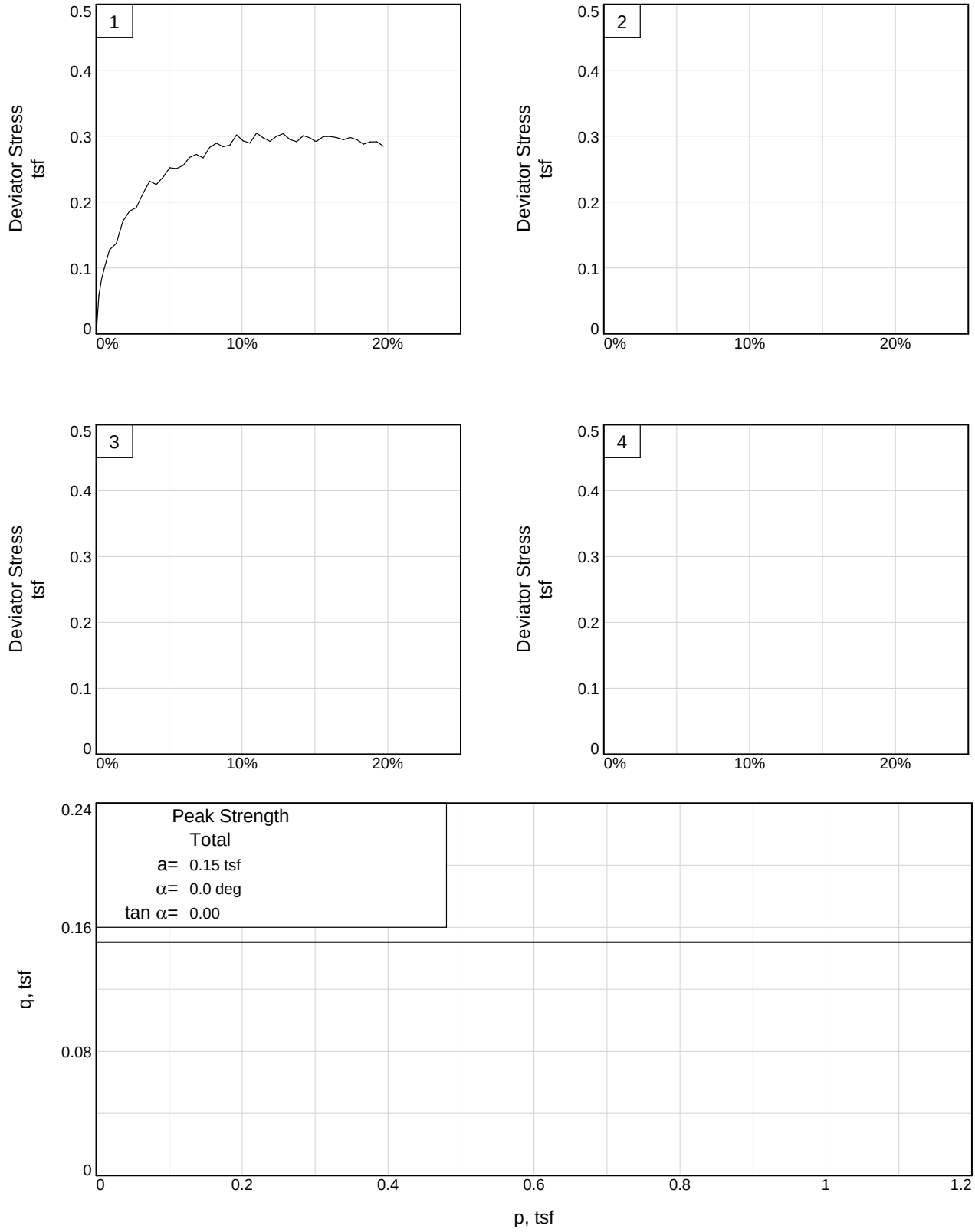
Client:

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-55, T-1 **Depth:** 15.0'-17.0'

Proj. No.: 21-126 **Date Sampled:**

TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

Tested By: JH



Client:

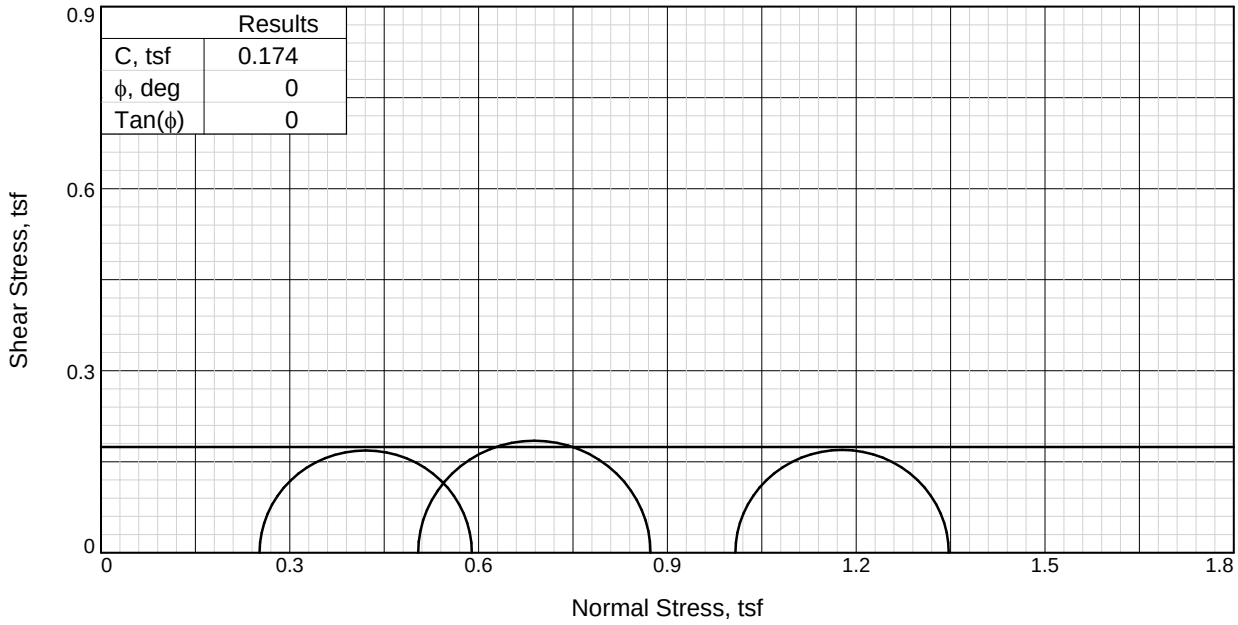
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

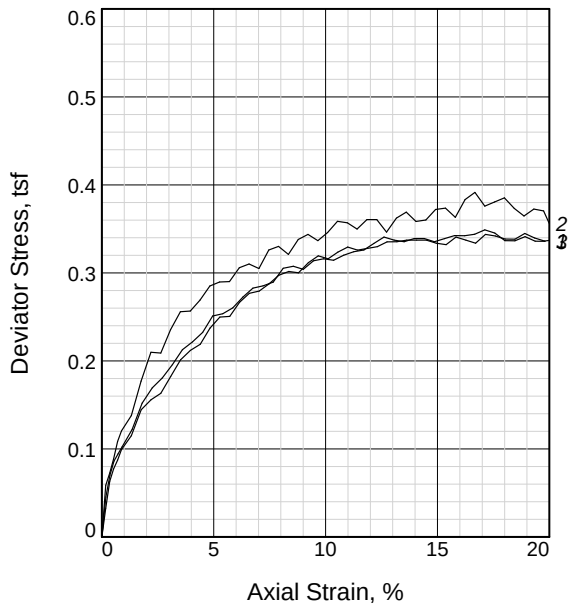
Depth: 15.0'-17.0' **Sample Number:** B-55, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: JH





Sample No.		1	2	3
Initial	Water Content, %	37.6	38.1	39.9
	Dry Density, pcf	84.0	82.8	81.0
	Saturation, %	100.0	98.7	99.2
	Void Ratio	1.0212	1.0505	1.0952
	Diameter, in.	2.76	2.77	2.76
	Height, in.	5.69	5.69	5.56
At Test	Water Content, %	37.5	38.8	39.9
	Dry Density, pcf	84.0	82.7	81.4
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.0212	1.0542	1.0862
	Diameter, in.	2.76	2.77	2.76
	Height, in.	5.69	5.70	5.55
Strain rate, in./min.		0.06	0.06	0.06
Back Pressure, psi		0.00	0.00	0.00
Cell Pressure, psi		3.50	7.00	14.00
Fail. Stress, tsf		0.34	0.37	0.34
Strain, %		13.6	13.6	14.0
Ult. Stress, tsf		0.34	0.39	0.34
Strain, %				
σ_1 Failure, tsf		0.59	0.87	1.35
σ_3 Failure, tsf		0.25	0.50	1.01

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Dark Gray Lean Silt

LL= 38 **PL=** 25 **PI=** 13
Assumed Specific Gravity= 2.72
Remarks: 12/24/21
#1 II-C, #2 II-C, #3 I-A

Figure _____

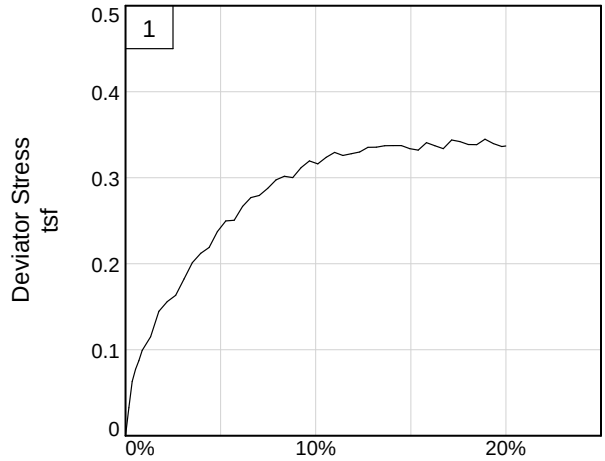
Client:

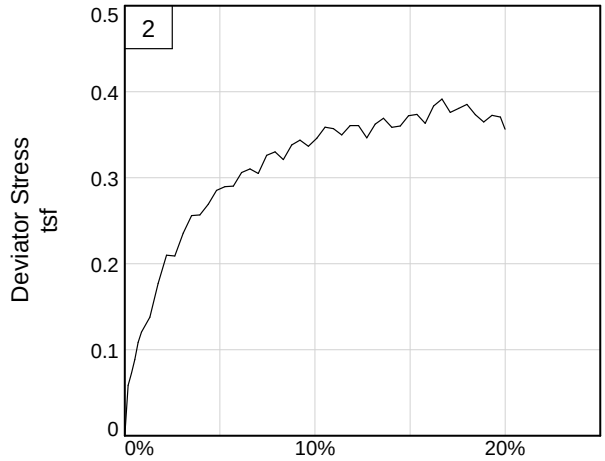
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-57, T-1 **Depth:** 15.0'-17.0'

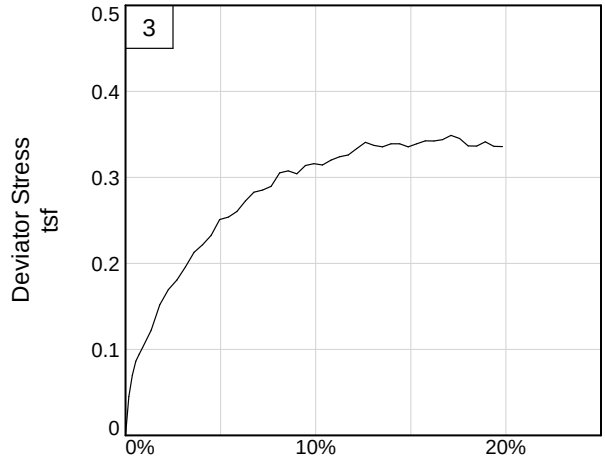
Proj. No.: 21-126 **Date Sampled:**

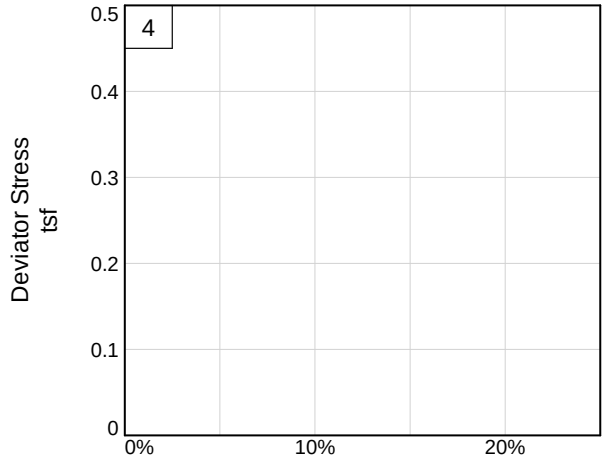
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

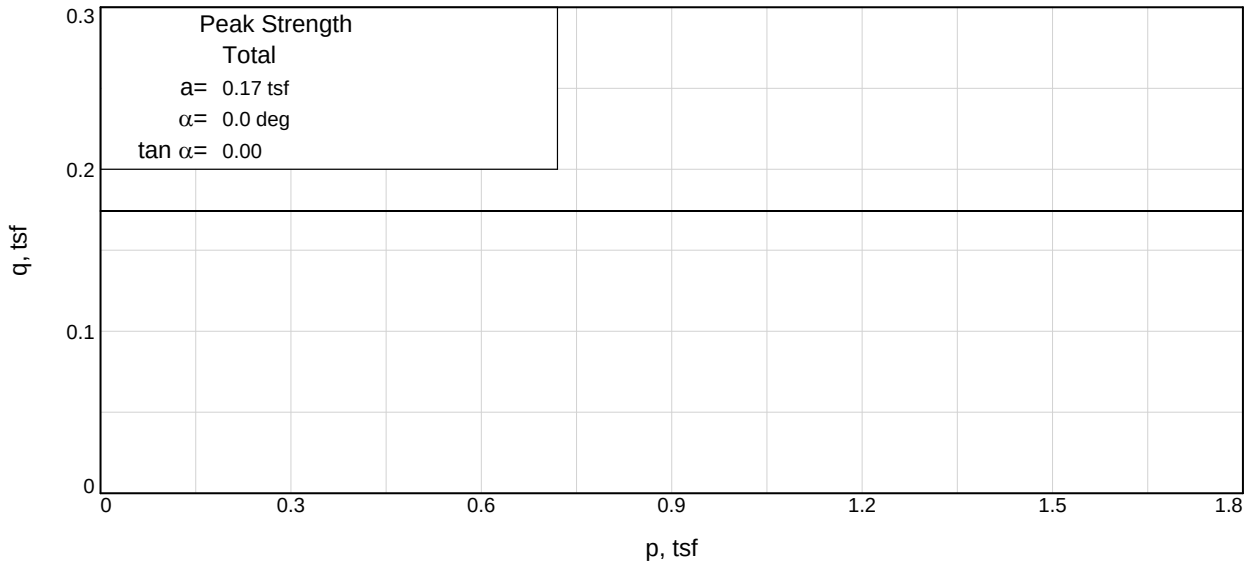
Tested By: JH











Client:

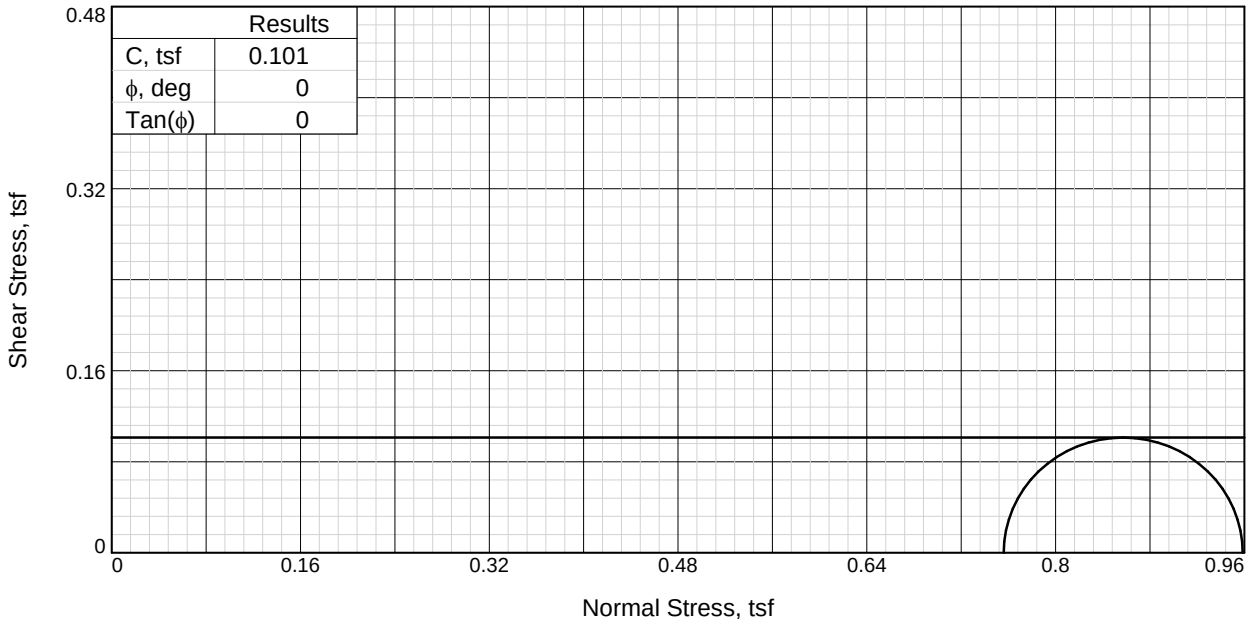
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

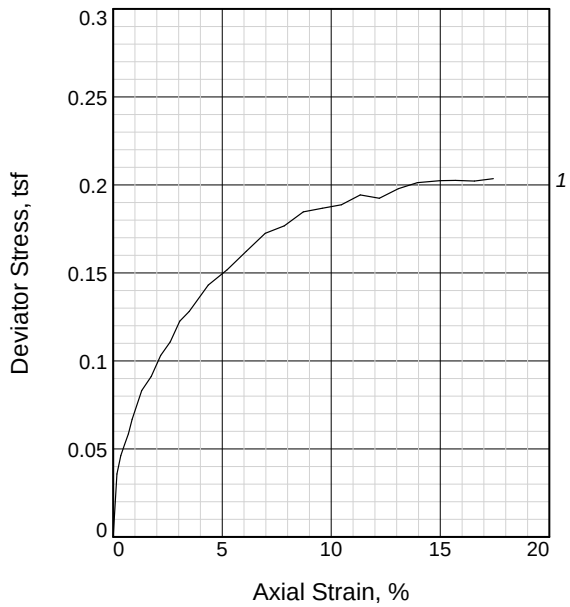
Depth: 15.0'-17.0' **Sample Number:** B-57, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: JH





Sample No.		1
Initial	Water Content, %	54.4
	Dry Density, pcf	69.6
	Saturation, %	102.8
	Void Ratio	1.4382
	Diameter, in.	2.80
	Height, in.	5.74
At Test	Water Content, %	52.9
	Dry Density, pcf	69.6
	Saturation, %	100.0
	Void Ratio	1.4382
	Diameter, in.	2.80
	Height, in.	5.74
Strain rate, in./min.		0.06
Back Pressure, psi		0.00
Cell Pressure, psi		10.50
Fail. Stress, tsf		0.20
Strain, %		15.0
Ult. Stress, tsf		0.20
Strain, %		
σ_1 Failure, tsf		0.96
σ_3 Failure, tsf		0.76

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Bluish Gray Heavy Silt

LL= 53 **PL=** 30 **PI=** 23
Assumed Specific Gravity= 2.72
Remarks:

Figure _____

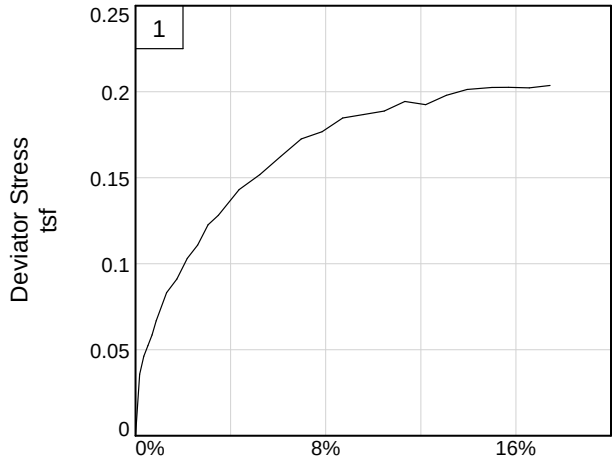
Client:

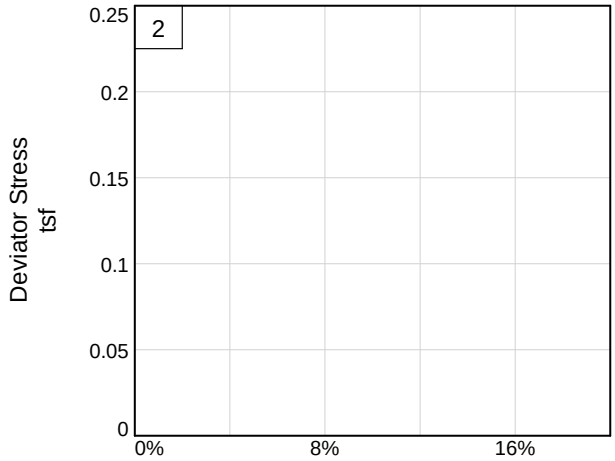
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-65, T-1 **Depth:** 15.0'-17.0'

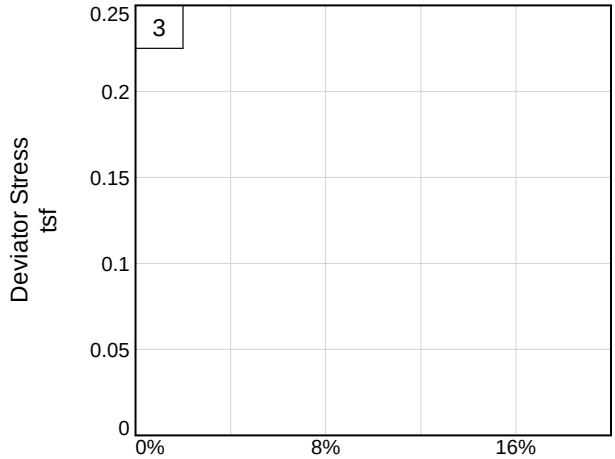
Proj. No.: 21-126 **Date Sampled:** 12-02-2021

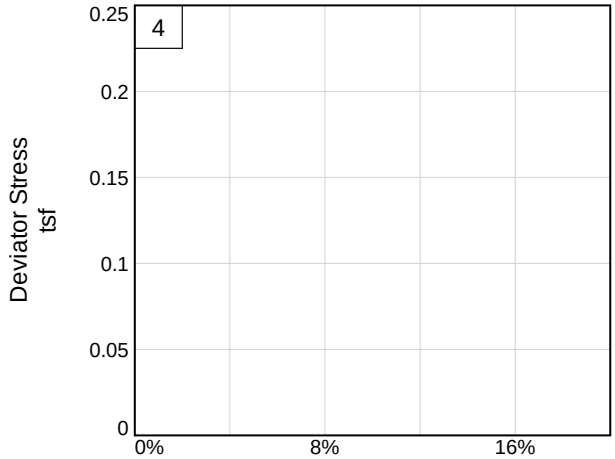
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

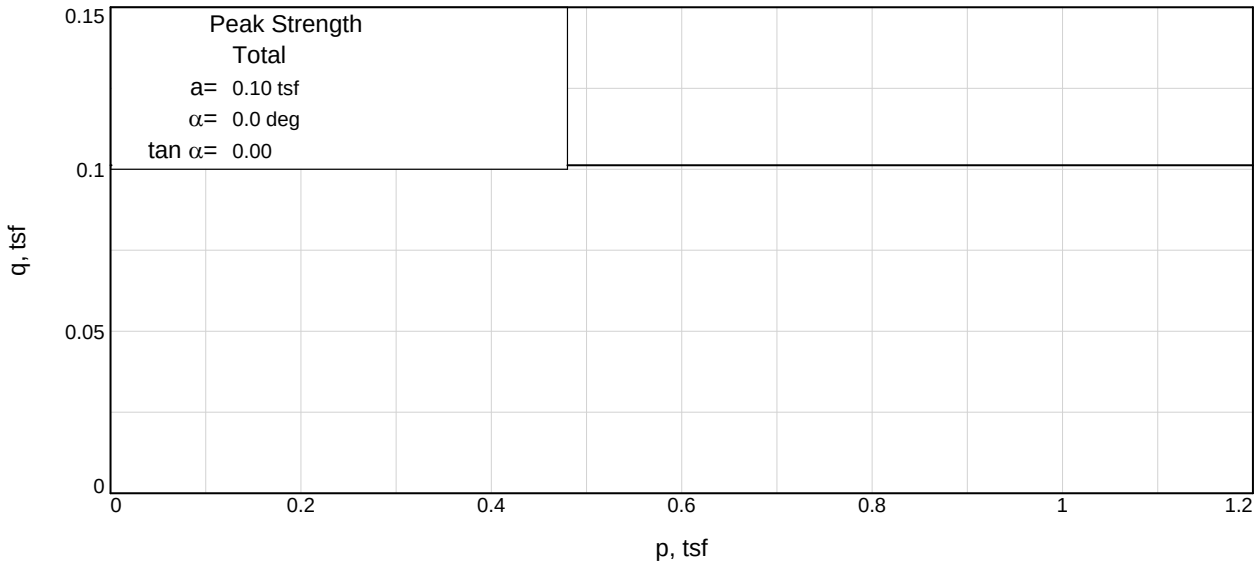
Tested By: RGP











Client:

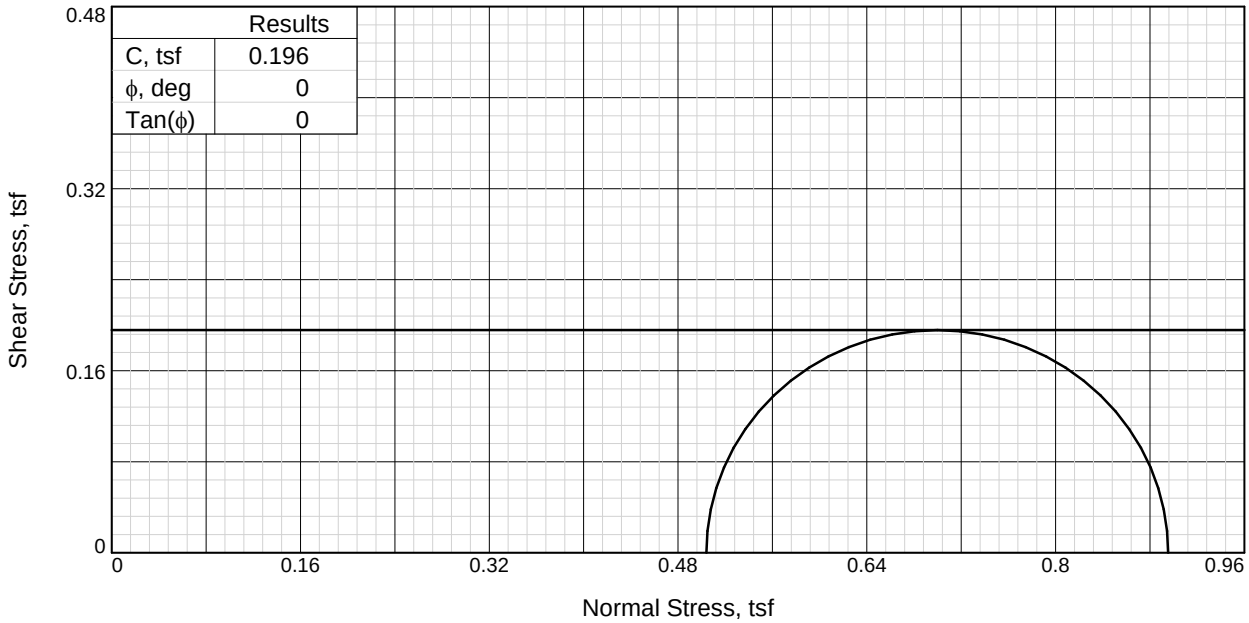
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

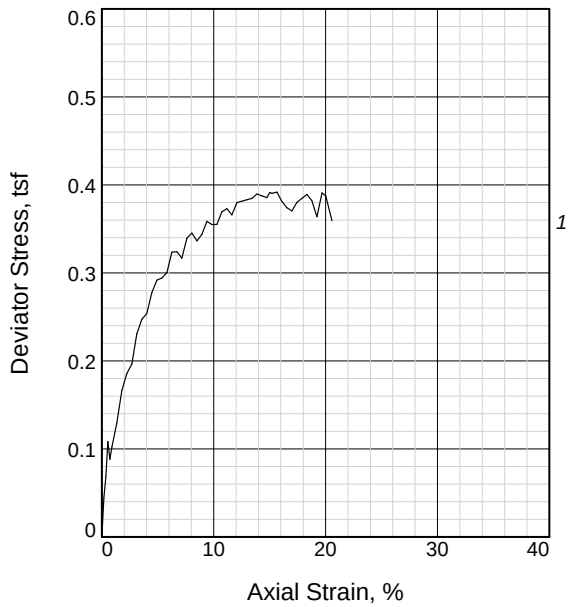
Depth: 15.0'-17.0' **Sample Number:** B-65, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: RGP





Sample No.		1
Initial	Water Content, %	37.3
	Dry Density, pcf	82.5
	Saturation, %	97.1
	Void Ratio	1.0283
	Diameter, in.	2.76
	Height, in.	5.60
At Test	Water Content, %	38.2
	Dry Density, pcf	82.7
	Saturation, %	100.0
	Void Ratio	1.0240
	Diameter, in.	2.76
	Height, in.	5.59
Strain rate, in./min.		0.06
Back Pressure, psi		0.00
Cell Pressure, psi		7.00
Fail. Stress, tsf		0.39
Strain, %		15.0
Ult. Stress, tsf		0.39
Strain, %		
σ_1 Failure, tsf		0.90
σ_3 Failure, tsf		0.50

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Dark Gray Lean Clay

LL= 37 **PL=** 20 **PI=** 17
Assumed Specific Gravity= 2.68
Remarks: 12/15/21 BULGING: TYPE I-C

Figure _____

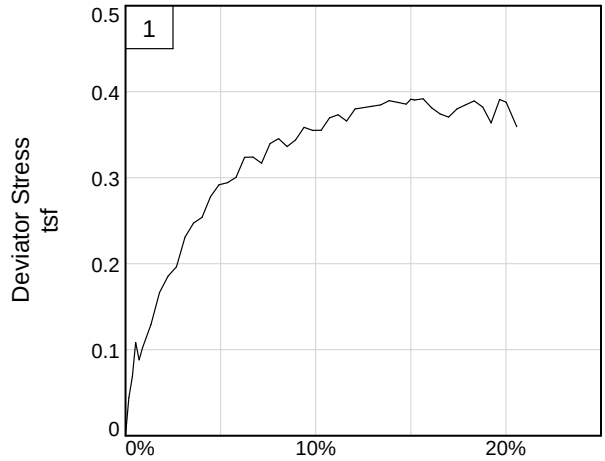
Client:

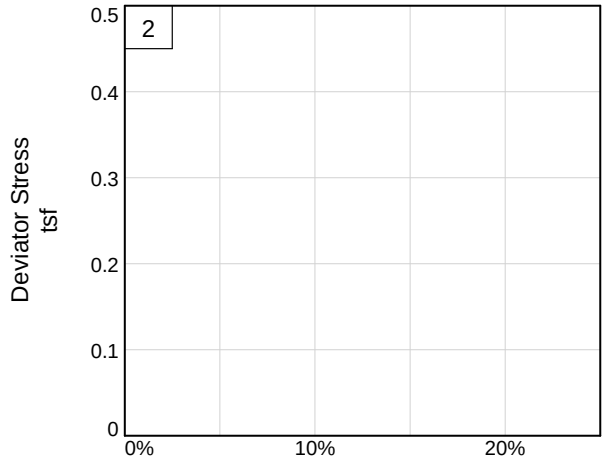
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-66, T-1 **Depth:** 16.5'-18.5'

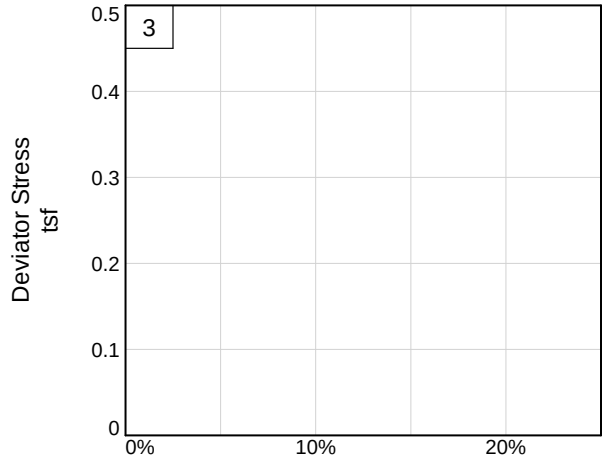
Proj. No.: 21-126 **Date Sampled:**

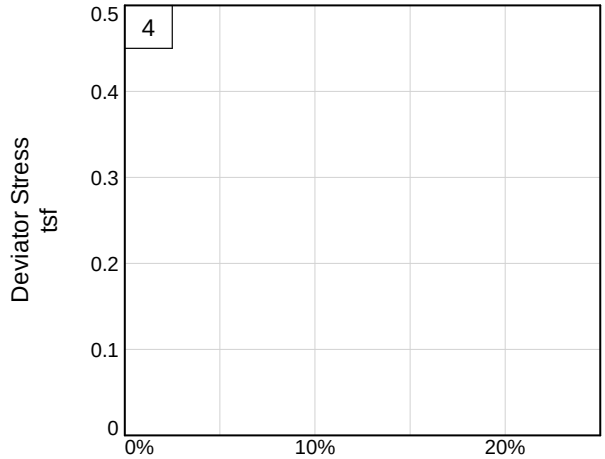
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

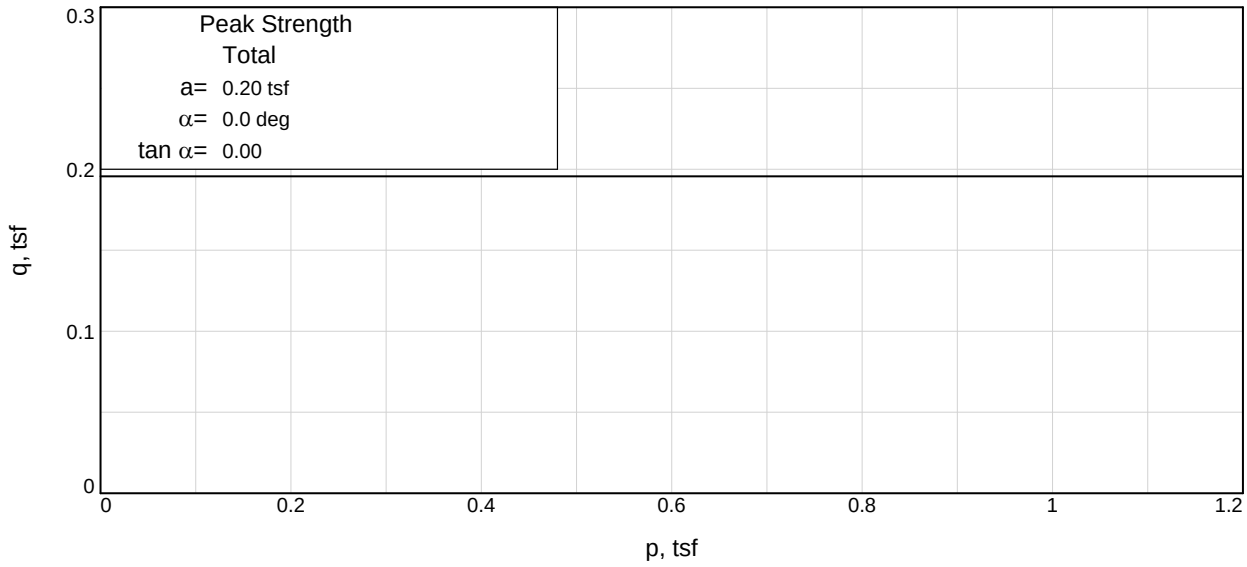
Tested By: JH











Client:

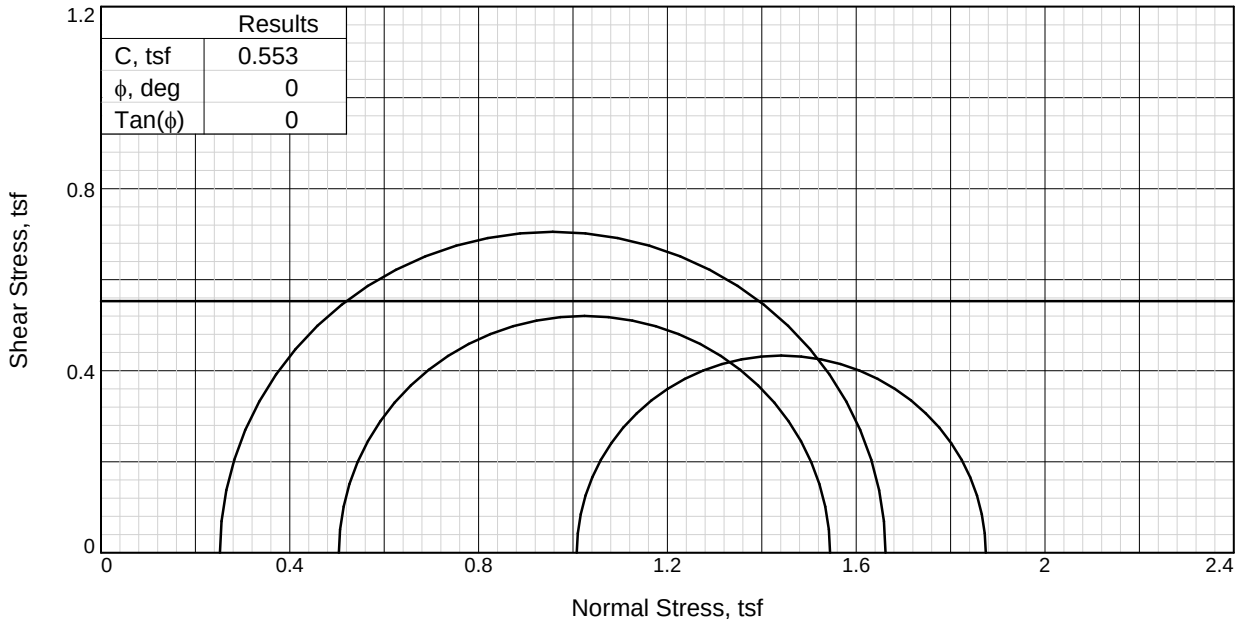
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

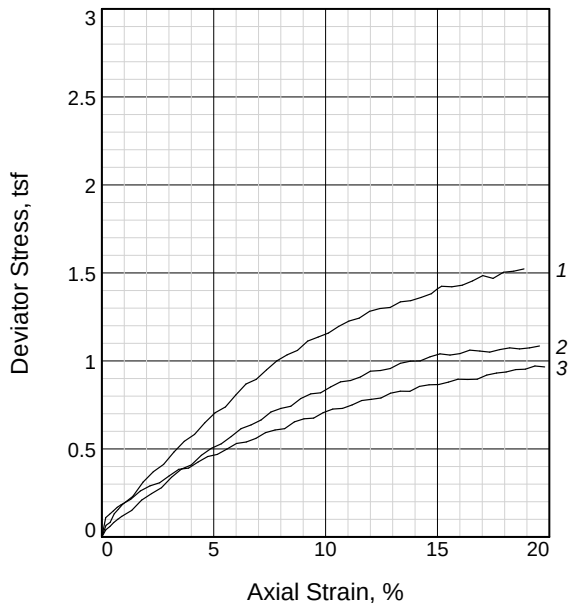
Depth: 16.5'-18.5' **Sample Number:** B-66, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: JH





Sample No.		1	2	3
Initial	Water Content, %	31.8	32.5	30.9
	Dry Density, pcf	89.0	87.1	90.4
	Saturation, %	96.9	94.6	97.4
	Void Ratio	0.8802	0.9202	0.8502
	Diameter, in.	2.77	2.77	2.76
	Height, in.	5.43	5.63	5.81
At Test	Water Content, %	32.8	34.1	31.6
	Dry Density, pcf	89.0	87.4	90.6
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.8802	0.9151	0.8473
	Diameter, in.	2.77	2.77	2.76
	Height, in.	5.43	5.62	5.81
Strain rate, in./min.		0.06	0.06	0.06
Back Pressure, psi		0.00	0.00	0.00
Cell Pressure, psi		3.50	7.00	14.00
Fail. Stress, tsf		1.41	1.04	0.87
Strain, %		15.0	15.1	15.1
Ult. Stress, tsf		1.52	1.09	0.97
Strain, %				
σ_1 Failure, tsf		1.66	1.54	1.87
σ_3 Failure, tsf		0.25	0.50	1.01

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Dark Gray Sandy Silt

LL= 27 **PL=** 26 **PI=** 1
Assumed Specific Gravity= 2.68
Remarks: 12-20-2021

Figure _____

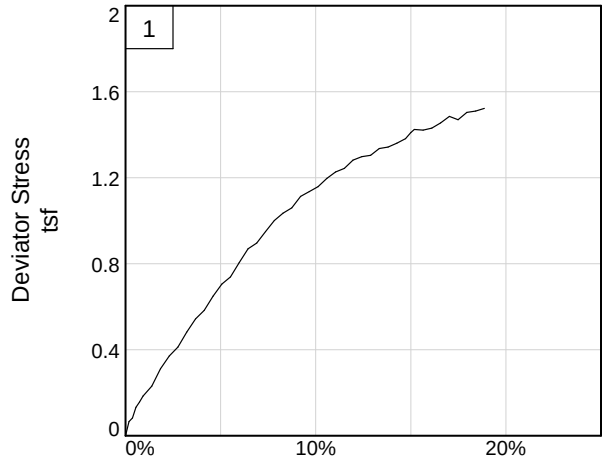
Client:

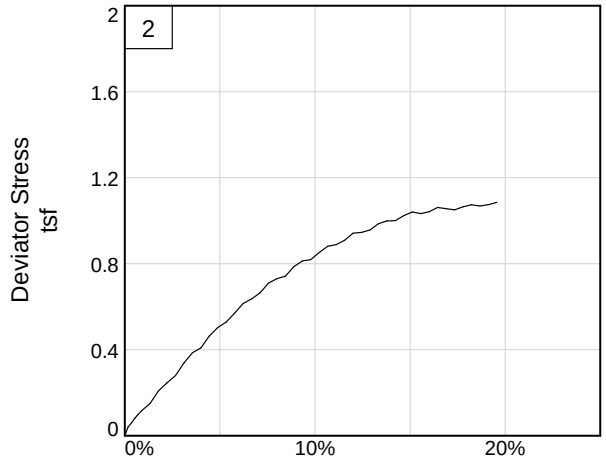
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-68, T-1 **Depth:** 7.5'-9.5'

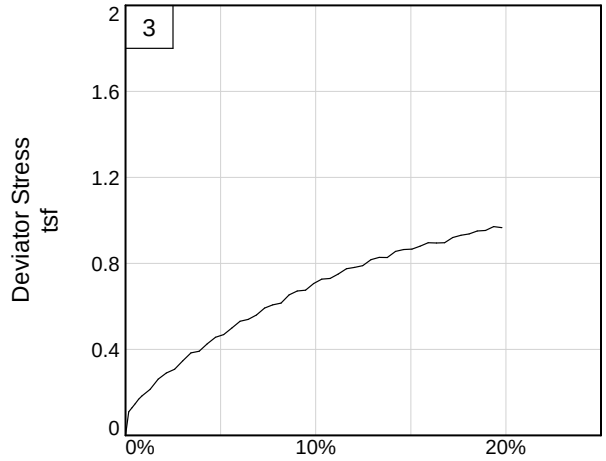
Proj. No.: 21-126 **Date Sampled:**

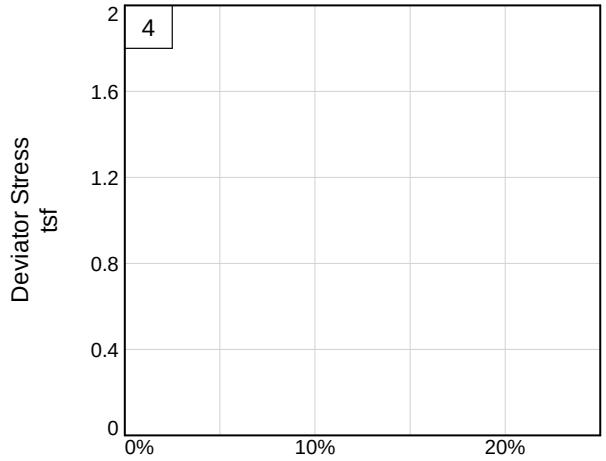
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

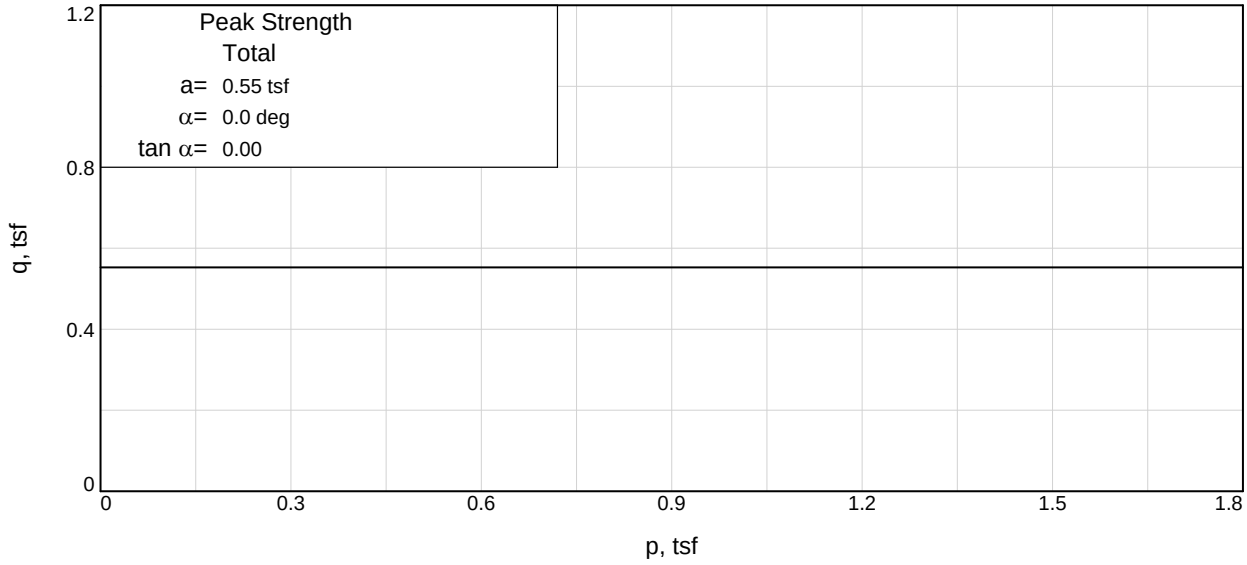
Tested By: JH











Client:

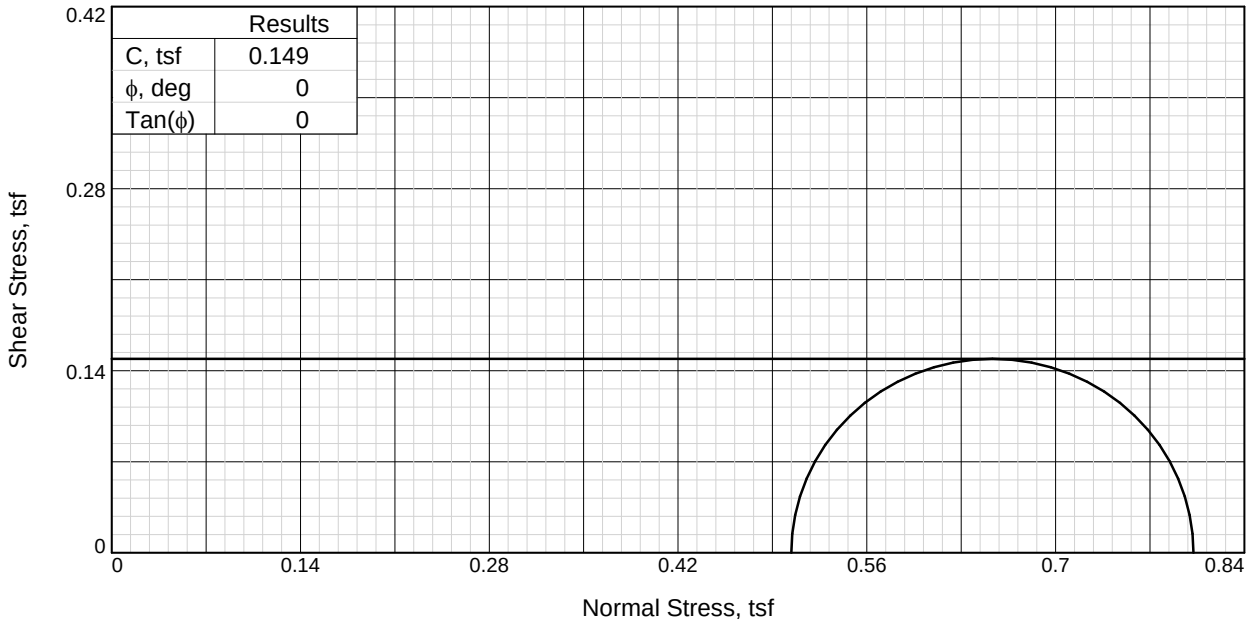
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

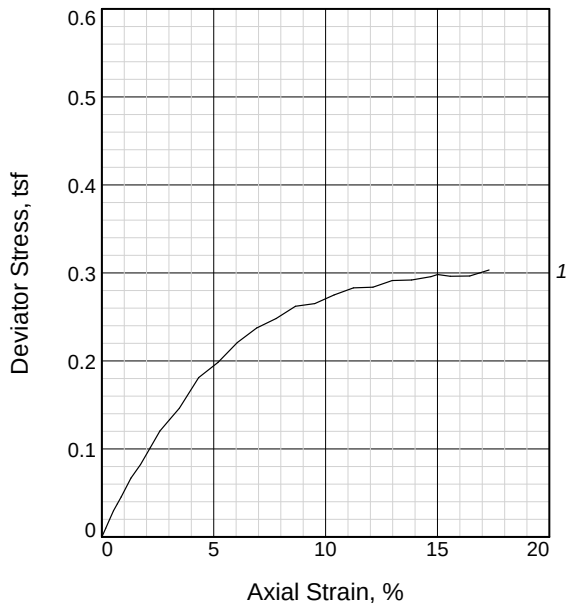
Depth: 7.5'-9.5' **Sample Number:** B-68, T-1

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: JH





Sample No.		1
Initial	Water Content, %	40.2
	Dry Density, pcf	80.0
	Saturation, %	98.8
	Void Ratio	1.0910
	Diameter, in.	2.81
	Height, in.	5.78
At Test	Water Content, %	40.7
	Dry Density, pcf	80.0
	Saturation, %	100.0
	Void Ratio	1.0910
	Diameter, in.	2.81
	Height, in.	5.78
Strain rate, in./min.		0.06
Back Pressure, psi		0.00
Cell Pressure, psi		7.00
Fail. Stress, tsf		0.30
Strain, %		15.0
Ult. Stress, tsf		0.30
Strain, %		
σ_1 Failure, tsf		0.80
σ_3 Failure, tsf		0.50

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Bluish Gray Lean Clay

LL= 44 **PL=** 21 **PI=** 23
Assumed Specific Gravity= 2.68
Remarks:

Client:

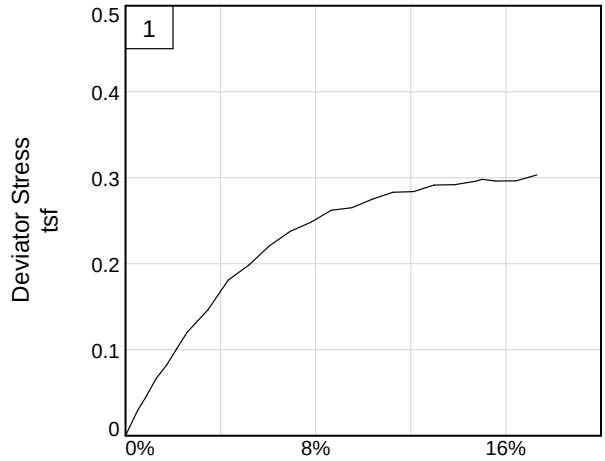
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-68, T-2 **Depth:** 14.5'-16.5'

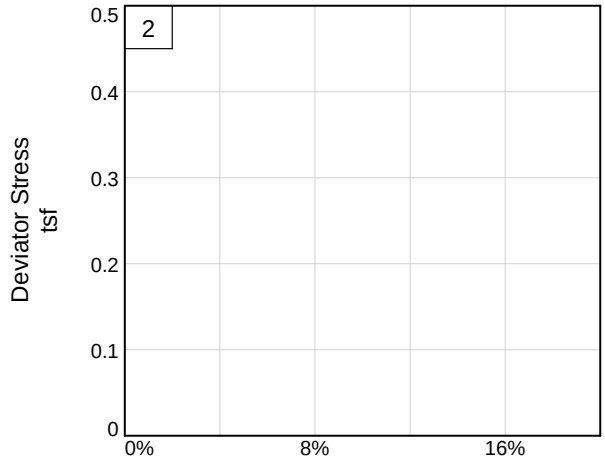
Proj. No.: 21-126 **Date Sampled:** 12-02-2021

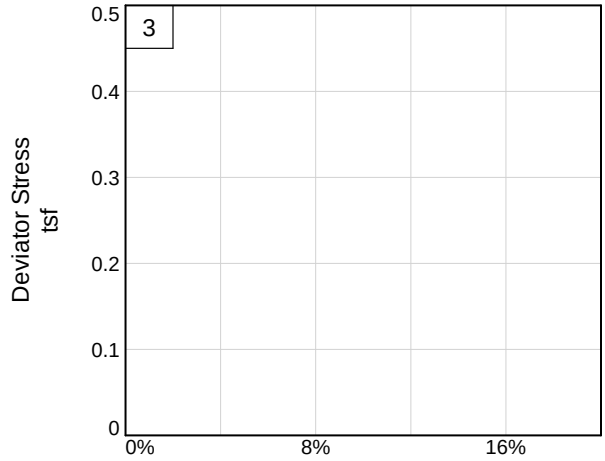
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

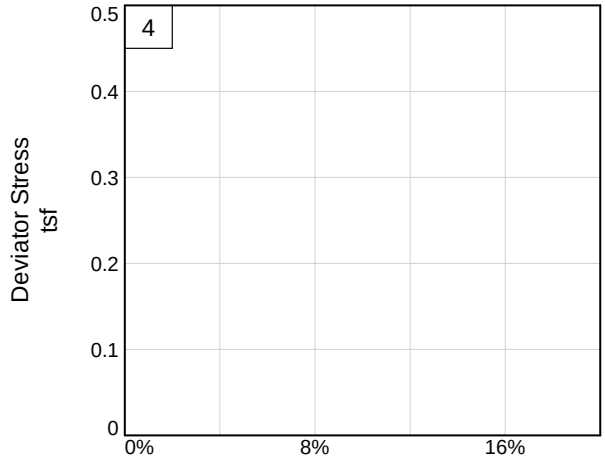
Figure _____

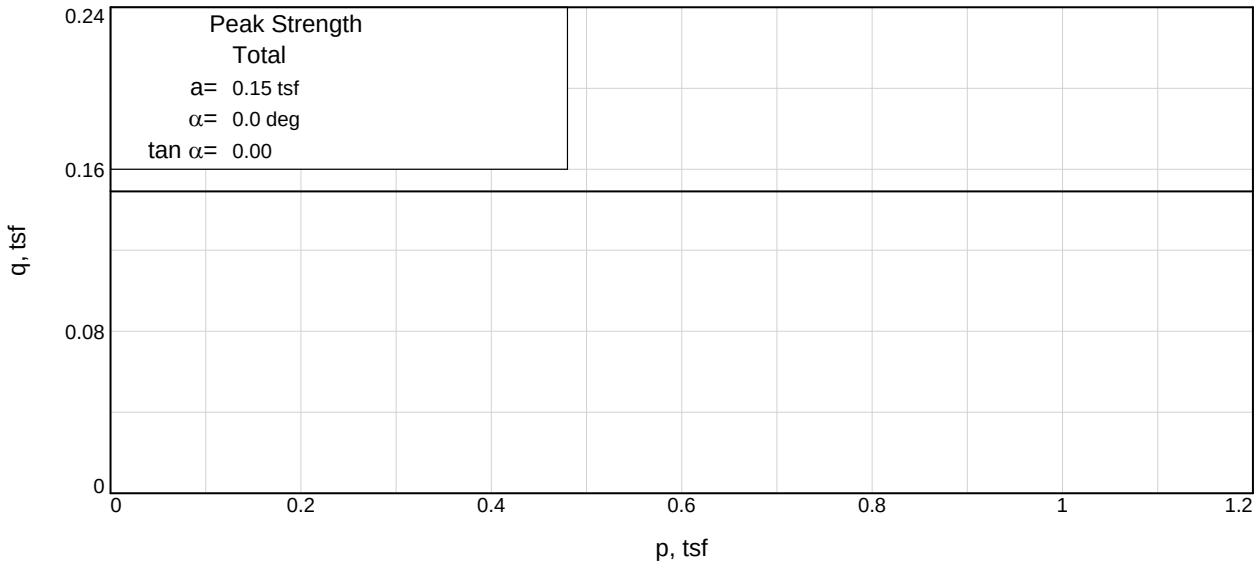
Tested By: RGP











Client:

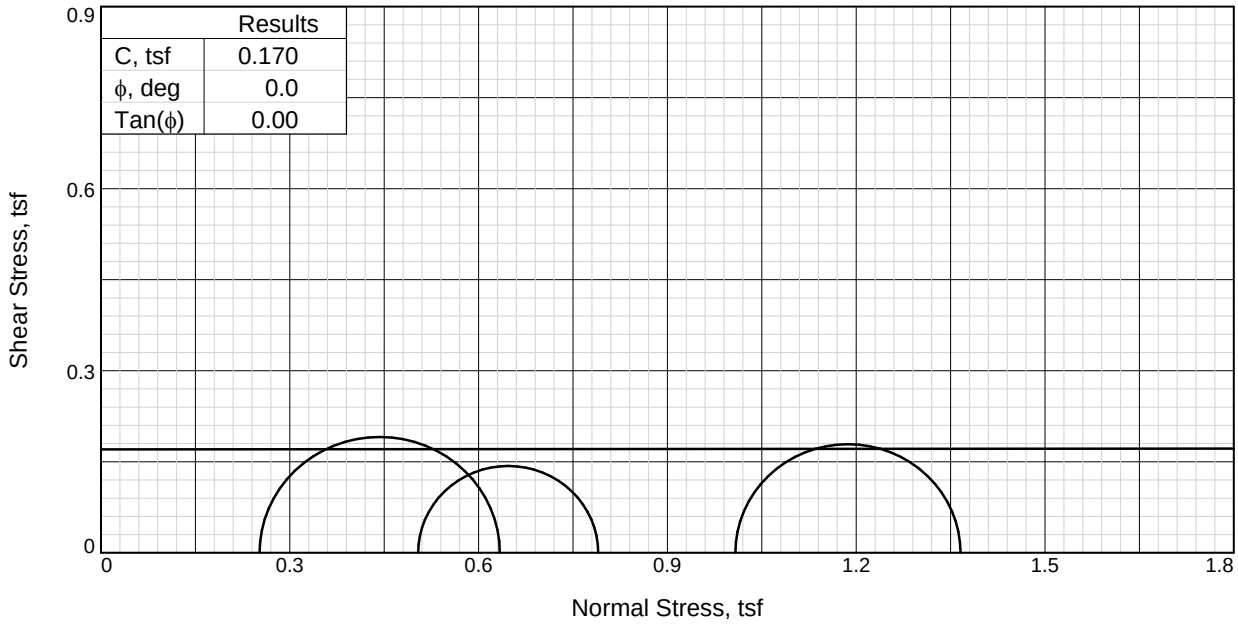
Project: A.S.P.A. UPPER BAY MARSH RESTORATION

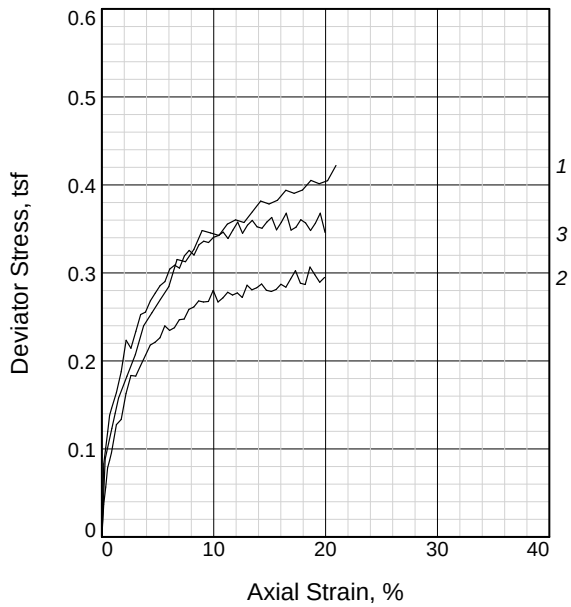
Depth: 14.5'-16.5' **Sample Number:** B-68, T-2

Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: RGP





Sample No.		1	2	3
Initial	Water Content, %	34.1	36.7	37.2
	Dry Density, pcf	89.4	85.4	84.4
	Saturation, %	100.0	98.1	97.1
	Void Ratio	0.9580	1.0504	1.0757
	Diameter, in.	1.38	2.70	2.74
	Height, in.	3.38	5.78	5.76
At Test	Water Content, %	31.9	37.4	38.5
	Dry Density, pcf	92.4	85.5	84.1
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.8959	1.0483	1.0811
	Diameter, in.	1.37	2.70	2.74
	Height, in.	3.34	5.78	5.76
Strain rate, in./min.		0.03	0.06	0.06
Back Pressure, psi		0.00	0.00	0.00
Cell Pressure, psi		3.50	7.00	14.00
Fail. Stress, tsf		0.38	0.29	0.36
Strain, %		14.2	13.0	14.7
Ult. Stress, tsf		0.42	0.31	0.36
Strain, %				
σ_1 Failure, tsf		0.63	0.79	1.37
σ_3 Failure, tsf		0.25	0.50	1.01

Type of Test:
Unconsolidated Undrained
Sample Type: Undisturbed
Description: Dark Gray Lean Clay

LL= 43 **PL=** 21 **PI=** 22
Assumed Specific Gravity= 2.805
Remarks: 12/27/21 #1 I-A, #2 I-A, #3 1-A

Client:

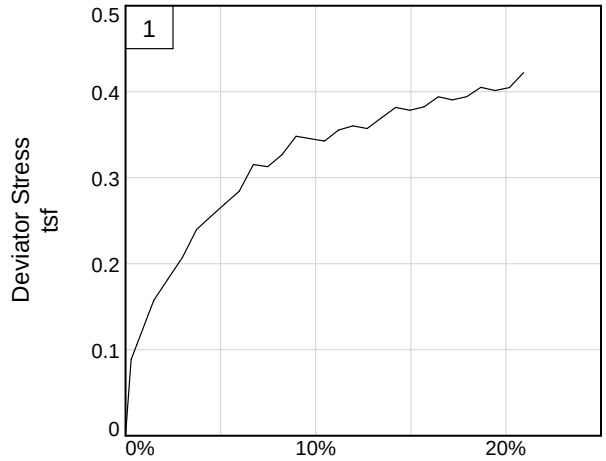
Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-74, T-1 **Depth:** 15.0'-17.0'

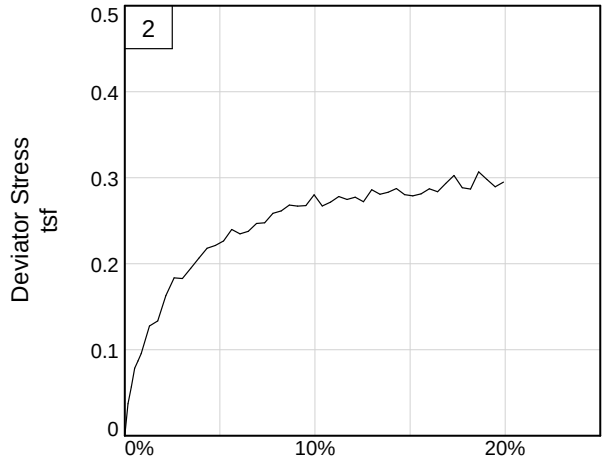
Proj. No.: 21-126 **Date Sampled:**

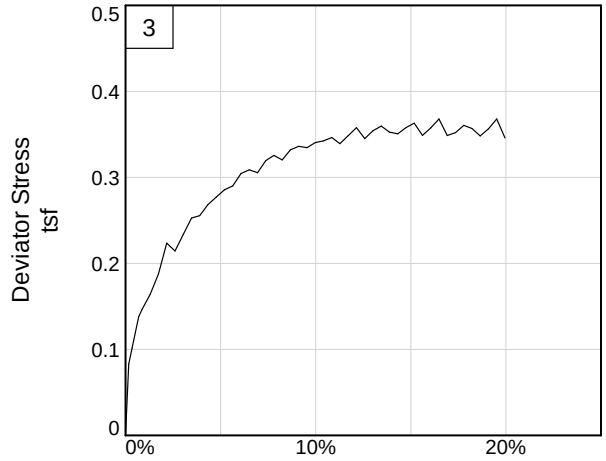
TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

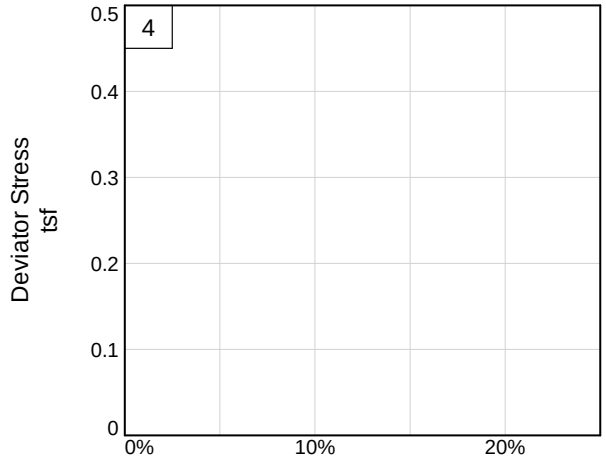
Figure _____

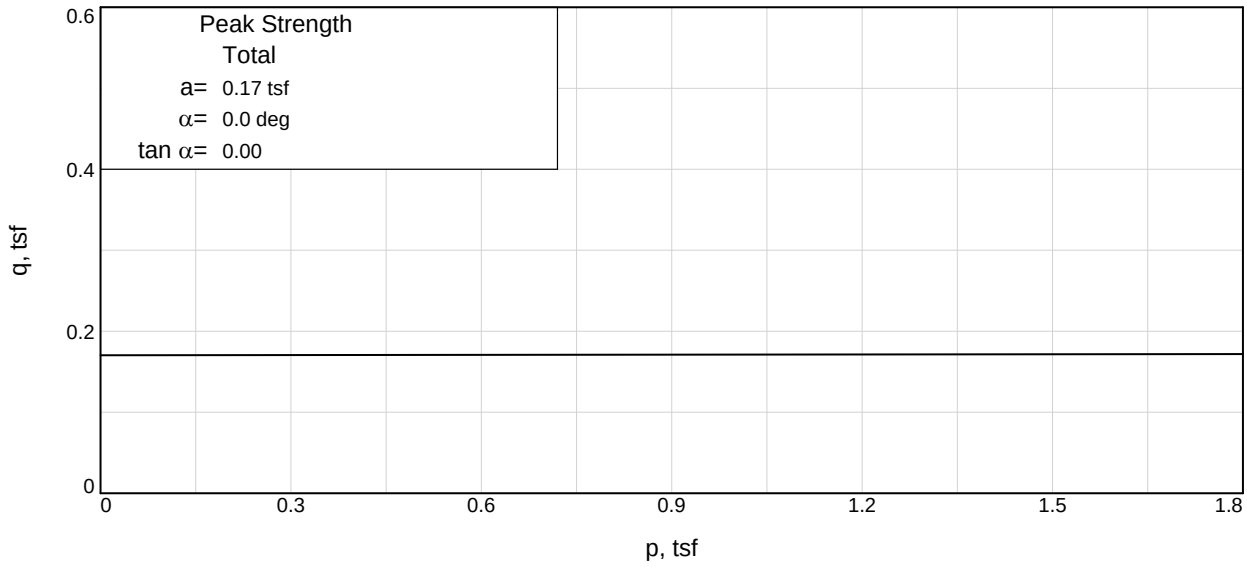
Tested By: JH











Client:

Project: A.S.P.A. UPPER BAY MARSH RESTORATION

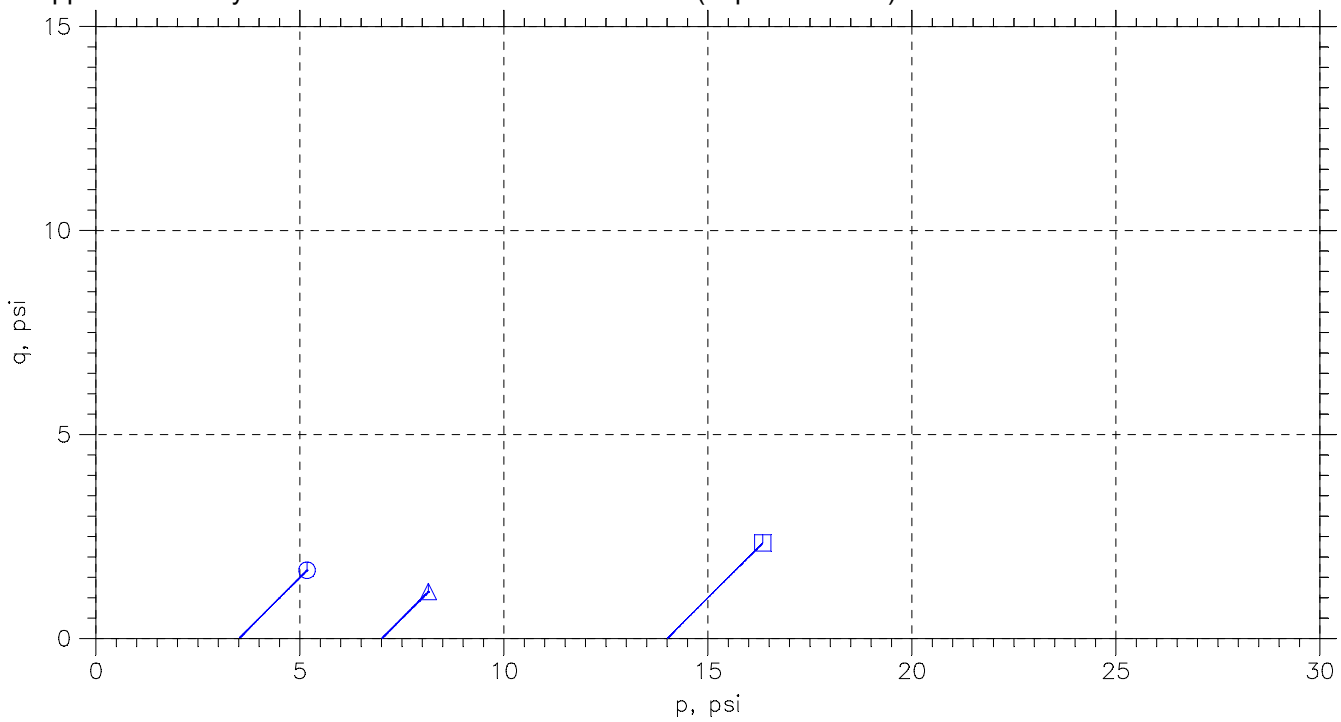
Depth: 15.0'-17.0' **Sample Number:** B-74, T-1

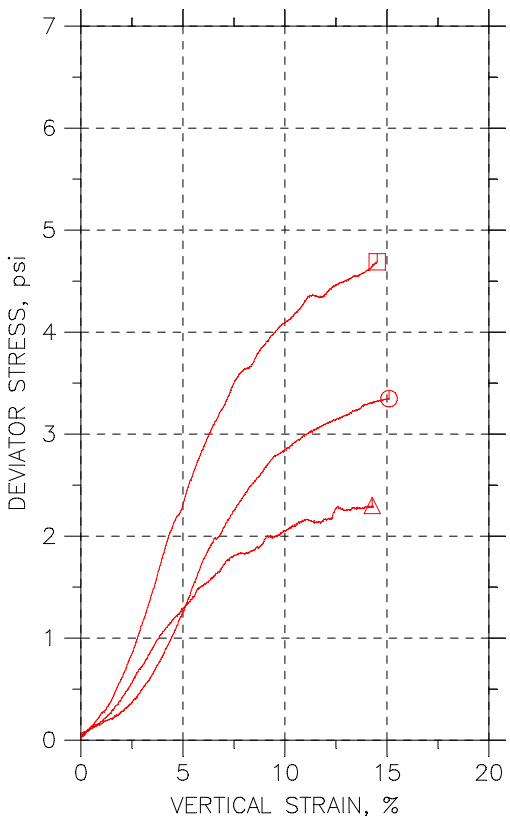
Project No.: 21-126 **Figure** _____

Geotechnical Engineering-Testing, Inc.

Tested By: JH

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏲	△	⊡	
Sample No.	T-1	T-1	T-1	
Test No.	UU-1-1	UU-1-2	UU-1-3	
Depth	---	---	---	
Tested by	trm	trm	trm	
Test Date	11/13/21	11/13/21	11/13/21	
Checked by	mcm	mcm	mcm	
Check Date	12/21/21	12/21/21	2/21/21	
Diameter, in	2.85	2.82	2.82	
Height, in	5.8	5.85	5.75	
Water Content, %	38.8	35.9	33.0	
Dry Density, pcf	80.7	84.72	83.95	
Saturation, %	97.9	99.9	90.2	
Void Ratio	1.05	0.953	0.971	
Confining Stress, psi	3.5	7	14	
Undrained Strength, psi	1.674	1.15	2.344	
Max. Dev. Stress, psi	3.348	2.3	4.689	
Strain at Failure, %	15.1	14.3	14.5	
Strain Rate, %/min	1	1	1	
Estimated Specific Gravity	2.65	2.65	2.65	
Liquid Limit	30	30	30	
Plastic Limit	26	26	26	
Plasticity Index	4	4	4	

GeoTesting EXPRESS

Project: ASPA Upper Bay Marsh

Location: ---

Project No.: GTX-314582

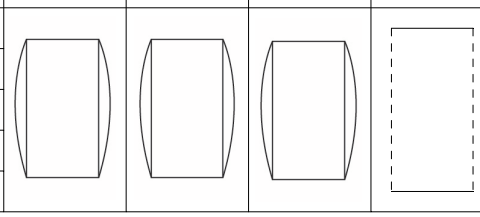
Boring No.: B-6

Sample Type: intact

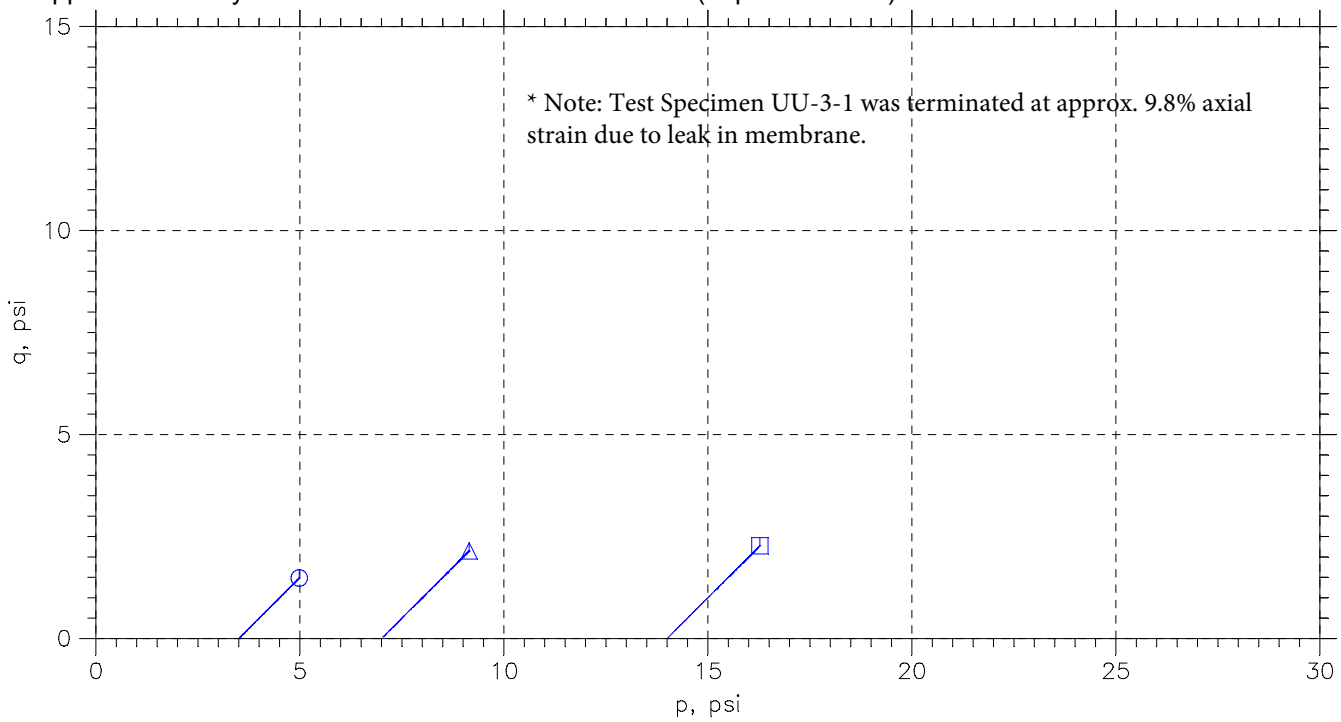
Description: Wet, olive sandy silt

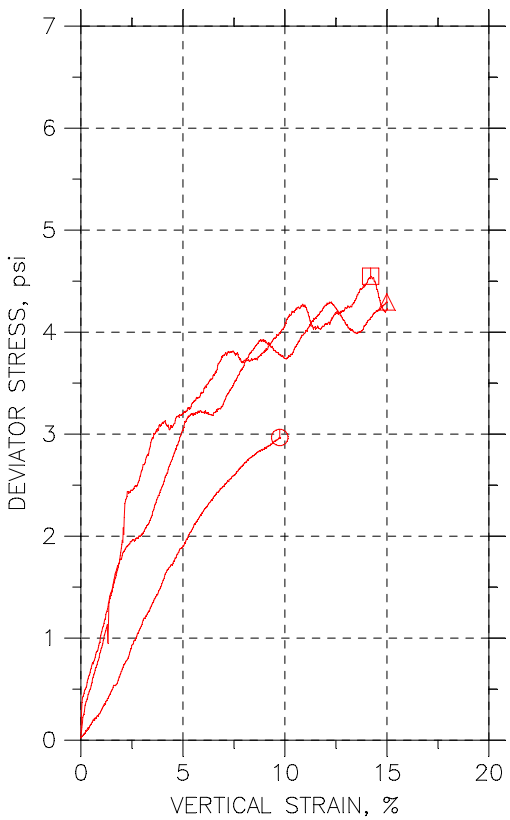
Remarks: Specimens trimmed

Phase calculations based on start and end of test.



UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏲	△	⊡	
Sample No.	T-1	T-1	T-1	
Test No.	UU-3-1	UU-3-2	UU-3-3	
Depth	---	----	---	
Tested by	trm	trm	trm	
Test Date	11/15/21	11/15/21	11/15/21	
Checked by	mcm	mcm	mcm	
Check Date	12/21/21	12/21/21	12/21/21	
Diameter, in	2.88	2.86	2.88	
Height, in	5.8	5.75	5.85	
Water Content, %	34.6	36.6	36.5	
Dry Density, pcf	86.21	78.26	81.15	
Saturation, %	99.8	87.2	93.1	
Void Ratio	0.919	1.11	1.04	
Confining Stress, psi	3.5	7	14	
Undrained Strength, psi	1.483	2.148	2.274	
Max. Dev. Stress, psi	2.967	4.296	4.547	
Strain at Failure, %	9.75	15	14.2	
Strain Rate, %/min	1	1	1	
Estimated Specific Gravity	2.65	2.65	2.65	
Liquid Limit	41	41	41	
Plastic Limit	26	26	26	
Plasticity Index	15	15	15	

GeoTesting EXPRESS

Project: ASPA Upper Bay Marsh

Location: ---

Project No.: GTX-314582

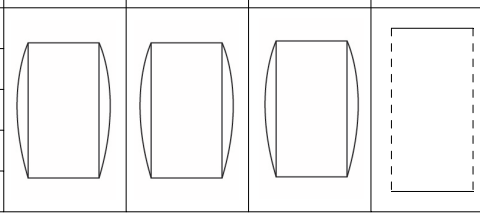
Boring No.: B-31

Sample Type: intact

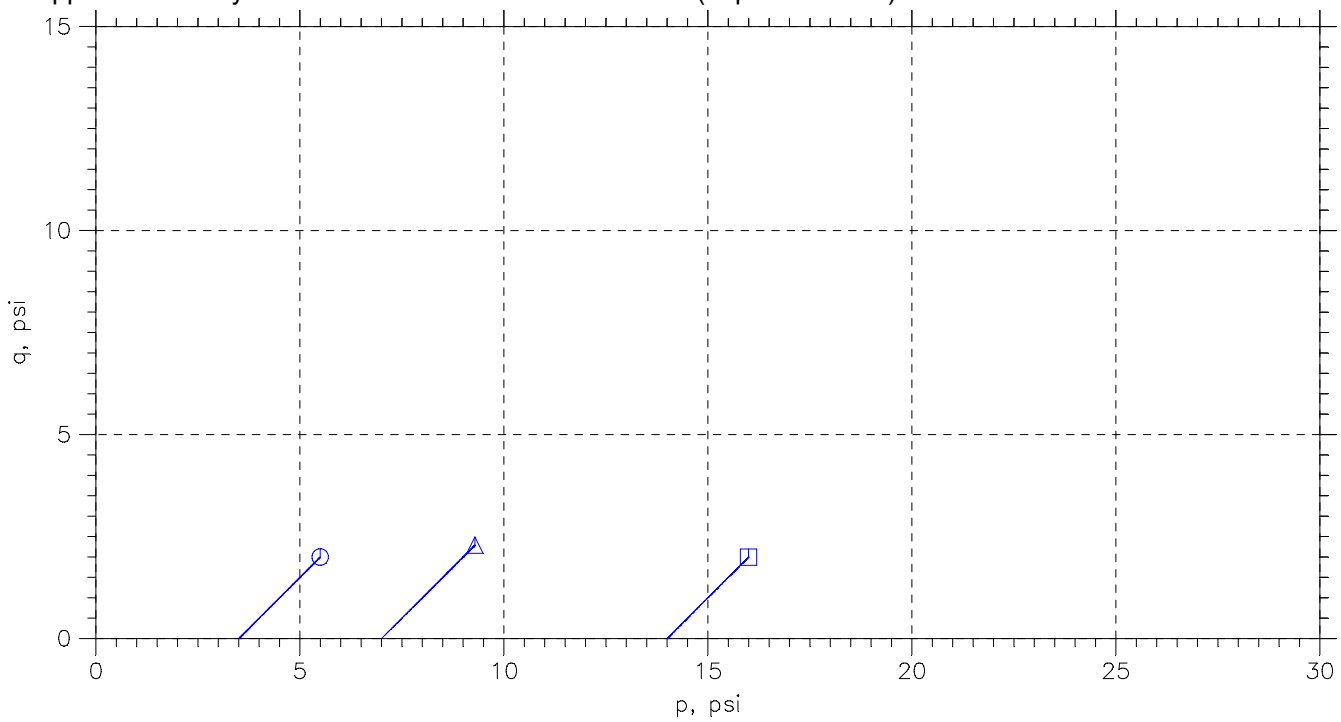
Description: Moist, dark gray silt with sand

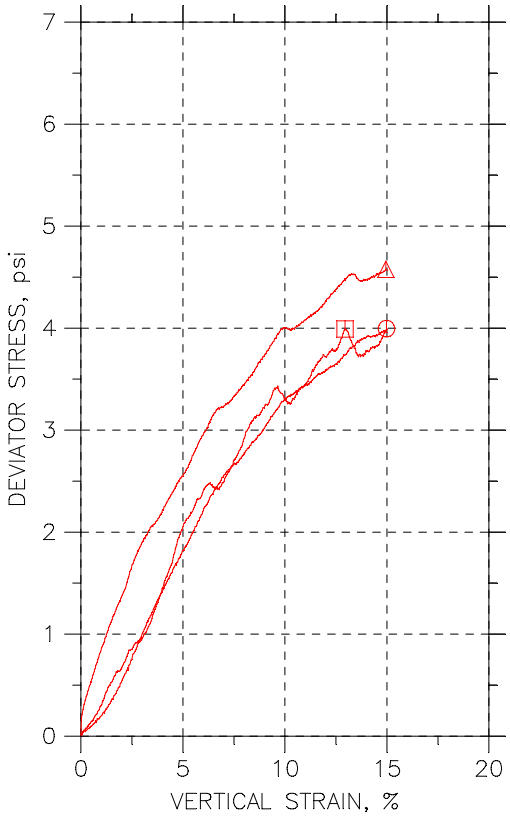
Remarks: Specimen

Phase calculations based on start and end of test.



UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	○	△	□	
Sample No.	T-1	T-1	T-1	
Test No.	UU-2-1	UU-2-2	UU-2-3	
Depth	---	---	---	
Tested by	trm	trm	trm	
Test Date	11/13/21	11/13/21	11/13/21	
Checked by	mcm	mcm	mcm	
Check Date	12/21/21	12/21/21	12/21/21	
Diameter, in	2.84	2.75	2.75	
Height, in	5.8	5.9	6	
Water Content, %	38.1	36.6	35.3	
Dry Density, pcf	81.03	82.43	77.34	
Saturation, %	97.0	96.3	82.2	
Void Ratio	1.04	1.01	1.14	
Confining Stress, psi	3.5	7	14	
Undrained Strength, psi	1.997	2.288	1.996	
Max. Dev. Stress, psi	3.995	4.577	3.992	
Strain at Failure, %	15	15	13	
Strain Rate, %/min	1	1	1	
Estimated Specific Gravity	2.65	2.65	2.65	
Liquid Limit	39	39	39	
Plastic Limit	28	28	28	
Plasticity Index	11	11	11	

GeoTesting EXPRESS

Project: ASPA Upper Bay Marsh

Location: ---

Project No.: GTX-314582

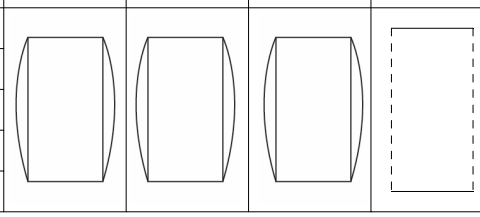
Boring No.: B-37

Sample Type: intact

Description: Moist, dark gray siltl with sand

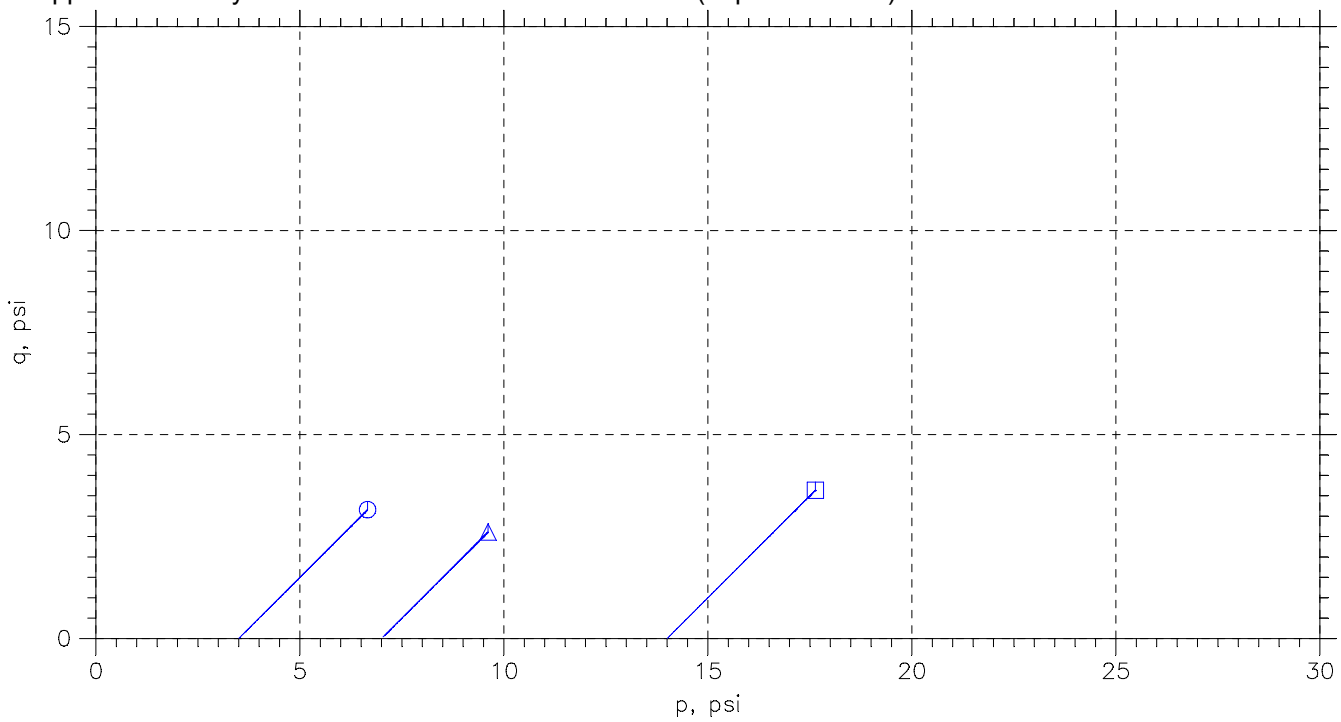
Remarks: Specimens

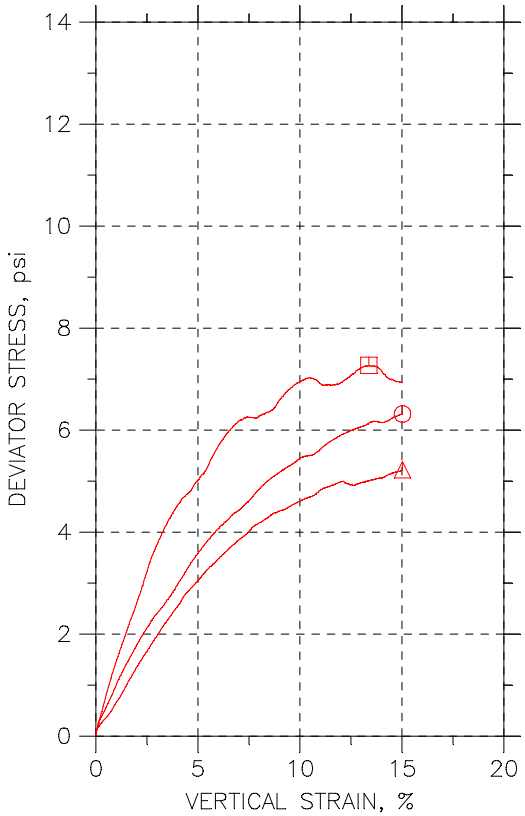
Phase calculations based on start and end of test.



Tue, 21-DEC-2021 04:55:30

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

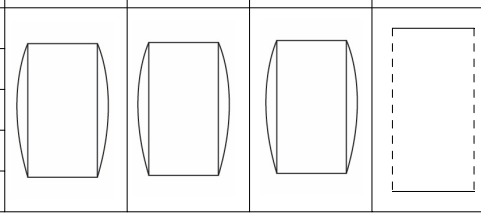




Symbol	◷	△	◫	
Sample No.	T-1	T-1	T-1	
Test No.	UU-5-1	UU-5-2	UU-5-3	
Depth	---	---	---	
Tested by	trm	trm	trm	
Test Date	11/18/21	11/18/21	11/18/21	
Checked by	mcm	mcm	mcm	
Check Date	12/22/21	12/22/21	12/22/21	
Diameter, in	2.85	2.87	2.87	
Height, in	5.78	5.95	6.1	
Water Content, %	33.6	34.5	32.4	
Dry Density, pcf	87.27	85.06	86.46	
Saturation, %	99.5	96.8	93.9	
Void Ratio	0.896	0.945	0.914	
Confining Stress, psi	3.5	7	14	
Undrained Strength, psi	3.158	2.611	3.635	
Max. Dev. Stress, psi	6.316	5.222	7.269	
Strain at Failure, %	15	15	13.4	
Strain Rate, %/min	1	1	1	
Estimated Specific Gravity	2.65	2.65	2.65	
Liquid Limit	32	32	32	
Plastic Limit	24	24	24	
Plasticity Index	8	8	8	

GeoTesting EXPRESS

Project: ASPA Upper Bay Marsh
Location: ---
Project No.: GTX-314582
Boring No.: B-41
Sample Type: intact
Description: Moist, dark gray sandy silt
Remarks: Test 1012
Phase calculations based on start of test.



Wed, 22-DEC-2021 04:08:08

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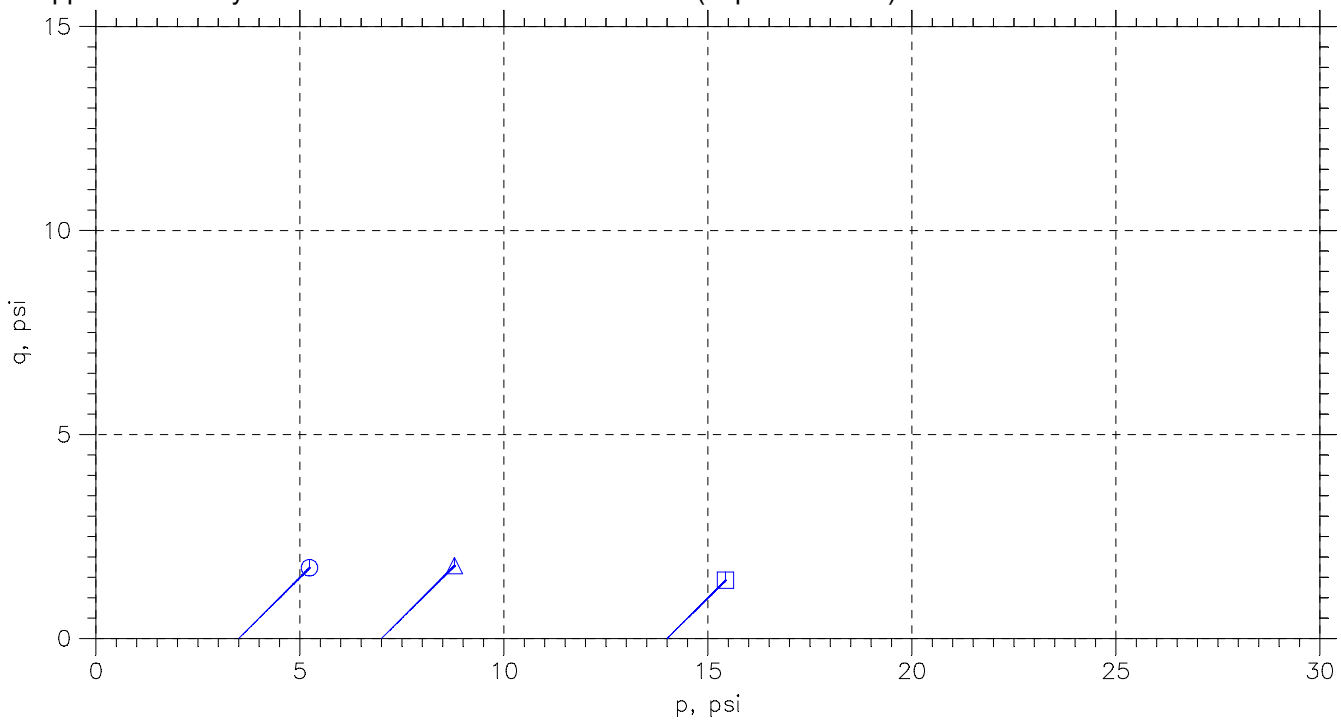
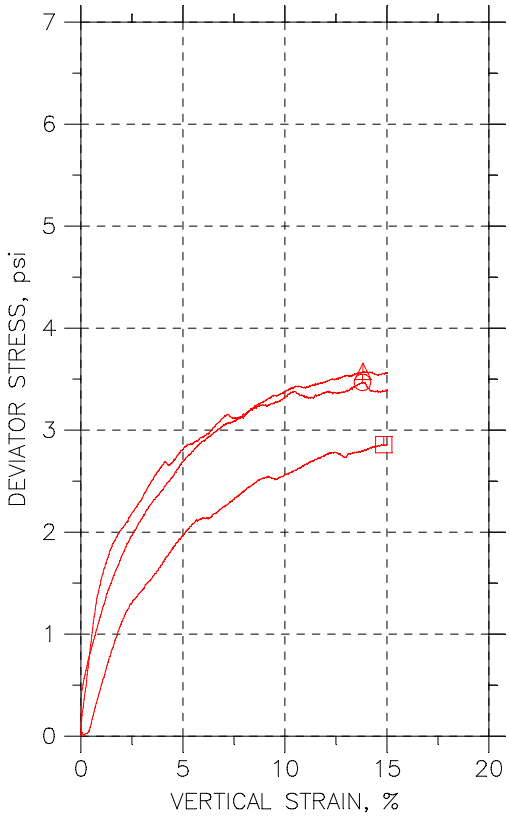
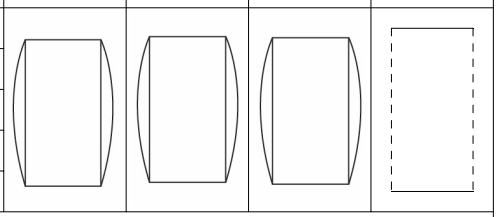




Symbol	○	△	□	
Sample No.	T-4	T-4	T-4	
Test No.	UU-4-1	UU-4-2	UU-4-3	
Depth	---	---	---	
Tested by	trm	trm	trm	
Test Date	11/18/21	11/18/21	11/18/21	
Checked by	mcm	mcm	mcm	
Check Date	12/22/21	12/22/21	12/22/21	
Diameter, in	2.85	2.83	2.87	
Height, in	5.8	5.7	5.95	
Water Content, %	39.4	38.3	37.3	
Dry Density, pcf	77.52	79.31	80.41	
Saturation, %	90.6	93.5	93.6	
Void Ratio	1.17	1.09	1.06	
Confining Stress, psi	3.5	7	14	
Undrained Strength, psi	1.734	1.788	1.429	
Max. Dev. Stress, psi	3.468	3.576	2.858	
Strain at Failure, %	13.8	13.8	14.8	
Strain Rate, %/min	1	1	1	
Estimated Specific Gravity	2.7	2.65	2.65	
Liquid Limit	37	37	37	
Plastic Limit	27	27	27	
Plasticity Index	10	10	10	

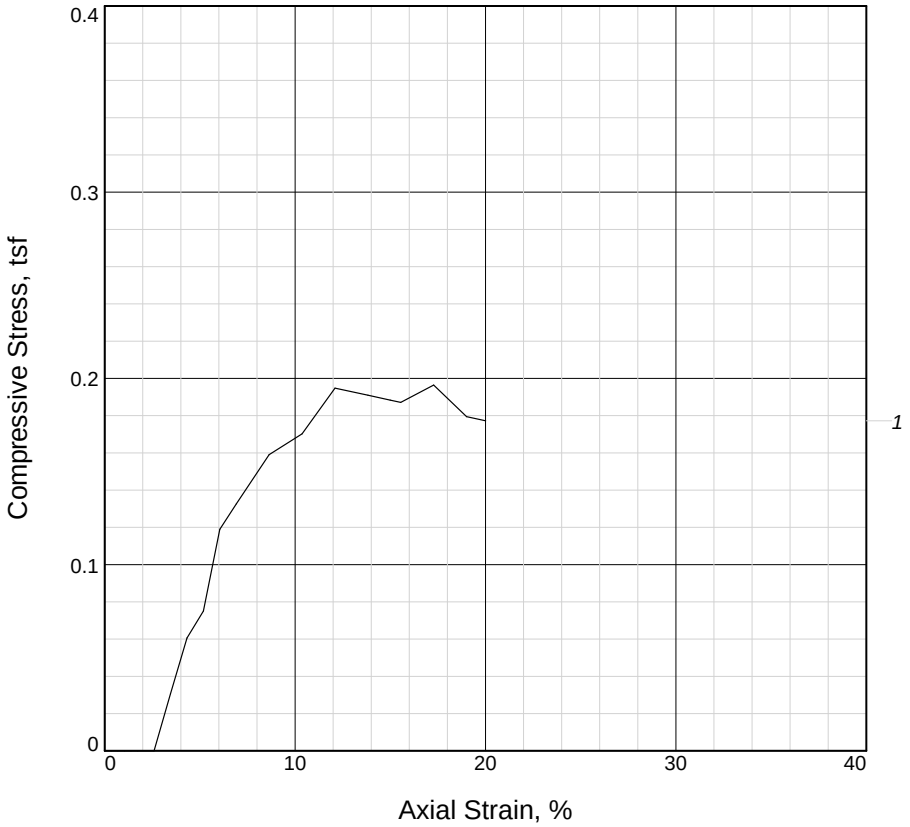
GeoTesting EXPRESS

Project: ASPA Upper Bay Marsh
Location: ---
Project No.: ASPGTX-3145
Boring No.: B-44
Sample Type: intact
Description: Moist, dark gray sandy silt
Remarks: Test 1012
Phase calculations based on start of test.



Wed, 22-DEC-2021 03:36:12

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, tsf	0.195			
Undrained shear strength, tsf	0.097			
Failure strain, %	12.1			
Strain rate, in./min.	0.03			
Water content, %	80.2			
Wet density, pcf	95.9			
Dry density, pcf	53.2			
Saturation, %	100.0			
Void ratio	2.1554			
Specimen diameter, in.	1.40			
Specimen height, in.	2.89			
Height/diameter ratio	2.06			

Description: Gray Fat Clay

LL = 106	**PL =** 31	**PI =** 75	**Assumed GS=** 2.69	**Type:** Split Spoon

Project No.: 21-126
Date Sampled: 07-19-2021
Remarks:

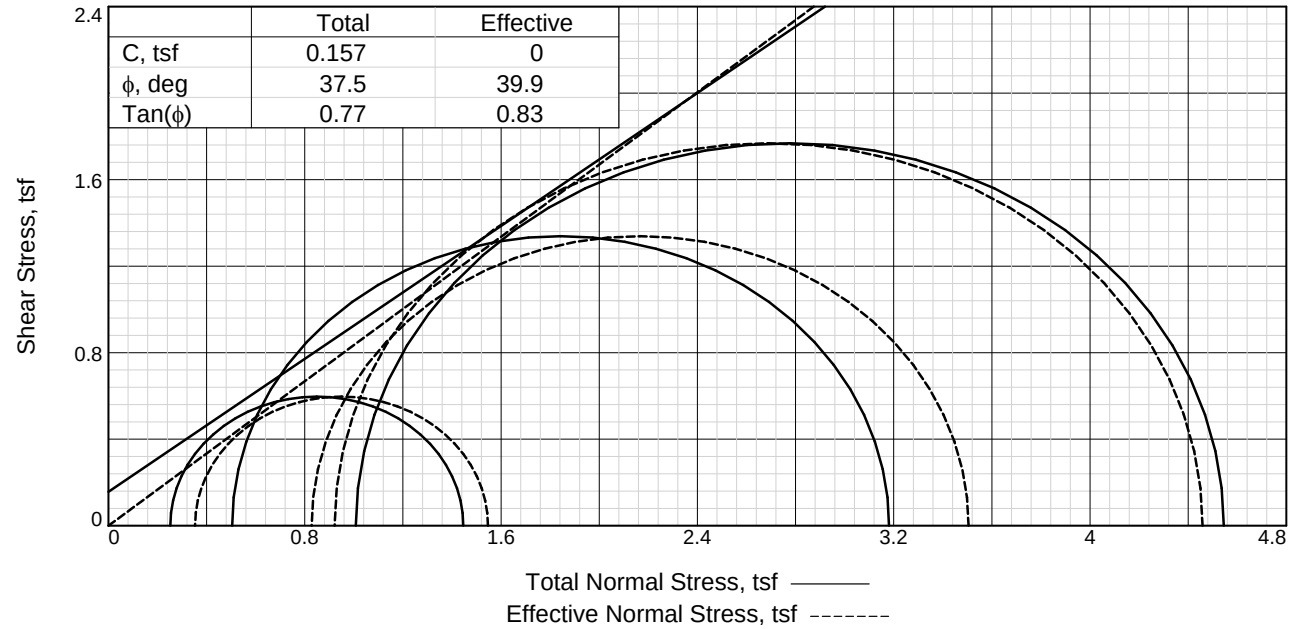
Figure _____

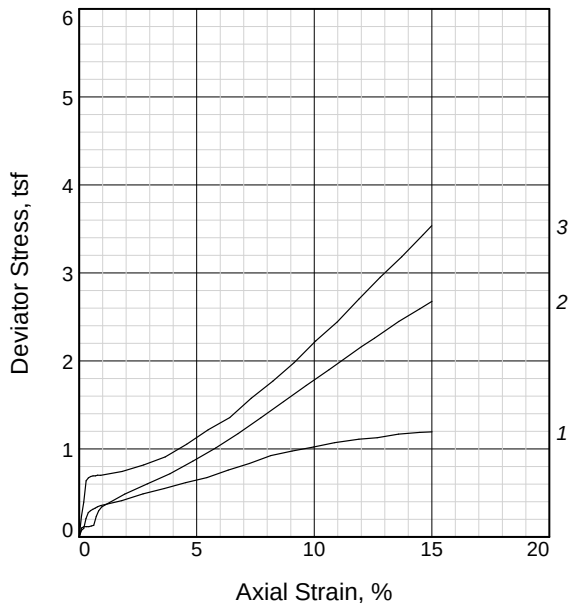
Client:

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-5, S-13 **Depth:** 43.5'-45.0'

UNCONFINED COMPRESSION TEST
Geotechnical Engineering-Testing, Inc.
Mobile, AL

Tested By: RGP





Sample No.		1	2	3
Initial	Water Content, %	38.2	35.2	37.4
	Dry Density, pcf	78.5	78.7	72.6
	Saturation, %	90.5	83.7	76.9
	Void Ratio	1.1301	1.1268	1.3033
	Diameter, in.	1.42	1.41	1.38
	Height, in.	3.13	2.99	3.21
At Test	Water Content, %	39.3	35.2	36.7
	Dry Density, pcf	81.5	86.0	84.3
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.0532	0.9445	0.9847
	Diameter, in.	1.40	1.37	1.31
	Height, in.	3.09	2.90	3.06
Strain rate, in./min.		0.00	0.00	0.00
Eff. Cell Pressure, psi		3.50	7.00	14.00
Fail. Stress, tsf		1.19	2.68	3.54
Total Pore Pr., tsf		1.34	1.12	1.53
Strain, %		15.0	15.0	15.0
Ult. Stress, tsf		1.19	2.68	3.54
Total Pore Pr., tsf		1.34	1.12	1.53
Strain, %		15.0	15.0	15.0
$\bar{\sigma}_1$ Failure, tsf		1.55	3.51	4.46
$\bar{\sigma}_3$ Failure, tsf		0.35	0.83	0.92

Type of Test:
CU with Pore Pressures
Sample Type: Undisturbed
Description: Dark Bluish Gray, Bluish Gray, and Gray Lean Clay
LL= 39 **PL=** 23 **PI=** 16
Assumed Specific Gravity= 2.68
Remarks: AASHTO: A-6(9)
USCS: CL
%<#200 = 67.9

Figure _____

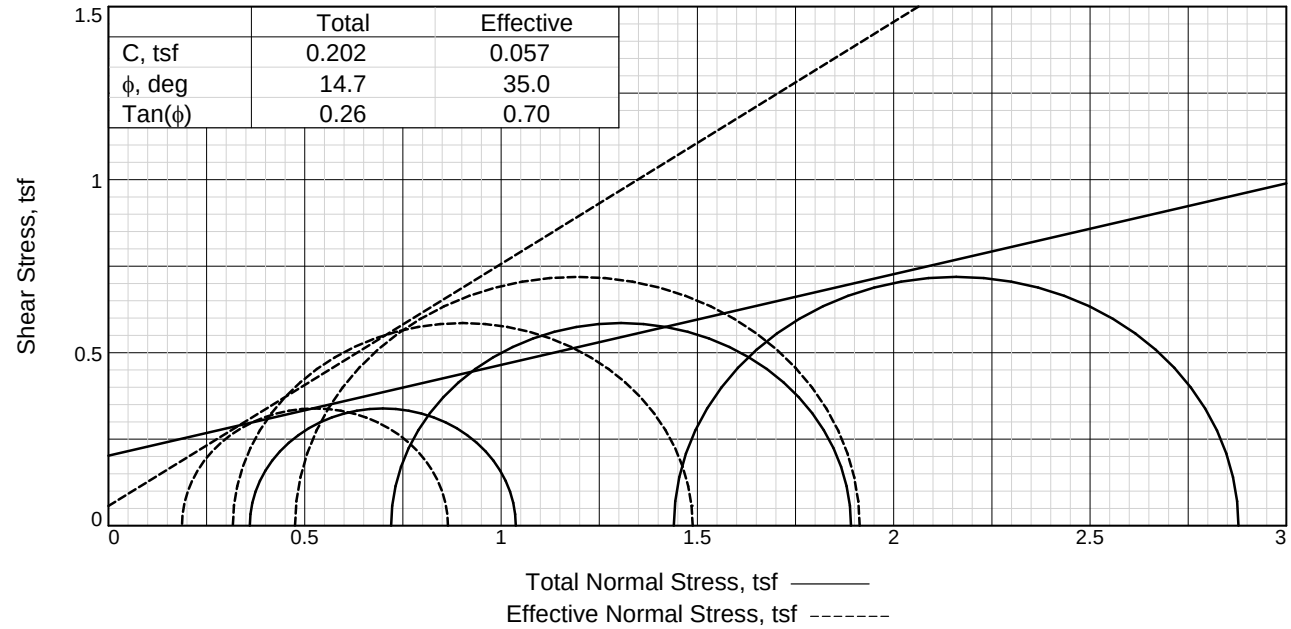
Client:

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-7, T-1 **Depth:** 10.0'-12.0'

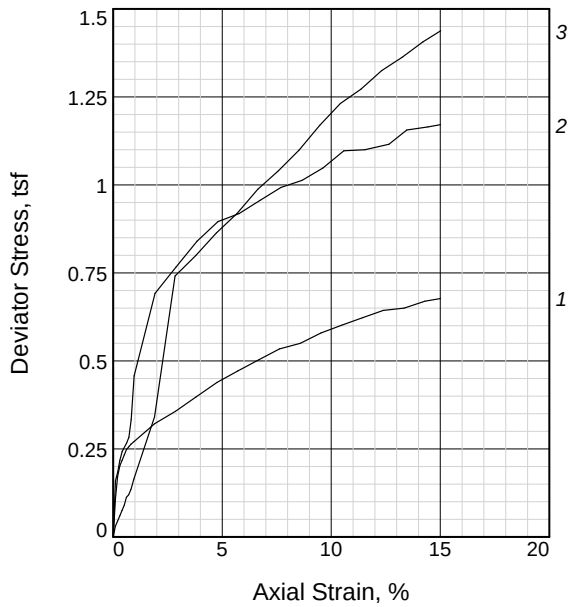
Proj. No.: 21-126 **Date Sampled:** 09-15-2021

TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

Tested By: RGP



	Total	Effective
C, tsf	0.202	0.057
ϕ, deg	14.7	35.0
Tan(ϕ)	0.26	0.70



Sample No.		1	2	3
Initial	Water Content, %	41.9	41.7	39.2
	Dry Density, pcf	77.0	78.2	80.4
	Saturation, %	95.9	98.1	97.3
	Void Ratio	1.1728	1.1393	1.0811
	Diameter, in.	1.41	1.41	1.41
	Height, in.	3.03	3.12	3.03
At Test	Water Content, %	36.6	27.3	34.5
	Dry Density, pcf	84.4	96.7	86.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.9819	0.7303	0.9253
	Diameter, in.	1.37	1.31	1.37
	Height, in.	2.94	2.91	2.96
Strain rate, in./min.		0.00	0.00	0.00
Eff. Cell Pressure, psi		5.00	10.00	20.00
Fail. Stress, tsf		0.68	1.17	1.44
Total Pore Pr., tsf		1.61	1.84	2.40
Strain, %		15.0	15.0	15.0
Ult. Stress, tsf				
Total Pore Pr., tsf				
Strain, %				
$\bar{\sigma}_1$ Failure, tsf		0.86	1.49	1.91
$\bar{\sigma}_3$ Failure, tsf		0.19	0.32	0.48

Type of Test:
CU with Pore Pressures
Sample Type: Undisturbed
Description: Gray Lean Clay

LL= 36 **PL=** 23 **PI=** 13
Assumed Specific Gravity= 2.68
Remarks:

Figure _____

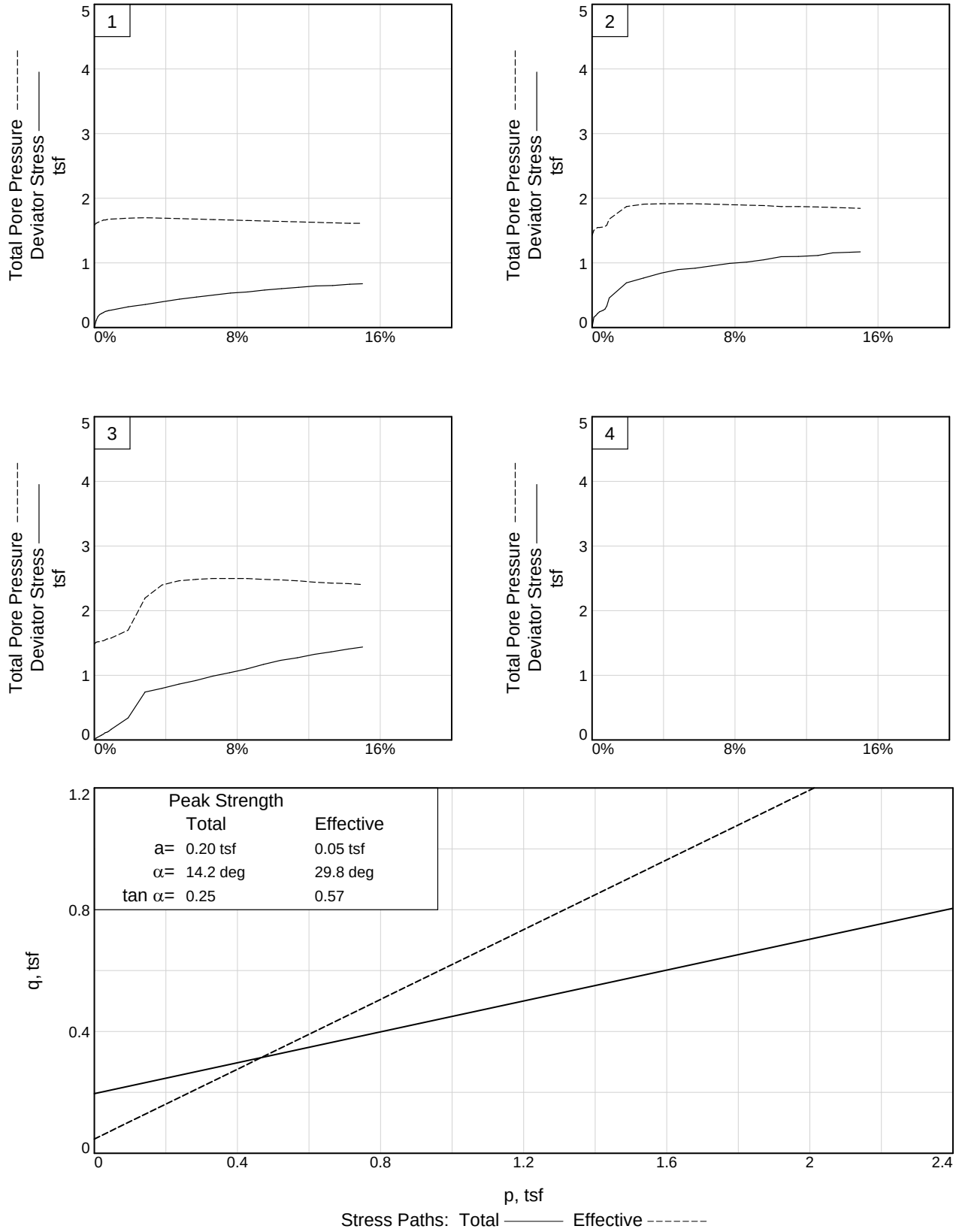
Client:

Project: A.S.P.A. UPPER BAY MARSH RESTORATION
MOBILE COUNTY, ALABAMA
Sample Number: B-21, T-1 **Depth:** 10.0'-12.0'

Proj. No.: 21-126 **Date Sampled:** 07-30-2021

TRIAXIAL SHEAR TEST REPORT
Geotechnical Engineering-Testing, Inc.
Mobile, AL

Tested By: RGP



Client:

Project: A.S.P.A. UPPER BAY MARSH RESTORATION

Depth: 10.0'-12.0' **Sample Number:** B-21, T-1

Project No.: 21-126 **Figure** _____

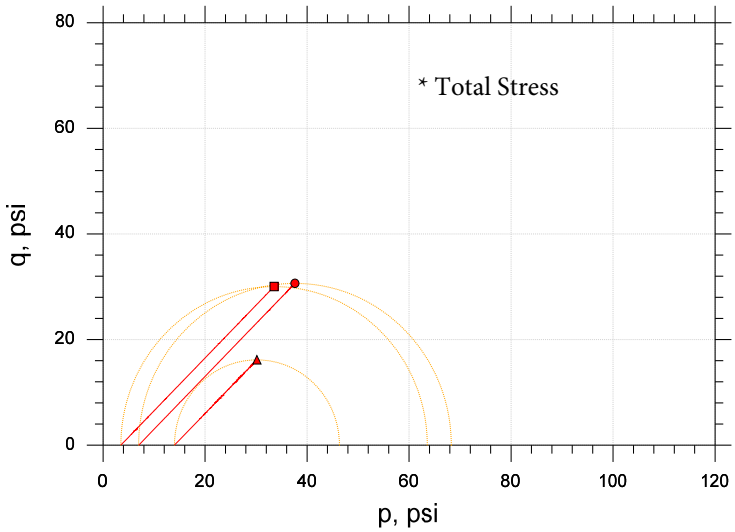
Geotechnical Engineering-Testing, Inc.

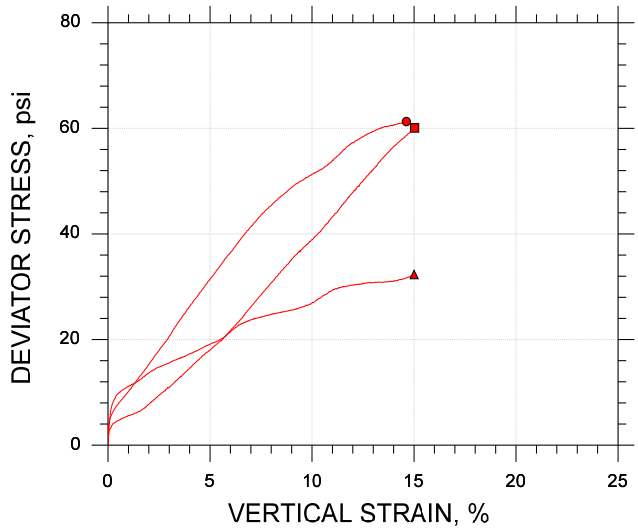
Tested By: RGP

GeoTesting EXPRESS

Client: Geotechnical Engineering-Testing, Inc	
Project Name: ASPA Upper Bay Marsh	
Project Location:	
Project Number: GTX-314582	
Tested By: trm	Checked By: mcm
Boring ID: B-17	
Preparation: intact	
Description: Moist, olive silty sand	
Classification: Silty SAND	
Group Symbol: SM	
Liquid Limit: NP	Plastic Limit: NP
Plasticity Index: NP	Estimated Specific Gravity: 2.65

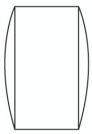
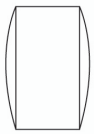
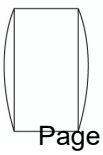
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲
Sample ID		T-4	T-4	T-4
Depth, ft		---	---	---
Test Number		CU-7-1	CU-7-2	CU-7-3
Initial	Height, in	4.300	3.850	4.270
	Diameter, in	1.930	1.923	1.950
	Moisture Content (from Cuttings), %	27.9	32.1	34.1
	Dry Density, pcf	91.5	84.9	87.1
	Saturation (Wet Method), %	91.3	89.7	98.5
	Void Ratio	0.809	0.949	0.936
Before Shear	Moisture Content, %	29.0	34.9	32.8
	Dry Density, pcf	93.5	86.0	89.4
	Cross-sectional Area (Method A), in²	2.877	2.877	2.938
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.769	0.924	0.886
	Back Pressure, psi	157.0	141.0	151.0
Vertical Effective Consolidation Stress, psi		3.519	6.996	13.95
Horizontal Effective Consolidation Stress, psi		3.492	7.012	13.99
Vertical Strain after Consolidation, %		0.0000	0.2533	0.8187
Volumetric Strain after Consolidation, %		0.5845	1.035	2.183
Time to 50% Consolidation, min		---	---	5.760
Shear Strength, psi		30.03	30.64	16.16
Strain at Failure, %		15.0	14.6	15.0
Strain Rate, %/min		0.01600	0.01600	0.01600
Deviator Stress at Failure, psi		60.06	61.29	32.33
Effective Minor Principal Stress at Failure, psi		21.52	19.95	11.51
Effective Major Principal Stress at Failure, psi		81.58	81.24	43.83
B-Value		1.0	1.0	0.95

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

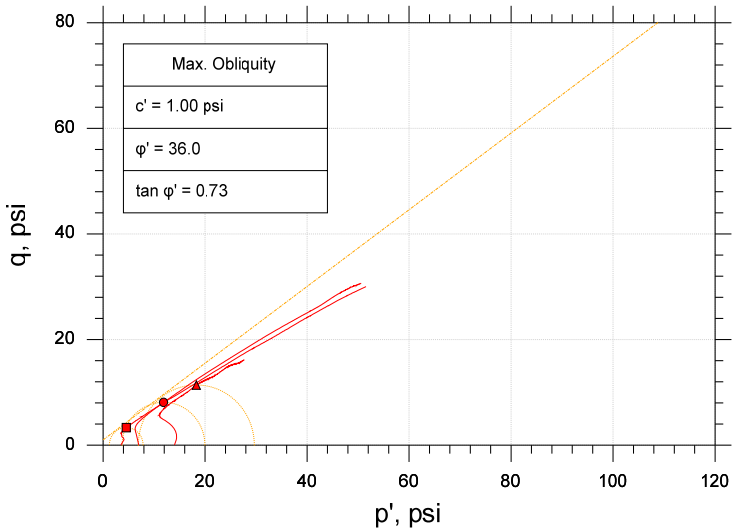




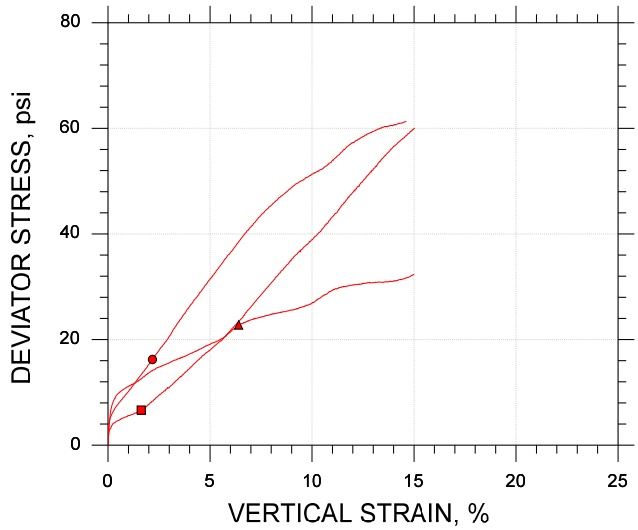
Remarks:

GeoTesting EXPRESS

Client: Geotechnical Engineering-Testing, Inc	
Project Name: ASPA Upper Bay Marsh	
Project Location:	
Project Number: GTX-314582	
Tested By: trm	Checked By: mcm
Boring ID: B-17	
Preparation: intact	
Description: Moist, olive silty sand	
Classification: Silty SAND	
Group Symbol: SM	
Liquid Limit: NP	Plastic Limit: NP
Plasticity Index: NP	Estimated Specific Gravity: 2.65

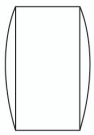
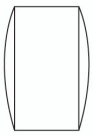
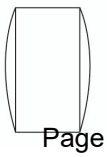
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲
Sample ID		T-4	T-4	T-4
Depth, ft		---	---	---
Test Number		CU-7-1	CU-7-2	CU-7-3
Initial	Height, in	4.300	3.850	4.270
	Diameter, in	1.930	1.923	1.950
	Moisture Content (from Cuttings), %	27.9	32.1	34.1
	Dry Density, pcf	91.5	84.9	87.1
	Saturation (Wet Method), %	91.3	89.7	98.5
	Void Ratio	0.809	0.949	0.936
Before Shear	Moisture Content, %	29.0	34.9	32.8
	Dry Density, pcf	93.5	86.0	89.4
	Cross-sectional Area (Method A), in²	2.877	2.877	2.938
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.769	0.924	0.886
	Back Pressure, psi	157.0	141.0	151.0
Vertical Effective Consolidation Stress, psi		3.519	6.996	13.95
Horizontal Effective Consolidation Stress, psi		3.492	7.012	13.99
Vertical Strain after Consolidation, %		0.0000	0.2533	0.8187
Volumetric Strain after Consolidation, %		0.5845	1.035	2.183
Time to 50% Consolidation, min		---	---	5.760
Shear Strength, psi		3.317	8.109	11.38
Strain at Failure, %		1.63	2.17	6.40
Strain Rate, %/min		0.01600	0.01600	0.01600
Deviator Stress at Failure, psi		6.635	16.22	22.76
Effective Minor Principal Stress at Failure, psi		1.217	3.744	6.910
Effective Major Principal Stress at Failure, psi		7.851	19.96	29.67
B-Value		1.0	1.0	0.95

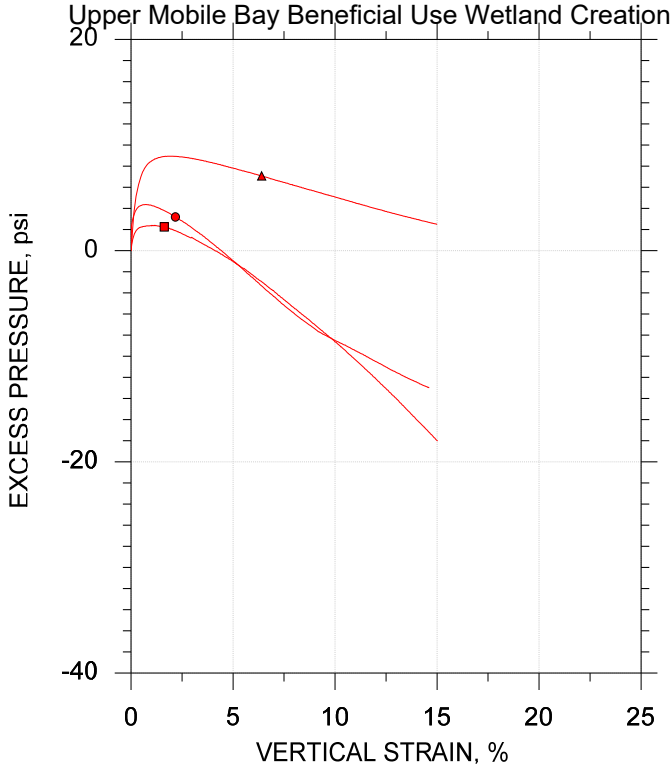
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

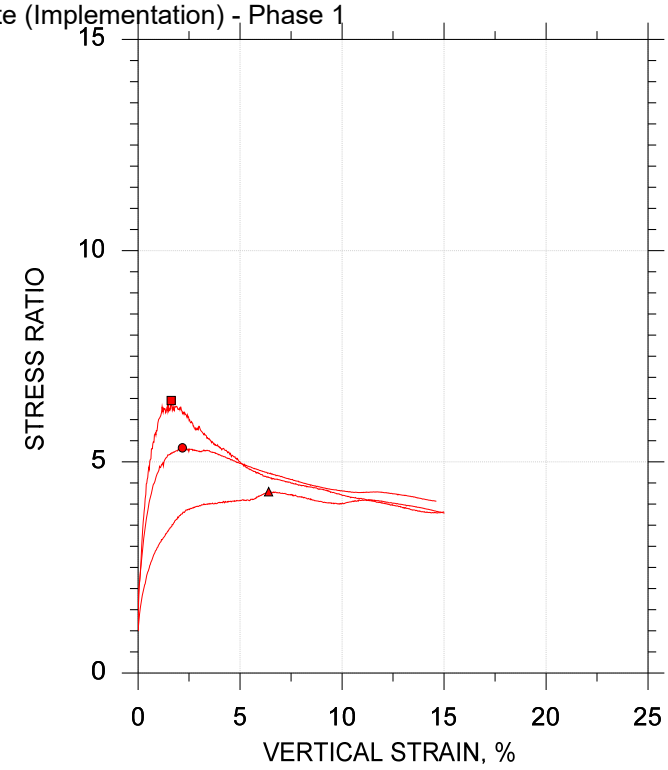




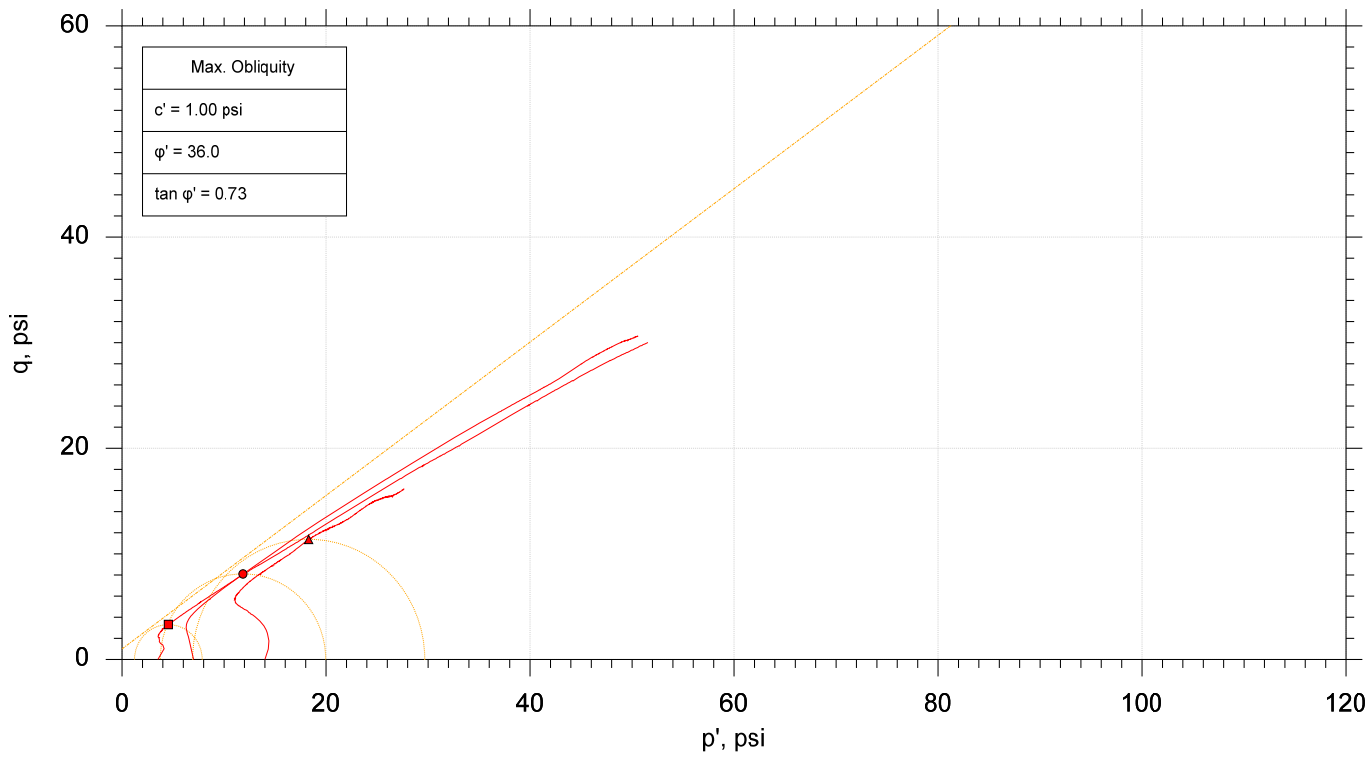
Remarks:

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Upper Mobile Bay Beneficial Use Wetland Creation Site (Implementation) - Phase 1







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	T-4	CU-7-1	---	trm	11/19/21	mcm	12/20/21	314582-CU-7-1m.dat
●	T-4	CU-7-2	---	trm	11/19/21	mcm	12/20/21	314582-CU-7-2m.dat
▲	T-4	CU-7-3	---	trm	11/19/21	mcm	12/20/21	314582-CU-7-3m.dat

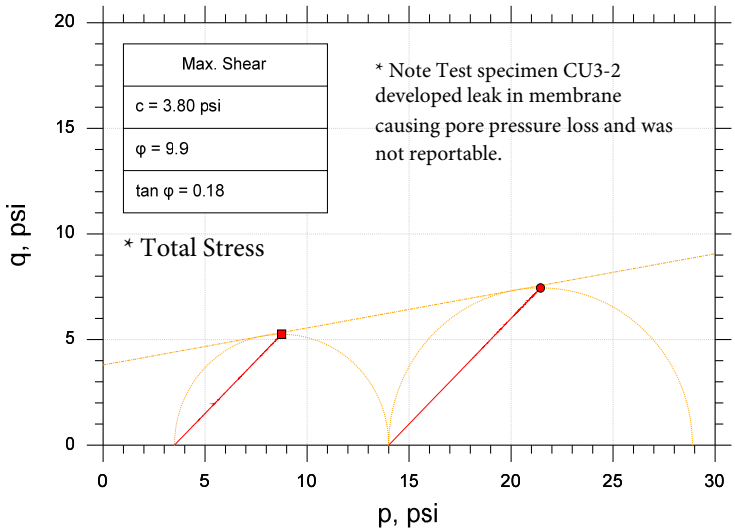
GeoTesting EXPRESS

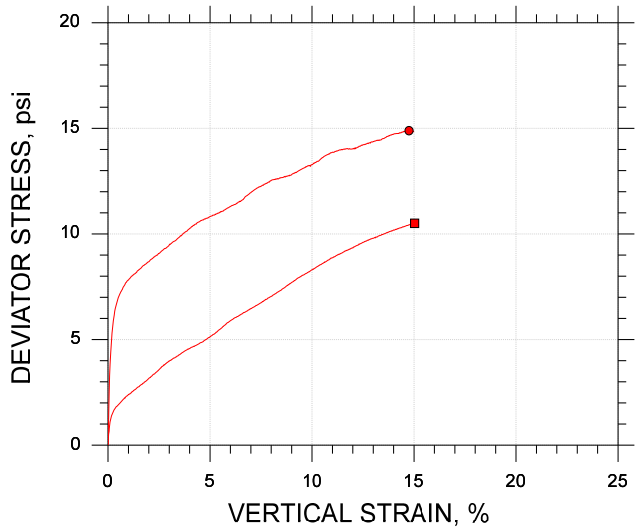
Project: ASPA Upper Bay Marsh	Location: ---	Project No.: GTX-314582
Boring No.: B-17	Sample Type: intact	
Description: Moist olive silty sand		
Remarks: TX-027		

GeoTesting EXPRESS

Client: Geotechnical Engineering-Testing, Inc.	
Project Name: ASPA Upper Bay Marsh	
Project Location:	
Project Number: GTX-314582	
Tested By: trm	Checked By: mcm
Boring ID: B-19	
Preparation: intact	
Description: Moist, dark gray clayey sand	
Classification: Clayey SAND	
Group Symbol: SC	
Liquid Limit: 33	Plastic Limit: 23
Plasticity Index: 10	Estimated Specific Gravity: 2.65

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





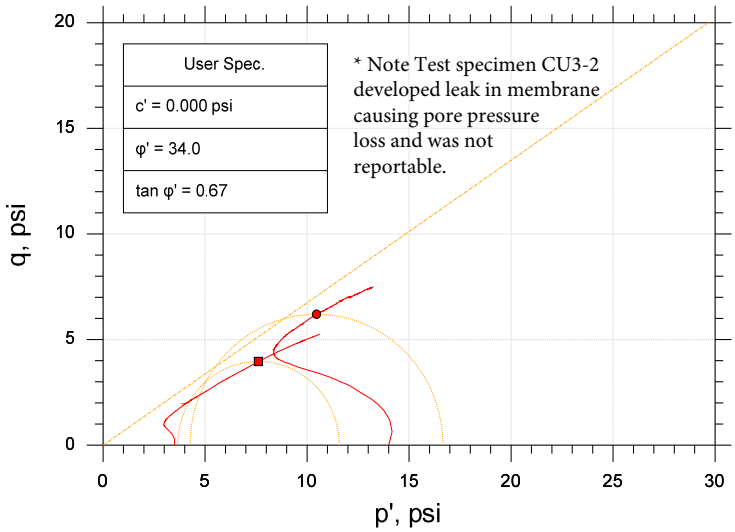
Symbol		■	●		
Sample ID		T-1	T-1		
Depth, ft		---	---		
Test Number		CU-3-1	CU-3-3		
Initial	Height, in	5.950	5.940		
	Diameter, in	2.870	2.870		
	Moisture Content (from Cuttings), %	31.5	46.9		
	Dry Density, pcf	80.9	76.1		
	Saturation (Wet Method), %	79.9	105.9		
	Void Ratio	1.04	1.17		
Before Shear	Moisture Content, %	38.3	39.8		
	Dry Density, pcf	82.1	80.5		
	Cross-sectional Area (Method A), in²	6.392	6.224		
	Saturation, %	100.0	100.0		
	Void Ratio	1.02	1.05		
	Back Pressure, psi	65.99	115.0		
Vertical Effective Consolidation Stress, psi		3.485	13.93		
Horizontal Effective Consolidation Stress, psi		3.500	14.00		
Vertical Strain after Consolidation, %		0.2507	1.265		
Volumetric Strain after Consolidation, %		1.444	3.988		
Time to 50% Consolidation, min		---	4.000		
Shear Strength, psi		5.252	7.445		
Strain at Failure, %		15.0	14.8		
Strain Rate, %/min		0.01600	0.01600		
Deviator Stress at Failure, psi		10.50	14.89		
Effective Minor Principal Stress at Failure, psi		5.368	5.668		
Effective Major Principal Stress at Failure, psi		15.87	20.56		
B-Value		0.95	0.95		

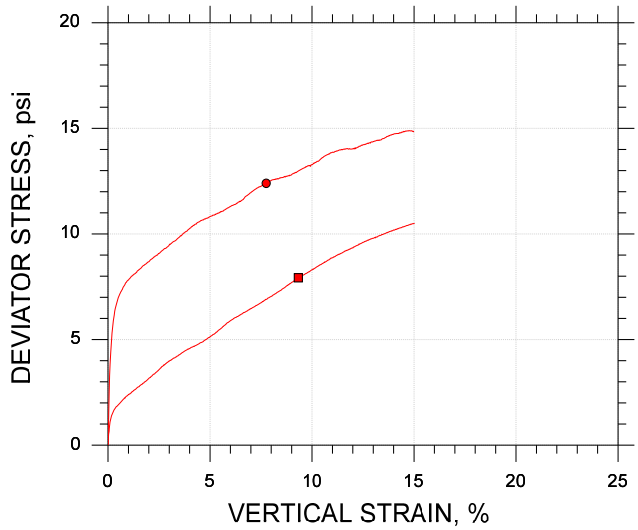
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

Remarks:

Client: Geotechnical Engineering-Testing, Inc.	
Project Name: ASPA Upper Bay Marsh	
Project Location:	
Project Number: GTX-314582	
Tested By: trm	Checked By: mcm
Boring ID: B-19	
Preparation: intact	
Description: Moist, dark gray clayey sand	
Classification: Clayey SAND	
Group Symbol: SC	
Liquid Limit: 33	Plastic Limit: 23
Plasticity Index: 10	Estimated Specific Gravity: 2.65

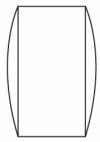
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

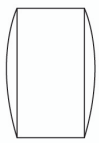




Symbol		■	●		
Sample ID		T-1	T-1		
Depth, ft		---	---		
Test Number		CU-3-1	CU-3-3		
Initial	Height, in	5.950	5.940		
	Diameter, in	2.870	2.870		
	Moisture Content (from Cuttings), %	31.5	46.9		
	Dry Density, pcf	80.9	76.1		
	Saturation (Wet Method), %	79.9	105.9		
	Void Ratio	1.04	1.17		
Before Shear	Moisture Content, %	38.3	39.8		
	Dry Density, pcf	82.1	80.5		
	Cross-sectional Area (Method A), in²	6.392	6.224		
	Saturation, %	100.0	100.0		
	Void Ratio	1.02	1.05		
	Back Pressure, psi	65.99	115.0		
Vertical Effective Consolidation Stress, psi		3.485	13.93		
Horizontal Effective Consolidation Stress, psi		3.500	14.00		
Vertical Strain after Consolidation, %		0.2507	1.265		
Volumetric Strain after Consolidation, %		1.444	3.988		
Time to 50% Consolidation, min		---	4.000		
Shear Strength, psi		3.962	6.200		
Strain at Failure, %		9.33	7.75		
Strain Rate, %/min		0.01600	0.01600		
Deviator Stress at Failure, psi		7.924	12.40		
Effective Minor Principal Stress at Failure, psi		3.653	4.263		
Effective Major Principal Stress at Failure, psi		11.58	16.66		
B-Value		0.95	0.95		

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.



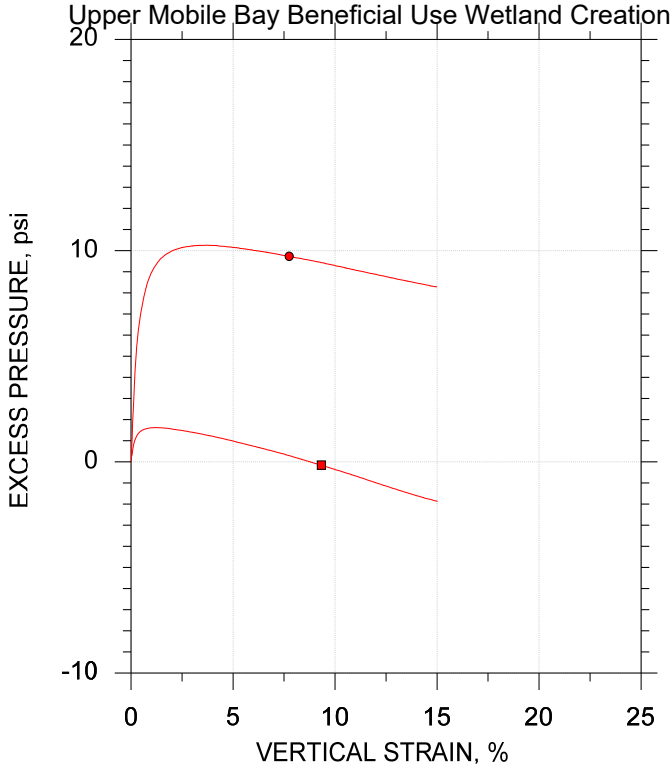


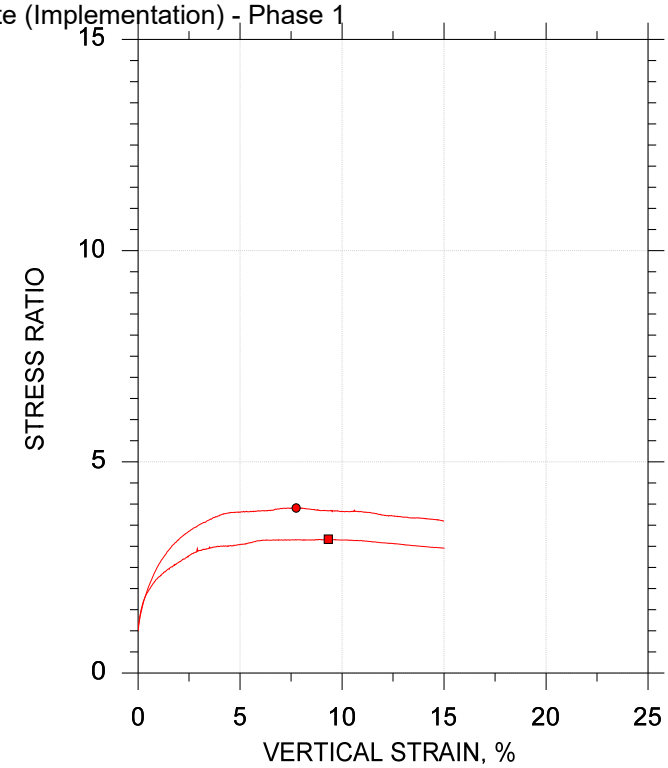
Remarks:

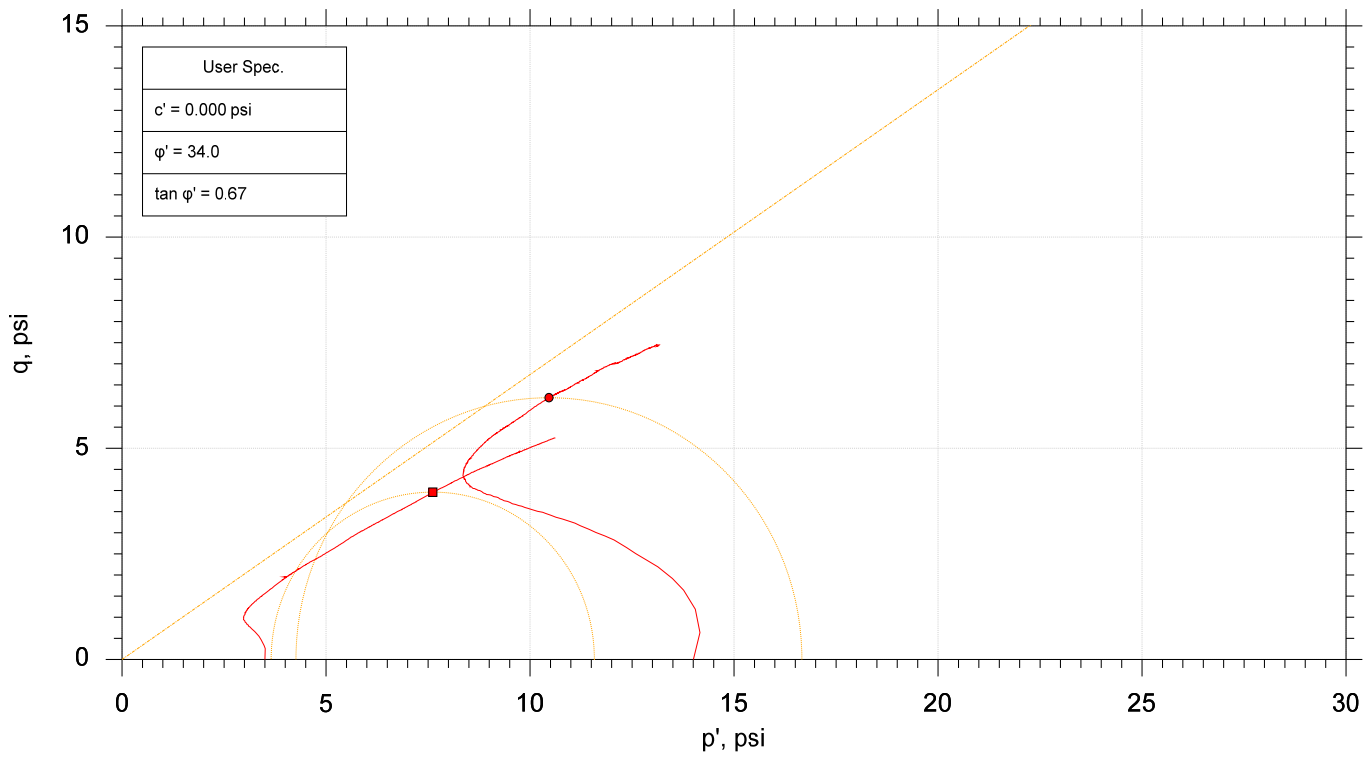
System RR

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Upper Mobile Bay Beneficial Use Wetland Creation Site (Implementation) - Phase 1







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	T-1	CU-3-1	---	trm	11/15/21	mcm	11/23/21	314582-CU-3-1m.dat
●	T-1	CU-3-3	---	trm	11/15/21	mcm	11/23/21	314582-CU-3-3m.dat

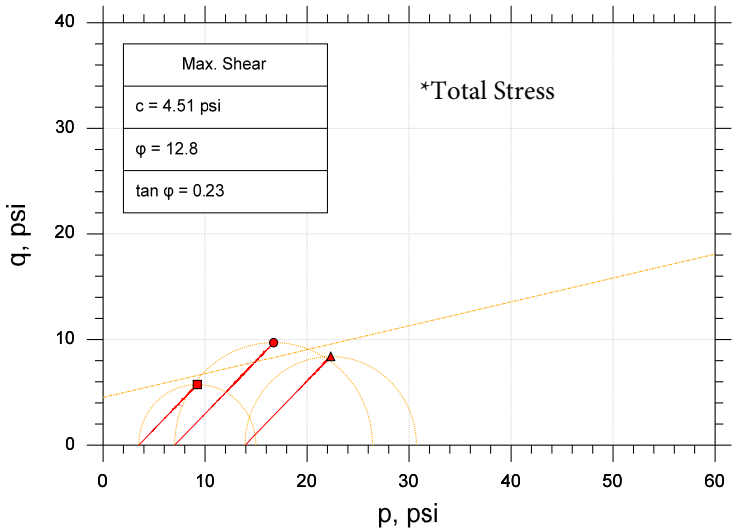
GeoTesting EXPRESS

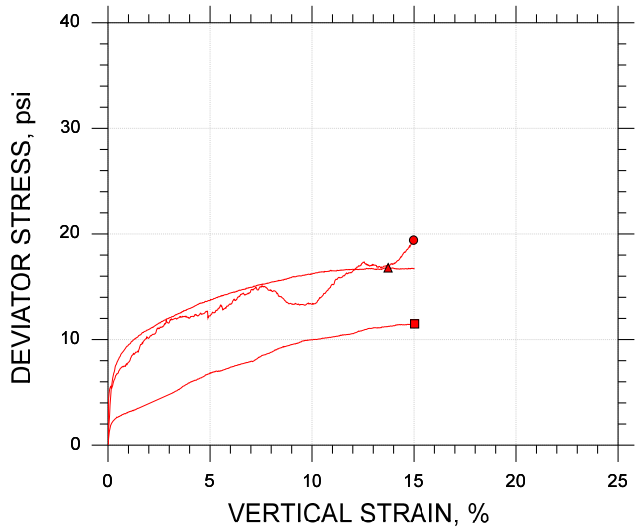
Project: ASPA Upper Bay Marsh	Location: ---	Project No.: GTX-314582
Boring No.: B-19	Sample Type: intact	
Description: Moist, dark gray clayey sand		
Remarks: System RR		

GeoTesting EXPRESS

Client: Geotechnical Engineering-Testing, Inc.	
Project Name: ASPA Upper Bay Marsh	
Project Location:	
Project Number: GTX-34582	
Tested By: trm	Checked By: mcm
Boring ID: B-25	
Preparation: intact	
Description: Moist, dark gray silt with sand	
Classification: SILT with Sandt	
Group Symbol: ML	
Liquid Limit: 40	Plastic Limit: 27
Plasticity Index: 13	Estimated Specific Gravity: 2.65

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲
Sample ID		T-4	T-4	T-4
Depth, ft		---	---	---
Test Number		CU-5-1	CU-5-2	CU-5-3
Initial	Height, in	4.390	4.310	4.400
	Diameter, in	1.950	1.970	1.940
	Moisture Content (from Cuttings), %	37.7	40.4	39.8
	Dry Density, pcf	81.7	79.1	79.9
	Saturation (Wet Method), %	97.5	98.2	98.6
	Void Ratio	1.02	1.09	1.07
Before Shear	Moisture Content, %	36.5	40.0	37.8
	Dry Density, pcf	84.1	80.3	82.6
	Cross-sectional Area (Method A), in²	2.935	2.997	2.872
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.968	1.06	1.00
	Back Pressure, psi	141.0	150.8	109.1
Vertical Effective Consolidation Stress, psi		3.459	7.038	13.92
Horizontal Effective Consolidation Stress, psi		3.497	7.012	13.95
Vertical Strain after Consolidation, %		0.5352	0.592	0.5691
Volumetric Strain after Consolidation, %		1.187	1.949	3.754
Time to 50% Consolidation, min		---	---	25.00
Shear Strength, psi		5.742	9.706	8.398
Strain at Failure, %		15.0	15.0	13.7
Strain Rate, %/min		0.01600	0.01600	0.01600
Deviator Stress at Failure, psi		11.48	19.41	16.80
Effective Minor Principal Stress at Failure, psi		3.675	4.831	6.067
Effective Major Principal Stress at Failure, psi		15.16	24.24	22.86
B-Value		1.0	0.95	0.96

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

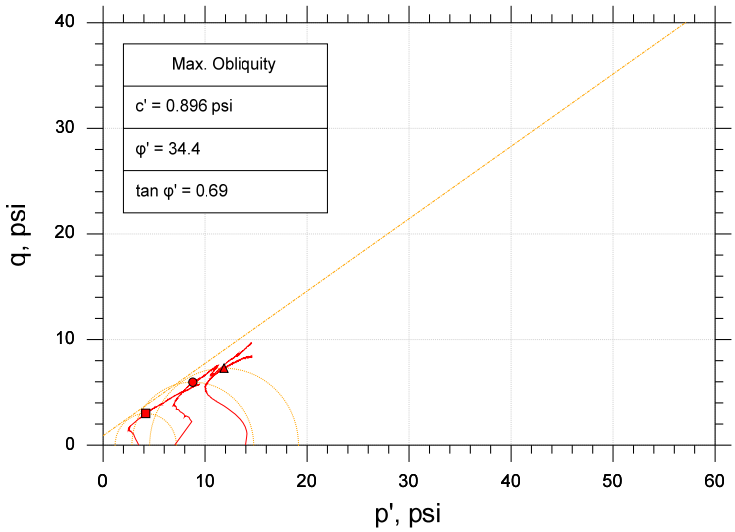
Remarks:

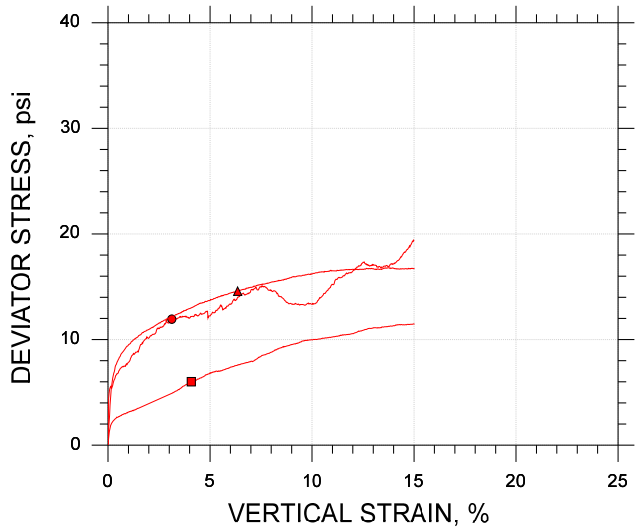
System RR

GeoTesting EXPRESS

Client: Geotechnical Engineering-Testing, Inc.	
Project Name: ASPA Upper Bay Marsh	
Project Location:	
Project Number: GTX-34582	
Tested By: trm	Checked By: mcm
Boring ID: B-25	
Preparation: intact	
Description: Moist, dark gray silt with sand	
Classification: SILT with Sandt	
Group Symbol: ML	
Liquid Limit: 40	Plastic Limit: 27
Plasticity Index: 13	Estimated Specific Gravity: 2.65

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲
Sample ID		T-4	T-4	T-4
Depth, ft		---	---	---
Test Number		CU-5-1	CU-5-2	CU-5-3
Initial	Height, in	4.390	4.310	4.400
	Diameter, in	1.950	1.970	1.940
	Moisture Content (from Cuttings), %	37.7	40.4	39.8
	Dry Density, pcf	81.7	79.1	79.9
	Saturation (Wet Method), %	97.5	98.2	98.6
	Void Ratio	1.02	1.09	1.07
Before Shear	Moisture Content, %	36.5	40.0	37.8
	Dry Density, pcf	84.1	80.3	82.6
	Cross-sectional Area (Method A), in²	2.935	2.997	2.872
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.968	1.06	1.00
	Back Pressure, psi	141.0	150.8	109.1
Vertical Effective Consolidation Stress, psi		3.459	7.038	13.92
Horizontal Effective Consolidation Stress, psi		3.497	7.012	13.95
Vertical Strain after Consolidation, %		0.5352	0.592	0.5691
Volumetric Strain after Consolidation, %		1.187	1.949	3.754
Time to 50% Consolidation, min		---	---	25.00
Shear Strength, psi		3.005	5.964	7.291
Strain at Failure, %		4.08	3.13	6.35
Strain Rate, %/min		0.01600	0.01600	0.01600
Deviator Stress at Failure, psi		6.011	11.93	14.58
Effective Minor Principal Stress at Failure, psi		1.184	2.831	4.571
Effective Major Principal Stress at Failure, psi		7.194	14.76	19.15
B-Value		1.0	0.95	0.96

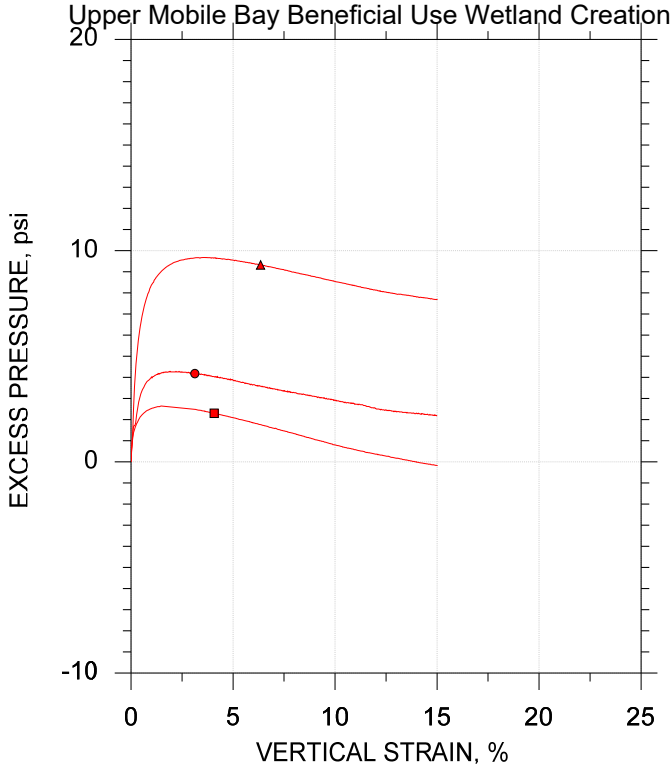
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

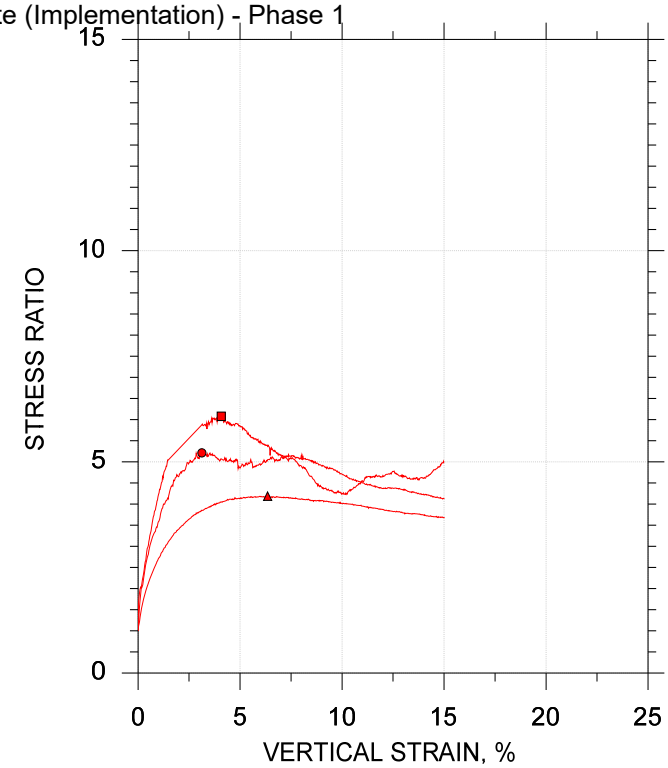
Remarks:

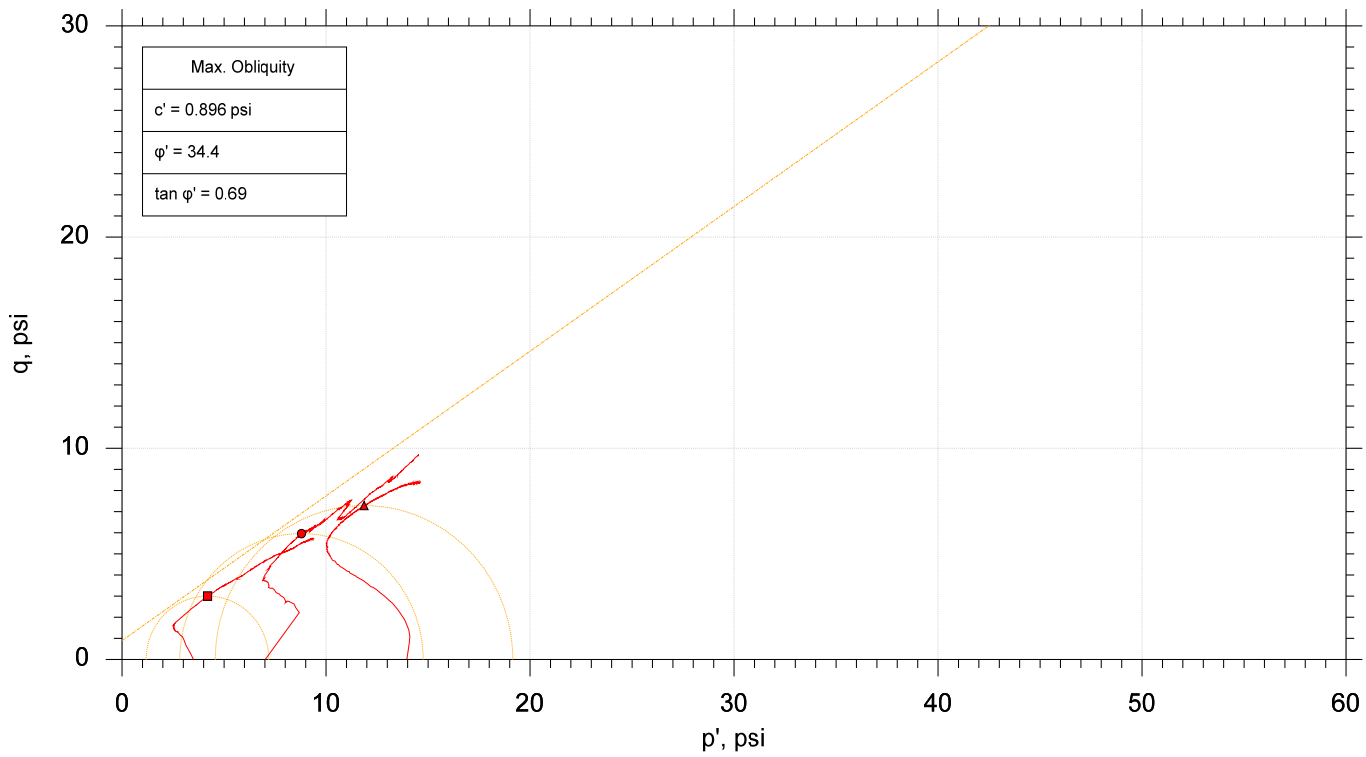
System RR

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Upper Mobile Bay Beneficial Use Wetland Creation Site (Implementation) - Phase 1







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	T-4	CU-5-1	---	trm	11/15/21	mcm	12/20/21	314582-CU-5-1m.dat
●	T-4	CU-5-2	---	trm	11/15/21	mcm	12/20/21	314582-CU-5-2m.dat
▲	T-4	CU-5-3	---	trm	11/15/21	mcm	12/20/21	314582-CU-5-3m.dat

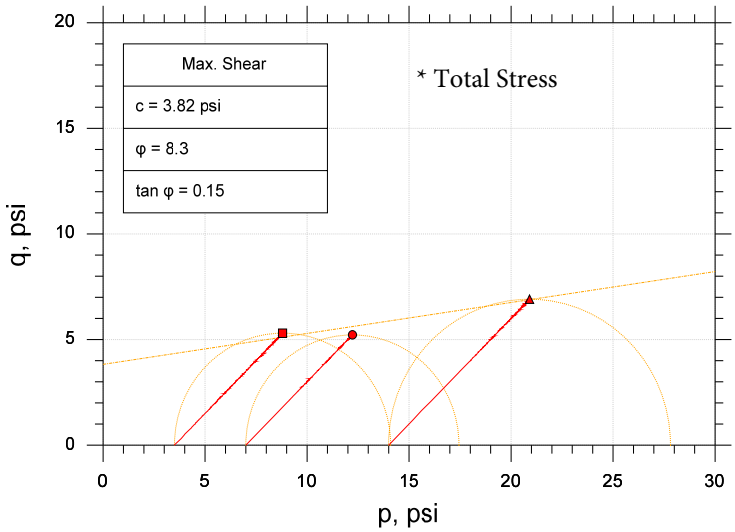
GeoTesting EXPRESS

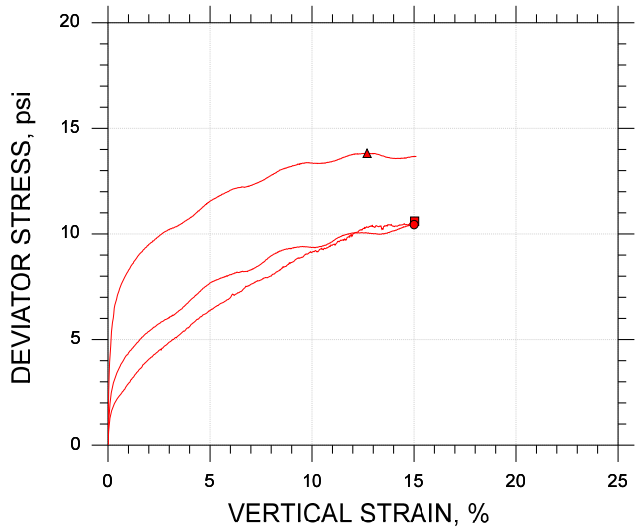
Project: ASPA Upper Bay Marsh	Location: ---	Project No.: GTX-34582
Boring No.: B-25	Sample Type: intact	
Description: Moist, dark gray silt with sand		
Remarks: System RR		

GeoTesting EXPRESS

Client: Geotechnical Engineering-Testing Inc.	
Project Name: ASPA Upper Bay Marsh	
Project Location:	
Project Number: GTX-314582	
Tested By: md	Checked By: mcm
Boring ID: B-29	
Preparation: intact	
Description: Moist, dark gray sandy silt	
Classification: Sandy SILT	
Group Symbol: ML	
Liquid Limit: 38	Plastic Limit: 28
Plasticity Index: 10	Estimated Specific Gravity: 2.65

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲
Sample ID		T-1	T-1	T-1
Depth, ft		---	---	---
Test Number		CU-1-1	CU-1-2	CU-1-3
Initial	Height, in	5.900	5.890	5.790
	Diameter, in	2.860	2.860	2.830
	Moisture Content (from Cuttings), %	38.3	39.9	38.6
	Dry Density, pcf	81.5	80.3	82.8
	Saturation (Wet Method), %	98.6	99.7	102.6
	Void Ratio	1.03	1.06	0.998
Before Shear	Moisture Content, %	37.9	38.3	42.6
	Dry Density, pcf	82.5	82.1	77.7
	Cross-sectional Area (Method A), in²	6.374	6.328	6.814
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.00	1.02	1.13
	Back Pressure, psi	151.0	105.0	133.0
Vertical Effective Consolidation Stress, psi		3.475	6.977	13.90
Horizontal Effective Consolidation Stress, psi		3.479	7.000	14.00
Vertical Strain after Consolidation, %		0.1444	0.5803	1.670
Volumetric Strain after Consolidation, %		0.3874	1.777	6.513
Time to 50% Consolidation, min		---	---	4.000
Shear Strength, psi		5.299	5.223	6.910
Strain at Failure, %		15.0	15.0	12.7
Strain Rate, %/min		0.01600	0.01600	0.01600
Deviator Stress at Failure, psi		10.60	10.45	13.82
Effective Minor Principal Stress at Failure, psi		4.206	4.799	6.167
Effective Major Principal Stress at Failure, psi		14.80	15.24	19.99
B-Value		0.95	0.95	0.95

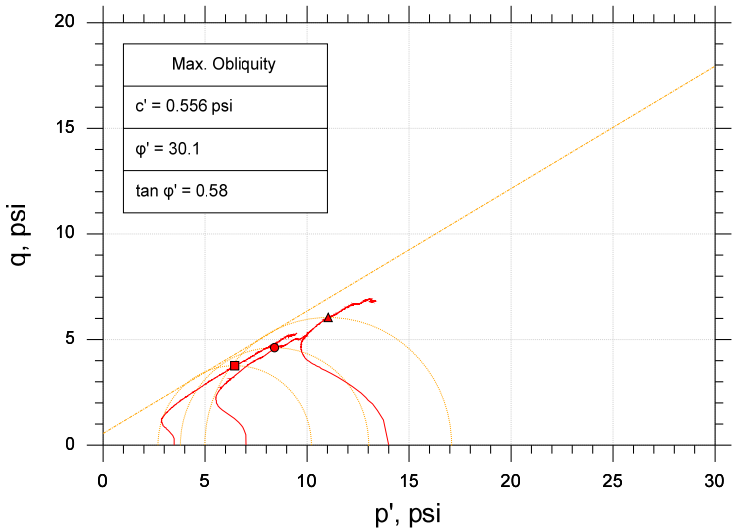
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

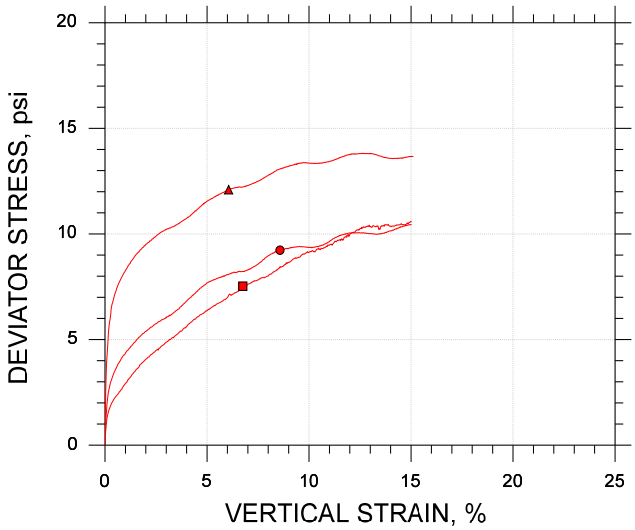
Remarks:

GeoTesting EXPRESS

Client: Geotechnical Engineering-Testing Inc.	
Project Name: ASPA Upper Bay Marsh	
Project Location:	
Project Number: GTX-314582	
Tested By: md	Checked By: mcm
Boring ID: B-29	
Preparation: intact	
Description: Moist, dark gray sandy silt	
Classification: Sandy SILT	
Group Symbol: ML	
Liquid Limit: 38	Plastic Limit: 28
Plasticity Index: 10	Estimated Specific Gravity: 2.65

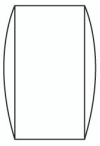
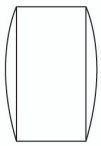
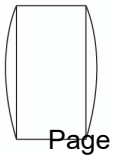
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲
Sample ID		T-1	T-1	T-1
Depth, ft		---	---	---
Test Number		CU-1-1	CU-1-2	CU-1-3
Initial	Height, in	5.900	5.890	5.790
	Diameter, in	2.860	2.860	2.830
	Moisture Content (from Cuttings), %	38.3	39.9	38.6
	Dry Density, pcf	81.5	80.3	82.8
	Saturation (Wet Method), %	98.6	99.7	102.6
	Void Ratio	1.03	1.06	0.998
Before Shear	Moisture Content, %	37.9	38.3	42.6
	Dry Density, pcf	82.5	82.1	77.7
	Cross-sectional Area (Method A), in²	6.374	6.328	6.814
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.00	1.02	1.13
	Back Pressure, psi	151.0	105.0	133.0
Vertical Effective Consolidation Stress, psi		3.475	6.977	13.90
Horizontal Effective Consolidation Stress, psi		3.479	7.000	14.00
Vertical Strain after Consolidation, %		0.1444	0.5803	1.670
Volumetric Strain after Consolidation, %		0.3874	1.777	6.513
Time to 50% Consolidation, min		---	---	4.000
Shear Strength, psi		3.762	4.616	6.048
Strain at Failure, %		6.75	8.58	6.06
Strain Rate, %/min		0.01600	0.01600	0.01600
Deviator Stress at Failure, psi		7.525	9.232	12.10
Effective Minor Principal Stress at Failure, psi		2.691	3.788	4.987
Effective Major Principal Stress at Failure, psi		10.22	13.02	17.08
B-Value		0.95	0.95	0.95

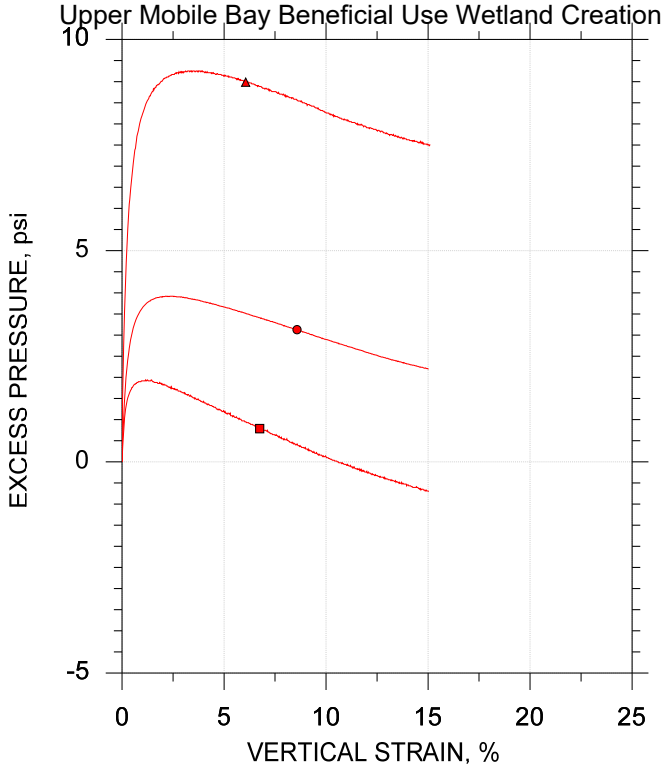
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

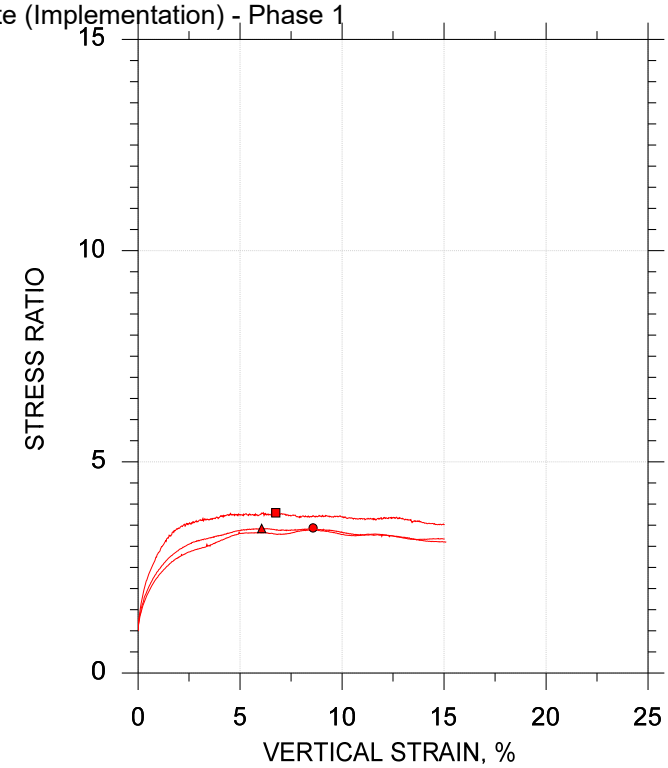




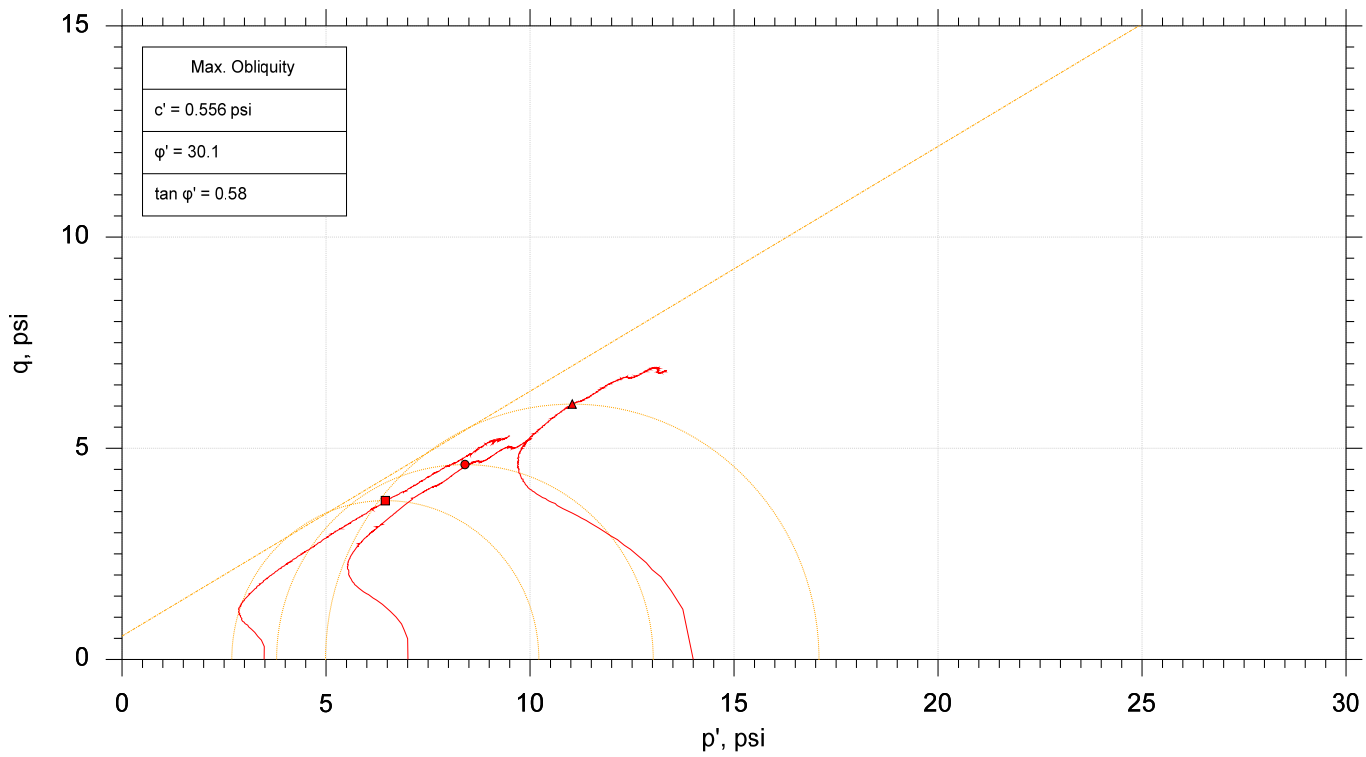
Remarks:

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Upper Mobile Bay Beneficial Use Wetland Creation Site (Implementation) - Phase 1







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	T-1	CU-1-1	---	md	11/10/21	mcm	11/23/21	314582-CU-1-1m.dat
●	T-1	CU-1-2	---	trm	11/10/21	mcm	11/23/21	314582-CU-1-2m.dat
▲	T-1	CU-1-3	---	trm	11/10/21	mcm	11/23/21	314582-CU-1-3m.dat

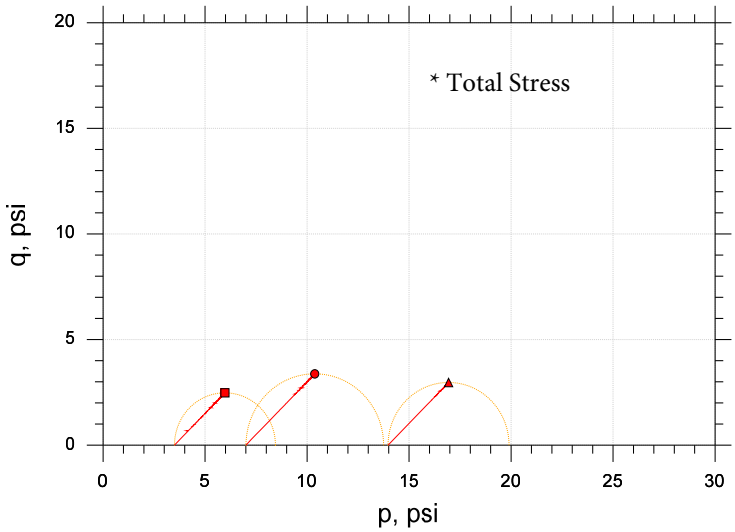
GeoTesting EXPRESS

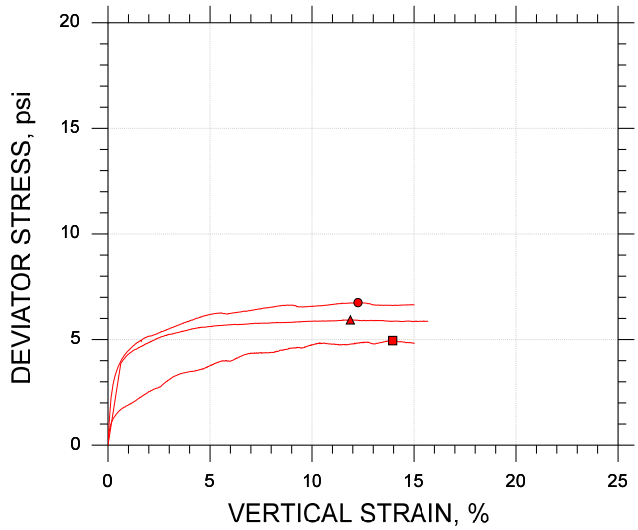
Project: ASPA Upper Bay Marsh	Location: ---	Project No.: GTX-314582
Boring No.: B-29	Sample Type: intact	
Description: Moist, dark gray sandy silt		
Remarks: TX-021		

GeoTesting EXPRESS

Client: Geotechnical Engineering-Testing, Inc.	
Project Name: ASPA Upper Bay Marsh	
Project Location:	
Project Number: GTX-314582	
Tested By: trm	Checked By: mcm
Boring ID: B-32	
Preparation: intact	
Description: Moist, dark gray clay	
Classification: Lean CLAY	
Group Symbol: CL	
Liquid Limit: 44	Plastic Limit: 26
Plasticity Index: 18	Estimated Specific Gravity: 2.7

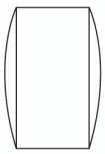
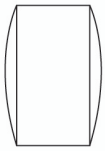
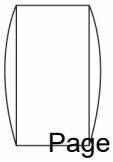
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲
Sample ID		T-5	T-5	T-5
Depth, ft		---	---	---
Test Number		CU-6-1	CU-6-2	CU-6-3
Initial	Height, in	5.650	5.650	5.550
	Diameter, in	2.820	2.810	2.800
	Moisture Content (from Cuttings), %	43.2	43.4	42.5
	Dry Density, pcf	76.4	75.6	76.0
	Saturation (Wet Method), %	96.8	95.3	94.4
	Void Ratio	1.21	1.23	1.22
Before Shear	Moisture Content, %	41.3	41.2	38.8
	Dry Density, pcf	79.7	79.7	82.3
	Cross-sectional Area (Method A), in²	6.024	5.959	5.830
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.12	1.11	1.05
	Back Pressure, psi	68.00	29.00	29.01
Vertical Effective Consolidation Stress, psi		3.477	6.928	13.84
Horizontal Effective Consolidation Stress, psi		3.498	7.003	13.97
Vertical Strain after Consolidation, %		0.4193	1.254	2.173
Volumetric Strain after Consolidation, %		3.741	4.827	6.842
Time to 50% Consolidation, min		---	---	81.00
Shear Strength, psi		2.476	3.374	2.965
Strain at Failure, %		14.0	12.3	11.9
Strain Rate, %/min		0.01600	0.01600	0.01600
Deviator Stress at Failure, psi		4.953	6.749	5.931
Effective Minor Principal Stress at Failure, psi		2.568	2.616	1.933
Effective Major Principal Stress at Failure, psi		7.520	9.365	7.864
B-Value		0.95	0.97	0.98

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

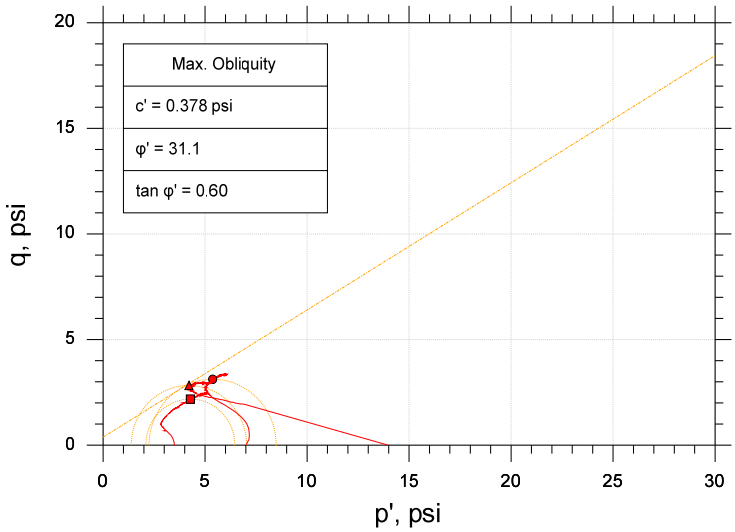
Remarks:

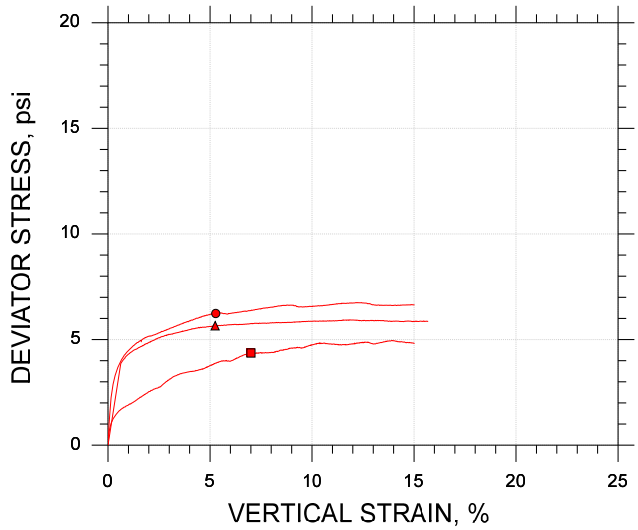
System RR

GeoTesting EXPRESS

Client: Geotechnical Engineering-Testing, Inc.	
Project Name: ASPA Upper Bay Marsh	
Project Location:	
Project Number: GTX-314582	
Tested By: trm	Checked By: mcm
Boring ID: B-32	
Preparation: intact	
Description: Moist, dark gray clay	
Classification: Lean CLAY	
Group Symbol: CL	
Liquid Limit: 44	Plastic Limit: 26
Plasticity Index: 18	Estimated Specific Gravity: 2.7

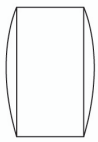
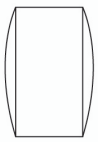
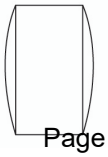
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲
Sample ID		T-5	T-5	T-5
Depth, ft		---	---	---
Test Number		CU-6-1	CU-6-2	CU-6-3
Initial	Height, in	5.650	5.650	5.550
	Diameter, in	2.820	2.810	2.800
	Moisture Content (from Cuttings), %	43.2	43.4	42.5
	Dry Density, pcf	76.4	75.6	76.0
	Saturation (Wet Method), %	96.8	95.3	94.4
	Void Ratio	1.21	1.23	1.22
Before Shear	Moisture Content, %	41.3	41.2	38.8
	Dry Density, pcf	79.7	79.7	82.3
	Cross-sectional Area (Method A), in²	6.024	5.959	5.830
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.12	1.11	1.05
	Back Pressure, psi	68.00	29.00	29.01
Vertical Effective Consolidation Stress, psi		3.477	6.928	13.84
Horizontal Effective Consolidation Stress, psi		3.498	7.003	13.97
Vertical Strain after Consolidation, %		0.4193	1.254	2.173
Volumetric Strain after Consolidation, %		3.741	4.827	6.842
Time to 50% Consolidation, min		---	---	81.00
Shear Strength, psi		2.181	3.117	2.826
Strain at Failure, %		7.00	5.28	5.25
Strain Rate, %/min		0.01600	0.01600	0.01600
Deviator Stress at Failure, psi		4.362	6.235	5.652
Effective Minor Principal Stress at Failure, psi		2.098	2.257	1.385
Effective Major Principal Stress at Failure, psi		6.461	8.491	7.037
B-Value		0.95	0.97	0.98

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

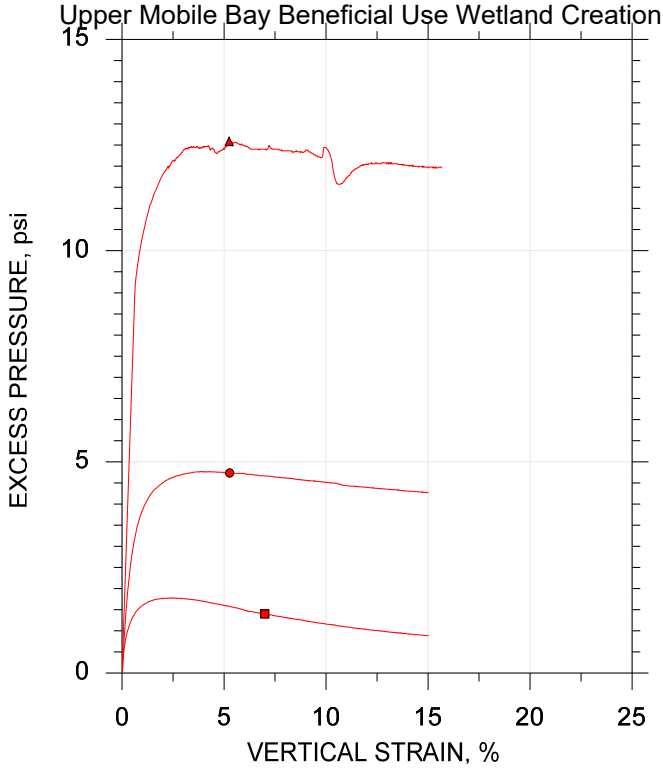




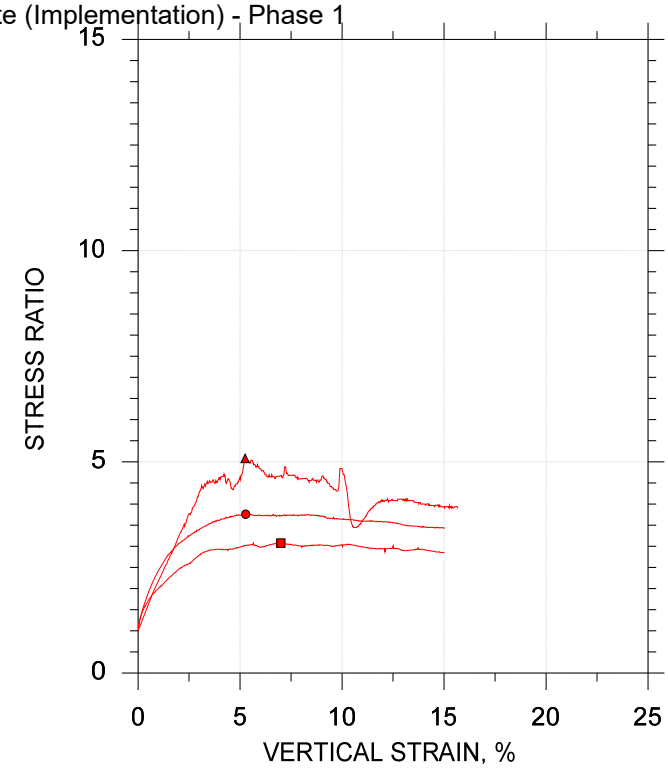
Remarks:

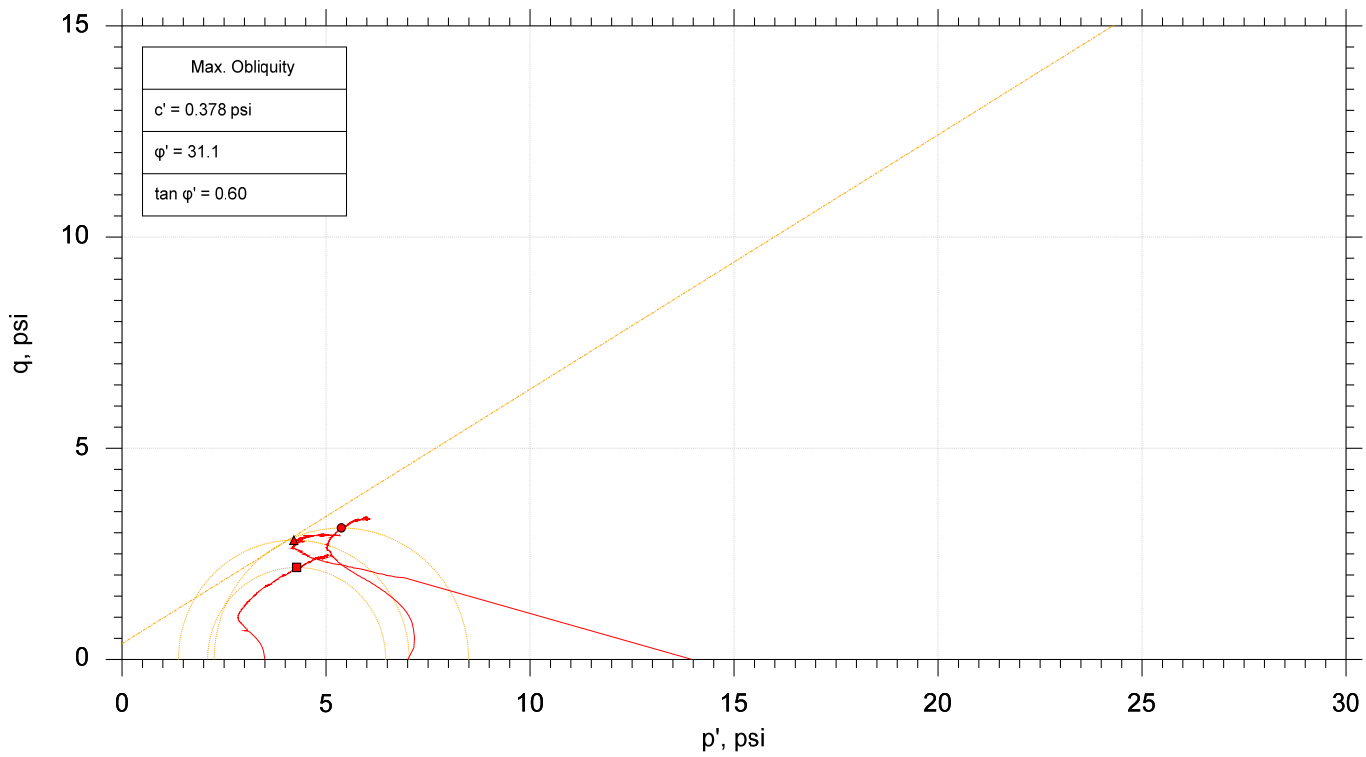
System RR

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Upper Mobile Bay Beneficial Use Wetland Creation Site (Implementation) - Phase 1







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	T-5	CU-6-1	---	trm	11/18/21	mcm	12/20/21	314582-CU-6-1m.dat
●	T-5	CU-6-2	---	trm	11/18/21	mcm	12/20/21	314582-CU-6-2m.dat
▲	T-5	CU-6-3	---	trm	11/18/21	mcm	12/20/21	314582-CU-6-3m.dat

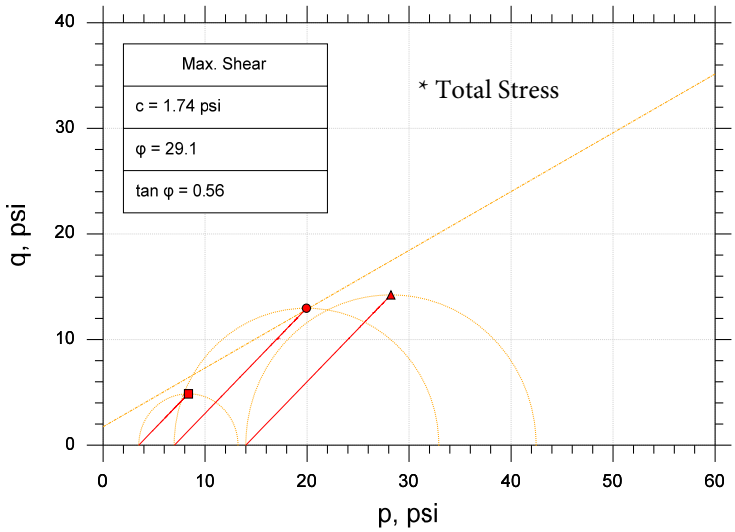
GeoTesting EXPRESS

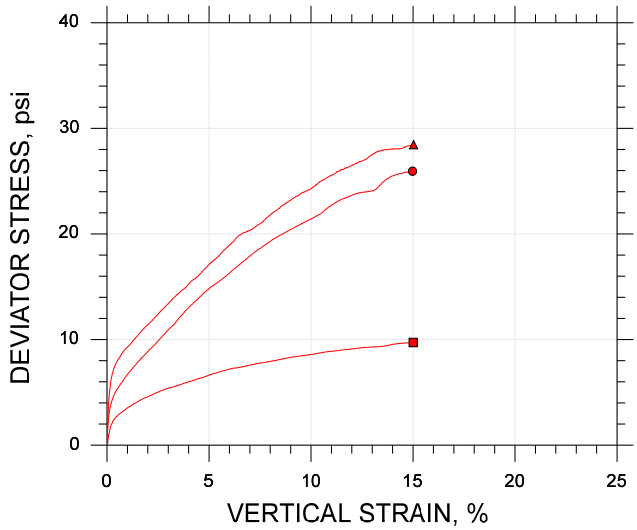
Project: ASPA Upper Bay Marsh	Location: ---	Project No.: GTX-314582
Boring No.: B-32	Sample Type: intact	
Description: Moist dark gray clay		
Remarks: System RR		

GeoTesting EXPRESS

Client: Geotechnical Engineering-Testing, Inc.	
Project Name: ASPA Upper Bay Marsh	
Project Location:	
Project Number: GTX-314582	
Tested By: trm	Checked By: mcm
Boring ID: B-58	
Preparation: intact	
Description: Moist, dark gray silty sand	
Classification: Silty SAND	
Group Symbol: SM	
Liquid Limit: NP	Plastic Limit: NP
Plasticity Index: NP	Estimated Specific Gravity: 2.65

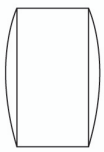
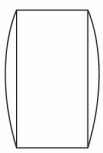
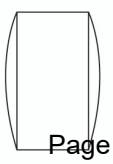
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲
Sample ID		T-4	T-4	T-4
Depth, ft		---	---	---
Test Number		CU-2-1	CU-2-2	CU-2-3
Initial	Height, in	5.900	5.890	6.050
	Diameter, in	2.870	2.870	2.870
	Moisture Content (from Cuttings), %	35.8	40.6	37.8
	Dry Density, pcf	83.1	73.3	81.8
	Saturation (Wet Method), %	95.8	85.6	98.0
	Void Ratio	0.990	1.26	1.02
Before Shear	Moisture Content, %	35.8	45.8	36.0
	Dry Density, pcf	84.9	74.8	84.7
	Cross-sectional Area (Method A), in²	6.374	6.380	6.323
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.950	1.21	0.954
	Back Pressure, psi	30.00	121.0	85.00
Vertical Effective Consolidation Stress, psi		3.468	6.983	13.95
Horizontal Effective Consolidation Stress, psi		3.497	6.991	13.99
Vertical Strain after Consolidation, %		0.5121	0.2289	0.8372
Volumetric Strain after Consolidation, %		1.847	0.9457	2.408
Time to 50% Consolidation, min		0.0000	0.0000	3.240
Shear Strength, psi		4.858	12.97	14.23
Strain at Failure, %		15.0	15.0	15.0
Strain Rate, %/min		0.01600	0.01600	0.01600
Deviator Stress at Failure, psi		9.716	25.94	28.45
Effective Minor Principal Stress at Failure, psi		3.680	10.04	10.45
Effective Major Principal Stress at Failure, psi		13.40	35.98	38.90
B-Value		1.0	0.95	0.95

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

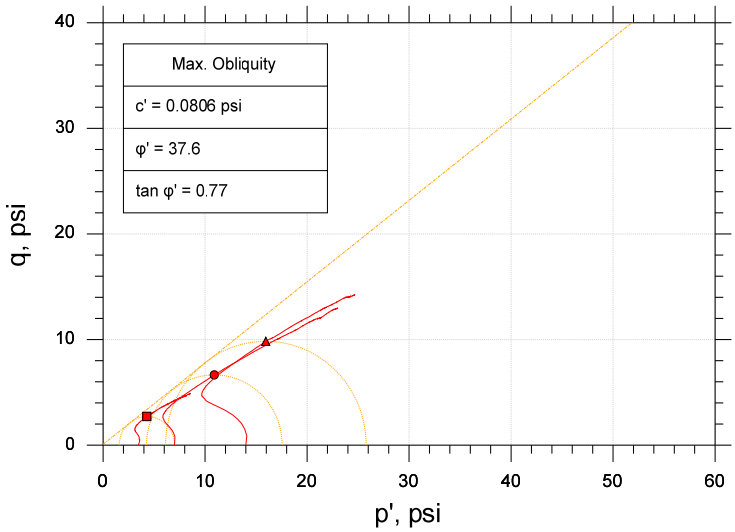




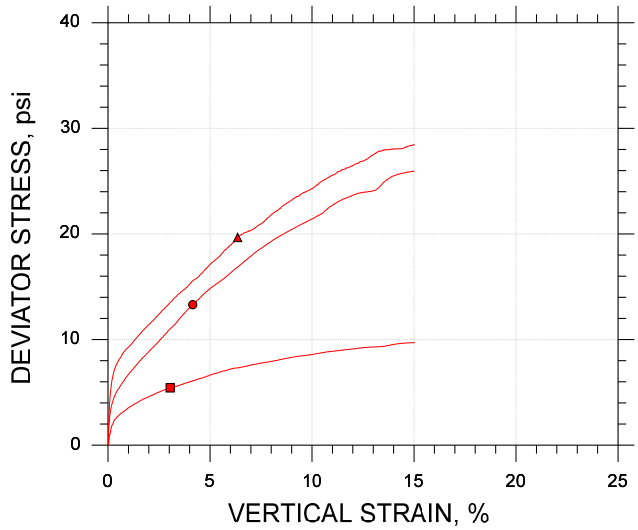
Remarks:

GeoTesting EXPRESS

Client: Geotechnical Engineering-Testing, Inc.	
Project Name: ASPA Upper Bay Marsh	
Project Location:	
Project Number: GTX-314582	
Tested By: trm	Checked By: mcm
Boring ID: B-58	
Preparation: intact	
Description: Moist, dark gray silty sand	
Classification: Silty SAND	
Group Symbol: SM	
Liquid Limit: NP	Plastic Limit: NP
Plasticity Index: NP	Estimated Specific Gravity: 2.65

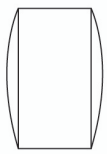
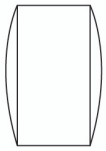
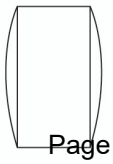
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲
Sample ID		T-4	T-4	T-4
Depth, ft		---	---	---
Test Number		CU-2-1	CU-2-2	CU-2-3
Initial	Height, in	5.900	5.890	6.050
	Diameter, in	2.870	2.870	2.870
	Moisture Content (from Cuttings), %	35.8	40.6	37.8
	Dry Density, pcf	83.1	73.3	81.8
	Saturation (Wet Method), %	95.8	85.6	98.0
	Void Ratio	0.990	1.26	1.02
Before Shear	Moisture Content, %	35.8	45.8	36.0
	Dry Density, pcf	84.9	74.8	84.7
	Cross-sectional Area (Method A), in²	6.374	6.380	6.323
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.950	1.21	0.954
	Back Pressure, psi	30.00	121.0	85.00
Vertical Effective Consolidation Stress, psi		3.468	6.983	13.95
Horizontal Effective Consolidation Stress, psi		3.497	6.991	13.99
Vertical Strain after Consolidation, %		0.5121	0.2289	0.8372
Volumetric Strain after Consolidation, %		1.847	0.9457	2.408
Time to 50% Consolidation, min		---	---	3.240
Shear Strength, psi		2.714	6.651	9.833
Strain at Failure, %		3.04	4.15	6.35
Strain Rate, %/min		0.01600	0.01600	0.01600
Deviator Stress at Failure, psi		5.429	13.30	19.67
Effective Minor Principal Stress at Failure, psi		1.585	4.248	6.121
Effective Major Principal Stress at Failure, psi		7.014	17.55	25.79
B-Value		1.0	0.95	0.95

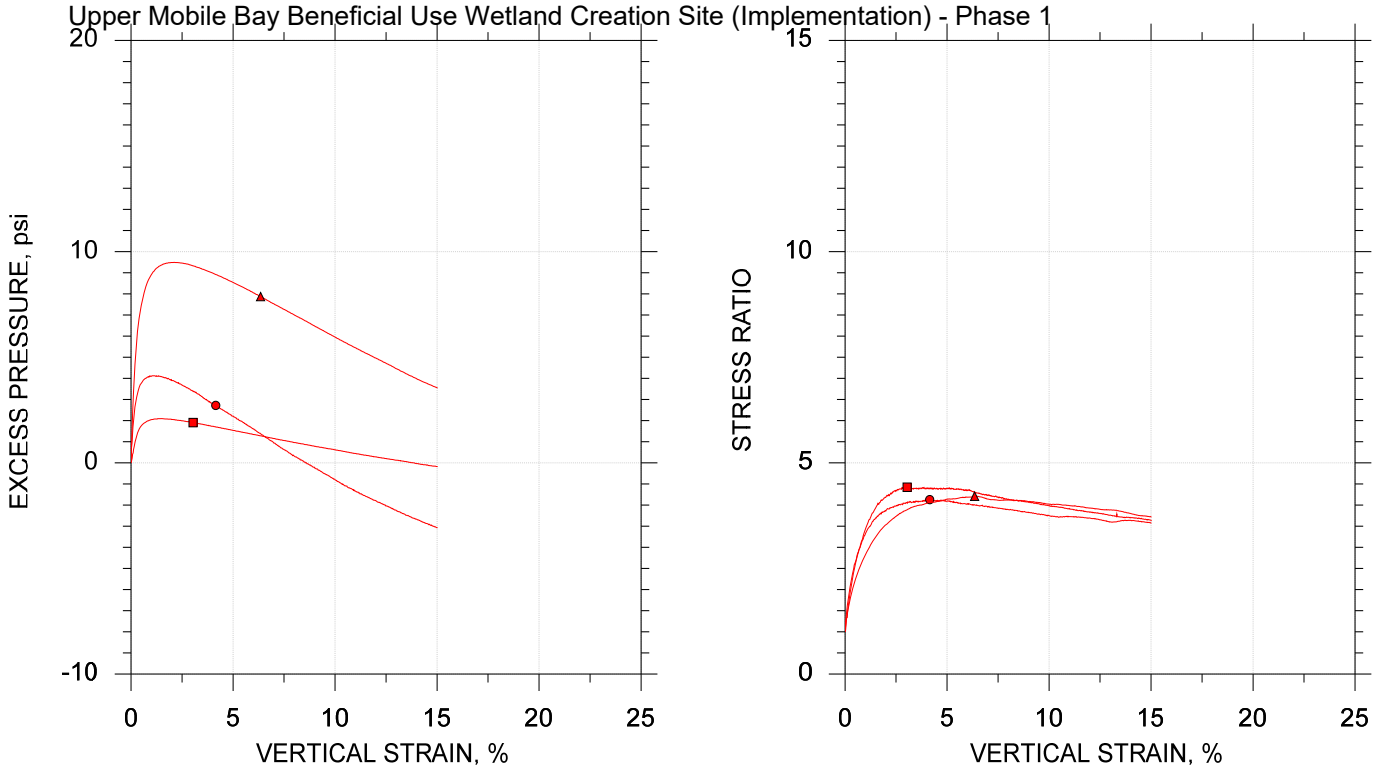
Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

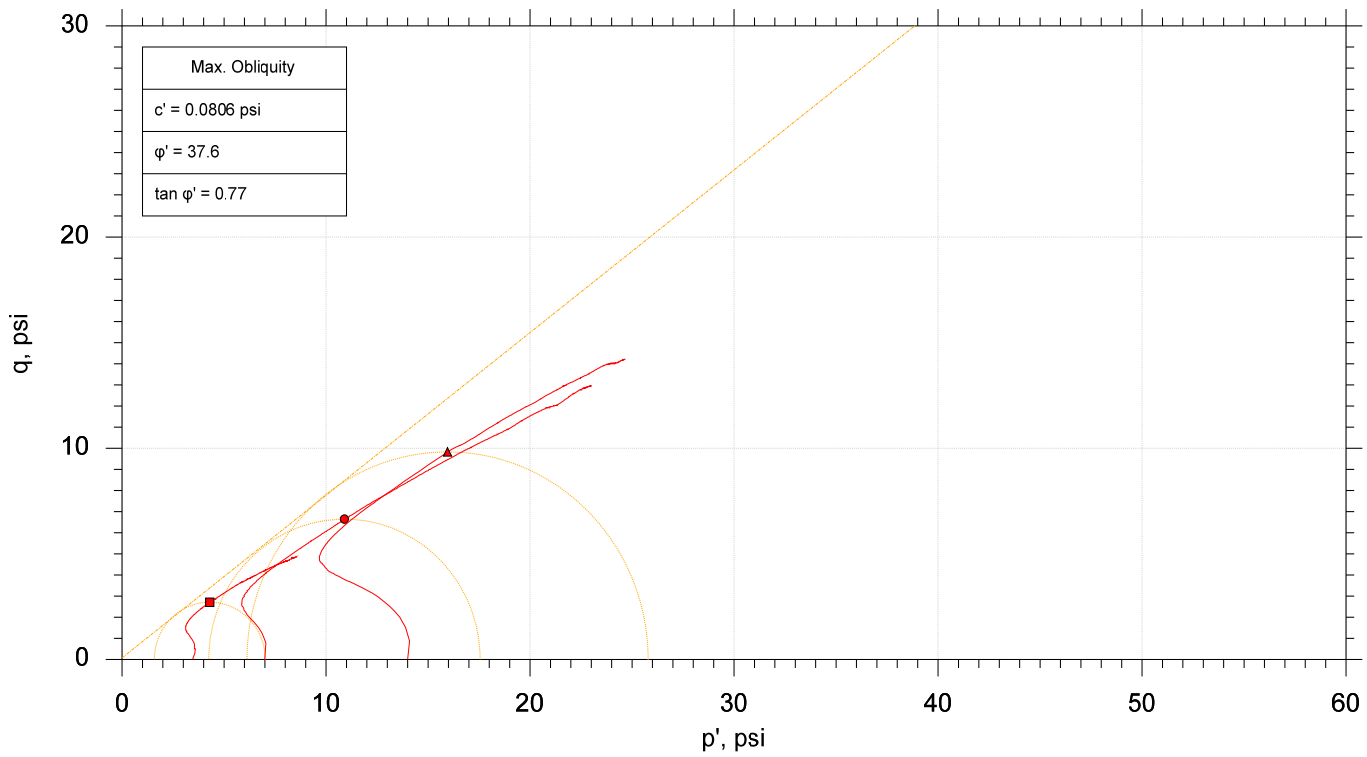




Remarks:

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Upper Mobile Bay Beneficial Use Wetland Creation Site (Implementation) - Phase 1





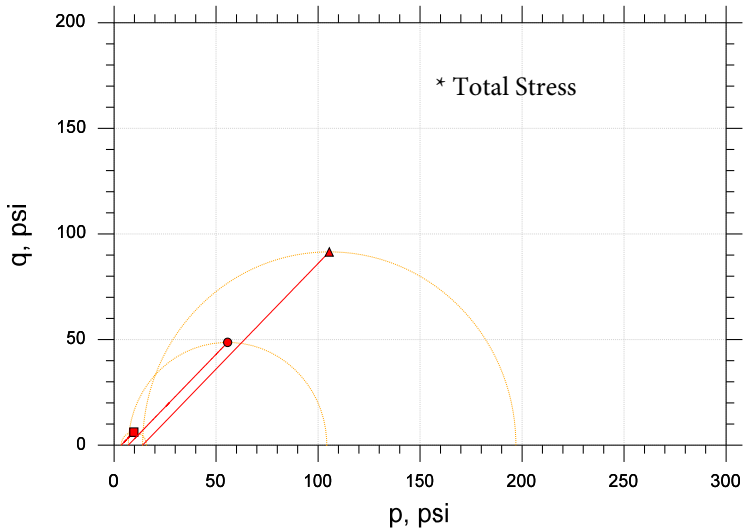
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	T-4	CU-2-1	---	trm	11/10/21	mcm	11/23/21	314582-CU-2-1m.dat
●	T-4	CU-2-2	---	md	11/10/21	mcm	11/23/21	314582-CU-2-2m.dat
▲	T-4	CU-2-3	---	trm	11/10/21	mcm	11/23/21	314582-CU-2-3m.dat

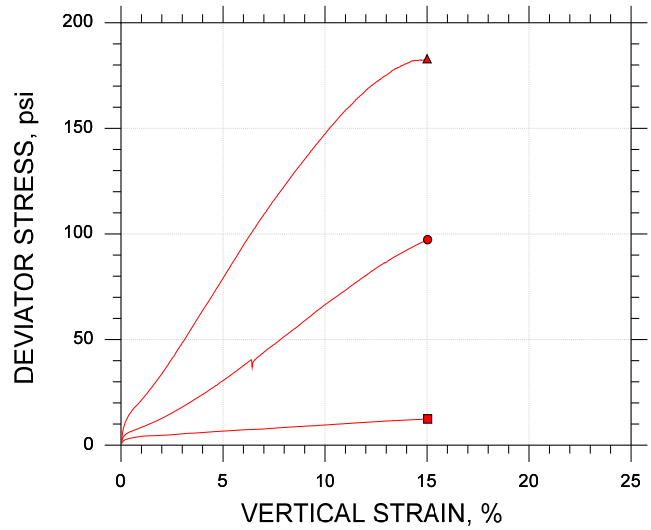
GeoTesting EXPRESS

Project: ASPA Upper Bay Marsh	Location: ---	Project No.: GTX-314582
Boring No.: B-58	Sample Type: intact	
Description: Moist, dark gray silty sand		
Remarks: TX-002		

Client: Geotechnical Engineering-Testing, Inc.	
Project Name: ASPA Upper Bay Marsh	
Project Location:	
Project Number: GTX-314582	
Tested By: md	Checked By: mcm
Boring ID: B-67	
Preparation: intact	
Description: Moist, gray silty sand	
Classification: Silty SAND	
Group Symbol: SM	
Liquid Limit: NP	Plastic Limit: NP
Plasticity Index: NP	Estimated Specific Gravity: 2.65

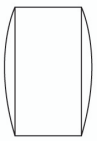
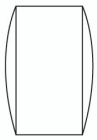
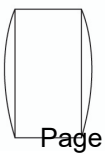
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲
Sample ID		T-1	T-1	T-1
Depth, ft		---	---	---
Test Number		CU-4-1	CU-4-2	CU-4-3
Initial	Height, in	5.630	5.800	5.780
	Diameter, in	2.830	2.870	2.870
	Moisture Content (from Cuttings), %	25.5	29.0	26.1
	Dry Density, pcf	88.2	89.8	89.8
	Saturation (Wet Method), %	77.2	91.2	82.2
	Void Ratio	0.875	0.842	0.842
Before Shear	Moisture Content, %	32.8	30.1	30.5
	Dry Density, pcf	88.5	92.0	91.5
	Cross-sectional Area (Method A), in²	6.279	6.360	6.387
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.869	0.799	0.808
	Back Pressure, psi	109.0	113.0	150.4
Vertical Effective Consolidation Stress, psi		3.503	6.992	13.98
Horizontal Effective Consolidation Stress, psi		3.501	6.995	13.99
Vertical Strain after Consolidation, %		0.06560	0.1240	0.1269
Volumetric Strain after Consolidation, %		0.1225	0.6875	0.4560
Time to 50% Consolidation, min		---	---	2.250
Shear Strength, psi		6.191	48.64	91.47
Strain at Failure, %		15.0	15.0	15.0
Strain Rate, %/min		0.01600	0.01600	0.01600
Deviator Stress at Failure, psi		12.38	97.29	182.9
Effective Minor Principal Stress at Failure, psi		5.790	42.57	76.31
Effective Major Principal Stress at Failure, psi		18.17	139.9	259.3
B-Value		0.95	0.95	0.97

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

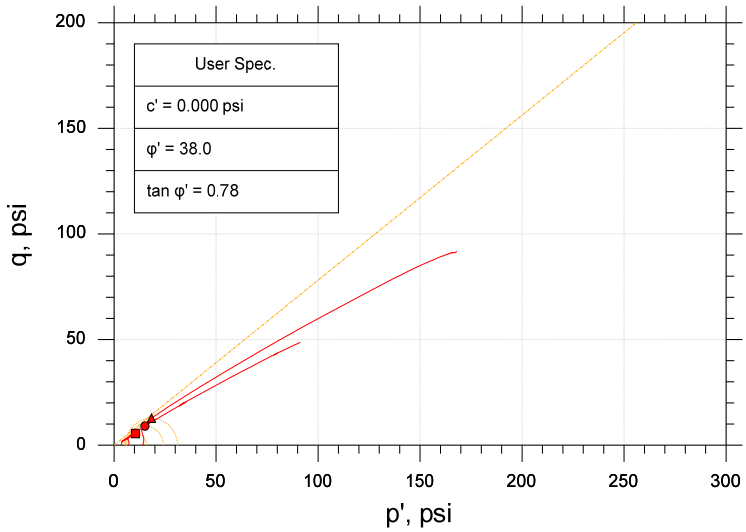




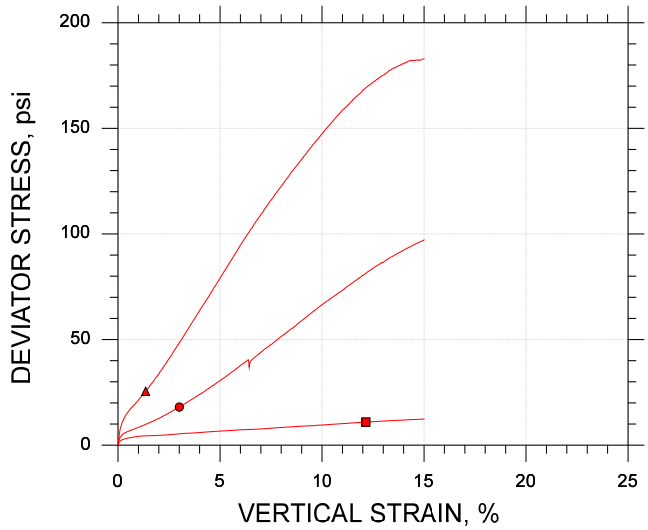
Remarks:

System RR

Client: Geotechnical Engineering-Testing, Inc.	
Project Name: ASPA Upper Bay Marsh	
Project Location:	
Project Number: GTX-314582	
Tested By: md	Checked By: mcm
Boring ID: B-67	
Preparation: intact	
Description: Moist, gray silty sand	
Classification: Silty SAND	
Group Symbol: SM	
Liquid Limit: NP	Plastic Limit: NP
Plasticity Index: NP	Estimated Specific Gravity: 2.65

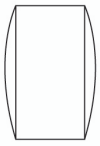
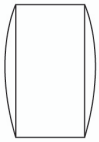
CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		■	●	▲
Sample ID		T-1	T-1	T-1
Depth, ft		---	---	---
Test Number		CU-4-1	CU-4-2	CU-4-3
Initial	Height, in	5.630	5.800	5.780
	Diameter, in	2.830	2.870	2.870
	Moisture Content (from Cuttings), %	25.5	29.0	26.1
	Dry Density, pcf	88.2	89.8	89.8
	Saturation (Wet Method), %	77.2	91.2	82.2
	Void Ratio	0.875	0.842	0.842
Before Shear	Moisture Content, %	32.8	30.1	30.5
	Dry Density, pcf	88.5	92.0	91.5
	Cross-sectional Area (Method A), in²	6.279	6.360	6.387
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.869	0.799	0.808
	Back Pressure, psi	109.0	113.0	150.4
Vertical Effective Consolidation Stress, psi		3.503	6.992	13.98
Horizontal Effective Consolidation Stress, psi		3.501	6.995	13.99
Vertical Strain after Consolidation, %		0.06560	0.1240	0.1269
Volumetric Strain after Consolidation, %		0.1225	0.6875	0.4560
Time to 50% Consolidation, min		---	---	2.250
Shear Strength, psi		5.463	9.014	12.75
Strain at Failure, %		12.2	3.00	1.35
Strain Rate, %/min		0.01600	0.01600	0.01600
Deviator Stress at Failure, psi		10.93	18.03	25.51
Effective Minor Principal Stress at Failure, psi		4.997	6.112	5.584
Effective Major Principal Stress at Failure, psi		15.92	24.14	31.09
B-Value		0.95	0.95	0.97

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

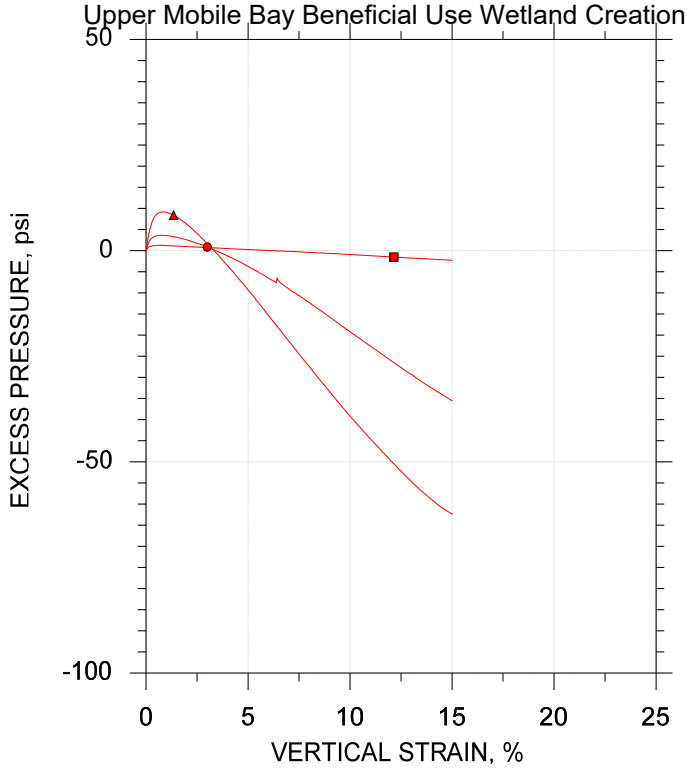



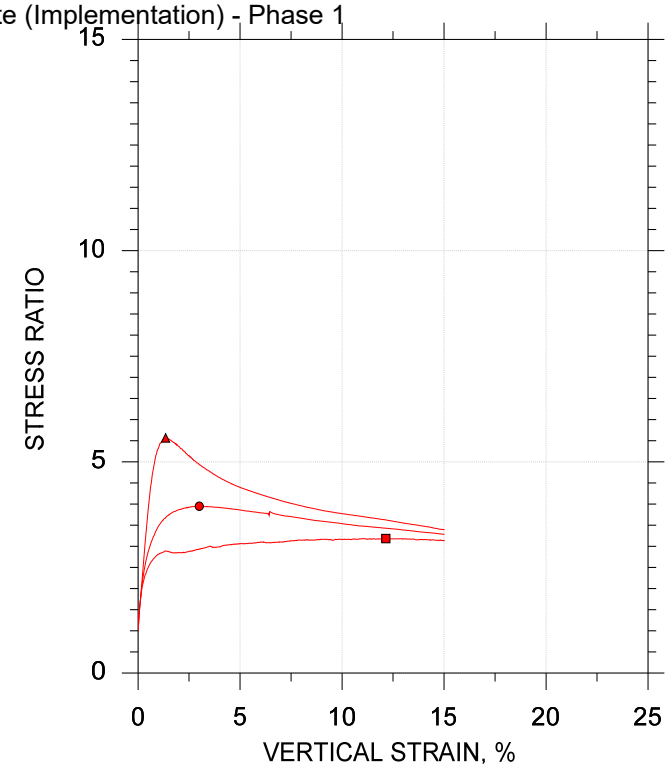
Remarks:

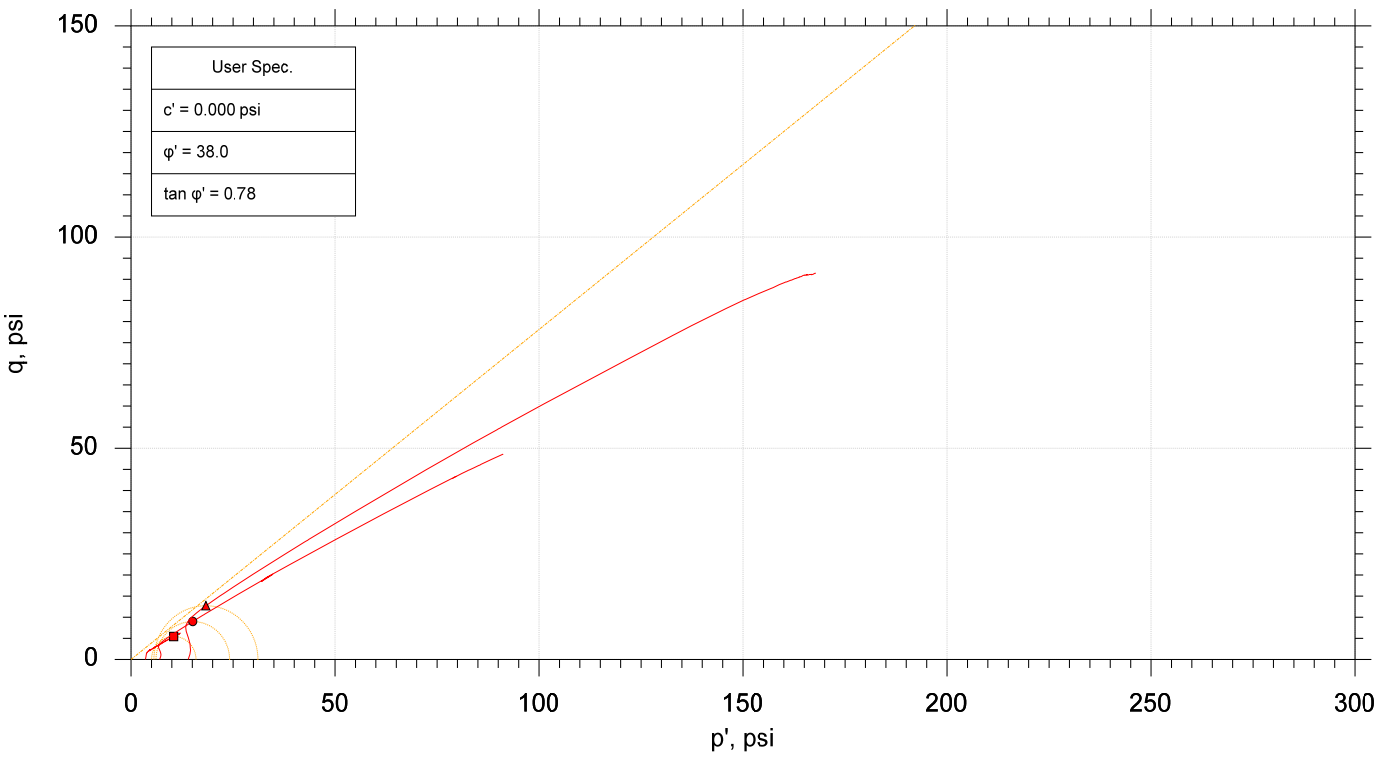
System RR

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

Upper Mobile Bay Beneficial Use Wetland Creation Site (Implementation) - Phase 1



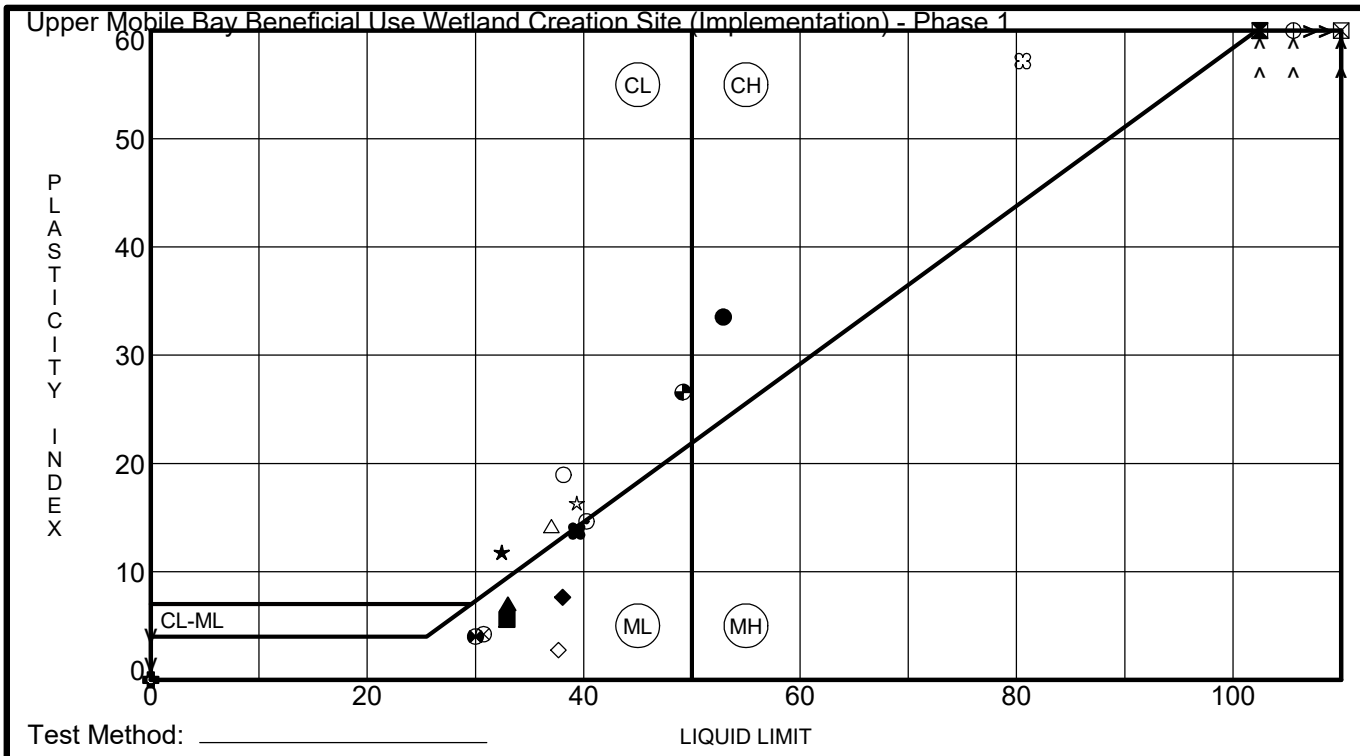




	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	T-1	CU-4-1	---	md	11/12/21	mcm	11/23/21	314582-CU-4-1m.dat
●	T-1	CU-4-2	---	md	11/12/21	mcm	11/23/21	314582-CU-4-2m.dat
▲	T-1	CU-4-3	---	trm	11/11/21	mcm	11/23/21	314582-CU-4-3m.dat

GeoTesting EXPRESS

Project: ASPA Upper Bay Marsh	Location: ---	Project No.: GTX-314582
Boring No.: B-67	Sample Type: intact	
Description: Moist gravelly sand		
Remarks: System RR		



Test Method: _____

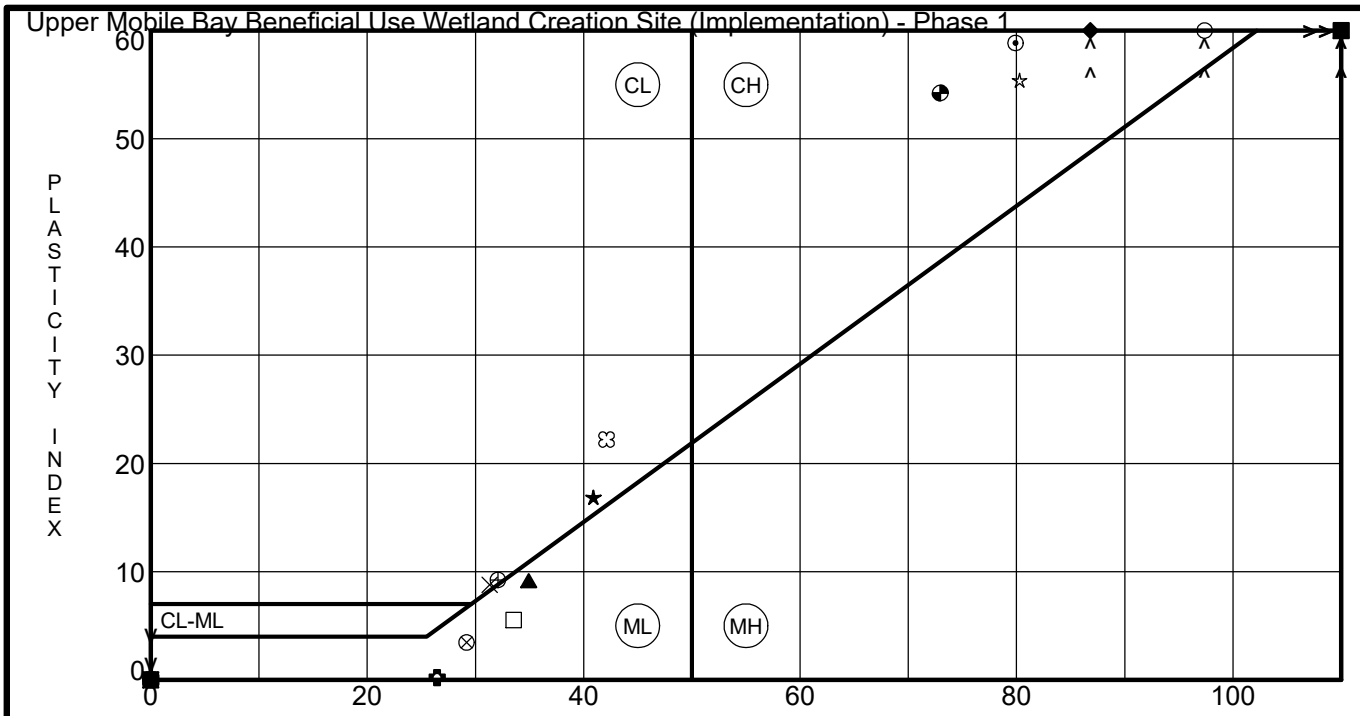
	Boring ID	Depth (ft.)	LL	PL	PI	Fines	Classification
●	**B-1**	**10.0**	**53**	**19**	**34**	**77.3**	**FAT CLAY with SAND (CH)**
⊠	**B-1**	**41.5**	**102**	**21**	**81**	**95.8**	**FAT CLAY (CH)**
▲	**B-2**	**10.0**	**33**	**26**	**7**	**43.9**	**SILTY SAND (SM)**
★	**B-3**	**5.5**	**32**	**21**	**11**	**64.8**	**SANDY LEAN CLAY (CL)**
⊙	**B-3**	**10.0**	**40**	**26**	**14**	**73.4**	
✪	**B-3**	**31.5**	**NP**	**21**	**NP**	**25.0**	**SILTY SAND (SM)**
○	**B-4**	**5.5**	**38**	**19**	**19**	**89.3**	**LEAN CLAY (CL)**
△	**B-4**	**10.0**	**37**	**23**	**14**	**60.1**	**SANDY LEAN CLAY (CL)**
⊗	**B-5**	**0.5**	**31**	**27**	**4**	**41.5**	**SILTY SAND (SM)**
⊕	**B-5**	**44.0**	**106**	**31**	**75**	**95.4**	**FAT CLAY (CH)**
□	**B-5**	**59.0**	**245**	**111**	**134**	**50.1**	**SANDY ORGANIC SILT (OH)**
⊛	**B-6**	**10.0**	**30**	**26**	**4**	**56.0**	**SANDY SILT (ML)**
◕	**B-7**	**0.5**	**49**	**23**	**26**	**84.0**	**LEAN CLAY with SAND (CL)**
☆	**B-7**	**10.0**	**39**	**23**	**16**	**64.0**	**SANDY LEAN CLAY (CL)**
⊠	**B-7**	**41.5**	**81**	**23**	**58**	**99.0**	**FAT CLAY (CH)**
■	**B-8**	**0.5**	**33**	**27**	**6**	**56.9**	**SANDY SILT (ML)**
◆	**B-8**	**10.5**	**38**	**30**	**8**	**62.0**	**SANDY SILT (ML)**
◇	**B-9A**	**10.0**	**38**	**35**	**3**	**56.1**	**SANDY SILT (ML)**
×	**B-9A**	**41.5**	**112**	**30**	**82**	**99.4**	**FAT CLAY (CH)**
✖	**B-9B**	**10.0**	**39**	**26**	**13**	**60.8**	**SANDY SILT (ML)**

GEOTECHNICAL ENGINEERING TESTING, INC.

ATTERBERG LIMITS RESULTS

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

US ATTERBERG LIMITS 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

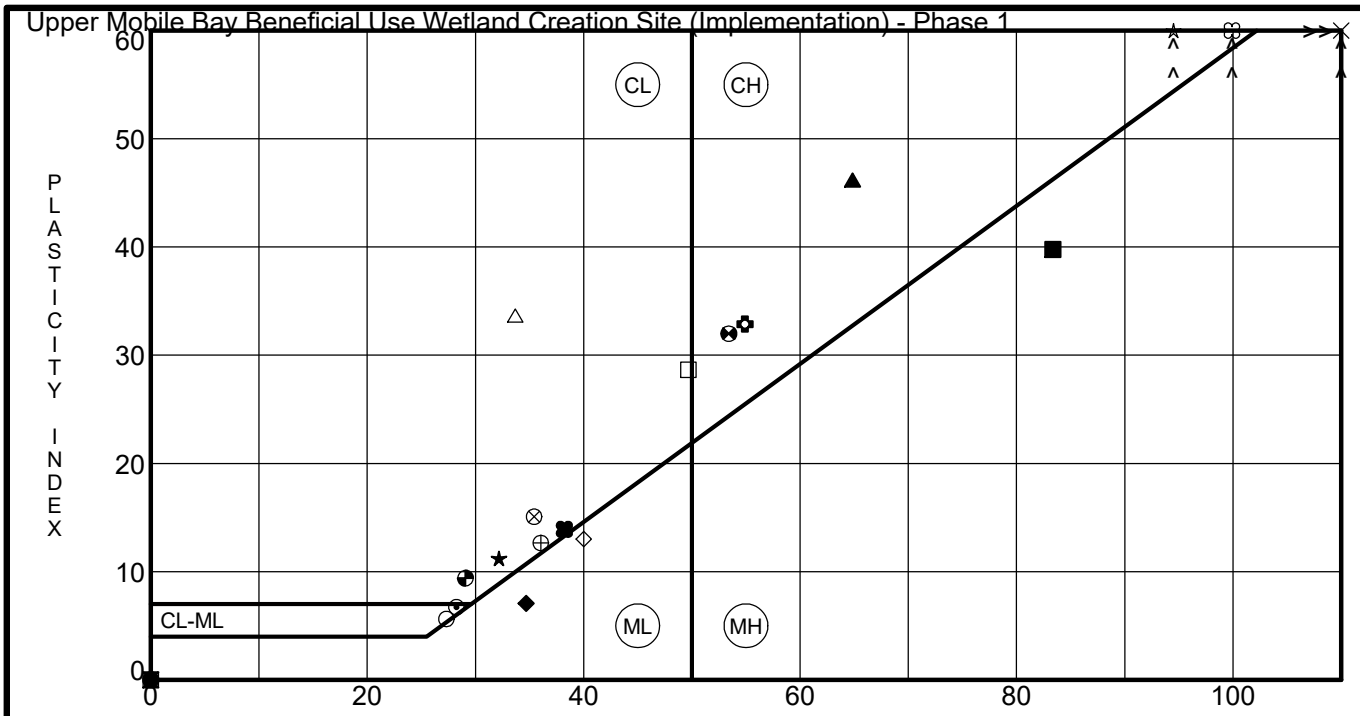
	Boring ID	Depth (ft.)	LL	PL	PI	Fines	Classification
●	B-10	3.0	NP	67	NP	51.6	SANDY ORGANIC SILT (OL)
⊠	B-10	8.0	NP	NP	NP	45.7	SILTY SAND (SM)
▲	B-10	13.0	35	26	9	59.2	SANDY SILT (ML)
★	B-11	10.0	41	24	17	62.1	SANDY LEAN CLAY (CL)
⊙	B-11	31.5	80	21	59	99.5	FAT CLAY (CH)
✿	B-12	10.0	26	26	NP	60.7	SANDY SILT (ML)
○	B-13	31.5	97	22	75	99.3	FAT CLAY (CH)
△	B-13	44.0	112	26	86	97.3	FAT CLAY (CH)
⊗	B-14	8.0	29	26	3	45.3	SILTY SAND (SM)
⊕	B-14	10.0	32	23	9	49.2	CLAYEY SAND (SC)
□	B-14	15.0	34	28	6	40.5	SILTY SAND (SM)
❂	B-15	8.0	NP	NP	NP	52.1	SANDY SILT (ML)
◕	B-15	26.5	73	19	54	97.7	FAT CLAY (CH)
☆	B-15	49.0	80	25	55	89.6	FAT CLAY (CH)
☙	B-15	56.5	42	20	22	93.4	LEAN CLAY (CL)
■	B-15	69.0	201	53	148	42.4	CLAYEY SAND (SC)
◆	B-15	79.0	87	22	65	80.4	FAT CLAY with SAND (CH)
◇	B-16	5.5	NP	NP	NP	26.0	SILTY SAND (SM)
×	B-16	10.5	31	23	8	48.3	SILTY SAND (SM)
✖	B-16	15.5	NP	NP	NP	49.8	SILTY SAND (SM)

GEOTECHNICAL ENGINEERING TESTING, INC.

ATTERBERG LIMITS RESULTS

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

US ATTERBERG LIMITS 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

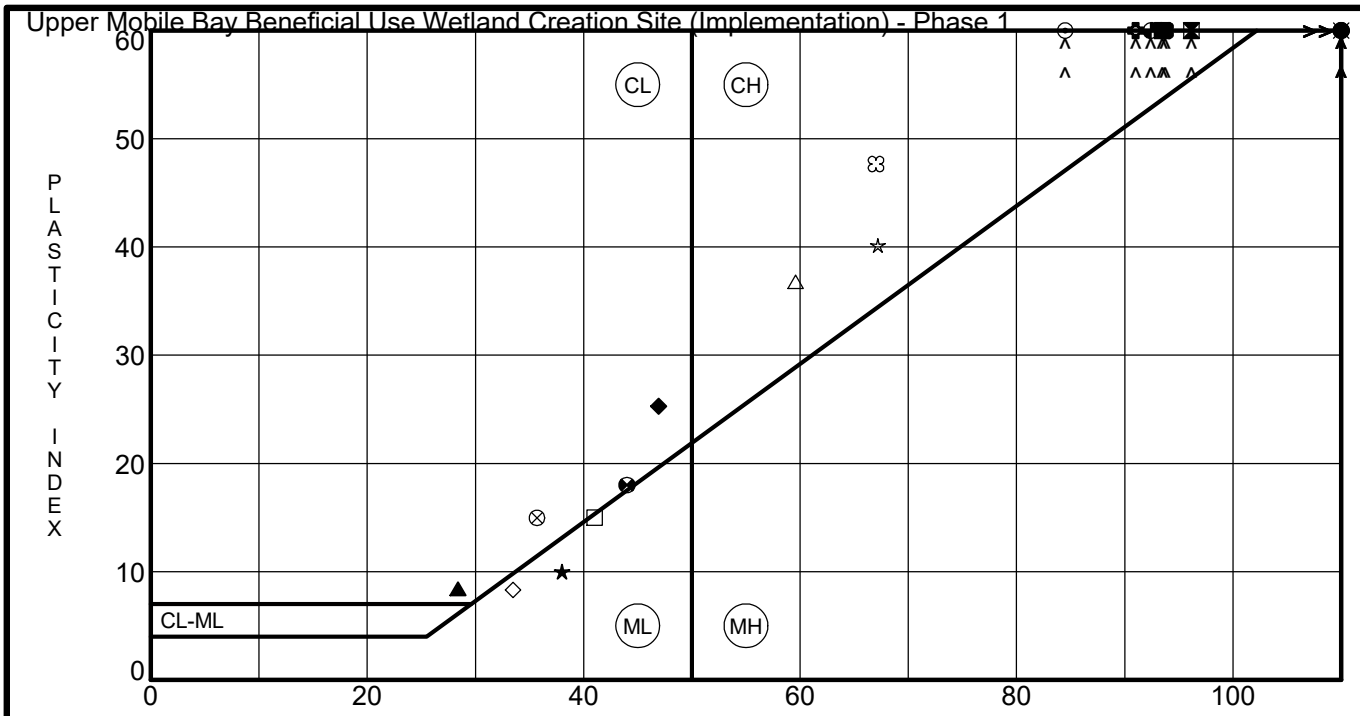
	Boring ID	Depth (ft.)	LL	PL	PI	Fines	Classification
●	B-17	5.0	NP	NP	NP	33.0	SILTY SAND (SM)
⊠	B-17	10.5	NP	NP	NP	16.7	SILTY SAND (SM)
▲	B-17	49.0	65	19	46	89.6	FAT CLAY (CH)
★	B-19	10.0	32	21	11	32.1	CLAYEY SAND (SC)
⊙	B-19	15.0	28	22	6	45.1	SILTY, CLAYEY SAND (SC-SM)
✿	B-19	31.5	55	22	33	96.6	FAT CLAY (CH)
○	B-20	5.5	27	22	5	39.7	SILTY SAND (SM)
△	B-20	10.0	34	NP	34	52.6	SANDY SILT (ML)
⊗	B-21	3.0	35	20	15	67.8	SANDY LEAN CLAY (CL)
⊕	B-21	10.0	36	23	13	70.5	LEAN CLAY with SAND (CL)
□	B-21	14.5	50	21	29	87.5	FAT CLAY (CH)
✿	B-21	54.0	53	21	32	87.9	FAT CLAY (CH)
◕	B-22	15.0	29	20	9	63.8	SANDY LEAN CLAY (CL)
☆	B-22	26.5	95	22	73	98.2	FAT CLAY (CH)
⊠	B-23	36.5	100	31	69	96.4	FAT CLAY (CH)
■	B-23	46.5	83	44	39	93.6	ELASTIC SILT (MH)
◆	B-24	17.5	35	28	7	65.6	SANDY SILT (ML)
◇	B-25	4.0	40	27	13	82.0	SILT with SAND (ML)
×	B-25	46.5	114	28	86	98.5	FAT CLAY (CH)
✖	B-27	15.0	38	24	14	73.2	LEAN CLAY with SAND (CL)

GEOTECHNICAL ENGINEERING TESTING, INC.

ATTERBERG LIMITS RESULTS

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

US ATTERBERG LIMITS 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

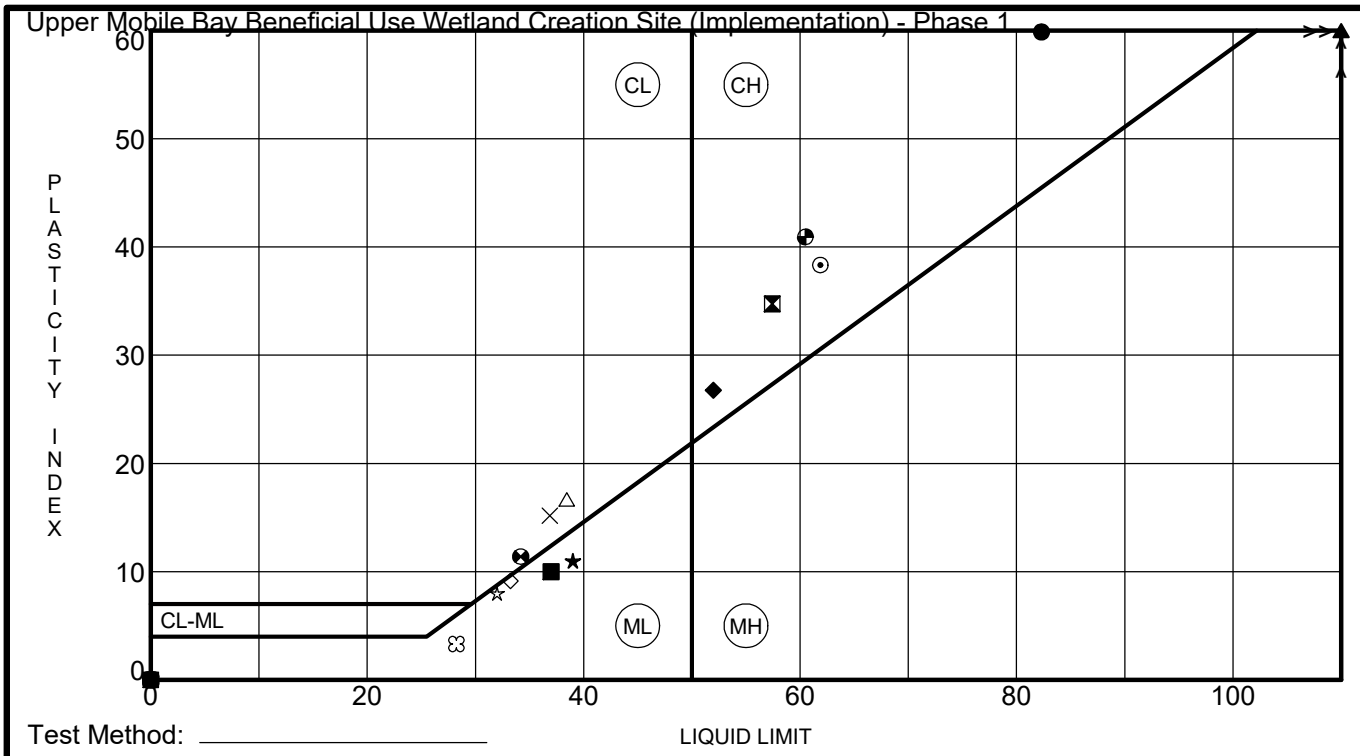
	Boring ID	Depth (ft.)	LL	PL	PI	Fines	Classification
●	**B-27**	**36.5**	**116**	**25**	**91**	**98.9**	**FAT CLAY (CH)**
⊠	**B-27**	**44.0**	**96**	**27**	**69**	**94.2**	**FAT CLAY (CH)**
▲	**B-28**	**10.0**	**28**	**20**	**8**	**81.5**	**LEAN CLAY with SAND (CL)**
★	**B-29**	**10.0**	**38**	**28**	**10**	**64.0**	**SANDY SILT (ML)**
⊙	**B-29**	**26.5**	**84**	**21**	**63**	**99.2**	**FAT CLAY (CH)**
✿	**B-29**	**44.0**	**91**	**23**	**68**	**98.9**	**FAT CLAY (CH)**
○	**B-29**	**59.0**	**131**	**40**	**91**	**96.7**	**FAT CLAY (CH)**
△	**B-30**	**4.0**	**60**	**23**	**37**	**78.9**	**FAT CLAY with SAND (CH)**
⊗	**B-30**	**15.0**	**36**	**21**	**15**	**92.0**	**LEAN CLAY (CL)**
⊕	**B-30**	**54.0**	**219**	**68**	**151**	**30.9**	**CLAYEY SAND (SC)**
□	**B-31**	**10.0**	**41**	**26**	**15**	**81.0**	**SILT with SAND (ML)**
⊛	**B-32**	**5.0**	**44**	**26**	**18**	**85.0**	**LEAN CLAY with SAND (CL)**
◕	**B-32**	**39.0**	**92**	**29**	**63**	**99.4**	**FAT CLAY (CH)**
☆	**B-32**	**56.5**	**67**	**27**	**40**	**89.9**	**FAT CLAY (CH)**
☋	**B-34**	**26.5**	**67**	**19**	**48**	**97.8**	**FAT CLAY (CH)**
■	**B-34**	**36.5**	**93**	**27**	**66**	**94.1**	**FAT CLAY (CH)**
◆	**B-35**	**15.0**	**47**	**22**	**25**	**88.2**	**LEAN CLAY (CL)**
◇	**B-35**	**26.5**	**33**	**25**	**8**	**45.8**	**SILTY SAND (SM)**
×	**B-35**	**64.0**	**220**	**75**	**145**	**29.1**	**SILTY SAND (SM)**
✖	**B-36**	**36.5**	**94**	**19**	**75**	**99.3**	**FAT CLAY (CH)**

GEOTECHNICAL ENGINEERING TESTING, INC.

ATTERBERG LIMITS RESULTS

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

US ATTERBERG LIMITS 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

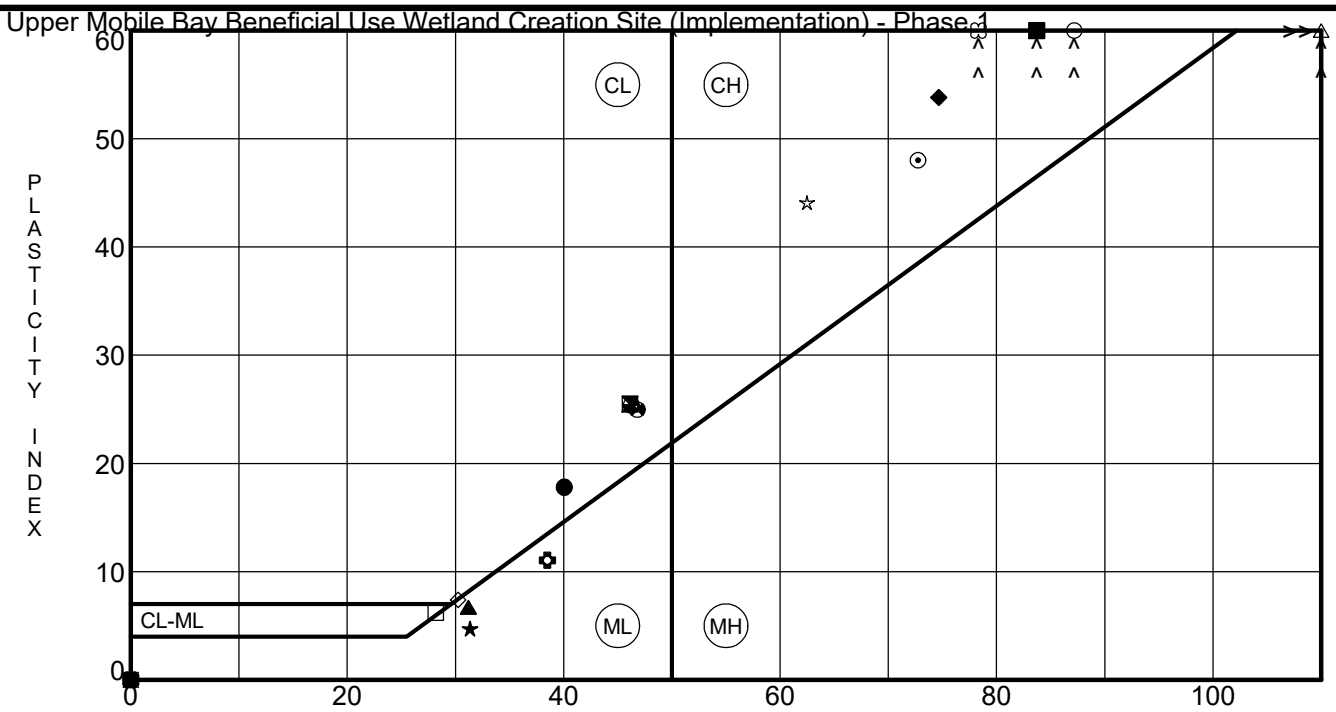
	Boring ID	Depth (ft.)	LL	PL	PI	Fines	Classification
●	B-36	49.0	82	22	60	79.1	FAT CLAY with SAND (CH)
⊠	B-36	59.0	57	23	34	84.4	FAT CLAY with SAND (CH)
▲	B-36	69.0	162	47	115	58.6	SANDY FAT CLAY (CH)
★	B-37	10.0	39	28	11	78.0	SILT with SAND (ML)
⊙	B-37	20.0	62	24	38	99.4	FAT CLAY (CH)
✿	B-39	3.0	NP	NP	NP	18.1	SILTY SAND (SM)
○	B-39	8.0	NP	NP	NP	17.4	SILTY SAND (SM)
△	B-39	13.0	38	22	16	58.2	SANDY LEAN CLAY (CL)
⊗	B-40	0.5	NP	NP	NP	19.4	SILTY SAND (SM)
⊕	B-40	5.5	NP	NP	NP	19.0	SILTY SAND (SM)
□	B-40	10.5	NP	NP	NP	18.0	SILTY SAND (SM)
◕	B-40	15.5	34	23	11	51.8	SANDY LEAN CLAY (CL)
◕	B-40	20.0	60	20	40	96.0	FAT CLAY (CH)
☆	B-41	10.0	32	24	8	50.0	SANDY SILT (ML)
☒	B-42	16.5	28	25	3	67.3	SANDY SILT (ML)
■	B-44	5.0	37	27	10	70.0	SANDY SILT (ML)
◆	B-44	16.5	52	25	27	98.7	FAT CLAY (CH)
◇	B-45	0.5	33	24	9	30.1	SILTY SAND (SM)
×	B-45	3.0	37	22	15	39.2	CLAYEY SAND (SC)
✖	B-45	5.5	NP	NP	NP	29.7	SILTY SAND (SM)

GEOTECHNICAL ENGINEERING TESTING, INC.

ATTERBERG LIMITS RESULTS

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

US ATTERBERG LIMITS 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

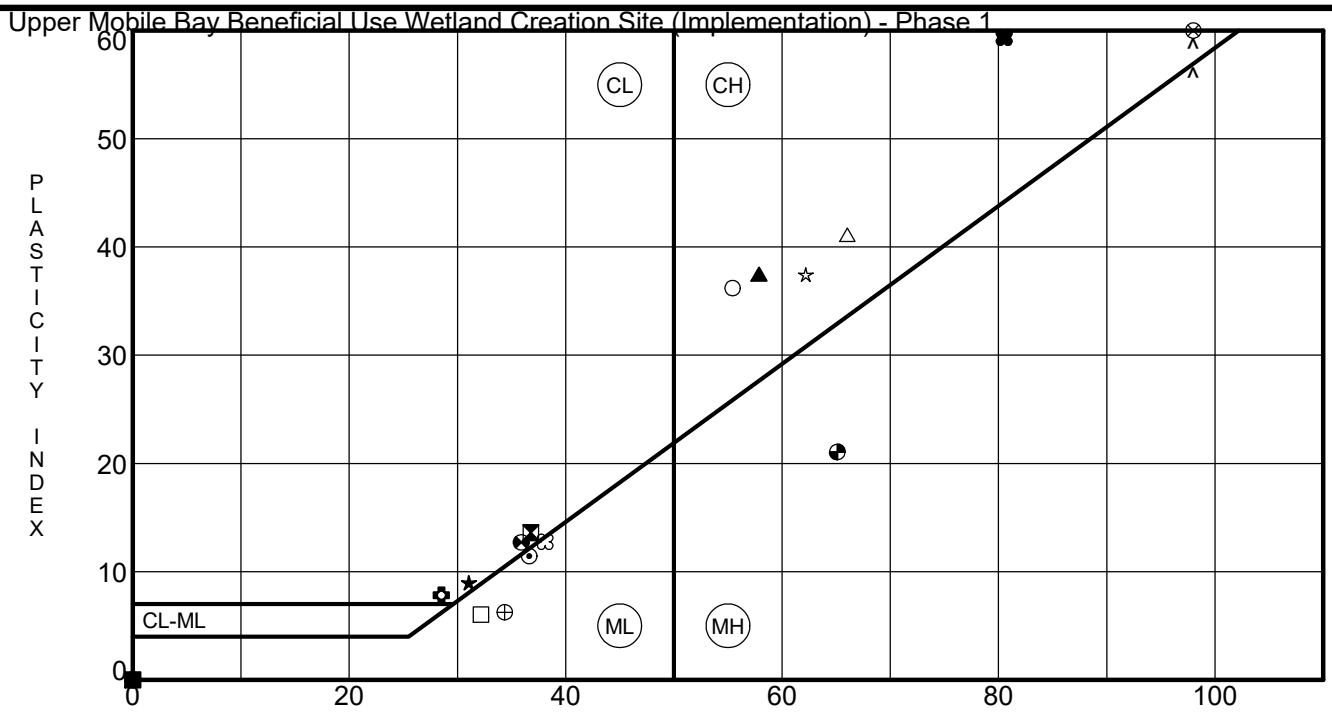
	Boring ID	Depth (ft.)	LL	PL	PI	Fines	Classification
●	**B-45**	**10.5**	**40**	**22**	**18**	**74.5**	**LEAN CLAY with SAND (CL)**
⊠	**B-45**	**12.5**	**46**	**21**	**25**	**94.5**	**LEAN CLAY (CL)**
▲	**B-46**	**3.0**	**31**	**24**	**7**	**36.0**	**SILTY SAND (SM)**
★	**B-46**	**5.5**	**31**	**27**	**4**	**50.0**	**SANDY SILT (ML)**
⊙	**B-46**	**36.5**	**73**	**25**	**48**	**65.4**	**SANDY FAT CLAY (CH)**
✿	**B-47**	**10.0**	**38**	**27**	**11**	**58.6**	**SANDY SILT (ML)**
○	**B-48**	**39.0**	**87**	**25**	**62**	**99.4**	**FAT CLAY (CH)**
△	**B-48**	**59.0**	**192**	**61**	**131**	**53.3**	**SANDY FAT CLAY (CH)**
⊗	**B-50**	**3.0**	**NP**	**NP**	**NP**	**19.4**	**SILTY SAND (SM)**
⊕	**B-50**	**8.0**	**NP**	**NP**	**NP**	**15.5**	**SILTY SAND (SM)**
□	**B-50**	**13.0**	**28**	**22**	**6**	**43.2**	**SILTY, CLAYEY SAND (SC-SM)**
◓	**B-50**	**18.0**	**47**	**22**	**25**	**81.6**	**LEAN CLAY with SAND (CL)**
◕	**B-50**	**20.5**	**46**	**21**	**25**	**88.2**	**LEAN CLAY (CL)**
☆	**B-51**	**24.0**	**62**	**18**	**44**	**97.0**	**FAT CLAY (CH)**
☙	**B-51**	**44.0**	**78**	**17**	**61**	**79.0**	**FAT CLAY with GRAVEL (CH)**
■	**B-51**	**64.0**	**84**	**23**	**61**	**97.2**	**FAT CLAY (CH)**
◆	**B-52**	**13.0**	**75**	**21**	**54**	**92.7**	**FAT CLAY (CH)**
◇	**B-53**	**10.0**	**30**	**23**	**7**	**34.7**	**SILTY SAND (SM)**
×	**B-54**	**0.5**	**NP**	**NP**	**NP**	**21.7**	**SILTY SAND (SM)**
✖	**B-54**	**5.5**	**NP**	**NP**	**NP**	**21.9**	**SILTY SAND (SM)**

GEOTECHNICAL ENGINEERING TESTING, INC.

ATTERBERG LIMITS RESULTS

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

US ATTERBERG LIMITS 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

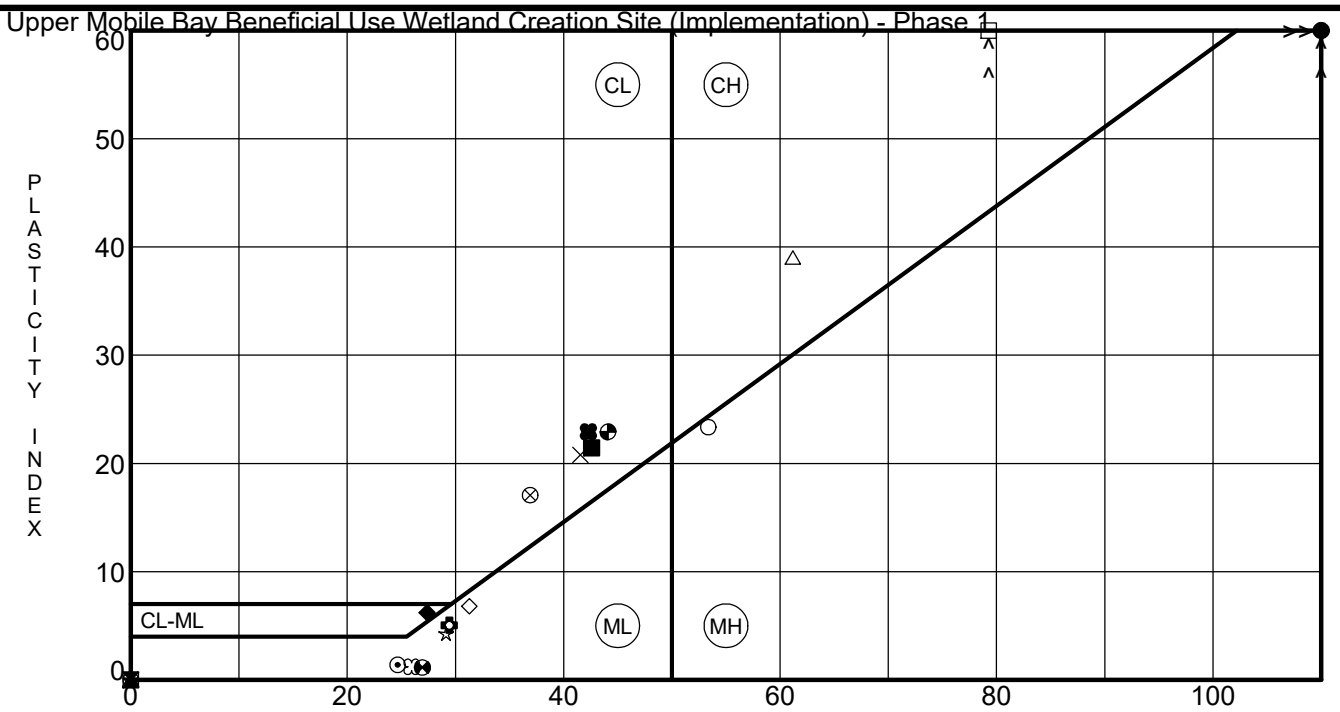
	Boring ID	Depth (ft.)	LL	PL	PI	Fines	Classification
●	B-54	10.5	NP	NP	NP	33.9	SILTY SAND (SM)
⊠	B-54	16.0	37	23	14	72.5	LEAN CLAY with SAND (CL)
▲	B-54	18.0	58	20	38	91.8	FAT CLAY (CH)
★	B-55	0.5	31	22	9	45.0	CLAYEY SAND (SC)
⊙	B-55	3.0	37	25	12	41.8	SILTY SAND (SM)
✿	B-55	5.5	29	21	8	24.5	CLAYEY SAND with GRAVEL (SC)
○	B-55	15.0	55	19	36	90.1	FAT CLAY (CH)
△	B-55	18.0	66	25	41	92.0	FAT CLAY (CH)
⊗	B-55	26.5	98	29	69	99.4	FAT CLAY (CH)
⊕	B-56	3.0	34	28	6	33.4	SILTY SAND (SM)
□	B-56	8.0	32	26	6	35.6	SILTY SAND (SM)
⊛	B-56	13.0	36	23	13	65.0	SANDY LEAN CLAY (CL)
◕	B-56	18.0	65	44	21	97.4	ELASTIC SILT (MH)
☆	B-56	20.5	62	25	37	96.7	FAT CLAY (CH)
☒	B-57	15.0	38	25	13	76.0	SILT with SAND (ML)
■	B-58	10.0	NP	NP	NP	48.0	SILTY SAND (SM)
◆	B-60	5.5	NP	NP	NP	19.8	SILTY SAND (SM)
◇	B-60	10.5	NP	NP	NP	17.5	SILTY SAND (SM)
×	B-60	15.5	NP	NP	NP	11.5	POORLY GRADED SAND with SILT (SP-SM)
✖	B-62	46.5	81	21	60	93.8	FAT CLAY (CH)

GEOTECHNICAL ENGINEERING TESTING, INC.

ATTERBERG LIMITS RESULTS

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

US ATTERBERG LIMITS 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

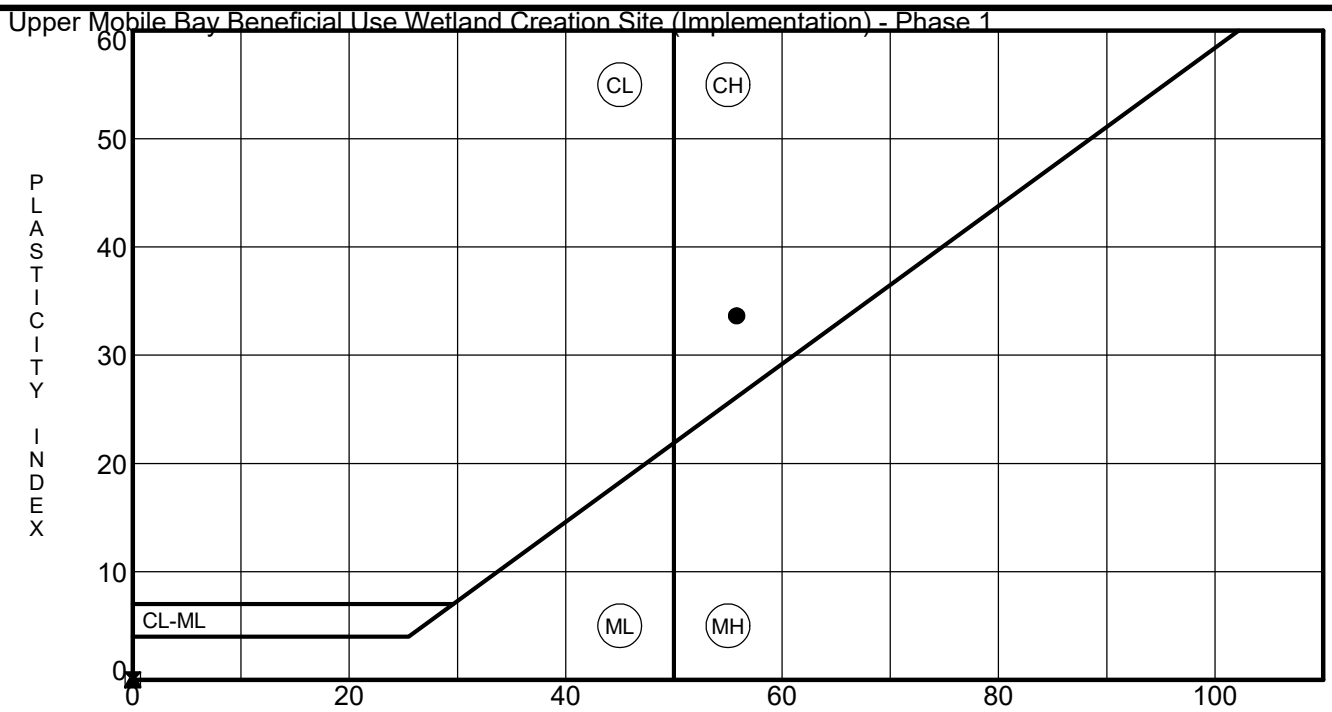
	Boring ID	Depth (ft.)	LL	PL	PI	Fines	Classification
●	B-62	59.0	183	66	117	86.7	ELASTIC SILT (MH)
⊠	B-63	3.0	NP	NP	NP	35.0	SILTY SAND (SM)
▲	B-63	8.0	NP	NP	NP	28.6	SILTY SAND (SM)
★	B-63	13.0	NP	NP	NP	8.5	POORLY GRADED SAND with SILT (SP-SM)
⊙	B-65	5.5	25	23	2	28.4	SILTY SAND (SM)
✿	B-65	10.5	29	24	5	38.9	SILTY SAND (SM)
○	B-65	15.0	53	30	23	94.7	ELASTIC SILT (MH)
△	B-65	17.5	61	22	39	93.8	FAT CLAY (CH)
⊗	B-66	16.5	37	20	17	85.0	LEAN CLAY with SAND (CL)
⊕	B-67	7.5	NP	NP	NP	13.0	SILTY SAND (SM)
□	B-67	54.0	79	15	64	76.4	FAT CLAY with SAND (CH)
❂	B-68	7.5	27	26	1	52.3	SANDY SILT (ML)
◕	B-68	14.5	44	21	23	78.0	LEAN CLAY with SAND (CL)
☆	B-69	3.0	29	25	4	56.8	SANDY SILT (ML)
☋	B-69	10.0	26	25	1	64.1	SANDY SILT (ML)
■	B-74	15.0	43	21	22	77.1	LEAN CLAY with SAND (CL)
◆	B-77	5.0	27	21	6	26.9	SILTY, CLAYEY SAND (SC-SM)
◇	B-78	5.0	31	25	6	64.7	SANDY SILT (ML)
×	B-79	5.0	42	21	21	53.8	SANDY LEAN CLAY (CL)
✖	B-80	5.0	42	19	23	58.6	SANDY LEAN CLAY (CL)

GEOTECHNICAL ENGINEERING TESTING, INC.

ATTERBERG LIMITS RESULTS

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

US ATTERBERG LIMITS 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

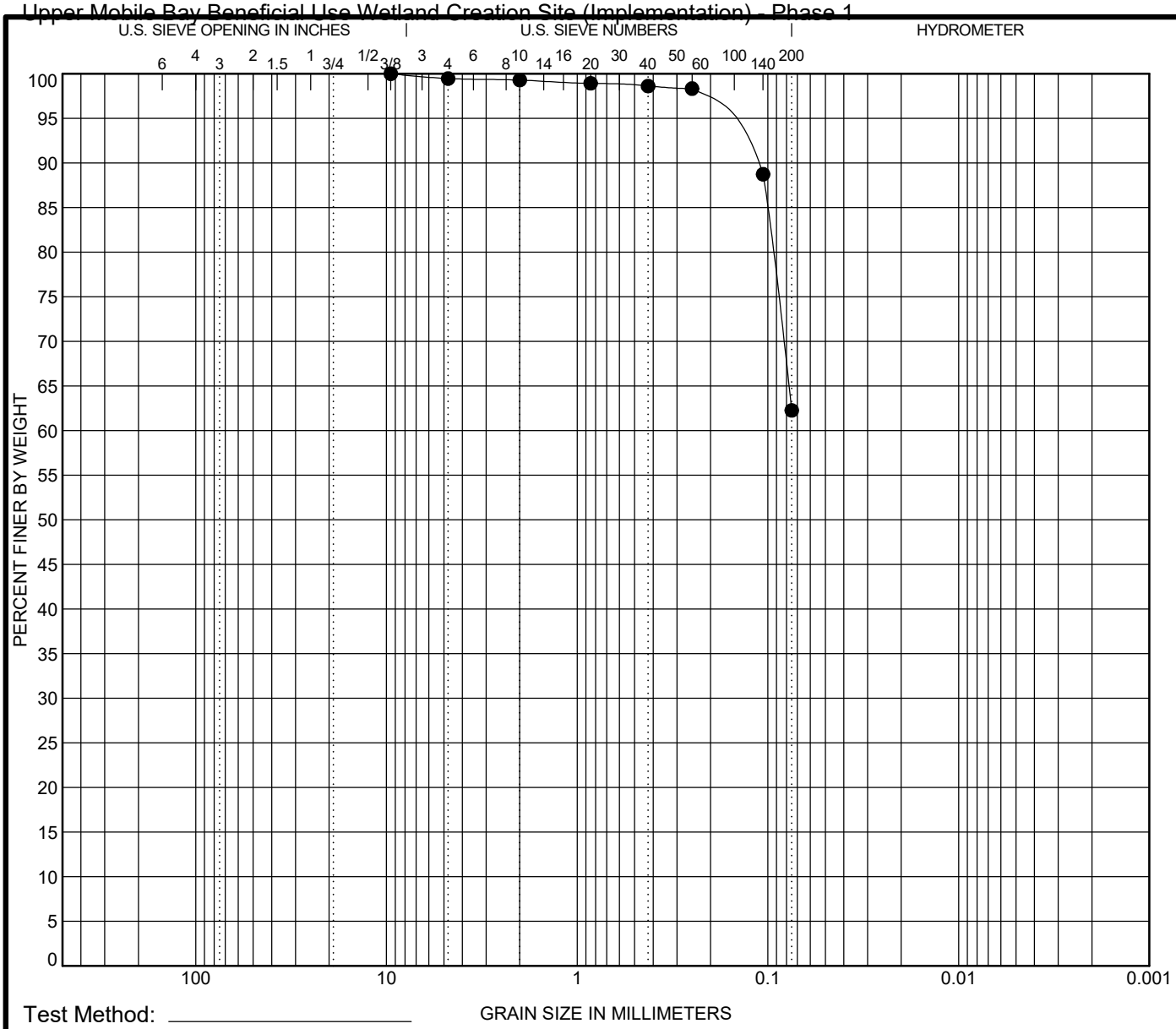
	Boring ID	Depth (ft.)	LL	PL	PI	Fines	Classification
●	**B-80**	**15.0**	**56**	**22**	**34**	**95.9**	**FAT CLAY (CH)**
⊠	**MI-B1**	**3.0**	**NP**	**NP**	**NP**	**5.3**	**POORLY GRADED SAND with SILT and GRAVEL (SP-SM)**
▲	**MI-B1**	**10.5**	**NP**	**NP**	**NP**	**5.8**	**POORLY GRADED GRAVEL with SILT and SAND (GP-GM)**

GEOTECHNICAL ENGINEERING TESTING, INC.

ATTERBERG LIMITS RESULTS

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

US ATTERBERG LIMITS 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-1**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-01	**5.5 ft.**	**9.5**				**0.5**	**37.2**	**62.3**	

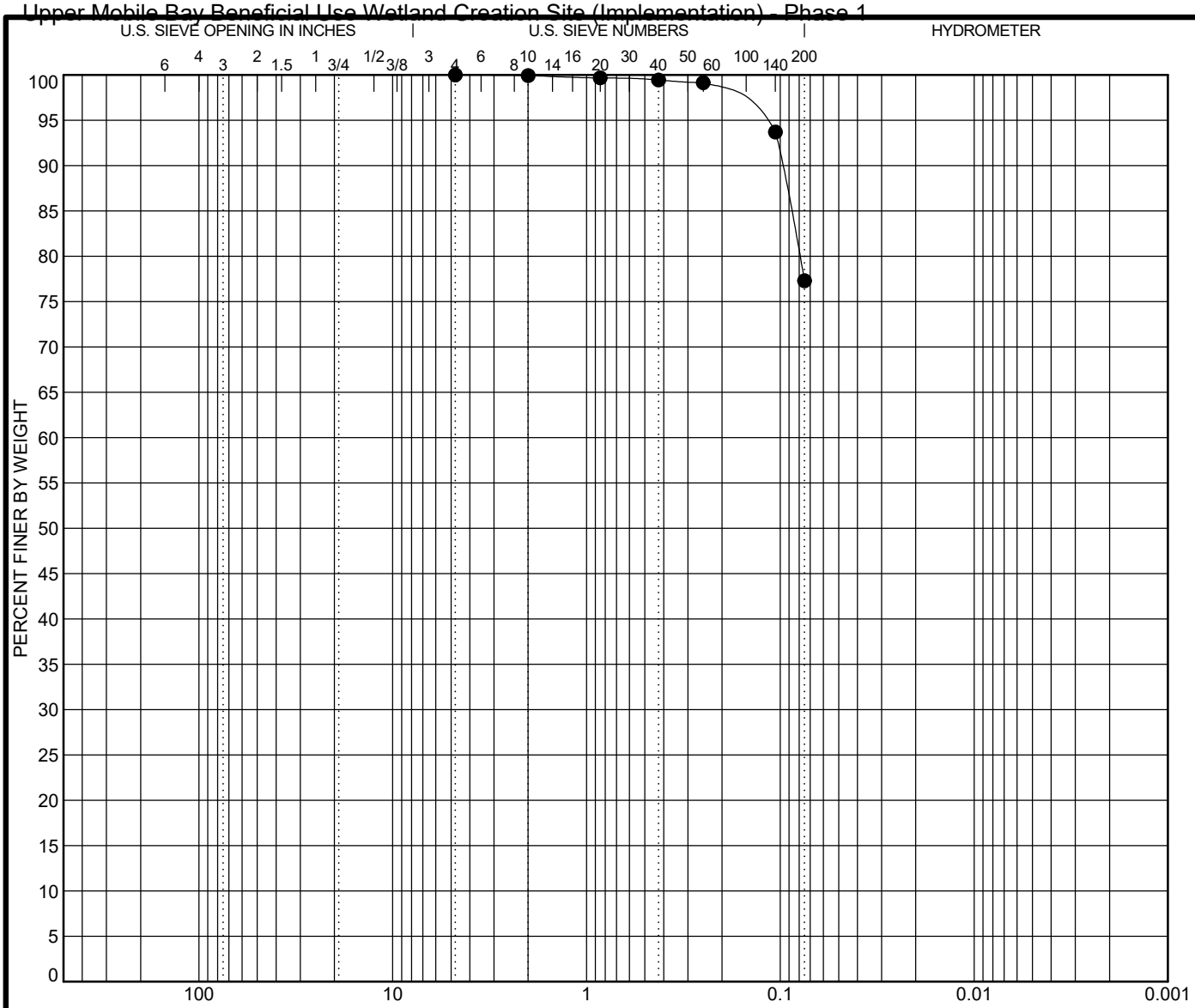
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-1**	**T-1;10.0 ft.**	**FAT CLAY with SAND (CH)**	**53**	**19**	**34**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-01	**10.0 ft.**	**4.75**				**0.0**	**22.7**	**77.3**	

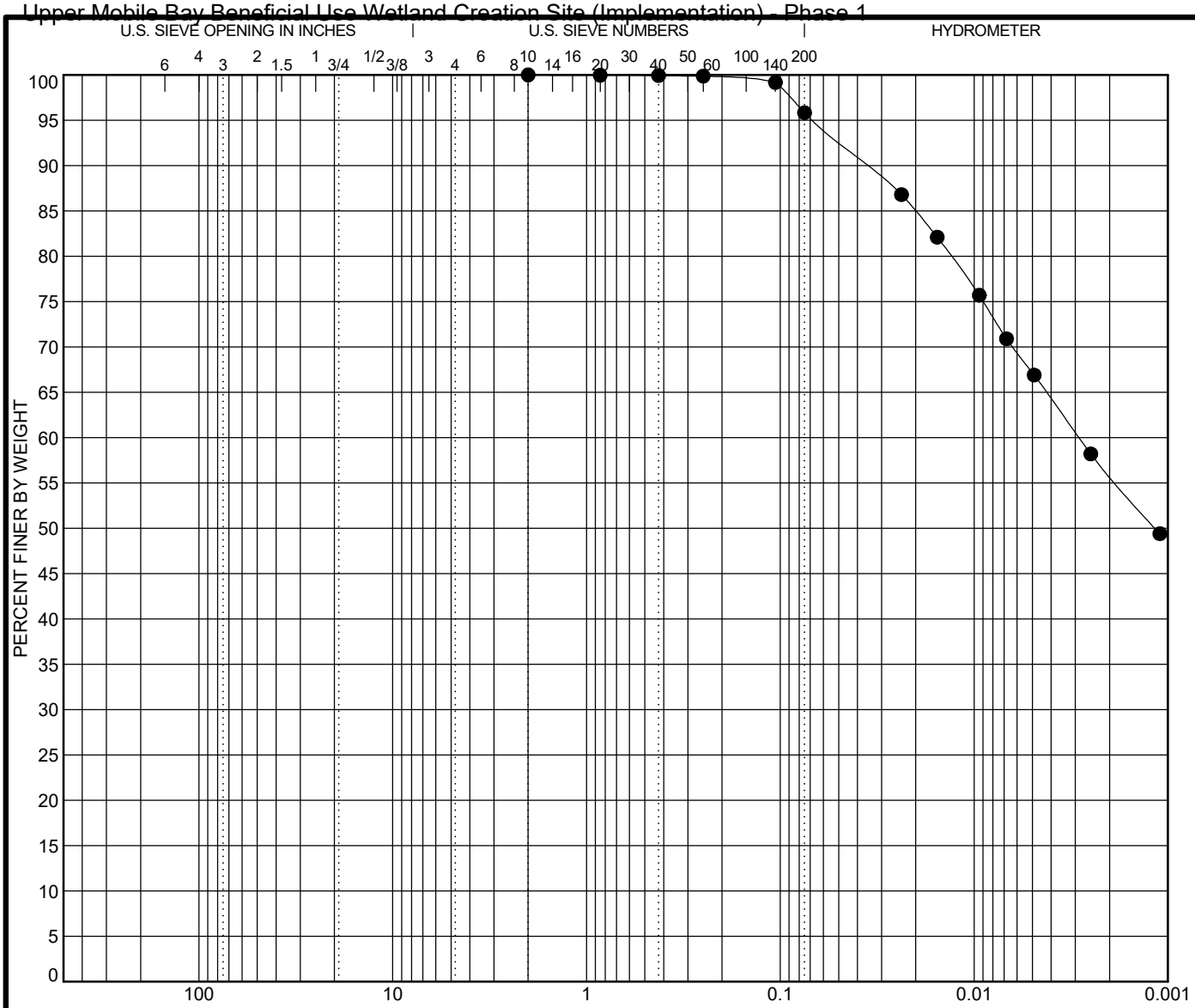
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-1**	**T-3;41.5 ft.**	**FAT CLAY (CH)**	**102**	**21**	**81**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-01	**41.5 ft.**	**2**	**0.003**			**0.0**	**4.2**	**40.0**	**55.8**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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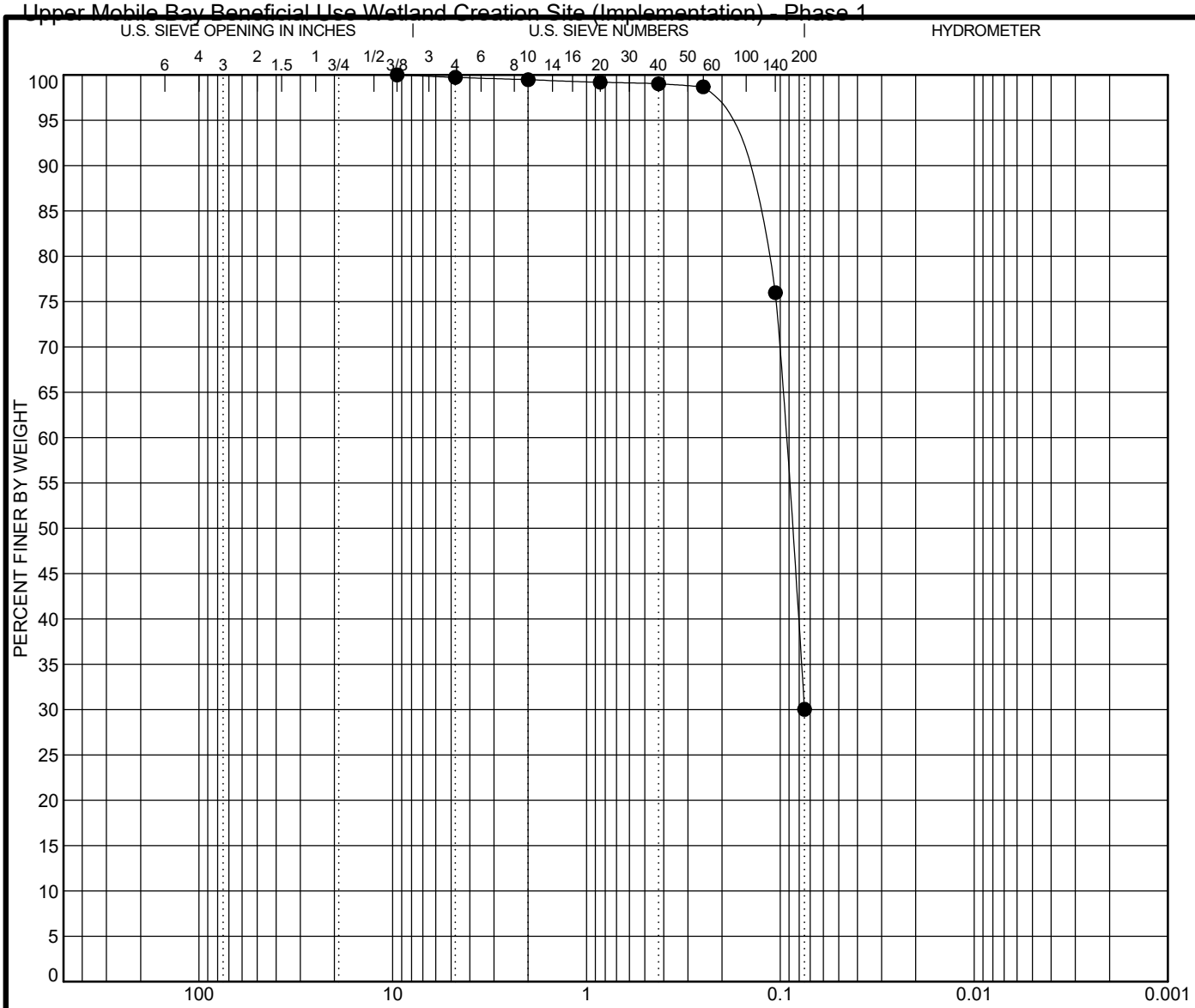
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-2**	**S-1;0.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-02	**0.5 ft.**	**9.5**	**0.094**			**0.3**	**69.7**	**30.0**	

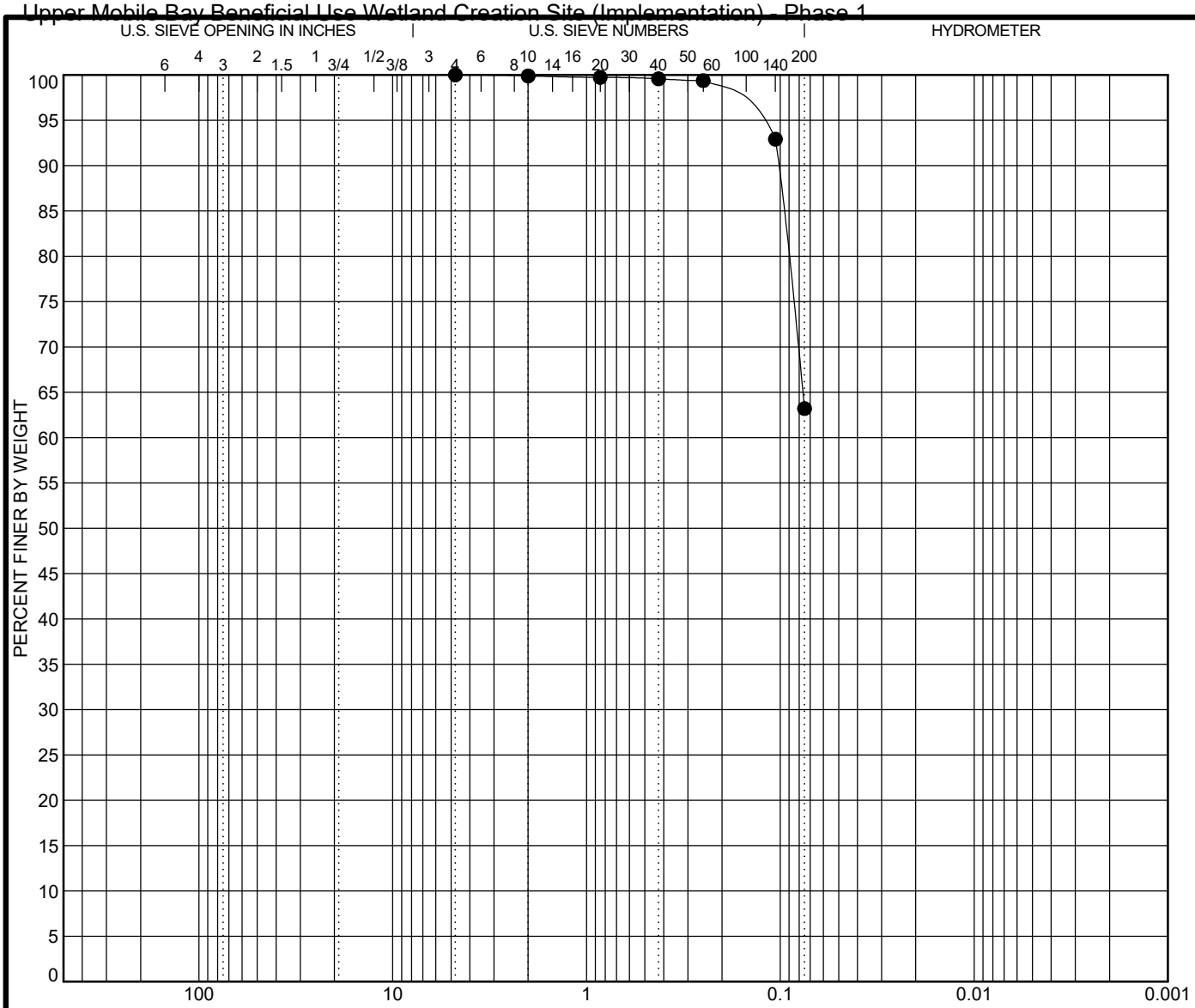
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-2**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-02	**5.5 ft.**	**4.75**				**0.0**	**36.8**	**63.2**	

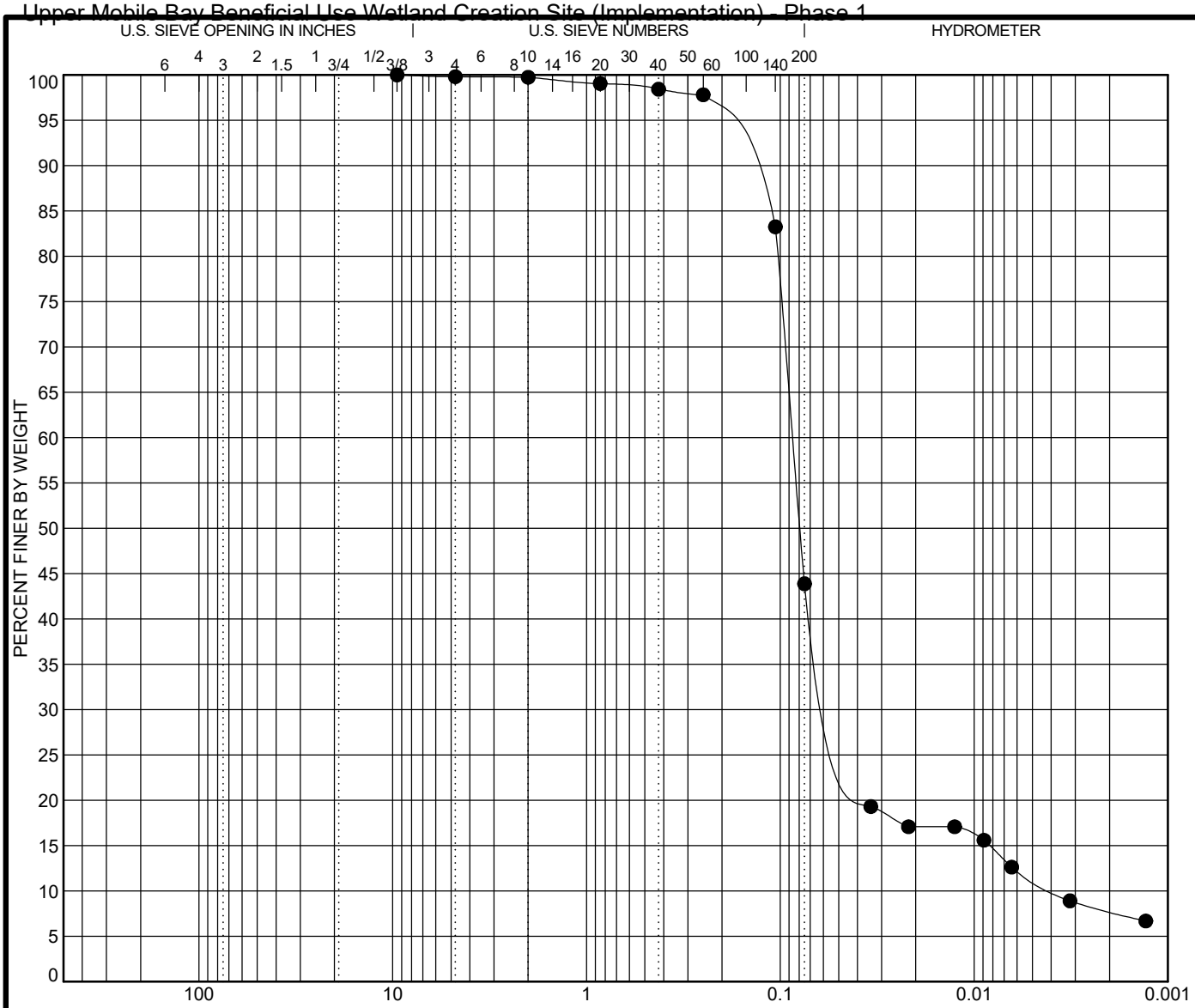
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-2**	**T-1;10.0 ft.**	**SILTY SAND (SM)**	**33**	**26**	**7**	**6.81**	**22.03**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-02	**10.0 ft.**	**9.5**	**0.086**	**0.048**	**0.004**	**0.2**	**55.9**	**36.1**	**7.7**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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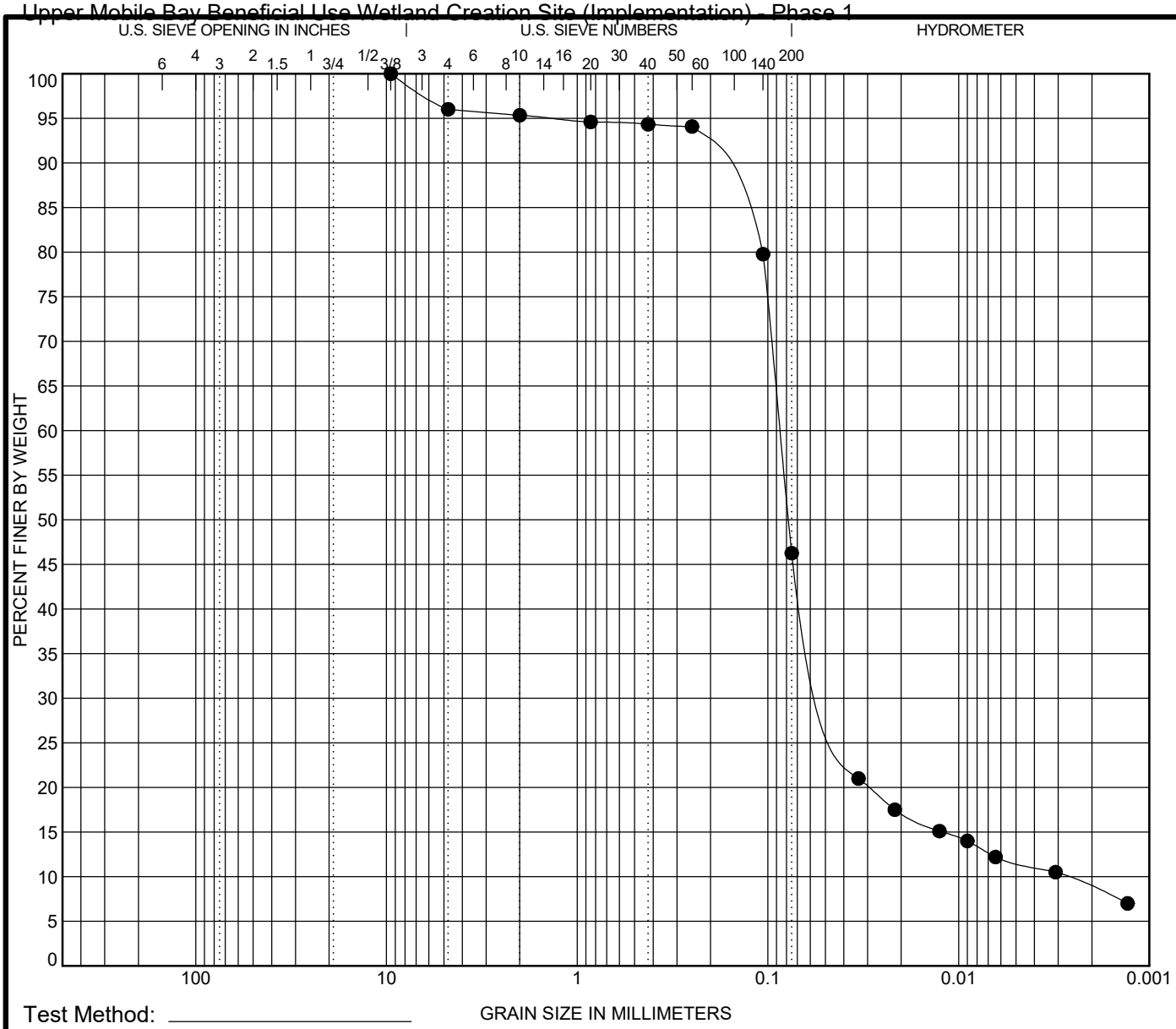
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-2**	**S-6;15.0 ft.**					**8.42**	**31.56**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-02	**15.0 ft.**	**9.5**	**0.086**	**0.045**	**0.003**	**4.0**	**49.7**	**37.5**	**8.7**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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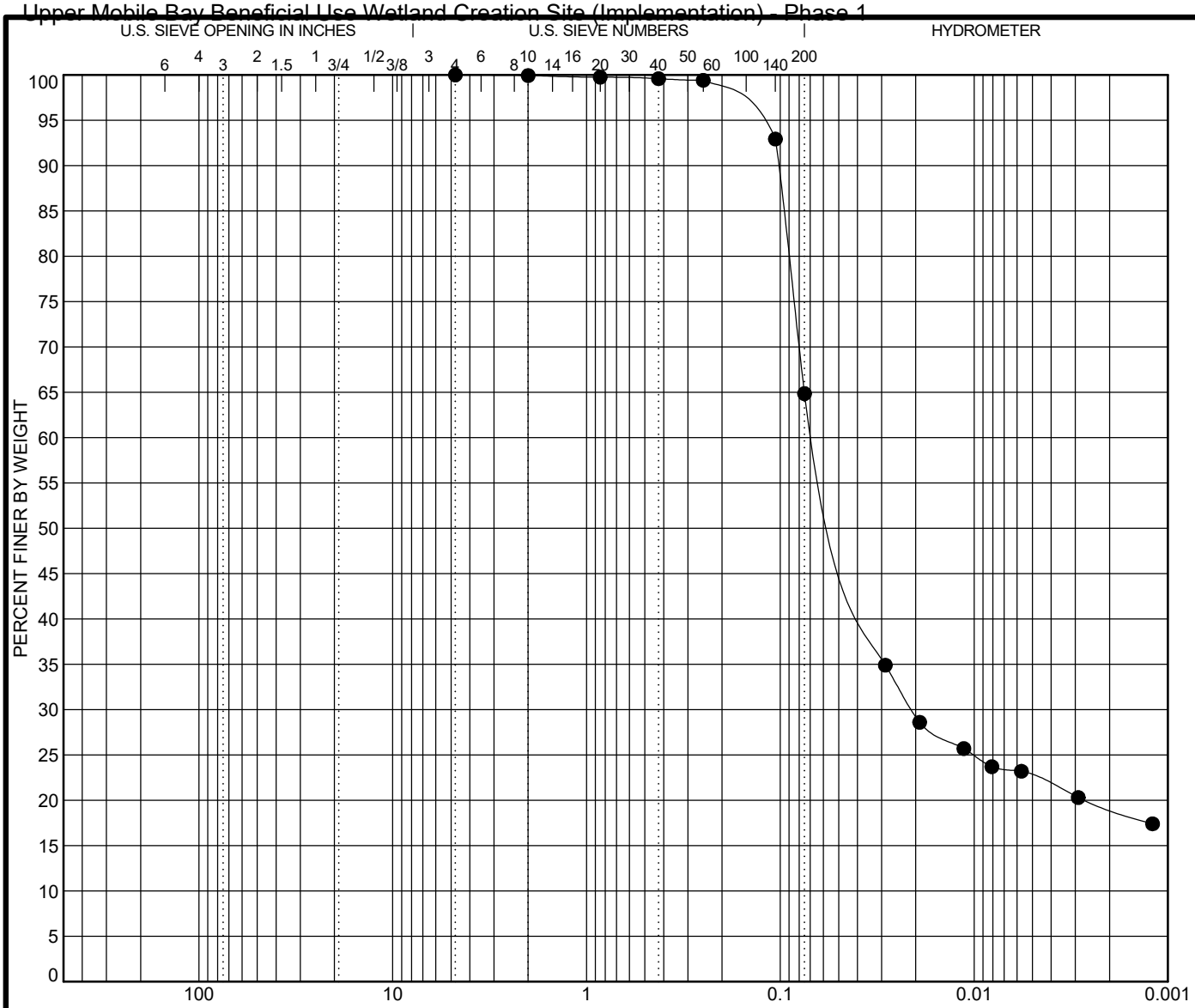
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-3**	**S-3;5.5 ft.**	**SANDY LEAN CLAY (CL)**	**32**	**21**	**11**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-03	**5.5 ft.**	**4.75**	**0.064**	**0.021**		**0.0**	**35.2**	**45.8**	**19.1**

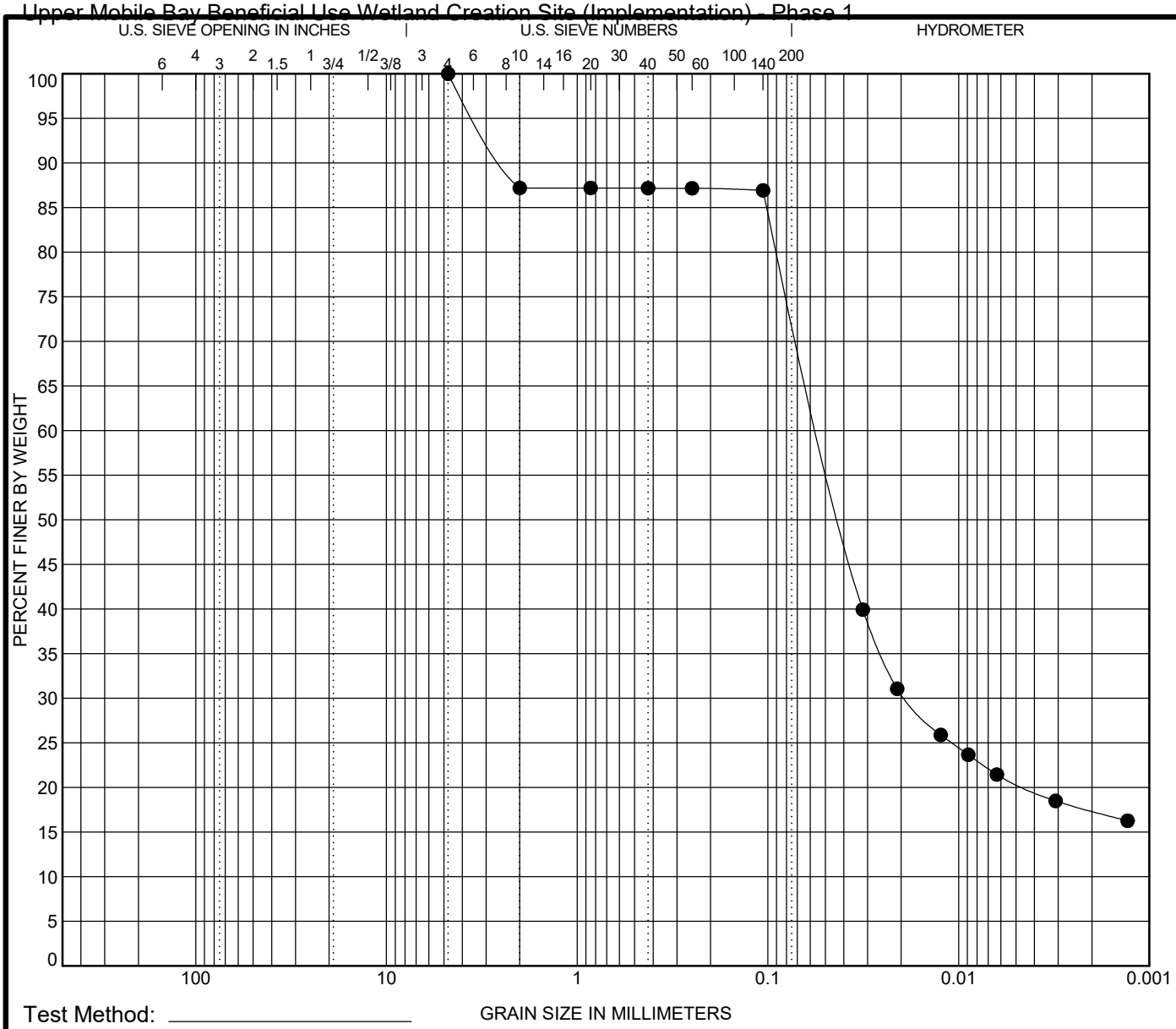
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-3**	**T-1;10.0 ft.**		**40**	**26**	**14**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-03	**10.0 ft.**	**4.75**	**0.053**	**0.019**		**0.0**	**26.6**	**56.1**	**17.4**

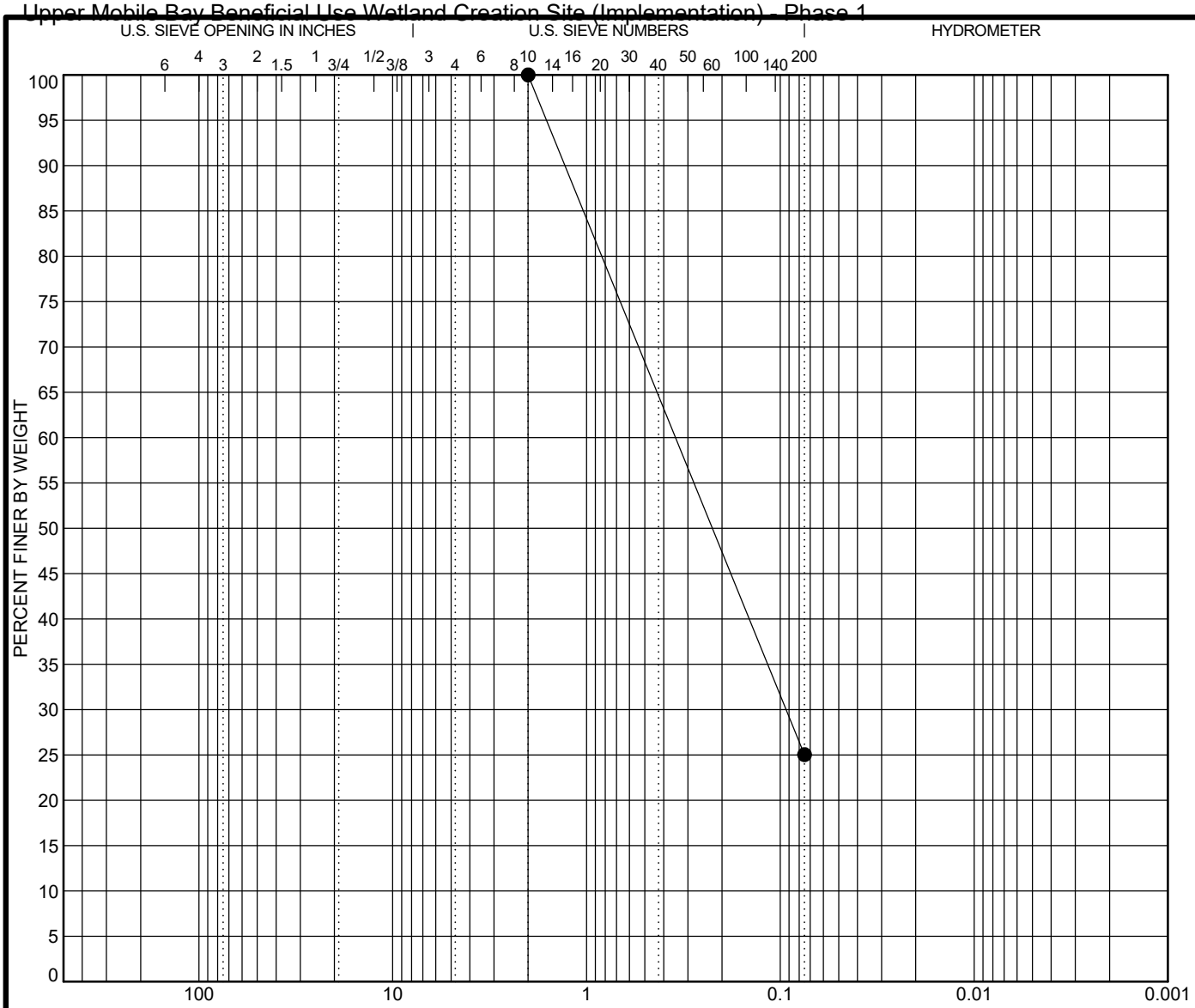
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-3**	**T-2;31.5 ft.**	**SILTY SAND (SM)**	**NP**	**21**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-03	**31.5 ft.**	**2**	**0.347**	**0.093**		**0.0**	**75.0**	**25.0**	

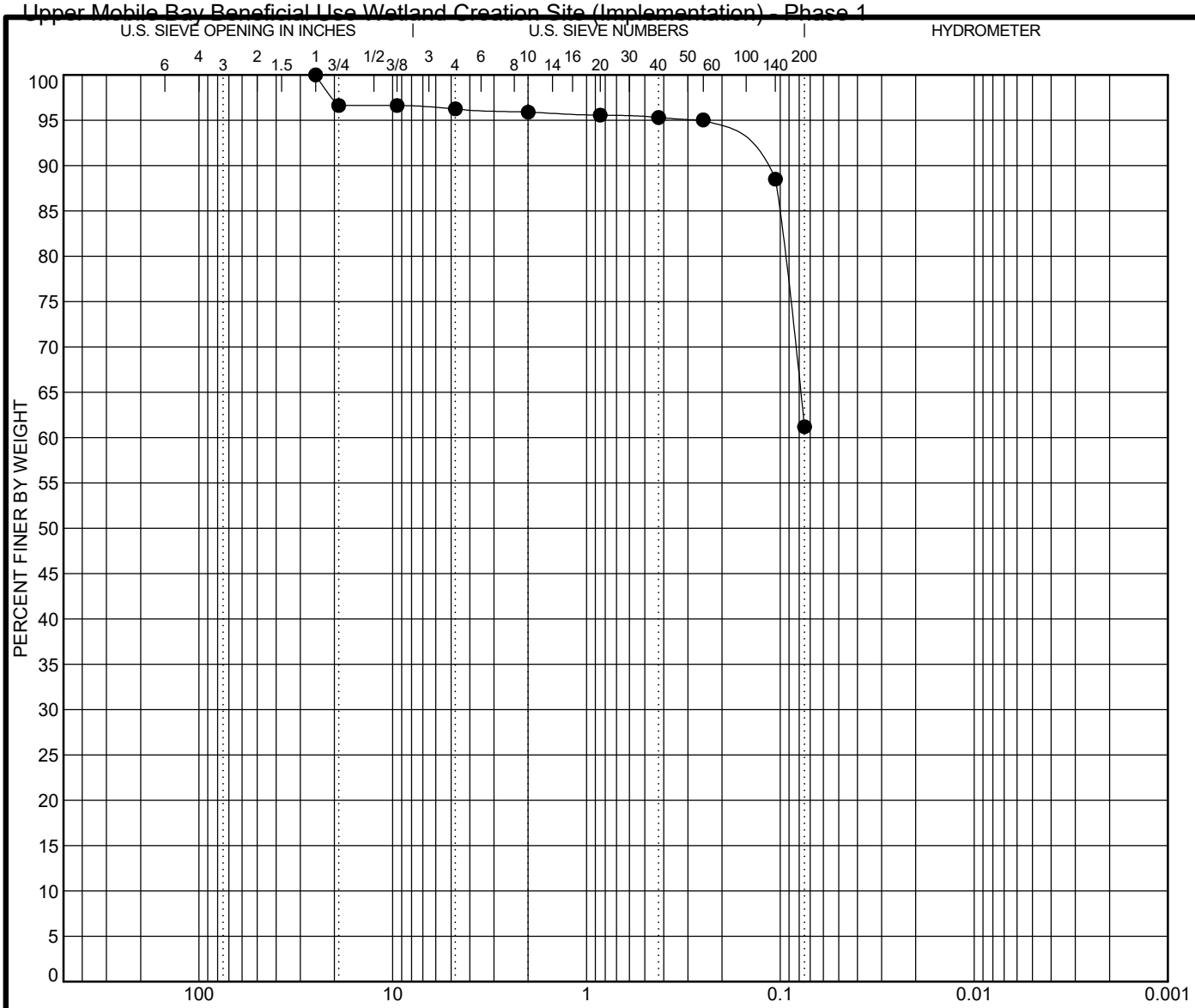
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-4**	**S-1;0.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-04	**0.5 ft.**	**25**				**3.7**	**35.1**	**61.2**	

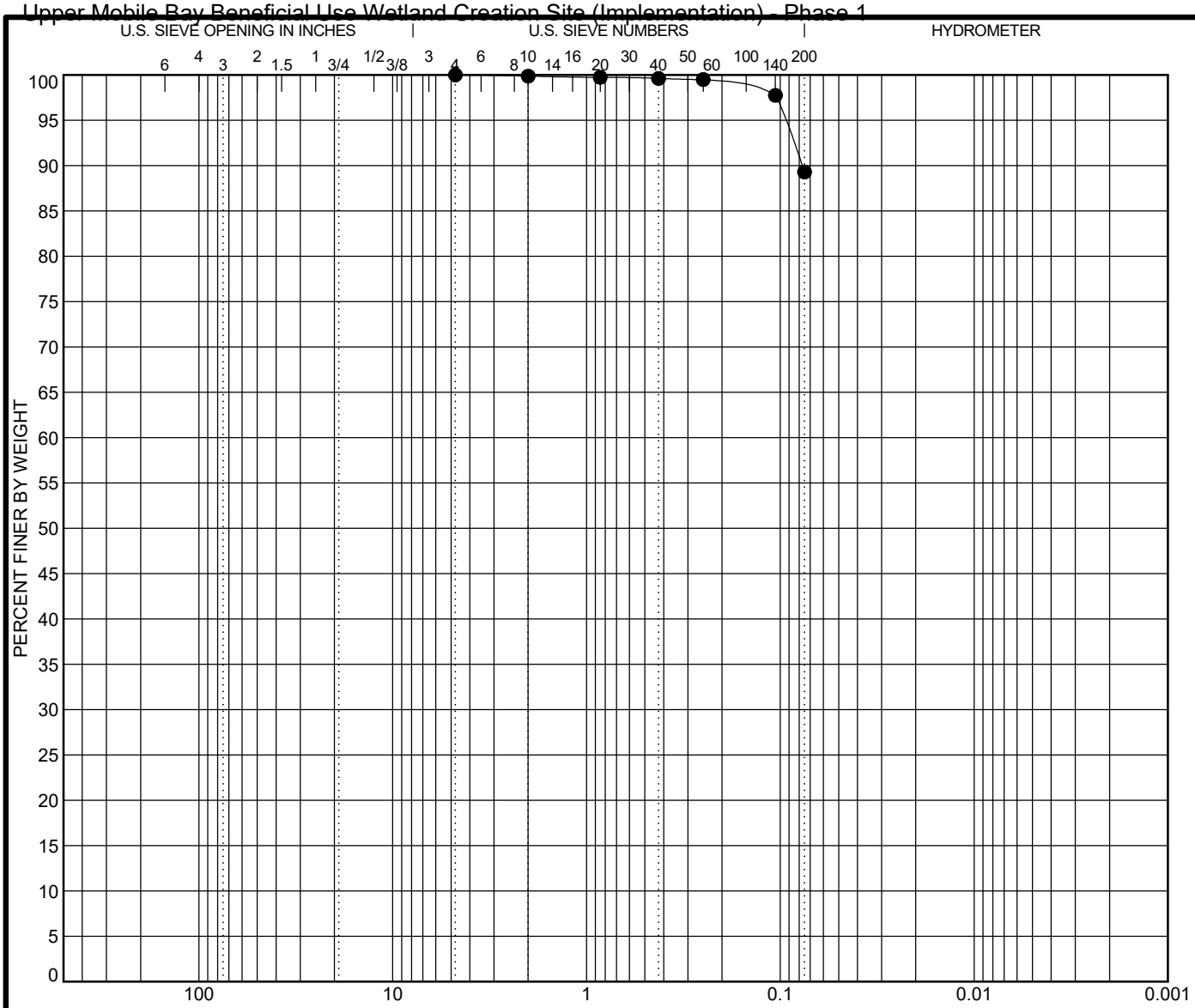
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-4**	**S-3;5.5 ft.**	**LEAN CLAY (CL)**	**38**	**19**	**19**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-04	**5.5 ft.**	**4.75**				**0.0**	**10.7**	**89.3**	

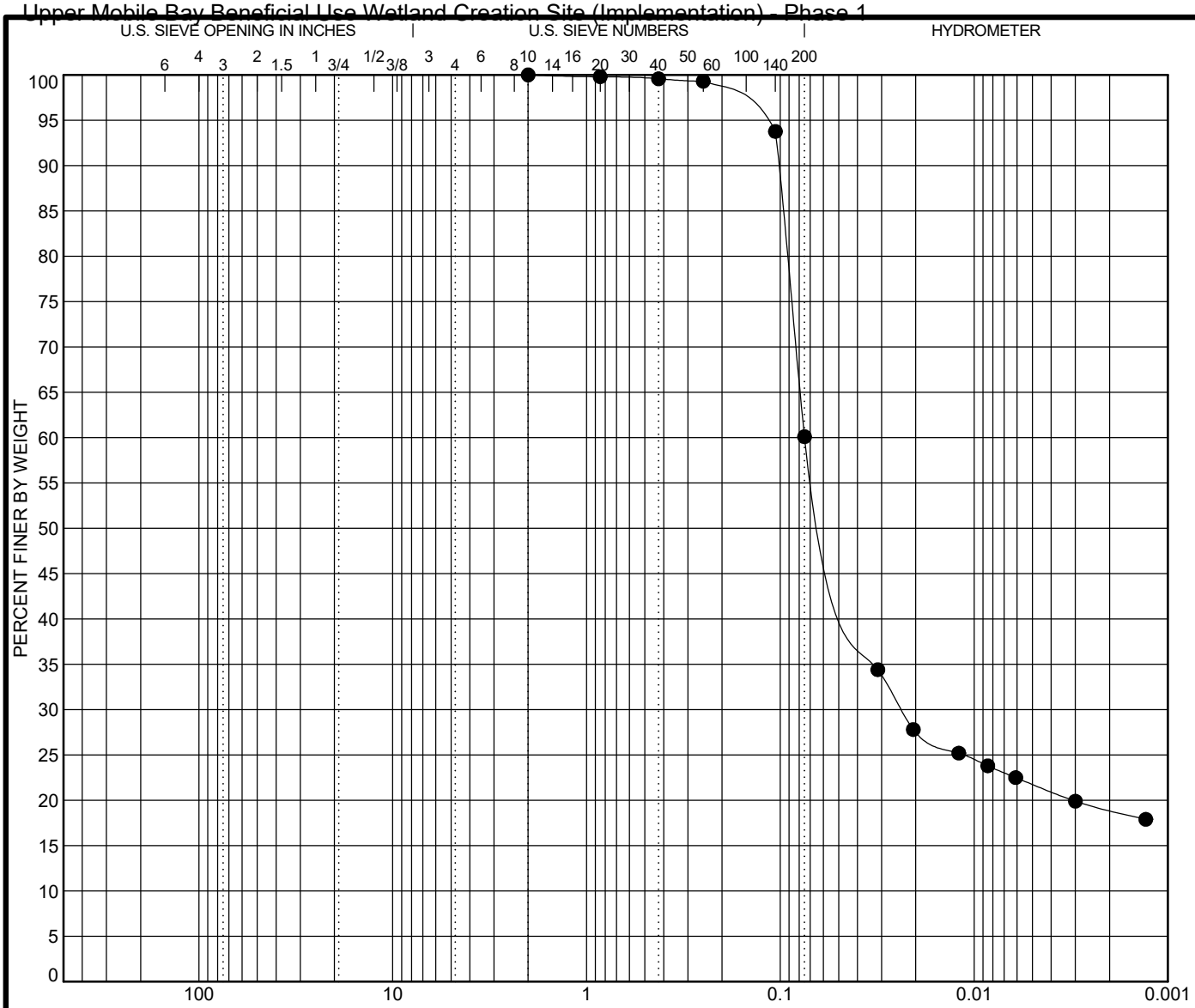
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-4**	**T-1;10.0 ft.**	**SANDY LEAN CLAY (CL)**	**37**	**23**	**14**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-04	**10.0 ft.**	**2**	**0.075**	**0.024**		**0.0**	**39.9**	**41.2**	**18.9**

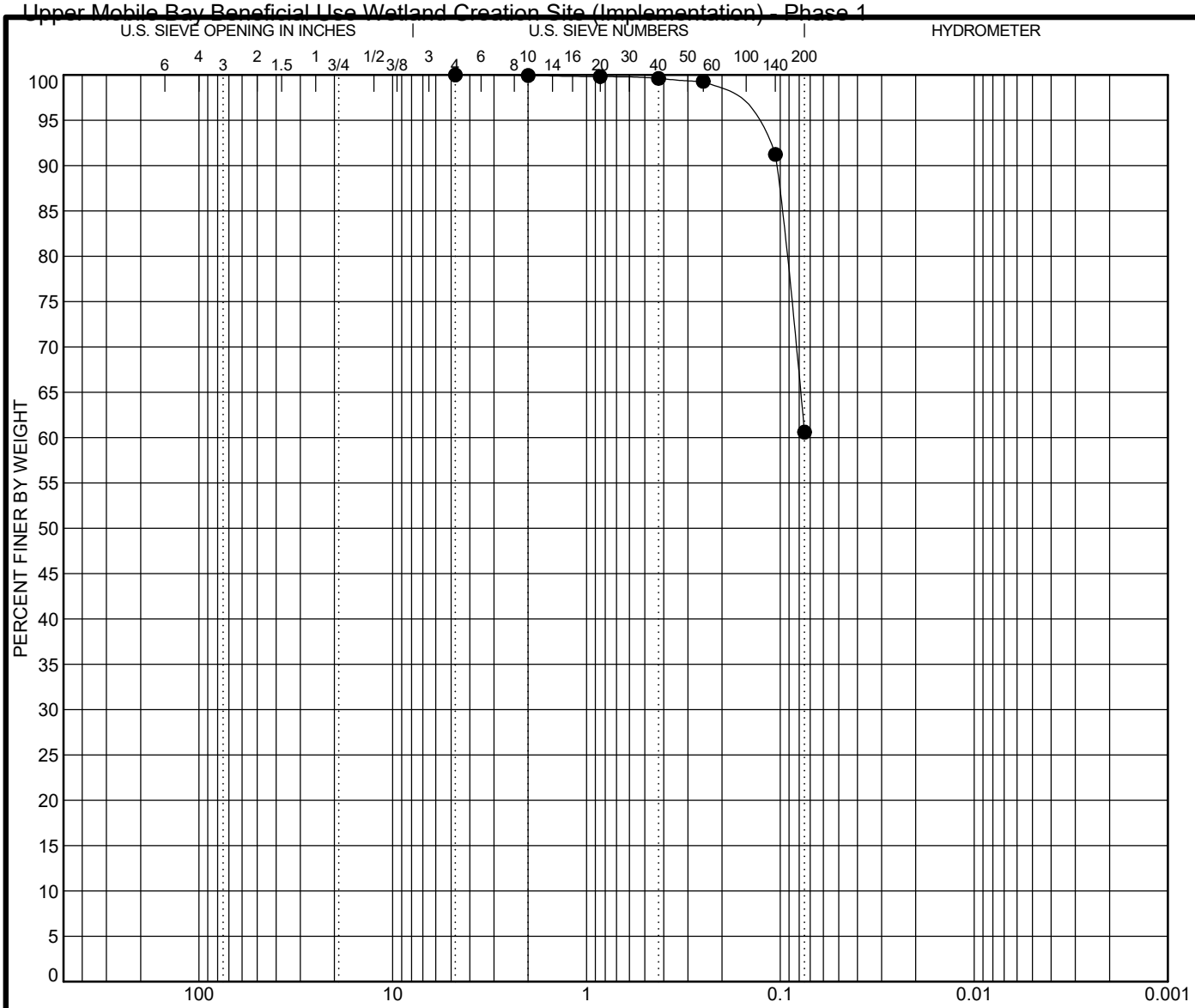
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-4**	**S-7;17.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-04	**17.5 ft.**	**4.75**				**0.0**	**39.4**	**60.6**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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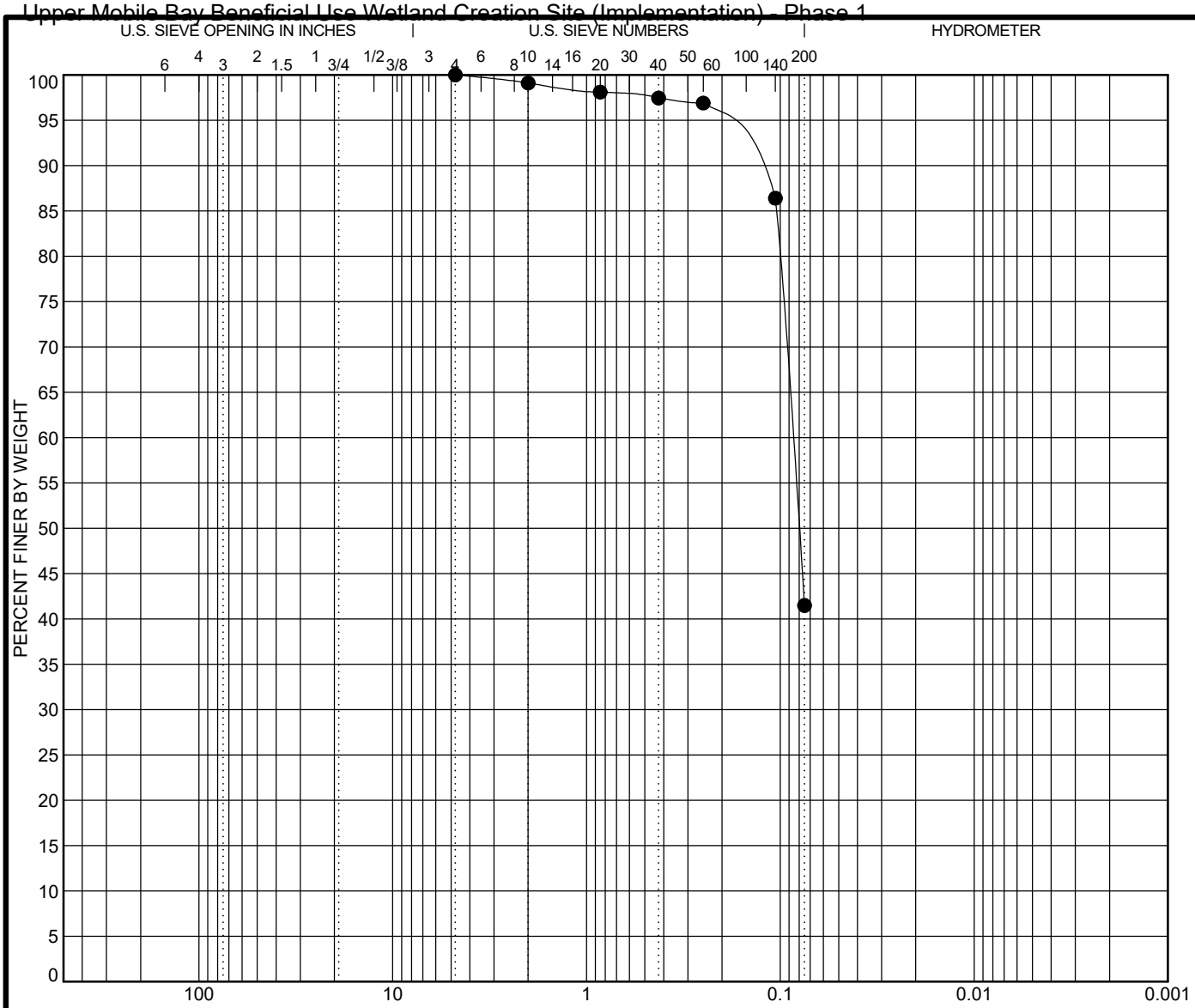
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-5**	**S-1;0.5 ft.**	**SILTY SAND (SM)**	**31**	**27**	**4**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-05	**0.5 ft.**	**4.75**	**0.086**			**0.0**	**58.5**	**41.5**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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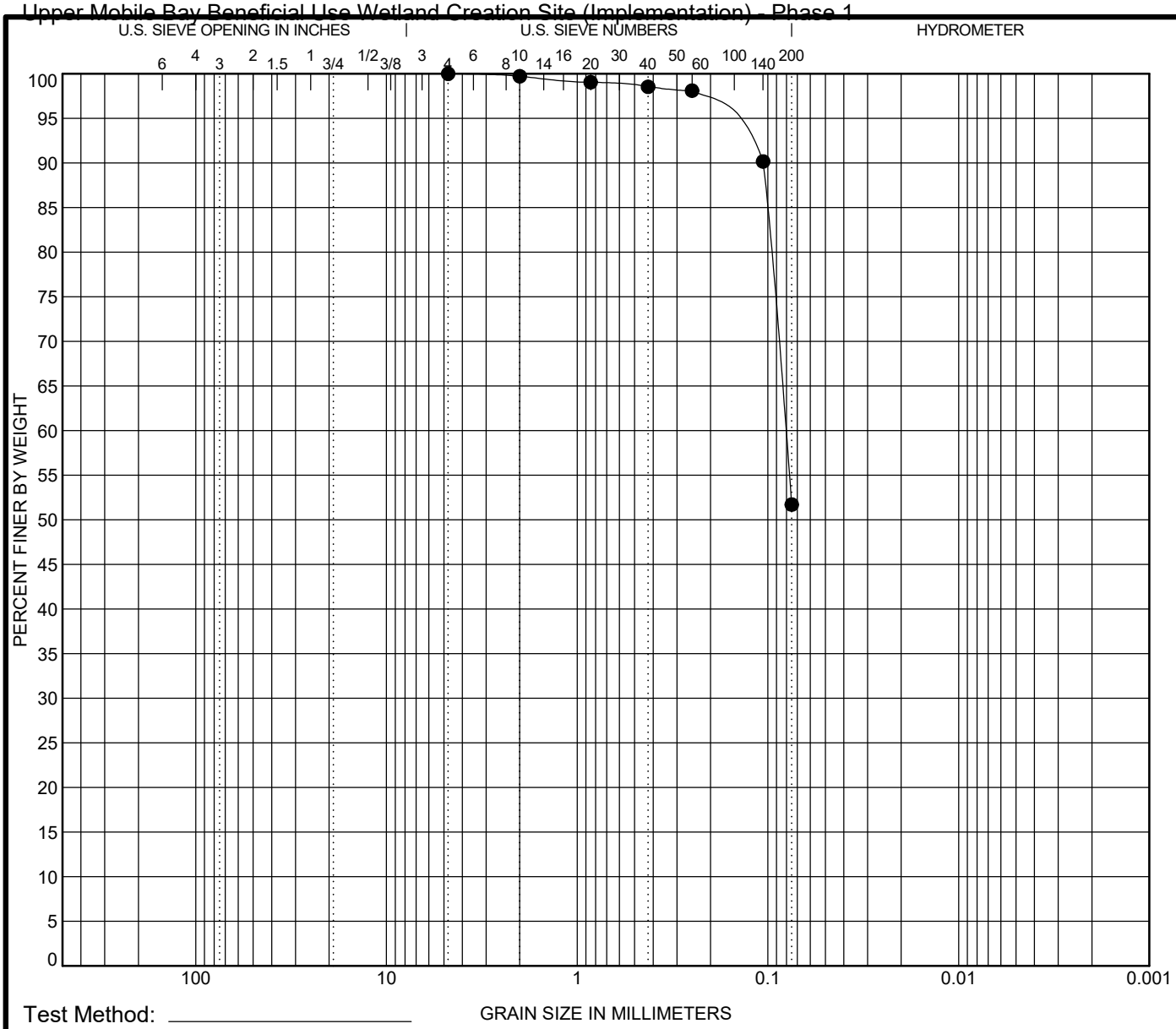
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-5**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-05	**5.5 ft.**	**4.75**	**0.081**			**0.0**	**48.3**	**51.7**	

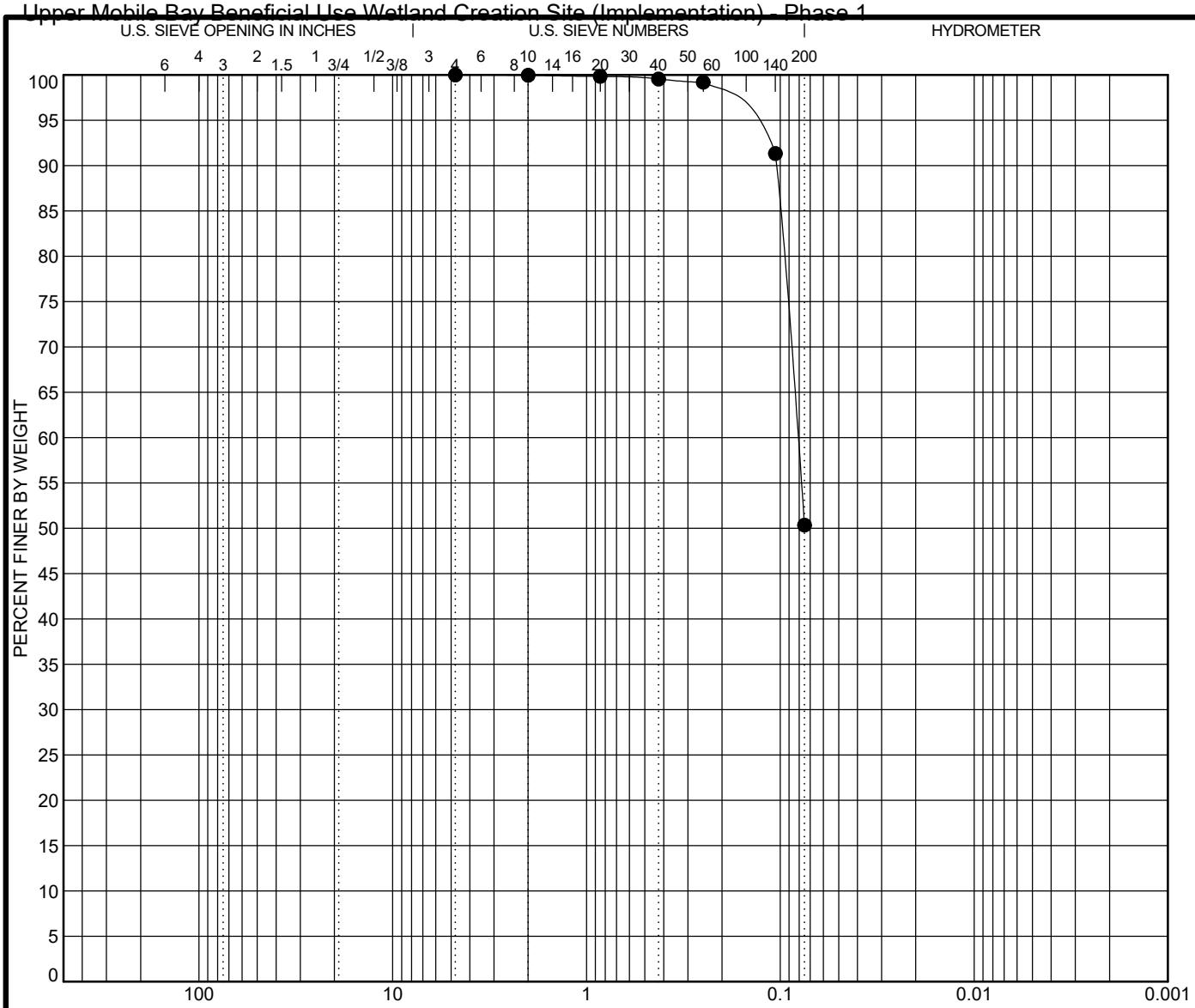
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **B-5**	**S-5;10.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-05	**10.5 ft.**	**4.75**	**0.081**			**0.0**	**49.7**	**50.3**	

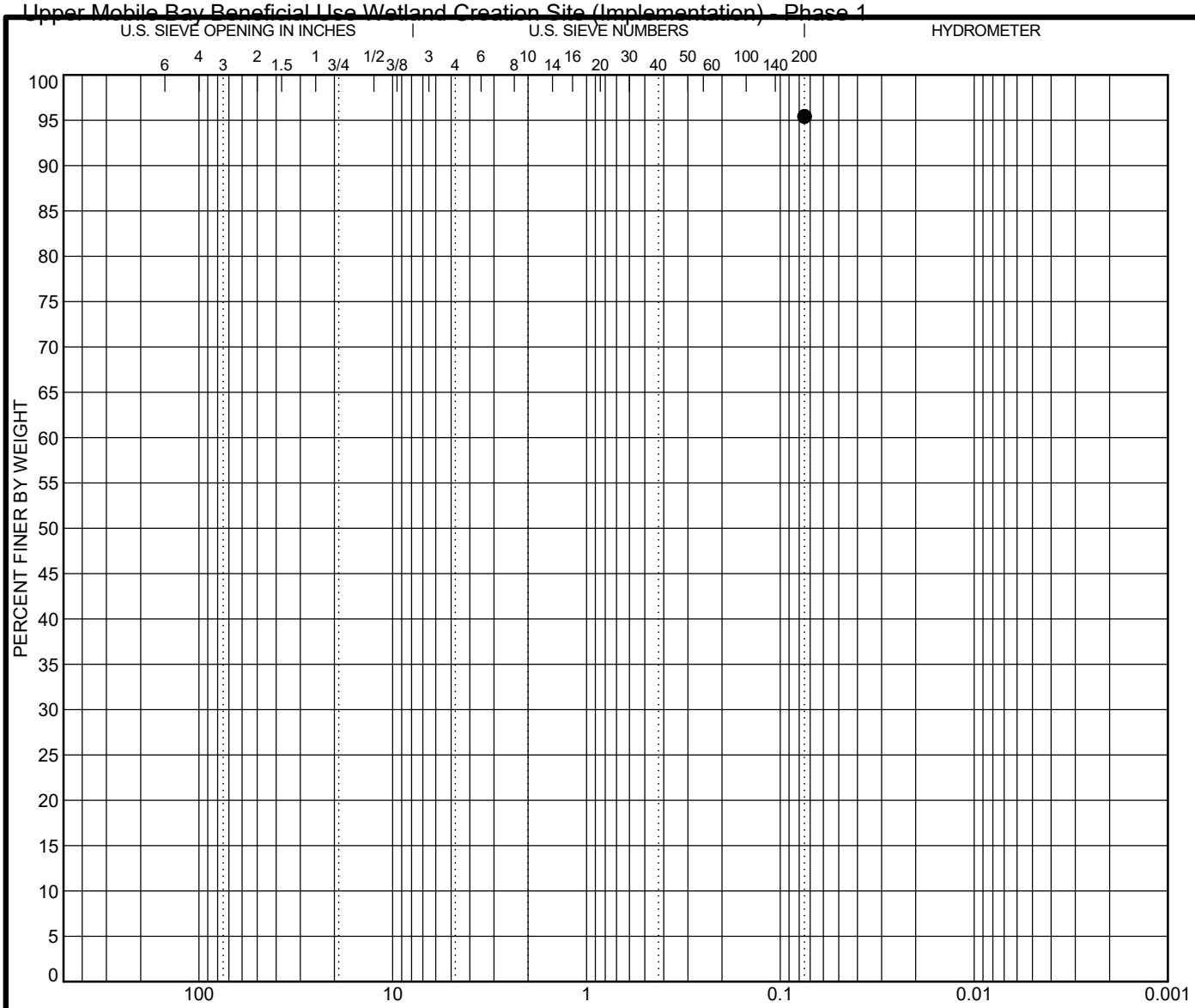
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-5**	**S-13;44.0 ft.**	**FAT CLAY (CH)**	**106**	**31**	**75**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-05	**44.0 ft.**	**0.075**				**0.0**	**0.0**	**95.4**	

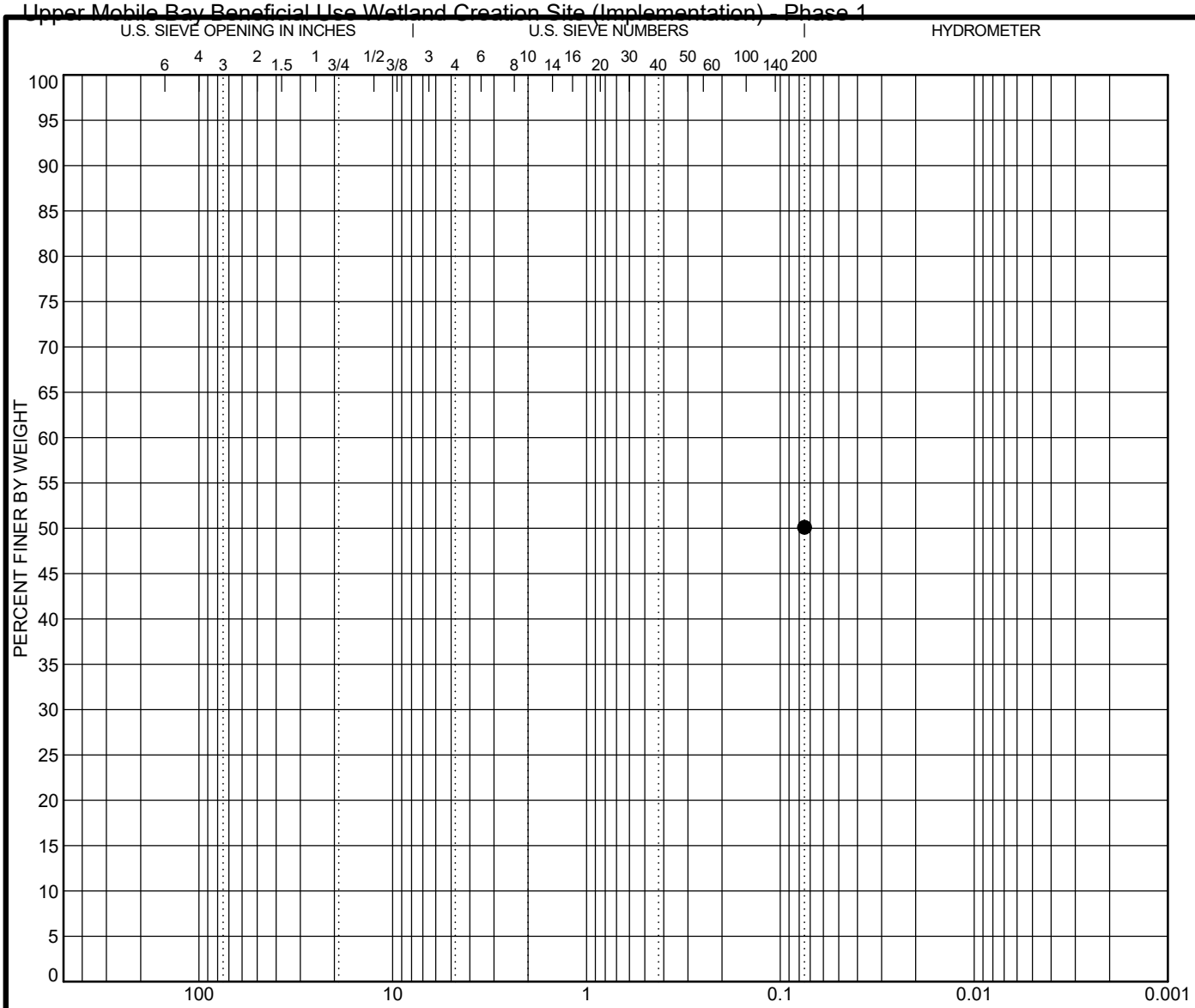
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-5**	**S-16;59.0 ft.**	**SANDY ORGANIC SILT (OH)**	**245**	**111**	**134**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-05	**59.0 ft.**	**0.075**				**0.0**	**0.0**	**50.1**	

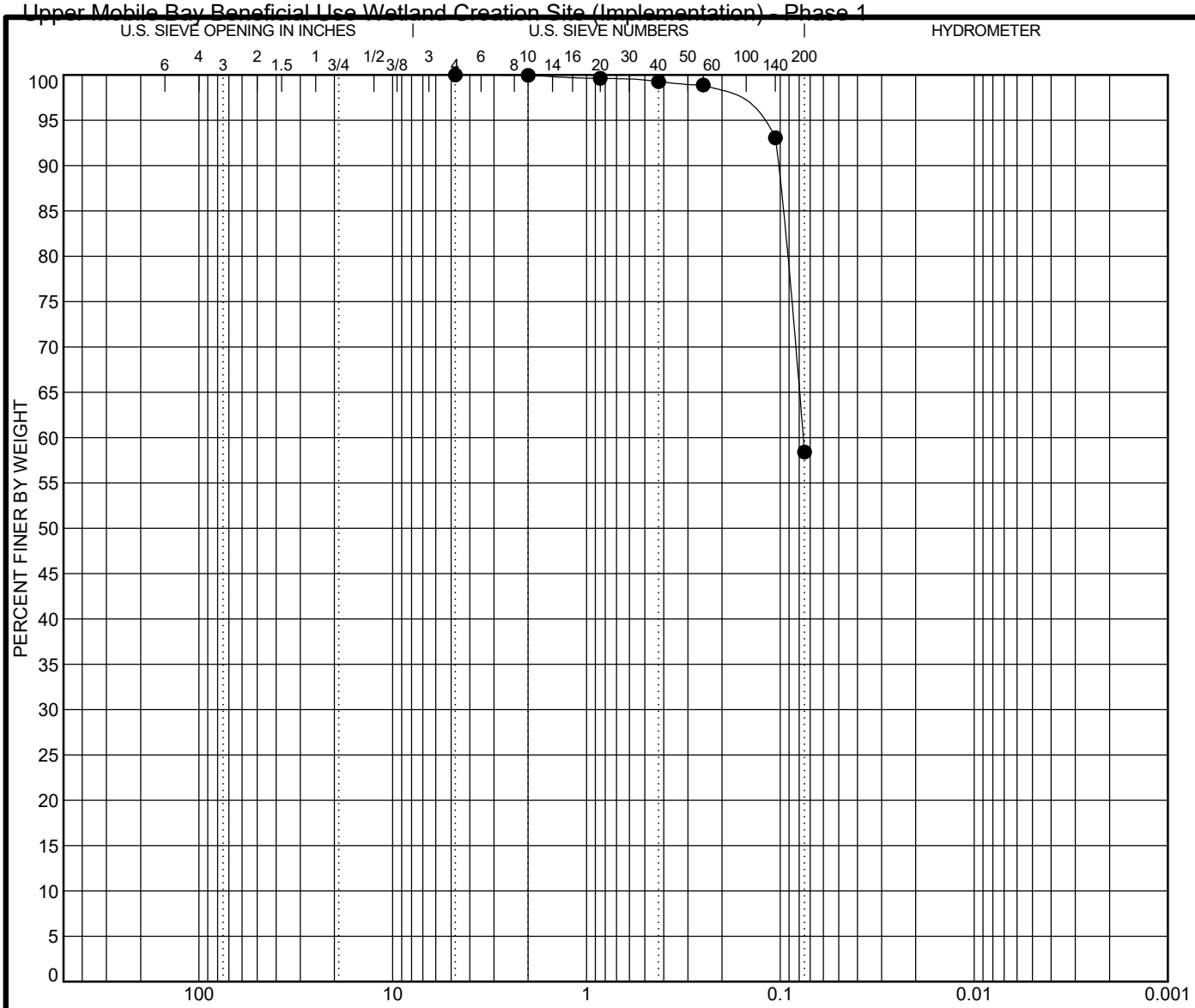
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-6**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-06	**3.0 ft.**	**4.75**	**0.076**			**0.0**	**41.6**	**58.4**	

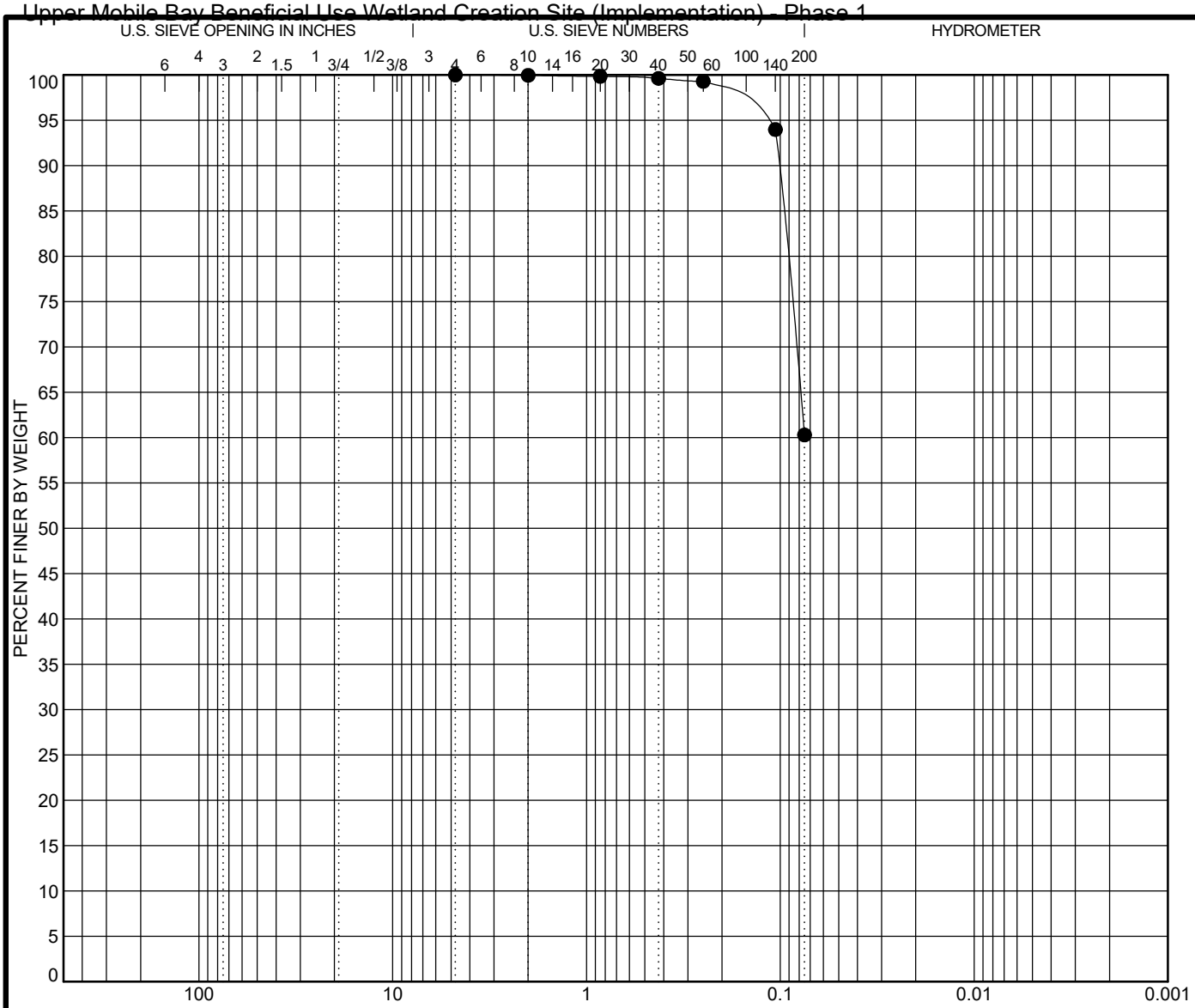
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-6**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-06	**8.0 ft.**	**4.75**				**0.0**	**39.7**	**60.3**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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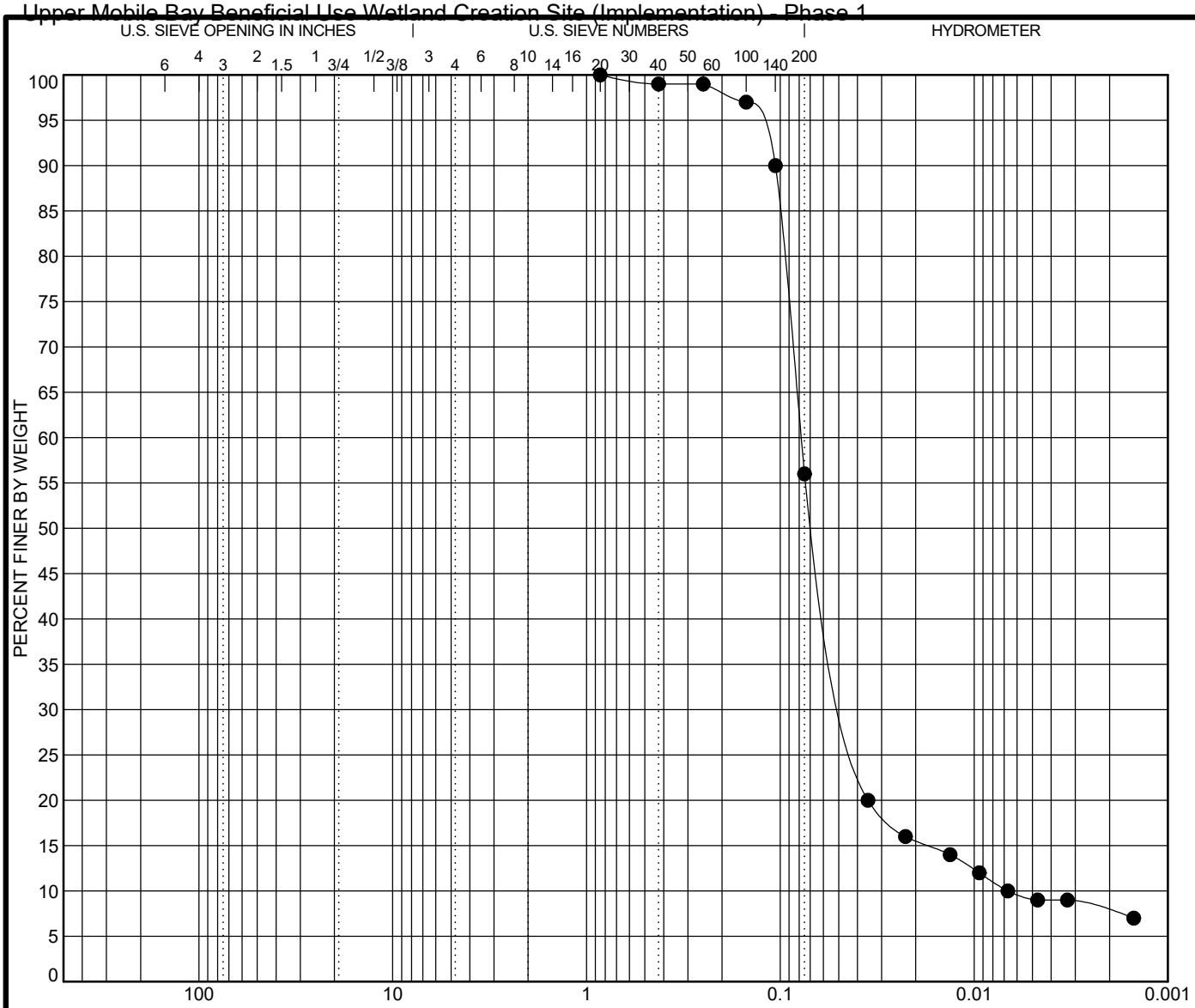
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-6**	**T-1;10.0 ft.**	**SANDY SILT (ML)**	**30**	**26**	**4**	**3.62**	**11.66**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-06	**10.0 ft.**	**0.85**	**0.078**	**0.044**	**0.007**	**0.0**	**44.0**	**48.3**	**7.7**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
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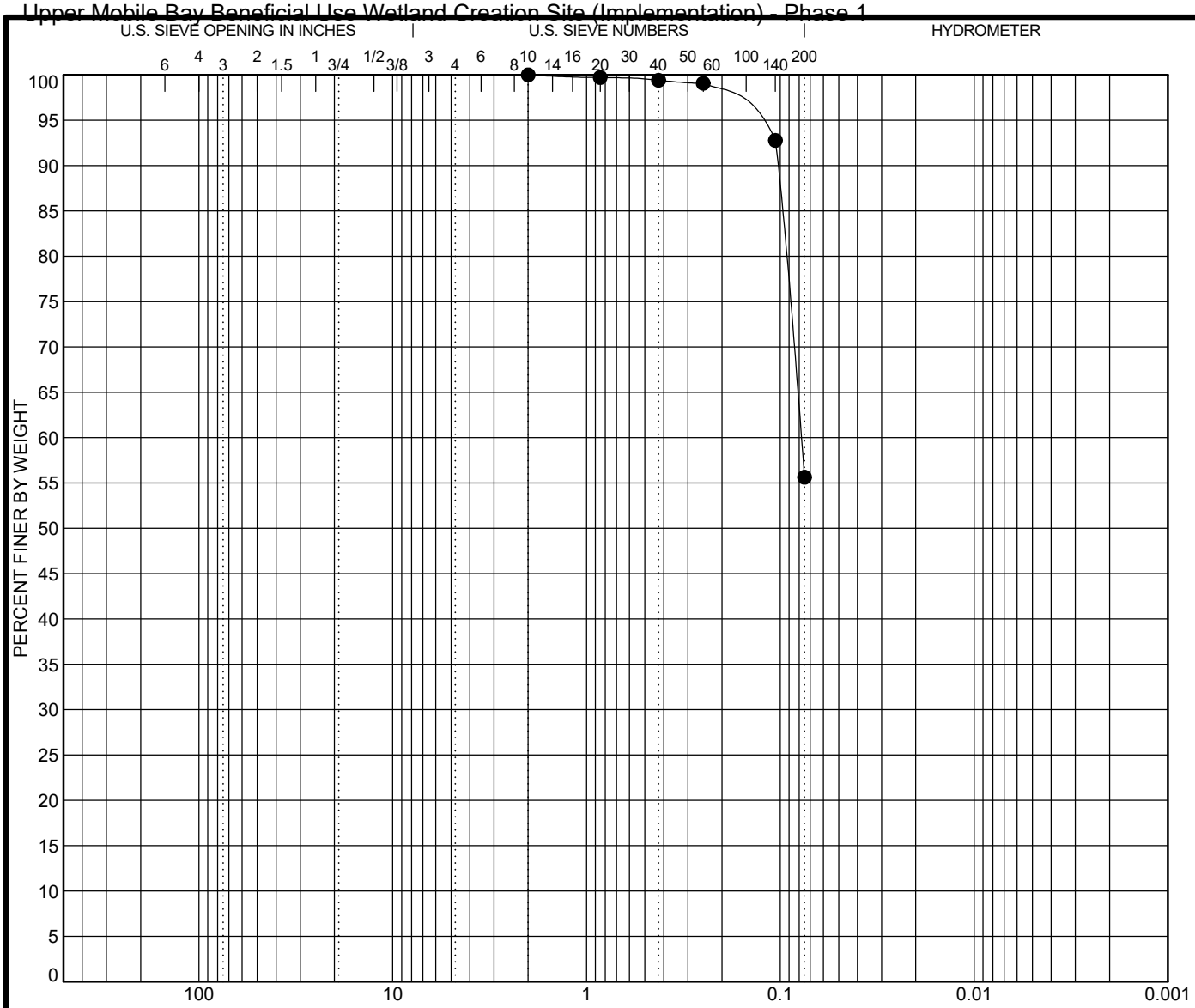
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-6**	**S-5;12.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-06	**12.5 ft.**	**2**	**0.078**			**0.0**	**44.4**	**55.6**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
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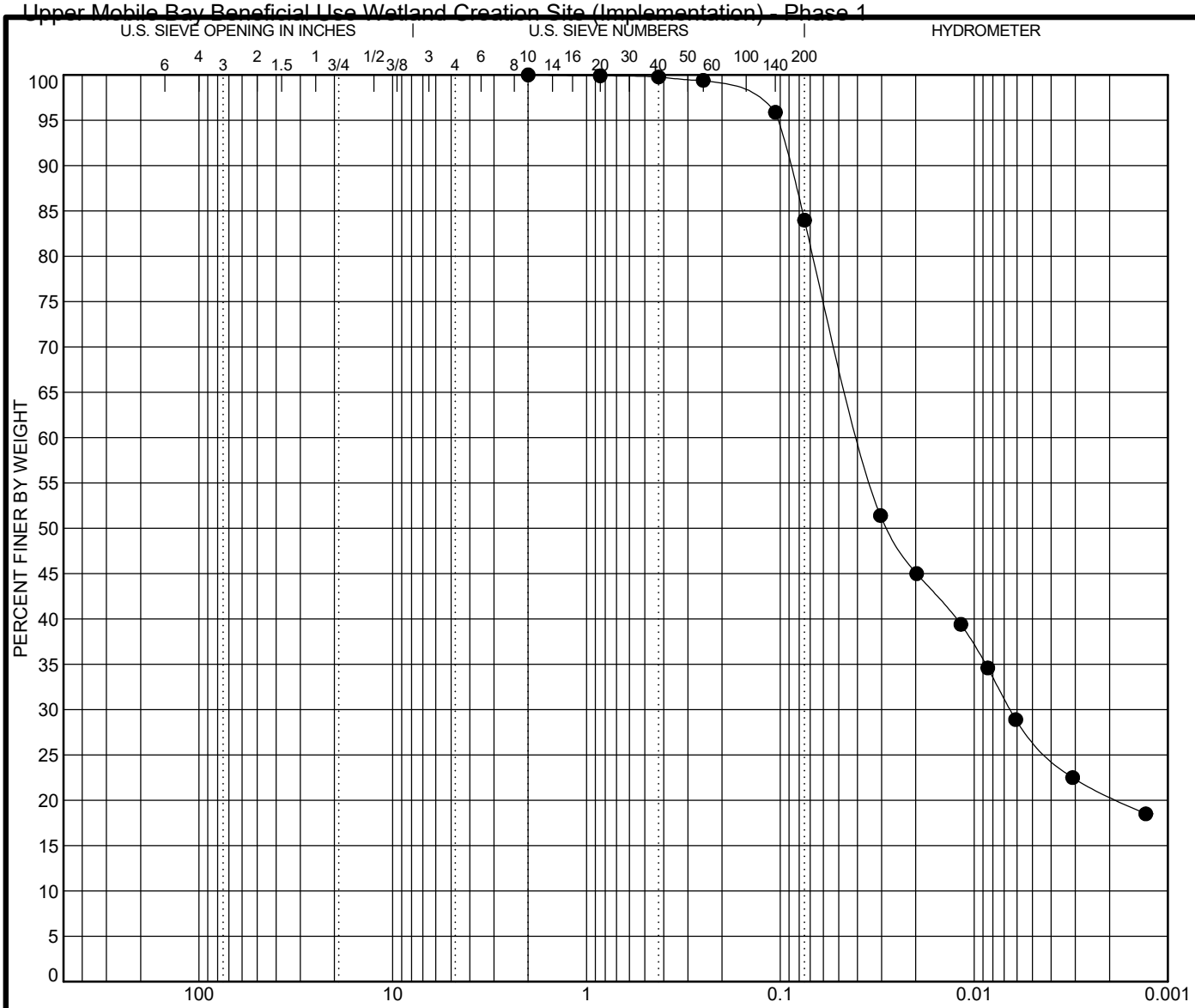
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-7**	**S-1;0.5 ft.**	**LEAN CLAY with SAND (CL)**	**49**	**23**	**26**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-07	**0.5 ft.**	**2**	**0.039**	**0.007**		**0.0**	**16.0**	**63.5**	**20.5**

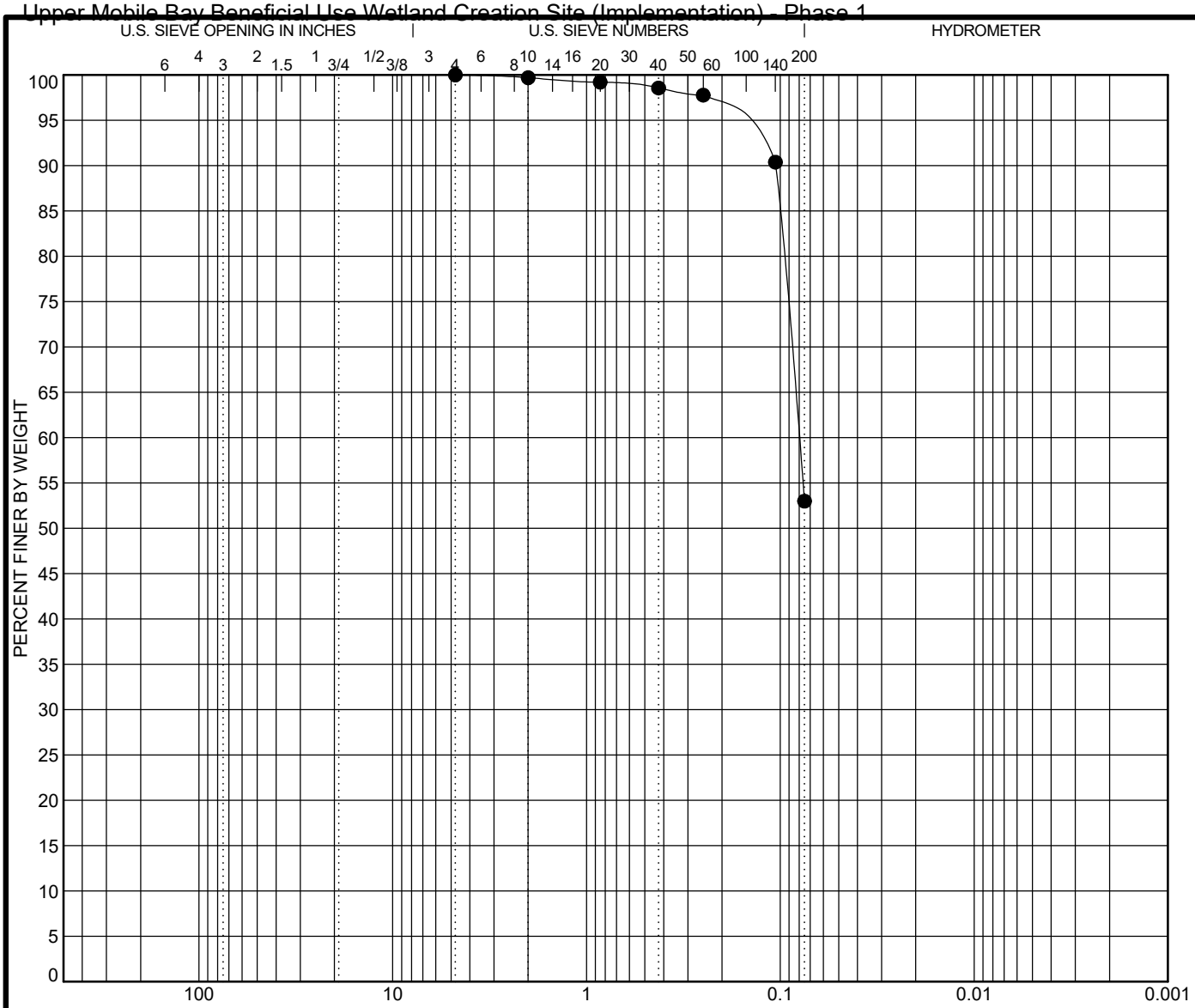
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-7**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-07	**5.5 ft.**	**4.75**	**0.08**			**0.0**	**47.0**	**53.0**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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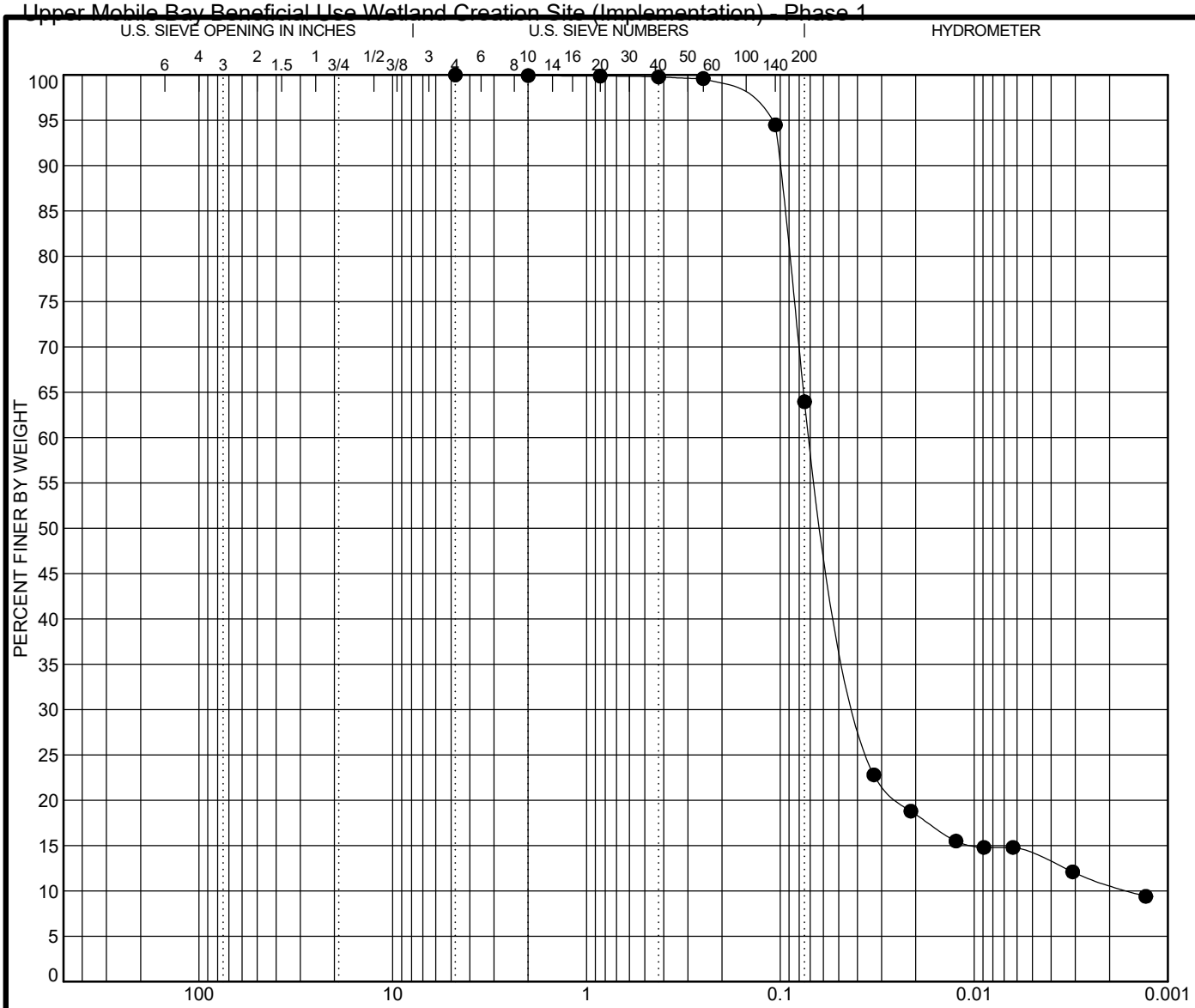
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-7**	**T-1;10.0 ft.**	**SANDY LEAN CLAY (CL)**	**39**	**23**	**16**	**13.22**	**43.94**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-07	**10.0 ft.**	**4.75**	**0.069**	**0.038**	**0.002**	**0.0**	**36.0**	**53.2**	**10.7**

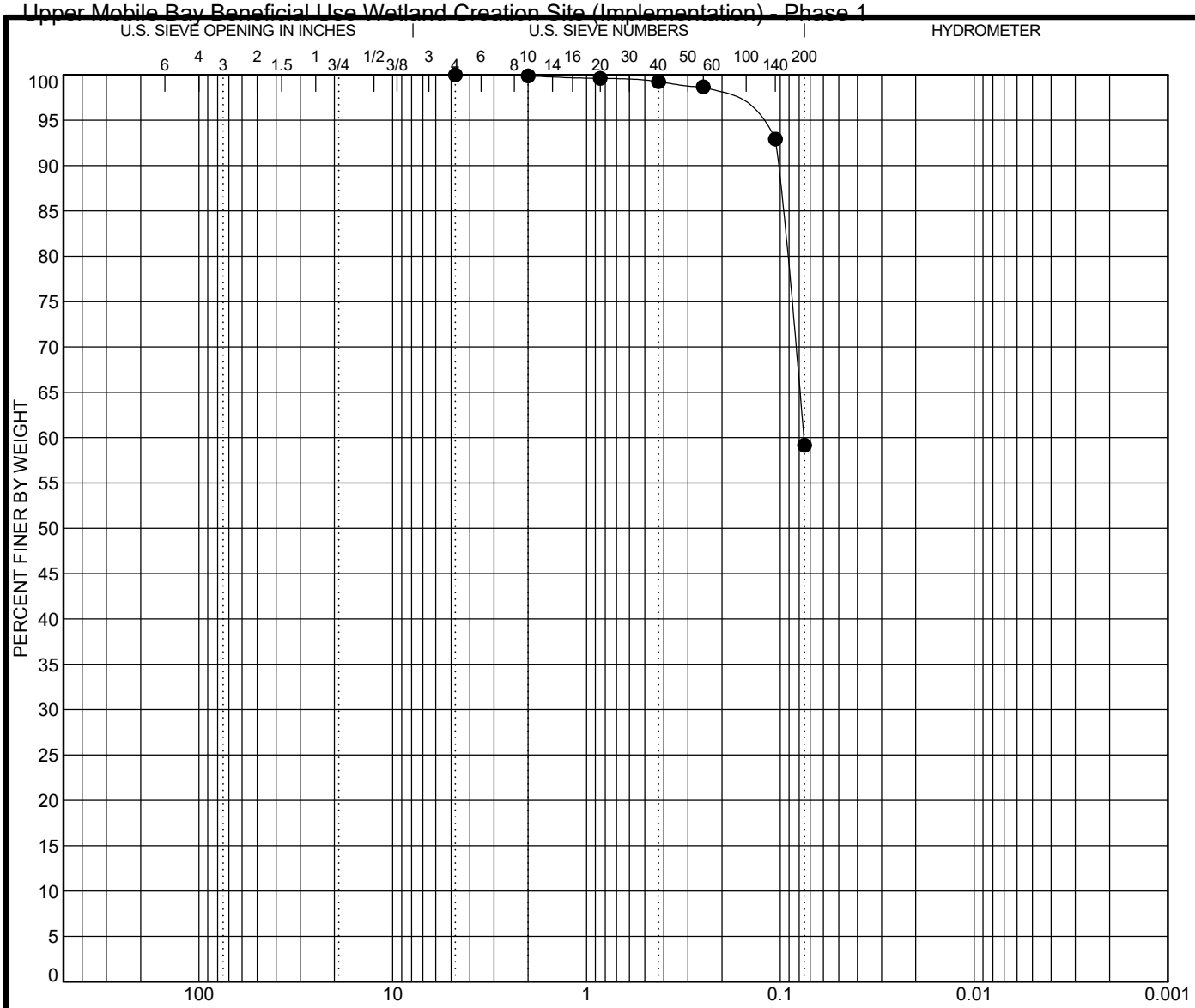
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-7**	**S-7;17.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-07	**17.5 ft.**	**4.75**	**0.076**			**0.0**	**40.8**	**59.2**	

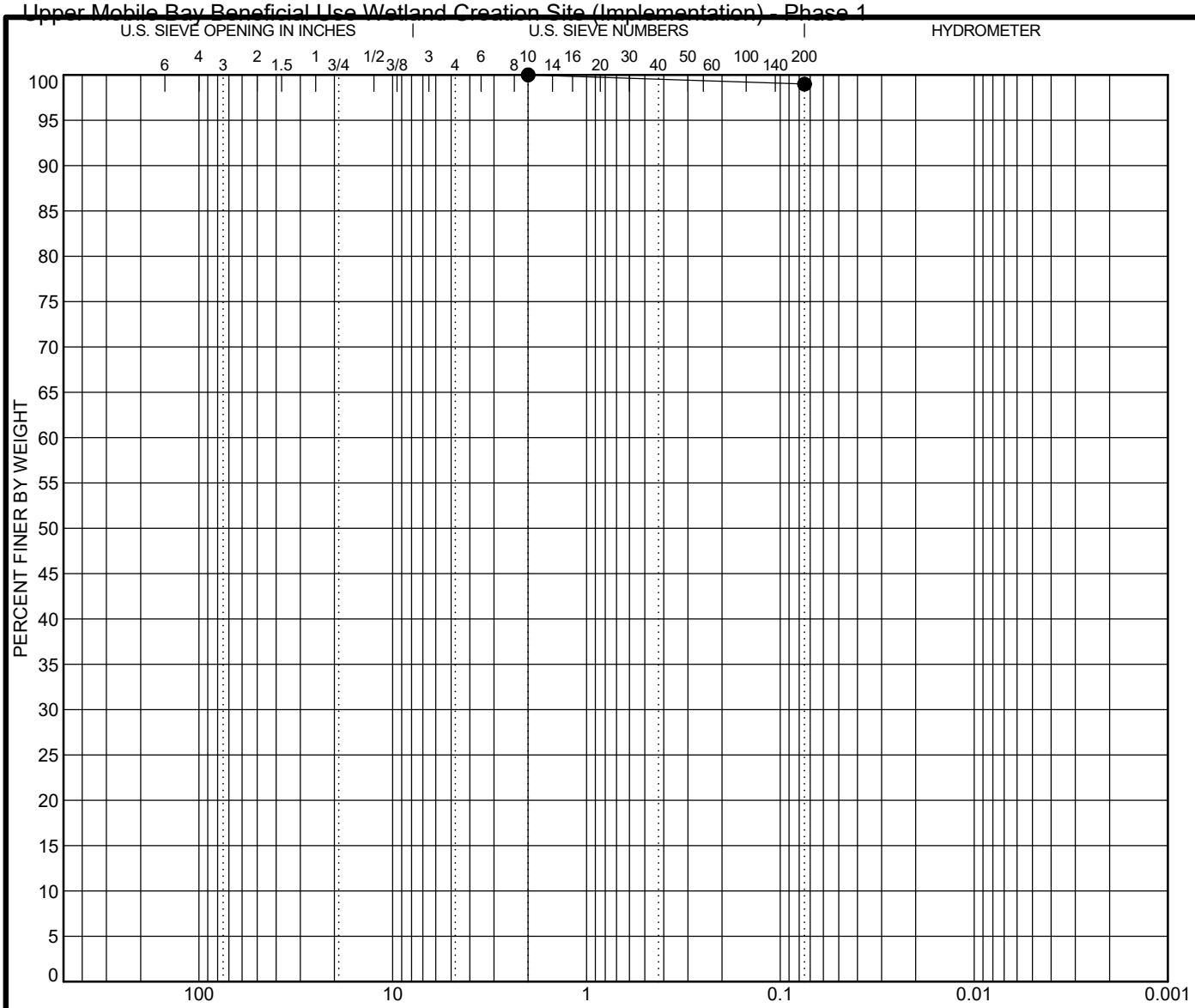
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-7**	**T-3;41.5 ft.**	**FAT CLAY (CH)**	**81**	**23**	**58**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-07	**41.5 ft.**	**2**				**0.0**	**1.0**	**99.0**	

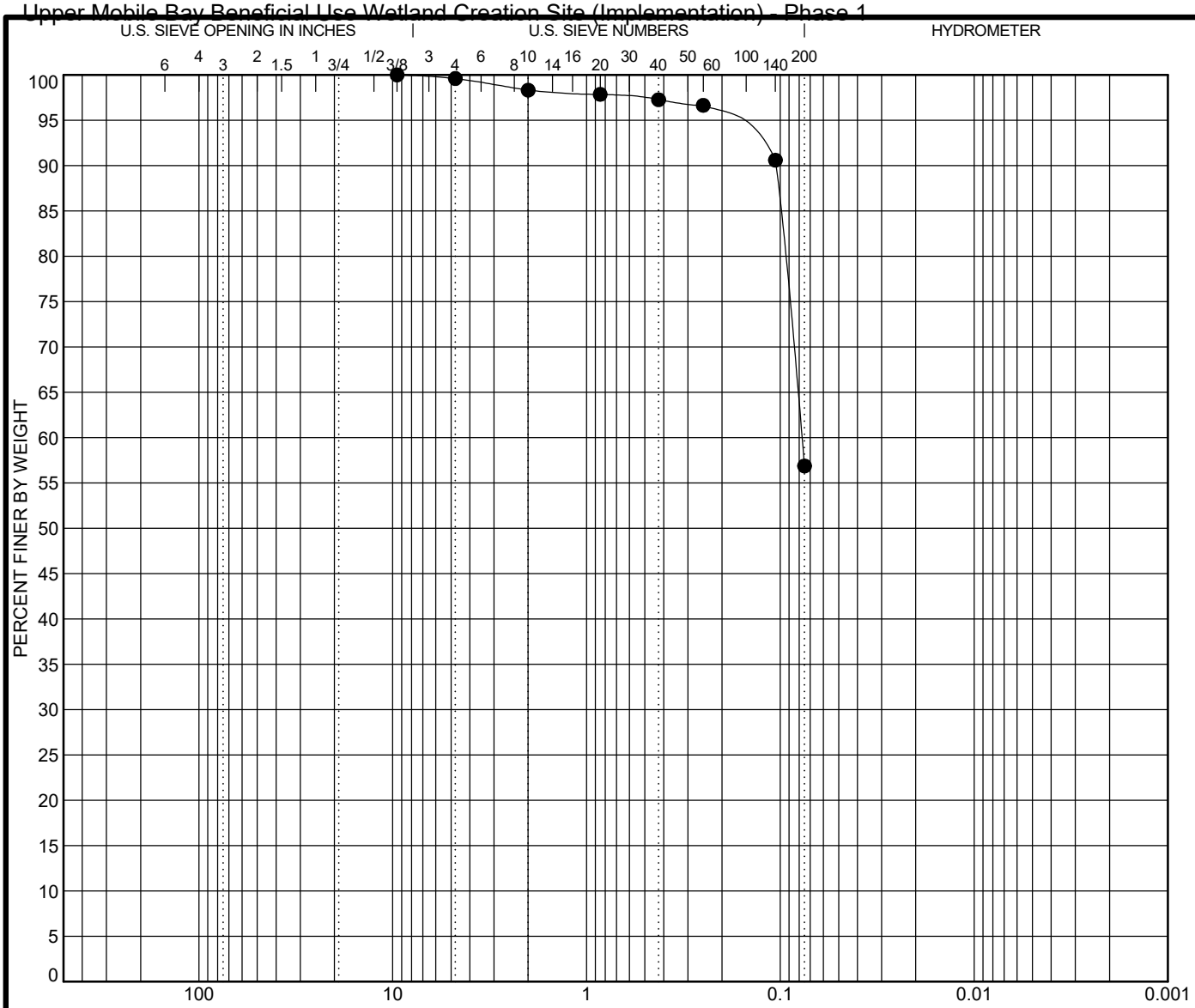
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-8**	**S-1;0.5 ft.**	**SANDY SILT (ML)**	**33**	**27**	**6**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-08	**0.5 ft.**	**9.5**	**0.077**			**0.4**	**42.7**	**56.9**	

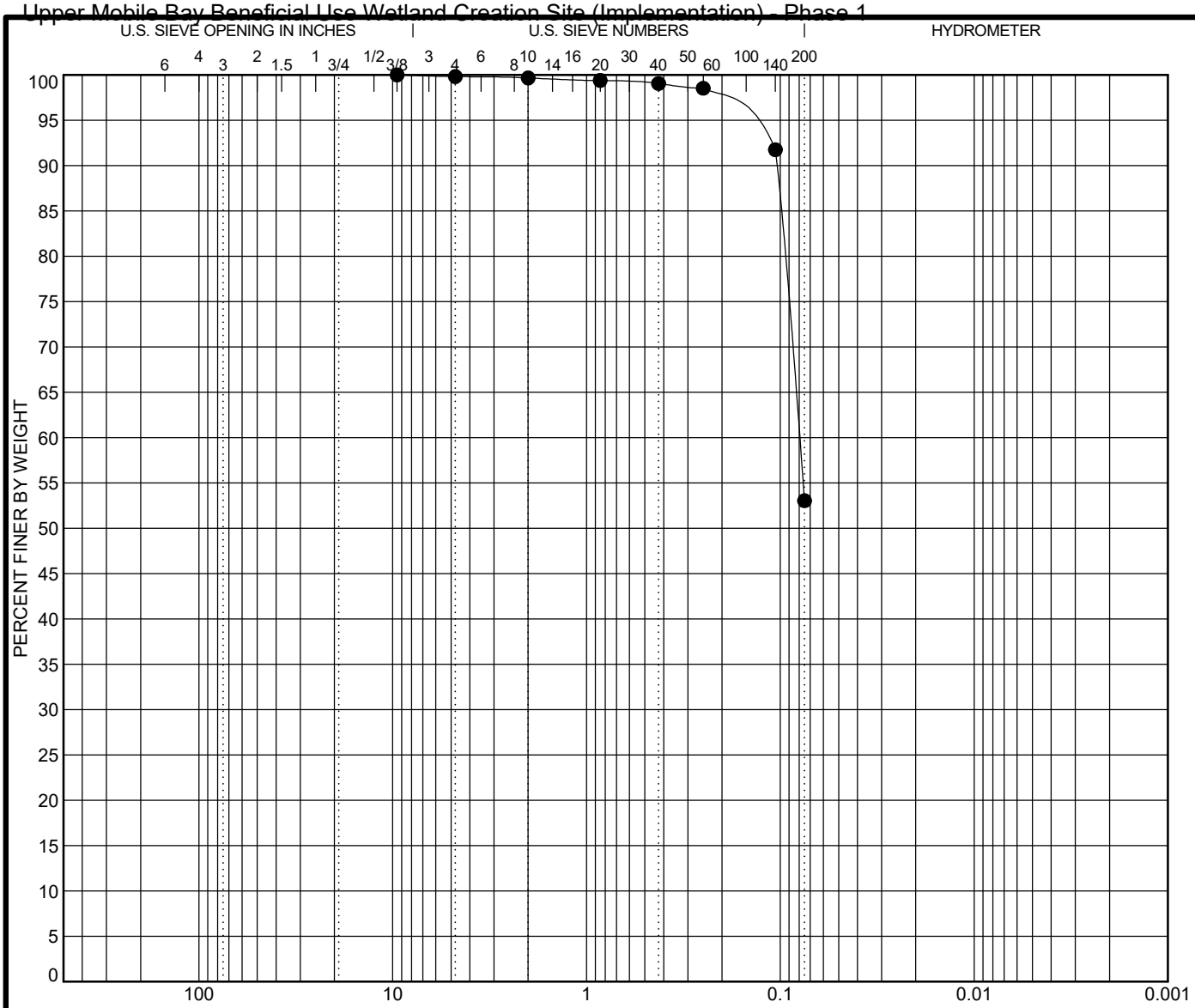
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-8**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-08	**5.5 ft.**	**9.5**	**0.08**			**0.2**	**46.8**	**53.0**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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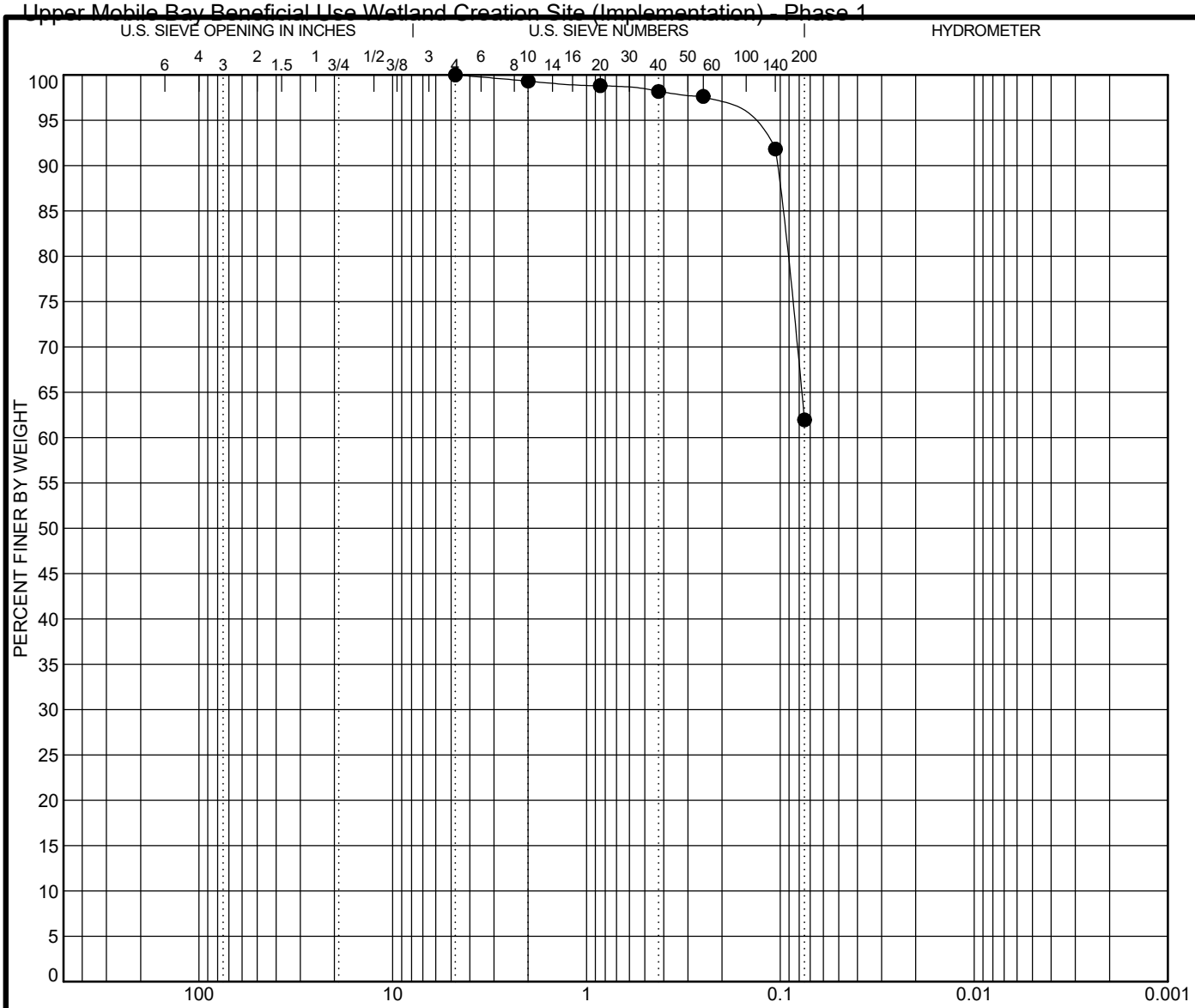
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-8**	**S-5;10.5 ft.**	**SANDY SILT (ML)**	**38**	**30**	**8**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-08	**10.5 ft.**	**4.75**				**0.0**	**38.0**	**62.0**	

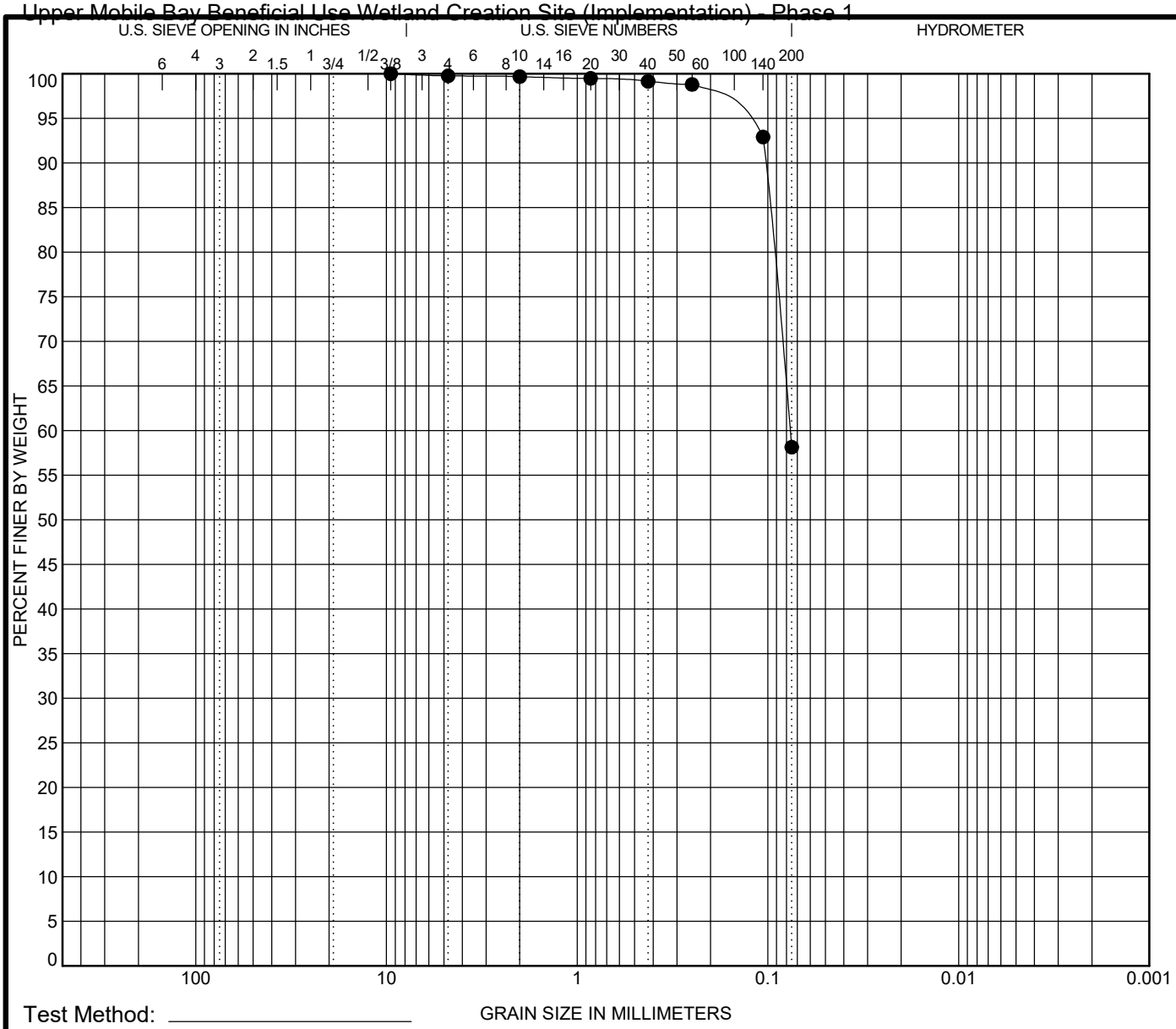
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-9A**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-09A	**5.5 ft.**	**9.5**	**0.076**			**0.2**	**41.6**	**58.1**	

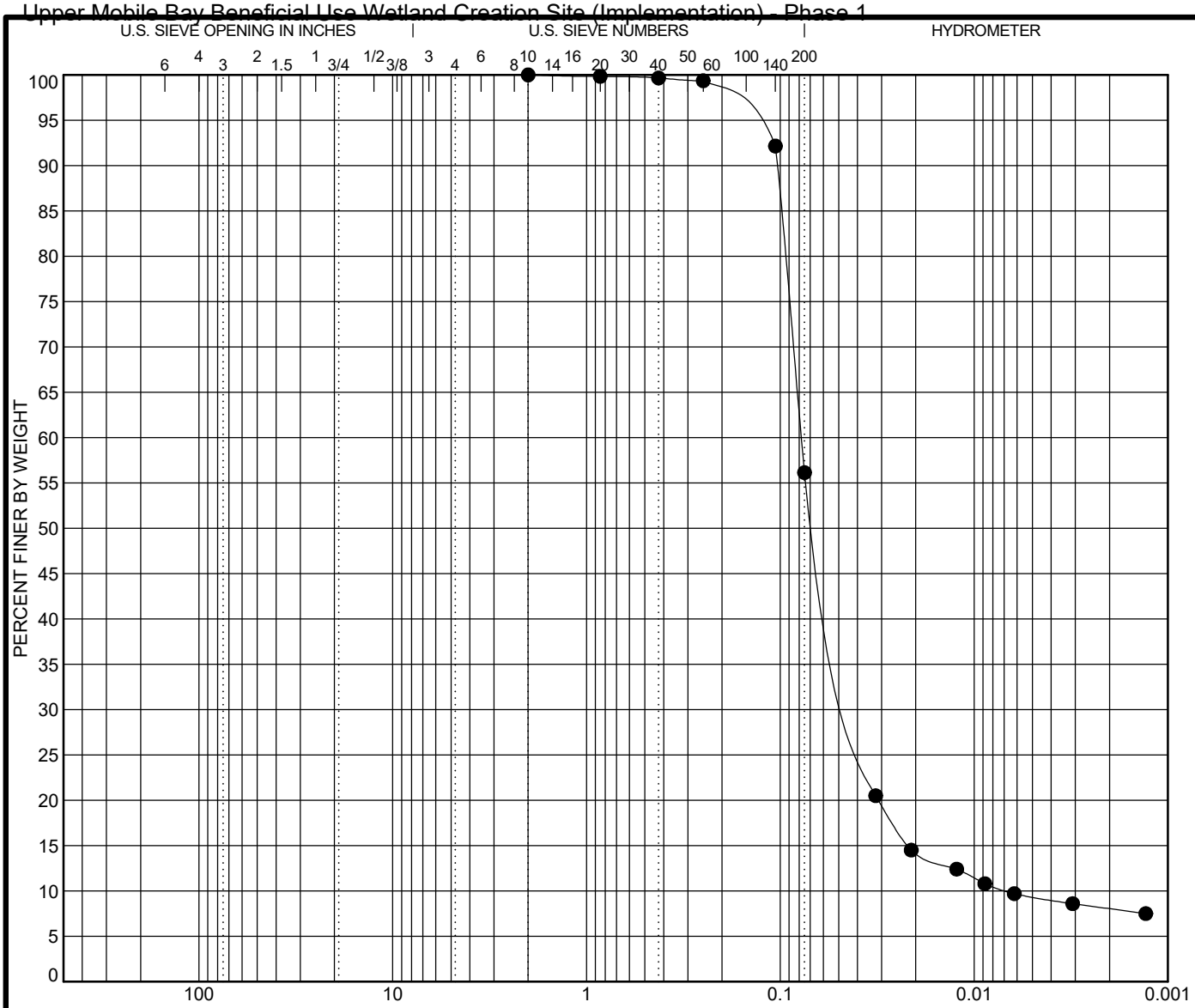
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-9A**	**T-1;10.0 ft.**	**SANDY SILT (ML)**	**38**	**35**	**3**	**3.07**	**11.41**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-09A	**10.0 ft.**	**2**	**0.078**	**0.04**	**0.007**	**0.0**	**43.9**	**48.1**	**8.0**

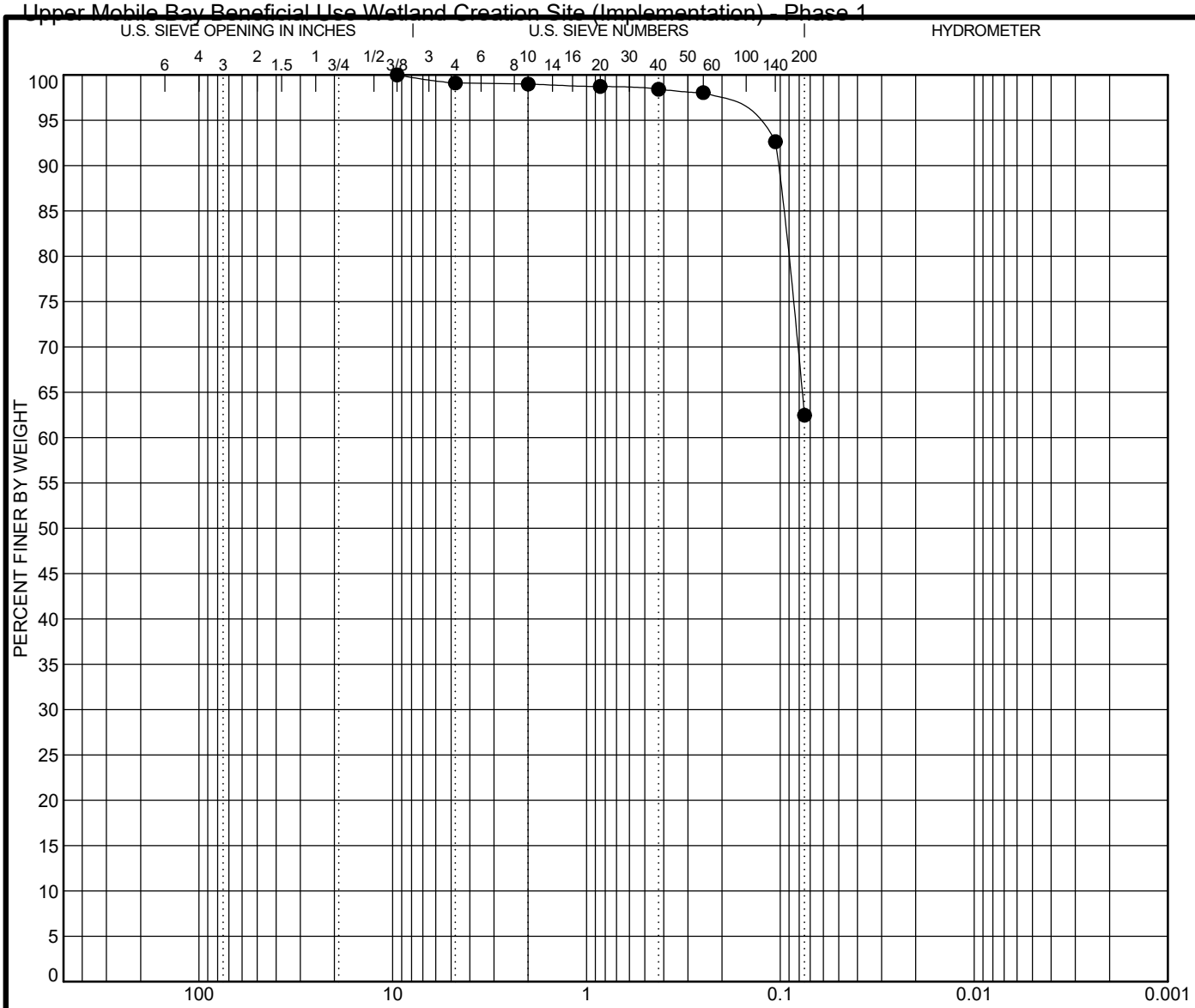
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-9A**	**S-7;17.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-09A	**17.5 ft.**	**9.5**				**0.9**	**36.6**	**62.5**	

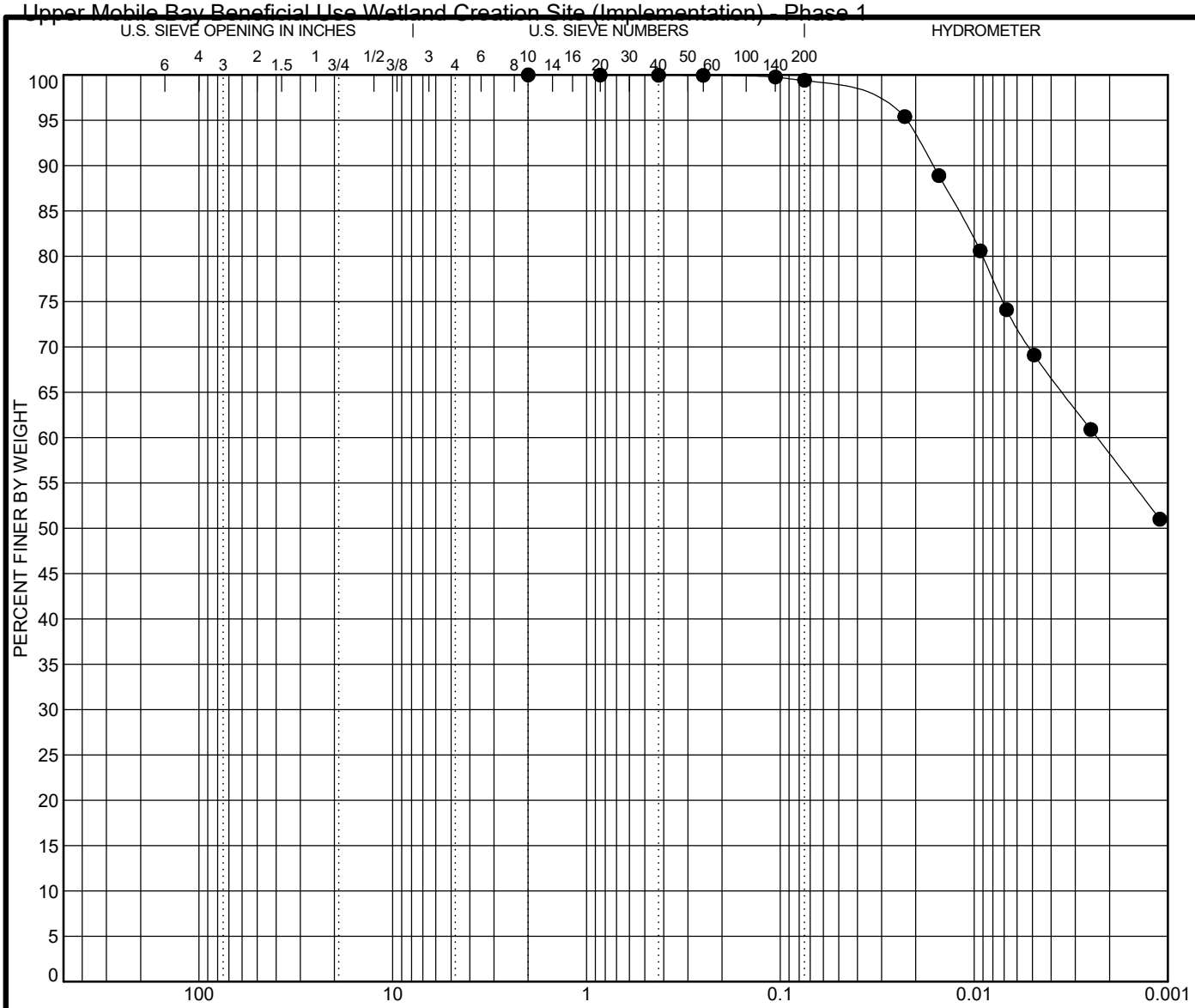
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-9A**	**T-3;41.5 ft.**	**FAT CLAY (CH)**	**112**	**30**	**82**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-09A	**41.5 ft.**	**2**	**0.002**			**0.0**	**0.6**	**41.2**	**58.2**

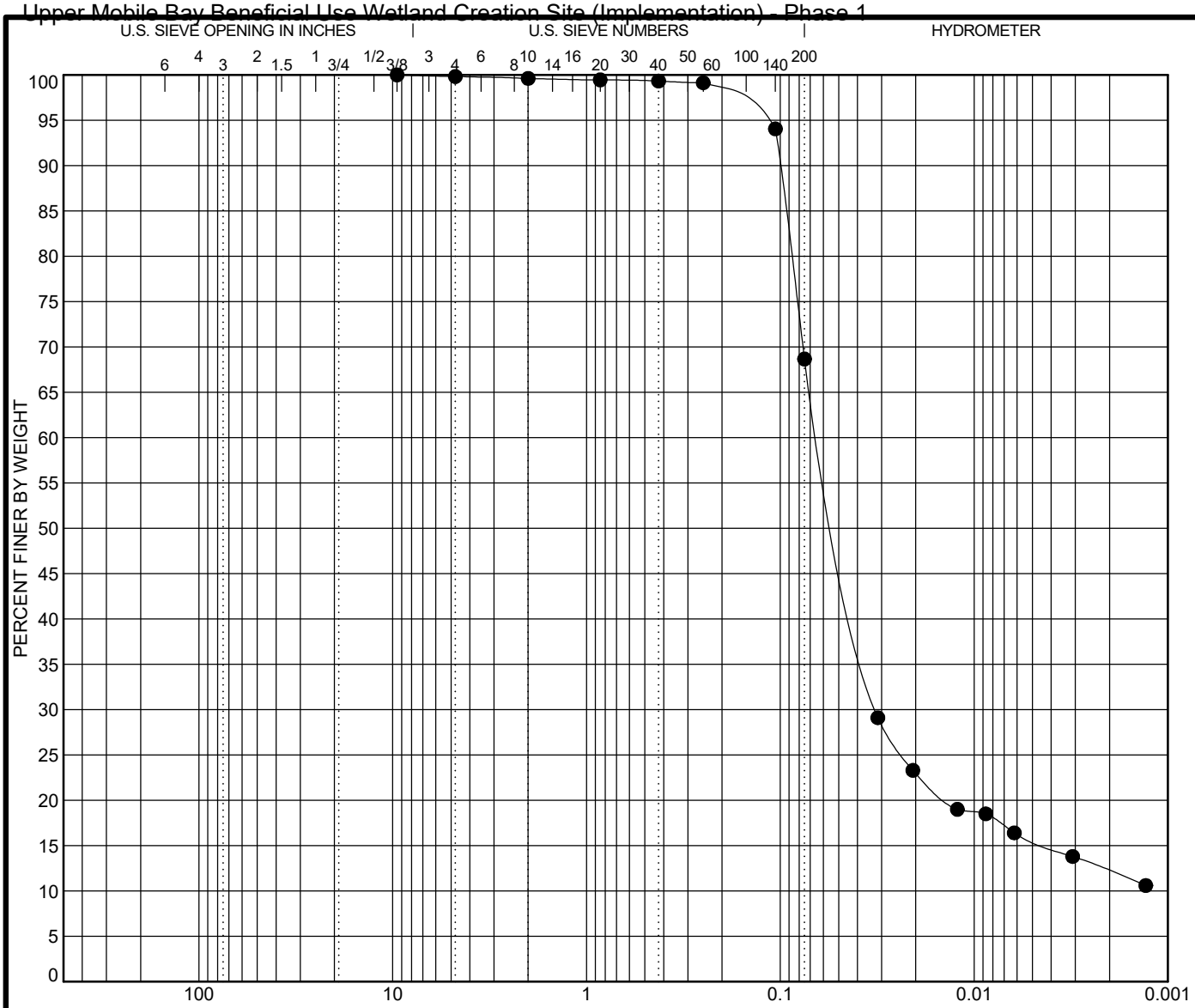
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE_21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-9B**	**S-1;0.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-09B	**0.5 ft.**	**9.5**	**0.062**	**0.032**		**0.2**	**31.2**	**56.5**	**12.2**

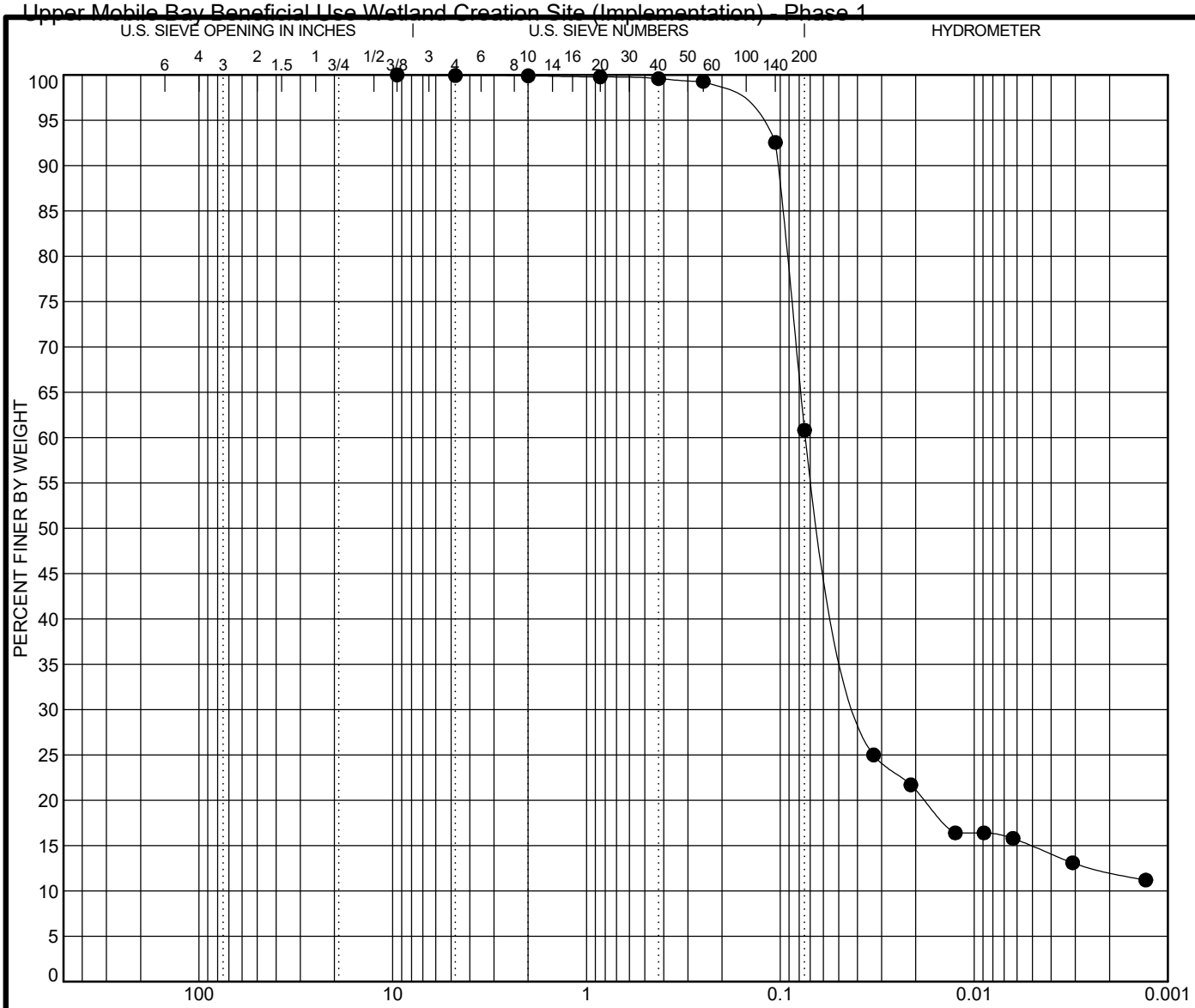
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-9B**	**T-1;10.0 ft.**	**SANDY SILT (ML)**	**39**	**26**	**13**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-09B	**10.0 ft.**	**9.5**	**0.074**	**0.037**		**0.1**	**39.1**	**48.7**	**12.1**

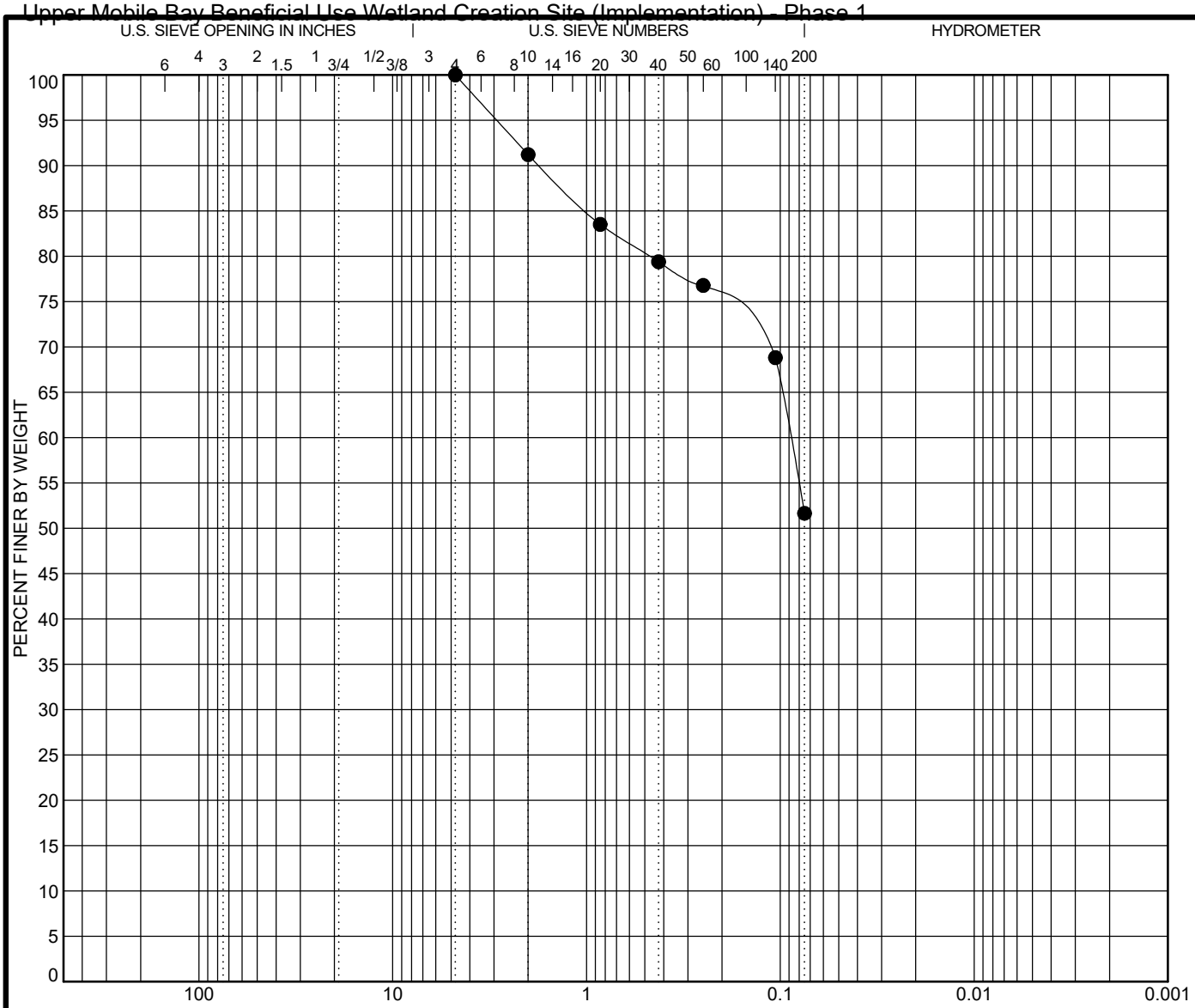
REMARKS:

GET GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-10**	**S-2;3.0 ft.**	**SANDY ORGANIC SILT (OL)**	**NP**	**67**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-10	**3.0 ft.**	**4.75**	**0.089**			**0.0**	**48.4**	**51.6**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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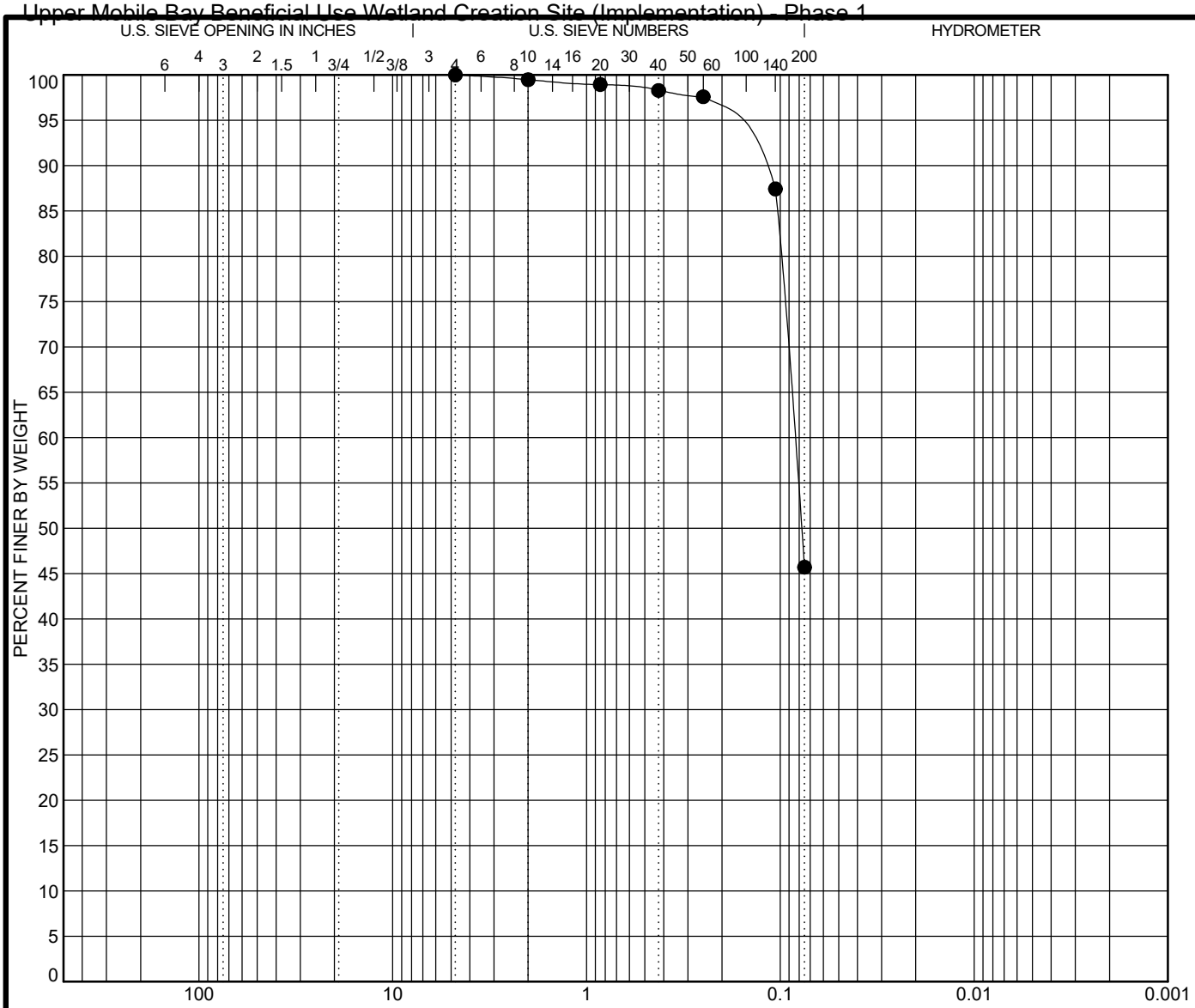
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-10**	**S-4;8.0 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-10	**8.0 ft.**	**4.75**	**0.084**			**0.0**	**54.3**	**45.7**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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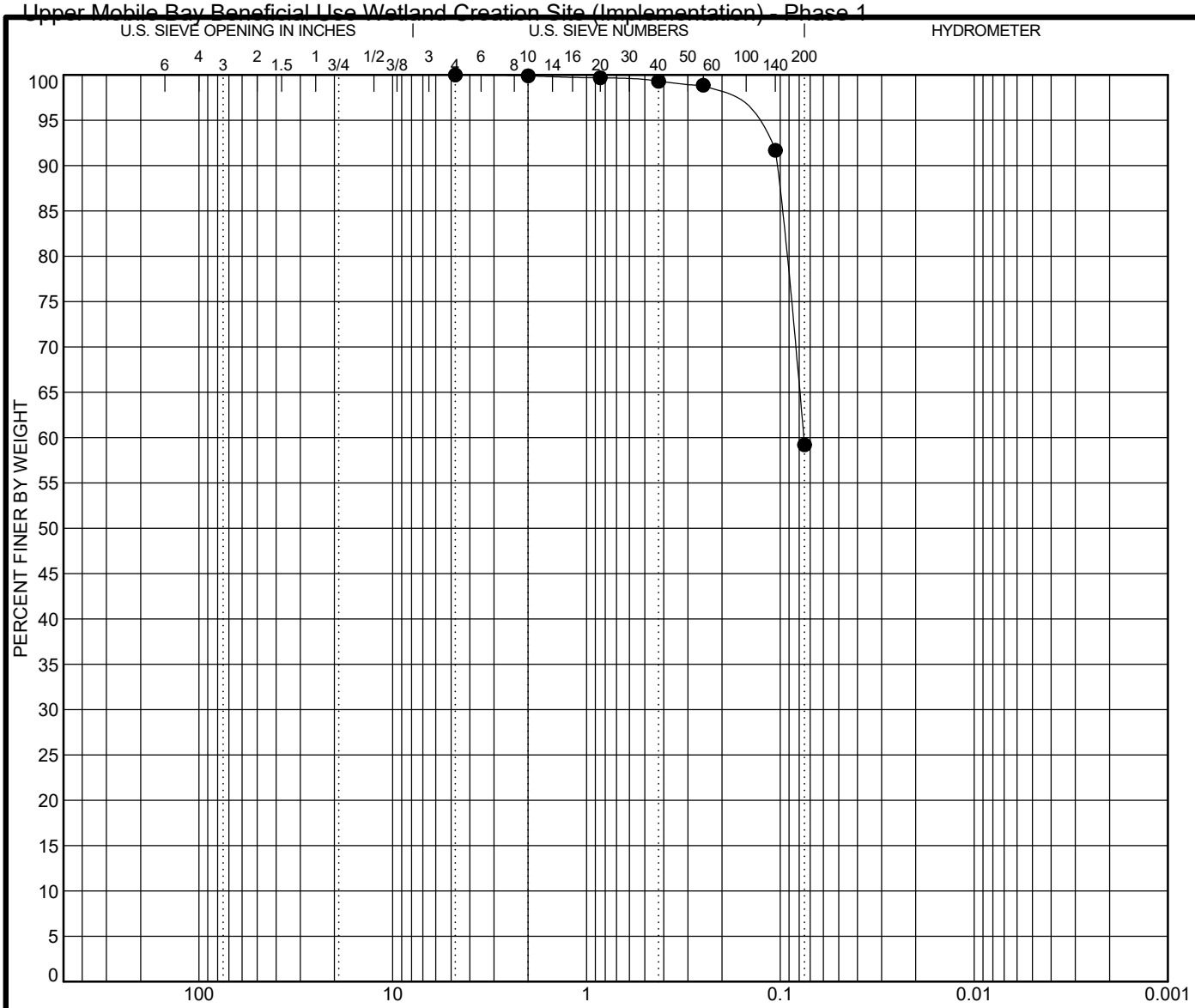
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-10**	**S-6;13.0 ft.**	**SANDY SILT (ML)**	**35**	**26**	**9**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-10	**13.0 ft.**	**4.75**	**0.076**			**0.0**	**40.8**	**59.2**	

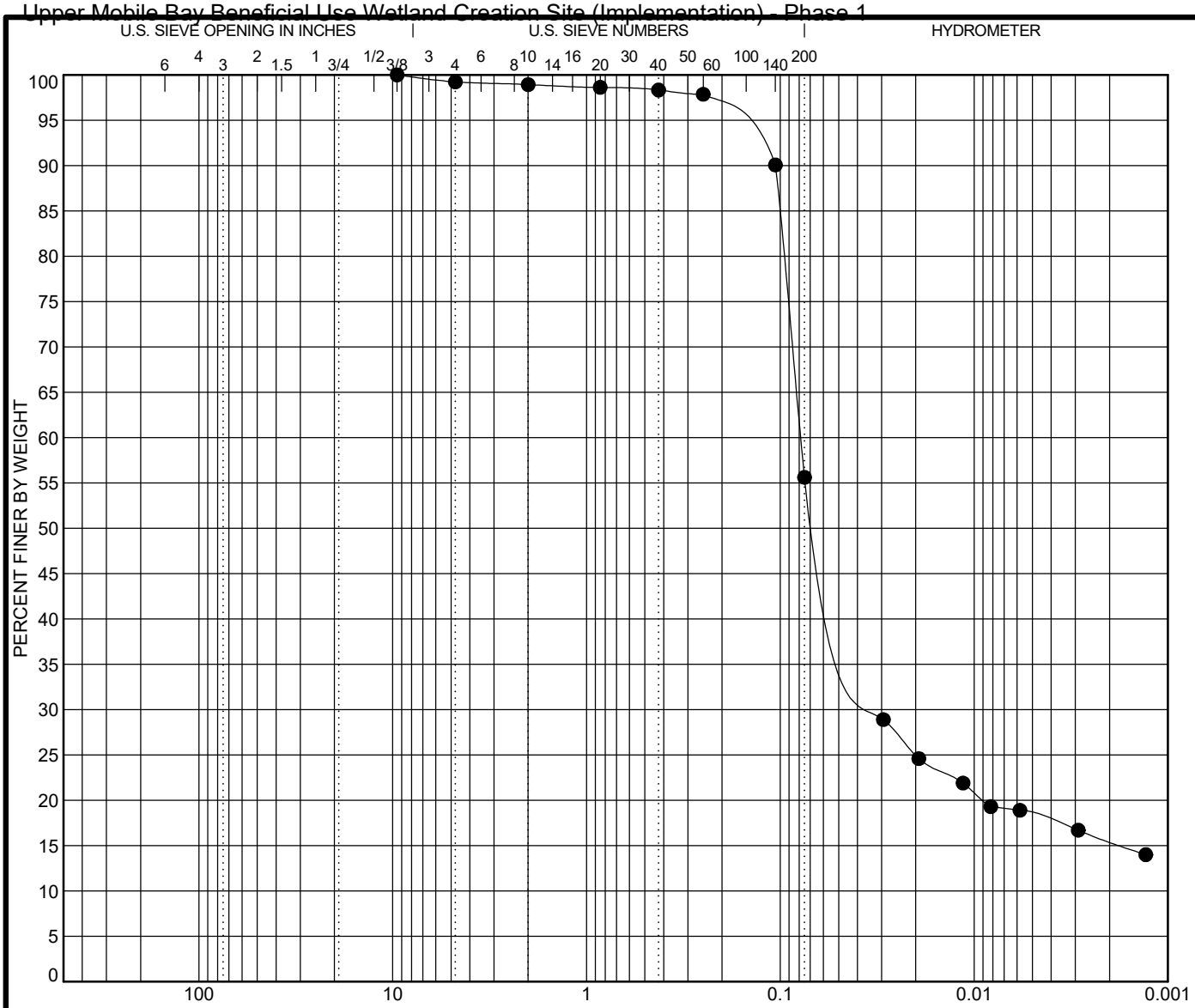
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-11**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-11	**3.0 ft.**	**9.5**	**0.078**	**0.031**		**0.8**	**43.6**	**40.2**	**15.4**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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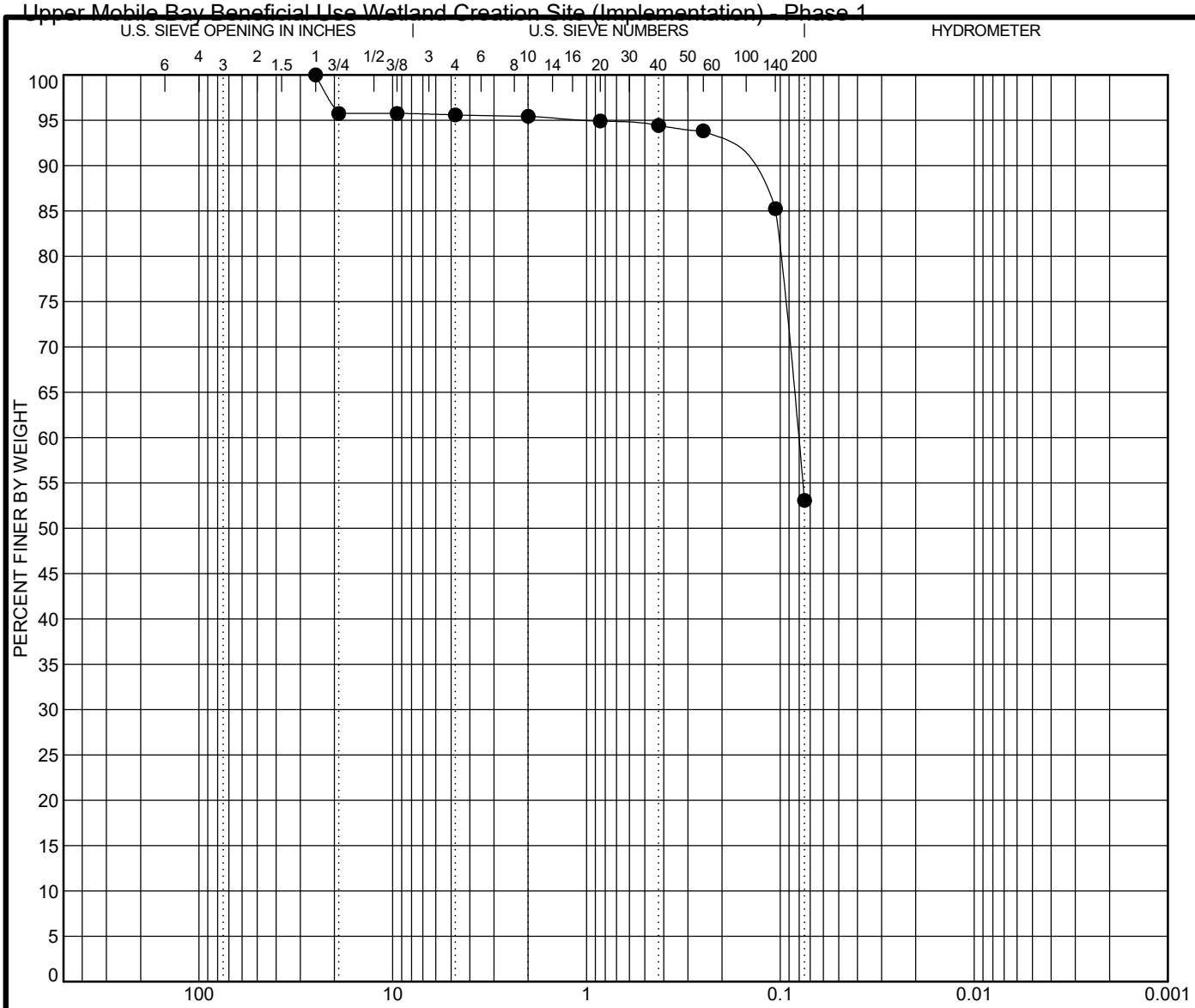
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-11**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-11	**8.0 ft.**	**25**	**0.081**			**4.4**	**42.5**	**53.1**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
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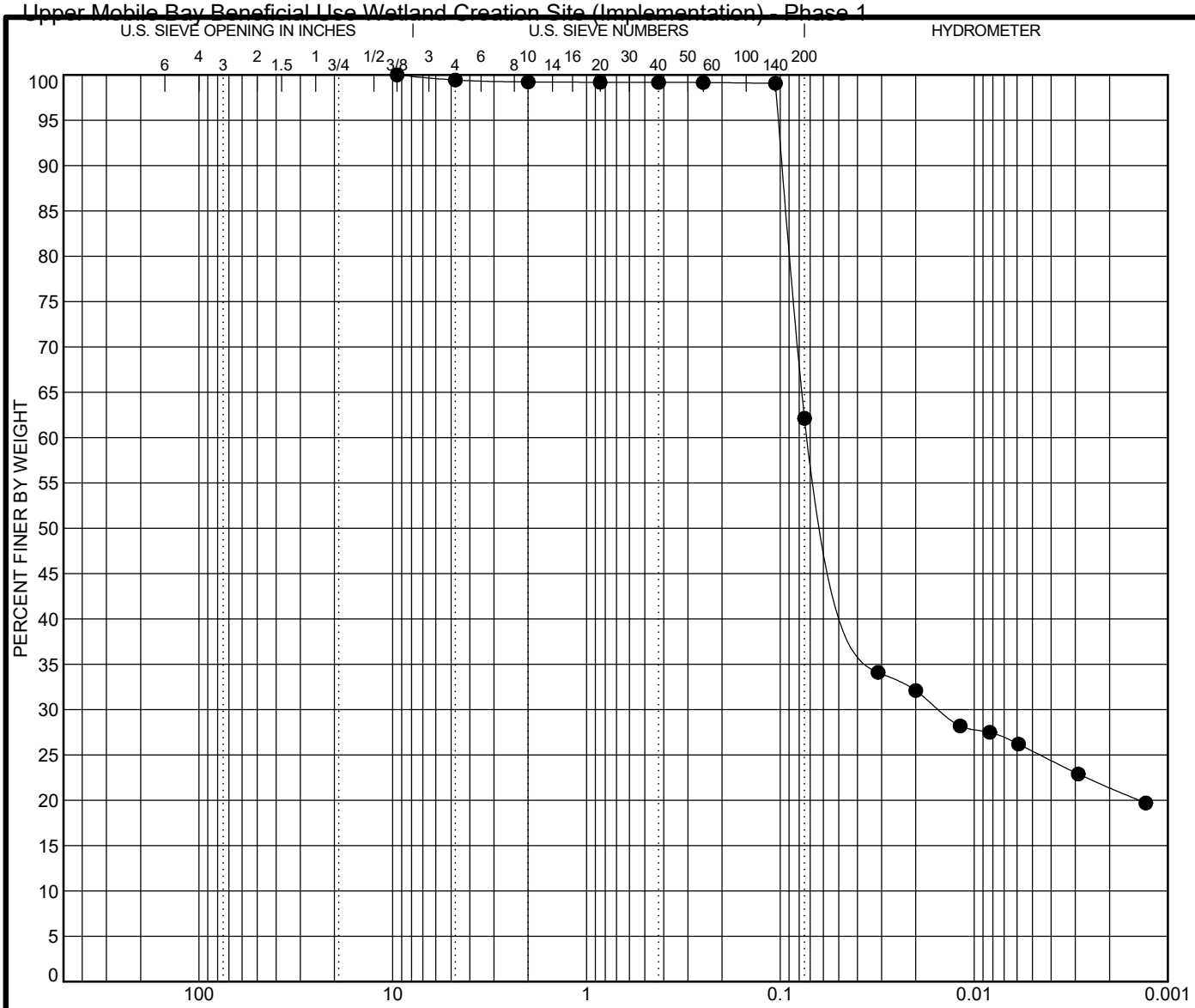
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-11**	**T-1;10.0 ft.**	**SANDY LEAN CLAY (CL)**	**41**	**24**	**17**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-11	**10.0 ft.**	**9.5**	**0.07**	**0.015**		**0.6**	**37.3**	**40.7**	**21.4**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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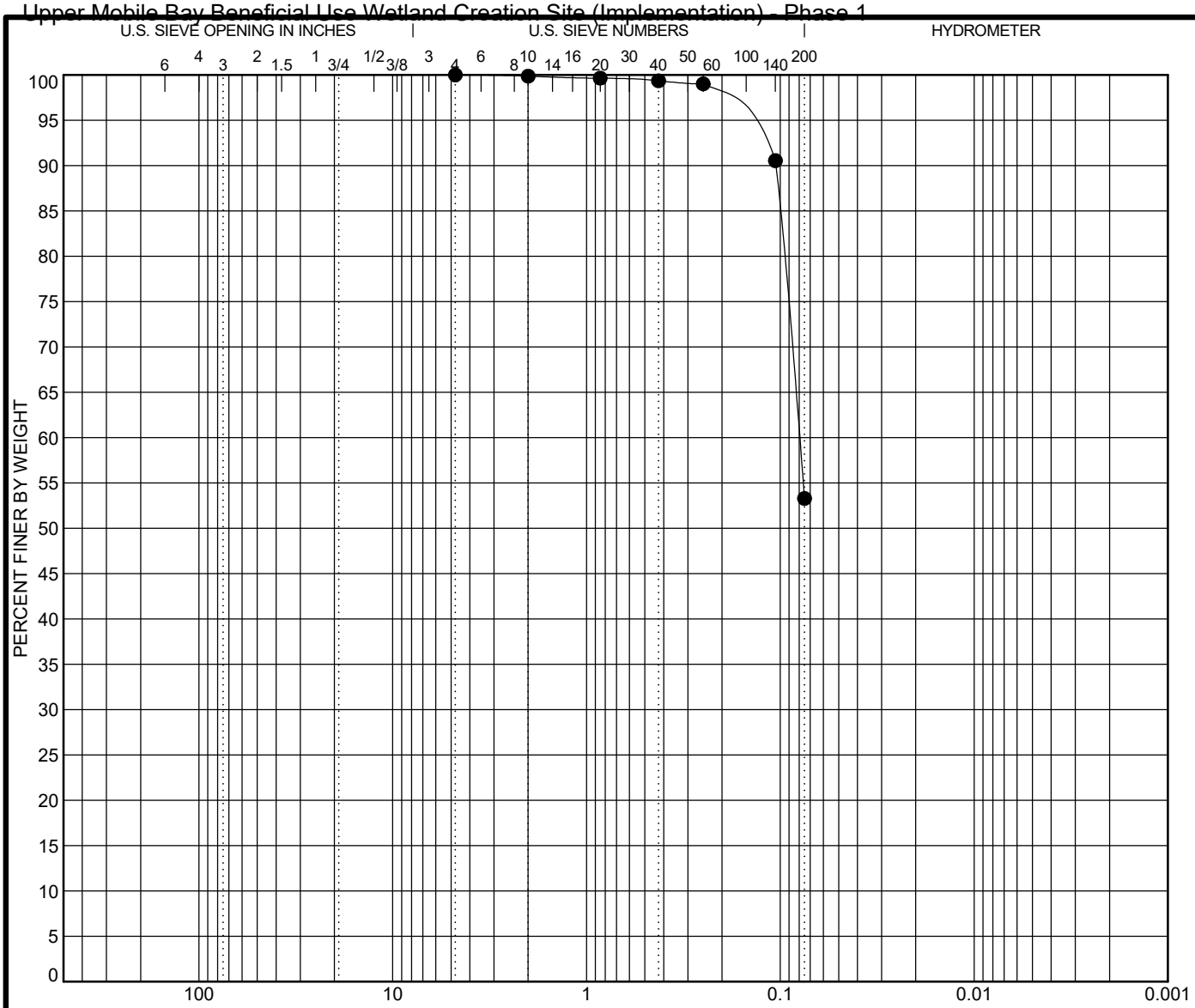
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-11**	**S-8;20.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-11	**20.0 ft.**	**4.75**	**0.08**			**0.0**	**46.7**	**53.3**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
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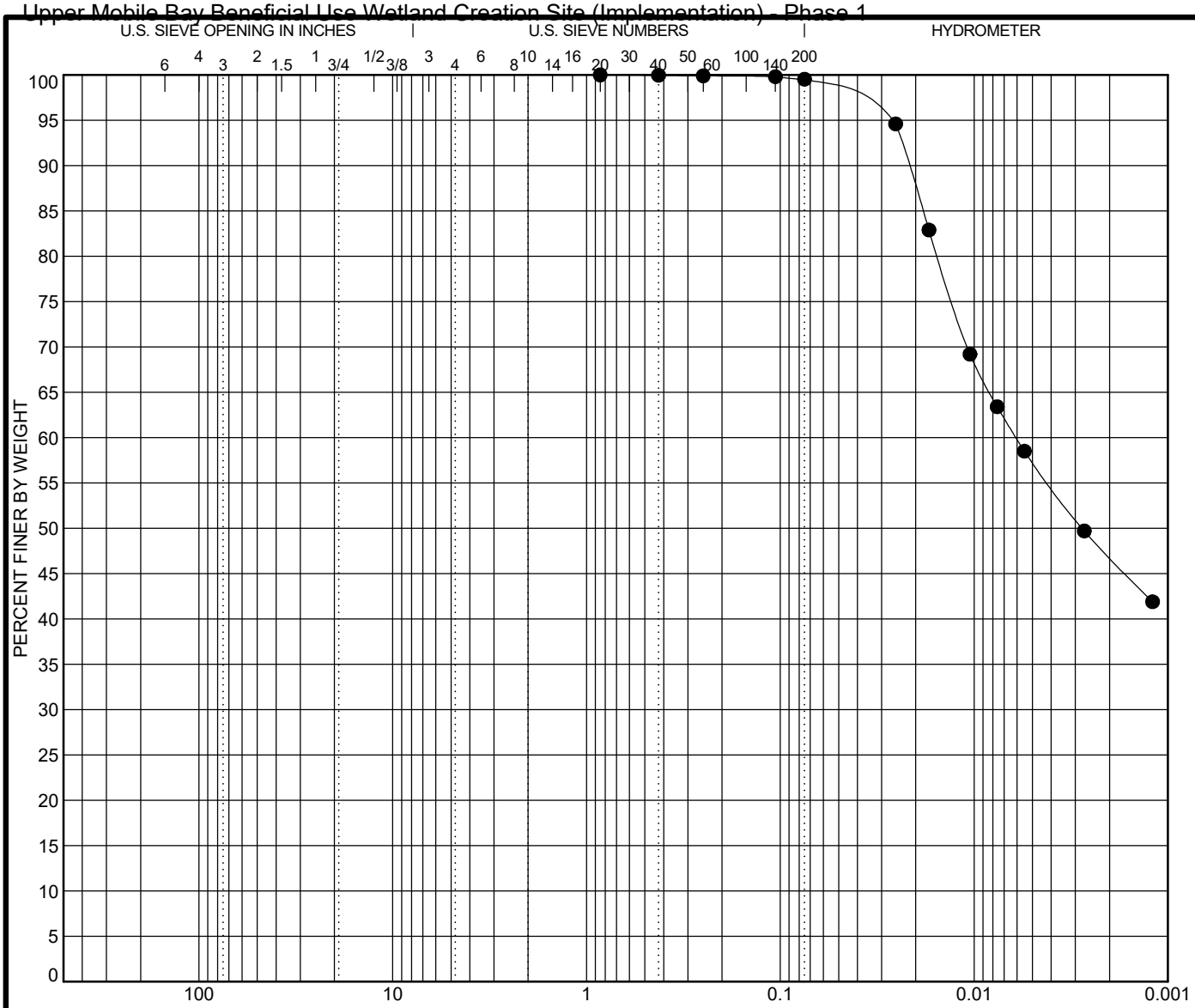
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-11**	**T-2;31.5 ft.**	**FAT CLAY (CH)**	**80**	**21**	**59**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-11	**31.5 ft.**	**0.85**	**0.006**			**0.0**	**0.5**	**52.7**	**46.8**

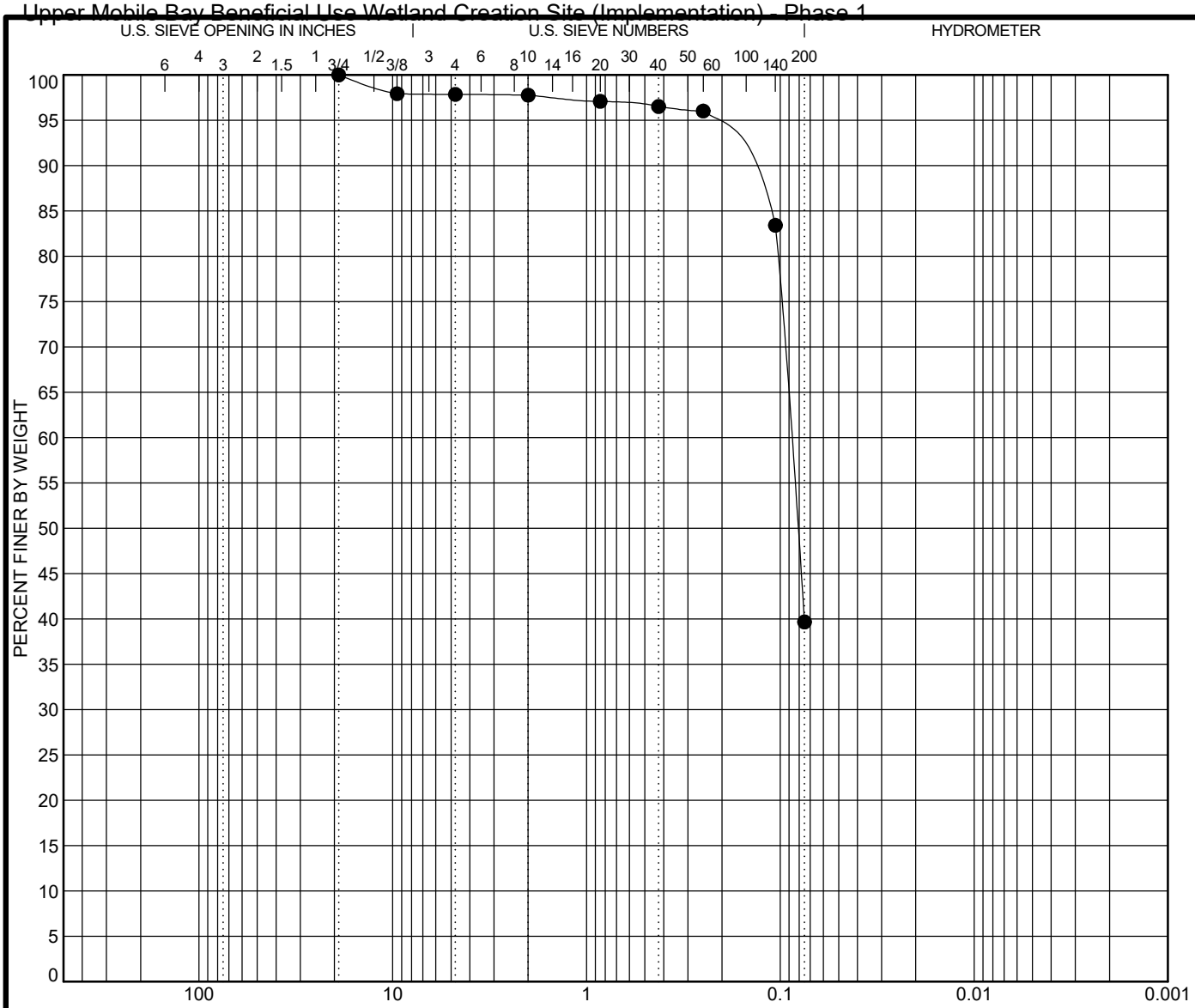
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **B-12**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-12	**3.0 ft.**	**19**	**0.088**			**2.1**	**58.2**	**39.7**	

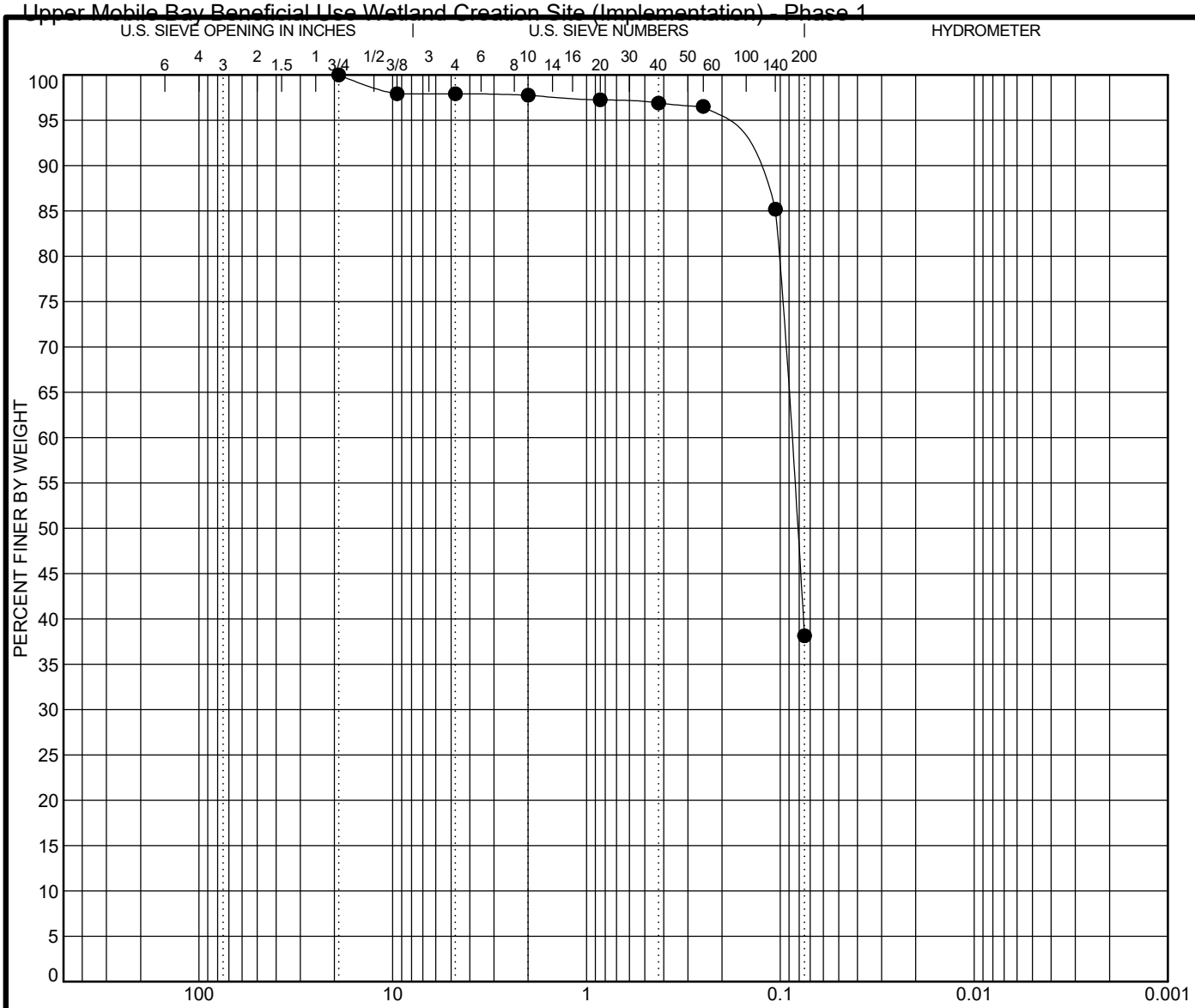
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **B-12**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-12	**8.0 ft.**	**19**	**0.088**			**2.1**	**59.8**	**38.1**	

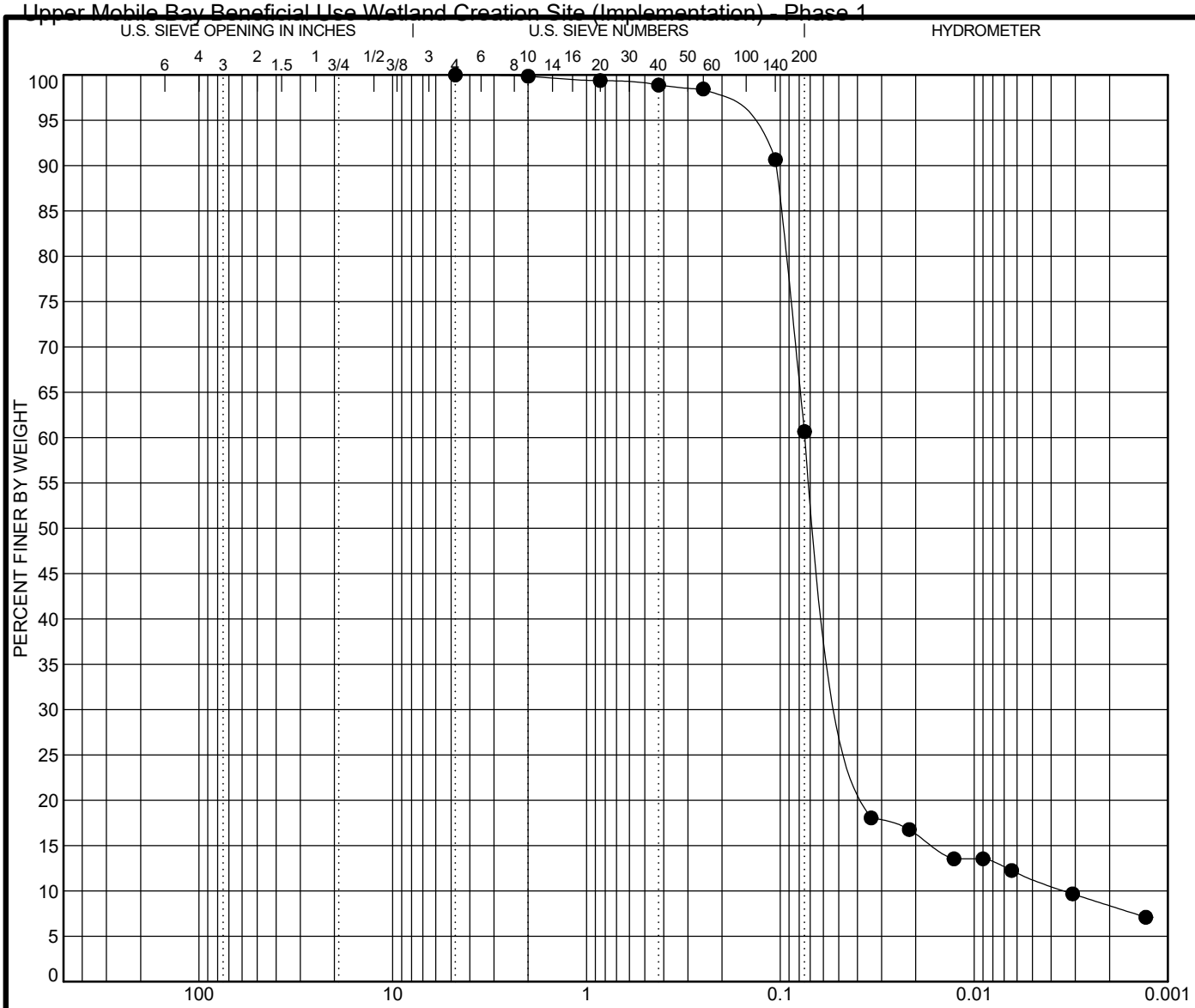
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-12**	**T-1;10.0 ft.**	**SANDY SILT (ML)**	**26**	**26**	**NP**	**7.16**	**21.80**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-12	**10.0 ft.**	**4.75**	**0.074**	**0.042**	**0.003**	**0.0**	**39.3**	**52.3**	**8.4**

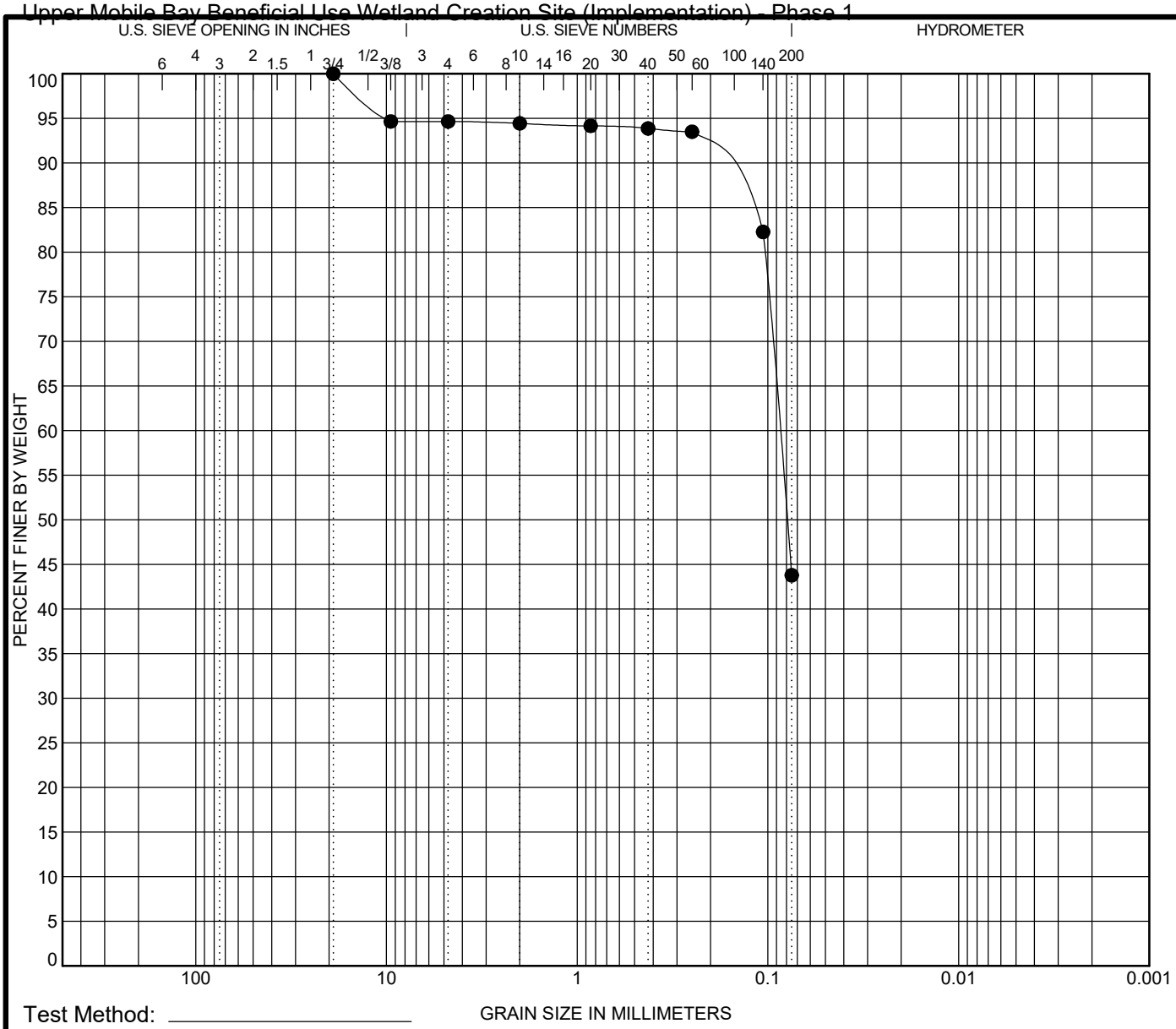
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-12**	**S-7;17.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-12	**17.5 ft.**	**19**	**0.087**			**5.4**	**50.9**	**43.8**	

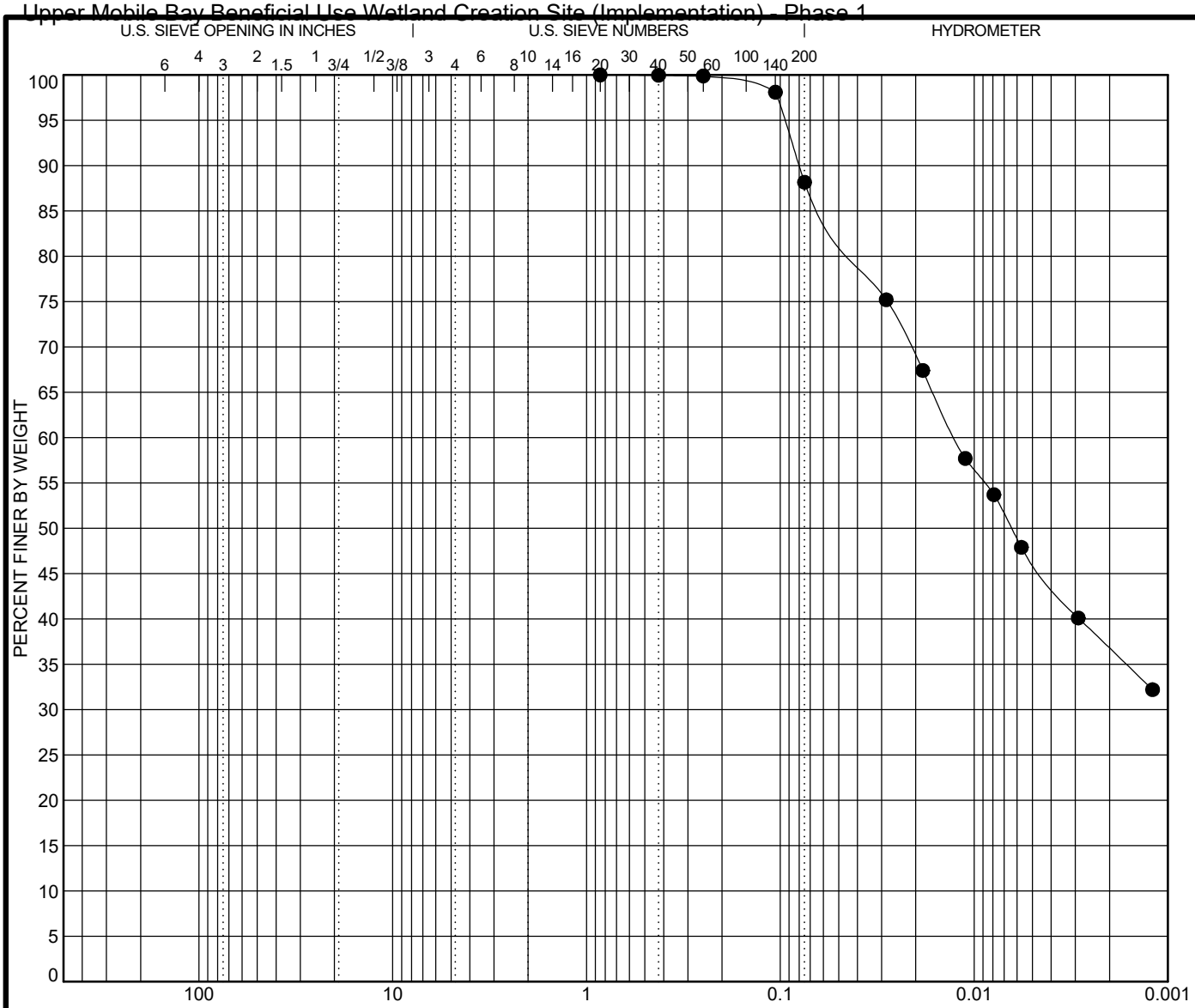
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-13**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-13	**3.0 ft.**	**0.85**	**0.013**			**0.0**	**11.8**	**51.4**	**36.8**

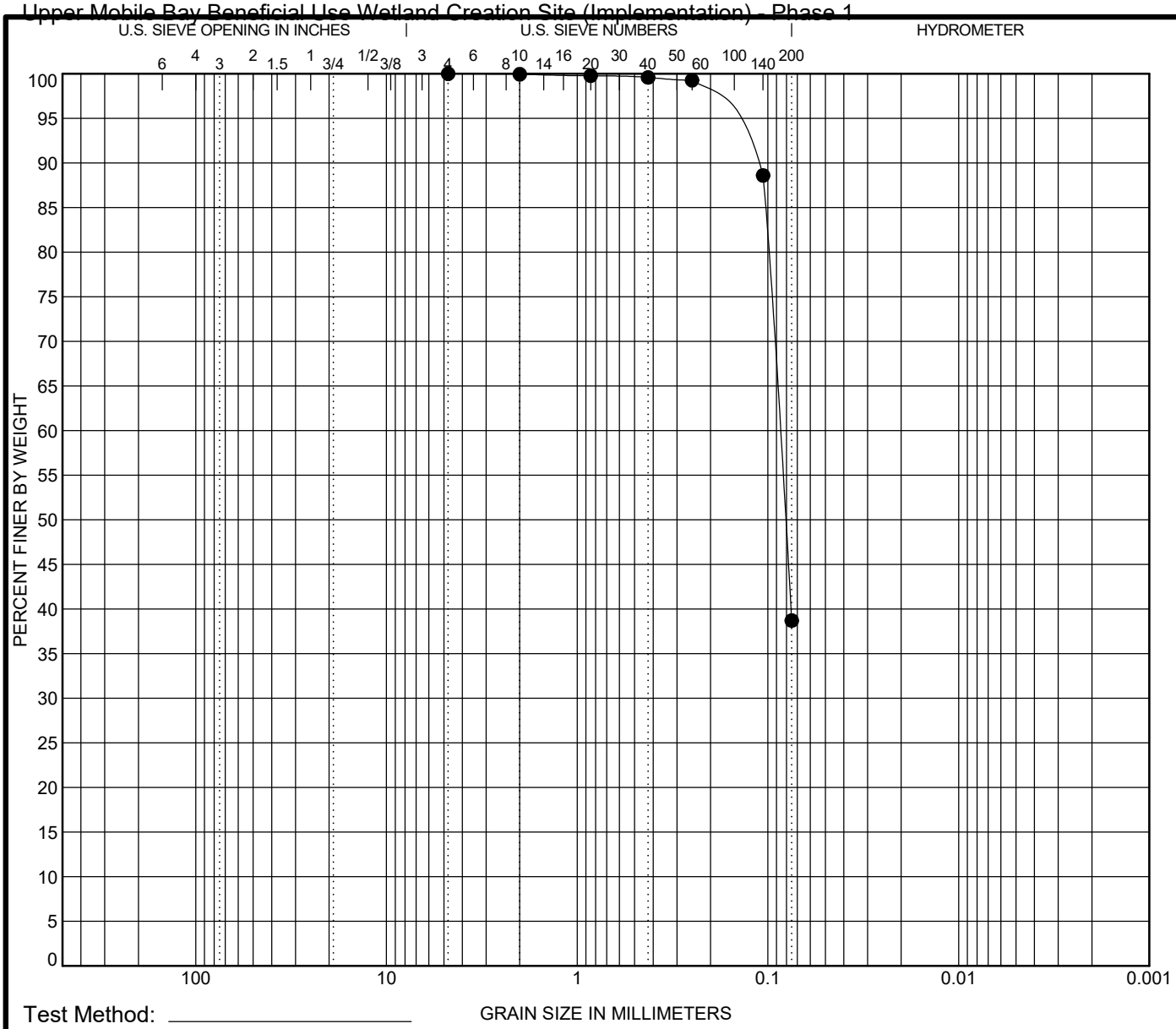
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-13**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-13	**8.0 ft.**	**4.75**	**0.087**			**0.0**	**61.3**	**38.7**	

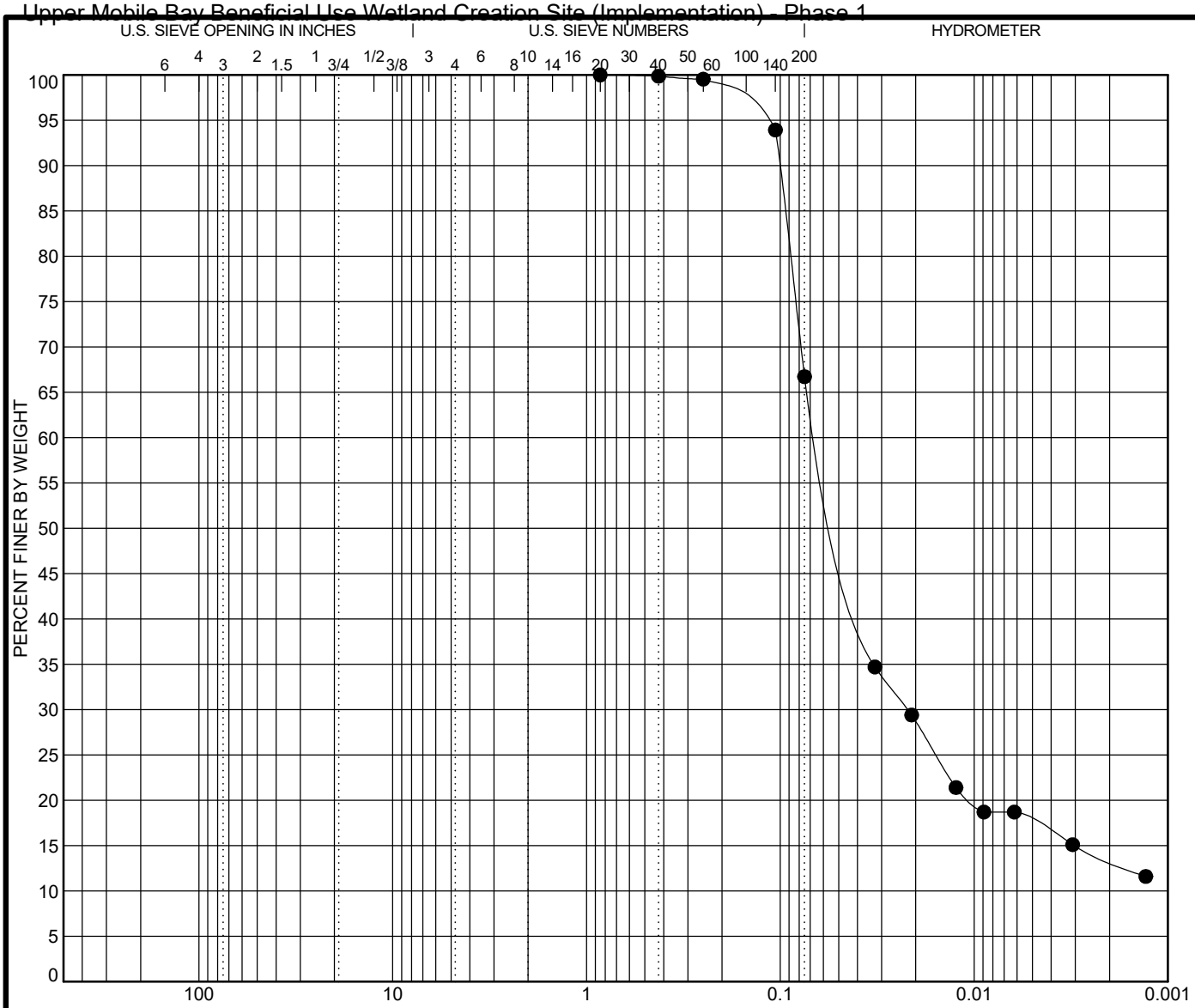
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-13**	**S-7;17.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-13	**17.5 ft.**	**0.85**	**0.063**	**0.022**		**0.0**	**33.3**	**53.4**	**13.3**

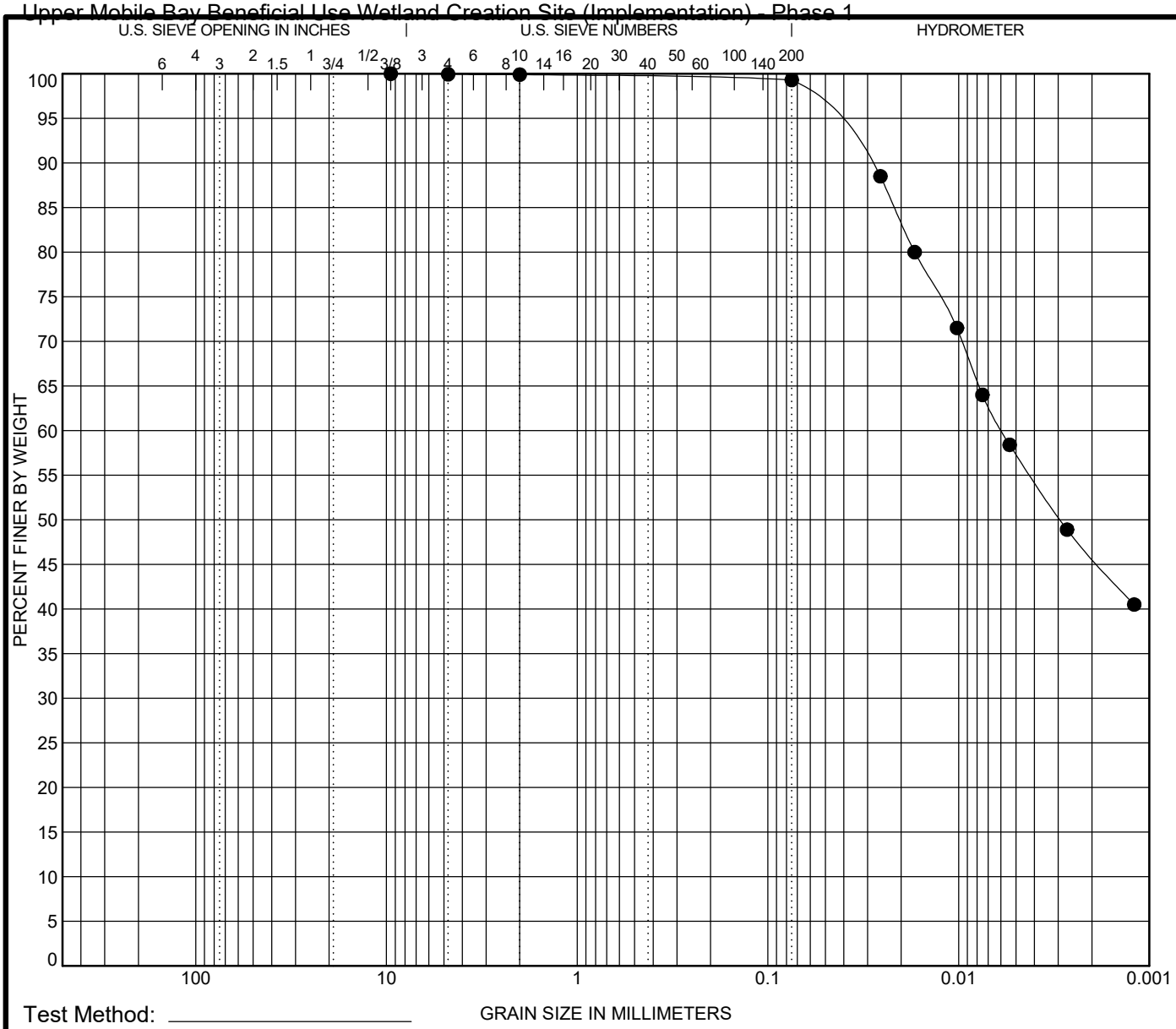
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-13**	**T-2;31.5 ft.**	**FAT CLAY (CH)**	**97**	**22**	**75**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-13	**31.5 ft.**	**9.5**	**0.006**			**0.1**	**0.6**	**53.5**	**45.8**

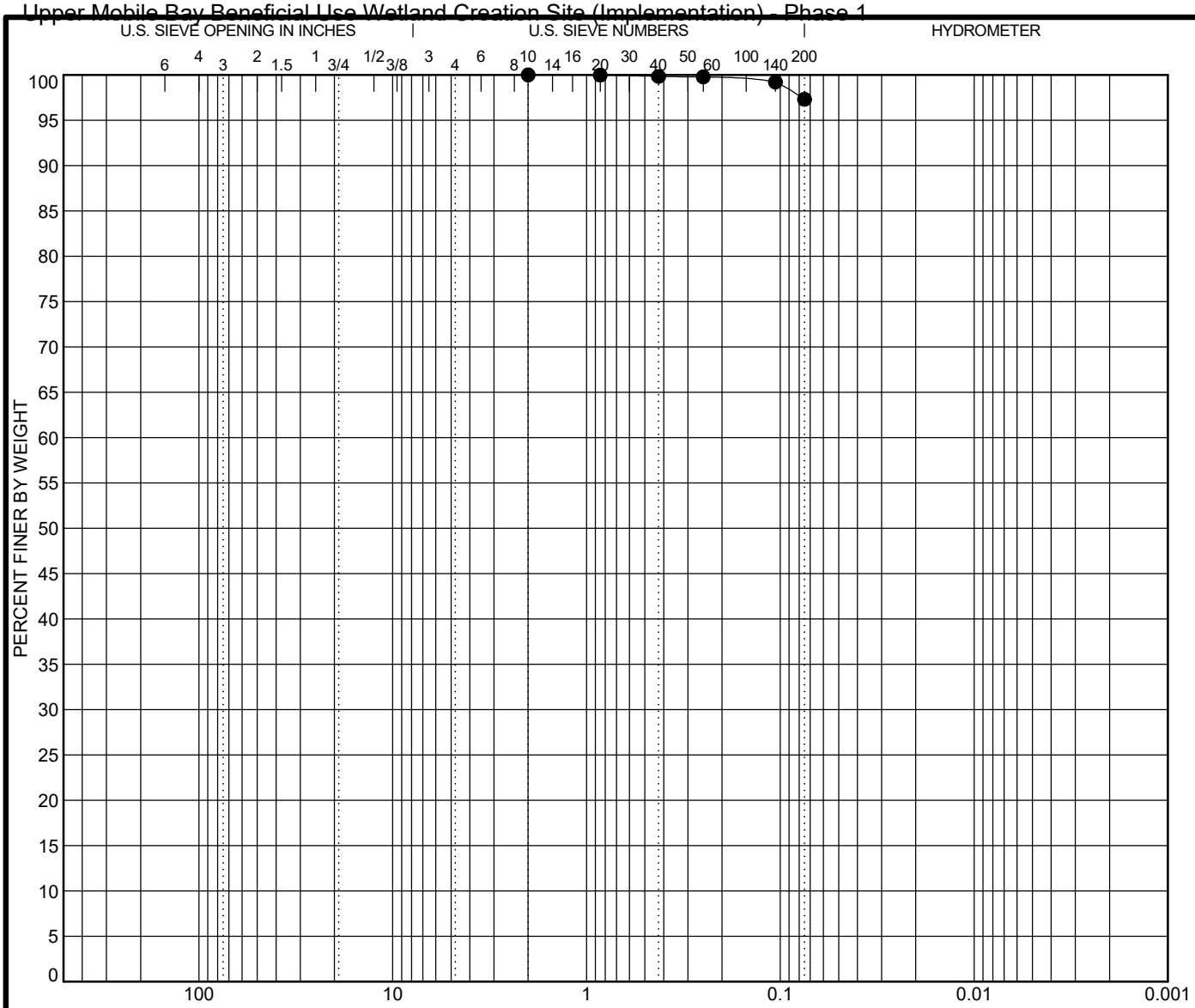
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-13**	**S-13;44.0 ft.**	**FAT CLAY (CH)**	**112**	**26**	**86**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-13	**44.0 ft.**	**2**				**0.0**	**2.7**	**97.3**	

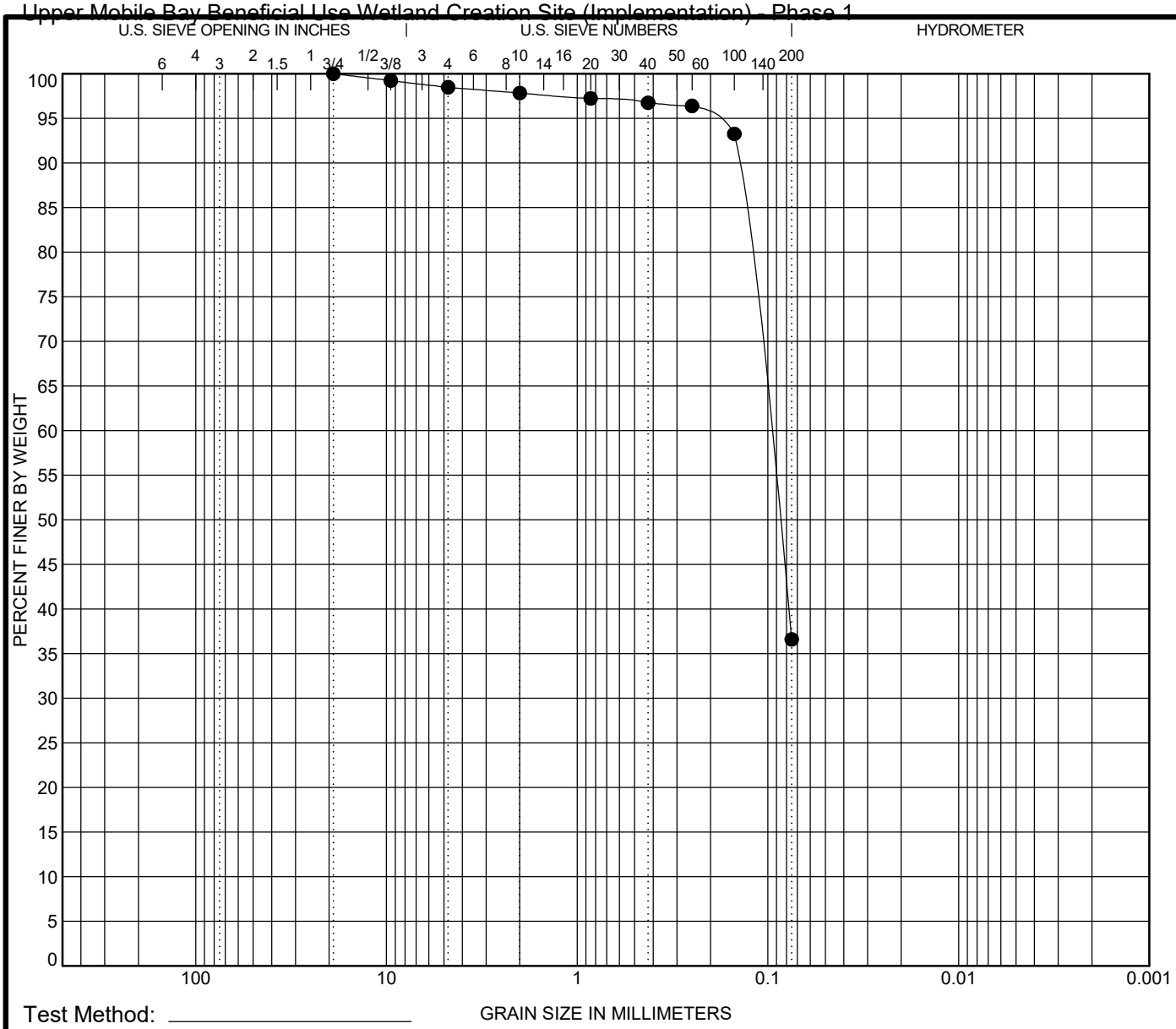
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-14**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-14	**3.0 ft.**	**19**	**0.1**			**1.5**	**61.9**	**36.6**	

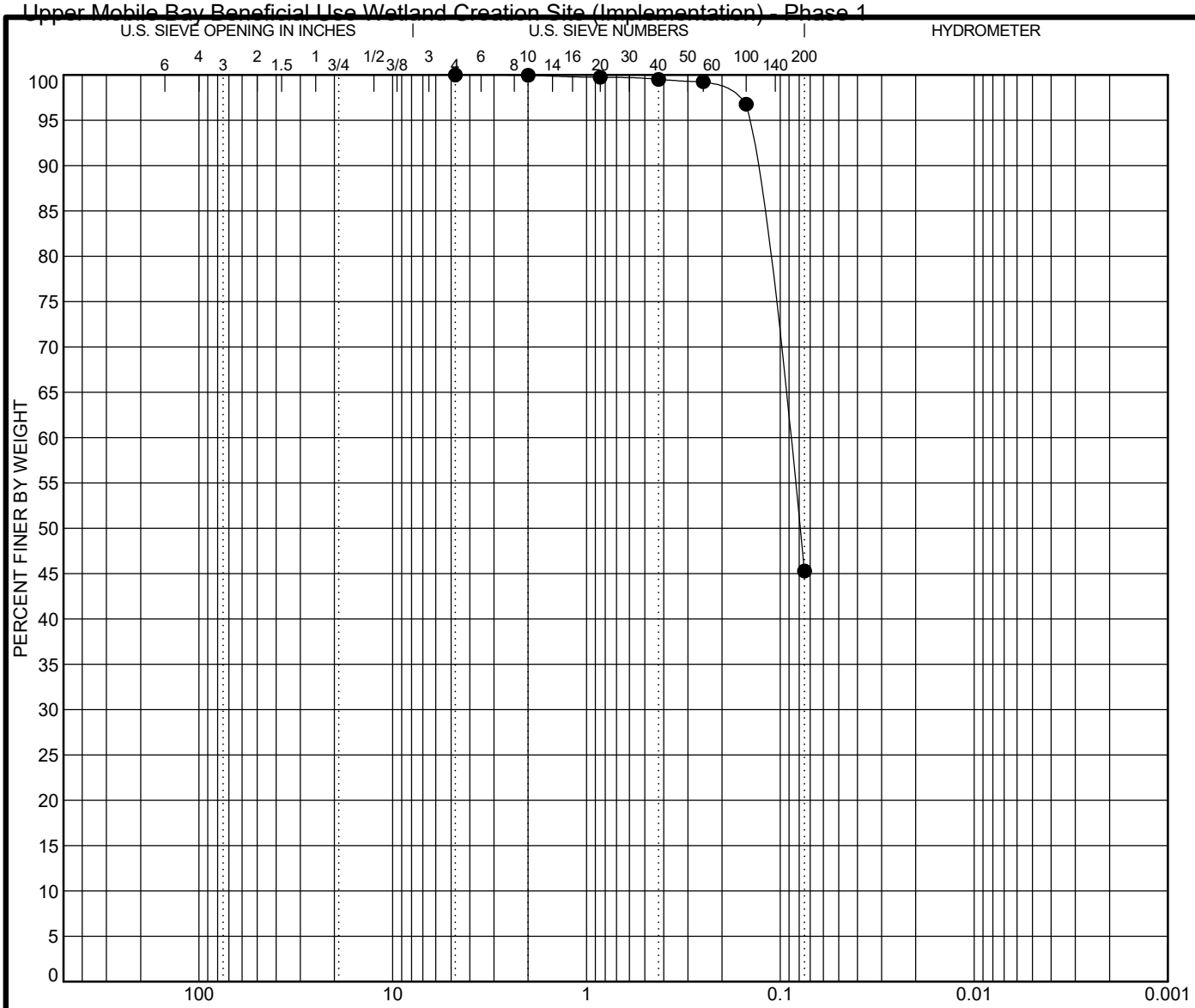
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-14**	**S-4;8.0 ft.**	**SILTY SAND (SM)**	**29**	**26**	**3**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-14	**8.0 ft.**	**4.75**	**0.091**			**0.0**	**54.7**	**45.3**	

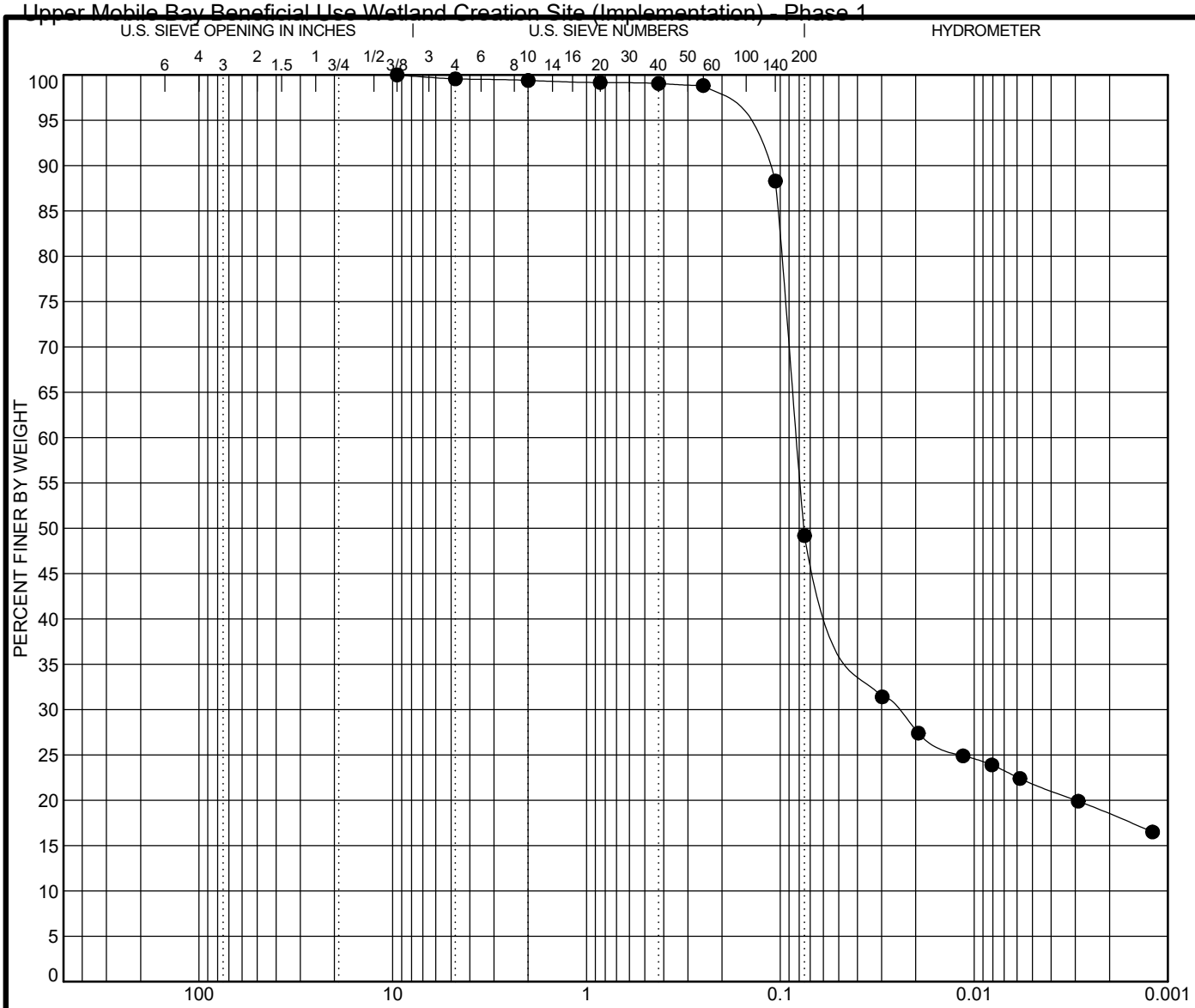
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-14**	**T-1;10.0 ft.**	**CLAYEY SAND (SC)**	**32**	**23**	**9**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-14	**10.0 ft.**	**9.5**	**0.083**	**0.026**		**0.4**	**50.4**	**30.7**	**18.5**

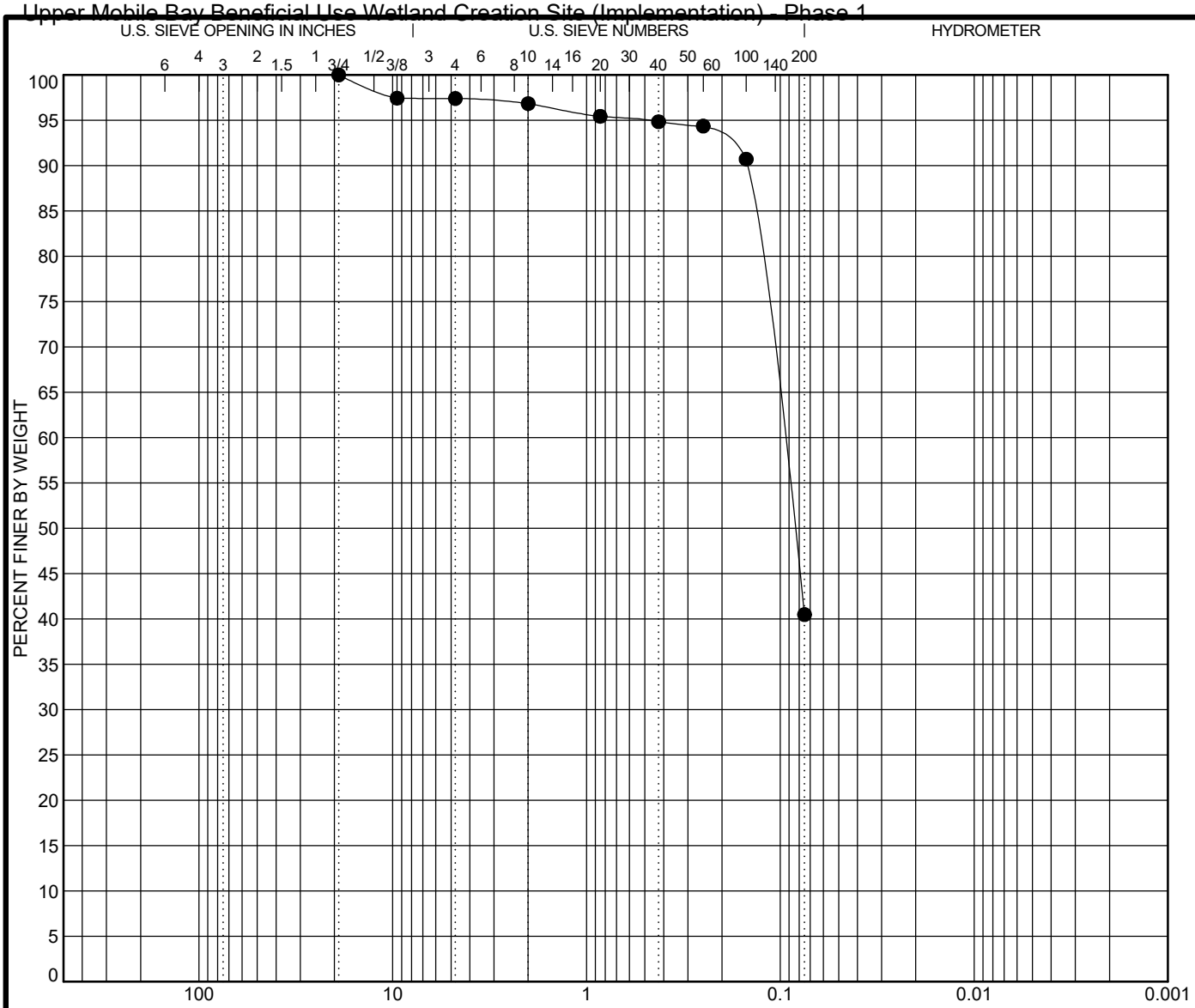
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-14**	**S-6;15.0 ft.**	**SILTY SAND (SM)**	**34**	**28**	**6**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-14	**15.0 ft.**	**19**	**0.098**			**2.6**	**56.9**	**40.5**	

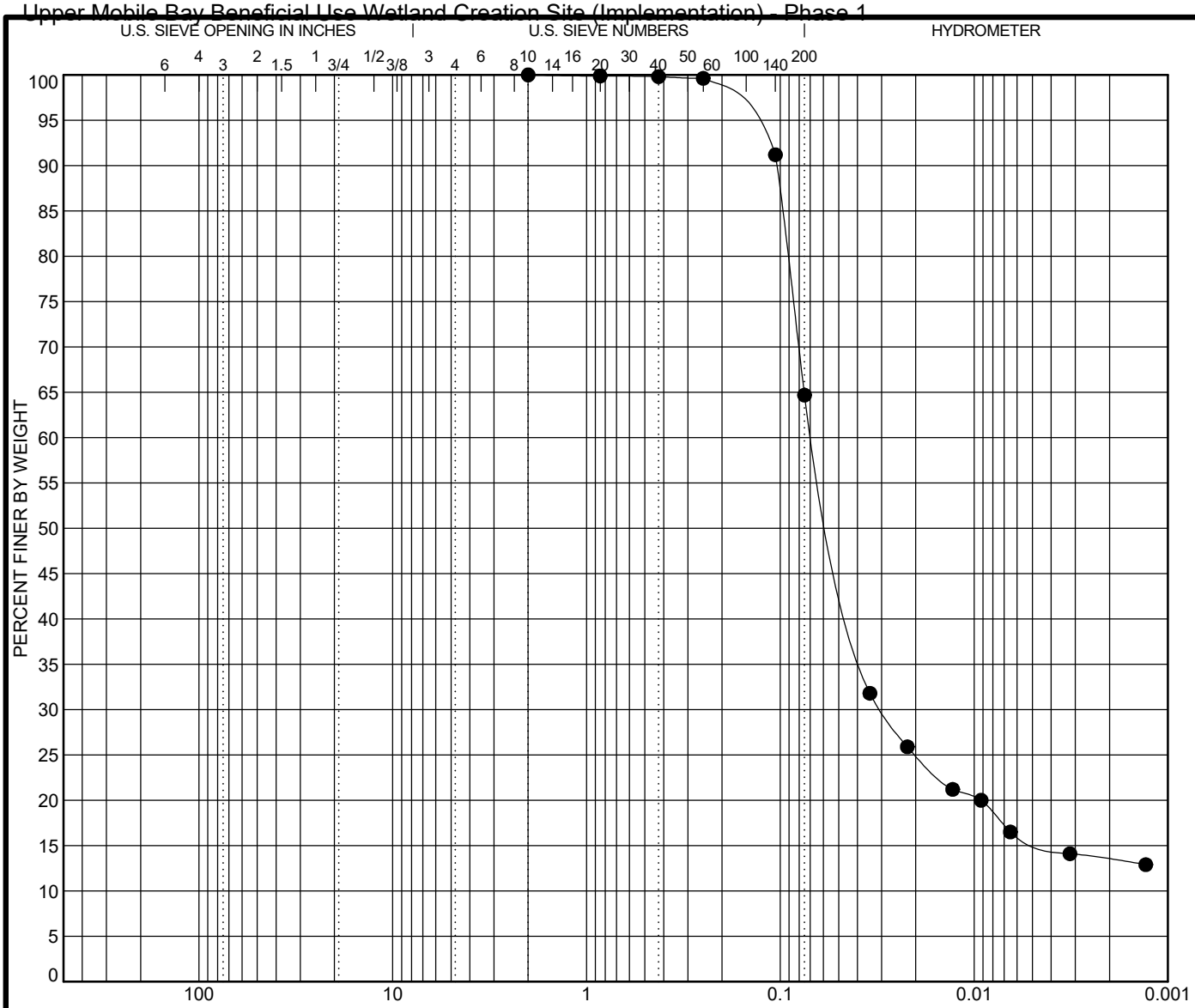
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **B-15 S-2;3.0 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-15 3.0 ft.	**2**	**0.067**	**0.03**		**0.0**	**35.3**	**51.2**	**13.5**

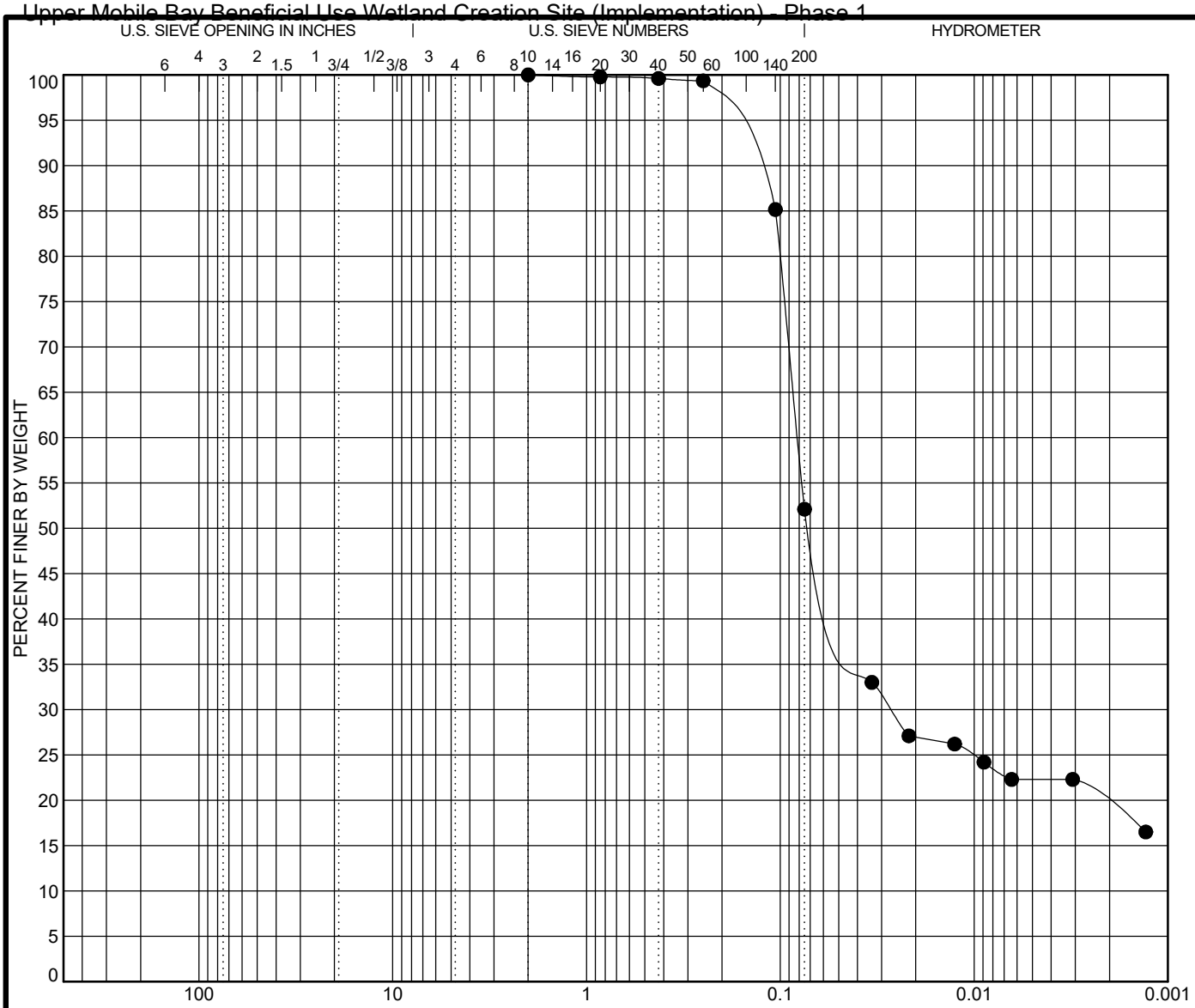
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-15**	**S-4;8.0 ft.**	**SANDY SILT (ML)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-15	**8.0 ft.**	**2**	**0.081**	**0.027**		**0.0**	**47.9**	**32.7**	**19.4**

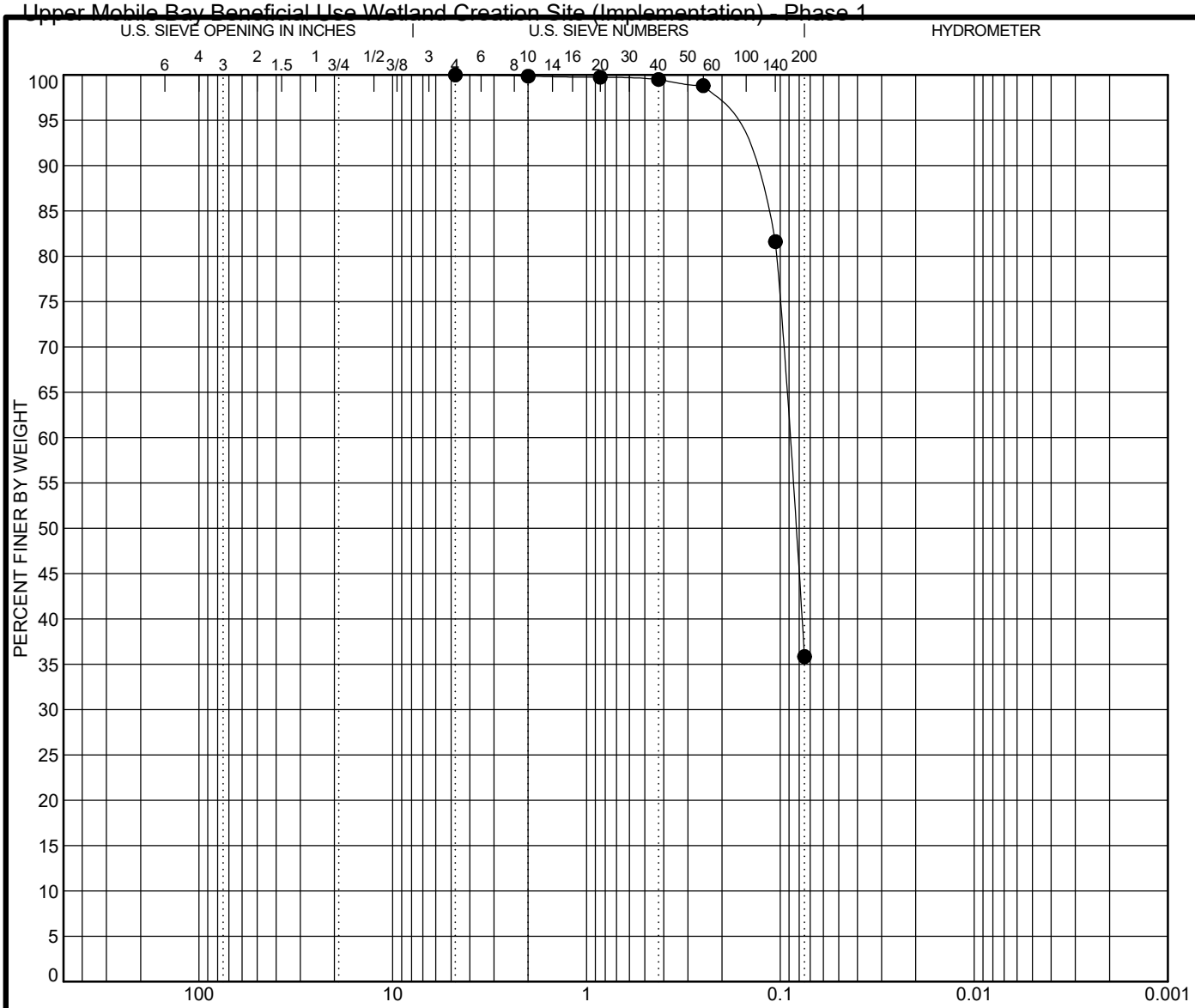
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-15**	**S-7;15.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-15	**15.5 ft.**	**4.75**	**0.09**			**0.0**	**64.2**	**35.8**	

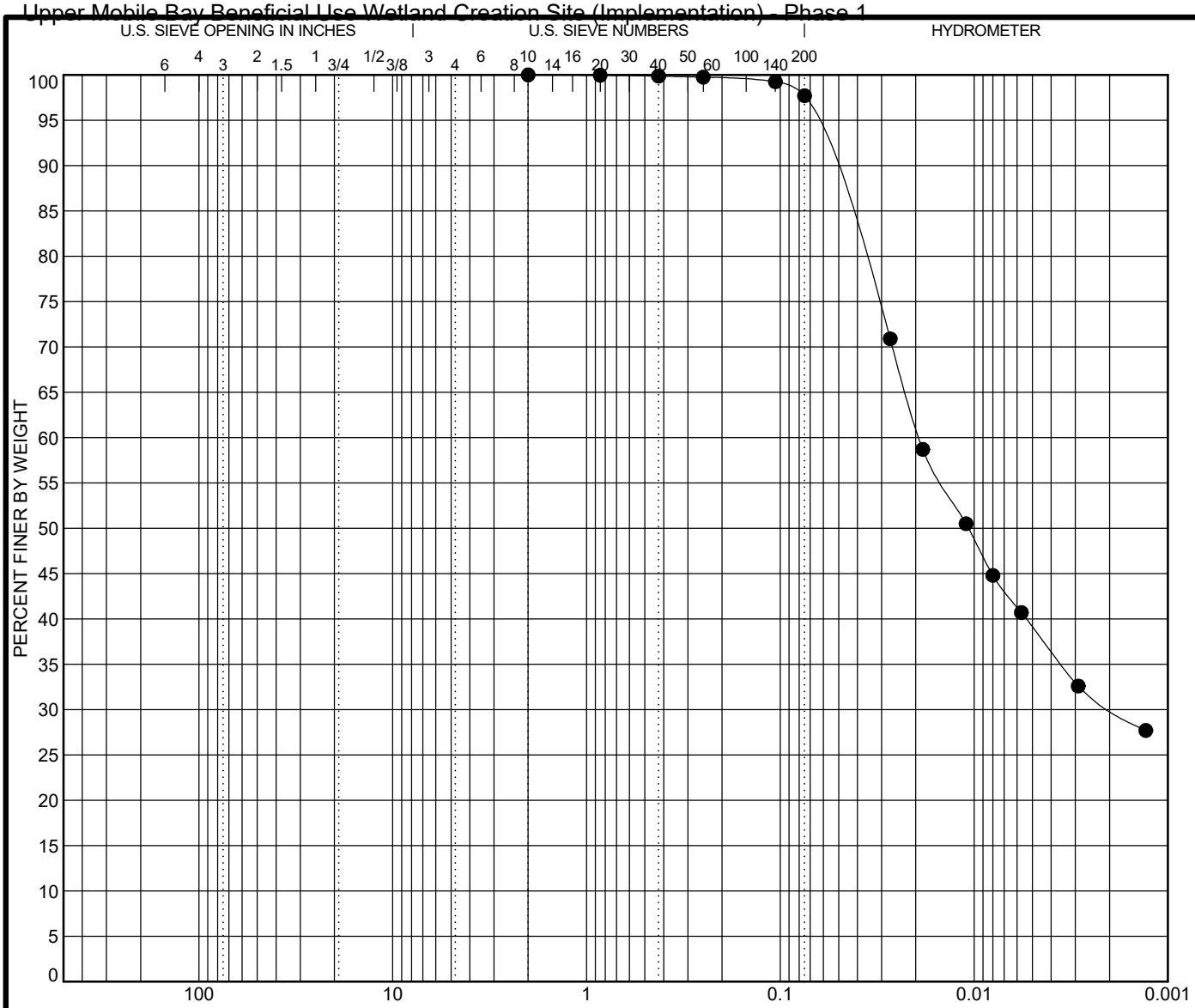
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-15**	**T-1;26.5 ft.**	**FAT CLAY (CH)**	**73**	**19**	**54**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-15	**26.5 ft.**	**2**	**0.019**	**0.002**		**0.0**	**2.3**	**67.4**	**30.3**

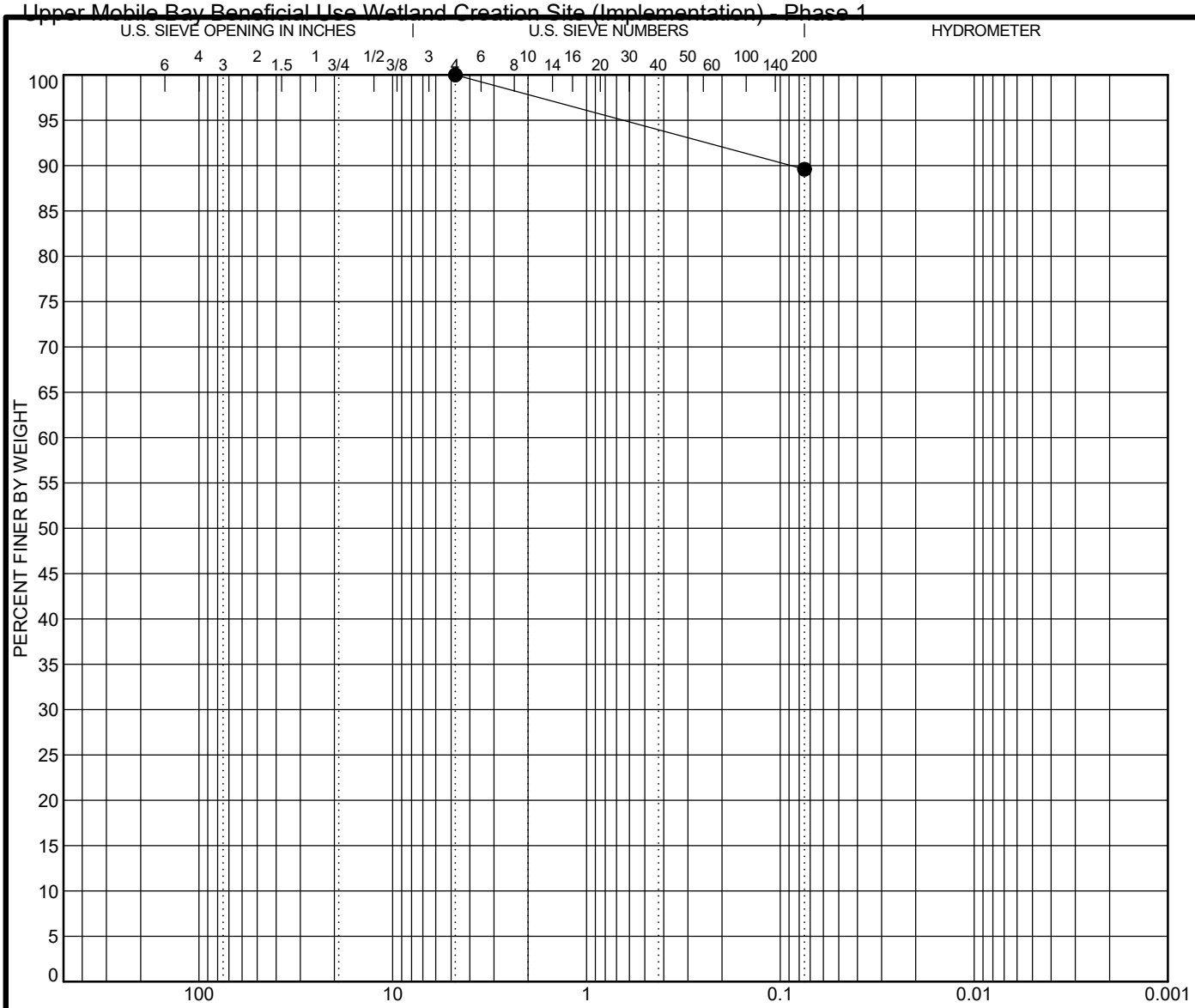
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-15**	**S-14;49.0 ft.**	**FAT CLAY (CH)**	**80**	**25**	**55**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-15	**49.0 ft.**	**4.75**				**0.0**	**10.4**	**89.6**	

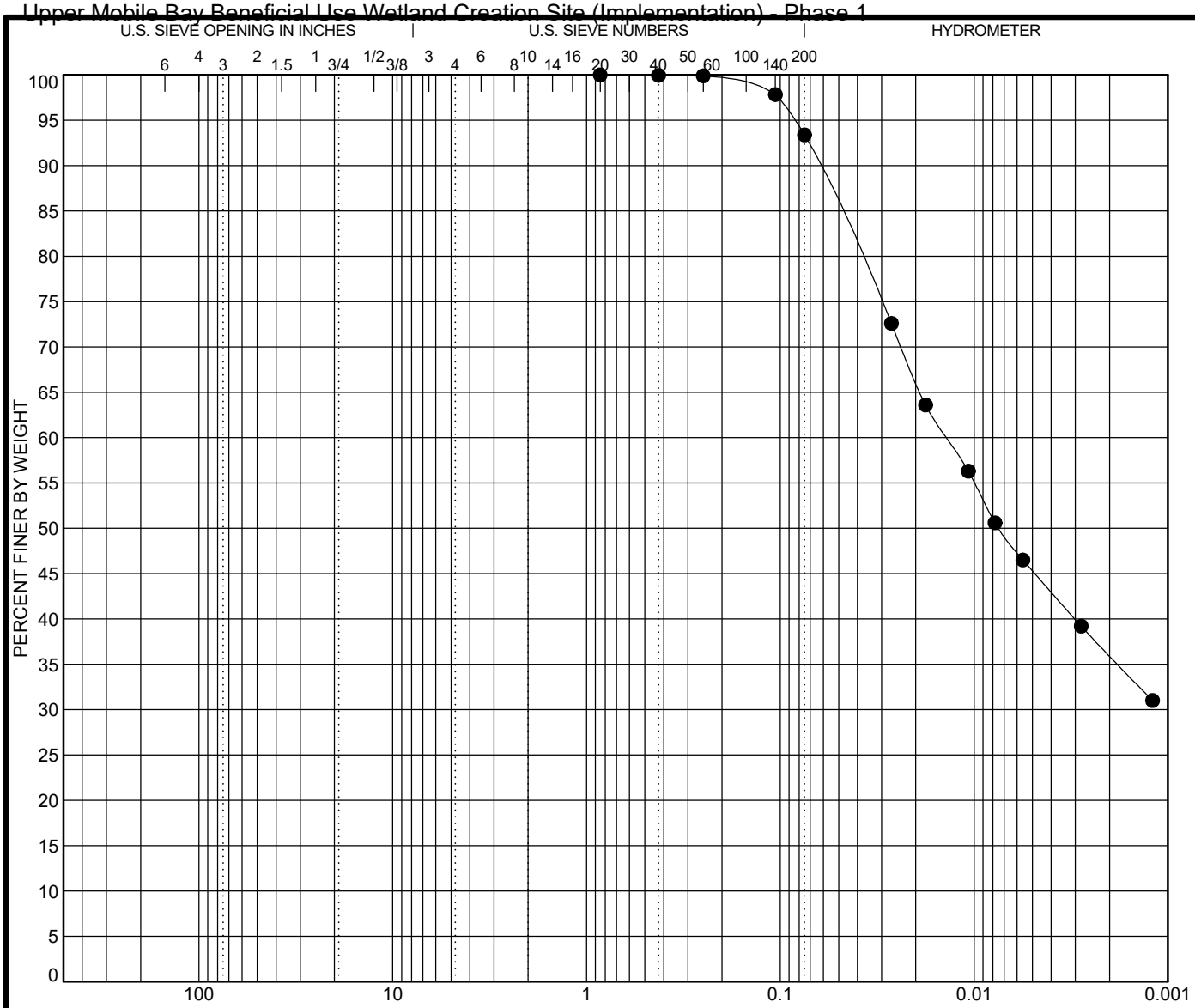
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-15**	**T-4;56.5 ft.**	**LEAN CLAY (CL)**	**42**	**20**	**22**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-15	**56.5 ft.**	**0.85**	**0.014**			**0.0**	**6.6**	**57.4**	**35.9**

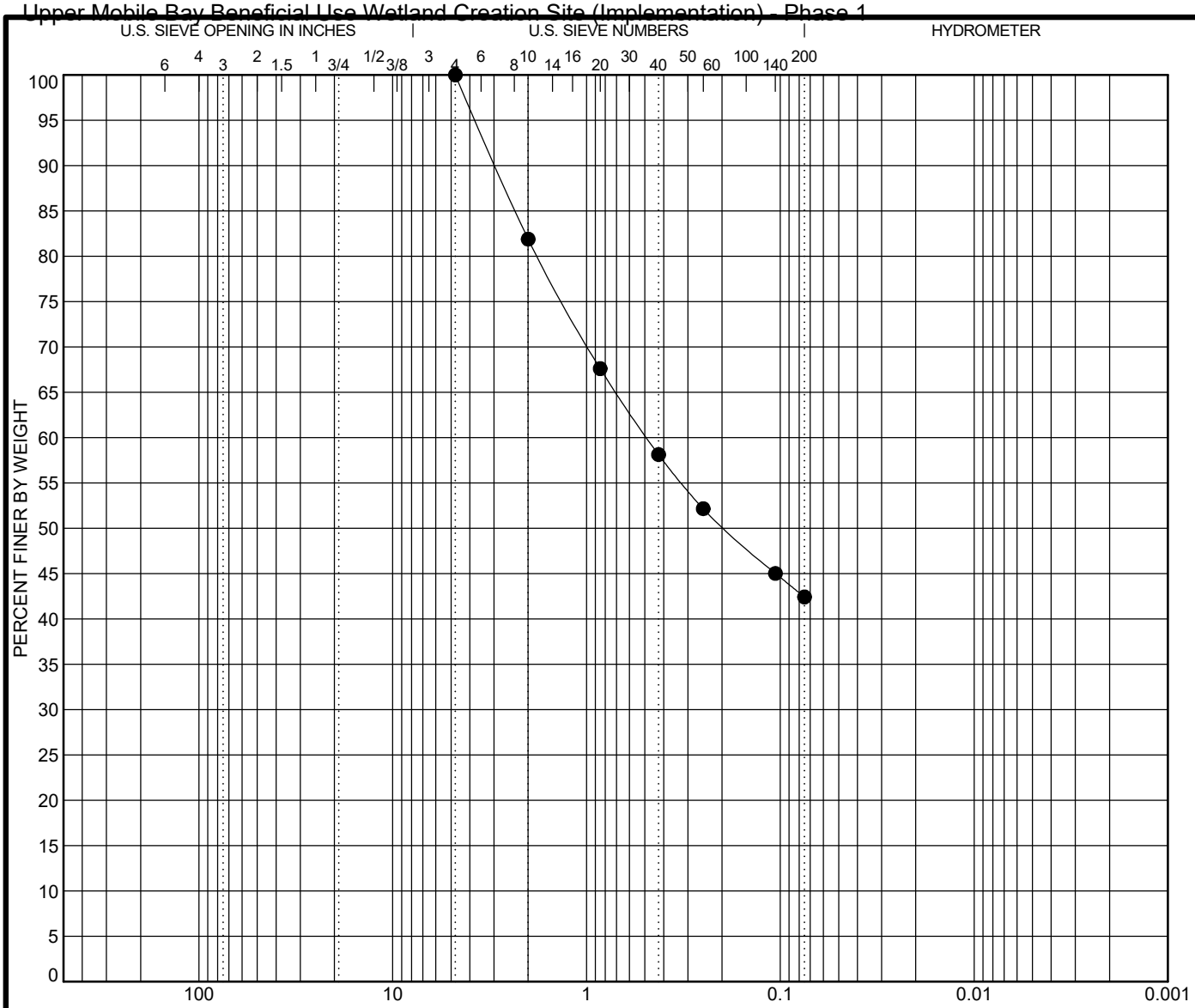
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-15**	**S-18;69.0 ft.**	**CLAYEY SAND (SC)**	**201**	**53**	**148**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-15	**69.0 ft.**	**4.75**	**0.487**			**0.0**	**57.6**	**42.4**	

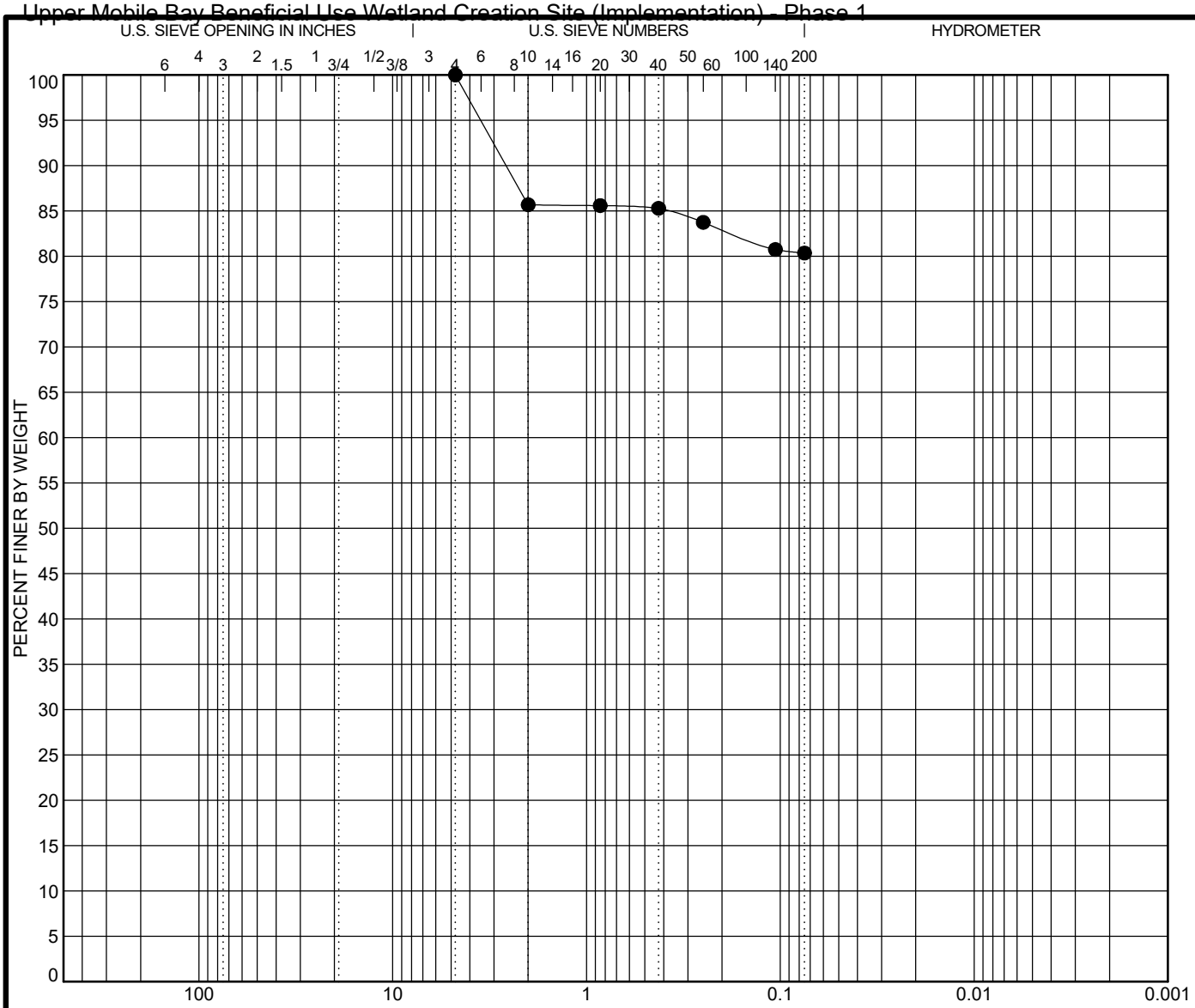
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-15**	**S-20;79.0 ft.**	**FAT CLAY with SAND (CH)**	**87**	**22**	**65**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-15	**79.0 ft.**	**4.75**				**0.0**	**19.6**	**80.4**	

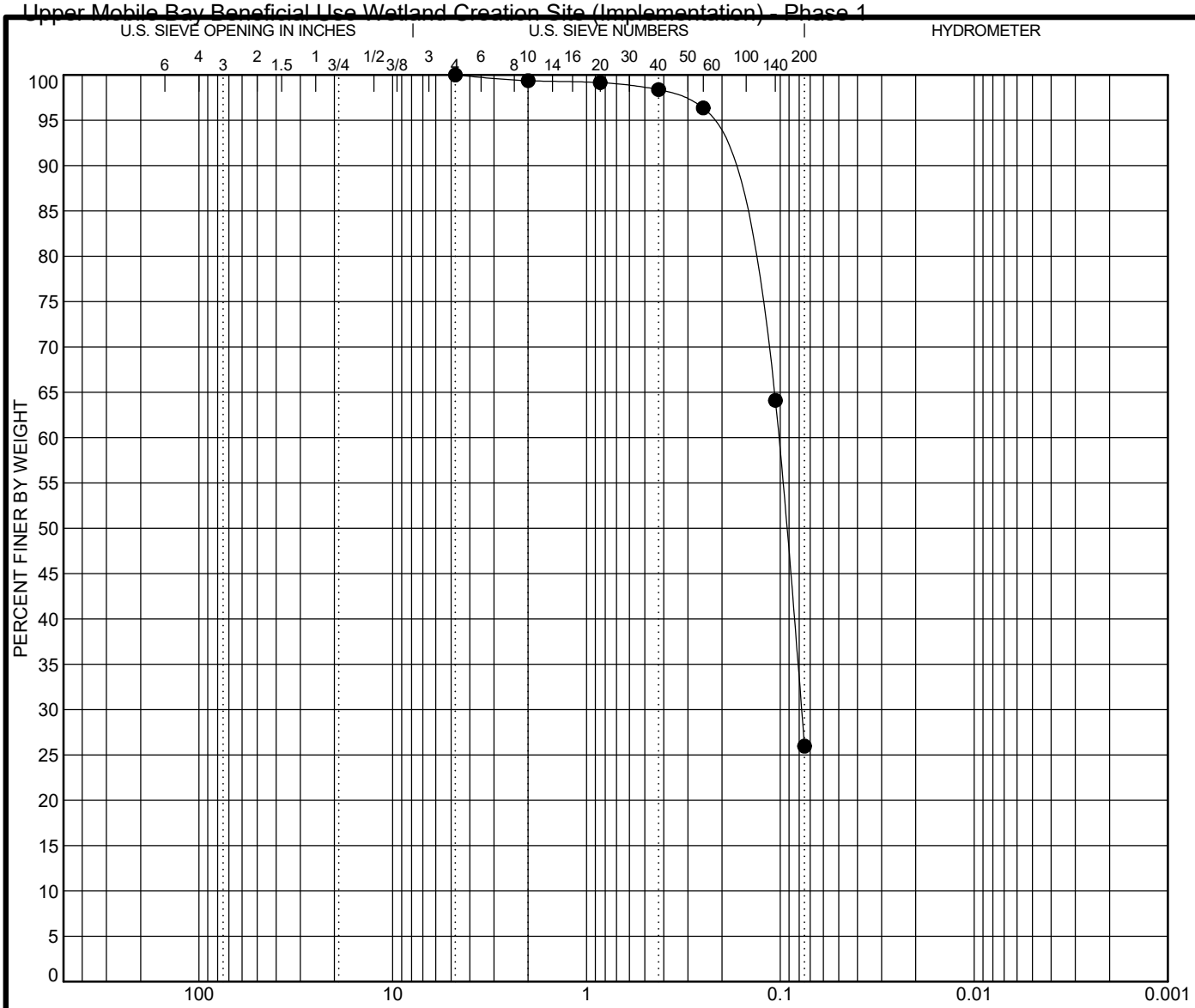
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-16**	**S-3;5.5 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-16	**5.5 ft.**	**4.75**	**0.102**	**0.078**		**0.0**	**74.0**	**26.0**	

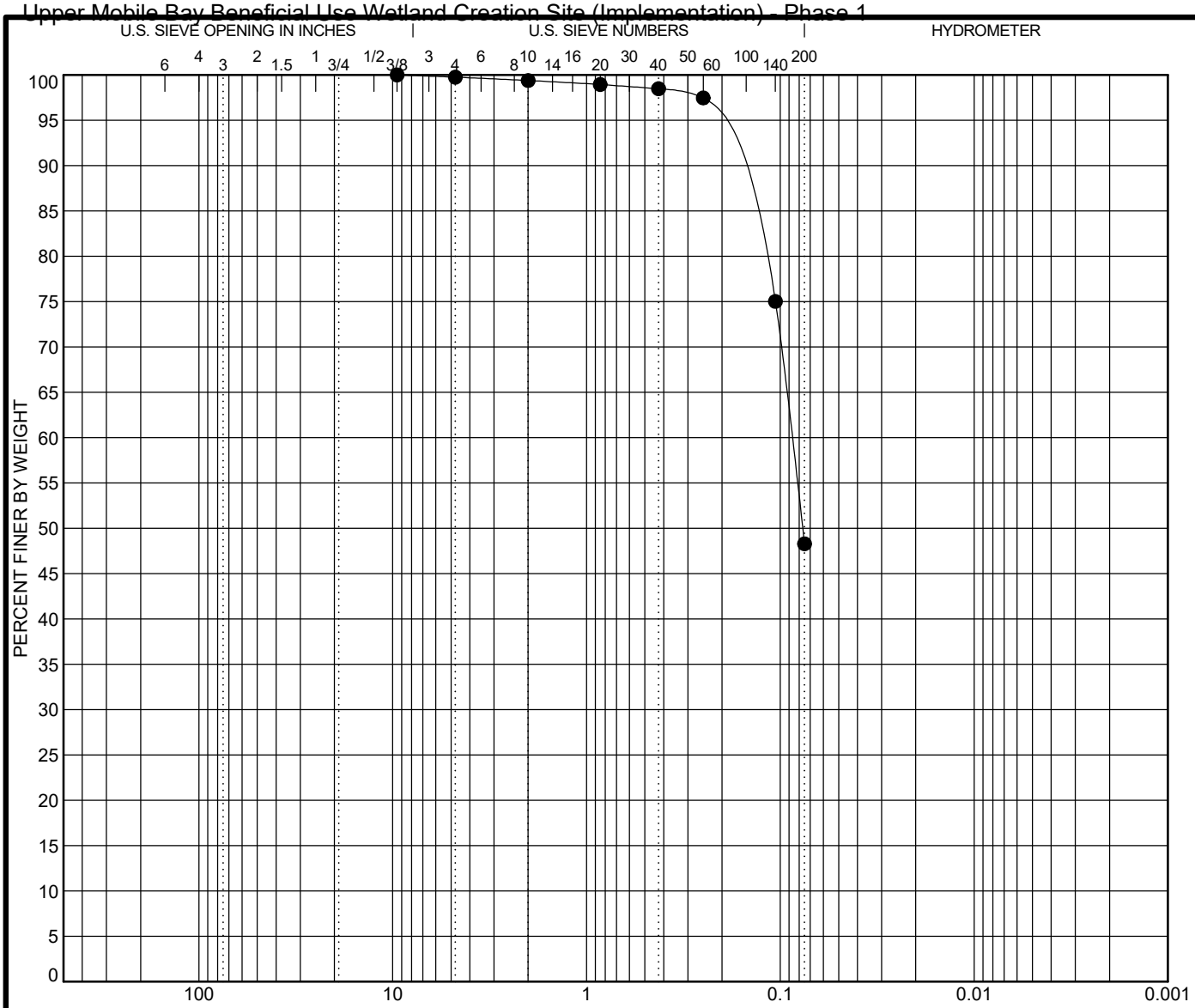
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE_21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-16**	**S-5;10.5 ft.**	**SILTY SAND (SM)**	**31**	**23**	**8**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-16	**10.5 ft.**	**9.5**	**0.087**			**0.2**	**51.5**	**48.3**	

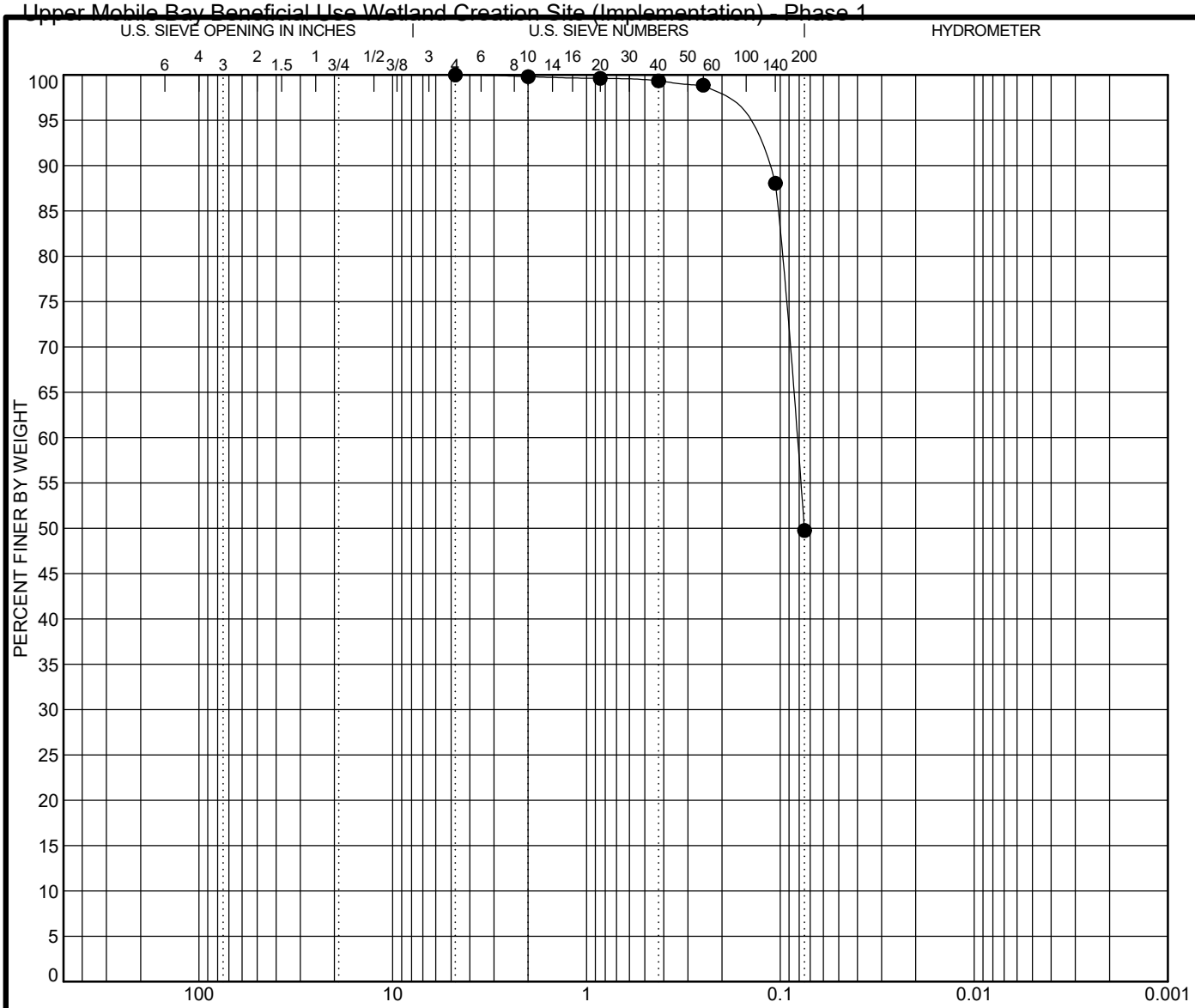
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-16**	**S-7;15.5 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-16	**15.5 ft.**	**4.75**	**0.082**			**0.0**	**50.2**	**49.8**	

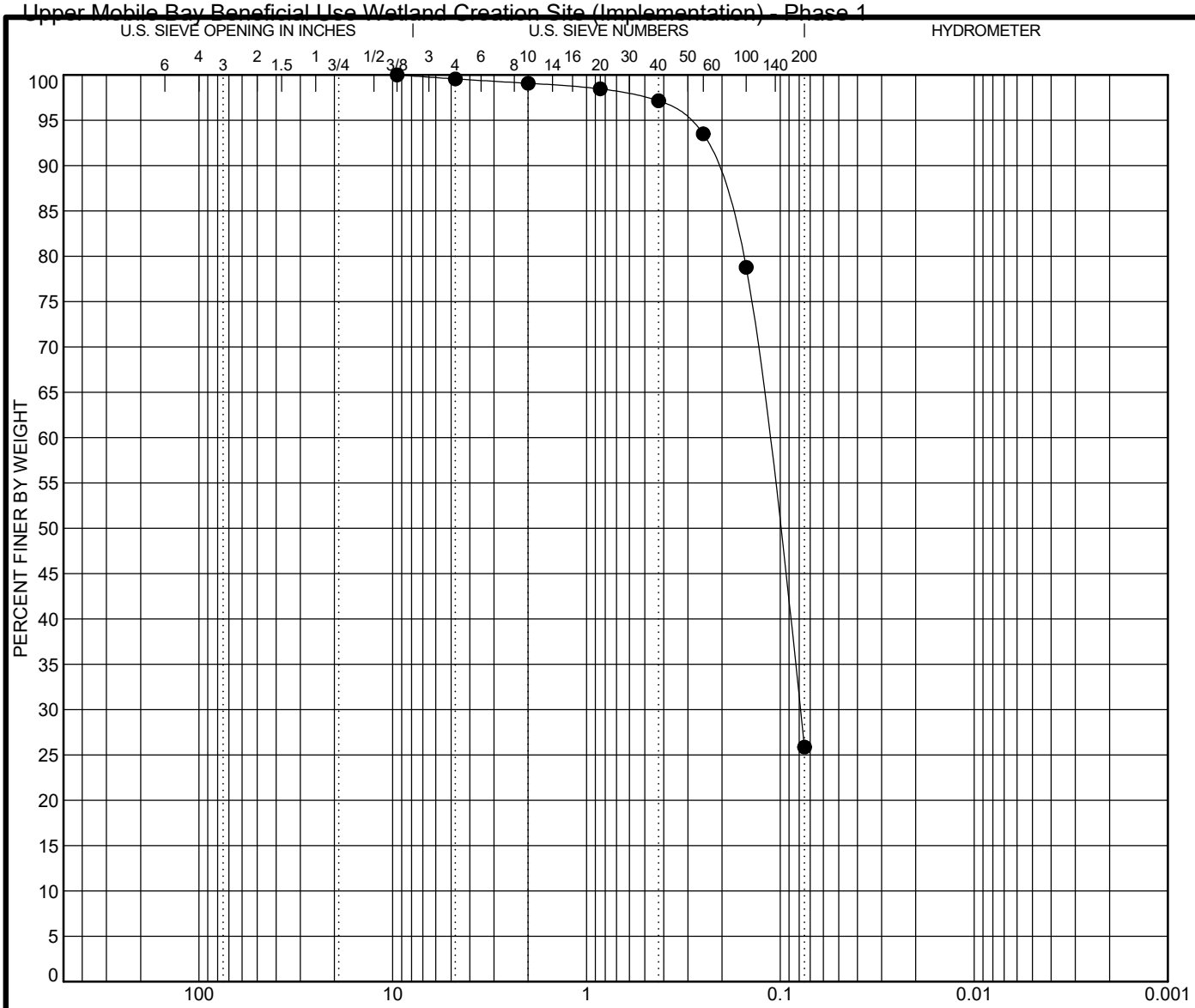
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-17**	**S-1;0.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-17	**0.5 ft.**	**9.5**	**0.117**	**0.079**		**0.4**	**73.7**	**25.9**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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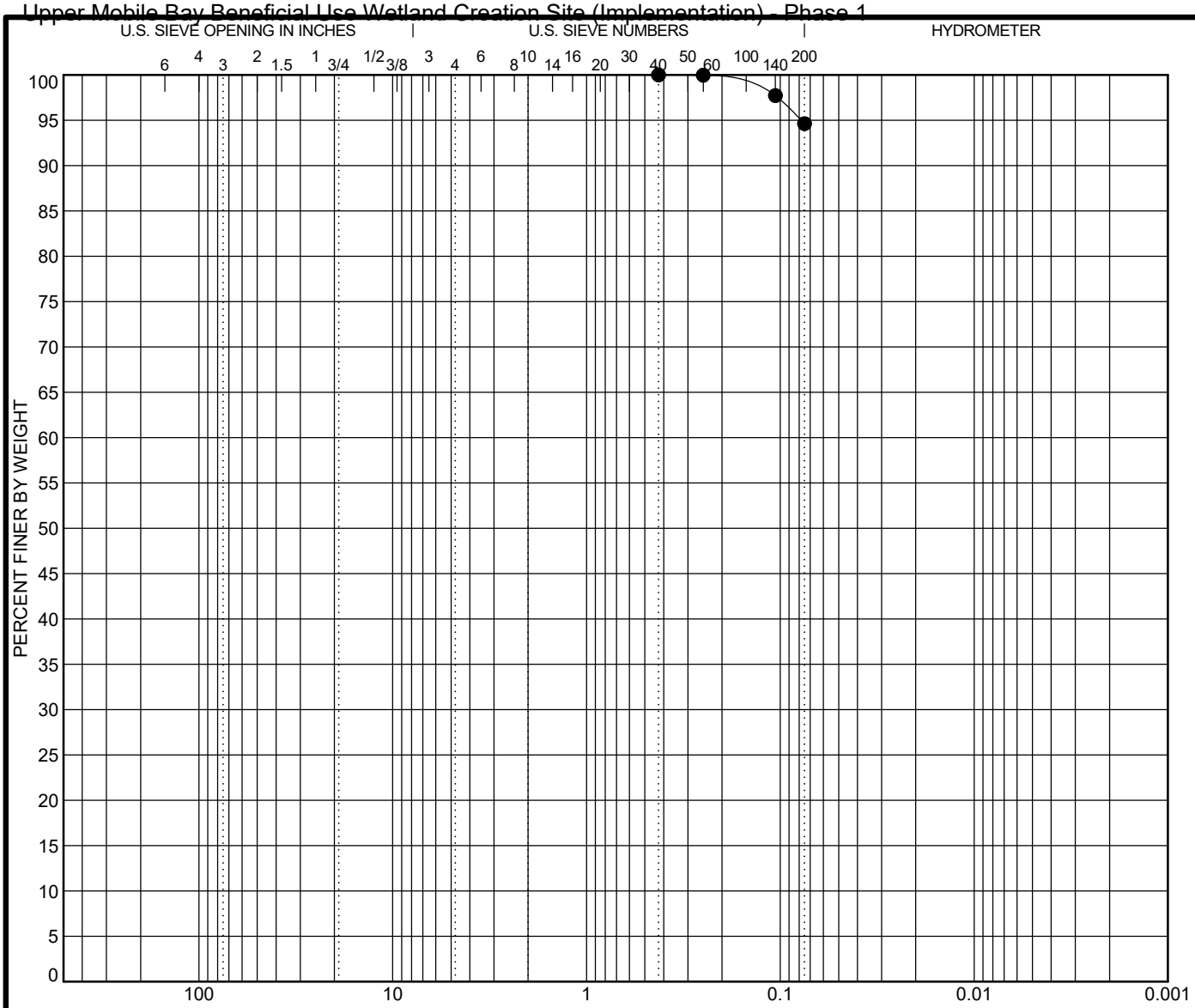
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-17**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-17	**3.0 ft.**	**0.425**				**0.0**	**5.4**	**94.6**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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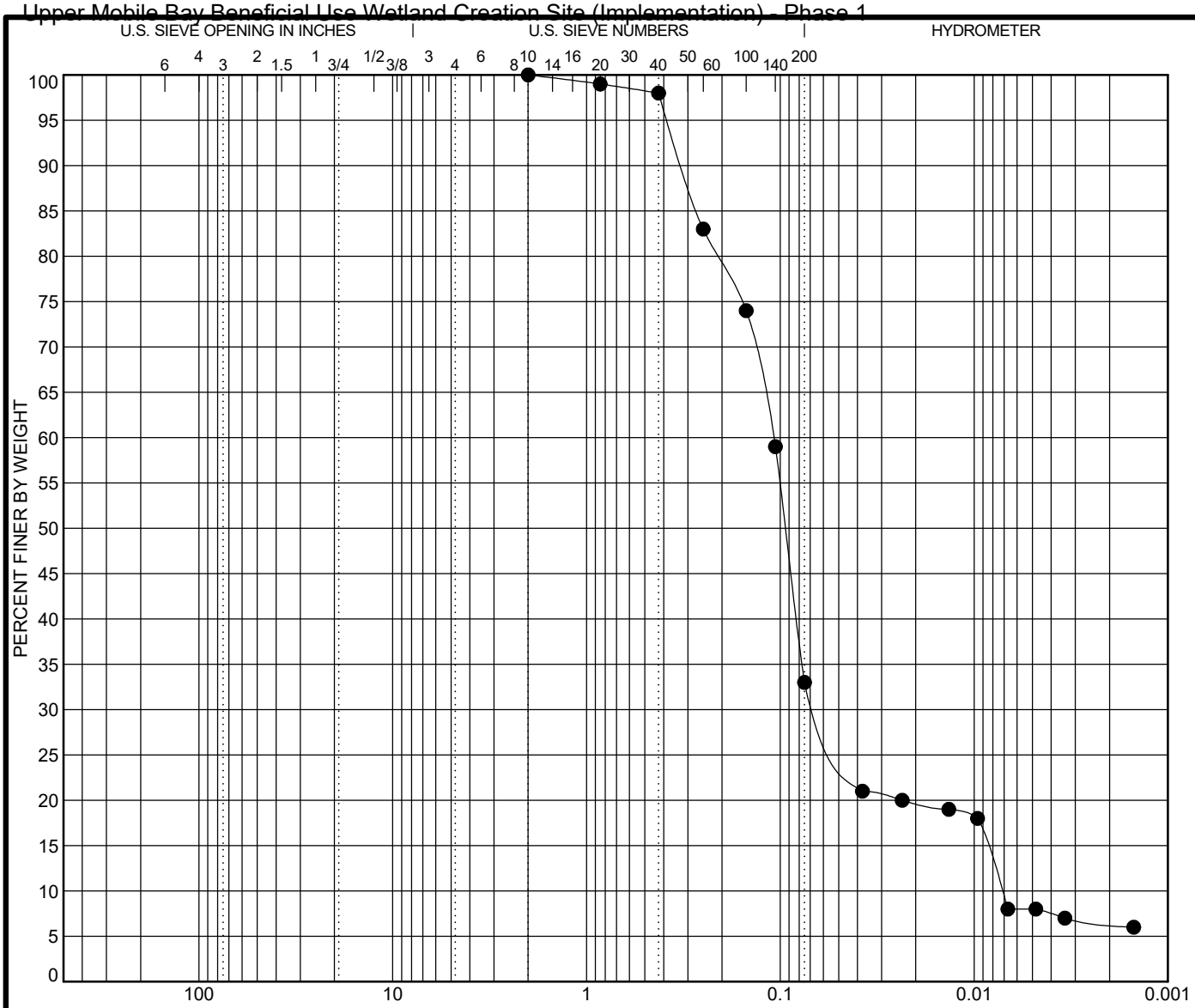
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-17**	**T-4;5.0 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**	**5.11**	**15.07**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-17	**5.0 ft.**	**2**	**0.108**	**0.063**	**0.007**	**0.0**	**67.0**	**26.6**	**6.4**

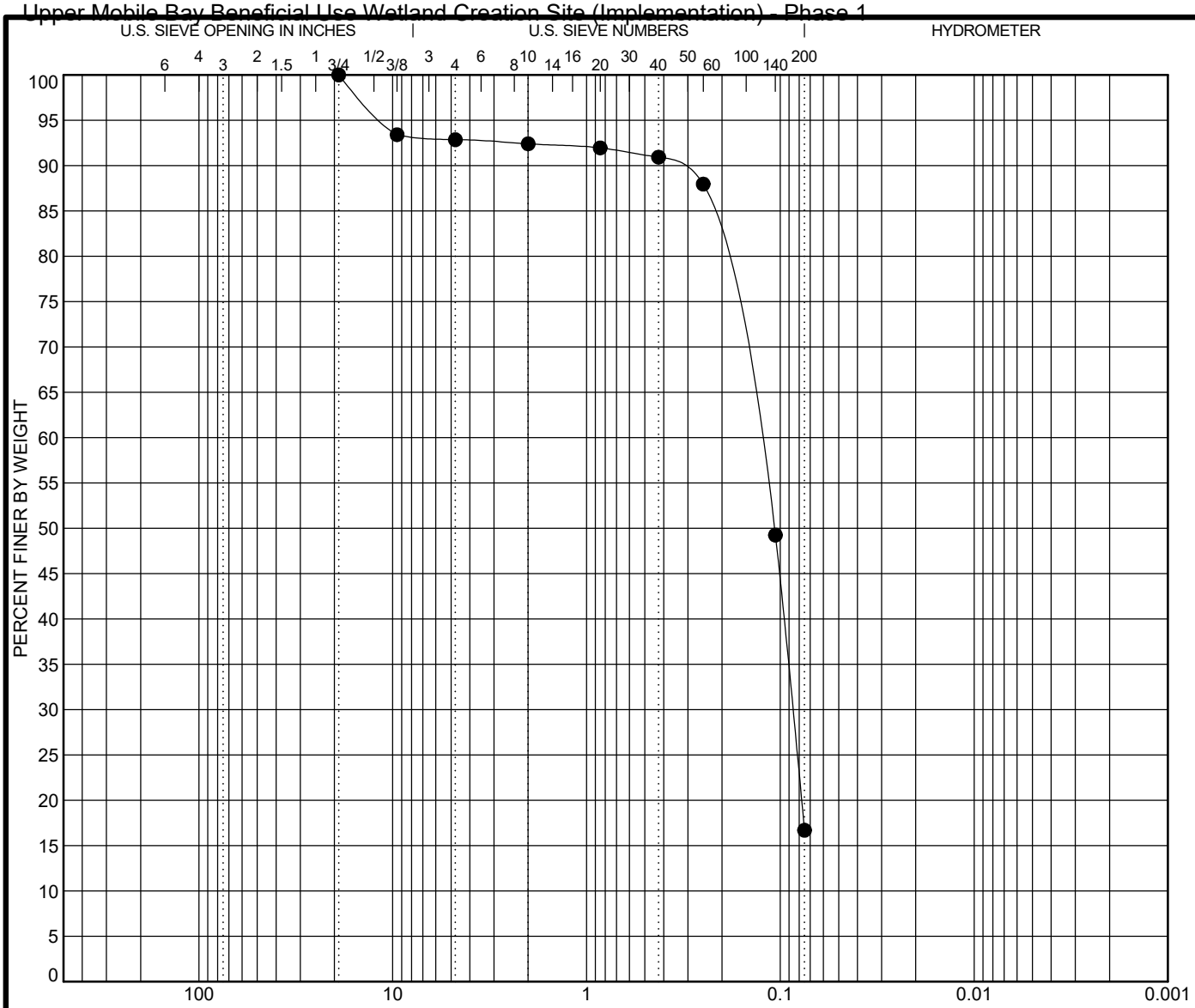
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-17**	**S-5;10.5 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-17	**10.5 ft.**	**19**	**0.135**	**0.086**		**7.1**	**76.2**	**16.7**	

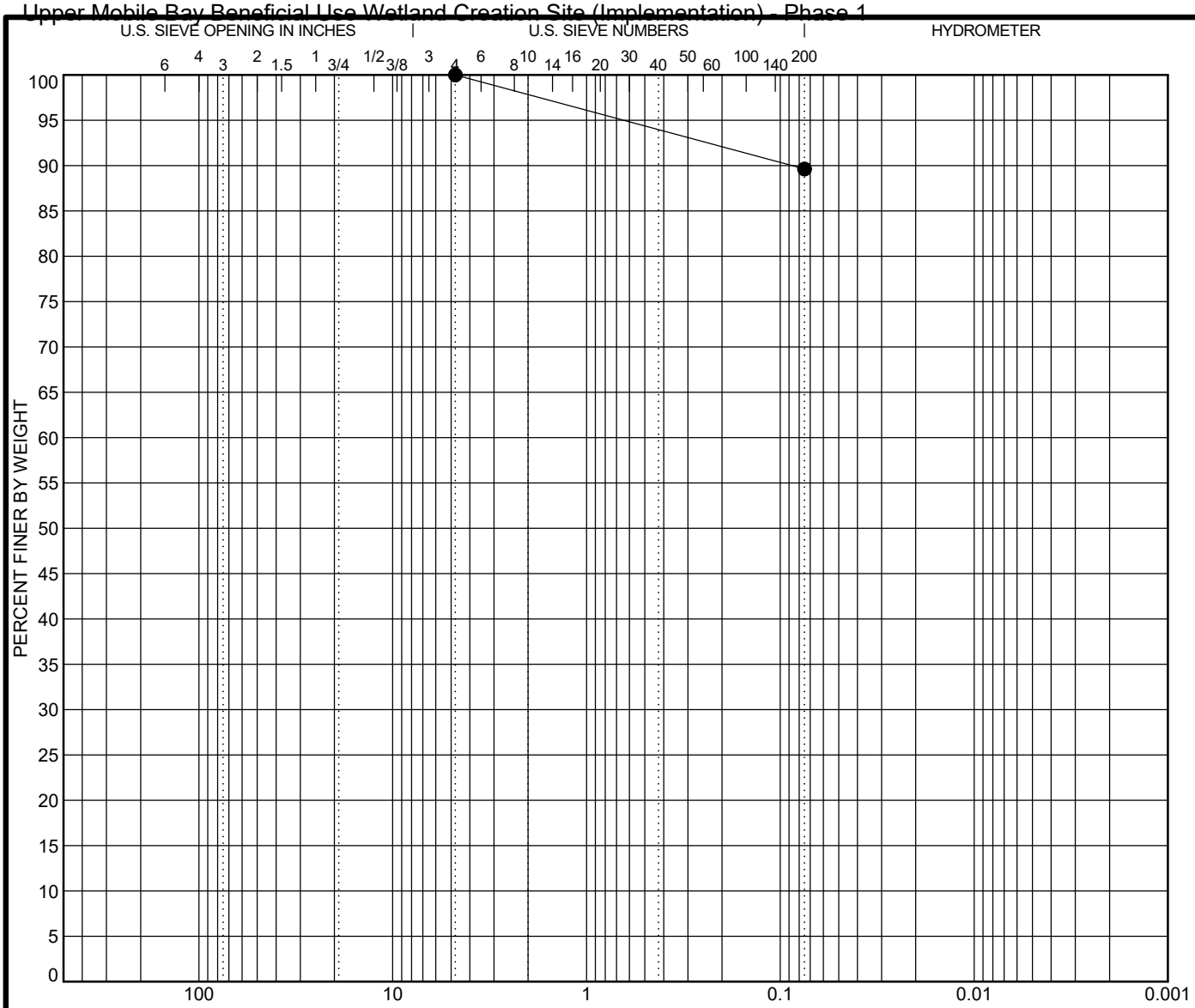
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-17**	**S-14;49.0 ft.**	**FAT CLAY (CH)**	**65**	**19**	**46**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-17	**49.0 ft.**	**4.75**				**0.0**	**10.4**	**89.6**	

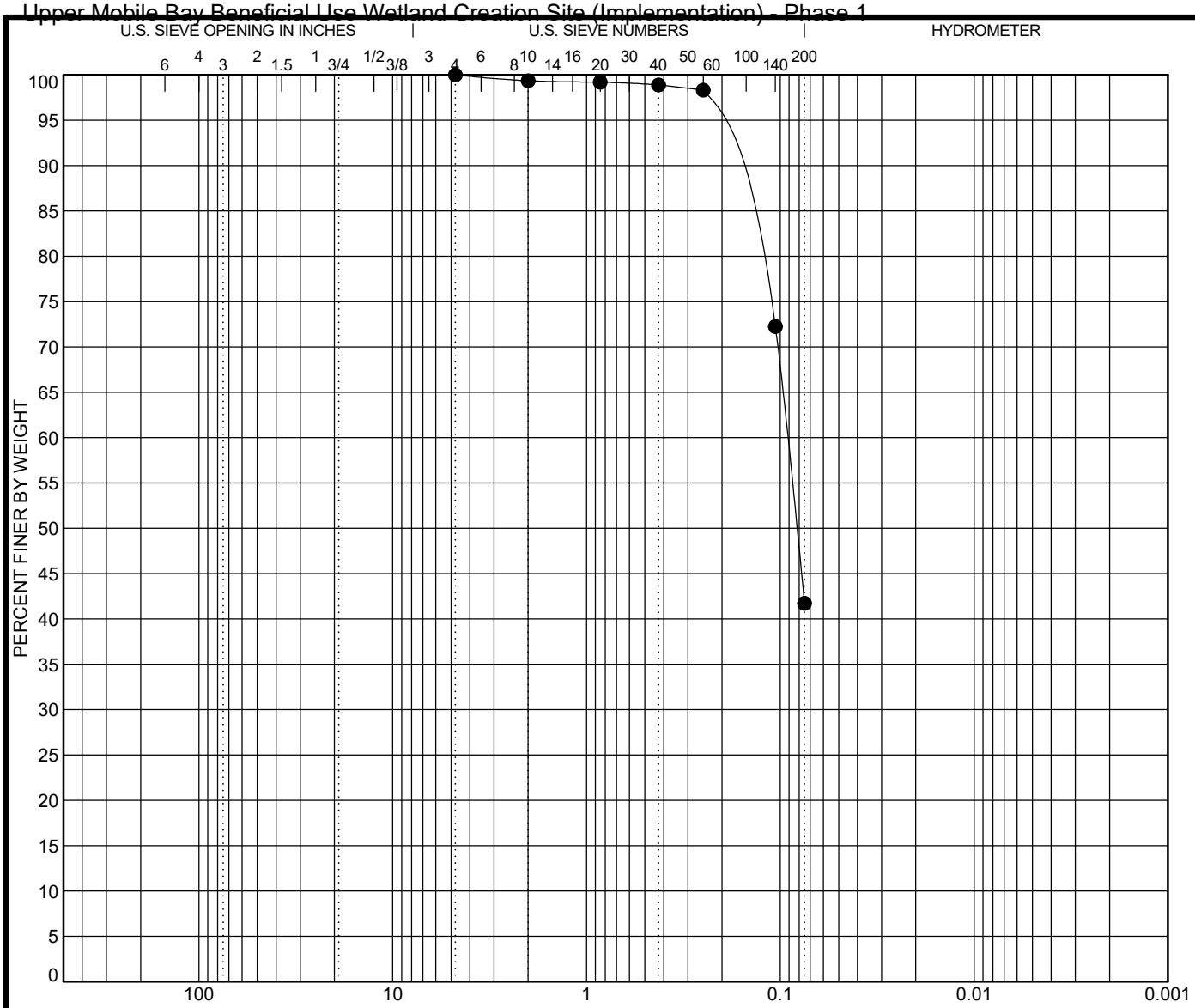
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-19**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-19	**3.0 ft.**	**4.75**	**0.092**			**0.0**	**58.3**	**41.7**	

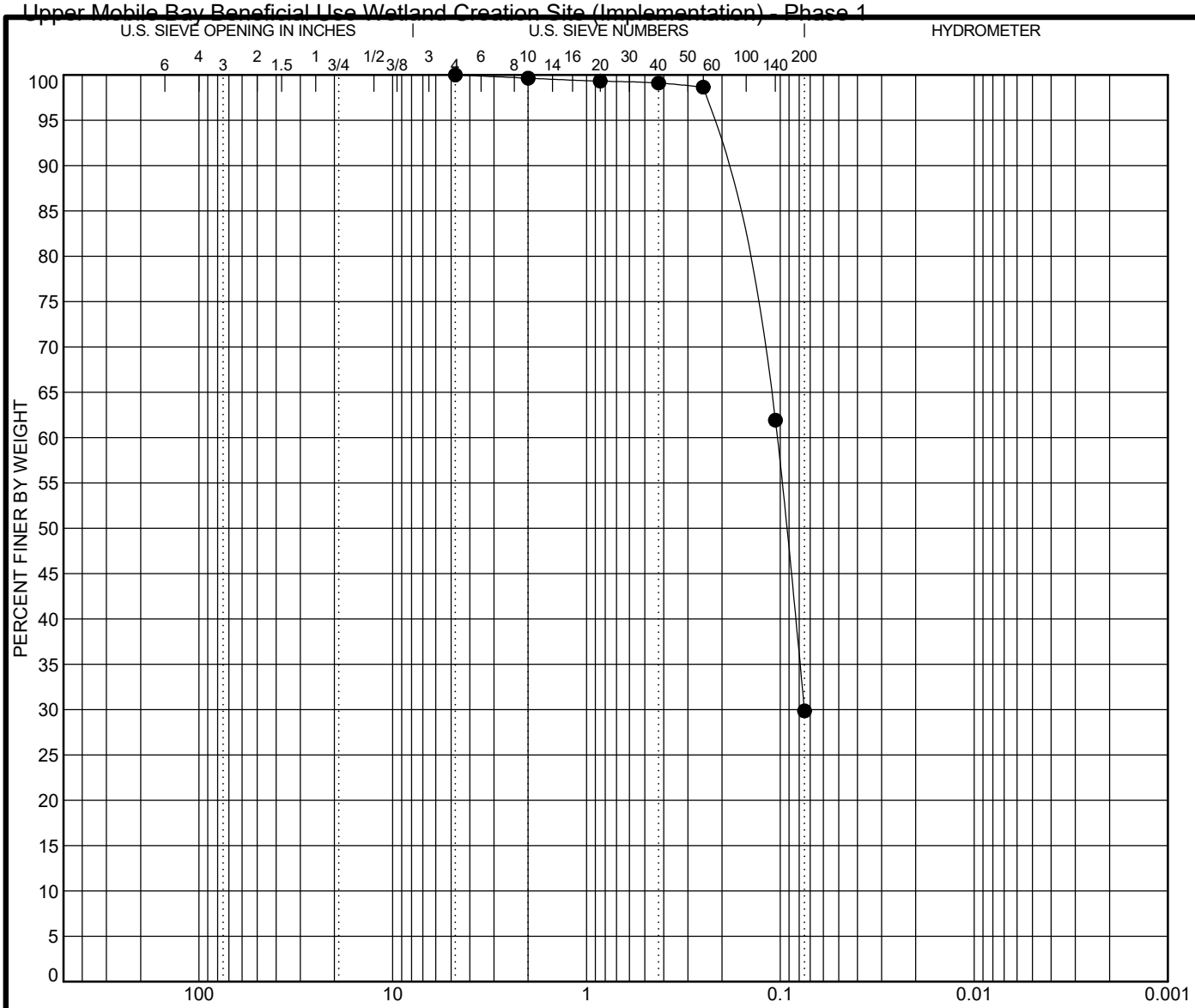
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-19**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-19	**8.0 ft.**	**4.75**	**0.104**	**0.075**		**0.0**	**70.1**	**29.9**	

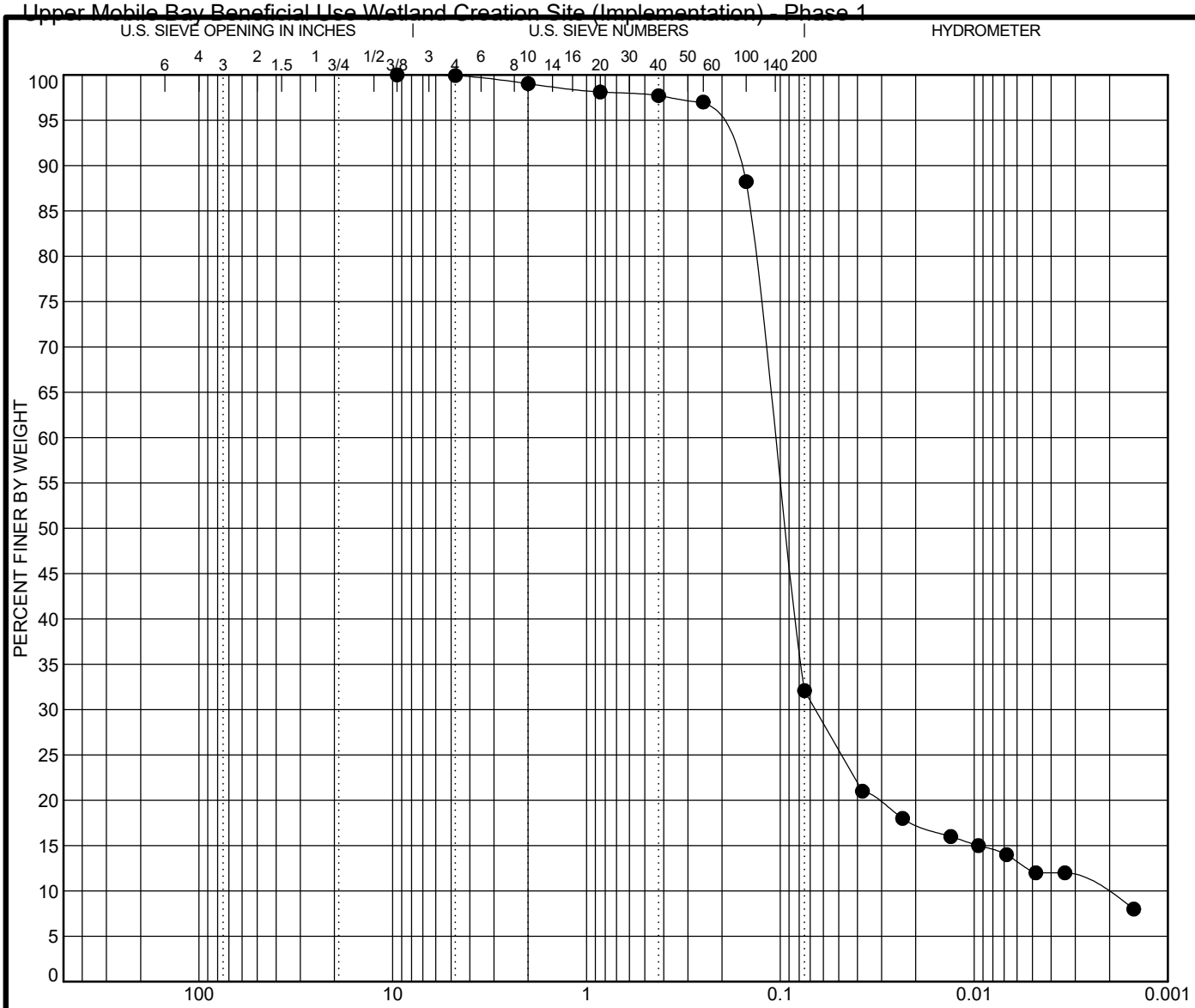
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-19**	**T-1;10.0 ft.**	**CLAYEY SAND (SC)**	**32**	**21**	**11**	**18.16**	**46.87**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-19	**10.0 ft.**	**9.5**	**0.106**	**0.066**	**0.002**	**0.1**	**67.8**	**22.7**	**9.4**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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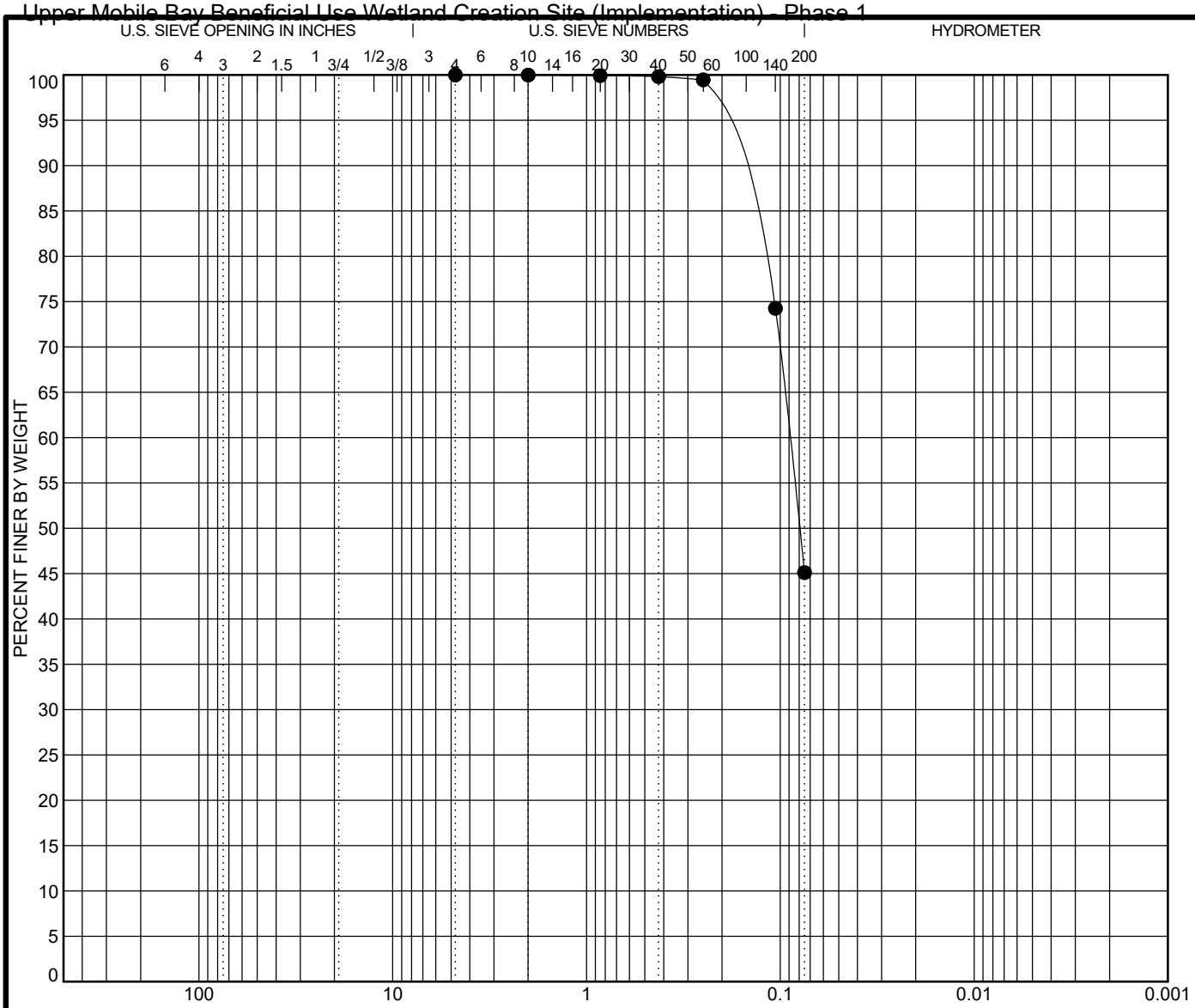
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-19**	**S-6;15.0 ft.**	**SILTY, CLAYEY SAND (SC-SM)**	**28**	**22**	**6**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-19	**15.0 ft.**	**4.75**	**0.089**			**0.0**	**54.9**	**45.1**	

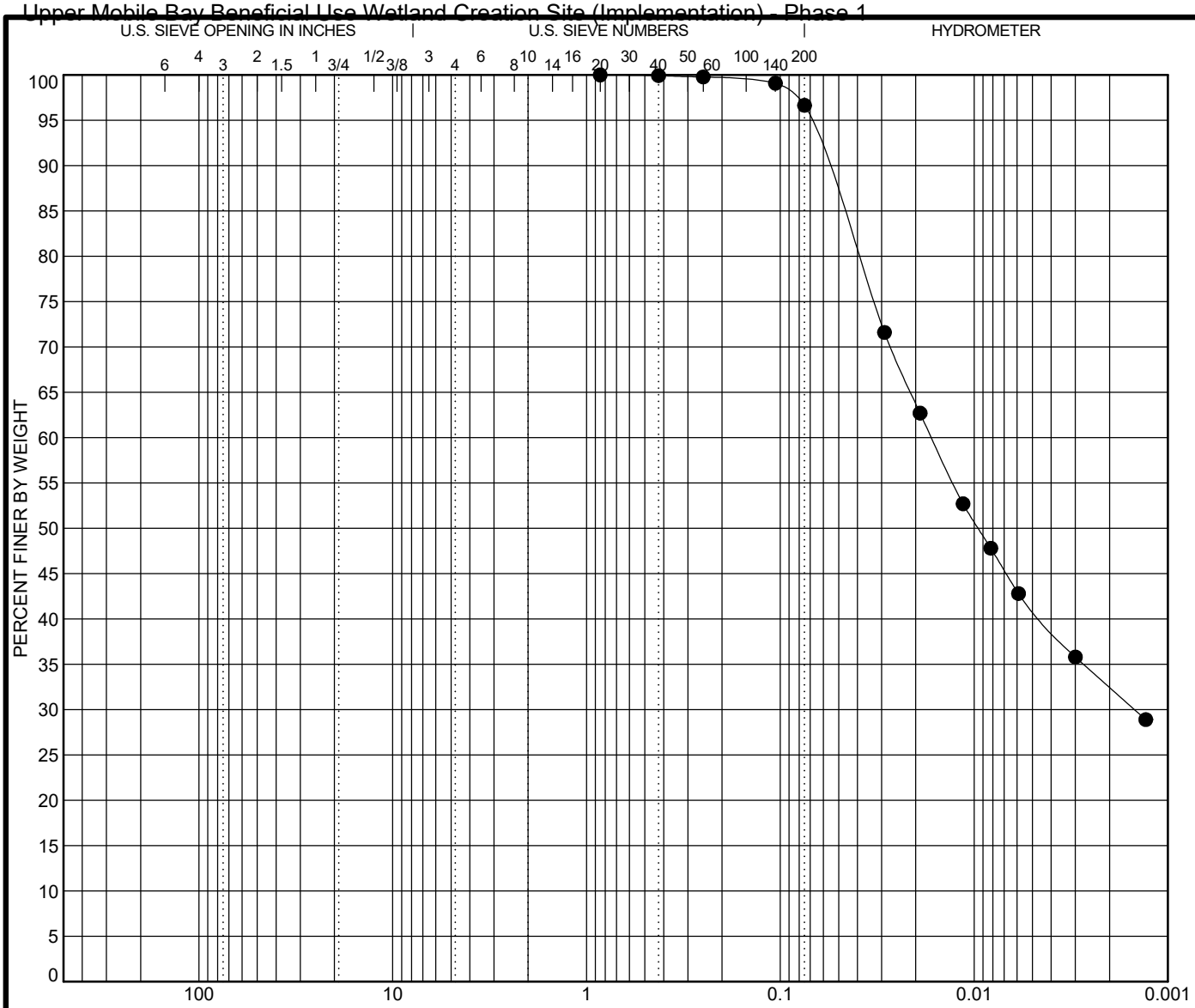
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-19**	**T-2;31.5 ft.**	**FAT CLAY (CH)**	**55**	**22**	**33**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-19	**31.5 ft.**	**0.85**	**0.017**	**0.001**		**0.0**	**3.4**	**64.2**	**32.5**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
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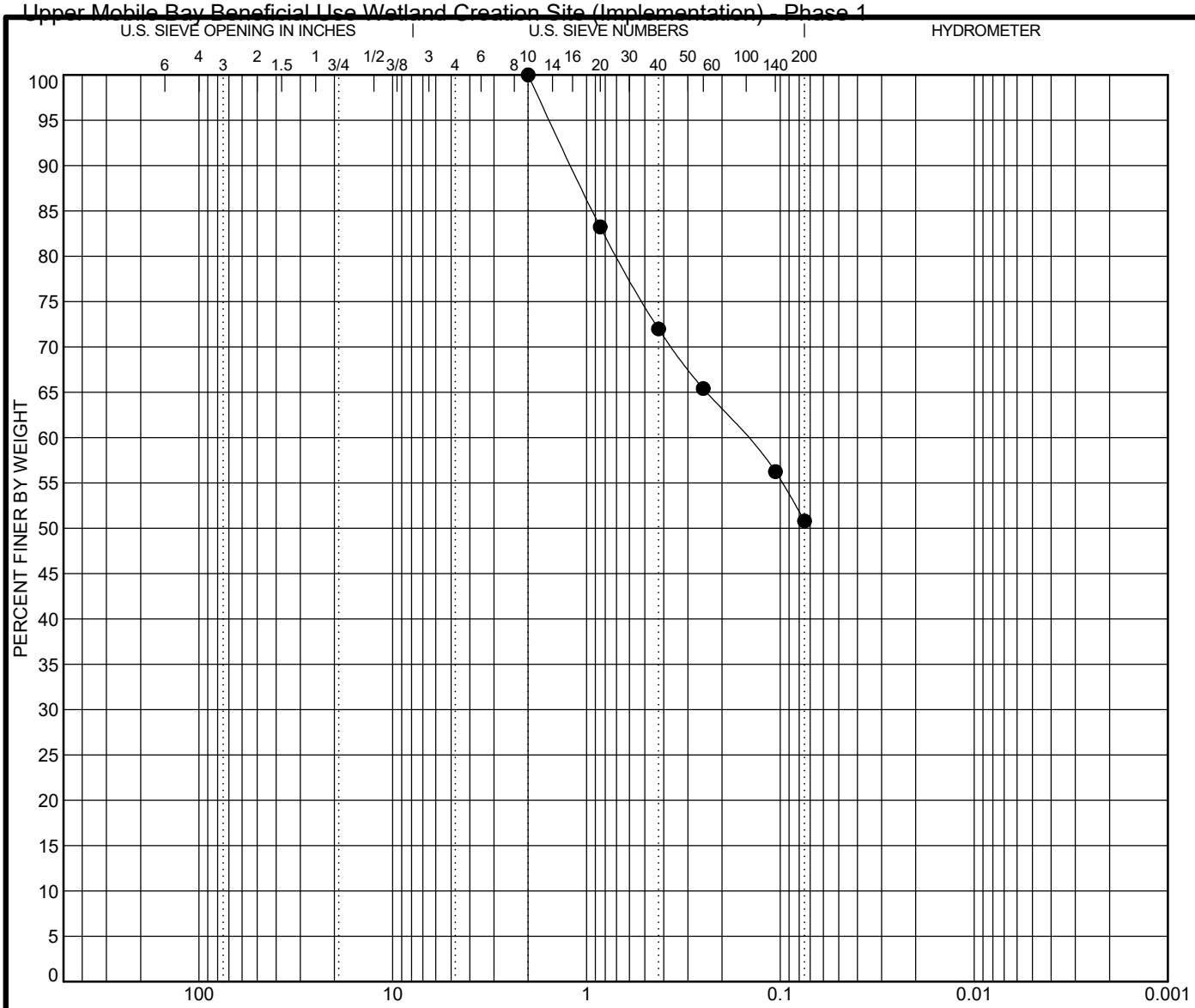
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **B-20**	**S-1;0.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-20	**0.5 ft.**	**2**	**0.151**			**0.0**	**49.2**	**50.8**	

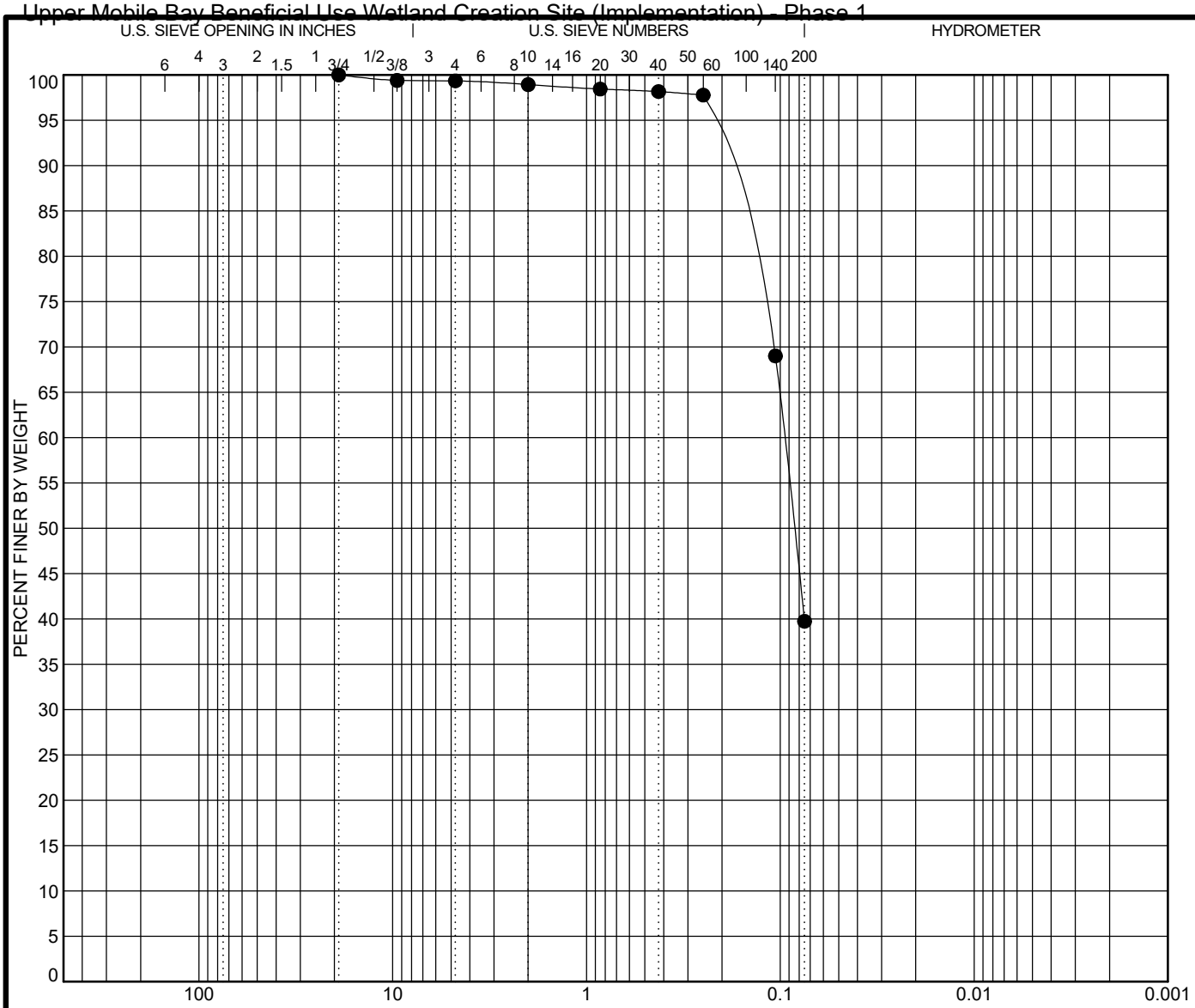
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-20**	**S-3;5.5 ft.**	**SILTY SAND (SM)**	**27**	**22**	**5**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-20	**5.5 ft.**	**19**	**0.095**			**0.7**	**59.6**	**39.7**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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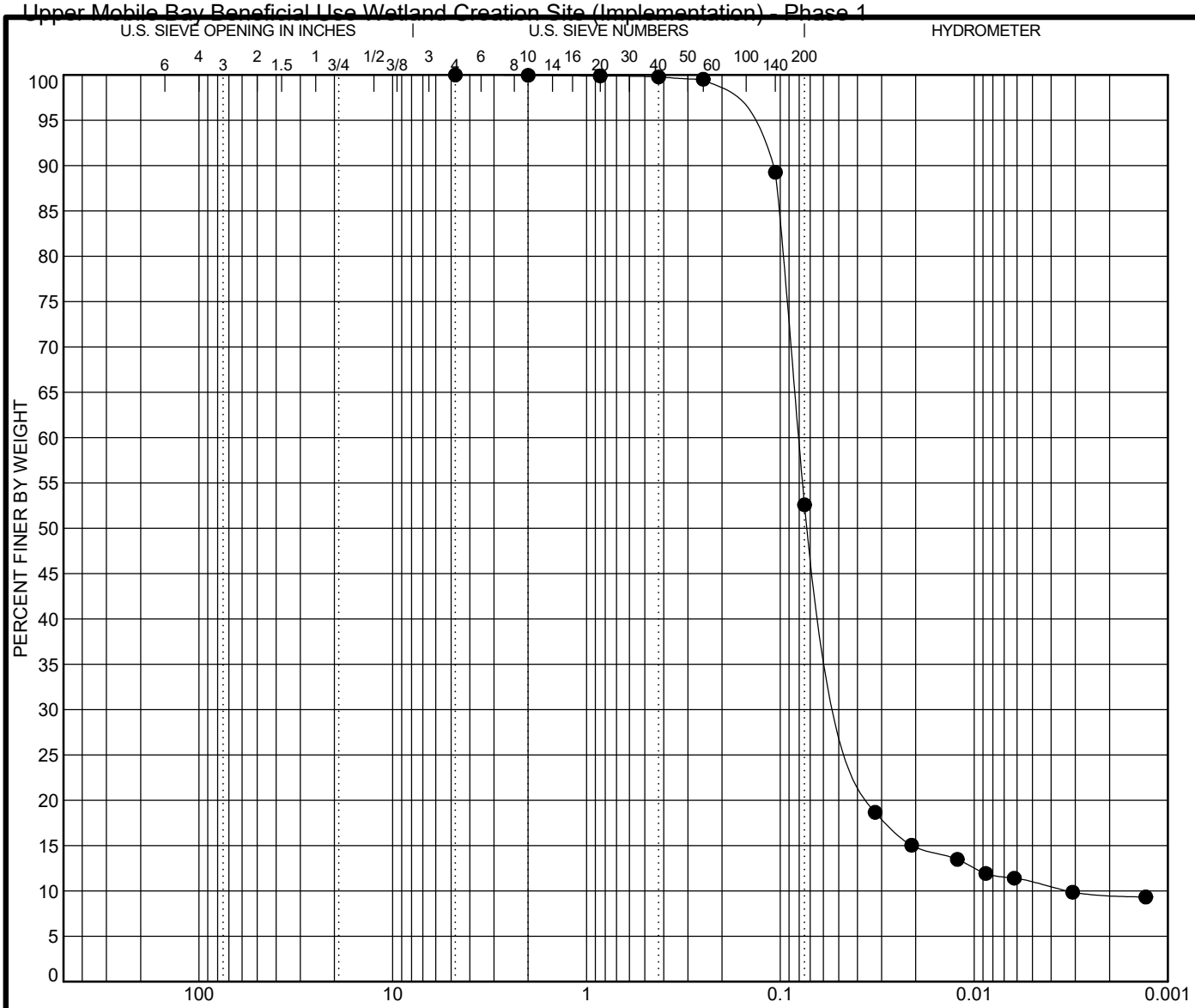
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-20**	**T-1;10.0 ft.**	**SANDY SILT (ML)**	**34**	**NP**	**34**	**6.91**	**24.30**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-20	**10.0 ft.**	**4.75**	**0.08**	**0.043**	**0.003**	**0.0**	**47.4**	**43.0**	**9.6**

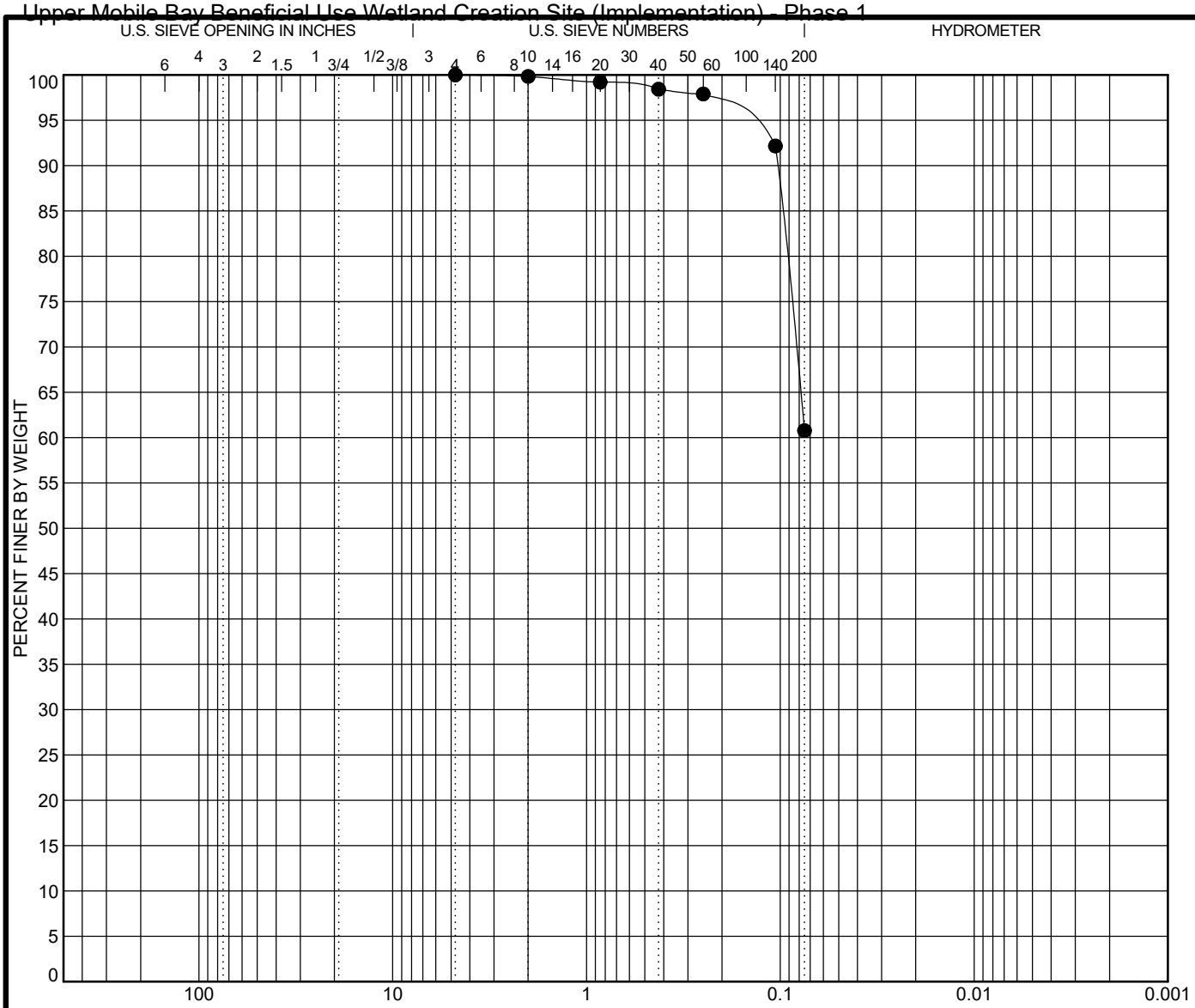
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-20**	**S-6;15.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-20	**15.0 ft.**	**4.75**				**0.0**	**39.2**	**60.8**	

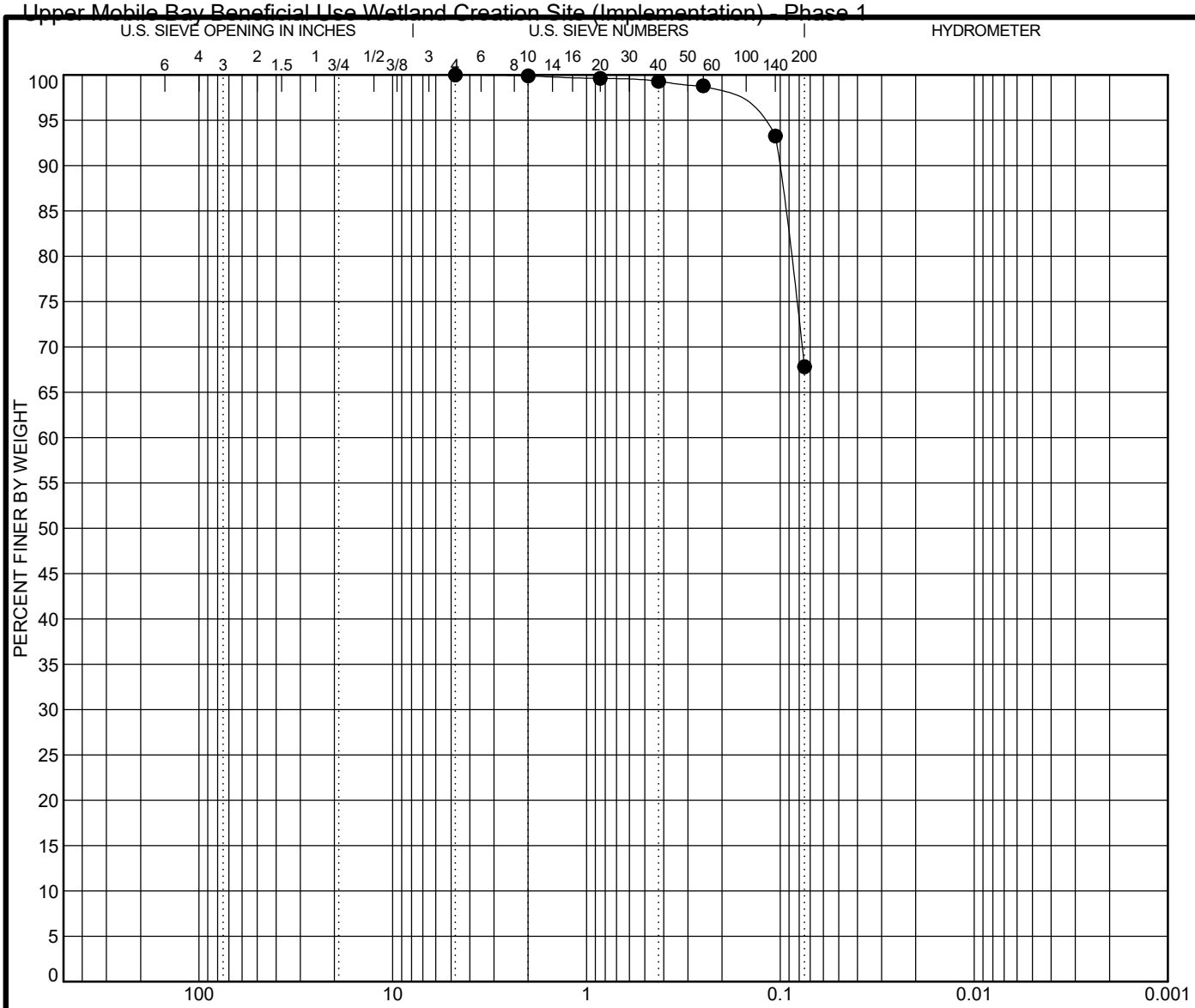
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-21**	**S-2;3.0 ft.**	**SANDY LEAN CLAY (CL)**	**35**	**20**	**15**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-21	**3.0 ft.**	**4.75**				**0.0**	**32.2**	**67.8**	

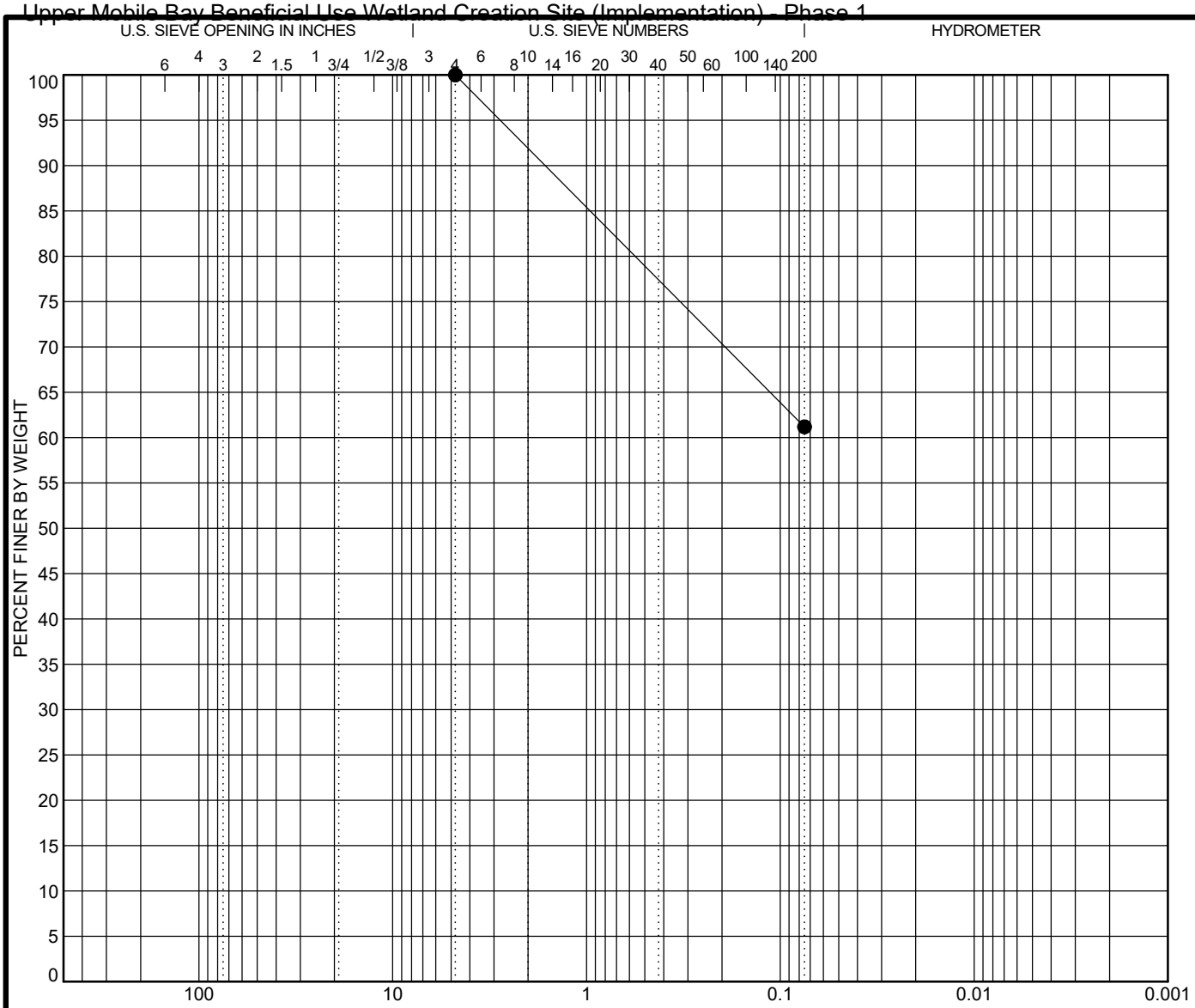
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-21**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-21	**8.0 ft.**	**4.75**				**0.0**	**38.8**	**61.2**	

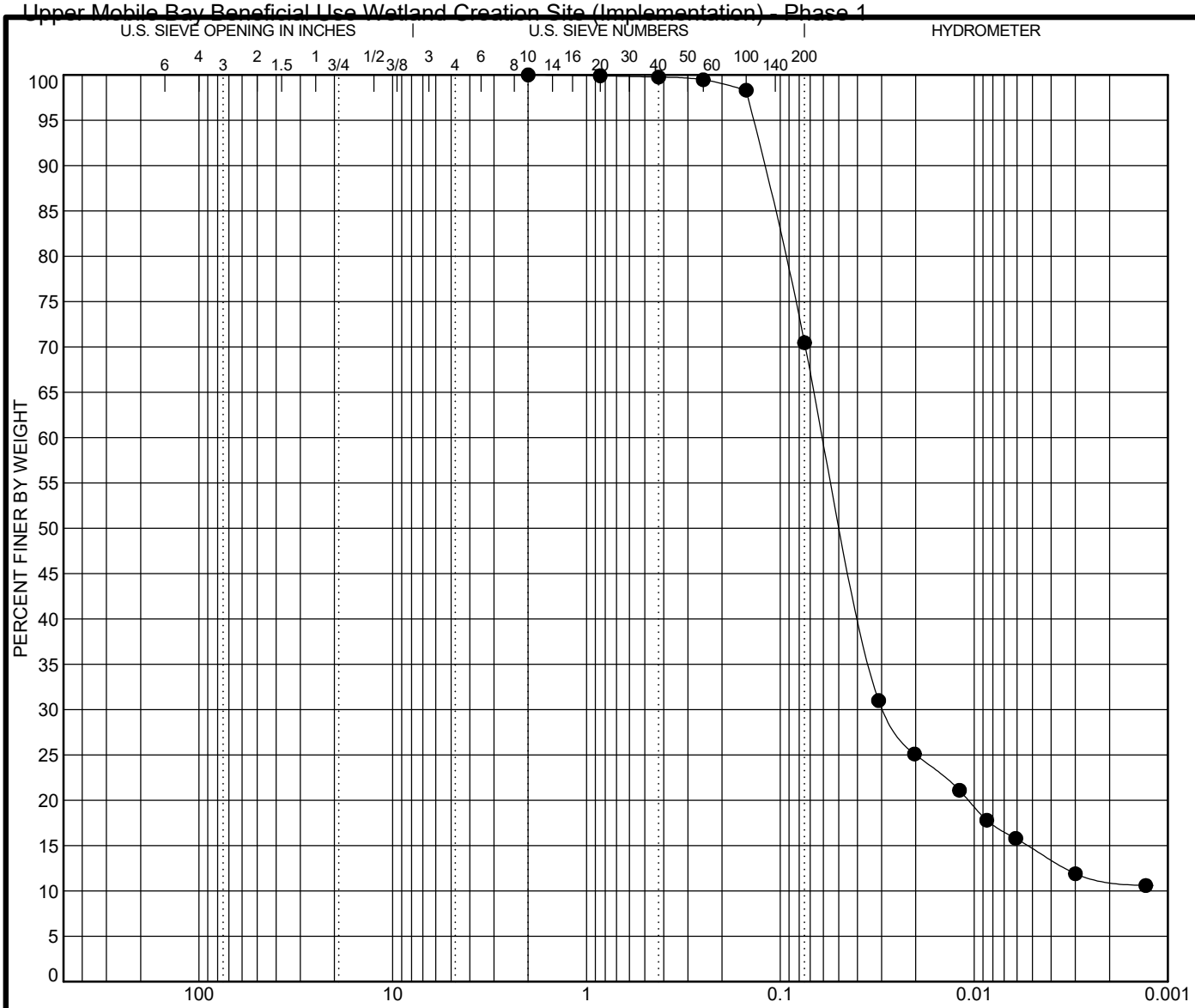
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-21**	**T-1;10.0 ft.**	**LEAN CLAY with SAND (CL)**	**36**	**23**	**13**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-21	**10.0 ft.**	**2**	**0.059**	**0.029**		**0.0**	**29.5**	**59.2**	**11.3**

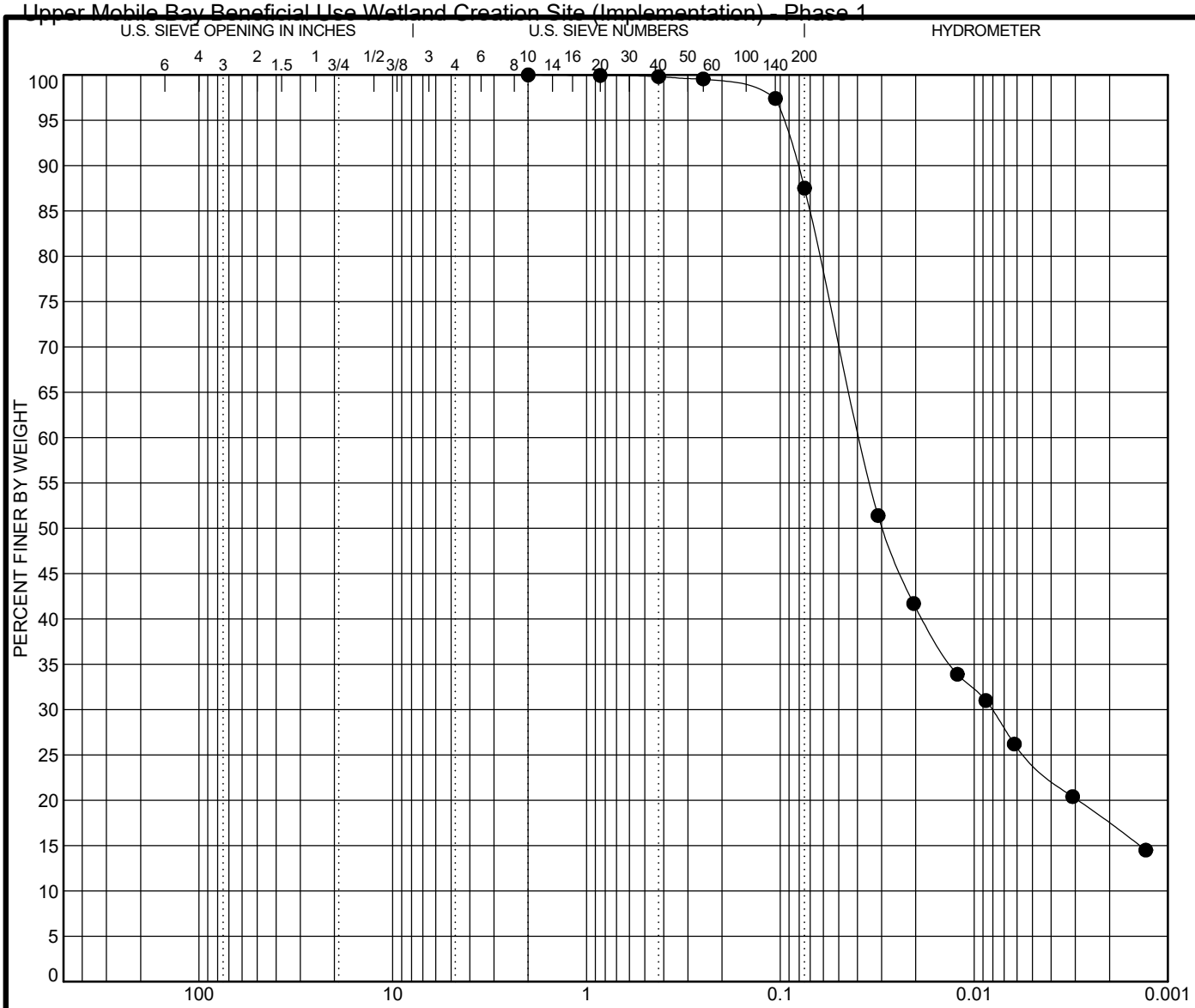
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-21**	**T-2;14.5 ft.**	**FAT CLAY (CH)**	**50**	**21**	**29**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-21	**14.5 ft.**	**2**	**0.039**	**0.008**		**0.0**	**12.5**	**70.1**	**17.4**

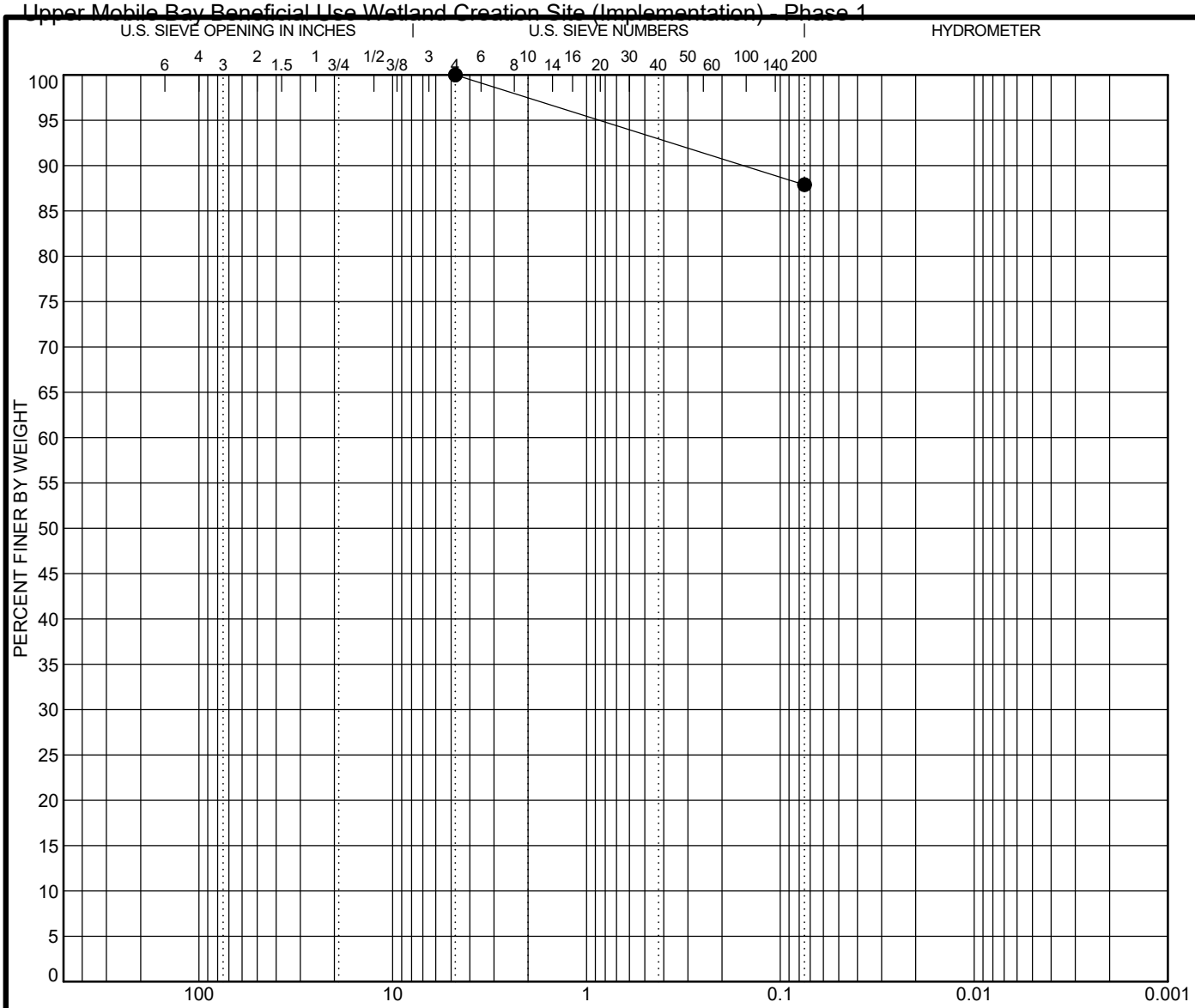
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-21**	**S-14;54.0 ft.**	**FAT CLAY (CH)**	**53**	**21**	**32**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-21	**54.0 ft.**	**4.75**				**0.0**	**12.1**	**87.9**	

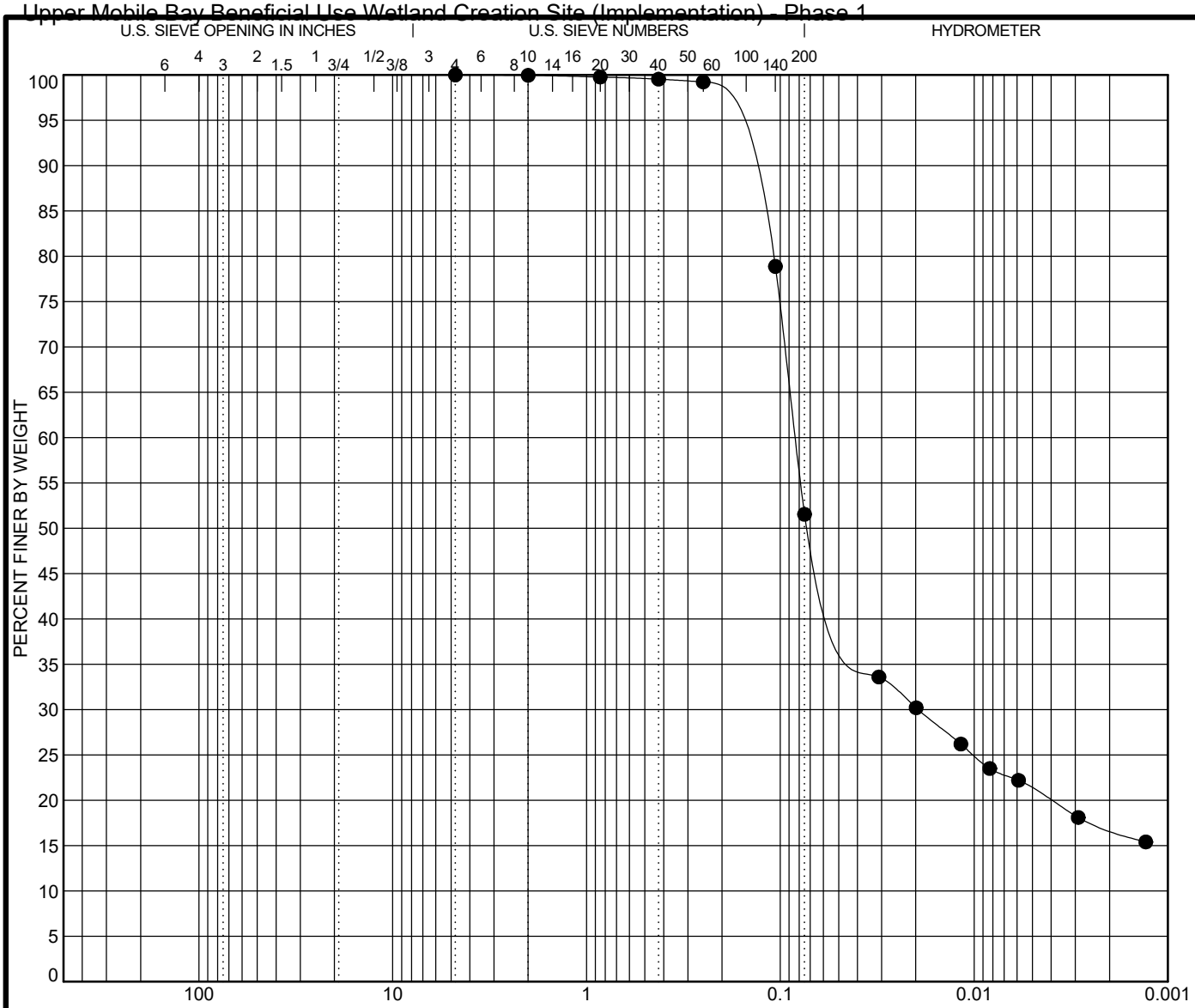
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-22**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-22	**3.0 ft.**	**4.75**	**0.083**	**0.019**		**0.0**	**48.5**	**34.7**	**16.8**

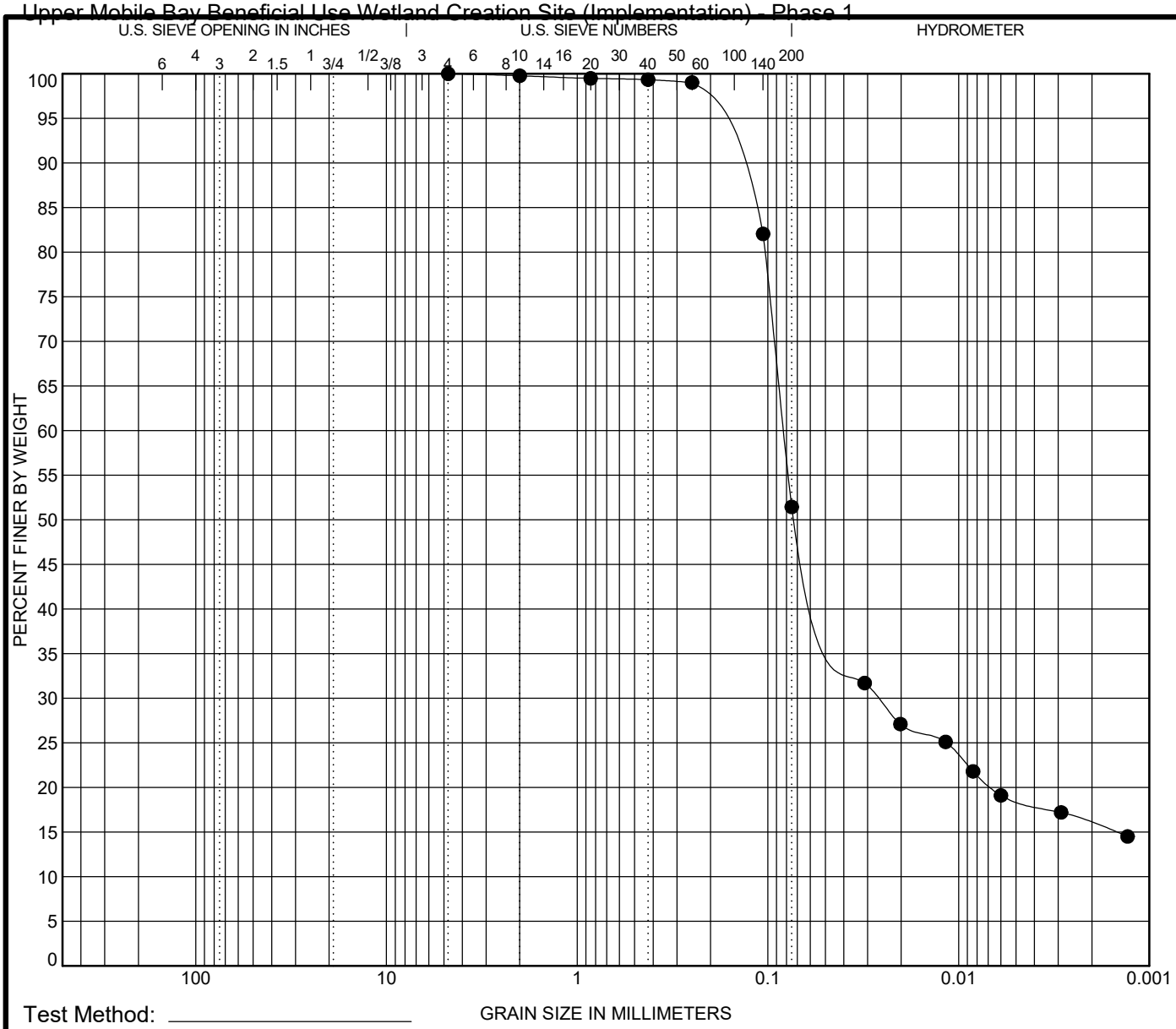
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-22**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-22	**8.0 ft.**	**4.75**	**0.083**	**0.027**		**0.0**	**48.6**	**35.5**	**15.9**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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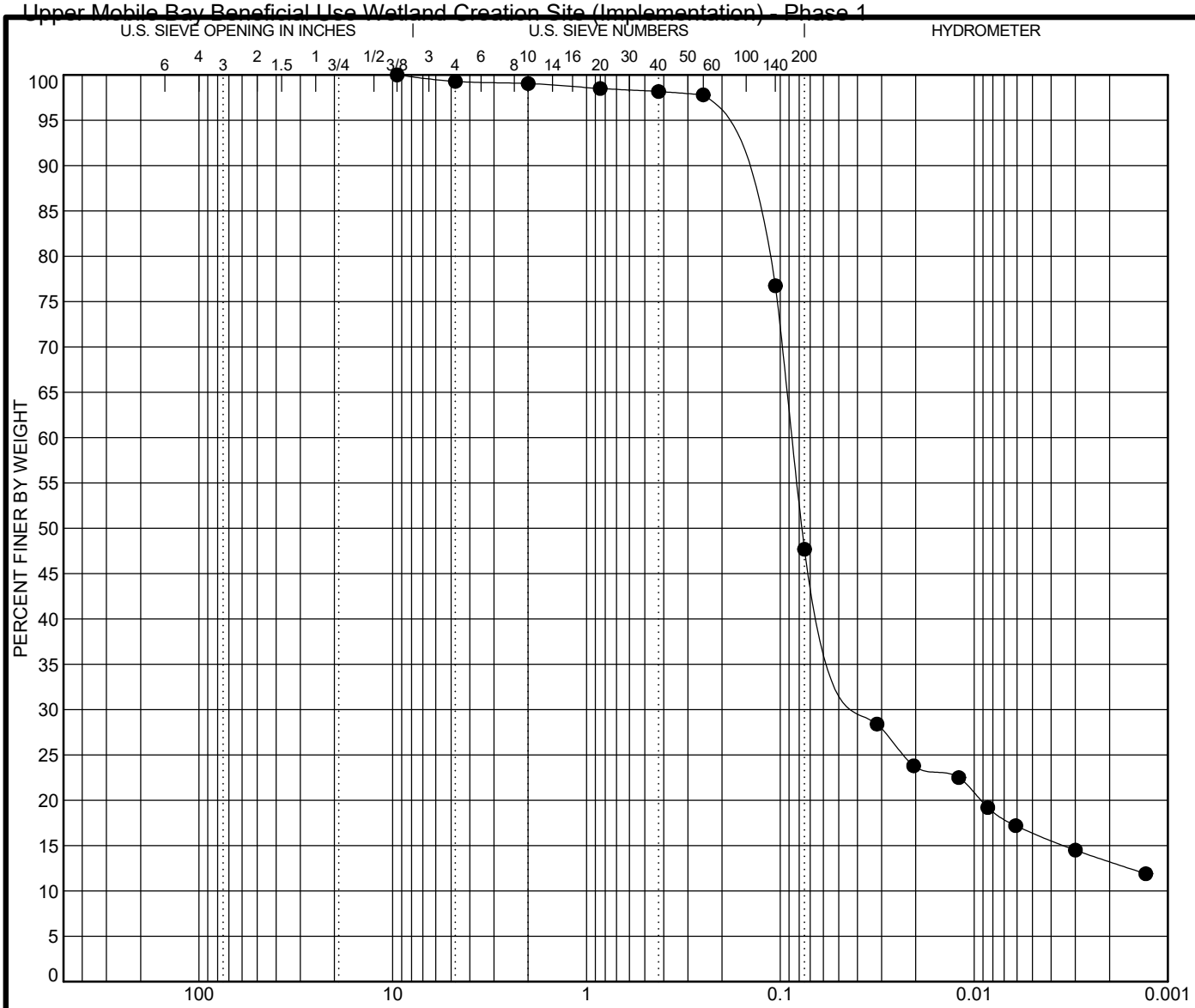
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-22**	**S-5;10.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-22	**10.5 ft.**	**9.5**	**0.087**	**0.034**		**0.7**	**51.6**	**34.4**	**13.2**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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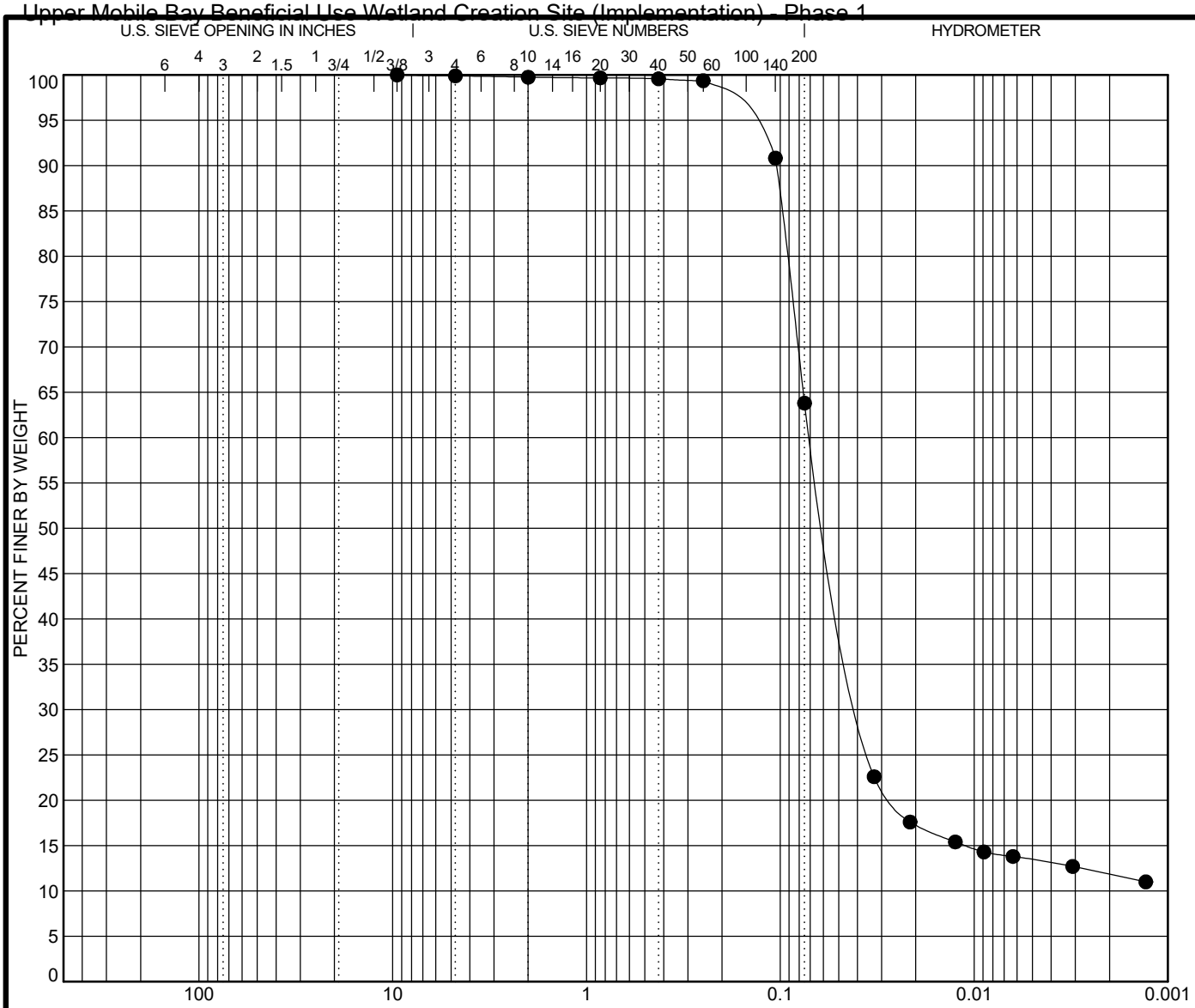
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-22**	**T-1;15.0 ft.**	**SANDY LEAN CLAY (CL)**	**29**	**20**	**9**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-22	**15.0 ft.**	**9.5**	**0.069**	**0.038**		**0.1**	**36.1**	**52.0**	**11.8**

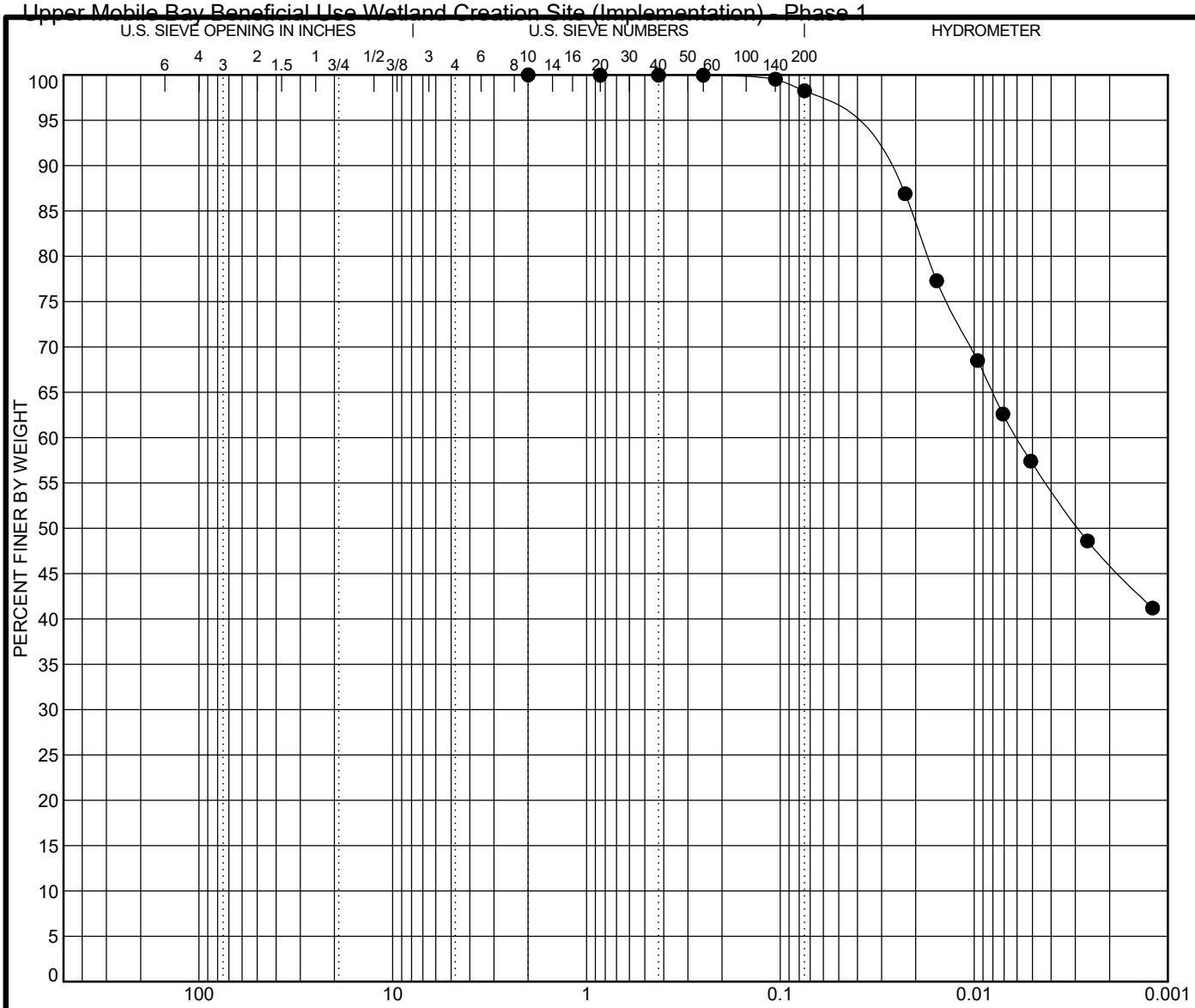
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-22**	**T-2;26.5 ft.**	**FAT CLAY (CH)**	**95**	**22**	**73**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-22	**26.5 ft.**	**2**	**0.006**			**0.0**	**1.8**	**52.2**	**46.1**

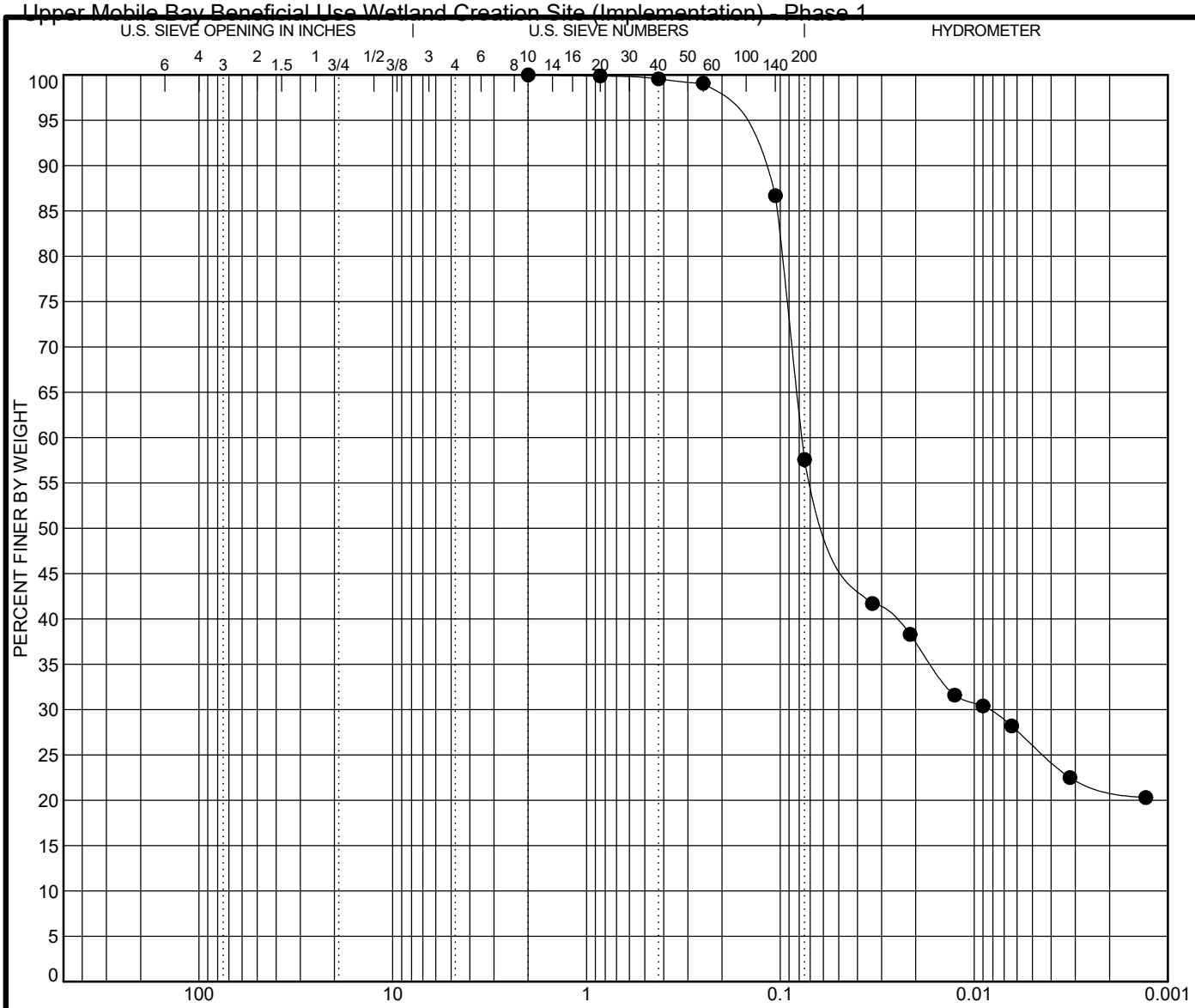
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-23**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-23	**3.0 ft.**	**2**	**0.077**	**0.008**		**0.0**	**42.4**	**36.2**	**21.4**

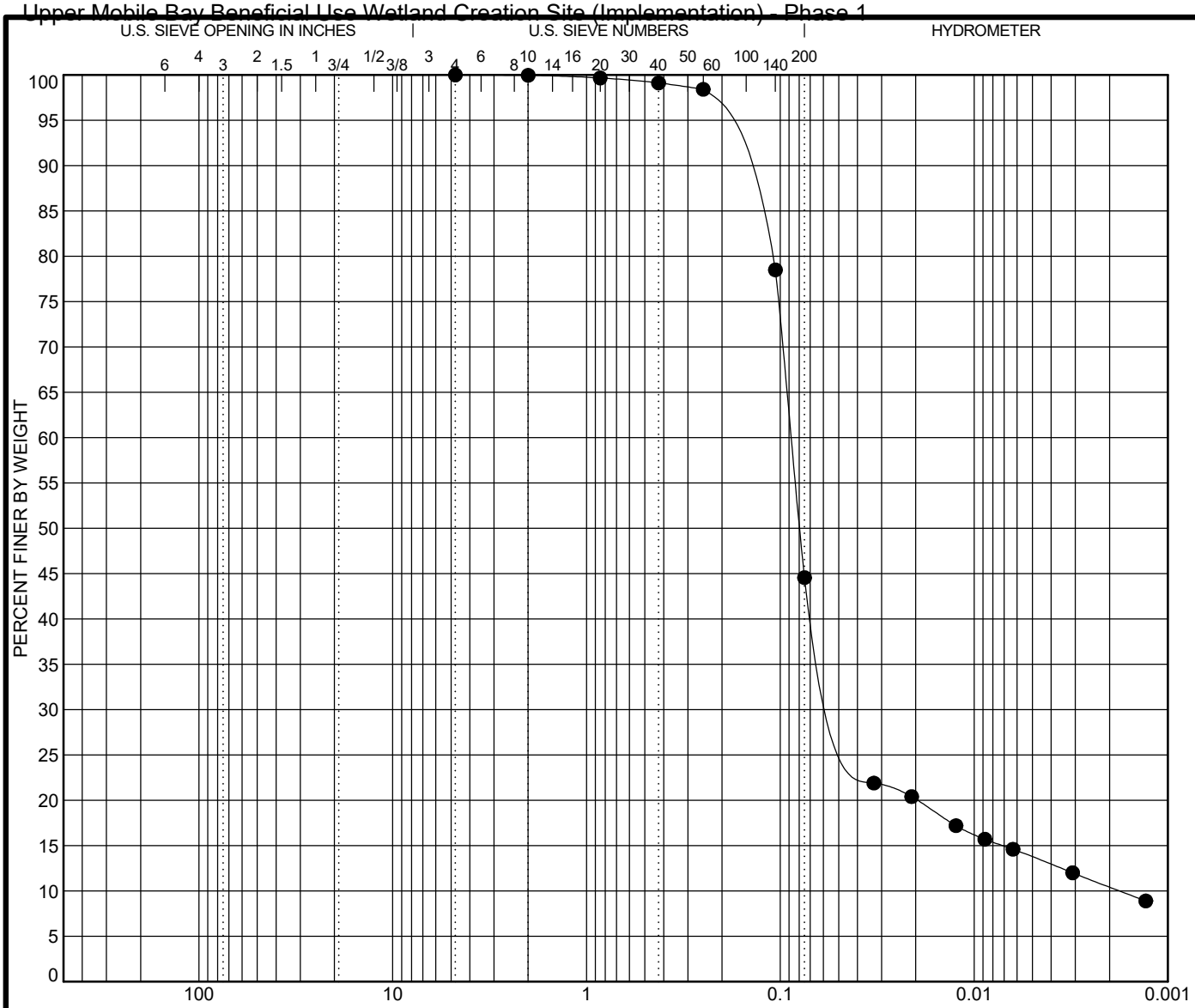
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-23**	**S-4;8.0 ft.**					**12.56**	**49.61**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-23	**8.0 ft.**	**4.75**	**0.088**	**0.044**	**0.002**	**0.0**	**55.4**	**34.1**	**10.4**

REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
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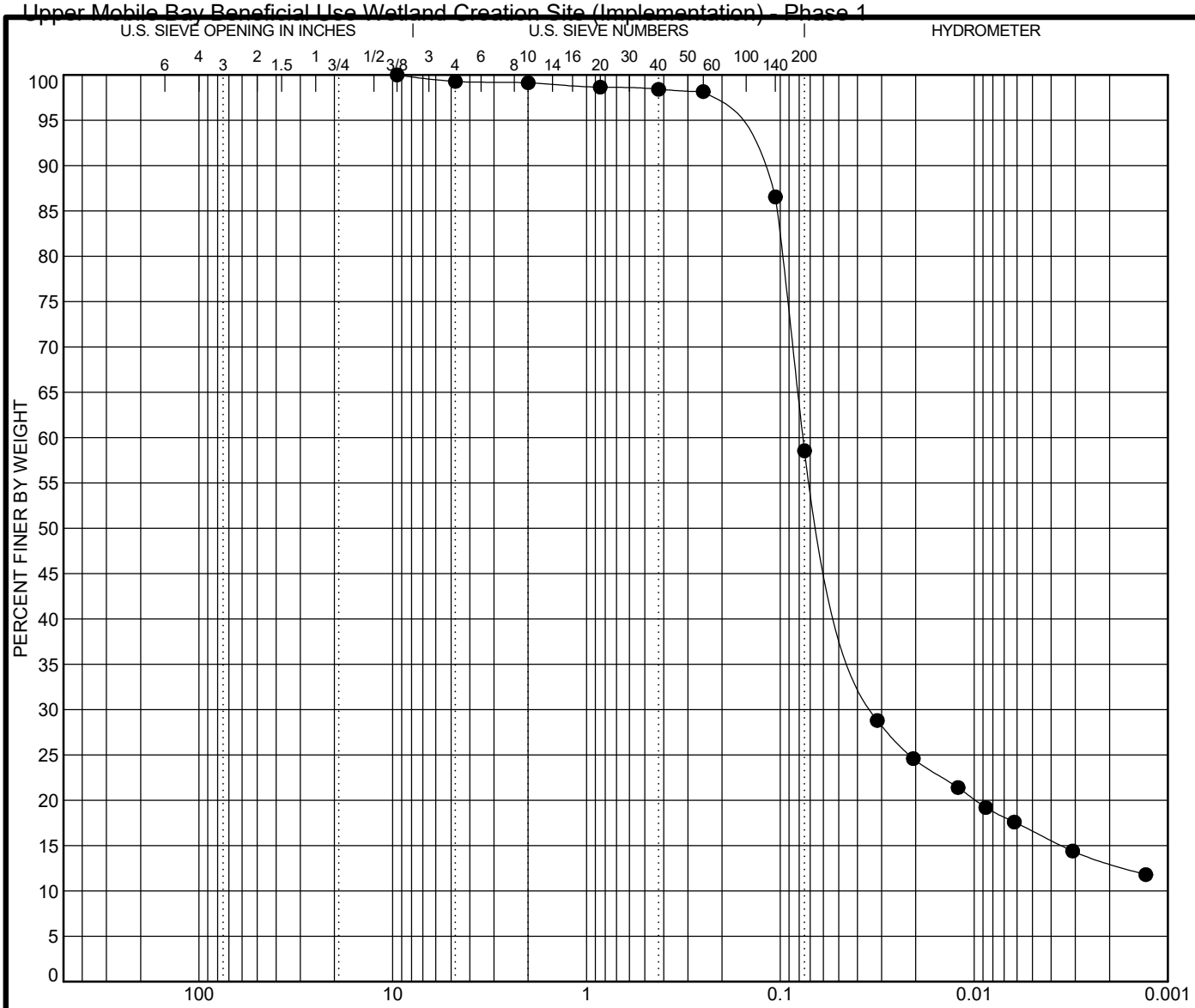

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-23**	**S-6;13.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-23	**13.0 ft.**	**9.5**	**0.076**	**0.033**		**0.7**	**40.7**	**45.5**	**13.1**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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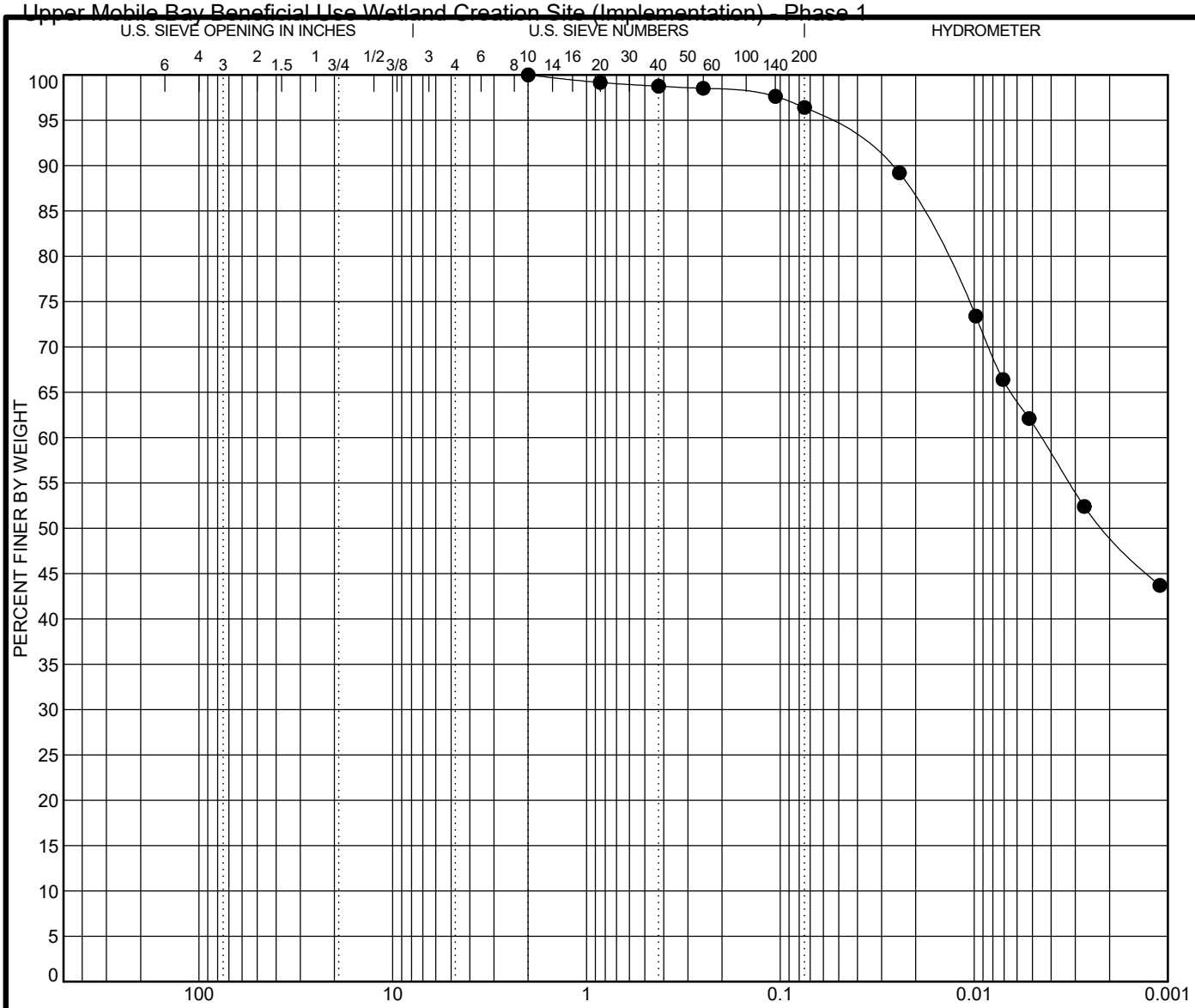
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-23**	**T-2;36.5 ft.**	**FAT CLAY (CH)**	**100**	**31**	**69**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-23	**36.5 ft.**	**2**	**0.005**			**0.0**	**3.6**	**46.9**	**49.5**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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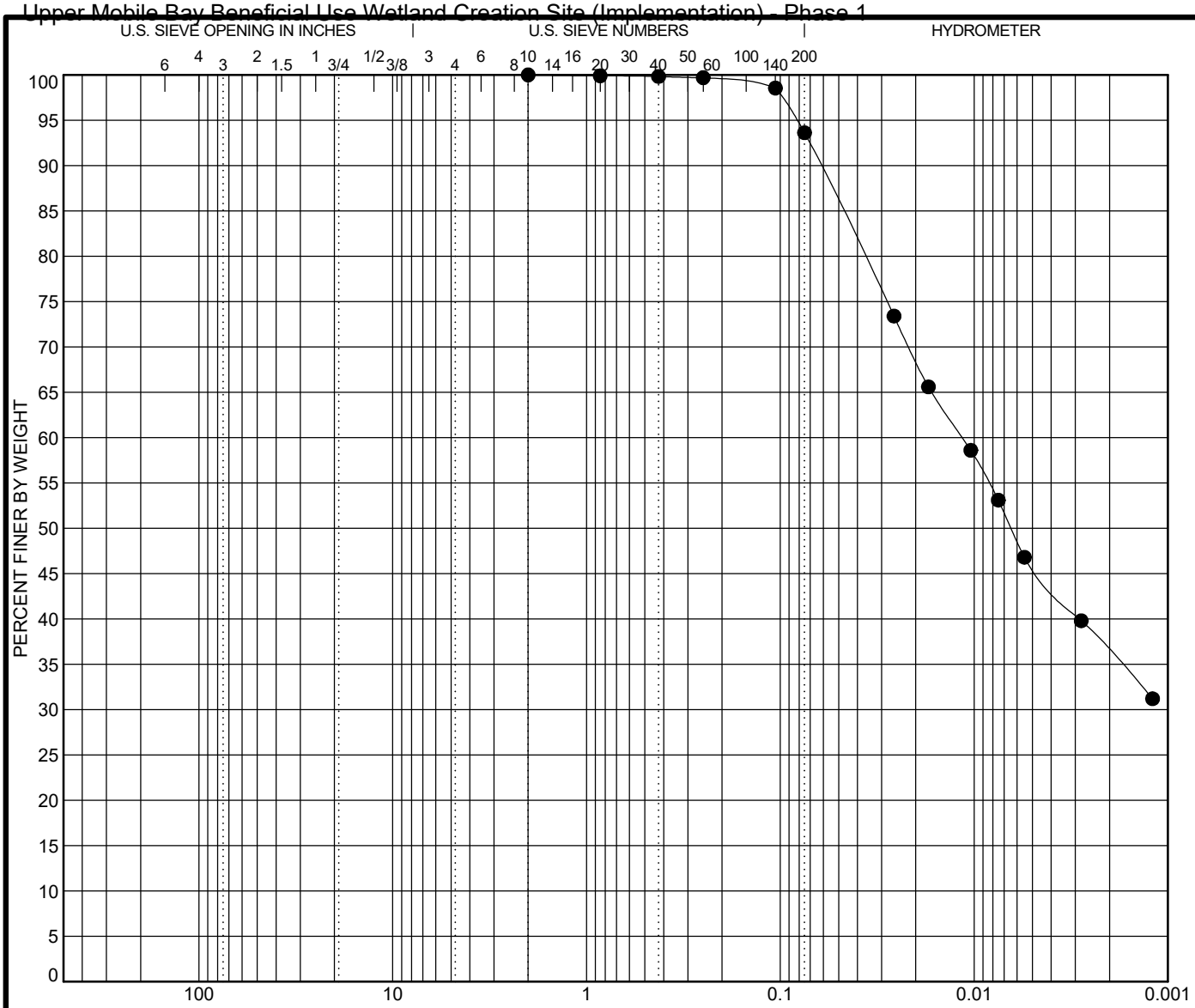
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-23**	**T-3;46.5 ft.**	**ELASTIC SILT (MH)**	**83**	**44**	**39**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-23	**46.5 ft.**	**2**	**0.012**			**0.0**	**6.4**	**57.2**	**36.4**

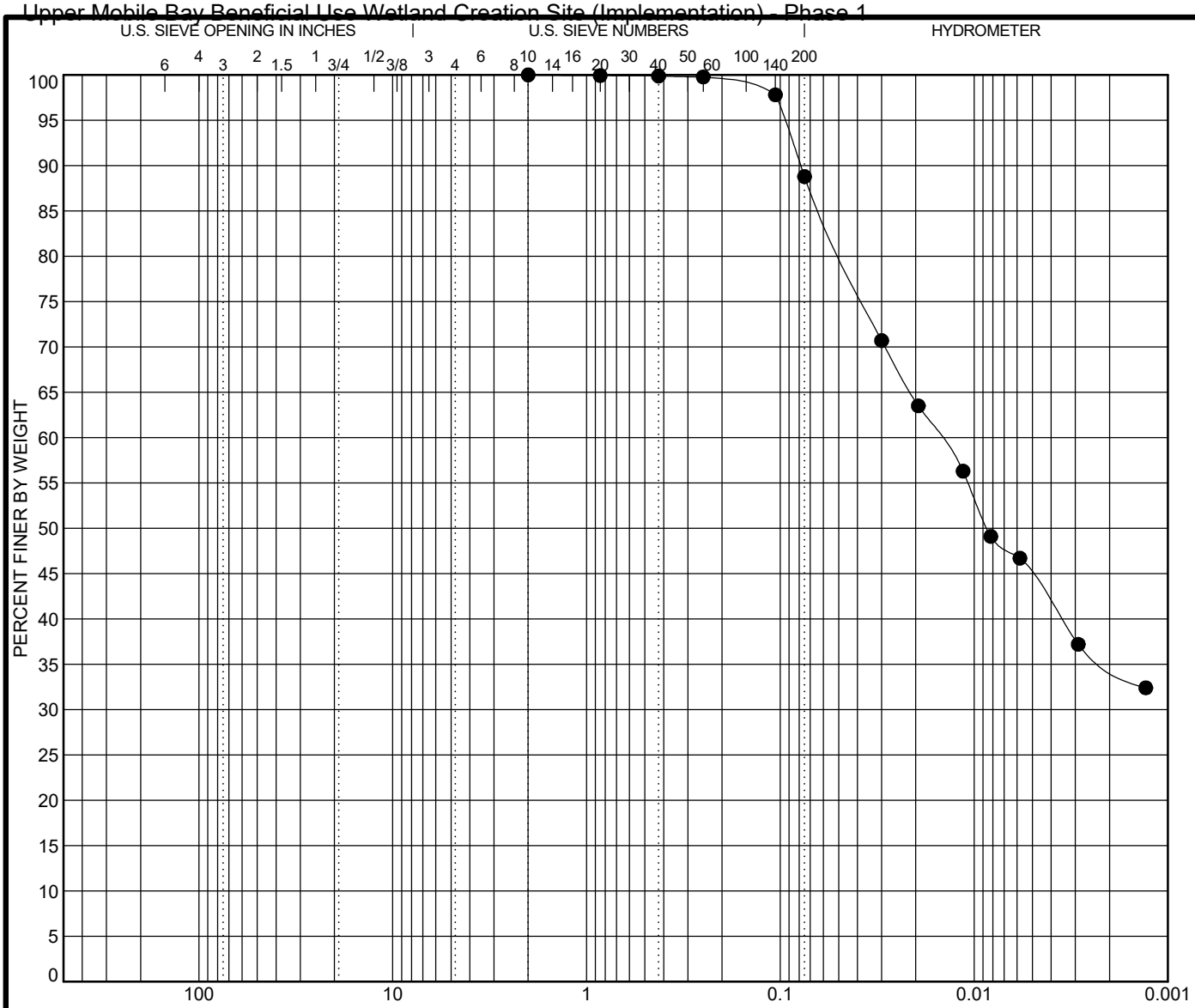
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-24**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-24	**3.0 ft.**	**2**	**0.015**			**0.0**	**11.2**	**53.8**	**35.0**

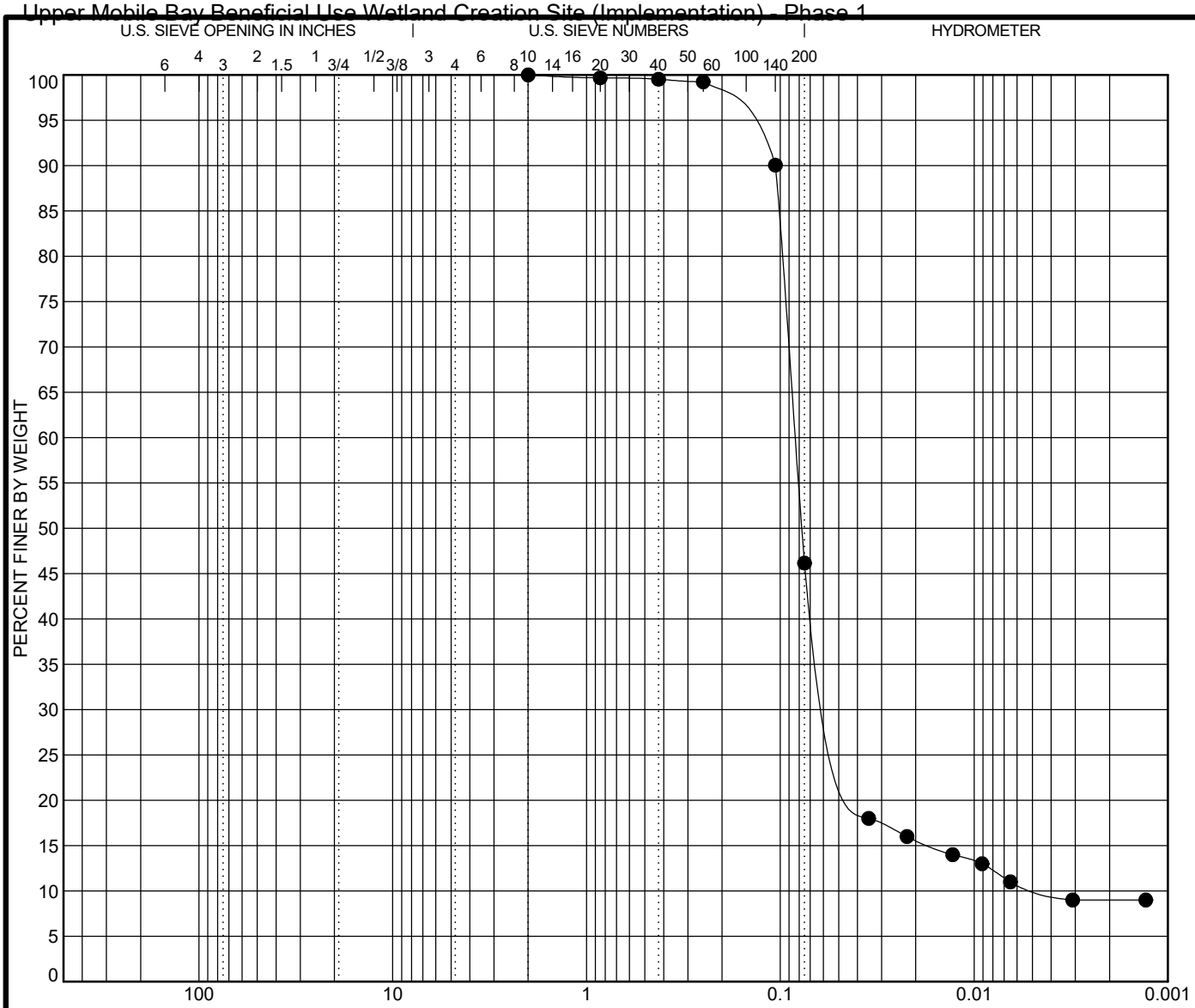
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-24**	**S-4;8.0 ft.**					**6.25**	**18.63**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-24	**8.0 ft.**	**2**	**0.084**	**0.048**	**0.004**	**0.0**	**53.8**	**37.2**	**9.0**

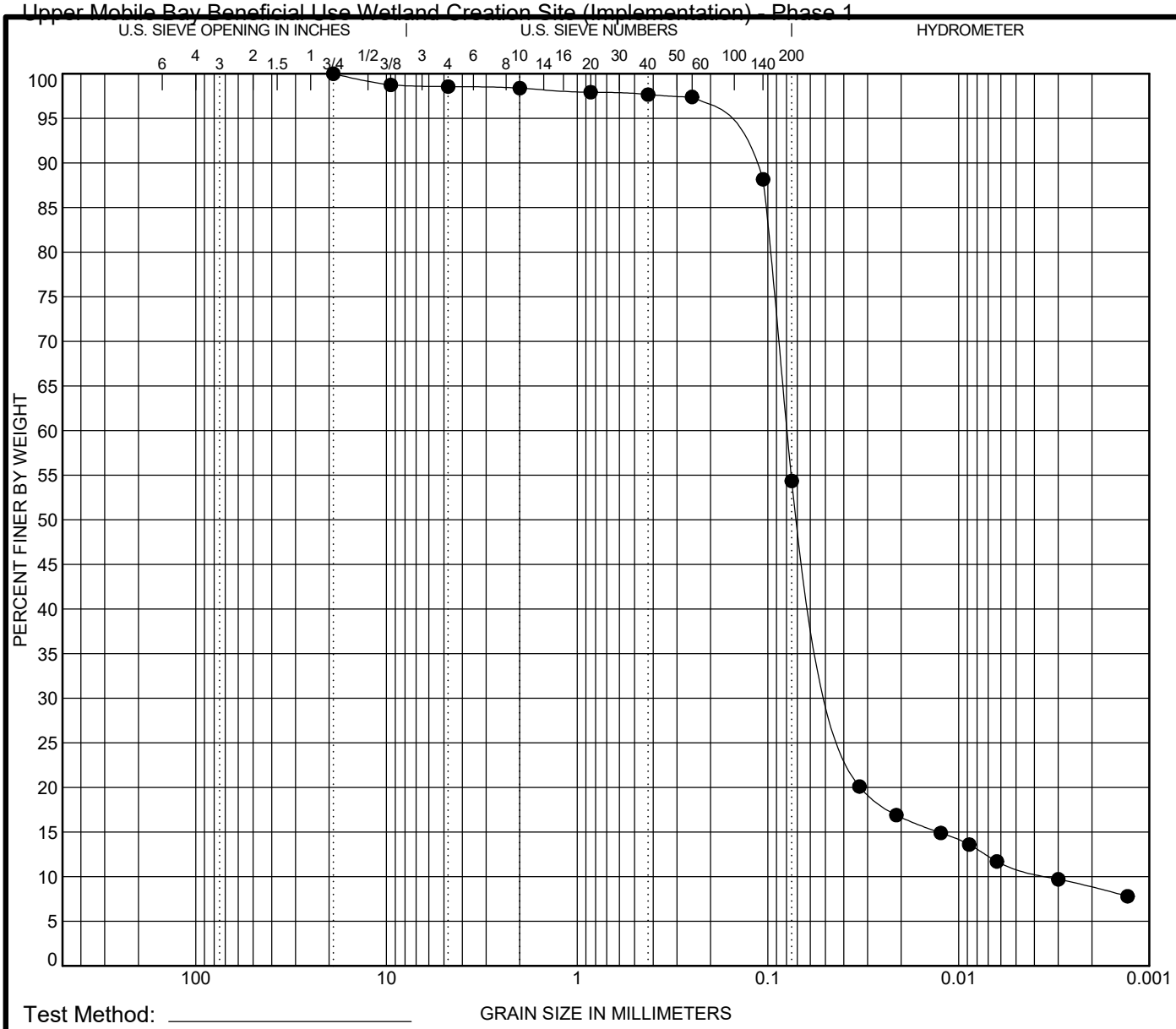
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-24**	**S-6;13.0 ft.**					**6.60**	**23.70**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-24	**13.0 ft.**	**19**	**0.079**	**0.042**	**0.003**	**1.4**	**44.2**	**45.6**	**8.8**

REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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G.E.T. PROJ. NUMBER: 21-126
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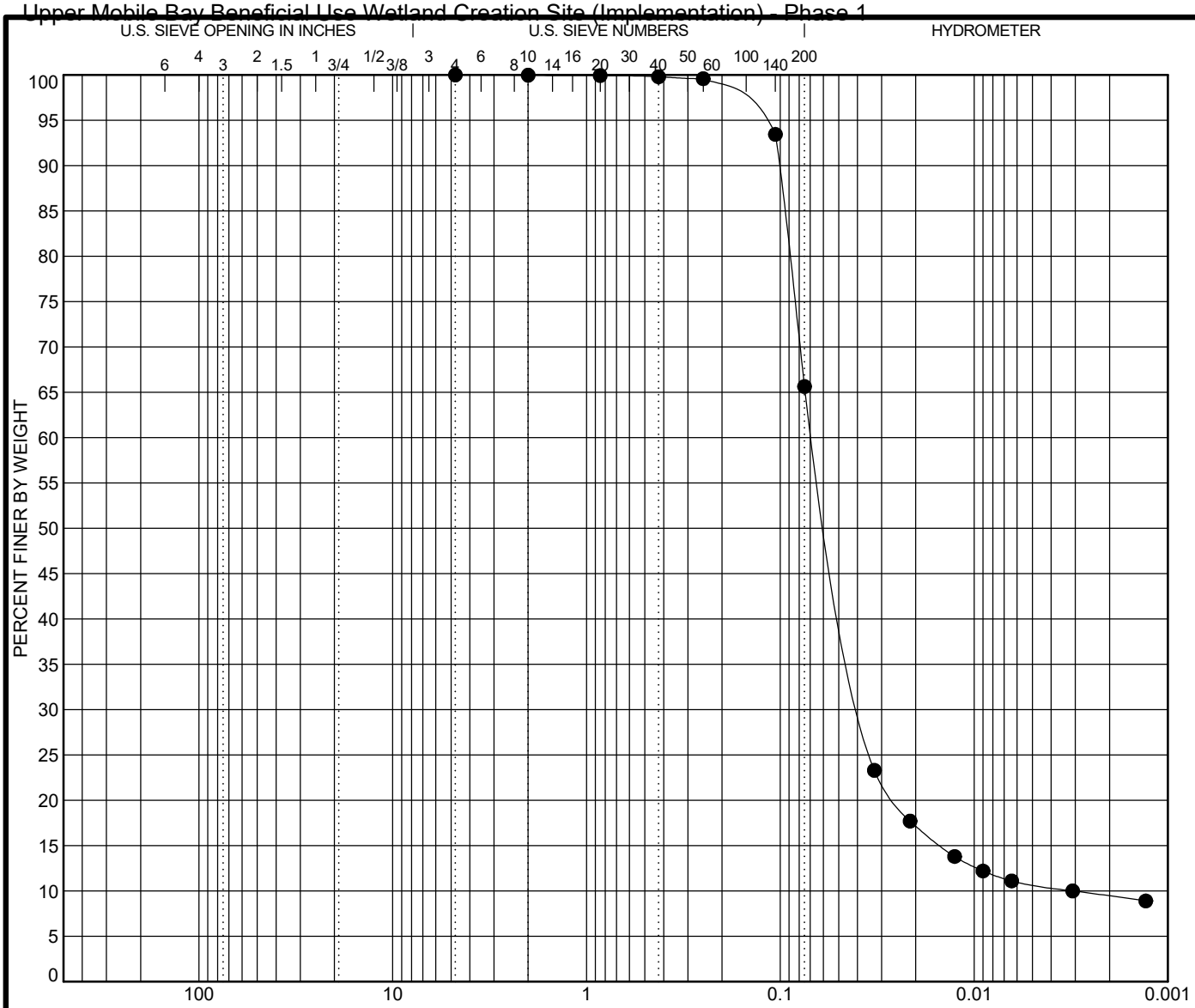

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-24**	**T-1;17.5 ft.**	**SANDY SILT (ML)**	**35**	**28**	**7**	**6.68**	**21.66**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-24	**17.5 ft.**	**4.75**	**0.067**	**0.037**	**0.003**	**0.0**	**34.4**	**56.2**	**9.4**

REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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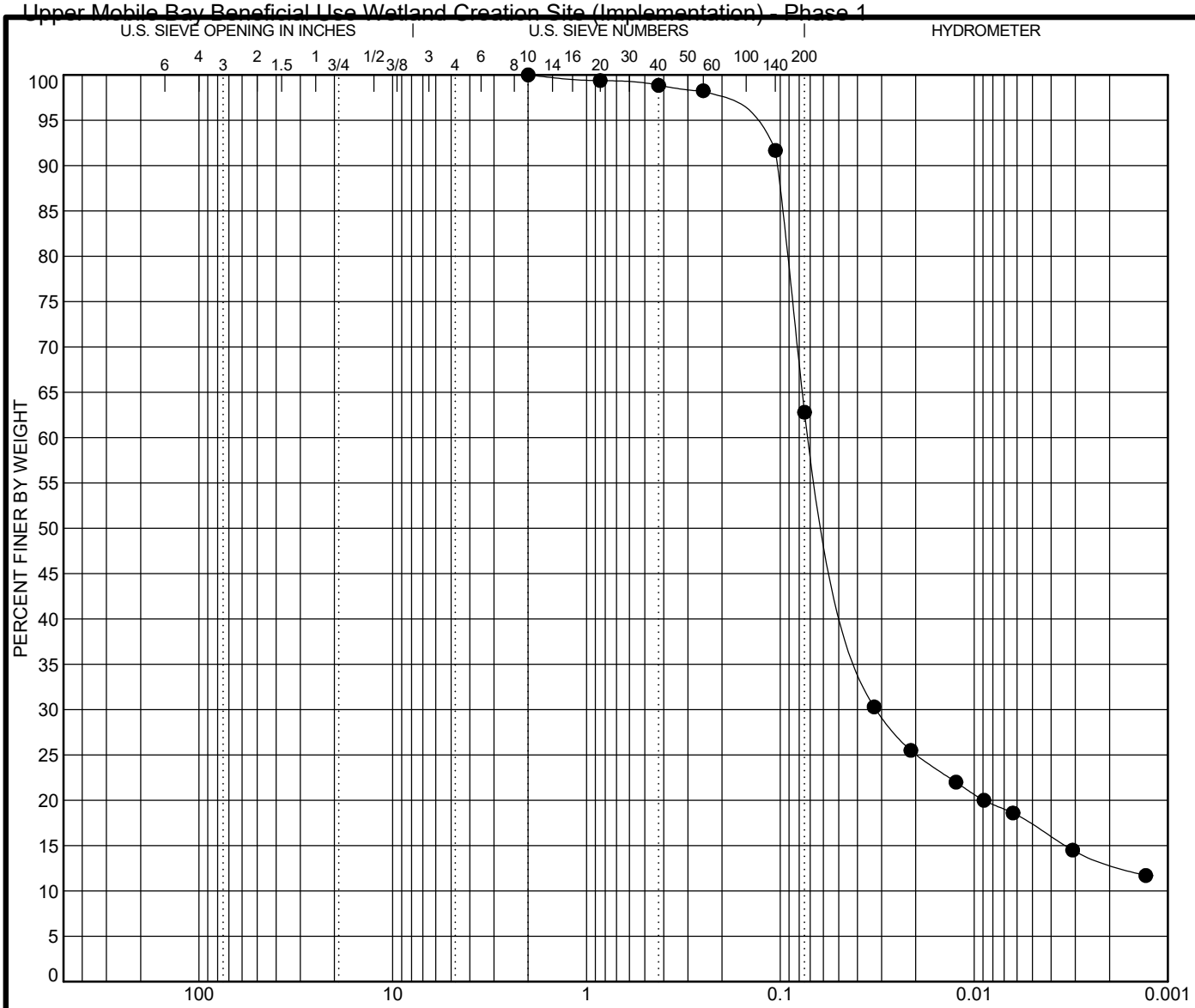

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-25**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-25	**3.0 ft.**	**2**	**0.07**	**0.032**		**0.0**	**37.2**	**49.7**	**13.1**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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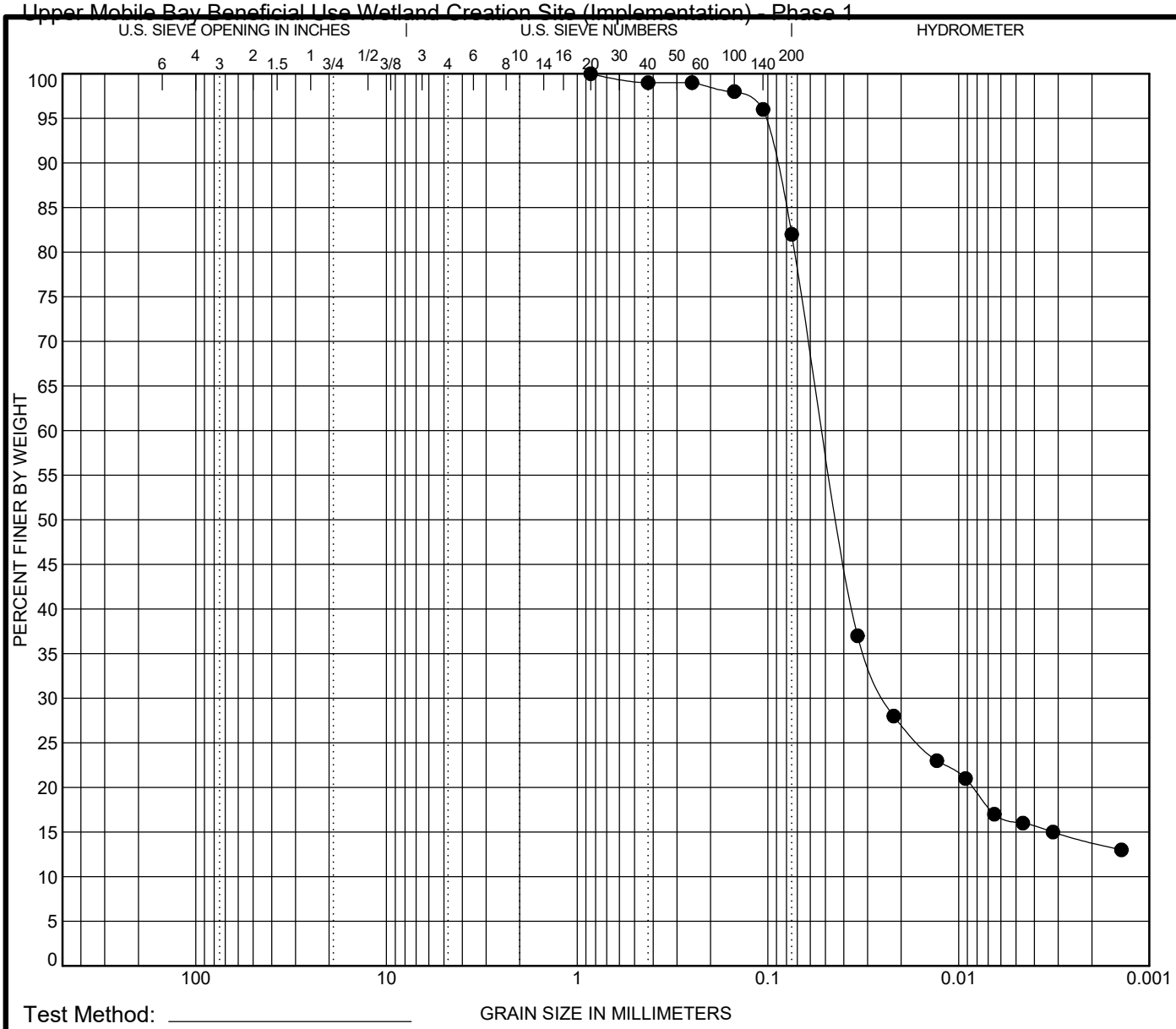
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-25**	**T-4;4.0 ft.**	**SILT with SAND (ML)**	**40**	**27**	**13**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-25	**4.0 ft.**	**0.85**	**0.051**	**0.024**		**0.0**	**18.0**	**68.1**	**13.9**

REMARKS:

GET GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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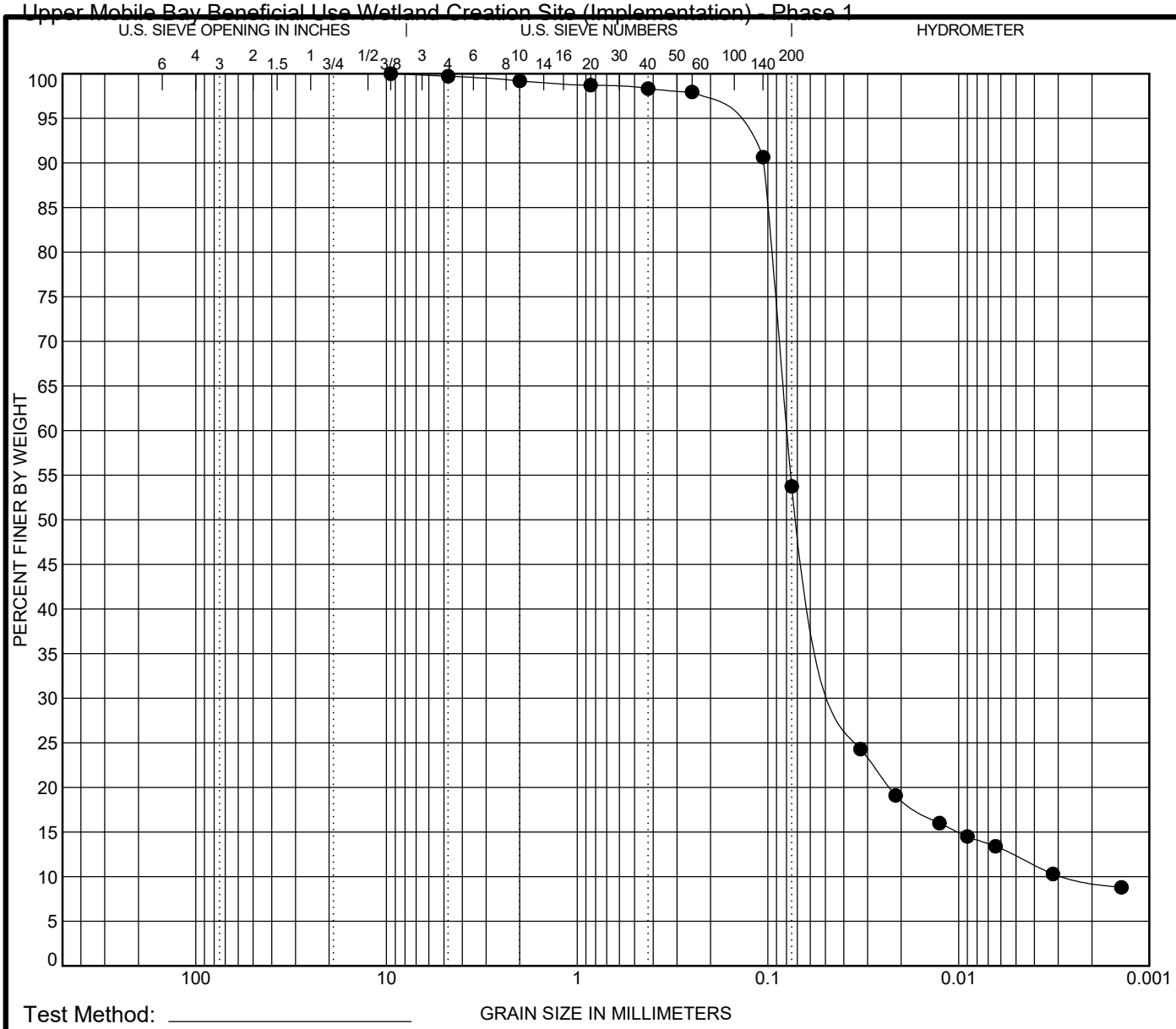

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-25**	**S-4;8.0 ft.**					**6.84**	**29.32**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-25	**8.0 ft.**	**9.5**	**0.08**	**0.038**	**0.003**	**0.3**	**46.0**	**44.3**	**9.4**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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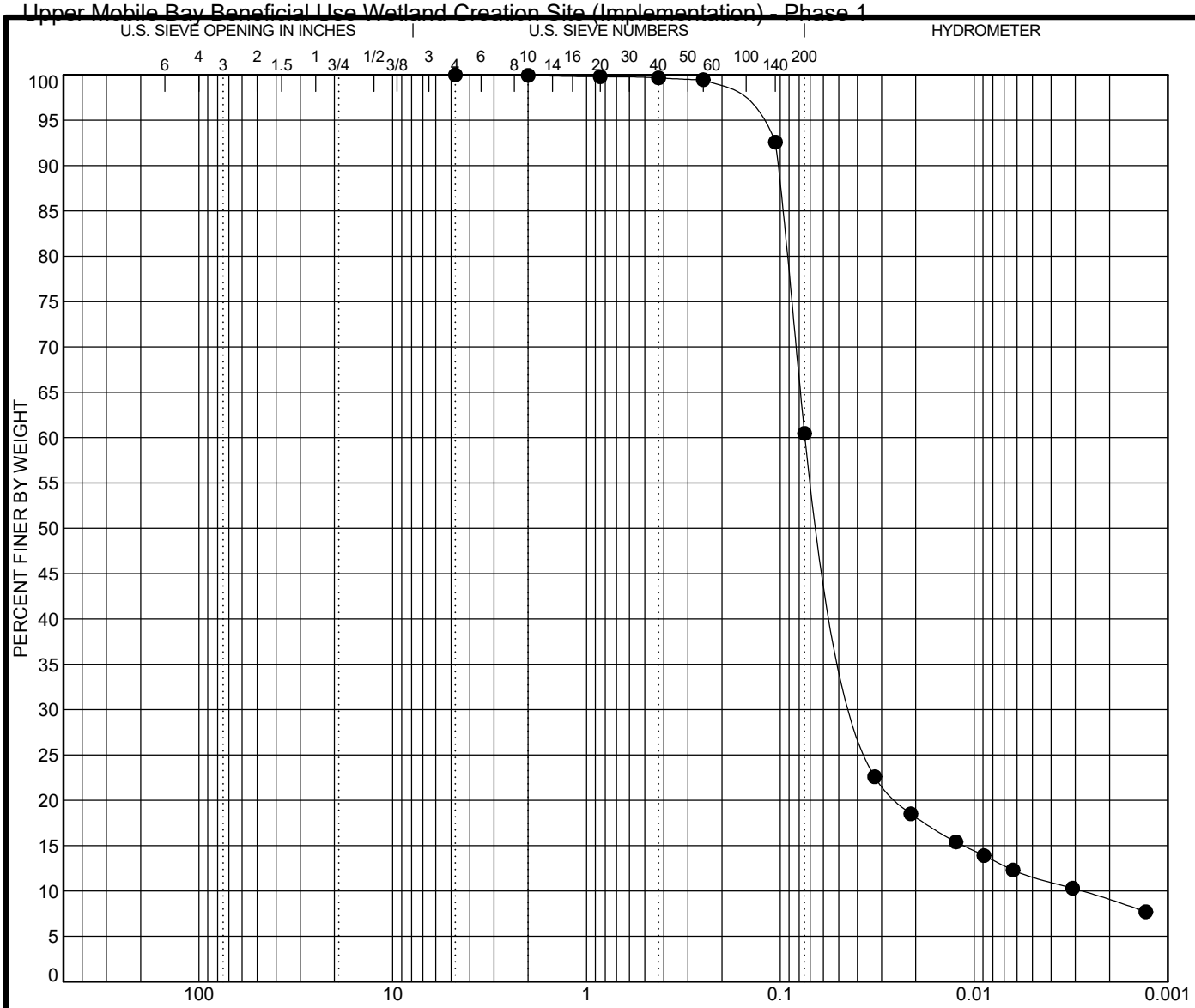
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-25**	**S-6;13.0 ft.**					**7.07**	**26.48**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-25	**13.0 ft.**	**4.75**	**0.074**	**0.038**	**0.003**	**0.0**	**39.5**	**51.5**	**9.0**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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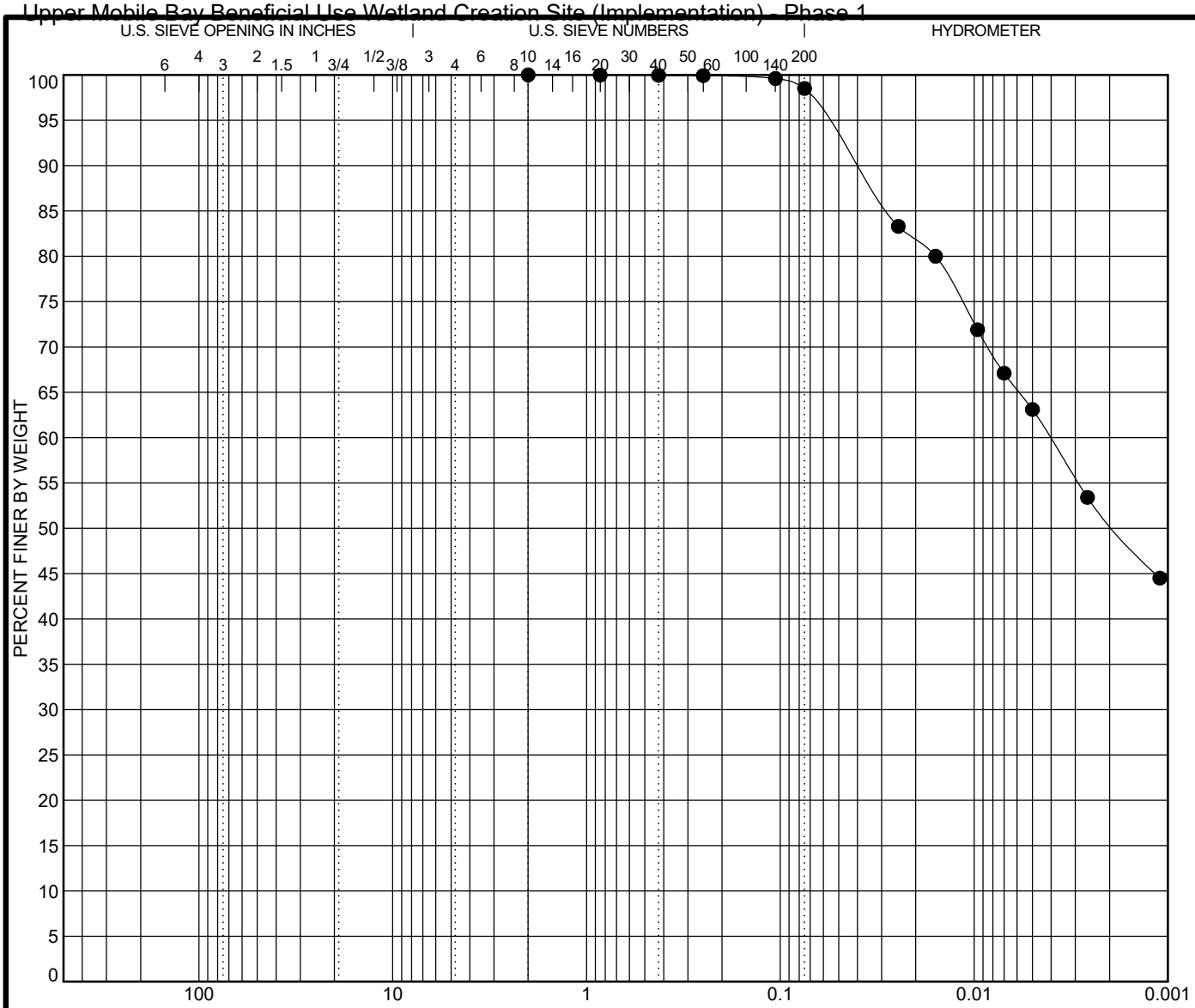
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-25**	**T-3;46.5 ft.**	**FAT CLAY (CH)**	**114**	**28**	**86**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-25	**46.5 ft.**	**2**	**0.004**			**0.0**	**1.5**	**47.8**	**50.7**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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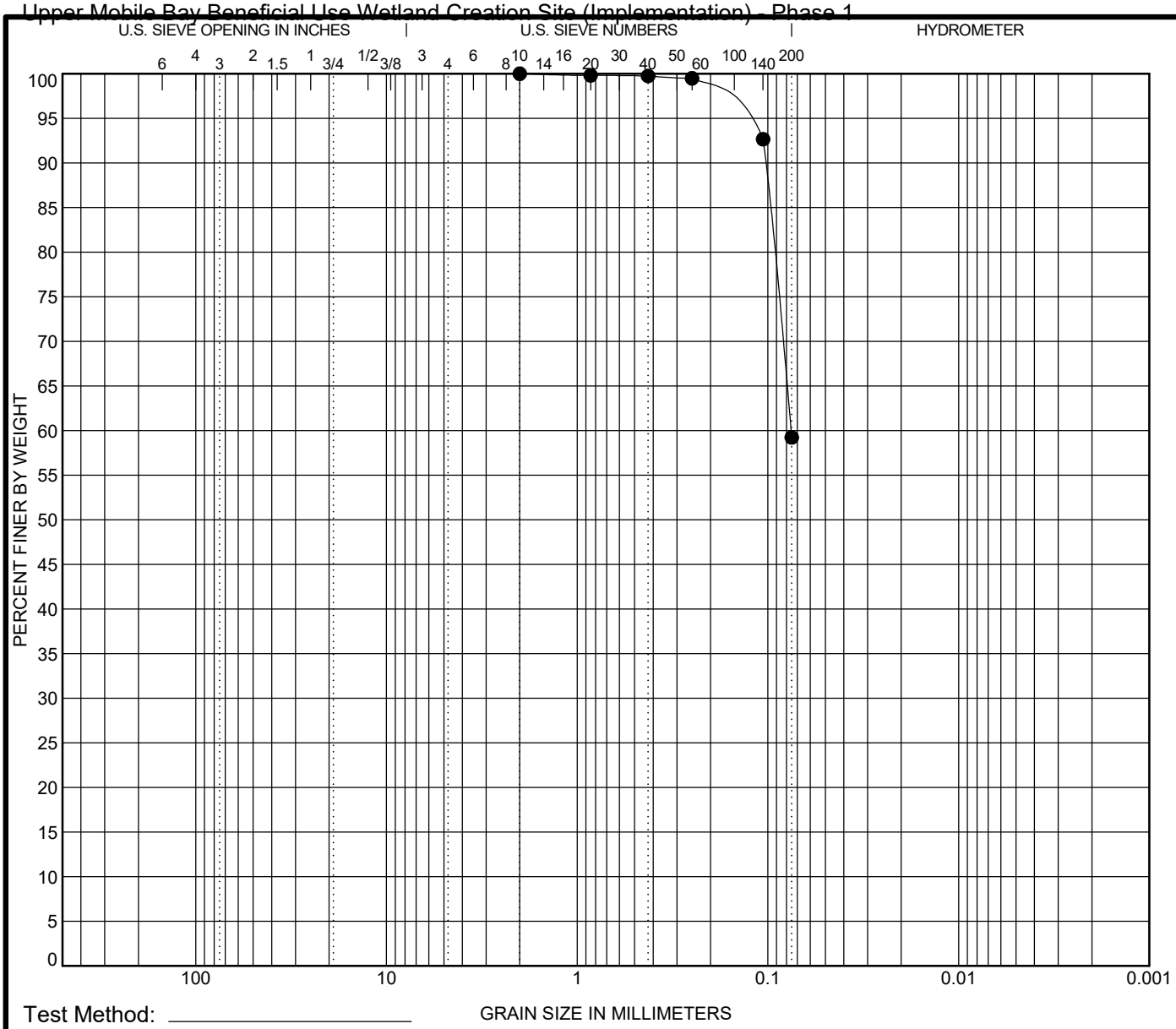
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-26**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-26	**3.0 ft.**	**2**	**0.076**			**0.0**	**40.8**	**59.2**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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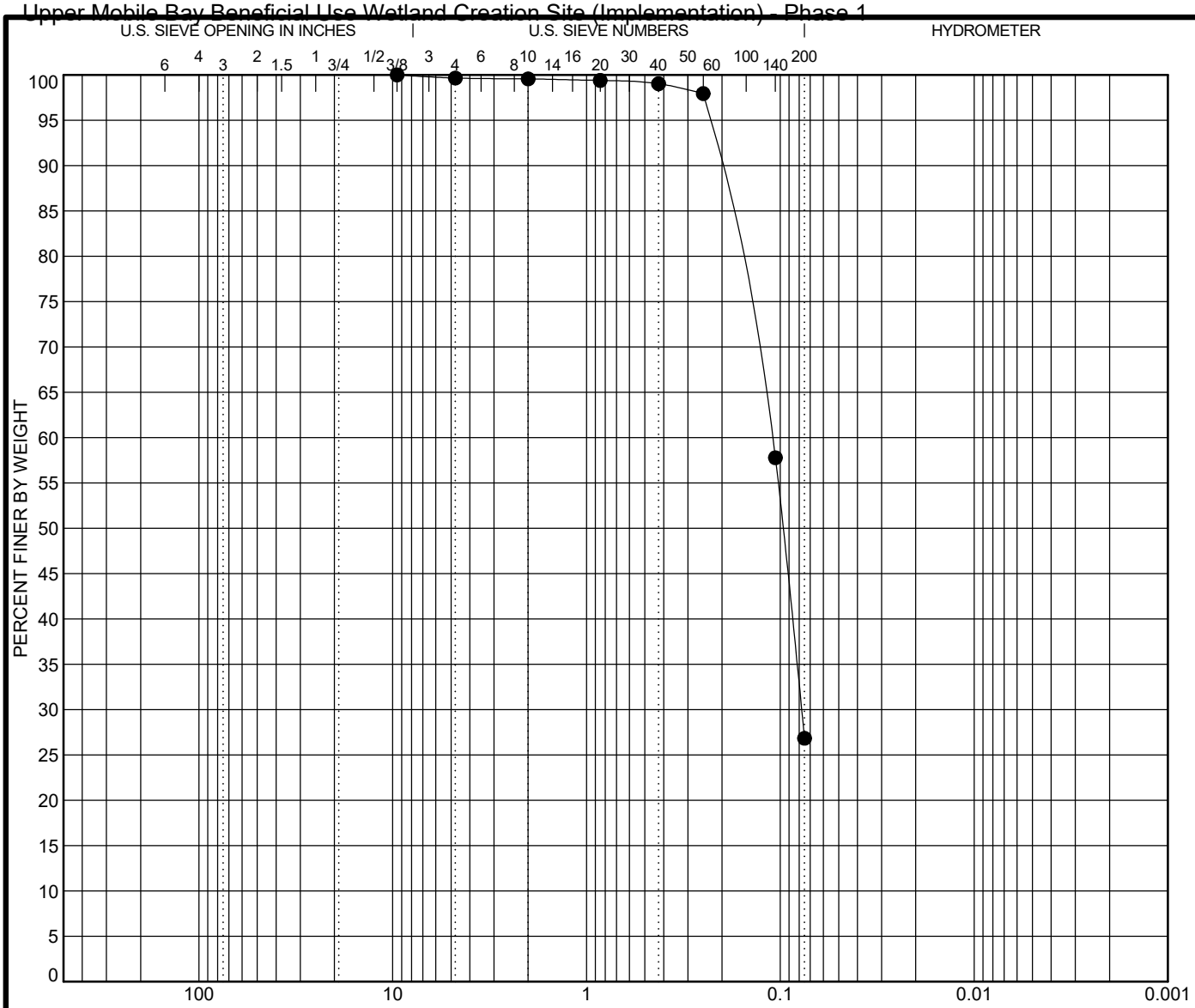

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-26**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-26	**5.5 ft.**	**9.5**	**0.111**	**0.078**		**0.3**	**72.8**	**26.8**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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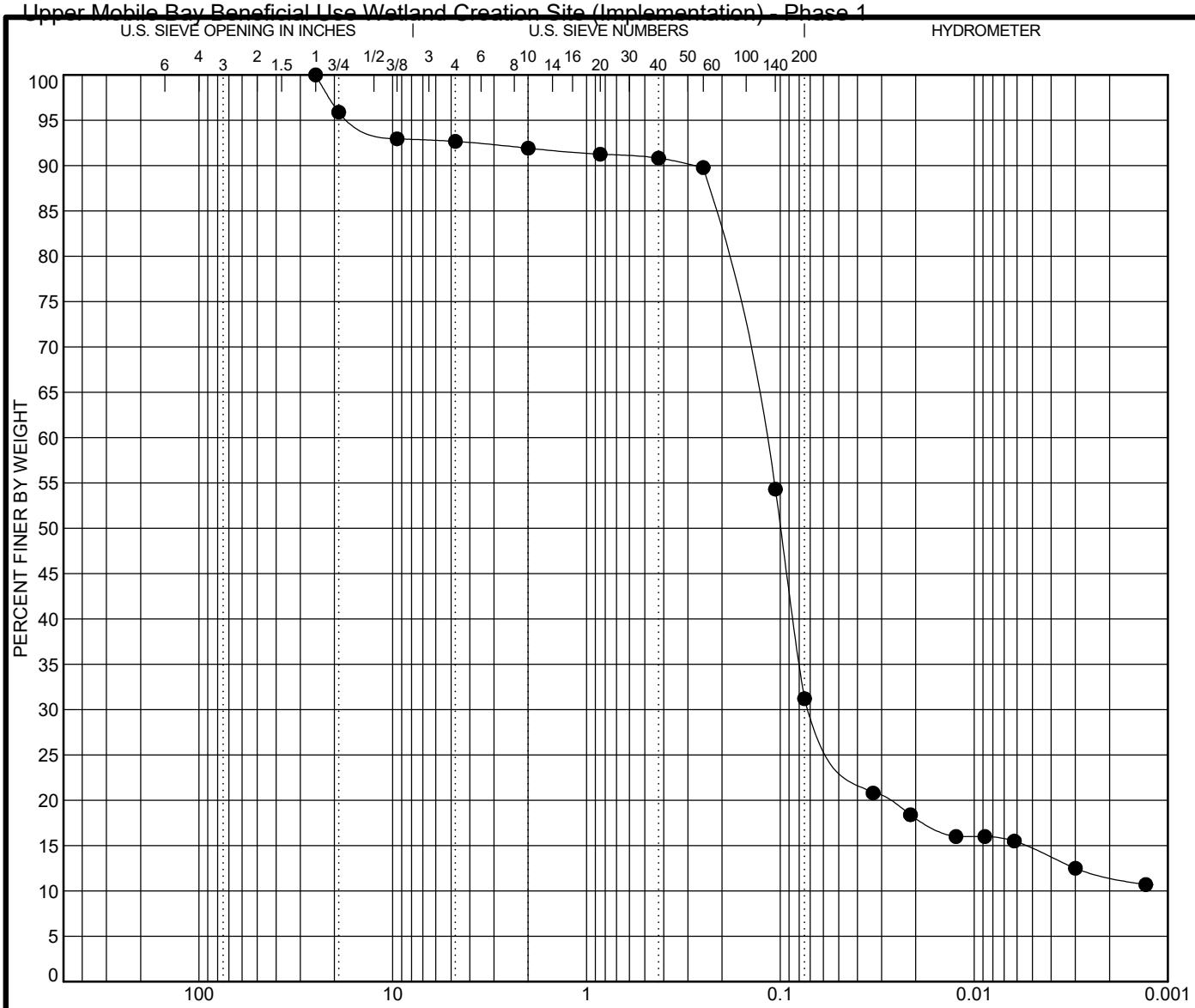

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-26**	**T-1;10.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-26	**10.0 ft.**	**25**	**0.122**	**0.068**		**7.3**	**61.5**	**19.6**	**11.6**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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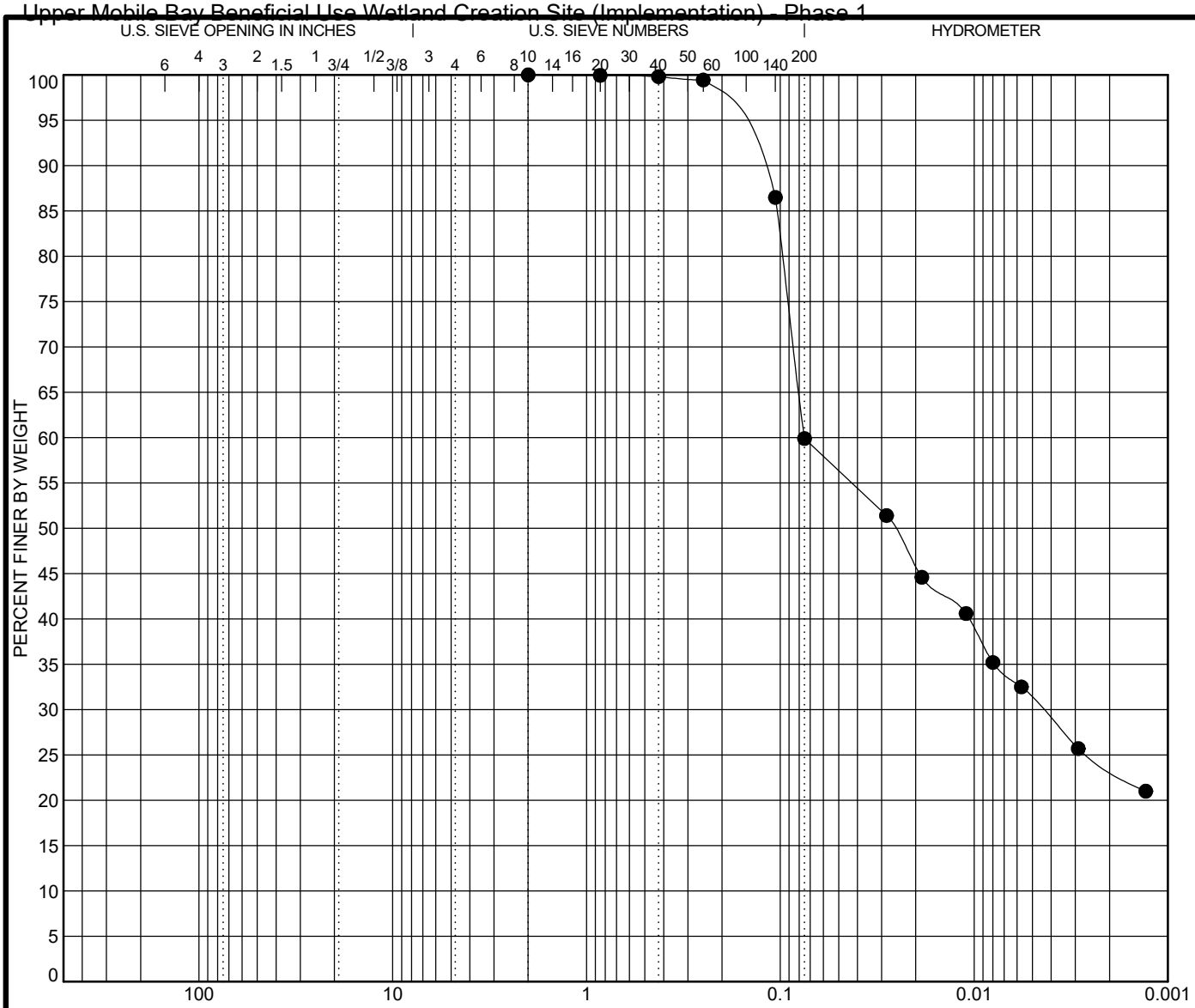
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-27**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-27	**3.0 ft.**	**2**	**0.075**	**0.004**		**0.0**	**40.1**	**36.4**	**23.5**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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G.E.T. PROJ. NUMBER: 21-126
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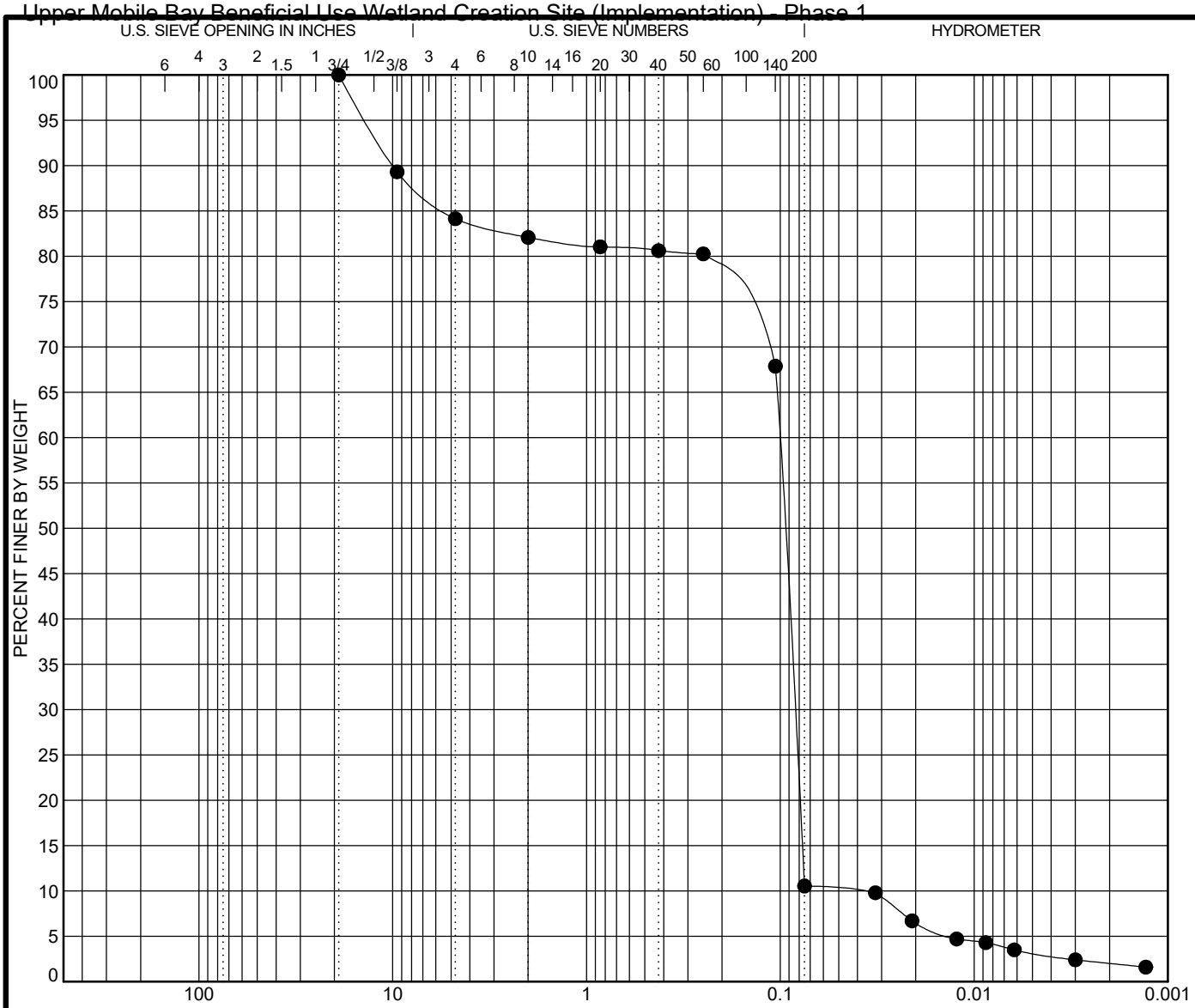
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-27**	**S-5;10.5 ft.**					**1.74**	**2.50**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-27	**10.5 ft.**	**19**	**0.101**	**0.084**	**0.04**	**15.9**	**73.6**	**8.5**	**2.0**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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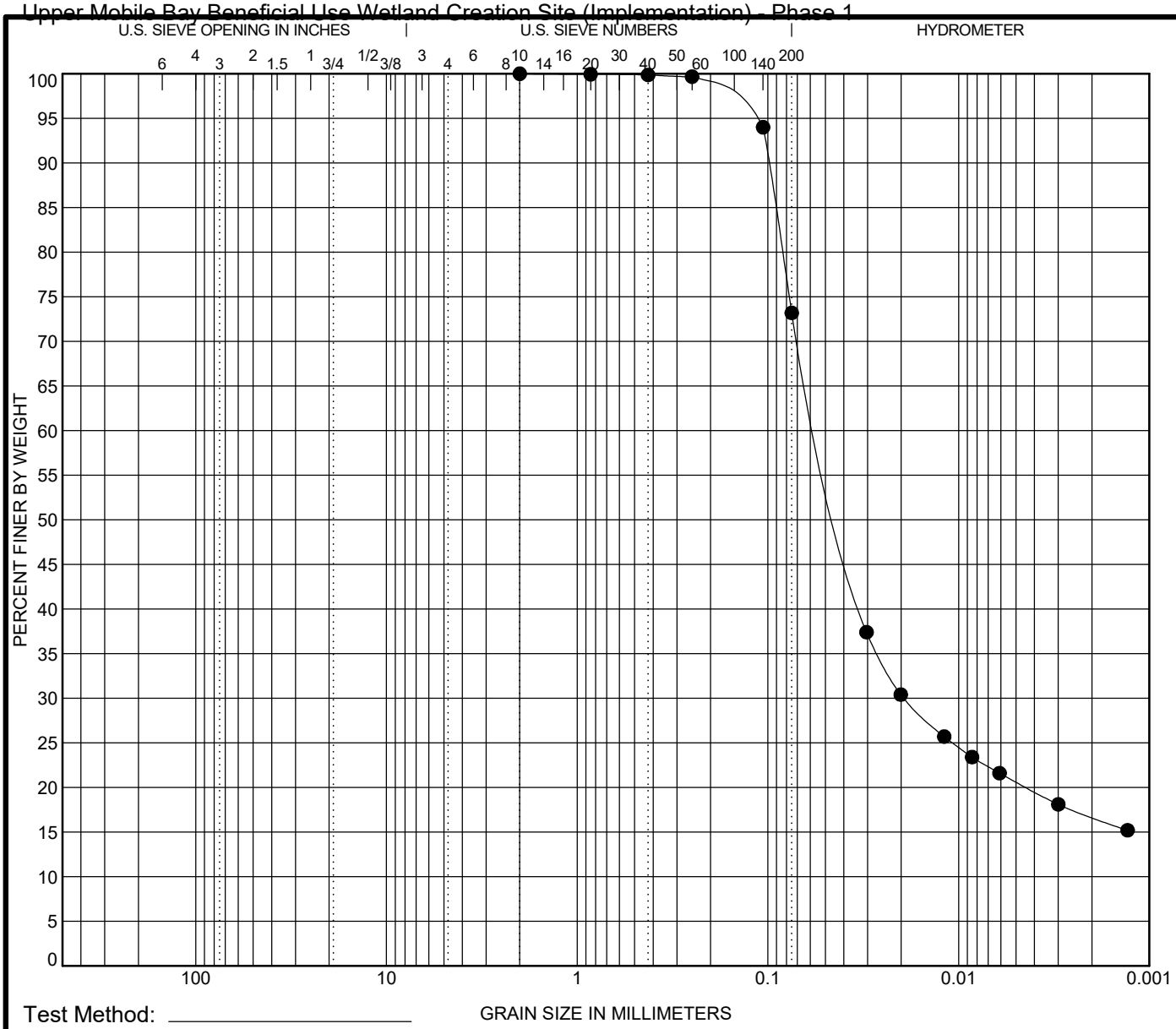
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-27**	**T-1;15.0 ft.**	**LEAN CLAY with SAND (CL)**	**38**	**24**	**14**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-27	**15.0 ft.**	**2**	**0.054**	**0.019**		**0.0**	**26.8**	**56.5**	**16.7**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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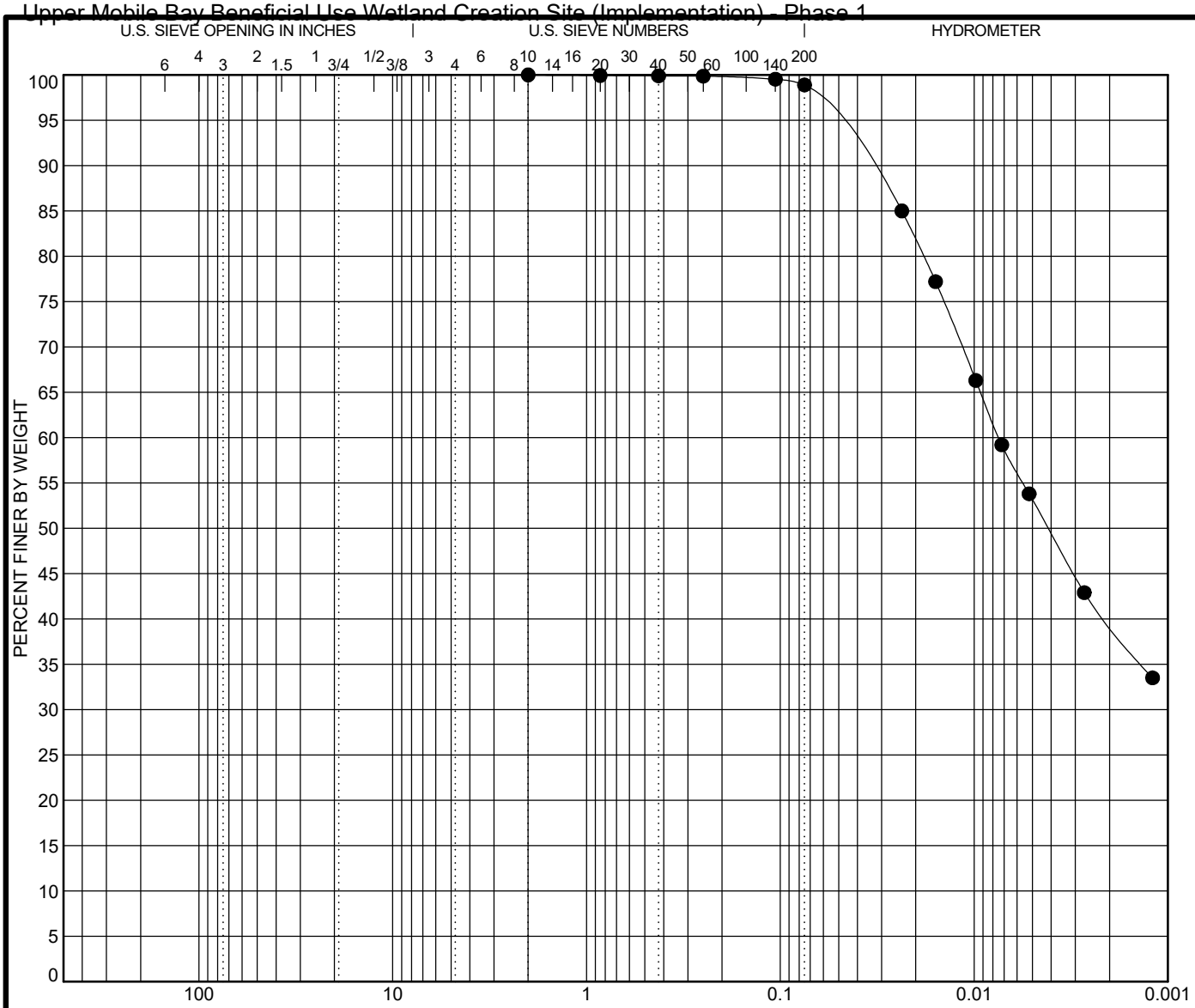
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-27**	**T-3;36.5 ft.**	**FAT CLAY (CH)**	**116**	**25**	**91**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-27	**36.5 ft.**	**2**	**0.007**			**0.0**	**1.1**	**59.5**	**39.4**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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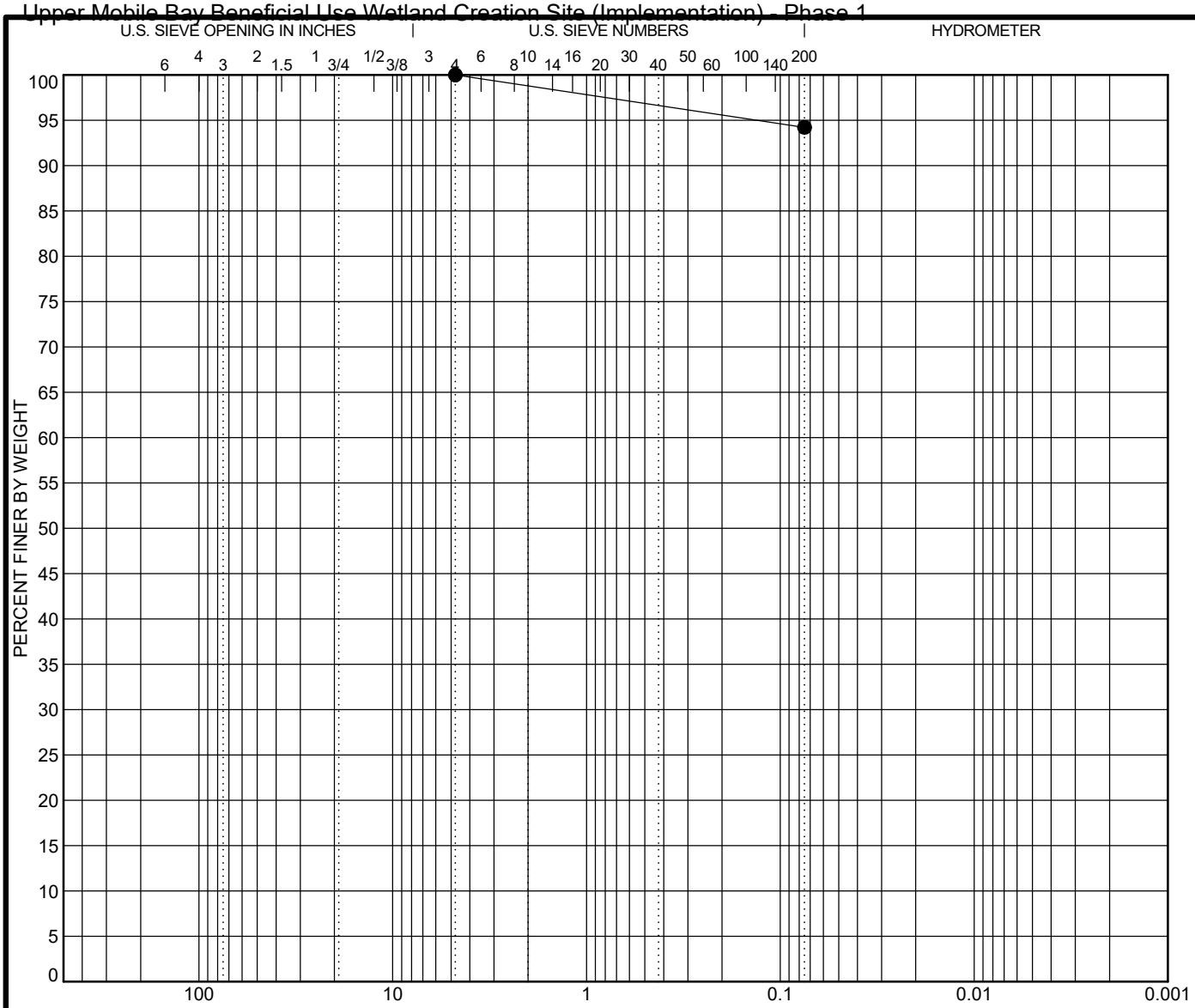

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-27**	**S-13;44.0 ft.**	**FAT CLAY (CH)**	**96**	**27**	**69**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-27	**44.0 ft.**	**4.75**				**0.0**	**5.8**	**94.2**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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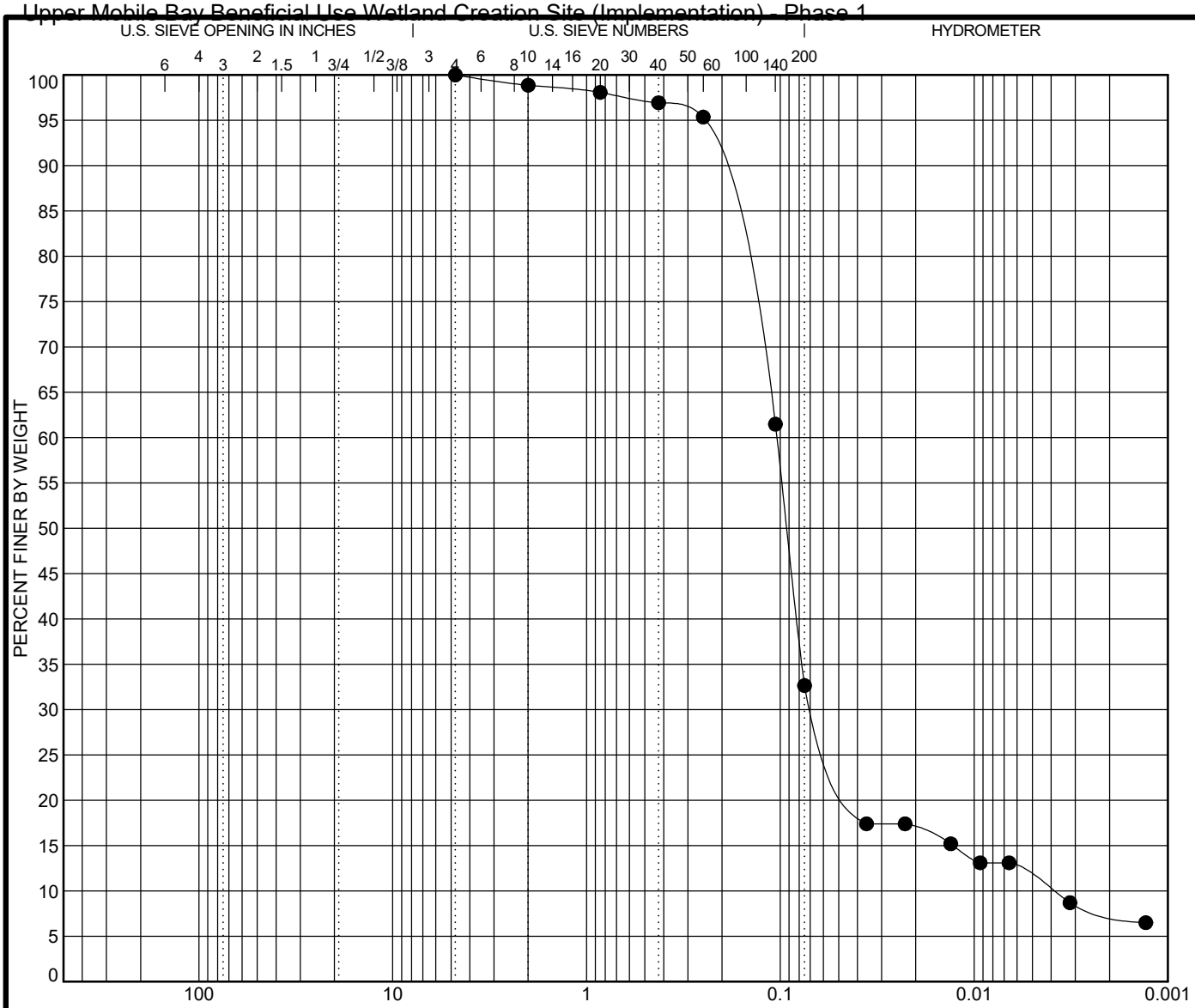

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-28**	**S-2;3.0 ft.**					**10.55**	**26.28**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-28	**3.0 ft.**	**4.75**	**0.104**	**0.066**	**0.004**	**0.0**	**67.4**	**25.1**	**7.6**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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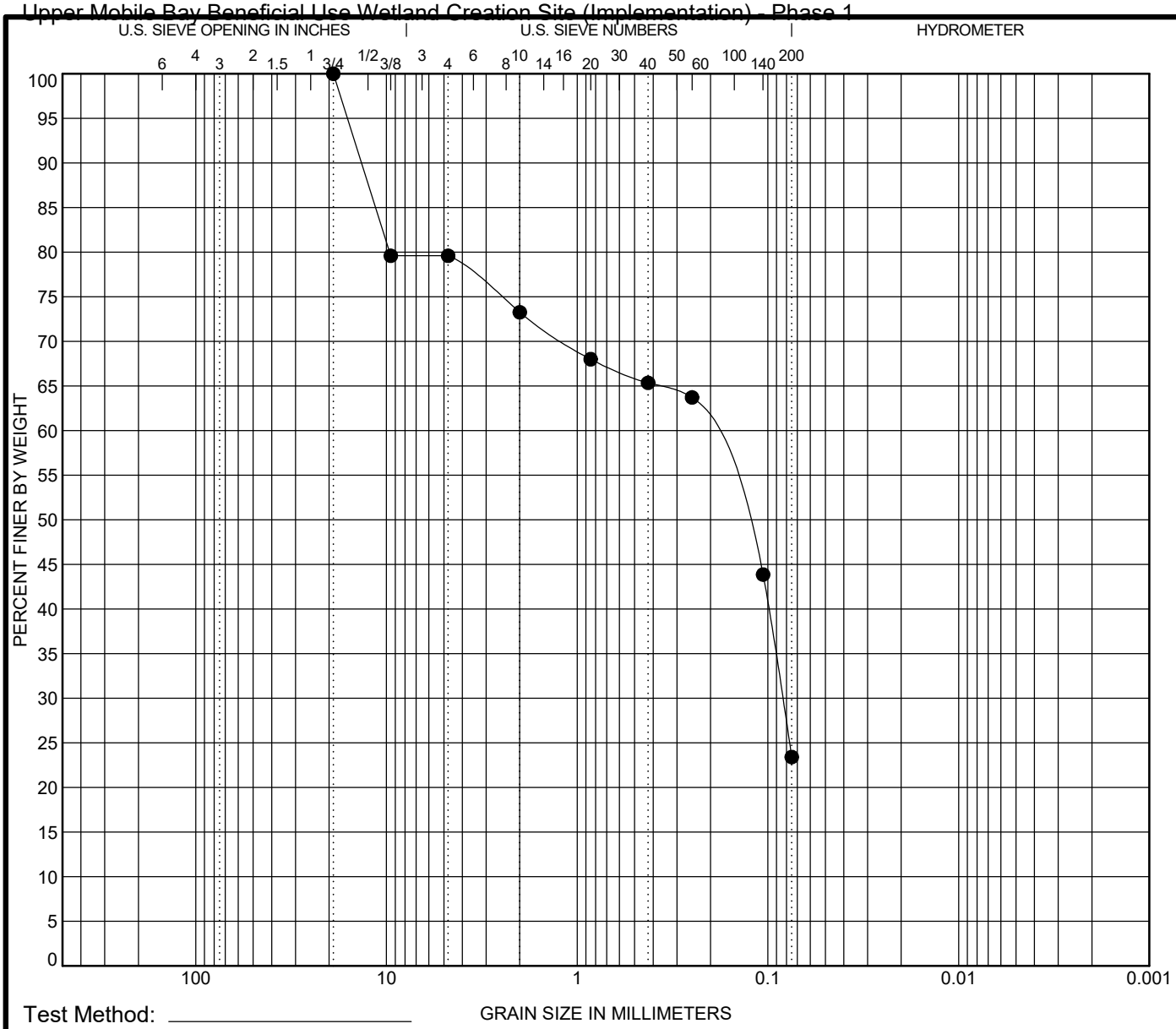

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **B-28 S-4;8.0 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-28 8.0 ft.	**19**	**0.213**	**0.084**		**20.4**	**56.2**	**23.4**	

REMARKS:

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GRAIN SIZE DISTRIBUTION

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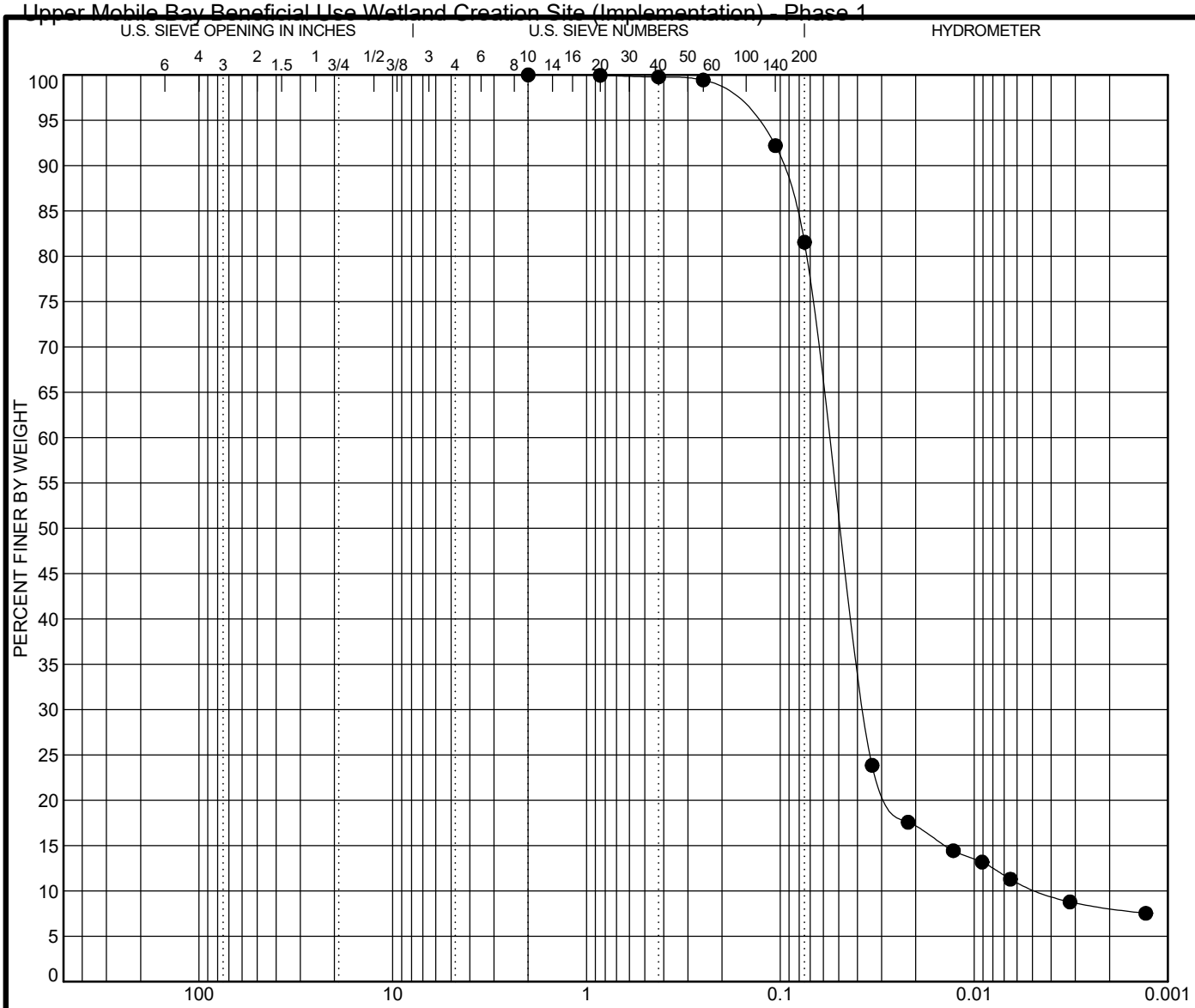
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-28**	**T-1;10.0 ft.**	**LEAN CLAY with SAND (CL)**	**28**	**20**	**8**	**5.35**	**12.33**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-28	**10.0 ft.**	**2**	**0.056**	**0.037**	**0.005**	**0.0**	**18.5**	**73.4**	**8.1**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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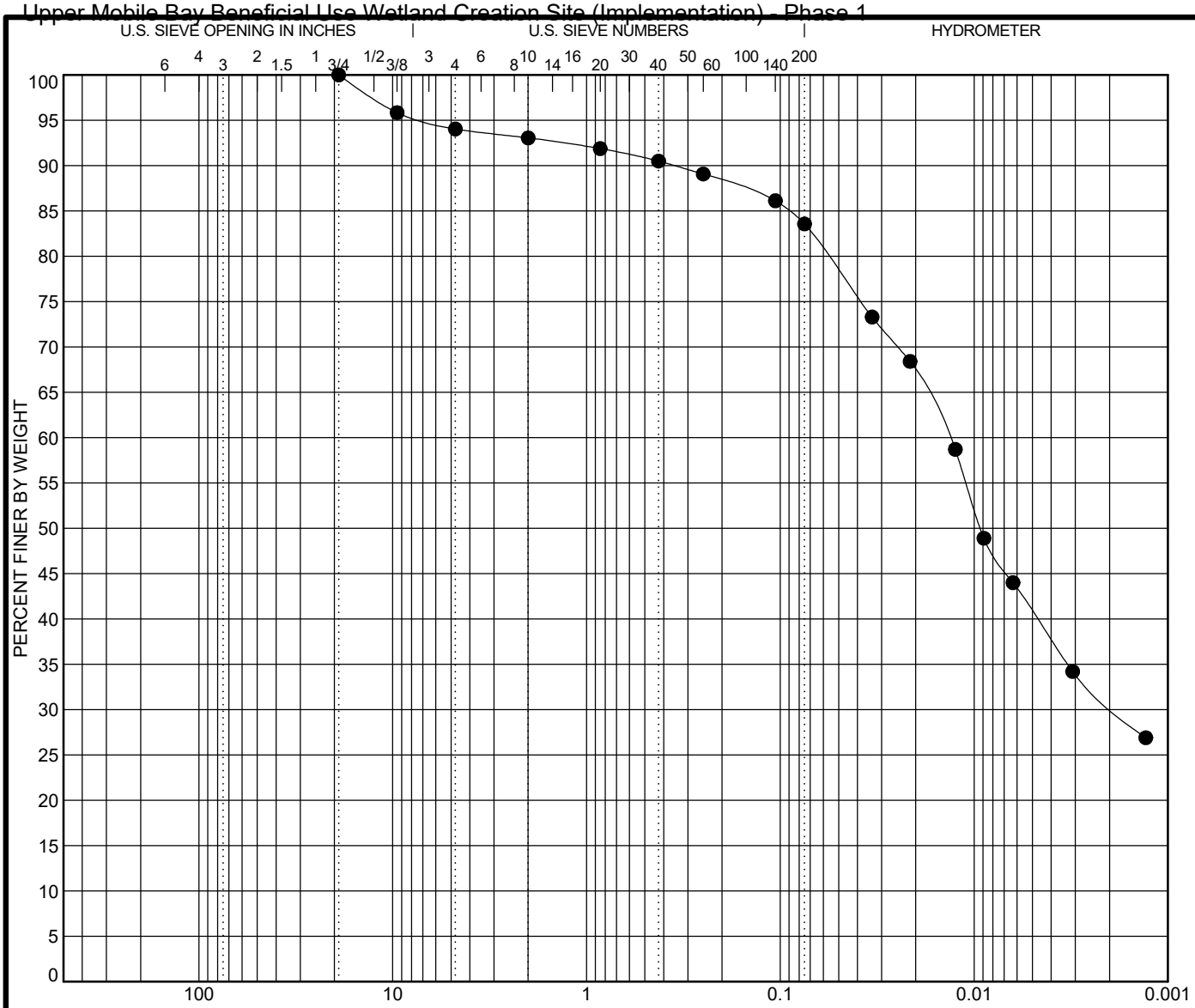
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-29**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-29	**3.0 ft.**	**19**	**0.013**	**0.002**		**6.0**	**10.5**	**53.0**	**30.5**

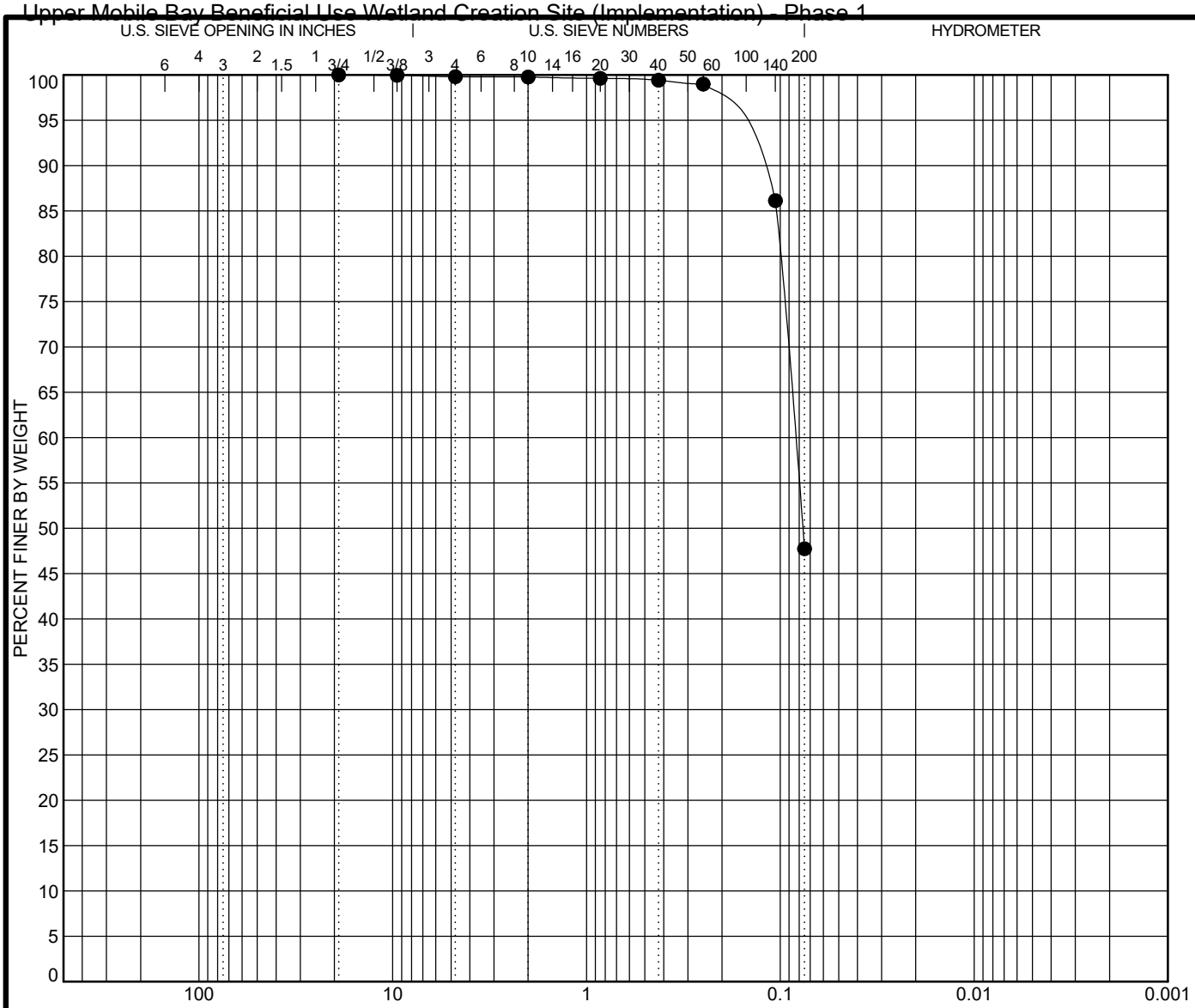
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-29**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-29	**8.0 ft.**	**19**	**0.084**			**0.2**	**52.1**	**47.7**	

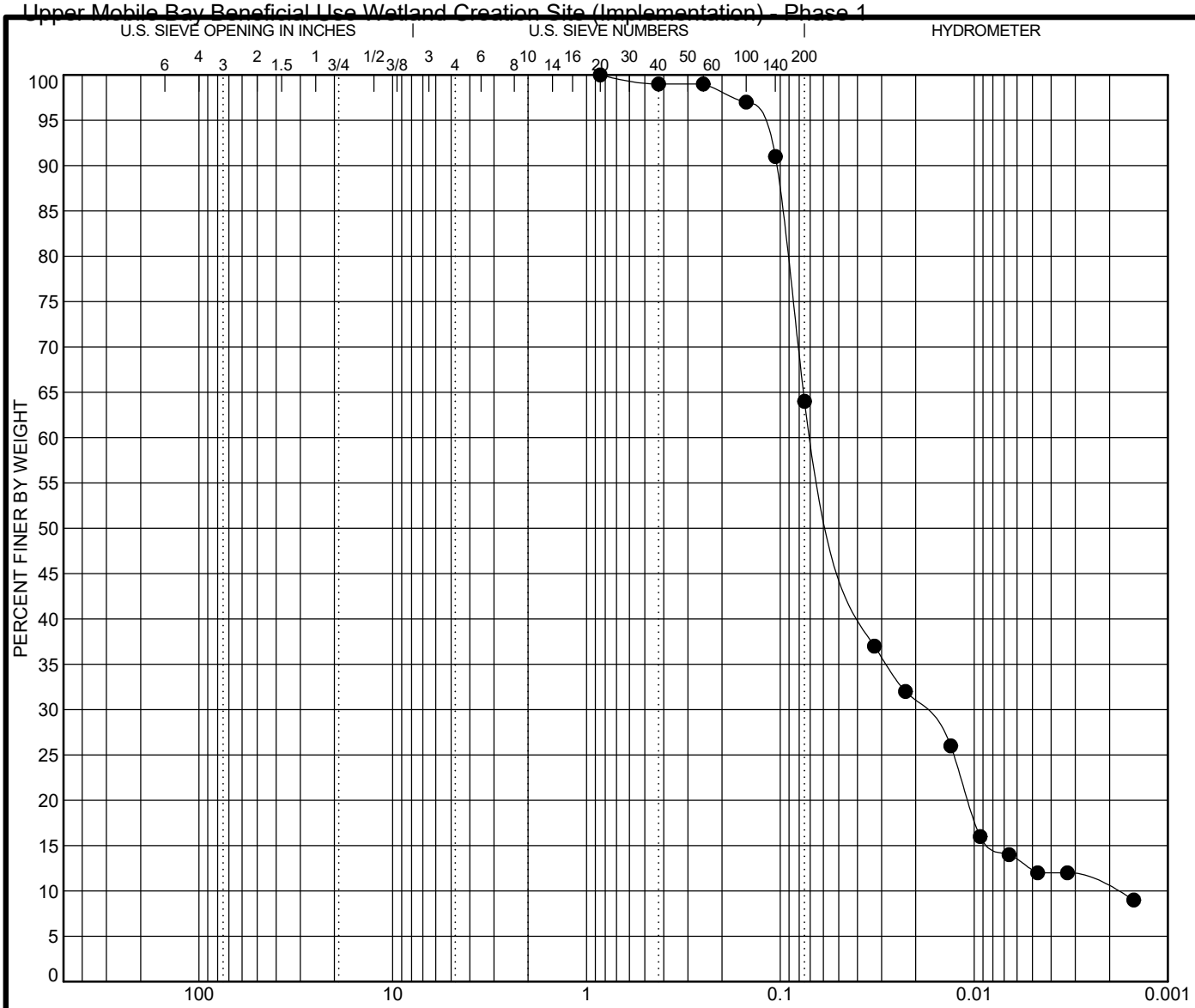
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-29**	**T-1;10.0 ft.**	**SANDY SILT (ML)**	**38**	**28**	**10**	**2.76**	**34.00**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-29	**10.0 ft.**	**0.85**	**0.066**	**0.019**	**0.002**	**0.0**	**36.0**	**53.9**	**10.1**

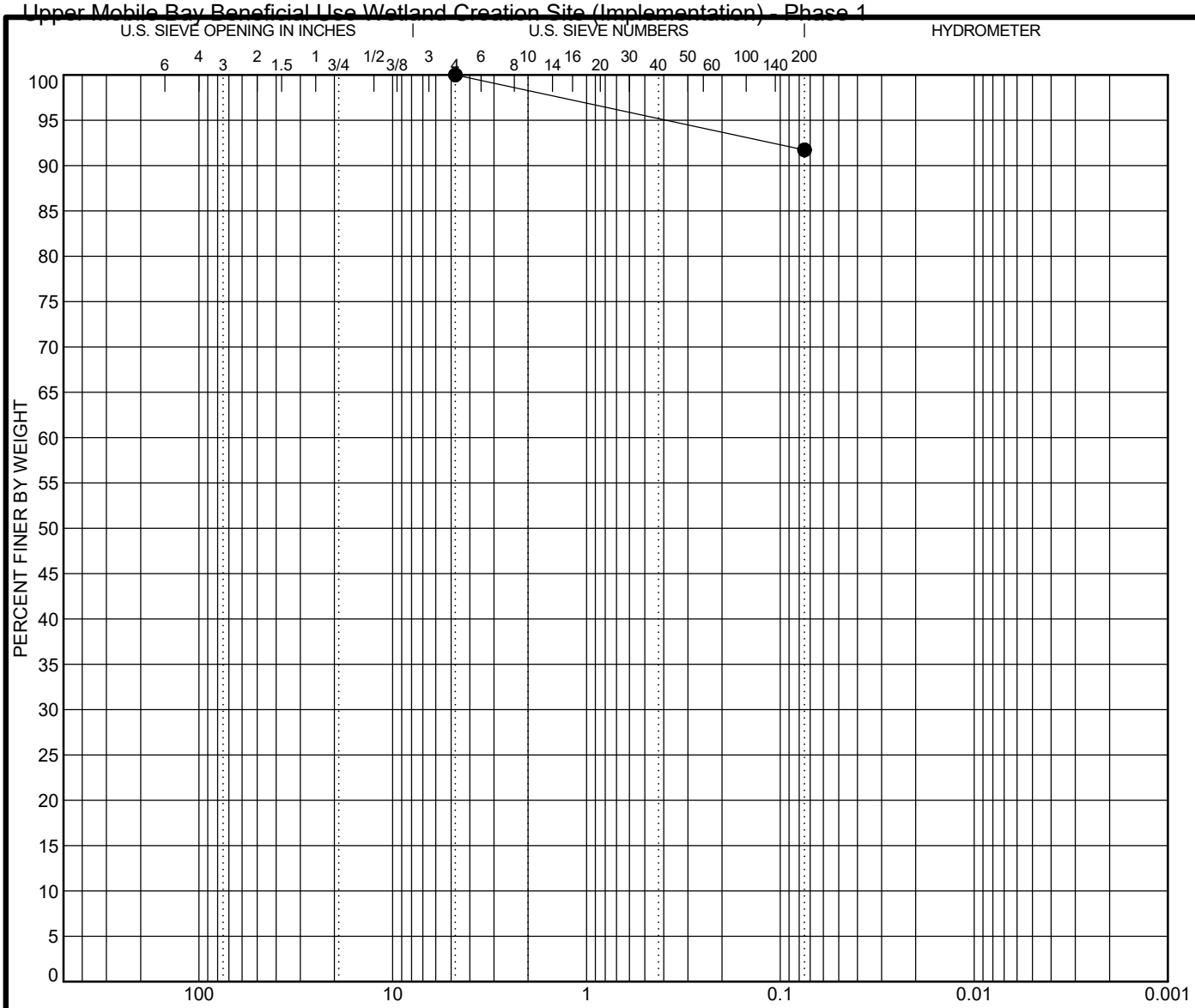
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-29**	**S-6;15.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-29	**15.0 ft.**	**4.75**				**0.0**	**8.3**	**91.7**	

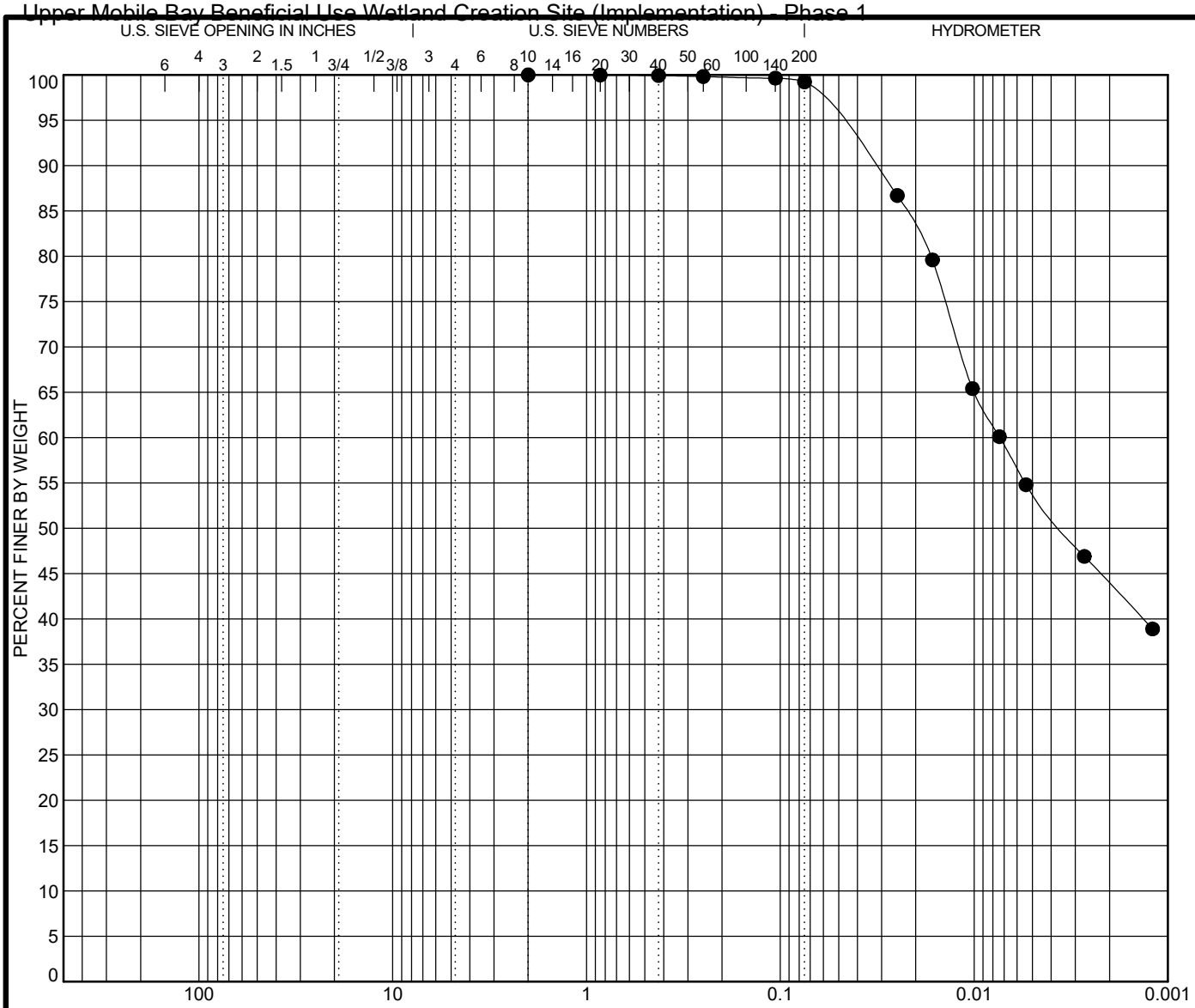
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-29**	**T-2;26.5 ft.**	**FAT CLAY (CH)**	**84**	**21**	**63**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-29	**26.5 ft.**	**2**	**0.007**			**0.0**	**0.8**	**55.3**	**43.9**

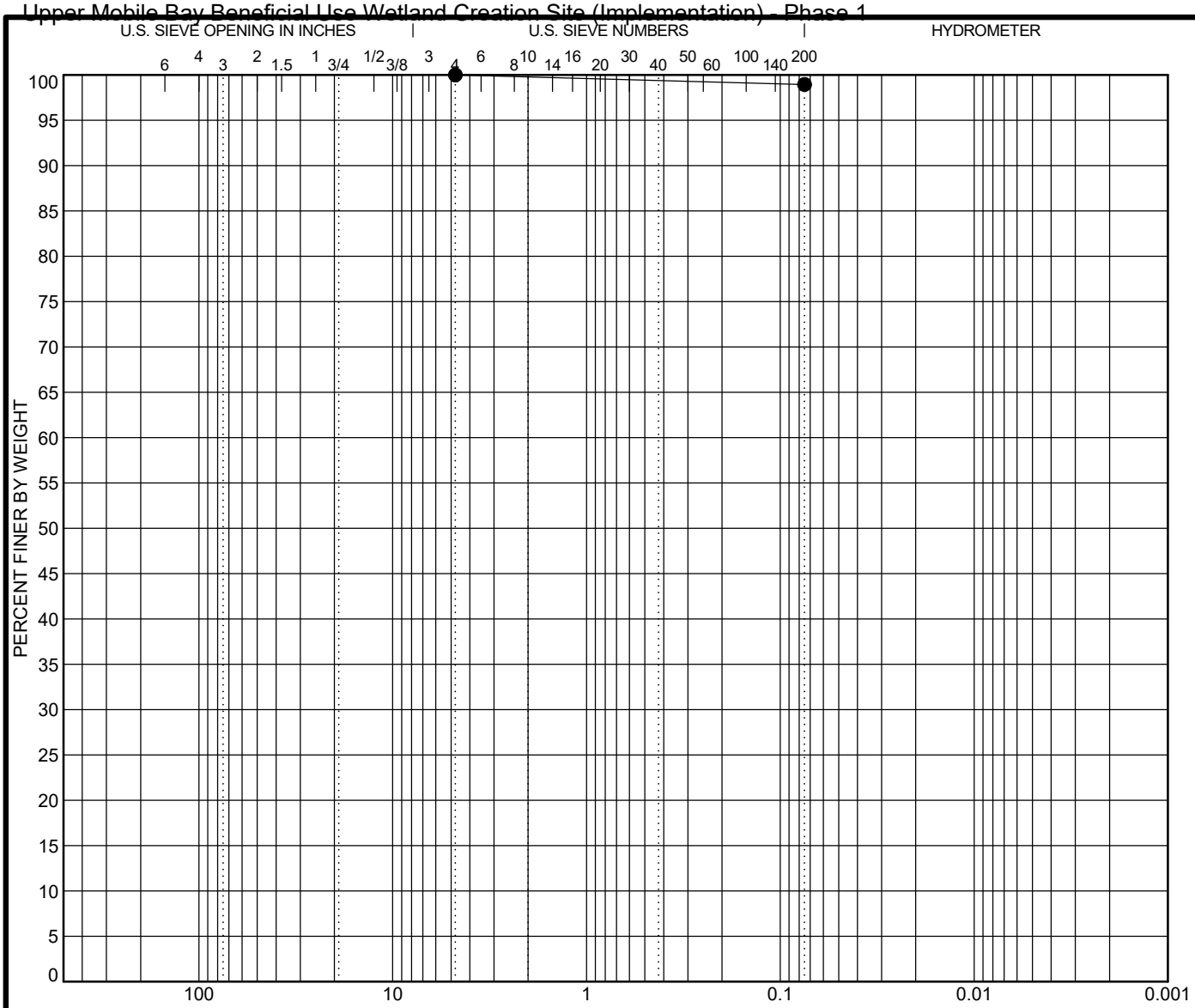
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-29**	**S-13;44.0 ft.**	**FAT CLAY (CH)**	**91**	**23**	**68**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-29	**44.0 ft.**	**4.75**				**0.0**	**1.1**	**98.9**	

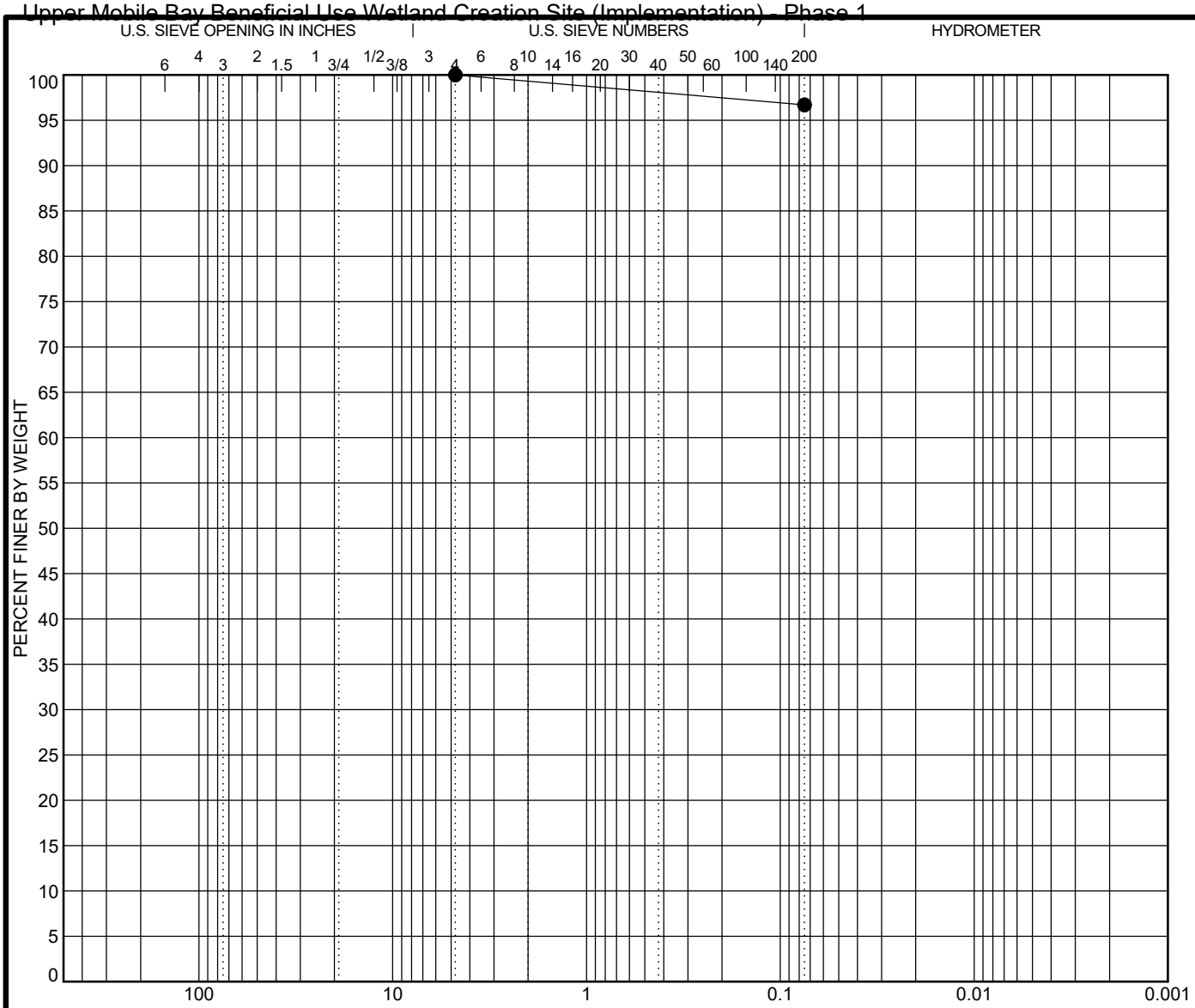
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-29**	**S-16;59.0 ft.**	**FAT CLAY (CH)**	**131**	**40**	**91**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-29	**59.0 ft.**	**4.75**				**0.0**	**3.3**	**96.7**	

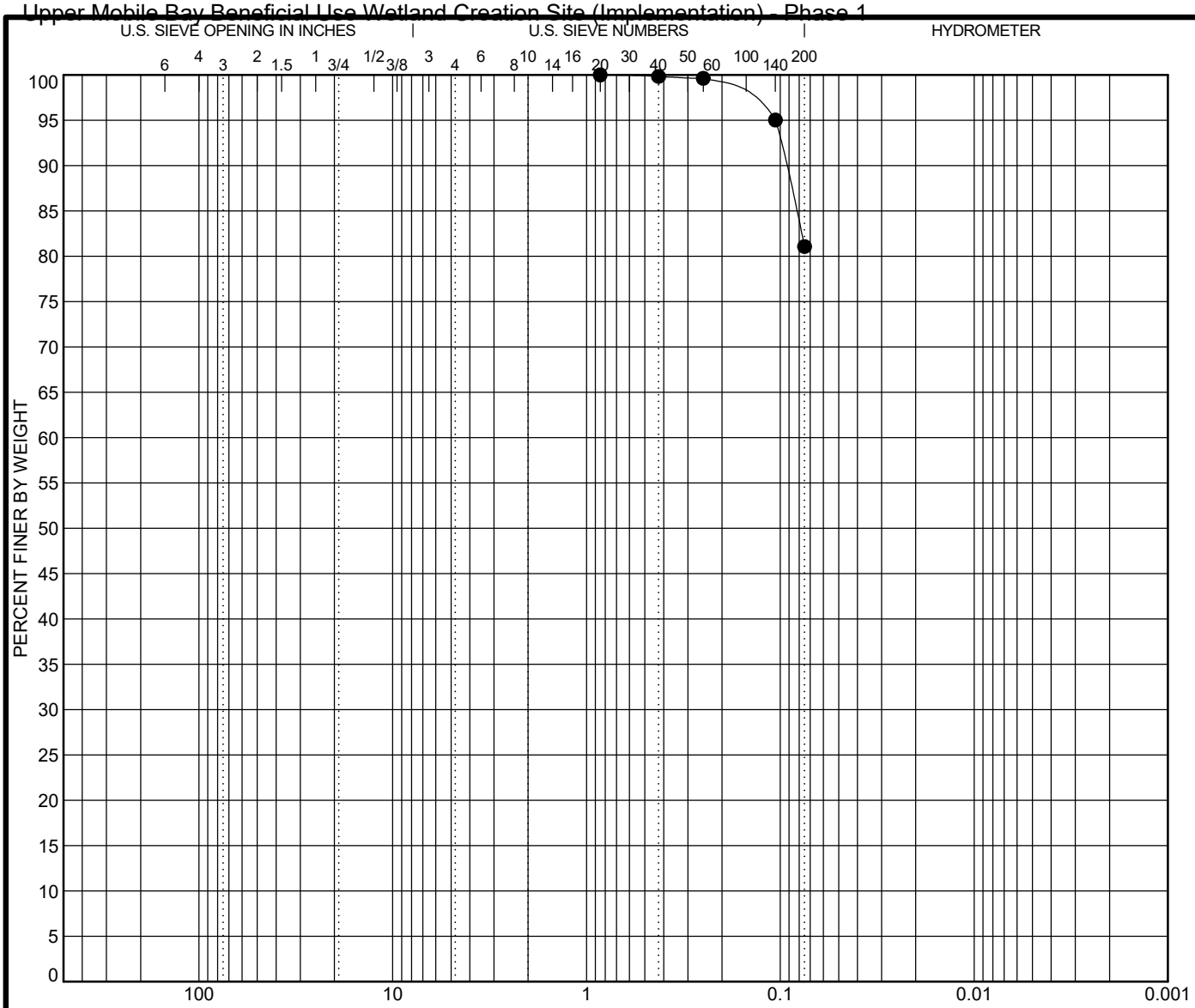
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-30**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-30	**3.0 ft.**	**0.85**				**0.0**	**18.9**	**81.1**	

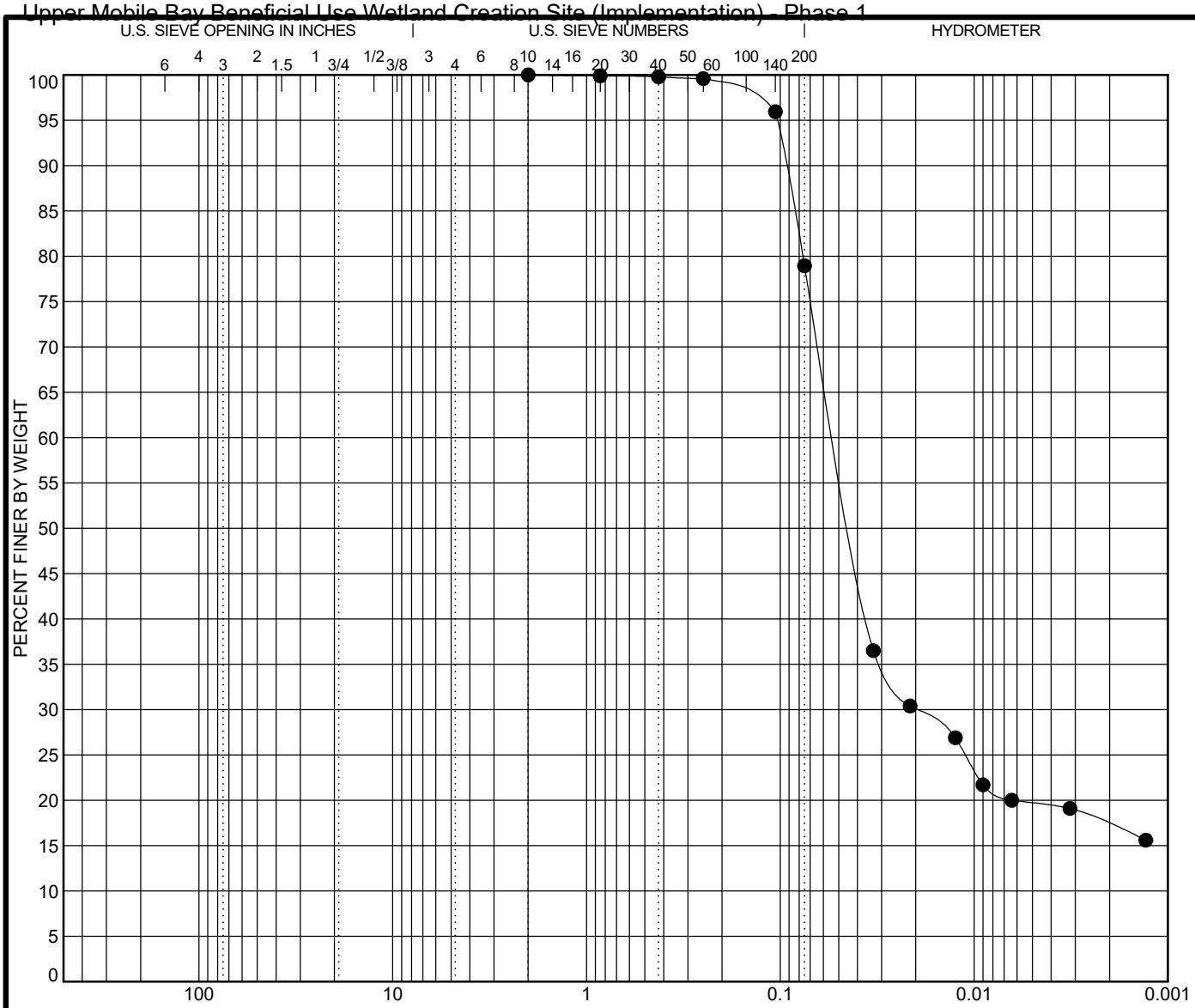
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-30**	**T-4;4.0 ft.**	**FAT CLAY with SAND (CH)**	**60**	**23**	**37**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-30	**4.0 ft.**	**2**	**0.052**	**0.02**		**0.0**	**21.1**	**61.7**	**17.3**

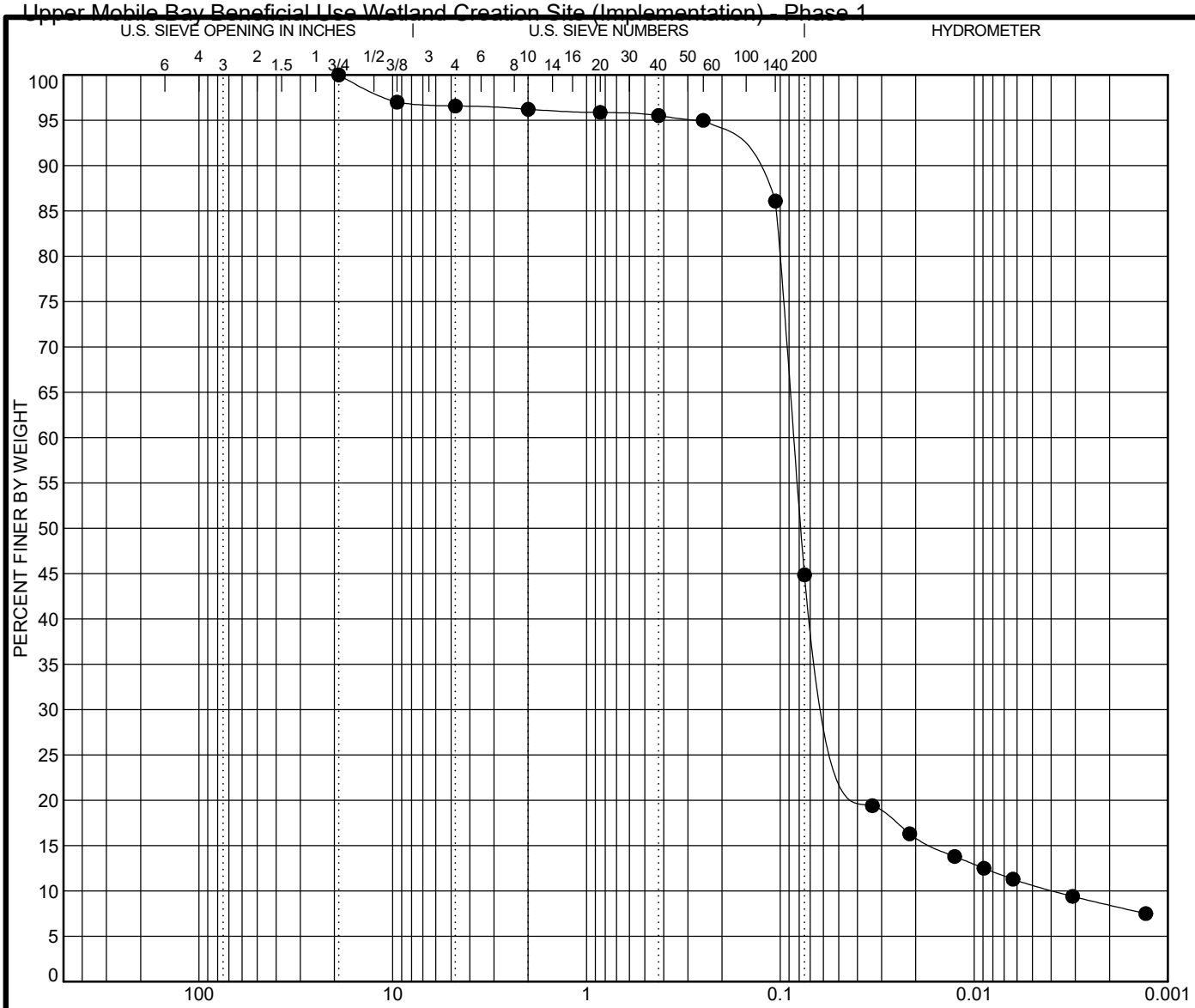
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-30**	**S-4;8.0 ft.**					**6.65**	**21.96**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-30	**8.0 ft.**	**19**	**0.085**	**0.047**	**0.004**	**3.4**	**51.7**	**36.4**	**8.4**

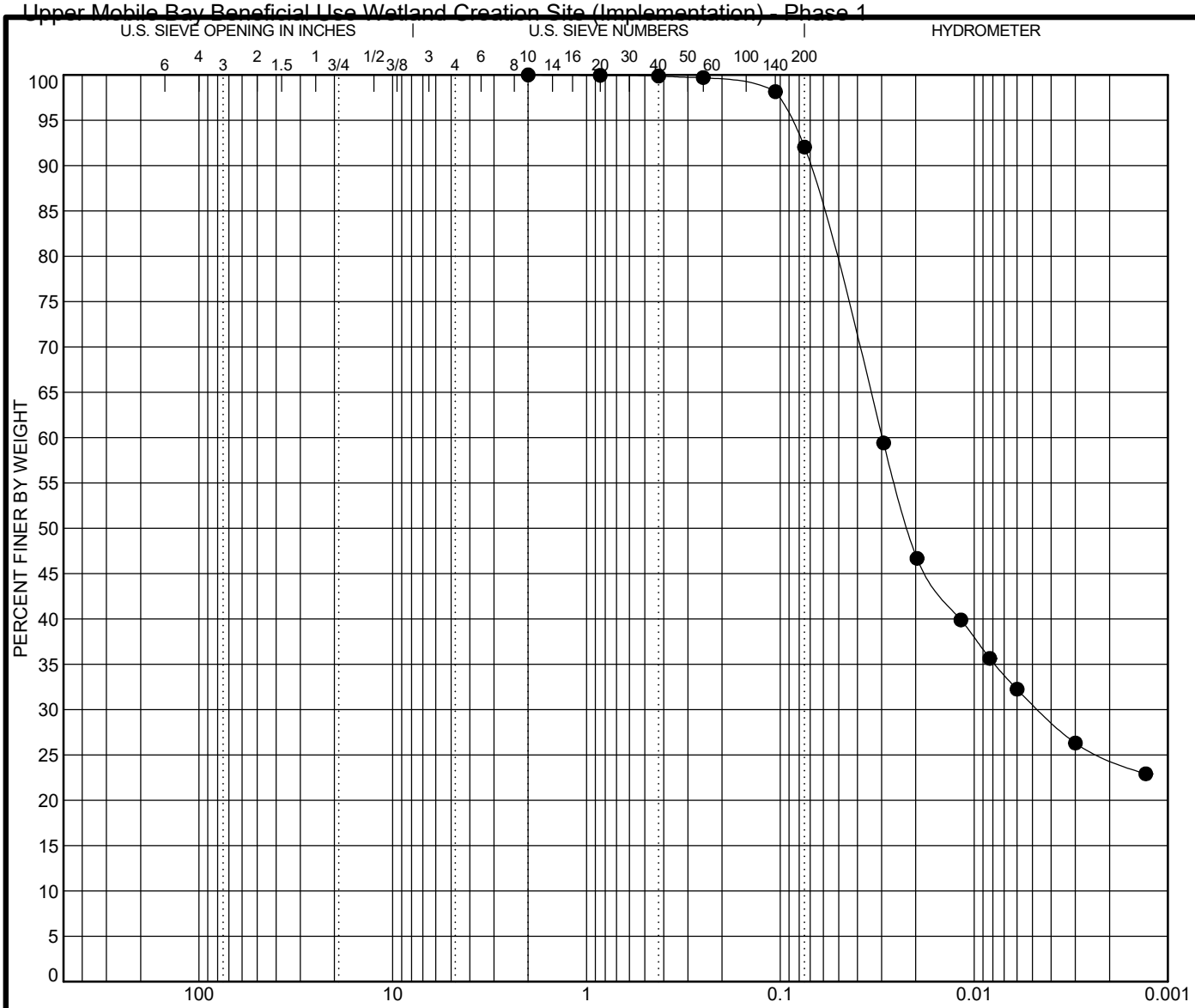
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-30**	**T-1;15.0 ft.**	**LEAN CLAY (CL)**	**36**	**21**	**15**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-30	**15.0 ft.**	**2**	**0.03**	**0.005**		**0.0**	**8.0**	**67.4**	**24.7**

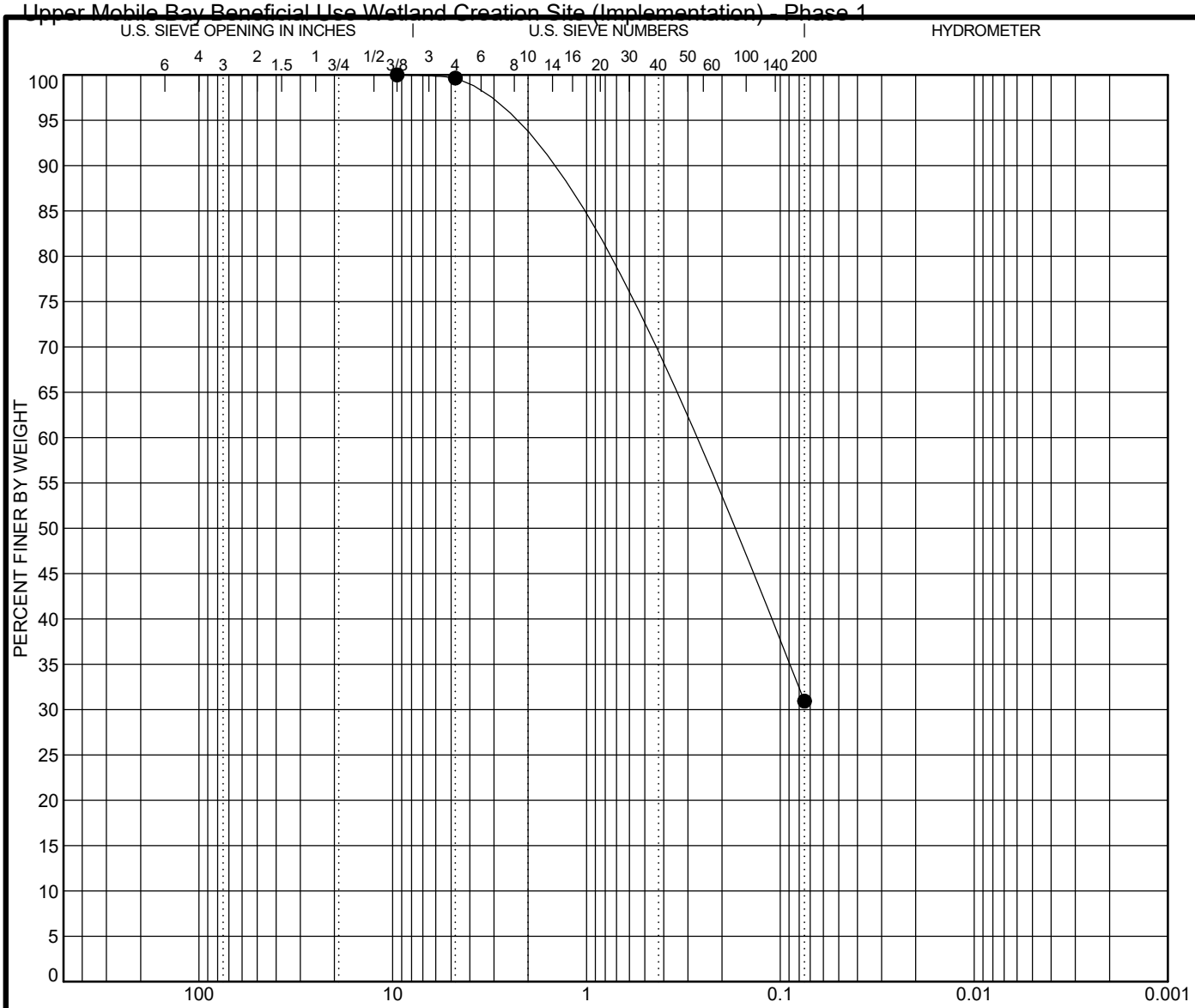
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **B-30**	**S-15;54.0 ft.**	**CLAYEY SAND (SC)**	**219**	**68**	**151**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-30	**54.0 ft.**	**9.5**	**0.434**			**0.3**	**68.7**	**30.9**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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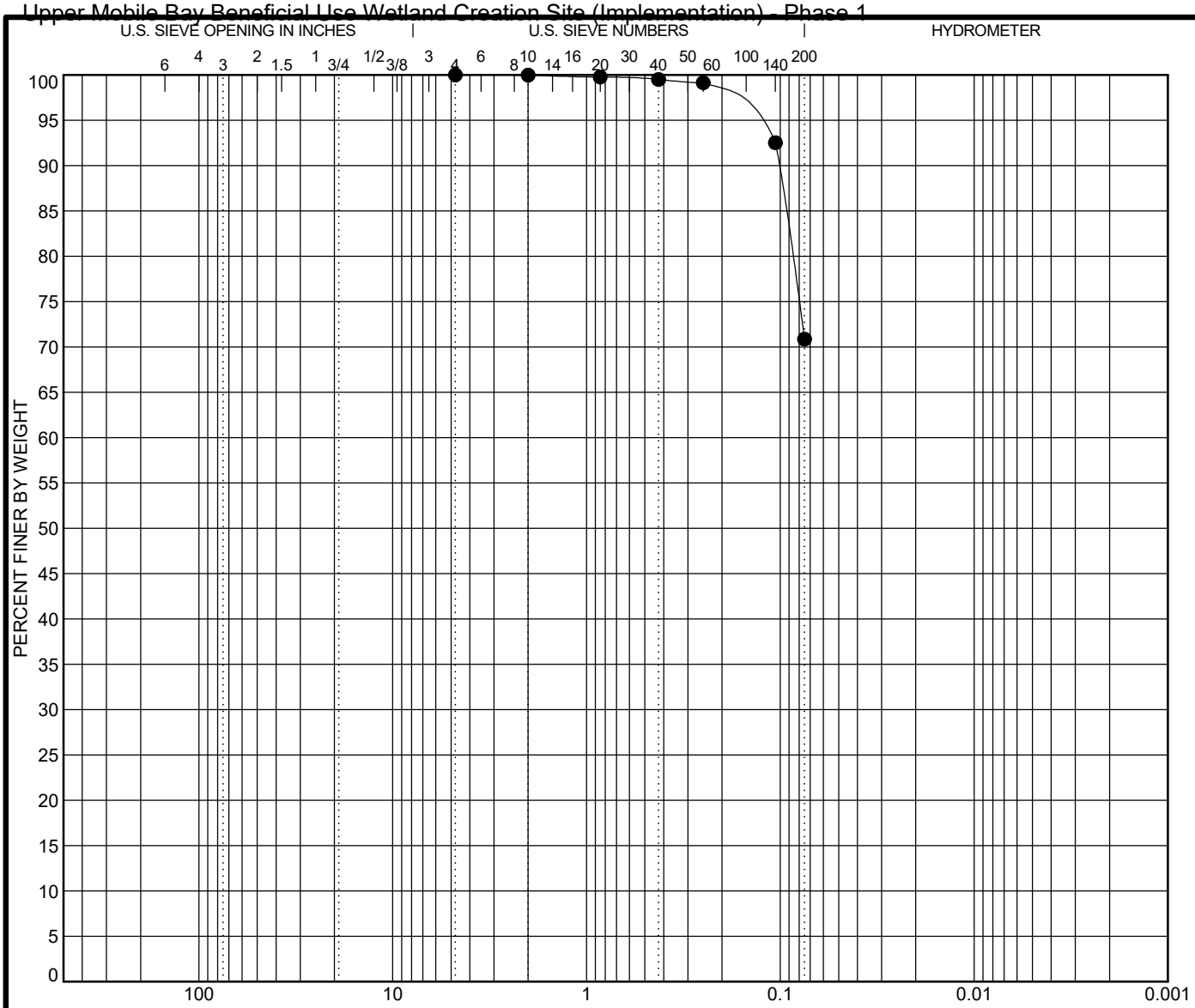
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-31**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-31	**3.0 ft.**	**4.75**				**0.0**	**29.1**	**70.9**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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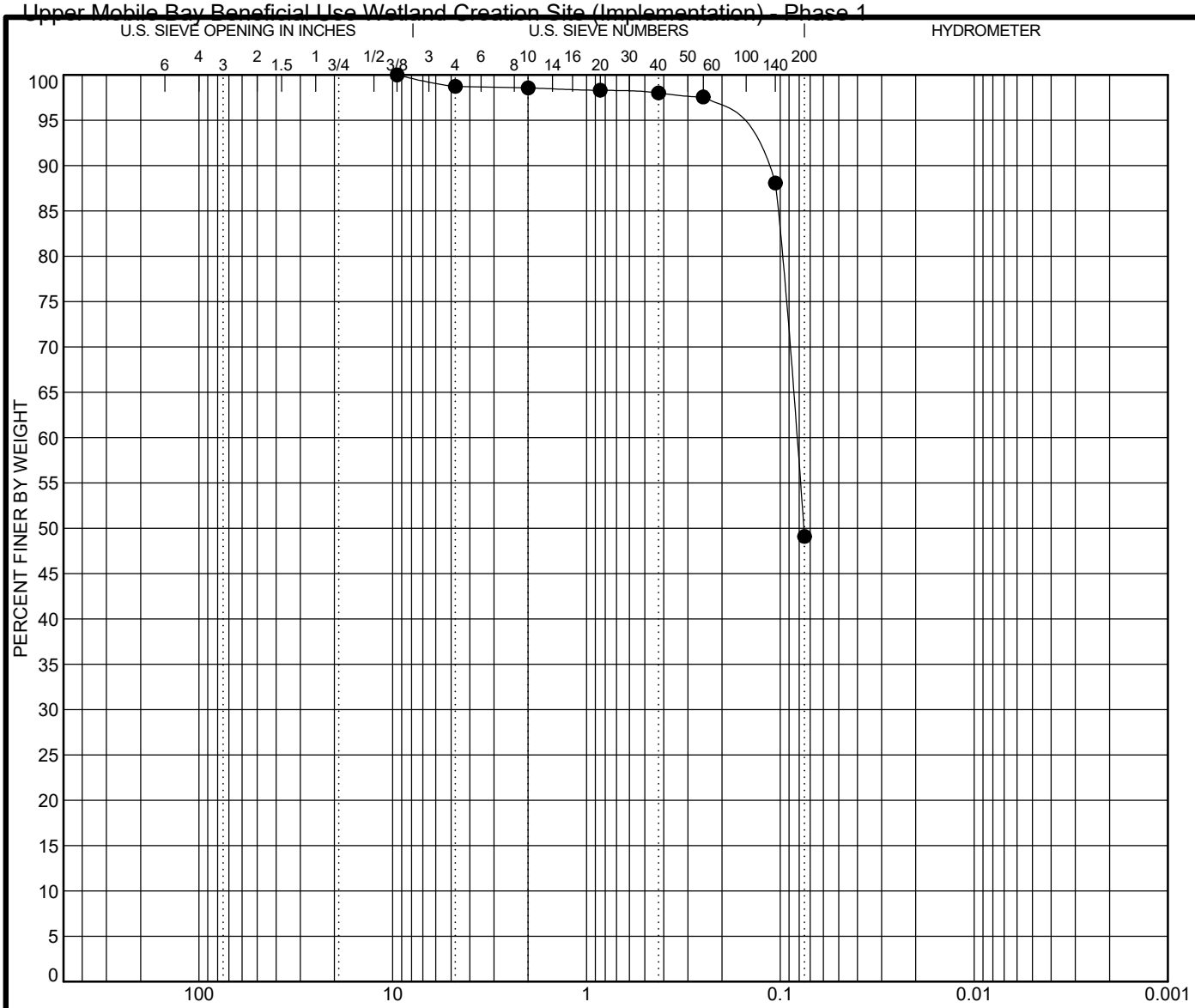
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-31**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-31	**5.5 ft.**	**9.5**	**0.083**			**1.3**	**49.6**	**49.1**	

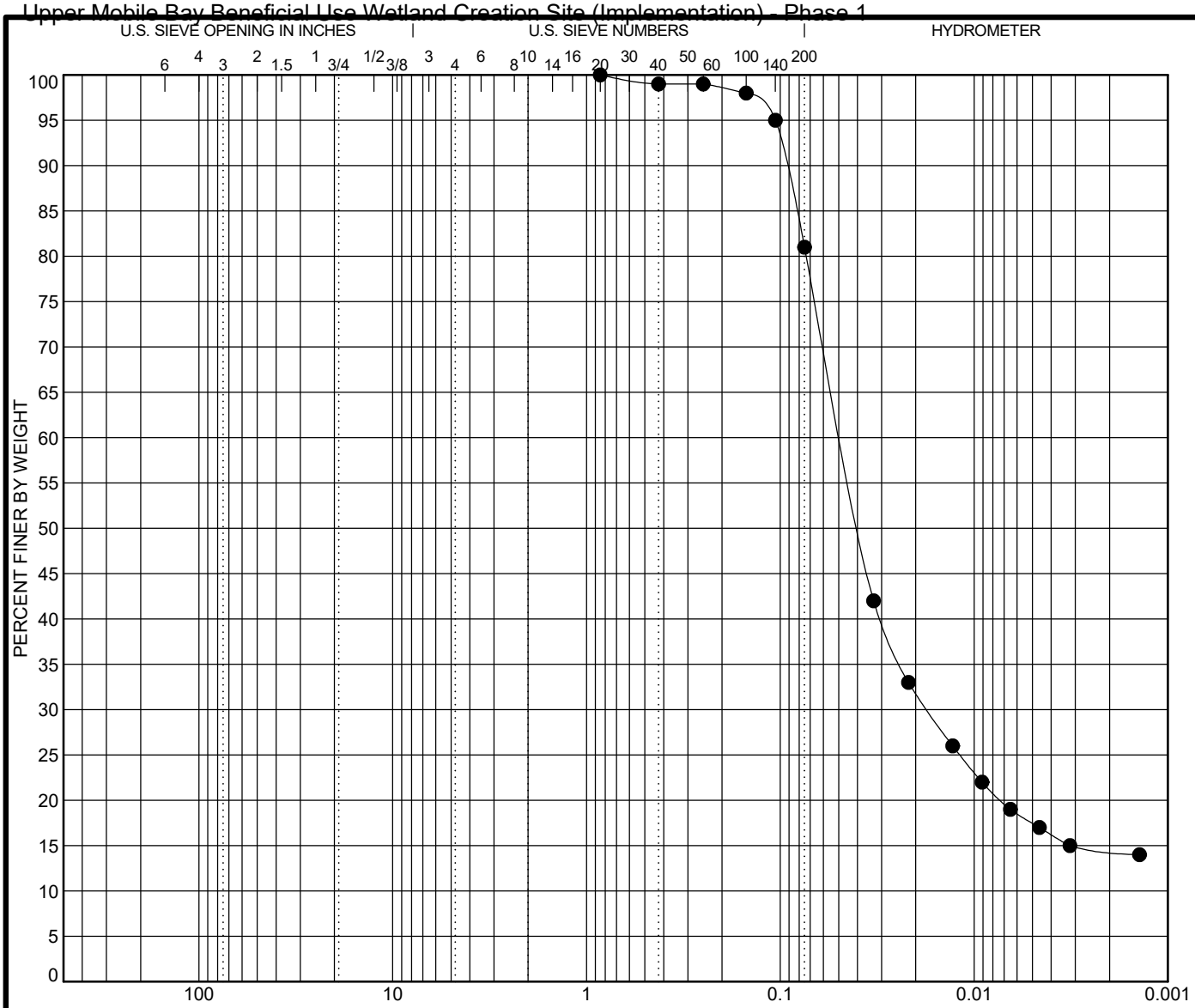
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-31**	**T-1;10.0 ft.**	**SILT with SAND (ML)**	**41**	**26**	**15**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-31	**10.0 ft.**	**0.85**	**0.048**	**0.017**		**0.0**	**19.0**	**66.6**	**14.4**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
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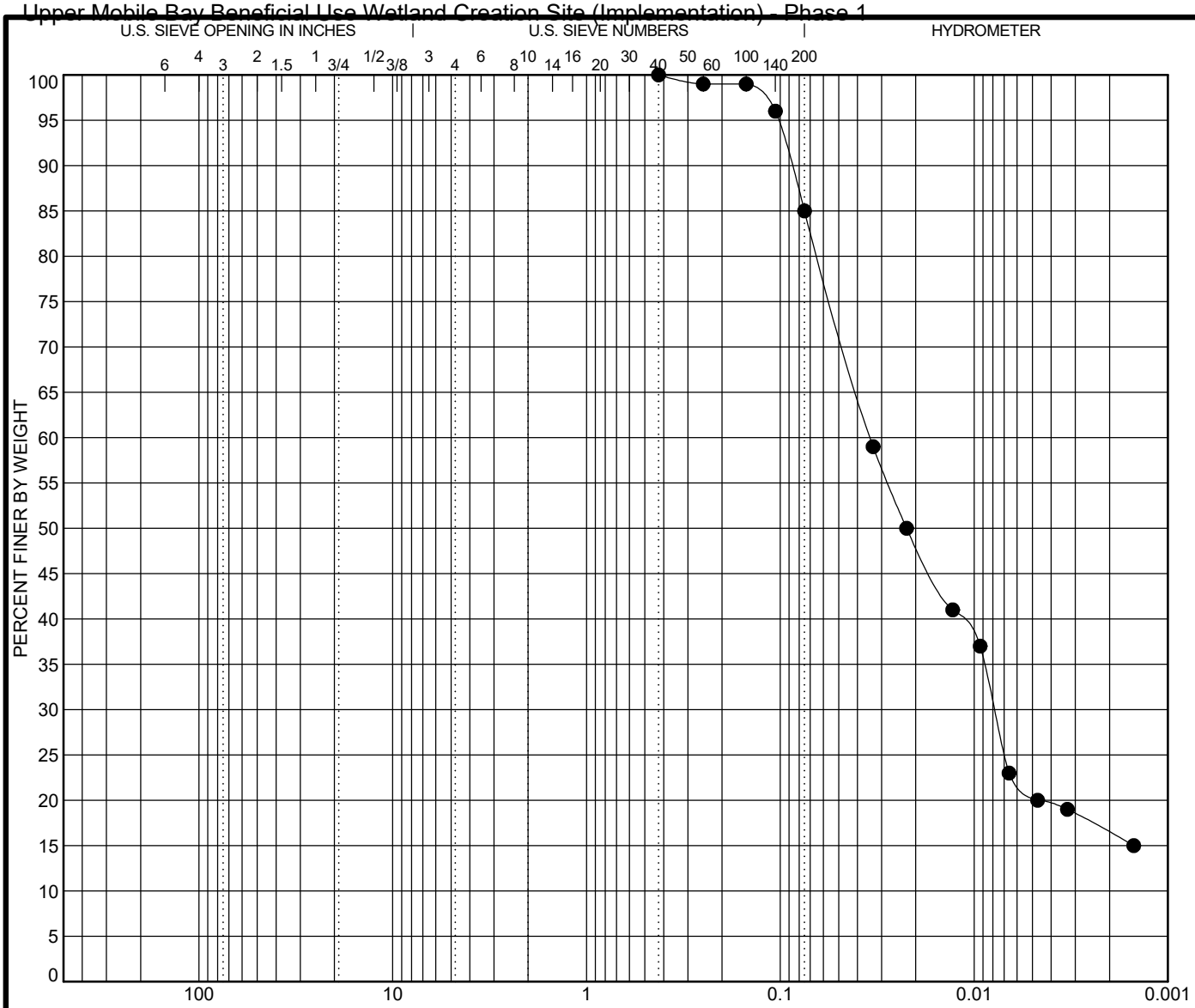
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-32**	**T-5;5.0 ft.**	**LEAN CLAY with SAND (CL)**	**44**	**26**	**18**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-32	**5.0 ft.**	**0.425**	**0.034**	**0.008**		**0.0**	**15.0**	**68.5**	**16.5**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
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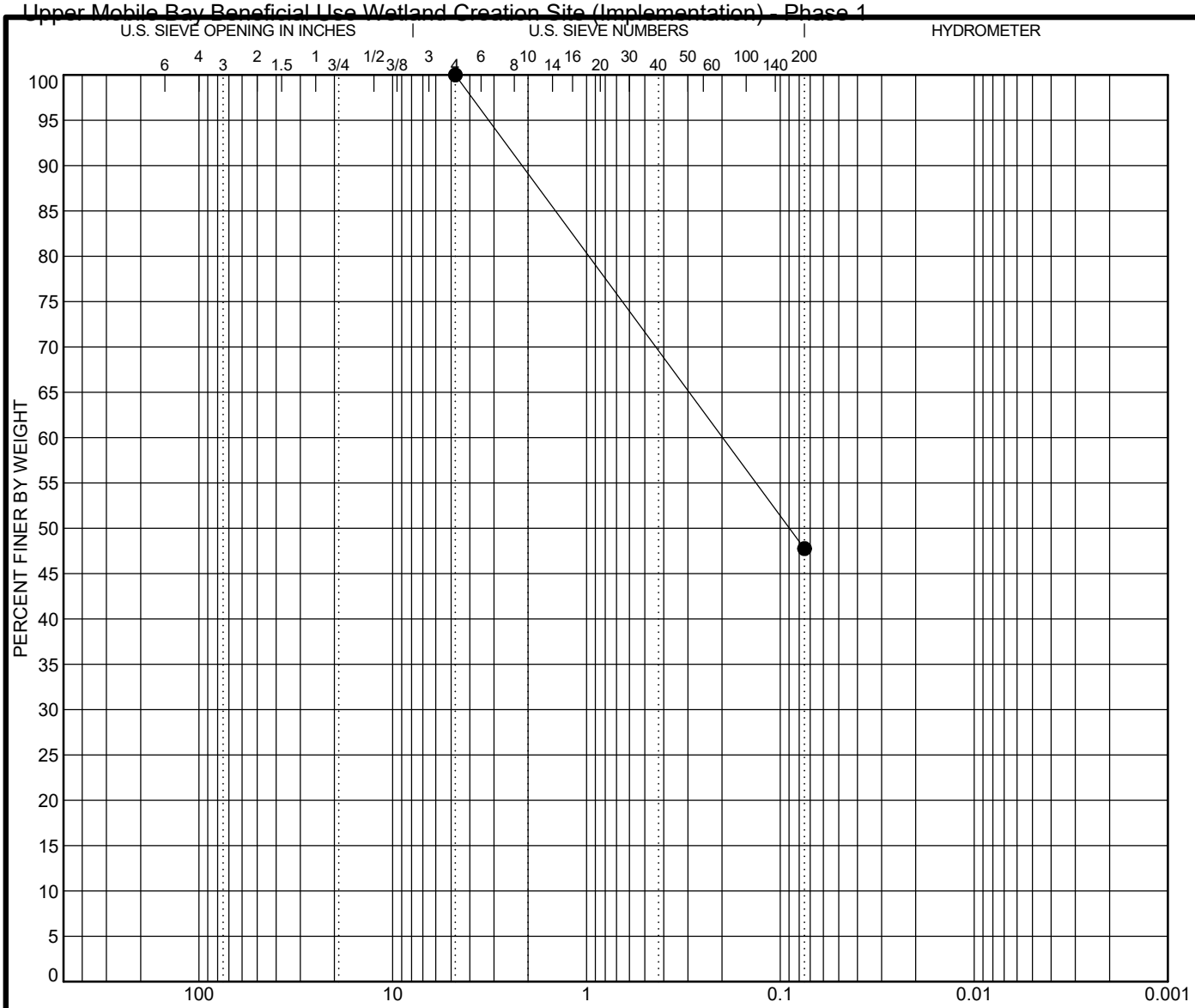
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-32**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-32	**5.5 ft.**	**4.75**	**0.198**			**0.0**	**52.2**	**47.8**	

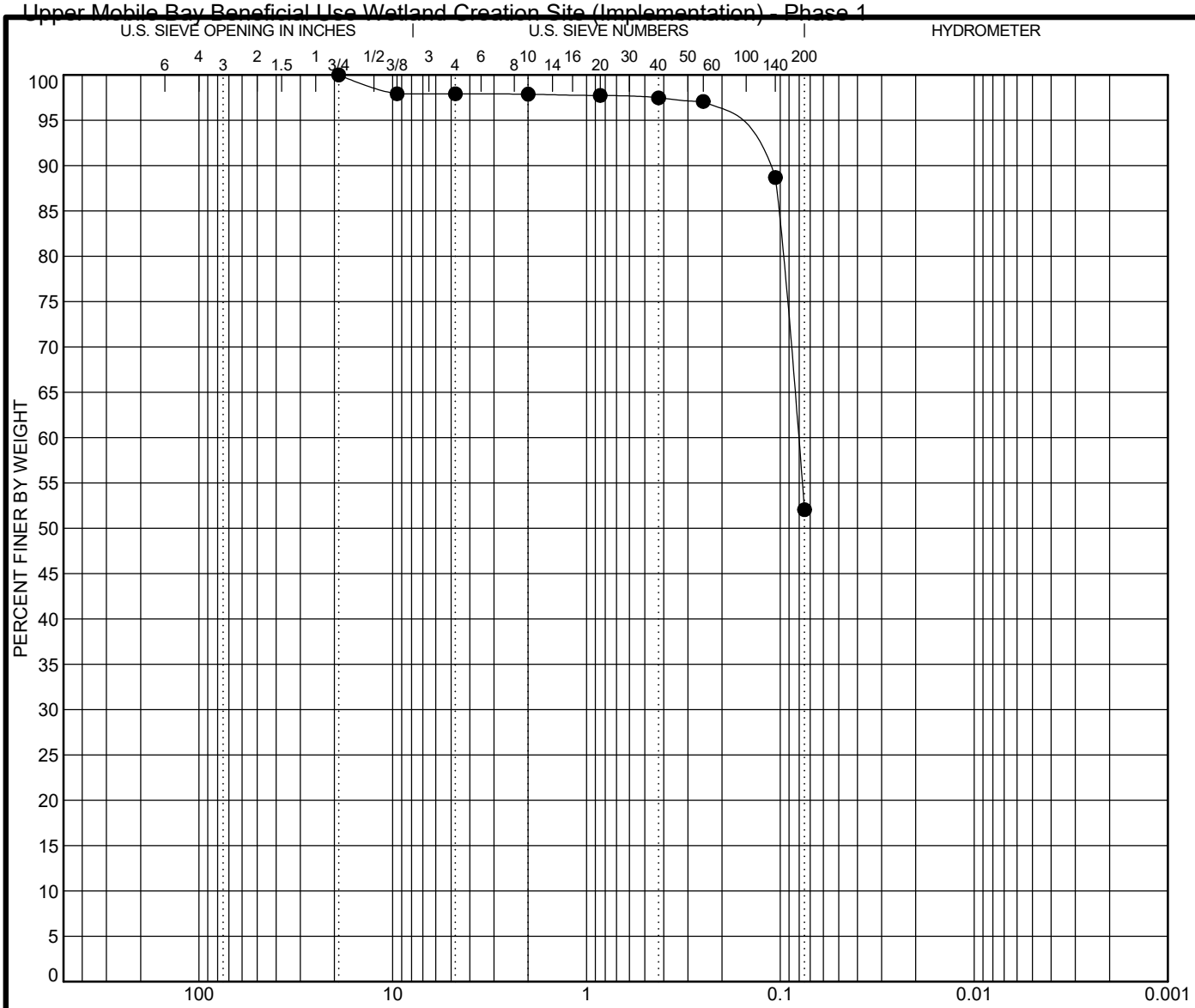
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **B-32 S-4;8.0 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-32 8.0 ft.	**19**	**0.081**			**2.1**	**45.9**	**52.0**	

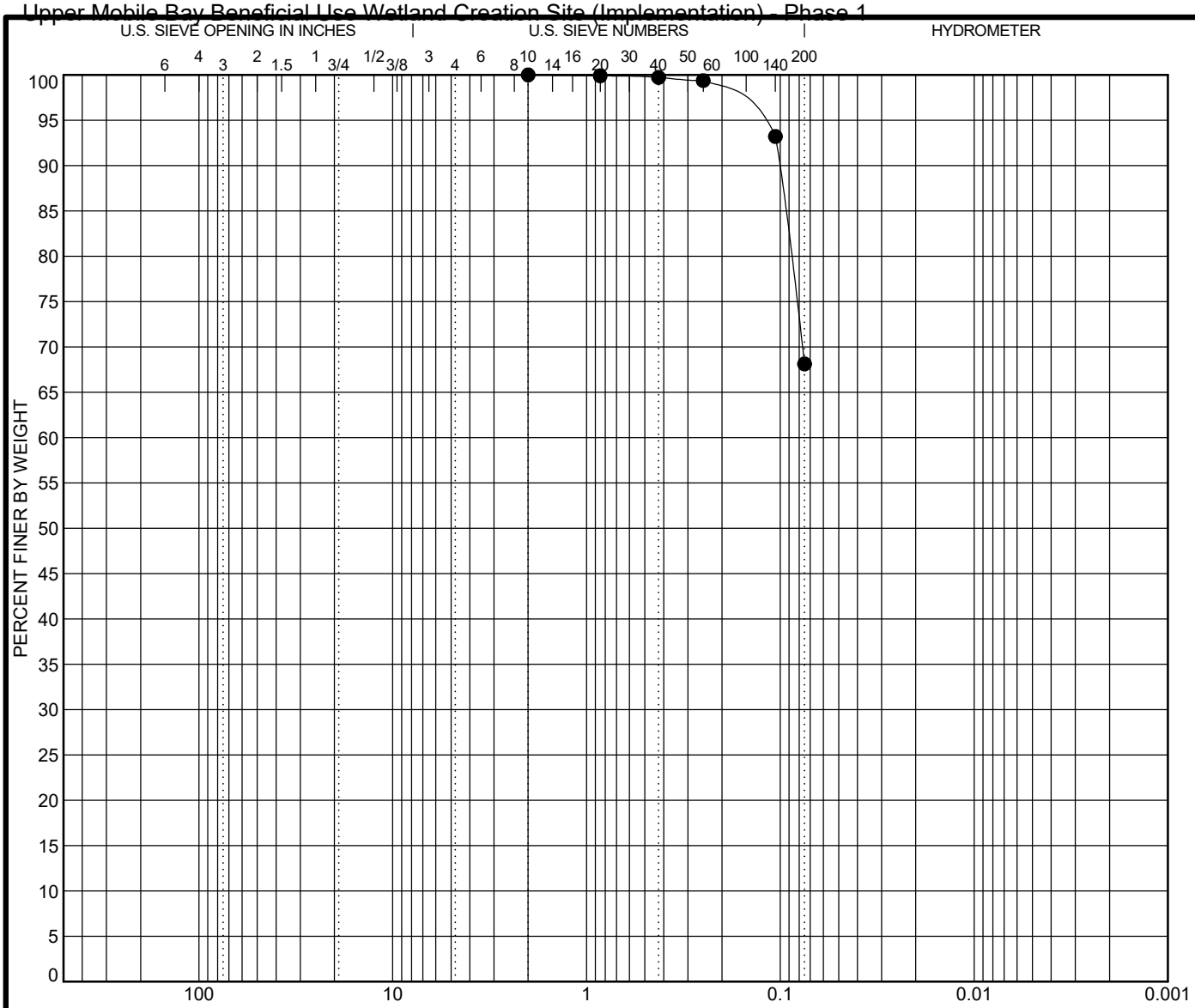
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-32**	**S-5;10.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-32	**10.5 ft.**	**2**				**0.0**	**31.9**	**68.1**	

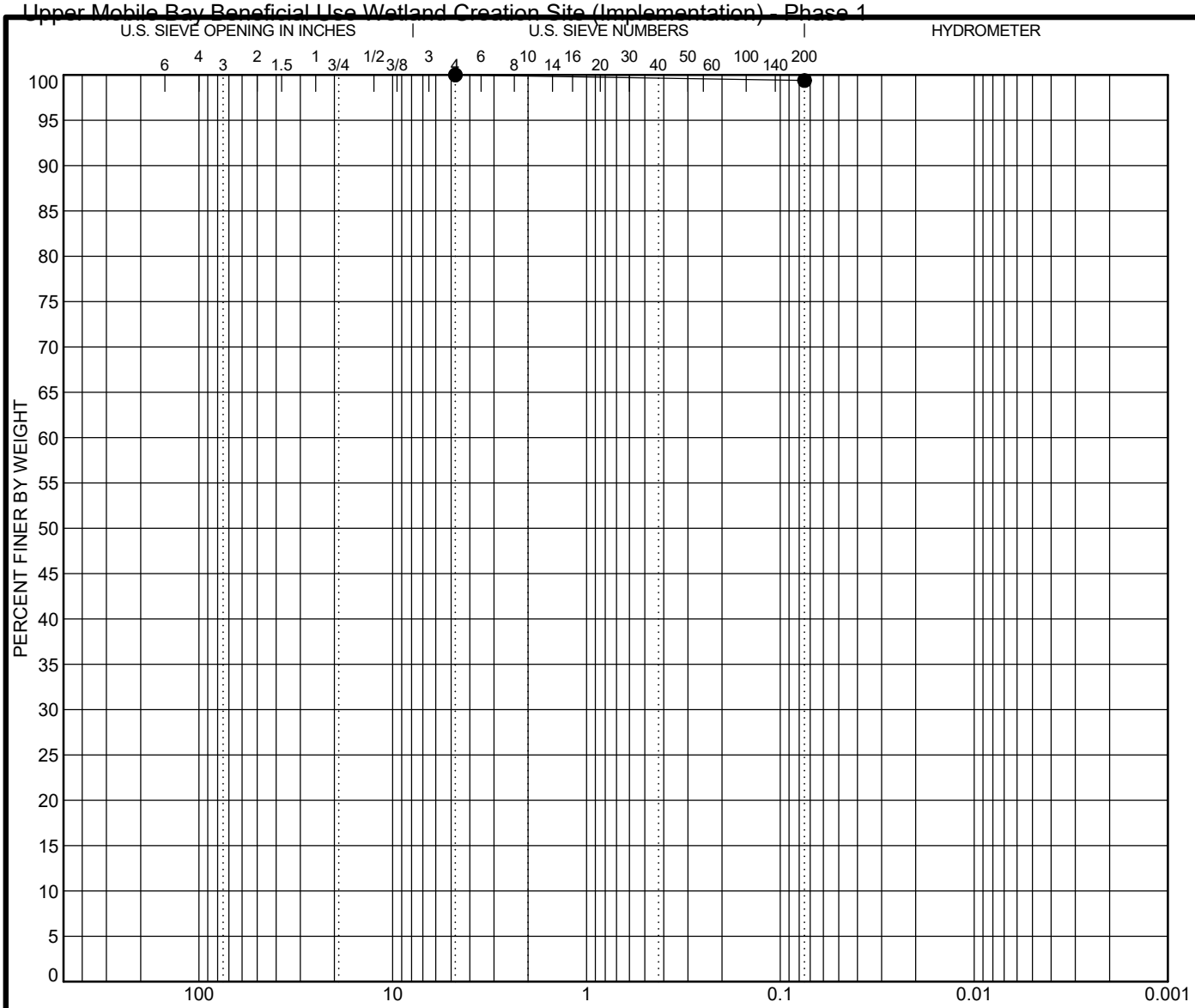
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-32**	**S-13;39.0 ft.**	**FAT CLAY (CH)**	**92**	**29**	**63**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-32	**39.0 ft.**	**4.75**				**0.0**	**0.6**	**99.4**	

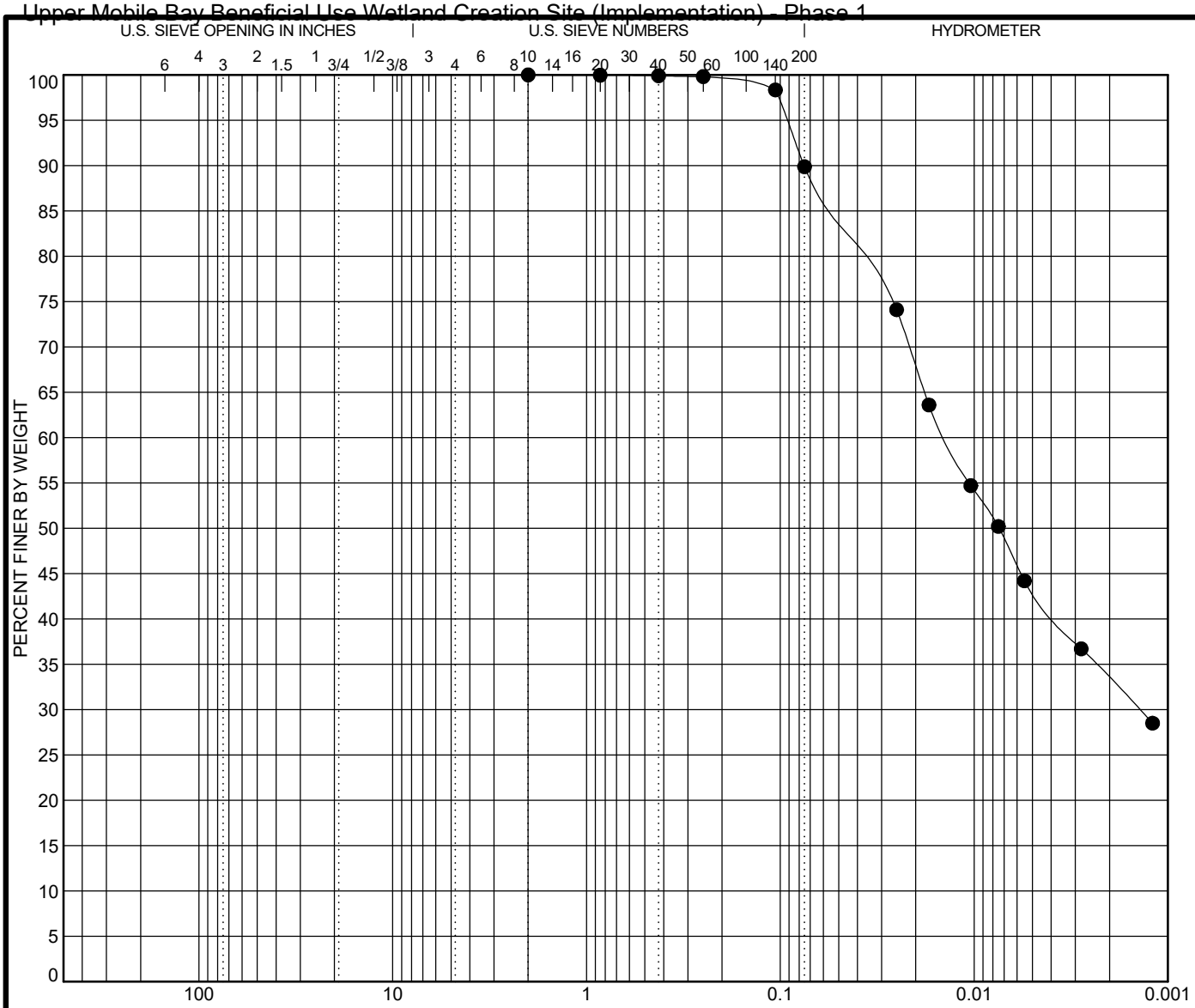
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-32**	**T-4;56.5 ft.**	**FAT CLAY (CH)**	**67**	**27**	**40**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-32	**56.5 ft.**	**2**	**0.014**	**0.001**		**0.0**	**10.1**	**56.4**	**33.4**

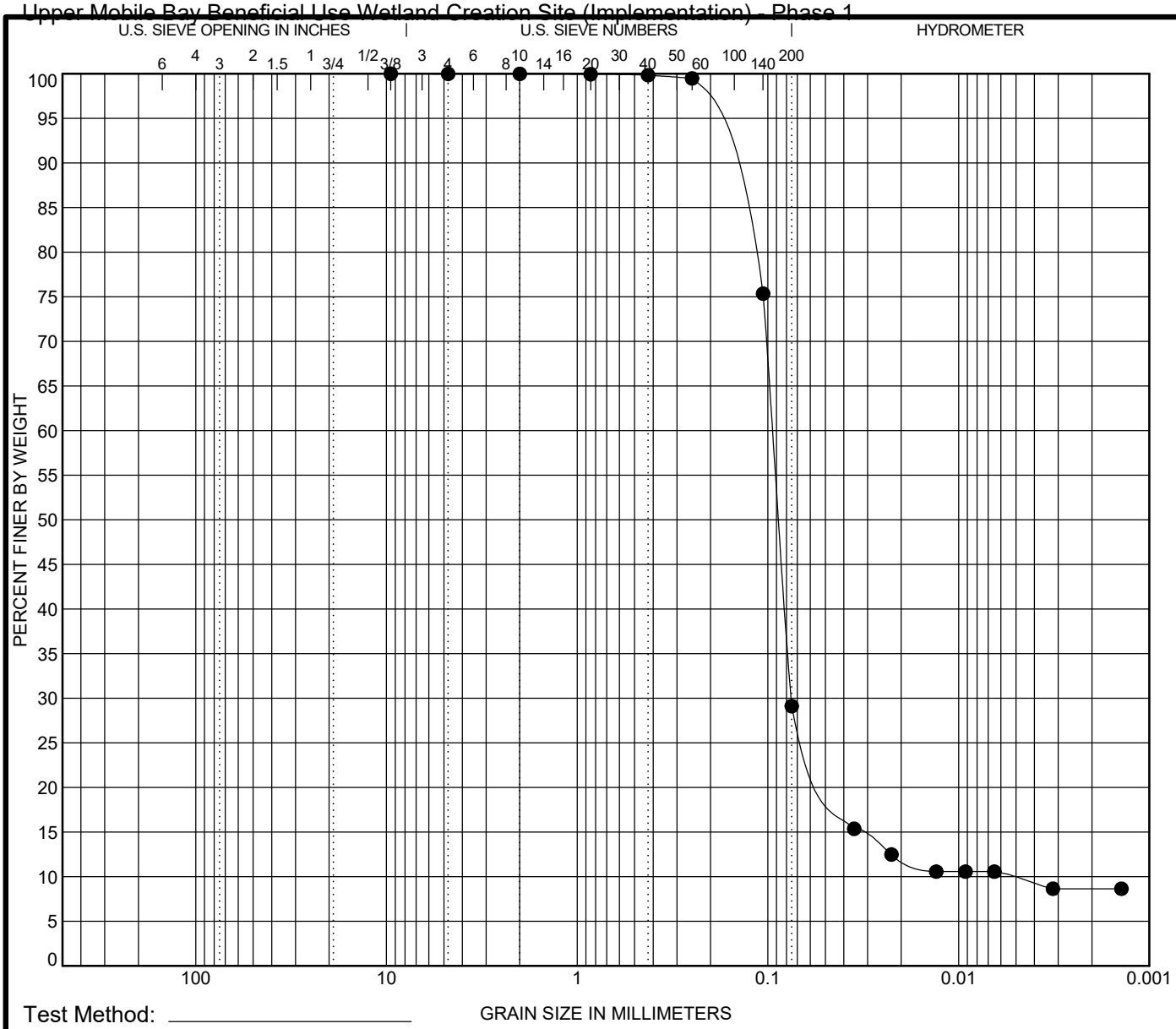
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-33**	**S-2;3.0 ft.**					**11.42**	**17.89**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-33	**3.0 ft.**	**9.5**	**0.094**	**0.075**	**0.005**	**0.0**	**70.9**	**20.5**	**8.6**

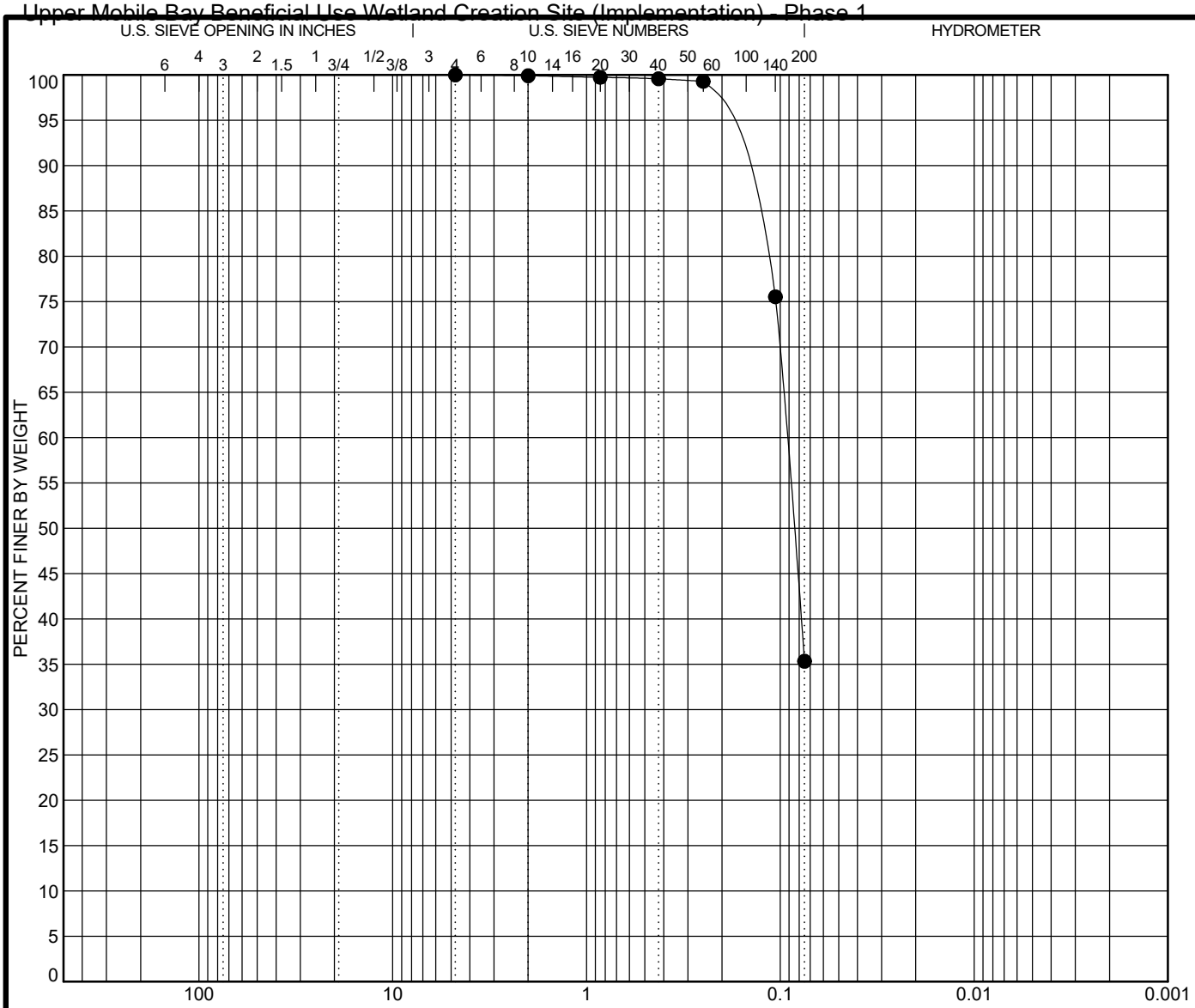
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-33**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-33	**8.0 ft.**	**4.75**	**0.093**			**0.0**	**64.7**	**35.3**	

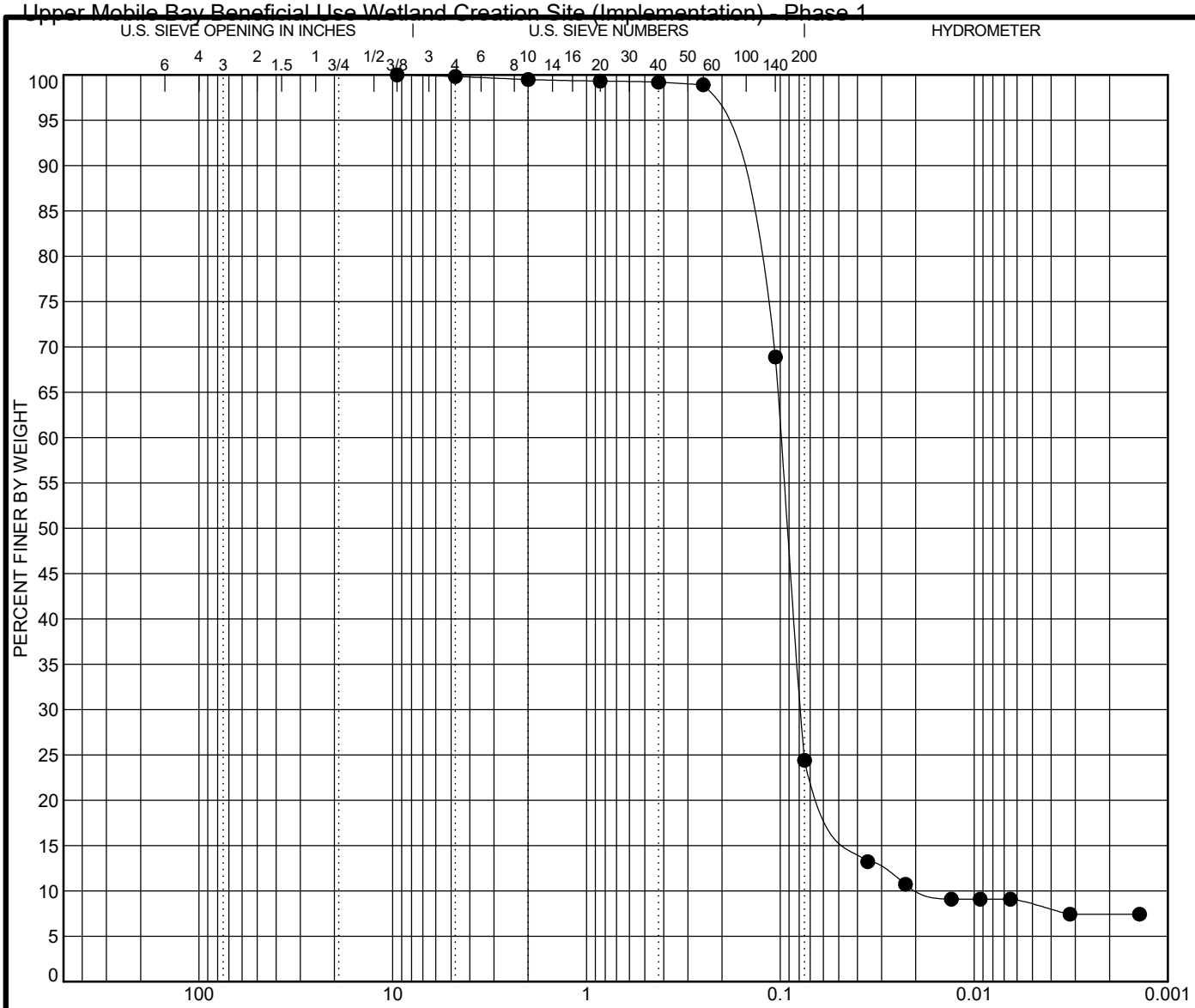
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-33**	**S-6;15.0 ft.**					**3.51**	**5.59**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-33	**15.0 ft.**	**9.5**	**0.099**	**0.078**	**0.018**	**0.2**	**75.4**	**17.0**	**7.4**

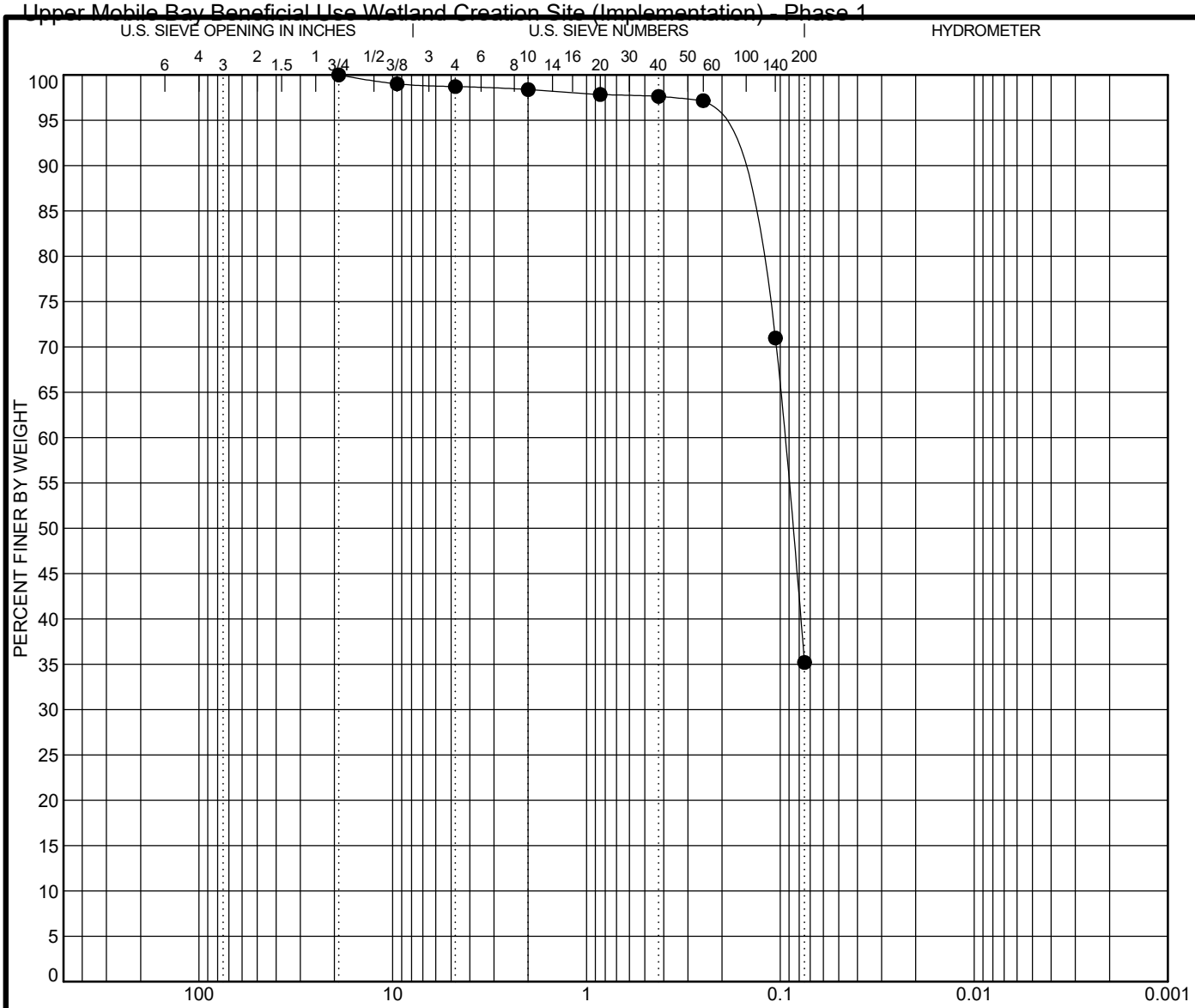
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **B-34**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-34	**3.0 ft.**	**19**	**0.095**			**1.3**	**63.5**	**35.2**	

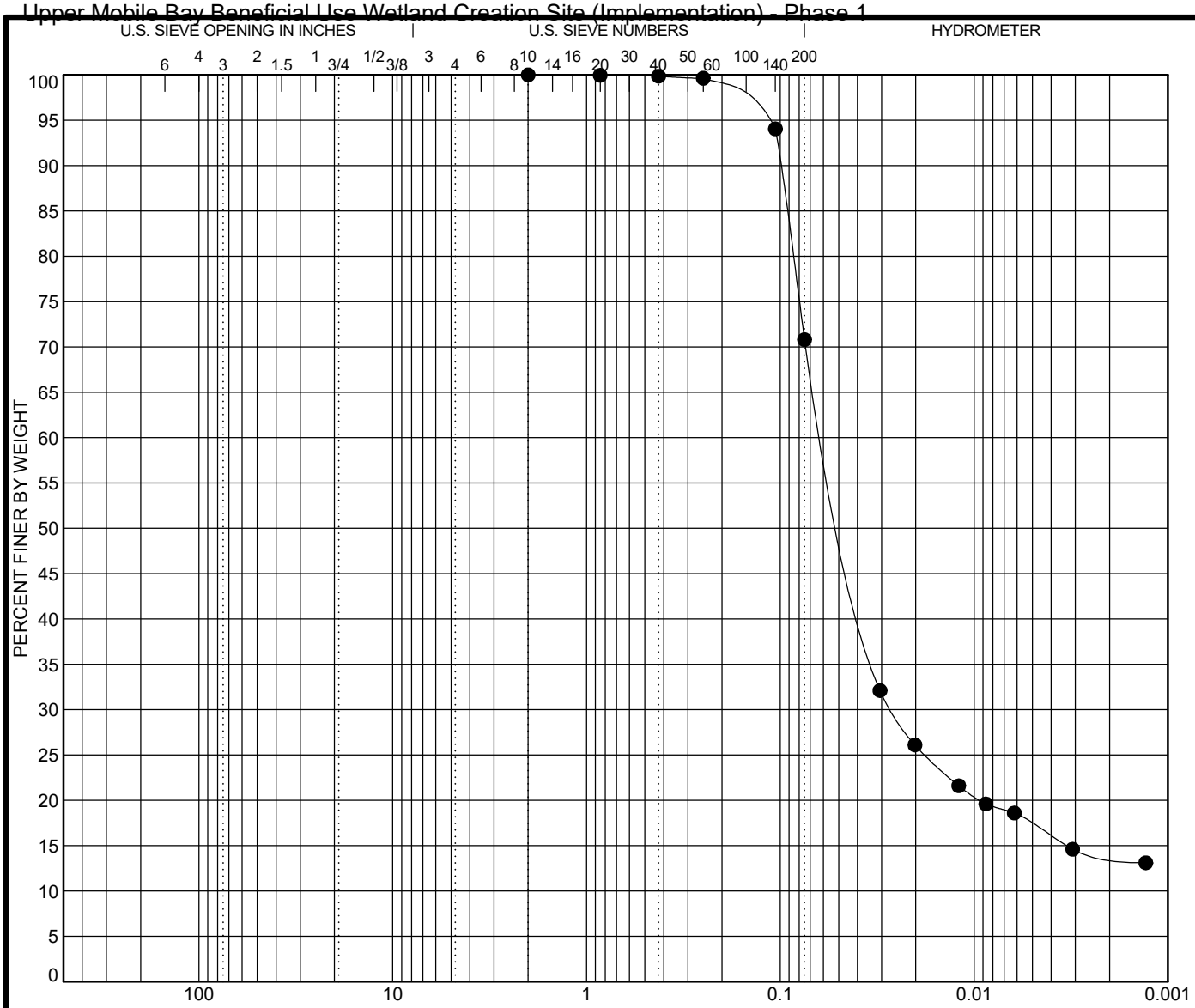
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **B-34**	**S-5;10.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-34	**10.5 ft.**	**2**	**0.058**	**0.026**		**0.0**	**29.2**	**57.0**	**13.8**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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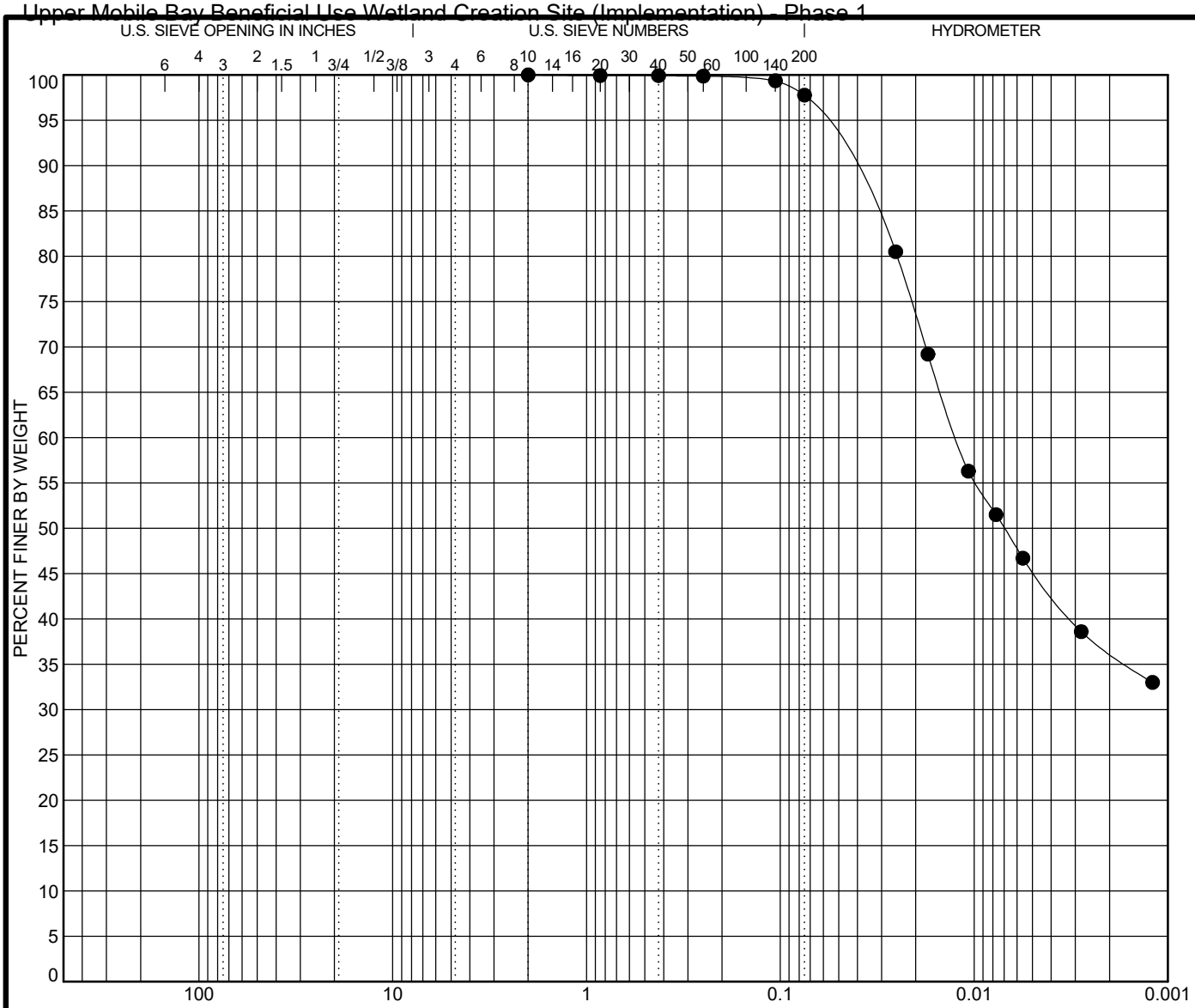
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-34**	**T-2;26.5 ft.**	**FAT CLAY (CH)**	**67**	**19**	**48**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-34	**26.5 ft.**	**2**	**0.012**			**0.0**	**2.2**	**61.4**	**36.4**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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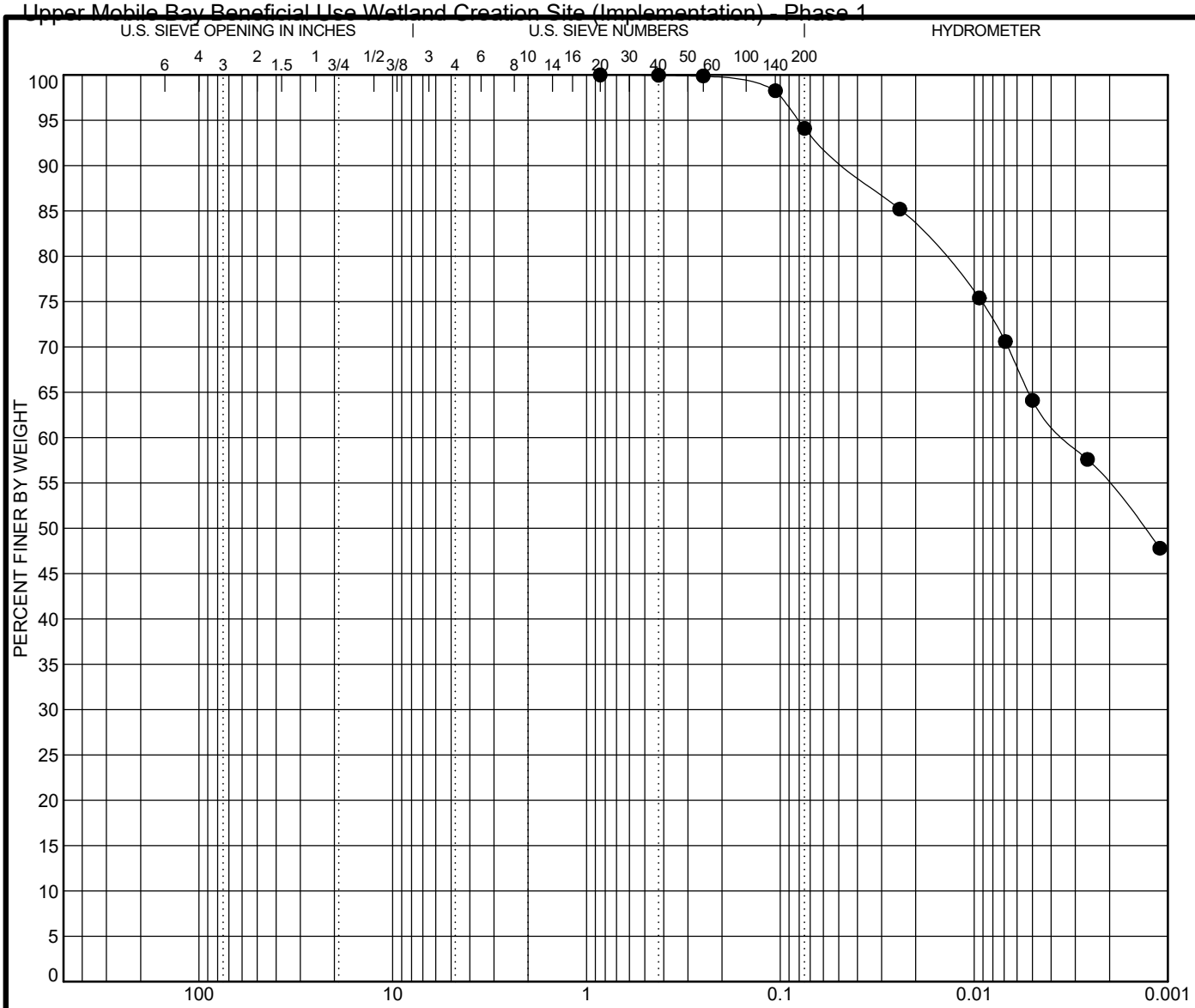
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-34**	**T-3;36.5 ft.**	**FAT CLAY (CH)**	**93**	**27**	**66**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-34	**36.5 ft.**	**0.85**	**0.003**			**0.0**	**5.9**	**39.5**	**54.6**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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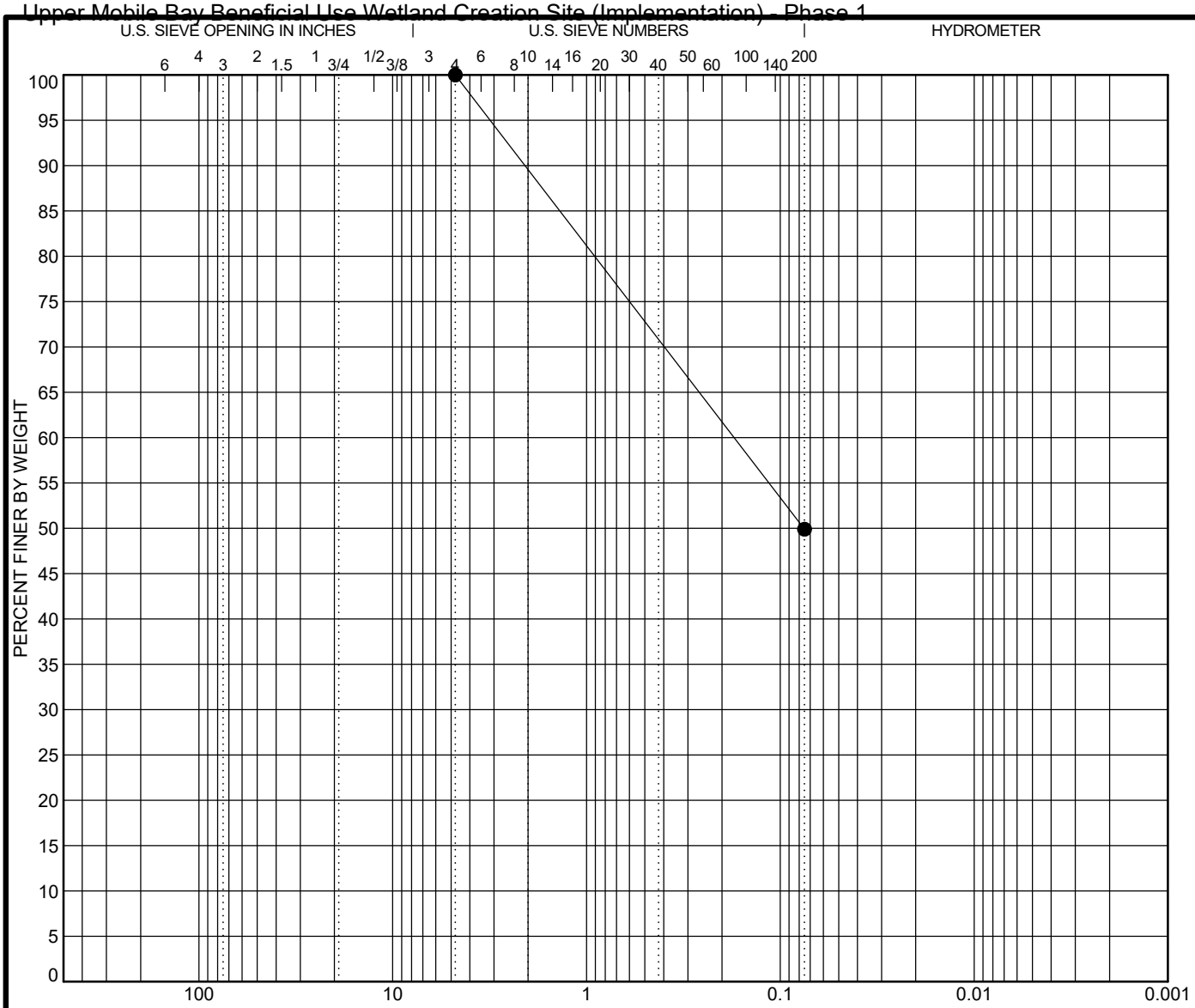
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **B-35 S-1;0.5 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-35 0.5 ft.	**4.75**	**0.173**			**0.0**	**50.1**	**49.9**	

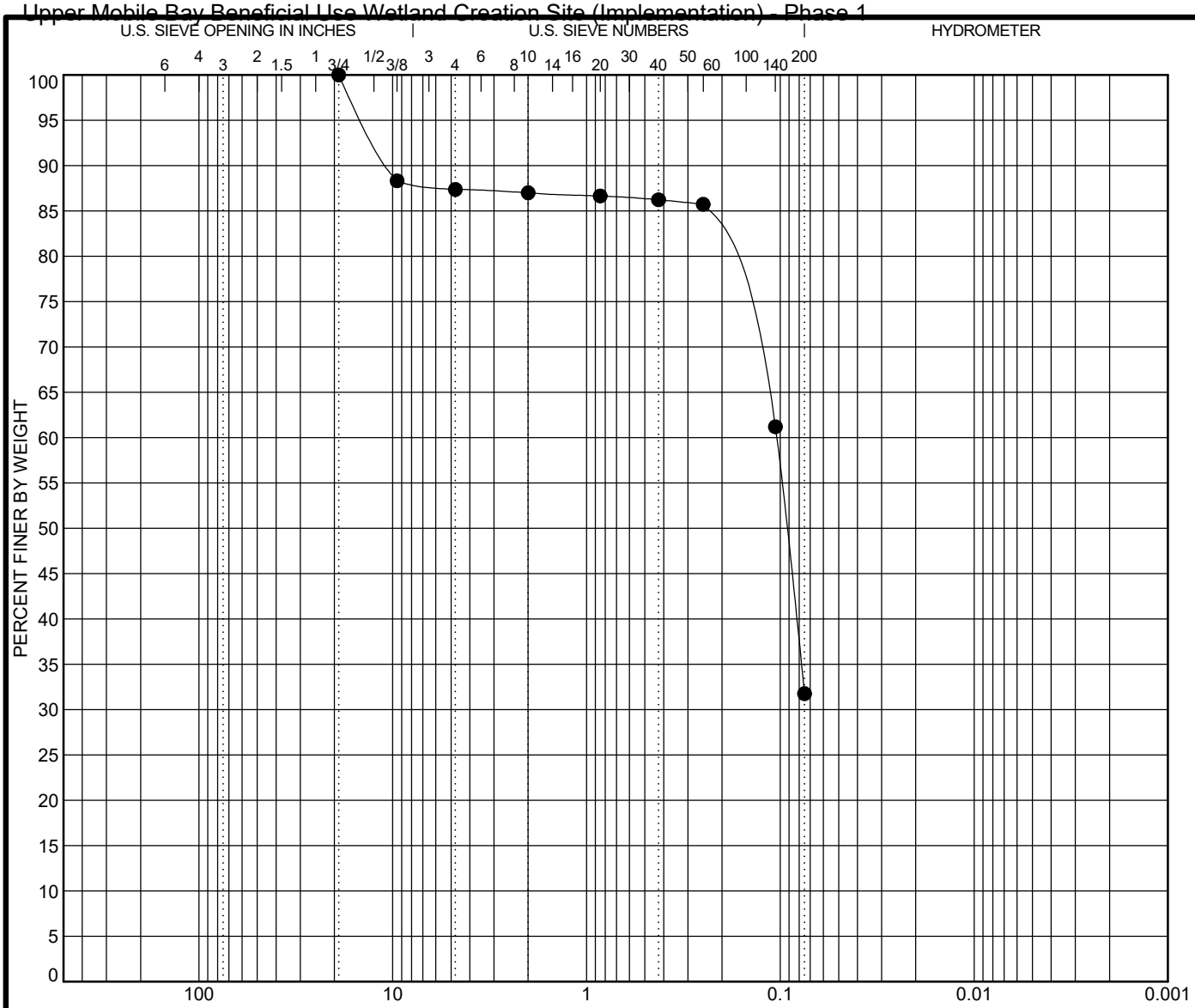
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-35**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-35	**5.5 ft.**	**19**	**0.105**			**12.6**	**55.6**	**31.8**	

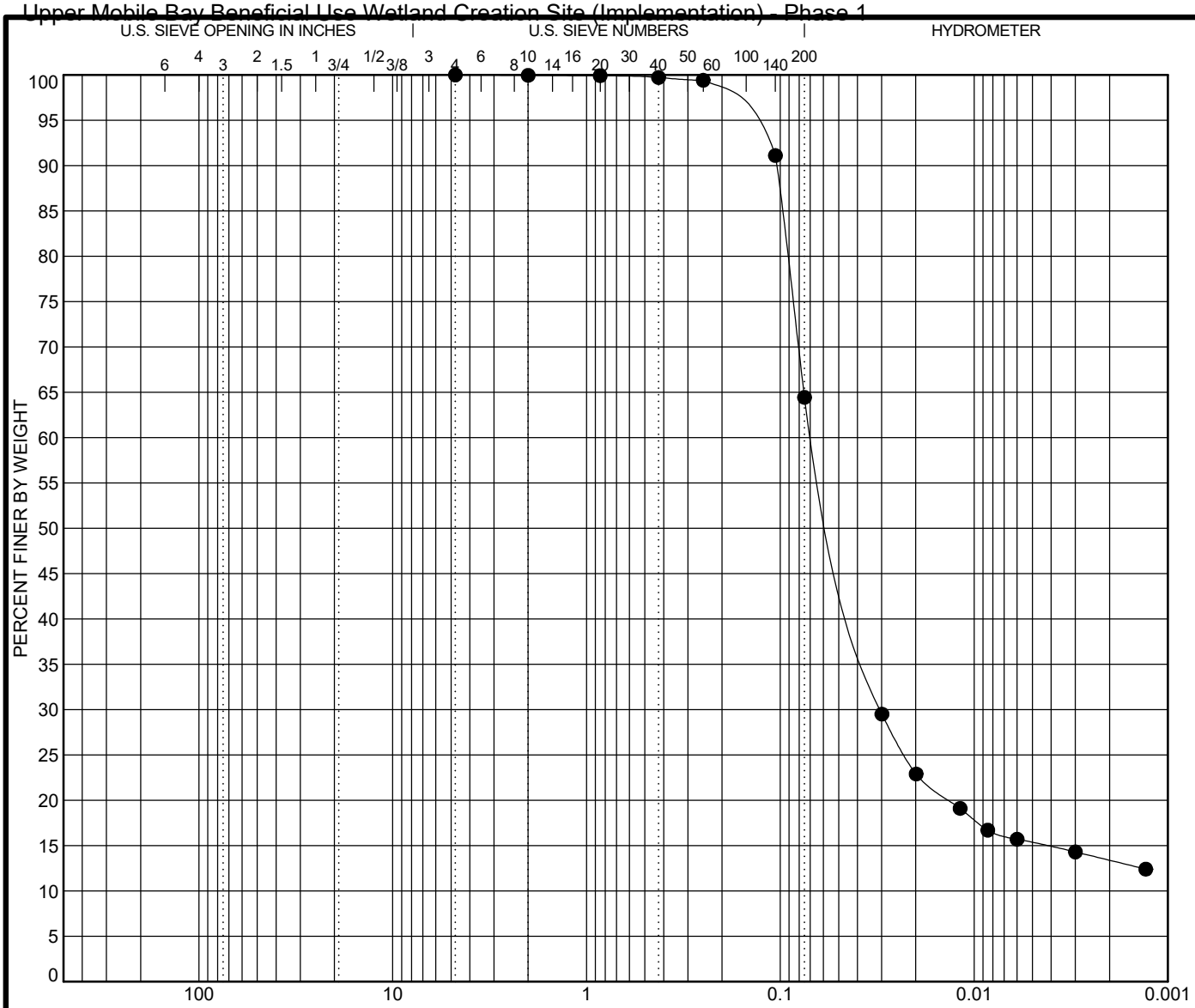
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-35**	**S-5;10.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-35	**10.5 ft.**	**4.75**	**0.067**	**0.03**		**0.0**	**35.6**	**51.1**	**13.4**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
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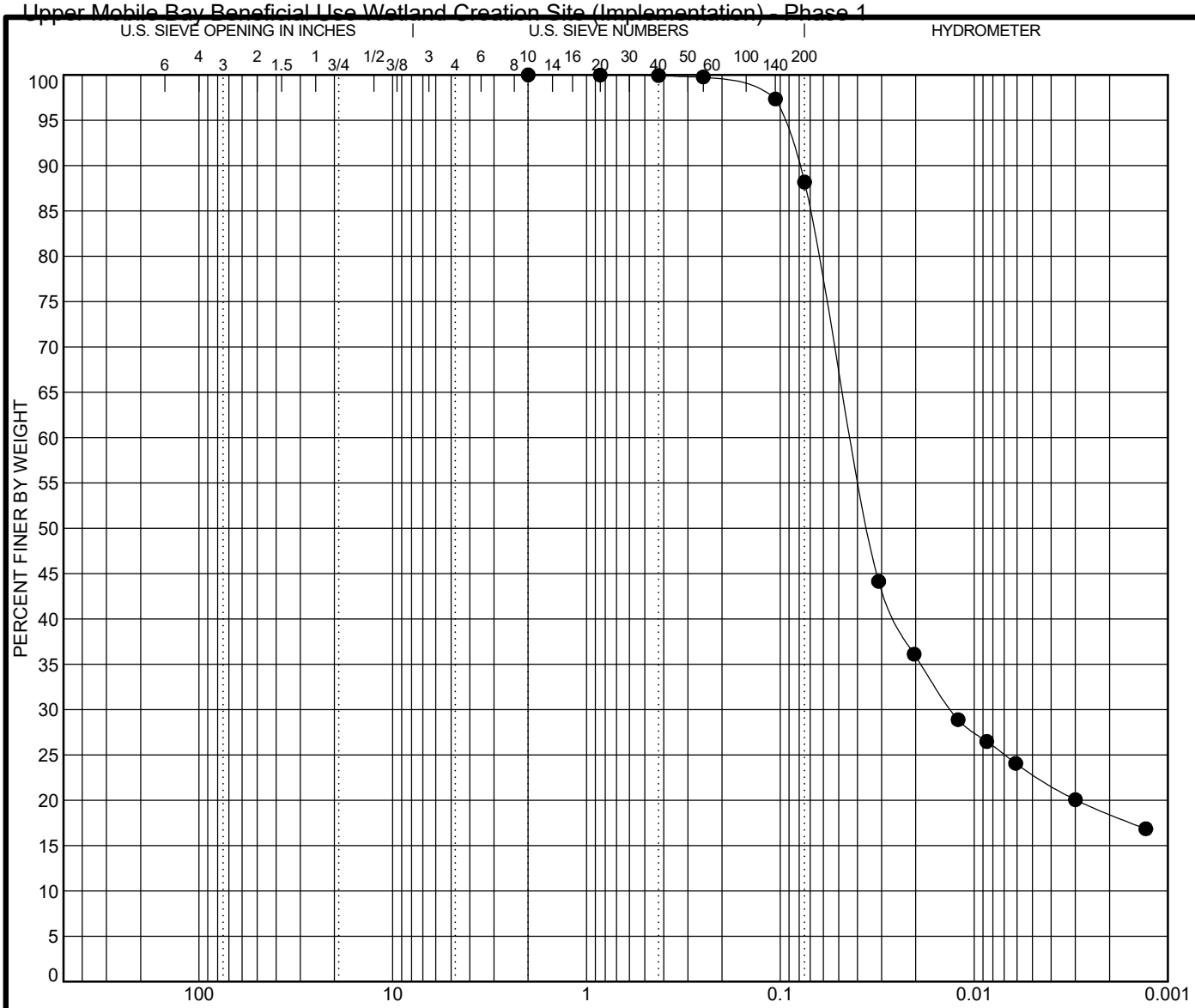
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-35**	**T-1;15.0 ft.**	**LEAN CLAY (CL)**	**47**	**22**	**25**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-35	**15.0 ft.**	**2**	**0.043**	**0.013**		**0.0**	**11.8**	**69.7**	**18.5**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
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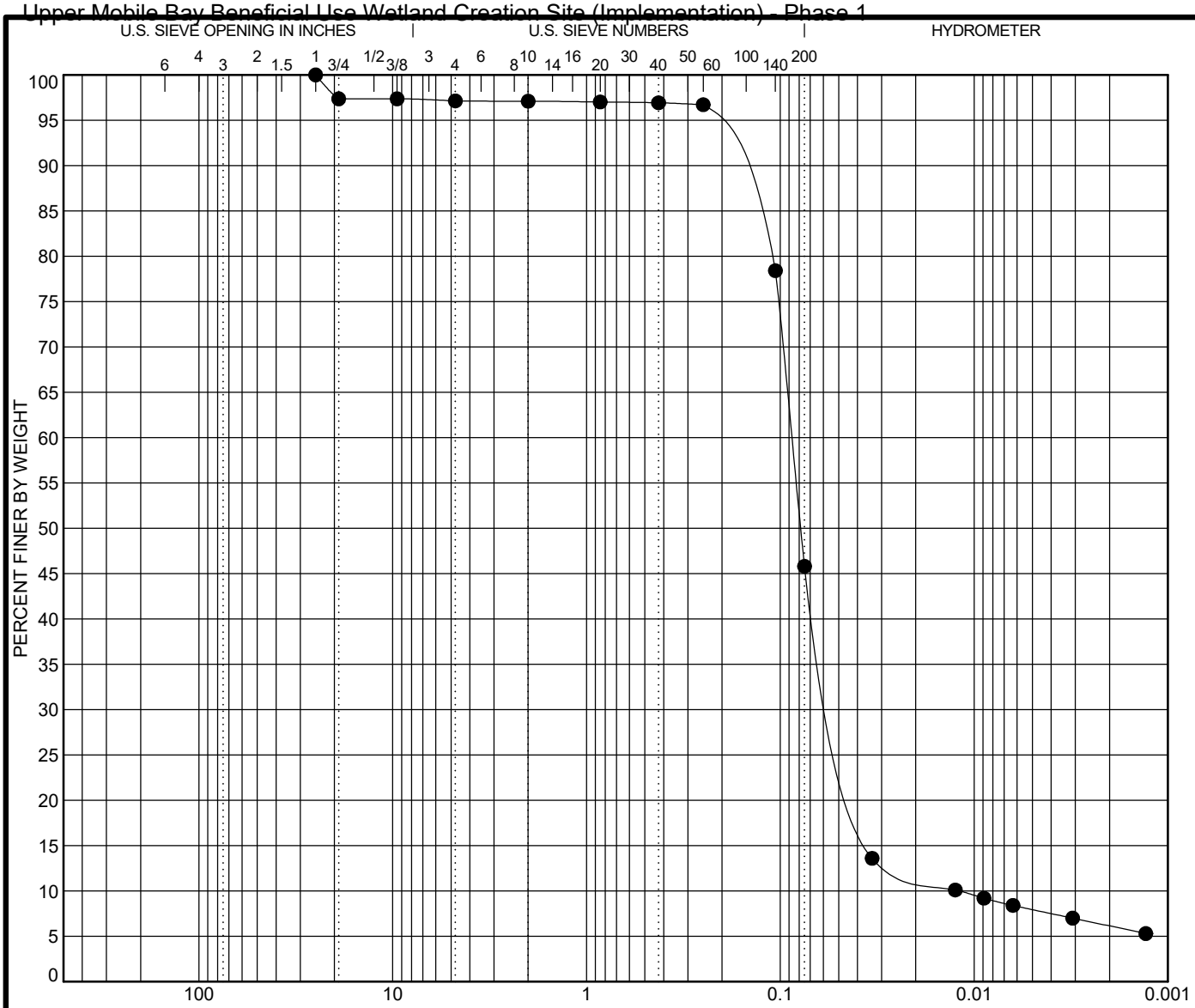
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-35**	**T-2;26.5 ft.**	**SILTY SAND (SM)**	**33**	**25**	**8**	**2.44**	**7.24**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-35	**26.5 ft.**	**25**	**0.087**	**0.051**	**0.012**	**2.9**	**51.3**	**39.7**	**6.1**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
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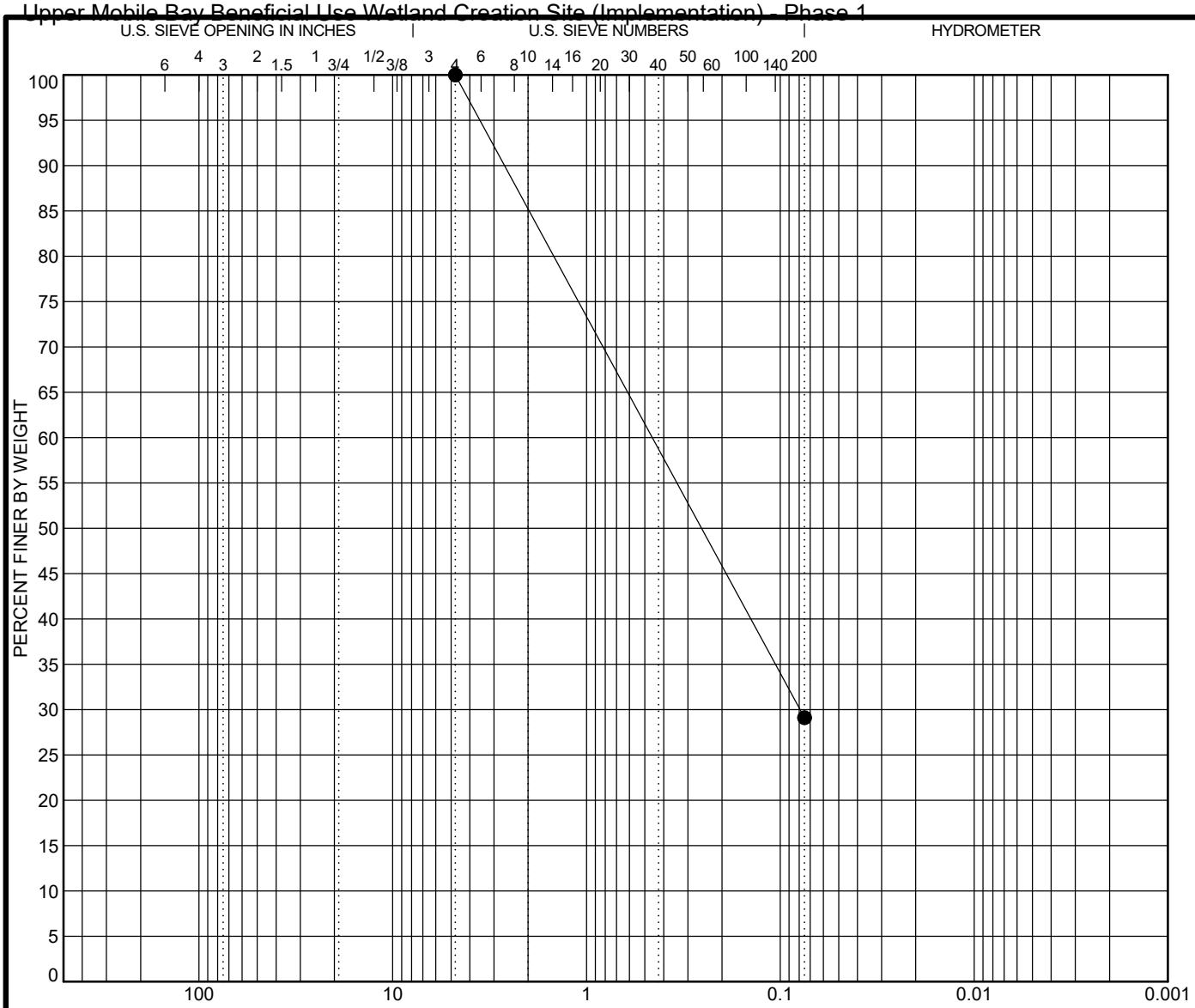
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-35**	**S-17;64.0 ft.**	**SILTY SAND (SM)**	**220**	**75**	**145**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-35	**64.0 ft.**	**4.75**	**0.457**	**0.079**		**0.0**	**70.9**	**29.1**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
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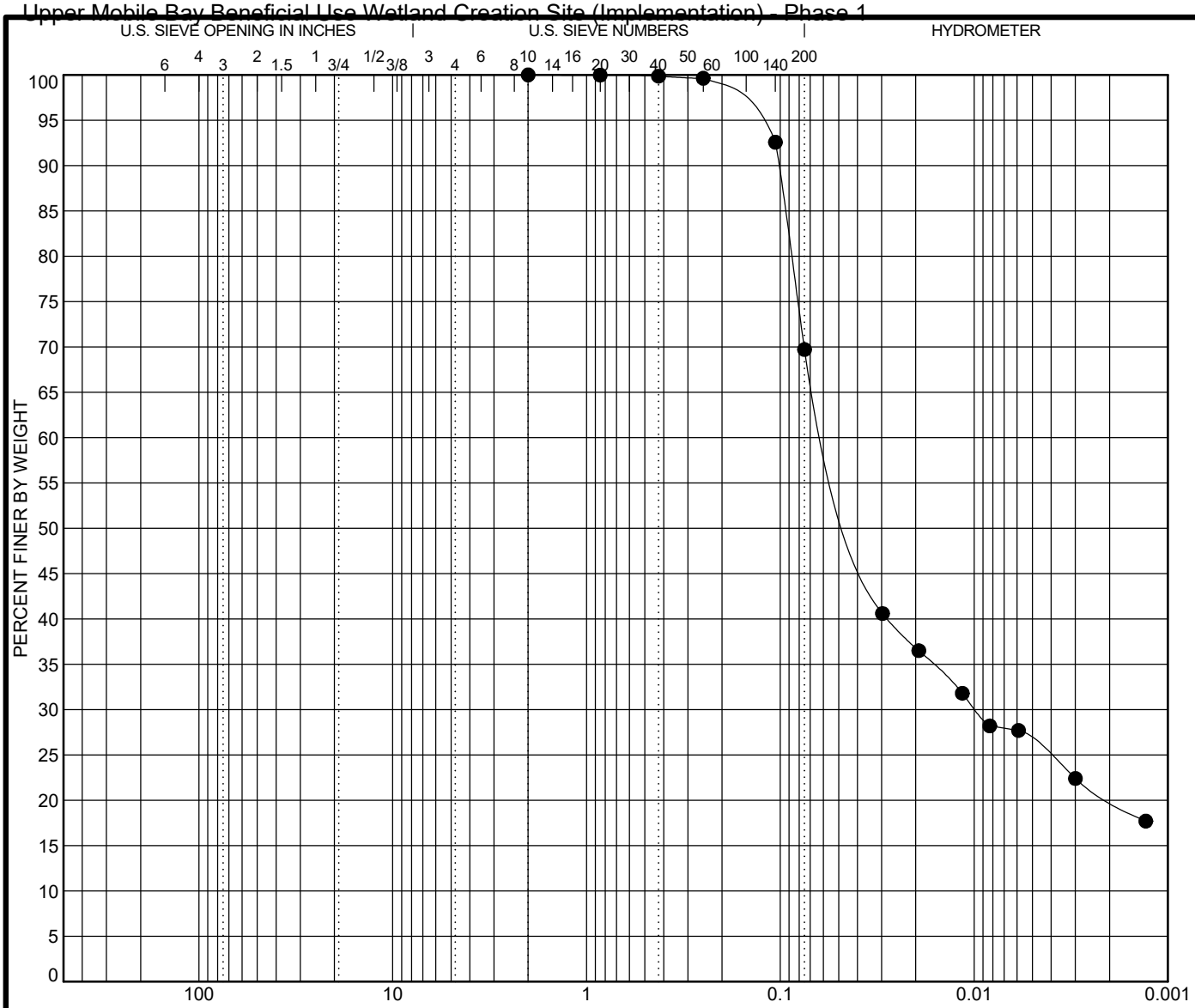
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **B-36 S-2;3.0 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-36 3.0 ft.	**2**	**0.055**	**0.01**		**0.0**	**30.3**	**49.6**	**20.1**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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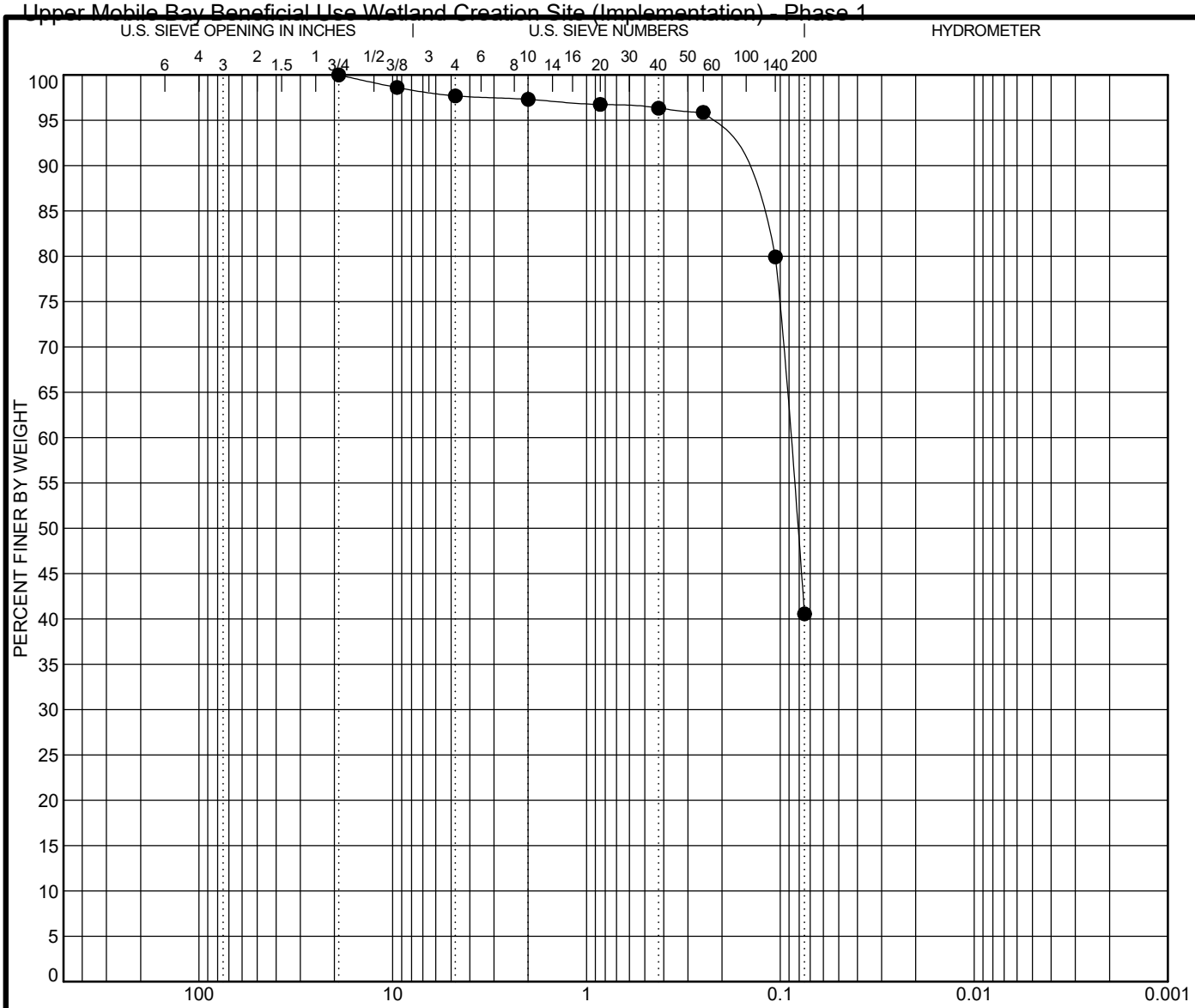

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-36**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-36	**8.0 ft.**	**19**	**0.089**			**2.3**	**57.1**	**40.6**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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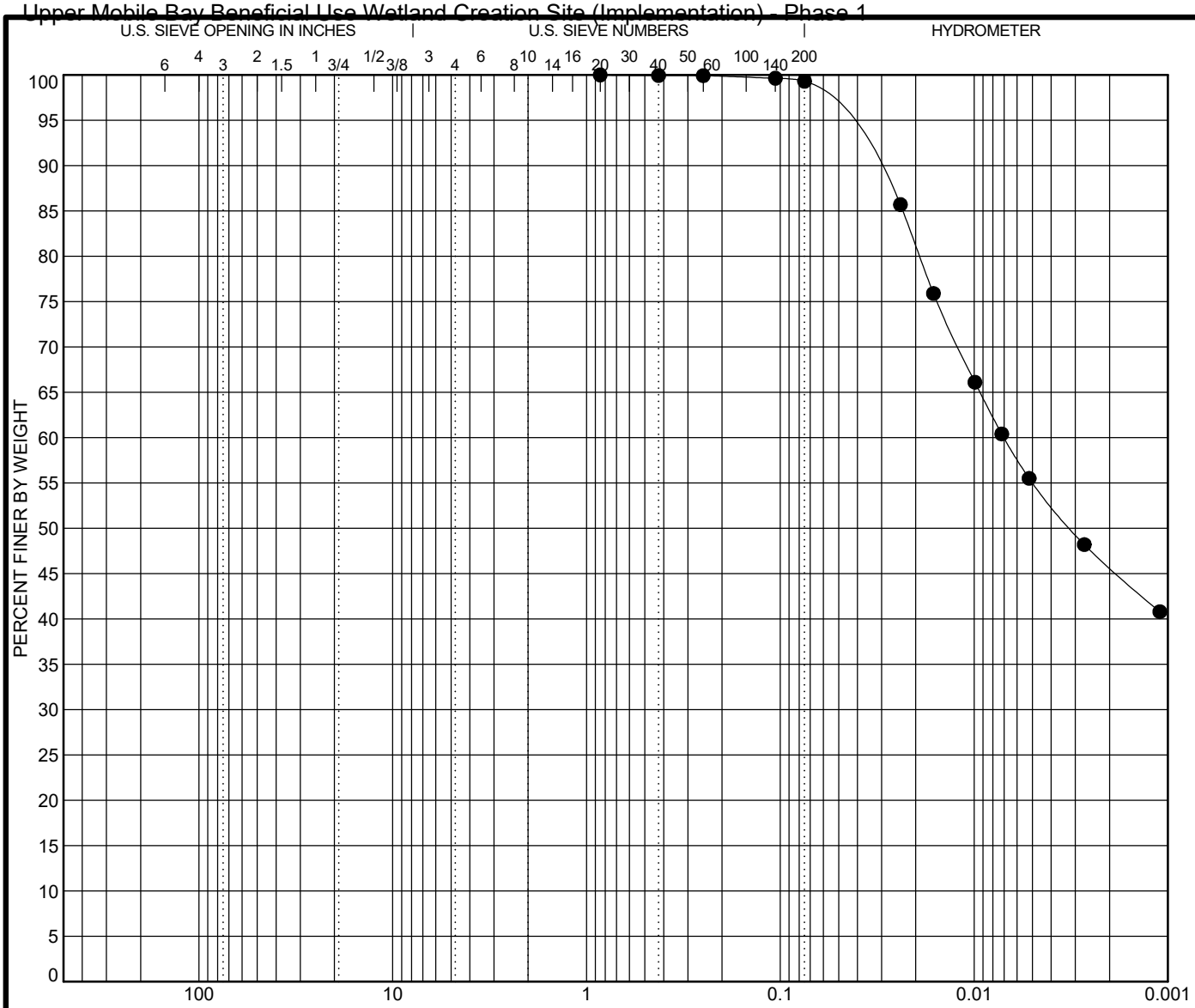
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-36**	**T-3;36.5 ft.**	**FAT CLAY (CH)**	**94**	**19**	**75**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-36	**36.5 ft.**	**0.85**	**0.007**			**0.0**	**0.7**	**53.6**	**45.7**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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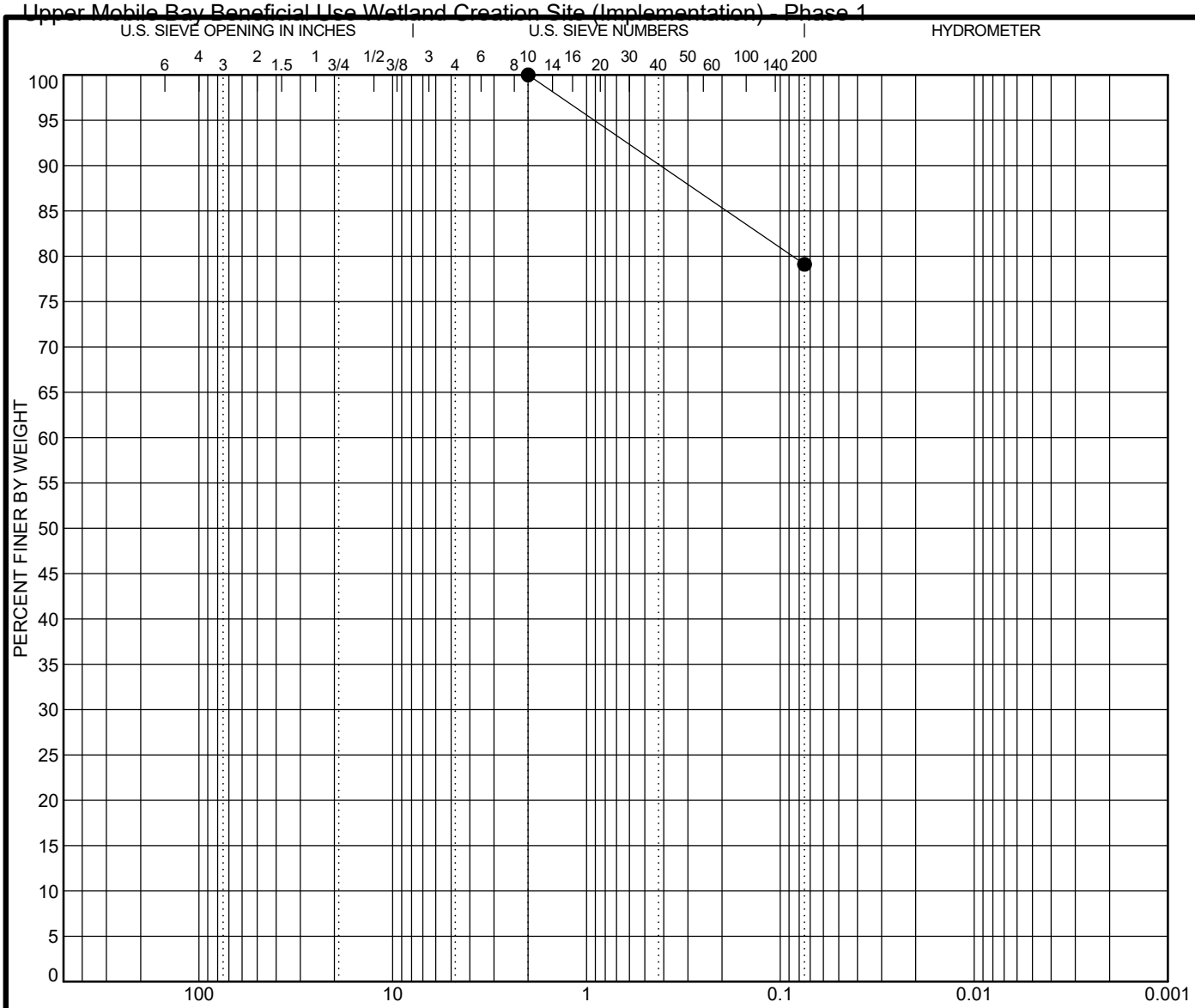
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-36**	**S-14;49.0 ft.**	**FAT CLAY with SAND (CH)**	**82**	**22**	**60**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-36	**49.0 ft.**	**2**				**0.0**	**20.9**	**79.1**	

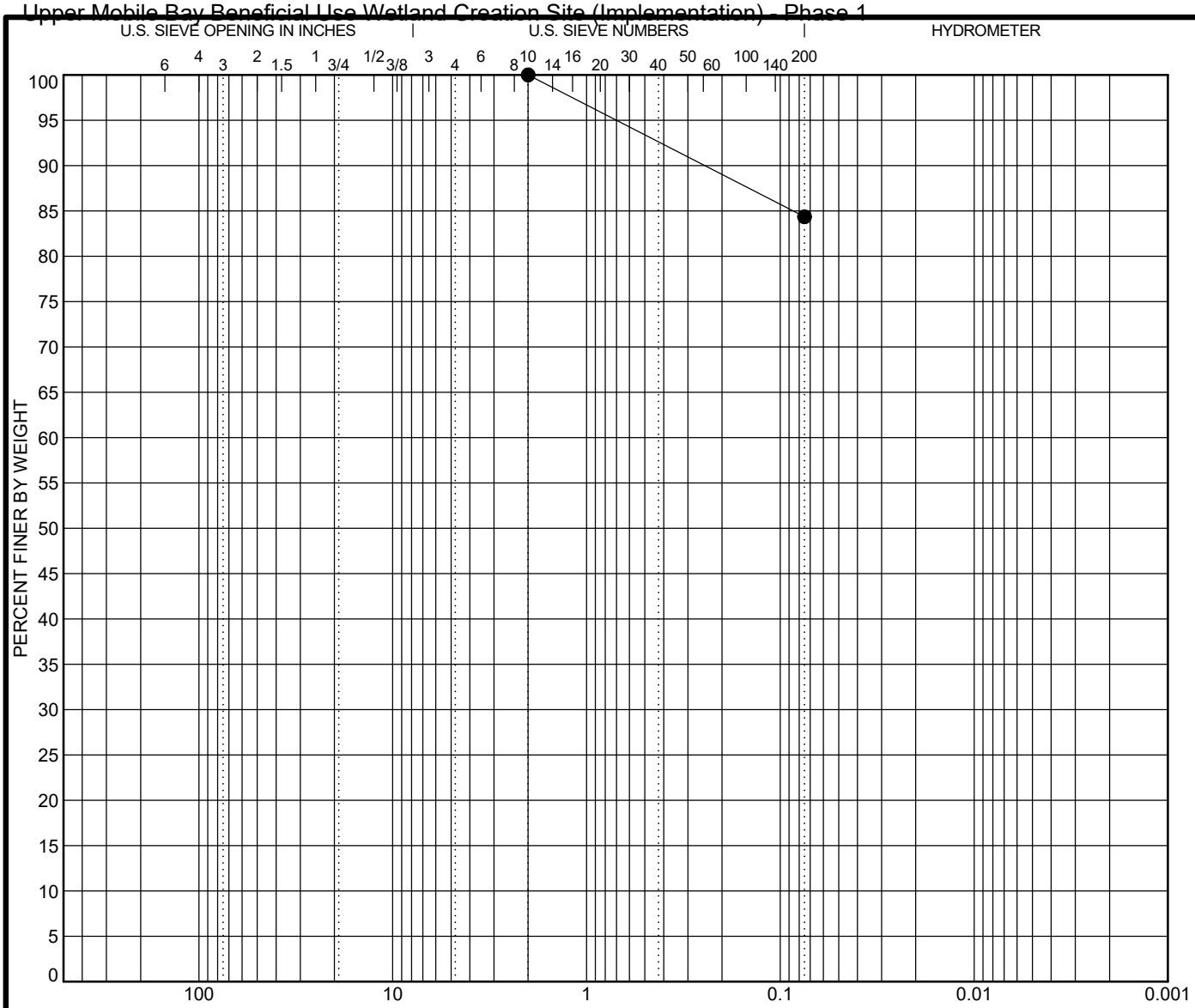
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-36**	**S-16;59.0 ft.**	**FAT CLAY with SAND (CH)**	**57**	**23**	**34**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-36	**59.0 ft.**	**2**				**0.0**	**15.6**	**84.4**	

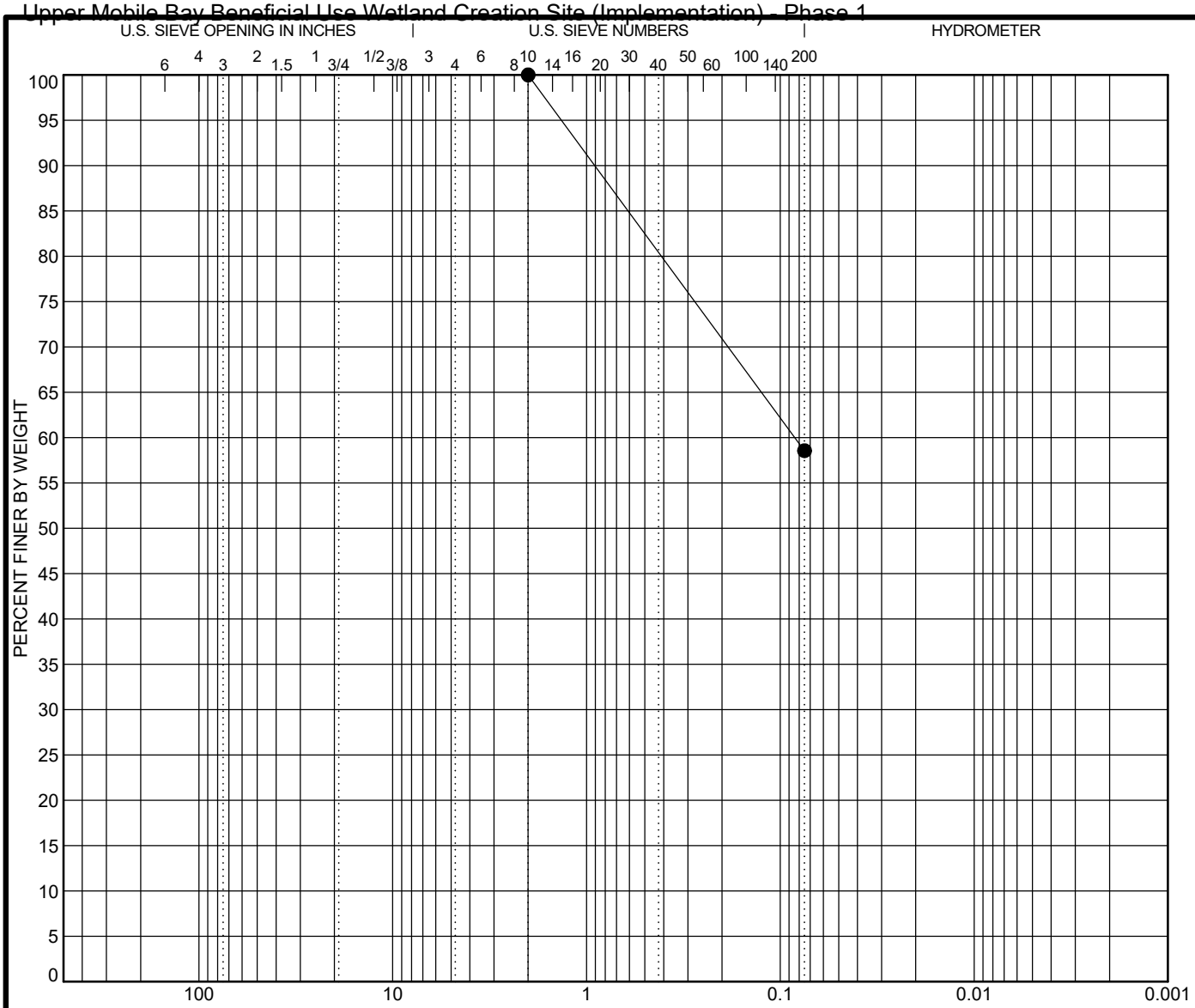
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-36**	**S-18;69.0 ft.**	**SANDY FAT CLAY (CH)**	**162**	**47**	**115**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-36	**69.0 ft.**	**2**	**0.084**			**0.0**	**41.4**	**58.6**	

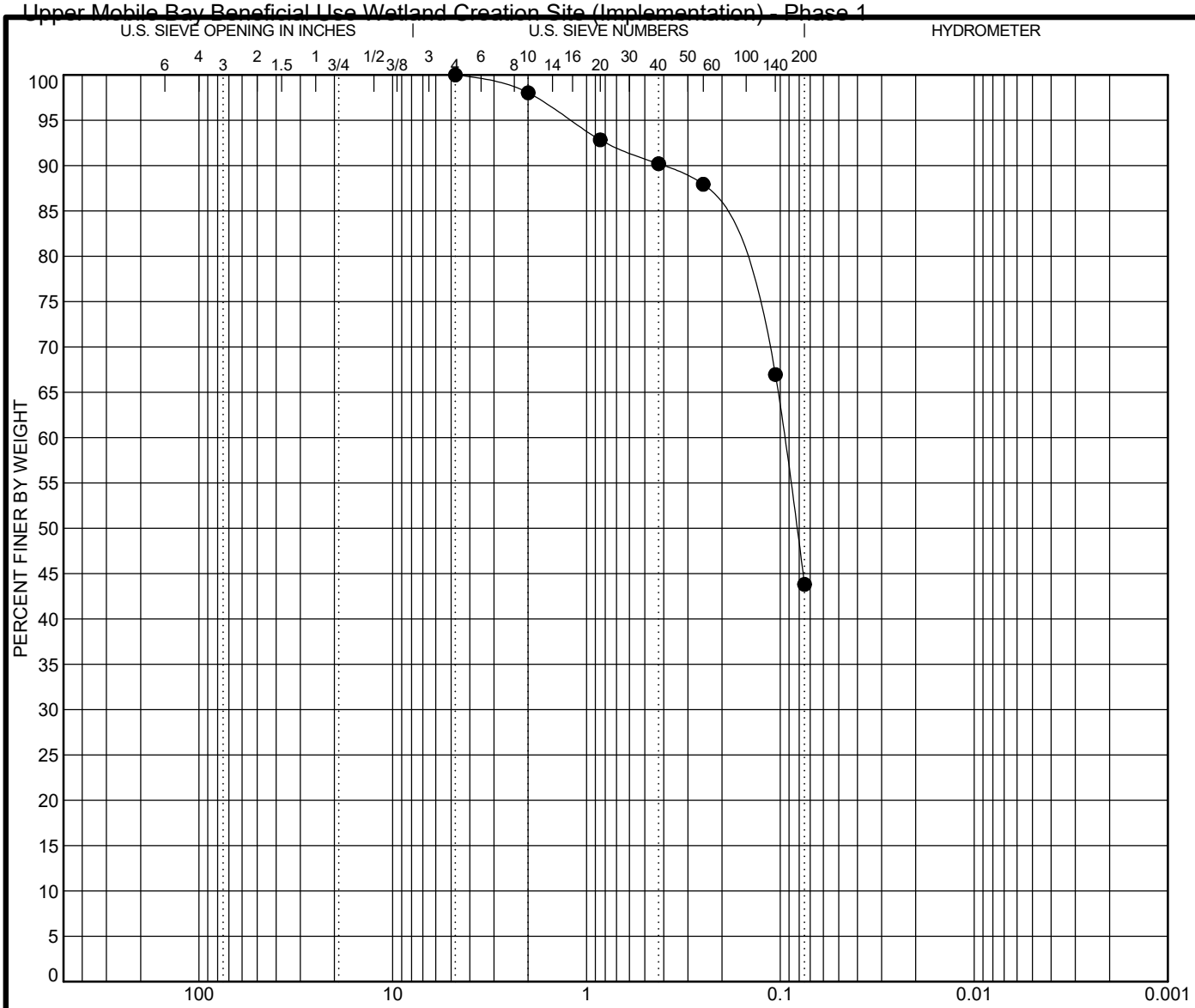
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-37**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-37	**3.0 ft.**	**4.75**	**0.096**			**0.0**	**56.2**	**43.8**	

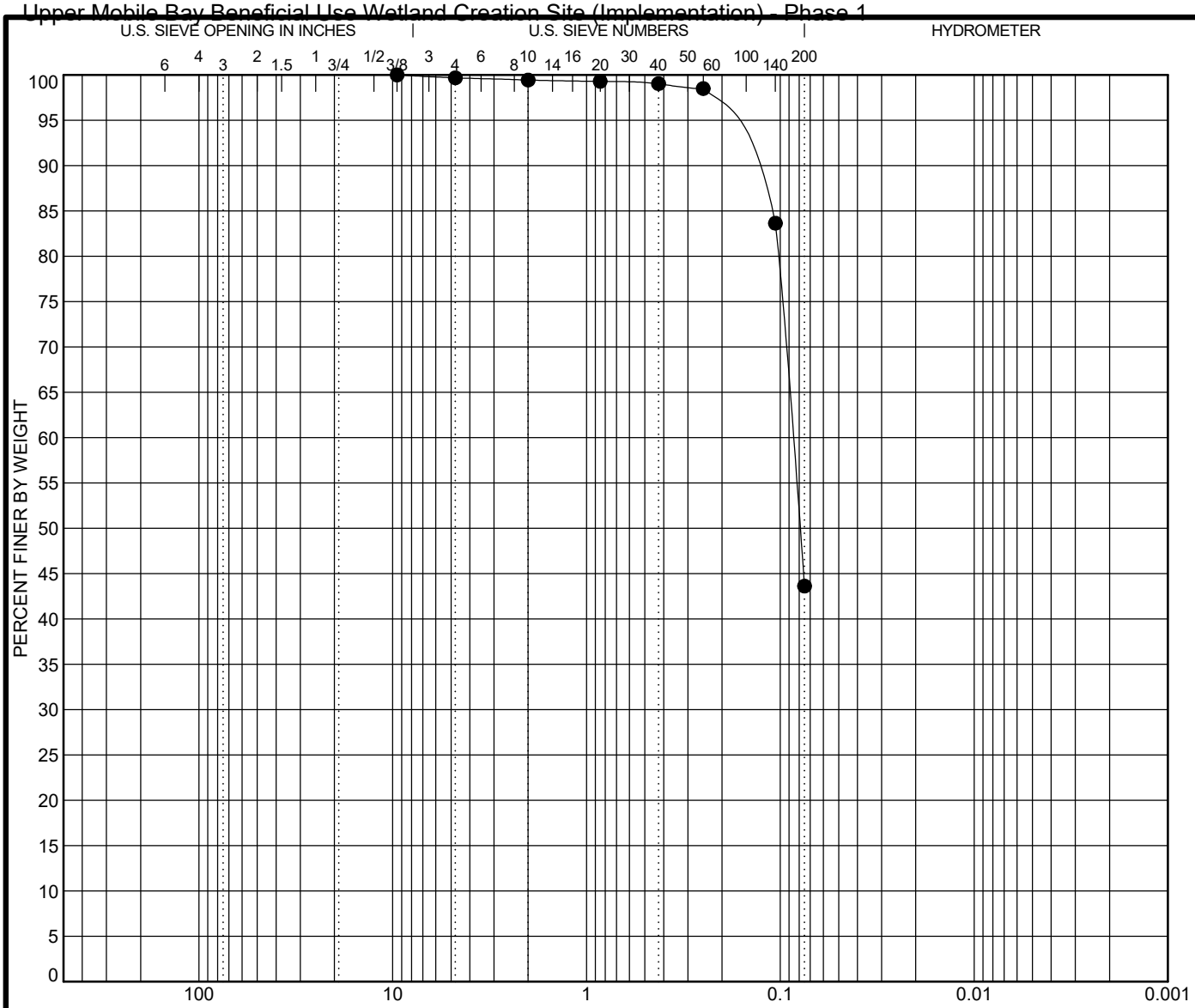
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-37**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-37	**5.5 ft.**	**9.5**	**0.086**			**0.3**	**56.1**	**43.6**	

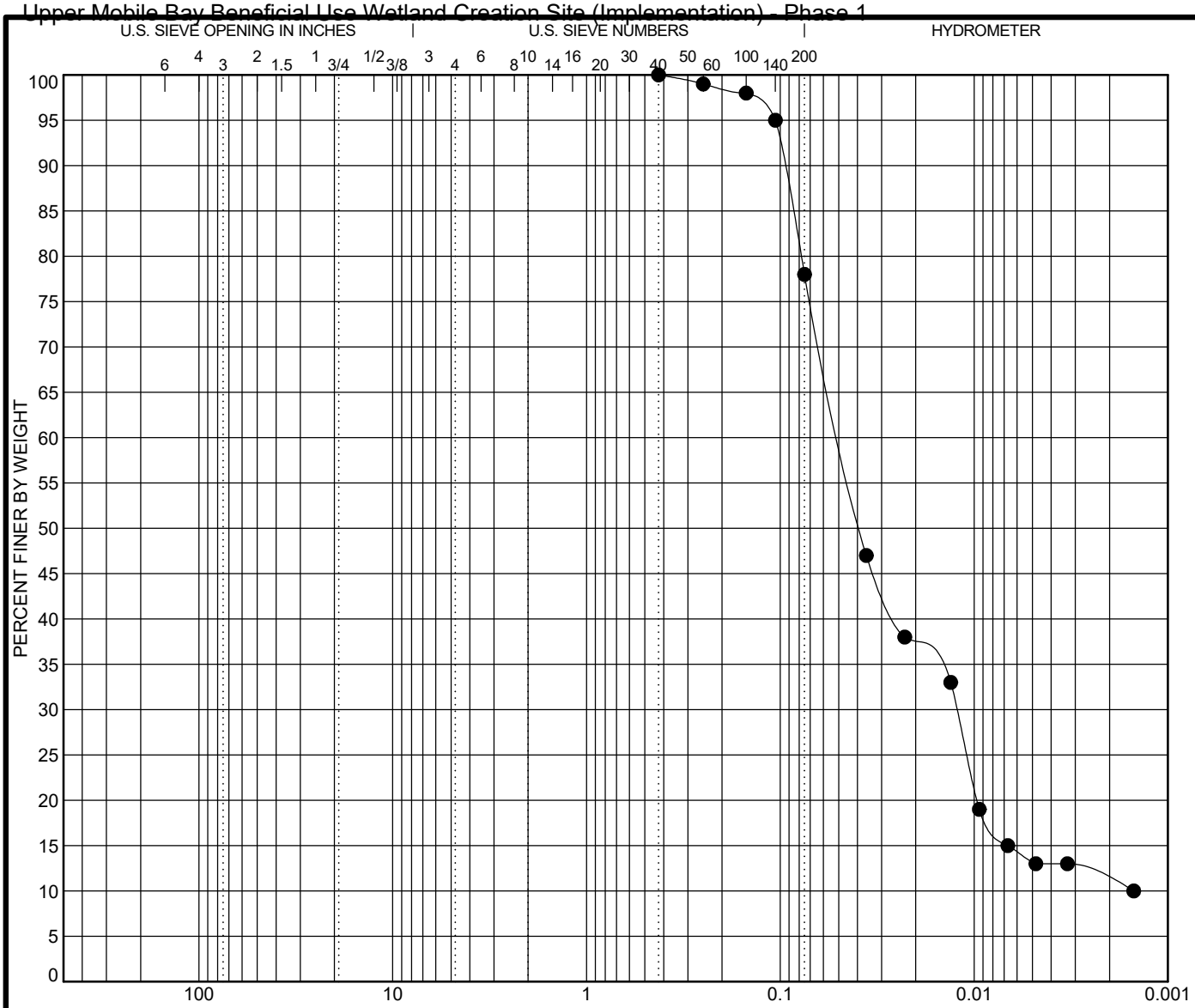
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-37**	**T-1;10.0 ft.**	**SILT with SAND (ML)**	**39**	**28**	**11**	**2.05**	**32.65**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-37	**10.0 ft.**	**0.425**	**0.049**	**0.012**	**0.002**	**0.0**	**22.0**	**66.9**	**11.1**

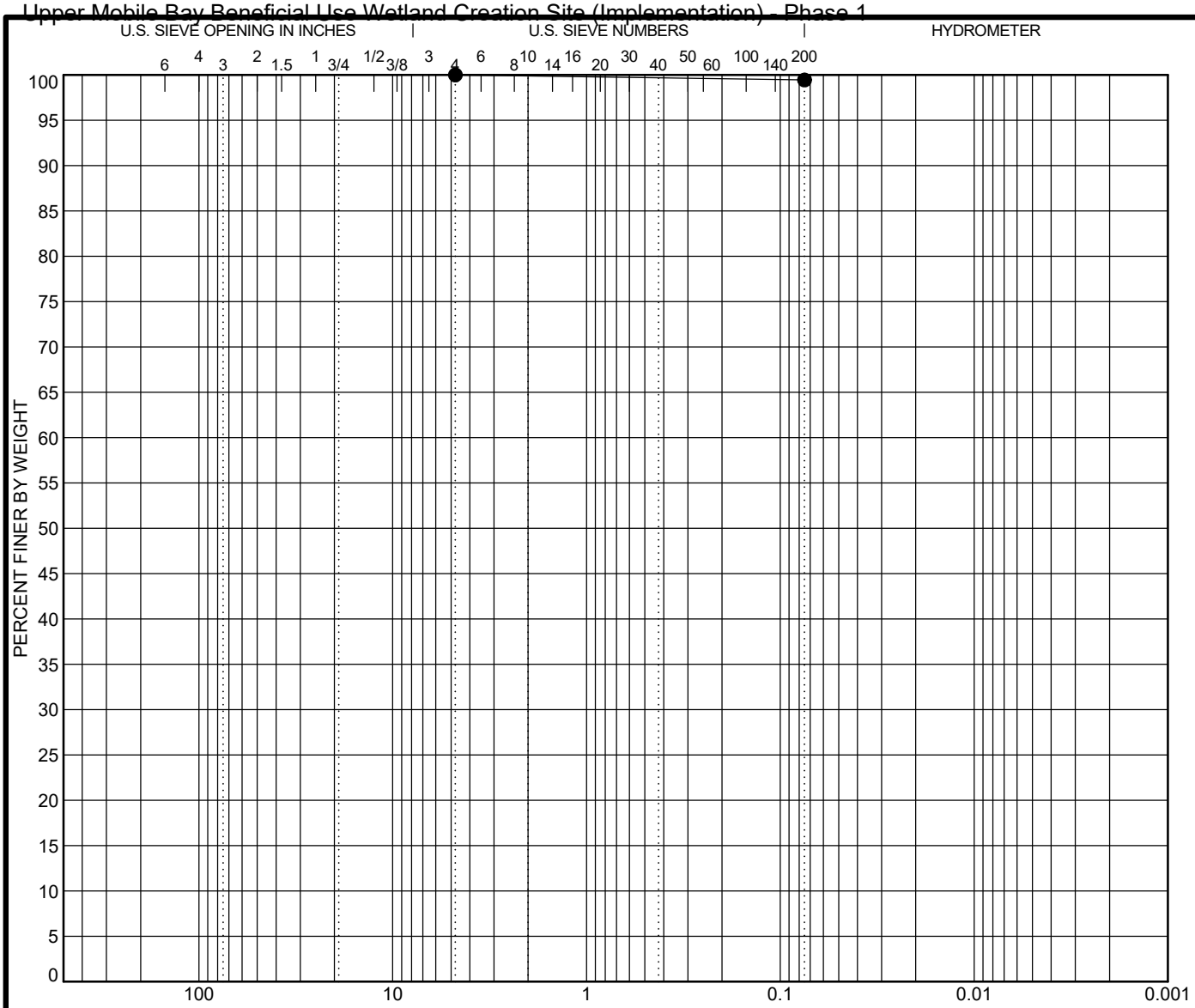
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-37**	**S-8;20.0 ft.**	**FAT CLAY (CH)**	**62**	**24**	**38**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-37	**20.0 ft.**	**4.75**				**0.0**	**0.6**	**99.4**	

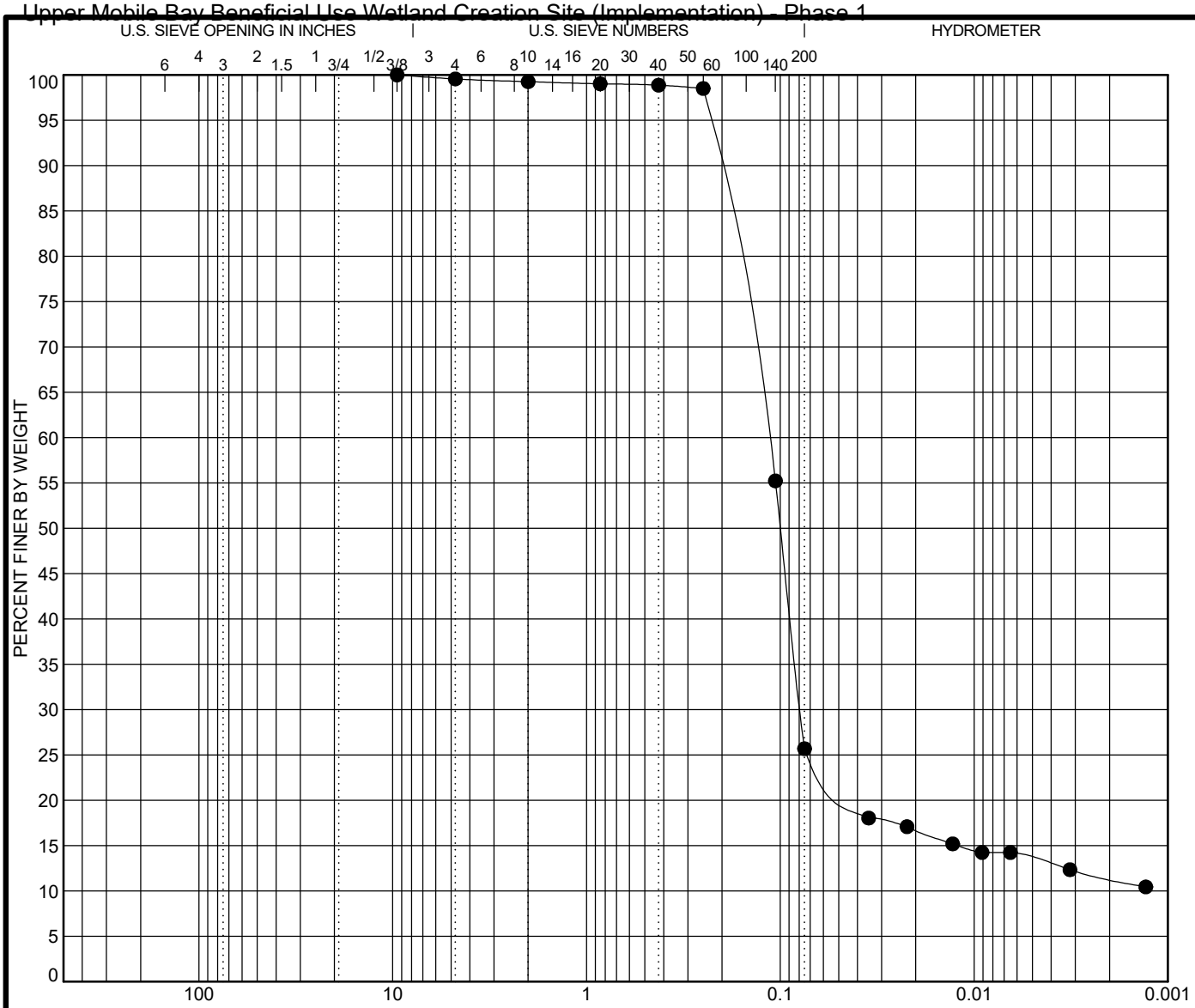
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **B-38**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-38	**3.0 ft.**	**9.5**	**0.117**	**0.079**		**0.4**	**73.9**	**14.3**	**11.4**

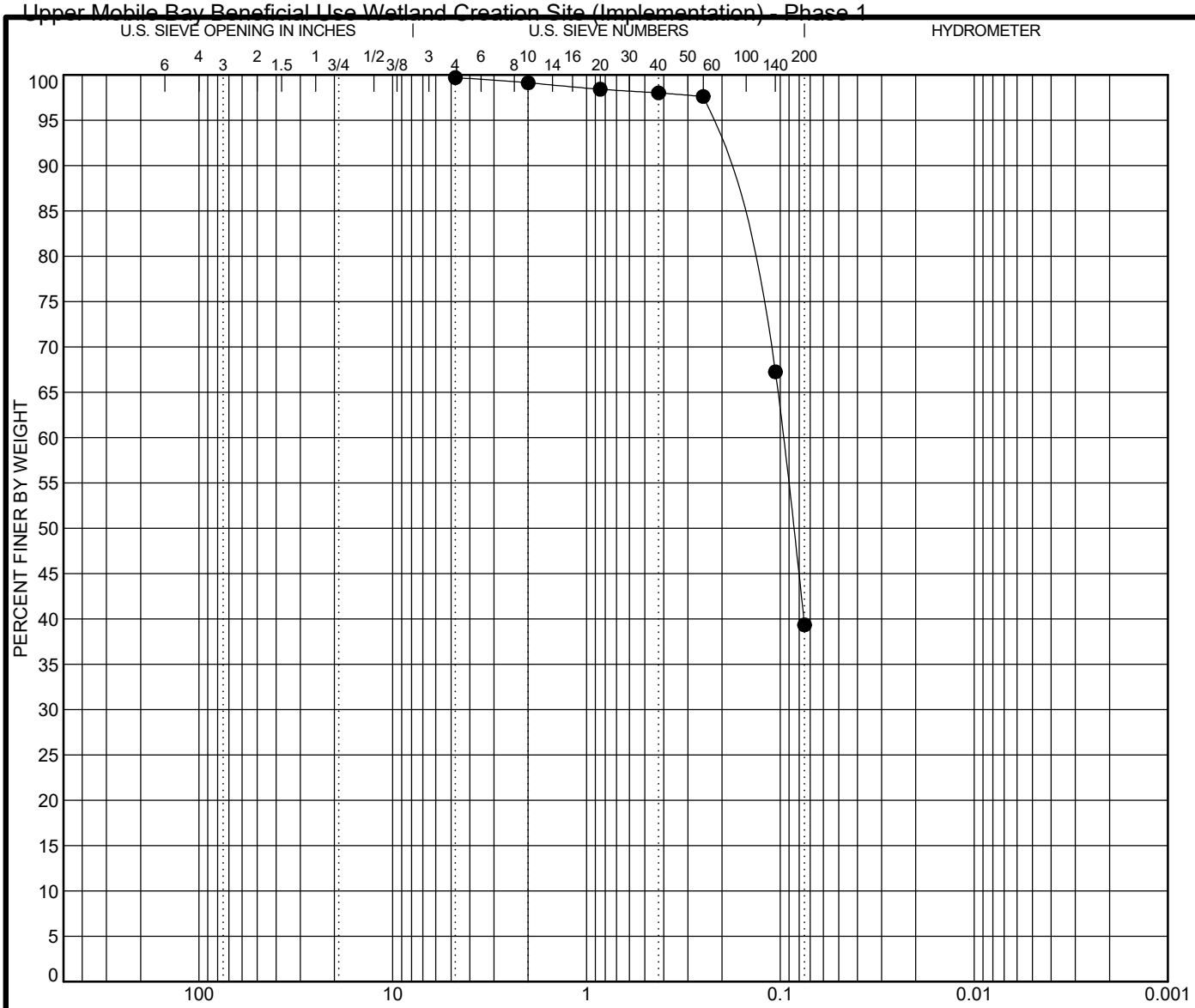
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-38**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-38	**8.0 ft.**	**4.75**	**0.097**			**0.0**	**60.4**	**39.3**	

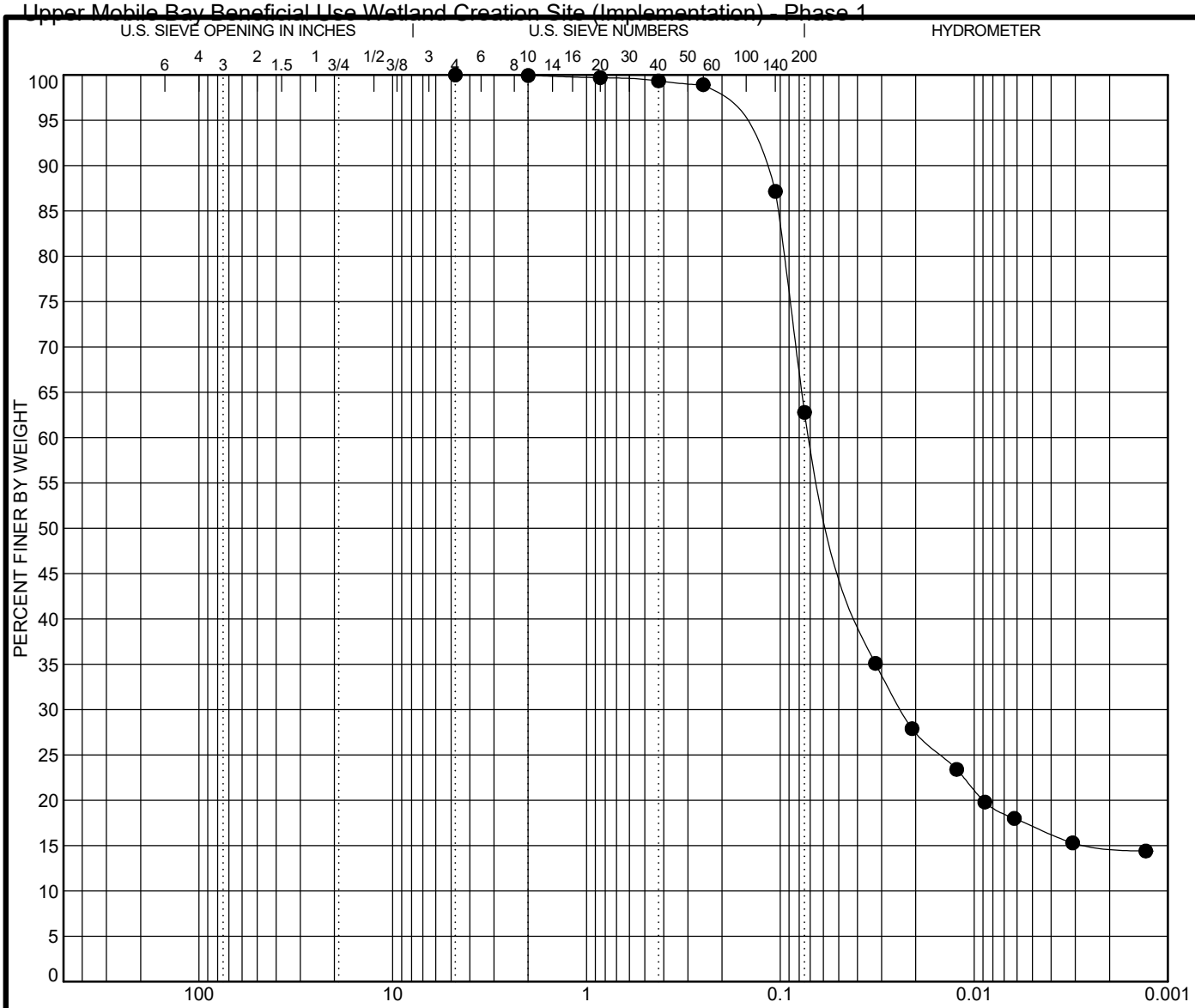
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-38**	**S-7;17.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-38	**17.5 ft.**	**4.75**	**0.069**	**0.024**		**0.0**	**37.2**	**47.9**	**14.8**

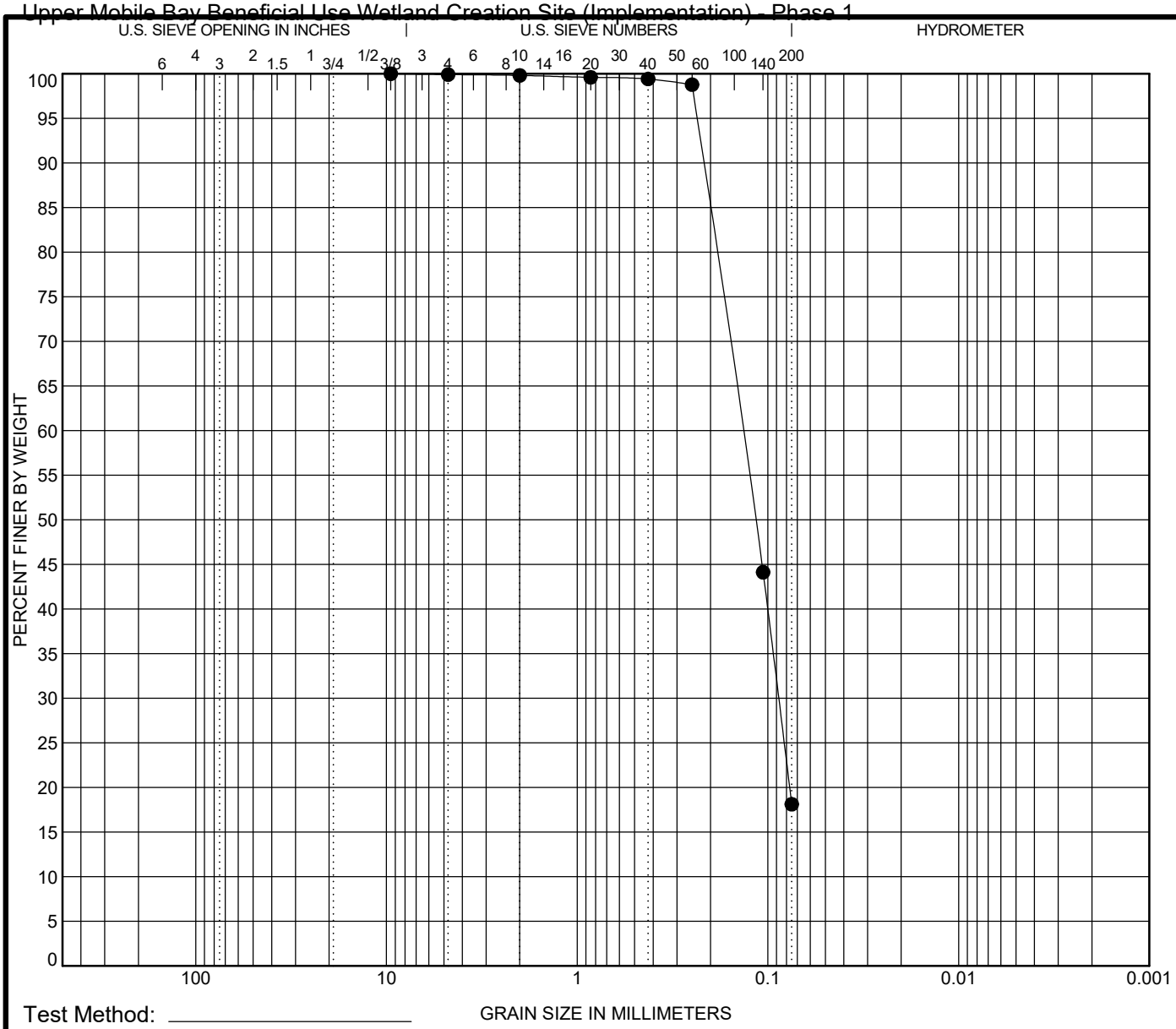
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-39**	**S-2;3.0 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-39	**3.0 ft.**	**9.5**	**0.136**	**0.088**		**0.1**	**81.8**	**18.1**	

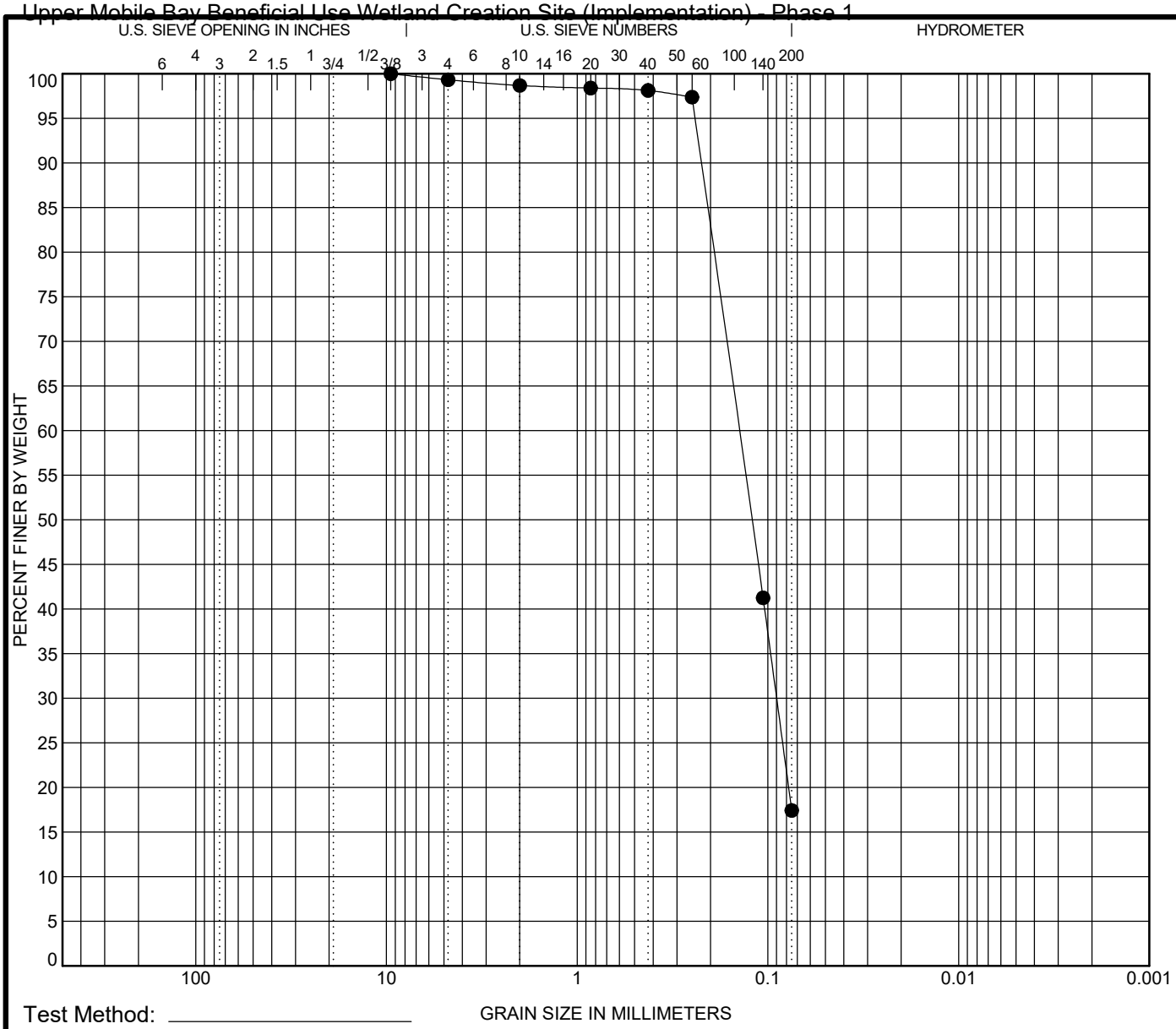
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-39**	**S-4;8.0 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-39	**8.0 ft.**	**9.5**	**0.141**	**0.09**		**0.7**	**81.9**	**17.4**	

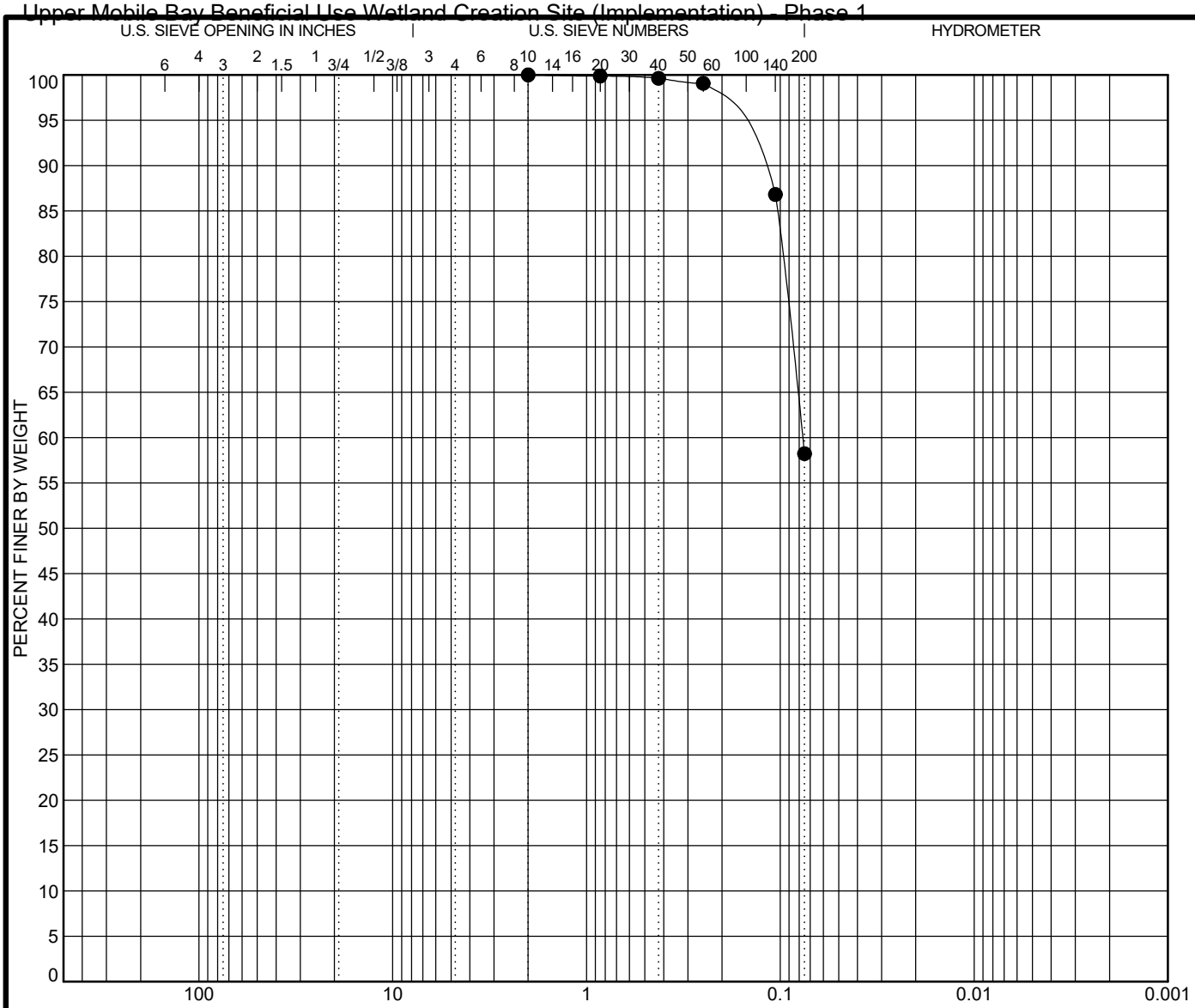
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-39**	**S-6;13.0 ft.**	**SANDY LEAN CLAY (CL)**	**38**	**22**	**16**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-39	**13.0 ft.**	**2**	**0.077**			**0.0**	**41.8**	**58.2**	

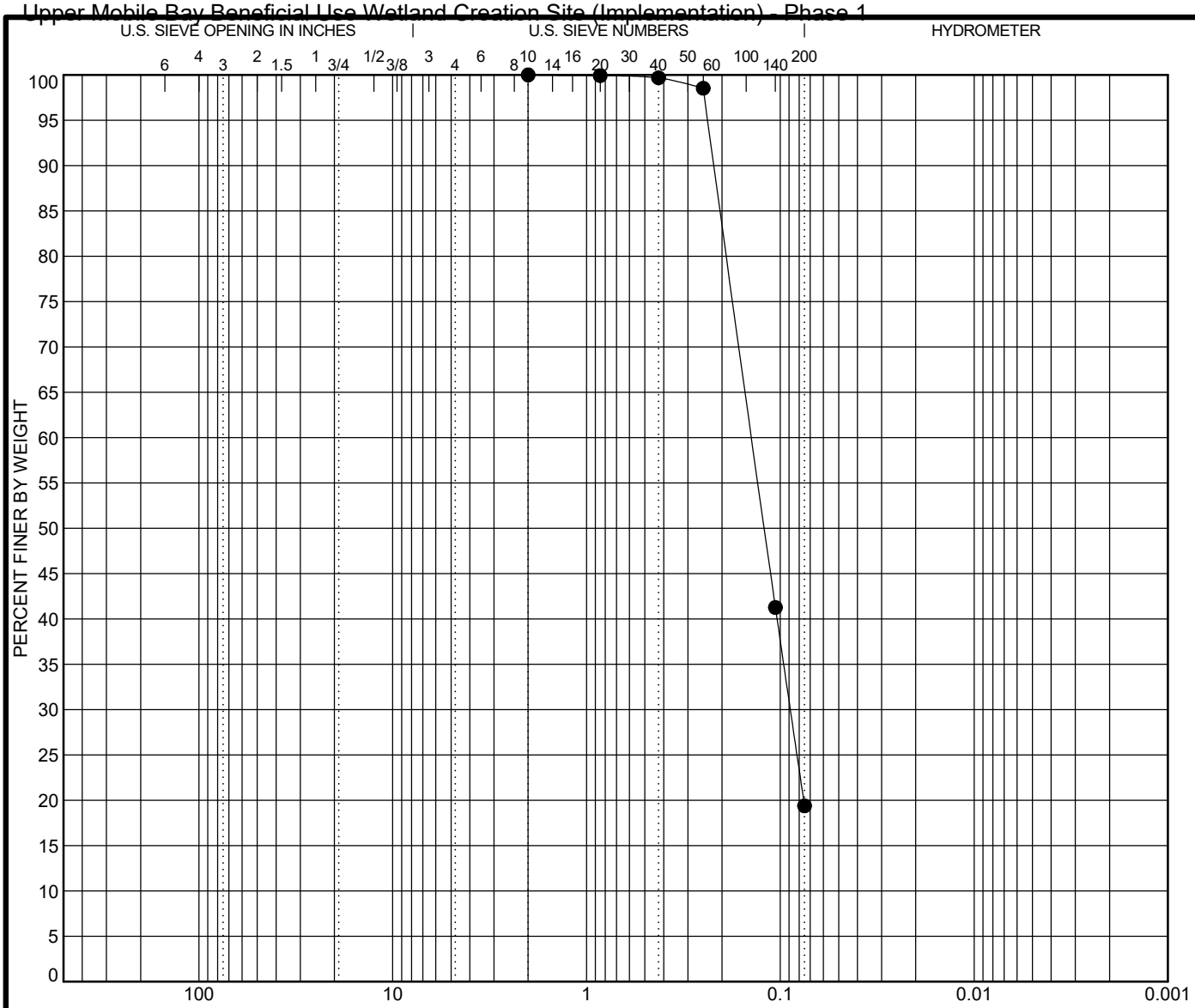
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-40**	**S-1;0.5 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-40	**0.5 ft.**	**2**	**0.14**	**0.089**		**0.0**	**80.6**	**19.4**	

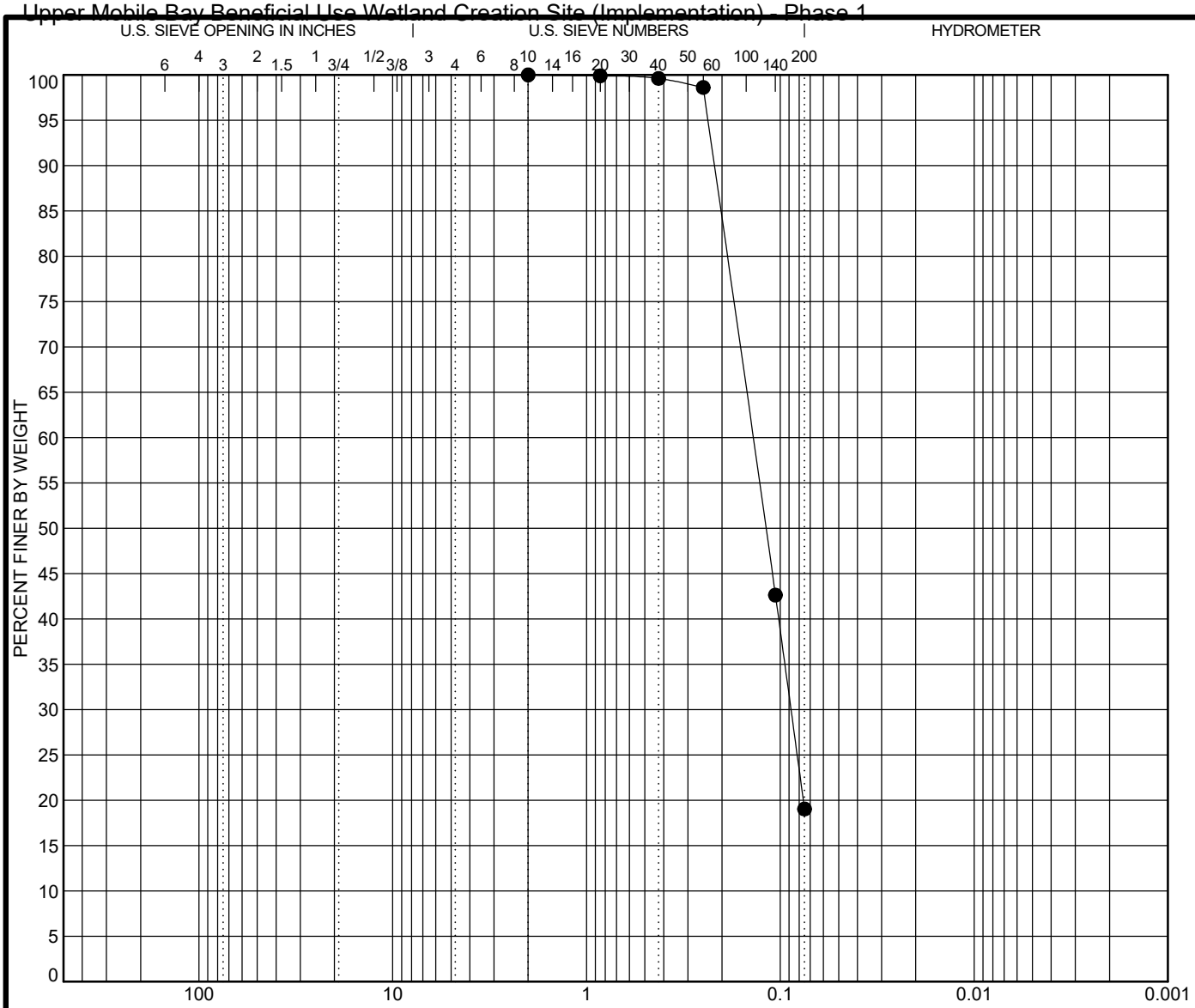
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-40**	**S-3;5.5 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-40	**5.5 ft.**	**2**	**0.138**	**0.088**		**0.0**	**81.0**	**19.0**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
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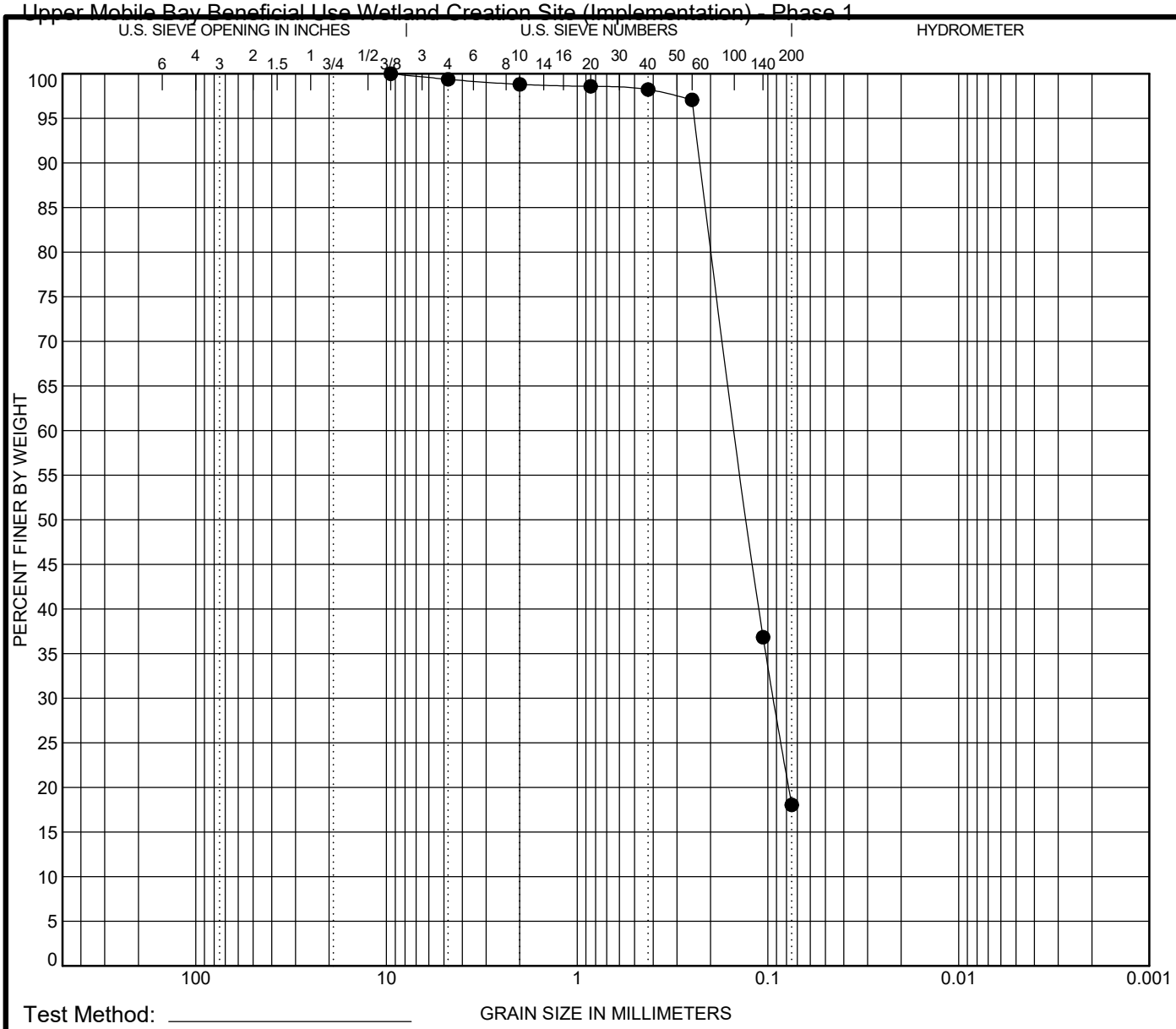
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-40**	**S-5;10.5 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-40	**10.5 ft.**	**9.5**	**0.147**	**0.093**		**0.6**	**81.3**	**18.0**	

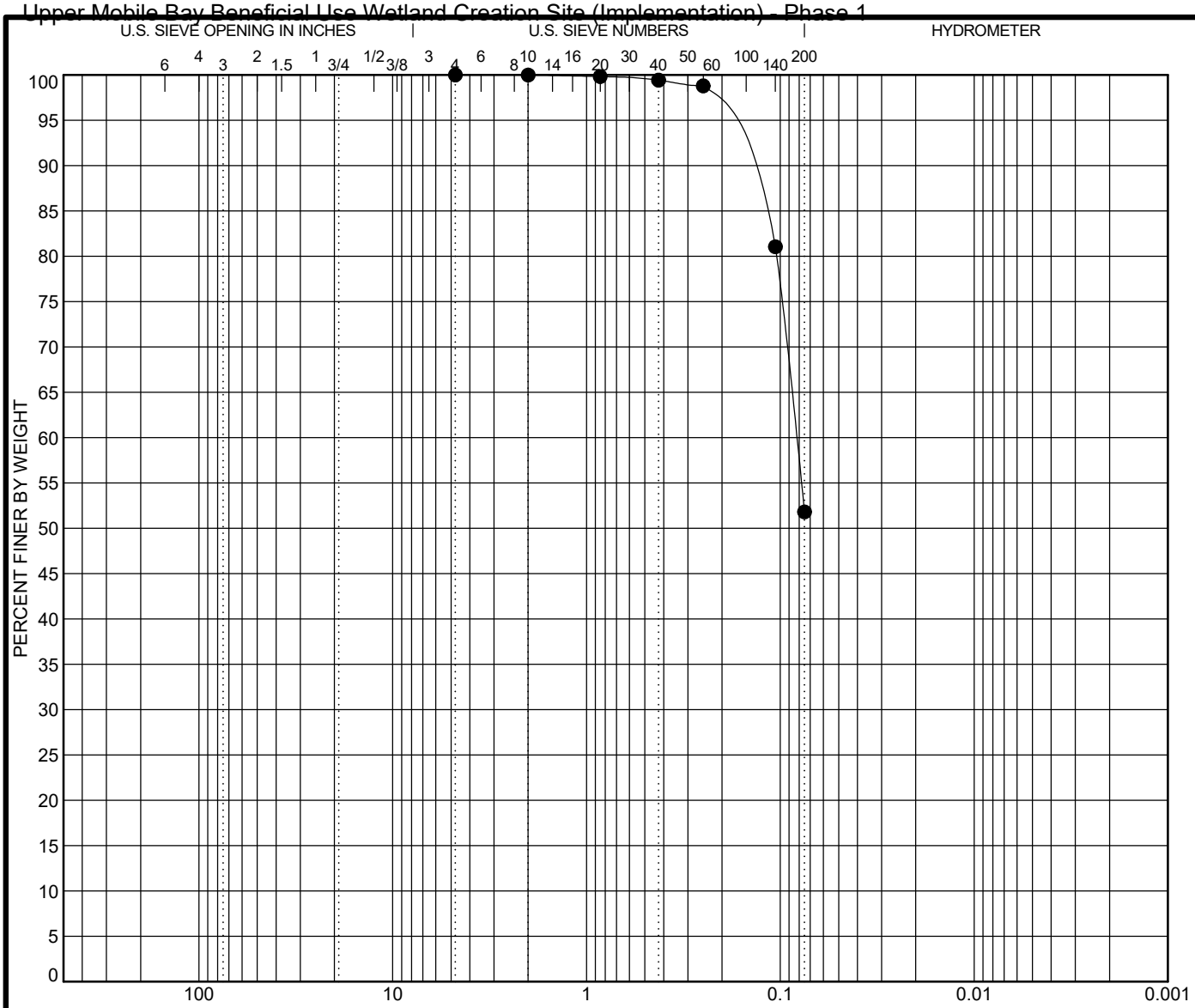
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-40**	**S-7;15.5 ft.**	**SANDY LEAN CLAY (CL)**	**34**	**23**	**11**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-40	**15.5 ft.**	**4.75**	**0.083**			**0.0**	**48.2**	**51.8**	

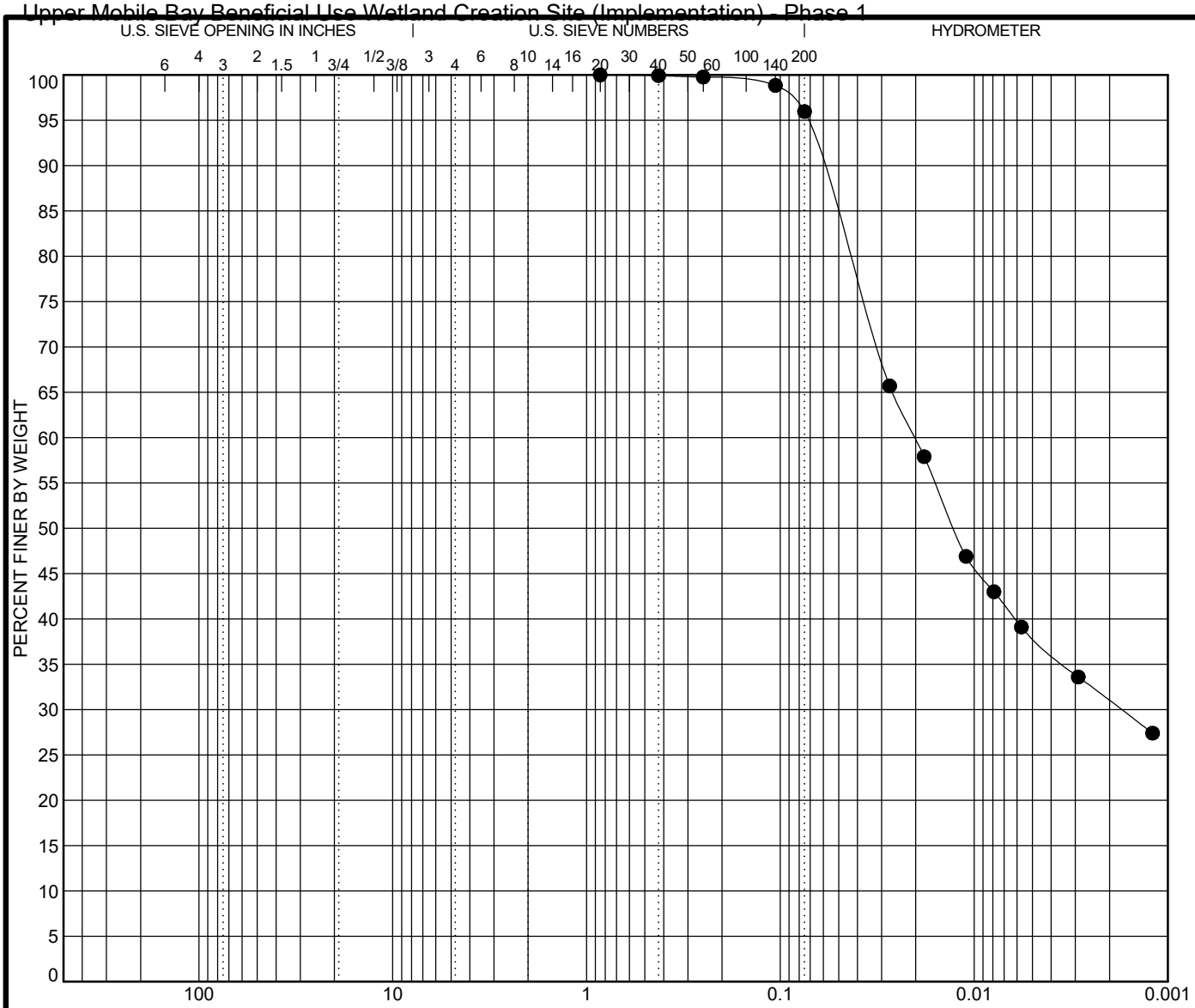
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-40**	**T-1;20.0 ft.**	**FAT CLAY (CH)**	**60**	**20**	**40**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-40	**20.0 ft.**	**0.85**	**0.02**	**0.002**		**0.0**	**4.0**	**65.0**	**31.0**

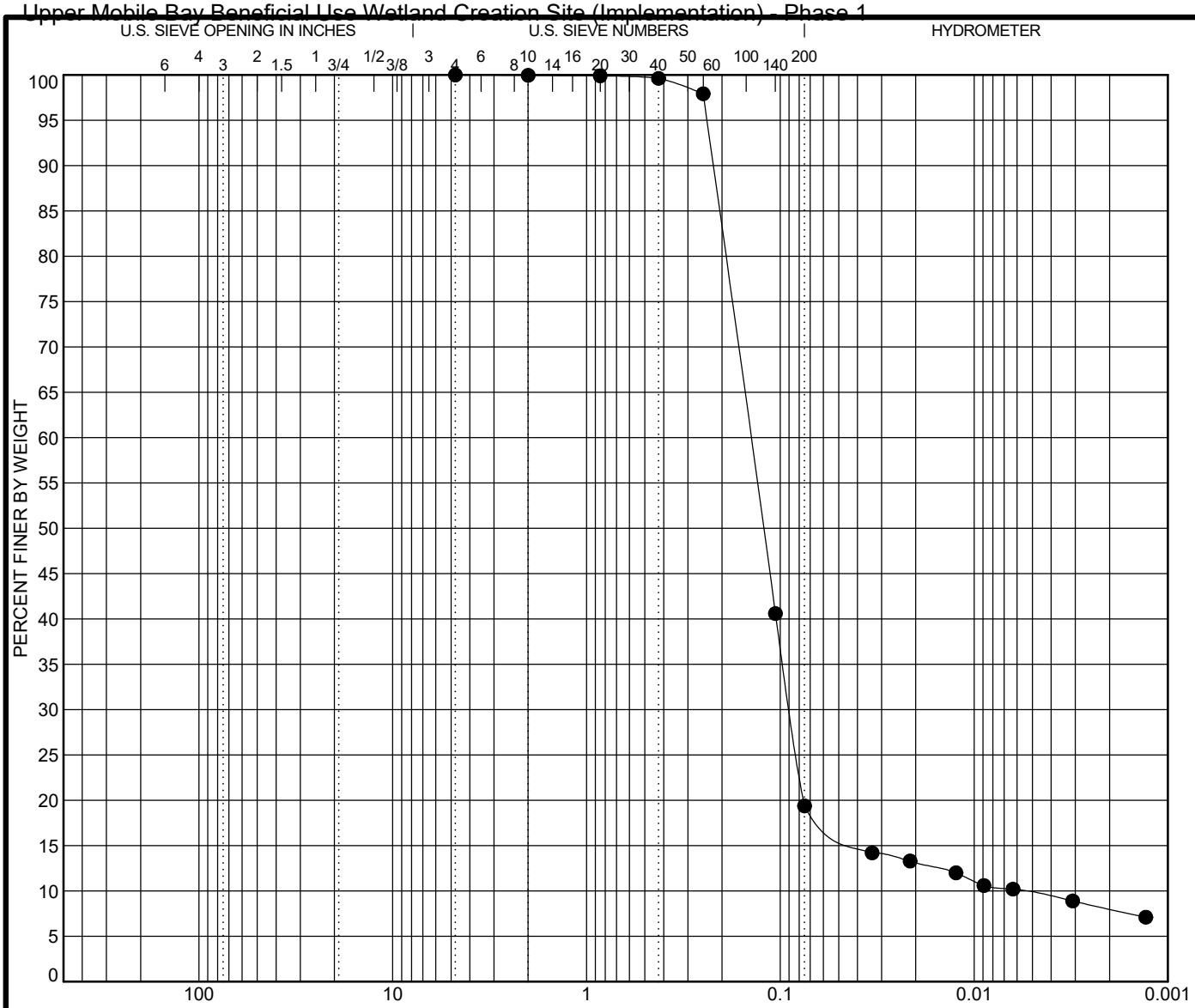
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-41**	**S-3;5.5 ft.**					**9.94**	**25.09**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-41	**5.5 ft.**	**4.75**	**0.142**	**0.089**	**0.006**	**0.0**	**80.6**	**11.4**	**8.0**

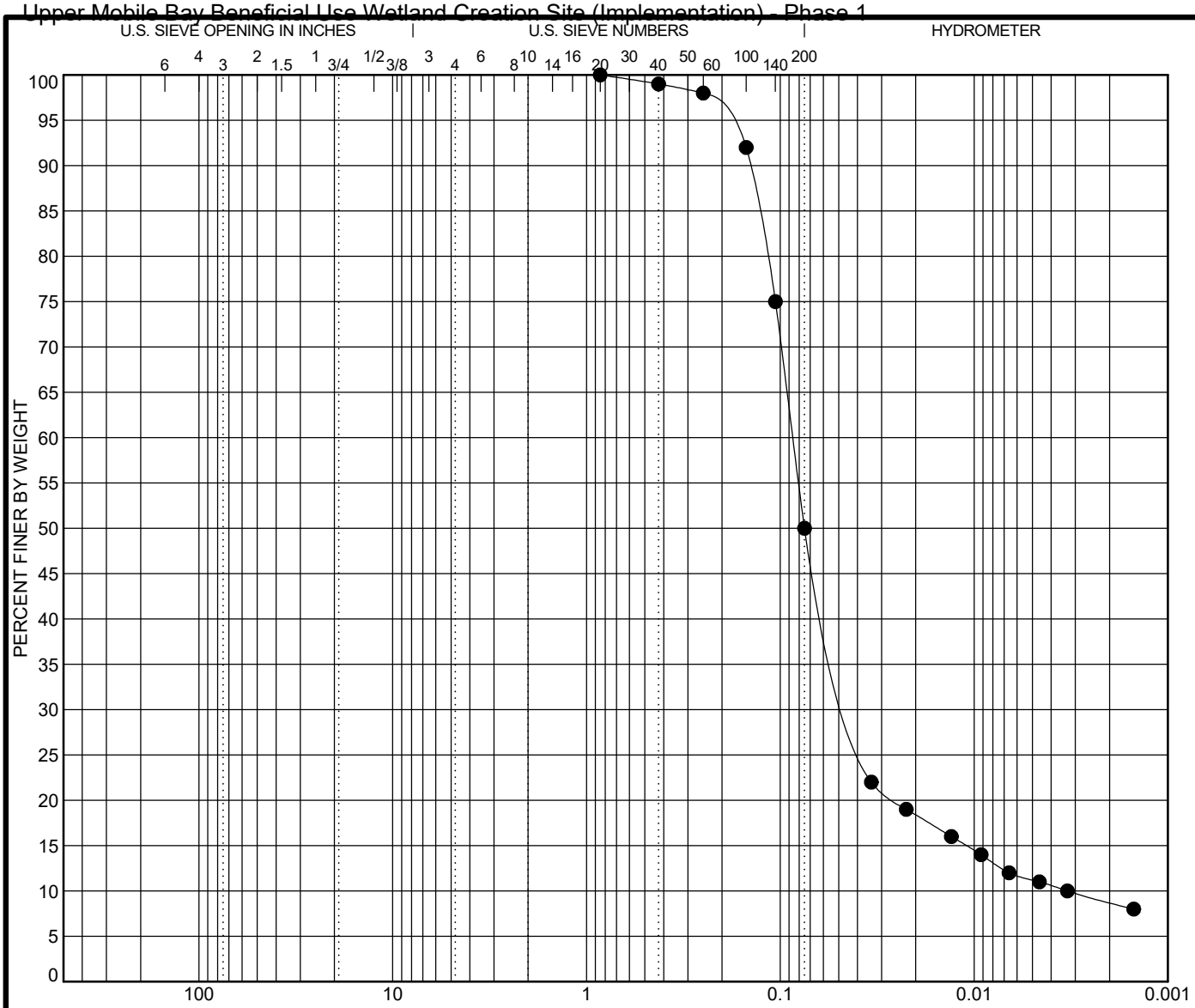
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-41**	**T-1;10.0 ft.**	**SANDY SILT (ML)**	**32**	**24**	**8**	**6.36**	**26.10**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-41	**10.0 ft.**	**0.85**	**0.086**	**0.043**	**0.003**	**0.0**	**50.0**	**41.3**	**8.7**

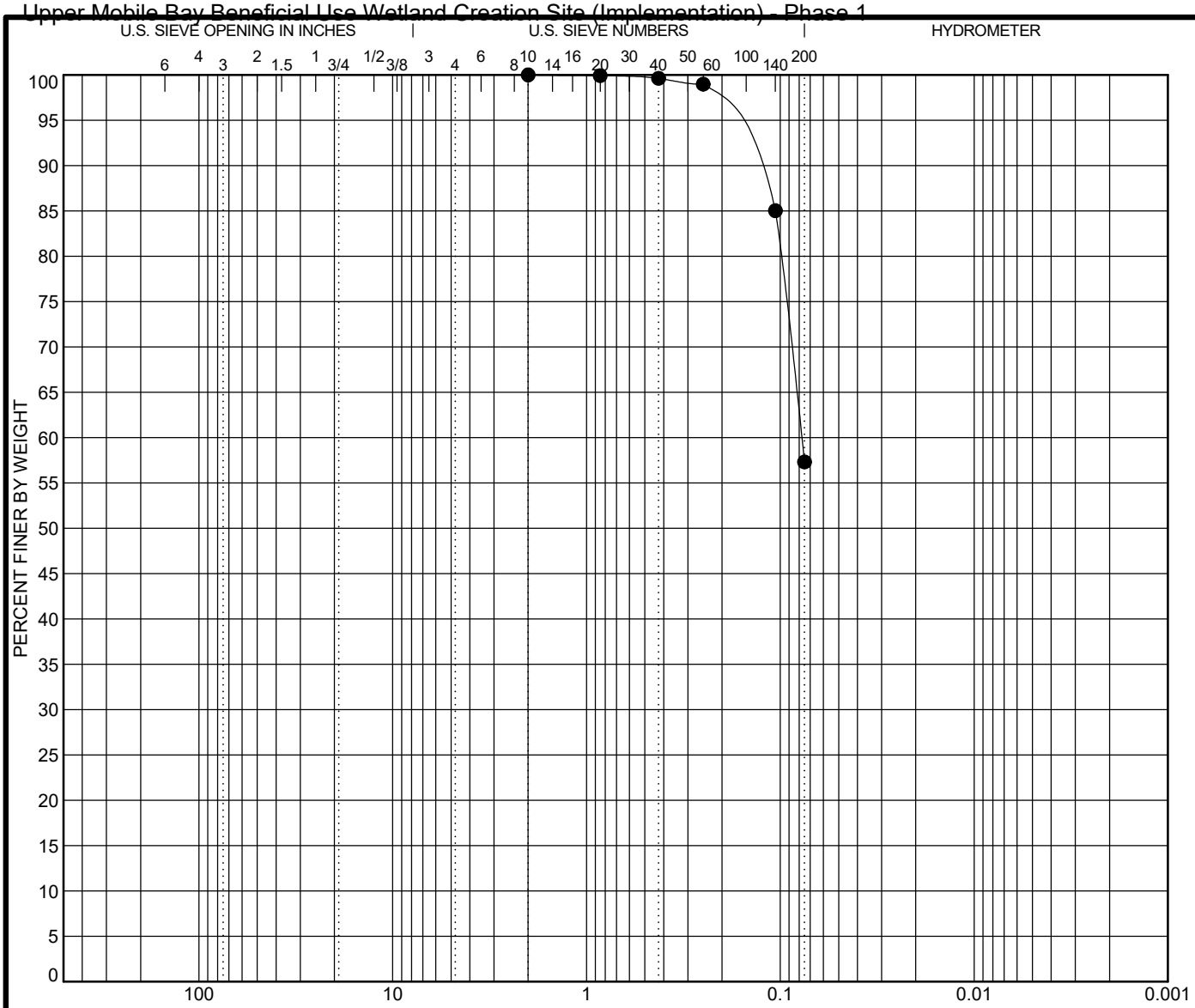
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-41**	**S-5;12.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-41	**12.5 ft.**	**2**	**0.078**			**0.0**	**42.7**	**57.3**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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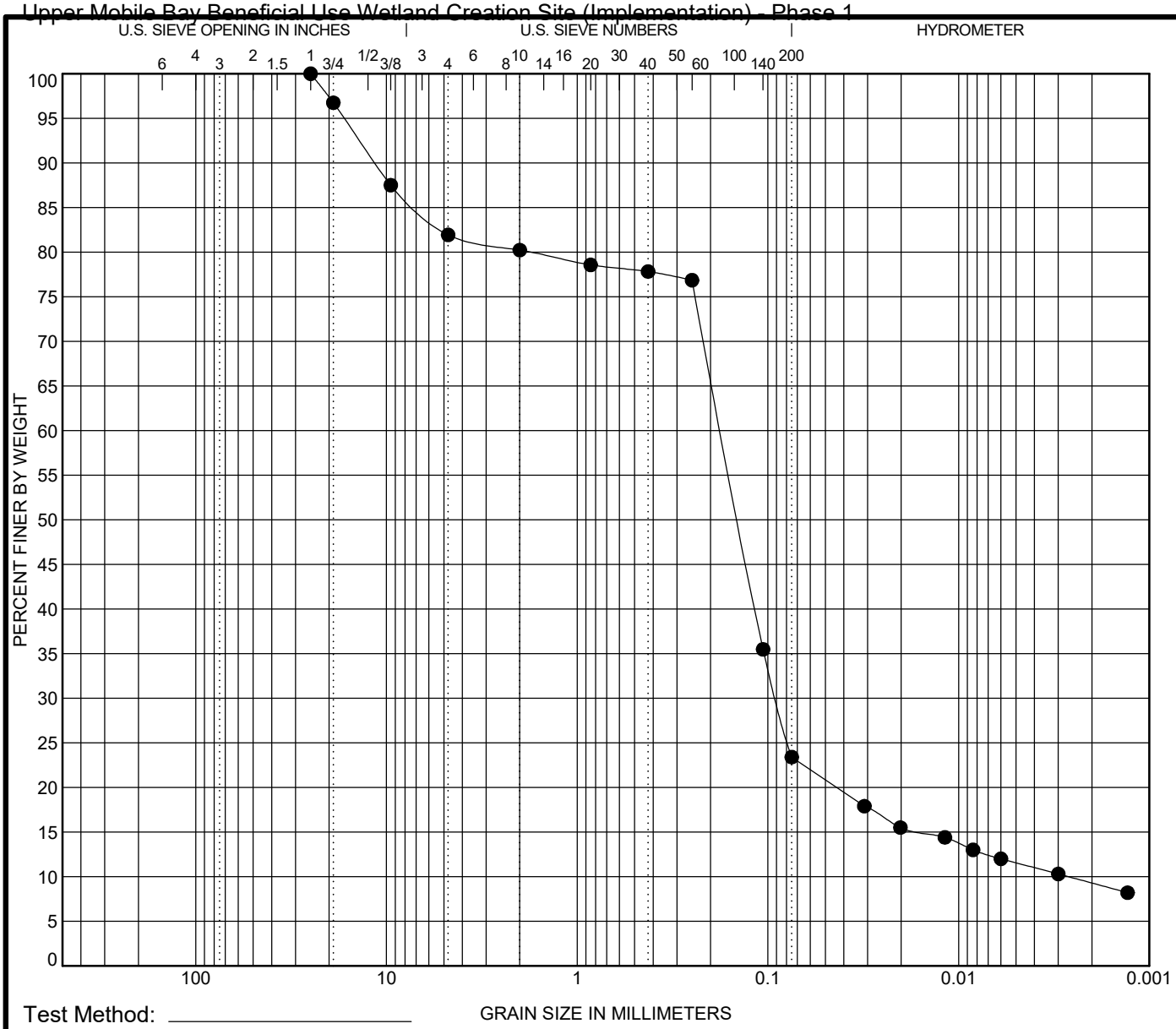
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-42**	**S-4;8.0 ft.**					**17.49**	**66.21**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-42	**8.0 ft.**	**25**	**0.176**	**0.091**	**0.003**	**18.1**	**58.5**	**14.1**	**9.3**

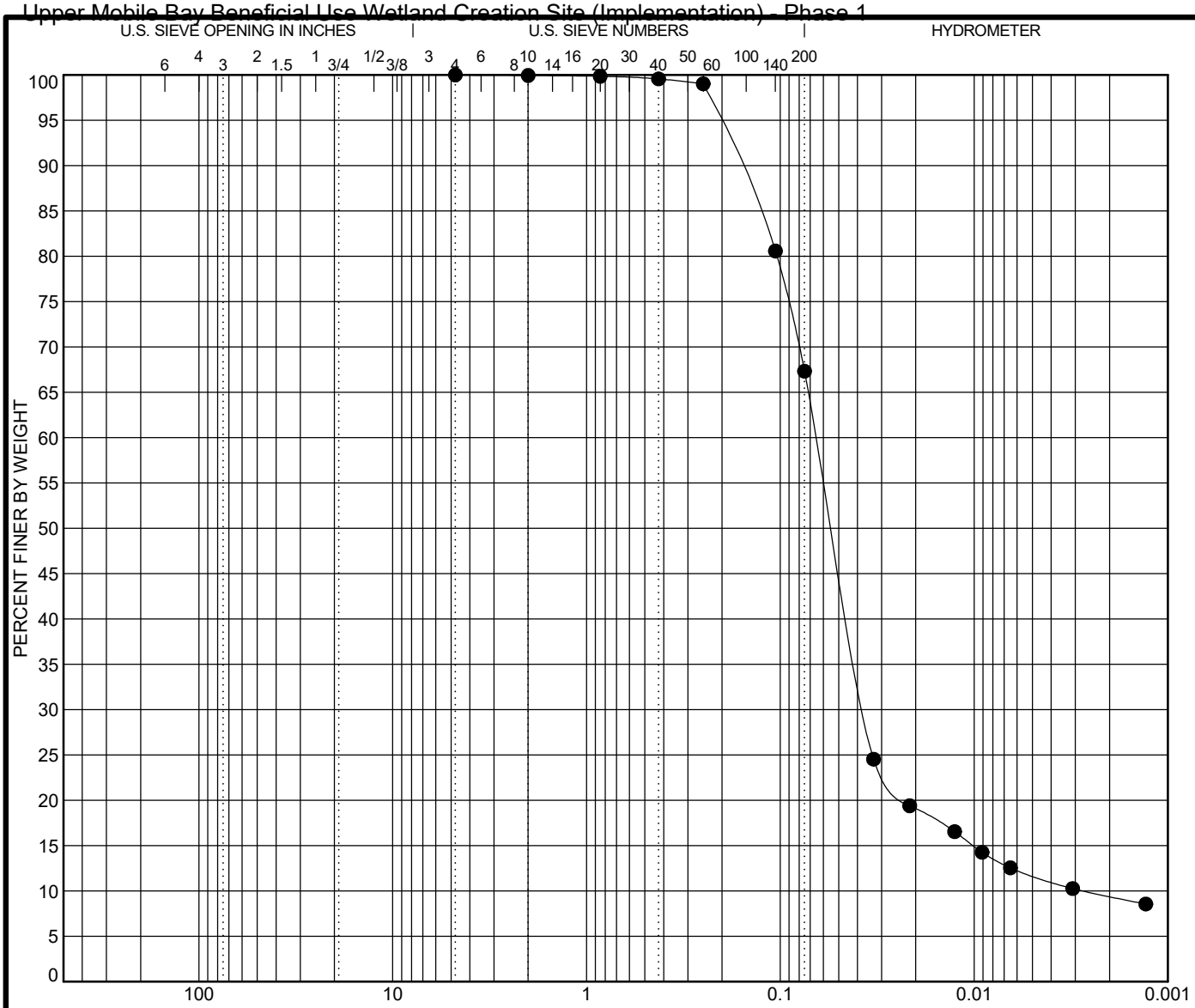
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-42**	**T-1;16.5 ft.**	**SANDY SILT (ML)**	**28**	**25**	**3**	**7.62**	**24.08**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-42	**16.5 ft.**	**4.75**	**0.065**	**0.037**	**0.003**	**0.0**	**32.7**	**57.9**	**9.4**

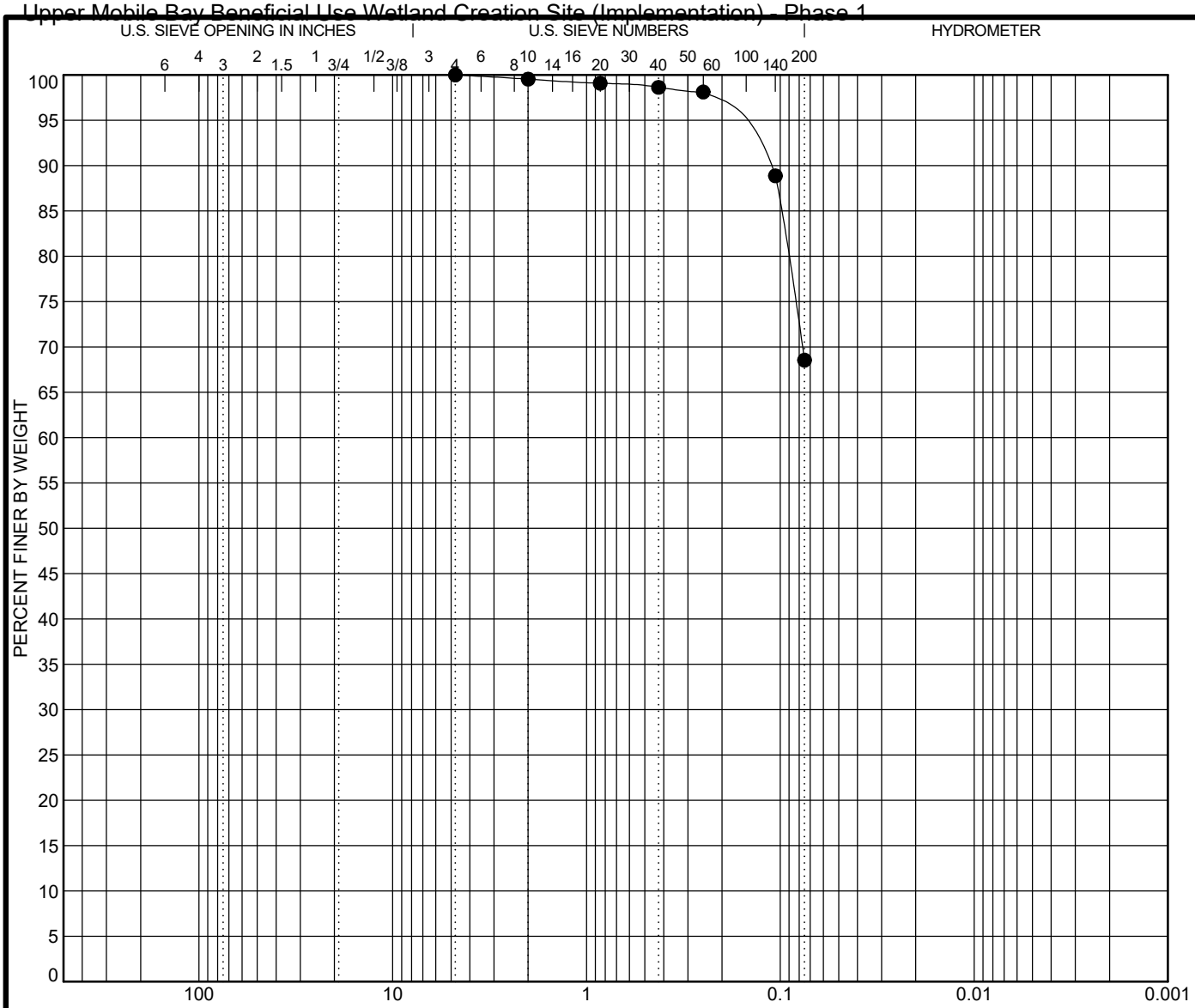
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-44**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-44	**3.0 ft.**	**4.75**				**0.0**	**31.5**	**68.5**	

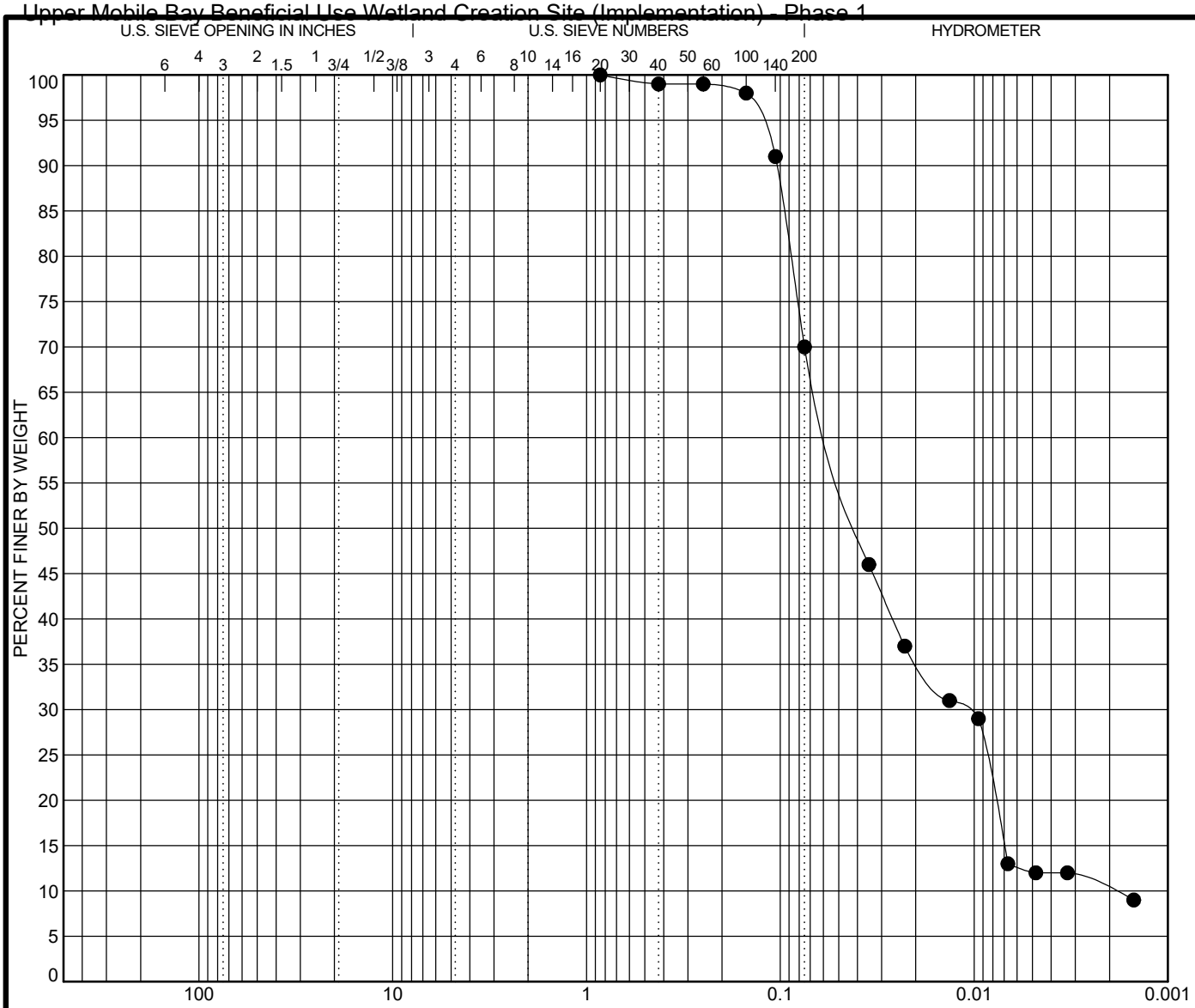
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-44**	**T-4;5.0 ft.**	**SANDY SILT (ML)**	**37**	**27**	**10**	**1.20**	**27.95**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-44	**5.0 ft.**	**0.85**	**0.055**	**0.011**	**0.002**	**0.0**	**30.0**	**59.9**	**10.1**

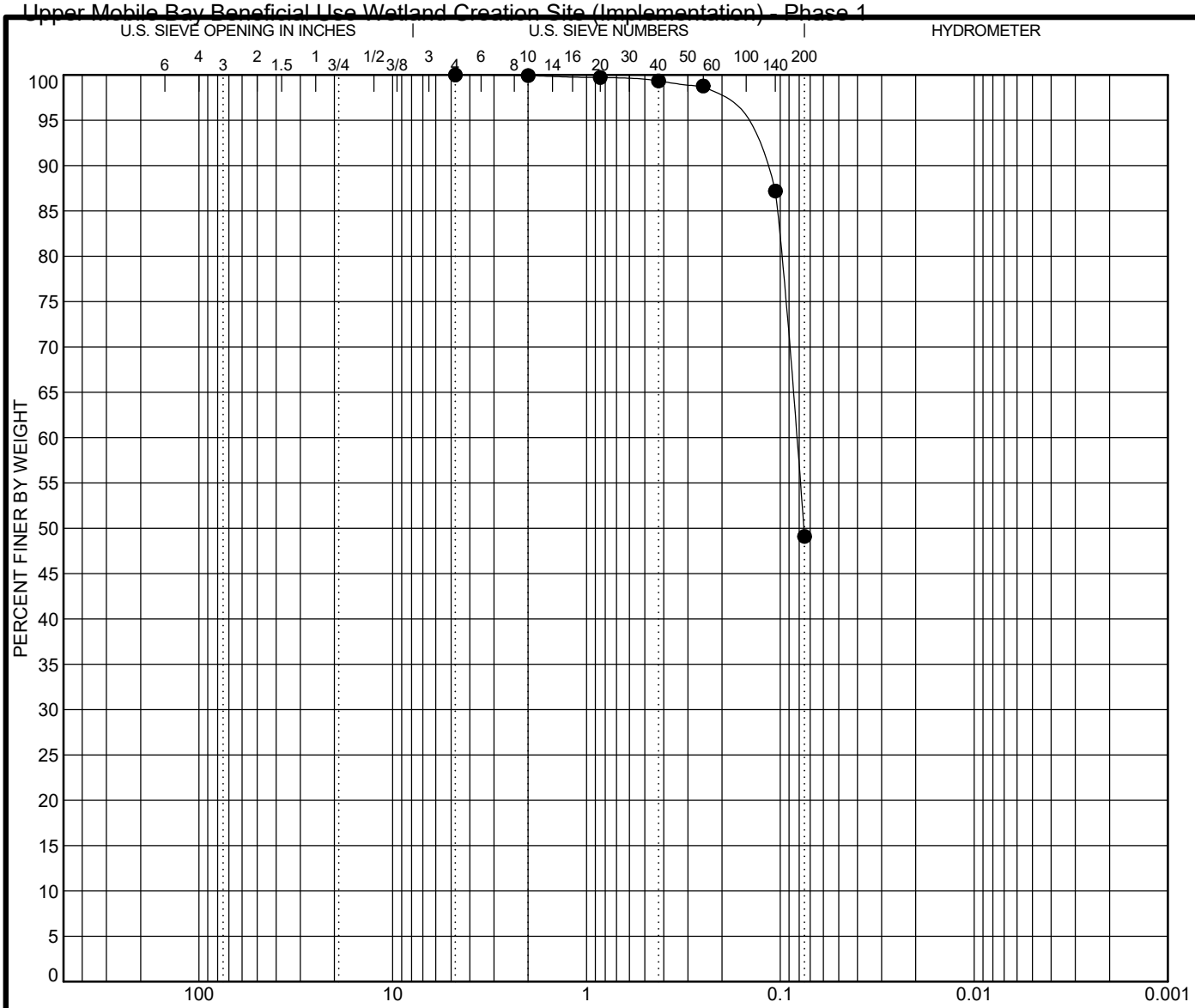
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-44**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-44	**8.0 ft.**	**4.75**	**0.083**			**0.0**	**50.9**	**49.1**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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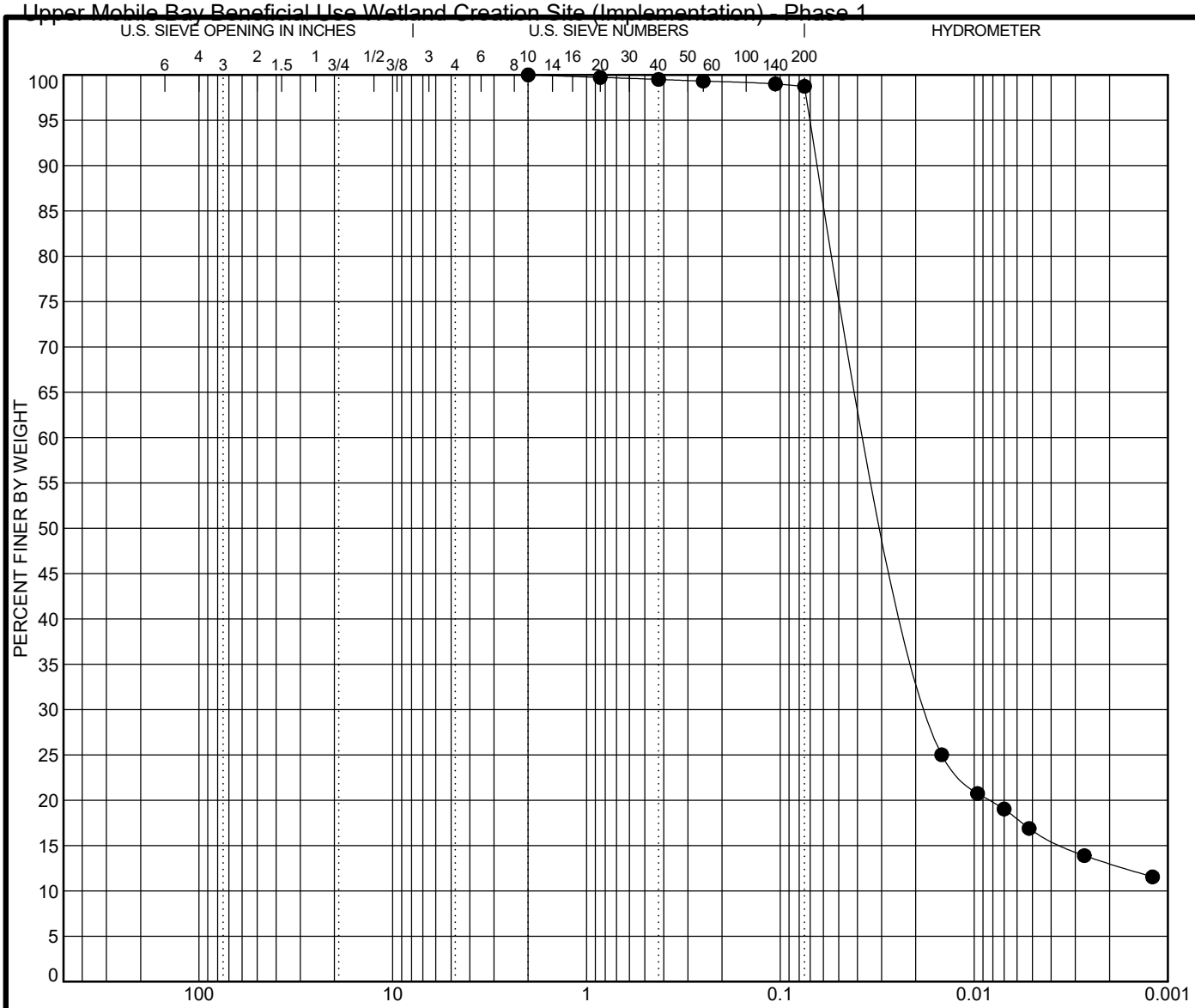
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-44**	**T-1;16.5 ft.**	**FAT CLAY (CH)**	**52**	**25**	**27**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-44	**16.5 ft.**	**2**	**0.032**	**0.016**		**0.0**	**1.3**	**85.7**	**13.0**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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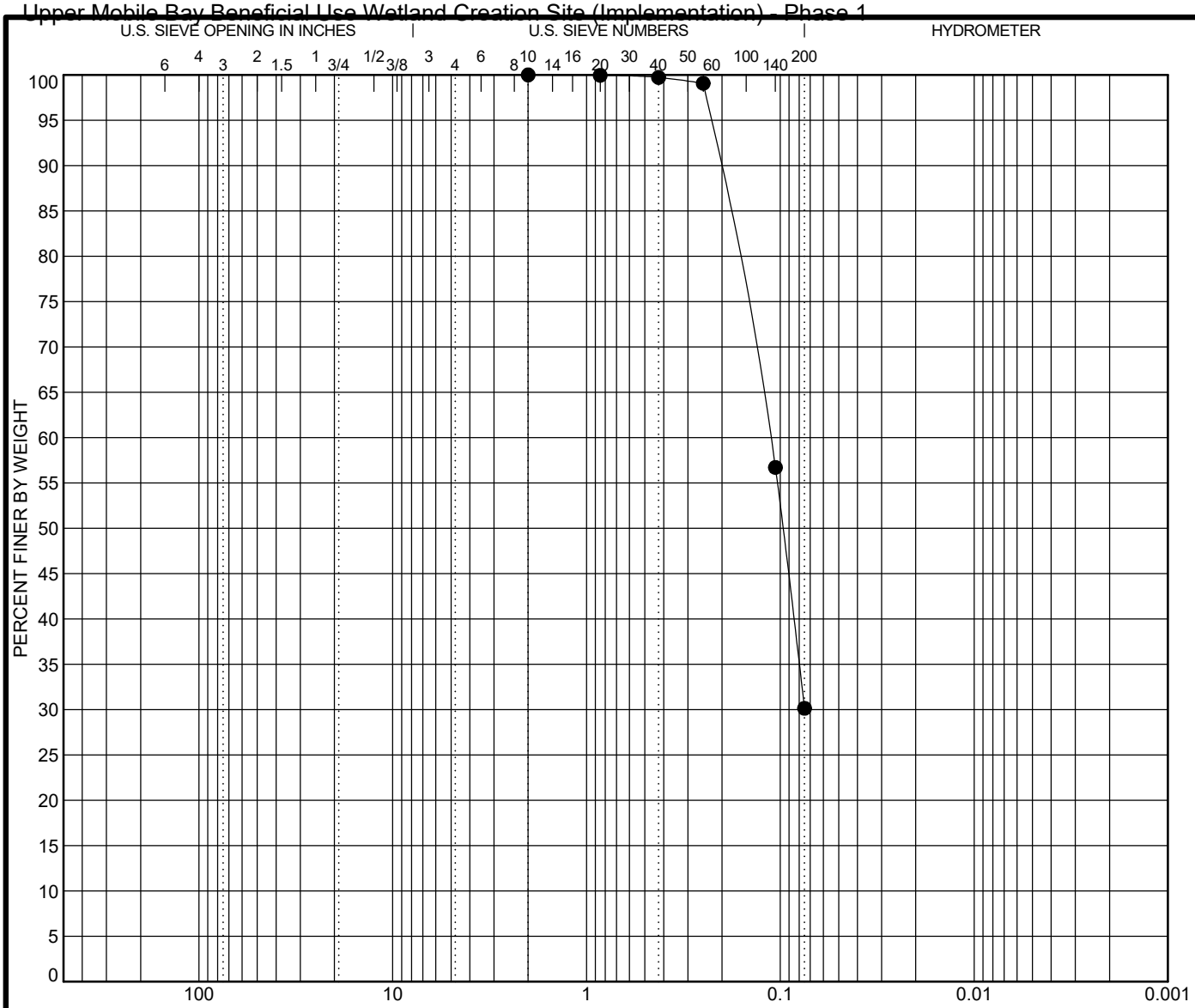
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-45**	**S-1;0.5 ft.**	**SILTY SAND (SM)**	**33**	**24**	**9**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-45	**0.5 ft.**	**2**	**0.113**			**0.0**	**69.9**	**30.1**	

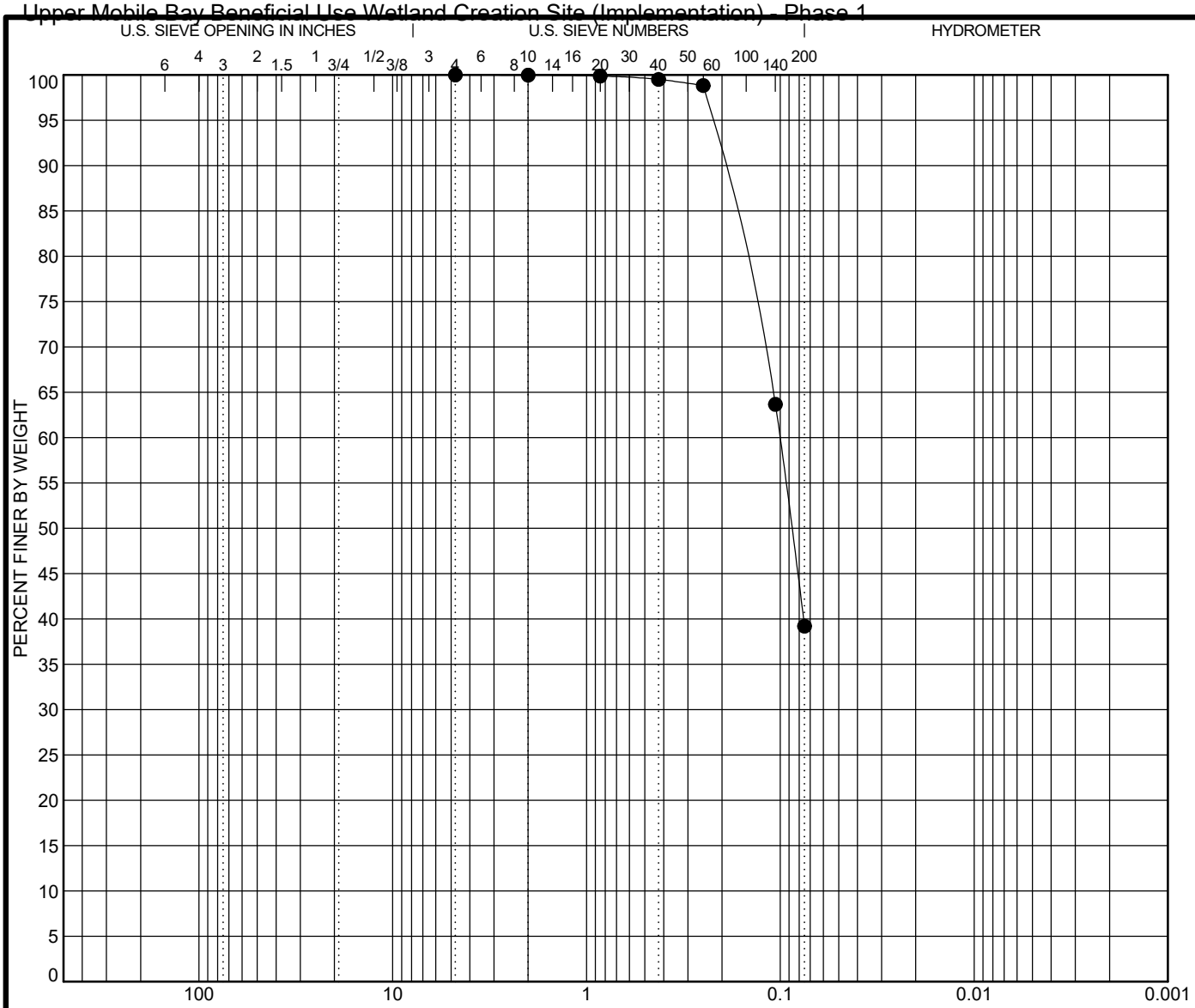
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-45**	**S-2;3.0 ft.**	**CLAYEY SAND (SC)**	**37**	**22**	**15**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-45	**3.0 ft.**	**4.75**	**0.101**			**0.0**	**60.8**	**39.2**	

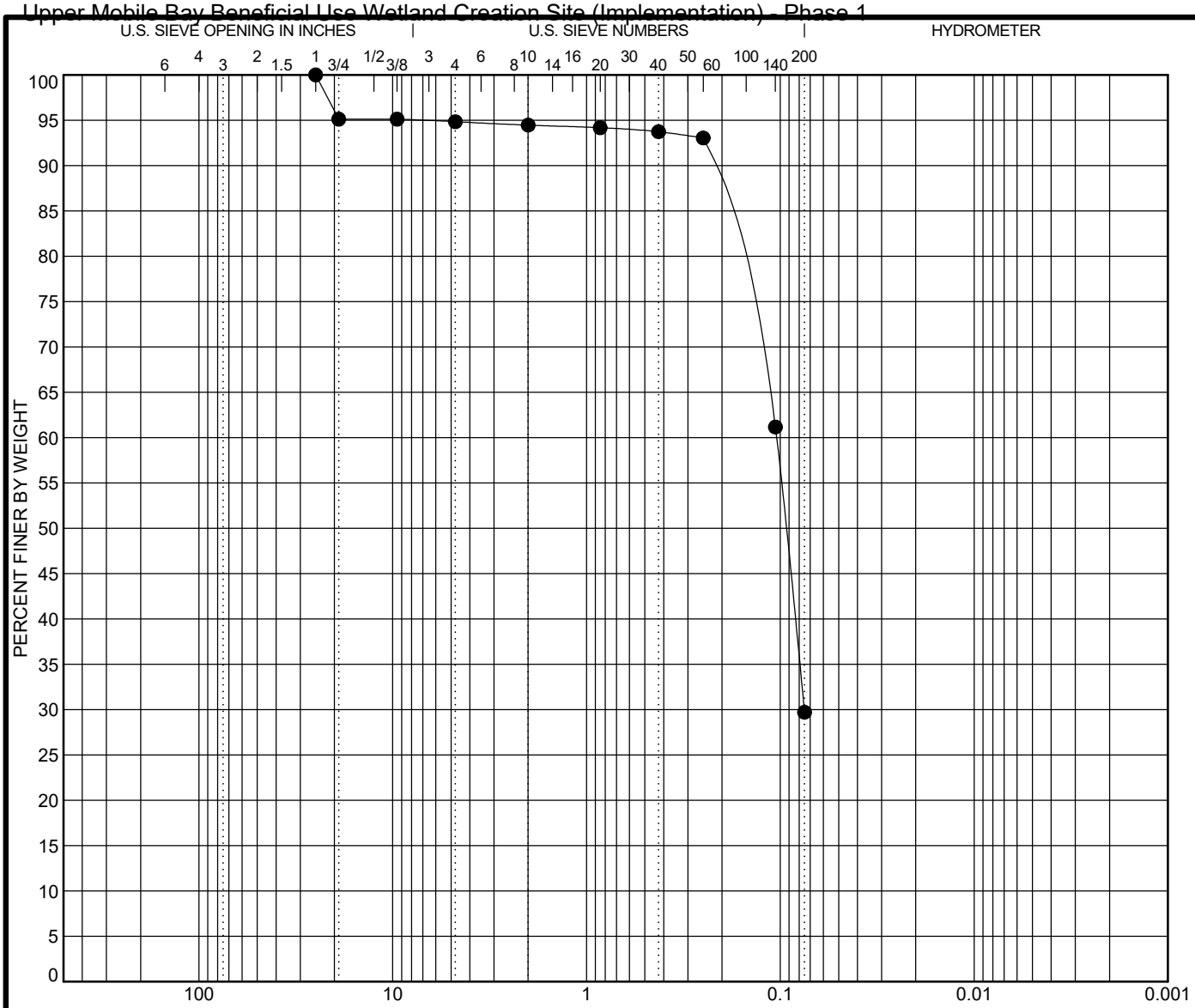
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-45**	**S-3;5.5 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-45	**5.5 ft.**	**25**	**0.105**	**0.075**		**5.2**	**65.1**	**29.7**	

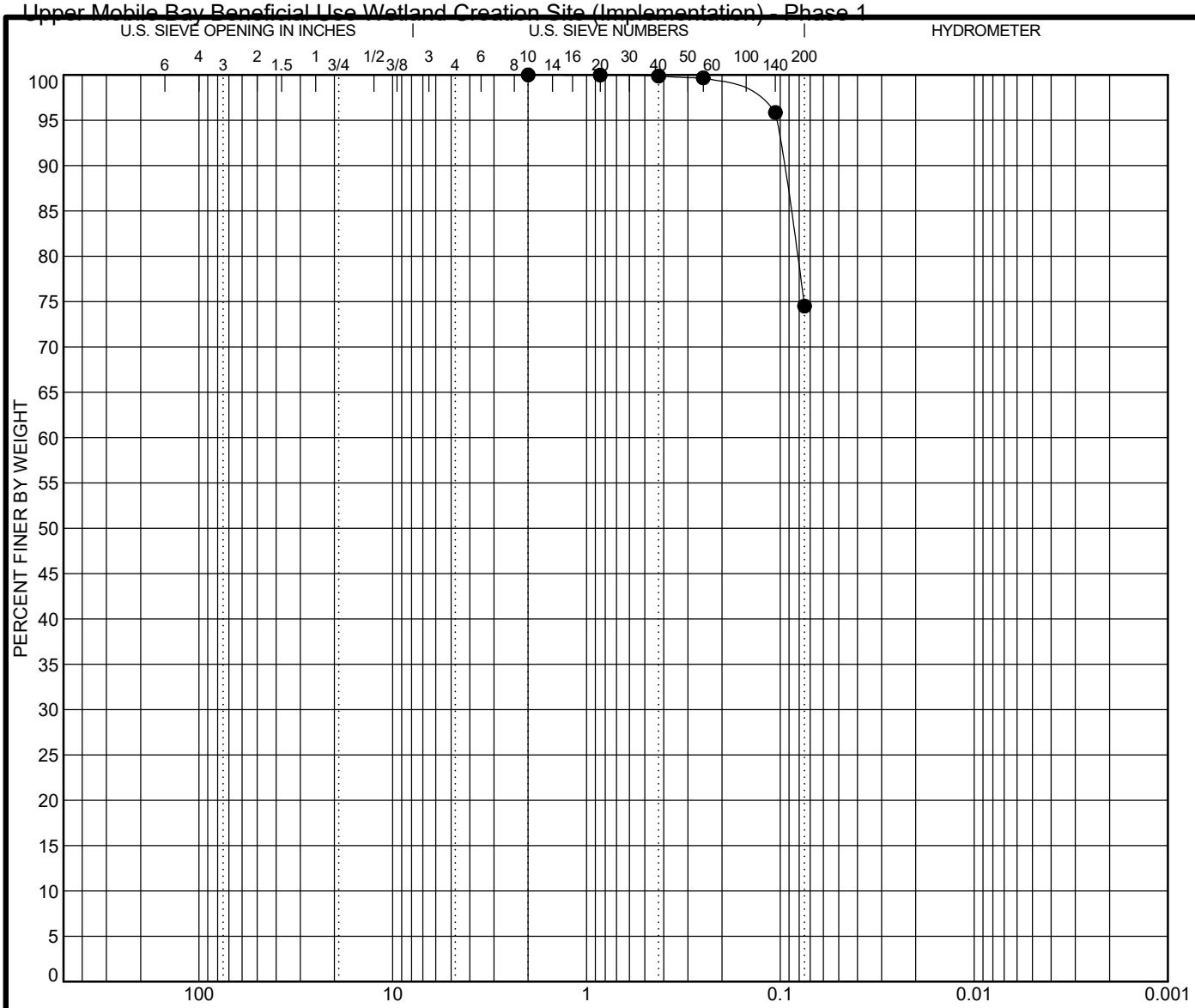
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-45**	**S-5;10.5 ft.**	**LEAN CLAY with SAND (CL)**	**40**	**22**	**18**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-45	**10.5 ft.**	**2**				**0.0**	**25.5**	**74.5**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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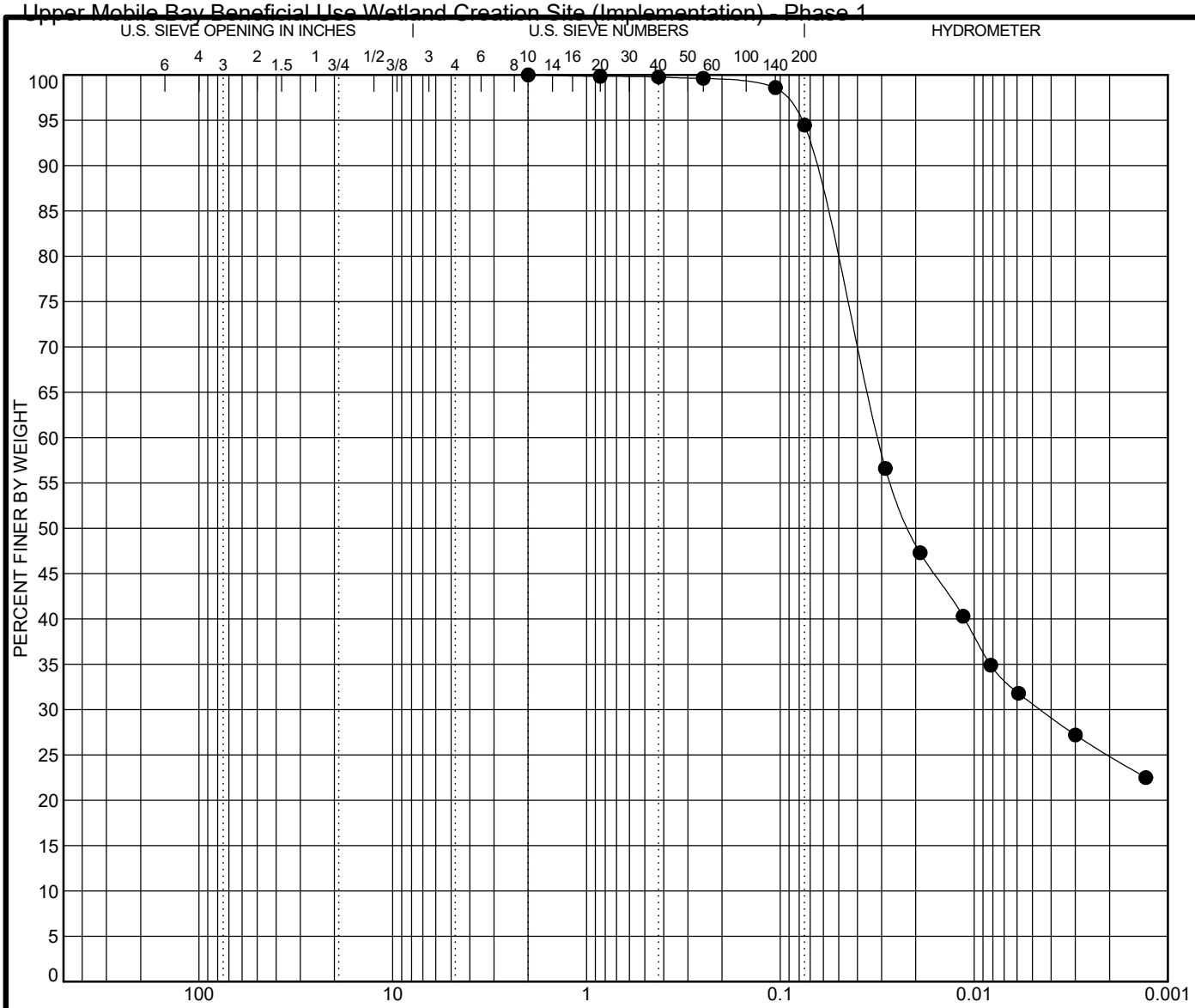
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-45**	**T-1;12.5 ft.**	**LEAN CLAY (CL)**	**46**	**21**	**25**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-45	**12.5 ft.**	**2**	**0.031**	**0.005**		**0.0**	**5.5**	**69.5**	**24.9**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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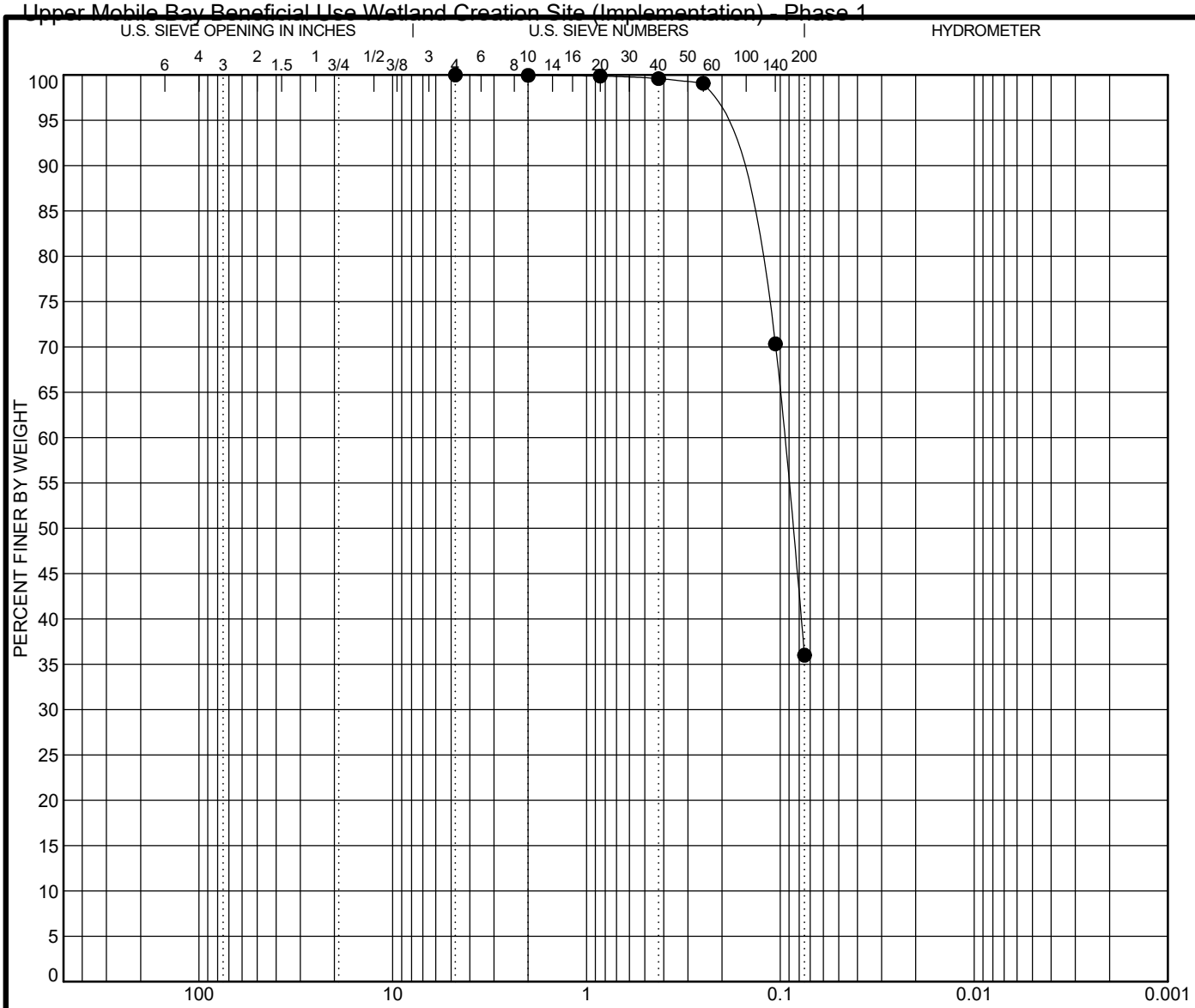
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-46**	**S-2;3.0 ft.**	**SILTY SAND (SM)**	**31**	**24**	**7**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-46	**3.0 ft.**	**4.75**	**0.096**			**0.0**	**64.0**	**36.0**	

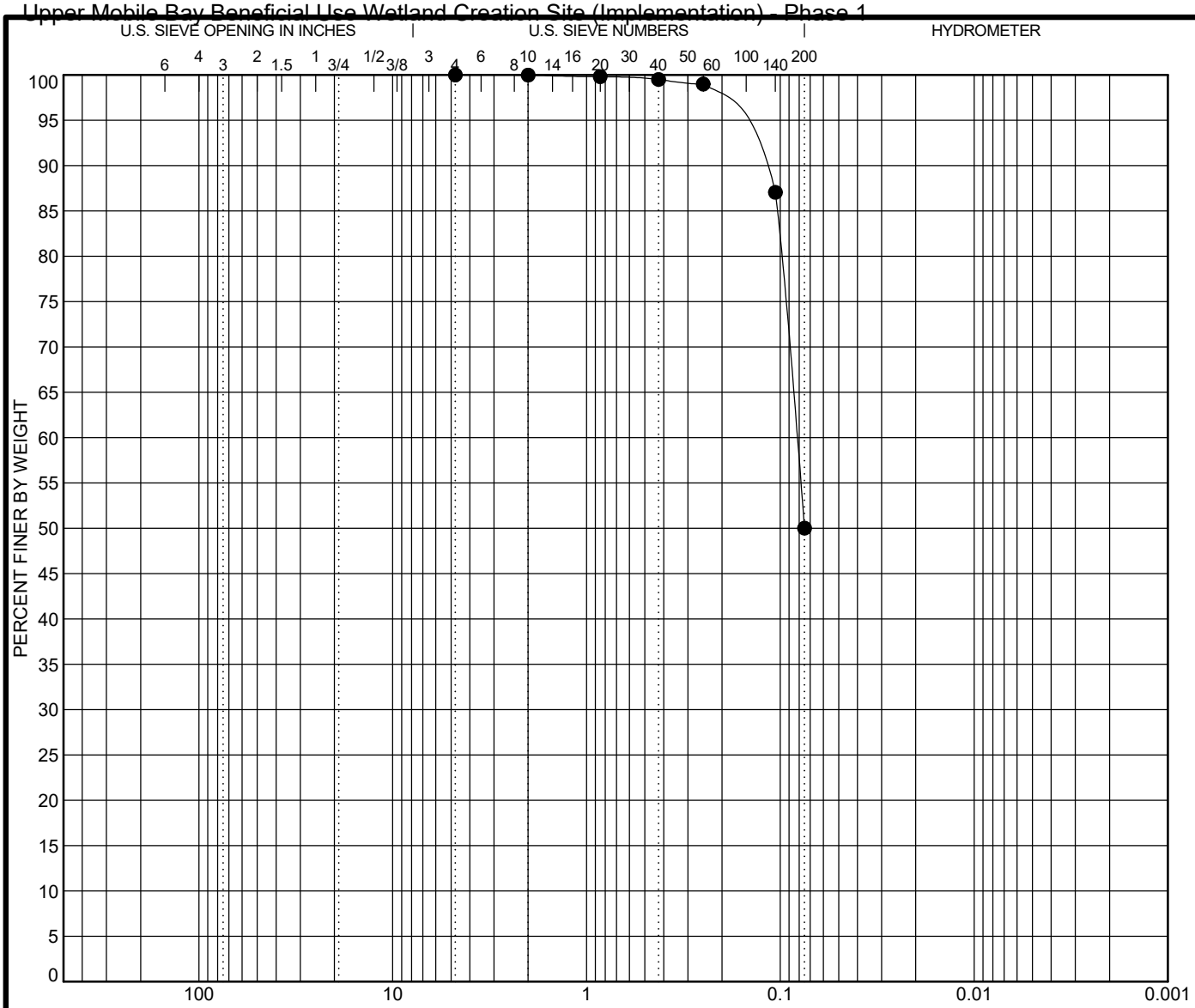
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-46**	**S-3;5.5 ft.**	**SANDY SILT (ML)**	**31**	**27**	**4**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-46	**5.5 ft.**	**4.75**	**0.082**			**0.0**	**50.0**	**50.0**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
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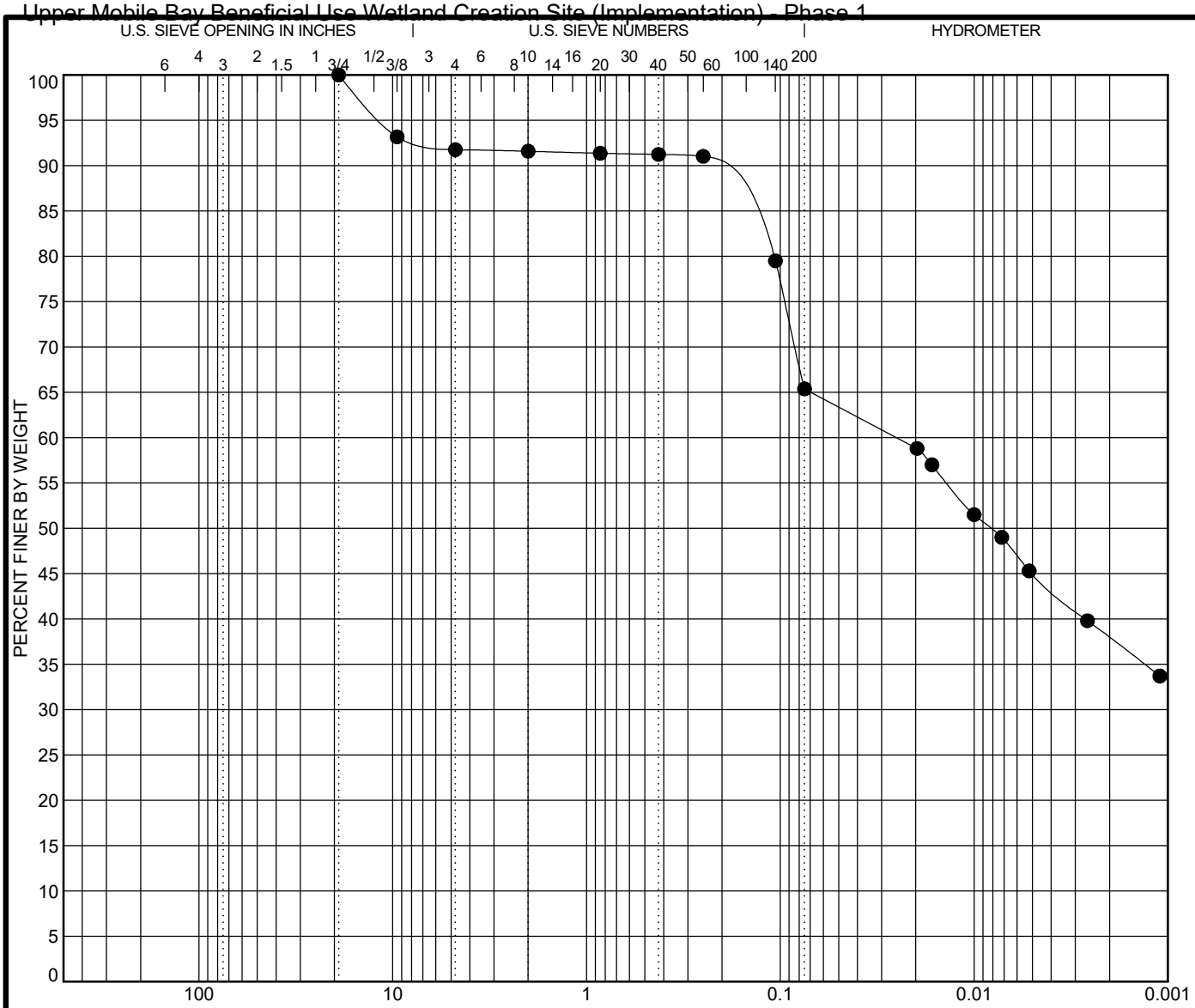
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-46**	**T-3;36.5 ft.**	**SANDY FAT CLAY (CH)**	**73**	**25**	**48**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-46	**36.5 ft.**	**19**	**0.025**			**8.2**	**26.4**	**27.4**	**37.9**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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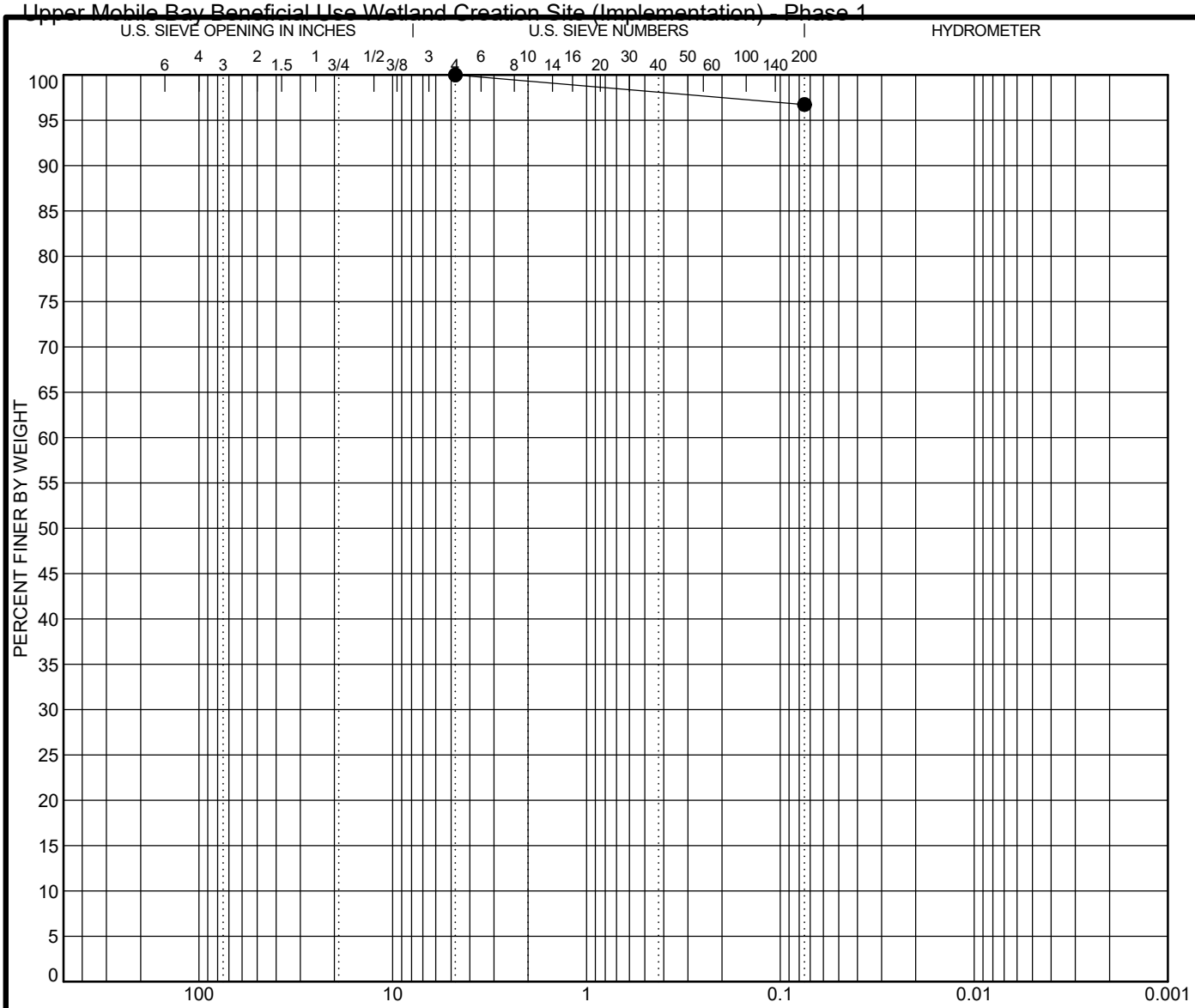
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-47**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-47	**3.0 ft.**	**4.75**				**0.0**	**3.3**	**96.7**	

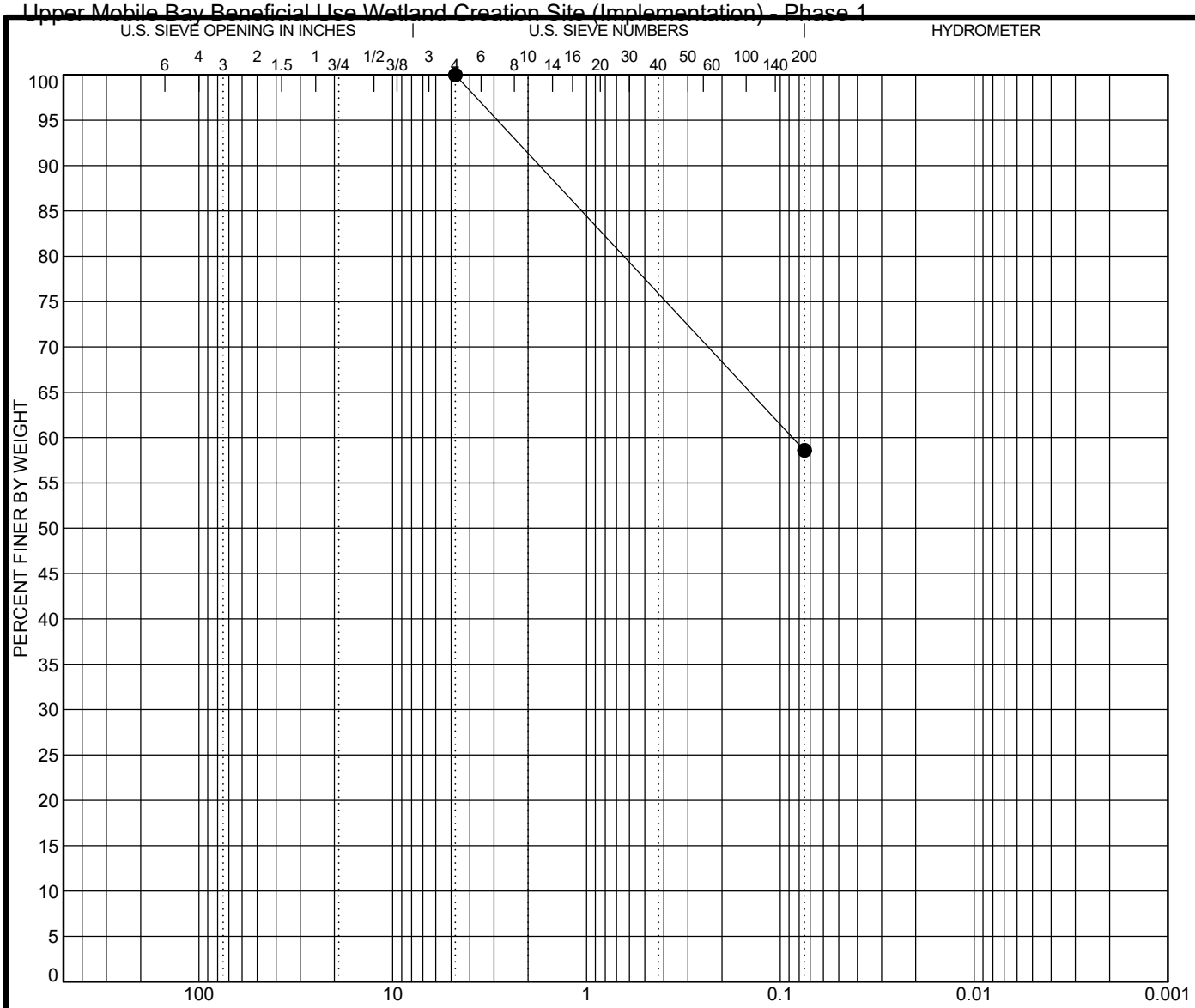
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-47**	**T-1;10.0 ft.**	**SANDY SILT (ML)**	**38**	**27**	**11**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-47	**10.0 ft.**	**4.75**	**0.086**			**0.0**	**41.4**	**58.6**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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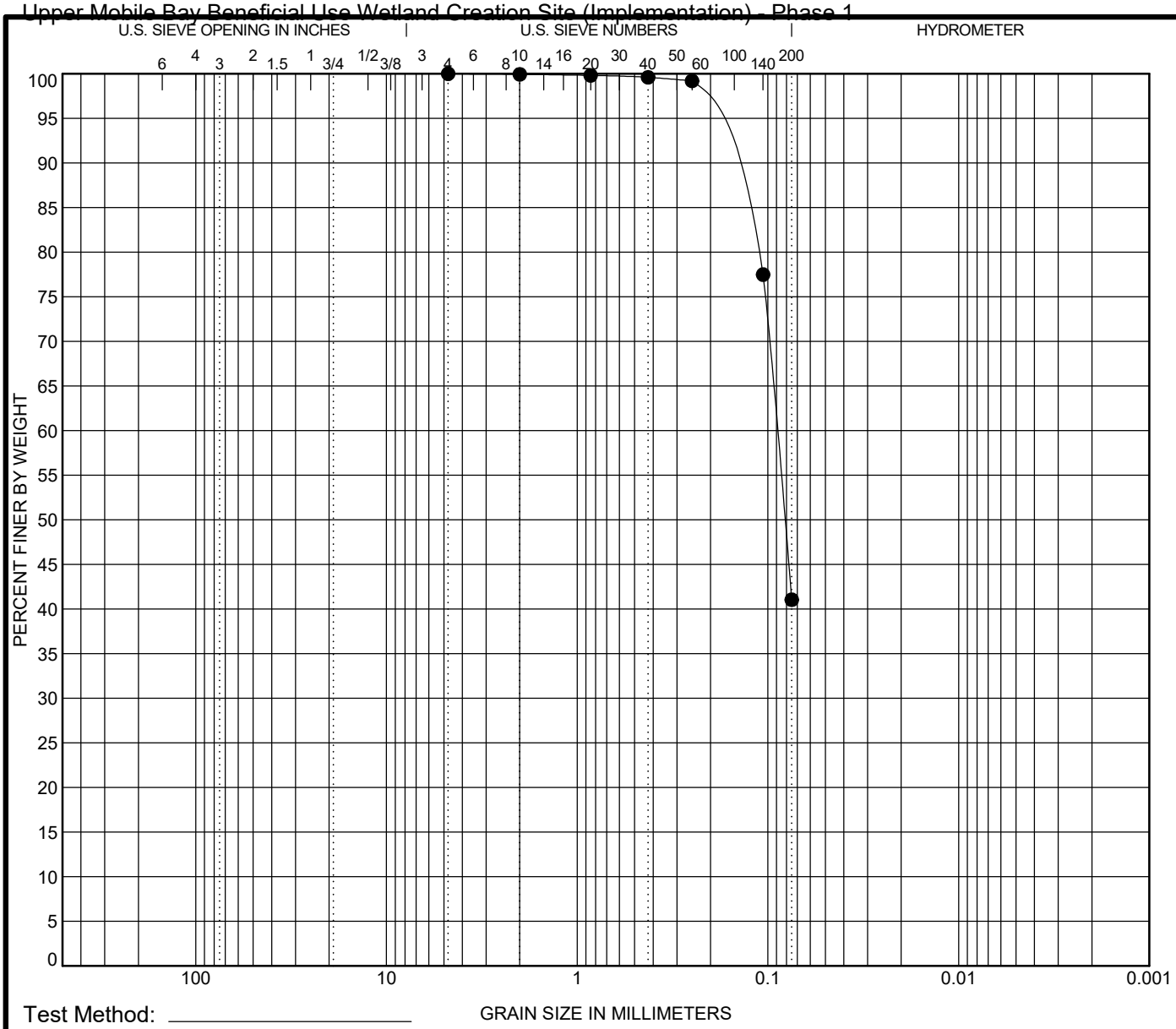
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-48**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-48	**3.0 ft.**	**4.75**	**0.09**			**0.0**	**59.0**	**41.0**	

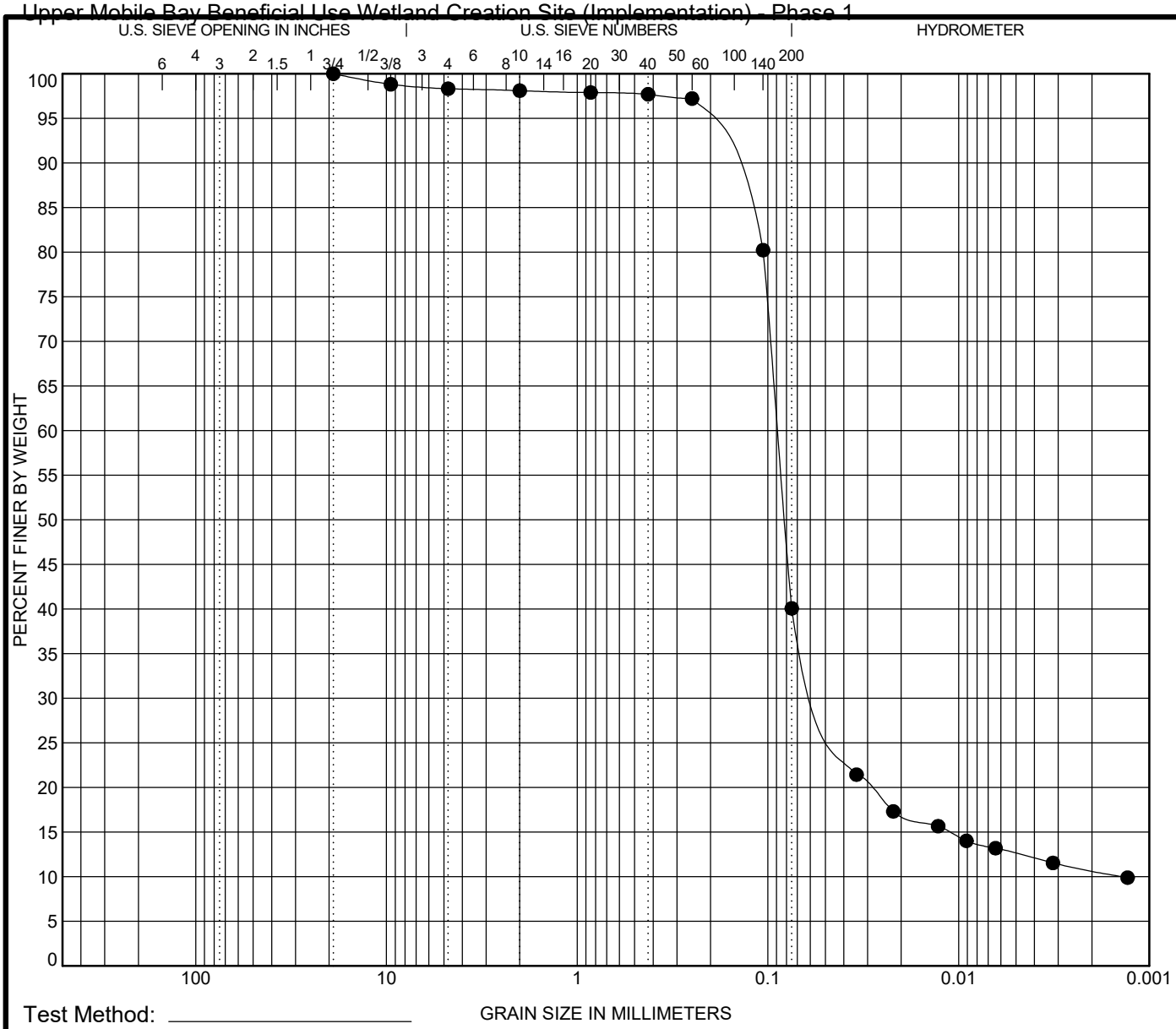
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-48**	**S-4;8.0 ft.**					**19.66**	**64.53**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-48	**8.0 ft.**	**19**	**0.089**	**0.049**	**0.001**	**1.7**	**58.3**	**29.4**	**10.7**

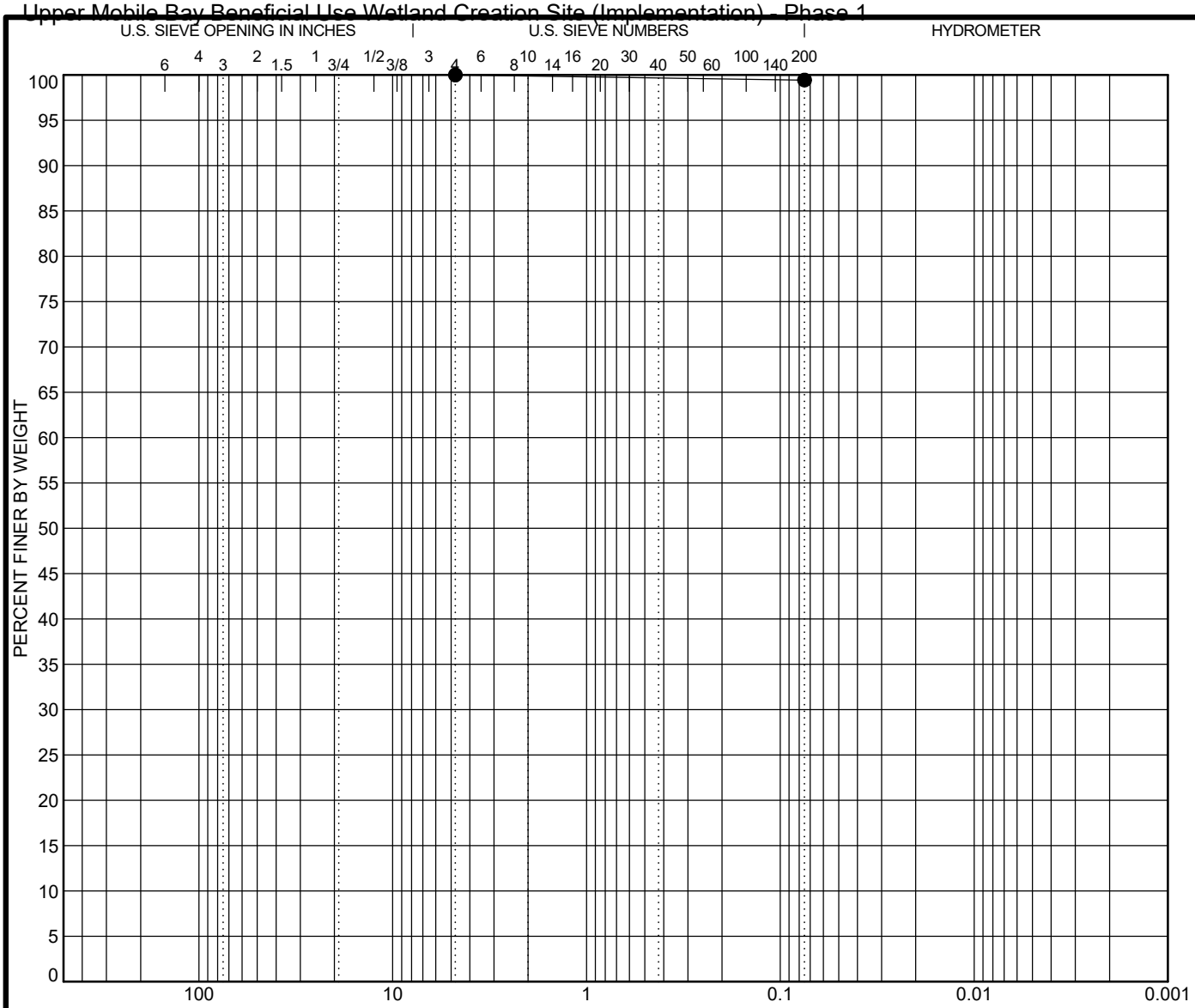
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-48**	**S-12;39.0 ft.**	**FAT CLAY (CH)**	**87**	**25**	**62**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-48	**39.0 ft.**	**4.75**				**0.0**	**0.6**	**99.4**	

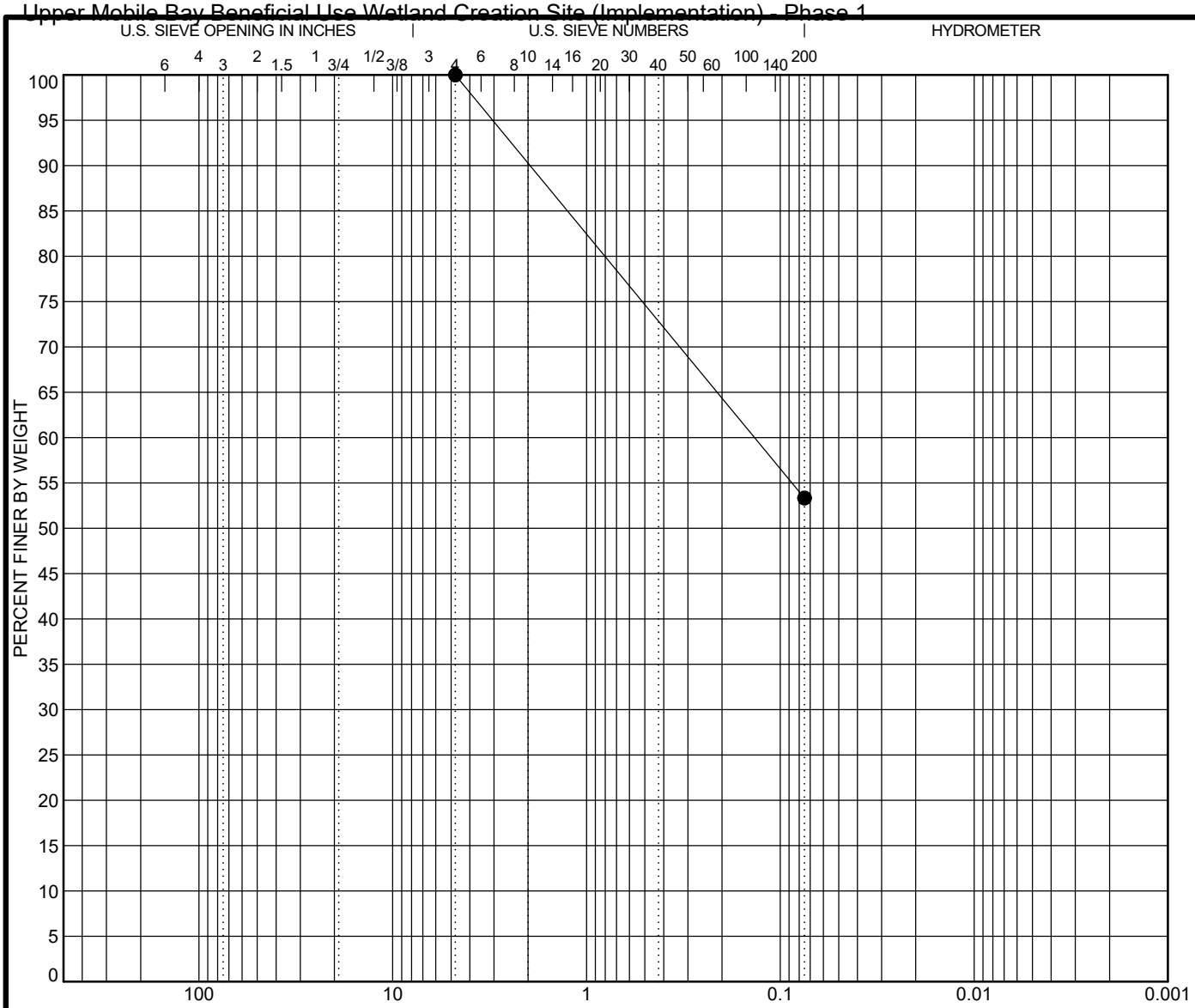
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-48**	**S-16;59.0 ft.**	**SANDY FAT CLAY (CH)**	**192**	**61**	**131**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-48	**59.0 ft.**	**4.75**	**0.136**			**0.0**	**46.7**	**53.3**	

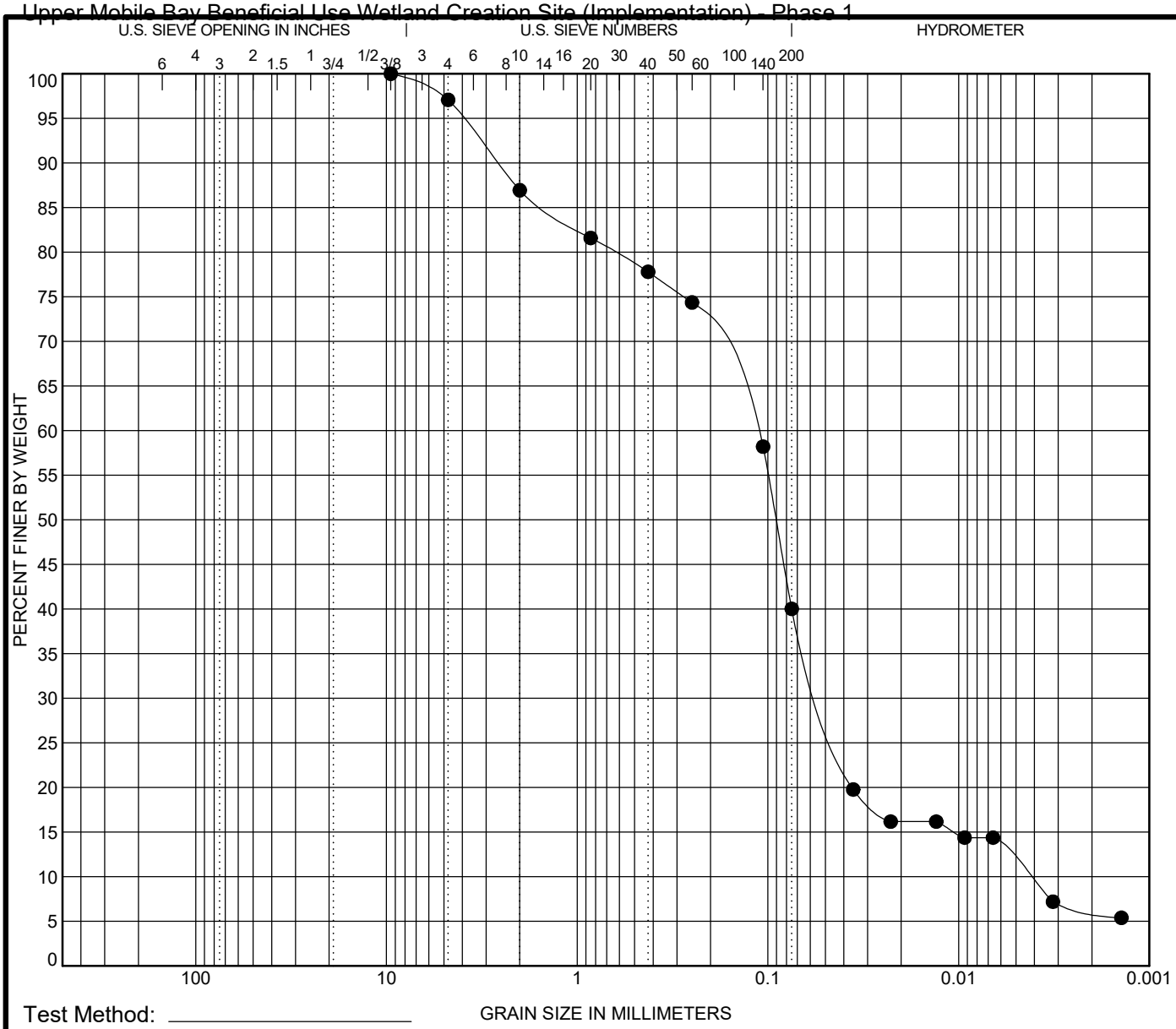
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-49**	**S-4;8.0 ft.**					**5.45**	**27.45**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-49	**8.0 ft.**	**9.5**	**0.117**	**0.052**	**0.004**	**2.9**	**57.0**	**33.9**	**6.2**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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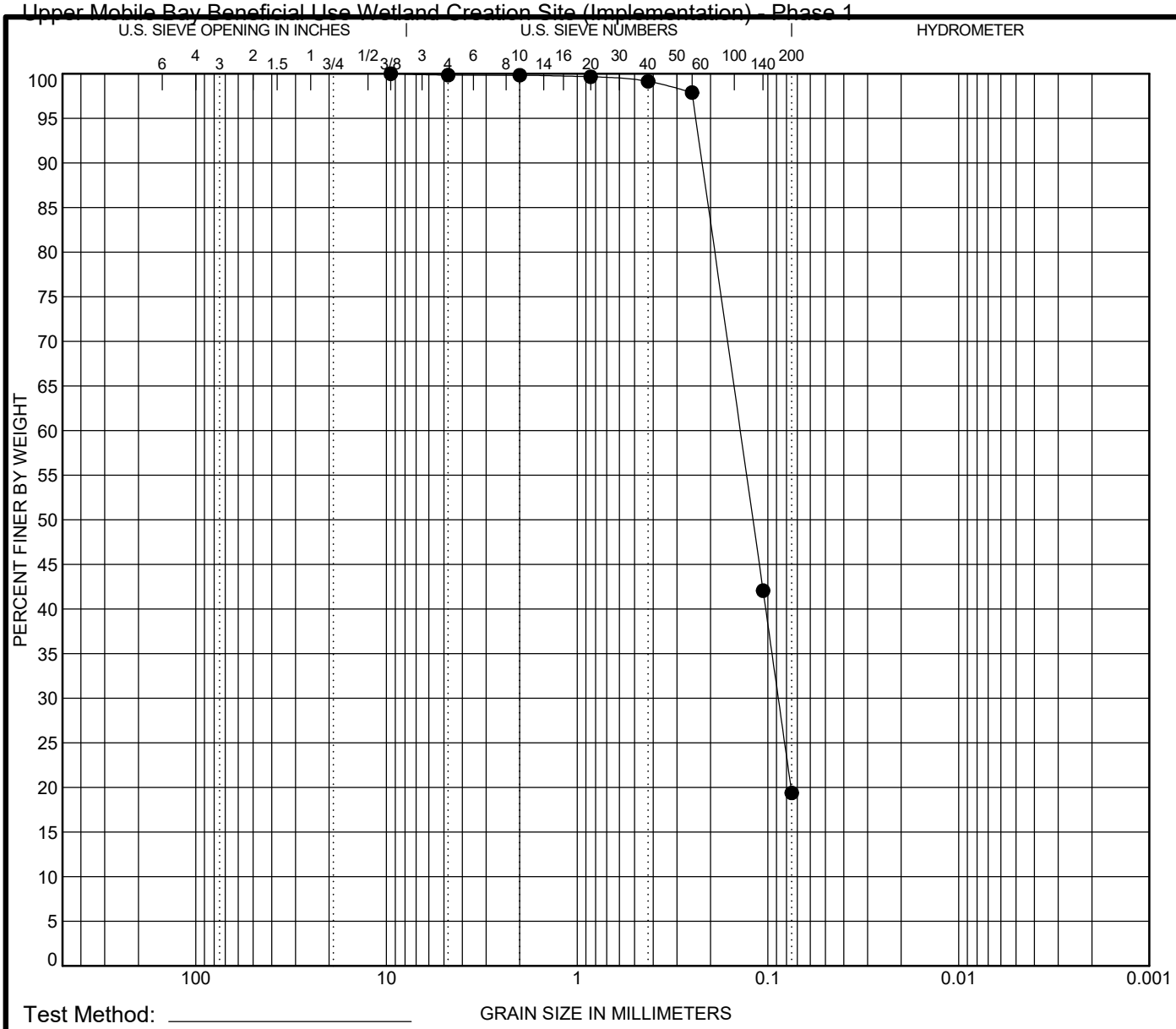
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-50**	**S-2;3.0 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-50	**3.0 ft.**	**9.5**	**0.14**	**0.088**		**0.2**	**80.5**	**19.4**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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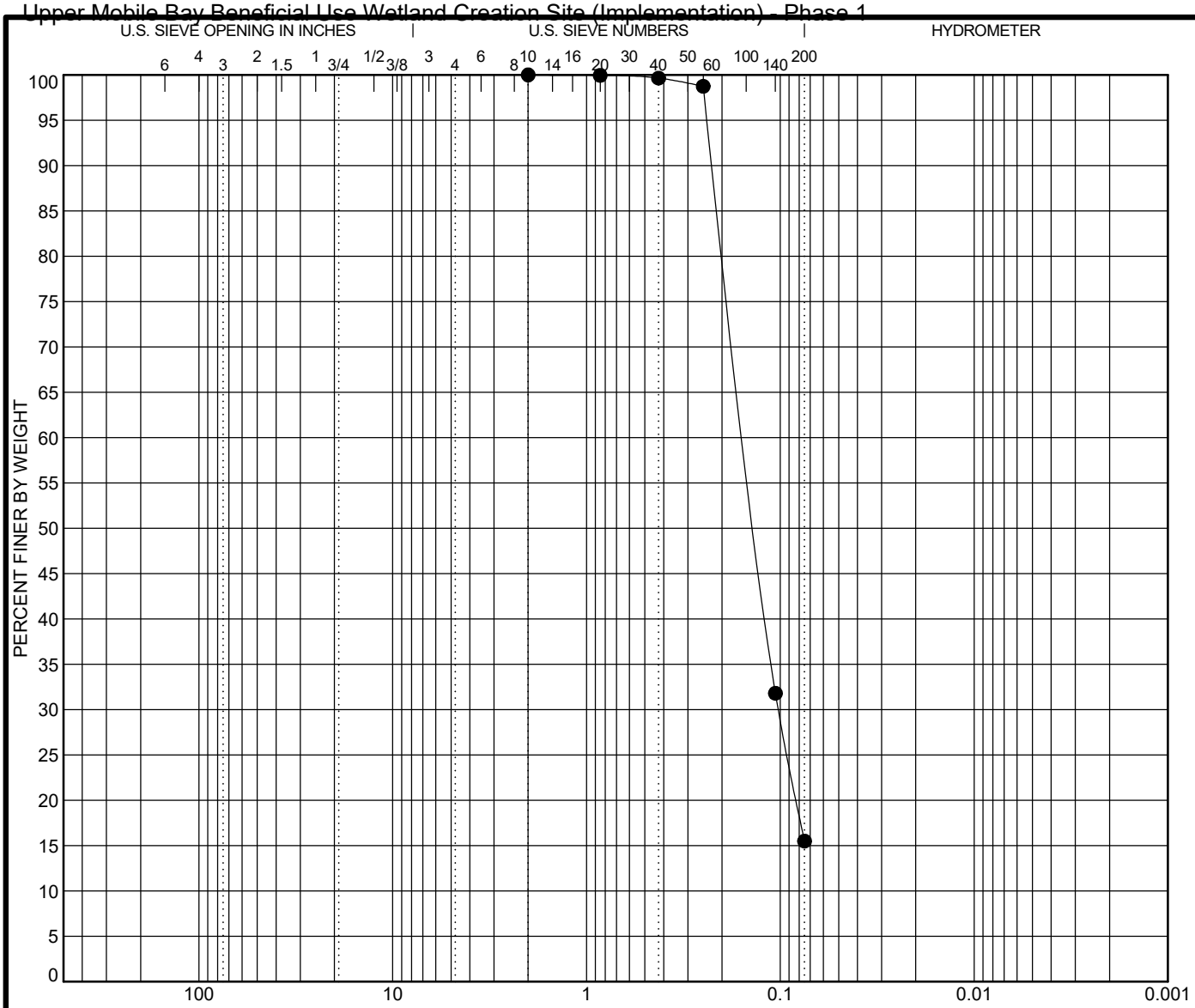
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-50**	**S-4;8.0 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-50	**8.0 ft.**	**2**	**0.152**	**0.102**		**0.0**	**84.5**	**15.5**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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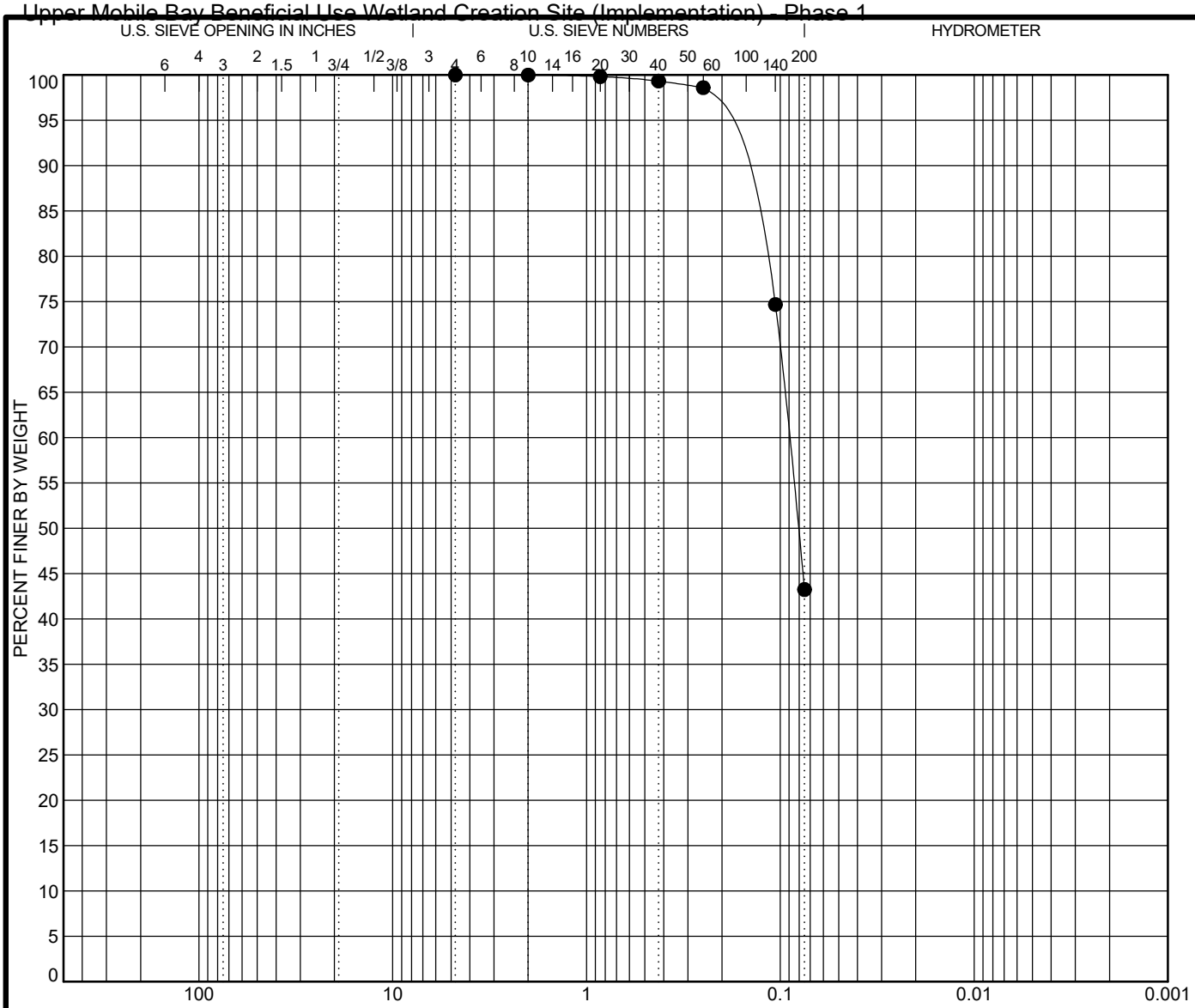
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-50**	**S-6;13.0 ft.**	**SILTY, CLAYEY SAND (SC-SM)**	**28**	**22**	**6**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-50	**13.0 ft.**	**4.75**	**0.09**			**0.0**	**56.8**	**43.2**	

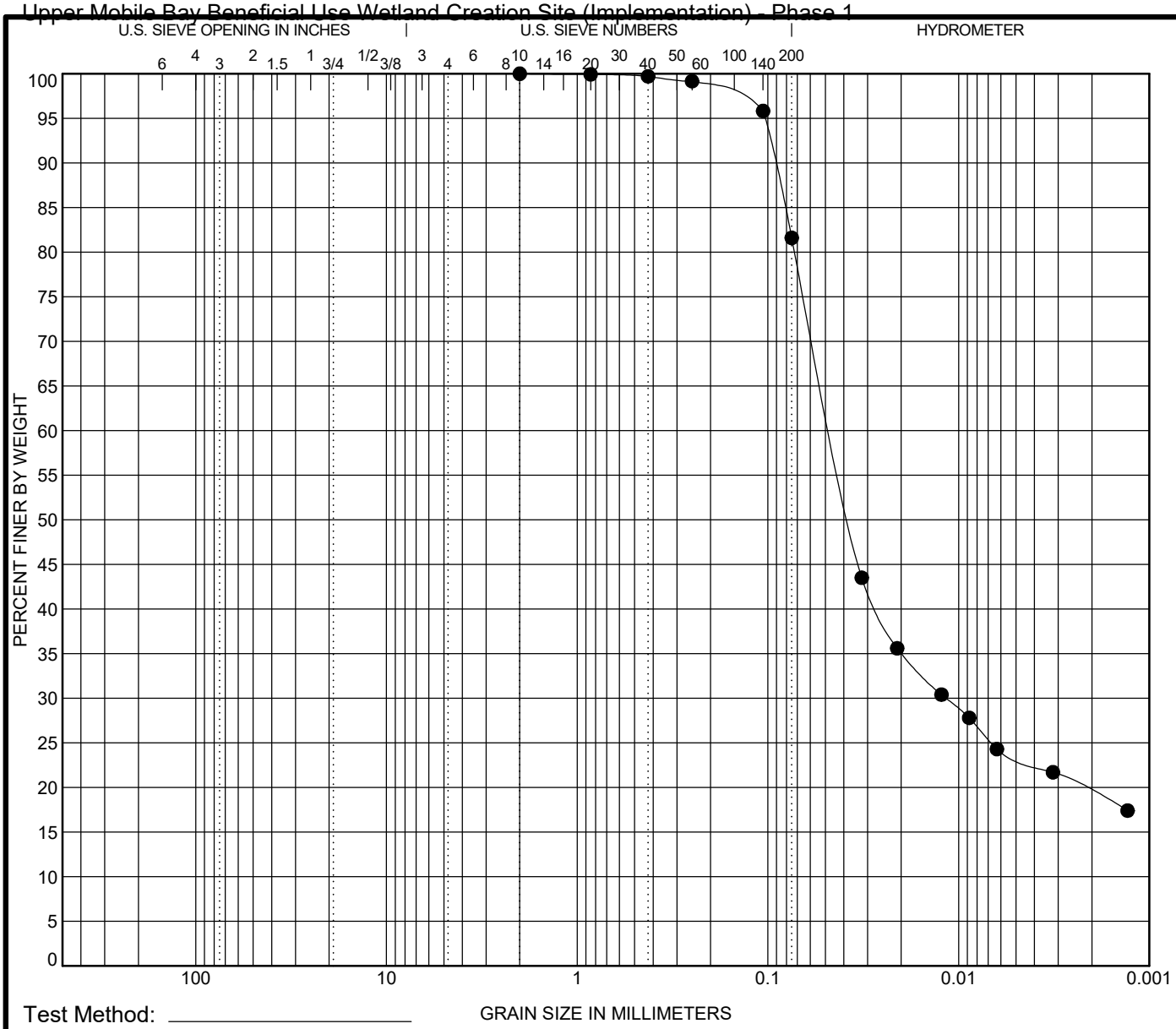
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-50**	**T-1;18.0 ft.**	**LEAN CLAY with SAND (CL)**	**47**	**22**	**25**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-50	**18.0 ft.**	**2**	**0.046**	**0.012**		**0.0**	**18.4**	**62.1**	**19.5**

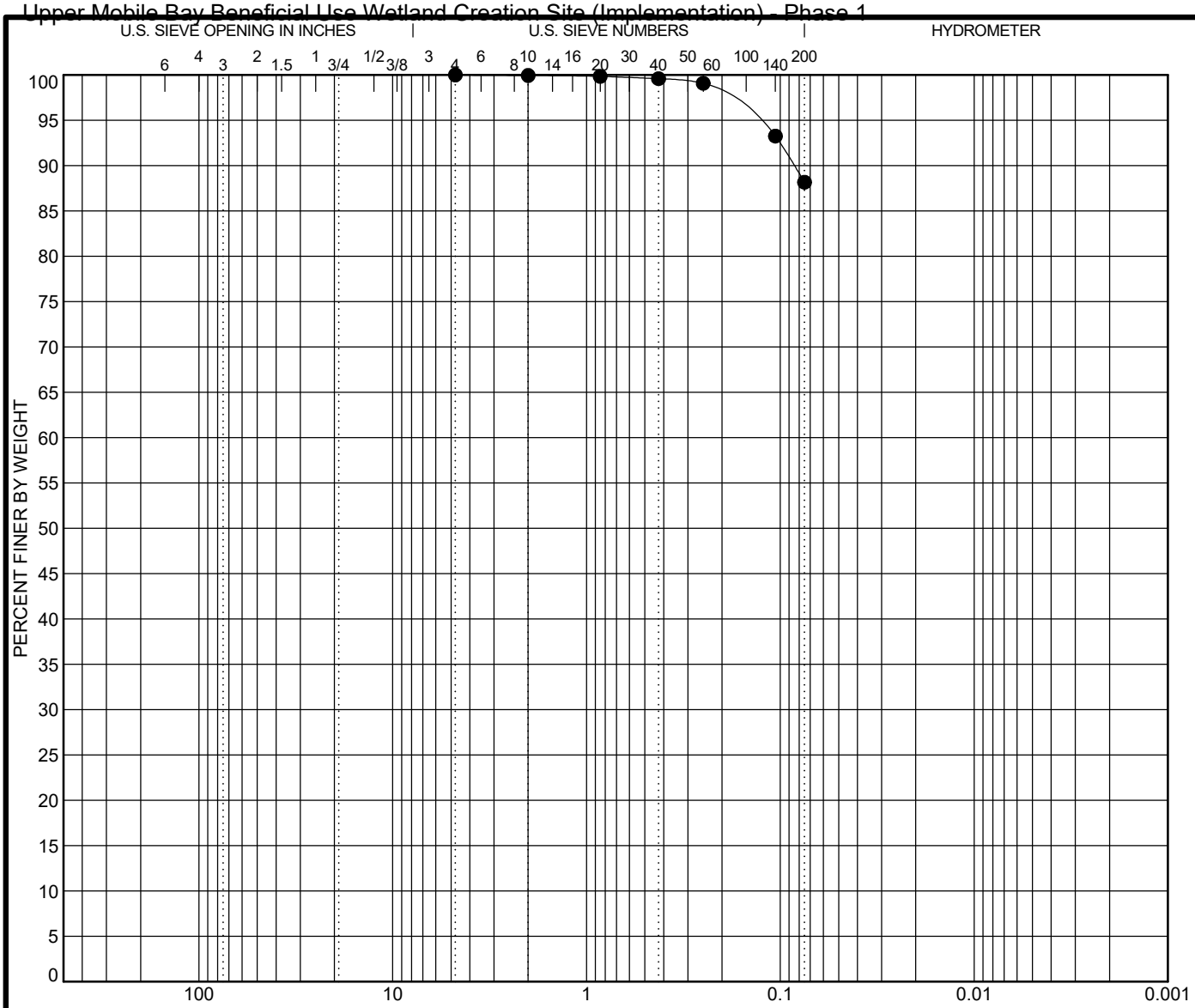
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-50**	**S-8;20.5 ft.**	**LEAN CLAY (CL)**	**46**	**21**	**25**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-50	**20.5 ft.**	**4.75**				**0.0**	**11.8**	**88.2**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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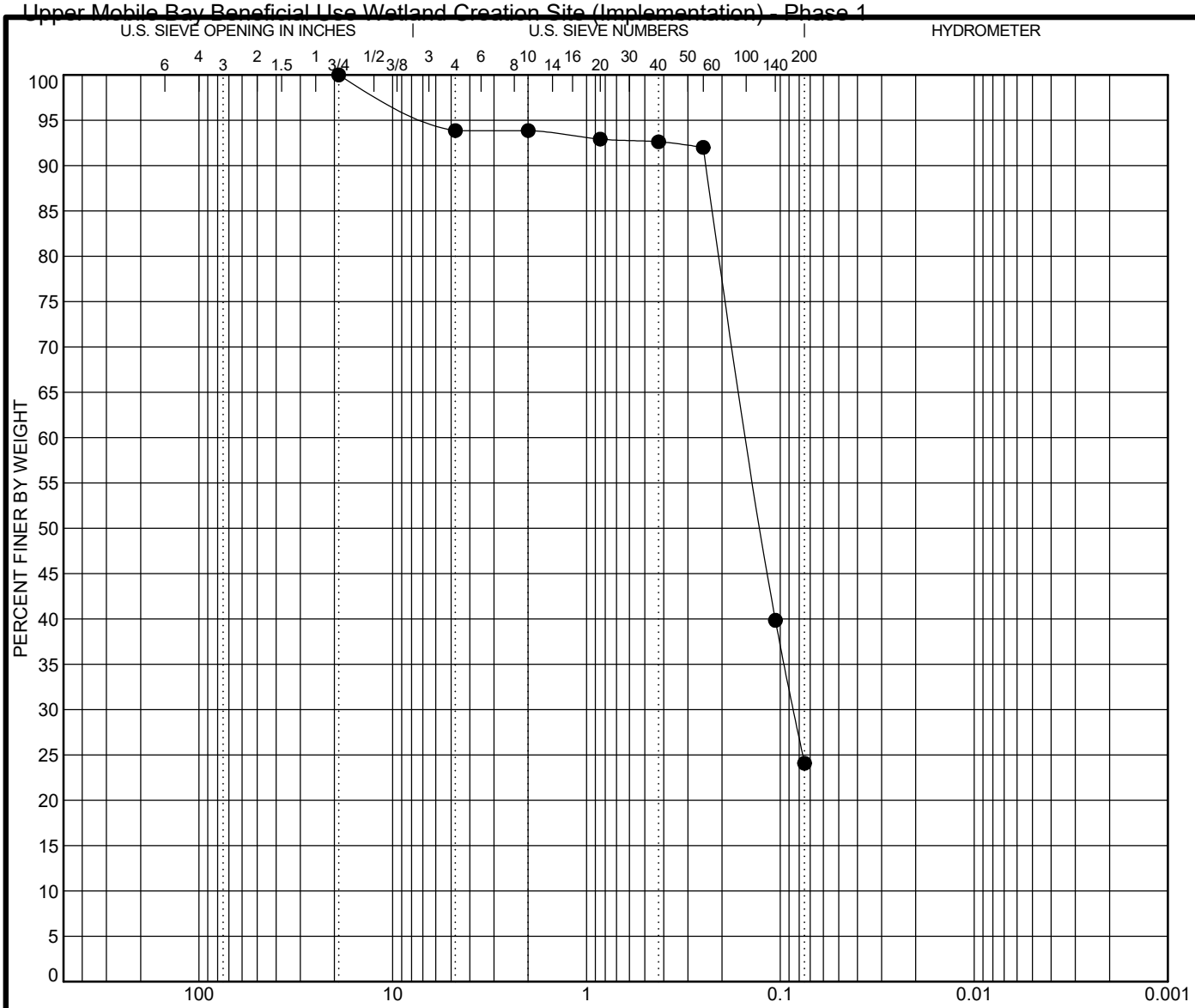
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **B-51**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-51	**5.5 ft.**	**19**	**0.148**	**0.085**		**6.1**	**69.8**	**24.1**	

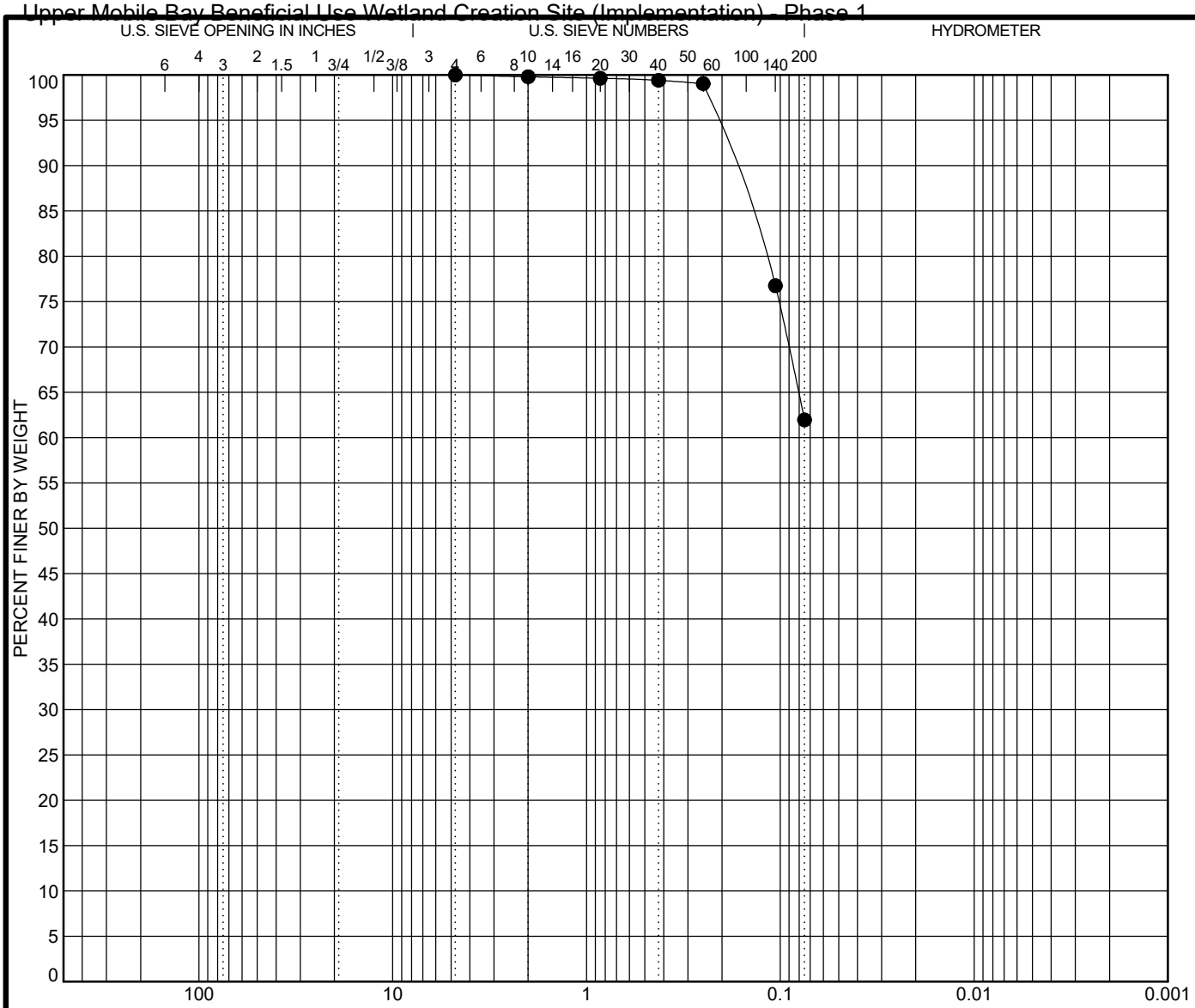
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-51**	**S-5;10.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-51	**10.5 ft.**	**4.75**				**0.0**	**38.0**	**62.0**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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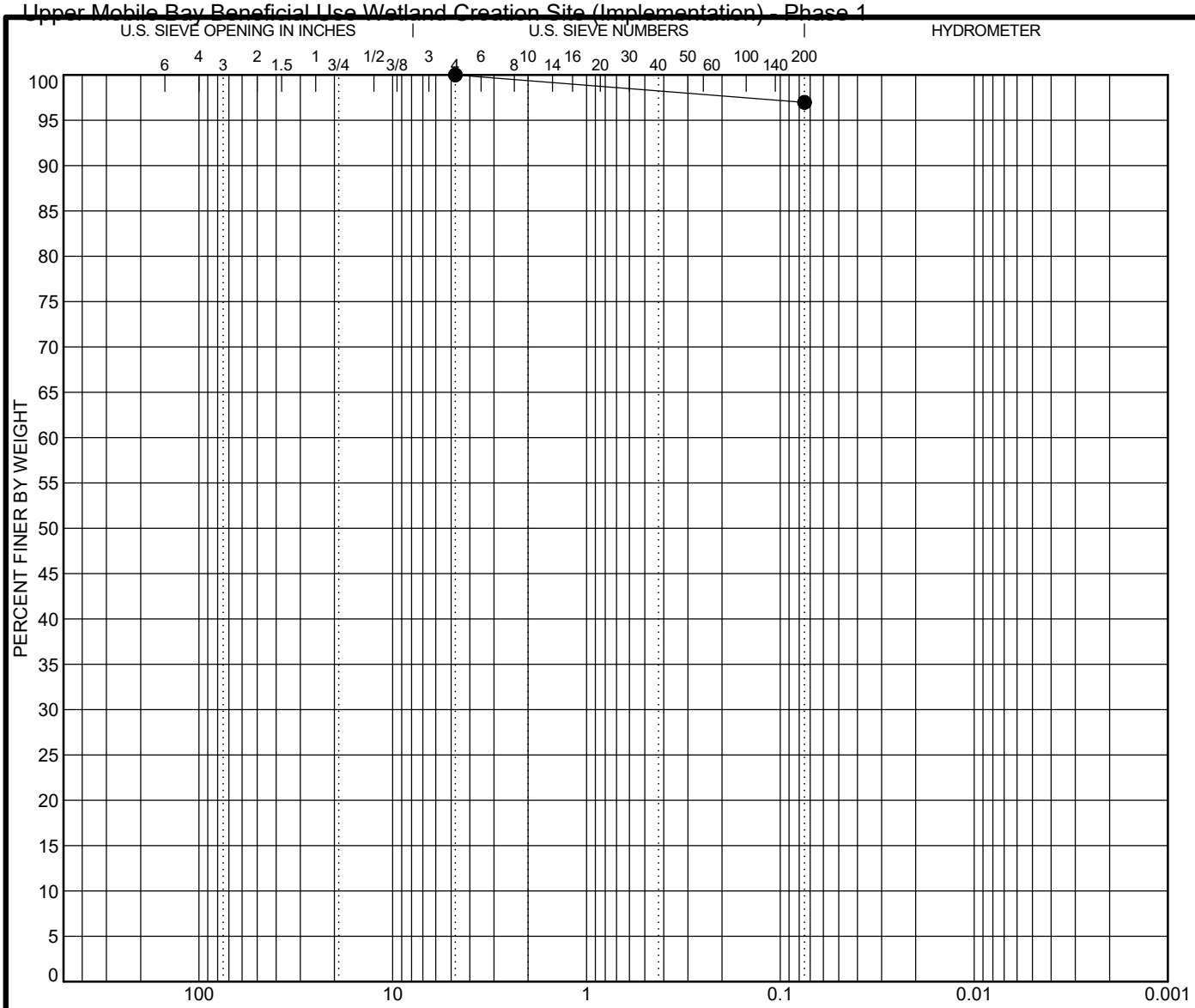
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-51**	**S-10;24.0 ft.**	**FAT CLAY (CH)**	**62**	**18**	**44**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-51	**24.0 ft.**	**4.75**				**0.0**	**3.0**	**97.0**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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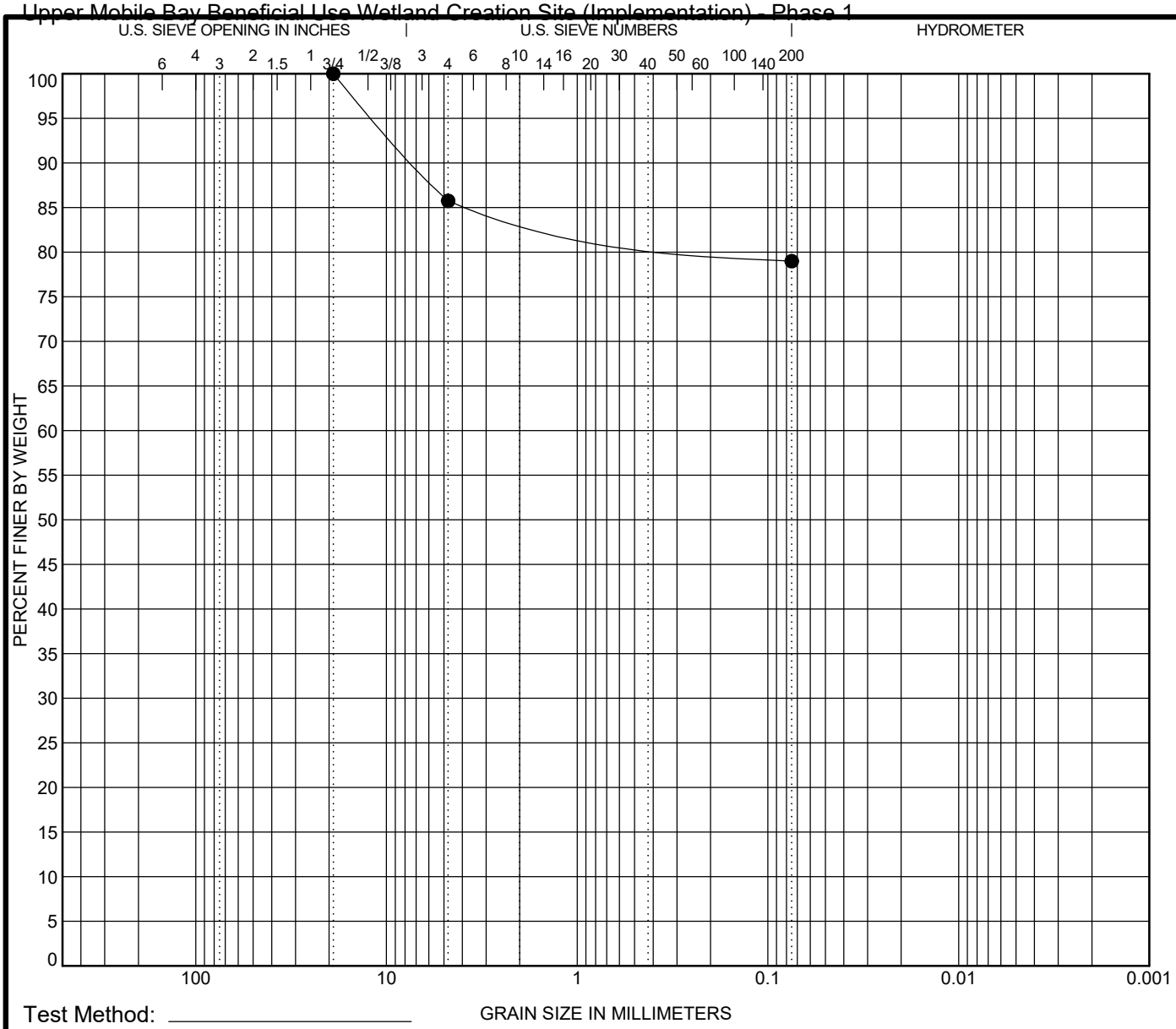
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-51**	**S-13;44.0 ft.**	**FAT CLAY with GRAVEL (CH)**	**78**	**17**	**61**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-51	**44.0 ft.**	**19**				**14.2**	**6.8**	**79.0**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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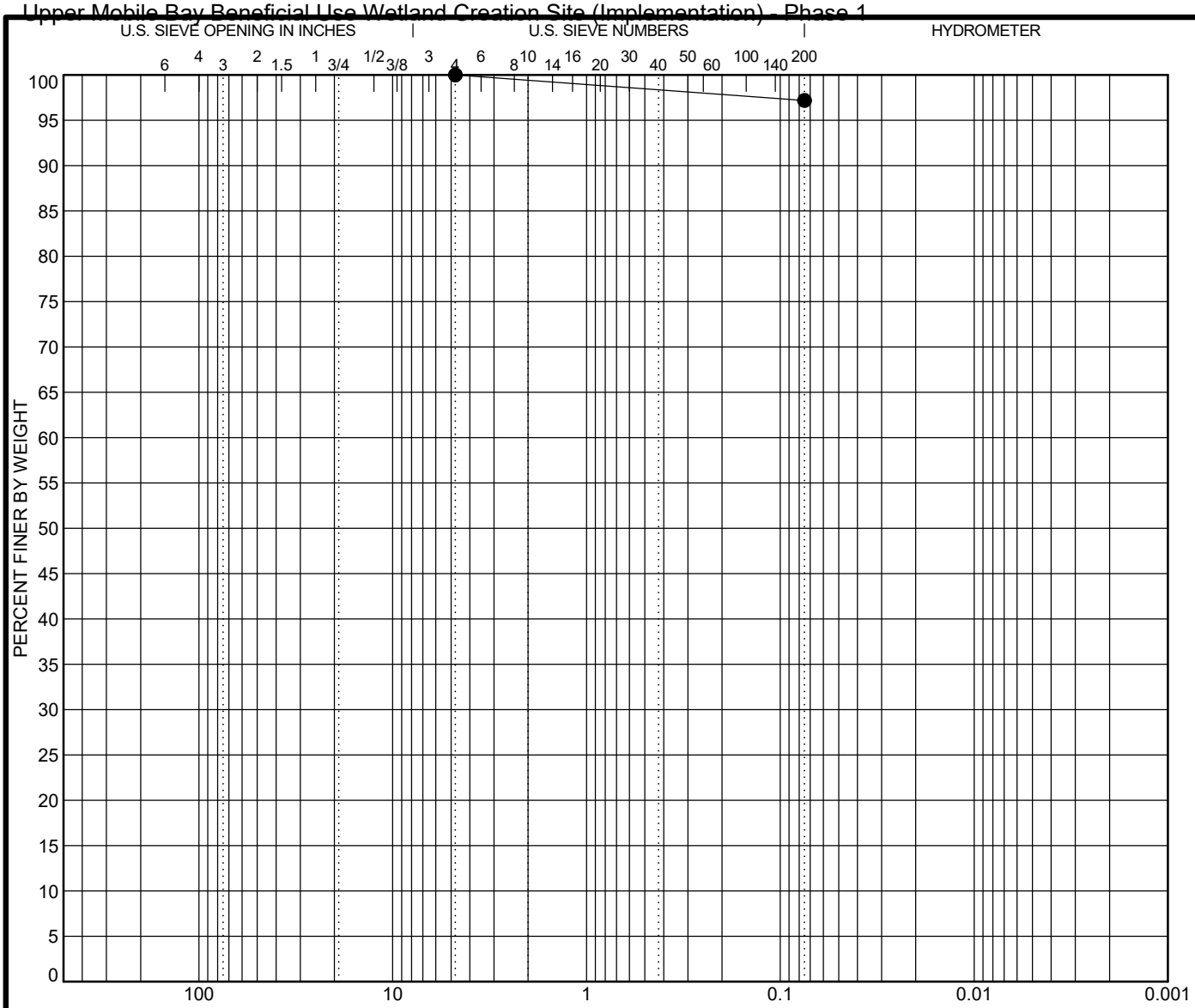
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-51**	**S-17;64.0 ft.**	**FAT CLAY (CH)**	**84**	**23**	**61**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-51	**64.0 ft.**	**4.75**				**0.0**	**2.8**	**97.2**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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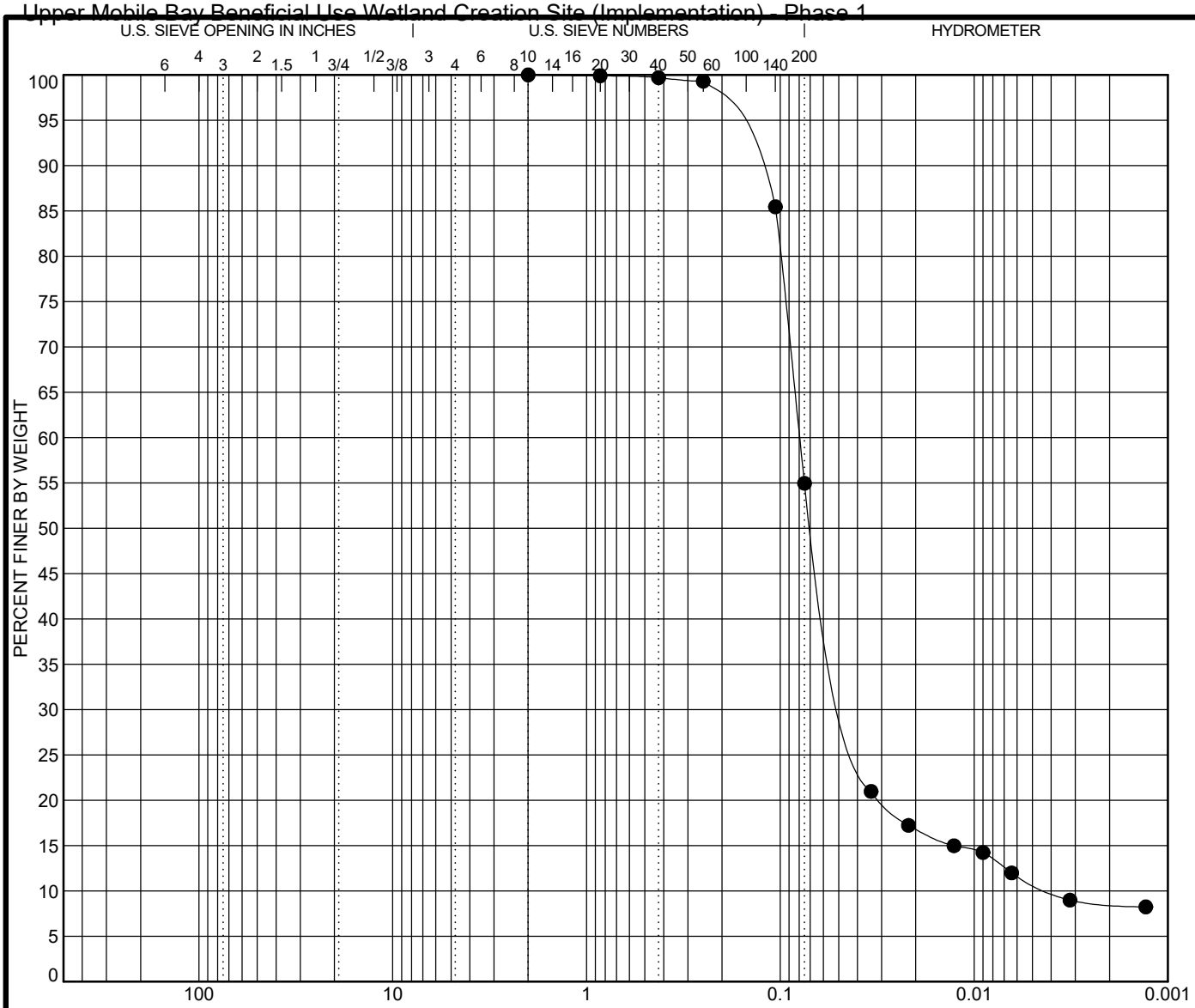
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-52**	**S-3;5.5 ft.**					**5.48**	**19.65**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-52	**5.5 ft.**	**2**	**0.079**	**0.042**	**0.004**	**0.0**	**45.0**	**46.4**	**8.6**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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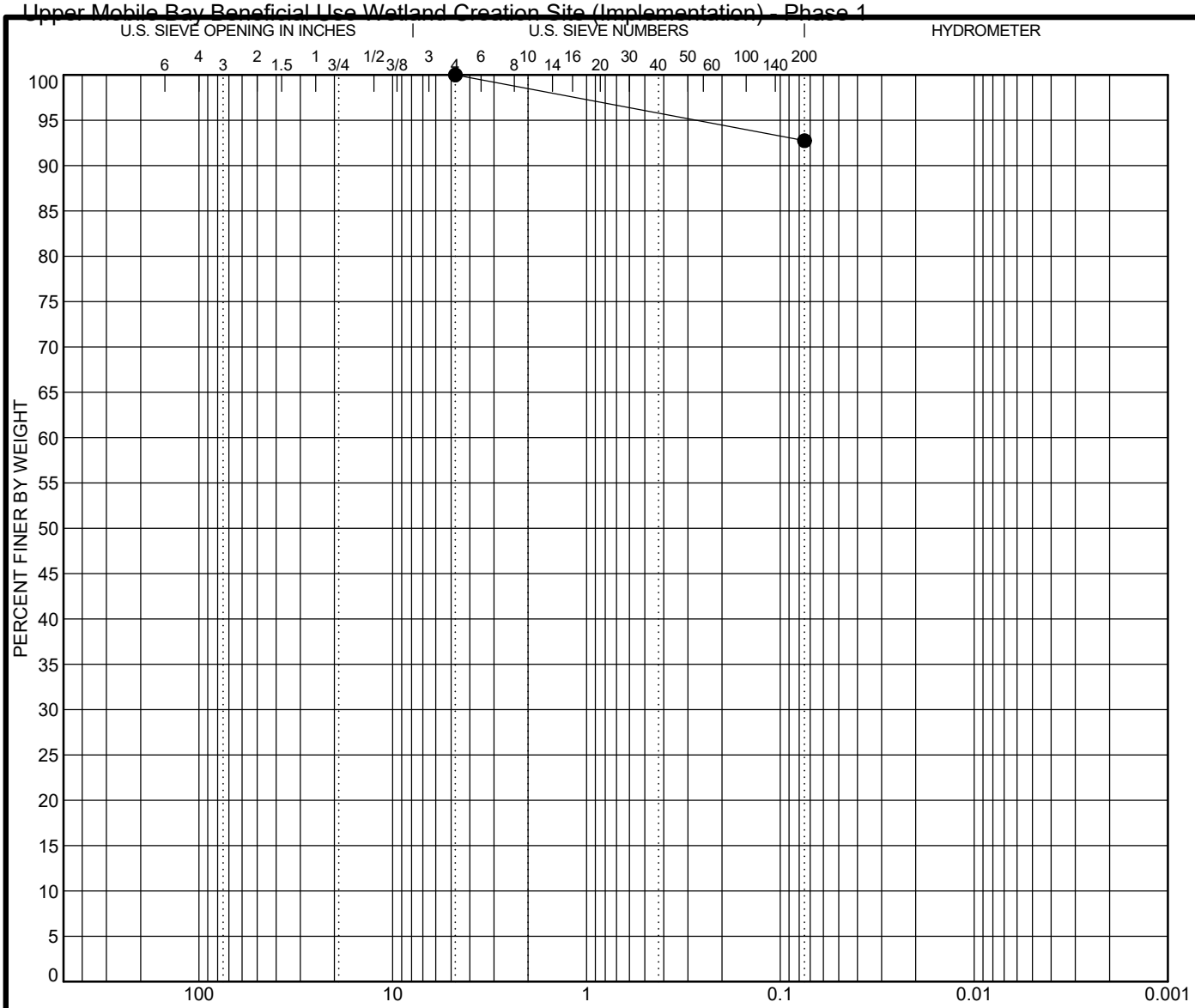
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-52**	**S-6;13.0 ft.**	**FAT CLAY (CH)**	**75**	**21**	**54**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-52	**13.0 ft.**	**4.75**				**0.0**	**7.3**	**92.7**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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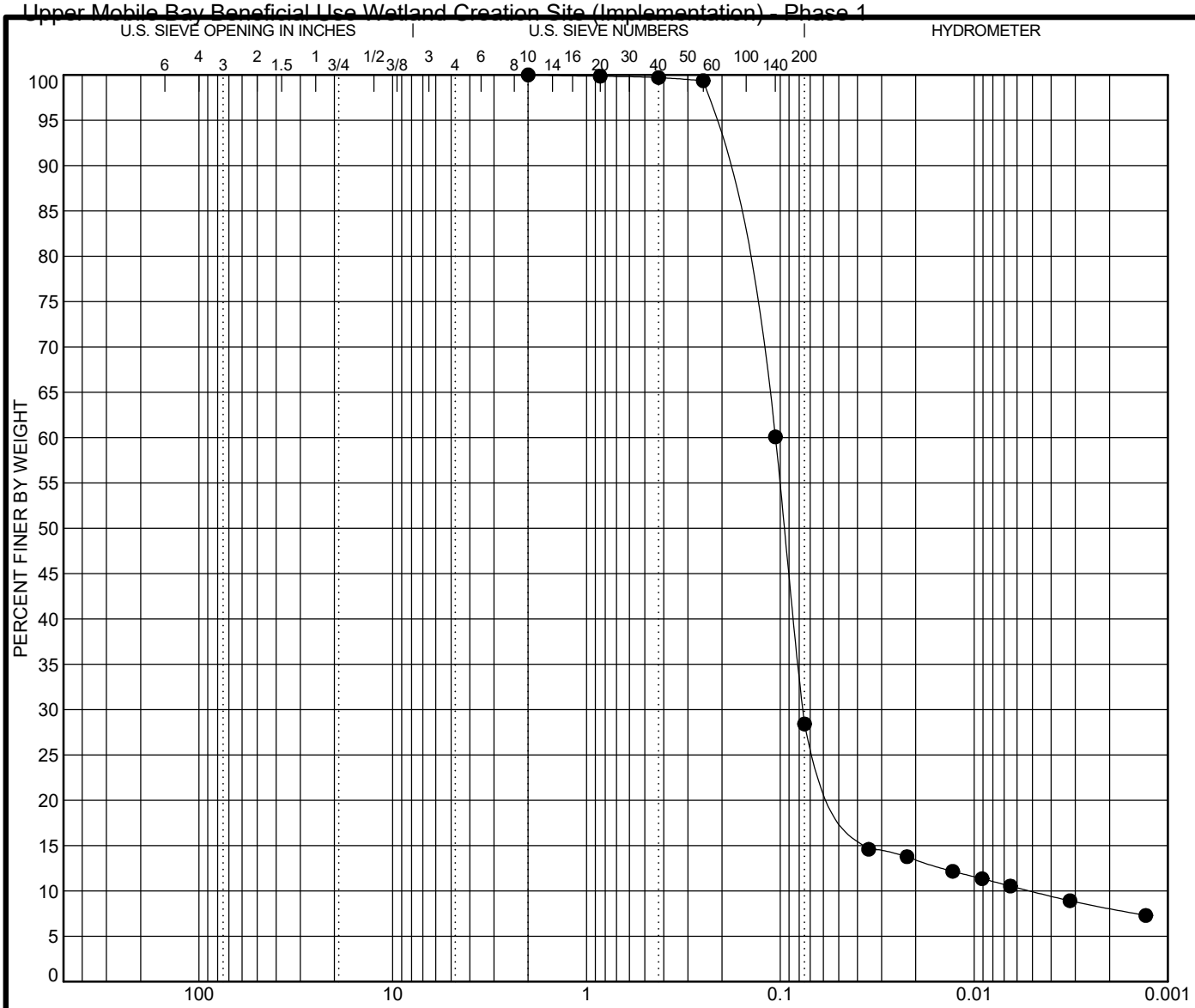
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-53**	**S-2;3.0 ft.**					**10.71**	**20.63**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-53	**3.0 ft.**	**2**	**0.106**	**0.076**	**0.005**	**0.0**	**71.6**	**20.3**	**8.1**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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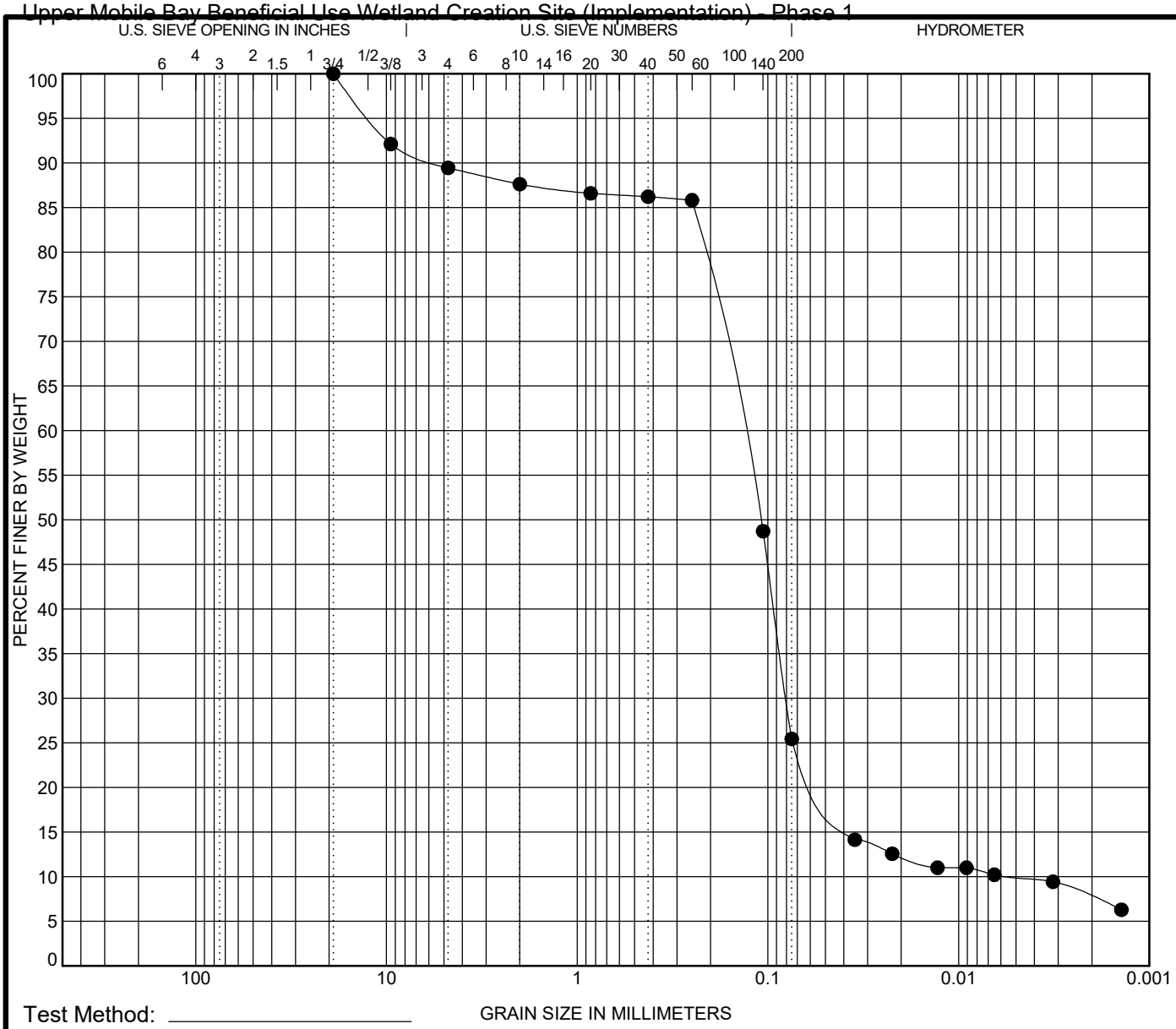
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-53**	**S-4;8.0 ft.**					**8.73**	**25.66**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-53	**8.0 ft.**	**19**	**0.138**	**0.08**	**0.005**	**10.6**	**64.0**	**17.8**	**7.6**

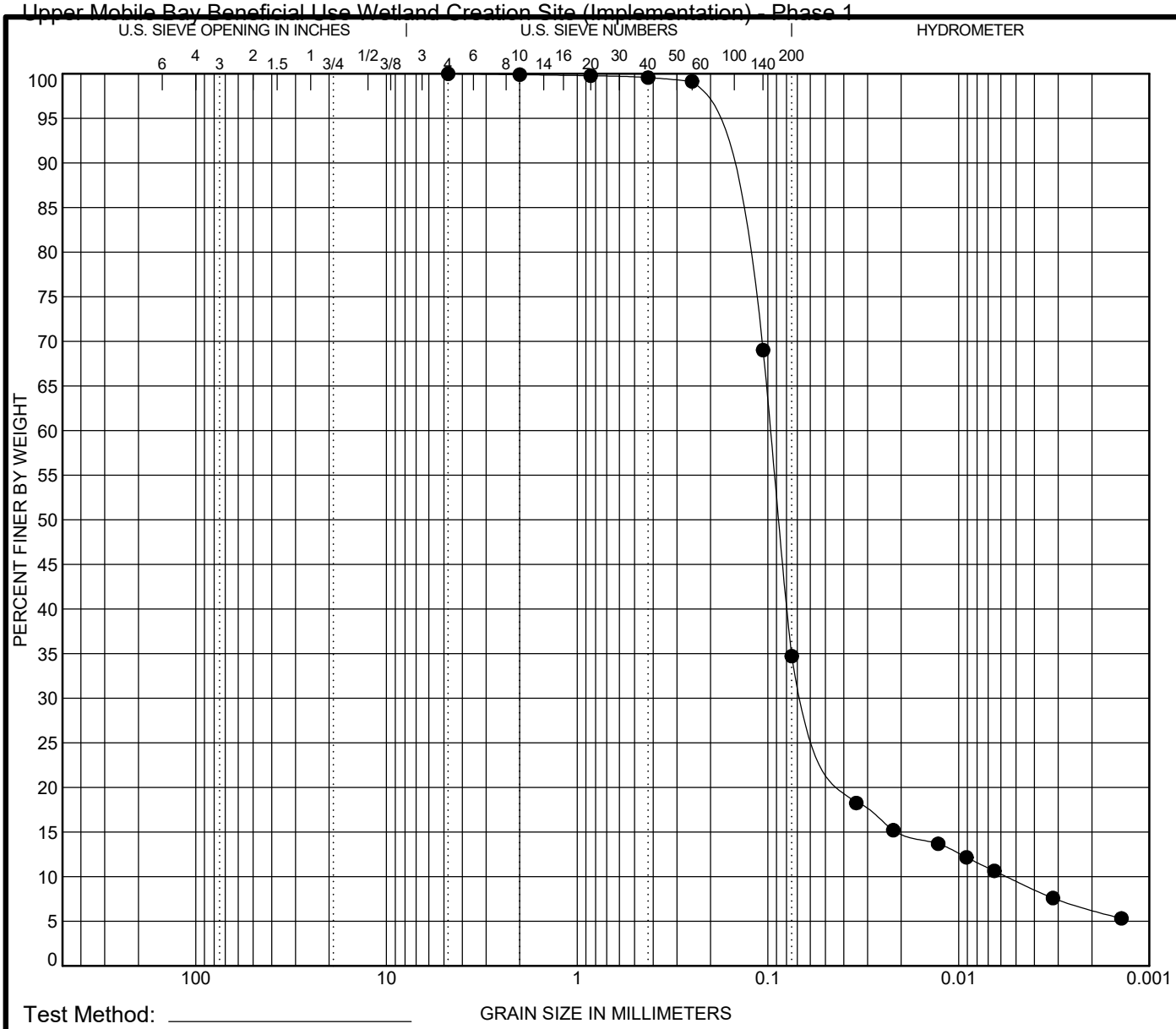
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-53**	**T-1;10.0 ft.**	**SILTY SAND (SM)**	**30**	**23**	**7**	**6.65**	**17.31**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-53	**10.0 ft.**	**4.75**	**0.097**	**0.06**	**0.006**	**0.0**	**65.3**	**28.4**	**6.3**

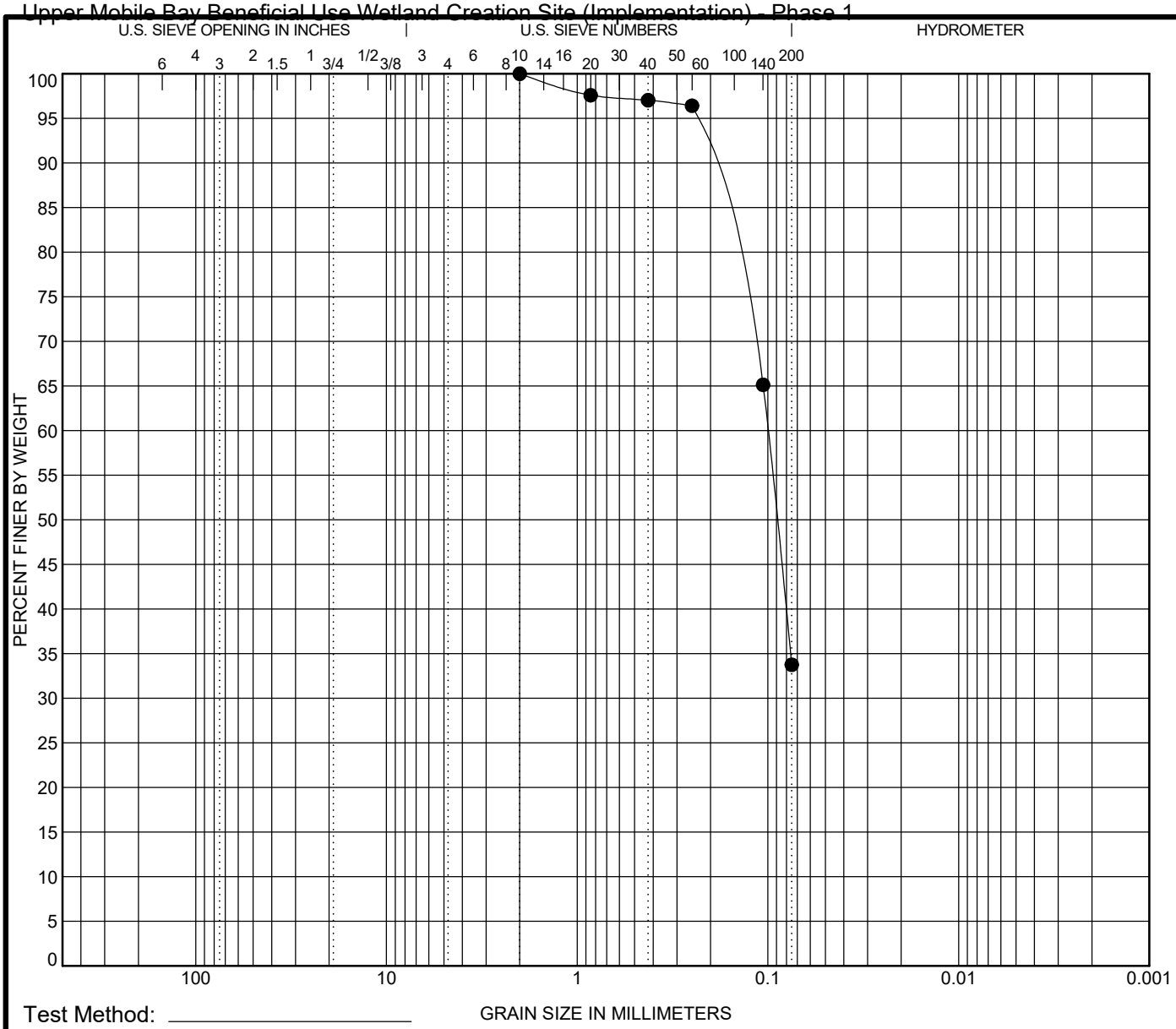
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-53**	**S-7;17.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-53	**17.5 ft.**	**2**	**0.1**			**0.0**	**66.3**	**33.7**	

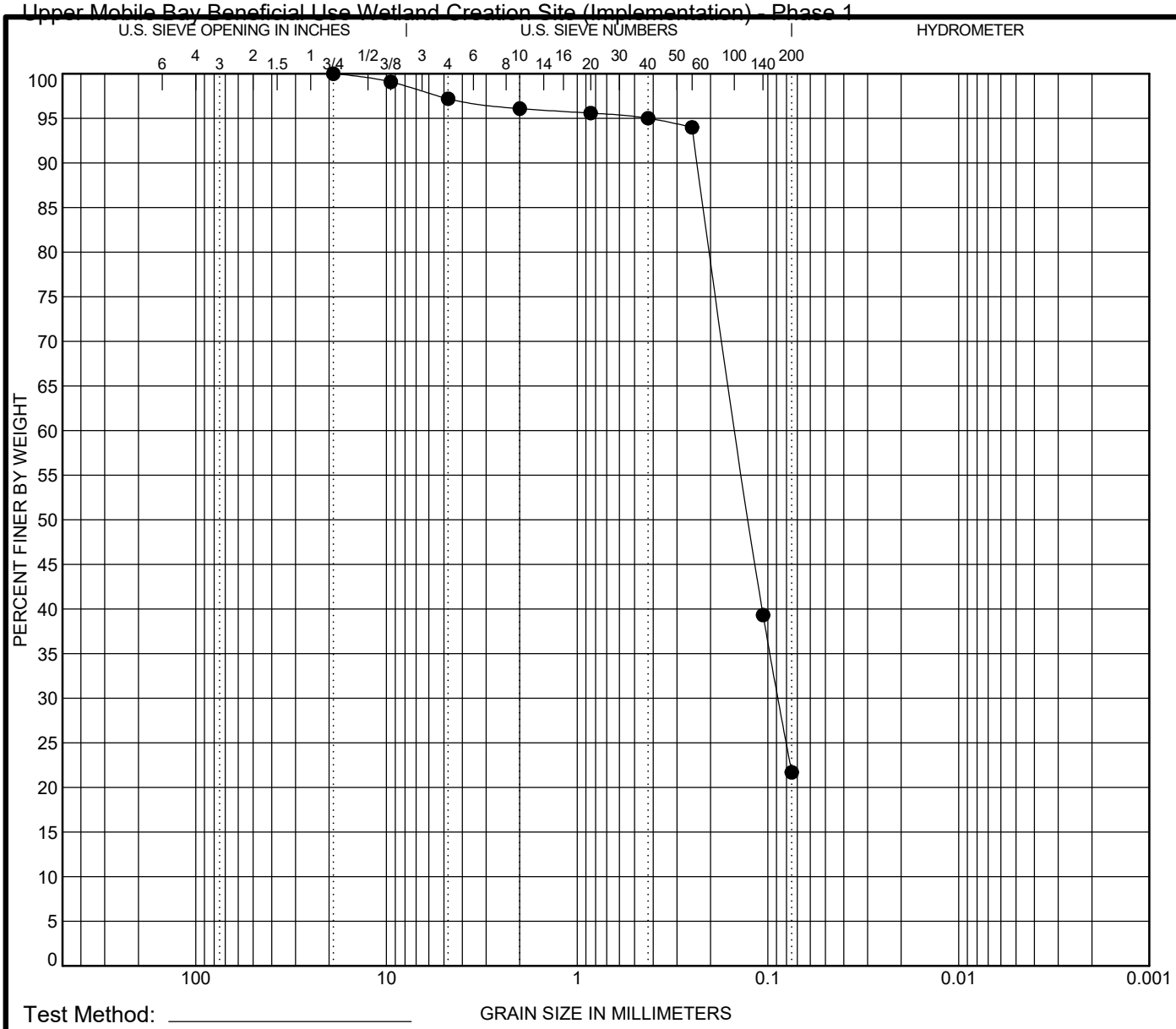
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-54**	**S-1;0.5 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-54	**0.5 ft.**	**19**	**0.147**	**0.088**		**2.8**	**75.5**	**21.7**	

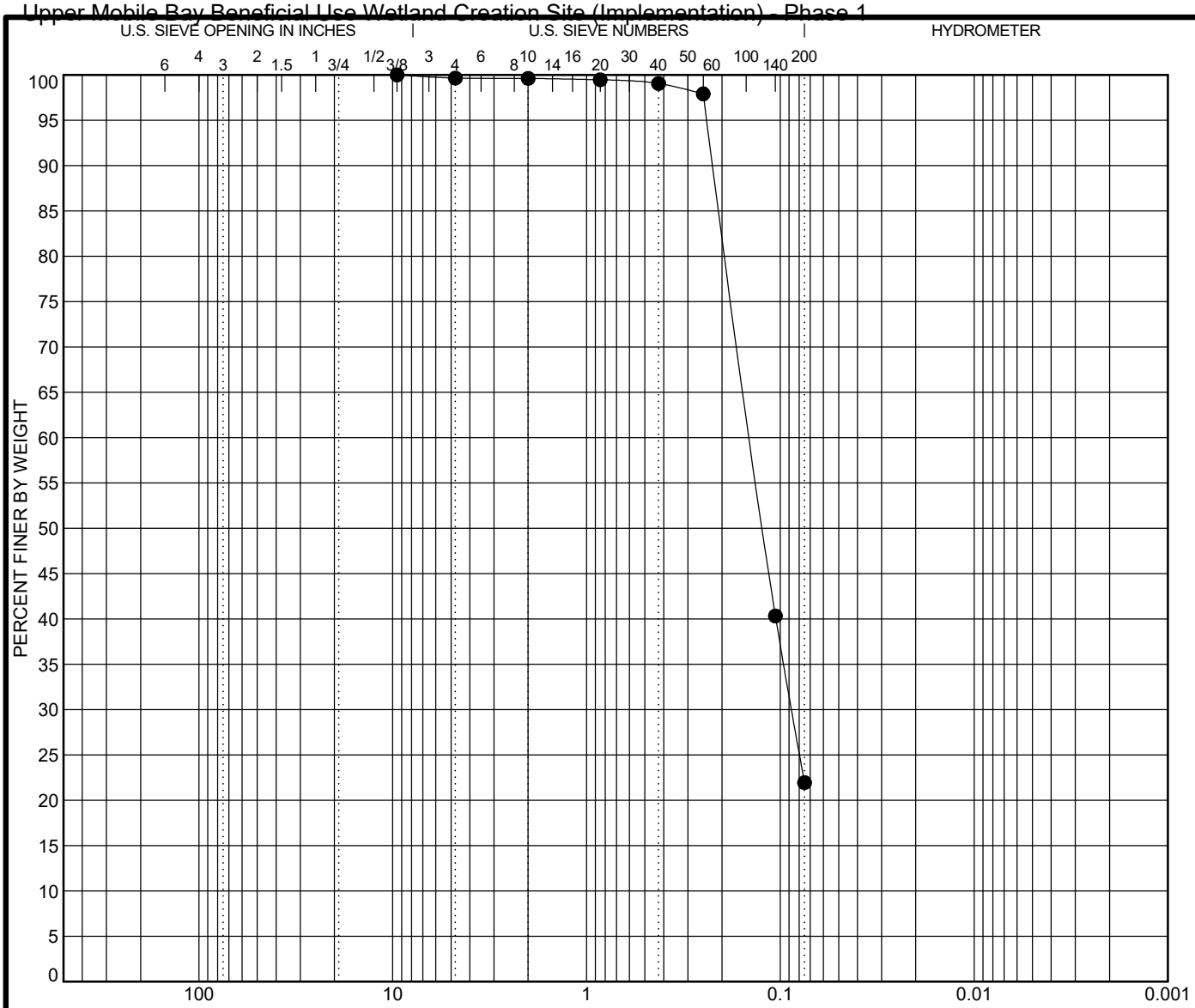
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-54**	**S-3;5.5 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-54	**5.5 ft.**	**9.5**	**0.142**	**0.087**		**0.3**	**77.7**	**21.9**	

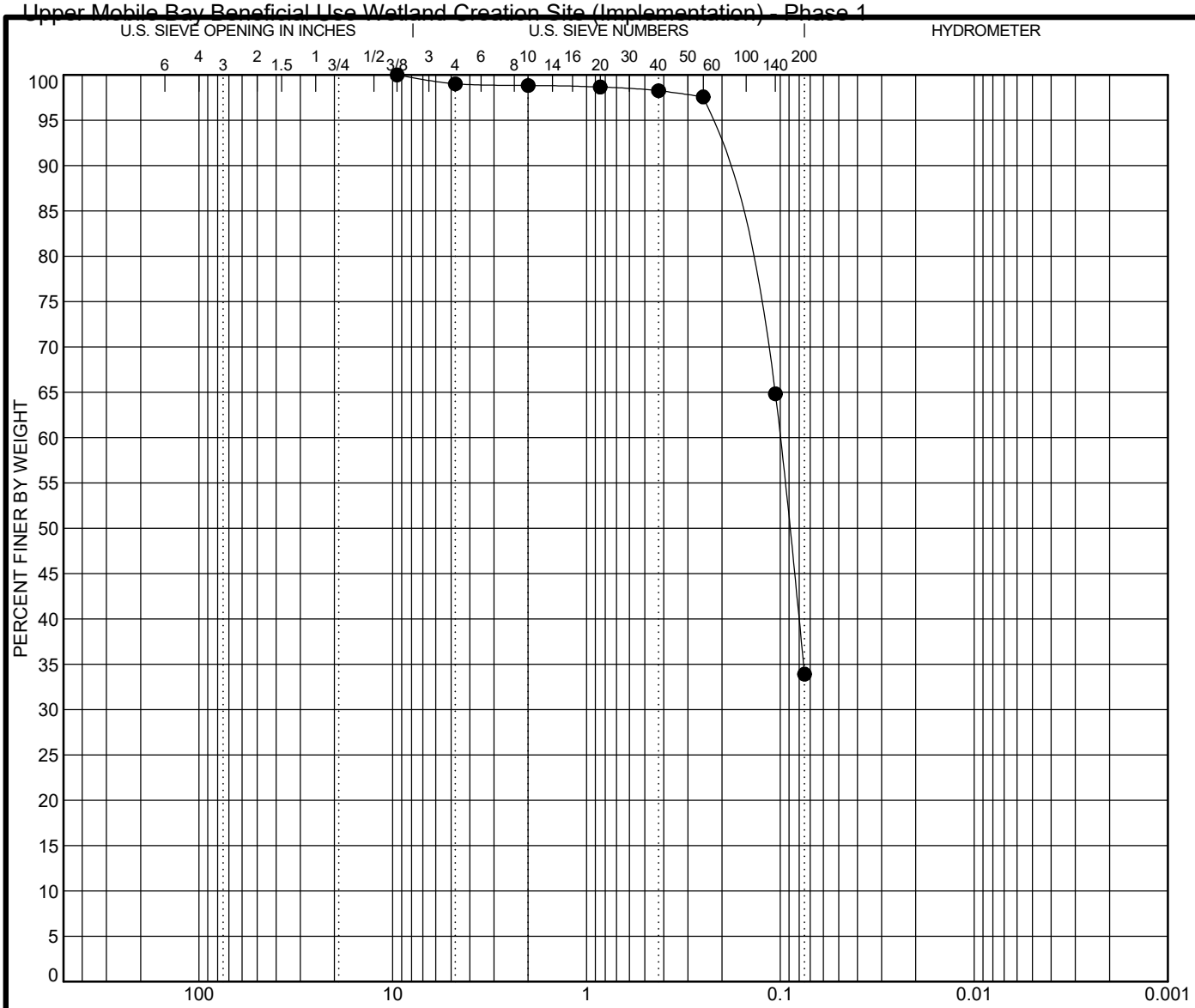
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-54**	**S-5;10.5 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-54	**10.5 ft.**	**9.5**	**0.1**			**1.0**	**65.1**	**33.9**	

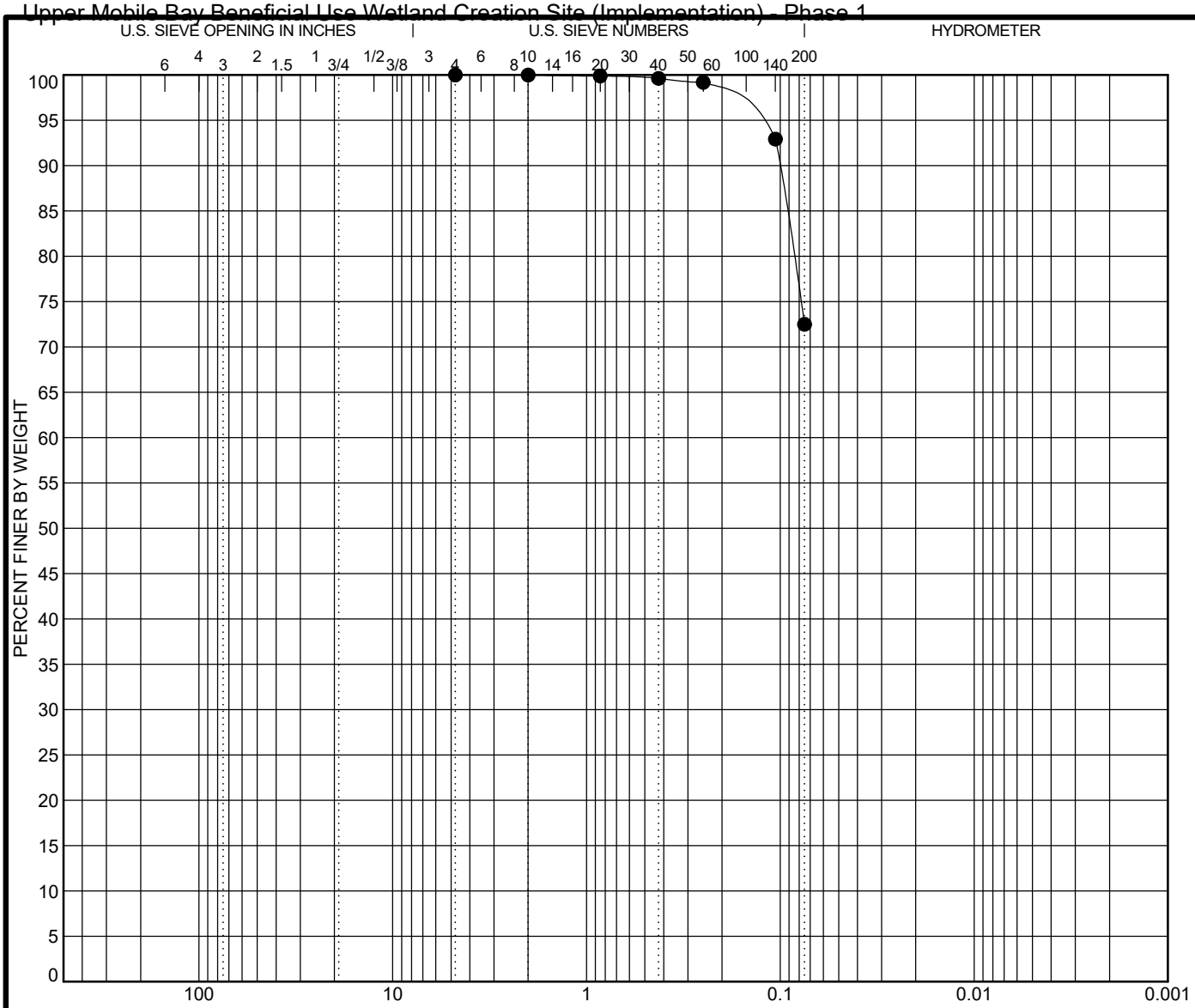
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-54**	**S-7;16.0 ft.**	**LEAN CLAY with SAND (CL)**	**37**	**23**	**14**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-54	**16.0 ft.**	**4.75**				**0.0**	**27.5**	**72.5**	

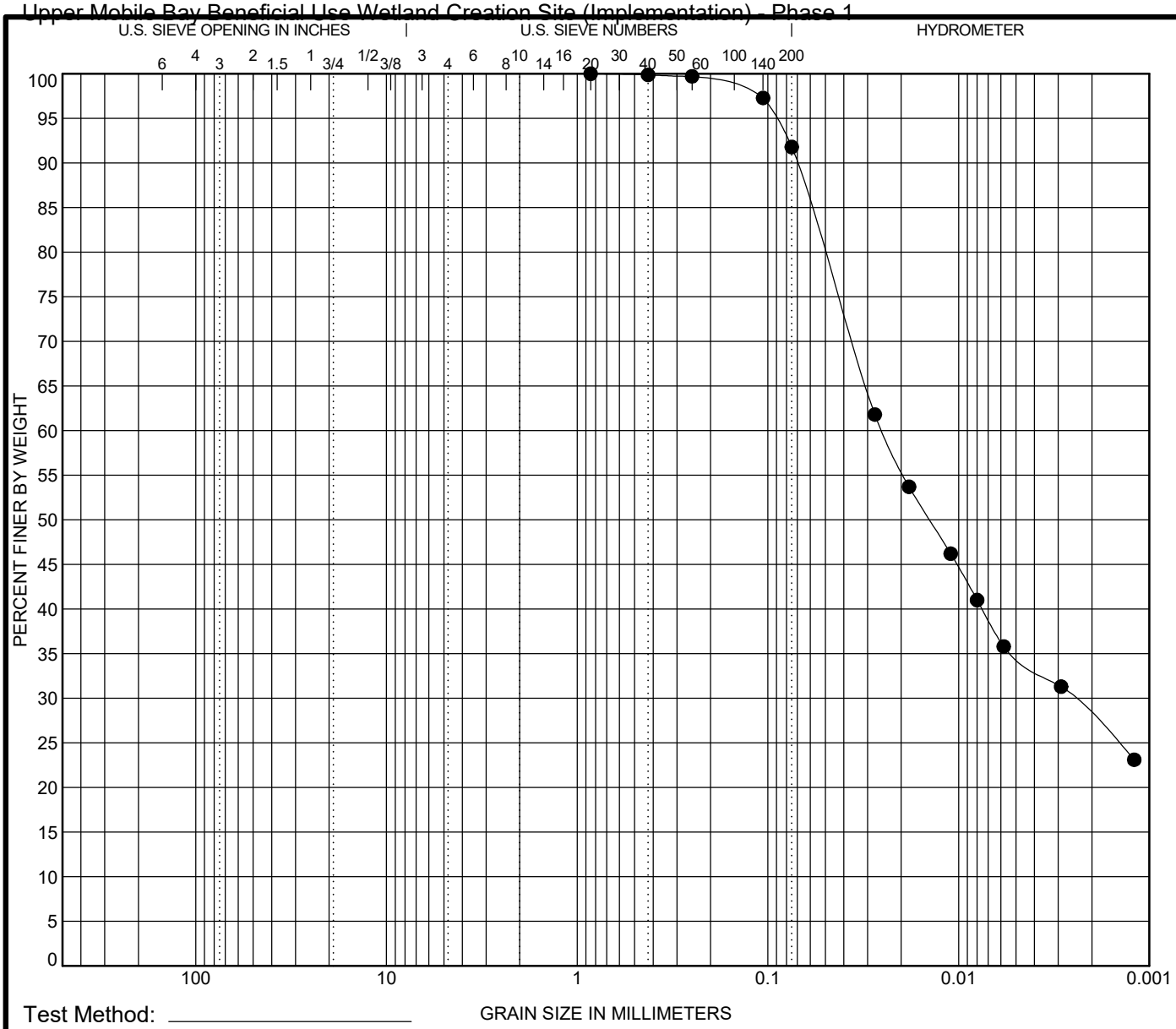
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● **B-54**	**T-1;18.0 ft.**	**FAT CLAY (CH)**	**58**	**20**	**38**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-54	**18.0 ft.**	**0.85**	**0.025**	**0.003**		**0.0**	**8.2**	**63.9**	**27.8**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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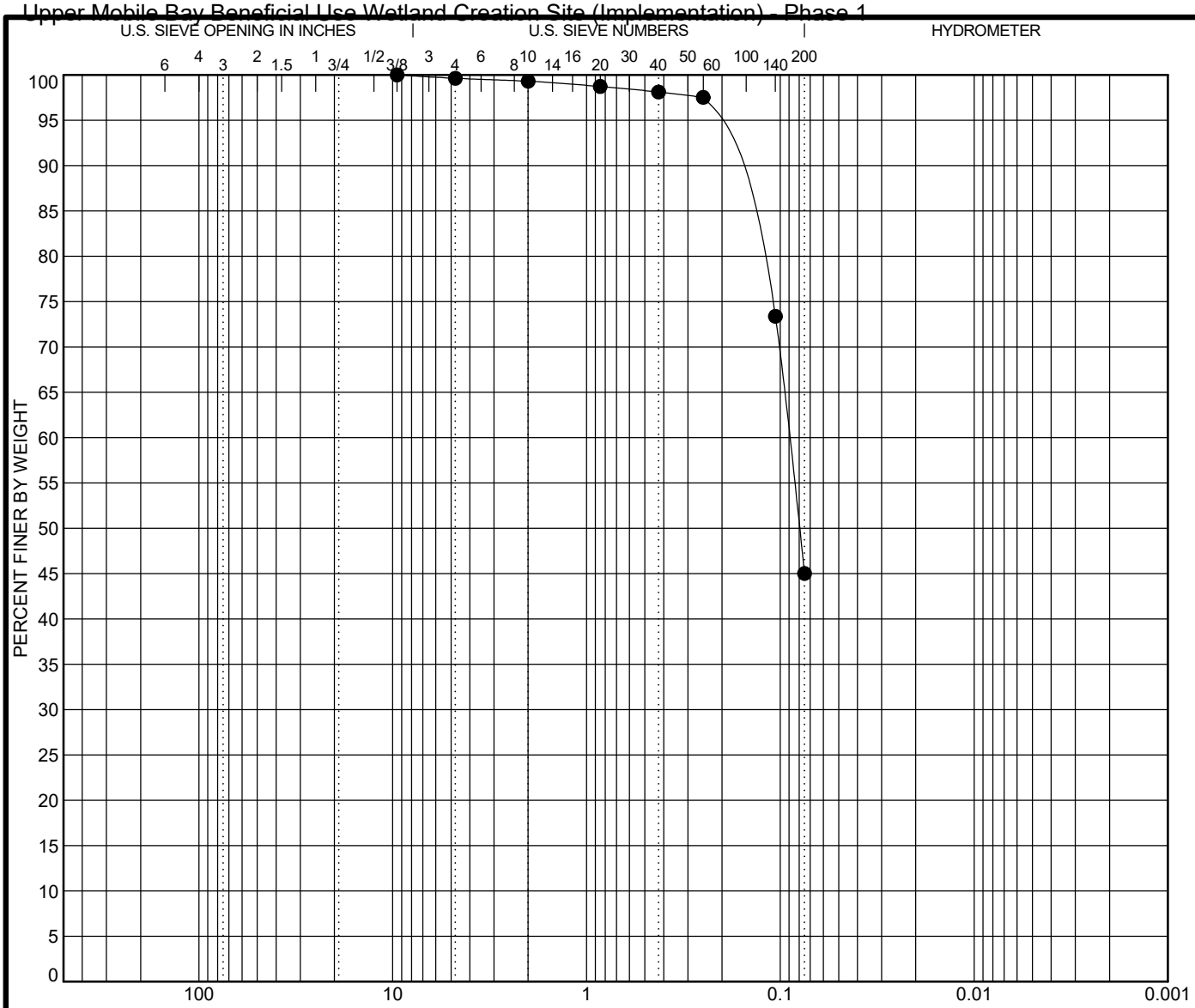
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-55**	**S-1;0.5 ft.**	**CLAYEY SAND (SC)**	**31**	**22**	**9**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-55	**0.5 ft.**	**9.5**	**0.09**			**0.4**	**54.6**	**45.0**	

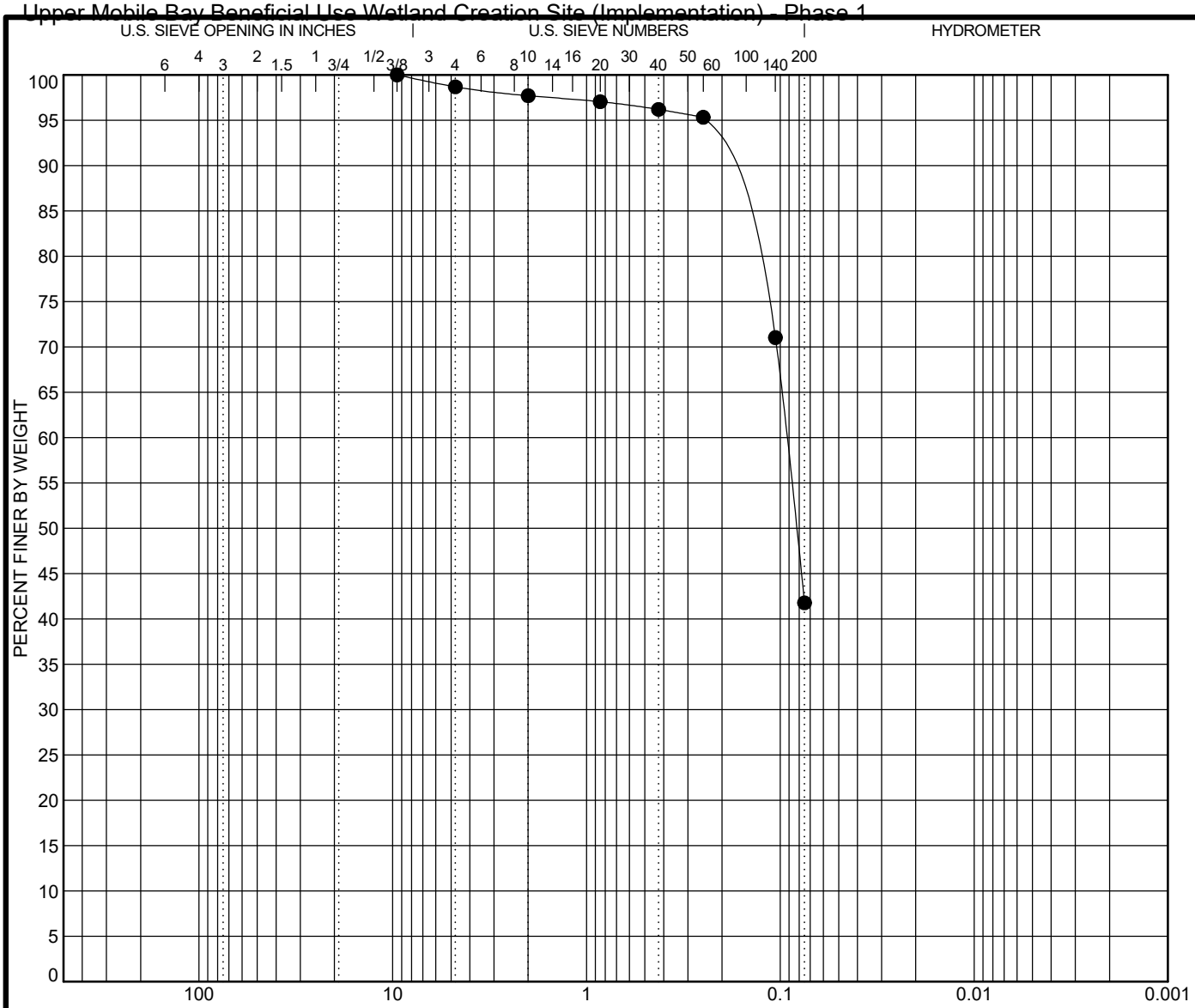
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-55**	**S-2;3.0 ft.**	**SILTY SAND (SM)**	**37**	**25**	**12**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-55	**3.0 ft.**	**9.5**	**0.093**			**1.3**	**56.9**	**41.8**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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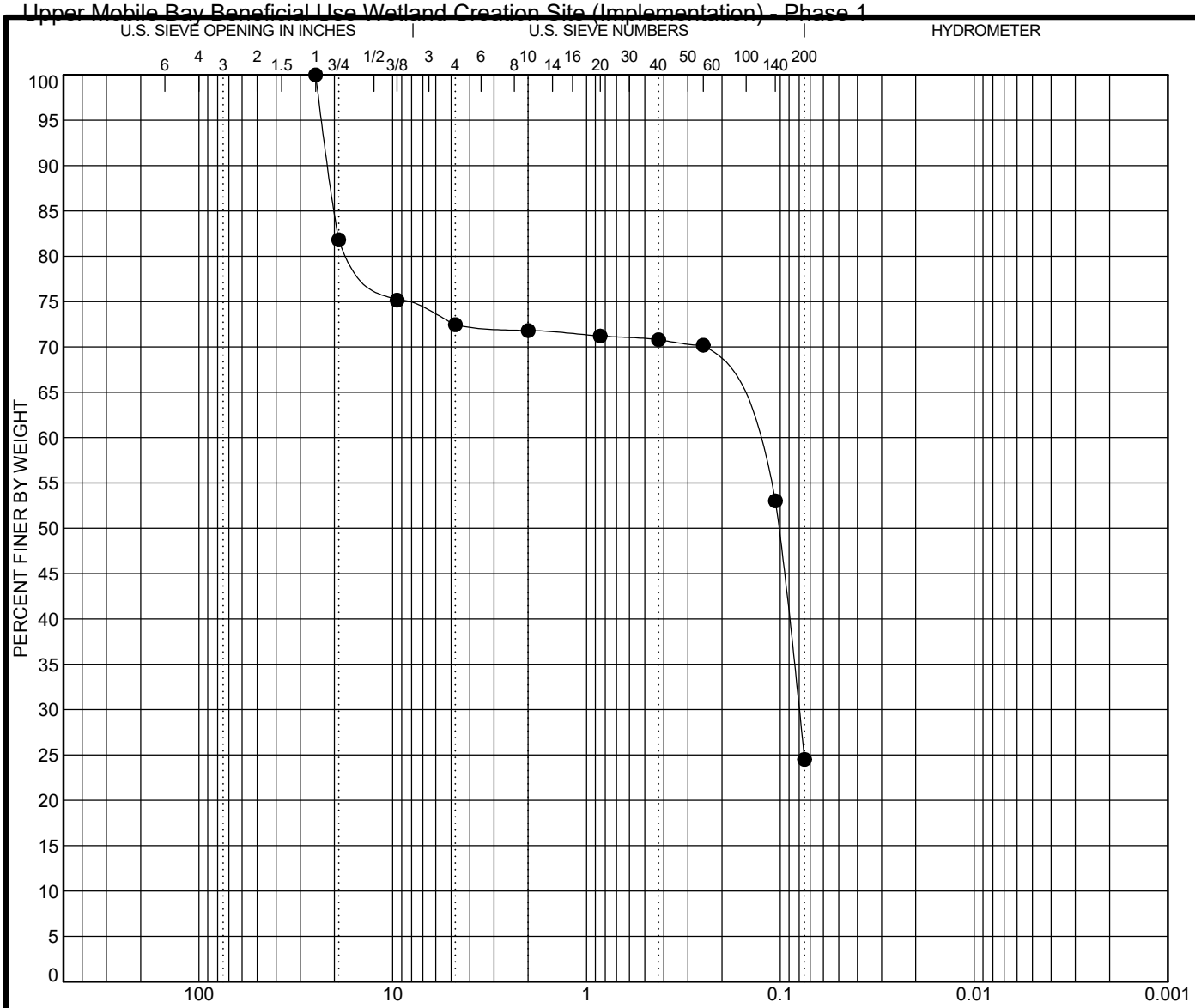
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-55**	**S-3;5.5 ft.**	**CLAYEY SAND with GRAVEL (SC)**	**29**	**21**	**8**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-55	**5.5 ft.**	**25**	**0.15**	**0.08**		**27.5**	**47.9**	**24.5**	

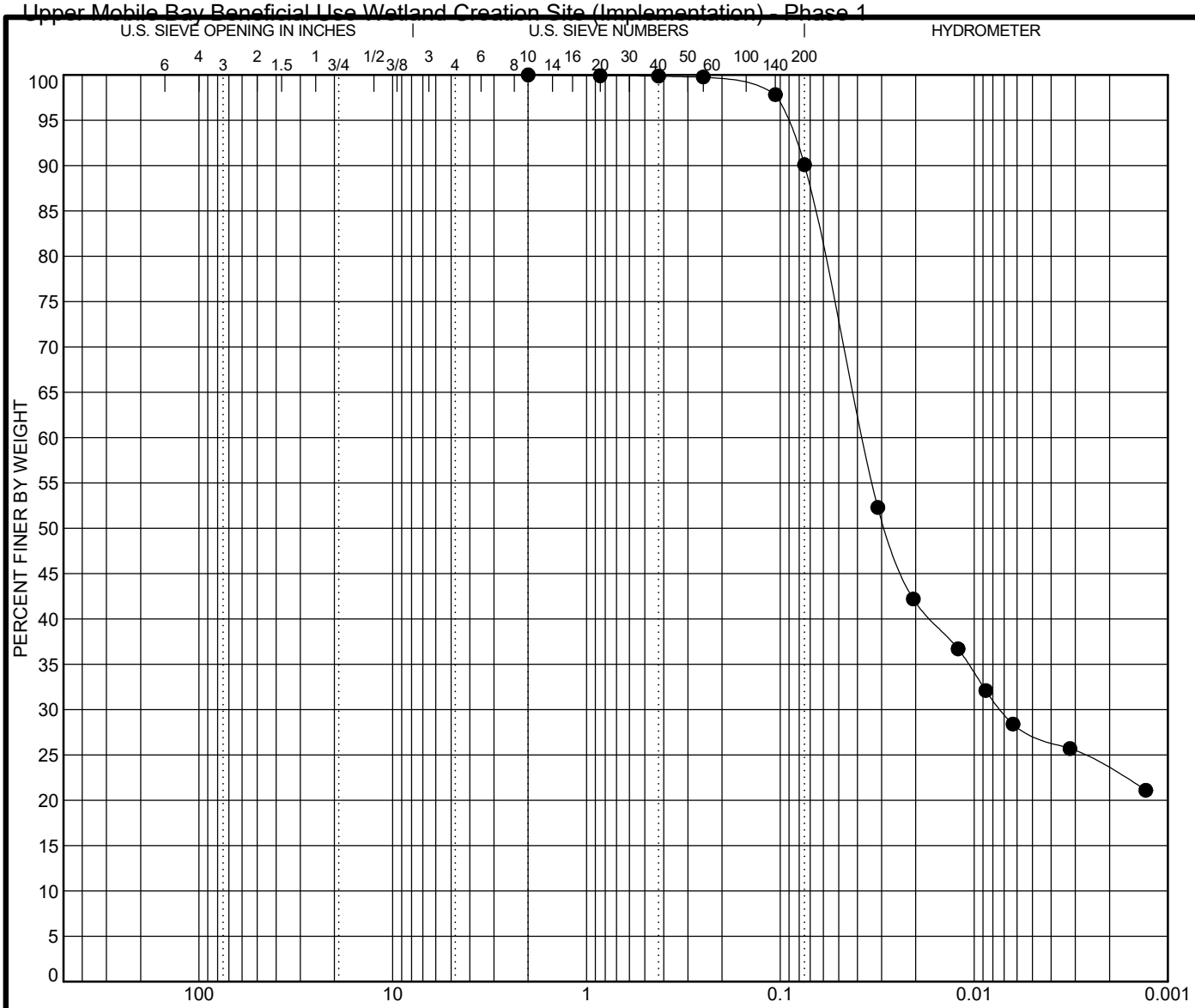
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-55**	**T-1;15.0 ft.**	**FAT CLAY (CH)**	**55**	**19**	**36**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-55	**15.0 ft.**	**2**	**0.037**	**0.007**		**0.0**	**9.9**	**66.8**	**23.3**

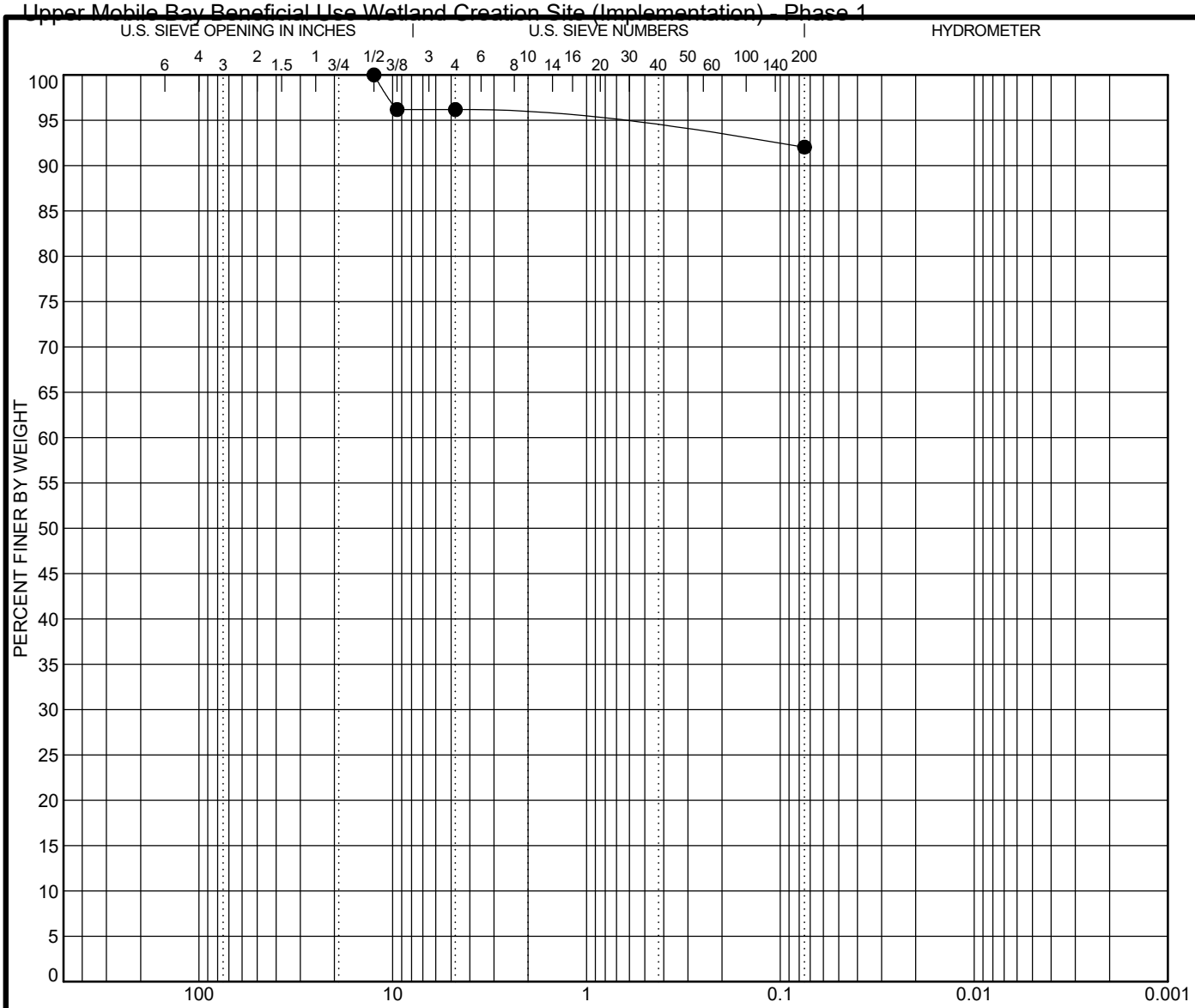
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-55**	**S-8;18.0 ft.**	**FAT CLAY (CH)**	**66**	**25**	**41**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-55	**18.0 ft.**	**12.5**				**3.8**	**4.1**	**92.0**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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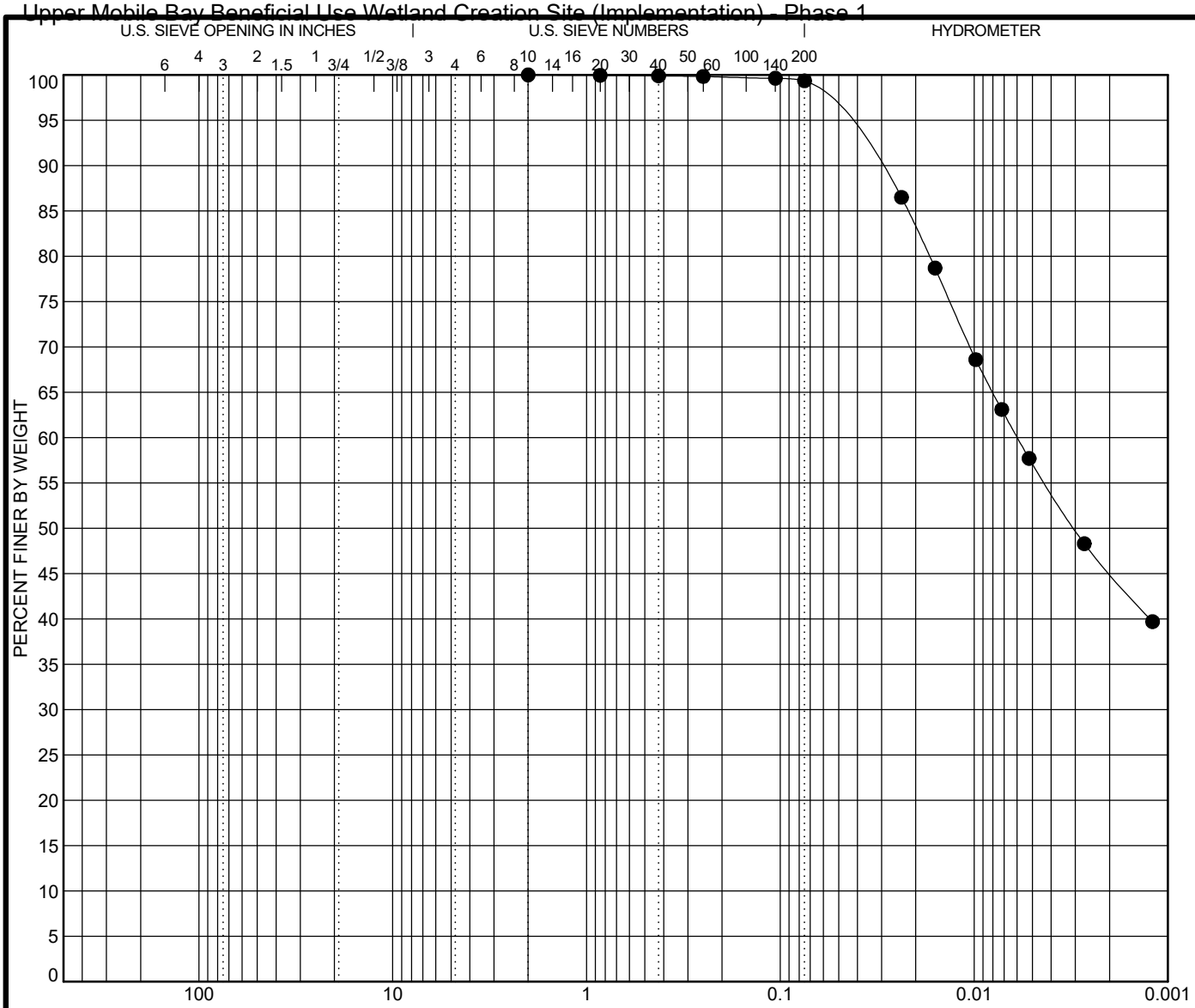
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-55**	**T-3;26.5 ft.**	**FAT CLAY (CH)**	**98**	**29**	**69**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-55	**26.5 ft.**	**2**	**0.006**			**0.0**	**0.6**	**54.2**	**45.1**

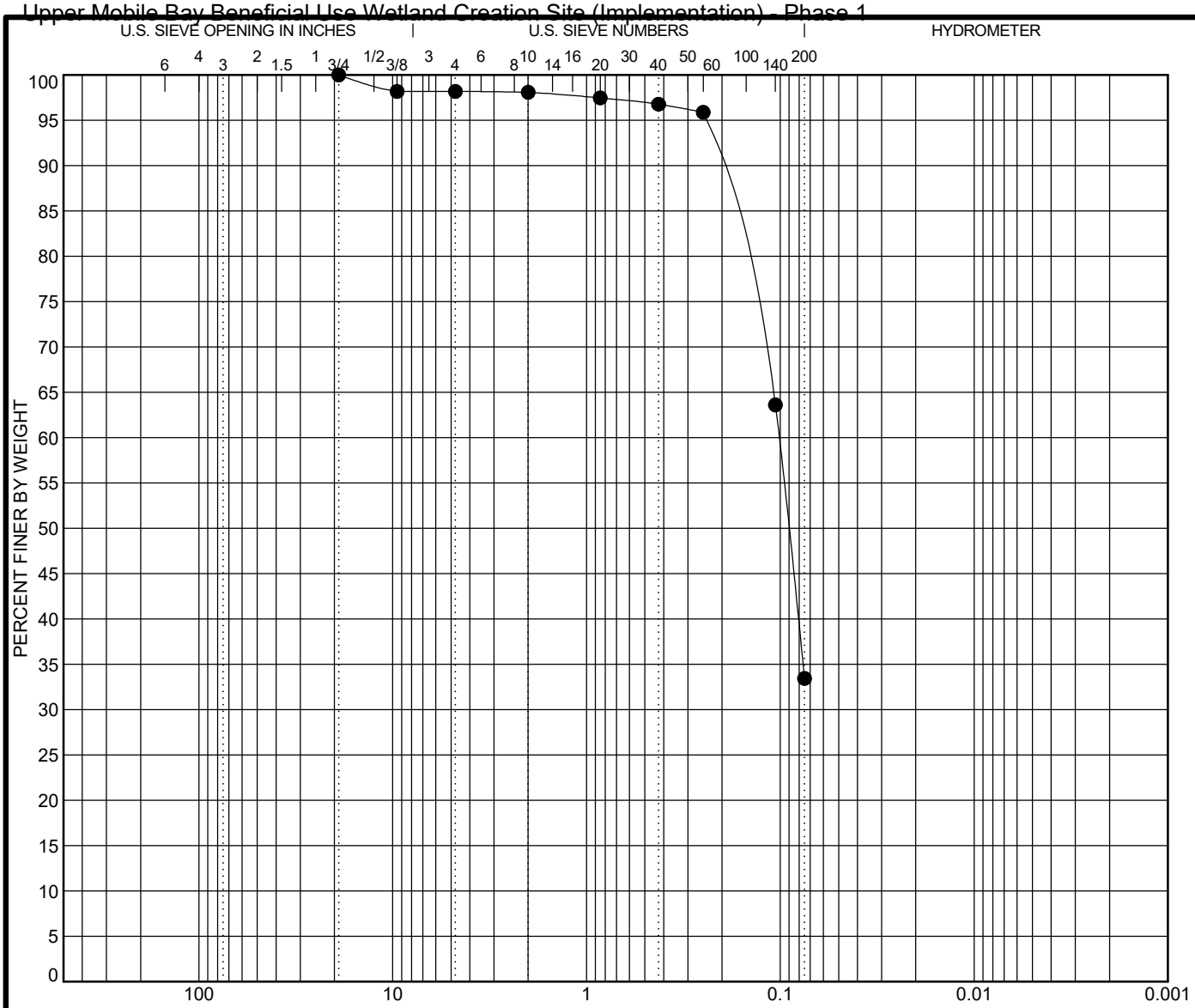
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-56**	**S-2;3.0 ft.**	**SILTY SAND (SM)**	**34**	**28**	**6**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-56	**3.0 ft.**	**19**	**0.102**			**1.8**	**64.7**	**33.4**	

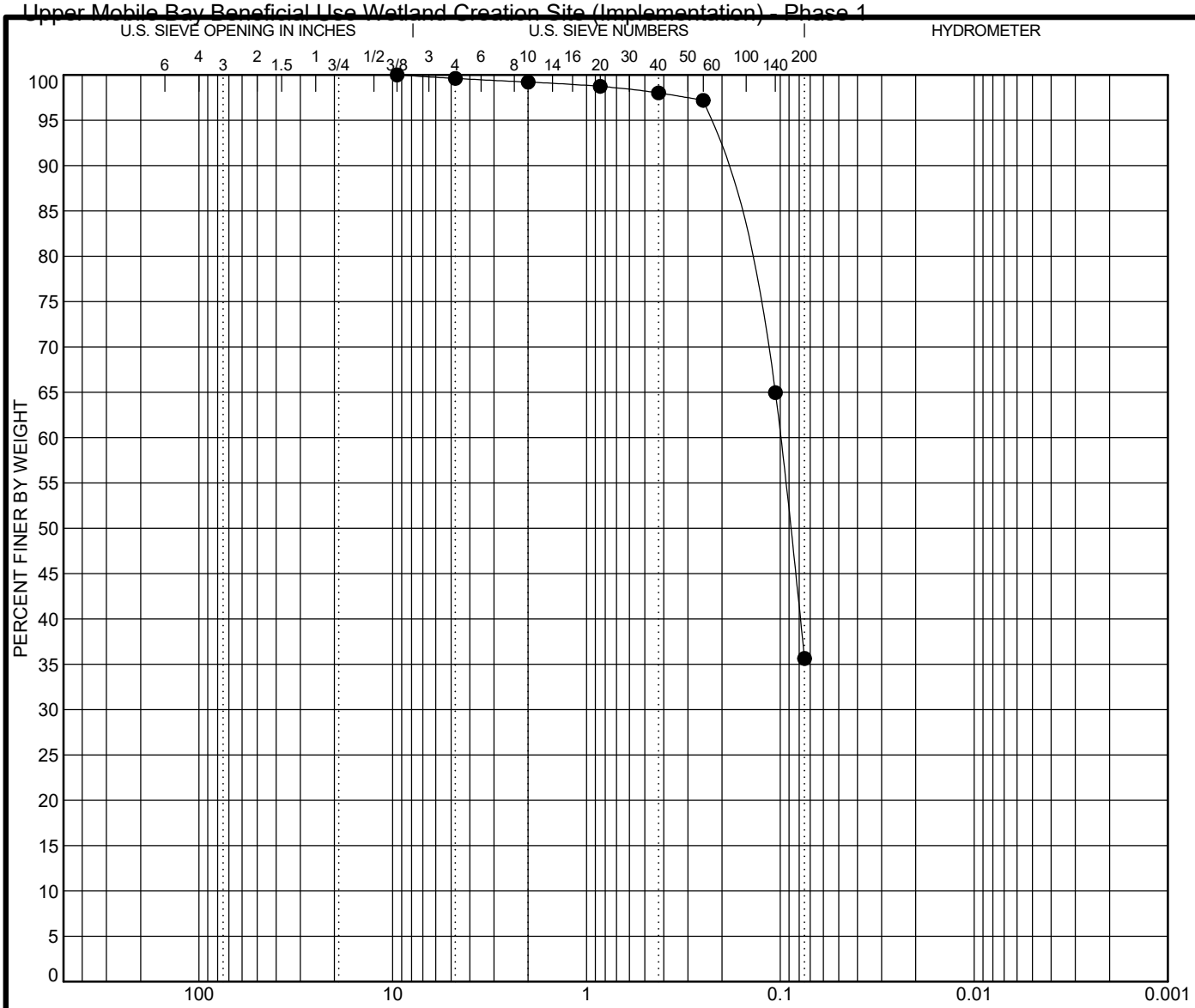
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-56**	**S-4;8.0 ft.**	**SILTY SAND (SM)**	**32**	**26**	**6**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-56	**8.0 ft.**	**9.5**	**0.1**			**0.4**	**64.0**	**35.6**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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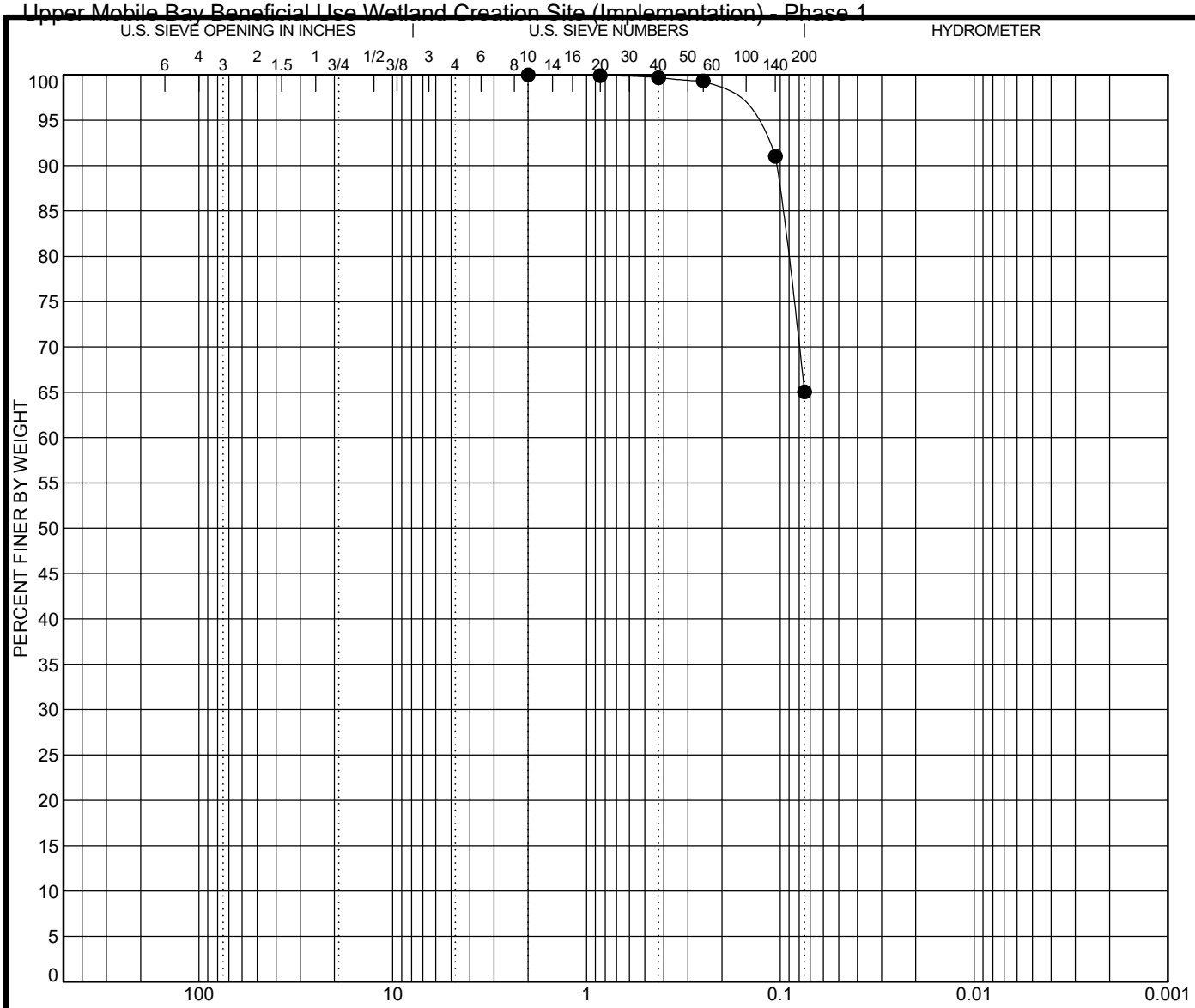
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-56**	**S-6;13.0 ft.**	**SANDY LEAN CLAY (CL)**	**36**	**23**	**13**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-56	**13.0 ft.**	**2**				**0.0**	**35.0**	**65.0**	

REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
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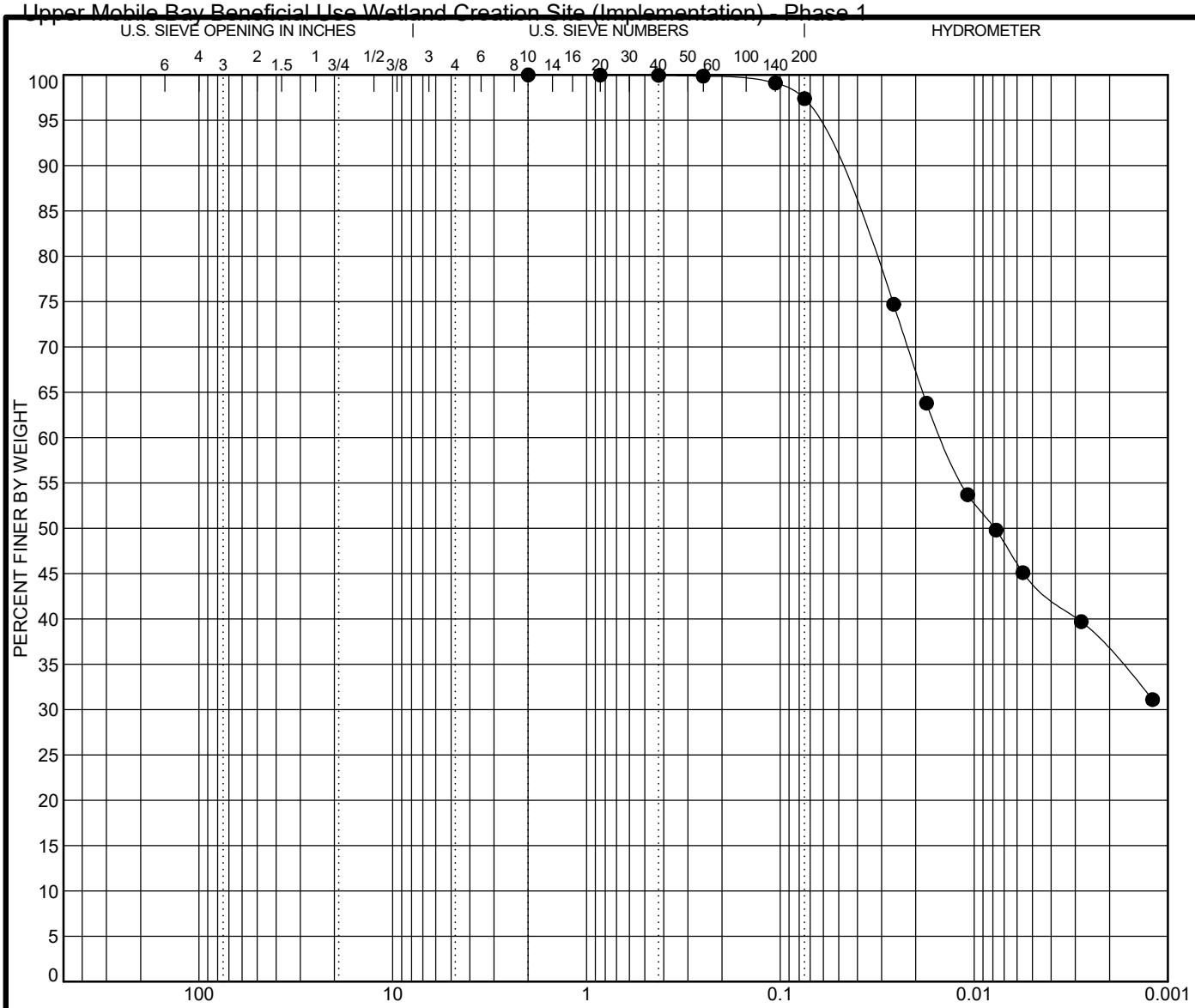

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-56**	**T-1;18.0 ft.**	**ELASTIC SILT (MH)**	**65**	**44**	**21**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-56	**18.0 ft.**	**2**	**0.015**			**0.0**	**2.6**	**61.1**	**36.3**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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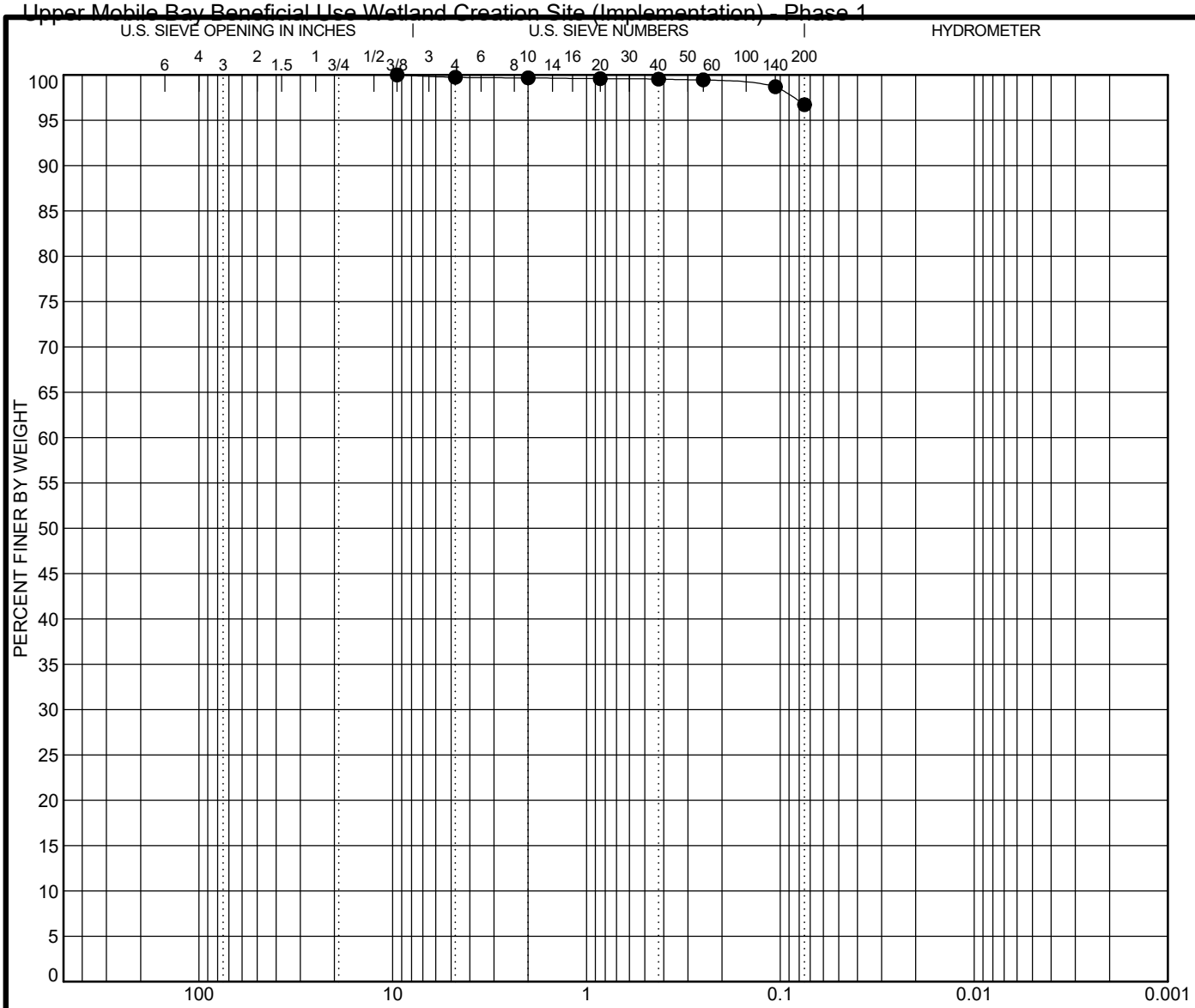
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-56**	**S-8;20.5 ft.**	**FAT CLAY (CH)**	**62**	**25**	**37**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-56	**20.5 ft.**	**9.5**				**0.3**	**3.0**	**96.7**	

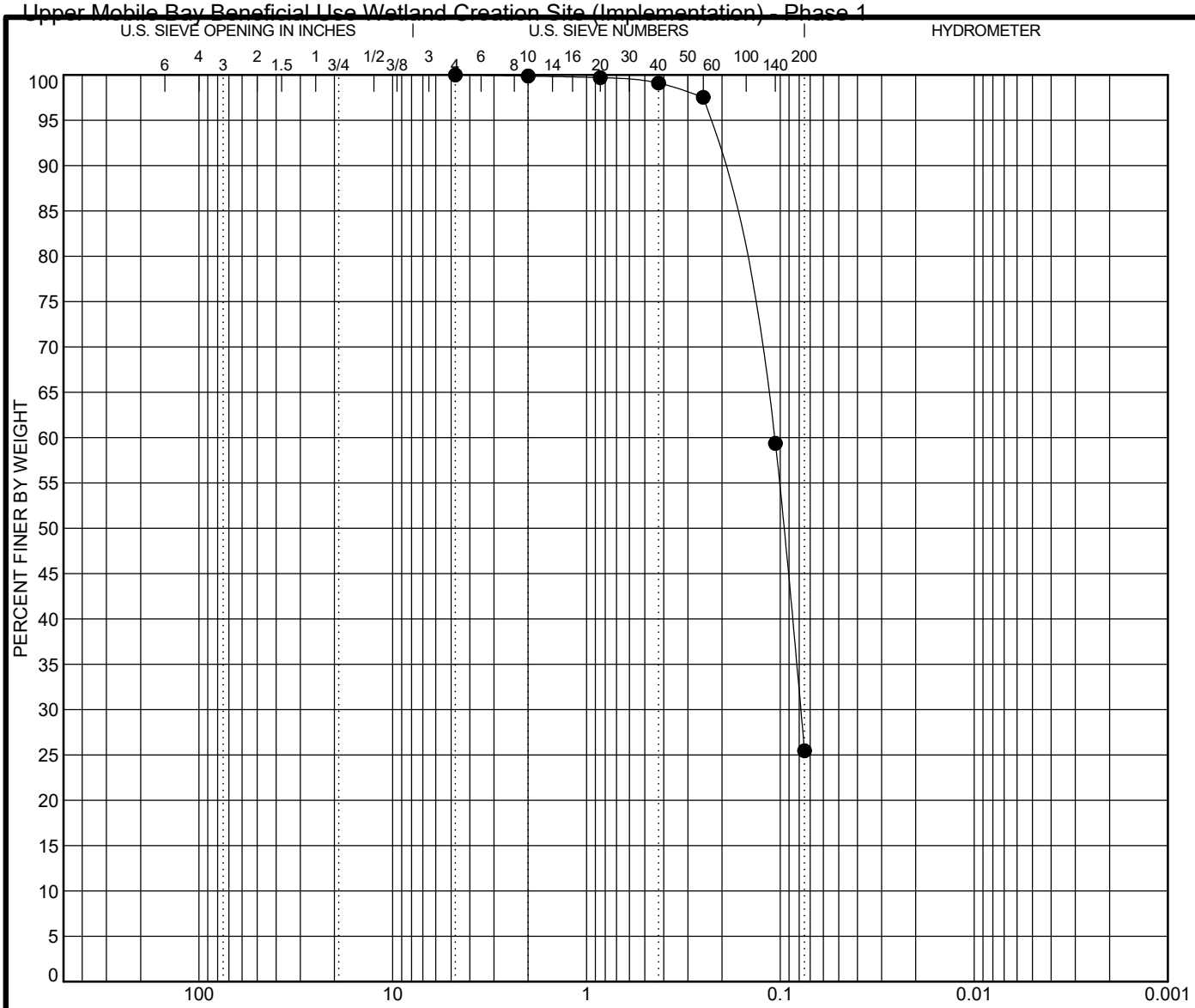
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-57**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-57	**5.5 ft.**	**4.75**	**0.108**	**0.079**		**0.0**	**74.5**	**25.5**	

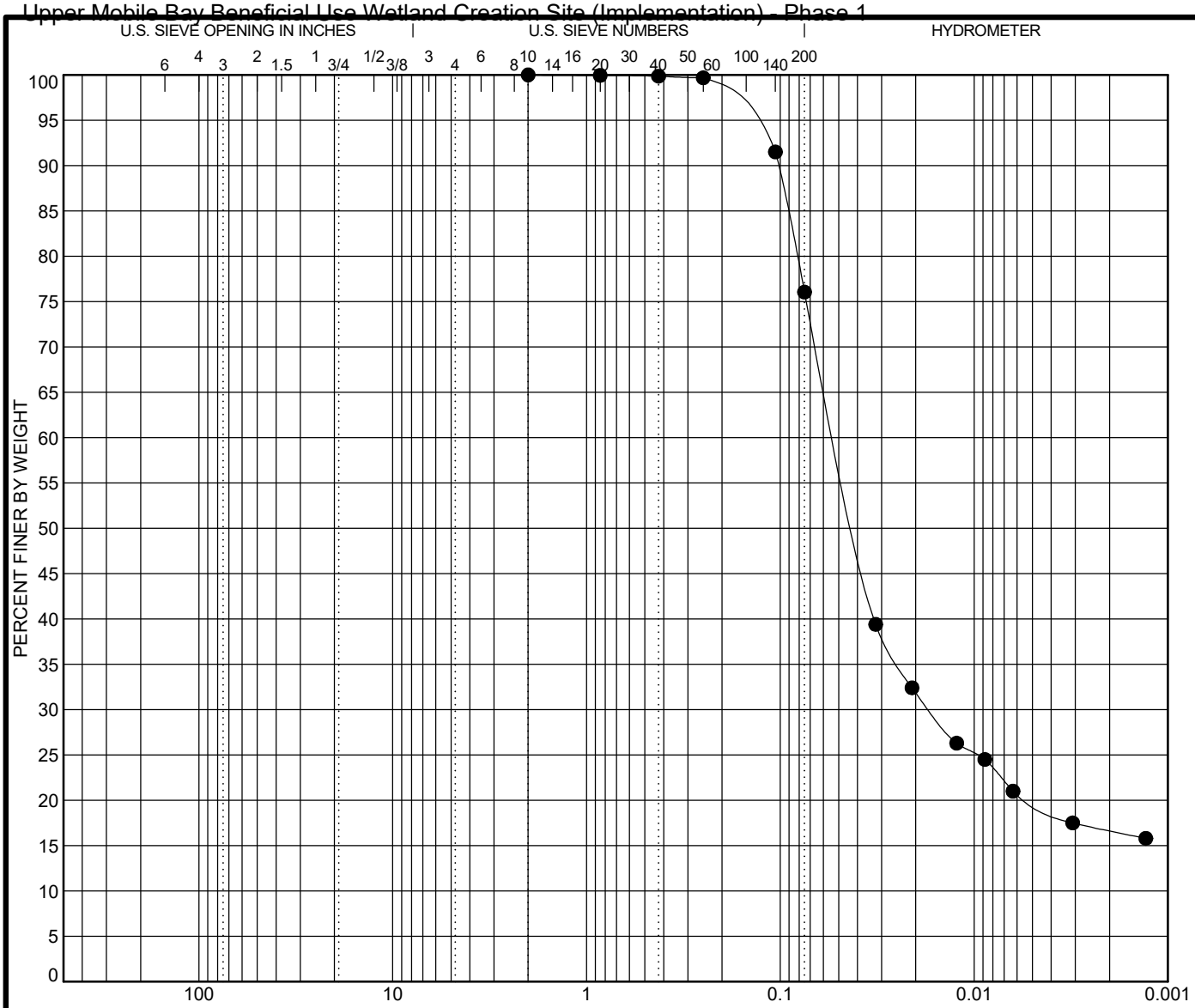
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-57**	**T-1;15.0 ft.**	**SILT with SAND (ML)**	**38**	**25**	**13**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-57	**15.0 ft.**	**2**	**0.052**	**0.017**		**0.0**	**24.0**	**59.4**	**16.6**

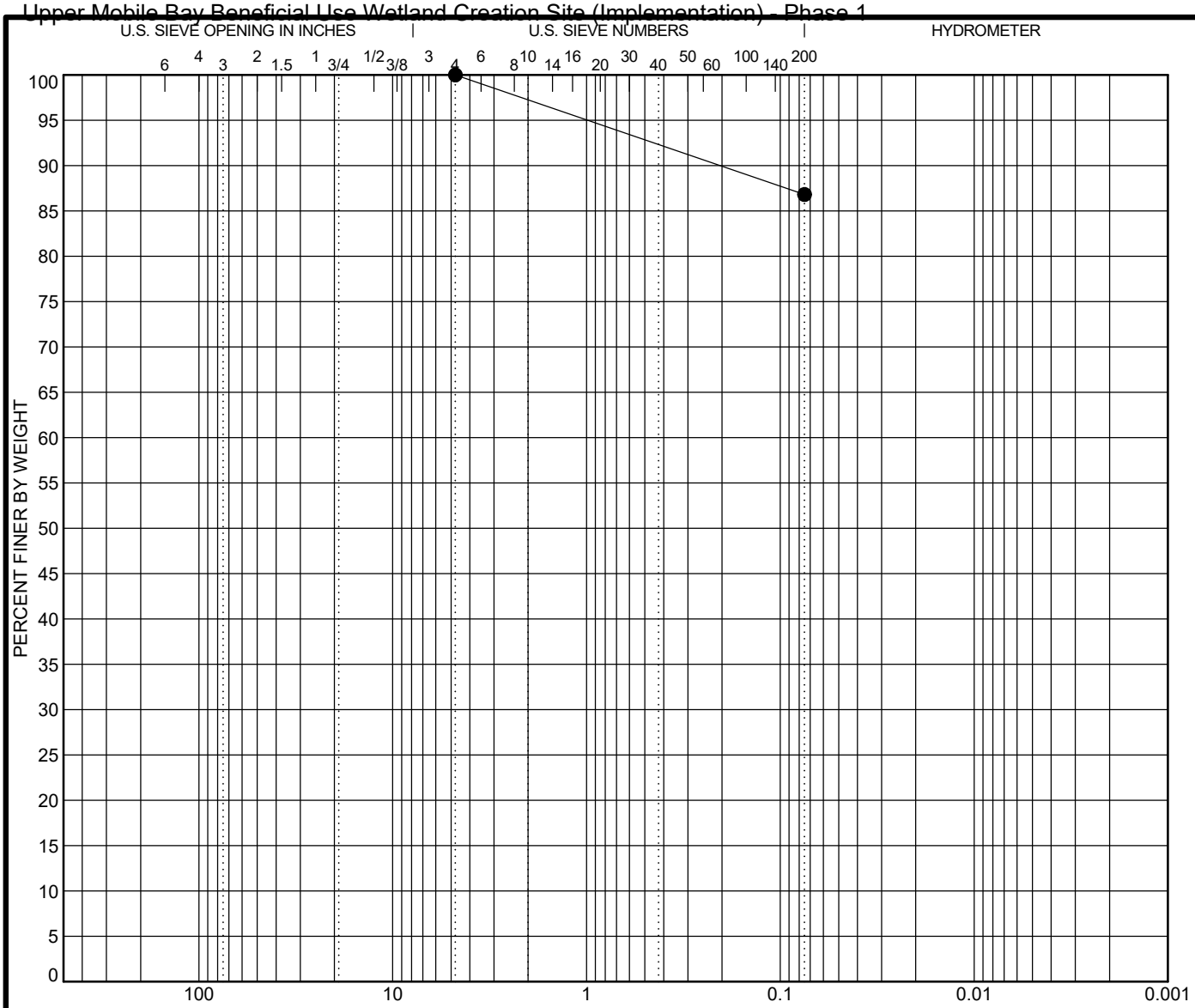
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-57**	**S-12;54.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-57	**54.0 ft.**	**4.75**				**0.0**	**13.2**	**86.8**	

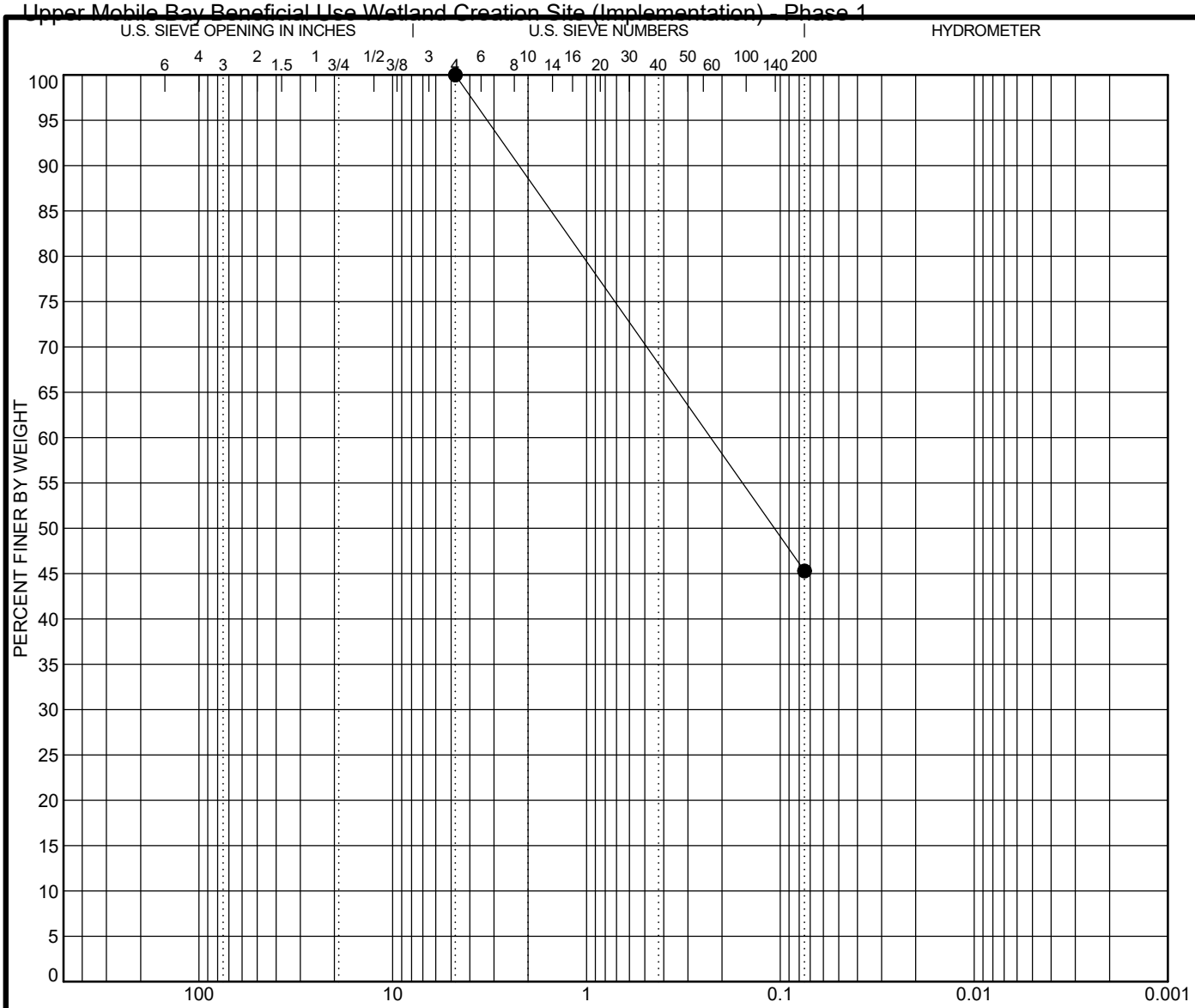
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-58**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-58	**5.5 ft.**	**4.75**	**0.229**			**0.0**	**54.7**	**45.3**	

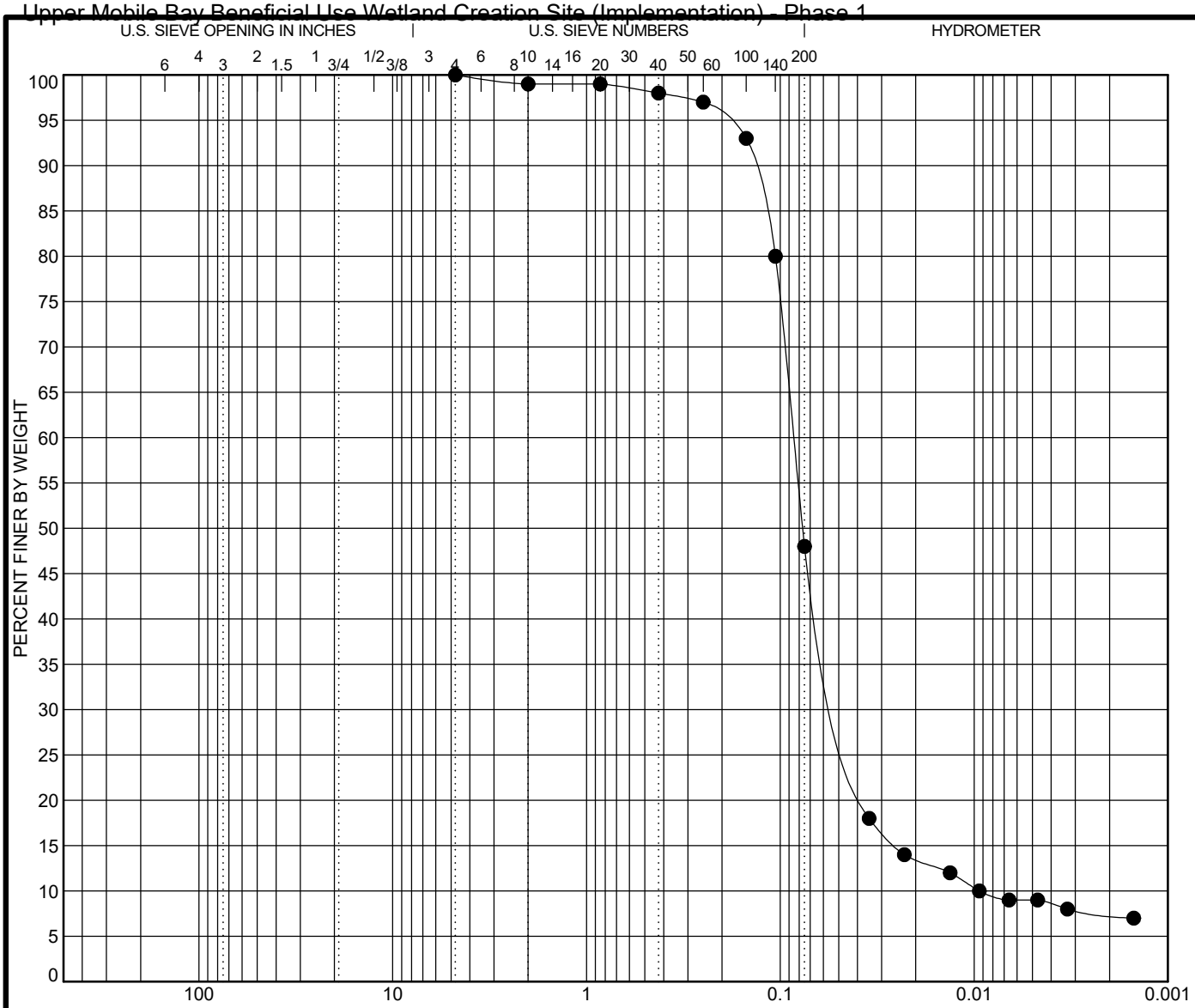
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**B-58 ;10.0 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**	**2.79**	**9.08**

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-58 10.0 ft.	**4.75**	**0.085**	**0.047**	**0.009**	**0.0**	**52.0**	**40.6**	**7.4**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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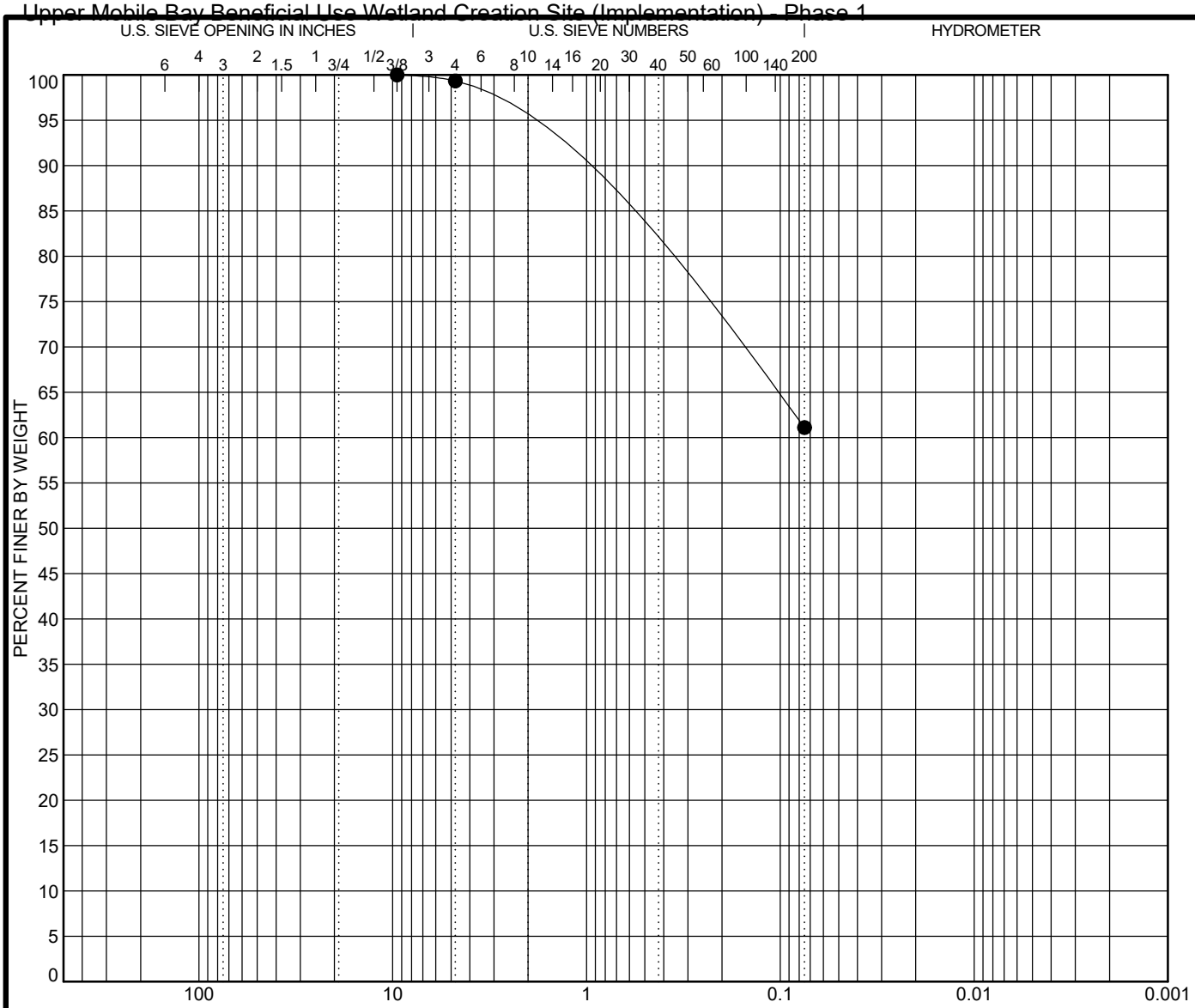
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-59**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-59	**3.0 ft.**	**9.5**				**0.7**	**38.2**	**61.1**	

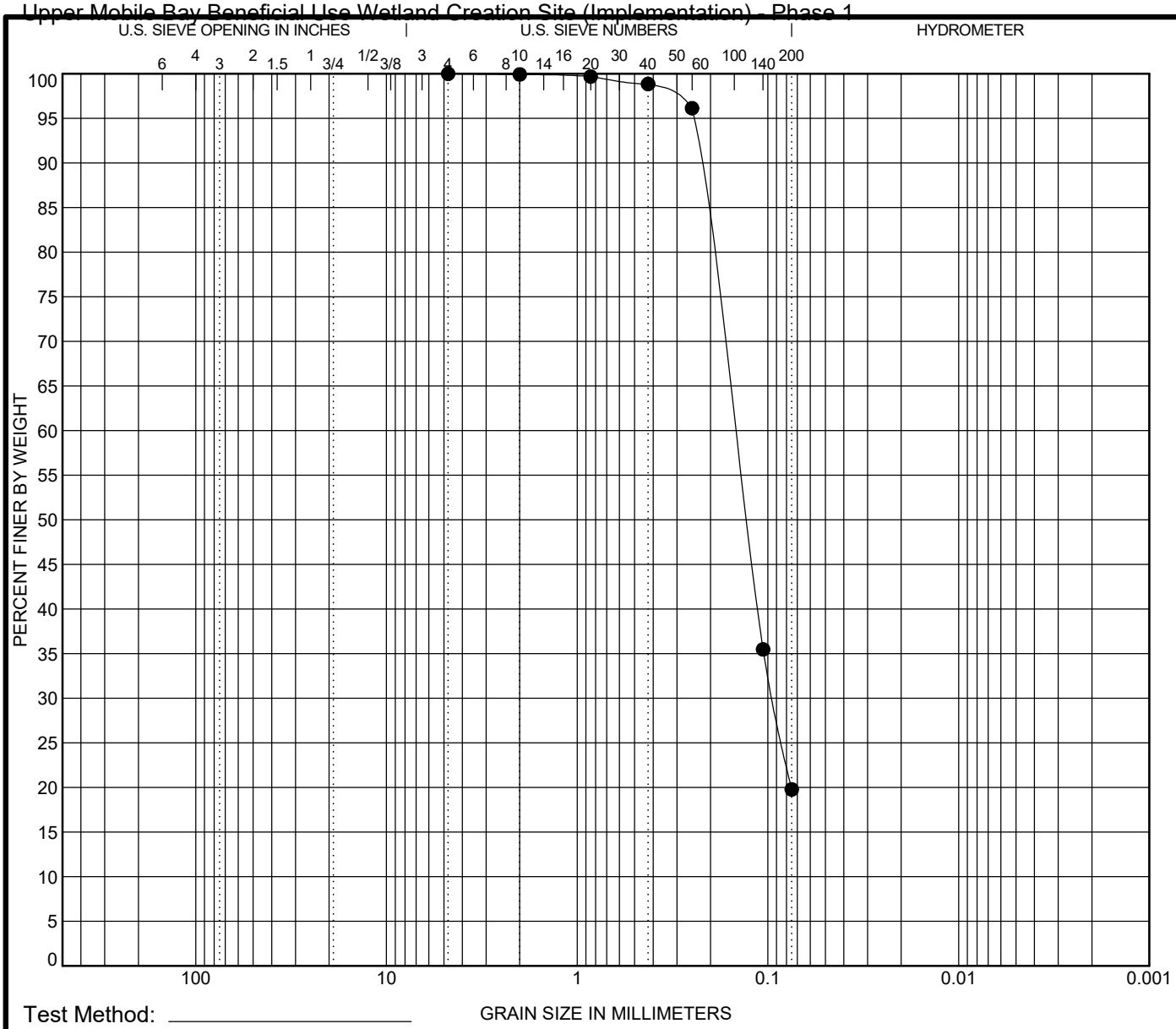
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-60**	**S-3;5.5 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-60	**5.5 ft.**	**4.75**	**0.15**	**0.094**		**0.0**	**80.2**	**19.8**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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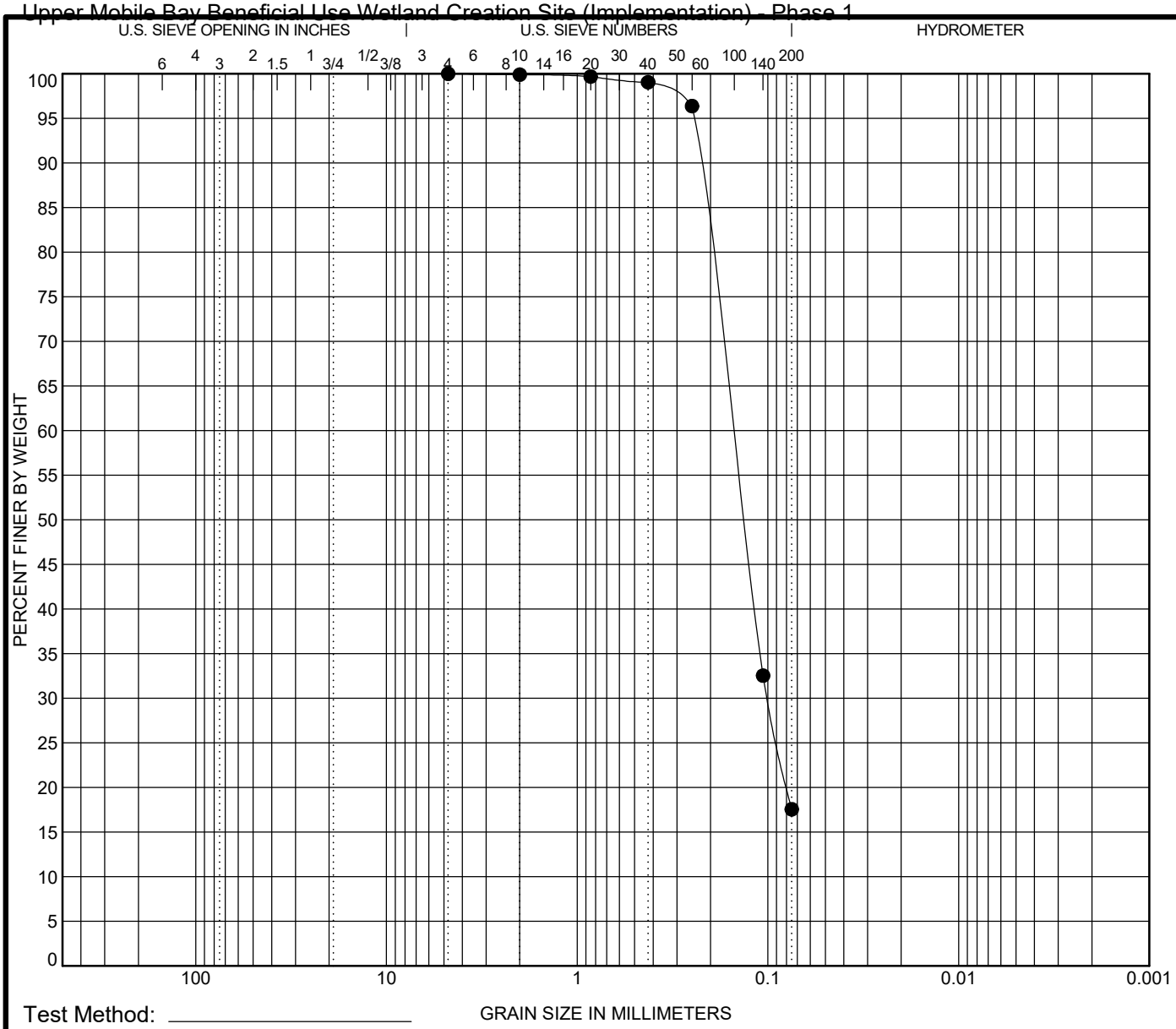
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-60**	**S-5;10.5 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-60	**10.5 ft.**	**4.75**	**0.153**	**0.1**		**0.0**	**82.5**	**17.5**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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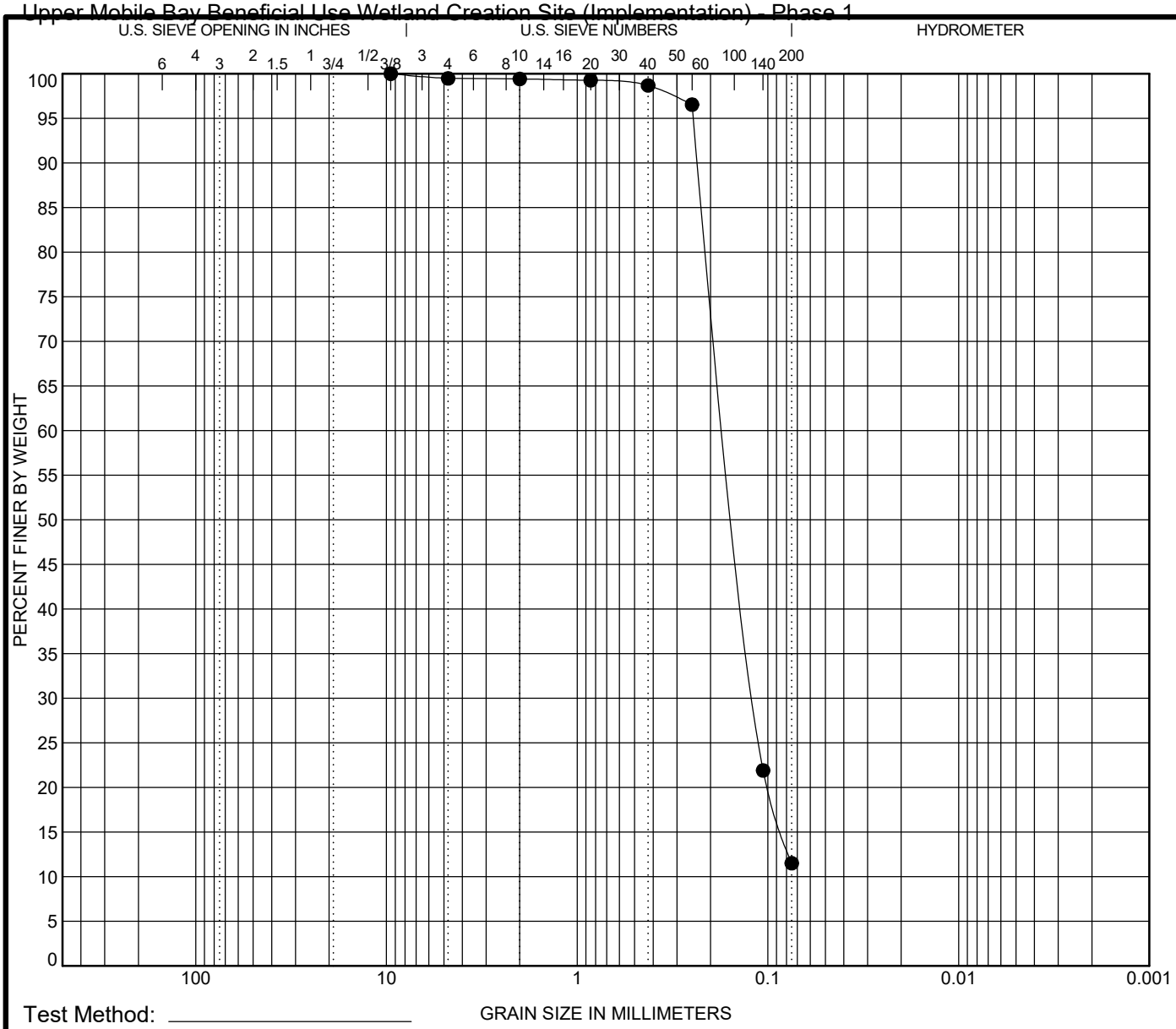
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-60**	**S-7;15.5 ft.**	**POORLY GRADED SAND with SILT (SP-SM)**	**NP**	**NP**	**NP**	**1.16**	**2.30**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-60	**15.5 ft.**	**9.5**	**0.164**	**0.116**		**0.5**	**88.0**	**11.5**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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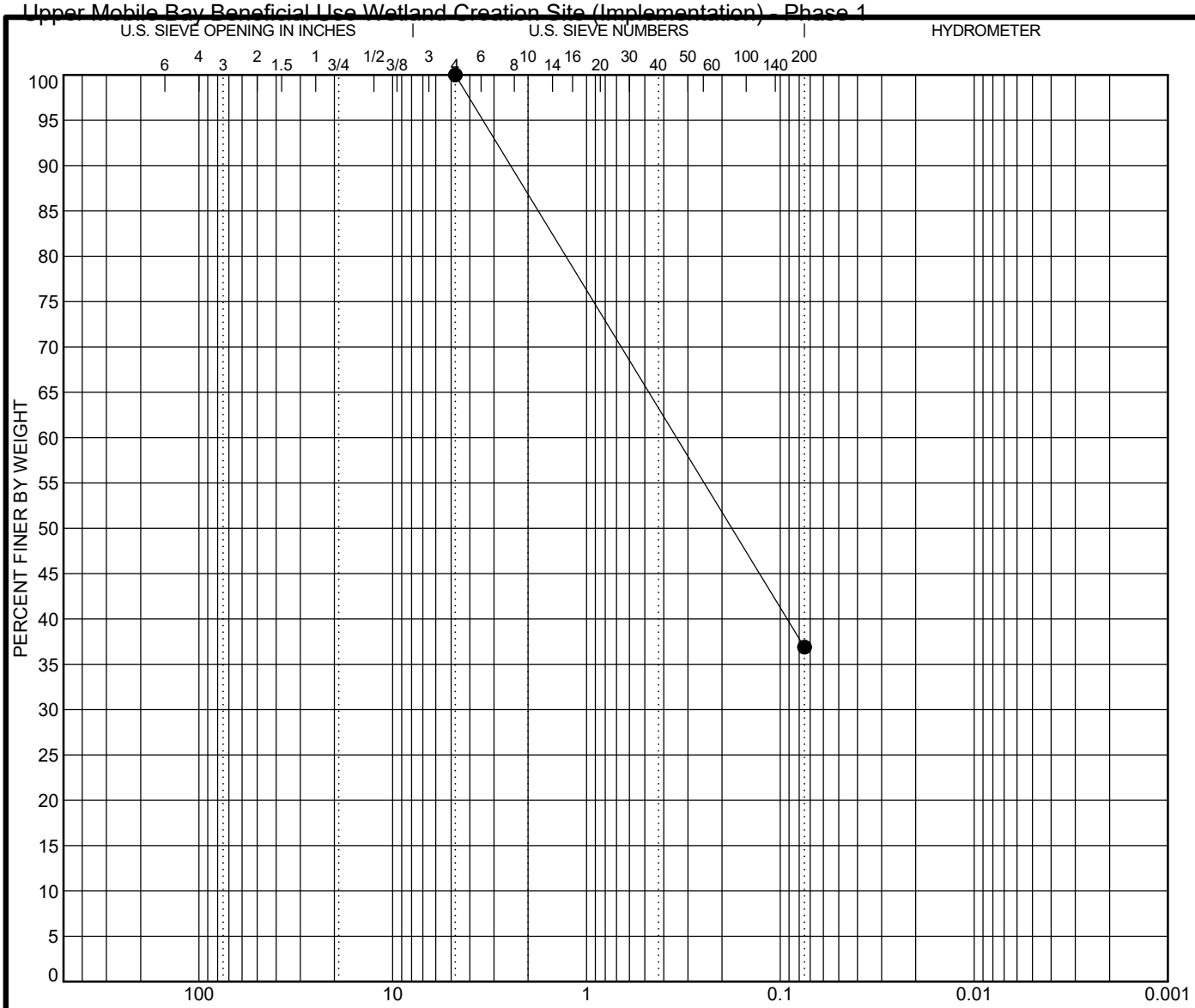
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-61**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-61	**3.0 ft.**	**4.75**	**0.343**			**0.0**	**63.1**	**36.9**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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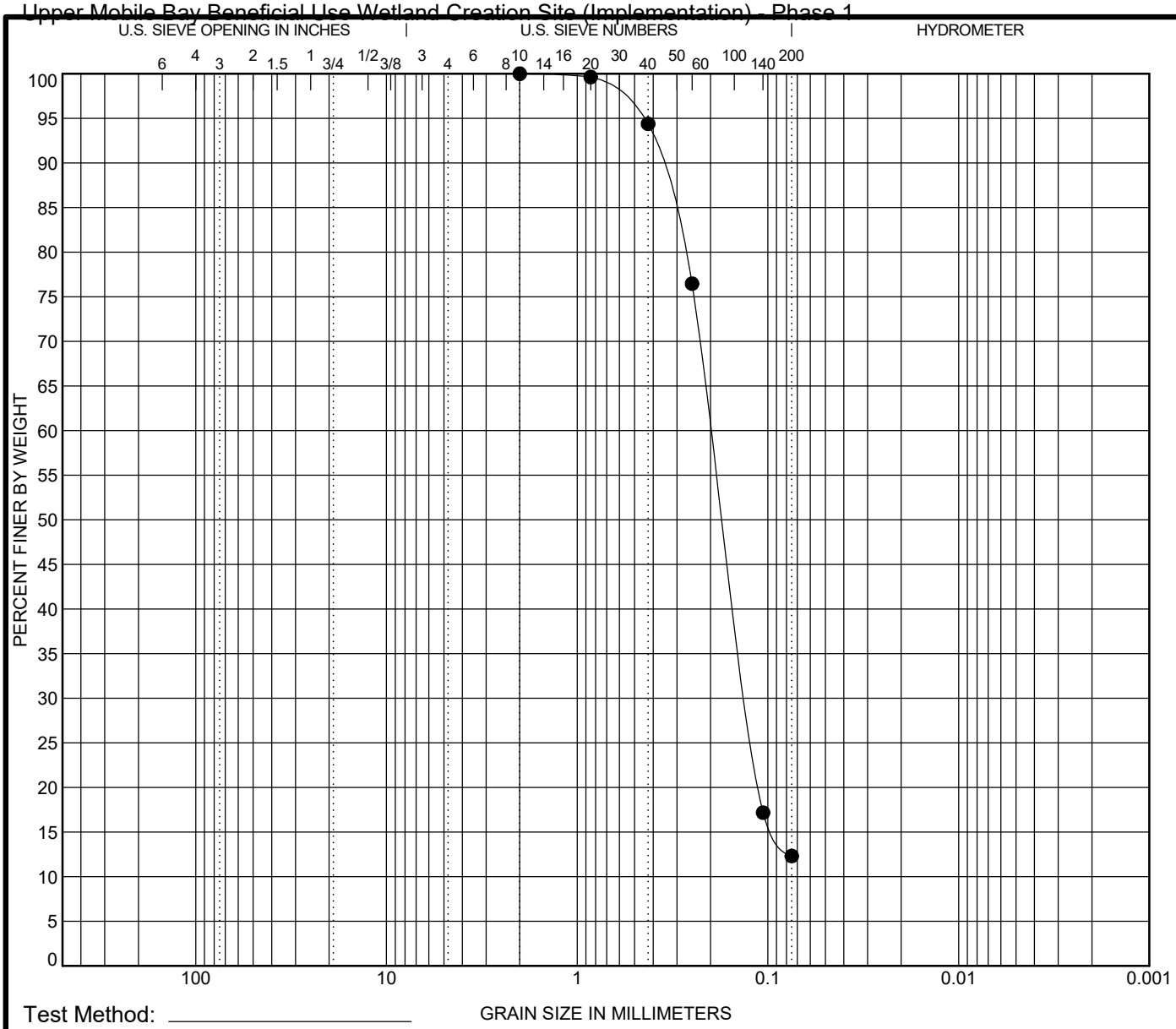
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-61**	**S-5;10.5 ft.**					**1.30**	**3.10**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-61	**10.5 ft.**	**2**	**0.197**	**0.128**		**0.0**	**87.7**	**12.3**	

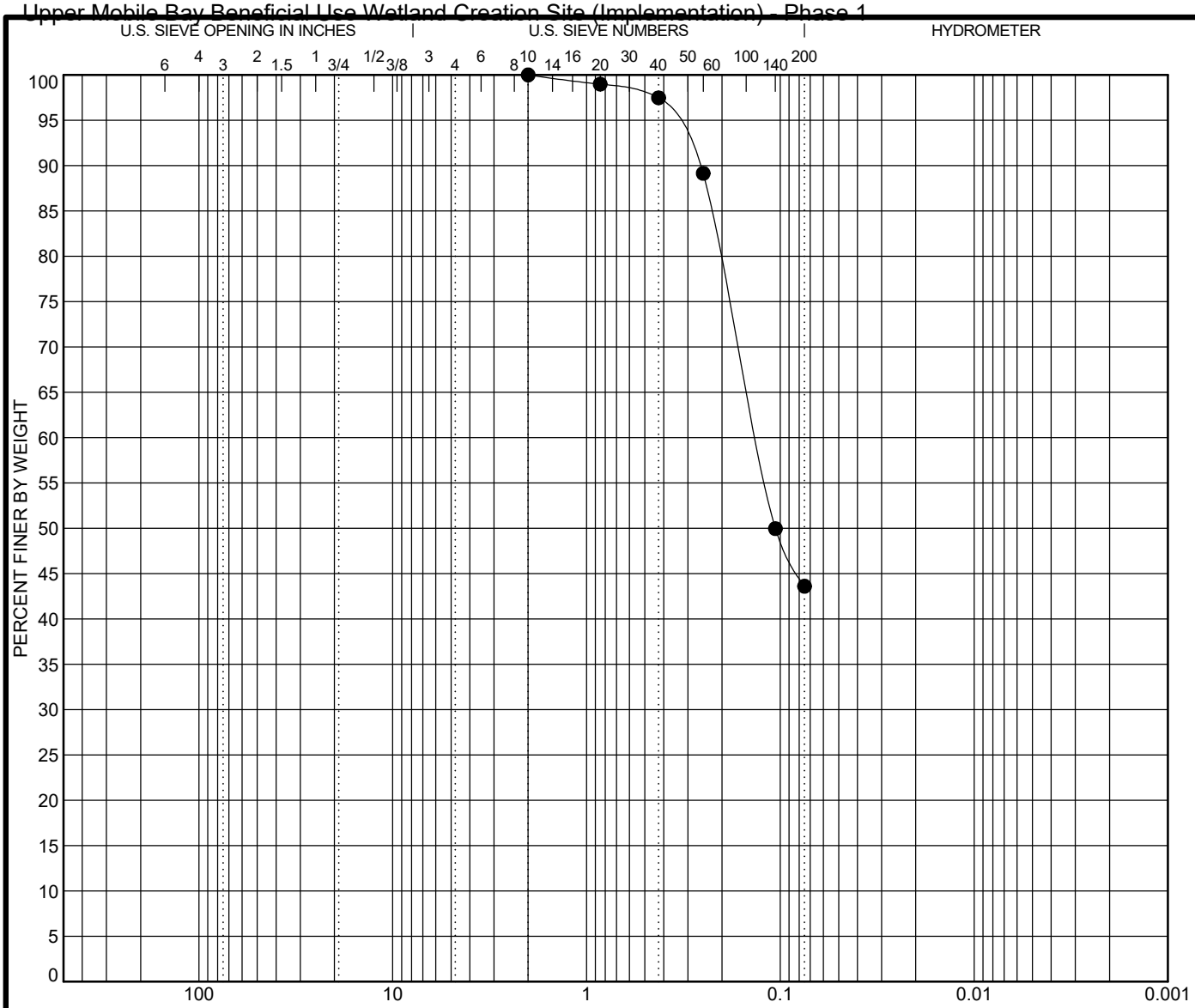
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-61**	**S-8;19.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-61	**19.0 ft.**	**2**	**0.132**			**0.0**	**56.4**	**43.6**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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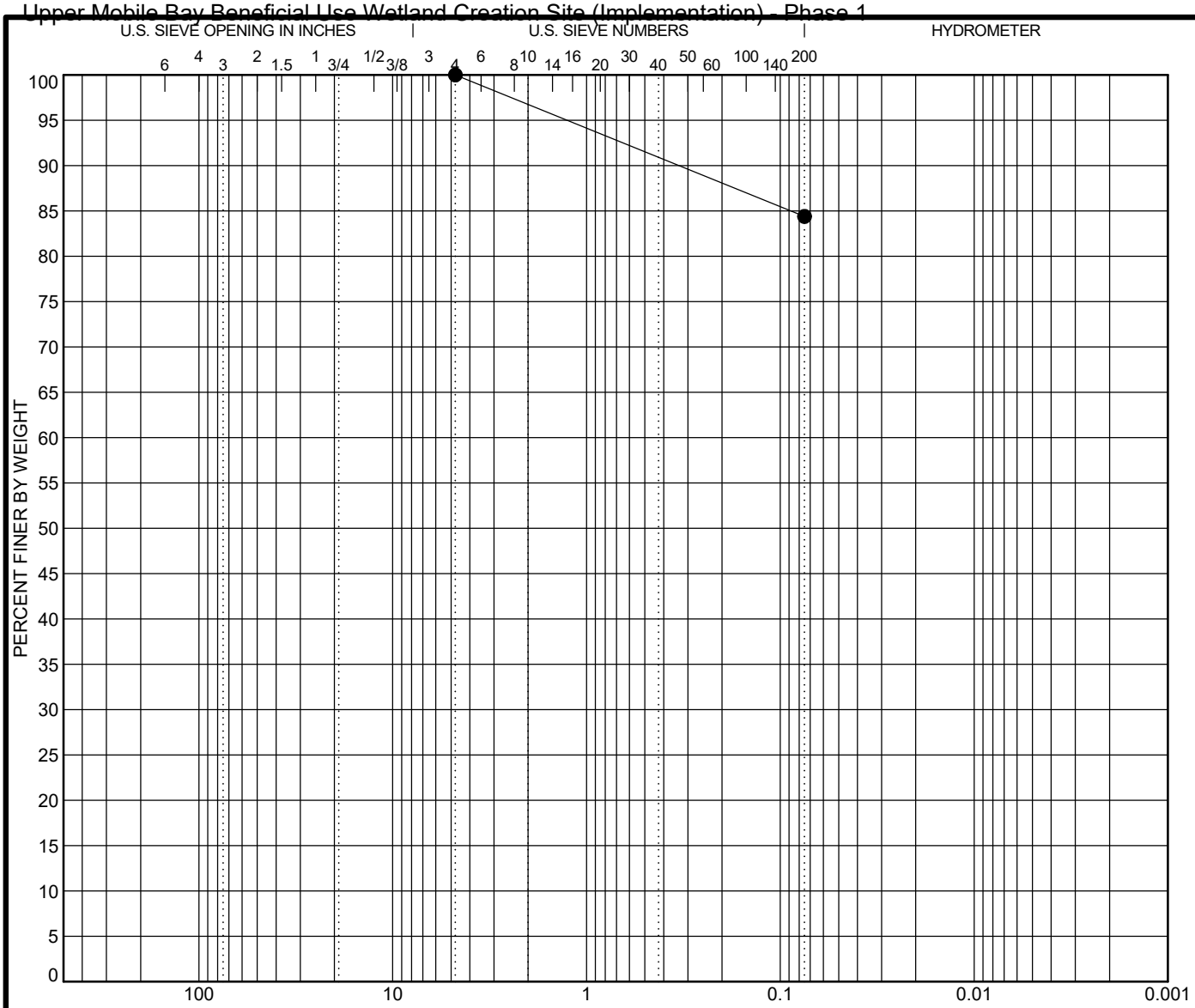
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-62**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-62	**3.0 ft.**	**4.75**				**0.0**	**15.6**	**84.4**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
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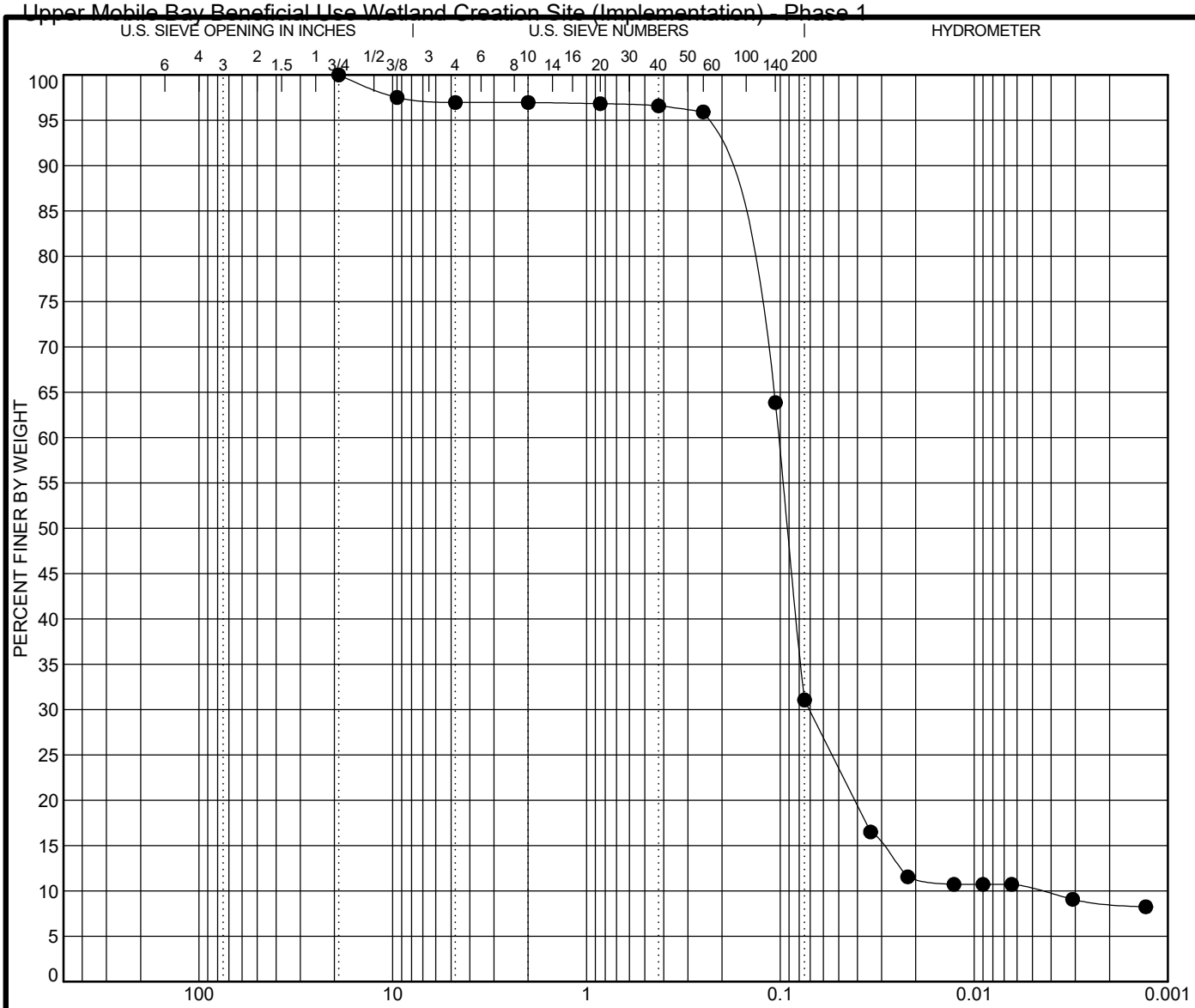
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-62**	**S-5;12.5 ft.**					**10.60**	**21.87**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-62	**12.5 ft.**	**19**	**0.102**	**0.071**	**0.005**	**3.0**	**65.9**	**22.4**	**8.7**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
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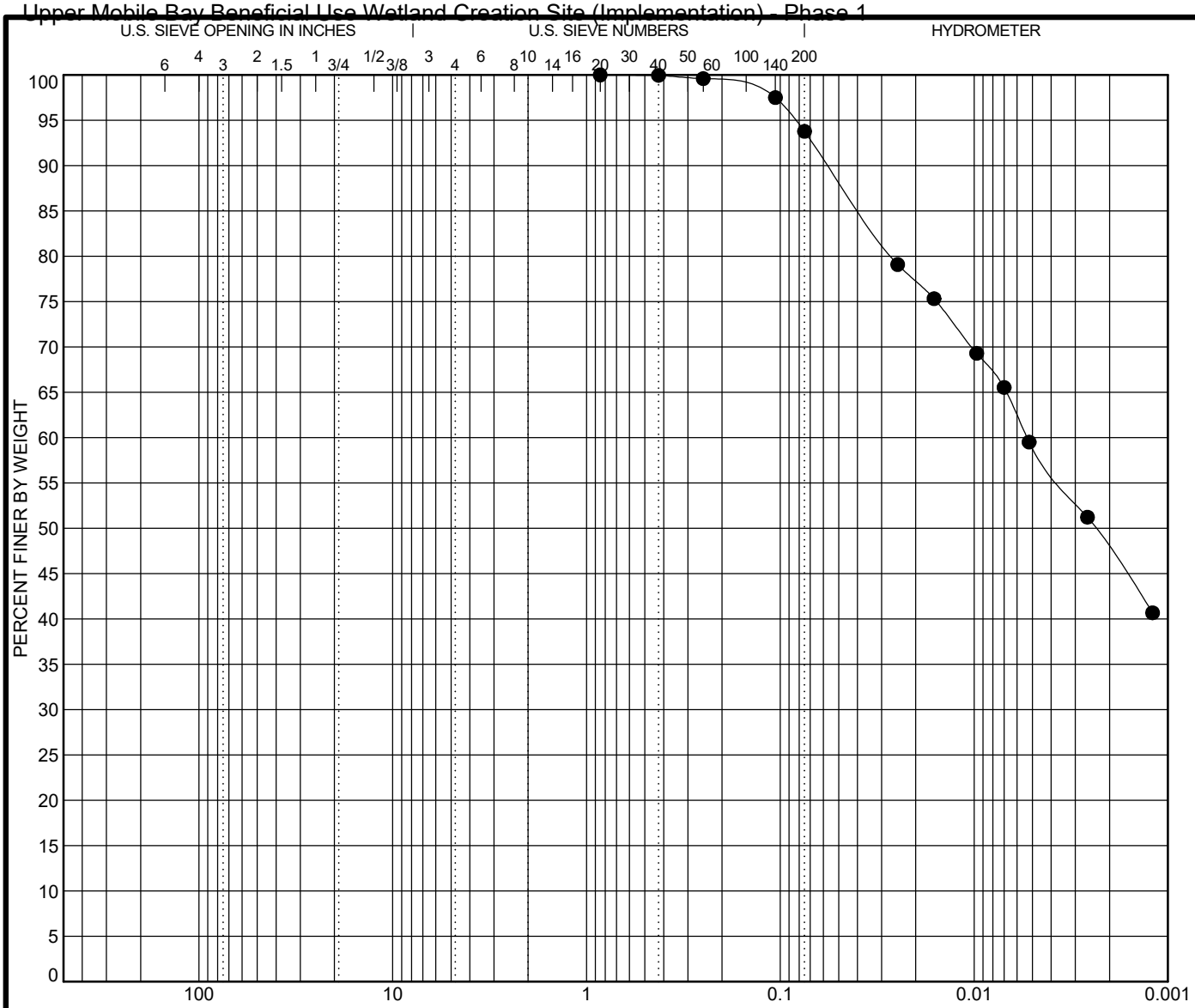
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-62**	**T-3;46.5 ft.**	**FAT CLAY (CH)**	**81**	**21**	**60**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-62	**46.5 ft.**	**0.85**	**0.005**			**0.0**	**6.2**	**46.1**	**47.6**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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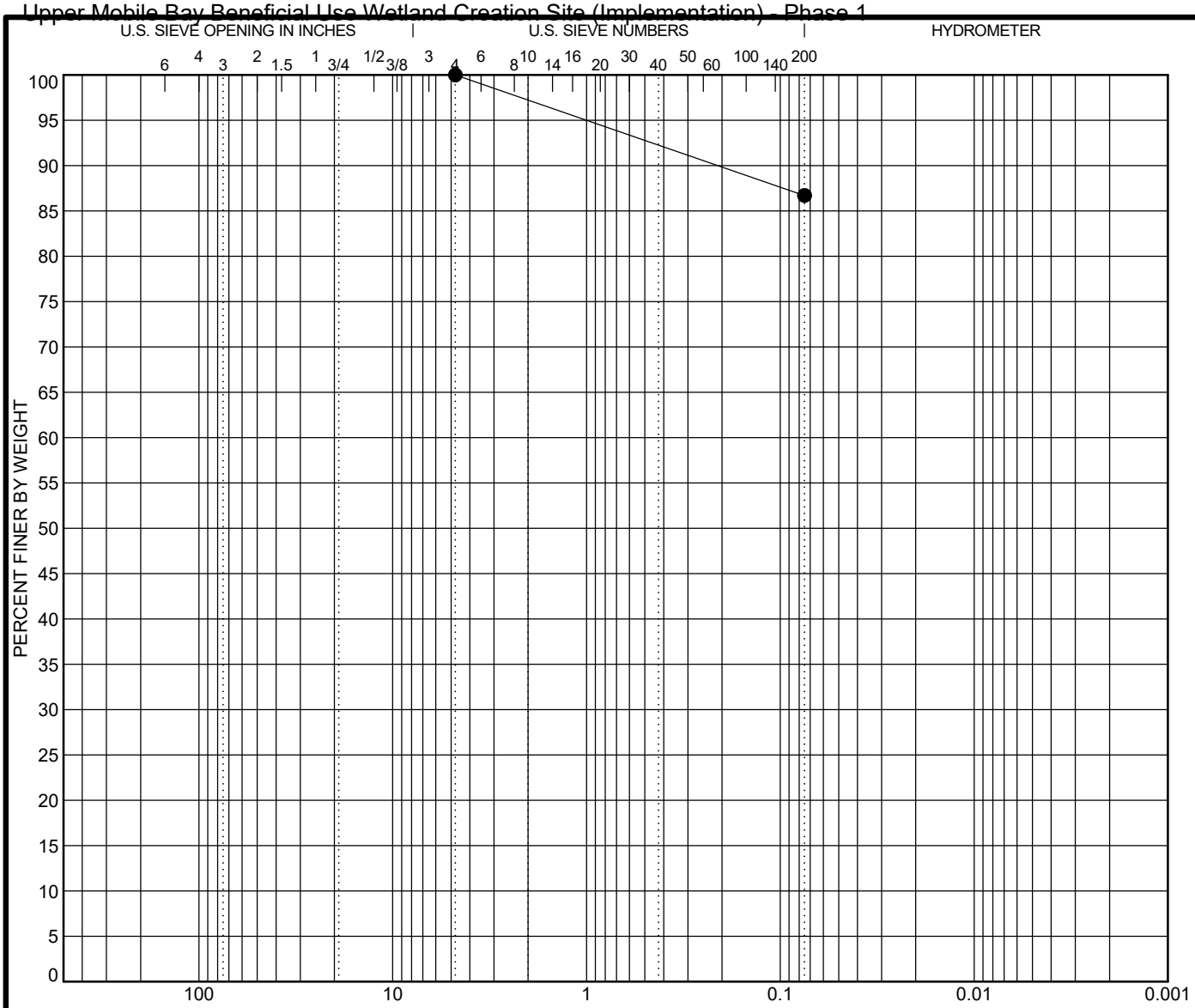
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-62**	**S-15;59.0 ft.**	**ELASTIC SILT (MH)**	**183**	**66**	**117**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-62	**59.0 ft.**	**4.75**				**0.0**	**13.3**	**86.7**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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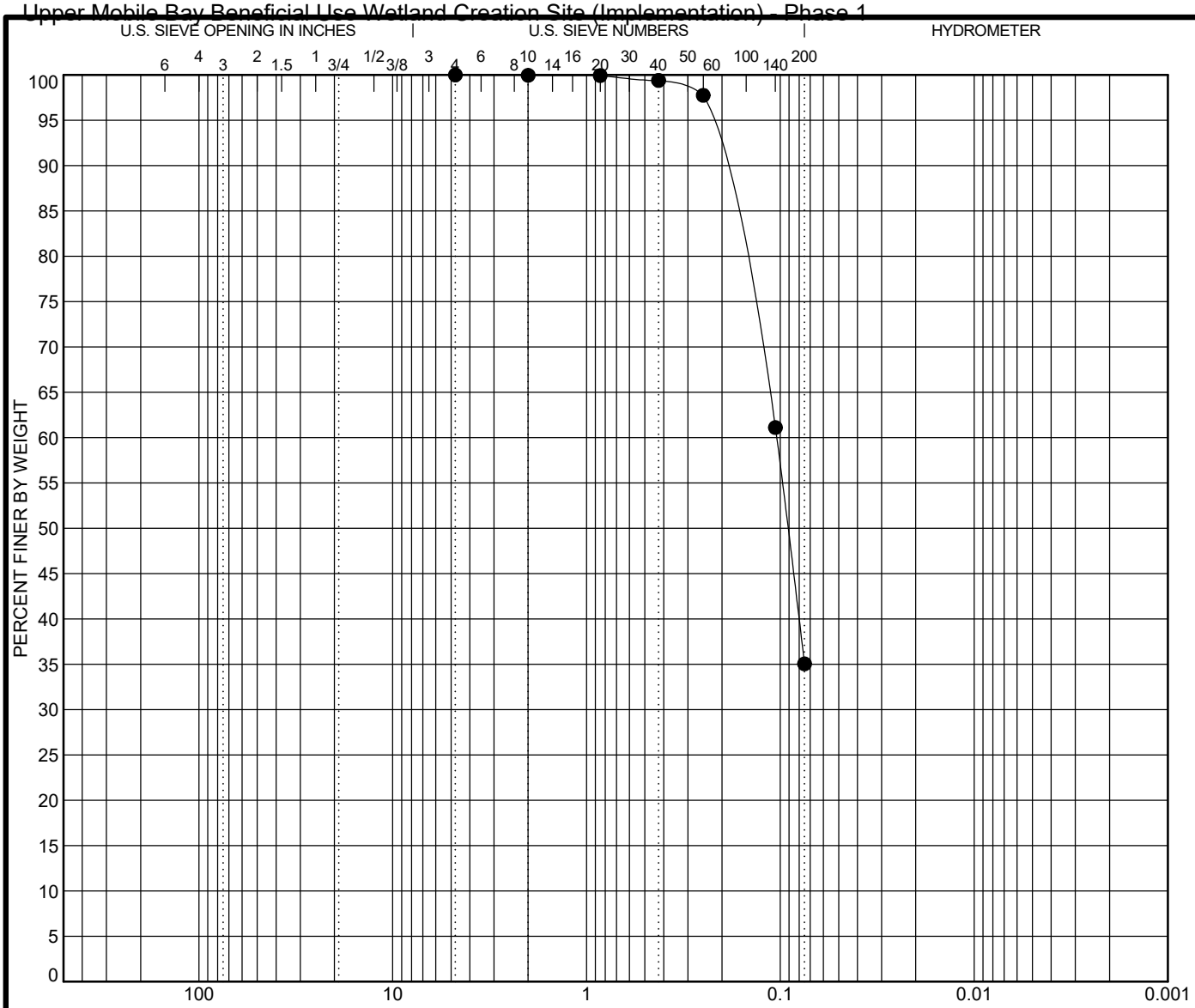

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-63**	**S-2;3.0 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-63	**3.0 ft.**	**4.75**	**0.104**			**0.0**	**65.0**	**35.0**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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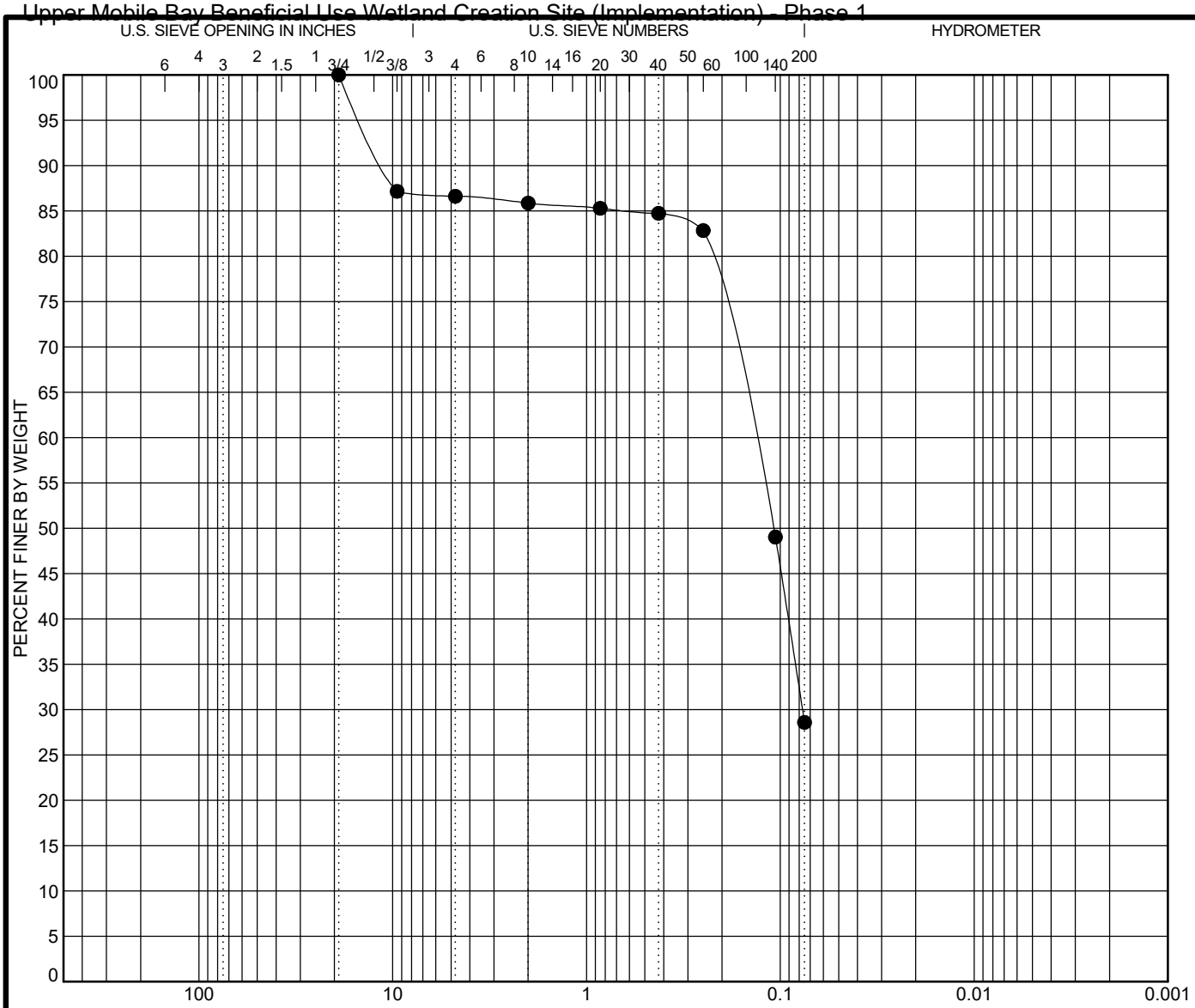

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-63**	**S-4;8.0 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-63	**8.0 ft.**	**19**	**0.14**	**0.077**		**13.4**	**58.0**	**28.6**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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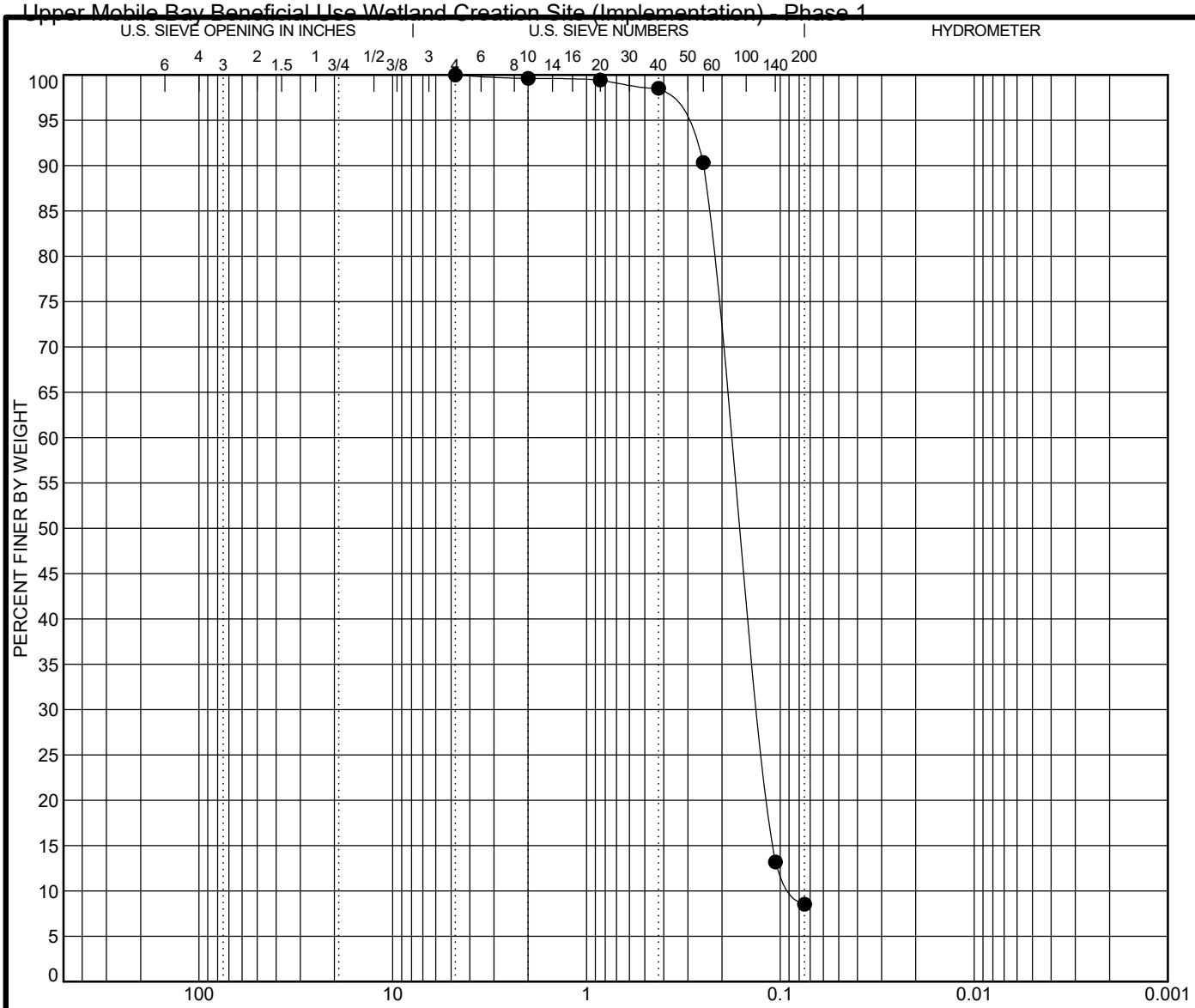
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-63**	**S-6;13.0 ft.**	**POORLY GRADED SAND with SILT (SP-SM)**	**NP**	**NP**	**NP**	**1.09**	**2.13**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-63	**13.0 ft.**	**4.75**	**0.178**	**0.128**	**0.084**	**0.0**	**91.5**	**8.5**	

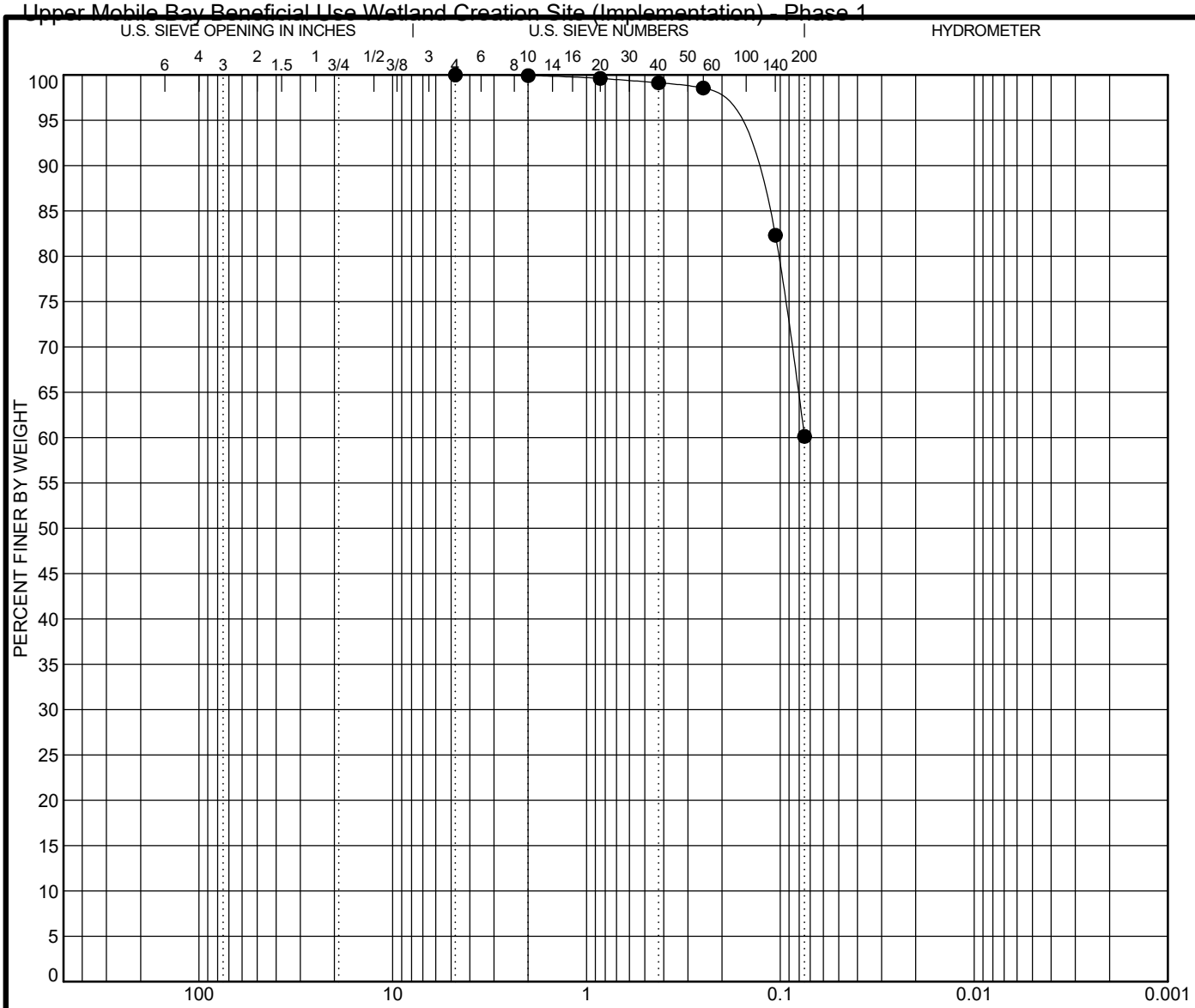
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-64**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-64	**3.0 ft.**	**4.75**				**0.0**	**39.9**	**60.1**	

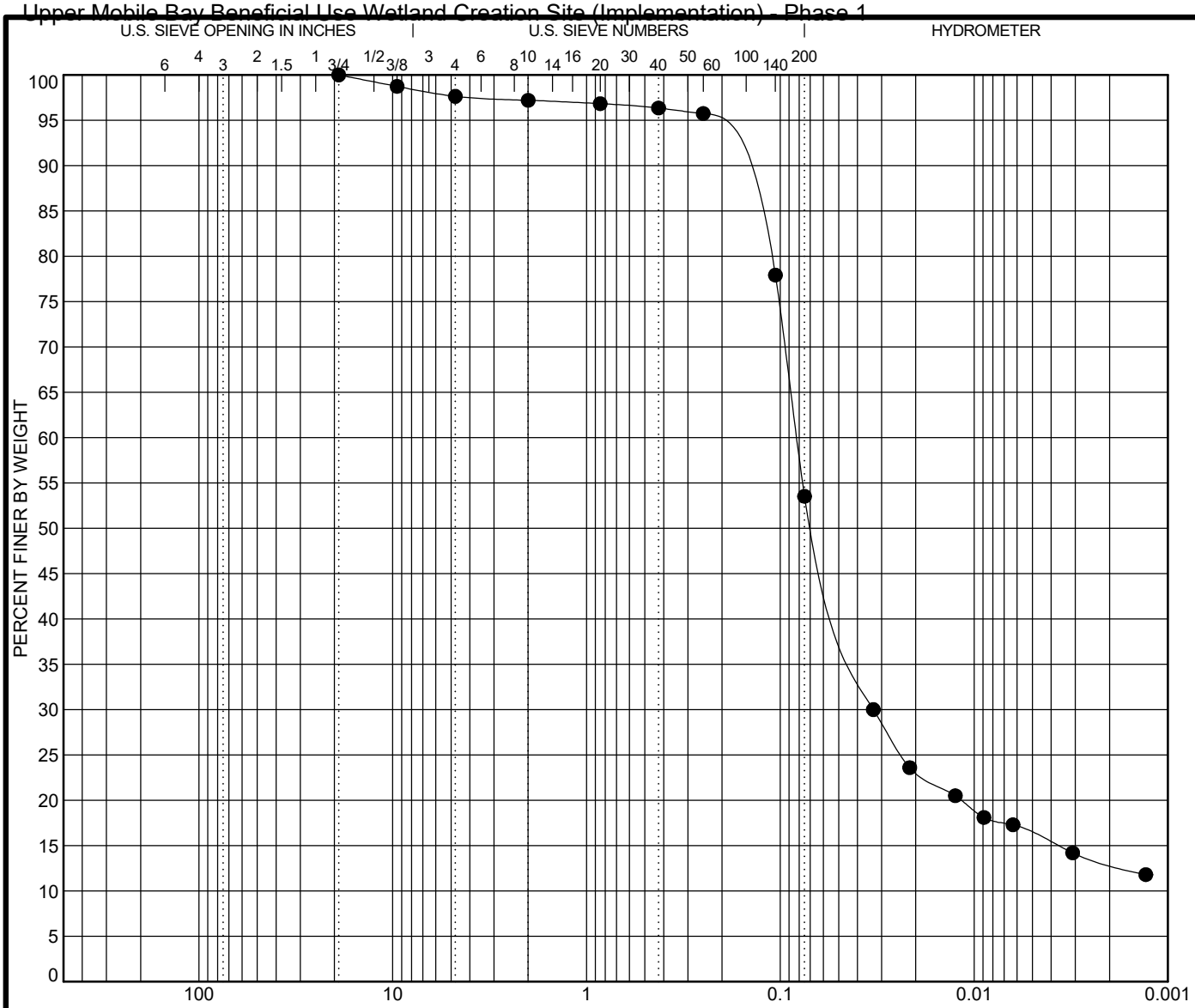
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-64**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-64	**8.0 ft.**	**19**	**0.082**	**0.033**		**2.4**	**44.1**	**40.5**	**13.0**

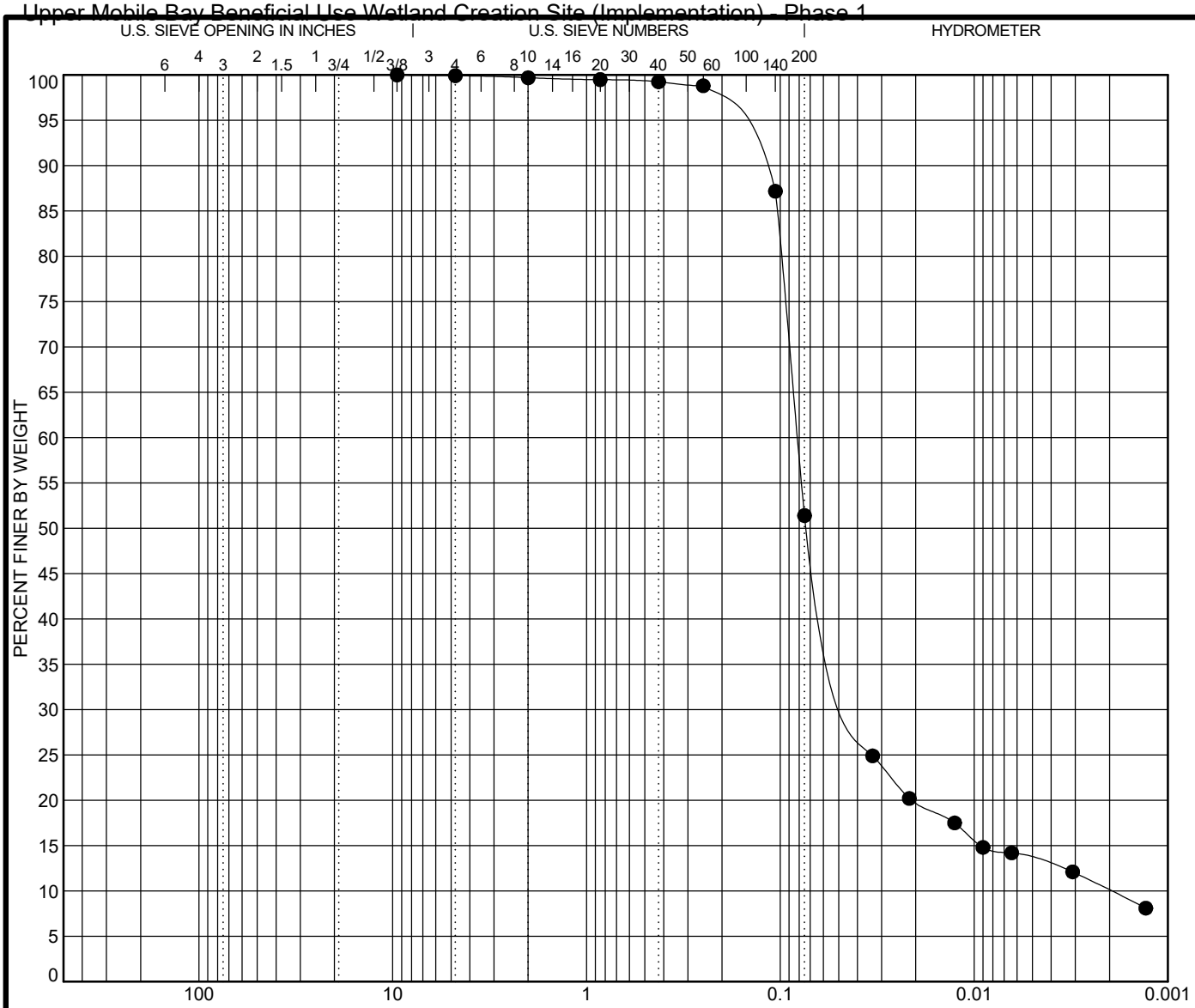
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE_21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-64**	**S-7;15.5 ft.**					**9.51**	**41.49**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-64	**15.5 ft.**	**9.5**	**0.082**	**0.039**	**0.002**	**0.1**	**48.5**	**41.3**	**10.1**

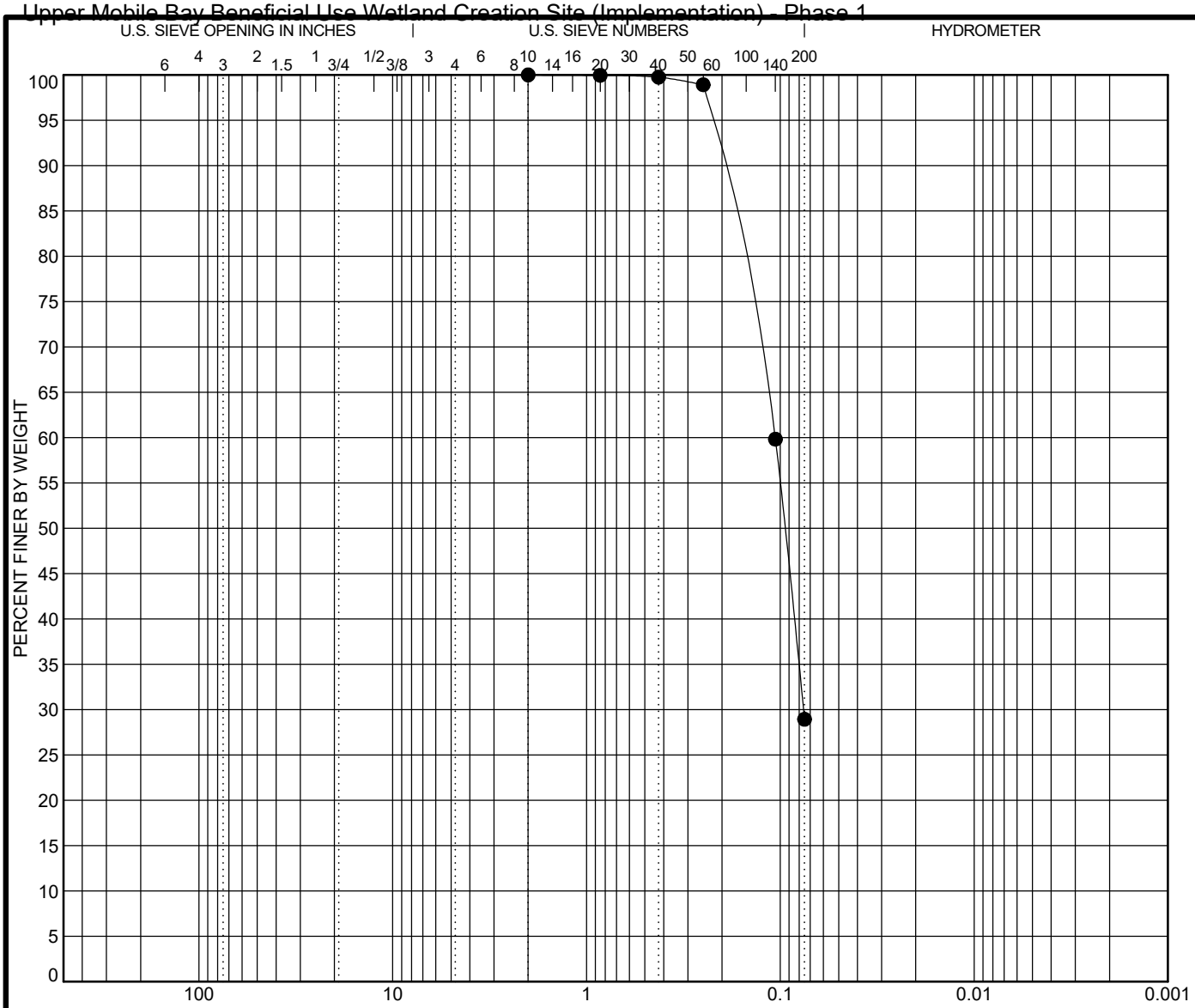
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-65**	**S-1;0.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-65	**0.5 ft.**	**2**	**0.106**	**0.076**		**0.0**	**71.1**	**28.9**	

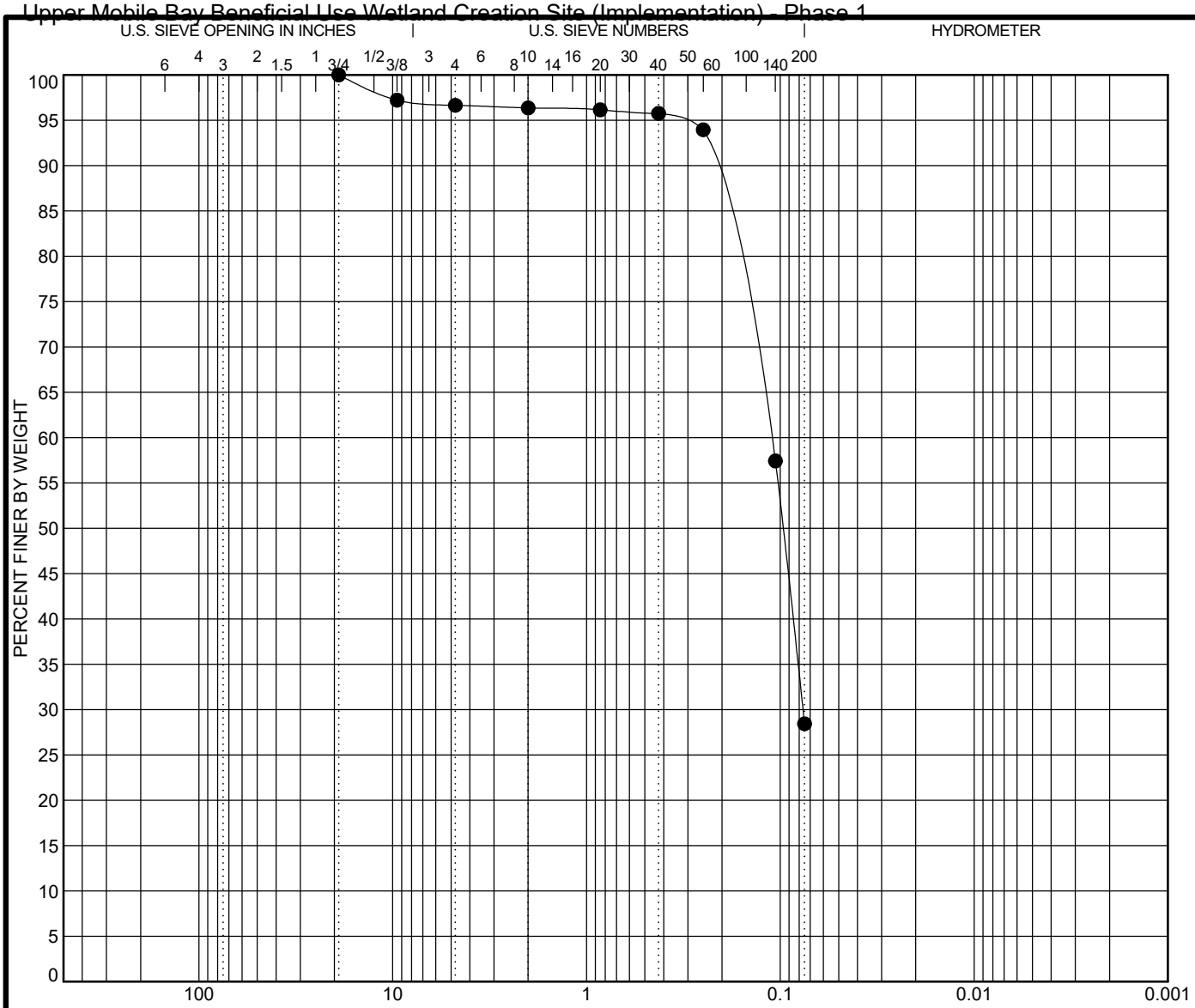
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-65**	**S-3;5.5 ft.**	**SILTY SAND (SM)**	**25**	**23**	**2**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-65	**5.5 ft.**	**19**	**0.113**	**0.076**		**3.3**	**68.2**	**28.4**	

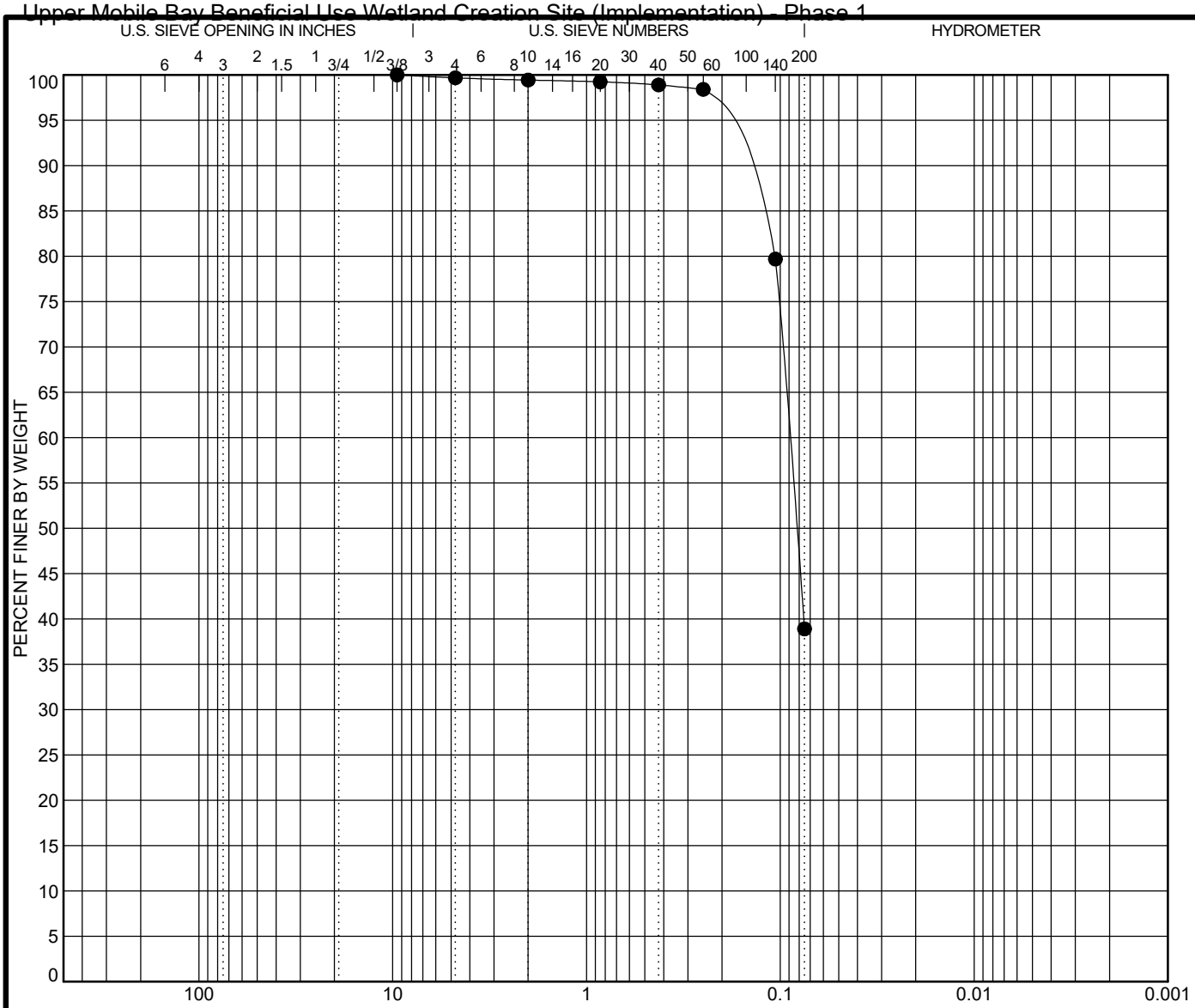
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-65**	**S-5;10.5 ft.**	**SILTY SAND (SM)**	**29**	**24**	**5**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-65	**10.5 ft.**	**9.5**	**0.09**			**0.3**	**60.8**	**38.9**	

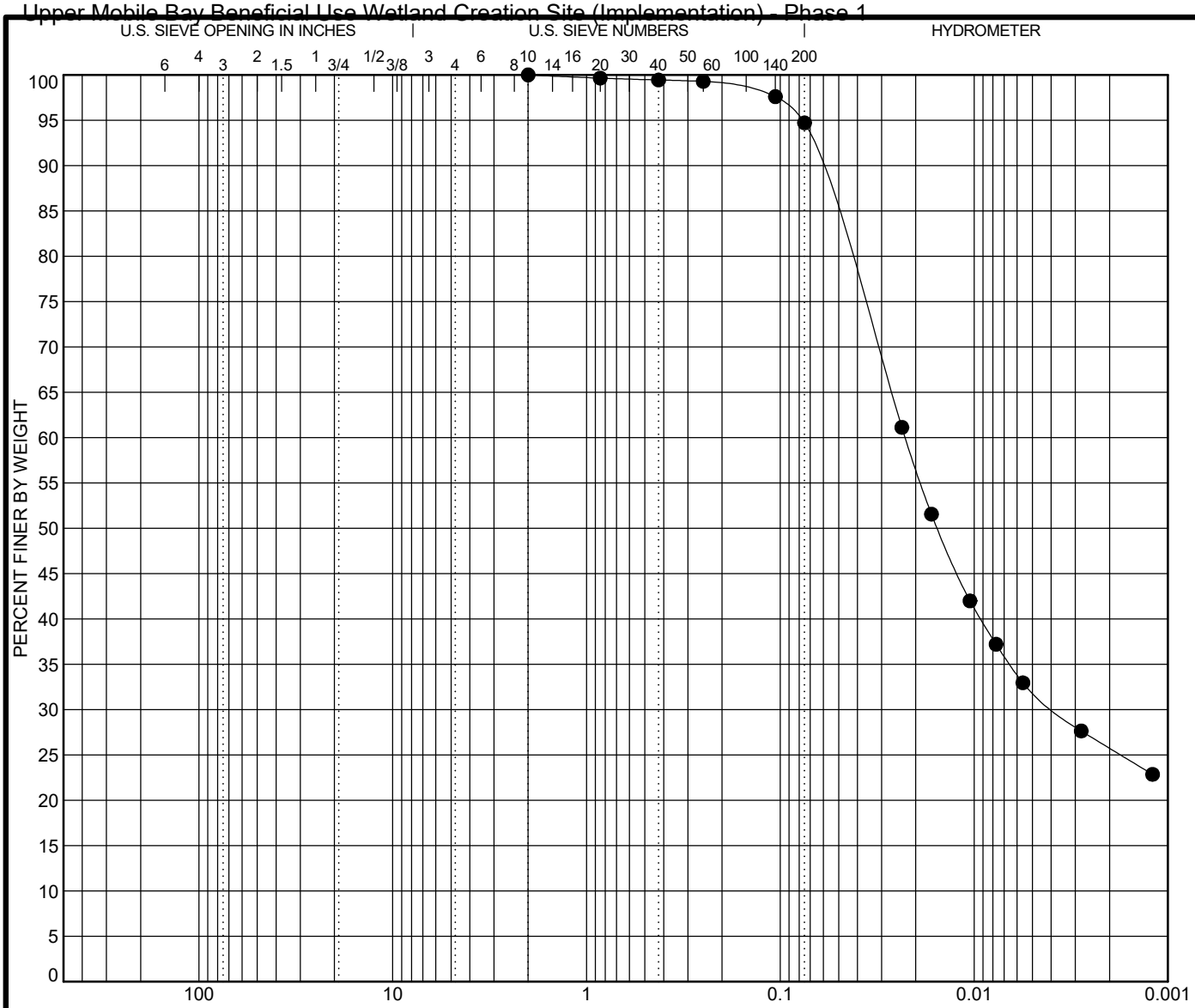
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-65**	**T-1;15.0 ft.**	**ELASTIC SILT (MH)**	**53**	**30**	**23**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-65	**15.0 ft.**	**2**	**0.023**	**0.004**		**0.0**	**5.3**	**69.0**	**25.7**

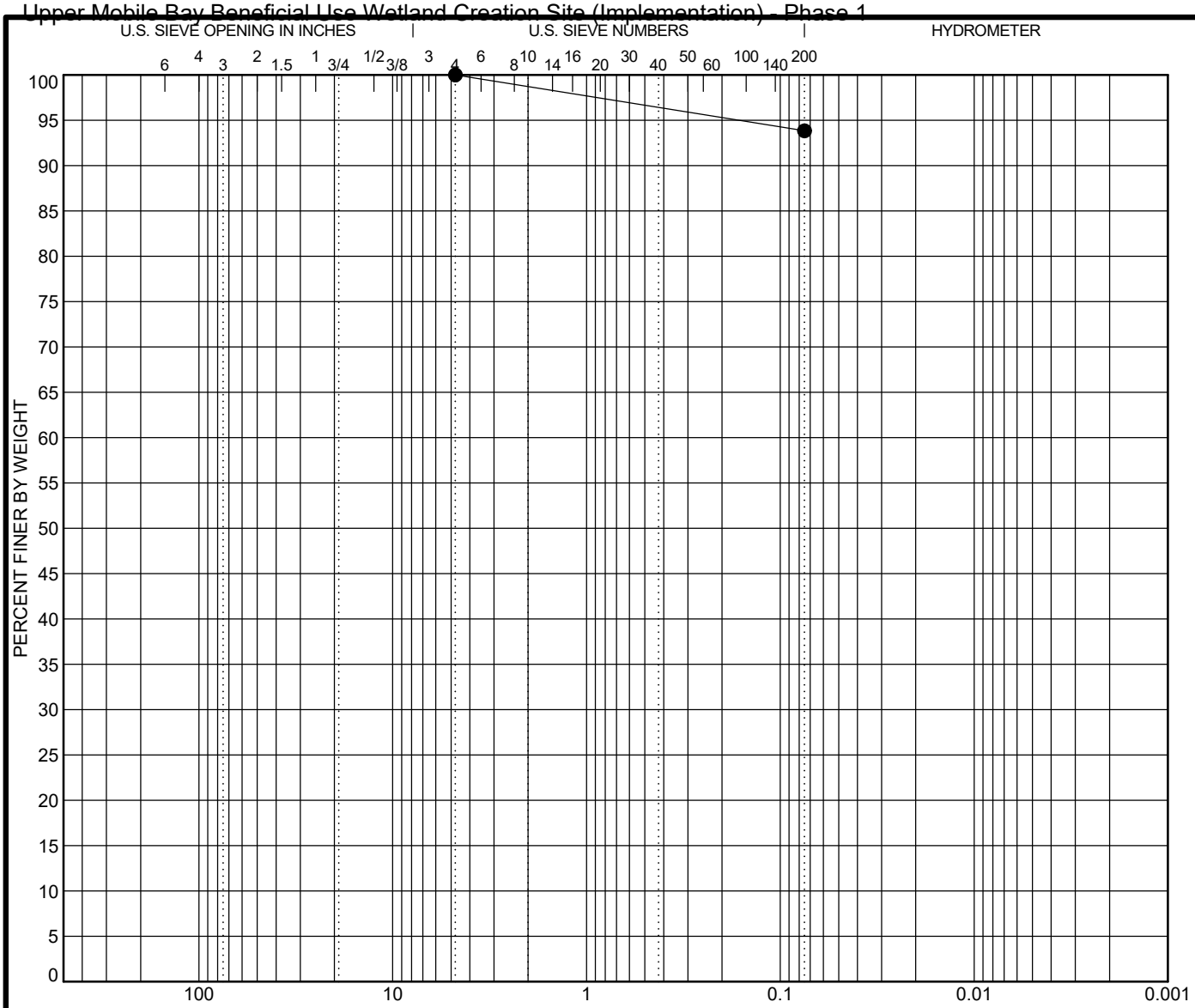
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-65**	**S-7;17.5 ft.**	**FAT CLAY (CH)**	**61**	**22**	**39**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-65	**17.5 ft.**	**4.75**				**0.0**	**6.2**	**93.8**	

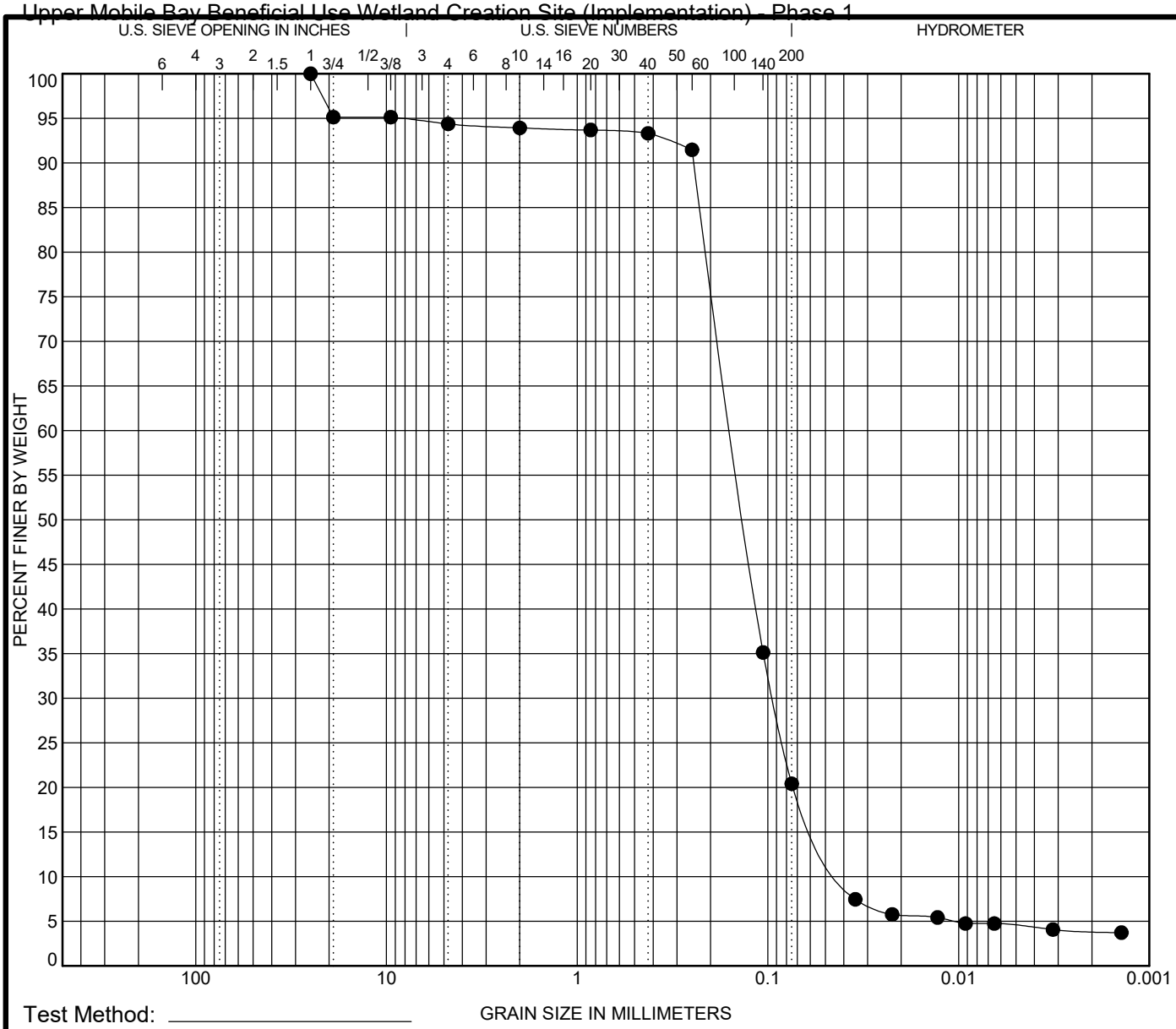
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-66**	**S-3;5.5 ft.**					**1.41**	**3.83**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-66	**5.5 ft.**	**25**	**0.155**	**0.094**	**0.04**	**5.6**	**74.0**	**16.5**	**3.9**

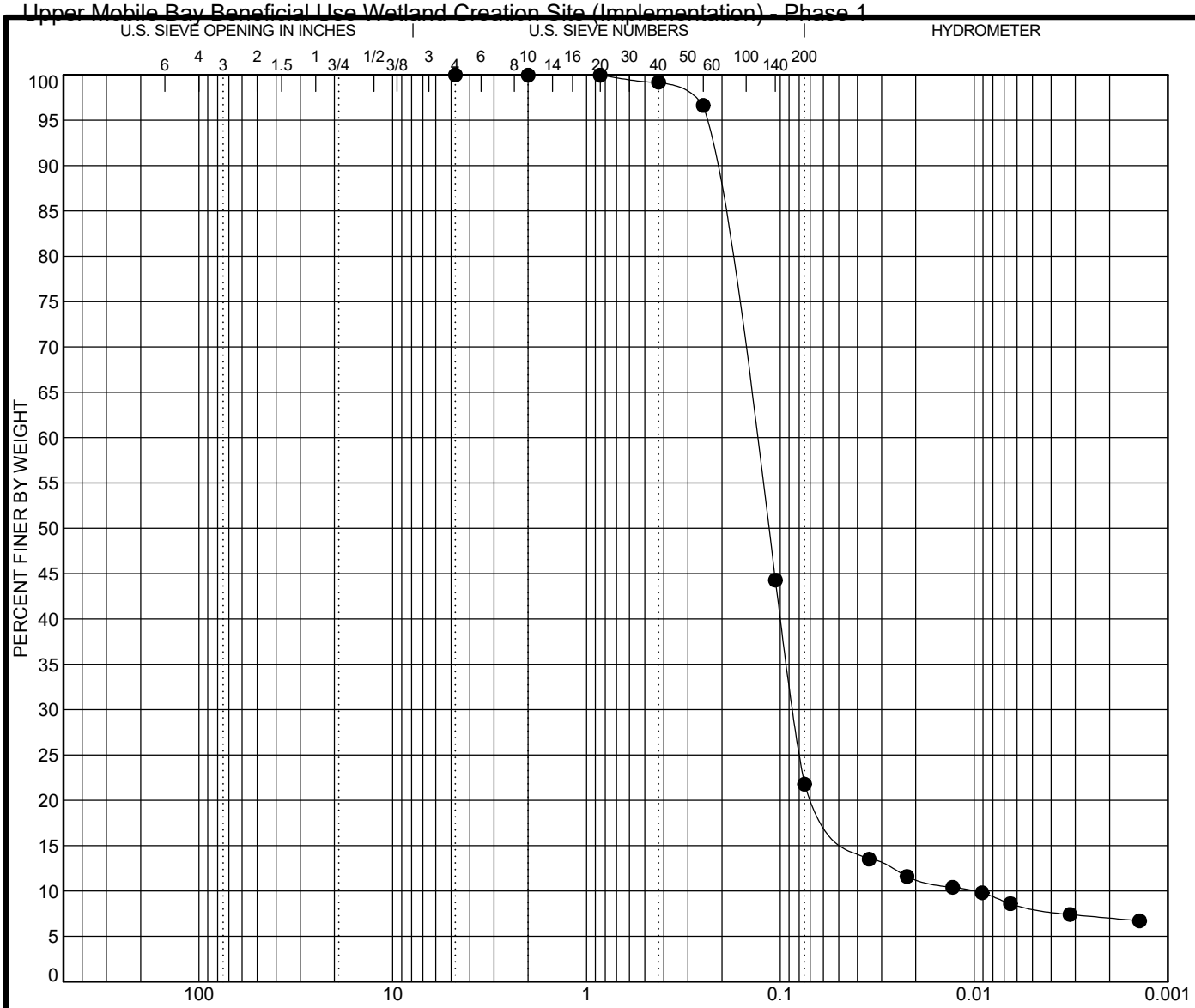
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-66**	**S-6;13.0 ft.**					**5.17**	**13.42**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-66	**13.0 ft.**	**4.75**	**0.137**	**0.085**	**0.01**	**0.0**	**78.2**	**14.8**	**7.0**

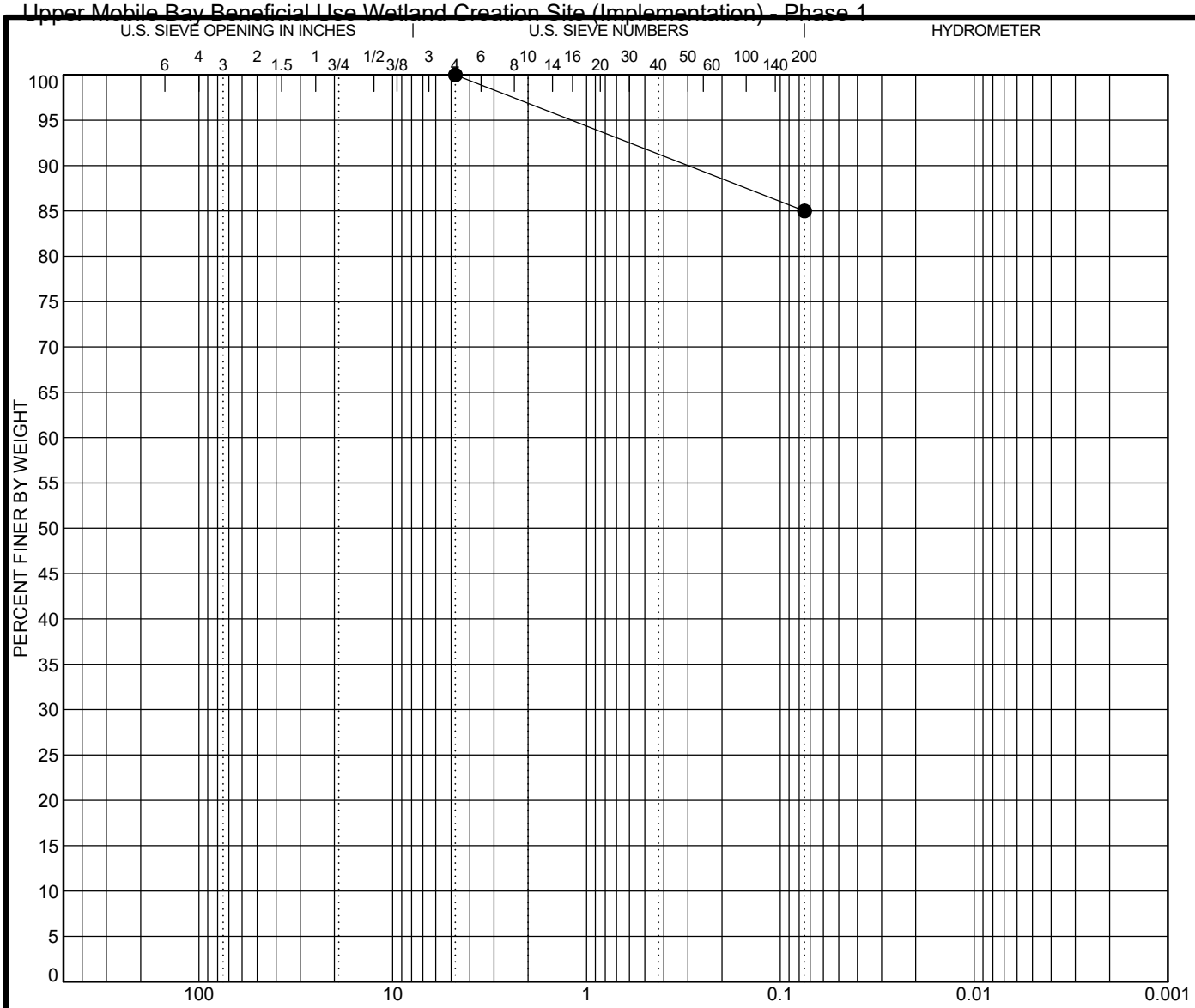
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-66**	**T-1;16.5 ft.**	**LEAN CLAY with SAND (CL)**	**37**	**20**	**17**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-66	**16.5 ft.**	**4.75**				**0.0**	**15.0**	**85.0**	

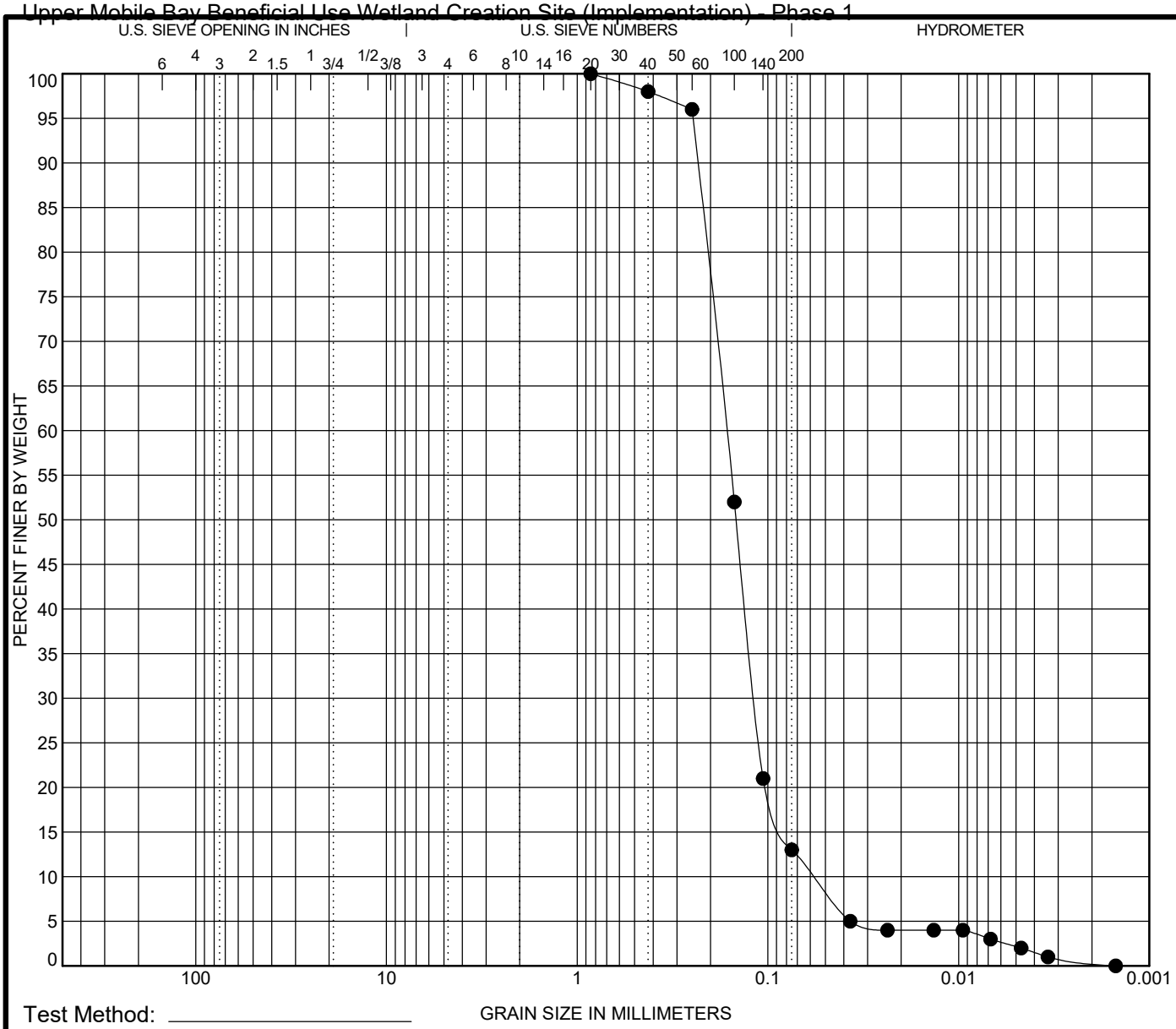
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-67**	**T-1;7.5 ft.**	**SILTY SAND (SM)**	**NP**	**NP**	**NP**	**1.45**	**2.86**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-67	**7.5 ft.**	**0.85**	**0.165**	**0.117**	**0.058**	**0.0**	**87.0**	**12.6**	**0.4**

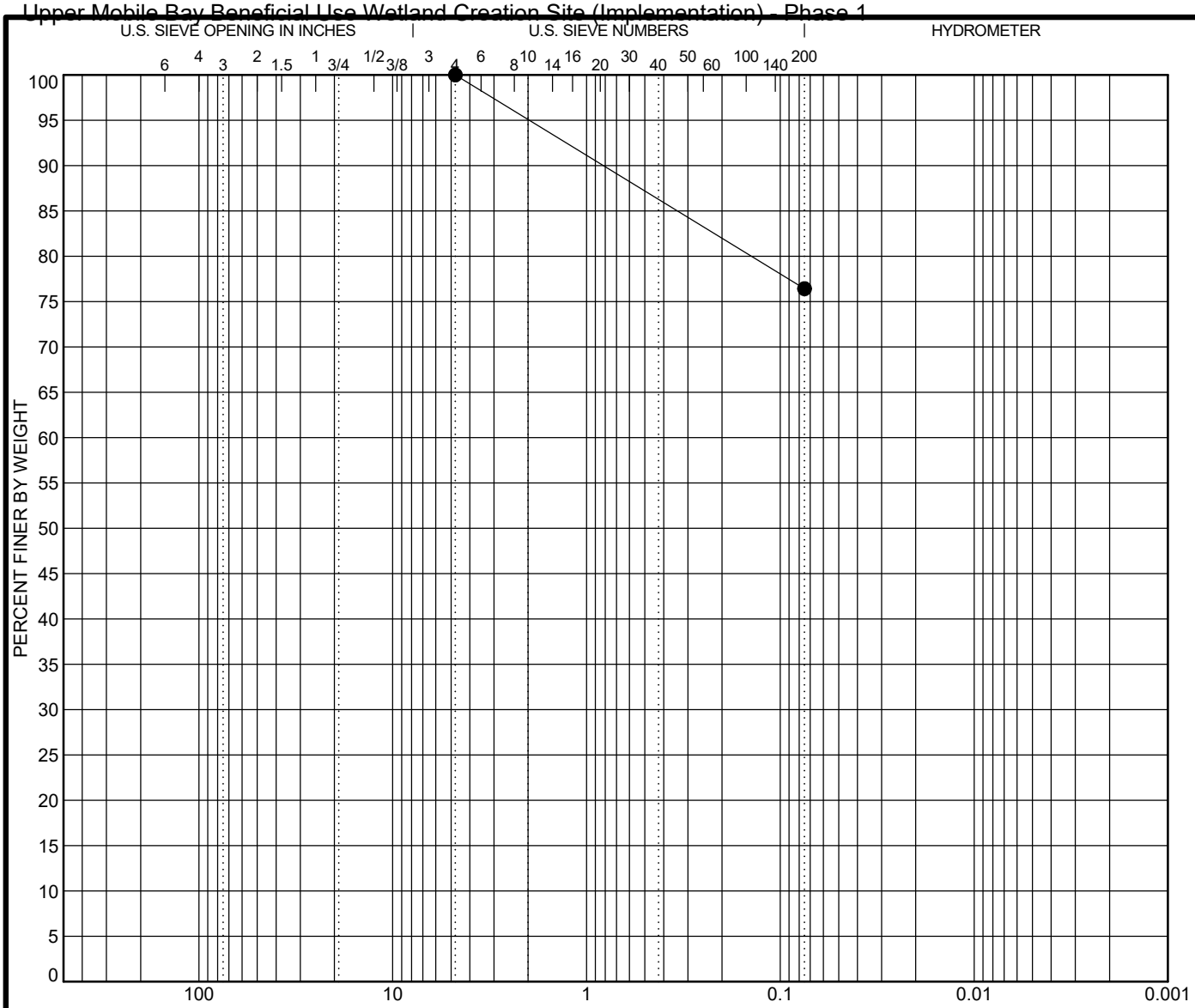
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-67**	**S-14;54.0 ft.**	**FAT CLAY with SAND (CH)**	**79**	**15**	**64**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-67	**54.0 ft.**	**4.75**				**0.0**	**23.6**	**76.4**	

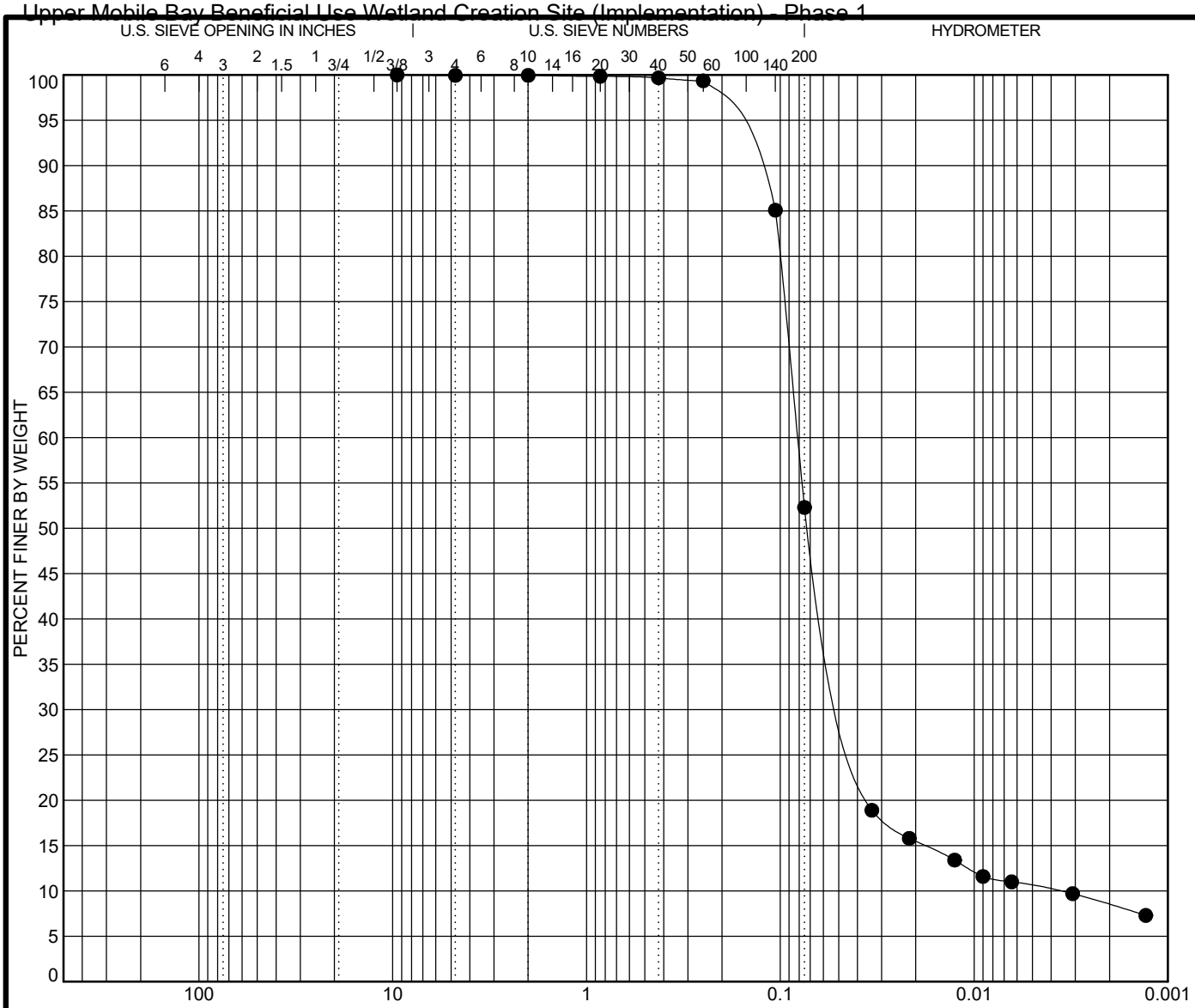
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-68**	**T-1;7.5 ft.**	**SANDY SILT (ML)**	**27**	**26**	**1**	**6.48**	**22.20**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-68	**7.5 ft.**	**9.5**	**0.081**	**0.044**	**0.004**	**0.1**	**47.7**	**43.8**	**8.5**

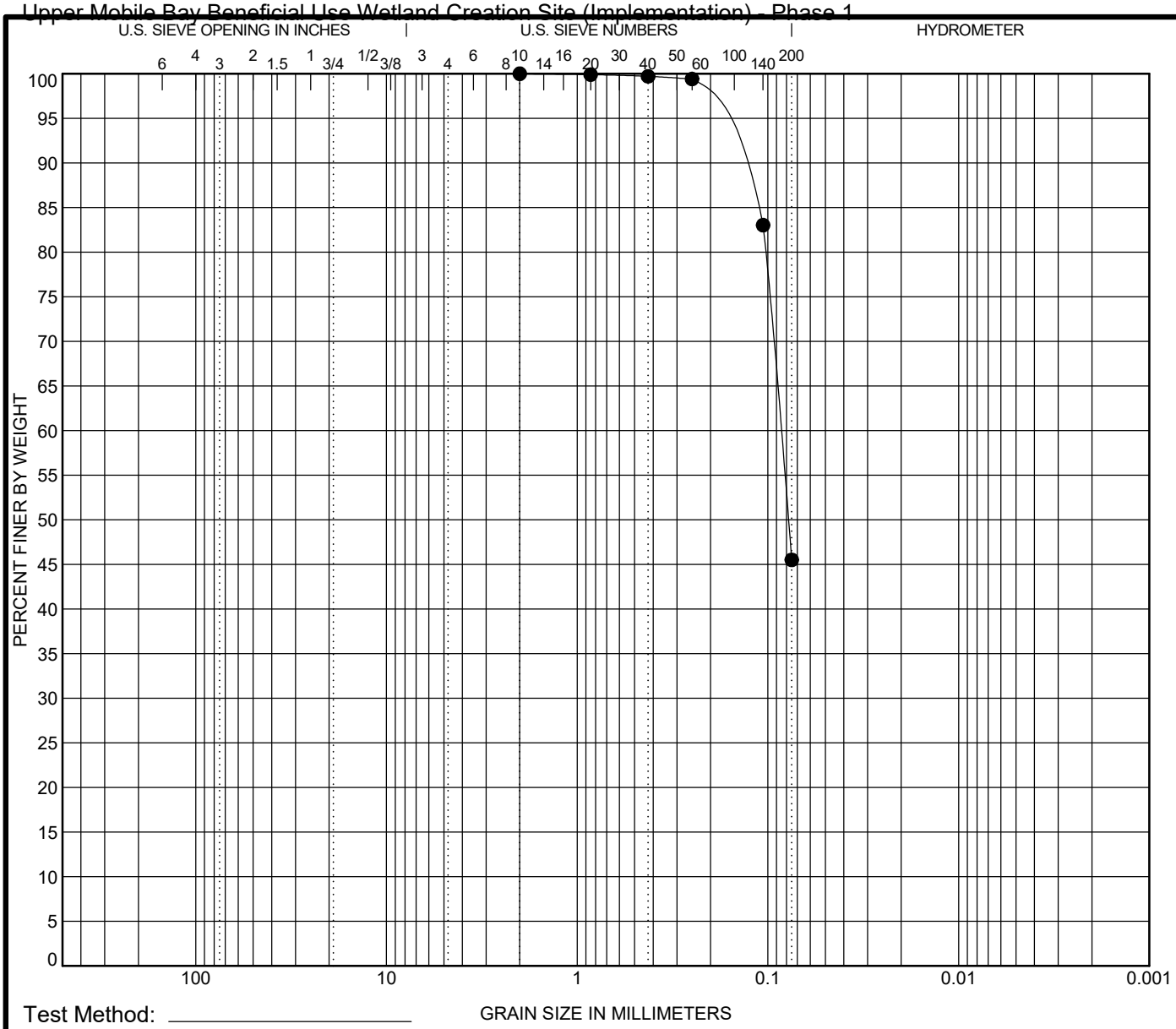
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-68**	**S-4;10.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-68	**10.0 ft.**	**2**	**0.086**			**0.0**	**54.5**	**45.5**	

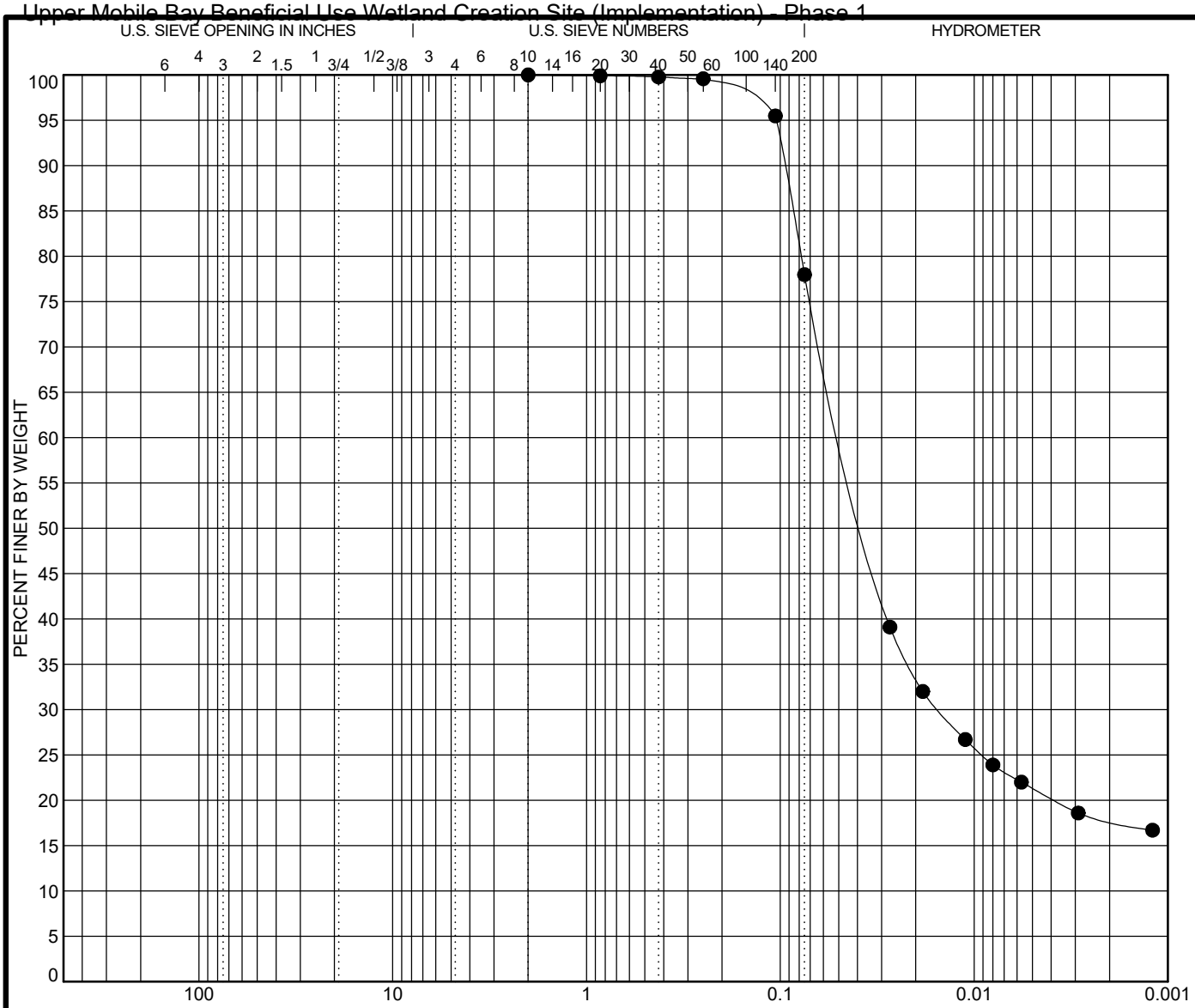
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-68**	**T-2;14.5 ft.**	**LEAN CLAY with SAND (CL)**	**44**	**21**	**23**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-68	**14.5 ft.**	**2**	**0.047**	**0.015**		**0.0**	**22.0**	**60.2**	**17.8**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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G.E.T. PROJ. NUMBER: 21-126
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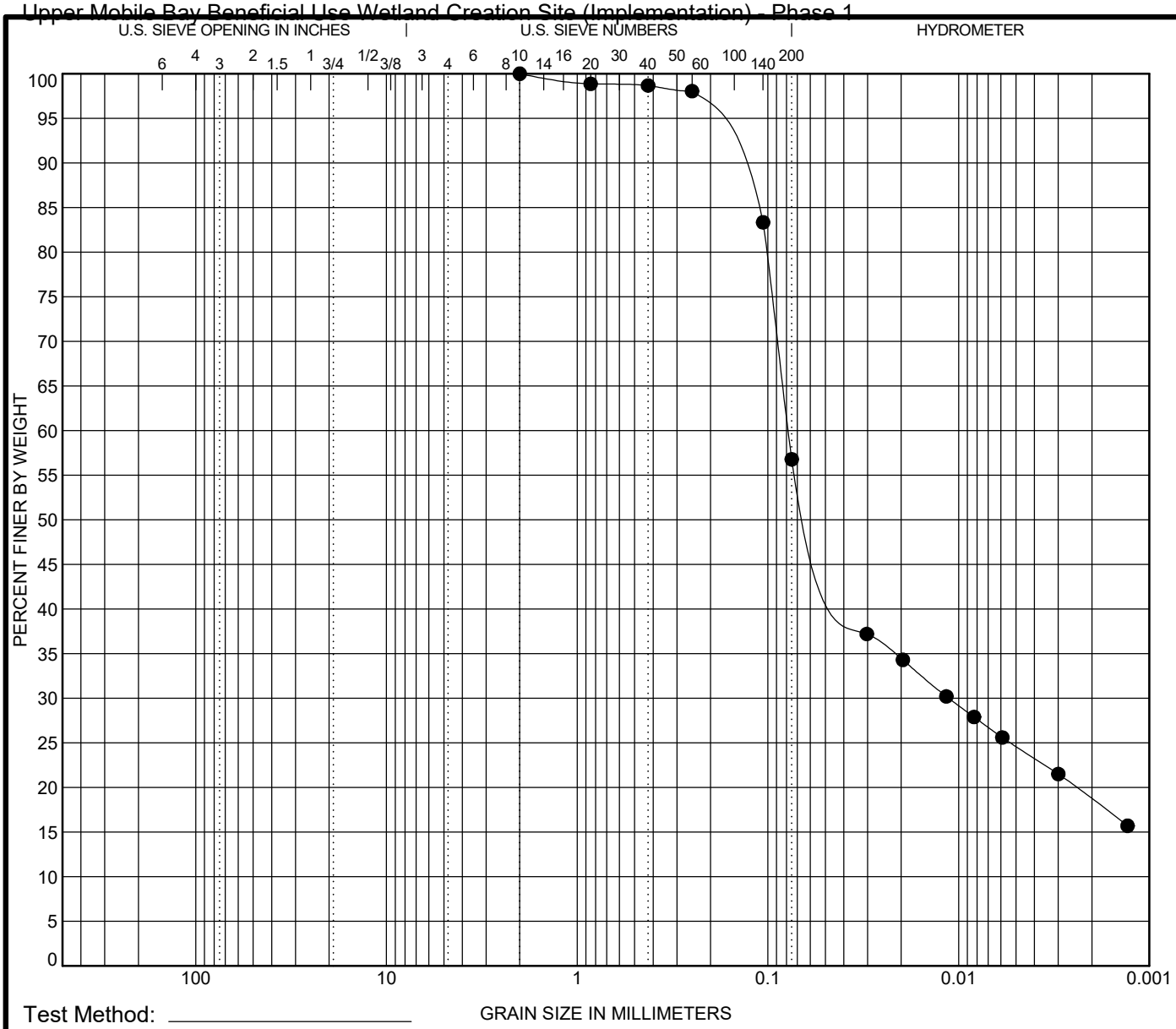
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-69**	**S-2;3.0 ft.**	**SANDY SILT (ML)**	**29**	**25**	**4**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-69	**3.0 ft.**	**2**	**0.078**	**0.011**		**0.0**	**43.2**	**38.1**	**18.7**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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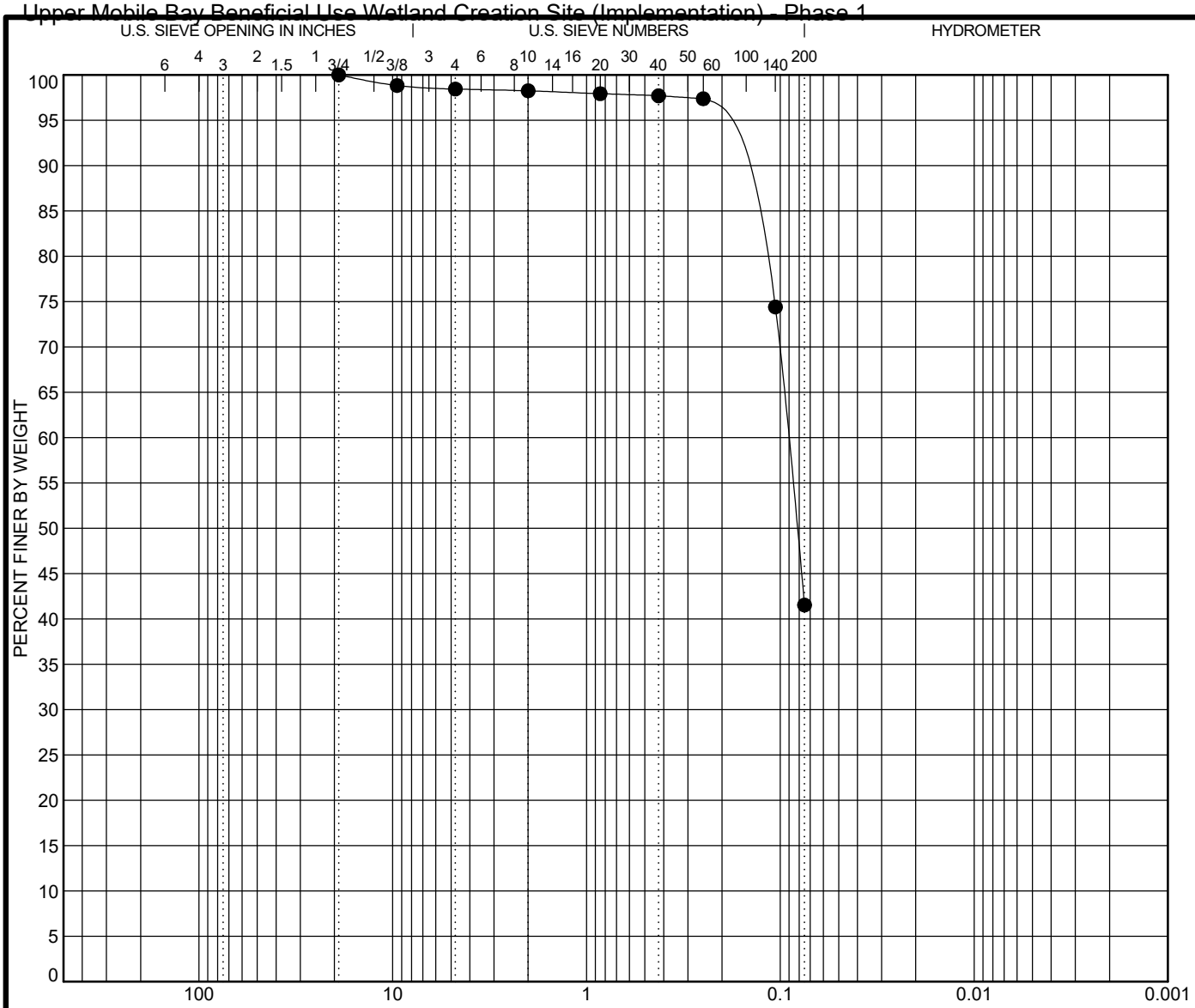
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-69**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-69	**5.5 ft.**	**19**	**0.091**			**1.6**	**56.9**	**41.5**	

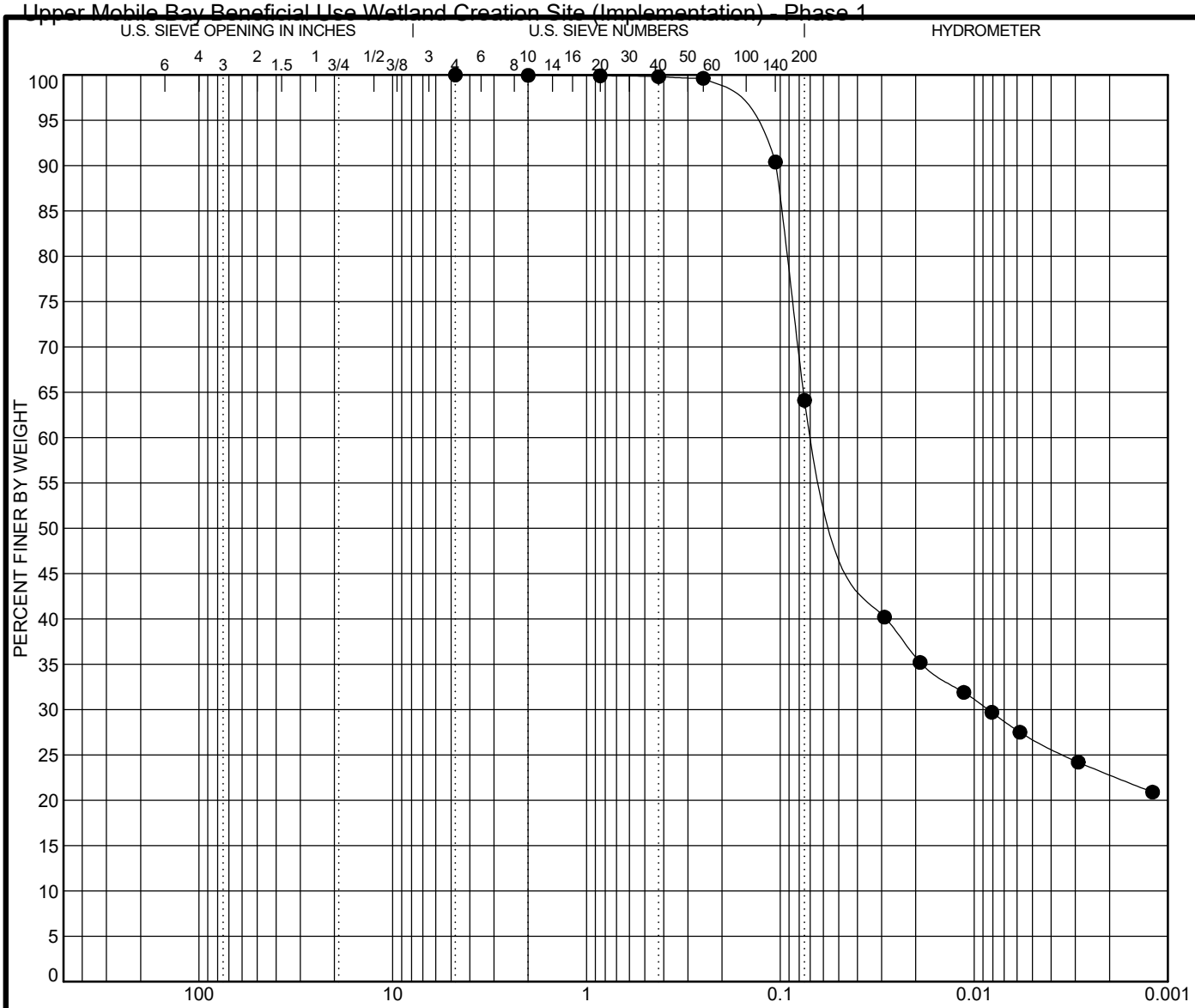
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-69**	**T-1;10.0 ft.**	**SANDY SILT (ML)**	**26**	**25**	**1**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-69	**10.0 ft.**	**4.75**	**0.064**	**0.008**		**0.0**	**35.9**	**41.3**	**22.8**

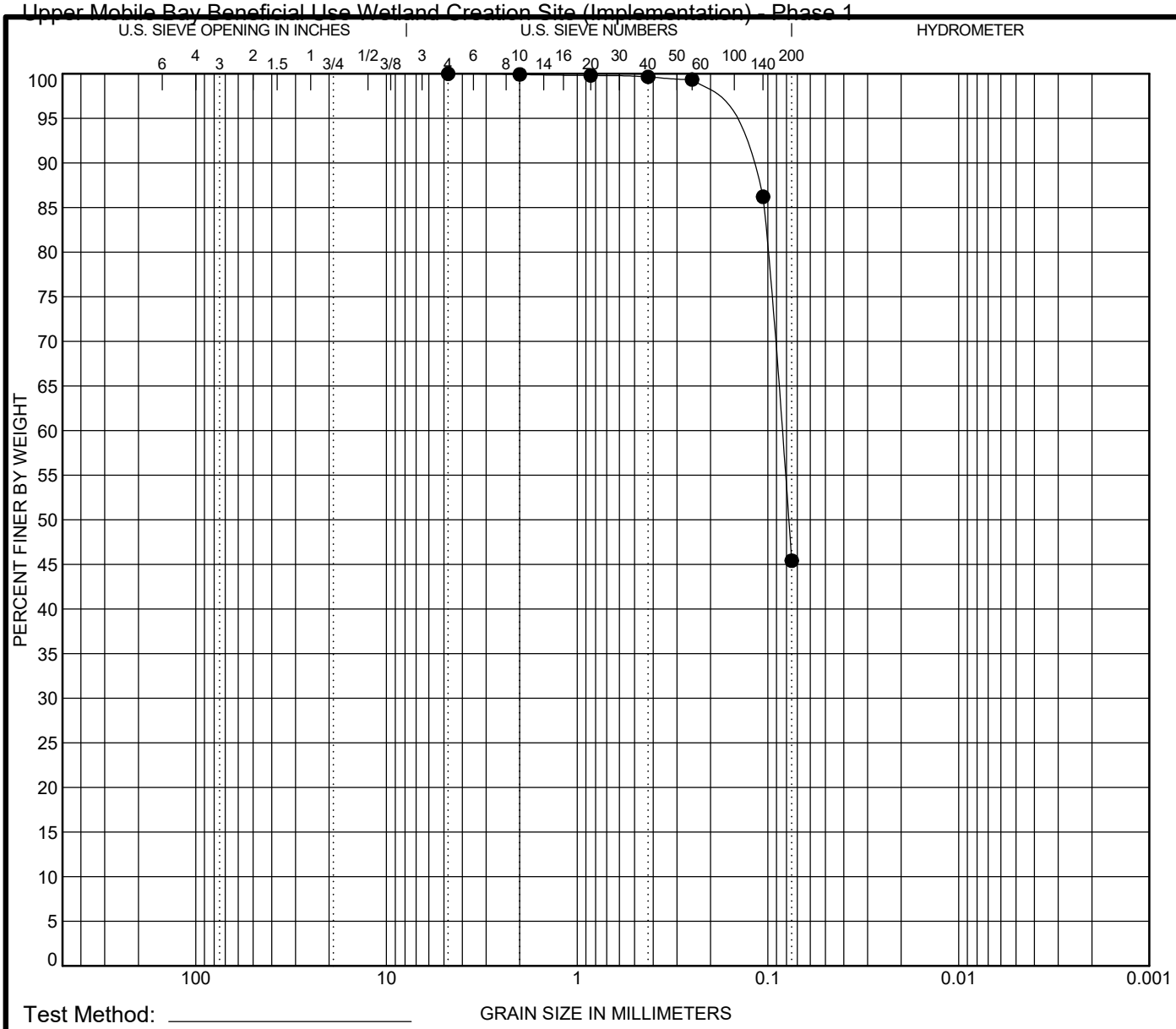
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**B-69 ;13.0 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-69 13.0 ft.	**4.75**	**0.085**			**0.0**	**54.6**	**45.4**	

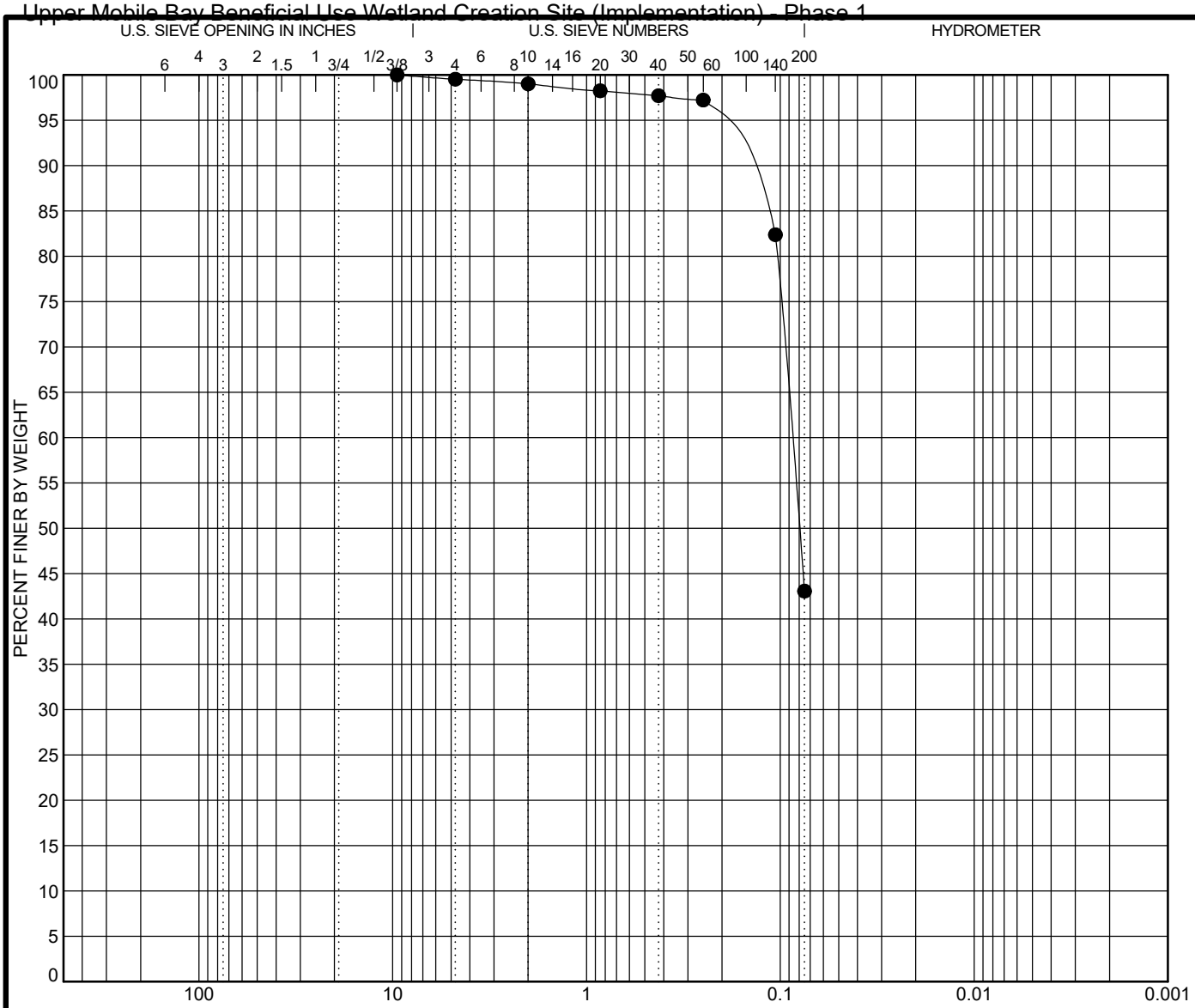
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-70**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-70	**3.0 ft.**	**9.5**	**0.087**			**0.5**	**56.5**	**43.1**	

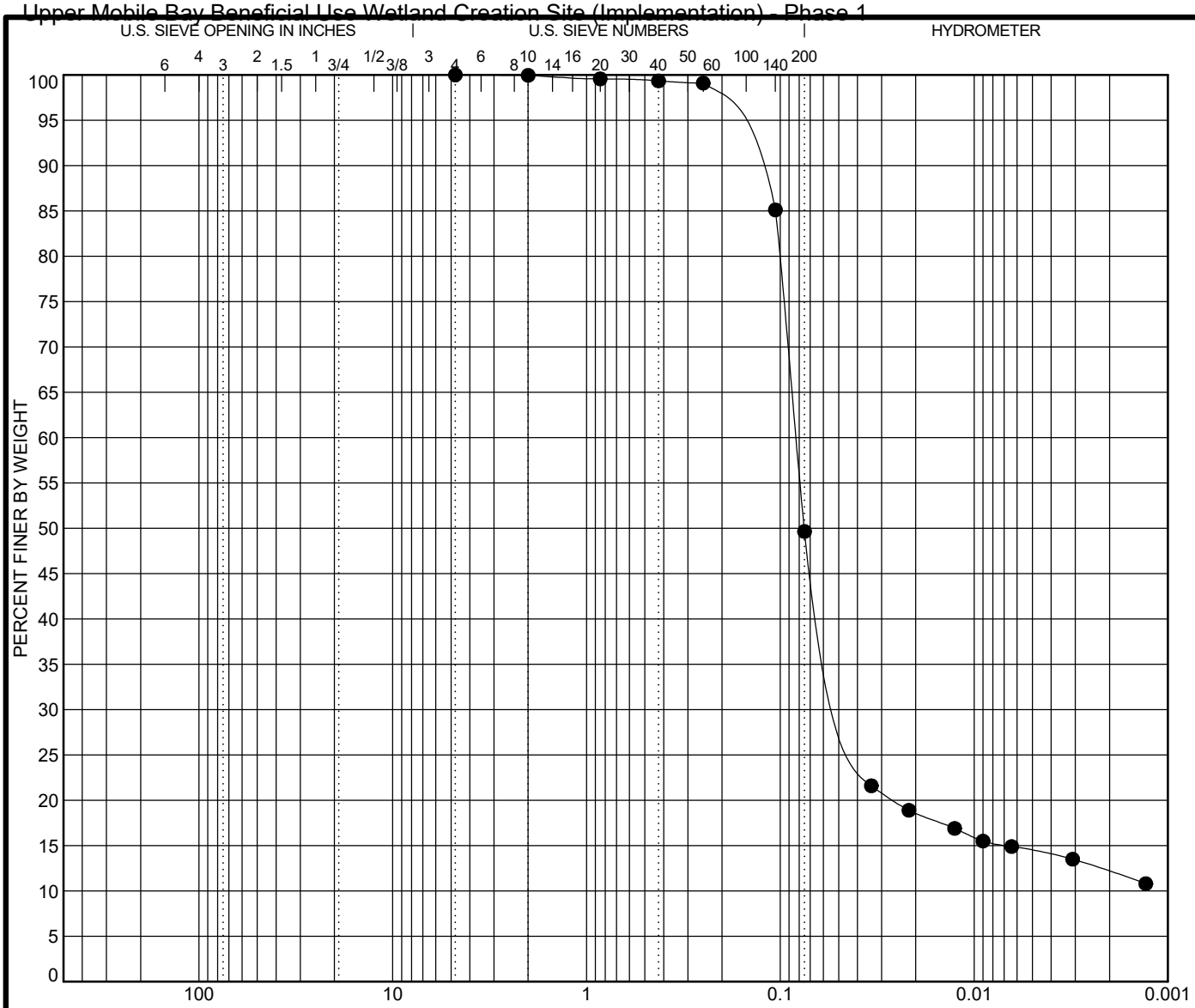
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-70**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-70	**8.0 ft.**	**4.75**	**0.083**	**0.043**		**0.0**	**50.4**	**37.5**	**12.1**

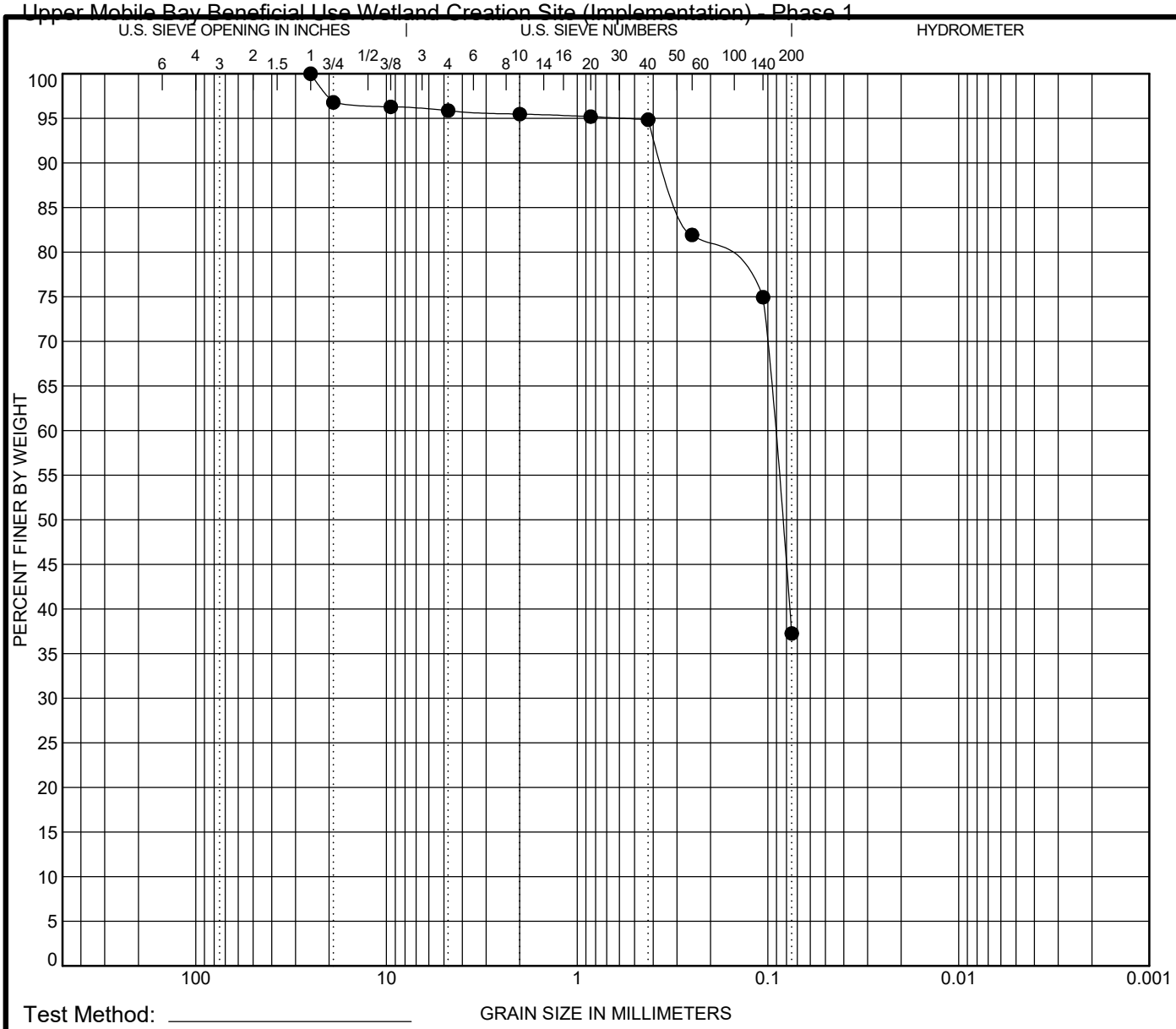
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-70**	**S-5;12.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-70	**12.5 ft.**	**25**	**0.092**			**4.1**	**58.6**	**37.3**	

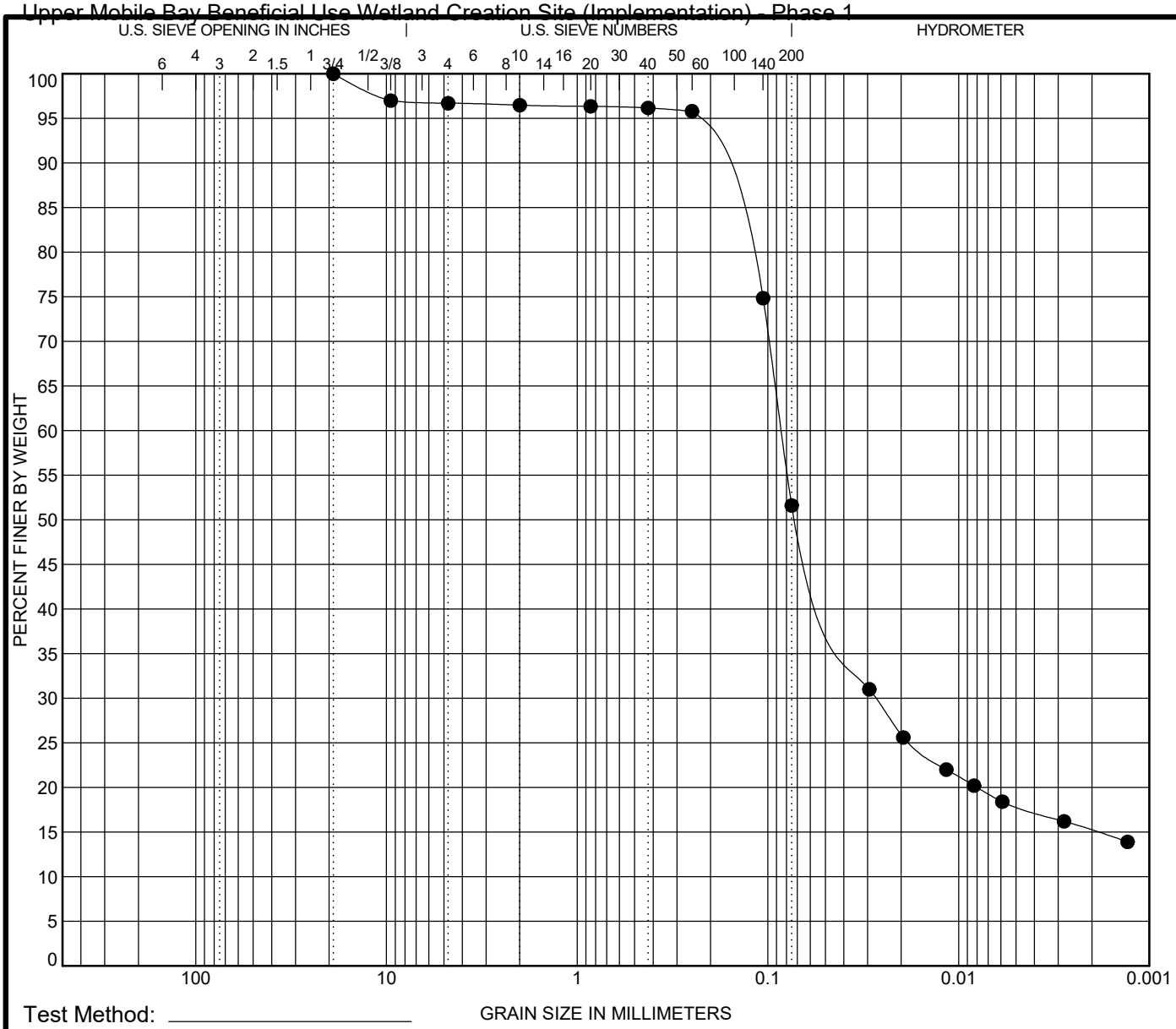
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-71**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-71	**3.0 ft.**	**19**	**0.085**	**0.027**		**3.3**	**45.1**	**36.4**	**15.2**

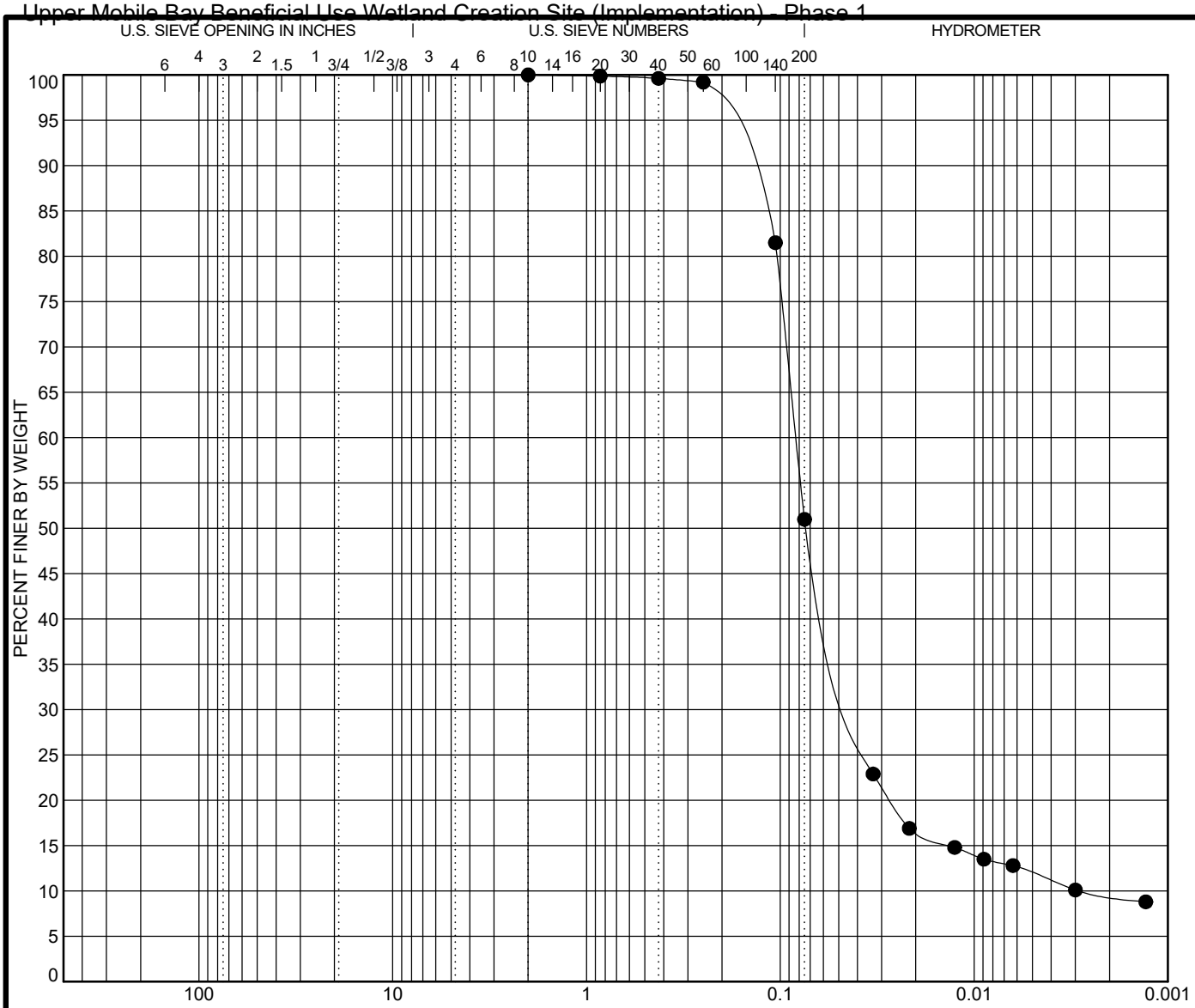
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-71**	**S-4;8.0 ft.**					**7.12**	**29.53**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-71	**8.0 ft.**	**2**	**0.083**	**0.041**	**0.003**	**0.0**	**49.0**	**41.5**	**9.5**

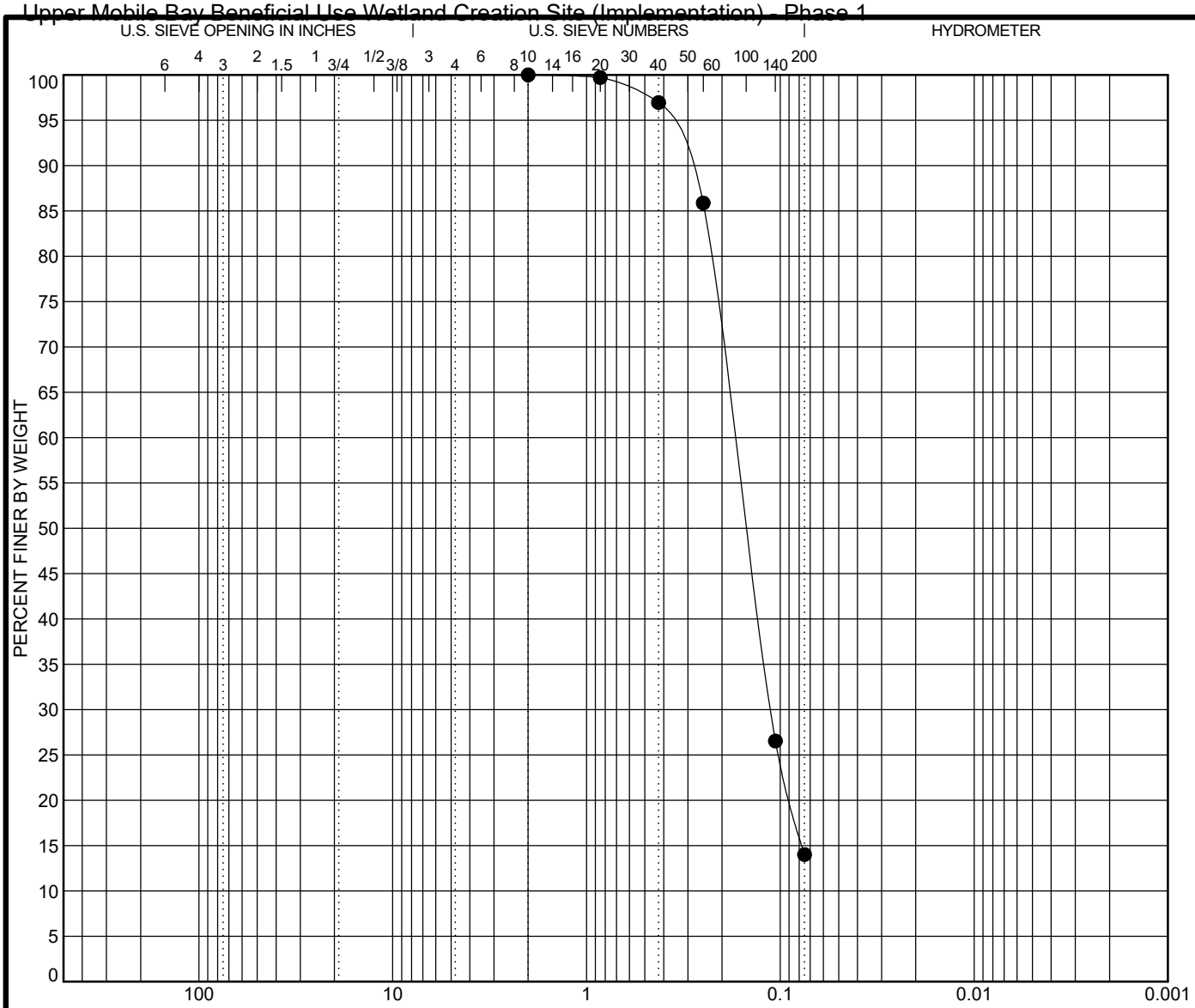
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-72**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-72	**5.5 ft.**	**2**	**0.172**	**0.111**		**0.0**	**86.0**	**14.0**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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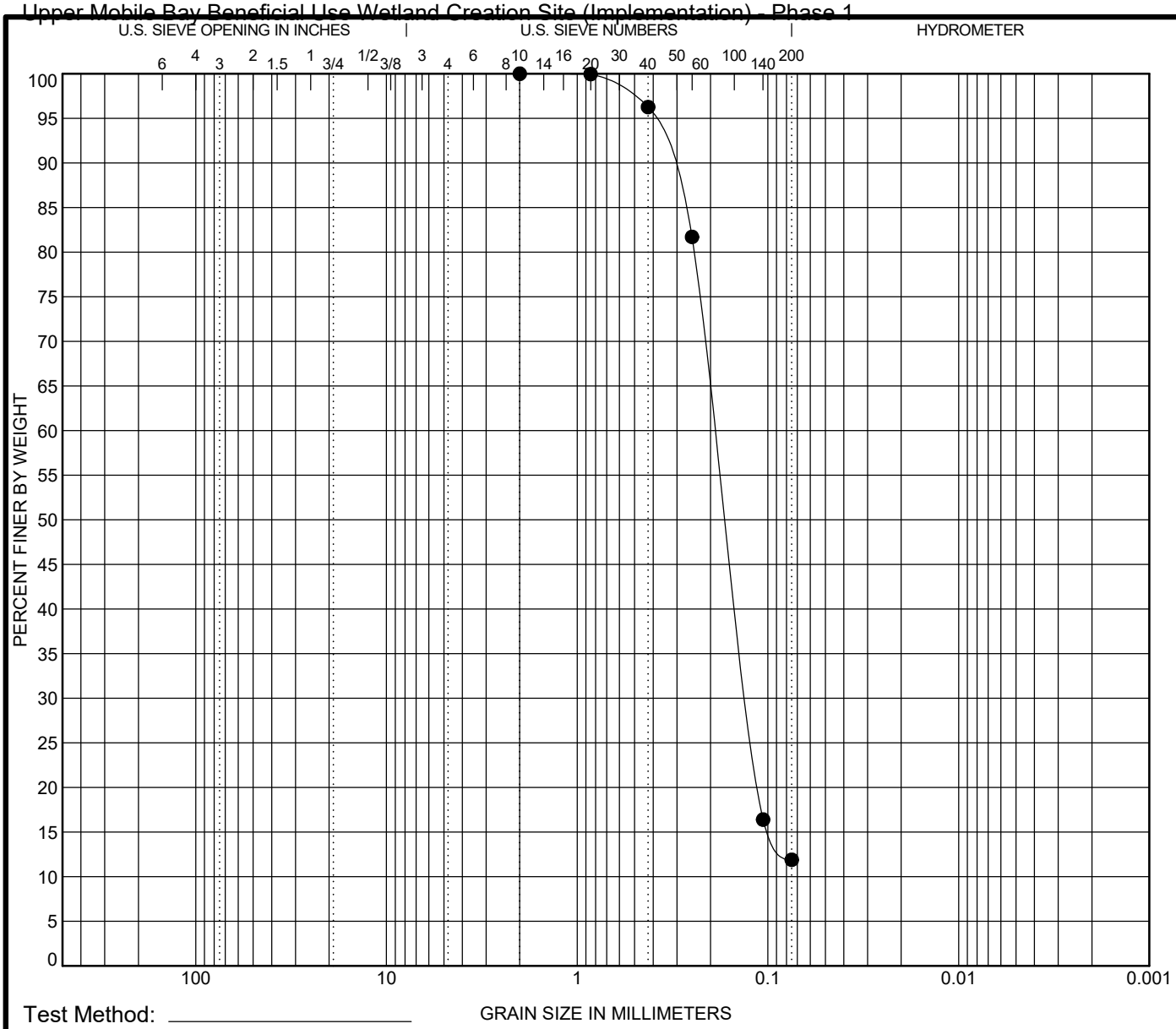
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-72**	**S-7;15.5 ft.**					**1.32**	**2.90**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-72	**15.5 ft.**	**2**	**0.188**	**0.127**		**0.0**	**88.1**	**11.9**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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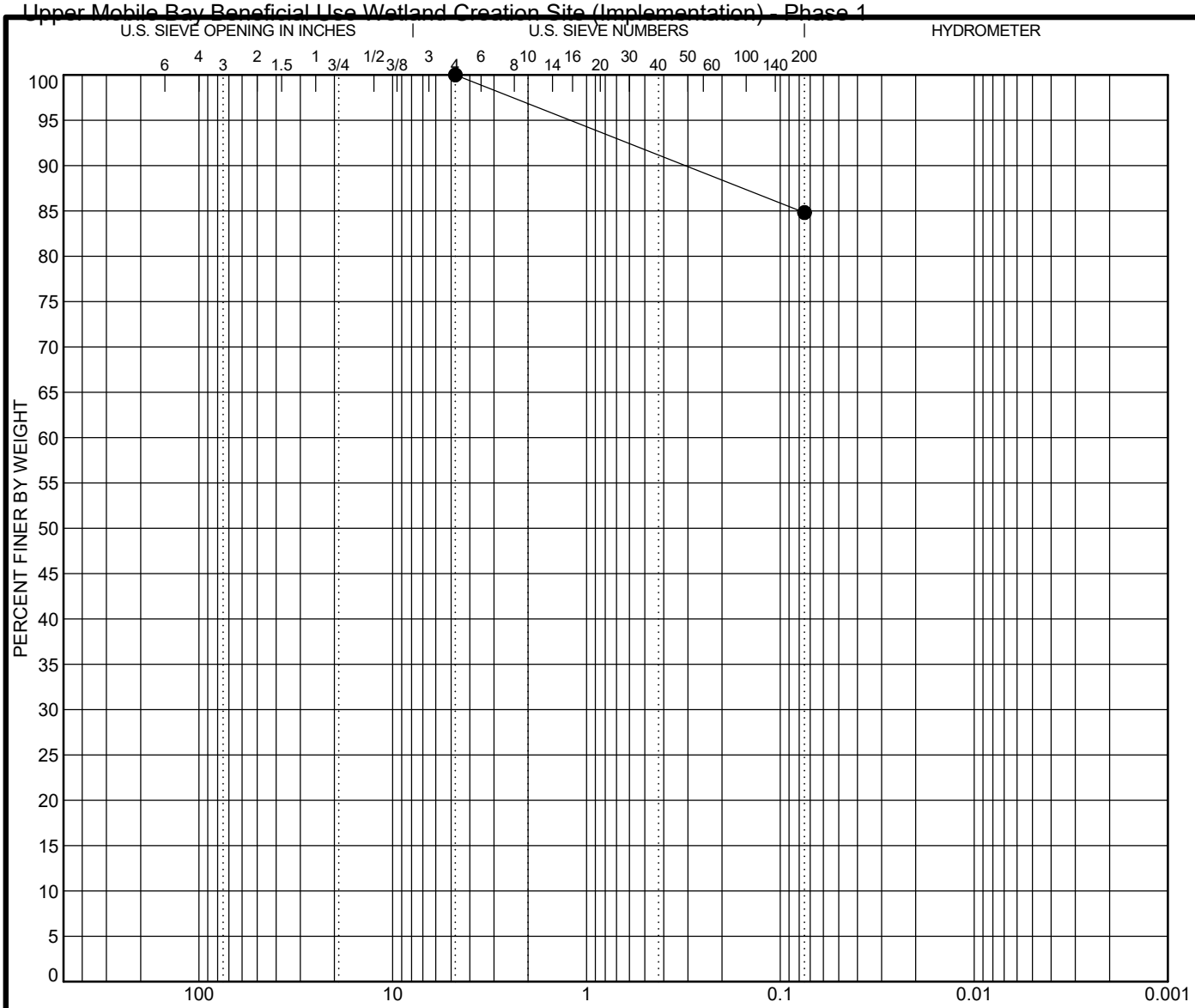
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-72**	**S-12;54.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-72	**54.0 ft.**	**4.75**				**0.0**	**15.2**	**84.8**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
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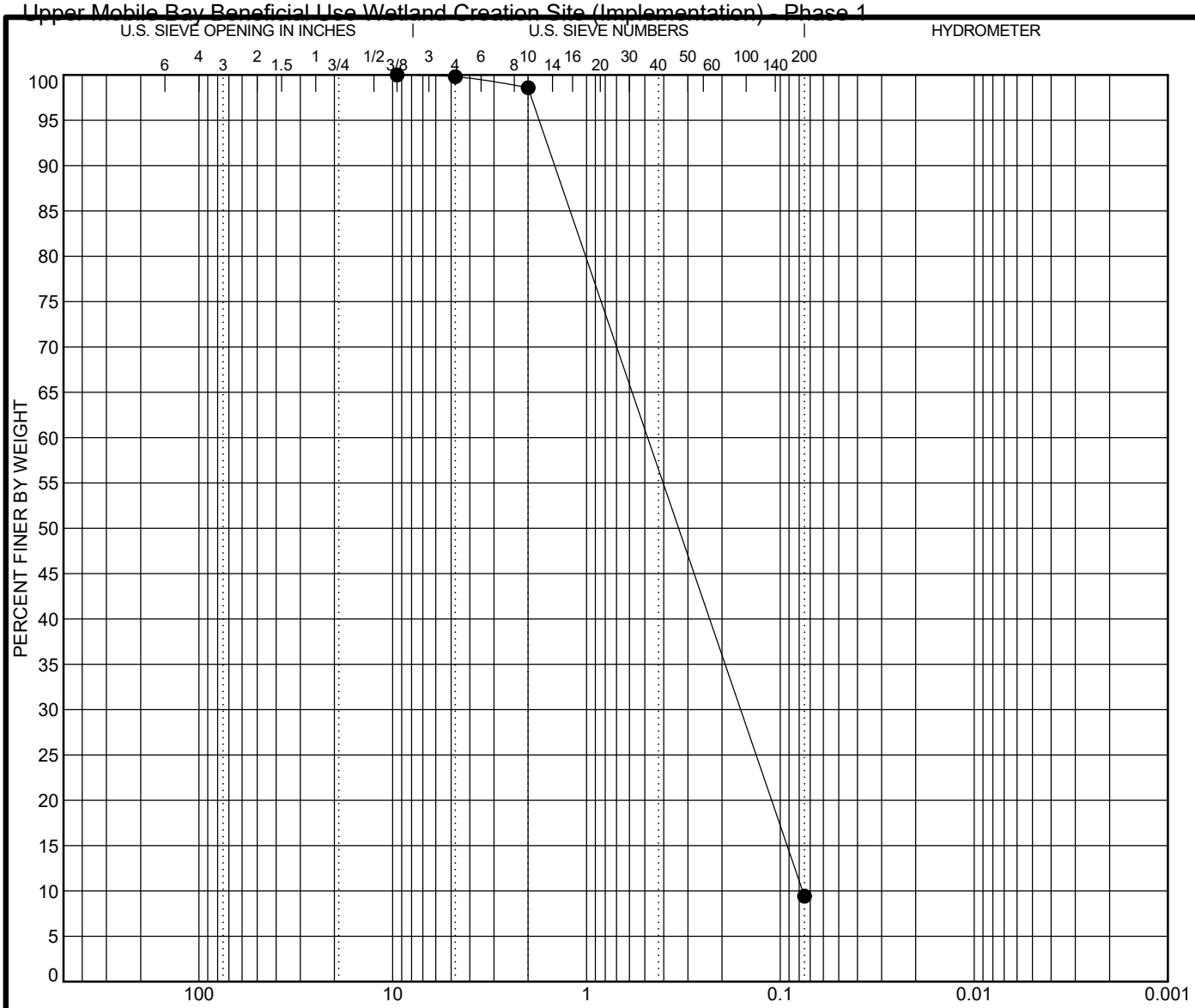
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● B-72	S-14;64.0 ft.					0.69	6.30

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-72	64.0 ft.	9.5	0.483	0.16	0.077	0.2	90.4	9.4	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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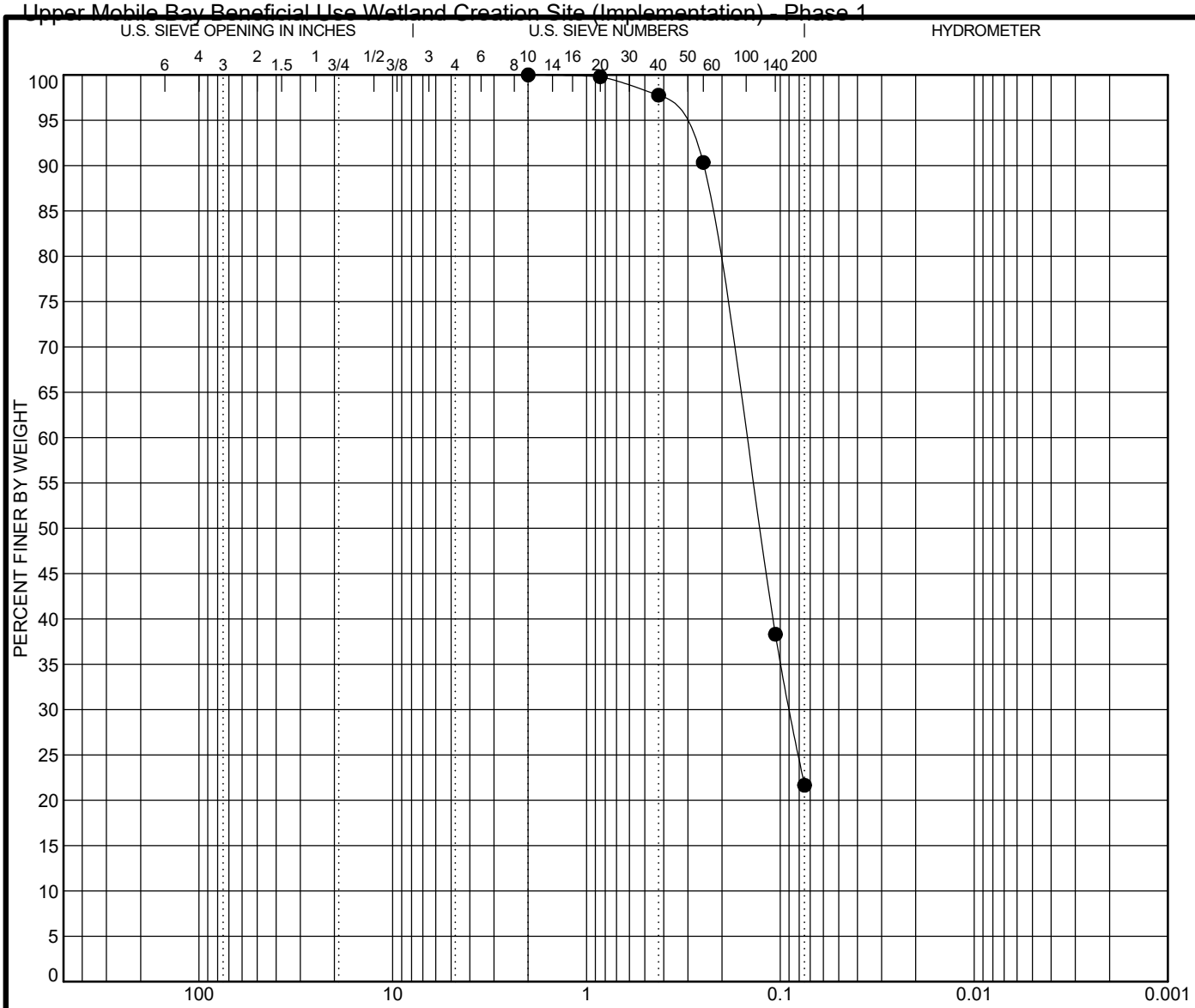
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-73**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-73	**3.0 ft.**	**2**	**0.152**	**0.089**		**0.0**	**78.3**	**21.7**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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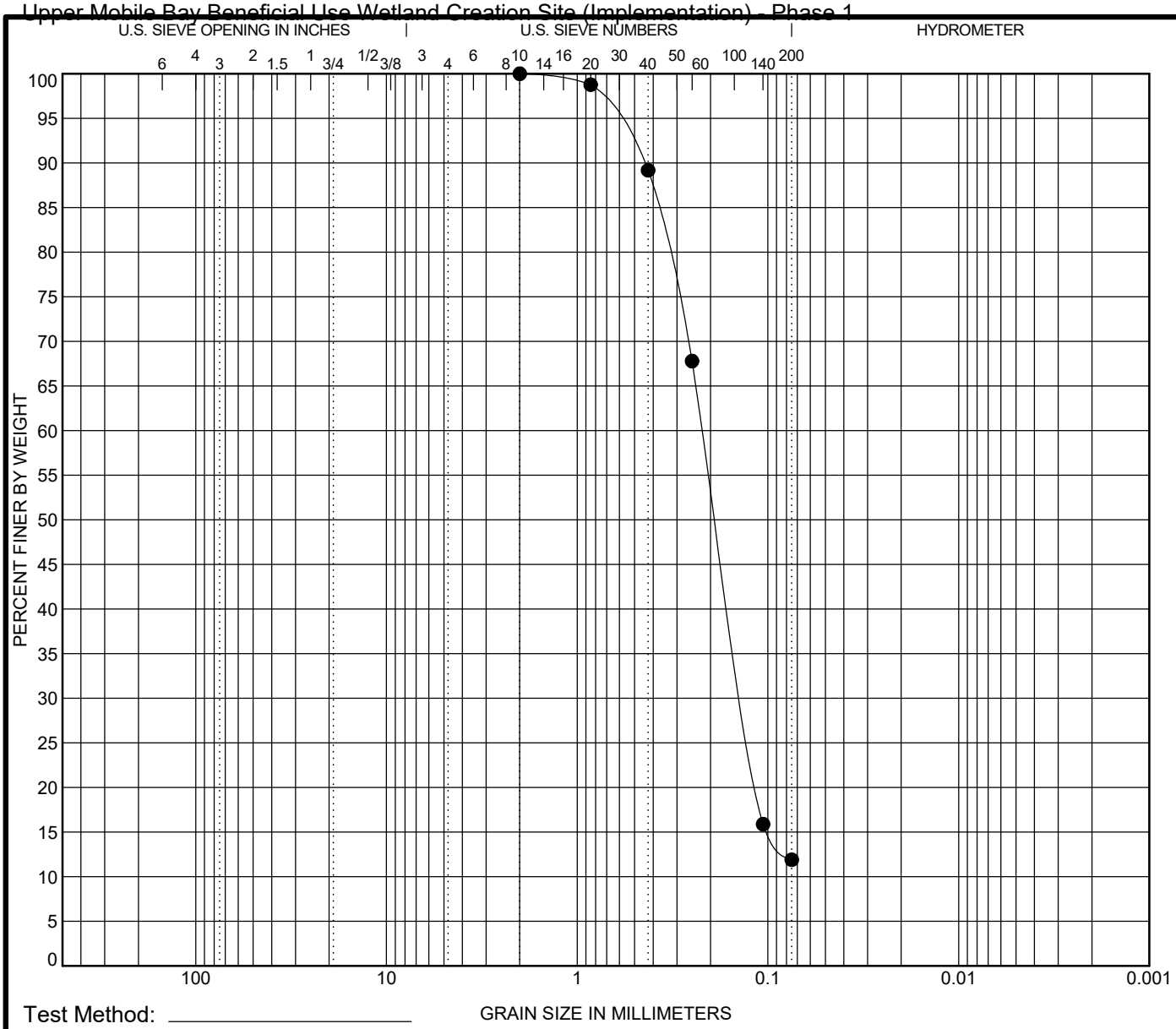
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-73**	**S-6;13.0 ft.**					**1.28**	**3.45**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-73	**13.0 ft.**	**2**	**0.22**	**0.134**		**0.0**	**88.1**	**11.9**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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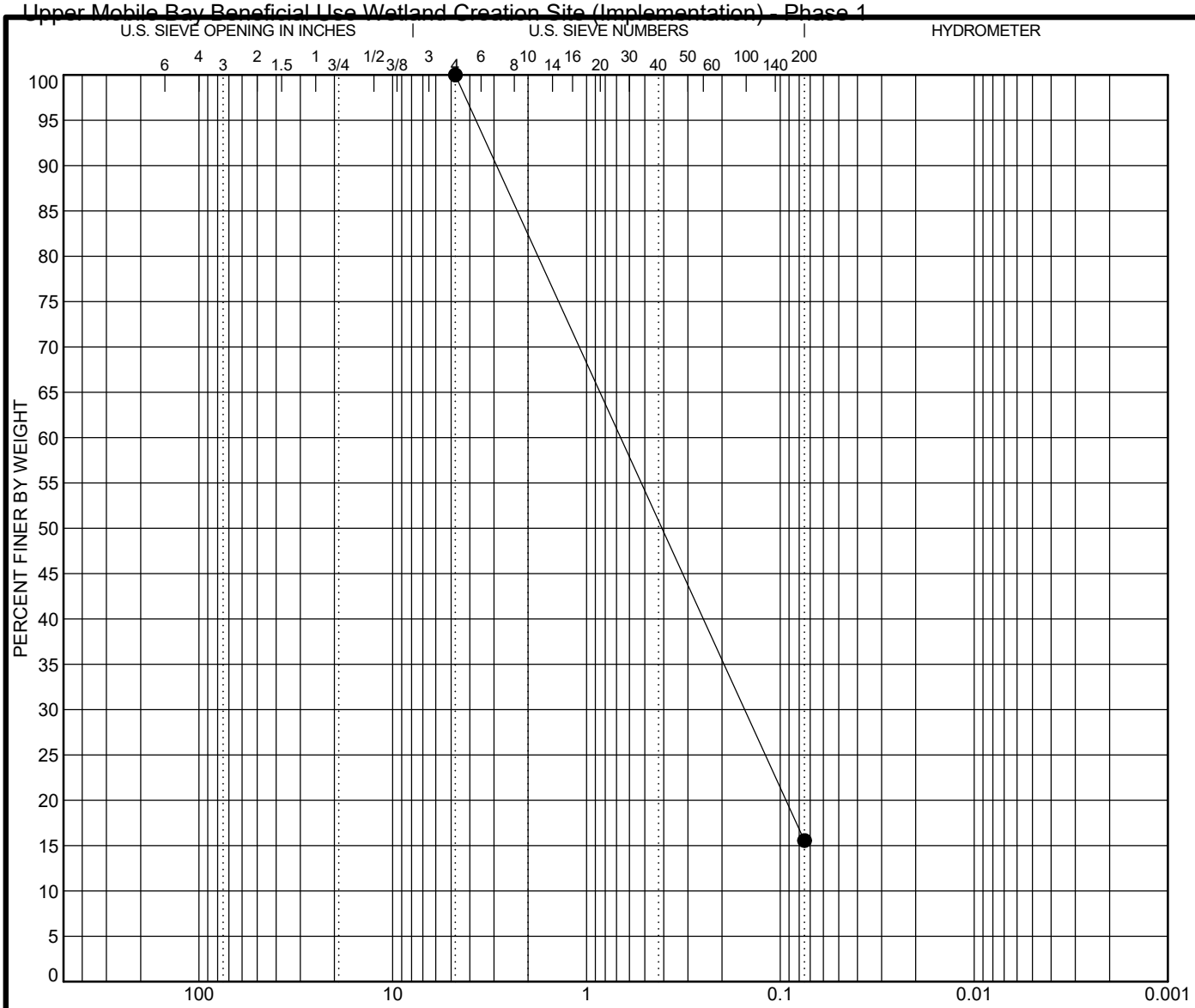
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-74**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-74	**3.0 ft.**	**4.75**	**0.666**	**0.152**		**0.0**	**84.4**	**15.6**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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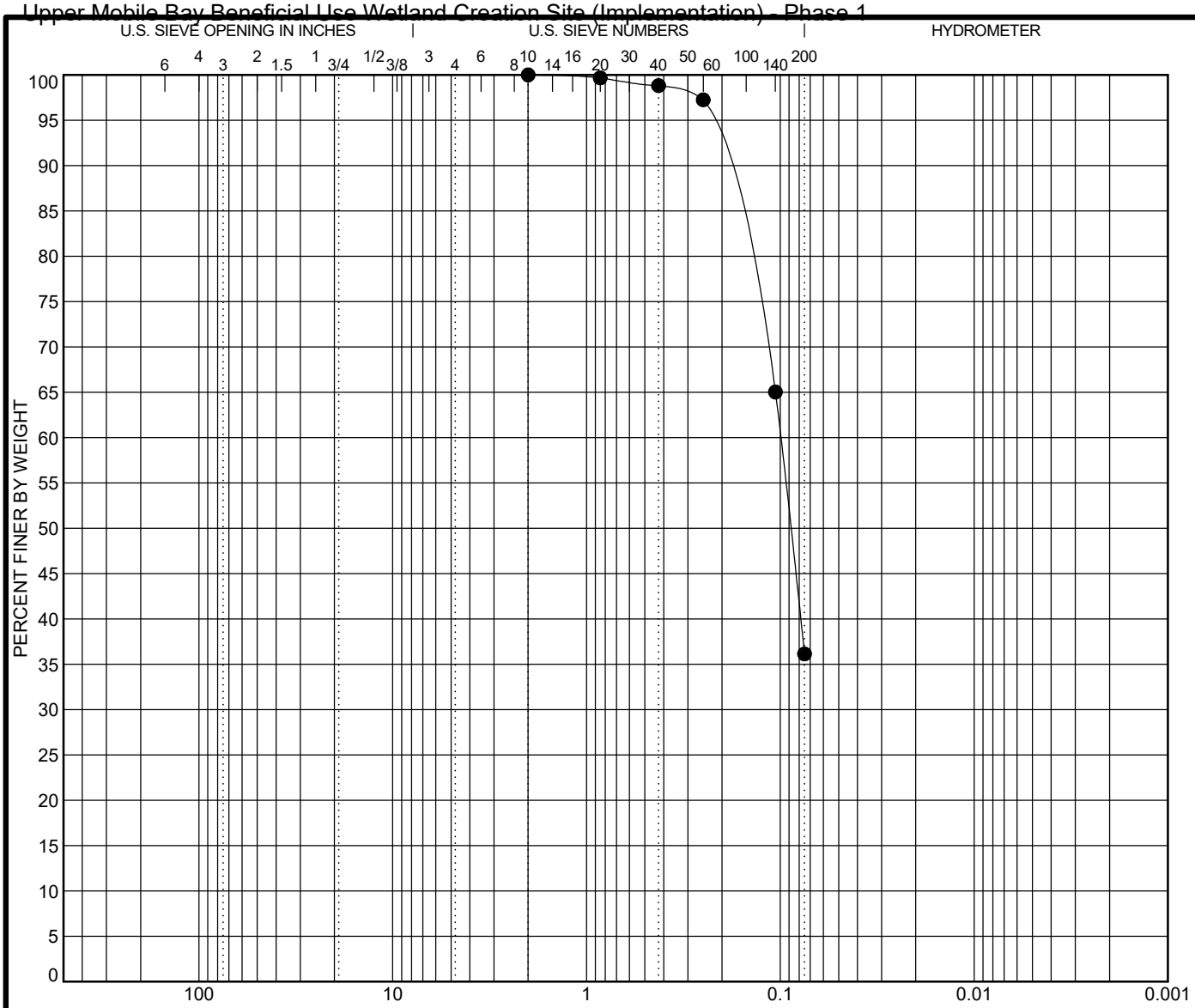
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-74**	**S-6;13.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-74	**13.0 ft.**	**2**	**0.1**			**0.0**	**63.9**	**36.1**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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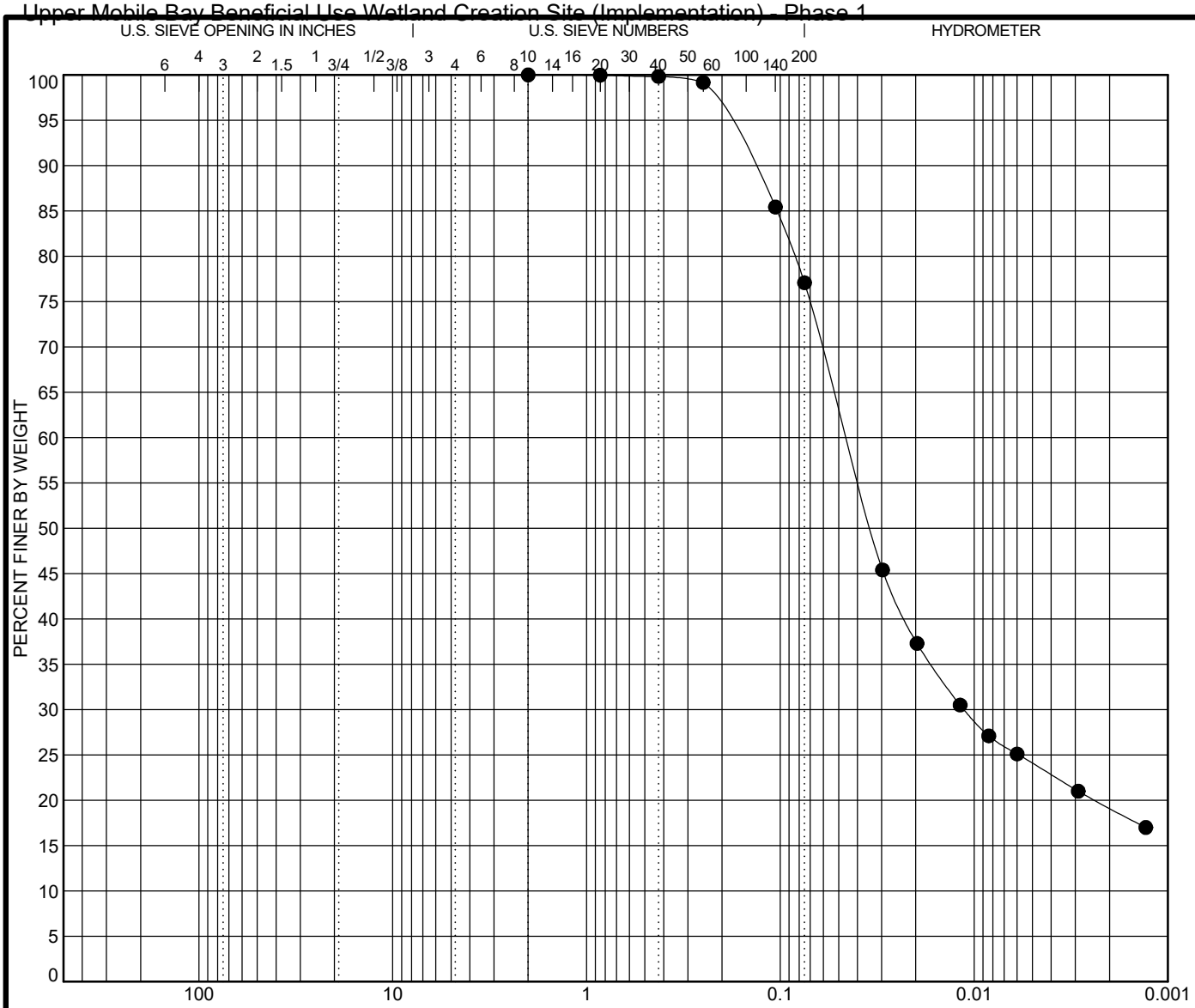

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-74**	**T-1;15.0 ft.**	**LEAN CLAY with SAND (CL)**	**43**	**21**	**22**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-74	**15.0 ft.**	**2**	**0.046**	**0.011**		**0.0**	**22.9**	**57.9**	**19.1**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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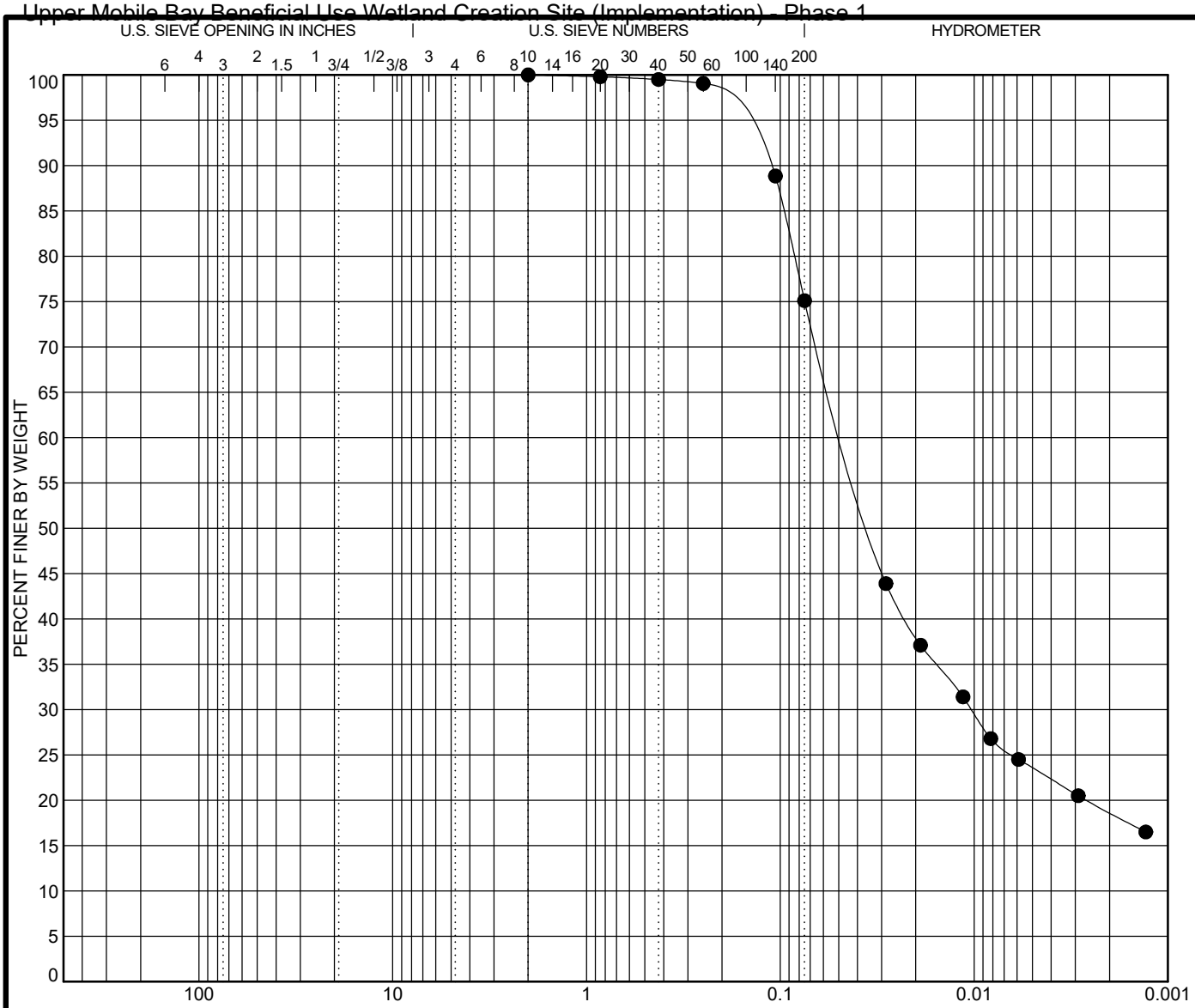

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-75**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-75	**3.0 ft.**	**2**	**0.047**	**0.01**		**0.0**	**24.9**	**56.5**	**18.6**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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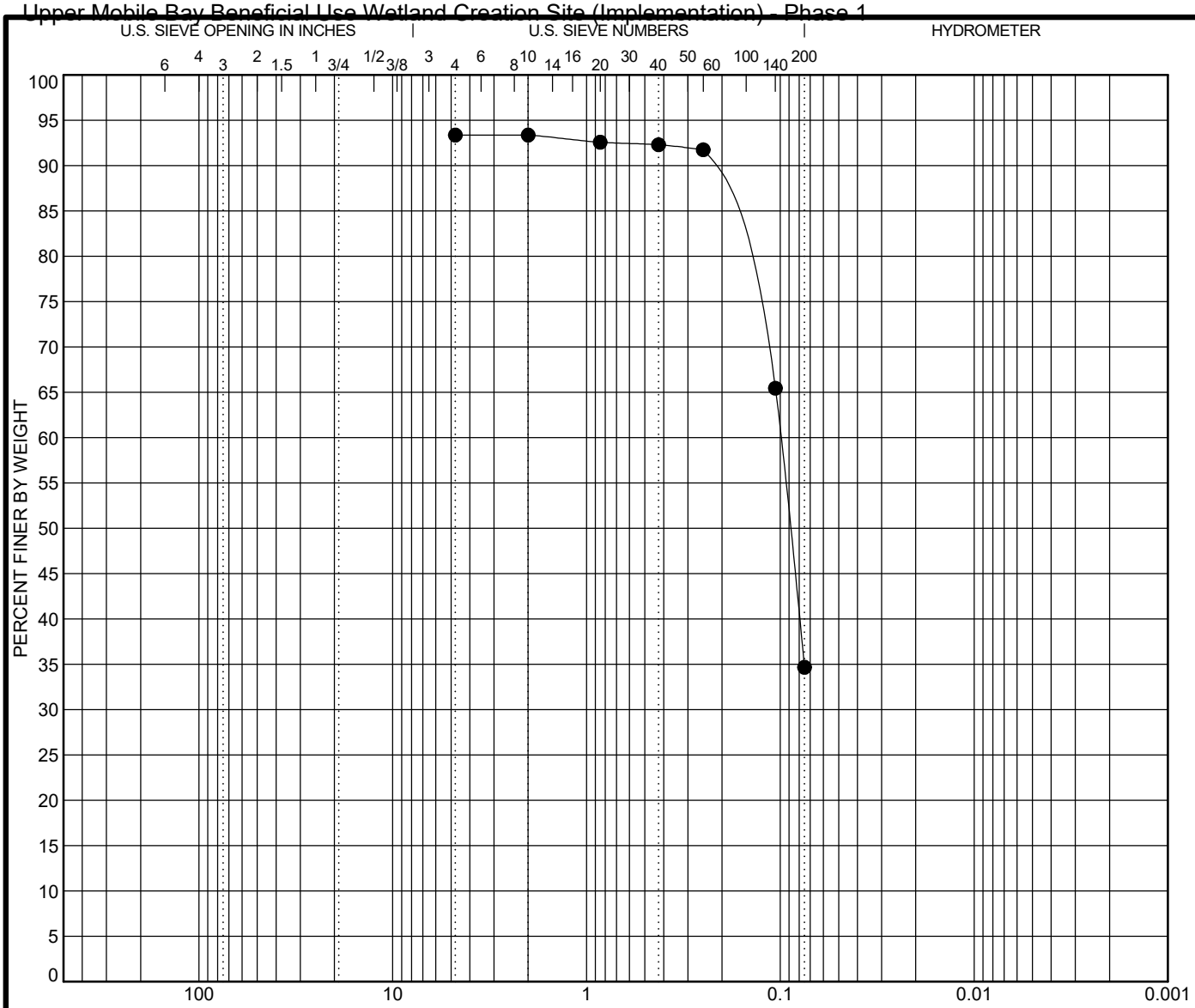
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-75**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-75	**5.5 ft.**	**4.75**	**0.1**			**0.0**	**58.7**	**34.7**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
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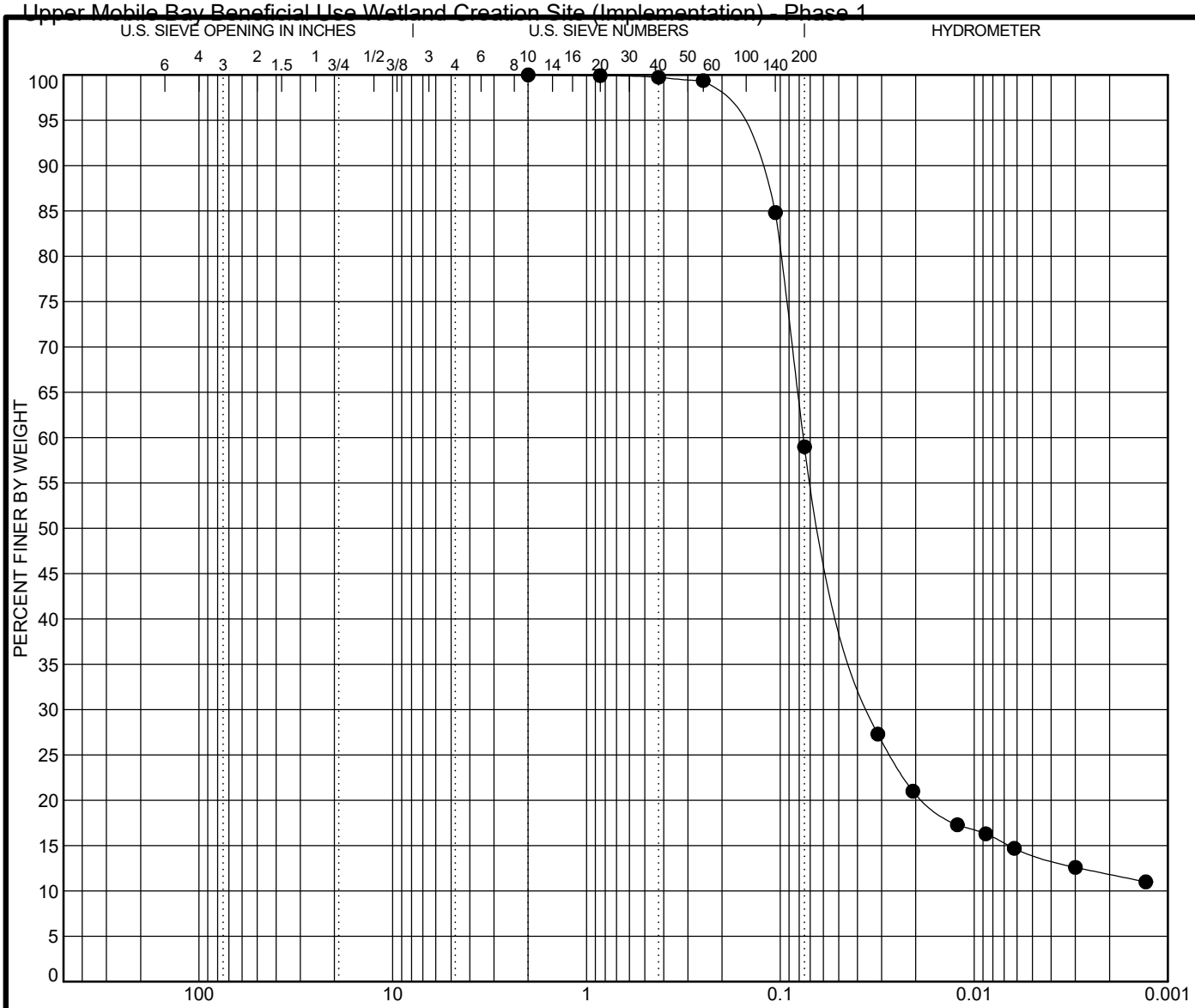
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-75**	**S-5;10.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-75	**10.5 ft.**	**2**	**0.076**	**0.034**		**0.0**	**41.0**	**47.2**	**11.8**

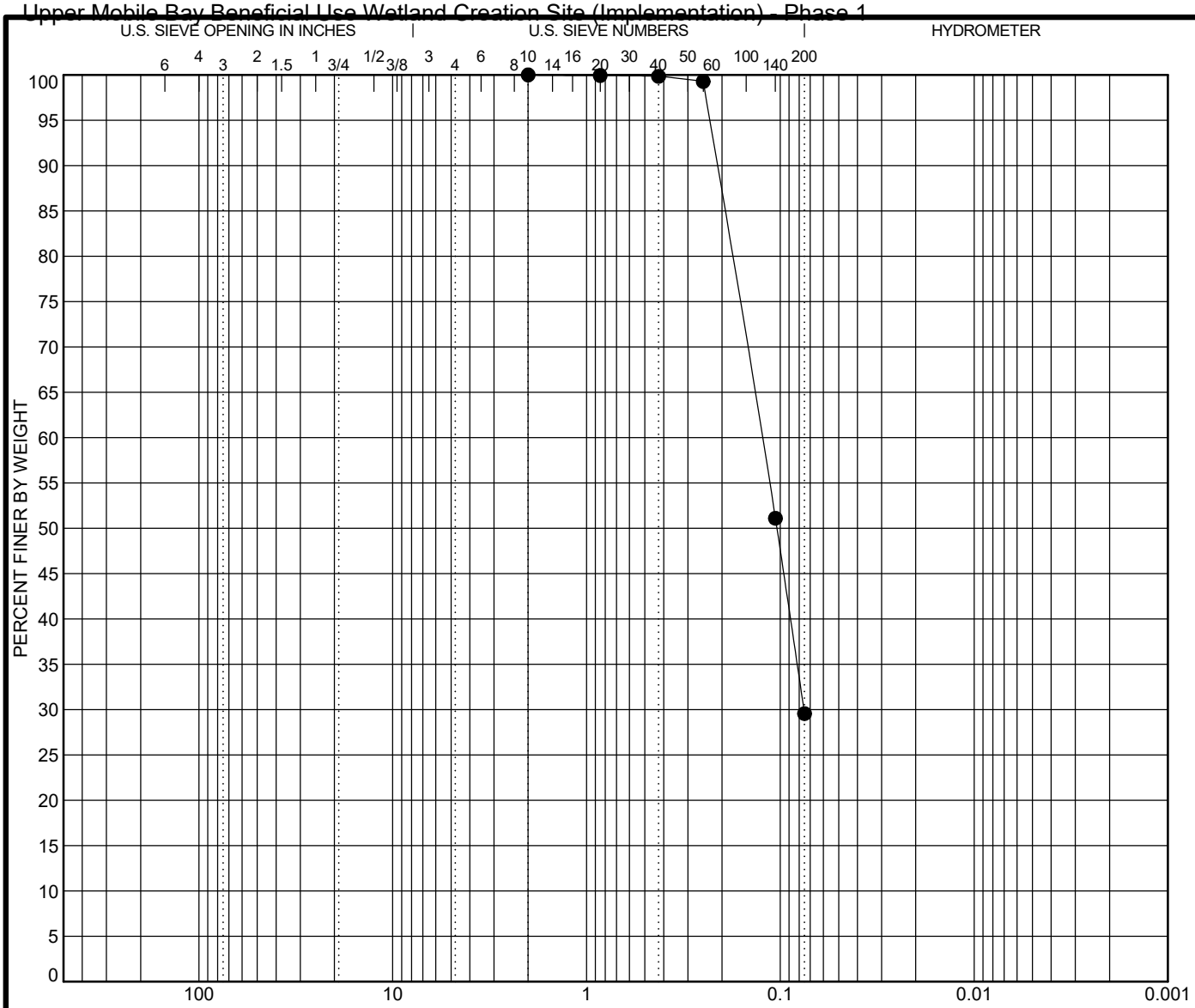
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **B-76 S-2;3.0 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-76 3.0 ft.	**2**	**0.124**	**0.076**		**0.0**	**70.4**	**29.6**	

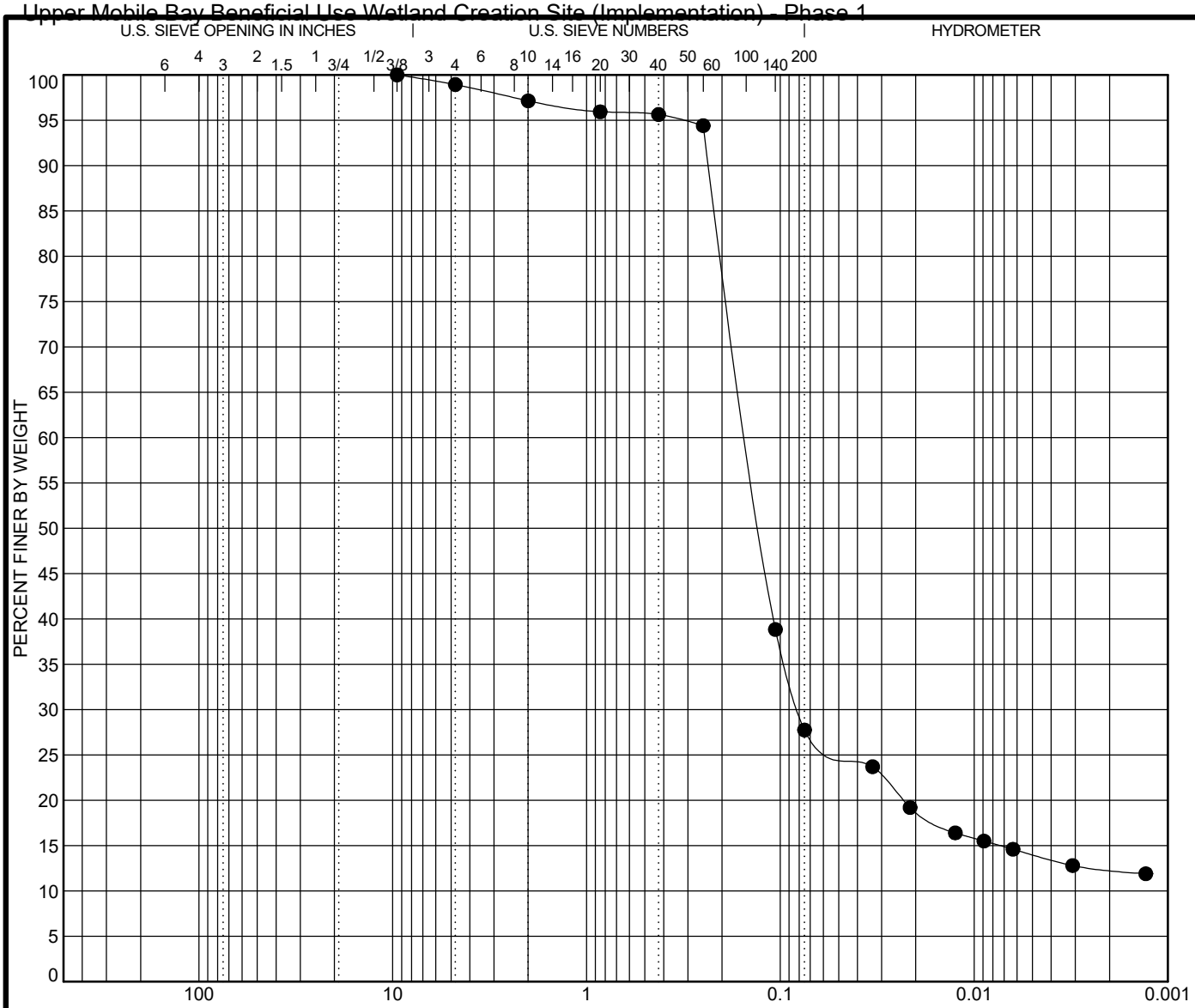
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-76**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-76	**8.0 ft.**	**9.5**	**0.147**	**0.08**		**1.1**	**71.2**	**15.4**	**12.3**

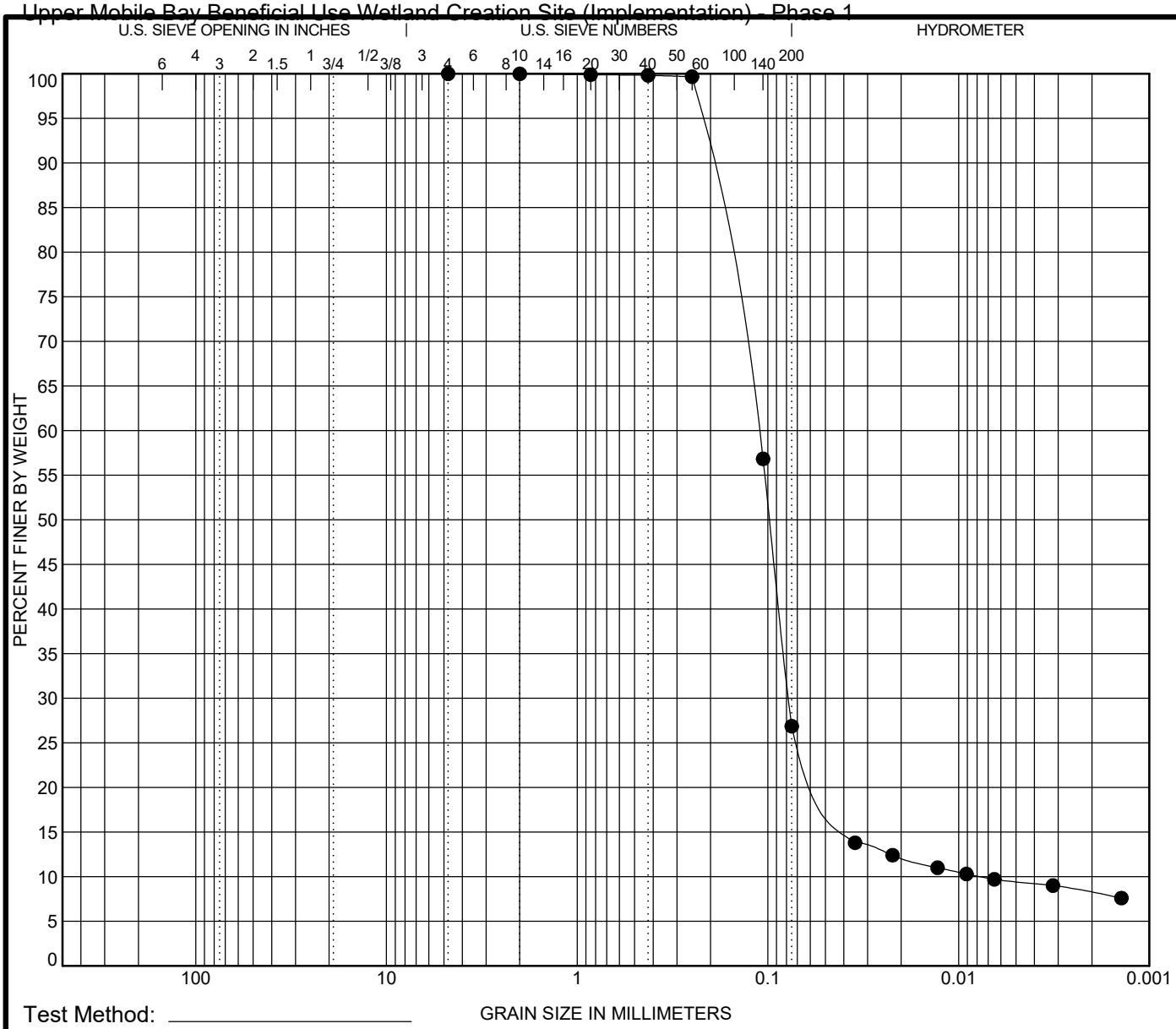
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-77**	**T-1;5.0 ft.**	**SILTY, CLAYEY SAND (SC-SM)**	**27**	**21**	**6**	**6.96**	**14.69**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-77	**5.0 ft.**	**4.75**	**0.113**	**0.078**	**0.008**	**0.0**	**73.1**	**18.7**	**8.2**

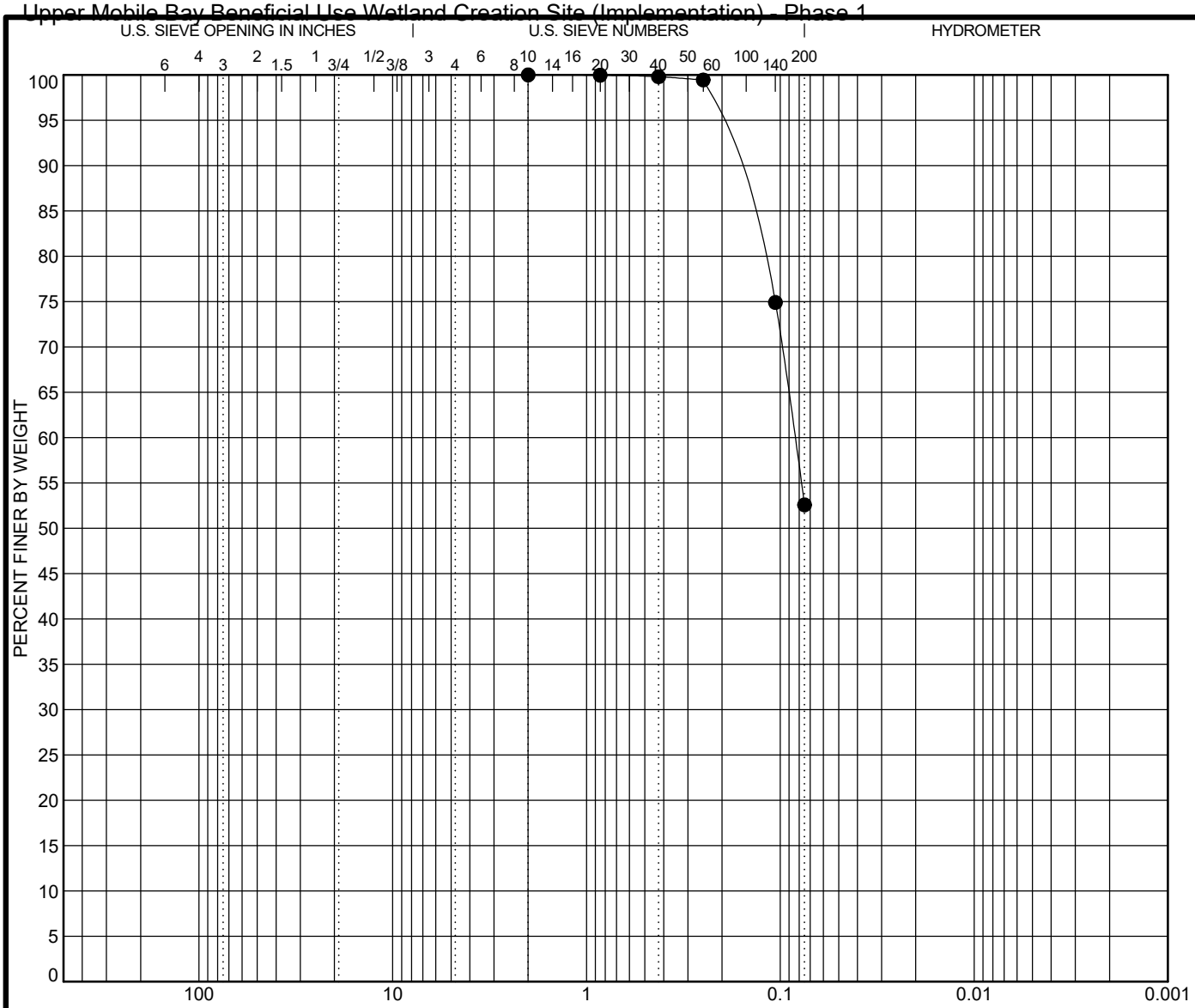
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-78**	**S-1;0.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-78	**0.5 ft.**	**2**	**0.084**			**0.0**	**47.4**	**52.6**	

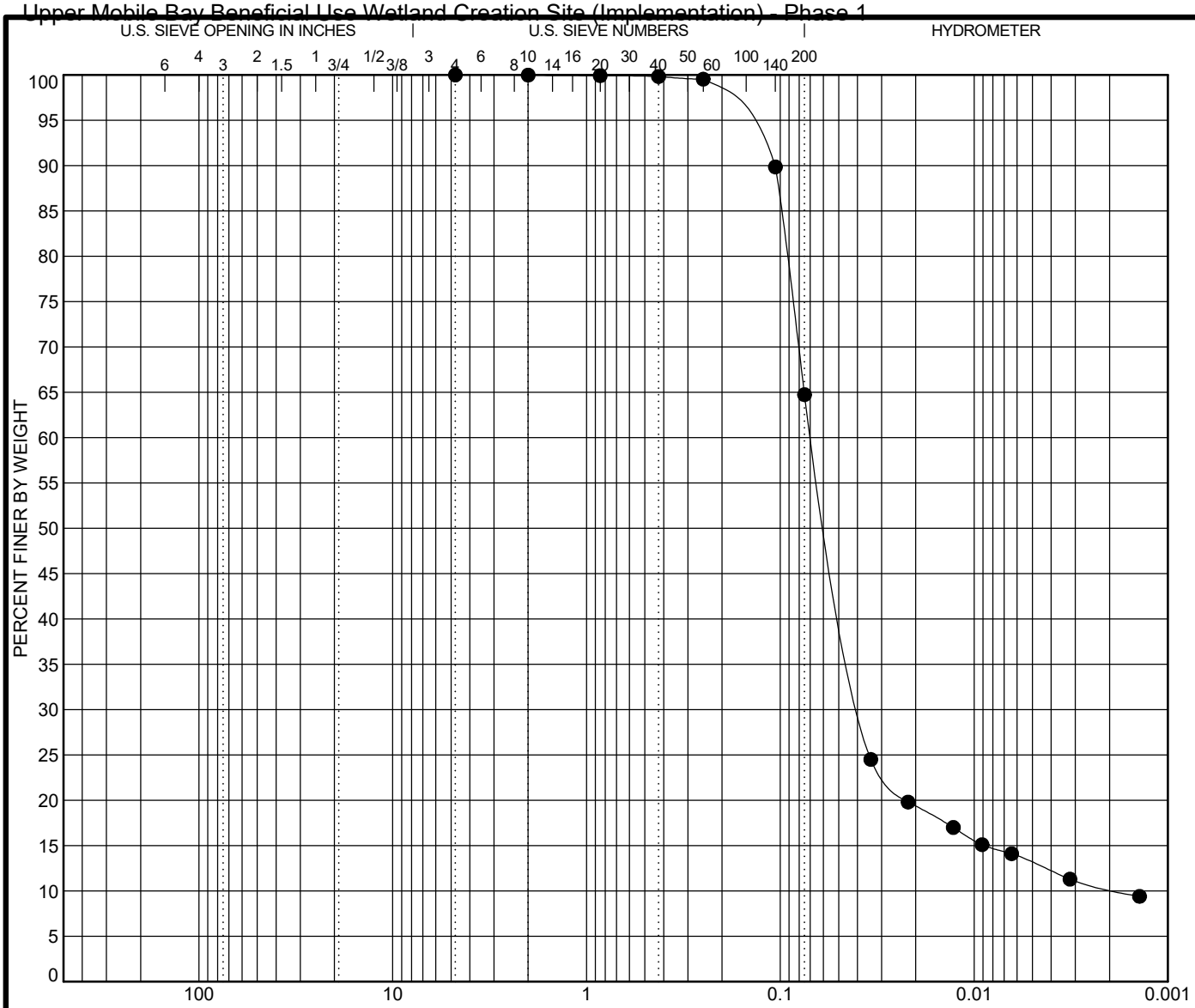
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-78**	**T-1;5.0 ft.**	**SANDY SILT (ML)**	**31**	**25**	**6**	**11.61**	**37.61**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-78	**5.0 ft.**	**4.75**	**0.068**	**0.038**	**0.002**	**0.0**	**35.3**	**54.5**	**10.2**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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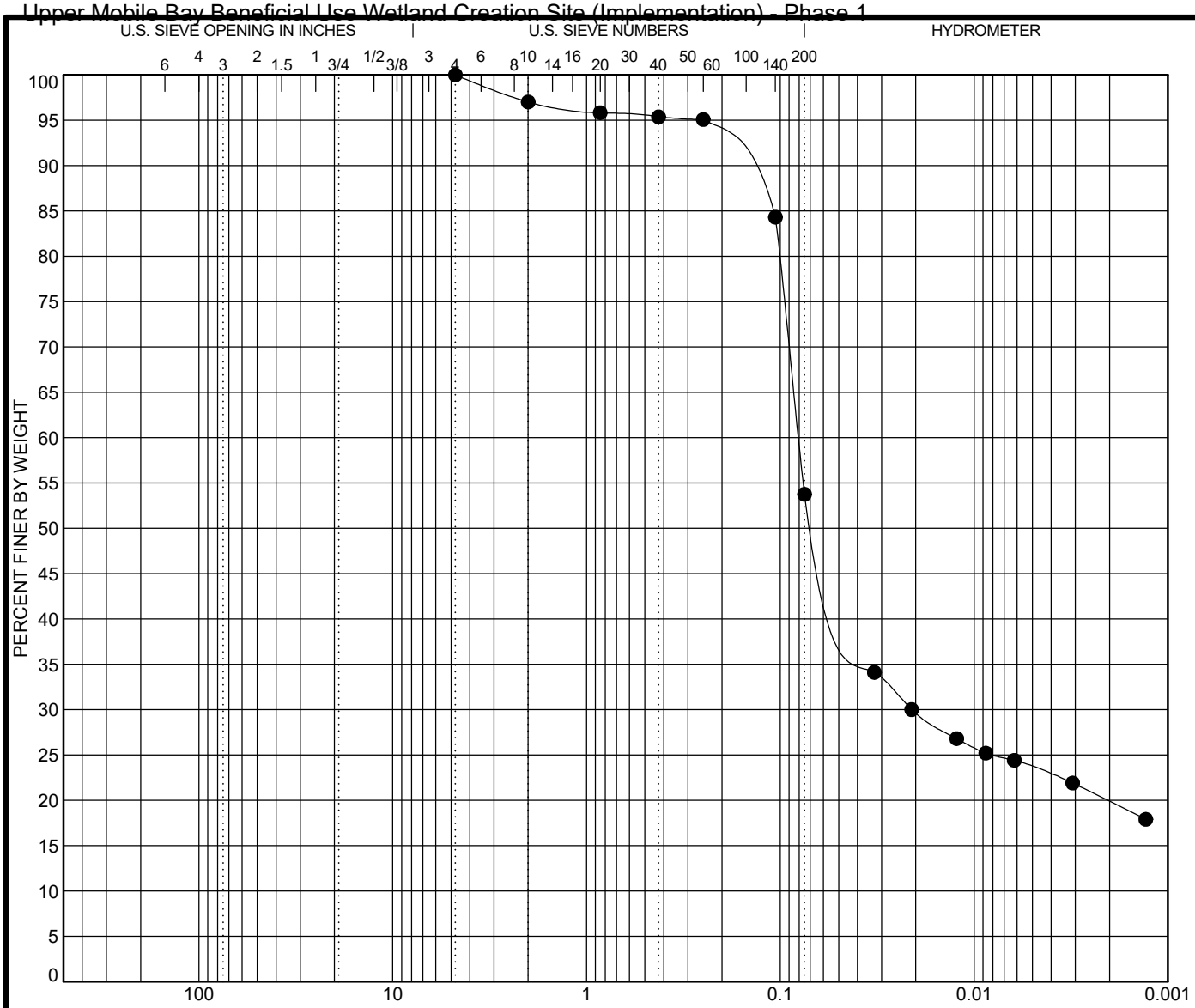
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-79**	**T-1;5.0 ft.**	**SANDY LEAN CLAY (CL)**	**42**	**21**	**21**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-79	**5.0 ft.**	**4.75**	**0.08**	**0.021**		**0.0**	**46.2**	**33.9**	**19.9**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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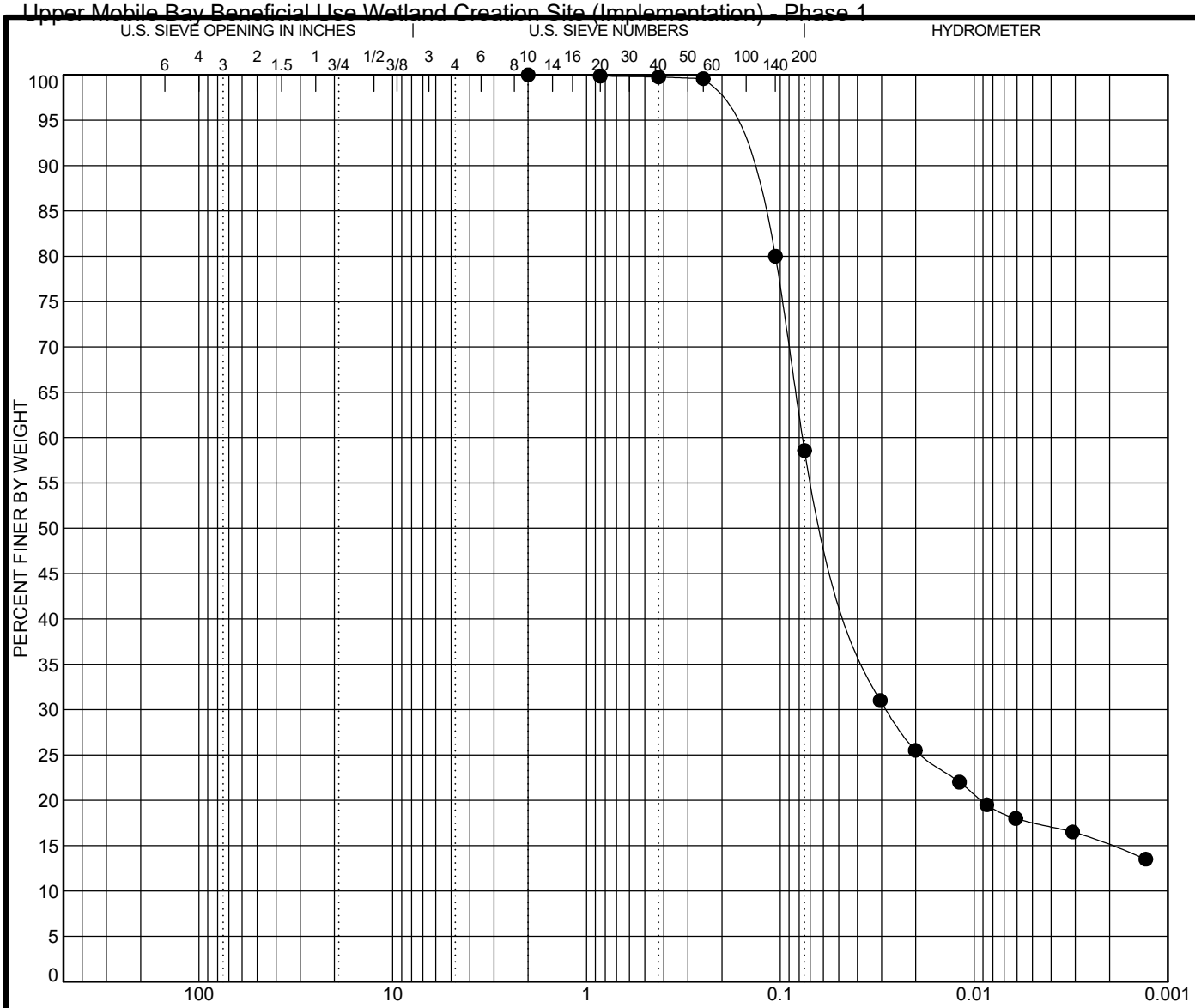
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-80**	**T-1;5.0 ft.**	**SANDY LEAN CLAY (CL)**	**42**	**19**	**23**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-80	**5.0 ft.**	**2**	**0.077**	**0.028**		**0.0**	**41.4**	**43.6**	**15.0**

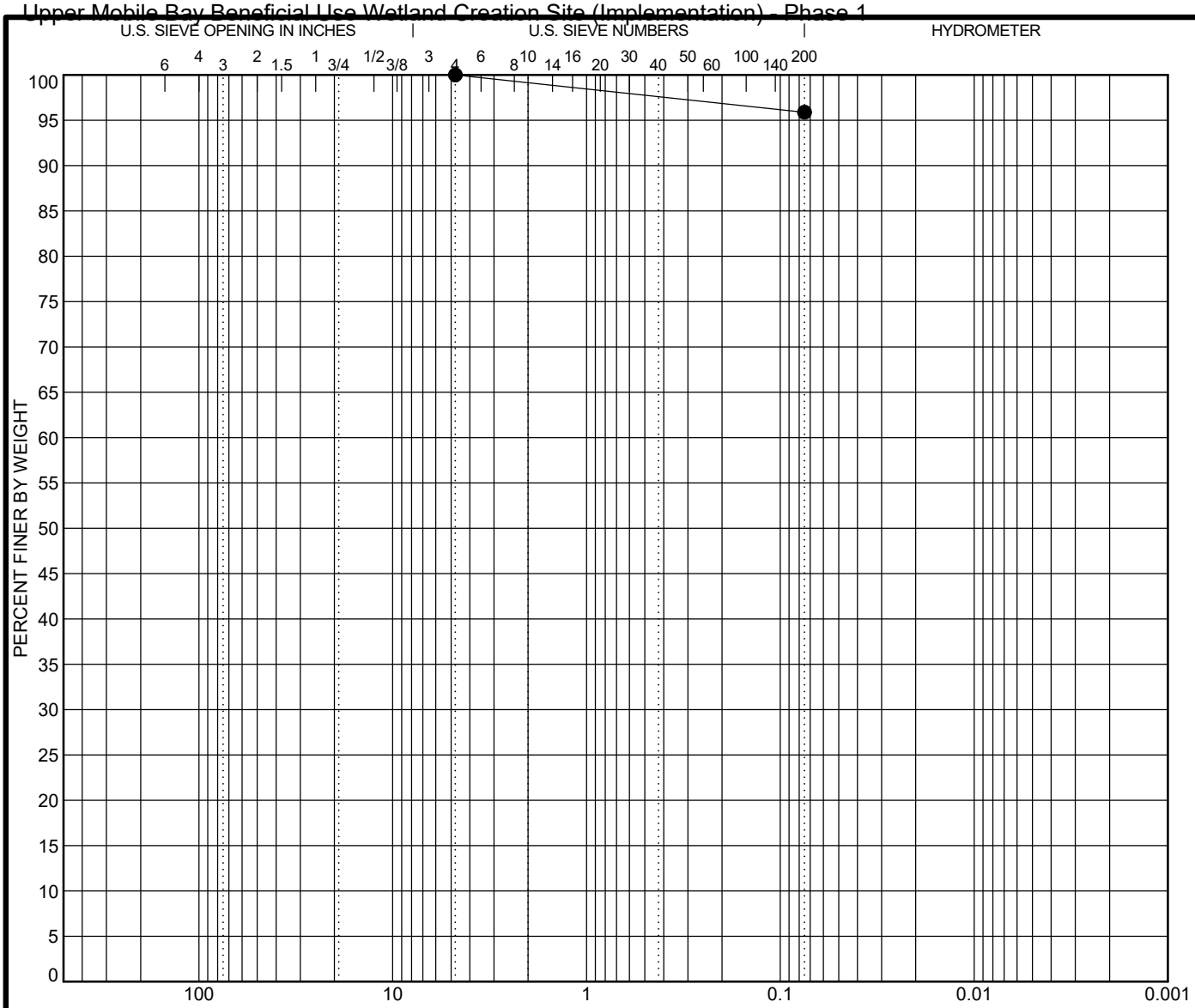
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**B-80**	**S-6;15.0 ft.**	**FAT CLAY (CH)**	**56**	**22**	**34**		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
B-80	**15.0 ft.**	**4.75**				**0.0**	**4.1**	**95.9**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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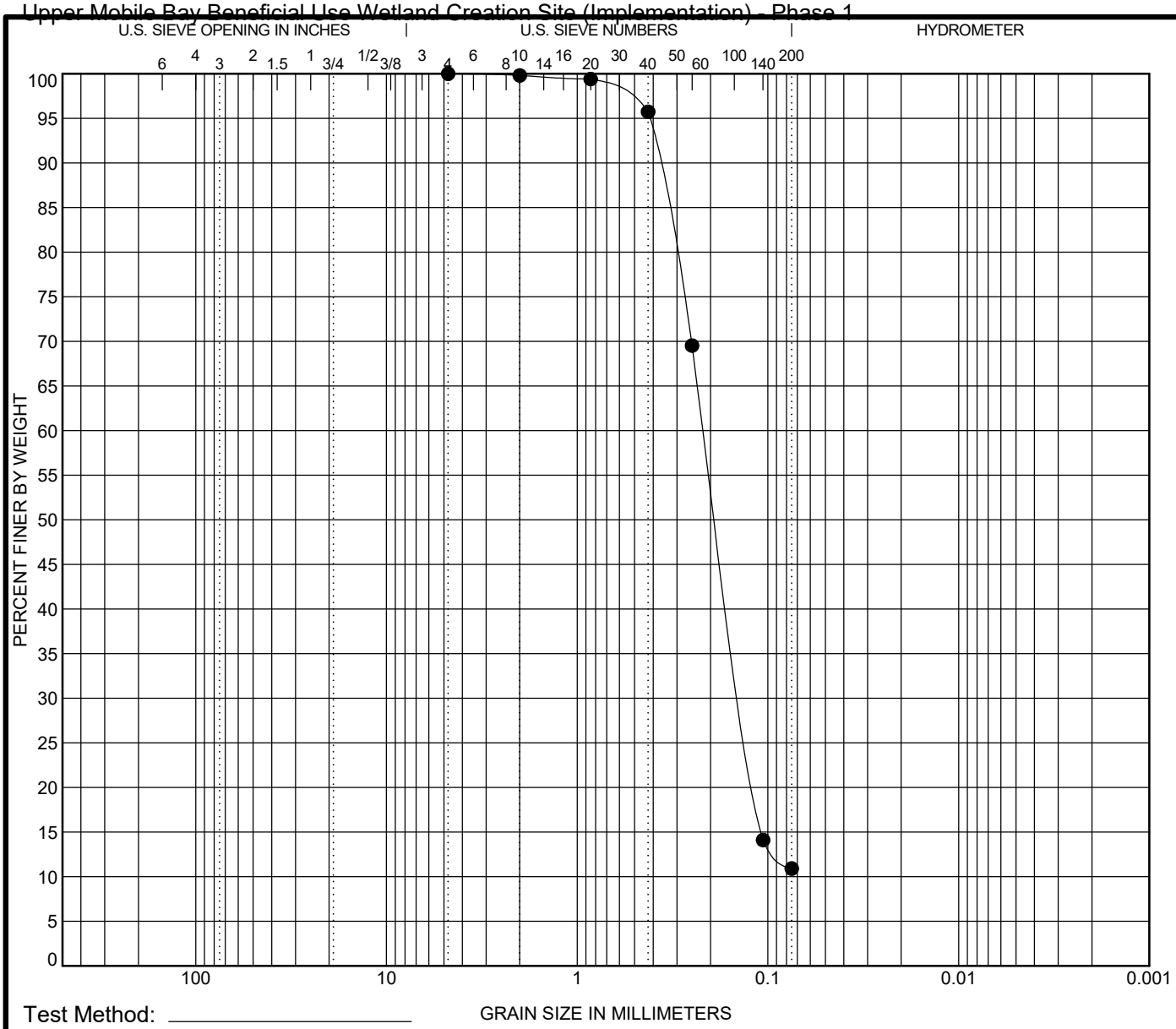
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**LSI-B1**	**S-3;5.5 ft.**					**1.25**	**3.17**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
LSI-B1	**5.5 ft.**	**4.75**	**0.216**	**0.136**		**0.0**	**89.1**	**10.9**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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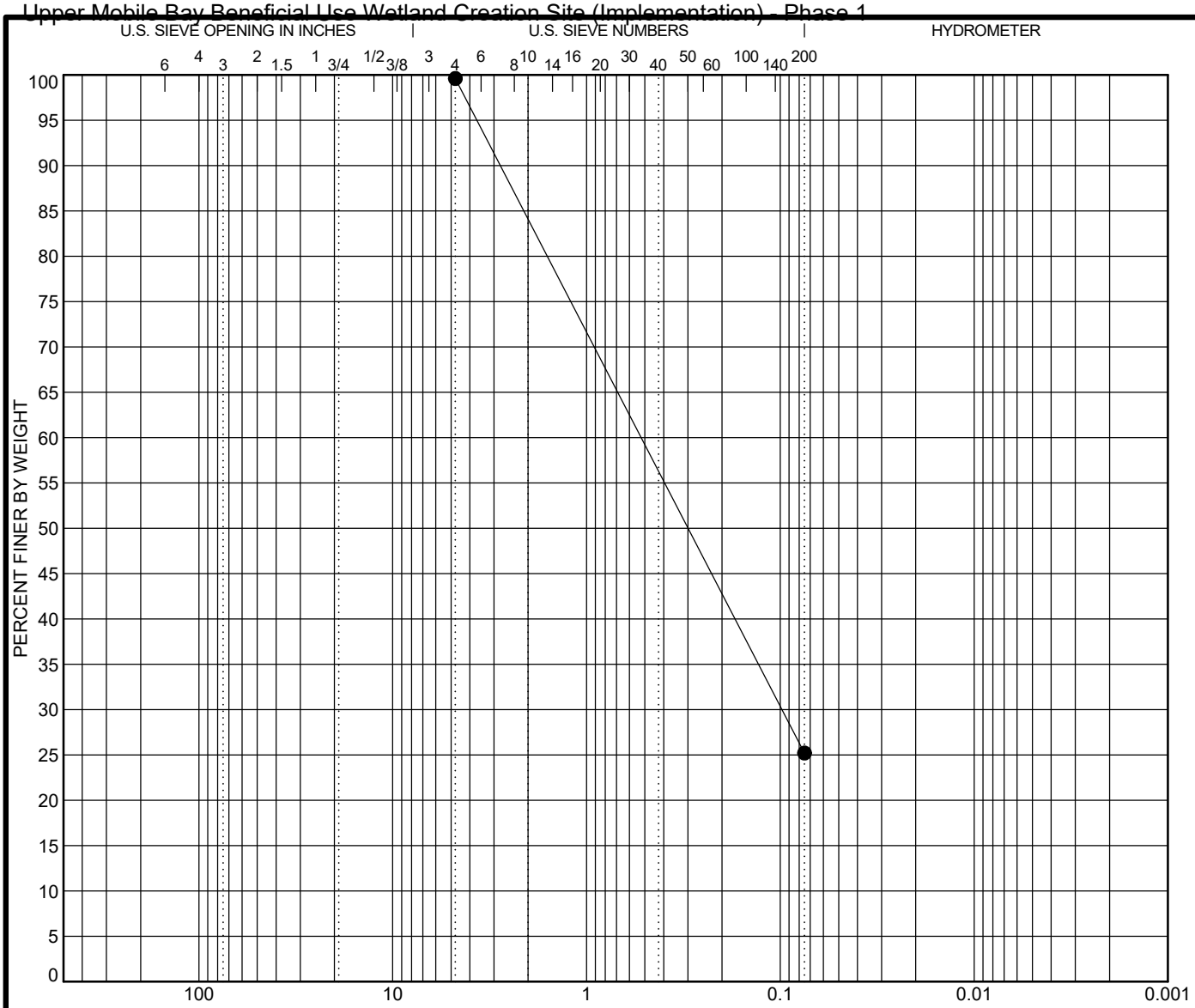
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**LSI-B1 S-5;10.5 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
LSI-B1 10.5 ft.	**4.75**	**0.522**	**0.098**		**0.0**	**74.4**	**25.2**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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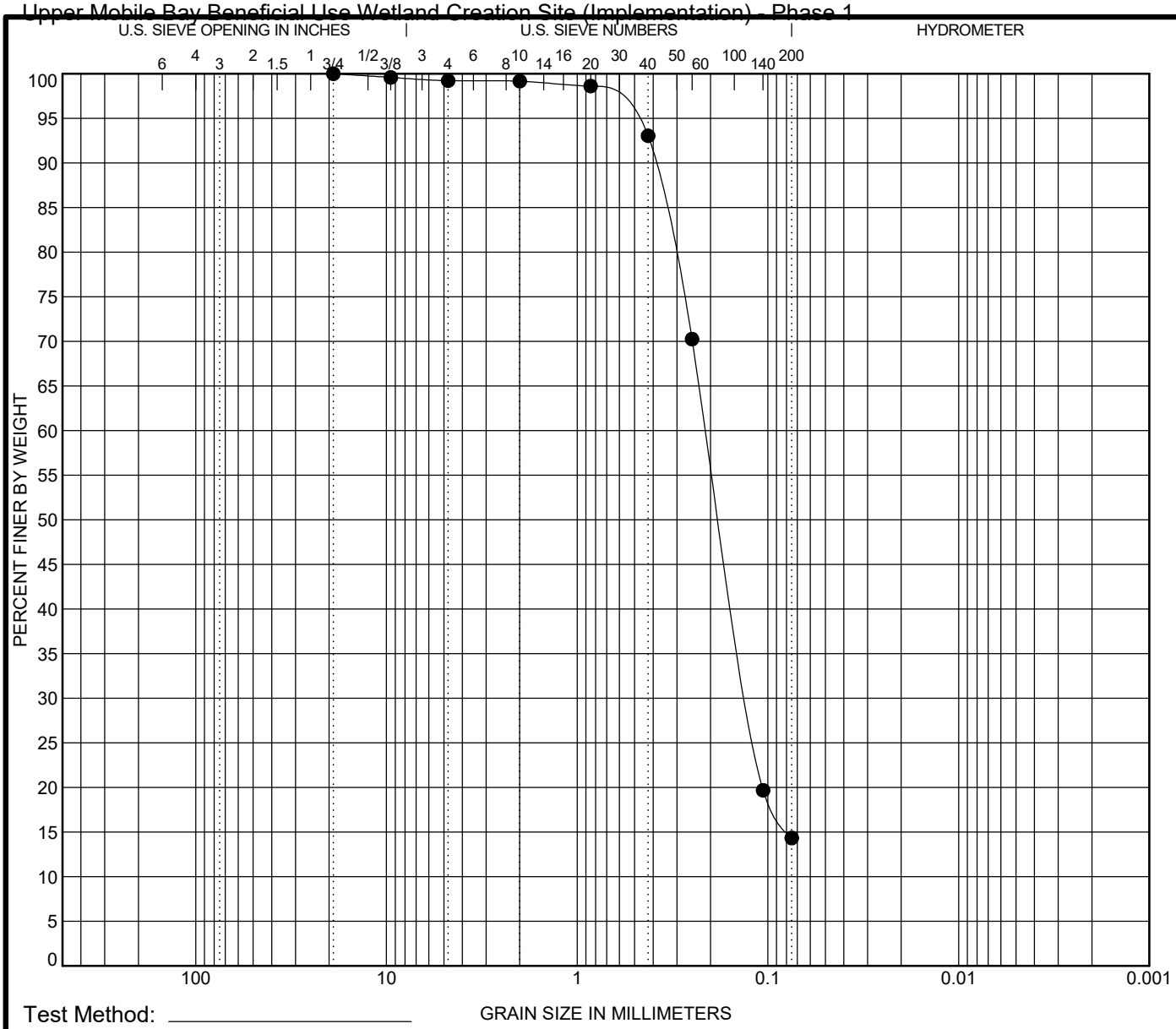
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **LSI-B1 S-7;15.5 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
LSI-B1 15.5 ft.	**19**	**0.21**	**0.126**		**0.8**	**84.9**	**14.3**	

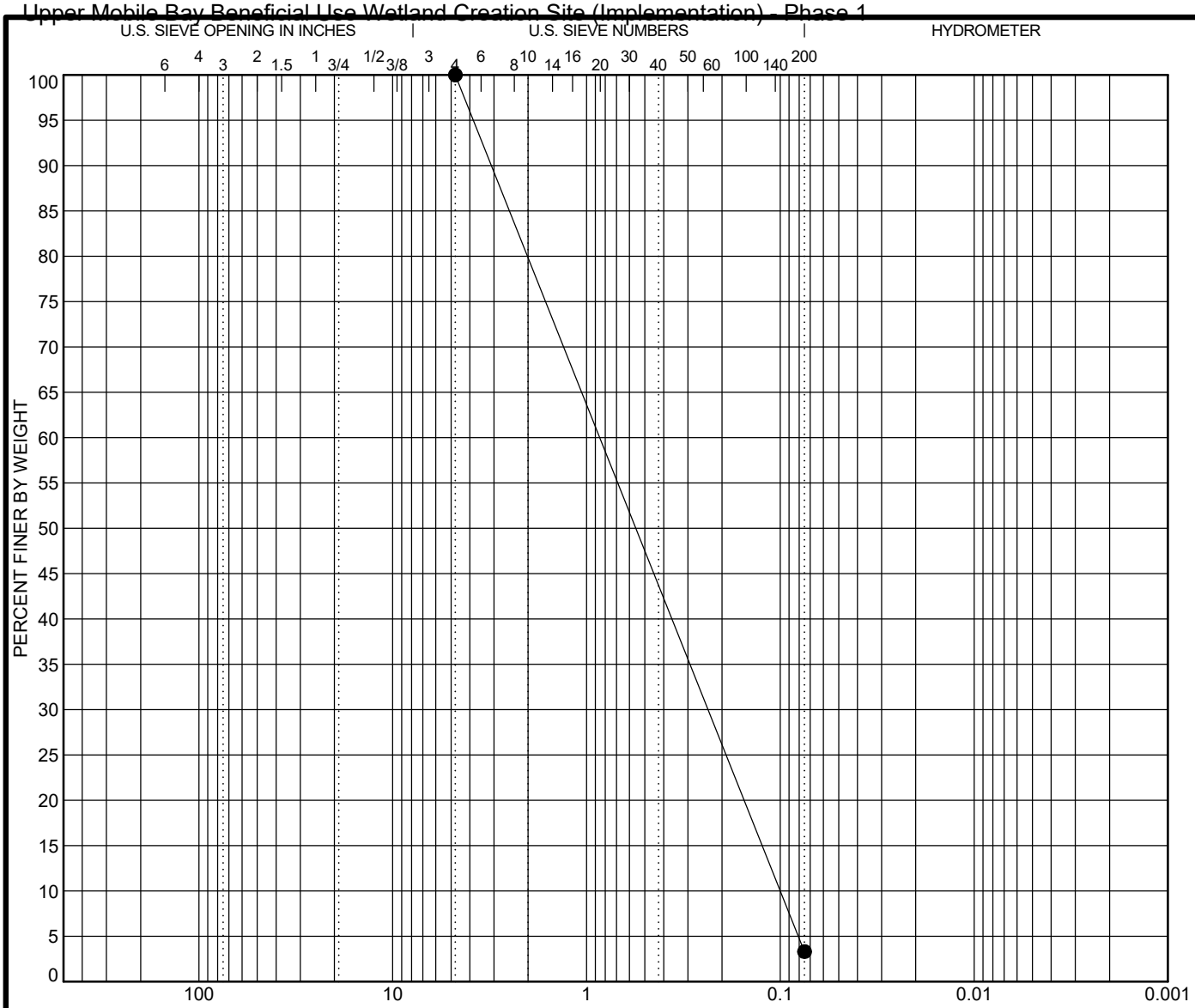
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**LSI-B1 S-9;20.5 ft.**	**POORLY GRADED SAND (SP)**				**0.65**	**8.54**

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
LSI-B1 20.5 ft.	**4.75**	**0.854**	**0.236**	**0.1**	**0.0**	**96.7**	**3.3**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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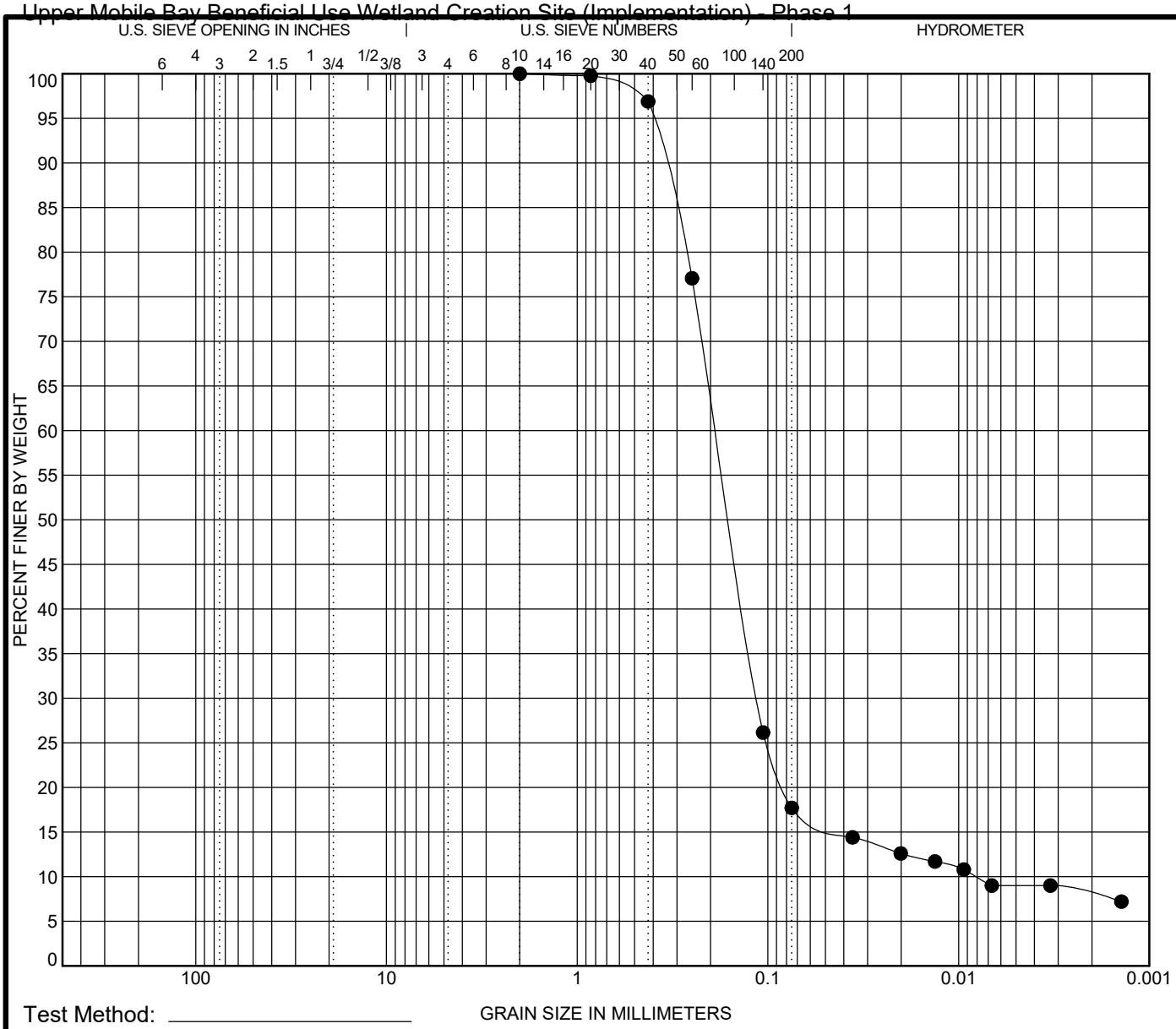
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**LSI-B2 ;5.5 ft.**					**8.44**	**23.19**

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
LSI-B2 5.5 ft.	**2**	**0.188**	**0.113**	**0.008**	**0.0**	**82.3**	**9.8**	**7.9**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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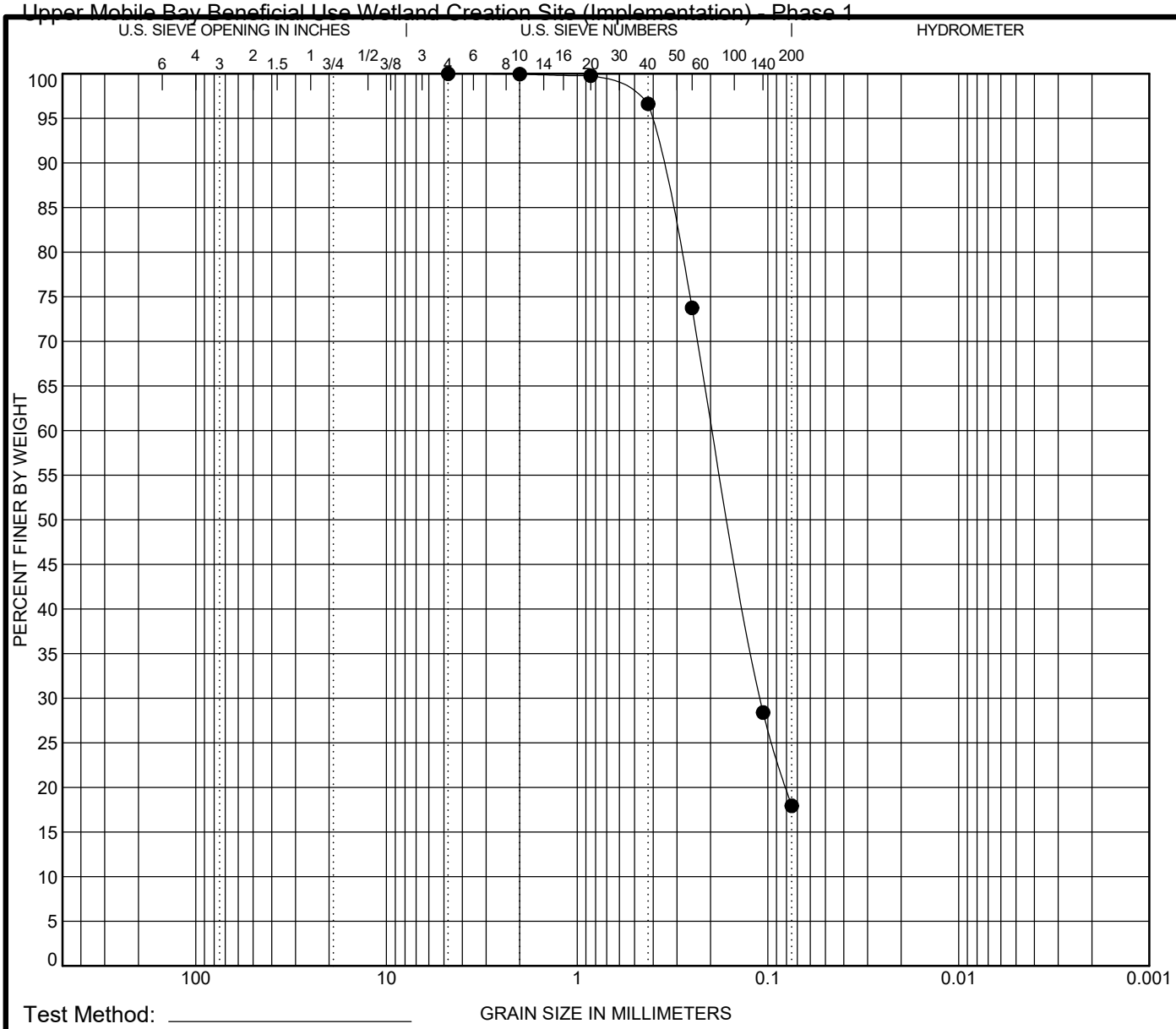
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**LSI-B2 S-4;10.0 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
LSI-B2 10.0 ft.	**4.75**	**0.193**	**0.109**		**0.0**	**82.1**	**17.9**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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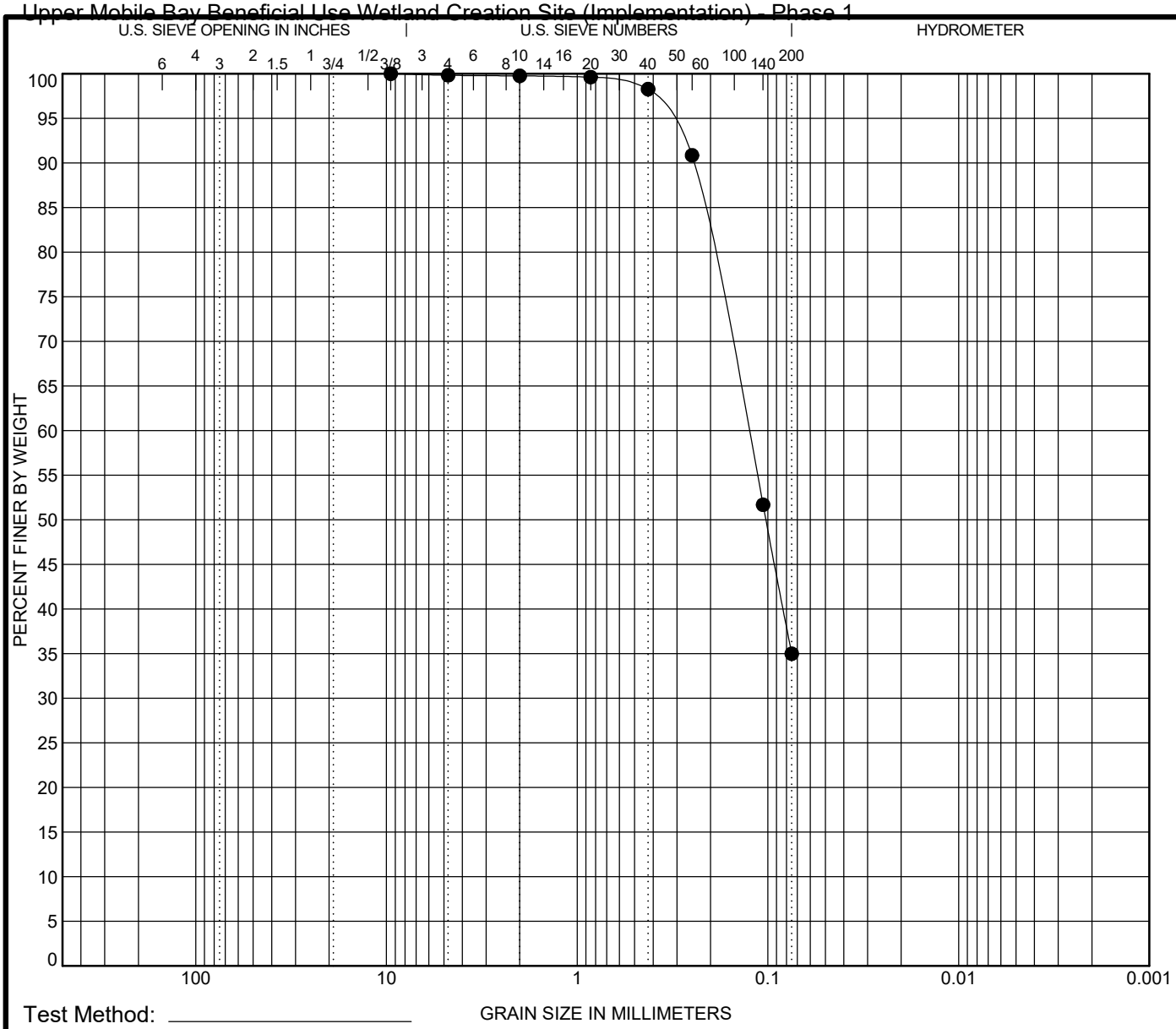
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**LSI-B2 S-6;15.0 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
LSI-B2 15.0 ft.	**9.5**	**0.127**			**0.2**	**64.8**	**35.0**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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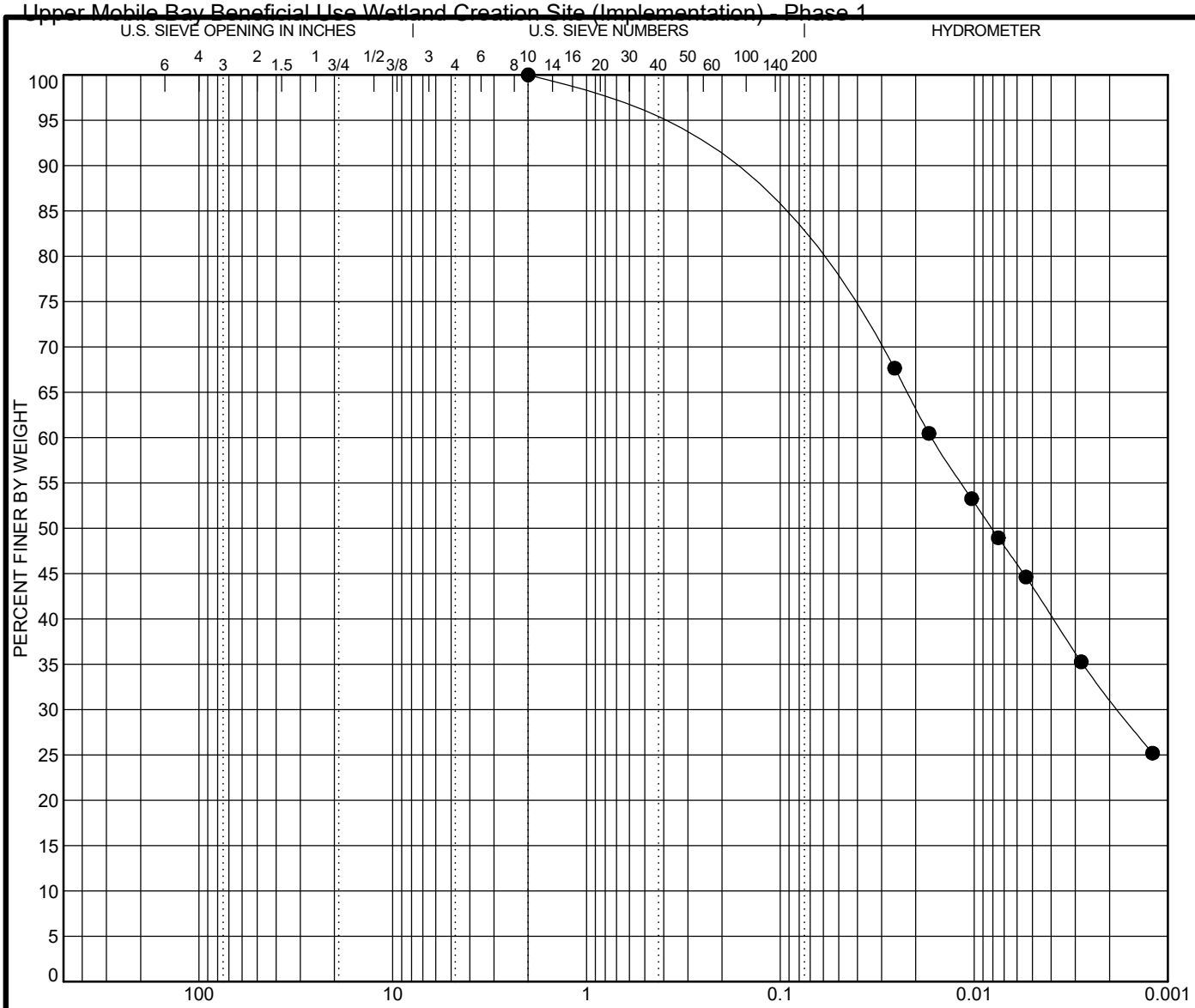

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**APM-B1 S-2;3.0 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
APM-B1 3.0 ft.	**2**	**0.017**	**0.002**		**0.0**	**24.4**	**44.3**	**31.3**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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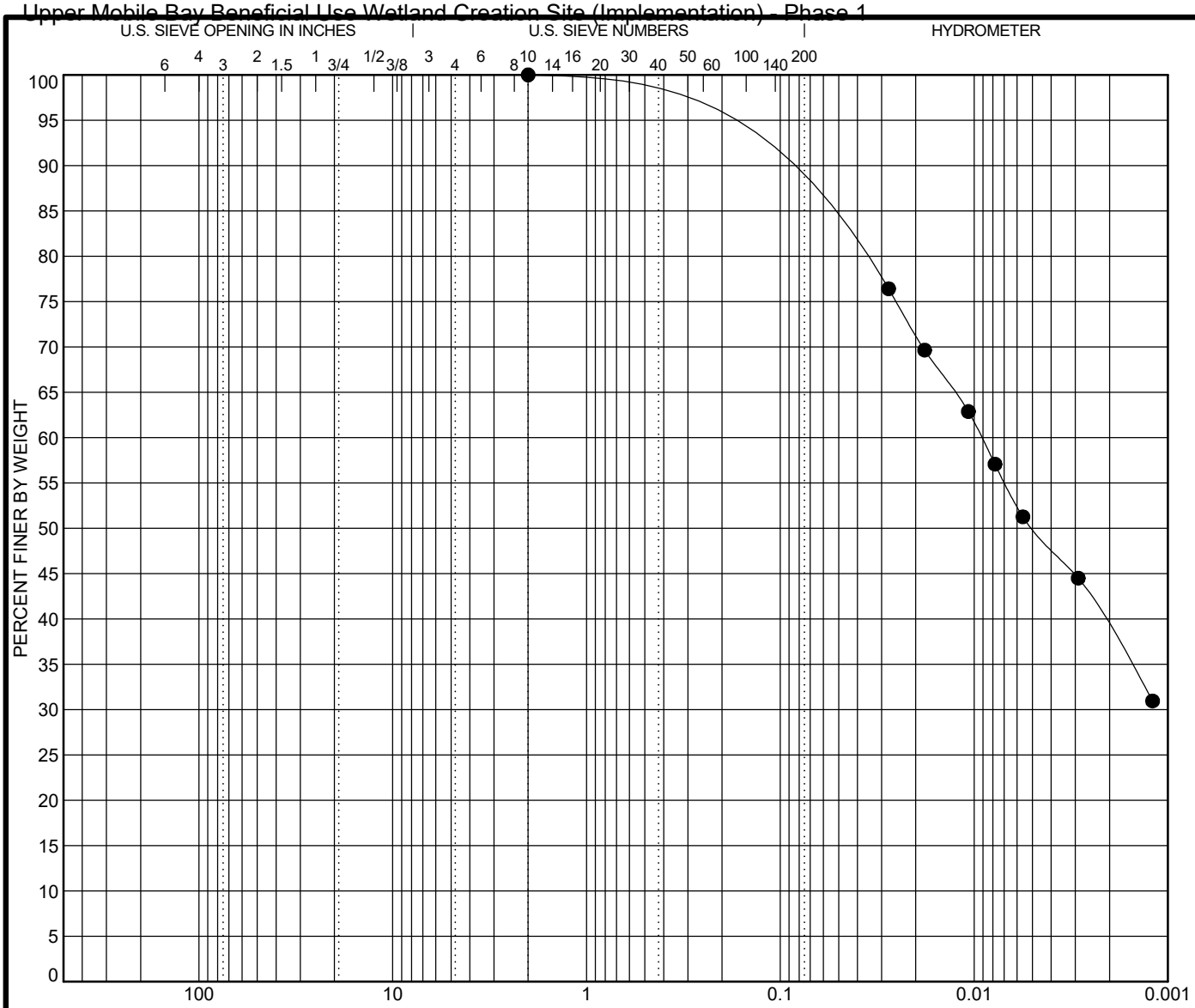

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**APM-B1 S-5;10.5 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
APM-B1 10.5 ft.	**2**	**0.009**			**0.0**	**18.1**	**43.1**	**38.8**

REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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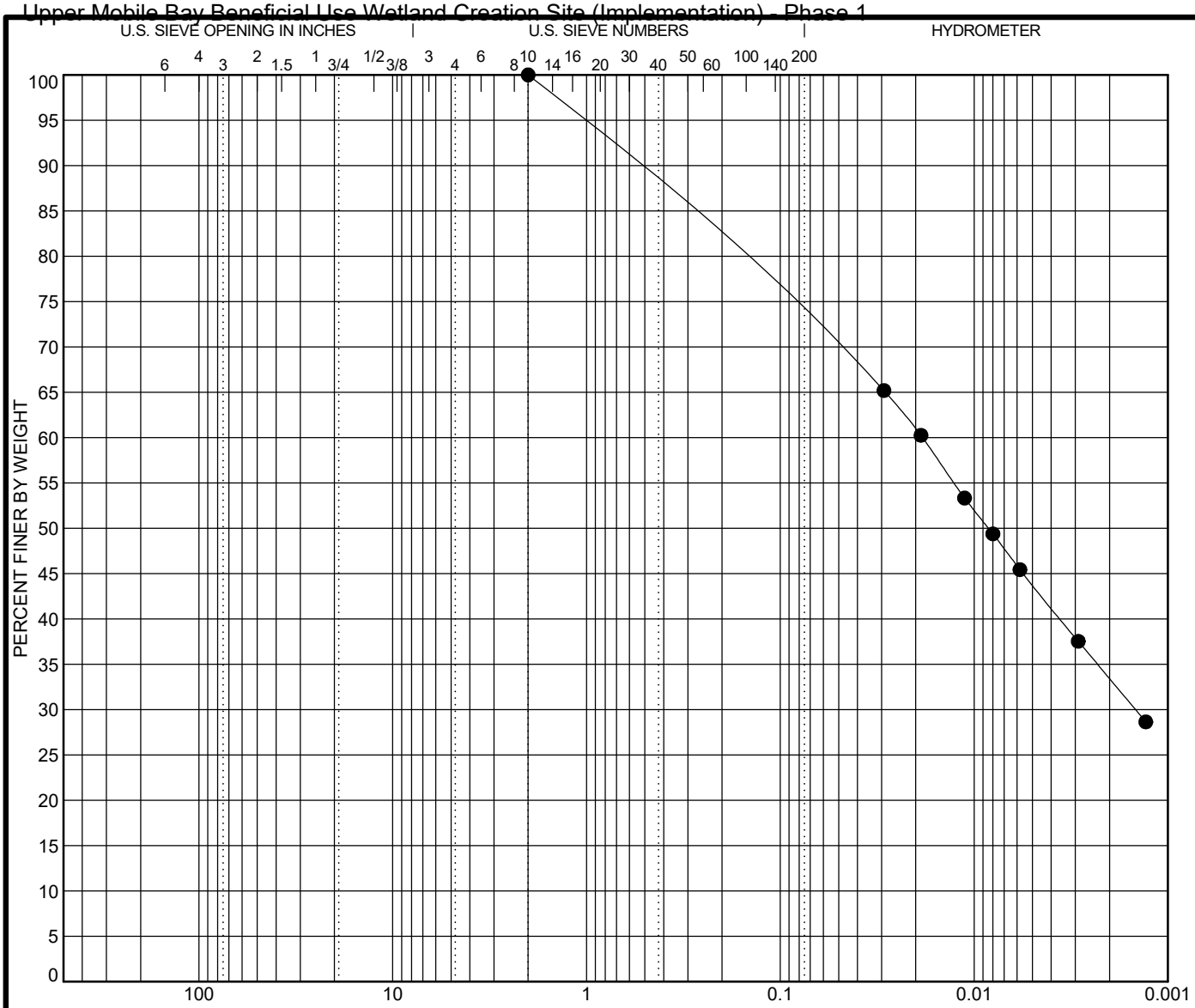

Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **APM-B2 S-4;8.0 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
APM-B2 8.0 ft.	**2**	**0.018**	**0.001**		**0.0**	**27.0**	**39.5**	**33.4**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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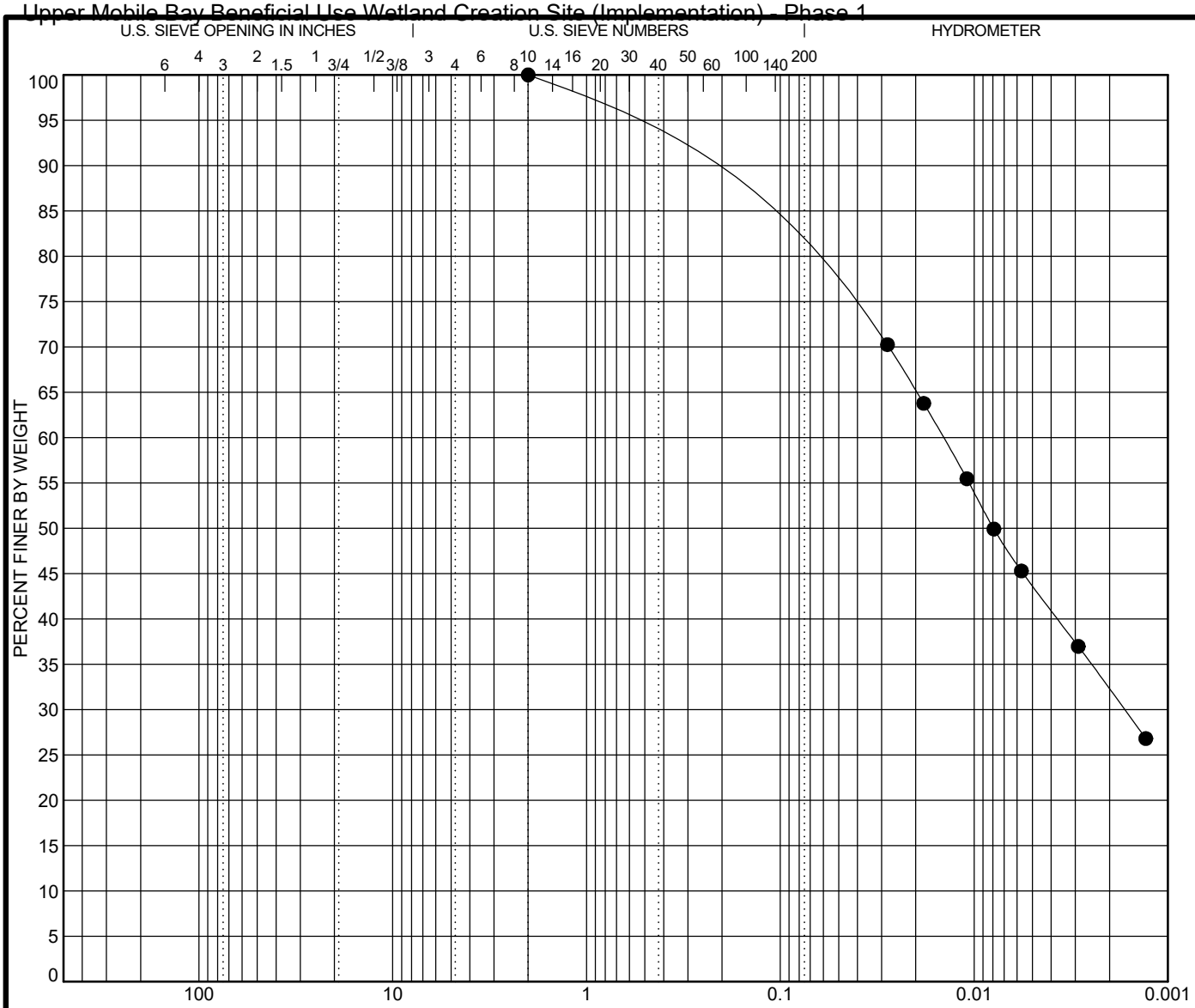
GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **APM-B3 S-3;5.5 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
APM-B3 5.5 ft.	**2**	**0.014**	**0.002**		**0.0**	**22.9**	**44.9**	**32.3**

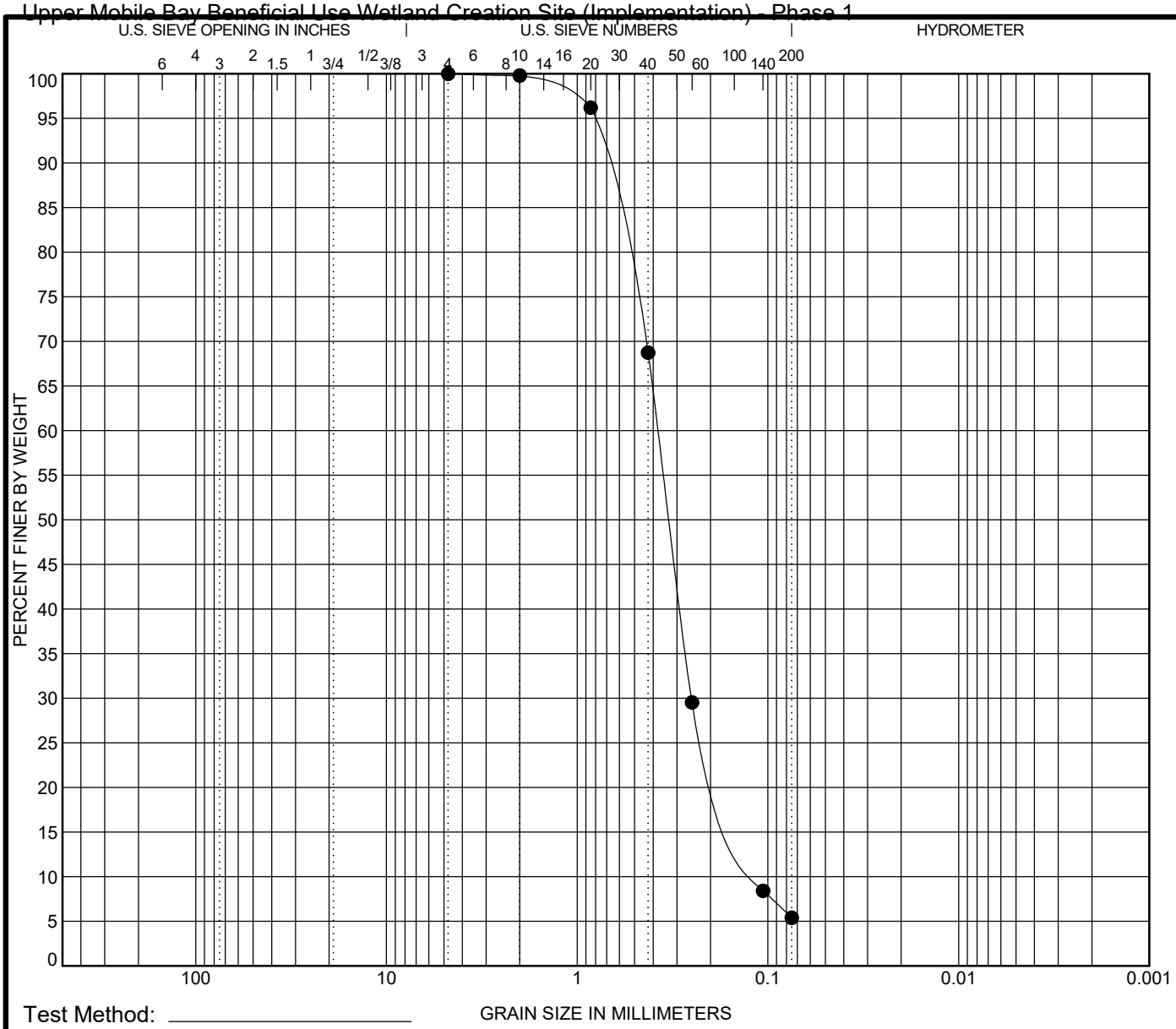
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**APM-B3 S-6;13.0 ft.**					**1.48**	**3.34**

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
APM-B3 13.0 ft.	**4.75**	**0.378**	**0.252**	**0.113**	**0.0**	**94.6**	**5.4**	

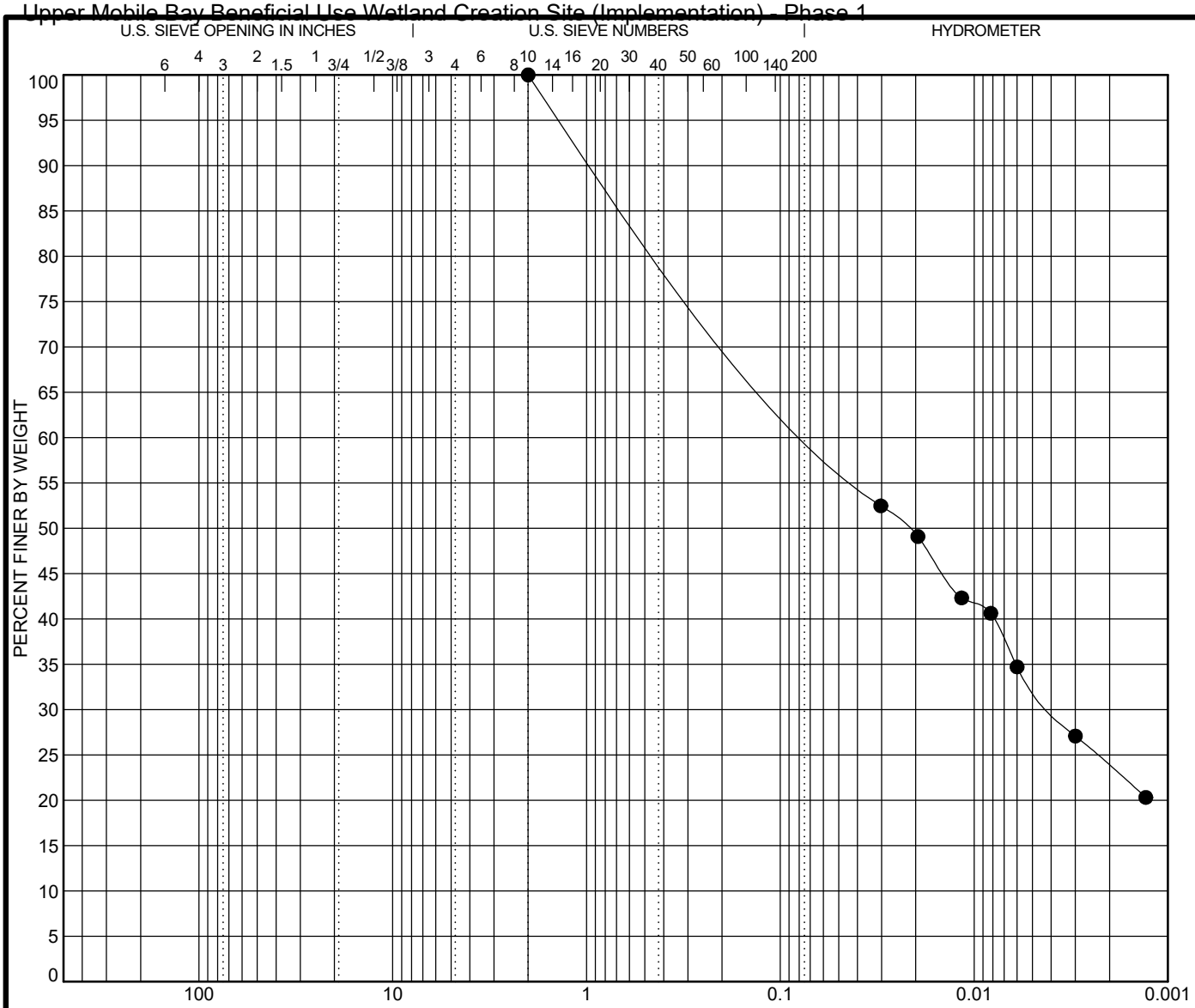
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **APM-B4 S-2;3.0 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
APM-B4 3.0 ft.	**2**	**0.059**	**0.004**		**0.0**	**37.2**	**39.0**	**23.8**

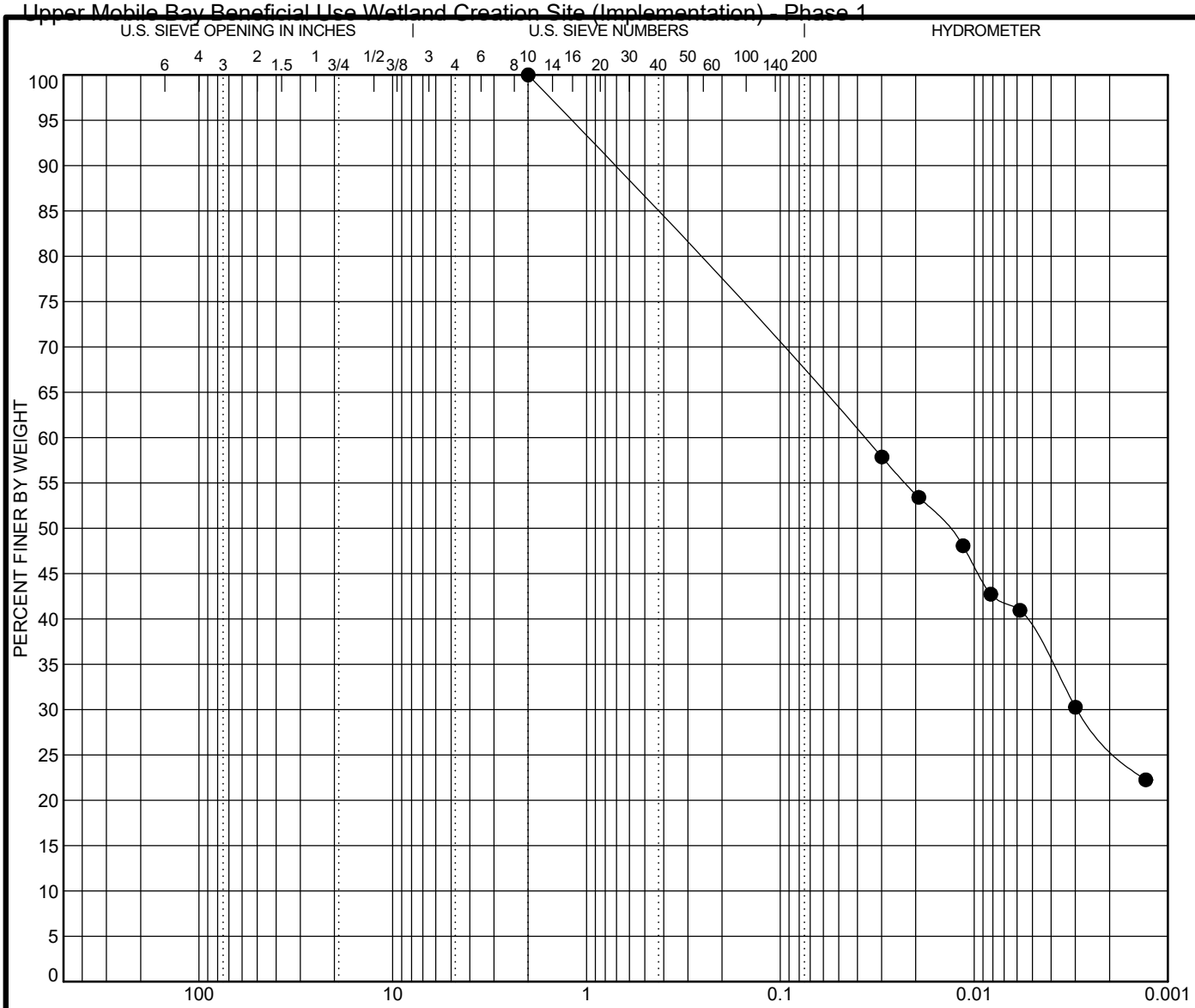
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● **APM-B4 S-4;8.0 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
APM-B4 8.0 ft.	**2**	**0.037**	**0.003**		**0.0**	**32.9**	**40.7**	**26.4**

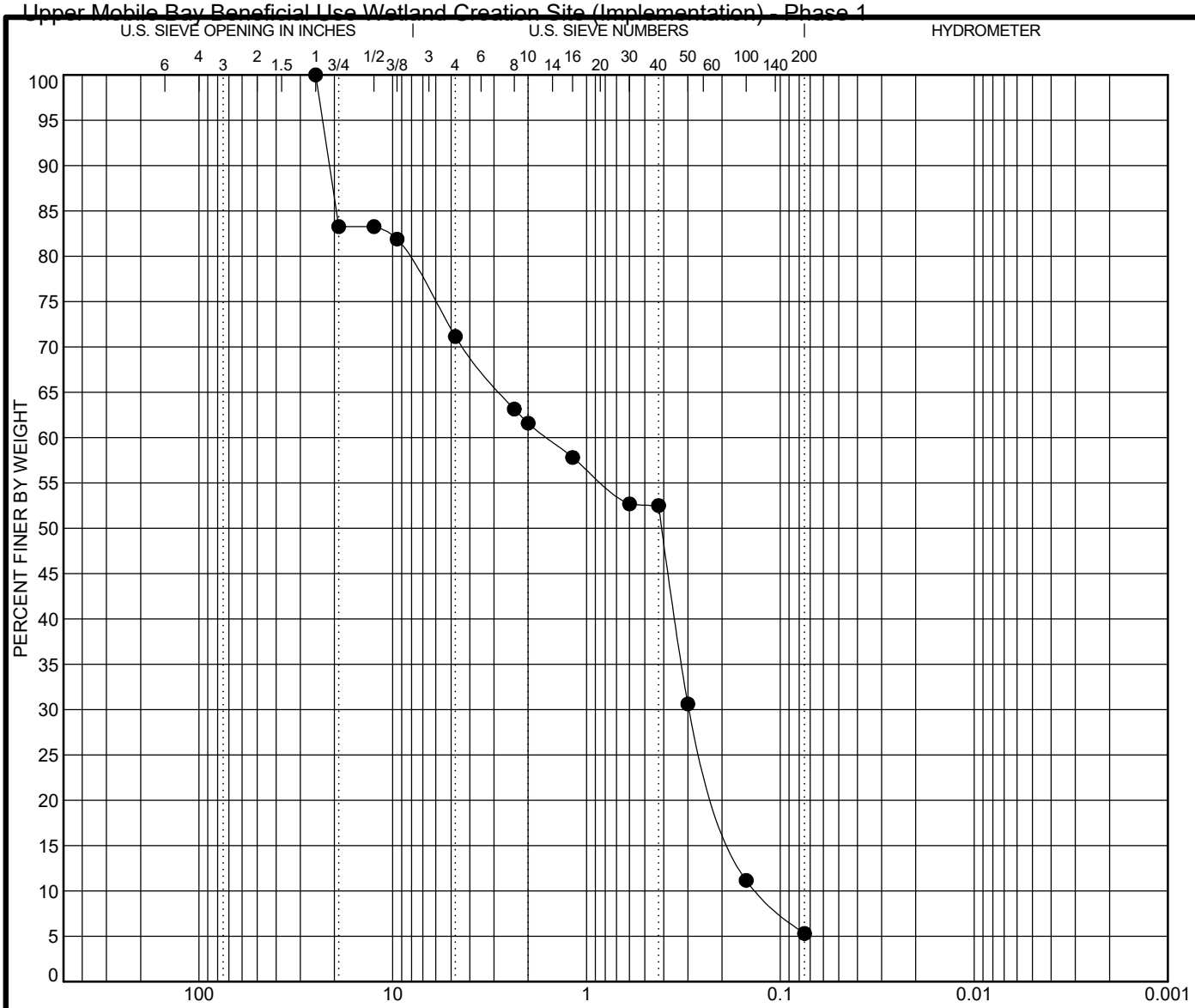
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**MI-B1**	**S-2;3.0 ft.**	**POORLY GRADED SAND with SILT and GRAVEL (SP-SM)**	**NP**	**NP**	**NP**	**0.41**	**12.26**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
MI-B1	**3.0 ft.**	**25**	**1.602**	**0.293**	**0.131**	**28.8**	**65.8**	**5.3**	

REMARKS: **Small amount of sample.**

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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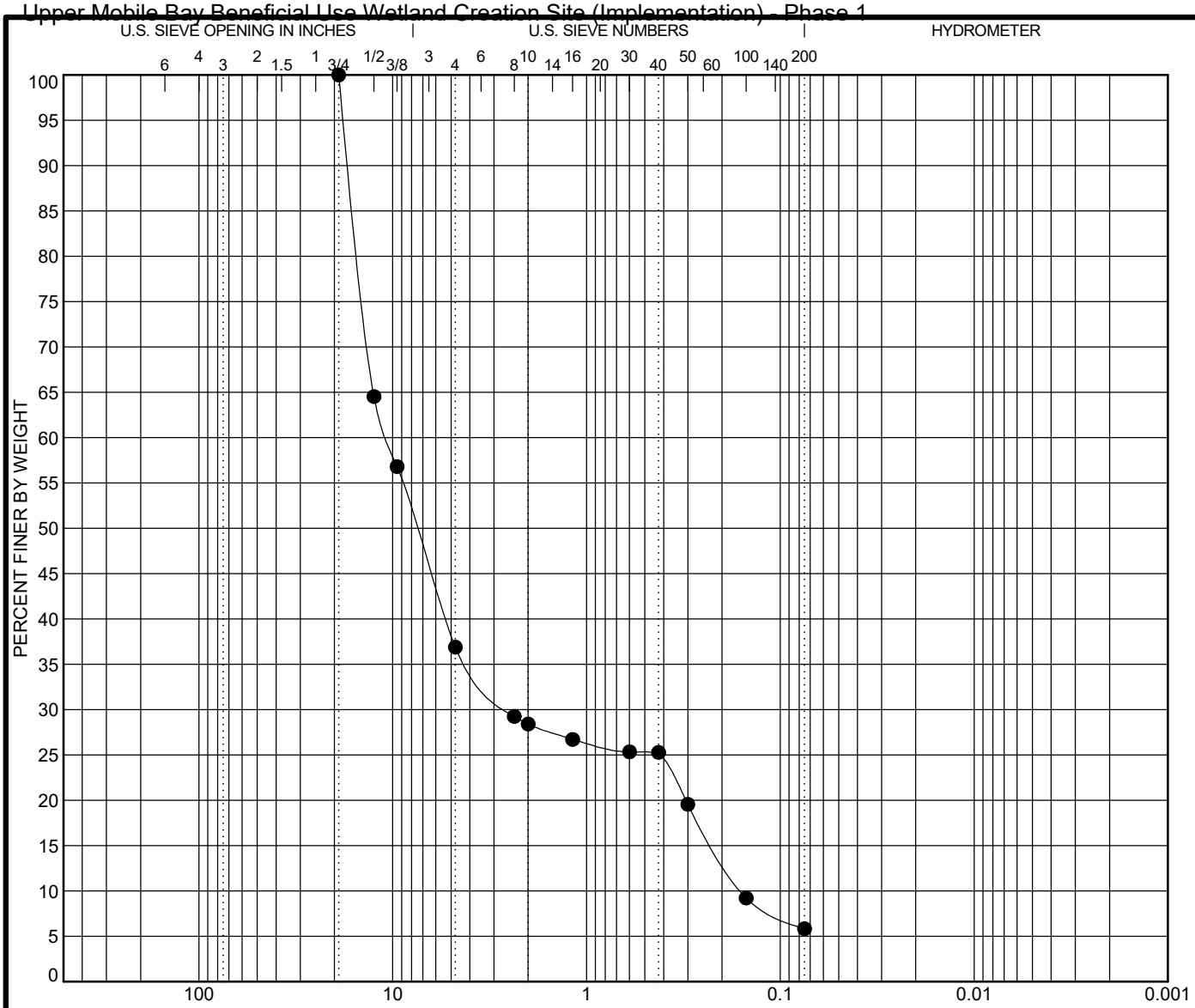
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**MI-B1**	**S-5;10.5 ft.**	**POORLY GRADED GRAVEL with SILT and SAND (GP-GM)**	**NP**	**NP**	**NP**	**3.80**	**67.33**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
MI-B1	**10.5 ft.**	**19**	**10.643**	**2.529**	**0.158**	**63.1**	**31.0**	**5.8**	

REMARKS: **Small amount of sample.**

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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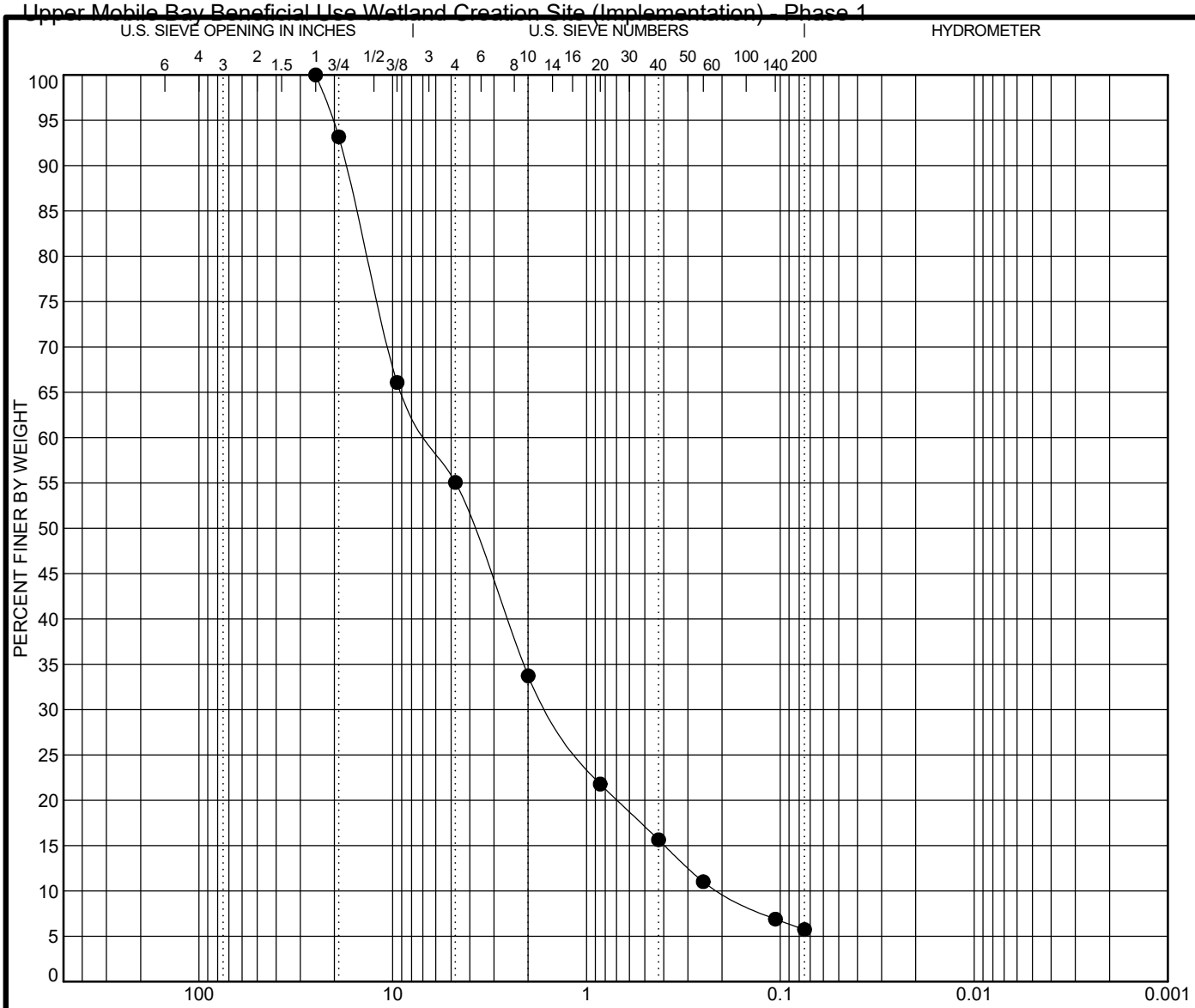
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**MI-B2**	**S-2;3.0 ft.**					**1.79**	**32.03**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
MI-B2	**3.0 ft.**	**25**	**6.48**	**1.531**	**0.202**	**44.9**	**49.3**	**5.7**	

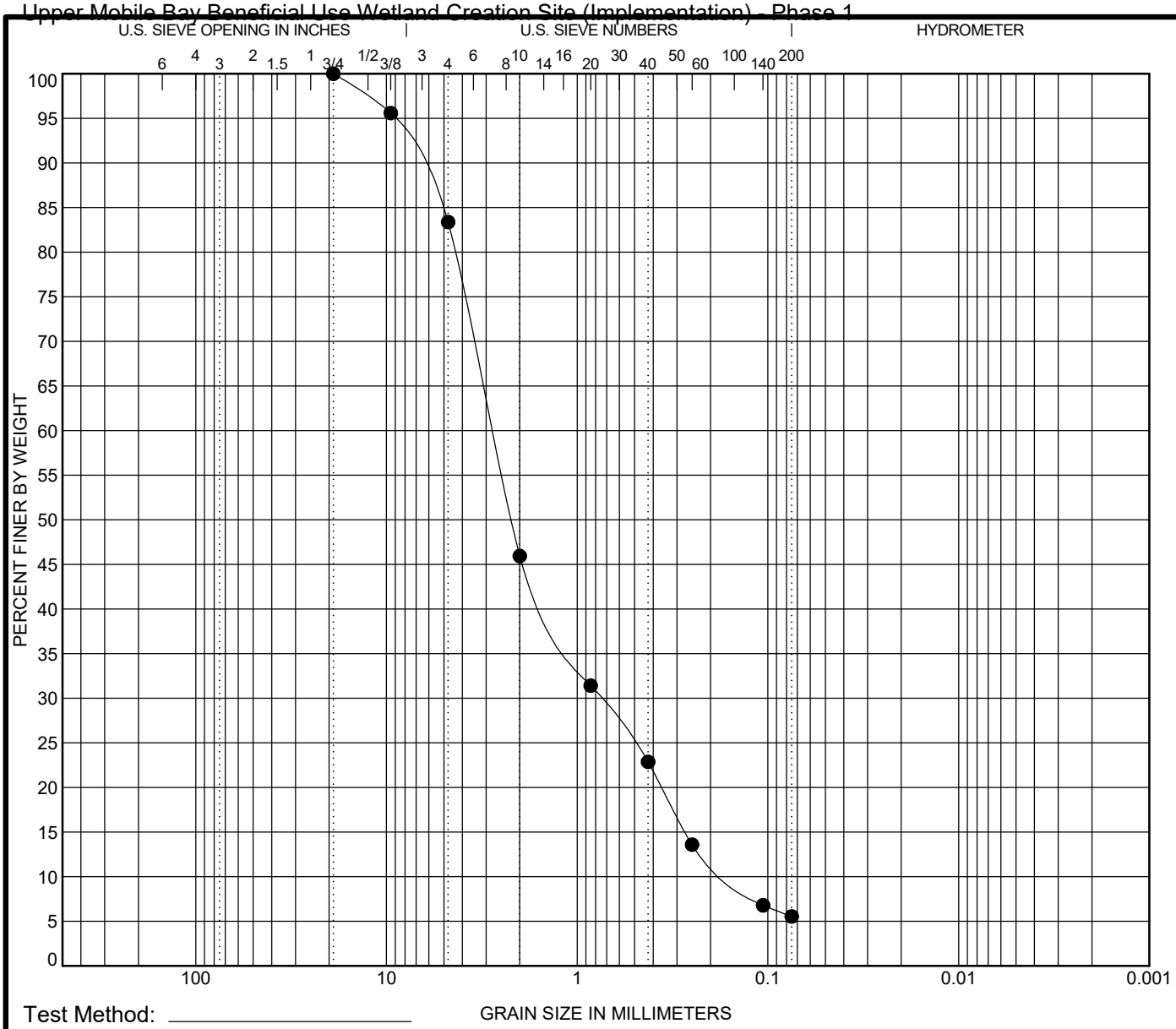
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**MI-B2**	**S-5;10.5 ft.**					**1.31**	**17.41**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
MI-B2	**10.5 ft.**	**19**	**2.768**	**0.758**	**0.159**	**16.6**	**77.8**	**5.5**	

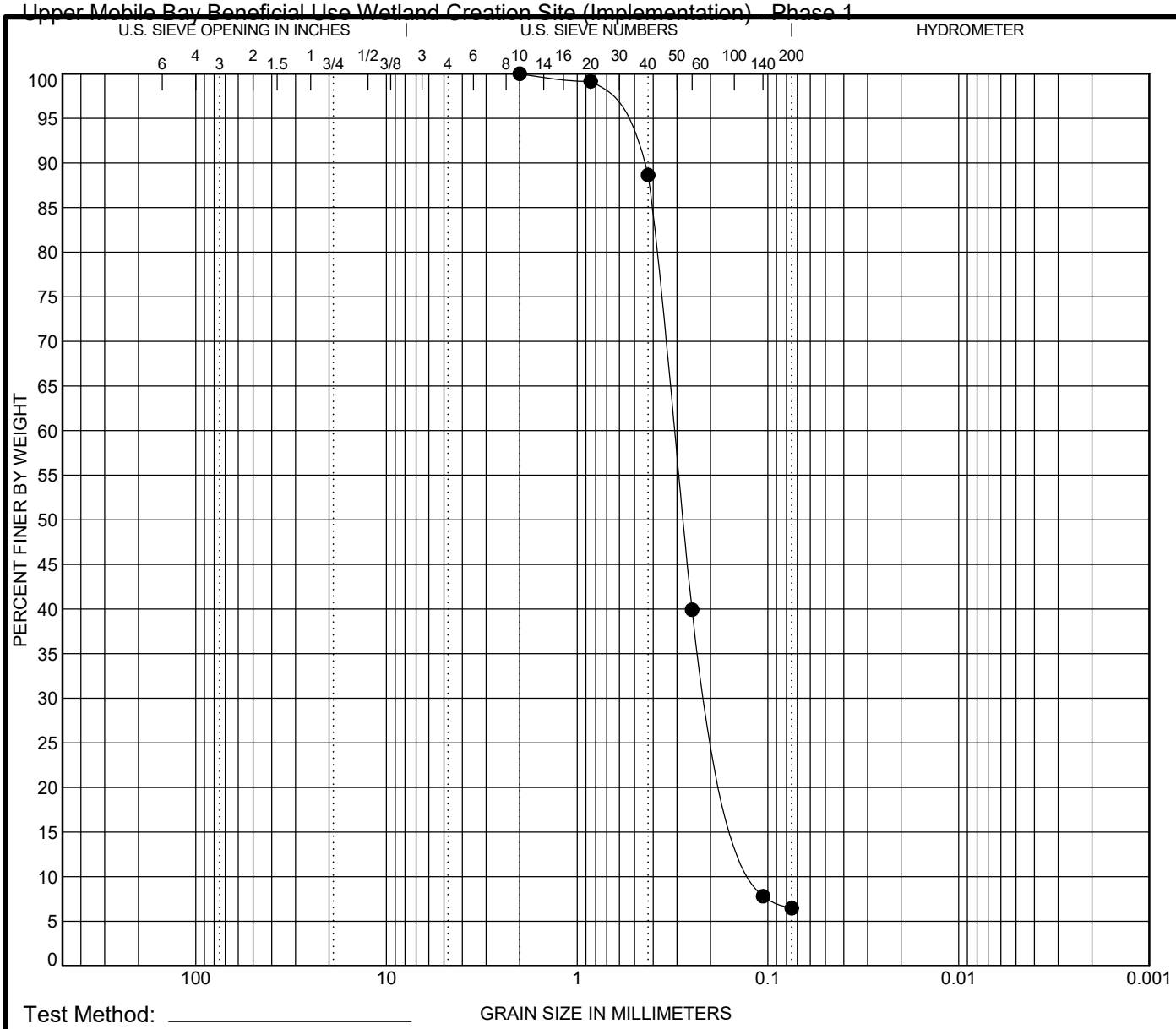
REMARKS:

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**MI-B2**	**S-7;15.5 ft.**					**1.05**	**2.77**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
MI-B2	**15.5 ft.**	**2**	**0.311**	**0.192**	**0.112**	**0.0**	**93.5**	**6.5**	

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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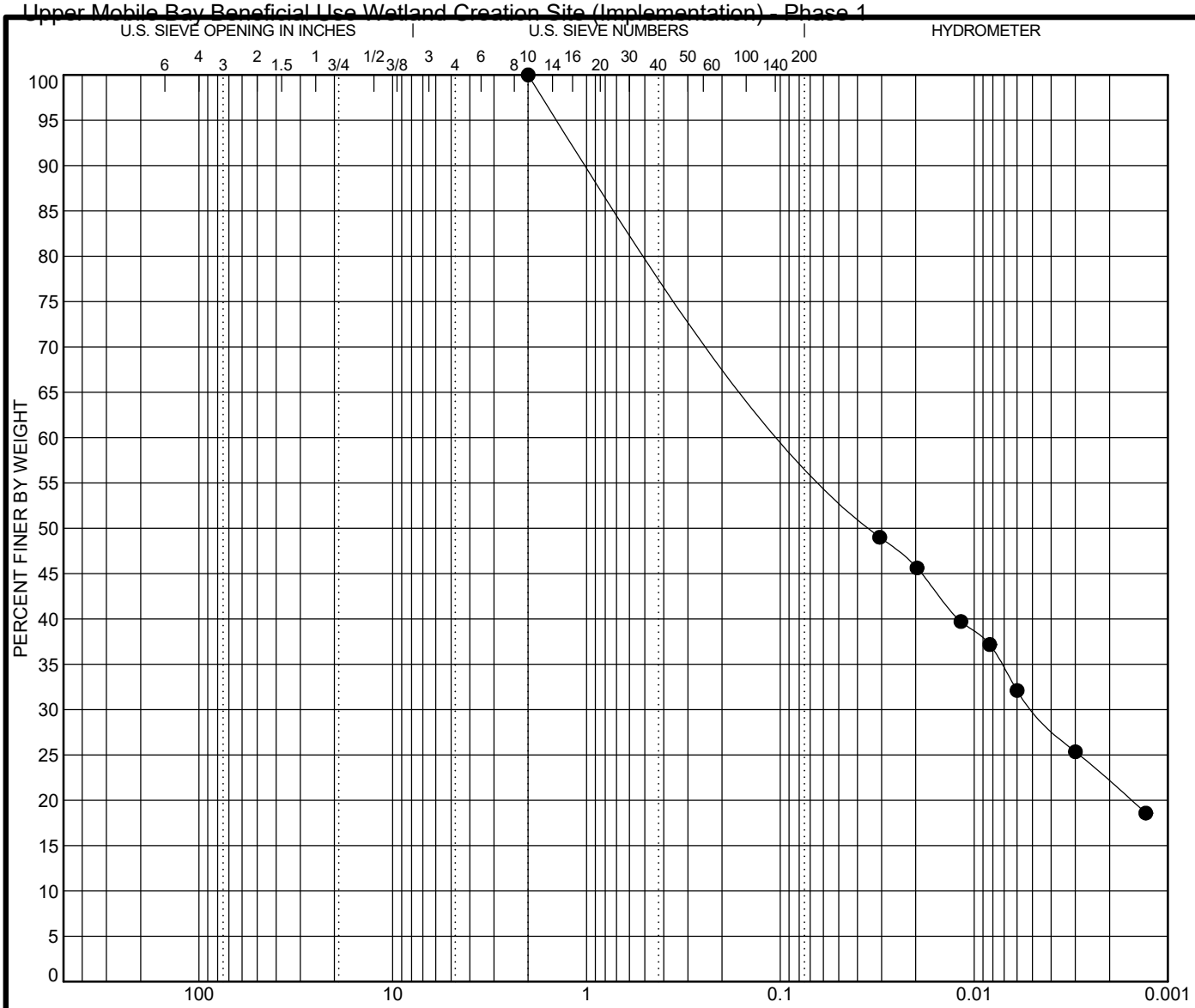
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**MI-B3**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
MI-B3	**3.0 ft.**	**2**	**0.076**	**0.005**		**0.0**	**40.1**	**37.8**	**22.1**

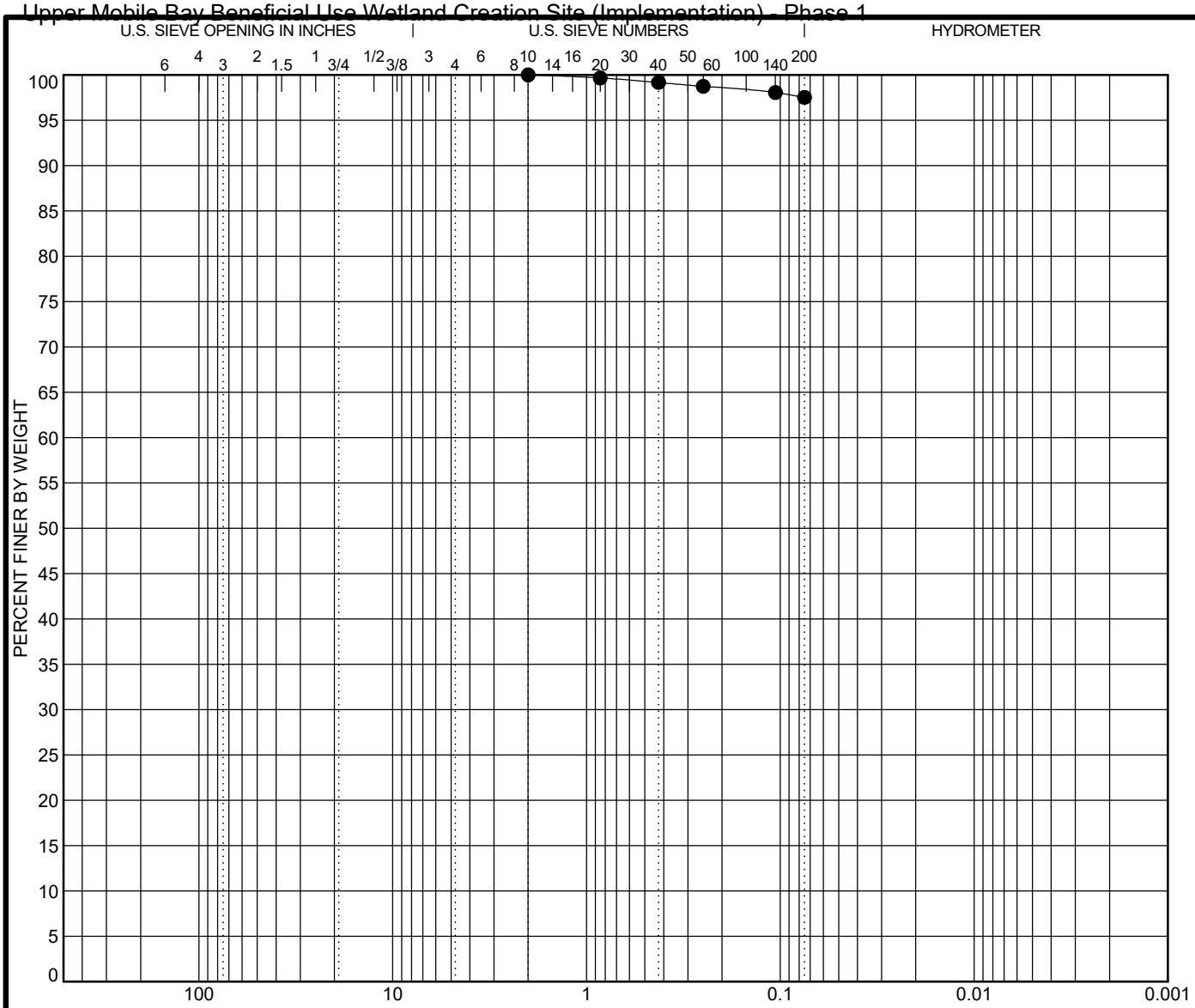
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**MI-B3**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
MI-B3	**8.0 ft.**	**2**				**0.0**	**2.5**	**97.5**	

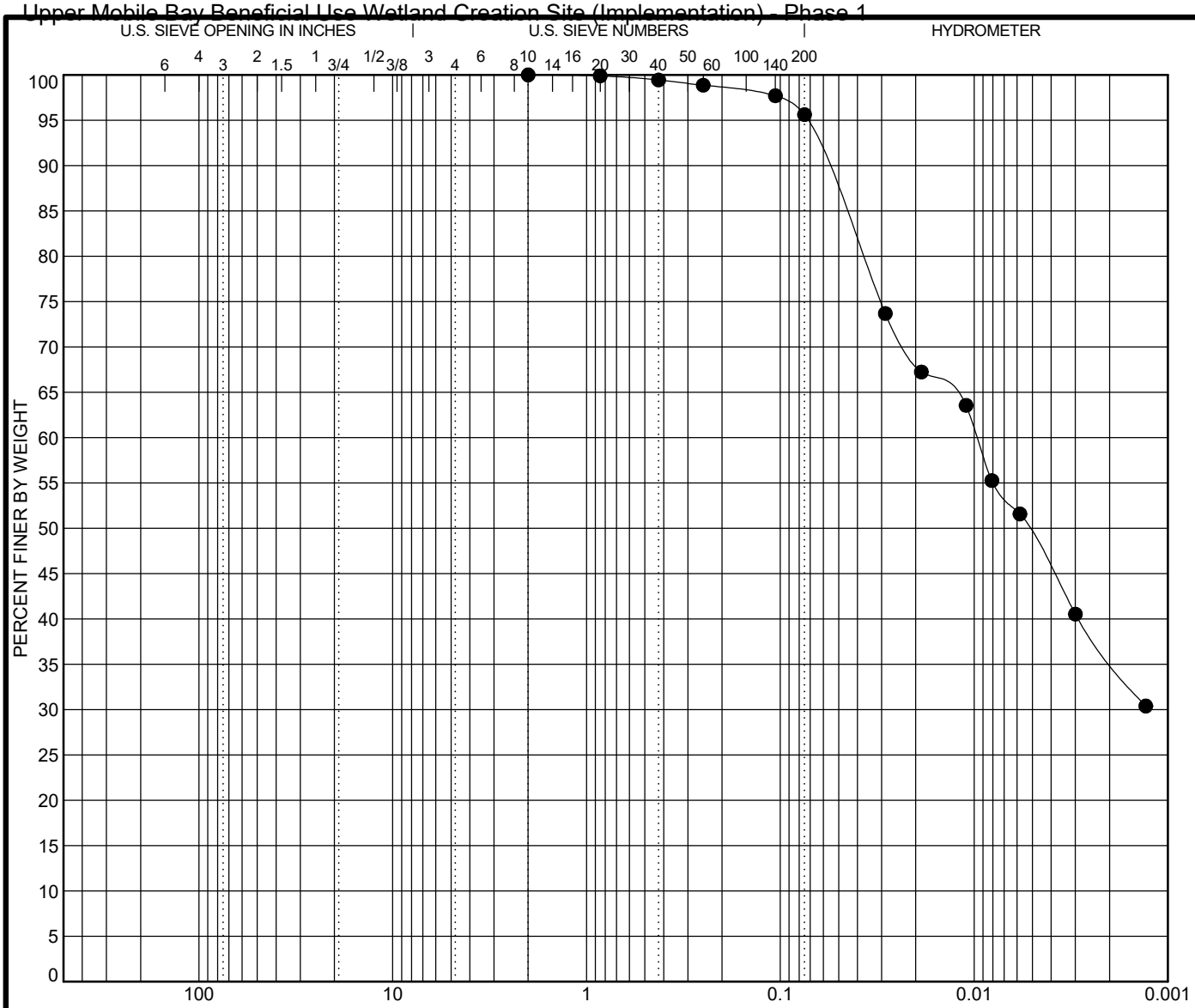
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**MI-B4**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
MI-B4	**5.5 ft.**	**2**	**0.01**			**0.0**	**4.4**	**60.0**	**35.6**

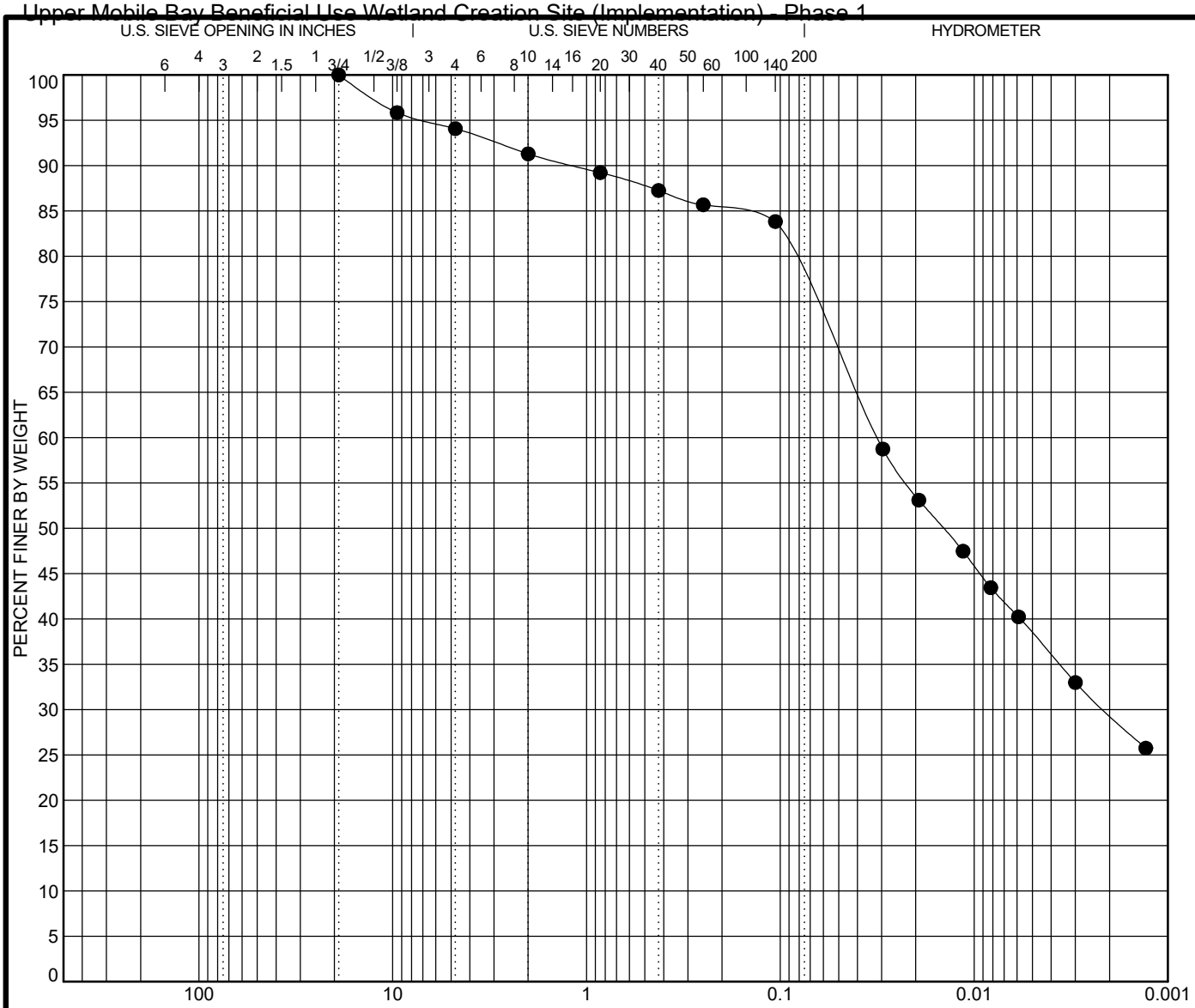
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**MI-B5**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
MI-B5	**3.0 ft.**	**19**	**0.032**	**0.002**		**5.9**	**17.0**	**47.5**	**29.5**

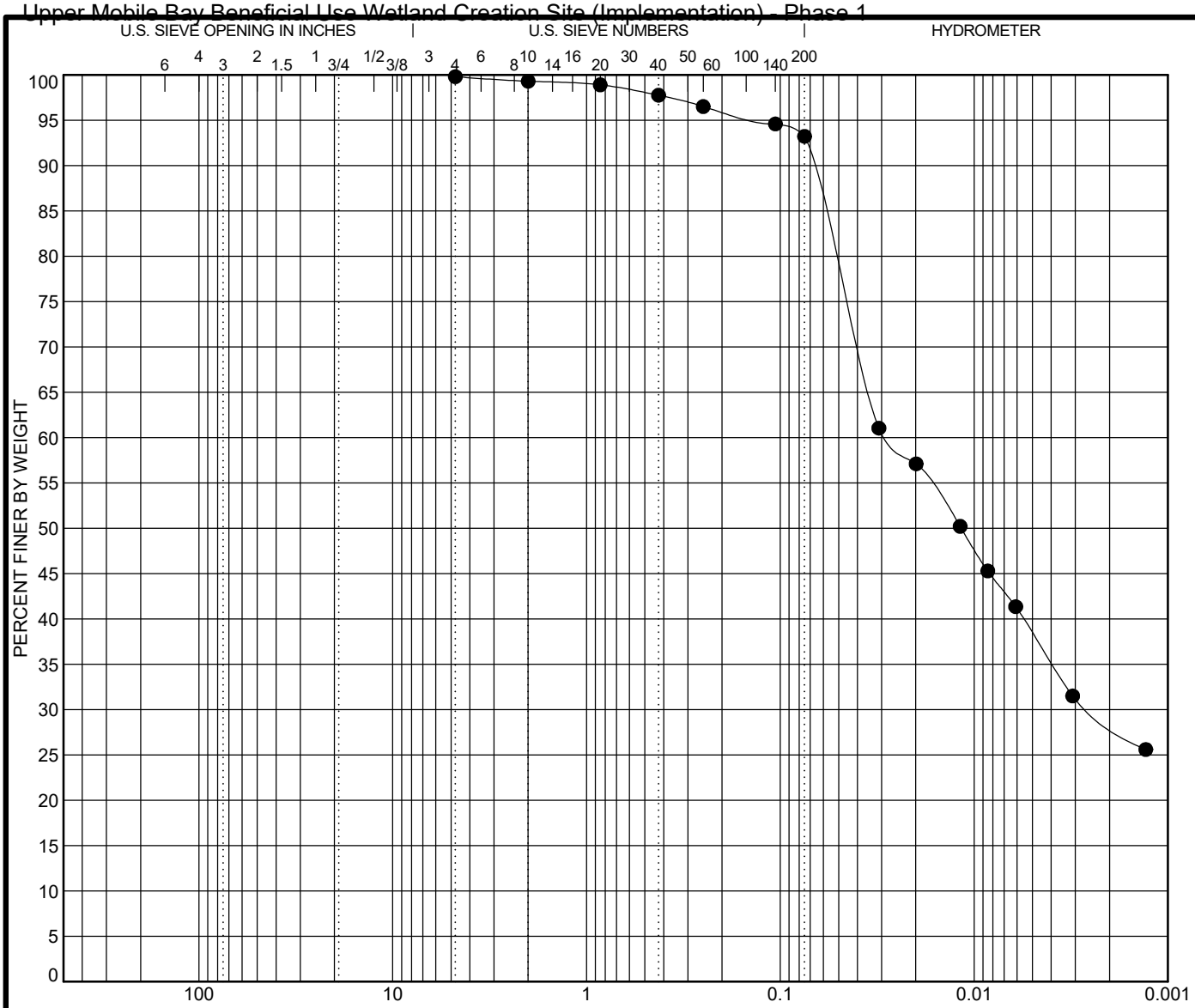
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**MI-B5**	**S-5;10.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
MI-B5	**10.5 ft.**	**4.75**	**0.028**	**0.002**		**0.0**	**6.6**	**64.7**	**28.5**

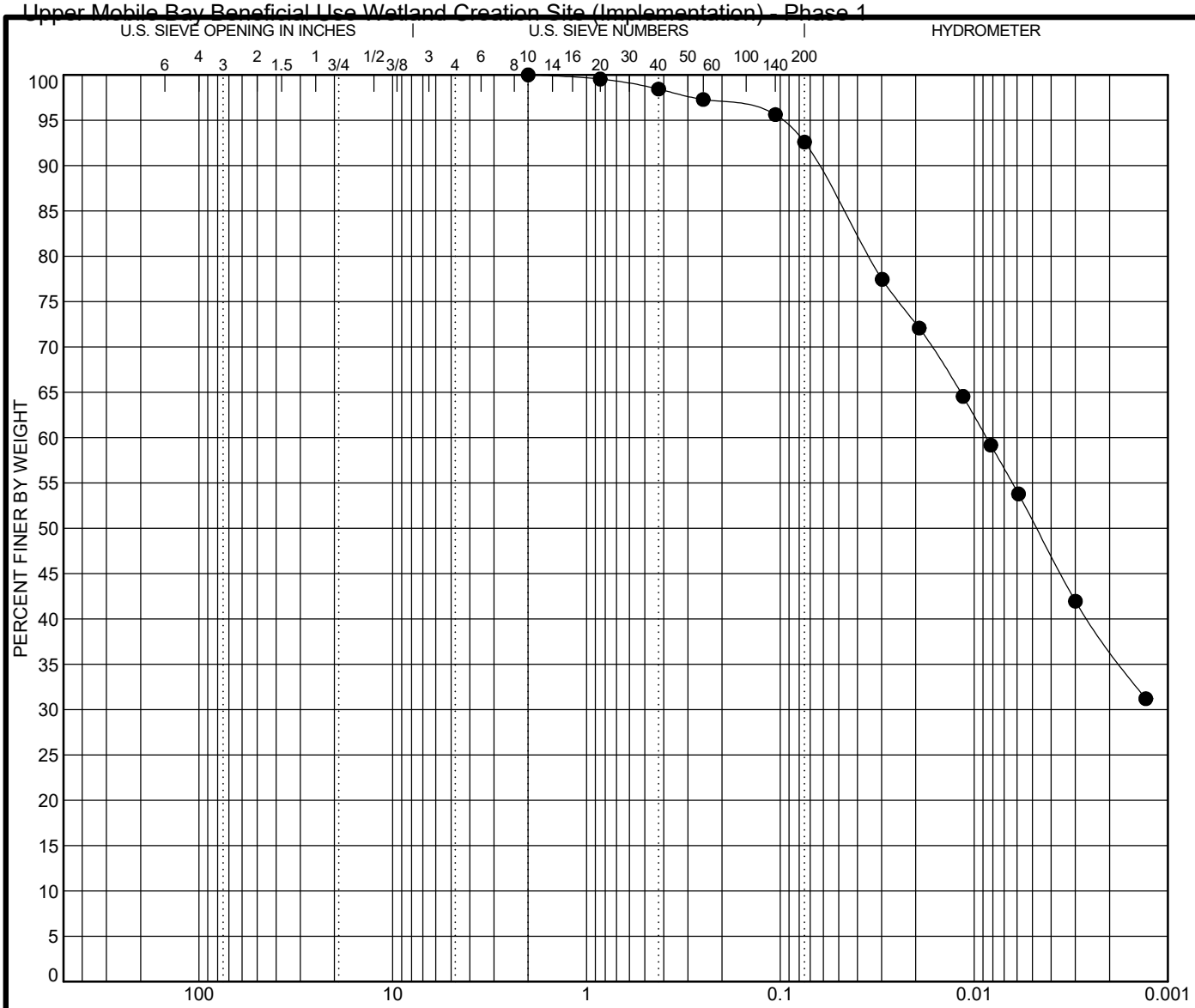
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**MI-B6**	**S-4;8.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
MI-B6	**8.0 ft.**	**2**	**0.009**			**0.0**	**7.4**	**55.9**	**36.7**

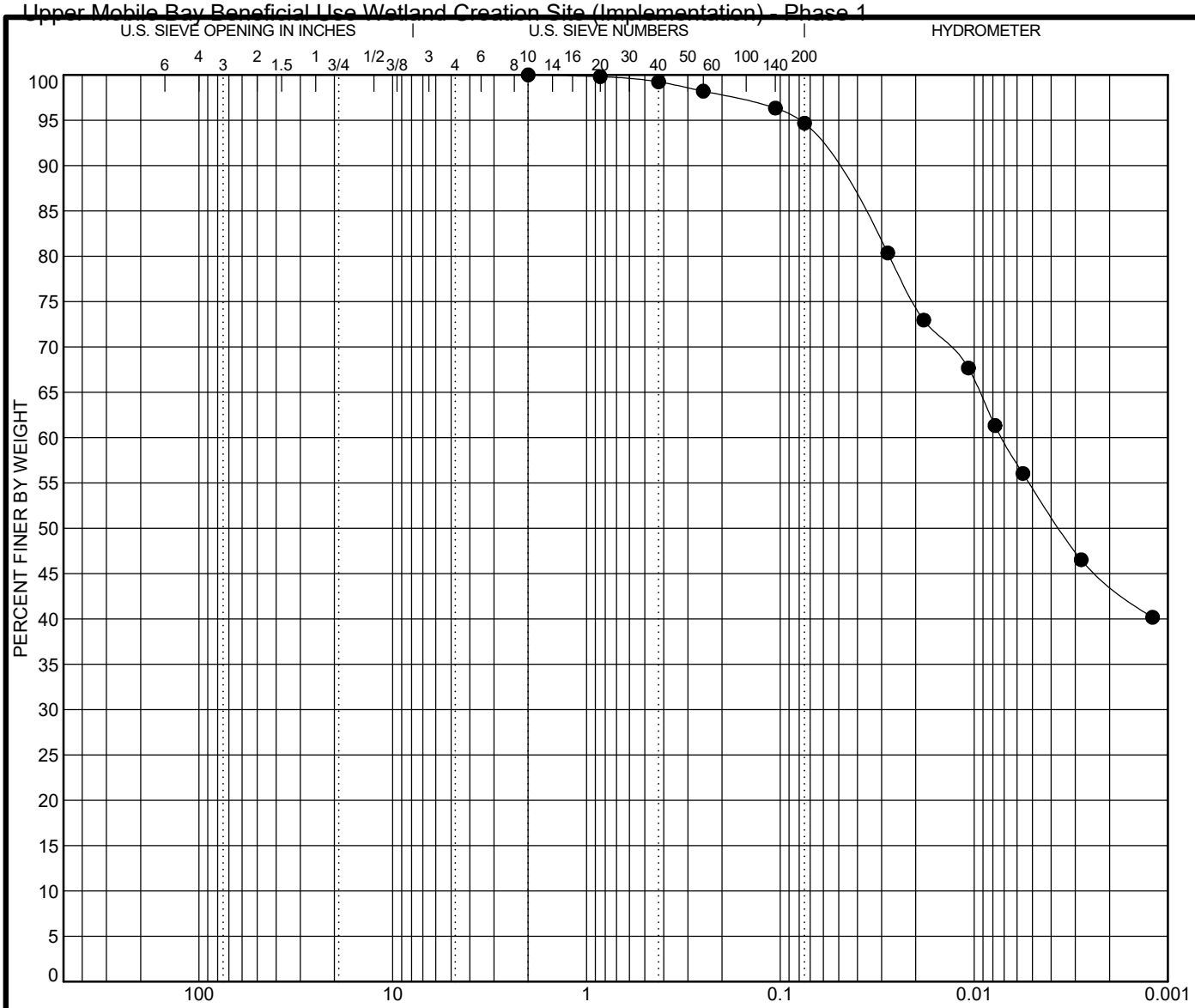
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**MI-B7**	**S-2;3.0 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
MI-B7	**3.0 ft.**	**2**	**0.007**			**0.0**	**5.3**	**50.7**	**44.0**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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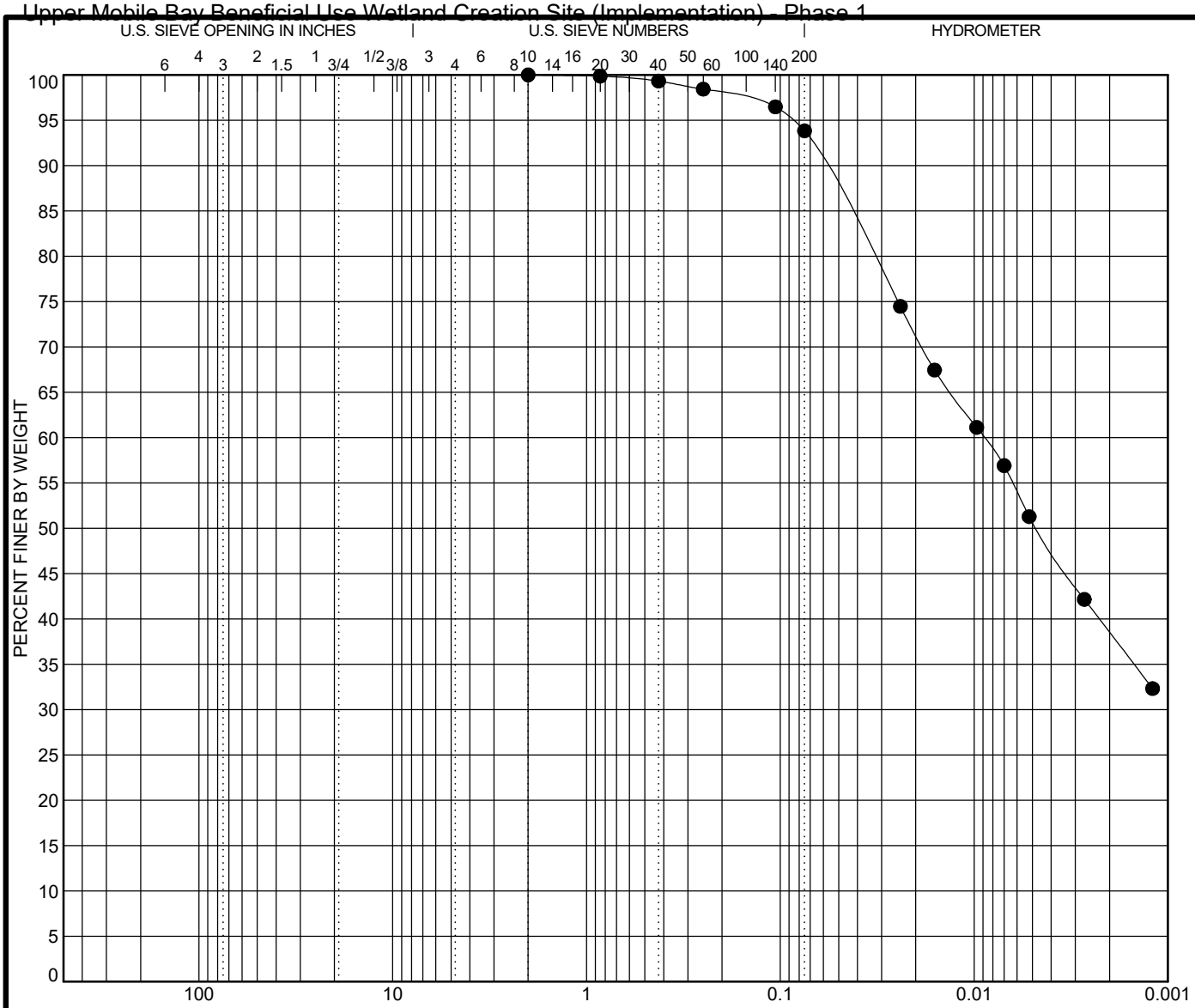
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**MI-B7**	**S-5;10.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
MI-B7	**10.5 ft.**	**2**	**0.009**			**0.0**	**6.2**	**55.3**	**38.5**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

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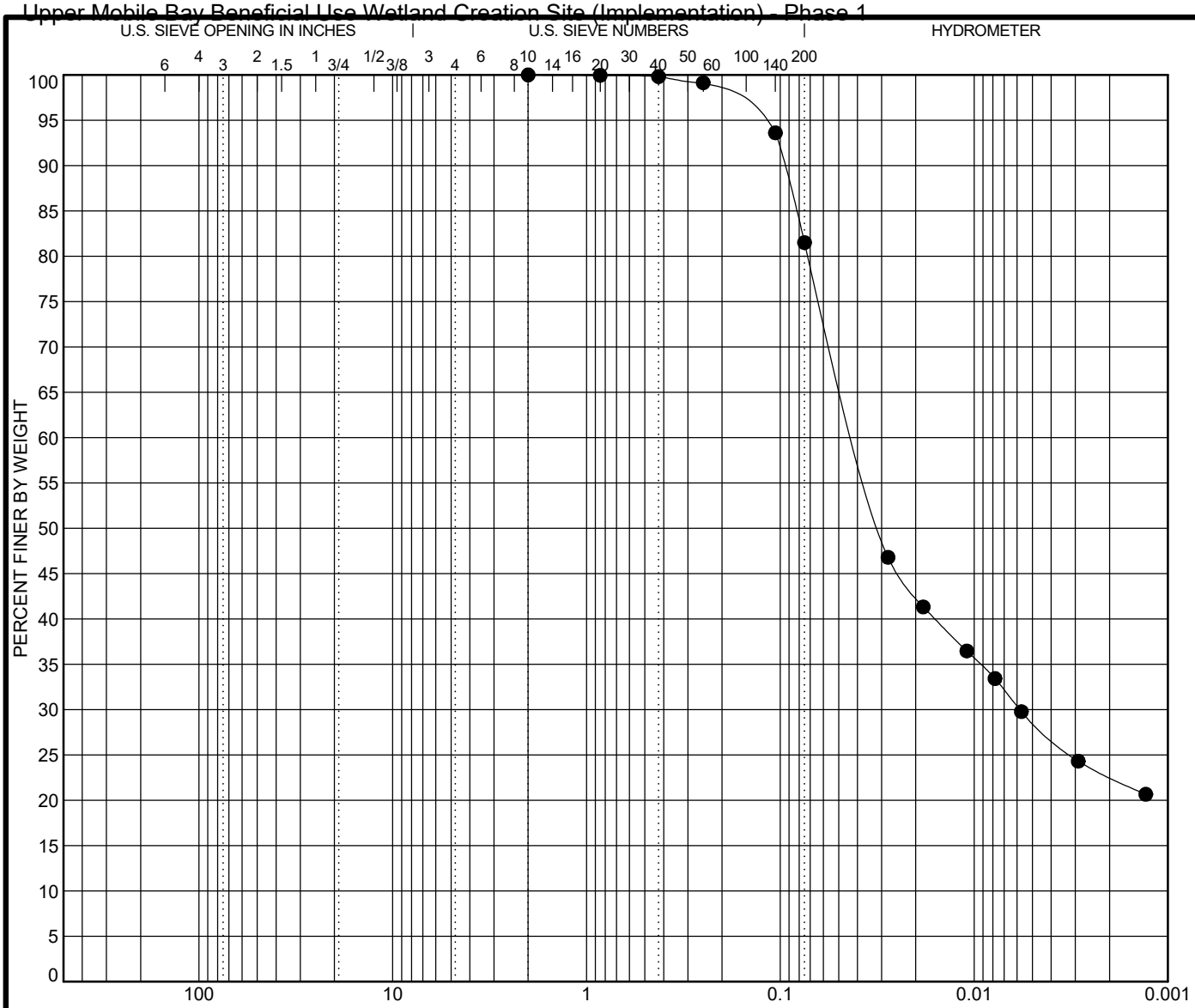
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**MI-B8**	**S-3;5.5 ft.**						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
MI-B8	**5.5 ft.**	**2**	**0.041**	**0.006**		**0.0**	**18.5**	**58.9**	**22.6**

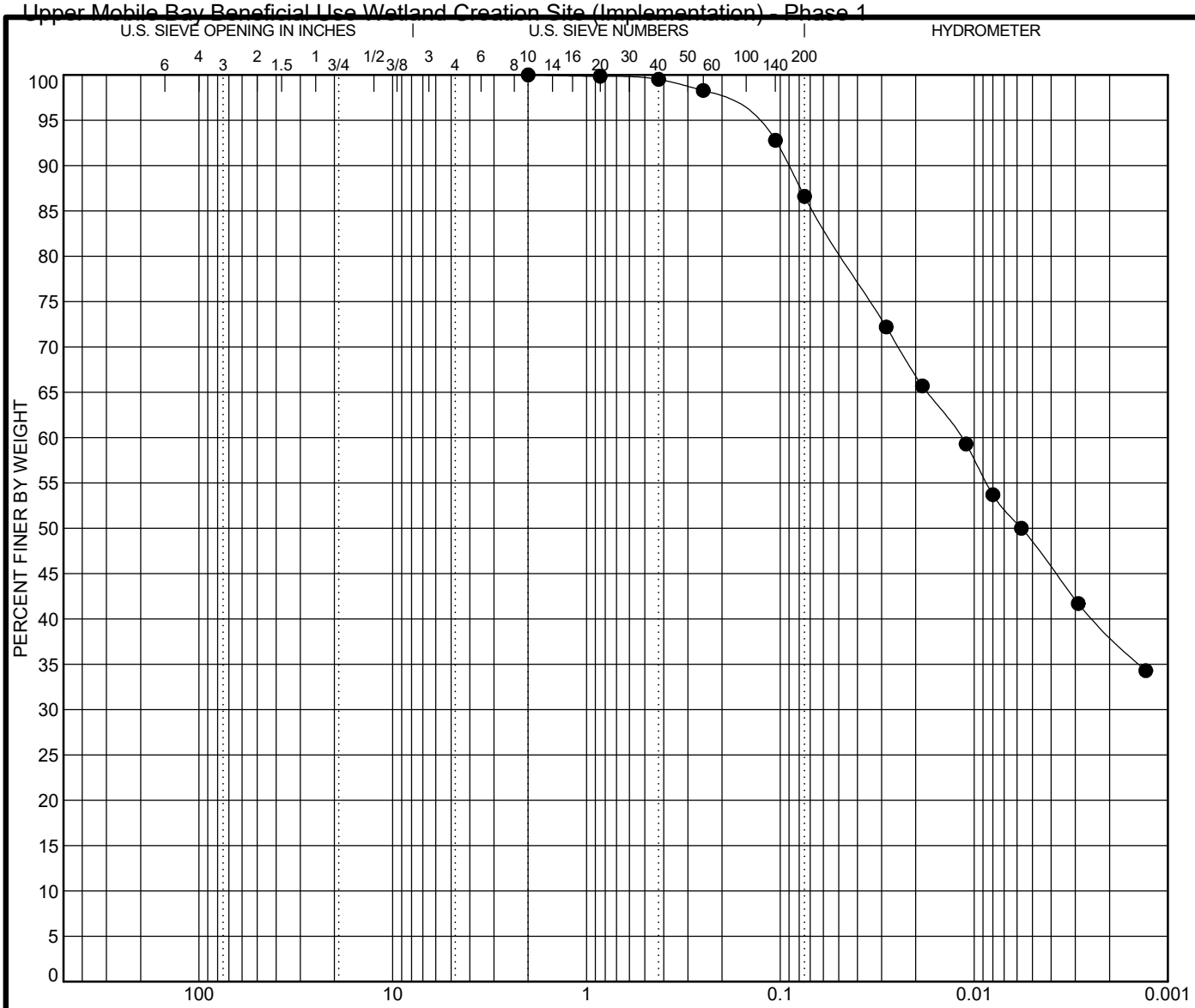
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE_21-126 ASPA UPPER BAY MARSH.GPJ GETI_AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**PINTO-B1 S-3;5.5 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
PINTO-B1 5.5 ft.	**2**	**0.012**			**0.0**	**13.4**	**48.3**	**38.3**

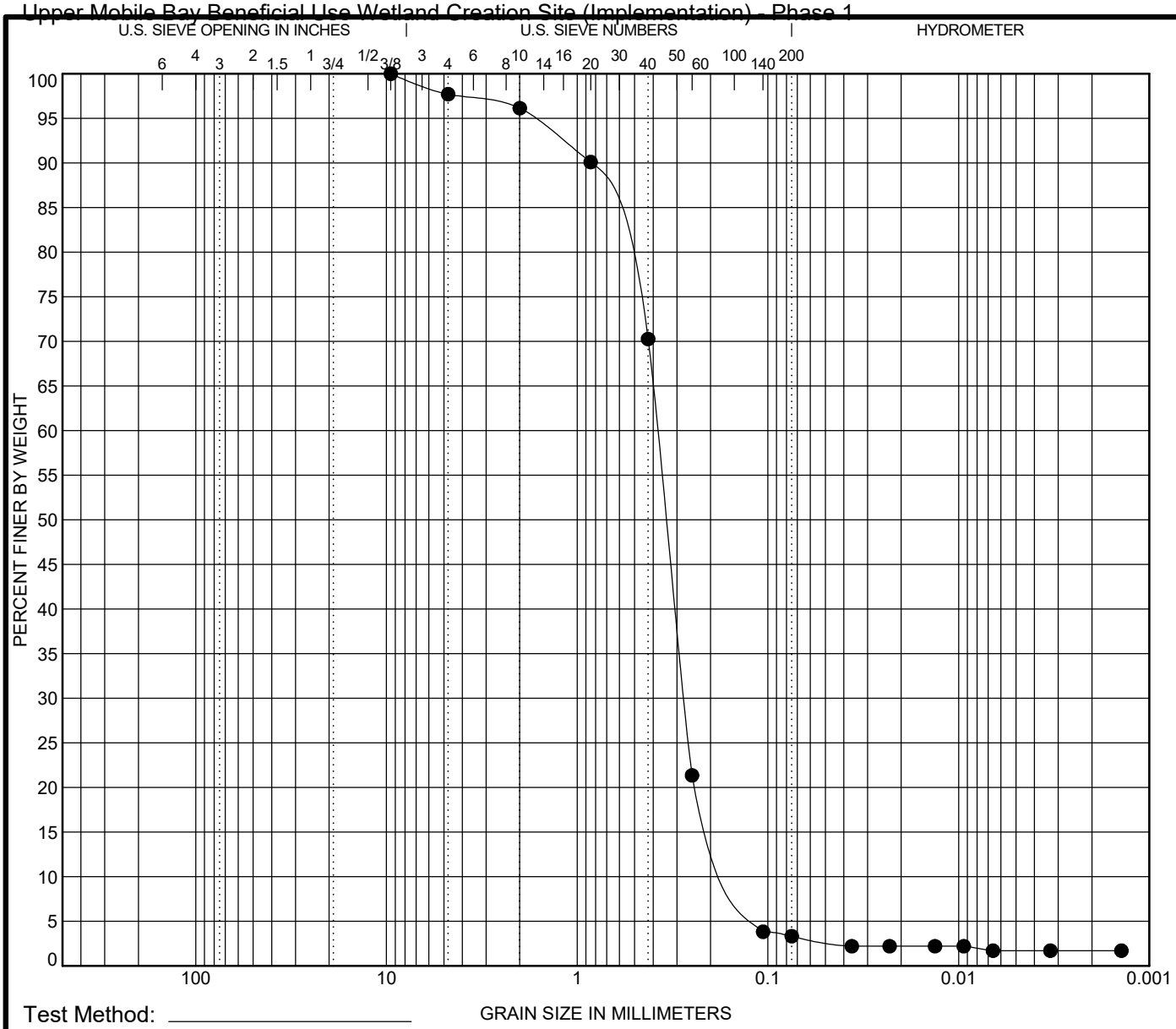
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**PINTO-B1S-8;19.0 ft.**	**POORLY GRADED SAND (SP)**				**1.38**	**2.65**

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
PINTO-B1 19.0 ft.	**9.5**	**0.38**	**0.275**	**0.143**	**2.3**	**94.4**	**1.6**	**1.7**

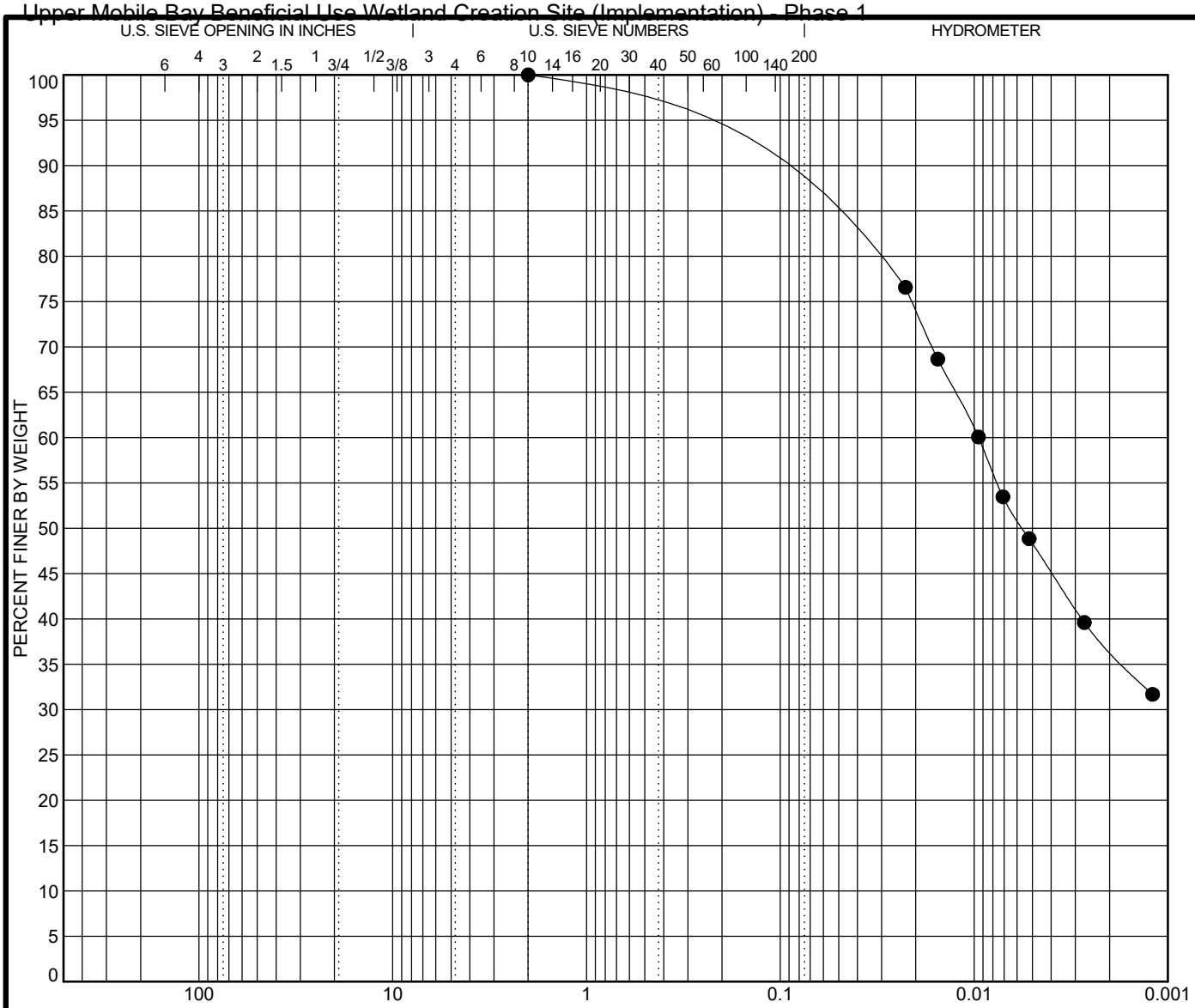
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**PINTO-B2 S-3;5.5 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
PINTO-B2 5.5 ft.	**2**	**0.009**			**0.0**	**17.2**	**46.2**	**36.7**

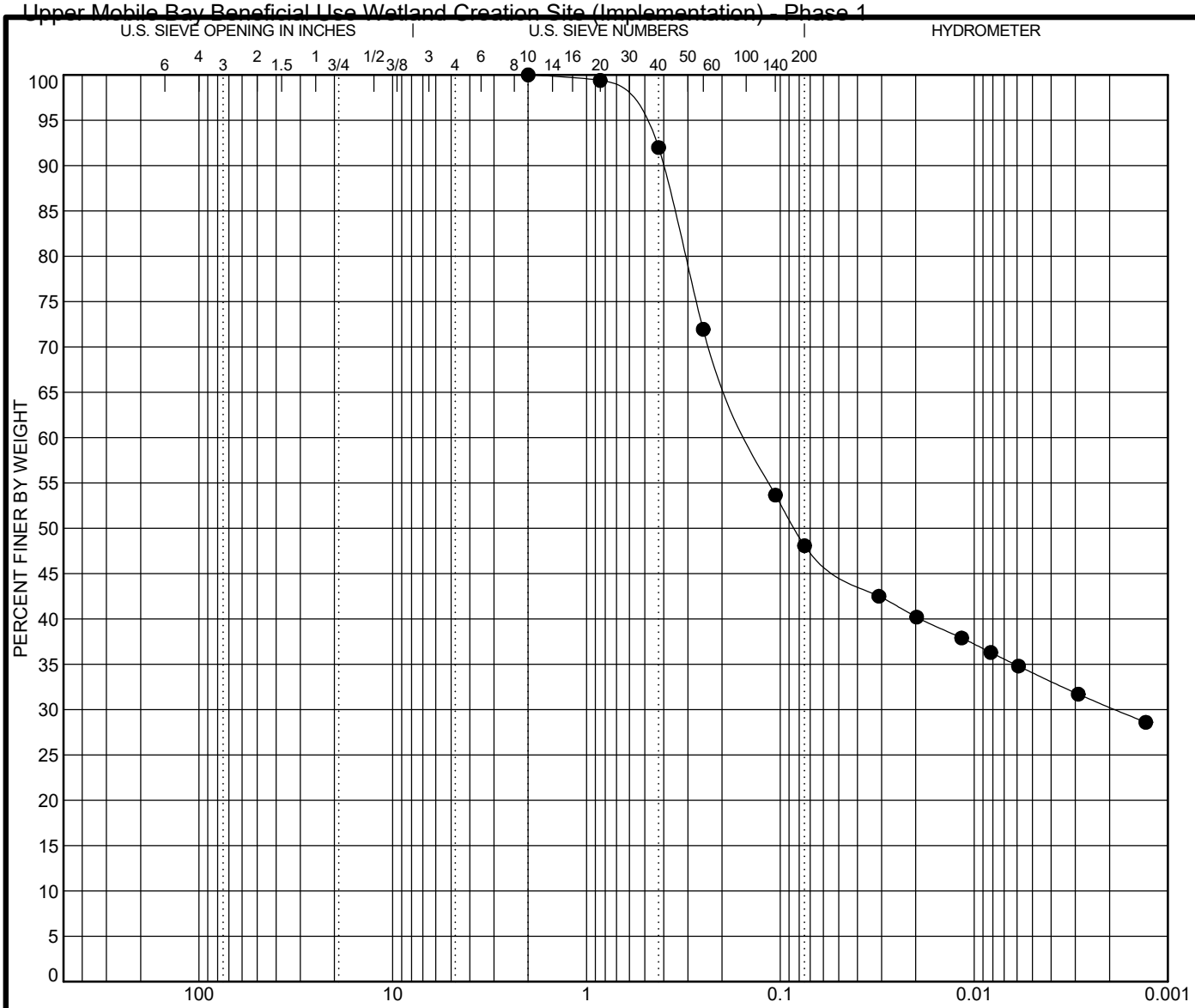
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**PINTO-B3 S-2;3.0 ft.**						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
PINTO-B3 3.0 ft.	**2**	**0.143**	**0.002**		**0.0**	**51.9**	**17.8**	**30.3**

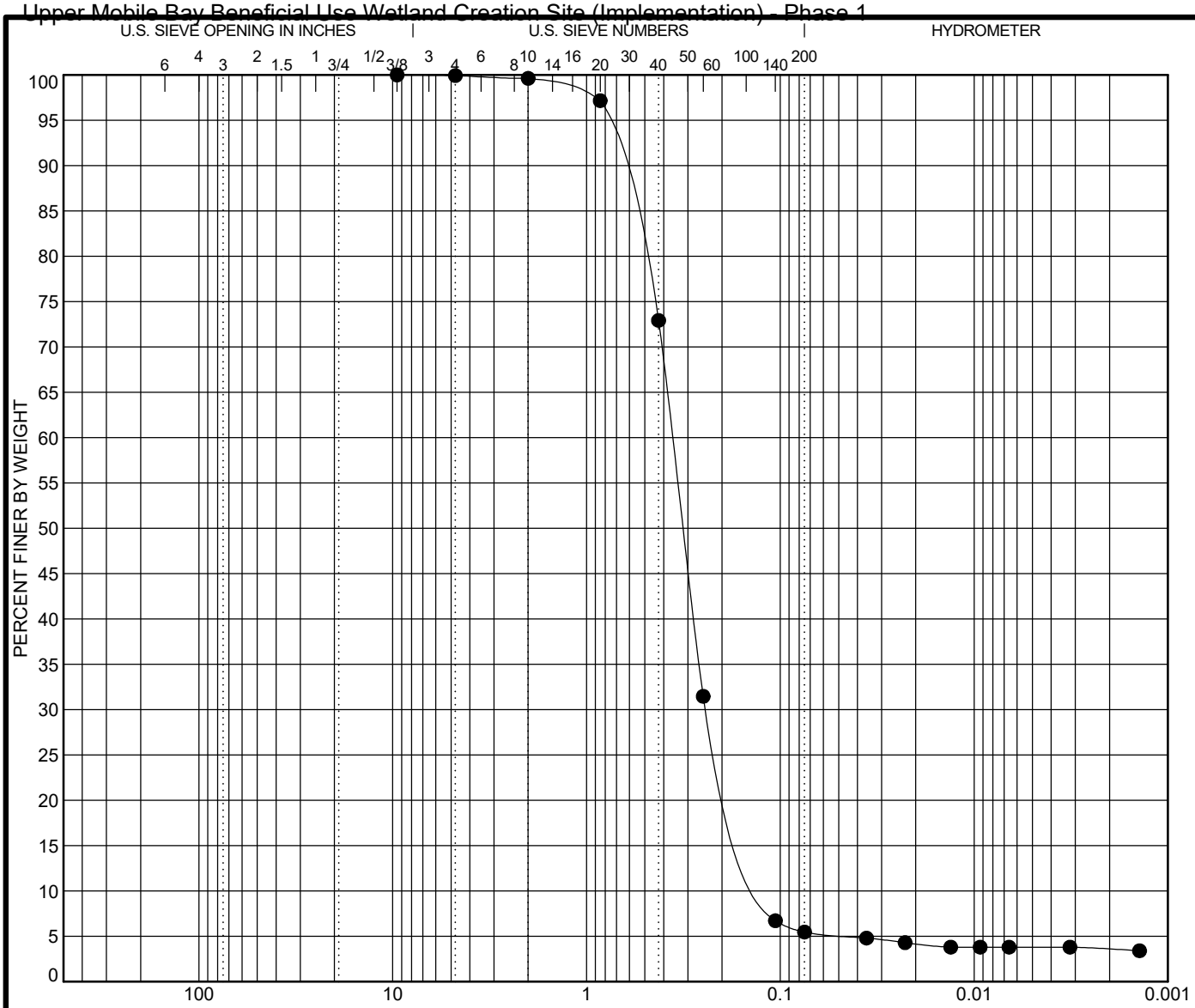
REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22



Test Method: _____

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**PINTO-B3S-7;15.5 ft.**					**1.32**	**3.03**

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
PINTO-B3 15.5 ft.	**9.5**	**0.36**	**0.238**	**0.119**	**0.1**	**94.5**	**1.9**	**3.6**

REMARKS:

GEOTECHNICAL ENGINEERING TESTING, INC.

GRAIN SIZE DISTRIBUTION

PROJECT NAME: ASPA UPPER BAY BENEFICIAL USE WETLAND CREATION SITE
G.E.T. PROJ. NUMBER: 21-126
PROJECT LOCATION: MOBILE, ALABAMA

GET_GRAINSIZE 21-126 ASPA UPPER BAY MARSH.GPJ GETI AL.GDT 1/12/22

BWT DISPOSAL AREA C (SUNFLOWER)

Legend

- Weir Boxes
- Bars
- River Miles
- Pipeline Corridors
- Drainage
- Property Line
- Upland Disposal Areas

Monuments

CONDITION

- ?
- Good
- Missing
- Disturbed

This disposal area was constructed in July 1984. The ground surface elevation was approximately 22' above sea level, and the elevation for the crown of the dike is at 35' above sea level. The site is approximately 58 acres, and the property was acquired through easement.

DREDGING HISTORY (1984-PRESENT)

DISPOSAL AREA C (SUNFLOWER)

YEAR	CUBIC YARDS
1984-2004	1,886,253
2005	169,675
2010	107,011
2012-2018	478,379
2019-2020	499,567
MATERIAL REMOVED	510,000
TOTAL	2,630,885

Aerial Photo 2004

N
W E
S

Scale:
1" = 300'

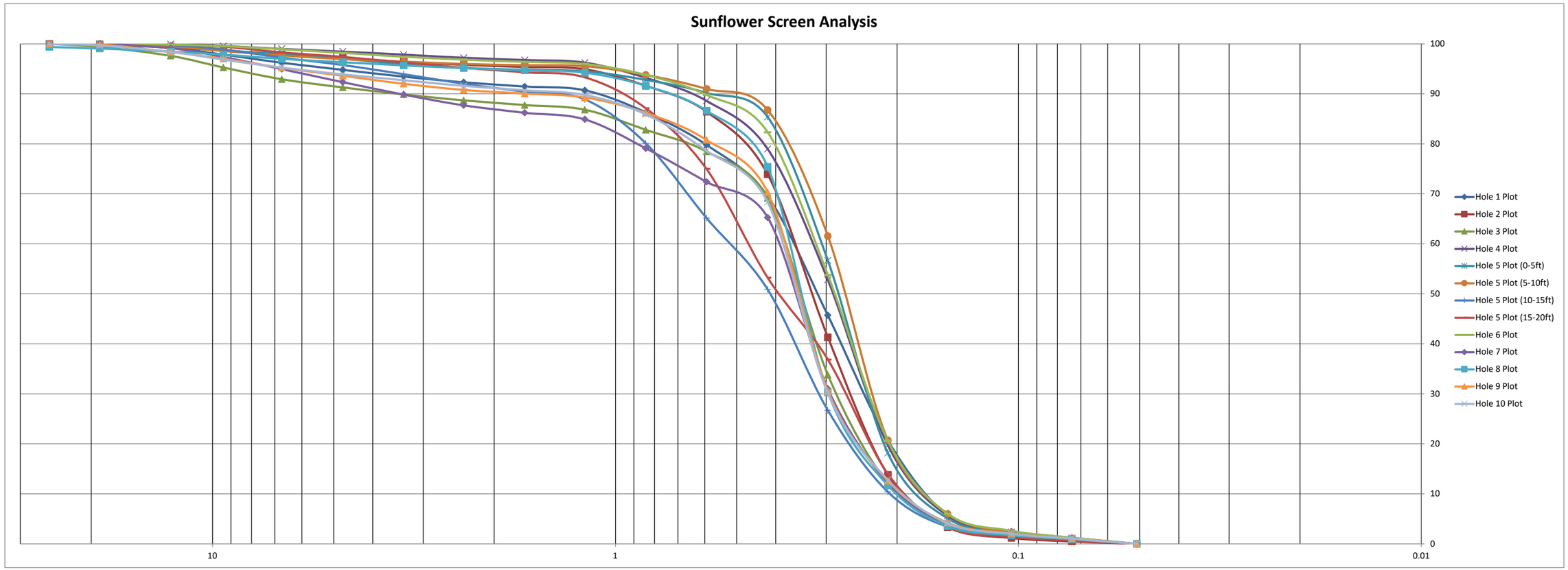
US ARMY CORPS OF ENGINEERS
Mobile District

Date: 2020
Imagery: 11/20/2019

Prepared By:
Tuscaloosa Site Office

Sunflower

Size(in)	Actual Size (mm)	Hole 1	Hole 1 Plot	Hole 2	Hole 2 Plot	Hole 3	Hole 3 Plot	Hole 4	Hole 4 Plot	Hole 5 (0-5ft)	Hole 5 Plot (0-5ft)	Hole 5 (5-10ft)	Hole 5 Plot (5-10ft)	Hole 5 (10-15ft)	Hole 5 Plot (10-15ft)	Hole 5 (15-20ft)	Hole 5 Plot (15-20ft)	Hole 6	Hole 6 Plot	Hole 7	Hole 7 Plot	Hole 8	Hole 8 Plot	Hole 9	Hole 9 Plot	Hole 10	Hole 10 Plot
Plus 1"	25.4	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0.62	99.38	0	100	0	100
Minus 1.0 +0.75"	19.05	0	100	0.22	99.78	0.61	99.39	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0.31	99.07	0.12	99.88	0.32	99.68
Minus 0.75+0.5"	12.7	0.81	99.19	0.5	99.28	1.78	97.61	0.04	99.96	0.49	99.51	0.54	99.46	0.26	99.74	0	100	0.15	99.85	0.88	99.12	0.64	98.43	1.52	98.36	1.28	98.4
Minus 0.5+0.37"	9.398	1.34	97.85	0.64	98.64	2.34	95.27	0.38	99.58	0.82	98.69	0.9	98.56	0.84	98.9	0.56	99.44	0.32	99.53	1.74	97.38	0.59	97.84	1.33	97.03	1.54	96.86
Minus 0.37+3 Mesh	6.731	1.62	96.23	0.82	97.82	2.35	92.92	0.58	99	0.7	97.99	0.87	97.69	1.63	97.27	1.15	98.29	0.6	98.93	2.43	94.95	0.84	97	1.8	95.23	1.61	95.25
Minus 3+4Mesh	4.7498	1.42	94.81	0.66	97.16	1.63	91.29	0.55	98.45	0.97	97.02	0.74	96.95	1.51	95.76	0.89	97.4	0.74	98.19	2.61	92.34	0.66	96.34	1.62	93.61	1.35	93.9
Minus 4+6 Mesh	3.3528	1.36	93.45	0.76	96.4	1.41	89.88	0.61	97.84	1.06	95.96	0.5	96.45	1.82	93.94	1.12	96.28	0.76	97.43	2.49	89.85	0.64	95.7	1.6	92.01	1.19	92.71
Minus 6+8 Mesh	2.37998	1.13	92.32	0.6	95.8	1.18	88.7	0.62	97.22	0.75	95.21	0.47	95.98	1.92	92.02	1.08	95.2	0.57	96.86	2.15	87.7	0.55	95.15	1.22	90.79	1.11	91.6
Minus 8+10 Mesh	1.67894	0.85	91.47	0.43	95.37	0.94	87.76	0.46	96.76	0.4	94.81	0.25	95.73	1.6	90.42	0.89	94.31	0.47	96.39	1.49	86.21	0.44	94.71	0.74	90.05	0.89	90.71
Minus 10+14 Mesh	1.19126	0.76	90.71	0.45	94.92	0.94	86.82	0.52	96.24	0.28	94.53	0.19	95.54	1.52	88.9	1	93.31	0.41	95.98	1.31	84.9	0.48	94.23	0.77	89.28	0.93	89.78
Minus 14+20 Mesh	0.84074	4.41	86.3	3.32	91.6	4.02	82.8	3.04	93.2	1.73	92.8	1.74	93.8	8.8	80.1	6.21	87.1	2.18	93.8	5.8	79.1	2.63	91.6	3.08	86.2	3.88	85.9
Minus 20+28Mesh	0.59436	6.52	79.78	5.17	86.43	4.35	78.45	4.59	88.61	2.6	90.2	2.8	91	14.94	65.16	12.12	74.98	4	89.8	6.72	72.38	4.97	86.63	5.43	80.77	7.29	78.61
Minus 28+35 Mesh	0.4191	10.24	69.54	12.52	73.91	9.27	69.18	9.65	78.96	4.81	85.39	4.23	86.77	14.29	50.87	21.77	53.21	7.48	82.32	7.11	65.27	11.22	75.41	10.47	70.3	10.28	68.33
Minus 35+48 Mesh	0.29718	23.84	45.7	32.59	41.32	35.38	33.8	26.19	52.77	28.74	56.65	25.19	61.58	24.17	26.7	16.35	36.86	28.55	53.77	34.26	31.01	45.1	30.31	39.72	30.58	38.18	30.15
Minus 48+65 Mesh	0.21082	25.03	20.67	27.53	13.79	21.7	12.1	33.07	19.7	38.5	18.15	40.86	20.72	16.33	10.37	22.88	13.98	33.15	20.62	18.78	12.23	18.61	11.7	17.98	12.6	17.36	12.79
Minus 65+100 Mesh	0.14986	14.93	5.74	10.44	3.35	8.48	3.62	14.1	5.6	13.07	5.08	14.71	6.01	6.95	3.42	10.59	3.39	14.64	5.98	8.15	4.08	8.18	3.52	8.38	4.22	8.7	4.09
Minus 100+150 Mesh	0.10414	3.29	2.45	2.18	1.17	1.98	1.64	3.24	2.36	2.86	2.22	3.69	2.32	1.64	1.78	2.03	1.36	3.35	2.63	2	2.08	1.82	1.7	2.14	2.08	2.1	1.99
Minus 150+200 Mesh	0.07366	1.26	1.19	0.69	0.48	0.79	0.85	1.21	1.15	1.24	0.98	1.25	1.07	0.84	0.94	0.68	0.68	1.38	1.25	1.08	1	0.79	0.91	1.04	1.04	0.94	1.05
Minus 200 Mesh	0.0508	1.19	0	0.48	0	0.85	0	1.15	0	0.98	0	1.07	0	0.94	0	0.68	0	1.25	0	1	0	0.91	0	1.04	0	1.05	0
Composite SUM		100		100		100		100		100		100		100		100		100		100		100		100		100	



RI 9549

REPORT OF INVESTIGATIONS/1995

Characterization of Dredged River Sediments in 10 Upland Disposal Sites of Alabama

UNITED STATES DEPARTMENT OF THE INTERIOR

UNITED STATES BUREAU OF MINES

U.S. Department of the Interior Mission Statement

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally-owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

Report of Investigations 9549

Characterization of Dredged River Sediments in 10 Upland Disposal Sites of Alabama

By C. W. Smith

UNITED STATES DEPARTMENT OF THE INTERIOR
Bruce Babbitt, Secretary

BUREAU OF MINES
Rhea Lydia Graham, Director

This report is based upon work done under an agreement between the University of Alabama and the U.S. Bureau of Mines.

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UNIT OF MEASURE ABBREVIATIONS USED IN THIS REPORT

ft	foot	pct	percent
g	gram	ppm	part per million
h	hour	s	second
in	inch	wt pct	weight percent
L	liter	yd	yard
min	minute	yd^3	cubic yard
mL	milliliter	°C	degree Celsius

CHARACTERIZATION OF DREDGED RIVER SEDIMENTS IN 10 UPLAND DISPOSAL SITES OF ALABAMA

By C. W. Smith[1]

ABSTRACT

The U.S. Bureau of Mines, Tuscaloosa Research Center, in cooperation with the U.S. Army Corps of Engineers under interagency Agreement No. 14-09-0078-1510, conducted a comprehensive sampling program of 10 upland disposal sites along the Alabama, Black Warrior, and Tombigbee River systems in Alabama. Samples from each site were characterized according to particle size, chemical analysis, mineralogical content, and potential end use. Additionally, samples were subjected to the Toxic Characteristic Leachate Procedure to determine the presence of potentially harmful heavy metals. Based on the results of these studies, each sample was determined to have properties amenable for use as aggregate in general-purpose portland cement concretes and certain asphalt concrete applications.

[1]Mining engineer, Tuscaloosa Research Center, U.S. Bureau of Mines, Tuscaloosa, AL.

INTRODUCTION

The U.S. Bureau of Mines (USBM), as a part of its mission to develop marketable products from waste materials, conducted a comprehensive sampling program of 10 upland disposal sites along the Alabama, Black Warrior, and Tombigbee River systems in Alabama. The U.S. Army Corps of Engineers (Corps), as a part of its mission, is charged with the channel maintenance of navigable waterways. Dredging is often required to maintain the proper depth of these channels. Each year over 300 million yd^3 [2] of material are dredged from river channels and stored in upland disposal areas. These upland disposal areas typically consist of an impoundment with an overflow weir. The dredged material is pumped to the impoundment where the solids settle out and the clear water is decanted through the weir and returned to the waterway.

The Tuscaloosa Area Office of the Corps is currently responsible for 17 upland disposal areas in Alabama with additional areas being constructed as needed. The land for these disposal areas is typically leased from individual landowners. When disposal areas are filled, the Corps must lease new land and construct a new disposal area. The USBM, Tuscaloosa Research Center, in cooperation with the Tuscaloosa Area Office of the Corps, under interagency Agreement No. 14-09-0078-1510, conducted a comprehensive sampling program of upland disposal sites along the Alabama, Black Warrior, and Tombigbee River systems in Alabama. A total of 10 upland disposal areas were sampled in this study in an effort to determine an end use for the material; thus, providing two potential benefits. First, the usable life of the area would be extended, eliminating the cost of constructing new areas. Second, the material represents a potentially usable product, which could provide a source of income for the landowner. Two sites sampled in this study were located on the Alabama River, five were located on the Tombigbee River, and the remaining three were located on the Black Warrior River. Figure 1 gives the approximate location of each site.

PROCEDURES AND STUDIES

SAMPLING PROCEDURES

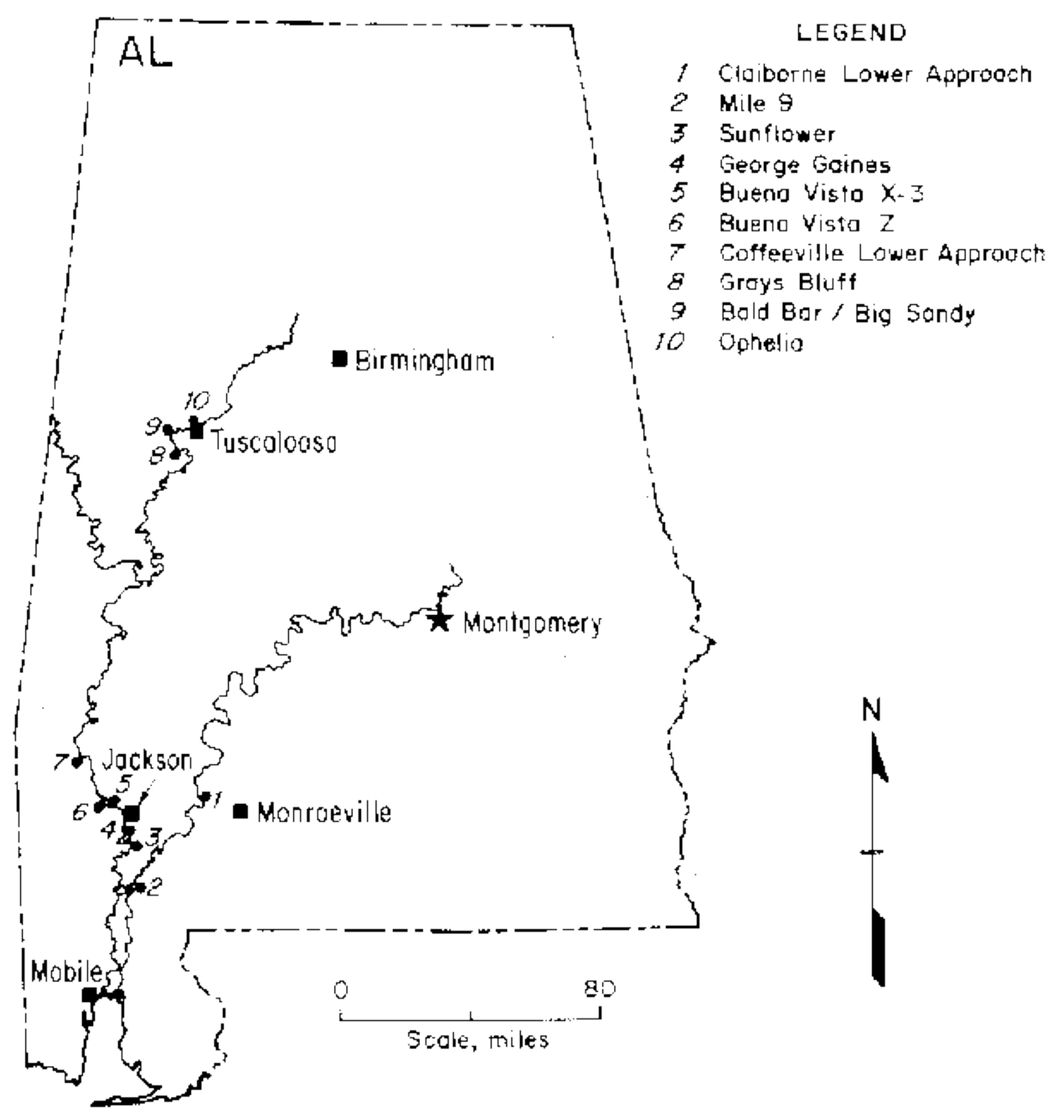
A total of 10 holes for sampling the disposal area were drilled at each site. The location of the holes were based on the positions that would yield the most representative sample of the material. Using a track mounted auger drilling rig, samples were collected at 5-ft intervals to determine segregation of the material with depth. No segregation was noted; therefore, the samples from each hole were combined prior to analysis.

AGGREGATE STUDIES

Visual examination of the samples suggested a potential use of the materials as aggregate in portland cement concrete and asphalt concrete. High-quality natural sand and gravel requires several steps to produce aggregate. First, the material must be excavated, which often requires the removal of useless overburden. Next, the material must be washed and sized to remove the clays and other fine materials. Then the material must be transported to the end-use site by truck, rail, or, in the case of large tonnages, barge.

The materials contained in the upland disposal areas in this study exhibit several characteristics that make them an obvious choice for use as an aggregate. First, in all cases the material is a clean quartz sand and gravel with few

Figure 1



Locations of upland disposal sites.

[2]Although the U.S. Bureau of Mines uses metric units, the measurements in this report were made using U.S. customary units. Foot equals 0.30 meter, inch equals 2.54 centimeters, mile equals 1.60 kilometers, yard equals 0.91 meter, and cubic yard equals 0.76 cubic meter.

impurities. Second, very little of the material is fine undersize (minus 200 mesh); thus, eliminating the need for washing and sizing. Third, the materials are located adjacent to navigable waterways making barge transportation an economical option.

Aggregates are an important constituent in portland cement concretes and asphalt concrete mixtures. Aggregates represent 70 to 85 wt pct of portland cement concretes and 90 to 95 wt pct of asphalt concrete mixtures (*1*).[3] The workability, strength, durability, moisture susceptibility, and performance of these construction materials are greatly influenced by the physical properties of the aggregate. Among the more important properties of aggregates are size and grading, hardness, porosity, particle shape and texture, volume stability, specific gravity, and chemical stability. Appendix A lists the standard tests used to determine aggregate properties.

Portland cement concretes typically use a particle size gradation obtained by blending coarse and fine aggregates. Coarse aggregate is classified as material coarser than 4 mesh while fine aggregate is typically minus 4 plus 200 mesh. Table 1 gives the gradation for coarse and fine aggregate as specified by the American Society for Testing and Materials (ASTM) Standard Specification C 33 (*2*). Generally, cement efficiency increases as coarser aggregate is used while workability is increased by the addition of fine aggregate. Acceptable gradations for asphalt concrete mixtures vary over a wide size range, depending on the end use of the mixture.

Table 1.—Size gradation for coarse and fine aggregate

Sieve size	*Passing, pct*
Coarse aggregate (gradation number 56):	
1-1/2 in	100
1 in	90-100
3/4 in	40- 85
1/2 in	10- 40
3/8 in	5- 15
No. 4	0- 5
Fine aggregate:	
3/8 in	100
No. 4	95-100
No. 8	80-100
No. 16	50- 85
No. 30	25- 60
No. 50	10- 30
No. 100	2- 10
No. 200	0- 2

The particle shape of an aggregate influences the properties of portland cement concrete. Use of a rough textured, angular aggregate requires the addition of more water to achieve a workable mixture. The loss of compressive strength due to the additional water is somewhat offset by an increase in the bond between the cement paste and aggregate (*3*). The use of angular aggregate in asphalt concrete mixtures is preferred due to an interlocking between particles that increases the strength and stability of these mixtures (*4*). The presence of flat and elongated particles in portland cement concrete and asphalt concretes results in reduced strength and stability.

Certain deleterious materials can have a profound effect on the strength and durability of portland cement concretes. Chert is one of the more common impurities that may lead to failure. Shale and argillaceous limestone may also cause considerable damage in concretes exposed to severe weathering. Certain reactive aggregates, such as opal and chalcedony, can also cause failure due to chemical expansion. Small amounts of deleterious or reactive aggregate may be present without serious damage taking place. The presence of less than 5 pct of these substances generally cause no problem, but the presence of minor amounts of organic impurities can lead to failure of portland cement concretes.

HEAVY MINERAL STUDIES

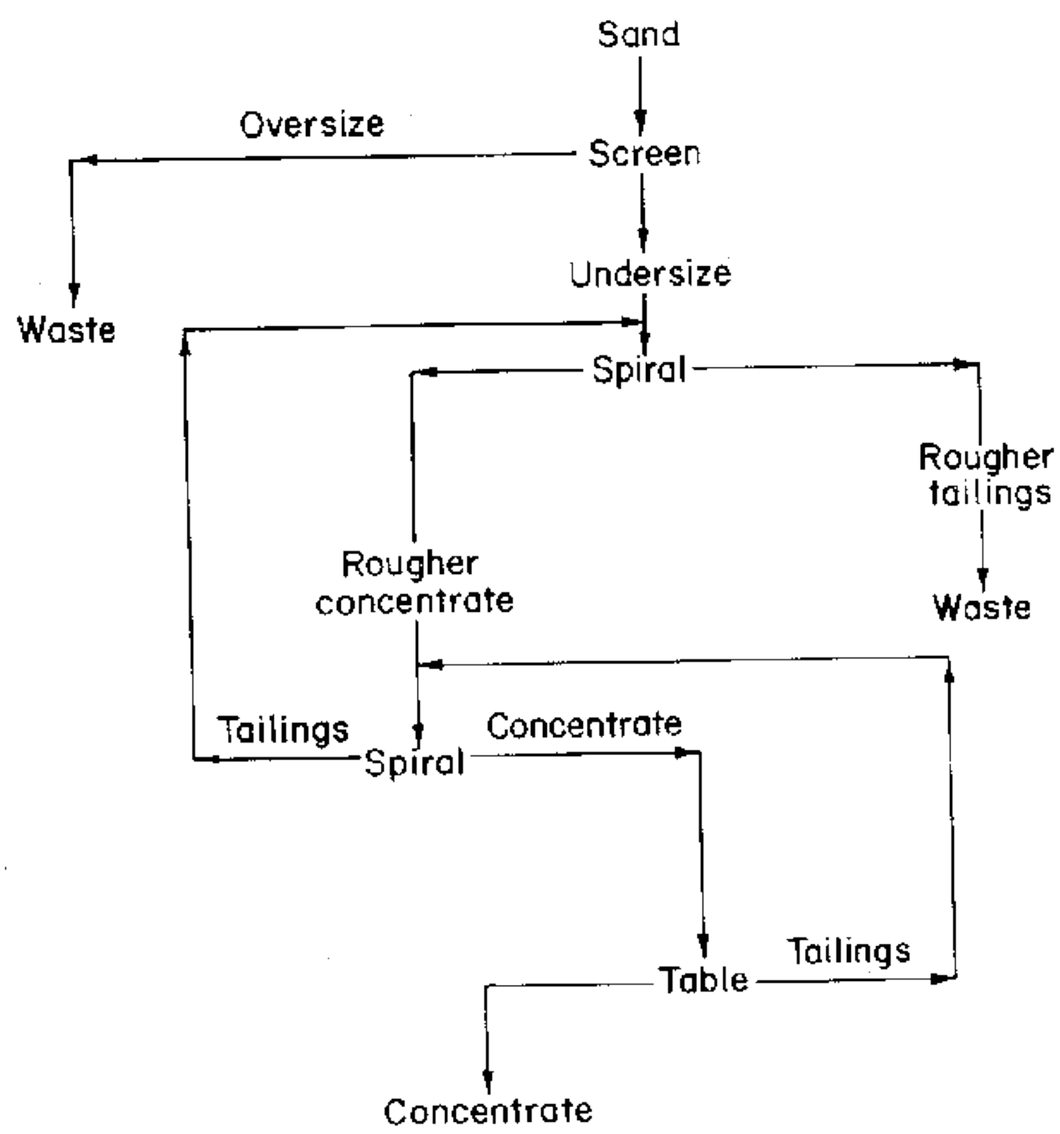
A second potential use for these materials is as a source of strategic heavy minerals such as rutile, zircon, ilmenite, kyanite, and monazite. Production of heavy minerals requires sizing to remove oversize and undersize particles followed by gravity concentration. Gravity concentration is typically achieved using a series of tables and spirals to concentrate the heavy minerals while rejecting the lighter minerals such as quartz. A general flowsheet of the process used to concentrate heavy minerals is shown in figure 2. The total heavy mineral content of samples in this study was determined by sink-float separation in heavy liquid at a specific gravity of 2.94. The heavy minerals present were identified through petrographic examination and X-ray diffraction analysis. Since the cost of production would exceed the value of the product, none of the samples in this study represented an economical source of heavy minerals due to the minor quantities present. However, economical amounts of heavy minerals were expected to be found in samples taken further up the Alabama River due to the geology of the rocks in the surrounding area.

TOXICITY STUDIES

A solid waste is defined as a hazardous waste by the U.S. Environmental Protection Agency (EPA) if it exhibits

[3]Italic numbers in parentheses refer to items in the list of references preceding the appendixes.

Figure 2



Flowsheet for concentration of heavy minerals.

the characteristics of ignitability, corrosivity, reactivity, or toxicity. Toxicity is determined using the Toxic Characteristic Leachate Procedure (TCLP) in which a representative sample of the waste is agitated in a mildly acidic solution for 18 h. The solution is then filtered from the solids and analyzed for metals using atomic absorption methods as suggested by the EPA. Table 2 shows the metals and the maximum allowable concentrations used in determining that the material is not a hazardous waste. Appendix B gives the standard EPA TCLP (5). Composite samples from each of the sites were checked for toxicity using the TCLP.

Table 2.—Maximum concentration of contaminants for TCLP

Contaminant	*Max conc, ppm*	*Contaminant*	*Max conc, ppm*
Ag	5.0	Cr	5.0
As	100.0	Hg	0.2
Ba	1.0	Pb	5.0
Cd	5.0	Se	1.0

TESTING PROCEDURES

Size and sink-float analyses were performed on each of the samples using the following procedures. A representative sample was split from the bulk sample and screen sized at 20 mesh. The plus 20-mesh material was further screened to produce mineral size fractions. The minus 20-mesh material was split into two fractions. One fraction was screened to determine size distribution while the remaining fraction was wet scrubbed to clean the particle surfaces and wet screened at 200 mesh to yield a minus 20- plus 200-mesh sample for sink-float separation. The sample was separated in heavy liquid with a specific gravity of 2.94 to liberate the heavy minerals. Figure 3 presents a flowsheet showing the procedures used for size analysis and sink-float separation of the samples.

SITE DESCRIPTIONS

GENERAL CHARACTERISTICS

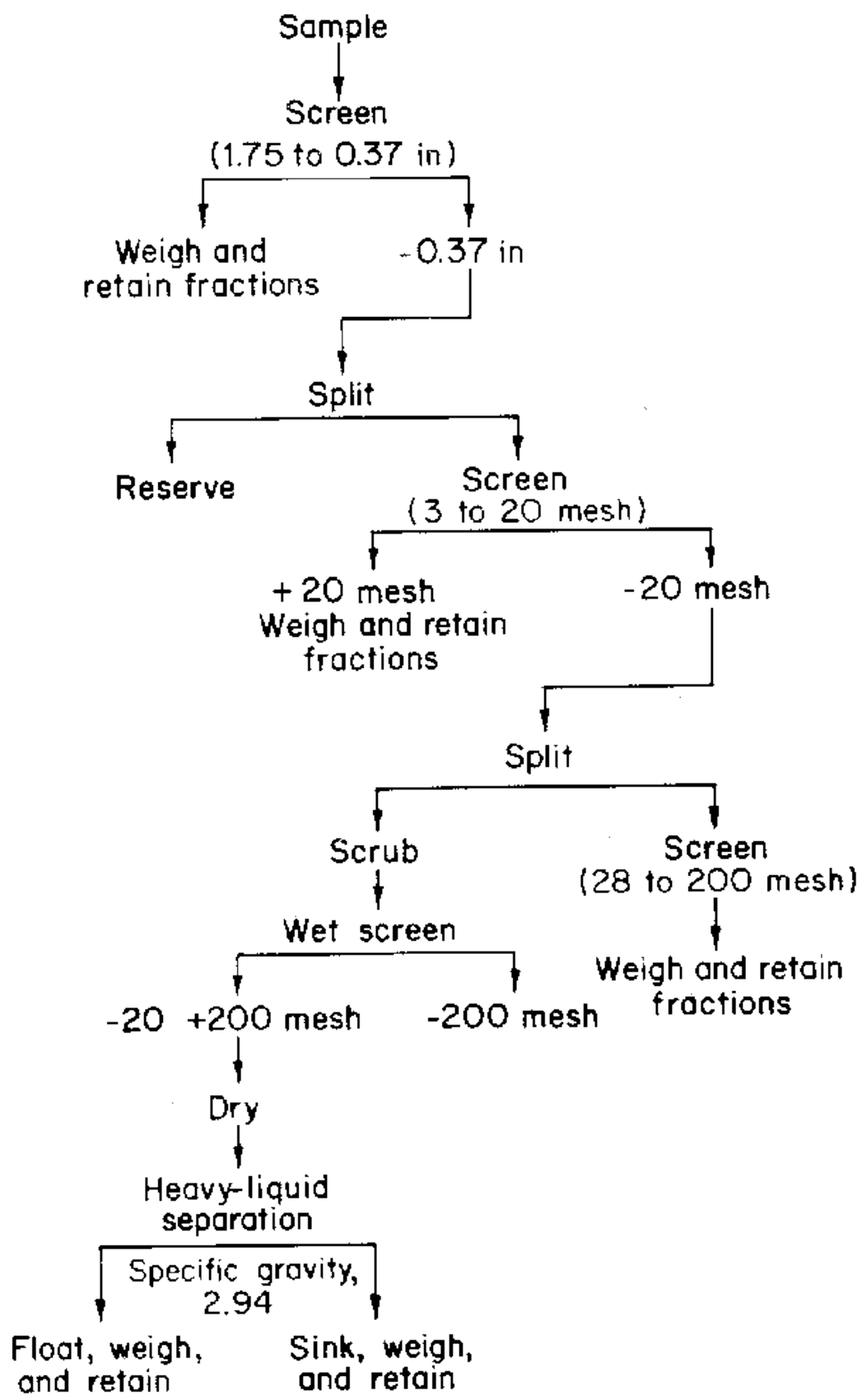
Samples from each site had several general characteristics in common. In all cases the material was a clean quartz sand and gravel with few impurities. The sand grains were all subangular to subrounded in shape. Minor amounts of heavy minerals were present in all samples. No chert, reactive aggregate, or deleterious organic materials were found. Results of the TCLP showed no sample to be a hazardous waste. Table 3 gives a summary description of the material contained in each disposal site. Material contained in other disposal areas, which were not sampled, are expected to exhibit general characteristics similar to the material in the sampled areas due to similar geology from which the materials are derived.

Table 3.—Summary of data for sites investigated

Site	Volume, yd^3	Material, wt pct			
		Coarse	Fine	Minus 200	Heavy minerals
Claiborne	134,476	4.88	94.59	0.53	0.62
Mile 9	654,296	0.38	98.35	1.27	0.42
Sunflower	835,610	4.37	94.66	0.97	0.45
George Gaines	351,708	7.53	91.53	0.94	0.37
Buena Vista X-3	1,084,726	10.02	88.91	1.07	0.52
Buena Vista Z	1,500,000	10.66	88.36	0.98	0.49
Coffeeville	536,450	0.73	97.57	1.70	0.44
Grays Bluff	216,261	4.96	94.13	0.91	0.36
Bald Bar/ Big Sandy	1,390,481	2.34	95.19	2.47	0.43
Ophelia (east)	62,616	7.59	91.19	1.22	0.24
Ophelia (west)	127,131	21.71	77.02	0.27	0.30

Samples of material from each of the sites have properties that appear suitable for use in most general-purpose portland cement concretes. Examples of such general-purpose use for the cement are in mortar mixes, curbs and drains, sidewalks, driveways, guard rail supports, and culverts. Due to the subrounded shape of the grains, use in high-strength applications such as bridges and load-bearing walls may not be recommended. Likewise, the material appears suitable for use in most general-purpose asphalt applications while use in high-strength applications is discouraged.

Figure 3

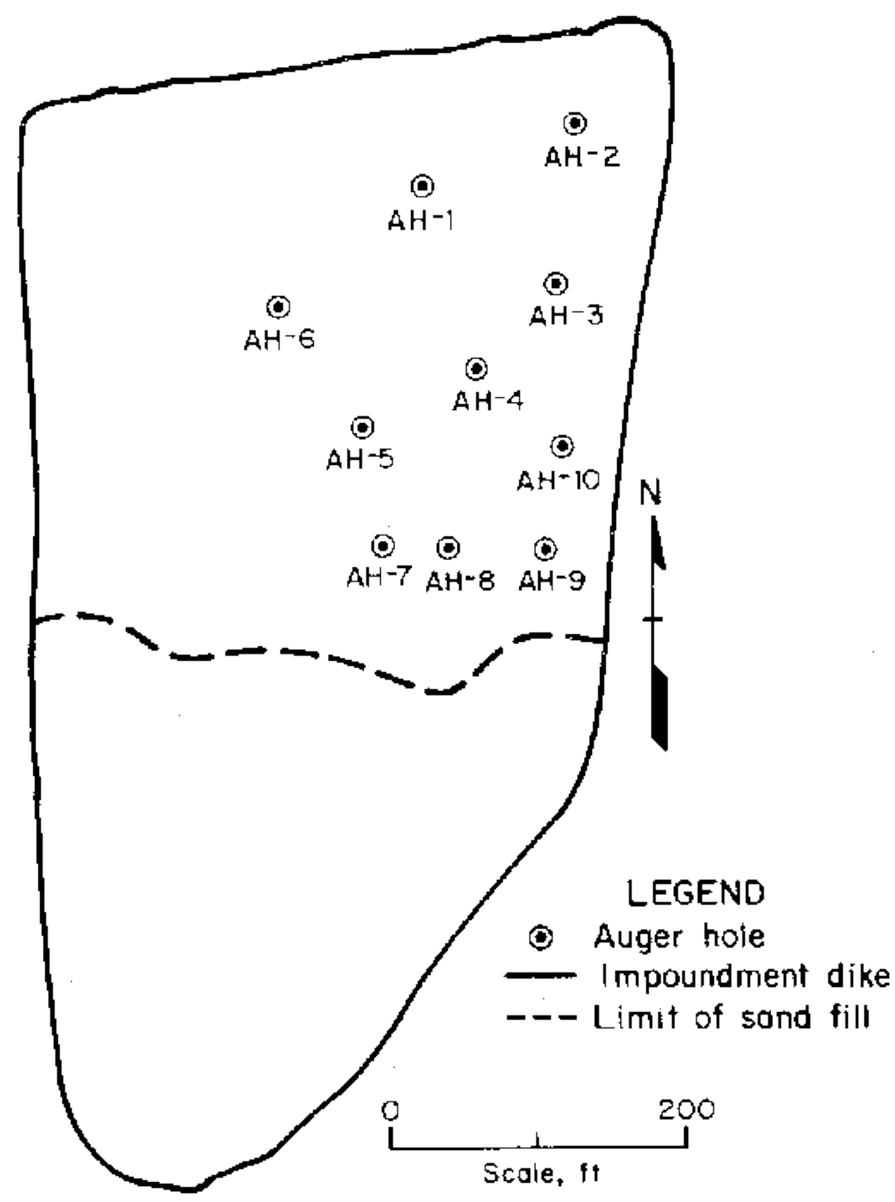


Sizing and sink-float separation of samples.

CLAIBORNE LOWER APPROACH

The Claiborne Lower Approach site is located adjacent to the Claiborne Lock and Dam at mile 72.5 on the Alabama River in sec. 35, T. 8N., R. 5E., Monroe County, AL. The site lies approximately 150 ft from the edge of the river and covers approximately 6 acres. The site presently contains approximately 134,476 yd³ of material. It is estimated that an additional 68,000 yd³ of material will be placed in the disposal area each year. Heavy minerals identified at the site in order of decreasing occurrence are ilmenite, rutile, zircon, kyanite, hematite, tourmaline, garnet, and pseudobrookite. Figure 4 shows the approximate location and depth of each of the sample holes. The material consists of 4.88 pct coarse aggregate, 94.59 pct fine aggregate, 0.53 pct undersize (minus 200 mesh), and

Figure 4



Sample locations in Claiborne Lower Approach test site.

contains 0.62 pct heavy minerals. Table 4 gives the size distribution of each sample. Table 5 gives the chemical analysis for the minor impurities present in each sample. Table 6 gives the results of the TCLP for a composite sample from the site.

Table 4.—Screen analysis of Claiborne Lower Approach samples

Size	Hole1	Hole 2	Hole 3	Hole 4		Hole 5	Hole 6	Hole 7	Hole 8	Hole 9	Hole 10
				0-5 ft	5-10 ft						
Plus 1.0 in	0	0	0	0	0	0	0	0	0	0	0
Minus 1.0 plus 0.75 in	0.85	0.35	0.62	0.21	0.22	0.15	0.39	0.40	0.30	0.18	0.20
Minus 0.75 plus 0.50 in	0.38	1.09	1.02	0.43	0.42	0.71	1.34	1.01	1.14	0.69	0.44
Minus 0.50 plus 0.37 in	1.03	1.91	1.96	1.29	1.20	1.02	1.38	2.58	1.85	1.12	1.25
Minus 0.37 in plus 3 mesh	2.54	2.09	2.27	1.14	0.89	0.92	1.65	2.20	2.15	0.82	1.18
Minus 3 plus 4 mesh	2.24	1.56	2.58	1.47	1.27	1.14	2.15	3.00	1.66	1.24	1.40
Minus 4 plus 6 mesh	3.02	1.82	2.58	1.84	1.50	1.60	2.67	3.34	1.72	1.50	1.91
Minus 6 plus 8 mesh	3.32	2.11	2.38	2.12	1.83	1.76	2.24	2.93	2.01	1.79	2.08
Minus 8 plus 10 mesh	2.96	2.03	2.30	2.14	1.61	2.02	2.44	2.46	2.13	1.99	2.18
Minus 10 plus 14 mesh	2.43	1.91	9.19	10.16	1.60	9.98	11.34	11.03	2.01	10.04	10.22
Minus 14 plus 20 mesh	10.83	8.63	9.90	10.74	8.36	11.04	13.07	11.15	8.53	10.98	10.68
Minus 20 plus 28 mesh	11.20	9.09	9.62	10.26	9.12	11.30	12.09	26.02	9.24	11.15	10.28
Minus 28 plus 35 mesh	26.06	9.62	27.63	24.82	10.62	29.98	25.28	10.92	9.47	30.13	24.80
Minus 35 plus 48 mesh	10.18	29.81	18.42	23.00	32.39	20.07	17.34	16.41	28.96	20.02	22.92
Minus 48 plus 65 mesh	16.21	18.32	6.34	7.89	18.35	6.21	4.54	4.77	19.23	6.27	7.97
Minus 65 plus 100 mesh	4.97	6.65	1.57	1.40	6.68	1.23	0.93	1.11	6.62	1.21	1.36
Minus 100 plus 150 mesh	1.01	1.58	0.88	0.61	1.97	0.51	0.60	0.33	1.61	0.53	0.67
Minus 150 plus 200 mesh	0.43	0.76	0.74	0.48	1.10	0.36	0.55	0.34	0.72	0.34	0.46
Minus 200 mesh	0.34	0.67	0	0	0.87	0	0	0	0.71	0	0
Composite	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 5.—Chemical analysis of minor elements in Claiborne Lower Approach samples

Hole	Depth, ft	Chemical analysis,[1] ppm							
		Al	Ca	Fe	K	Mn	Mg	Na	Ti
1	0-15	2,950	719	3,640	2,330	67	24	440	374
2	0-14	2,520	180	3,800	2,050	66	22	355	559
3	0-13	3,160	241	3,690	2,530	51	46	453	328
4	0- 5	3,580	284	4,470	2,830	67	61	513	604
4	5-10	3,090	273	3,940	2,730	59	43	502	474
5	0- 8	3,640	516	4,540	2,710	82	52	469	878
6	0- 5	3,120	364	5,660	2,310	132	106	379	1,960
7	0- 8	3,020	295	4,220	2,580	86	89	508	828
8	0- 8	3,340	320	4,460	2,730	66	56	485	488
9	0- 9	2,990	273	3,830	2,720	74	62	385	623
10	0-11	3,220	380	4,170	2,440	68	51	495	385

[1] <0.02 ppm Hg for all holes.

Table 6.—TCLP results for Claiborne Lower Approach test site

Contaminant	*Conc, ppm*	*Contaminant*	*Conc, ppm*
Ag	0.014	Cr	<0.037
As	0.734	Hg	<0.001
Ba	0.354	Pb	0.254
Cd	0.012	Se	<0.300

MILE 9

The Mile 9 site is located at mile 9 on the Alabama River in sec. 28, T. 3N., R. 2E., Baldwin County, AL. The site lies approximately 250 ft from the edge of the river and covers approximately 5 acres. The site presently contains approximately 324,777 yd³ of material. It is

estimated that an additional 53,000 yd^3 of material will be placed in the disposal area each year. Heavy minerals identified in order of decreasing occurrence are ilmenite, rutile, kyanite, hematite, tourmaline, garnet, and pseudobrookite. Figure 5 shows the approximate location and depth of each sample hole. The material consists of 0.38 pct coarse aggregate, 98.35 pct fine aggregate, 1.27 pct undersize, and contains 0.42 pct heavy minerals. Table 7 gives the screen analysis of each sample. Table 8 gives the chemical analysis for the minor impurities present in the sample. Table 9 gives the results of the TCLP for a composite sample from the site.

Table 7.—Screen analysis of Mile 9 samples

Size	Hole 1	Hole 2	Hole 3	Hole 4	Hole 5				Hole 6	Hole 7	Hole 8	Hole 9
					0.5-ft	5-10 ft	10-15 ft	15-20 ft				
Minus 1.0 in . . .	0	0	0	0	0	0	0	0	0	0	0	0
Minus 1.0 plus 0.75 in	0.07	0.06	0.11	0.10	0.23	0.11	0.04	0.12	0.02	0.08	0.08	0.06
Minus 0.75 plus 0.50 in . .	0.04	0.06	0.10	0.23	0.31	0.06	0.10	0.13	0.03	0.11	0.12	0.08
Minus 0.50 plus 0.37 in . .	0.04	0.06	0.06	0.15	0.23	0.14	0.14	0.22	0.08	0.37	0.12	0.08
Minus 0.37 in plus 3 mesh	0.06	0.06	0.12	0.23	0.34	0.25	0.15	0.24	0.10	0.30	0.20	0.10
Minus 3 plus 4 mesh . .	0.14	0.14	0.06	0.28	0.30	0.33	0.18	0.39	0.13	0.41	0.22	0.14
Minus 4 plus 6 mesh	0.18	0.16	0.12	0.42	0.38	0.48	0.24	0.58	0.18	0.57	0.28	0.16
Minus 6 plus 8 mesh	0.24	0.26	0.14	0.16	0.45	4.03	2.45	0.61	0.25	0.71	2.10	0.35
Minus 8 plus 10 mesh	2.93	2.20	0.19	3.13	3.76	9.66	6.73	1.01	0.32	0.97	5.95	2.54
Minus 10 plus 14 mesh	8.15	6.18	0.26	8.15	10.62	11.85	10.41	6.10	3.19	5.78	9.82	6.18
Minus 14 plus 20 mesh	14.03	9.25	2.94	13.06	13.57	33.28	32.11	10.65	8.38	11.50	38.84	12.35
Minus 20 plus 28 mesh	36.27	34.69	8.19	29.09	32.48	26.67	32.56	11.08	11.72	15.24	32.25	39.73
Minus 28 plus 35 mesh	27.70	32.16	12.35	32.20	27.75	8.28	9.78	33.89	38.32	34.69	6.65	25.65
Minus 35 plus 48 mesh	7.53	10.42	37.98	8.47	6.71	1.96	1.97	23.36	25.51	20.36	1.32	8.50
Minus 48 plus 65 mesh	1.31	2.18	26.75	1.75	1.23	1.16	1.26	7.39	7.61	5.60	0.95	1.65
Minus 65 plus 100 mesh . . .	0.62	1.06	7.53	1.16	0.68	1.74	1.88	1.68	1.70	1.27	1.10	1.08
Minus 100 plus 150 mesh . . .	0.69	1.06	1.32	1.42	0.96	0	0	1.09	1.04	0.84	0	1.35
Minus 150 plus 200 mesh . . .	0	0	0.86	0	0	0	0	1.46	1.42	1.20	0	0
Minus 200 mesh	0	0	0.92	0	0	0	0	0	0	0	0	0
Composite . .	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 8.—Chemical analysis of minor elements in Mile 9 samples.

Hole	Depth, ft	Chemical analysis,[1] ppm							
		Al	Ca	Fe	K	Mn	Mg	Na	Ti
1	0-15	3,240	123	4,160	2,380	83	27	356	246
2	0-21	3,520	234	3,900	2,430	73	33	363	190
3	0-11	2,740	131	4,010	2,420	66	23	449	349
4	0-20	3,310	176	4,050	2,530	76	46	495	387
5	0- 5	2,620	98	3,990	2,110	72	23	314	589
5	5-10	2,630	101	4,010	1,940	74	<22	323	575
5	10-15	3,320	158	3,870	2,240	73	<22	406	240
5	15-20	3,570	146	4,780	2,750	114	<22	435	277
6	0- 8	2,620	132	4,060	2,400	77	58	390	403
7	0- 9	2,660	147	3,880	2,190	70	23	344	407
8	0-11	3,035	126	4,160	2,260	83	23	370	433
9	0- 9	2,840	134	3,980	2,150	80	31	320	395

[1] <0.02 ppm Hg for all holes.

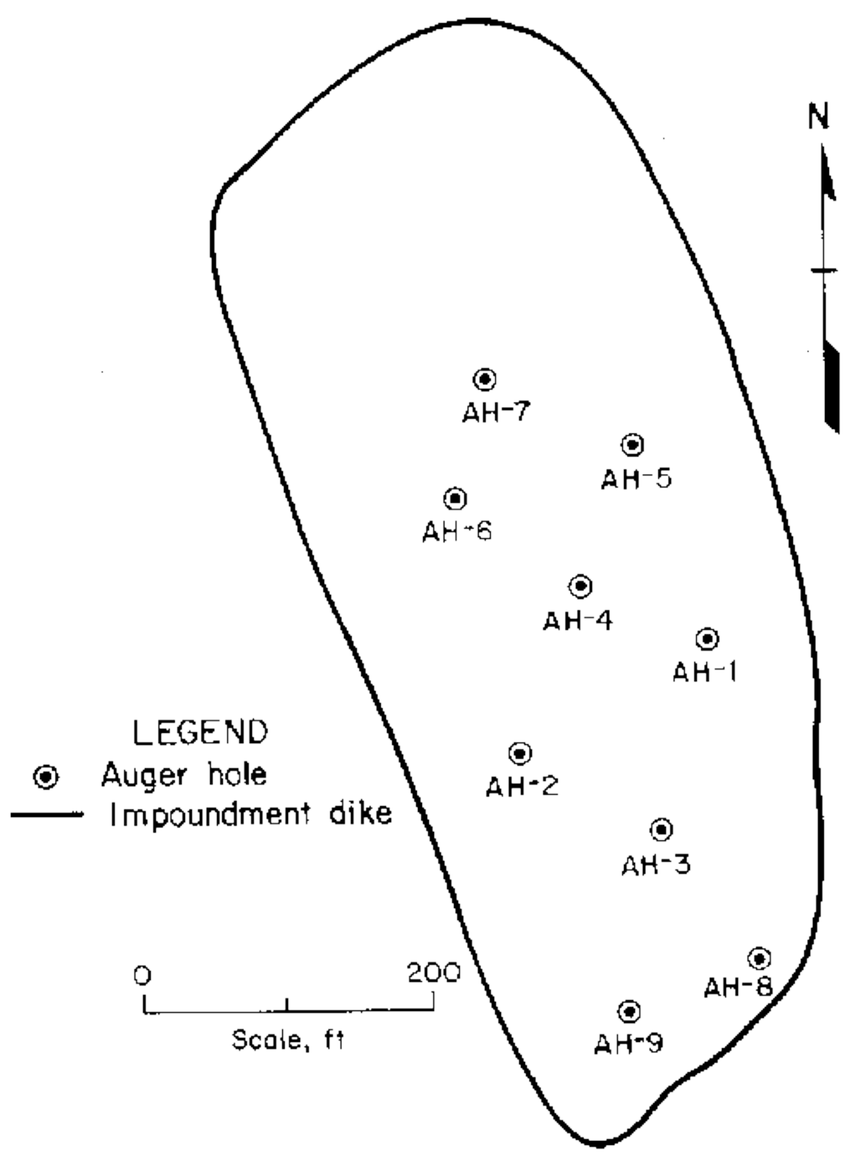
Table 9.—TCLP results for Mile 9 test site

Contaminant	Conc, ppm	Contaminant	Conc, ppm
Ag	<0.014	Cr	<0.036
As	0.831	Hg	<0.001
Ba	2.370	Pb	0.292
Cd	<0.005	Se	<0.300

SUNFLOWER

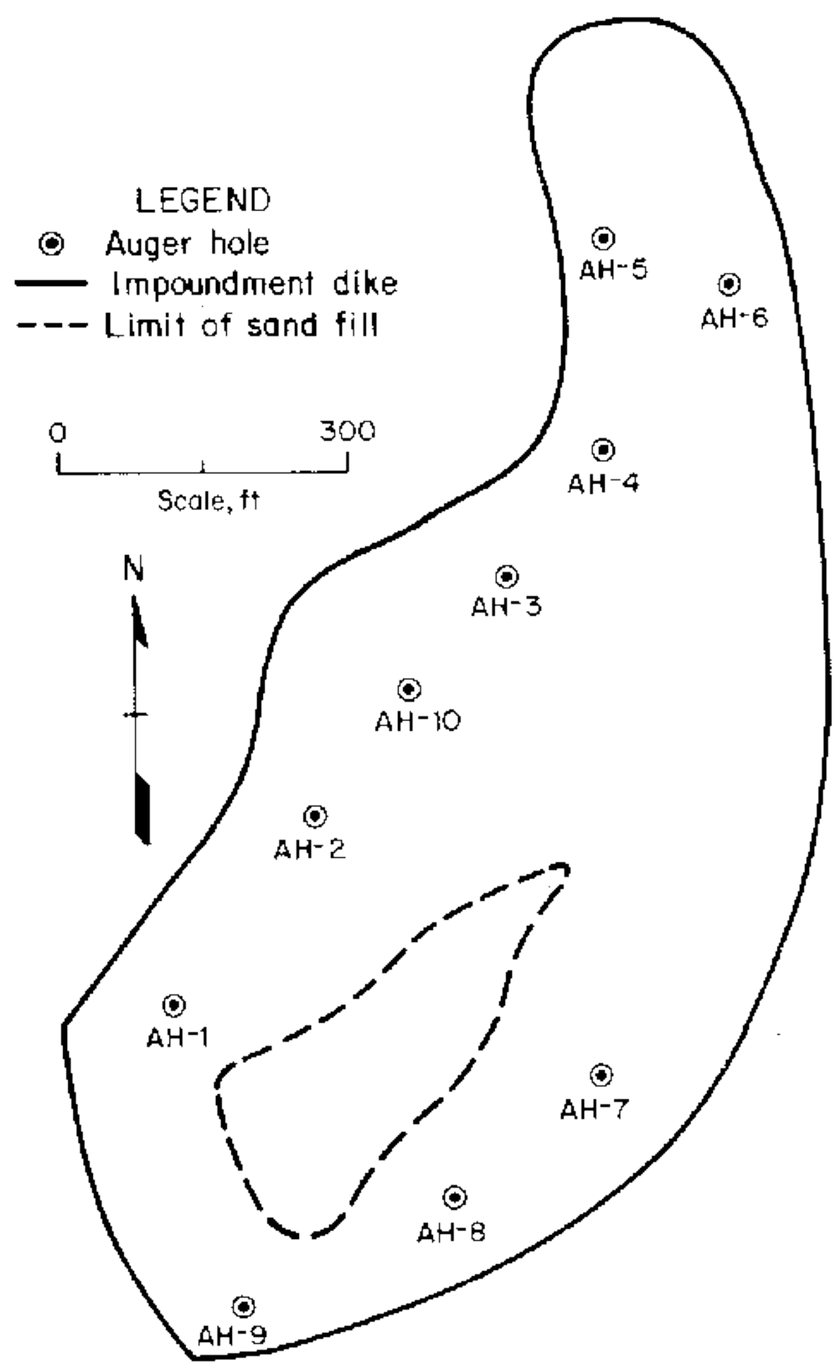
The Sunflower site is located at mile 78 on the Tombigbee River in sec. 20, T. 5N., R. 2E., Clarke County, AL. The site lies approximately 400 ft from the edge of the river and covers approximately 80 acres. The site presently contains approximately 835,610 yd³ of material and it is estimated that an additional 85,000 yd³ will be added to the disposal area each year. Heavy minerals identified, in decreasing order of occurrence, include zircon, ilmenite, rutile, kyanite, hematite, tourmaline, and garnet. Figure 6 shows the approximate location and depth of each sample hole. The material consists of 4.37 pct coarse aggregate, 94.66 pct fine aggregate, 0.97 pct undersize, and contains 0.45 pct heavy minerals. Table 10 gives the screen analysis of each sample. Table 11 gives the chemical analysis for the minor impurities present in the sample. Table 12 gives the results of the TCLP for a composite sample from the site.

Figure 5



Sample locations in Mile 9 test site.

Figure 6



Sample locations in Sunflower test site.

Table 10.—Screen analysis of Sunflower samples

Size	Hole 1	Hole 2	Hole 3	Hole 4	Hole 5				Hole 6	Hole 7	Hole 8	Hole 9	Hole 10
					0-5 ft	5-10 ft	10-15 ft	15-20 ft					
Plus 1.0 in	0	0	0	0	0	0	0	0	0	0	0.62	0	0
Minus 1.0 plus 0.75 in	0	0.22	0.61	0	0	0	0	0	0	0	0.31	0.12	0.32
Minus 0.75 plus 0.50 in	0.81	0.50	1.78	0.04	0.49	0.54	0.26	0	0.15	0.88	0.64	1.52	1.28
Minus 0.50 plus 0.37 in	1.34	0.64	2.34	0.38	0.82	0.90	0.84	0.56	0.32	1.74	0.59	1.33	1.54
Minus 0.37 in plus 3 mesh . .	1.62	0.82	2.35	0.58	0.70	0.87	1.63	1.15	0.60	2.43	0.84	1.80	1.61
Minus 3 plus 4 mesh	1.42	0.66	1.63	0.55	0.97	0.74	1.51	0.89	0.74	2.61	0.66	1.62	1.35
Minus 4 plus 6 mesh	1.36	0.76	1.41	0.61	1.06	0.50	1.82	1.12	0.76	2.49	0.64	1.60	1.19
Minus 6 plus 8 mesh	1.13	0.60	1.18	0.62	0.75	0.47	1.92	1.08	0.57	2.15	0.55	1.22	1.11
Minus 8 plus 10 mesh	0.85	0.43	0.94	0.46	0.40	0.25	1.60	0.89	0.47	1.49	0.44	0.74	0.89
Minus 10 plus 14 mesh	0.76	0.45	0.94	0.52	0.28	0.19	1.52	1.00	0.41	1.31	0.48	0.77	0.93
Minus 14 plus 20 mesh	4.41	3.32	4.02	3.04	1.73	1.74	8.80	6.21	2.18	5.80	2.63	3.08	3.88
Minus 20 plus 28 mesh	6.52	5.17	4.35	4.59	2.60	2.80	14.94	12.12	4.00	6.72	4.97	5.43	7.29
Minus 28 plus 35 mesh	10.24	12.52	9.27	9.65	4.81	4.23	14.29	21.77	7.48	7.11	11.22	10.47	10.28
Minus 35 plus 48 mesh	23.84	32.59	35.38	26.19	28.74	25.19	24.17	16.35	28.55	34.26	45.10	39.72	38.18
Minus 48 plus 65 mesh	25.03	27.53	21.70	33.07	38.50	40.86	16.33	22.88	33.15	18.78	18.61	17.98	17.36
Minus 65 plus 100 mesh . . .	14.93	10.44	8.48	14.10	13.07	14.71	6.95	10.59	14.64	8.15	8.18	8.38	8.70
Minus 100 plus 150 mesh . . .	3.29	2.18	1.98	3.24	2.86	3.69	1.64	2.03	3.35	2.00	1.82	2.14	2.10
Minus 150 plus 200 mesh . . .	1.26	0.69	0.79	1.21	1.24	1.25	0.84	0.68	1.38	1.08	0.79	1.04	0.94
Minus 200 mesh	1.19	0.48	0.85	1.15	0.98	1.07	0.94	0.68	1.25	1.00	0.91	1.04	1.05
Composite . .	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 11.—Chemical analysis of minor elements in Sunflower samples

Hole	Depth, ft	Chemical analysis,[1] ppm							
		Al	Ca	Fe	K	Mn	Mg	Na	Ti
1	0-24	1,550	<35	3,540	1,250	55	<22	216	611
2	0-23	1,350	<34	3,100	877	54	<22	127	484
3	0-21	1,340	<34	3,160	721	51	<22	171	469
4	0-23	1,900	<44	3,570	1,270	62	<22	207	733
5	0- 5	1,910	41	3,750	1,200	67	<22	314	776
5	5-10	2,190	66	3,930	1,620	60	<22	301	771
5	10-15	1,490	<35	3,380	879	59	<22	203	479
5	15-20	1,290	<34	3,180	989	48	<22	202	464
6	0-19	1,950	<34	3,370	1,310	49	<22	167	505
7	0-22	1,720	<34	3,220	811	48	<22	65	499
8	0-21	1,360	<35	3,230	844	53	<22	69	534
9	0-22	1,970	59	3,430	1,120	59	25	187	503
10	0-22	1,760	<35	3,290	1,060	50	<22	132	507

[1] <0.02 ppm Hg for all holes.

Table 12.—TCLP results for Sunflower test site

Contaminant	Conc, ppm	Contaminant	Conc, ppm
Ag	<0.014	Cr	<0.037
As	0.556	Hg	<0.001
Ba	0.262	Pb	0.332
Cd	<0.005	Se	<0.300

GEORGE GAINES

The George Gaines test site is located at mile 82 on the Tombigbee River in sec. 37, T. 5N., R. 2E., Clarke County, AL. The site presently lies at the edge of the river and covers approximately 35 acres. The site contains approximately 654,296 yd³ of material. Heavy minerals identified in order of decreasing occurrence are zircon, ilmenite, rutile, kyanite, hematite, tourmaline, and garnet. Figure 7 shows the approximate location and depth of each sample hole. The material consists of 7.53 pct coarse aggregate, 91.53 pct fine aggregate, 0.94 pct undersize, and contains 0.37 pct heavy minerals. Table 13 gives the screen analysis of each sample. Table 14 gives the chemical analysis for the minor impurities in the sample. Table 15 gives the results of the TCLP for a composite sample from the site.

Table 13.—Screen analysis of George Gaines samples

Size	Hole 1	Hole 2 0-5 ft	Hole 2 5-10 ft	Hole 2 10-15 ft	Hole 2 15-20 ft	Hole 2 20-25 ft	Hole 3	Hole 4	Hole 5	Hole 6	Hole 7	Hole 8	Hole 9	Hole 10
Plus 1.0 in	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minus 1.0 plus 0.75 in	0	0.39	0	0	0.27	0.41	0	0	0	0	0.77	0.66	0.10	0.13
Minus 0.75 plus 0.50 in	1.29	0.24	0.21	0.08	0.12	2.13	0.66	0.60	0.99	1.06	3.70	2.06	0.99	0.72
Minus 0.50 plus 0.37 in	1.76	0.69	0.52	0.54	1.06	3.66	1.43	1.52	1.98	2.01	5.46	3.03	1.82	1.77
Minus 0.37 in plus 3 mesh	2.27	1.00	0.59	1.07	2.04	3.57	1.90	1.75	2.59	2.76	6.21	2.85	2.09	1.93
Minus 3 plus 4 mesh	1.80	1.15	0.94	0.88	1.48	3.00	1.91	1.61	2.54	2.99	3.78	2.65	1.63	1.57
Minus 4 plus 6 mesh	1.87	1.36	1.07	1.09	1.64	2.92	2.20	1.54	2.45	3.42	3.47	2.40	1.79	1.70
Minus 6 plus 8 mesh	1.81	1.41	1.16	1.23	1.72	1.44	2.18	1.52	2.18	2.72	2.66	2.23	1.54	1.60
Minus 8 plus 10 mesh	1.50	1.31	1.11	1.09	1.40	1.85	1.71	1.30	1.68	2.19	2.03	1.73	1.13	1.25
Minus 10 plus 14 mesh	1.61	1.22	1.12	1.28	1.26	2.69	1.63	1.33	1.65	1.93	1.93	1.48	1.04	1.22
Minus 14 plus 20 mesh	7.69	8.13	9.08	8.34	7.91	7.83	10.18	9.53	10.64	11.32	10.89	10.31	5.97	6.71
Minus 20 plus 28 mesh	12.33	20.99	14.48	14.49	12.28	11.42	16.01	13.97	13.98	14.22	14.21	12.78	11.25	9.48
Minus 28 plus 35 mesh	16.94	22.49	22.36	20.66	20.25	17.93	21.23	19.05	18.58	17.18	16.17	17.06	18.03	18.09
Minus 35 plus 48 mesh	26.45	24.48	26.87	26.34	26.88	21.78	22.58	23.81	22.21	21.62	16.13	20.80	27.91	30.24
Minus 48 plus 65 mesh	12.61	8.85	11.96	11.72	11.88	10.56	9.60	12.13	10.23	8.85	7.06	10.31	13.84	13.07
Minus 65 plus 100 mesh	6.12	4.31	5.29	5.83	5.60	4.94	4.07	6.48	5.20	4.64	3.81	5.82	6.73	6.41
Minus 100 mesh plus 150 mesh	1.72	1.11	1.44	1.81	1.83	1.57	1.25	1.96	1.66	1.44	1.04	1.98	2.12	2.21
Minus 150 plus 200 mesh	0.99	0.48	0.84	1.08	0.99	0.99	0.63	0.95	0.72	0.92	0.36	0.97	1.03	1.03
Minus 200 mesh	1.22	0.39	0.96	1.47	1.39	1.30	0.83	0.95	0.72	0.76	0.36	0.88	0.99	0.87
Composite	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 14.—Chemical analysis of minor elements in George Gaines samples

Hole	Depth, ft	Chemical analysis,[1] ppm							
		Al	Ca	Fe	K	Mn	Mg	Na	Ti
1	0-24	1,140	218	2,910	1,110	46	110	263	357
2	0- 5	1,110	86	2,600	745	36	55	121	200
2	5-10	1,070	<54	2,590	452	50	<32	102	324
2	10-15	1,350	149	2,930	718	54	104	144	373
2	15-20	1,310	150	2,990	830	52	91	212	406
2	20-24	1,280	127	3,060	917	50	87	209	340
3	0-25	1,320	146	3,070	825	54	112	226	370
4	0-21	1,430	118	2,970	696	54	74	137	274
5	0-17	1,030	79	2,860	907	62	<32	135	343
6	0-17	1,050	<54	2,890	579	51	<32	60	343
7	0- 3	1,070	69	3,100	960	64	<32	114	131
8	0-14	1,890	179	3,370	1,220	69	97	229	180
9	0-15	1,320	105	3,120	758	49	69	200	507
10	0-12	1,120	66	2,770	966	39	<32	146	354

[1] <0.02 ppm Hg for all holes.

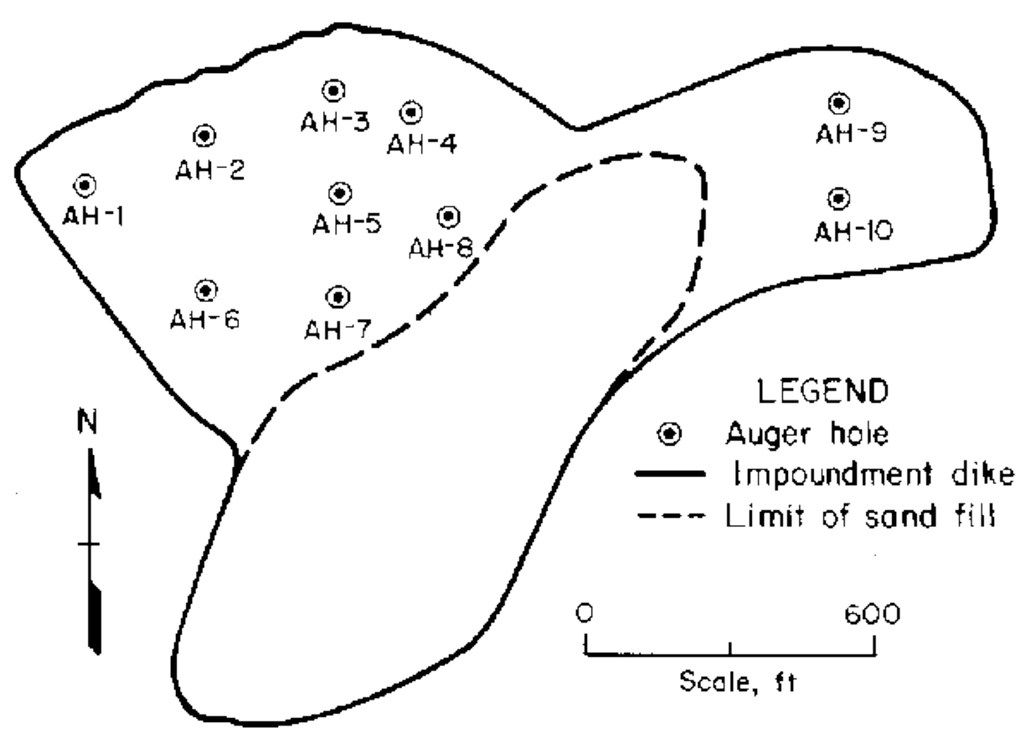
Table 15.—TCLP results for George Gaines test site

Contaminant	*Conc, ppm*	*Contaminant*	*Conc, ppm*
Ag	<0.014	Cr	<0.037
As	0.599	Hg	<0.001
Ba	0.326	Pb	0.120
Cd	<0.005	Se	<0.300

BUENA VISTA X-3

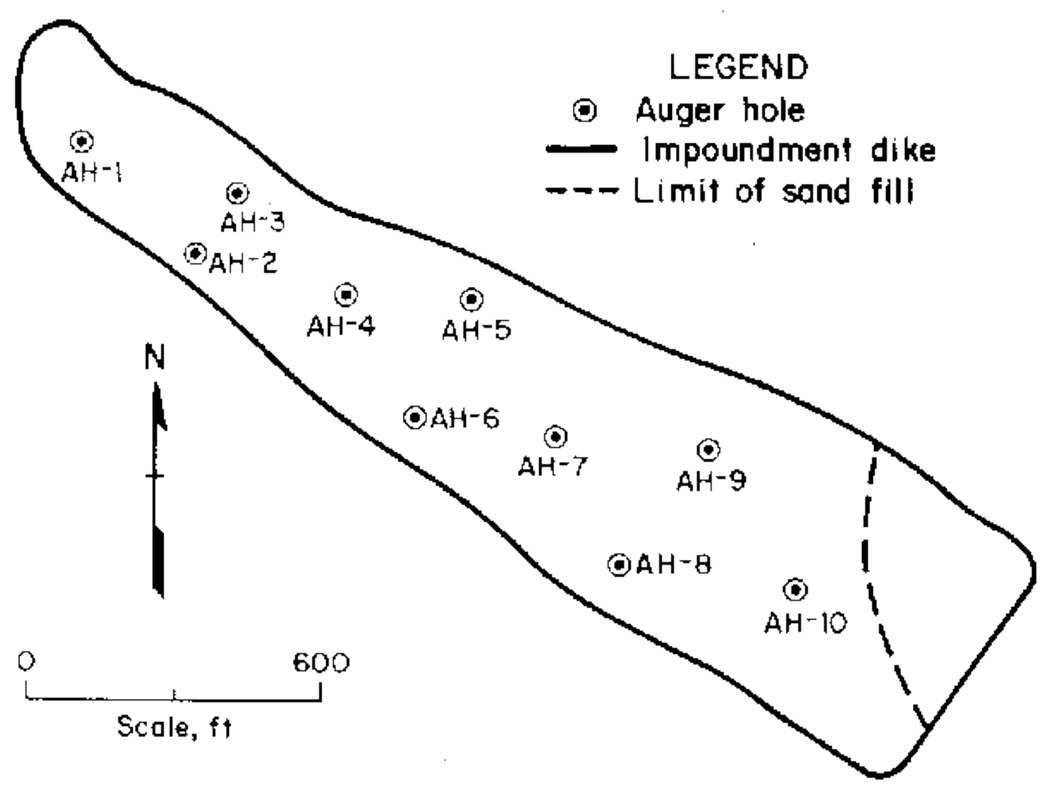
The Buena Vista X-3 site is located at mile 108 on the Tombigbee River in the Mitchell Reserve, T. 8N., R. 1W., Clarke County, AL. The site lies approximately 500 ft from the edge of the river and covers approximately 30 acres. The site presently contains approximately 1,084,726 yd³ of material. It is estimated that an additional 150,000 yd³ of material will be added to the disposal area each year. Heavy minerals identified in order of decreasing occurrence are zircon, rutile, kyanite, ilmenite, tourmaline, and hematite. Figure 8 shows the approximate location and depth of each sample hole. The material consists of 10.02 pct coarse aggregate, 88.91 pct fine aggregate, 1.07 pct undersize, and contains 0.52 pct heavy minerals. Table 16 gives the screen analysis for each sample. Table 17 gives the chemical analysis for the minor impurities present in the samples. Table 18 gives the results of the TCLP for a composite sample from the site.

Figure 7



Sample locations in George Gaines test site.

Figure 8



Sample locations in Buena Vista X-3 test site.

Table 16.—Screen analysis of Buena Vista X-3 samples

Size	Hole 1	Hole 2	Hole 3	Hole 4	Hole 5 0-5 ft	Hole 5 5-10 ft	Hole 5 10-15 ft	Hole 5 15-20 ft	Hole 5 20-25 ft	Hole 6	Hole 7	Hole 8	Hole 9	Hole 10
Plus 1.0 in	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minus 1.0 plus 0.75 in	0.76	0.19	0	0.93	0.26	0.20	0	0.24	0.19	0.09	0.30	0	0.10	0.52
Minus 0.75 plus 0.50 in . .	1.45	0.83	1.05	2.58	1.19	1.67	1.32	1.96	0.83	1.88	0.66	0.40	0.31	1.61
Minus 0.50 plus 0.37 in . .	4.53	1.76	1.41	5.03	2.34	2.91	3.10	2.76	1.69	4.24	2.86	1.12	0.59	3.17
Minus 0.37 in plus 3 mesh . .	2.66	2.57	1.84	6.16	2.91	3.31	3.87	2.66	1.67	4.82	3.56	1.68	1.11	4.79
Minus 3 plus 4 mesh	3.62	2.34	1.91	4.66	2.86	2.66	3.34	2.46	1.57	3.21	2.85	0.95	1.08	4.13
Minus 4 plus 6 mesh	3.24	2.01	1.75	3.83	2.52	2.38	2.79	1.70	1.19	2.57	2.21	0.79	0.95	3.42
Minus 6 plus 8 mesh	2.45	1.43	1.46	2.69	1.67	1.67	2.10	1.26	0.91	1.72	1.49	0.49	0.56	2.26
Minus 8 plus 10 mesh	1.65	0.87	0.93	1.66	1.19	1.21	1.37	0.78	0.66	0.98	0.87	0.35	0.35	1.33
Minus 10 plus 14 mesh	1.26	0.58	0.66	1.14	0.89	0.90	0.91	0.65	0.53	0.68	0.52	0.27	0.25	0.86
Minus 14 plus 20 mesh	6.38	2.92	3.19	5.22	4.67	4.79	4.70	3.53	2.86	2.81	2.08	1.45	1.10	3.11
Minus 20 plus 28 mesh	7.70	3.68	4.30	5.69	7.65	7.29	6.85	5.78	6.18	4.06	2.82	2.73	2.17	4.91
Minus 28 plus 35 mesh	10.43	6.17	6.84	7.89	11.92	11.94	10.81	9.10	7.93	5.28	3.96	5.25	3.11	6.86
Minus 35 plus 48 mesh	14.70	14.07	14.38	14.08	20.40	20.55	20.48	19.84	21.71	12.99	14.57	17.56	13.75	17.05
Minus 48 plus 65 mesh	23.73	34.42	33.45	22.84	25.76	25.15	25.02	30.30	33.13	30.69	40.20	43.16	48.11	30.36
Minus 65 plus 100 mesh . . .	11.06	19.12	20.06	11.13	10.20	9.64	9.30	12.43	13.88	17.05	15.91	17.82	20.16	12.08
Minus 100 mesh plus 150 mesh	2.49	4.09	4.02	2.38	1.85	1.75	1.88	2.31	2.70	4.34	3.03	3.56	3.79	2.00
Minus 150 plus 200 mesh . . .	0.98	1.54	1.43	1.08	0.83	0.88	0.99	1.12	1.22	1.54	1.18	1.34	1.48	0.77
Minus 200 mesh	0.91	1.41	1.32	1.01	0.89	1.10	1.17	1.12	1.15	1.05	0.93	1.08	1.03	0.77
Composite . .	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 17.—Chemical analysis of minor elements in Buena Vista X-3 samples

Hole	Depth, ft	Chemical analysis,[1] ppm Al	Ca	Fe	K	Mn	Mg	Na	Ti
1	0-30	1,940	60	4,340	1,090	94	39	174	668
2	0-20	2,900	117	4,720	1670	99	92	282	998
3	0-26	2,860	86	4,300	1,450	93	73	247	787
4	0-25	2,120	<34	4,510	1,270	96	23	132	924
5	0- 5	1,280	<34	3,550	973	73	<22	74	505
5	5-10	1,400	<34	3,490	802	65	<22	115	417
5	10-15	1,640	<34	3,800	1,010	76	<22	116	507
5	15-20	2,560	129	4,440	1,350	92	69	286	522
5	20-28	2,880	128	4,520	1,680	87	81	298	286
6	0-23	3,090	109	4,760	1,720	102	34	332	1,010
7	0-28	1,800	35	4,170	1,330	90	<22	173	863
8	0-28	2,680	104	4,140	1,510	83	67	220	829
9	0-16	2,880	128	4,350	1,860	95	79	327	944
10	0- 9	2,020	98	4,490	1,240	86	37	211	635

[1] <0.02 ppm Hg for all holes.

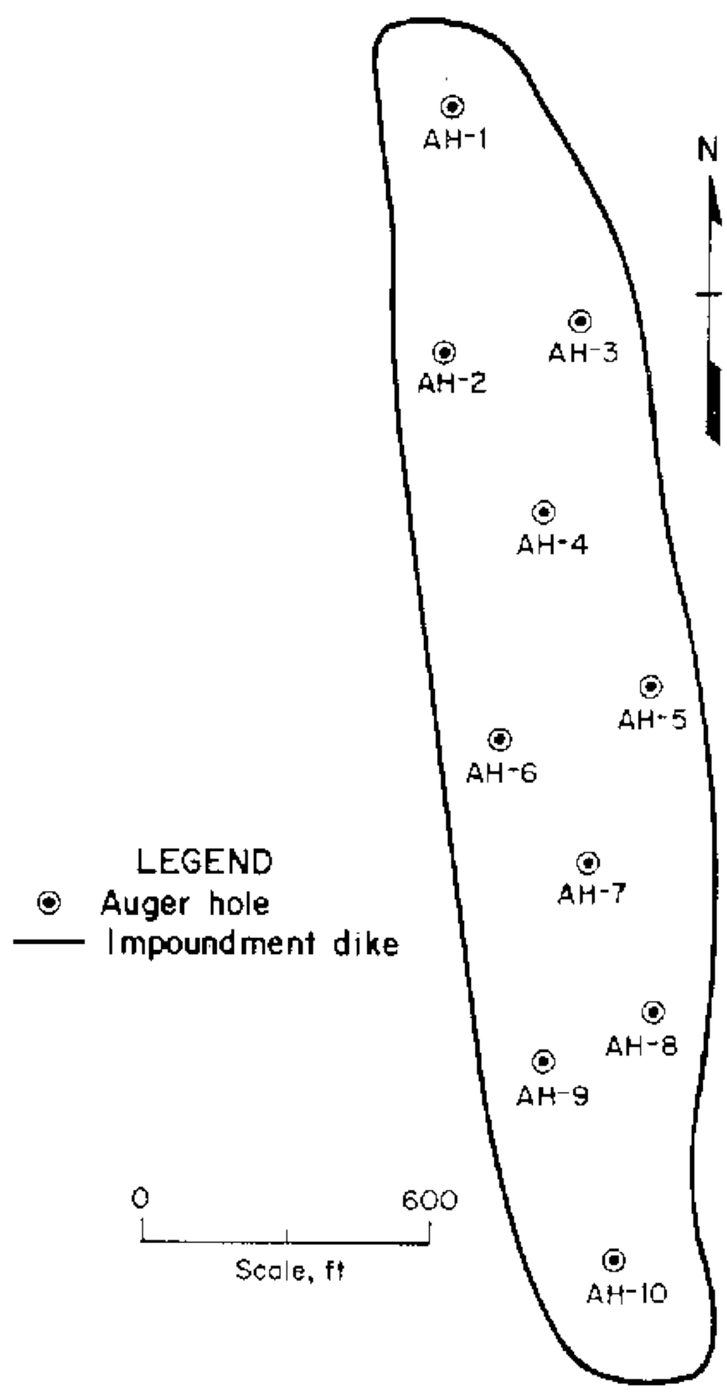
Table 18.—TCLP results for Buena Vista X-3 test site

Contaminant	*Conc, ppm*	*Contaminant*	*Conc, ppm*
Ag	<0.014	Cr	<0.037
As	0.623	Hg	<0.001
Ba	0.239	Pb	0.303
Cd	<0.005	Se	<0.300

BUENA VISTA Z

The Buena Vista Z test site is located at mile 109 on the Tombigbee River in sec. 37, T. 8N., R. 1W., Washington County, AL. The site lies approximately 300 ft from the edge of the river and covers approximately 35 acres. The site contains approximately 1,500,000 yd³ of material. It is estimated that an additional 150,000 yd³ of material will be placed in the disposal area each year. Heavy minerals identified in order of decreasing occurrence are zircon, rutile, kyanite, ilmenite, tourmaline, hematite, and garnet. Figure 9 shows the approximate location and depth of each sample hole. The material consists of 10.66 pct coarse aggregate, 88.36 pct fine aggregate, 0.98 pct undersize, and contains 0.49 pct heavy minerals. Table 19 gives the screen analysis of each sample. Table 20 gives the chemical analysis for the minor impurities present in the sample. Table 21 gives the results of the TCLP for a composite sample from the site.

Figure 9

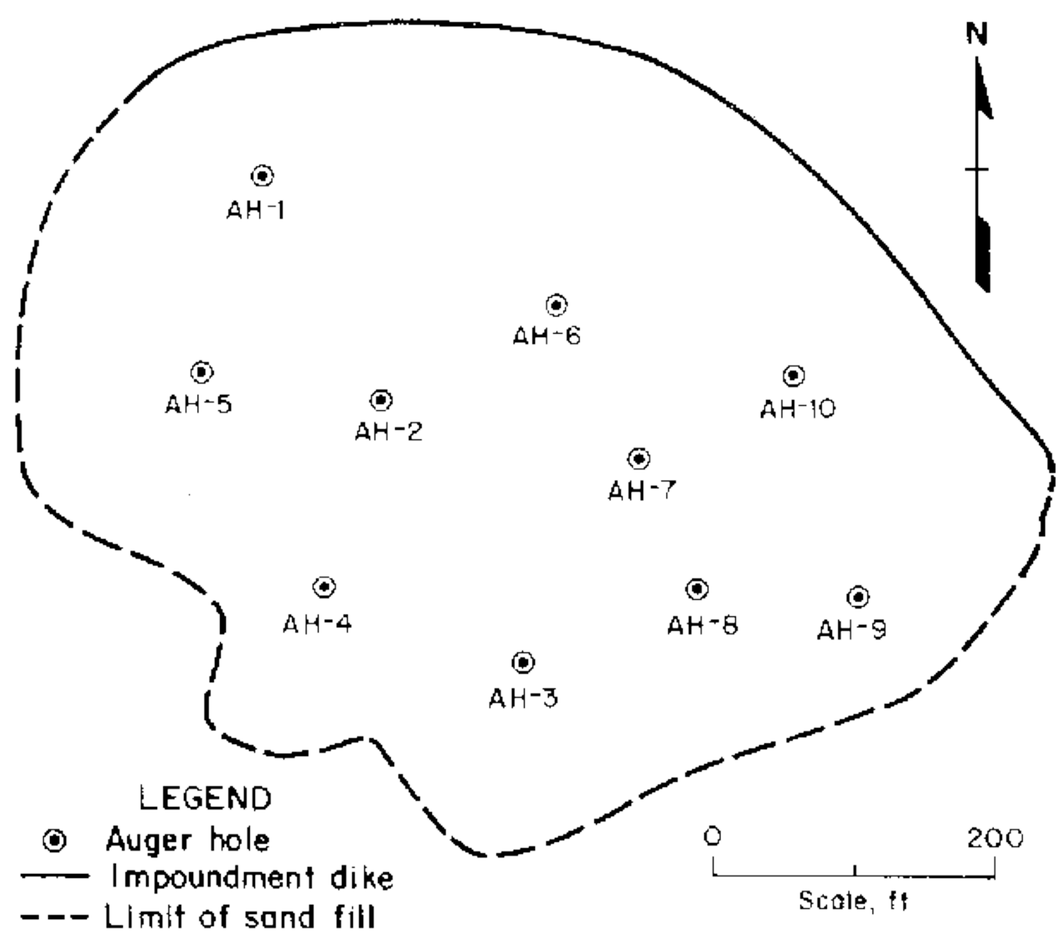


Sample locations in Buena Vista Z test site.

COFFEEVILLE LOWER APPROACH

The Coffeeville Lower Approach site is located adjacent to the Coffeeville Lock and Dam at mile 116 on the Tombigbee River in sec. 7, T. 9N., R. 1W., Choctaw County, AL. The site lies approximately 100 ft from the edge of the river, covers approximately 100 acres, and presently contains approximately 536,450 yd³ of material. It is estimated that an additional 80,000 yd³ of material will be placed in the disposal area each year. Heavy minerals identified in order of decreasing occurrence are zircon, rutile, ilmenite, kyanite, tourmaline, hematite, and garnet. Figure 10 shows the approximate location and depth of each sample hole. The material consists of 0.73 pct coarse aggregate, 97.57 pct fine aggregate, 1.70 pct undersize, and contains 0.44 pct heavy minerals. Table 22 gives the screen analysis and heavy mineral content of each sample. Table 23 gives the chemical analysis for the minor impurities present in each sample. Table 24 gives the results of the TCLP for a composite sample from the site.

Figure 10



Sample locations in Coffeeville Lower Approach test site.

Table 19.—Screen analysis of Buena Vista Z samples

Size	Hole 1	Hole 2	Hole 3	Hole 4	Hole 5	Hole 6					Hole 7	Hole 8	Hole 9	Hole 10
						0-5 ft	5-10 ft	10-15 ft	15-20 ft	20-25 ft				
Plus 1.0 in	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minus 1.0 plus 0.75 in	1.81	0.32	0.74	1.68	0.28	1.23	0.43	0.18	0.17	2.83	0.18	0.59	0.73	0.24
Minus 0.75 plus 0.50 in	3.38	3.00	4.33	2.77	1.53	0.62	0.82	1.07	1.55	4.39	0.41	2.91	1.23	0.77
Minus 0.50 plus 0.37 in	4.72	6.10	7.05	5.02	2.75	0.53	0.84	1.29	3.56	5.43	0.56	3.73	1.28	0.78
Minus 0.37 in plus 3 mesh . .	3.54	7.19	8.89	4.43	3.42	0.45	0.69	0.87	3.16	3.58	0.80	4.07	1.17	1.62
Minus 3 plus 4 mesh	2.99	5.06	6.54	4.08	2.63	0.29	0.56	0.68	2.35	2.71	0.77	2.69	0.81	1.53
Minus 4 plus 6 mesh	2.12	4.41	5.21	2.76	2.03	0.22	0.39	0.62	2.06	1.90	0.65	1.54	0.52	1.33
Minus 6 plus 8 mesh	1.33	2.86	3.16	1.77	1.42	0.18	0.24	0.46	1.43	1.18	0.49	0.91	0.35	0.95
Minus 8 plus 10 mesh	0.93	1.85	1.81	1.19	0.90	0.16	0.19	0.39	1.07	0.87	0.34	0.54	0.30	0.62
Minus 10 plus 14 mesh	4.58	1.34	1.24	5.60	0.63	0.82	0.84	1.84	0.83	3.91	0.29	0.46	1.51	0.51
Minus 14 plus 20 mesh	8.48	6.37	5.13	9.52	2.91	2.46	2.64	3.07	4.12	8.03	1.61	2.56	2.76	2.35
Minus 20 plus 28 mesh	8.85	11.52	8.05	9.71	5.50	3.42	3.30	4.40	7.61	7.83	4.04	4.09	5.31	3.23
Minus 28 plus 35 mesh	16.90	10.43	7.73	20.79	6.40	26.47	32.57	28.39	8.10	24.63	4.52	7.39	23.36	5.47
Minus 35 plus 48 mesh	25.76	15.02	12.45	20.82	18.91	39.06	36.40	36.77	25.54	23.03	36.58	28.11	37.32	16.16
Minus 48 plus 65 mesh	10.68	15.19	15.66	6.57	32.96	18.27	15.11	14.73	26.89	6.48	29.17	28.66	16.93	45.15
Minus 65 plus 100 mesh . . .	2.06	6.09	8.85	1.59	13.28	3.56	2.64	2.70	7.95	0.88	14.29	8.73	3.34	14.75
Minus 100 mesh plus 150 mesh	0.89	1.61	1.80	0.85	2.43	1.30	1.20	1.27	1.78	1.52	2.70	1.62	1.59	2.40
Minus 150 plus 200 mesh . . .	0.98	0.80	0.72	0.85	1.13	0.96	1.14	1.27	0.87	0.80	1.35	0.78	1.49	1.10
Minus 200 mesh	0	0.84	0.64	0	0.89	0	0	0	0.96	0	1.25	0.62	0	1.04
Composite . .	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 20.—Chemical analysis of minor elements in the Buena Vista Z samples

Hole	Depth, ft	Chemical analysis,[1] ppm							
		Al	Ca	Fe	K	Mn	Mg	Na	Ti
1	0-17	2,780	175	4,500	1,510	78	94	239	482
2	0-21	2,050	156	4,280	1,120	119	31	159	403
3	0-17	1,960	83	4,450	1,030	113	30	177	946
4	0-27	2,180	99	4,910	1,110	114	51	187	884
5	0-17	2,760	120	4,340	1,610	92	93	257	581
6	0- 5	3,180	185	4,980	1,840	106	127	333	1,180
6	5-10	2,600	159	4,410	1,460	88	99	446	780
6	10-15	2,320	62	4,020	1,310	92	51	191	732
6	15-20	2,070	47	4,060	944	92	31	129	514
6	20-27	2,370	84	4,360	1,200	110	70	197	631
7	0-23	2,670	134	4,520	1,420	98	87	217	1,190
8	0- 8	2,580	134	3,920	1,530	95	101	265	310
9	0-17	2,340	149	3,940	1,610	86	73	320	441
10	0-14	2,360	71	4,310	1,440	93	74	205	1,040

[1] <0.02 ppm Hg for all holes.

Table 21.—TCLP results for Buena Vista Z test site

Contaminant	*Conc, ppm*	*Contaminant*	*Conc, ppm*
Ag	<0.014	Cr	<0.037
As	0.866	Hg	<0.001
Ba	0.362	Pb	0.222
Cd	<0.005	Se	<0.300

Table 22.—Screen analysis of Coffeeville Lower Approach samples

Size	Hole 1	Hole 2	Hole 3	Hole 4	Hole 5				Hole 6	Hole 7	Hole 8	Hole 9	Hole 10
					0-5 ft	5-10 ft	10-15 ft	15-20 ft					
Plus 1.0 in	0	0	0	0	0	0	0	0	0	0	0	0	0
Minus 0.75 plus 0.50 in	0	0	0	0	0	0	0	0	0	0	0	0	0
Minus 0.50 plus 0.37 in	0.26	0.43	0.11	0.02	0.05	0.04	0	0.02	0.04	0.41	0.29	0.51	0.27
Minus 0.37 in plus 3 mesh	0.35	0.37	0.09	0.07	0.39	0.20	0.07	0.10	0.07	0.51	0.23	0.47	0.22
Minus 3 plus 4 mesh	0.33	0.37	0.09	0.05	0.28	0.29	0.12	0.11	0.04	0.58	0.26	0.43	0.22
Minus 4 plus 6 mesh	0.31	0.36	0.09	0.10	0.33	0.27	0.17	0.11	0.08	0.61	0.21	0.47	0.22
Minus 6 plus 8 mesh	0.25	0.31	0.07	0.08	0.33	0.27	0.20	0.11	0.10	0.59	0.19	0.44	0.19
Minus 8 plus 10 mesh	0.25	0.28	0.09	0.10	0.36	0.27	0.14	0.10	0.08	0.45	0.34	0.23	0.14
Minus 10 plus 14 mesh	0.23	0.26	0.07	0.11	0.33	0.27	0.14	0.11	0.13	0.53	0.16	0.22	0.13
Minus 14 plus 20 mesh	1.83	1.47	0.59	0.77	2.43	1.69	0.96	0.94	0.70	2.42	0.87	1.07	0.79
Minus 20 plus 28 mesh	5.88	3.31	2.03	1.95	3.70	3.53	2.75	2.41	2.04	4.72	2.53	2.10	2.19
Minus 28 plus 35 mesh	12.59	8.29	5.87	5.20	7.71	6.94	5.88	6.67	5.54	7.98	5.28	5.37	5.20
Minus 35 plus 48 mesh	40.40	30.64	30.66	31.53	35.09	33.13	32.04	37.50	26.25	29.74	30.16	26.63	31.22
Minus 48 plus 65 mesh	23.41	36.08	39.29	40.98	33.88	40.37	43.44	39.29	38.41	31.17	36.81	31.23	34.75
Minus 65 plus 100 mesh	7.54	10.34	11.33	10.49	8.40	7.25	8.39	7.02	13.18	9.36	10.73	13.20	11.04
Minus 100 mesh plus 150 mesh	3.39	4.35	5.77	4.85	3.92	2.38	2.57	2.48	8.01	6.20	6.79	10.52	8.16
Minus 150 plus 200 mesh	1.48	1.67	2.29	2.00	1.55	1.28	1.31	1.31	3.34	2.90	3.02	4.64	3.39
Minus 200 mesh	1.31	1.42	1.56	1.70	1.25	1.64	1.82	1.72	1.83	1.83	2.08	2.41	1.55
Composite	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 23.—Chemical analysis of minor elements in Coffeeville Lower Approach samples

Hole	Depth, ft	Chemical analysis,[1] ppm							
		Al	Ca	Fe	K	Mn	Mg	Na	Ti
1	0-22	1,830	277	3,890	862	96	44	179	379
2	0-22	2,800	252	4,440	1,530	102	72	250	867
3	0-18	2,830	133	4,100	1,340	104	77	186	464
4	0-17	2,880	204	4,200	1,480	111	86	317	646
5	0- 5	2,560	142	4,010	1,180	103	72	244	588
5	5-10	1,980	105	3,660	1,080	95	37	129	432
5	10-15	1,930	156	3,460	939	88	<23	130	404
5	15-20	1,600	117	3,350	732	94	<22	92	439
6	0-18	3,190	176	4,580	1,770	107	98	302	901
7	0-18	3,270	248	4,830	1690	111	115	279	828
8	0-18	2,770	140	4,400	1,040	105	87	300	557
9	0-13	4,150	319	5,360	2,620	113	179	598	777
10	0-11	3,380	219	4,520	1,940	88	130	445	523

[1] <0.02 ppm Hg for all holes.

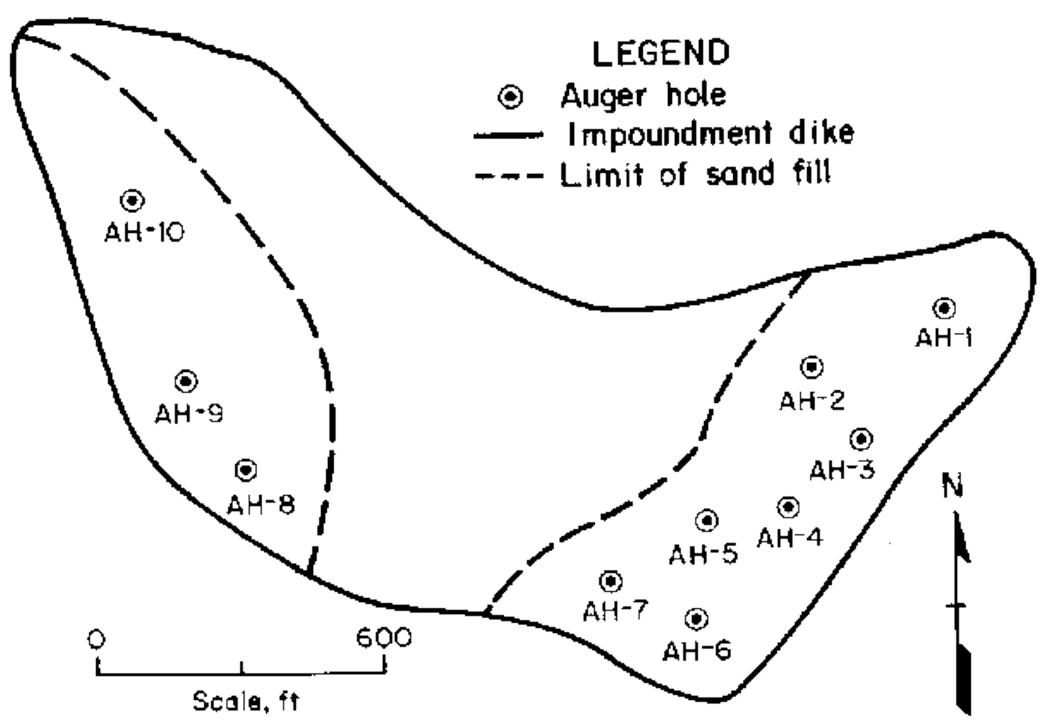
Table 24.—TCLP results for Coffeeville Lower Approach test site

Contaminant	*Conc, ppm*	*Contaminant*	*Conc, ppm*
Ag	<0.014	Cr	<0.037
As	0.505	Hg	<0.001
Ba	0.402	Pb	0.125
Cd	<0.005	Se	<0.300

GRAYS BLUFF

The Grays Bluff site is located at mile 297 on the Black Warrior River in sec. 33, T. 24N., R. 4E., Tuscaloosa County, AL. The site lies approximately 100 ft from the edge of the river and covers approximately 40 acres. The site presently contains approximately 216,261 yd³ of material. It is estimated that an additional 70,000 yd³ of material will be placed in the disposal area each year. Heavy minerals identified in order of decreasing occurrence are zircon, rutile, kyanite, ilmenite, tourmaline, and garnet. Figure 11 shows the approximate location and depth of each sample hole. The material consists of 4.96 pct coarse aggregate, 94.13 pct fine aggregate, 0.91 pct undersize, and contains 0.36 pct heavy minerals. Table 25 gives the screen analysis of each sample. Table 26 gives the chemical analysis of the minor impurities present in each sample. Table 27 gives the results of the TCLP for a composite sample from the site.

Figure 11

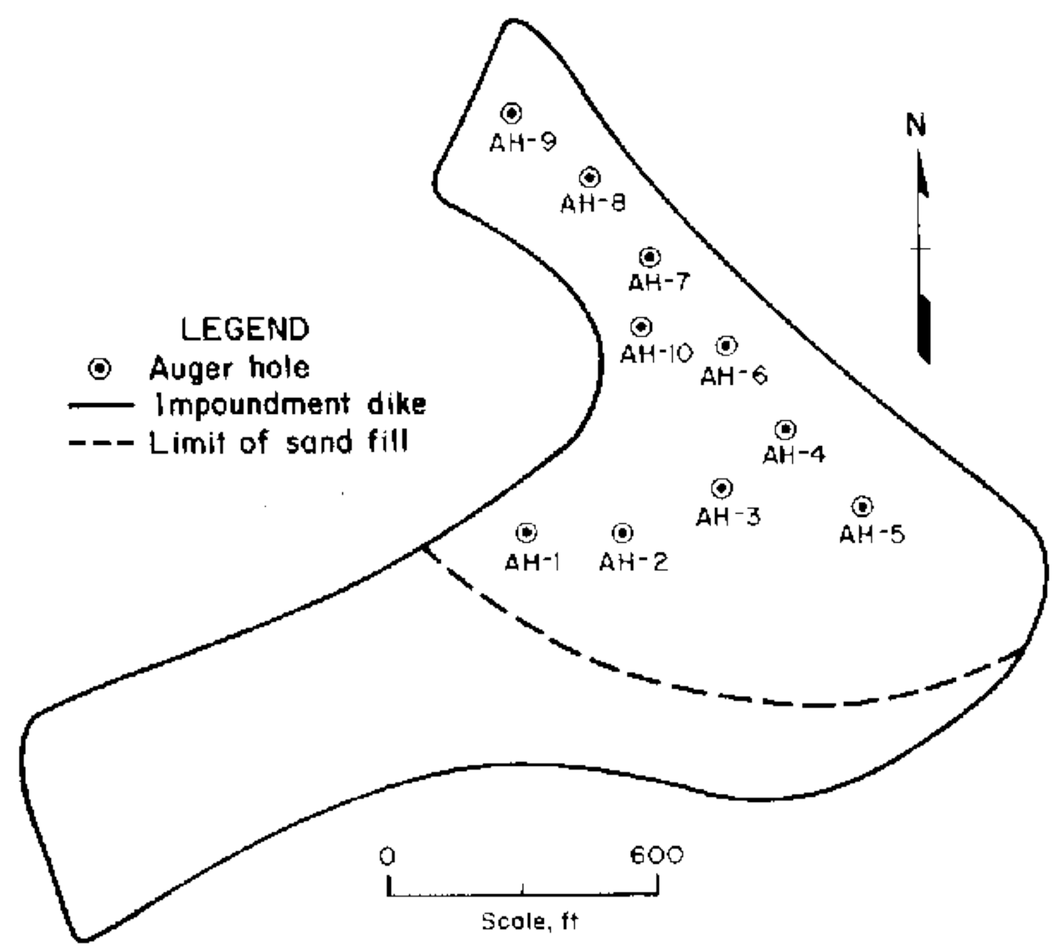


Sample locations in Grays Bluff test site.

BALD BAR/BIG SANDY

The Bald Bar/Big Sandy site is located at mile 307 on the Black Warrior River in sec. 13, T. 24N., R. 4E., Tuscaloosa County, AL. The site lies approximately 100 ft from the edge of the river and covers approximately 80 acres. The site presently contains approximately 1,390,481 yd³ of material. It is estimated that an additional 150,000 yd³ of material will be placed in the disposal area each year. Heavy minerals identified in order of decreasing occurrence are zircon, rutile, ilmenite, kyanite, garnet, and tourmaline. Figure 12 shows the approximate location and depth of each sample hole. The material consists of 2.34 pct coarse aggregate, 95.19 pct fine aggregate, 2.47 pct undersize, and contains 0.43 pct heavy minerals. Table 28 gives the screen analysis of each sample. Table 29 gives the chemical analysis for the minor impurities present in each sample. Table 30 gives the TCLP results for a composite sample from the site.

Figure 12



Sample locations in Bald Bar/Big Sandy test site.

Table 25.—Screen analysis of Grays Bluff samples

Size	Hole 1	Hole 2	Hole 3	Hole 4	Hole 5	Hole 6 0-5 ft	Hole 6 5-10 ft	Hole 6 10-15 ft	Hole 6 15-20 ft	Hole 7	Hole 8	Hole 9	Hole 10
Plus 1.0 in	0	0	0	0	0	0	0	0	0	0	0	0	0
Minus 1.0 plus 0.75 in	0	0	0	0	0	0.69	0.47	0	0	0.42	0	0	0
Minus 0.75 plus 0.50 in	1.19	0	0.22	0.24	0	3.32	0.78	0.84	0.55	3.13	0.94	0	0.26
Minus 0.50 plus 0.37 in	1.66	0.49	1.11	0.38	0.31	4.62	1.90	1.00	1.98	3.95	1.53	0.97	0.16
Minus 0.37 in plus 3 mesh	1.87	0.56	0.96	0.66	0.33	4.74	2.11	0.96	1.18	4.11	1.71	1.43	0.31
Minus 3 plus 4 mesh	1.42	0.47	0.83	0.44	0.21	3.17	1.57	0.76	1.22	3.08	1.04	1.06	0.14
Minus 4 plus 6 mesh	1.06	0.54	0.50	0.35	0.13	2.48	1.27	0.76	0.94	2.47	0.88	1.03	0.23
Minus 6 plus 8 mesh	0.97	0.39	0.37	0.31	0.15	1.64	0.73	0.72	0.83	1.41	0.66	0.79	0.24
Minus 8 plus 10 mesh	1.06	0.43	0.37	0.26	0.15	1.31	1.14	0.61	0.67	0.84	0.54	0.61	0.23
Minus 10 plus 14 mesh	0.47	0.24	0.19	0.13	0.08	0.64	0.43	0.37	0.39	0.40	0.42	0.45	0.23
Minus 14 plus 20 mesh	3.30	2.08	1.96	0.93	0.44	2.79	2.01	1.57	1.34	1.20	2.19	2.45	1.29
Minus 20 plus 28 mesh	7.27	6.88	6.34	3.06	1.18	4.80	4.25	3.06	2.40	1.95	6.22	6.41	3.52
Minus 28 plus 35 mesh	18.13	16.47	15.12	8.14	4.20	9.58	8.61	7.22	6.63	5.19	16.42	17.10	6.97
Minus 35 plus 48 mesh	36.93	40.33	37.14	33.27	30.33	32.36	32.14	32.47	32.49	25.00	37.64	37.77	27.07
Minus 48 plus 65 mesh	17.54	23.08	24.43	37.41	45.25	21.77	31.75	37.73	37.51	33.76	21.03	20.91	41.22
Minus 65 plus 100 mesh	3.58	5.12	6.07	8.81	10.80	4.20	7.27	7.40	7.50	8.44	5.07	4.96	12.32
Minus 100 mesh plus 150 mesh	1.61	1.87	2.44	3.27	3.93	1.20	2.07	2.32	2.19	2.71	1.92	1.87	3.96
Minus 150 plus 200 mesh	0.78	0.61	0.99	1.11	1.30	0.33	0.73	0.92	0.87	0.92	0.83	0.91	1.10
Minus 200 mesh	1.15	0.44	0.96	1.22	1.22	0.36	0.78	1.28	1.31	1.03	0.96	1.27	0.73
Composite	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 26.—Chemical analysis of minor elements in Grays Bluff samples

Hole	Depth, ft	Chemical analysis,[1] ppm Al	Ca	Fe	K	Mn	Mg	Na	Ti
1	0-22	1,660	<54	4,630	867	104	<32	72	513
2	0-22	2,010	75	3,980	1,120	94	57	61	233
3	0-15	1,860	<53	3,940	856	100	<32	<54	250
4	0-17	520	119	4,230	1,190	95	89	187	524
5	0-18	2,470	159	4,240	1,390	85	96	236	689
6	0- 5	2,440	159	4,200	948	92	122	169	538
6	5-10	2,280	142	4,150	1,090	88	98	176	623
6	10-15	2,560	131	4,230	990	94	87	154	556
6	15-23	2,450	156	4,210	1,030	93	68	144	728
7	0-16	2,440	100	4,180	1,310	83	85	169	637
8	0-16	1,920	133	3,810	918	57	97	177	1,275
9	0-25	1,730	65	3,710	883	64	45	88	385
10	0-16	1,750	<54	4,130	1,220	93	40	149	827

[1] <0.02 ppm Hg for all holes.

Table 27.—TCLP results for Grays Bluff test site

Contaminant	*Conc, ppm*	*Contaminant*	*Conc, ppm*
Ag	<0.014	Cr	<0.037
As	0.759	Hg	<0.001
Ba	0.353	Pb	0.506
Cd	<0.005	Se	<0.300

Table 28.—Screen analysis of Bald Bar/Big Sandy samples

Size	Hole 1	Hole 2	Hole 3	Hole 4	Hole 5	Hole 6					Hole 7	Hole 8	Hole 9	Hole 10
						0-5 ft	5-10 ft	10-15 ft	15-20 ft	20-25 ft				
Plus 1.0 in	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minus 1.0 plus 0.75 in	0	0	0	0.23	0	0	0	0	0	0	0	0	0.98	0.50
Minus 0.75 plus 0.50 in	0	0.33	0.89	0.30	0.37	0.76	0	0.09	0	0.41	0.13	0.19	2.20	0.75
Minus 0.50 plus 0.37 in	0.11	0.71	0.69	0.08	0.48	0.56	0.12	0.21	0.30	0.22	0.45	0.91	2.28	0.99
Minus 0.37 in plus 3 mesh	0.13	0.53	0.63	0.23	0.45	0.58	0.24	0.18	0.16	0.15	0.39	1.34	3.11	0.89
Minus 3 plus 4 mesh	0.26	0.43	0.54	0.14	0.34	0.62	0.24	0.12	0.13	0.26	0.27	1.16	2.25	0.67
Minus 4 plus 6 mesh	0.14	0.28	0.49	0.11	0.36	0.71	0.22	0.12	0.09	0.15	0.30	0.99	1.73	0.58
Minus 6 plus 8 mesh	0.11	0.17	0.39	0.12	0.36	0.70	0.20	0.13	0.12	0.19	0.24	0.73	1.27	0.43
Minus 8 plus 10 mesh	0.06	0.12	0.33	0.13	0.30	0.59	0.16	0.11	0.11	0.17	0.20	0.49	0.88	0.32
Minus 10 plus 14 mesh	0.06	0.10	0.24	0.13	0.24	0.50	0.15	0.11	0.12	0.14	0.15	0.34	0.63	0.23
Minus 14 plus 20 mesh	0.10	0.43	1.10	0.73	1.10	2.28	0.77	0.63	0.57	0.81	0.77	1.25	2.27	1.14
Minus 20 plus 28 mesh	0.43	1.19	3.19	2.55	2.91	7.10	2.91	2.08	1.87	3.02	2.21	2.85	4.66	2.65
Minus 28 plus 35 mesh	1.08	2.90	7.21	6.09	6.69	14.55	6.59	4.29	4.78	7.18	5.97	5.82	10.18	5.85
Minus 35 plus 48 mesh	2.90	11.35	16.89	14.55	15.82	26.21	15.09	13.19	19.62	18.20	18.45	18.91	25.11	15.41
Minus 48 plus 65 mesh	10.60	34.33	30.44	29.15	23.67	24.99	30.01	33.59	36.13	33.14	35.71	37.87	23.53	32.87
Minus 65 plus 100 mesh	30.87	26.32	19.06	23.96	22.42	10.85	21.96	23.78	20.44	21.18	20.90	17.74	11.02	20.71
Minus 100 mesh plus 150 mesh	28.44	14.65	12.40	14.59	16.69	5.60	13.41	13.64	9.48	9.96	8.92	6.20	4.66	10.46
Minus 150 plus 200 mesh	16.85	4.09	3.58	4.36	5.23	1.90	4.30	4.03	2.92	2.68	2.49	1.73	1.49	3.12
Minus 200 mesh	5.22	2.07	1.93	2.55	2.57	1.50	3.63	3.70	3.16	2.14	2.45	2.08	1.75	2.43
Composite	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 29.—Chemical analysis of minor elements in Bald Bar/Big Sandy samples

Hole	Depth, ft	Chemical analysis,[1] ppm							
		Al	Ca	Fe	K	Mn	Mg	Na	Ti
1	0-17	4,860	145	5,280	3,060	110	103	496	957
2	0-17	5,270	204	5,050	2,600	127	231	429	849
3	0-18	4,880	156	4,750	2,600	115	226	348	694
4	0-18	4,280	121	4,760	2,450	105	147	372	730
5	0-10	5,830	115	5,150	2,870	119	220	389	712
6	0- 5	2,260	<54	4,150	1,290	103	<32	176	581
6	5-10	4,980	175	5,110	2,790	138	186	372	791
6	10-15	4,820	221	5,290	2,810	132	170	475	860
6	15-20	3,920	169	4,680	2,140	135	188	344	654
6	20-24	3,560	113	4,620	2,430	110	106	355	753
7	0-23	2,630	<54	4,220	1,760	114	<32	172	659
8	0-26	3,420	98	4,360	1,830	140	117	206	699
9	0-23	3,460	194	4,550	1,530	132	156	257	577
10	0-31	5,090	192	4,990	2,540	141	207	410	728

[1] <0.02 ppm Hg for all holes.

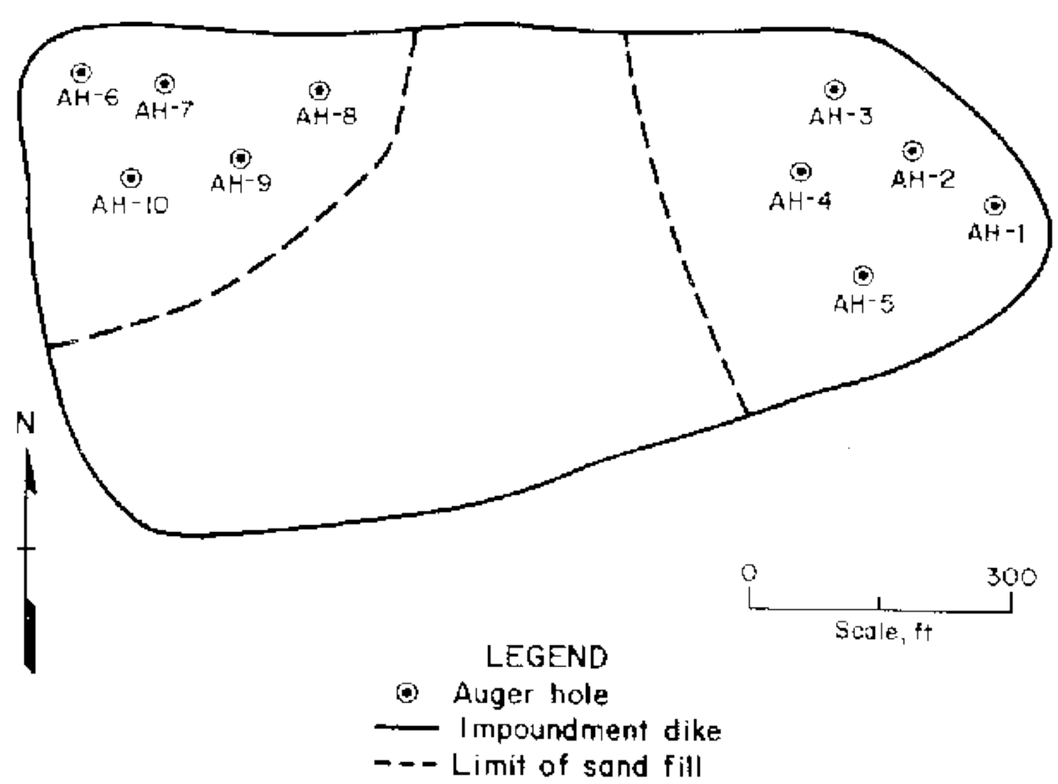
Table 30.—TCLP results for Bald Bar/Big Sandy test site

Contaminant	*Conc, ppm*	*Contaminant*	*Conc, ppm*
Ag	<0.014	Cr	<0.037
As	0.760	Hg	<0.001
Ba	0.180	Pb	0.094
Cd	<0.005	Se	<0.300

OPHELIA

The Ophelia site is located at mile 329 on the Black Warrior River in sec. 34, T. 21S., R. 11W., Tuscaloosa County, AL. The site lies approximately 200 ft from the edge of the river and covers approximately 52 acres. The site presently contains approximately 189,747 yd³ of material. It is estimated that an additional 26,000 yd³ of material will be placed in the disposal area each year. Heavy minerals identified in order of decreasing occurrence are zircon, ilmenite, rutile, hematite, kyanite, tourmaline, garnet, and monazite. Figure 13 shows the approximate location and depth of each sample hole. The dredged material was placed in two separate areas within the impoundment. The areas varied considerably in the proportion of coarse and fine aggregate, thus separate consideration was given to each area. The material in the eastern area consists of 7.59 pct coarse aggregate, 91.19 pct fine aggregate, 1.22 pct undersize, and contains 0.24 pct heavy minerals. Table 31 gives the screen analysis of each sample from this area. Table 32 gives the chemical analysis of the minor impurities present in each sample. The material in the western area consists of 21.71 pct coarse aggregate, 77.02 pct fine aggregate, 1.27 pct undersize, and contains 0.30 pct heavy minerals. Table 33 gives the screen analysis of each sample from this area. Table 34 gives the chemical analysis of the minor impurities present in each sample. Table 35 gives the results of the TCLP for a composite sample from the site.

Figure 13



Sample locations in Ophelia test site.

Table 31.—Screen analysis of Ophelia samples (eastern area)

Size	Hole 1	Hole 2			Hole 3	Hole 4	Hole 5
		0-5 ft	5-10 ft	10-15 ft			
Plus 1.0 in	0	0	0	0	0	0	0
Minus 1.0 plus 0.75 in	1.18	0	0.37	0	1.31	1.28	0.55
Minus 0.75 plus 0.50 in	2.80	1.50	0.54	1.03	3.57	2.37	1.55
Minus 0.50 plus 0.37 in	1.89	1.68	0.19	1.37	3.14	2.61	1.99
Minus 0.37 in plus 3 mesh	2.23	1.66	0.49	1.87	2.65	2.07	2.30
Minus 3 plus 4 mesh	1.66	0.97	0.28	1.19	1.71	1.44	1.76
Minus 4 plus 6 mesh	1.37	0.93	0.24	1.02	1.16	0.97	1.42
Minus 6 plus 8 mesh	1.07	0.70	0.21	0.72	0.87	0.74	1.05
Minus 8 plus 10 mesh	0.75	0.58	0.19	0.53	0.61	0.60	0.65
Minus 10 plus 14 mesh	0.49	0.43	0.16	0.37	0.37	0.40	0.36
Minus 14 plus 20 mesh	1.76	1.65	0.33	1.31	1.52	1.52	0.92
Minus 20 plus 28 mesh	2.93	3.37	2.11	2.93	3.08	3.29	1.56
Minus 28 plus 35 mesh	7.92	9.81	7.62	7.89	7.50	8.42	4.64
Minus 35 plus 48 mesh	32.39	37.16	38.29	32.88	31.33	31.97	24.20
Minus 48 plus 65 mesh	31.14	29.95	37.09	34.74	29.76	29.23	39.58
Minus 65 plus 100 mesh	6.75	6.40	7.30	7.22	6.89	7.55	10.80
Minus 100 mesh plus 150 mesh	2.11	2.01	2.26	2.30	2.42	3.06	3.84
Minus 150 plus 200 mesh	0.70	0.59	0.88	0.99	0.91	1.19	1.42
Minus 200 mesh	0.86	0.61	1.45	1.65	1.20	1.29	1.45
Composite	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 32.—Chemical analysis of minor elements in Ophelia samples (eastern area)

Hole	Depth, ft	Chemical analysis,[1] ppm							
		Al	Ca	Fe	K	Mn	Mg	Na	Ti
1	0-12	3,320	159	4,360	1,320	100	174	286	401
2	0- 5	2,650	72	3,930	1,220	74	125	180	436
2	5-10	2,810	105	3,660	1,150	118	118	180	388
2	10-17	2,030	<53	3,530	903	97	<32	109	342
3	0-18	1,960	113	3,930	938	71	54	243	411
4	0-12	2,370	89	4,240	1,330	105	48	240	324
5	0-11	3,290	206	3,970	1,660	106	147	438	475

[1] <0.02 ppm Hg for all holes.

Table 33.—Screen analysis of Ophelia samples (western area)

Size	Hole 6	Hole 7		Hole 8	Hole 9	Hole 10
		0-5 ft	5-10 ft			
Plus 1.0 in	0.48	0	0	0.52	0	0.81
Minus 1.0 plus 0.75 in	2.04	1.98	1.47	0.56	0.69	2.41
Minus 0.75 plus 0.50 in	9.32	8.02	2.98	4.03	5.10	4.33
Minus 0.50 plus 0.37 in	9.46	8.36	3.49	5.30	4.17	4.35
Minus 0.37 in plus 3 mesh	8.86	7.02	2.27	4.61	4.26	4.09
Minus 3 plus 4 mesh	5.27	4.80	1.49	2.80	2.37	2.55
Minus 4 plus 6 mesh	3.95	3.34	1.06	2.41	1.73	1.87
Minus 6 plus 8 mesh	2.60	2.22	0.76	1.62	1.14	1.18
Minus 8 plus 10 mesh	1.57	1.54	0.48	1.07	0.77	0.87
Minus 10 plus 14 mesh	0.96	0.94	0.33	0.70	0.51	0.52
Minus 14 plus 20 mesh	2.30	2.78	0.97	1.87	1.47	1.62
Minus 20 plus 28 mesh	3.59	4.21	1.55	2.69	2.75	2.78
Minus 28 plus 35 mesh	5.59	7.53	3.75	5.05	5.83	6.64
Minus 35 plus 48 mesh	19.62	20.23	18.95	17.92	22.38	25.29
Minus 48 plus 65 mesh	17.28	18.33	41.08	30.82	29.83	27.88
Minus 65 plus 100 mesh	4.02	5.20	12.44	11.26	9.41	7.73
Minus 100 mesh plus 150 mesh	1.46	1.97	4.03	3.97	4.30	2.91
Minus 150 plus 200 mesh	0.66	0.70	1.26	1.23	1.72	1.05
Minus 200 mesh	0.97	0.73	1.64	1.57	1.57	1.12
Composite	100.00	100.00	100.00	100.00	100.00	100.00

Table 34.—Chemical analysis of minor elements in Ophelia samples (western area)

Hole	Depth, ft	Chemical analysis,[1] ppm							
		Al	Ca	Fe	K	Mn	Mg	Na	Ti
6	0-16	3,900	114	6,020	1,600	76	178	249	540
7	0- 5	2,190	99	4,400	1,140	57	106	210	422
7	5-13	2,950	62	3,960	1,300	102	78	150	470
8	0-16	3,300	<54	4,830	1,470	51	115	263	578
9	0- 5	3,750	99	4,470	1,820	91	104	381	440
10	0-12	3,430	107	4,480	1,800	92	143	314	529

[1] <0.02 ppm Hg for all holes.

Table 35.—TCLP results for Ophelia test site

Contaminant	*Conc, ppm*	*Contaminant*	*Conc, ppm*
Ag	<0.014	Cr	<0.037
As	0.393	Hg	<0.001
Ba	0.162	Pb	0.158
Cd	<0.005	Se	<0.300

CONCLUSIONS

Samples from each of the upland disposal sites were determined to have the properties necessary for use as aggregate in general-purpose portland cement concretes. In all cases the material in the disposal sites was clean quartz sand and gravel containing few impurities and no reactive or deleterious constituents. Due to the semi-rounded shape of the particles, use in high-strength applications is not recommended. Although a more angular shaped material is generally preferred in asphalt concrete mixtures, the samples meet all the other criteria necessary for these mixtures and may be suitable for use in certain applications. Sink-float analyses revealed no economical heavy mineral values in any of the samples. Results of the TCLP showed no sample to be a hazardous waste.

REFERENCES

1. Barksdale, R. D. (ed.). The Aggregate Handbook. National Stone Association, 1991, 350 pp.

2. American Society for Testing and Materials. Standard Specifications for Aggregate in Portland Cement Concretes. C33-87 in 1990 Annual Book of ASTM Standards: Volume 4.02, Concrete and Aggregates. 1990, pp. 71-74.

3. Powers, T. C. The Properties of Fresh Concrete. Wiley, 1964, 179 pp.

4. Krebs, R. D., and R. D. Walker. Highway Materials. McGraw-Hill, 1971, 208 pp.

5. U.S. Code of Federal Regulations. Title 40—Protection of Environment; Chapter 1—Environmental Protection Agency; Part 261—Identification and Listing of Hazardous Wastes; July 1, 1986.

APPENDIX A.—STANDARD ASTM TESTS FOR AGGREGATE USED IN PORTLAND CEMENT CONCRETE

Aggregate characteristic	*ASTM test method*
Sampling	D 75
Gradation:	
Coarse and fine	C 136
Mineral filler	C 117
Fineness modulus	C 136
Unit weight	C 29
Particle shape	D 2248
Los Angeles abrasion:	
Coarse	C 535
Fine	C 131
Deleterious materials:	
Clay and friable particles	C 142
Chert	C 123
Minus 200-mesh	C 117
Organic impurities	C 40
Reactive aggregate	C 33

APPENDIX B.—TOXIC CHARACTERISTIC LEACHATE PROCEDURE (TCLP, METHOD 1311)

Extraction solution #1
11.4 mL glacial acetic acid
Approximately 128.6 ml of 1.0 N NaOH
Dilute to 2 L with distilled water
Adjust pH to 4.93 +/-0.05 with 1.0 N NaOH

Extraction solution #2
11.4 mL glacial acetic acid
Dilute to 2 L with distilled water
Adjust pH to 2.88 +/-0.05 with 1.0 N NaOH

Crush sample to minus 3/8 in

Place a 5 g sample into 150 mL etched beaker
Add 96.5 mL distilled water
Cover and stir 5 min

Measure pH
If pH </=5.0 use solution 1

If pH >5.0 add 3.5 mL 1 N HCl
Stir 30 s
Heat to 50° C for 10 min

Cool to room temperature
Measure pH
If pH </=5.0 use solution 1

If pH >5.0 use solution 2

Add 100 g of sample to 2 L of extraction solution
Tumble for 18 h
Vacuum filter
Analyze filtrate as per EPA approved procedures

INT.BU.OF MINES,PGH.,PA 30087

☆ U.S.G.P.O. 1995-609-012/ 20,014

APPENDIX B: PROJECT PERMITS

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, MOBILE DISTRICT
100 CANAL STREET
MOBILE, AL 36602-1901

September 24, 2025

South Alabama Branch
Regulatory Division

SUBJECT: Department of the Army Final Permit, File Number SAM-2021-00246-DCH, Upper Mobile Bay Beneficial Use Site, Mobile County, Alabama

Alabama Port Authority
Attention: Mr. Doug Otto
Email Address: Doug.Otto@alports.com
250 North Water Street
Mobile, Alabama 366

Dear Mr. Otto:

PLEASE READ THIS LETTER CAREFULLY AND COMPLY WITH ITS PROVISIONS

There is attached a Department of the Army permit authorizing you to perform the work specified therein in accordance with the plans shown on the drawings attached thereto. This permit is issued under provision of the federal laws for the protection and preservation of the navigable waters of the United States. These laws provide that after the proposed work has been approved by issuance of a Department of the Army permit,

IT SHALL NOT BE LAWFUL TO DEVIATE FROM SUCH PLANS EITHER BEFORE OR AFTER COMPLETION OF THE WORK,

unless modification of said plans has previously been submitted to and received the approval of the Department of the Army.

You and your contractors should study and carefully adhere to all the terms and conditions of the permit. The District must be notified of the commencement and completion of the permitted work. The attached Commencement and Completion Certification forms may be used for that purpose. Also attached is a yellow "NOTICE OF AUTHORIZATION" sign which must be conspicuously displayed at the site during construction of the permitted work.

If for any reason it becomes necessary to make a material change in the location, plans, or mitigation for this work, revised plans should be submitted promptly to the

District Engineer in order that the revised plans may receive the approval required by law before work is begun. Compliance with this and other conditions of the permit is essential. Failure to submit the requested notices may result in permit revocation.

You are receiving an electronic copy only of this letter and permit. If you wish to receive a paper copy, you should send a written request to this office at the following address: U.S. Army Corps of Engineers, Mobile District, Regulatory Division, Post Office Box 2288, Mobile, Alabama 36628. Electronic copies of this letter and permit are being provided to you at Doug.Otto@alports.com; to the Alabama Department of Environmental Management, Mobile Branch, Coastal Section, Attention: Mr. Scott Brown, at coastal@adem.alabama.gov; to the Alabama Department of Conservation and Natural Resources, State Lands Division, Attention: Mr. Jeremiah Kolb, at submerged.lands@dcnr.alabama.gov; and to your agent, Moffatt & Nichol, Attention: Ms. Meg Goecker, at mgoecker@moffattnichol.com.

If you have any questions, please contact the project manager, Ms. Jessica C. Comeaux at (251) 508-4266, or by e-mail at Jessica.C.Comeaux@usace.army.mil. For additional information about our Regulatory Program, please visit our web site at www.sam.usace.army.mil/Missions/Regulatory.aspx. Also, please take a moment to complete our customer satisfaction survey located near the bottom of the webpage. Your responses are appreciated and will help us improve our services.

Sincerely,

Allison Monroe

Digitally signed by Allison Monroe
Date: 2025.09.24 10:05:28 -05'00'

Allison Monroe
Chief, Regulatory Division
Mobile District

Attachments

US Army Corps of Engineers

This notice of authorization must be conspicuously displayed at the site of work.

A permit to perform work authorized by statutes and regulations of the Department of the Army at

Upper Mobile Bay; approximately 1.5 miles south of US Highway 90/98 causeway; at Latitude 30.646906°, Longitude -88.000935°; Mobile, Mobile County, Alabama.

has been issued to Alabama Port Authority, Attention: Doug Otto **on** September 24, 2025

Address of Permittee: 250 North Water Street, Mobile, Alabama 36602

PERMIT NUMBER

SAM-2021-00246-DCH

Allison Monroe Digitally signed by Allison Monroe Date: 2025.09.24 10:11:11 -05'00'

Allison Monroe, Chief

Mobile District, Regulatory Division

For the **District Commander**

ENG FORM 4336, Jul 81 (33 CFR 320-330) EDITION OF JUL 70 MAY BE USED

Proponent: CECW-O

COMMENCEMENT CERTIFICATION

U.S. Army Corps of Engineers
Mobile District

Permit Number: **SAM-2021-00246-DC**

Name of Permittee: **Alabama Port Authority, Attention: Doug Otto**

Date of Issuance: **September 24, 2025**

Upon commencement of the activity authorized by this permit and any mitigation required by the permit, please sign this certification and return it to the following address:

U.S. Army Corps of Engineers
Mobile District
Regulatory Division
Post Office Box 2288
Mobile, Alabama 36628-0001

Please note that your permitted activity is subject to a commencement inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with all terms and conditions of this permit, the permit is subject to permit suspension, modification, or revocation and you are subject to an enforcement action by this office.

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

_____ _____
Signature of Permittee Date

COMPLETION CERTIFICATION

U.S. Army Corps of Engineers
Mobile District

Permit Number: **SAM-2021-00246-DCH**

Name of Permittee: **Alabama Port Authority, Attention: Doug Otto**

Date of Issuance: **September 24, 2025**

Upon completion of the activity authorized by this permit and any mitigation required by the permit, please sign this certification and return it to the following address:

U.S. Army Corps of Engineers
Mobile District
Regulatory Division
Post Office Box 2288
Mobile, Alabama 36628-0001

Please note that your permitted activity is subject to a completion inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with all terms and conditions of this permit, the permit is subject to permit suspension, modification, or revocation and you are subject to an enforcement action by this office.

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

_____ _____
Signature of Permittee Date

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Alabama Port Authority		File Number: SAM-2021-00246-DCH	Date: 09-24-2025
Attached is:			See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
X	PROFFERED PERMIT (Standard Permit or Letter of permission)		B
	PERMIT DENIAL WITHOUT PREJUDICE		C
	PERMIT DENIAL WITH PREJUDICE		D
	APPROVED JURISDICTIONAL DETERMINATION		E
	PRELIMINARY JURISDICTIONAL DETERMINATION		F

SECTION I

The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/appeals/ or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C. PERMIT DENIAL WITHOUT PREJUDICE: Not appealable
You received a permit denial without prejudice because a required Federal, state, and/or local authorization and/or certification has been denied for activities which also require a Department of the Army permit before final action has been taken on the Army permit application. The permit denial without prejudice is not appealable. There is no prejudice to the right of the applicant to reinstate processing of the Army permit application if subsequent approval is received from the appropriate Federal, state, and/or local agency on a previously denied authorization and/or certification.

D: PERMIT DENIAL WITH PREJUDICE: You may appeal the permit denial
You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information for reconsideration

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

- RECONSIDERATION: You may request that the district engineer reconsider the approved JD by submitting new information or data to the district engineer within 60 days of the date of this notice. The district will determine whether the information submitted qualifies as new information or data that justifies reconsideration of the approved JD. A reconsideration request does not initiate the appeal process. You may submit a request for appeal to the division engineer to preserve your appeal rights while the district is determining whether the submitted information qualifies for a reconsideration.

F: PRELIMINARY JURISDICTIONAL DETERMINATION: Not appealable
You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision you may contact: Jessica C. Comeaux CESAS-ZR TREC Team Lead / Mobile District Liaison 100 Canal Street Mobile, Alabama 36602 Phone: 251-508-4266 Jessica.C.Comeaux@usace.army.mil	If you have questions regarding the appeal process, or to submit your request for appeal, you may contact: Krista Sabin Regulatory Review Officer South Atlantic Division 60 Forsyth St SW, Floor M9 Atlanta, Georgia 30303-8803 (904) 314-9631 CESAD-Regulatory@usace.army.mil

SECTION II – REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. Use additional pages as necessary. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:
Email address of appellant and/or agent:	Telephone number:

DEPARTMENT OF THE ARMY PERMIT

Permittee: **Alabama Port Authority, Attention: Mr. Doug Otto**

Permit No.: **SAM-2021-00246-DCH**

Issuing Office: **MOBILE DISTRICT**

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the U.S. Army Corps of Engineers (USACE) having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: **This permit authorizes the phased construction of a 1,200-acre beneficial use (wetland creation) dredged-material placement area in Upper Mobile Bay. The completed project will allow for the placement of up to 10 million cubic yards of material dredged from Upper Mobile Bay area within three (3) wetland creation area (WCA) containment dikes protected by rock breakwaters or revetment at the south boundary of the project area progressing to the north boundary, as needed, into softer containment structures. Three (3) types of shoreline protection and external containment structures will be utilized, dependent on the controlling environmental conditions: Type I includes a rock breakwater with a maximum crest elevation of +4 feet NAVD88, a marsh buffer, and an internal earthen containment dike with a crest elevation of +6 feet NAVD88. Type II includes a sand containment dike protected by a rock revetment, with a crest elevation of +6 feet NAVD88. Type III includes a sand containment dike and a fronting beach, with a maximum crest elevation of +6 feet NAVD88. Project design elevations may be adjusted as the project is implemented, to account for sea level rise.**

Individual wetland creation cells (WCC) will be constructed within the larger WCAs to provide manageable-sized areas for material placement and targeted wetland habitat creation. Each cell will be 40-60 acres in size. Construction of internal containment structures will proceed as existing WCCs approach capacity to allow for continued dredge-material placement. Material obtained for construction of the internal containment dikes will be hydraulically or mechanically dredged within individual WCC on site. If material must be sourced from existing upland dredge placement areas and transported by hopper barge to the WCA, it will be demonstrated to meet sediment suitability criteria prior to construction activities. If in-situ material is utilized, internal borrow areas will be filled over time and incorporated into habitat creation activities for each WCC.

Habitat creation will include the excavation of tidal creeks, tidal ponds, embayments, low- and high-marsh features, and scrub shrub mounds. Dredged material utilized for marsh creation will be placed by hydraulic dredge lines. Dredged material construction fill elevation will not exceed +4 feet NAVD88 to accommodate settling to the wetland design target elevation of +1 feet NAVD88. Within the initial five years, approximately 100 acres of wetlands will be created through the placement of dredged material, with approximately 40-80 acres of wetlands being created each following year. Estimated fill impacts for each area of the overall project are described in Table A below.

A corridor for vessels and equipment will be established where the minimal water depth is met to access the project site. A Project Access Facility (PAF) will be constructed at the project site for equipment and personnel access and material offloading for use over the lifespan of the project. This activity will require installation of steel sheet piles for construction of a bulkhead, and timber piles for mooring and berthing activities. The PAF will be constructed to a maximum elevation of +6 feet NAVD88 and be approximately 30 feet wide and 100 feet long. The PAF will intersect the external containment dike system to provide access throughout the project site.

Corridors for dredge pipelines will be established between dredging locations and the project site. The corridor will include crossing(s) for the Mobile Ship Channel and will be routed through open water along a route that minimizes navigation impacts and impacts to benthic habitat and avoids cultural resource and submerged aquatic vegetation (SAV) areas. During each dredge cycle, the dredge pipeline

will be temporarily placed within the pipeline corridor. All dredged materials used for the project will be determined suitable for open-water disposal in accordance with the EPA Inland Testing Manual (EPA/USACE 1994) and the methods developed in conjunction with EPA during this project evaluation.

Dredged materials for beneficial use will be primarily obtained from four main areas in Mobile Harbor including portions of the upper harbor near Mobile River (Piers 2, 4, 7, 8, and adjacent to Pier A), the Pinto Island berths, the APM-Terminal berths (Choctaw Point Terminal), or the McDuffie Island berths adjacent to the federal ship channel. Any material placed in the wetland creation cells will be evaluated through separate permit authorizations and NEPA evaluations.

Table A: Estimated Fill Impacts

EXCAVATION AND FILL SUMMARY		
EXCAVATIONS - EXTERNAL CONTAINMENT	VOLUME (cubic yards)	AREA (square feet)
SOUTH WCA	974,156	2,630,221
MIDDLE WCA	659,716	1,781,234
NORTH WCA	606,240	1,636,849
EXCAVATIONS - INTERNAL CONTAINMENT	VOLUME (cubic yards)	AREA (square feet)
SOUTH WCA	349,744	944,309
MIDDLE WCA	293,829	793,339
NORTH WCA	214,799	579,958
FILL - DREDGE FILL FOR EXTERNAL CONTAINMENT	VOLUME (cubic yards)	AREA (square feet)
SOUTH WCA	487,078	1,262,836
MIDDLE WCA	329,858	1,027,635
NORTH WCA	303,120	818,425
FILL - DREDGE FILL FOR INTERNAL CONTAINMENT	VOLUME (cubic yards)	AREA (square feet)
SOUTH WCA	115,255	770,232
MIDDLE WCA	146,915	762,368
NORTH WCA	107,400	618,338
FILL - RIP RAP FOR EXTERNAL CONTAINMENT	VOLUME (cubic yards)	AREA (square feet)
SOUTH WCA	493,154	2,020,538
MIDDLE WCA	296,806	1,644,216
NORTH WCA	272,748	1,309,479
FILL - DREDGE FILL FOR WETLAND CREATION	VOLUME (cubic yards)	AREA (square feet)
SOUTH WCA	4,079,554	16,411,955
MIDDLE WCA	3,281,707	14,992,569
NORTH WCA	2,410,898	13,071,136

ATTACHED:
1. **Project Vicinity Map**
2. **Project Plans (20 pages)**
3. **State of Alabama Water Quality Certification (49 pages)**
4. **Upper Mobile Bay Beneficial Use Wetland Creation Site Project – Final Monitoring and Adaptive Management Plan – February 2025 (21 pages)**
5. **Sediment Evaluation Protocol Framework (5 pages)**
6. **Standard Manatee Conditions (2 pages)**

Waters: **Mobile Bay**

Project Location: **The project is located within Upper Mobile Bay; approximately 1.5 miles south of US Highway 90/98 causeway; at Latitude 30.646906°, Longitude -88.000935°; Mobile, Mobile County, Alabama.**

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **April 4, 2035**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least 1 month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity, or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

A. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structures or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the USACE, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

B. It is the responsibility of the permittee to ensure that all persons and contractors working on this project are aware of all general and special conditions of the permit. A copy of this permit and its general and special conditions shall remain available on site at all times during project construction activities.

C. Compliance with all terms and General and Special Conditions of this Permit is mandatory. This project shall not be modified from the work described in the attached plans without prior coordination and written approval from the USACE, Mobile District.

D. The attached yellow Notice of Authorization sign must be posted at the site during construction of the permitted activity.

E. The USACE, Mobile District, must be notified of the commencement and completion of each phase of containment area and/or wetland cell construction. The attached commencement and completion forms may be used for that purpose. The permittee shall provide detailed as-built drawings and post-construction elevations with each completion notification.

F. The Upper Mobile Bay Beneficial Use site shall be constructed in three distinct Phases of wetland creation, beginning at the South Wetland Creation Area (Phase 1), as described in the Project Description. This permit is valid for 10 years from the date of issuance. To commence the second and third phases of the project, the permittee must coordinate with the USACE, Mobile District prior to expiration of this permit to demonstrate the success of the initial phase of construction. A comprehensive report including updated design features, wetland performance and success, and a modelling simulation of expected sediment transport potential and baroclinic flow surrounding the project site must be submitted to the USACE, Mobile District at the completion of each Phase of Wetland Creation Area construction, prior to the continuance of construction of Phases 2 and 3 and any request for an extension of the permit. The permittee shall obtain written confirmation from the USACE that all the compliance requirements have been met before ongoing additional Phases of construction, or any additional activities for which the permittee is authorized may be discontinued.

G. The permittee shall notify the USACE, Mobile District prior to planned levee gapping activities for each constructed wetland cell. This notification must: (1) evaluate field fitting the location of gaps based on natural drainage locations prior to mobilizing for gapping activities, (2) evaluate if internal gaps would be required for fisheries access, (3) evaluate potential for adjusted placement of gaps, (4) coordinate the timing of gapping to avoid temporal ecological losses, and (5) determine the minimum cross-sectional area per gap for each wetland creation cell. Only once there is confirmation from the USACE that all sediment placed within a wetland creation cell meet the requirements specified in *UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT - FINAL MONITORING AND ADAPTATIVE MANAGEMENT PLAN*, shall the containment features be breached. NMFS-HCD will be given 14 days from notification to resolve any comments on the gapping plans.

H. The permittee shall monitor the progress of the vegetative establishment following the breaching of each Phase for a minimum of 10 years from the breaching event and longer if the vegetative success criteria are not achieved. Methods, criteria, and general approach are described in *UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT - FINAL MONITORING AND ADAPTATIVE MANAGEMENT PLAN*, which shall be followed, along with the application of adaptive management principles, to ensure satisfactory results.

I. The design of subsequent phases of the project shall reflect the knowledge gained from monitoring earlier project phases, particularly as it relates to optimum elevations for target plant species establishment, sedimentation rates, settlement rates, and processes at the project site. The permittee shall provide the U.S. Army Corps of Engineers Mobile District with the 60 and 95 percent engineering designs, including geotechnical analysis and settlement curves which evaluate expected settlement rates, prior to construction activities for all subsequent marsh creation cells.

J. The USACE, Mobile District, must be notified prior at least 14 days prior to the commencement of each event of dredged sediment placement within the site. This commencement notification should include Tier 1 and Tier 2 sediment testing results, sampled and analyzed in accordance with the methods developed in conjunction with the EPA during this project's evaluation and contained within "*EVALUATION OF DREDGED MATERIAL PROPOSED FOR OPEN WATER BENEFICIAL USE MOBILE BAY, ALABAMA*" (EA Engineering, Science, and Technology, Inc., PBC, 2024).

K. All sediments proposed for use within the Upper Mobile Bay Beneficial Use Site must be demonstrated during commencement notification to meet the suitability criteria summarized in the attached *Sediment Evaluation Protocol Framework Memorandum*. Sediment must be tested and

analyzed in accordance with "*TABLE 1. ANALYTICAL TESTING SCHEME FOR DREDGED SEDIMENTS TO BE PLACED IN ALABAMA PORT AUTHORITIES BENEFICIAL USE SITE MOBILE BAY, ALABAMA*" and compared with suitability criteria within "*TABLE 2. USEPA AND STATE OF ALABAMA ACUTE MARINE WATER QUALITY CRITERIA FOR THE PROTECTION OF AQUATIC LIFE*". Sediment suitability for placement within the site must be determined in comparison to contaminant detection levels published in "*U.S. Environmental Protection Agency (USEPA). 2024. National Recommended Water Quality Criteria for saltwater*", or the material may not be used in the Upper Mobile Bay Beneficial Use Site.

L. The permittee shall maintain complete records of the sediment sources, their physical and chemical characteristics, and of the location of such sediments within the site. The total volume of dredged materials and their chemical characteristics will be submitted to the USACE, Mobile District with the comprehensive report submitted after each Phase of project construction.

M. The permittee will maintain Clean Water Act Section 401(a) Water Quality Certification (ADEM-2021-292-WQC-COE-IP) as required by ADEM certification letter dated October 6, 2022.

N. Best Management Practices (BMPs) shall be implemented to minimize erosion, siltation, and damage to adjacent waters of the United States in which the discharge of fill material has not been authorized. Appropriate erosion and sediment control measures must be utilized and maintained in effective operating condition during construction. All exposed structural components and fill material must be permanently stabilized at the earliest practicable opportunity. All temporary erosion control features shall remain in place until permanent stabilization measures have been completed and become fully effective. Reference the "*2018 Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas*" for state recommended practices and implementation guidance.

O. The permittee will ensure that turbidity generated during construction activities must not cause substantial visible contrast nor result in an increase of more than fifty (50) Nephelometric turbidity units (NTUs) above background in state waters. Silt curtains must immediately be installed during the placement of sediment within internal containment dikes if turbidity levels exceed 50 NTUs above background.

P. It is the responsibility of the permittee to coordinate this activity with the Alabama Department of Conservation and Natural Resources, State Lands Division, for any approvals, riparian easements, and/or fees that may be required for impacting public submerged lands at: Alabama Department of Conservation and Natural Resources, State Lands Division, Coastal Section, 31115 Five Rivers Boulevard, Spanish Fort, Alabama 36527, (251) 621-1238.

Q. The permittee shall contact the community's designated officials responsible for FEMA floodplain regulations and enforcement to obtain necessary authorizations and to ensure that all federal, state, and local floodplain ordinances and safety precautions in effect for this area are met.

R. In order for the U.S. Coast Guard (USGC) to give proper notice to the maritime community, the permitted owners, contractors, or responsible party shall contact Coast Guard Sector Mobile Waterways Management Branch (spw), 1500 15th Street, Mobile, Alabama 36615, (251) 441-5166 or (251) 441-5940, 60 days prior to performing the proposed action. The permitted owners, contractors, or responsible party must also install and maintain, at the permitted owner's, contractor's, or responsible party's expense, any safety lights, signs and signals required by the USCG, through regulations or otherwise, on the permitted owner's, contractor's, or responsible party's fixed structures. To receive a USCG's Private Aids to Navigation marking determination, at no later than 30 days prior to the installation of any fixed structures in navigable waters, you are required to contact the Eighth Coast Guard District (dpw), 500 Poydras Street, Suite 1230, New Orleans, Louisiana 70130, (504) 671-2124, or via email to D8oanPATON@uscg.mil. For general information related to Private Aids to Navigation, please visit the Eight CG District website at www.atlanticarea.uscg.mil/District-8/District-Divisions/Waterways/PATON/.

S. Signs and/or buoys must be deployed around the project area to warn navigational interests of the ongoing construction hazards. When construction is complete, the applicant must follow all U.S. Coast Guard rules and regulations for marking and lighting structures, as described in the U.S. Coast Guard's Private Aids to Navigation literature.

T. The permittee assumes complete financial responsibility for all necessary adaptive management, monitoring, reporting, and repair response associated with maintaining the project footprint to its authorized design specifications.

U. The permittee shall implement the attached "Alabama Standard Manatee Construction Conditions" throughout project construction. In the event of an equipment strike, collision with and/or injury to a manatee as a result of project implementation, work shall cease and the permittee shall immediately contact this office at (251) 508-4266 or (251) 690-2658, and the U.S. Fish and Wildlife Service in Daphne, (251) 441-5181.

V. The permittee must establish an underwater "exclusion zone" for all marine mammals, defined as the distance where underwater noise levels will exceed 120 dBrms for continuous noise or 160 dBrms for impact noise to prevent all possible Level A or Level B harassment to marine mammals. ESA listed species and marine mammal monitoring of the exclusion zone shall be conducted prior to commencement of pile installation. Pile installation activities shall not commence until marine mammals are not sighted in the exclusion zone for 15 minutes. Pile-driving will commence with a soft start procedure (ramping up) in order to alert nearby wildlife, allowing them to move out of the area prior to construction activities.

W. The permittee will implement NMFS Southeast Region's *Measures for Reducing Entrapment Risk to Protected Species* (2012), *Protected Species Construction Conditions* (2021), and *Vessel Strike Avoidance Measures* (2021) during project construction. If a protected species is seen within 100 yards of the active daily construction operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a protected species. Operation of any mechanical construction equipment shall cease immediately if a protected species is seen within a 50-ft radius of the equipment. Activities may not resume until the species has departed the project area of its own volition. Further, construction must be limited to daylight hours, which will assist construction workers in seeing listed species and, if present, avoiding interactions with them.

X. Containment feature and sediment elevation monitoring reports must be submitted as described in the attached *UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT - FINAL MONITORING AND ADAPTATIVE MANAGEMENT PLAN.* Reporting schedules shall be followed as outlined therein, with regular reporting to the Project Manager at jessica.c.comeaux@usace.army.mil with a copy to CESAM-RD@sam.usace.army.mil.

Y. If monitoring results indicate that fill elevations (after accounting for projected settlement and consolidation) have exceeded the performance criteria in the *UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT - FINAL MONITORING AND ADAPTATIVE MANAGEMENT PLAN*, those overfilled areas shall be graded down to design elevations within six months of completion of sediment placement within each cell.

Z. Wetland performance monitoring surveys must be conducted post construction at the peak of the growing season (mid to late summer) in accordance with the attached *UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT - FINAL MONITORING AND ADAPTATIVE MANAGEMENT PLAN*. These reports should be sent to the project manager at jessica.c.comeaux@usace.army.mil with a copy to CESAM-RD@sam.usace.army.mil. The annual report shall describe, at a minimum, the current site conditions, estimated performance on the sediment settlement curve, and an estimated work plan for the next year's activities to include geotechnical analyses, gapping plans, and vegetative planting plans. During the year-5 report, the permittee should determine whether performance criteria is met and make recommendations to the USACE, Mobile

District regarding adaptive management and continued monitoring.

AA. Side casted materials from construction activities shall not obstruct hydrological and biological interconnectivity.

BB. Tidal ponds shall not be fully contained to allow for fish movements from the tidal creeks flowing into the tidal ponds.

CC. Post-storm event monitoring and reporting is required. In the event that any named tropical storm changes water levels at the Upper Mobile Bay Beneficial Use site beyond typical tidal fluctuations, the structural integrity of the containment areas, the elevations of any sediment, and the percent coverage of planted wetland vegetation within must be documented and forwarded within 60 days to the Project Manager at jessica.c.comeaux@usace.army.mil with a copy to CESAM-RD@sam.usace.army.mil. Should there be any damage to the site such that structures, elevations, and vegetation does not comply with the attached permit drawing specifications, potential adaptive management actions should be submitted to the USACE Regulatory Division for review. Any subsequent construction of the wetland creation areas or materials placement will be suspended until such time that mitigative measures are taken to ensure the containment structures are repaired and planted areas are revegetated.

DD. This permit does not authorize impacts, either directly or indirectly, to any area of water bottoms that contain submersed grass beds. Conditions of submerged aquatic vegetation within one half mile of the full project footprint should be monitored yearly during regular wetland performance monitoring and evaluated in comparison to the SAV baseline found in *Evaluation of the Potential Impacts of the Proposed Mobile Harbor Navigation Channel Expansion on the Aquatic Resources of Mobile Bay*, Berkowitz *et al.*, 2020.

EE. Should loss or degradation of submerged aquatic vegetation (SAV) in the vicinity of the project be observed by resource agencies and can be attributed to project activities, the permittee is required to provide a restoration plan to the USACE, Mobile District and the NOAA-HCD. This plan must be provided within 60 days of the completion of a field survey that demonstrates a loss or degradation of special aquatic sites, including all submerged aquatic vegetation. Any subsequent construction of the wetland creation areas or materials placement will be suspended until such time that mitigative measures are taken to ensure no net loss of submerged grass beds in the project's vicinity.

FF. In order to ensure that the permitted activity does not impact the magnetic anomalies present during historic property investigations, all construction activities including pipelaying, excavating, dredging, anchoring, spudding, or other subsurface ground disturbance are prohibited within 50 meters (164 feet) of Target M11, M12, M14, M15, M16, and M17 as defined in *A Phase I Archaeological Marine Survey of Beneficial Use Areas for Mobile Bay Sediment Placement Project Mobile County, Alabama* (2013). The avoidance areas must be marked on maps and construction drawings and placed in a propriety GPS system used by contractors as navigational hazards.

GG. In order to ensure that the permitted activity does not impact the American Civil War obstruction areas, as defined in *A Phase I Archaeological Marine Survey of Beneficial Use Areas for Mobile Bay Sediment Placement Project Mobile County, Alabama* (2013), all construction activities including pipelaying, excavating, dredging, anchoring, spudding, or other subsurface ground disturbance are prohibited within 100 meters (328 feet) of those resources. The avoidance areas must be marked on maps and construction drawings and placed in a propriety GPS system used by contractors as navigational hazards.

HH. Should historic properties, archaeological material, or cultural resources be encountered during project activities, all work shall cease and the USACE, Mobile District shall be consulted immediately, such that appropriate coordination with state, federal, and tribal organizations may be initiated. It is the permittee's responsibility to ensure that contractors are aware of this requirement. If any archaeological or cultural materials are discovered during the project undertaking, neither the construction team nor the applicant will disclose this information to the public or the media in any

manner. Discoveries of archaeological materials will be kept private and confidential. The following USACE representatives must be contacted immediately in the event of inadvertent discovery:

CESAM-RD@usace.army.mil

Jessica Comeaux, Project Manager
Jessica.C.Comeaux@usace.army.mil
(251) 508-4266

Kad Henderson, Archaeologist
Kad.M.Henderson@usace.army.mil
(251) 477-0849

II. The permittee shall provide an updated Technical Memorandum for a Refined Remote-Sensing Survey to the USACE, Mobile District, post construction of the wetland creation areas (approximately every five years) documenting the status of the American Civil War archeological buffer area (100m) and 6 other identified magnetic anomalies buffer areas (50m) as defined in A Phase I Archaeological Marine Survey of Beneficial Use Areas for Mobile Bay Sediment Placement Project Mobile County, Alabama (2013) and referenced in Special Conditions FF and GG.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed federal project.

3. Limits of Federal Liability. In issuing this permit, the federal government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a re-evaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR Part 325.7 or enforcement procedures such as those contained in 33 CFR Parts 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR Part 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the USACE will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

DocuSigned by:

Doug Otto

Sep 23, 2025 | 2:43 PM CDT

(PERMITTEE) **ALABAMA PORT AUTHORITY**
ATTENTION: MR. DOUG OTTO
250 NORTH WATER STREET
MOBILE, ALABAMA 36602

(DATE)

This permit becomes effective when the federal official, designated to act for the Secretary of the Army, has signed below.

JEREMY J. CHAPMAN, P.E.
COLONEL, U.S. ARMY
(DISTRICT COMMANDER)

BY: Allison Monroe Digitally signed by Allison Monroe Date: 2025.09.24 10:03:26 -05'00'

ALLISON MONROE, CHIEF (DATE)
REGULATORY DIVISION
MOBILE DISTRICT

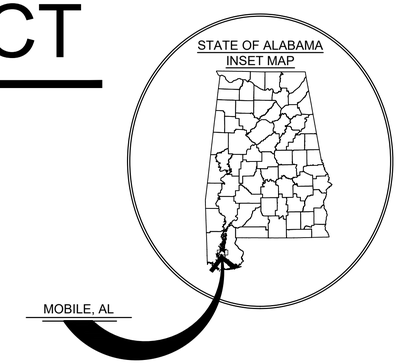
When the structures or work authorized by this permit (**SAM-2021-00246-DCH)** are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

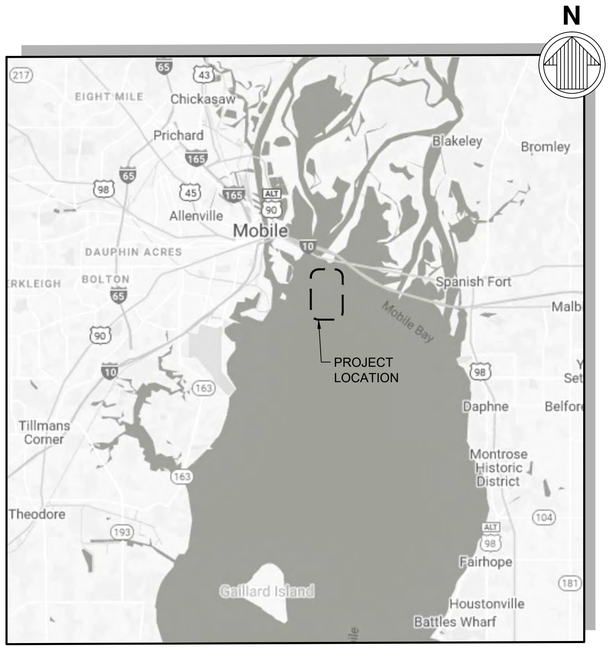
(TRANSFEREE) (DATE)

UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT

ALABAMA STATE PORT AUTHORITY

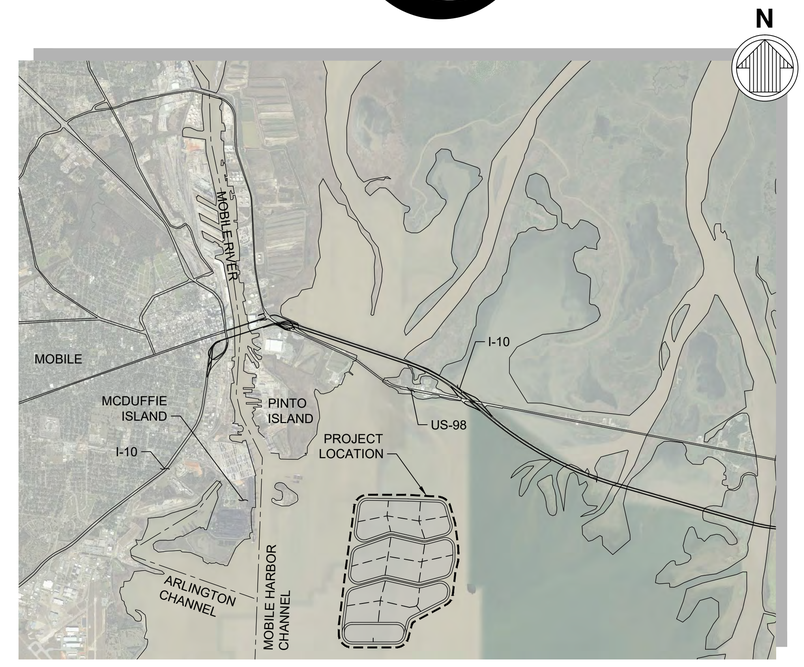
PERMIT DRAWINGS - NOT FOR CONSTRUCTION





VICINITY MAP
SCALE: NTS

INDEX OF DRAWINGS		
SHEET INDEX	SHEET	DRAWING TITLE
1	G-001	TITLE SHEET
2	G-002	GENERAL NOTES
3	V-101	GENERAL CONDITIONS
4	V-102	ENVIRONMENTAL AVOIDANCE PLAN
5	B-101	GENERAL SOIL BORING LOGS PLAN
6	C-101	WETLAND CREATION SITE LAYOUT
7	C-102	CONCEPTUAL WETLAND CREATION CELL DETAIL
8	C-301	WETLAND CREATION AREA TYPICAL SECTION
9	C-320	CONTAINMENT DIKE TYPICAL SECTIONS (1 OF 2)
10	C-321	CONTAINMENT DIKE TYPICAL SECTIONS (2 OF 2)
11	C-501	TEMPORARY WARNING SIGN DETAIL
12	C-502	TURBIDITY CURTAIN DETAIL
13	C-503	BOX WEIR DETAIL
14	C-601	COORDINATE TABLES



LOCATION PLAN
SCALE: NTS

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr.

UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT

TITLE SHEET

Designed by: NC
Dwn by: GE
Ckd by: MES
Reviewed by: PWK
Submitted by: MARY BETH SULLIVAN
Date: 2021-09-08
Rev. -
M&N Project No. 210315
Drawing code:
Drawing Scale:
Plot scale: 1:1 (D SHEET)

moffatt & nichol
11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000

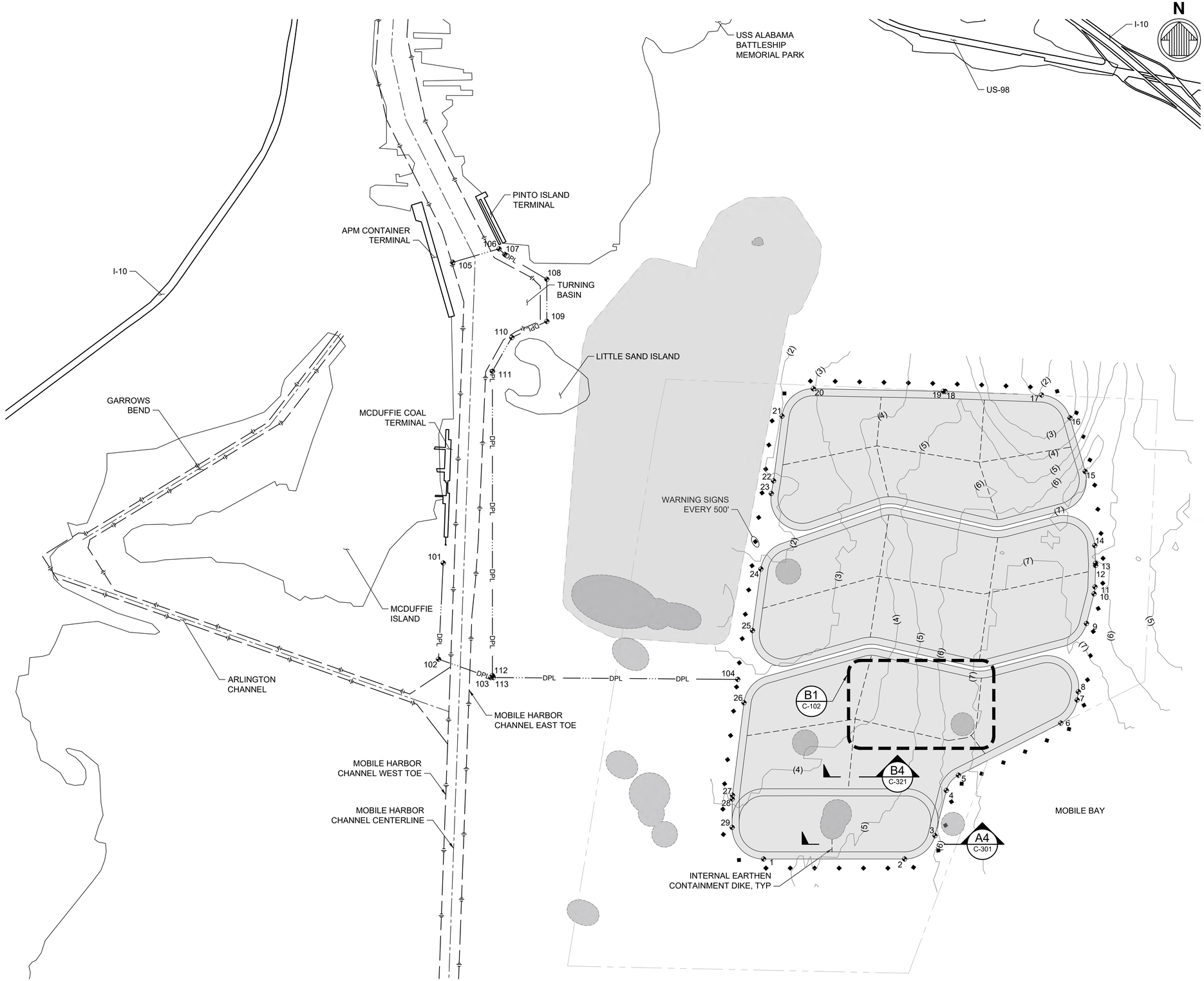
250 N. WATER STREET MOBILE, AL 36602

SEAL

Sheet Reference No.
G-001
INDEX: 1 OF 14

File: Q:\BR\210315\20 CADD_Active_permit set\210315G0G-001 , Plotted: 2/6/2025 2:52 p. m. by DOMINGUEZ, EDWIN ; Saved: 3/7/2022 3:05 p. m. by MAMARTINEZ

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



NOTES:

1. SEE GENERAL NOTE 5 ON SHEET G-002 FOR CONSTRUCTION SITE LIMITATIONS.
2. SEE SHEET C-501 FOR WARNING SIGN DETAILS.
3. WARNING SIGNS TO BE PLACED AS NECESSARY BASED ON COORDINATION WITH U.S. COAST GUARD.
4. EXACT INTERNAL CONTAINMENT DIKE LAYOUT TO BE DETERMINED DURING DETAILED DESIGN. WETLAND CREATION CELLS TO BE APPROX. 40 ACRES.
5. EXAMPLE WETLAND CREATION CELL SHOWN IN DETAIL B1 ON SHEET C-101.

LEGEND:

- EXTERNAL DIKE TOE
- INTERNAL DIKE
- WETLAND DEVELOPMENT AREA
- NO BOTTOM DISTURBANCE AREA
- OBSTRUCTION AVOIDANCE AREA
- (1) DEPTH CONTOUR
- DPL PROPOSED DREDGE PIPELINE CORRIDOR
- CULTURAL RESOURCE SURVEY AREA EXTENTS
- WARNING SIGNS (EVERY 500')
- 10# PROJECT FEATURE INFLECTION POINT

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

ALABAMA STATE PORT AUTHORITY

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

WETLAND CREATION SITE LAYOUT

Rev: -
Date: 2021-09-08
M&N Project No: 210315
Designed by: NC
Cad by: MES
Drawing code:
Dwn by: GE
Reviewed by: PWK
Drawing Scale:
Submitted by: MARY BETH SULLIVAN
Plot scale: 1:1 (0 SHEET)

moffatt & nichol
11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000

250 N. WATER STREET MOBILE, AL 36602

SEAL

Sheet Reference No.
C-101
INDEX: 6 OF 14

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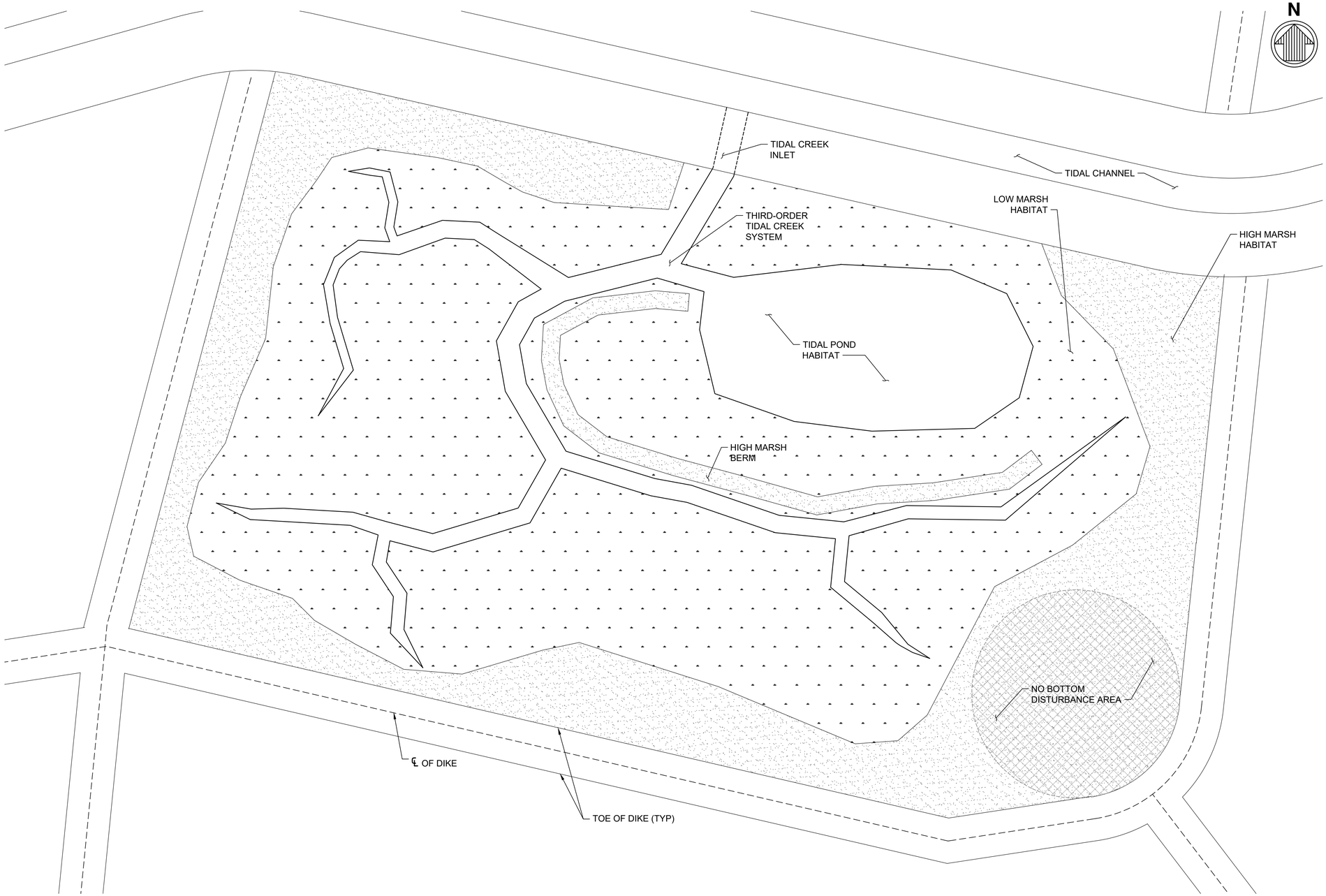

B1 C-101 CONCEPTUAL WETLAND CREATION CELL DETAIL
SCALE: 1"=120'

N

NOTES:

1. WETLAND HABITAT TO BE CONSTRUCTED AFTER FINAL DREDGED MATERIAL LIFT HAS DEWATERED.
2. WETLAND HABITAT LAYOUT SHOWN AS AN EXAMPLE. EXACT LAYOUT TO BE DETERMINED.
3. WETLAND HABITAT TO BE HYDRAULICALLY CONNECTED TO MOBILE BAY.
4. EXTERNAL DIKE TO BE GAPPED/DEGRADED AS NECESSARY.

LEGEND:

- HIGH MARSH HABITAT
- LOW MARSH HABITAT
- NO BOTTOM DISTURBANCE AREA

120' 0' 120' 240'
SCALE: 1"=120'

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

ALABAMA STATE PORT AUTHORITY

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

CONCEPTUAL WETLAND CREATION CELL DETAIL

Designed by: NC
Dwn by: GE
Ckd by: MES
Date: 2021-09-08
Rev. -
M&N Project No. 210315
Reviewed by: PWK
Submitted by: MARY BETH SULLIVAN
Drawing code:
Drawing Scale:
Plot scale: 1:1 (D SHEET)

moffatt & nichol
11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000

250 N. WATER STREET MOBILE, AL 36602

SEAL

Sheet Reference No.
C-102
INDEX: 7 OF 14

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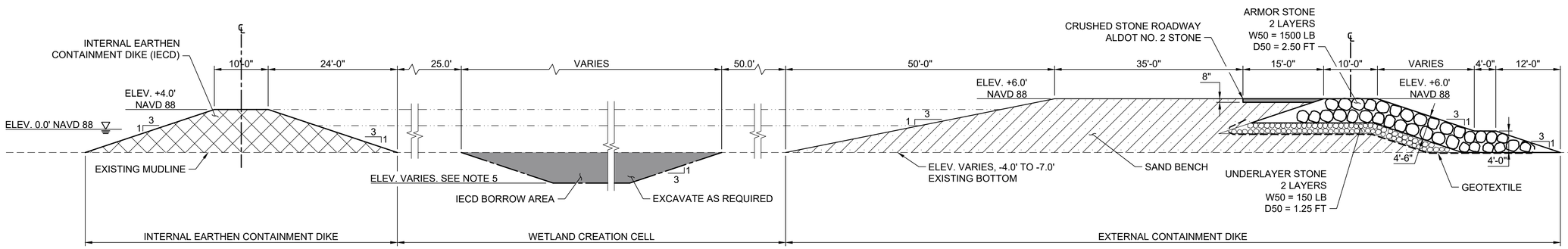
NOTES:

1. EXACT DIMENSIONS, INCLUDING ELEVATIONS, WIDTHS, LENGTHS, SLOPES, ETC. TO BE DETERMINED DURING DETAILED DESIGN.
2. DESIGN ELEVATIONS OF CONTAINMENT DIKES SHALL NOT EXCEED +6.0' NAVD 88.
3. DREDGED MATERIAL CONSTRUCTION FILL ELEVATION SHALL NOT EXCEED +4.0' NAVD 88. WETLAND DESIGN ELEVATION SHALL BE INTERTIDAL. ASSUMED TO BE +1.0' NAVD 88.
4. INTERNAL IN-SITU BORROW TO BE USED TO CONSTRUCT SAND BENCH AND INTERNAL EARTHEN CONTAINMENT DIKES. BORROW DEPTH SHALL NOT EXCEED -20.0' NAVD 88.
5. BORROW AREA DREDGE DEPTH VARIES DEPENDING ON SAND LAYER THICKNESS. CONTRACTOR SHALL NOT DREDGE BEYOND -20.0' NAVD 88.



A4 / C-101 WETLAND CREATION AREA TYPICAL SECTION
SCALE: 3/32"=1'-0"

16' 0'-0" 8' 16'
SCALE: 3/32"=1'-0"

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

WETLAND CREATION AREA TYPICAL SECTION

Designed by: NC
Date: 2021-09-08
Rev. -
Dwn by: GE
Cad by: MES
M&N Project No. 210315
Drawing code:
Reviewed by: PWK
Submitted by: MARY BETH SULLIVAN
Drawing Scale:
Plot scale: 1:1 (D SHEET)

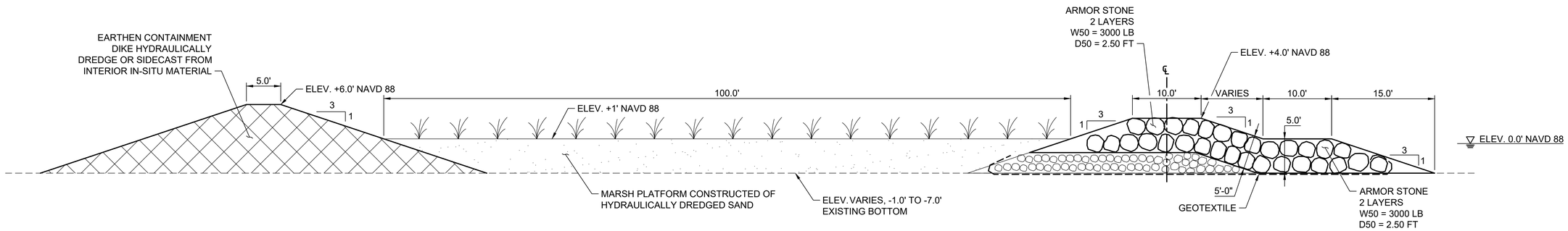
moffatt & nichol
11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000

250 N. WATER STREET MOBILE, AL 36602

SEAL

Sheet Reference No.
C-301
INDEX: 8 OF 14

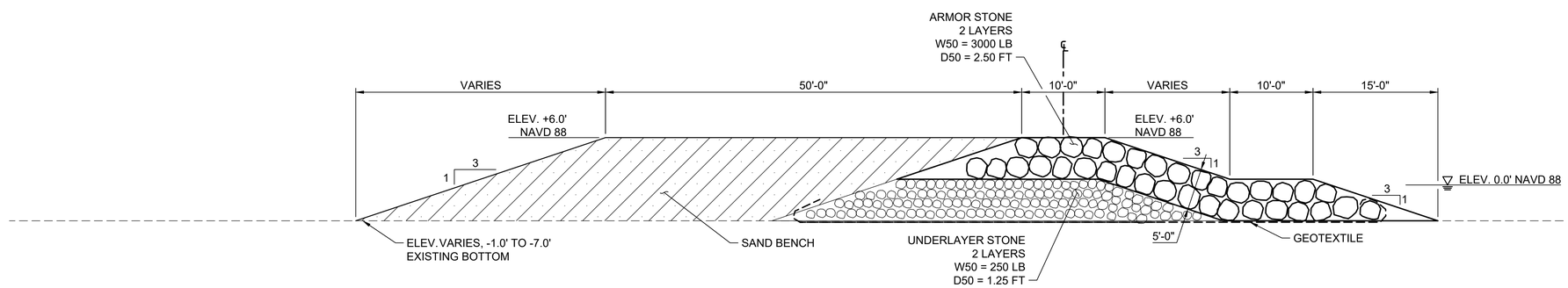
File: Q:\BR\210315\20 CADD_Active_permit set\210315C-301 ; Plotted: 2/6/2025 2:53 p. m. by DOMINGUEZ, EDWIN ; Saved: 9/8/2021 11:27 a. m. by GESPINO



C1 C-320 TYPE I CONTAINMENT
SCALE: 1/8"=1'-0"

NOTES:

1. EXACT DIMENSIONS, INCLUDING ELEVATIONS, WIDTHS, LENGTHS, SLOPES, ETC. TO BE DETERMINED DURING DETAILED DESIGN.
2. DESIGN ELEVATIONS OF CONTAINMENT DIKES SHALL NOT EXCEED +6.0' NAVD 88.
3. LOCATIONS OF TYPE I, TYPE II AND TYPE III CONTAINMENT TO BE DETERMINED DURING DETAILED DESIGN.



A1 C-320 TYPE II CONTAINMENT
SCALE: 1/8"=1'-0"

8' 0'-0" 8' 16'
SCALE: 1/8"=1'-0"

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

CONTAINMENT DIKE
TYPICAL SECTIONS (1 OF 2)

Designed by: NC
Date: 2021-09-08
Rev. -
Dwn by: GE
Ckd by: MES
M&N Project No. 210315
Reviewed by: PWK
Drawing code:
Submitted by: MARY BETH SULLIVAN
Drawing Scale:
Plot scale: 1:1 (D SHEET)

moffatt & nichol
11 N. WATER STREET,
SUITE 20220 MOBILE,
AL 36602 251-378-9000

250 N. WATER STREET
MOBILE, AL 36602

SEAL

Sheet
Reference No.
C-320
INDEX: 9 OF 14

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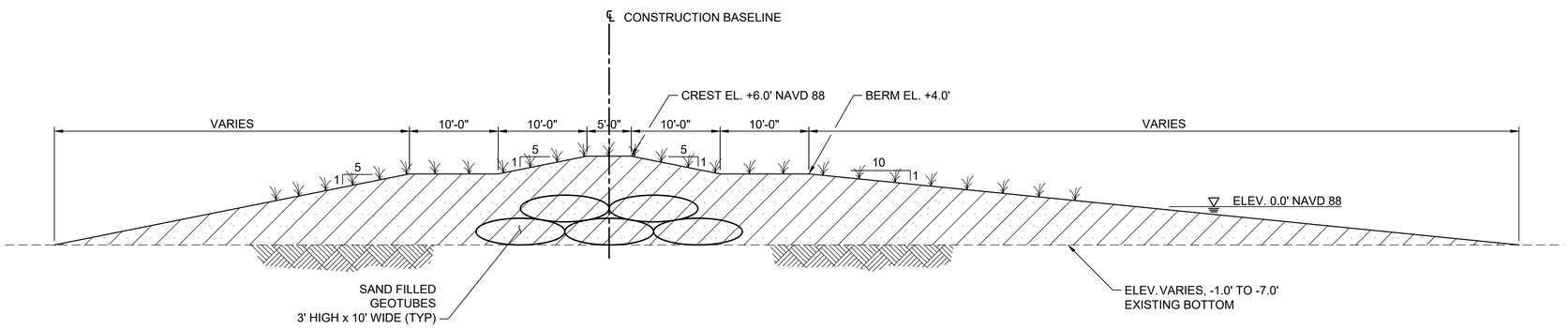
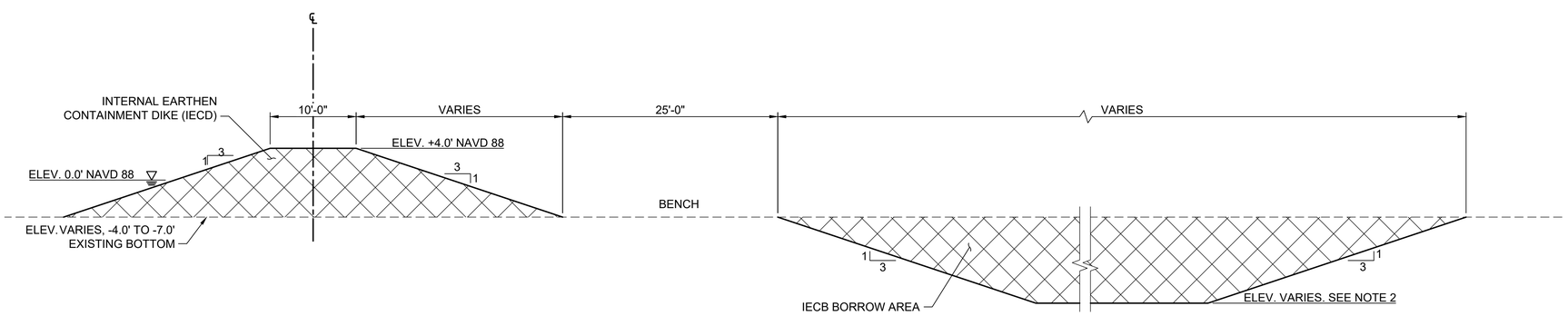


D4 / C-321 TYPE III CONTAINMENT
SCALE: 1/8"=1'-0"

NOTES:

1. EXACT DIMENSIONS, INCLUDING ELEVATIONS, WIDTHS, LENGTHS, SLOPES, ETC. TO BE DETERMINED DURING DETAILED DESIGN.
2. THE INTERNAL IN-SITU BORROW AREAS PLANNED FOR EXTERNAL CONTAINMENT WILL ALSO BE UTILIZED FOR INTERNAL CONTAINMENT DIKE MATERIAL.
3. BORROW AREA DREDGE DEPTH VARIES DEPENDING ON SAND LAYER THICKNESS. CONTRACTOR SHALL NOT DREDGE BEYOND -20.0' NAVD 88.



B4 / C-101 INTERNAL EARTHEN CONTAINMENT DIKES
SCALE: 1/8"=1'-0"

8' 0'-0" 8' 16'
SCALE: 1/8"=1'-0"

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

CONTAINMENT DIKE
TYPICAL SECTIONS (2 OF 2)

Designed by: NC
Date: 2021-09-08
Rev: -
Dwn by: GE
Cad by: MES
M&N Project No: 210315
Drawing code:
Reviewed by: PWK
Submitted by: MARY BETH SULLIVAN
Drawing Scale:
Plot scale: 1:1 (0 SHEET)

moffatt & nichol
11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000

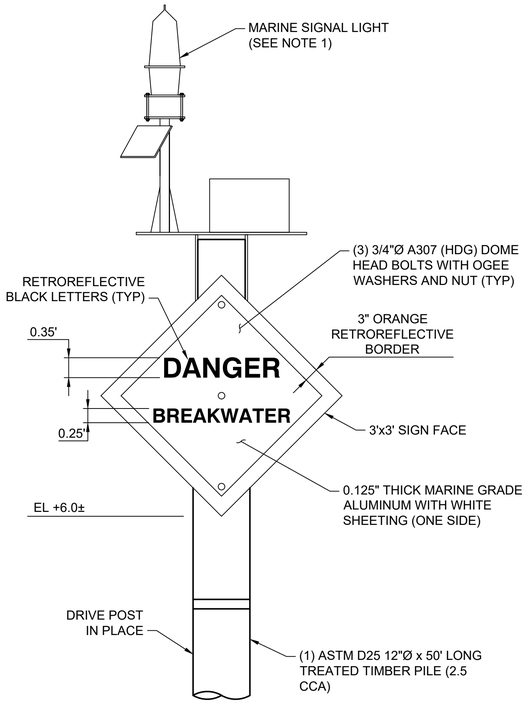
ALABAMA STATE PORT AUTHORITY
250 N. WATER STREET
MOBILE, AL 36602

SEAL

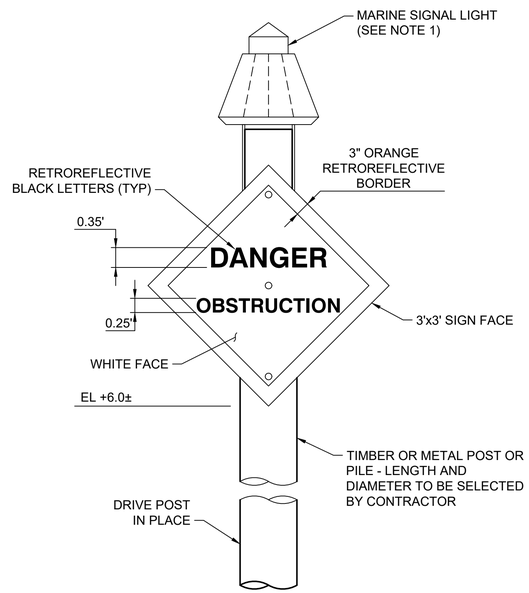
Sheet Reference No.
C-321
INDEX: 10 OF 14

File: Q:\BR\210315\20 CADD_Active_permit set\210315DC-321 ; Plotted: 2/6/2025 2:53 p. m. by DOMINGUEZ, EDWIN ; Saved: 9/8/2021 11:27 a. m. by GESPINO

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



C1 / C-101 PERMANENT WARNING SIGN DETAIL
SCALE: NTS



C2 / C-101 TEMPORARY WARNING SIGN DETAIL
SCALE: NTS

LEGEND

HDG = HOT DIP GALVANIZED
CCA = CHROMATED COPPER ARSENATE

NOTES

1. MARINE SIGNAL LIGHT SHALL MEET REQUIREMENTS OF CFR TITLE 33, SUBPART 67.30 FOR CLASS "C" STRUCTURES AND HAVE AS MINIMUM THE FOLLOWING PROPERTIES:
   RANGE:3 NAUTICAL MILES (25 CANDELA)
   LENS: CLEAR
   SLOW FLASH: 2.5 SEC
   VISIBILITY: 360° HORIZON
   COLOR: WHITE
2. CONTRACTOR SHALL COORDINATE WITH US COAST GUARD ON REQUIREMENTS OF TEMPORARY WARNING SIGNS, INCLUDING SIGN VERBIAGE AND PLACEMENT LOCATION, PRIOR TO INSTALLATION.
3. OTHER FORMS OF TEMPORARY WARNING SIGNS MAY BE USED WITH PRIOR APPROVAL OF US COAST GUARD AND ENGINEER'S REVIEW.
4. DURING CONSTRUCTION TEMPORARY WARNING SIGNS AND/OR BUOYS SHALL BE REQUIRED AS NECESSARY.
5. ALL SIGN FACES SHALL BE ORIENTED TO FACE PREDOMINANT APPROACH DIRECTION OF ONCOMING BOAT TRAFFIC.

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

ALABAMA STATE PORT AUTHORITY

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

TEMPORARY WARNING SIGN DETAIL

Designed by: NC
Date: 2021-09-08
Rev. -
Dwn by: GE
Ckd by: MES
M&N Project No. 210315
Drawing code:
Reviewed by: PWK
Submitted by: MARY BETH SULLIVAN
Drawing Scale:
Plot scale: 1:1 (0 SHEET)

moffatt & nichol
11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000

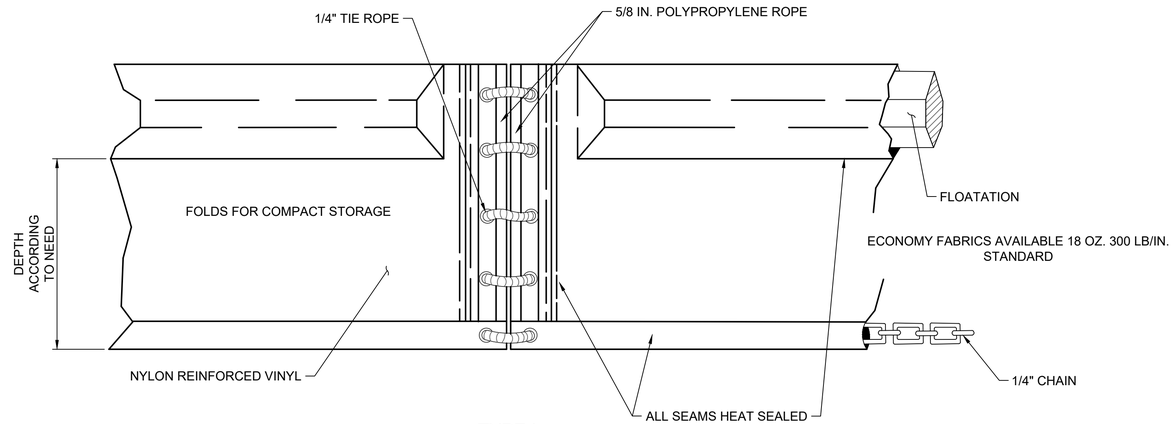
250 N. WATER STREET MOBILE, AL 36602

SEAL

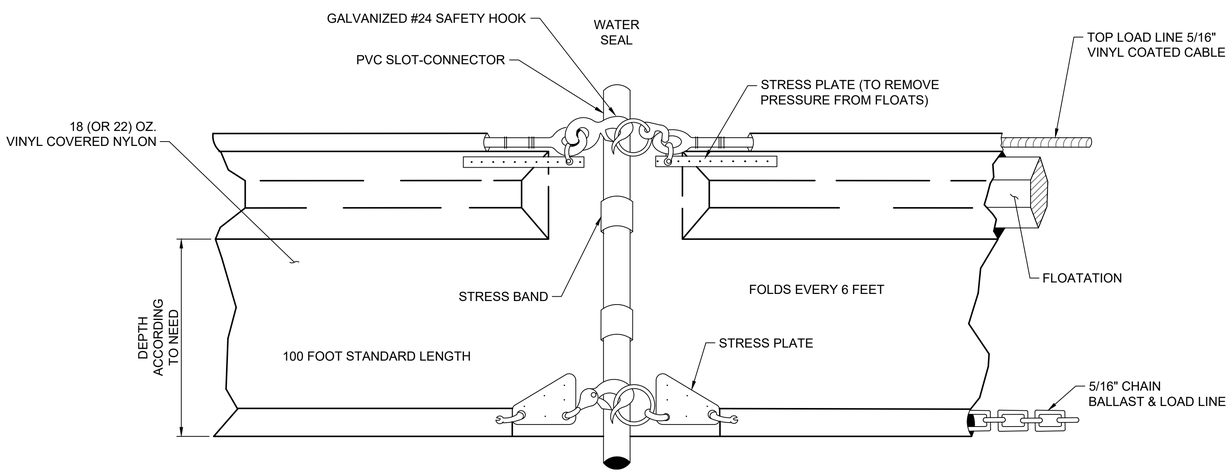
Sheet Reference No.
C-501
INDEX: 11 OF 14

File: Q:\BR\210315\20 CADD_Active_permit set\210315C-501 ; Plotted: 2/6/2025 2:54 p. m. by DOMINGUEZ, EDWIN ; Saved: 3/16/2022 4:24 p. m. by GESPINO

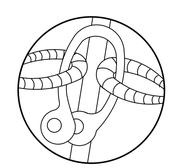
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



TYPE I



TYPE II



SHACKLE CONNECTION

TURBIDITY CONTROL NOTES:

1. CONTRACTOR SHALL SUBMIT TURBIDITY CONTROL PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN TURBIDITY CONTROL CURTAIN AROUND DREDGE FILL AREA. THE CONTRACTOR HAS THE OPTION TO ENCLOSE THE WATERSIDE OF THE SITE, WITHIN THE LIMITS OF DISTURBANCE, OR TO INSTALL AND MOVE THE CURTAIN IN STAGES. THE CONTRACTOR SHALL MAINTAIN SUCH CURTAINS AT ALL TIMES IN THE AREAS WHERE DREDGE FILL IS IN PROGRESS.
3. TURBIDITY SHALL BE MONITORED DAILY.
4. TURBIDITY CURTAINS SHALL BE SECURED WITH TEMPORARY STEEL OR TIMBER PILINGS AT SUFFICIENT SPACING TO MAINTAIN CONTROL/FUNCTION. A WEIGHT SYSTEM CAN ALSO BE UTILIZED IF PRACTICAL.
5. TURBIDITY CURTAINS SHALL BE SIMILAR TO EITHER THE TYPE I OR TYPE II CURTAINS SHOWN ON THIS SHEET.
6. MEASURES FOR REDUCING ENTRAPMENT RISK TO PROTECTED SPECIES WILL BE IMPLEMENTED.

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

TURBIDITY CURTAIN DETAIL

Designed by: NC
Date: 2021-09-08
Rev. -
Dwn by: GE
Ckd by: MES
M&N Project No. 210315
Reviewed by: PWK
Submitted by: MARY BETH SULLIVAN
Drawing code:
Drawing Scale:
Plot scale: 1:1 (D SHEET)

moffatt & nichol 11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000

ALABAMA STATE PORT AUTHORITY 250 N. WATER STREET MOBILE, AL 36602

SEAL

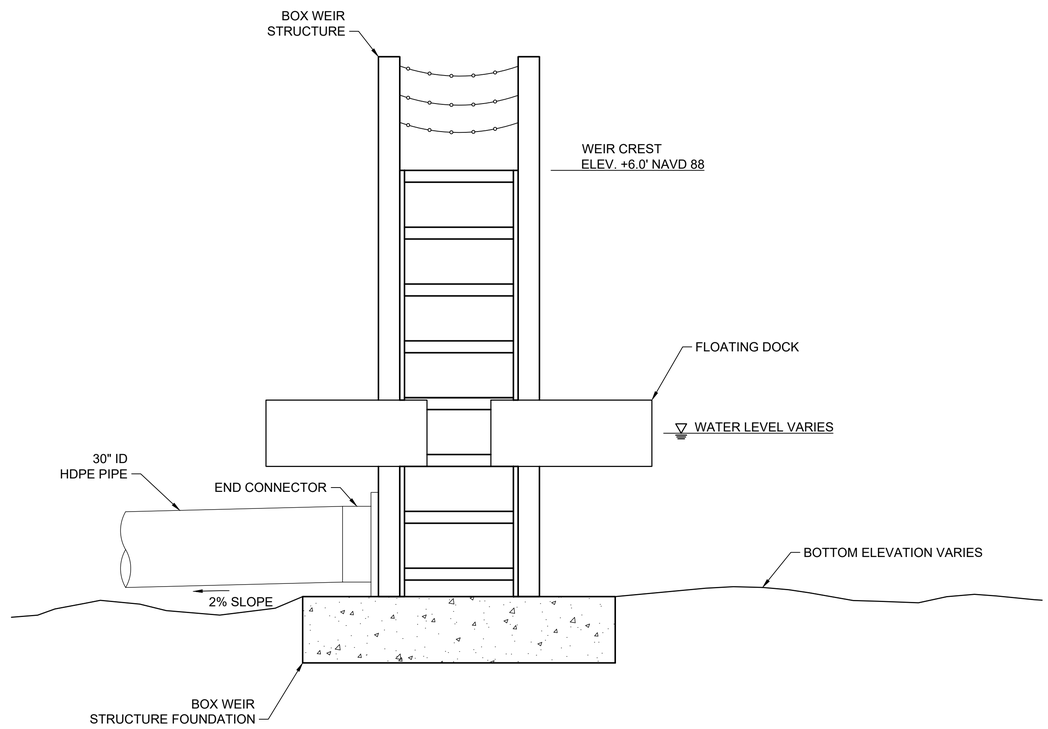
Sheet Reference No.
C-502
INDEX: 12 OF 14

File: Q:\BR\210315\20 CADD_Active_permit set\210315000-502 - Plotted: 2/6/2025 2:54 p. m. by: DOMINGUEZ, EDWIN - Saved: 9/8/2021 11:27 a. m. by: GESPINO

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

NOTES:

1. BOX RISER WEIRS PROPOSED FOR WETLAND CREATION CELL DREDGED MATERIAL DEWATERING.
2. 30" DIA HDPE PIPE ASSUMED.
3. 2 WEIRS MAY BE INSTALLED WITHIN A WETLAND CREATION CELL FOR REDUNDANCY.
4. ACCESS TO FLOATING DOCK BY GANGWAY FROM EXTERIOR DIKE.
5. HDPE PIPE TO BE ANCHORED AS NECESSARY.
6. HDPE PIPE TO BE INSTALLED AT APPROX. 2% SLOPE THROUGH EXTERNAL CONTAINMENT DIKE. OUTFALL ELEVATION TO BE DETERMINED.



4' 0'-0" 2' 4'

SCALE: 3/8"=1'-0"

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

BOX WEIR DETAIL

Designed by: NC
Date: 2021-09-08
Rev. -
Dwn by: GE
Ckd by: MES
M&N Project No. 210315
Reviewed by: PWK
Submitted by: MARY BETH SULLIVAN
Drawing code:
Drawing Scale:
Plot scale: 1:1 (D SHEET)

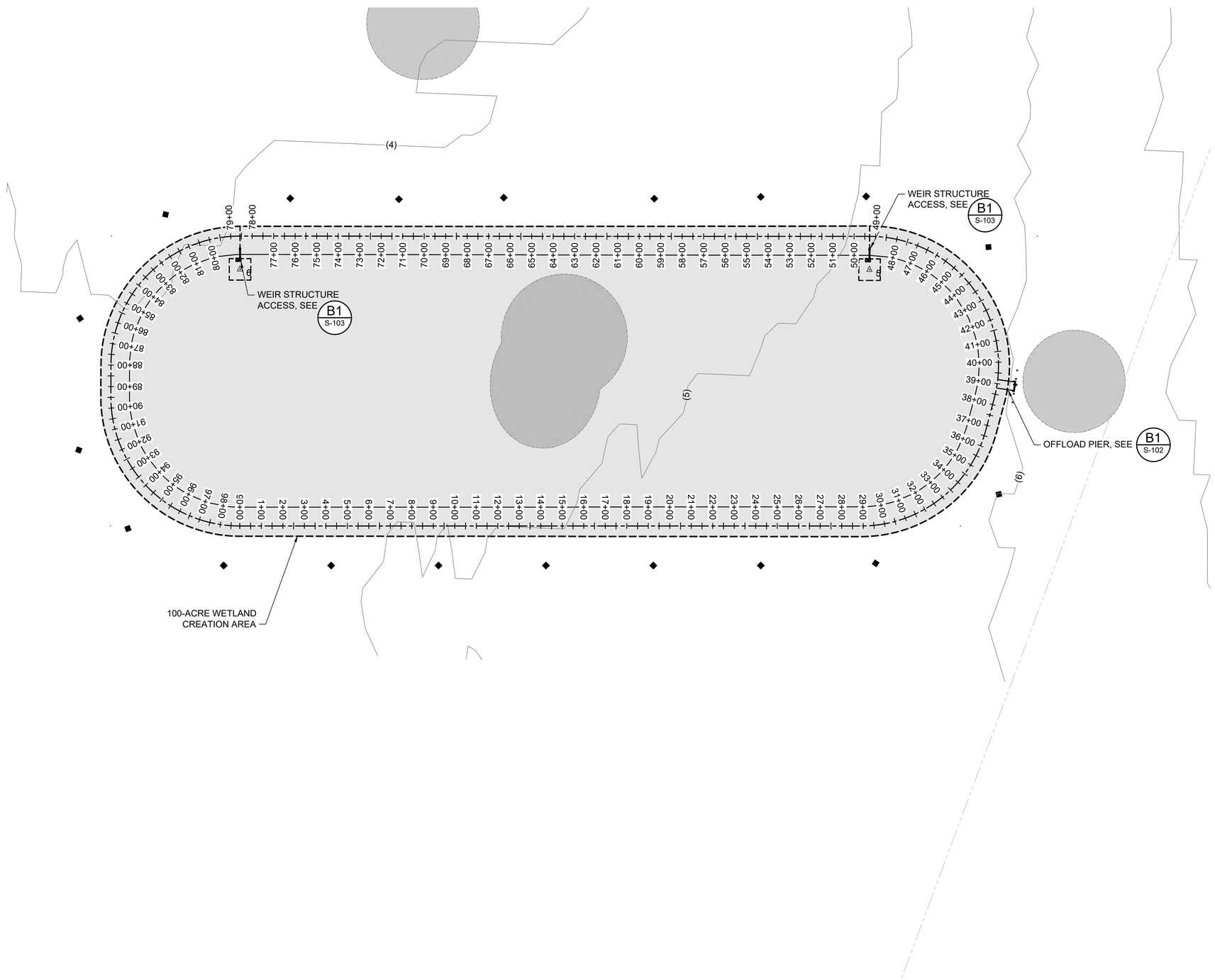
moffatt & nichol
11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000

250 N. WATER STREET
MOBILE, AL 36602

SEAL

Sheet Reference No.
C-503
INDEX: 13 OF 14

File: Q:\BR\210315\20 CADD_Active_permit set\210315000C-503 ; Plotted: 2/6/2025 2:54 p. m. by DOMINGUEZ, EDWIN ; Saved: 9/8/2021 11:27 a. m. by GESPINO



LEGEND:

- EXTERNAL DIKE TOE
- INTERNAL DIKE
- WETLAND CREATION AREA
- NO BOTTOM DISTURBANCE AREA
- OBSTRUCTION AVOIDANCE AREA
- (1) DEPTH CONTOUR
- CULTURAL RESOURCE SURVEY AREA EXTENTS
- WARNING SIGNS (EVERY 500')
- IECD BORROW AREA
- CENTERLINE OF EXTERNAL DIKE

250' 0' 250' 500'

SCALE: 1"=250'

PERMIT DRAWINGS
ISSUED: 2021-10-29
NOT TO BE USED FOR CONSTRUCTION

ALABAMA STATE PORT AUTHORITY

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

OVERALL SITE PLAN

Rev.
Date:
Designed by: DJJ
Dwn by: WBT
Ckd by: DJJ
Reviewed by: MEW
Submitted by: MARY BETH SULLIVAN
M&N Project No. 210315
Drawing code:
Drawing Scale:
Plot scale: 1:1 (D SHEET)

moffatt & nichol
11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000

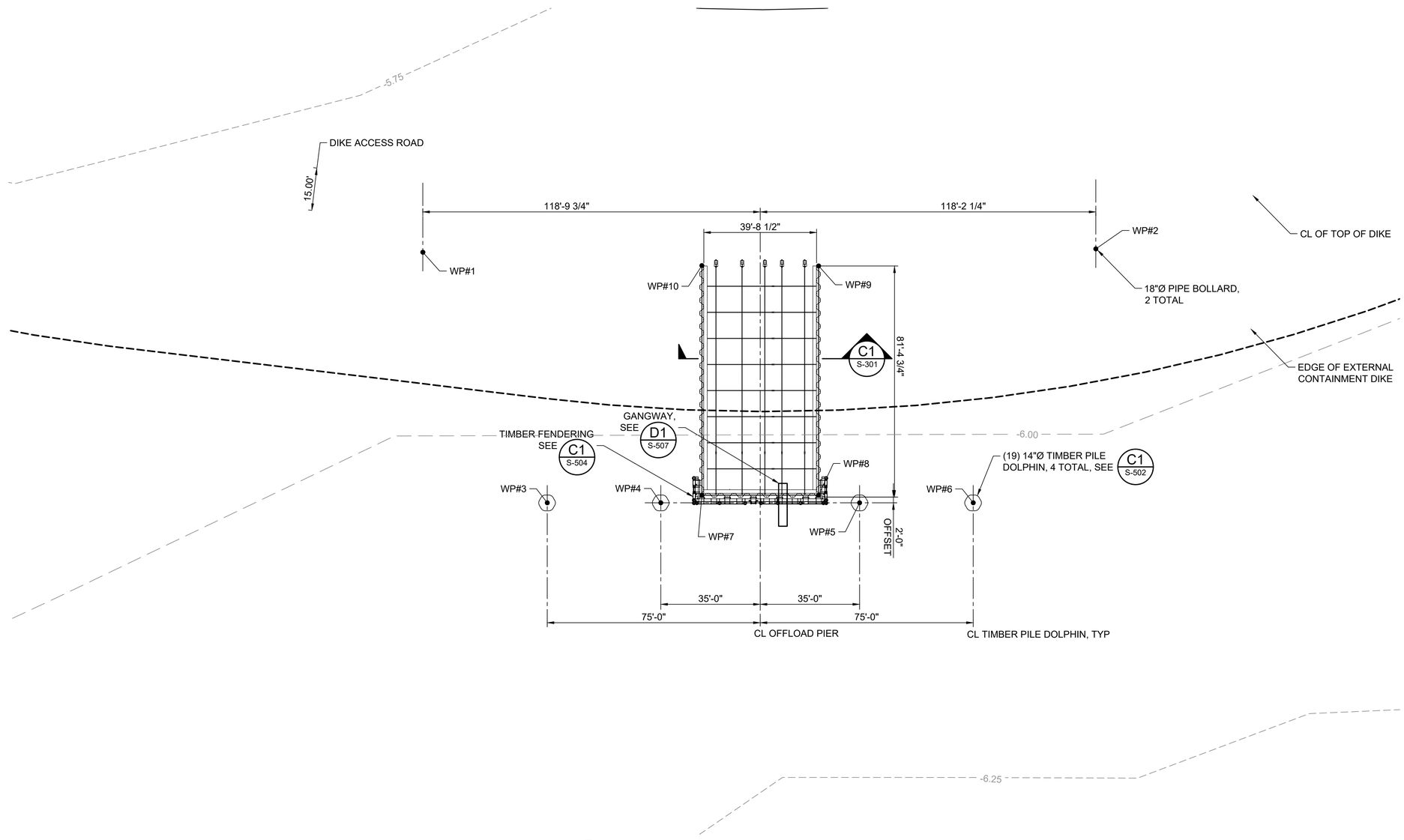
250 N. WATER STREET
MOBILE, AL 36602

SEAL

Sheet Reference No.
S-101
INDEX: 24 OF 39

File: Q:\BR\210315\20 CADD_Active_construction set\210315\S-101 ; Plotted: 2/5/2025 11:04 p.m. by DOMINGUEZ, EDWIN ; Saved: 2/4/2025 5:02 p.m. by EDOMINGUEZ

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



B1 S-101 OFFLOAD PIER PLAN
SCALE: 1"=20'-0"

WORK POINT TABLE			
POINT #	DESCRIPTION	LATITUDE	LONGITUDE
WP#1	CL PIPE BOLLARD	N30° 38' 08.15"	W88° 00' 03.62"
WP#2	CL PIPE BOLLARD	N30° 38' 10.48"	W88° 00' 03.26"
WP#3	CL TIMBER DOLPHIN	N30° 38' 08.46"	W88° 00' 02.55"
WP#4	CL TIMBER DOLPHIN	N30° 38' 08.85"	W88° 00' 02.49"
WP#5	CL TIMBER DOLPHIN	N30° 38' 09.54"	W88° 00' 02.38"
WP#6	CL TIMBER DOLPHIN	N30° 38' 09.93"	W88° 00' 02.32"
WP#7	CL SHEET PILE	N30° 38' 09.00"	W88° 00' 02.49"
WP#8	CL SHEET PILE	N30° 38' 09.40"	W88° 00' 02.43"
WP#9	CL SHEET PILE	N30° 38' 09.51"	W88° 00' 03.35"
WP#10	CL SHEET PILE	N30° 38' 09.11"	W88° 00' 03.41"

N

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

PERMIT DRAWINGS
ISSUED: 2021-10-29
NOT TO BE USED FOR CONSTRUCTION

ALABAMA STATE PORT AUTHORITY

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

OFFLOAD PIER PLAN

Designed by: DJJ
Dwn by: WBT
Ckd by: DJJ
Reviewed by: MEW
Submitted by: MARY BETH SULLIVAN
Date: DATE
Rev. REVNO
M&N Project No: 210315
Drawing code:
Drawing Scale:
Plot scale: 1:1 (0 SHEET)

moffatt & nichol
11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000

250 N. WATER STREET MOBILE, AL 36602

SEAL

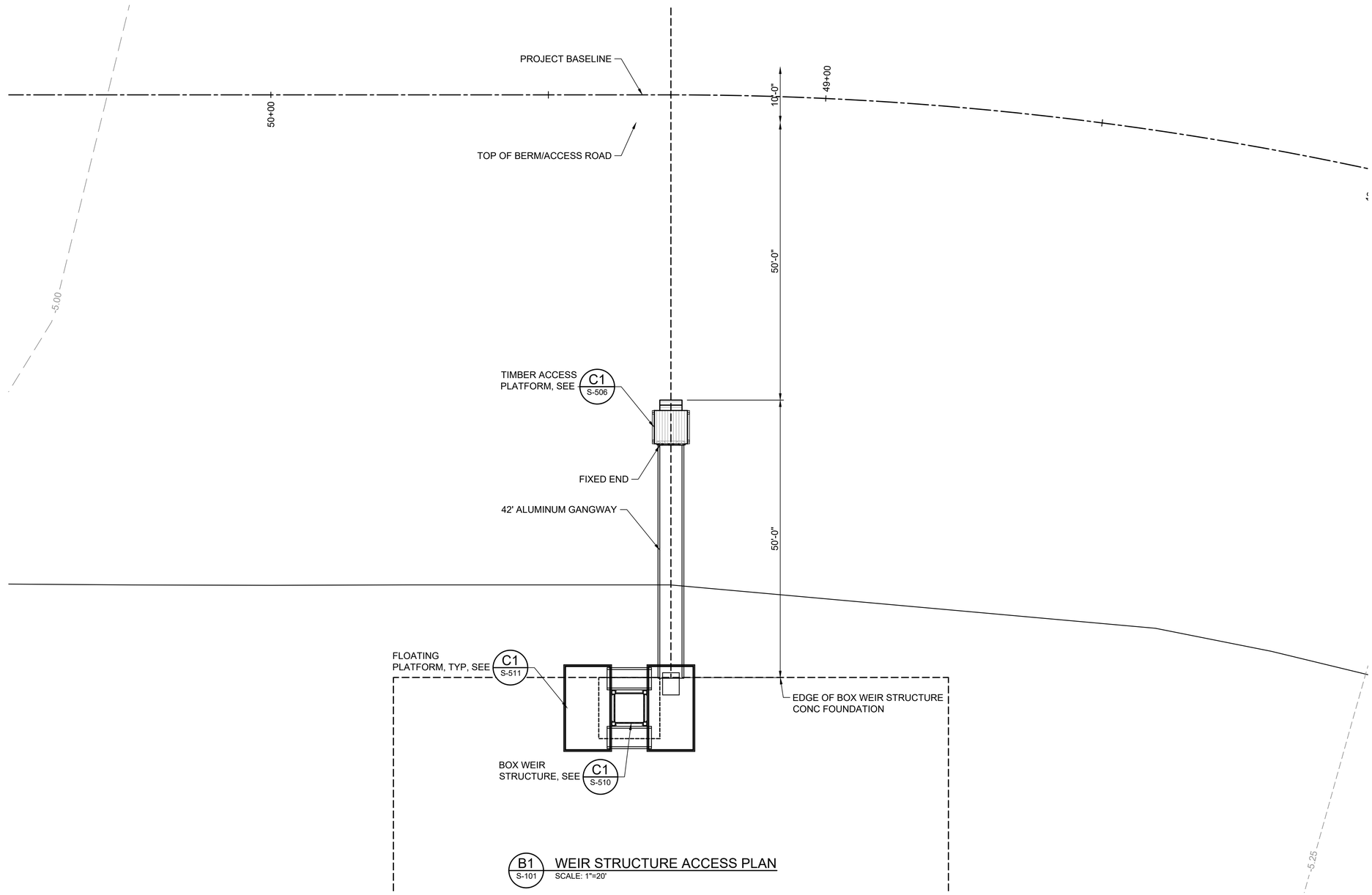
Sheet Reference No.
S-102
INDEX: 25 OF 39

File: Q:\BR\210315\20 CADD_Active_construction set\210315\01S-102 , Plotted: 2/5/2025 11:04 p.m. by DOMINGUEZ, EDWIN , Saved: 2/4/2025 2:35 p.m. by EDOMINGUEZ

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

NOTE:

1. FOR SECTION VIEWS OF WEIR STRUCTURE ACCESS, SEE SECTION A1 AND C1 ON SHEET S-302.
2. FOR ELEVATIONS VIEWS OF WEIR STRUCTURE, SEE SECTION C1 AND C4 ON SHEET S-509.



B1 S-101 WEIR STRUCTURE ACCESS PLAN
SCALE: 1"=20'

N

20' 0'-0" 20' 40'

SCALE: 1"=20'

PERMIT DRAWINGS
ISSUED: 2021-10-29
NOT TO BE USED FOR CONSTRUCTION

ALABAMA STATE PORT AUTHORITY

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

WEIR PLAN

Designed by: DJJ
Dwn by: VBT
Ckd by: DJJ
Reviewed by: MEW
Submitted by: MARY BETH SULLIVAN
Date:
Rev.
M&N Project No. 210315
Drawing code:
Drawing Scale:
Plot scale: 1:1 (D SHEET)

moffatt & nichol
11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000

250 N. WATER STREET
MOBILE, AL 36602

SEAL

Sheet Reference No.
S-103
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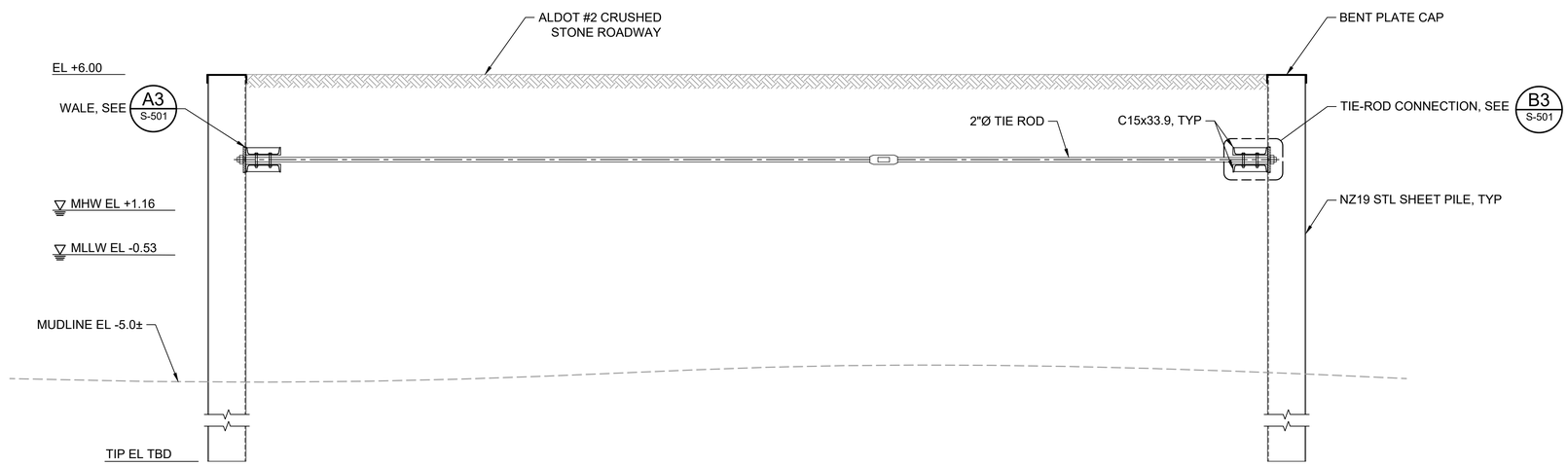
File: Q:\BR\210315\20 CADD_Active_construction set\210315\01S-103 , Plotted: 2/5/2025 11:05 p.m. by DOMINGUEZ, EDWIN , Saved: 11/24/2021 10:38 a.m. by GESPINO



C1 S-102 TYPICAL BULKHEAD SECTION
SCALE: 3/8"=1'-0"

4'-0" 0'-0" 2'-0" 4'-0"
SCALE: 3/8"=1'-0"

PERMIT DRAWINGS
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NOT TO BE USED FOR CONSTRUCTION

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UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

BULKHEAD SECTION

Designed by: DJJ
Date:
Rev.
Dwn by: WBT
Ckd by: DJJ
M&N Project No. 210315
Reviewed by: MEW
Drawing code:
Submitted by: MARY BETH SULLIVAN
Drawing Scale:
Plot scale: 1:1 (D SHEET)

moffatt & nichol
11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000

250 N. WATER STREET
MOBILE, AL 36602

SEAL

Sheet Reference No.
S-301
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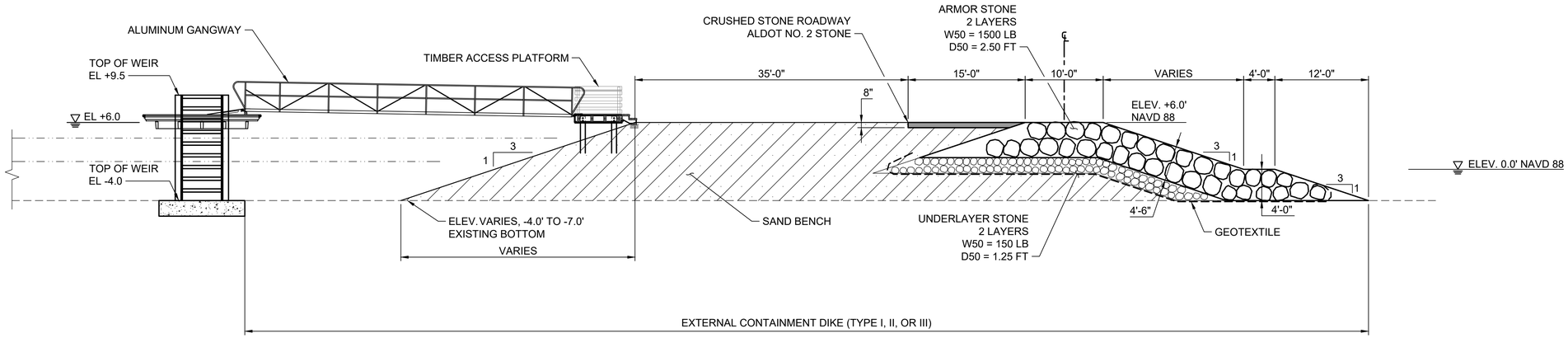
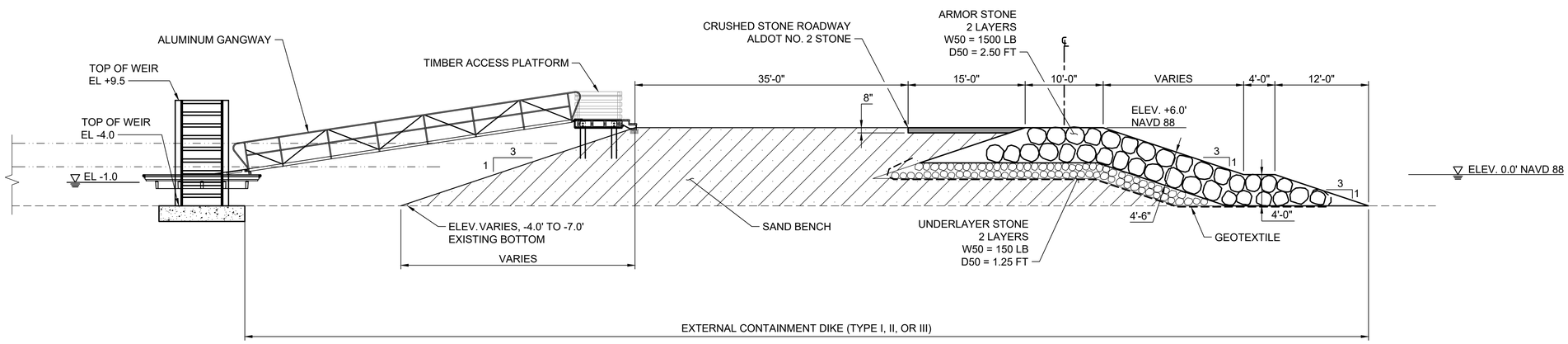
File: Q:\BR\210315\20 CADD_Active_construction set\210315S-301 , Plotted: 2/5/2025 11:05 p.m. by DOMINGUEZ, EDWIN , Saved: 11/24/2021 10:38 a.m. by GESPINO

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



C1 S-103 SECTION
SCALE: 1/8"=1'-0"



A1 S-103 SECTION
SCALE: 1/8"=1'-0"

8' 0'-0" 8' 16'
SCALE: 1/8"=1'-0"

PERMIT DRAWINGS
ISSUED: 2021-10-29
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

SECTION

Designed by: DJJ	Cxtd by: DJJ	M&N Project No. 210315	Rev.
Dwn by: VBT			Date:
Reviewed by: MEW		Drawing code:	
Submitted by: MARY BETH SULLIVAN		Drawing Scale: Plot scale: 1:1 (D SHEET)	

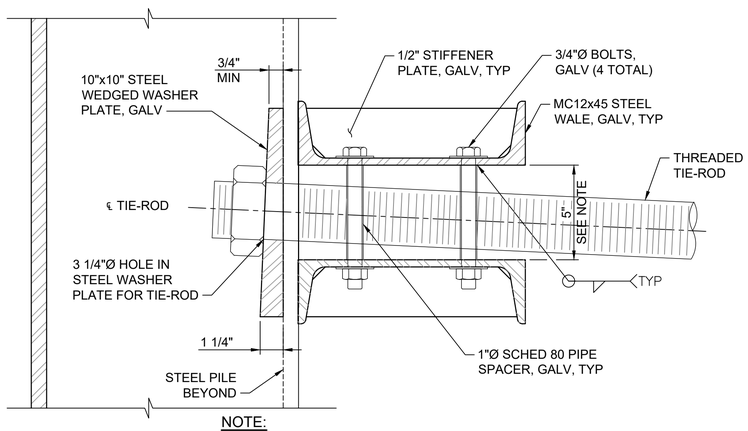
moffatt & nichol
11 N. WATER STREET,
SUITE 20220 MOBILE,
AL 36602 251-378-9000

250 N. WATER STREET
MOBILE, AL 36602

SEAL

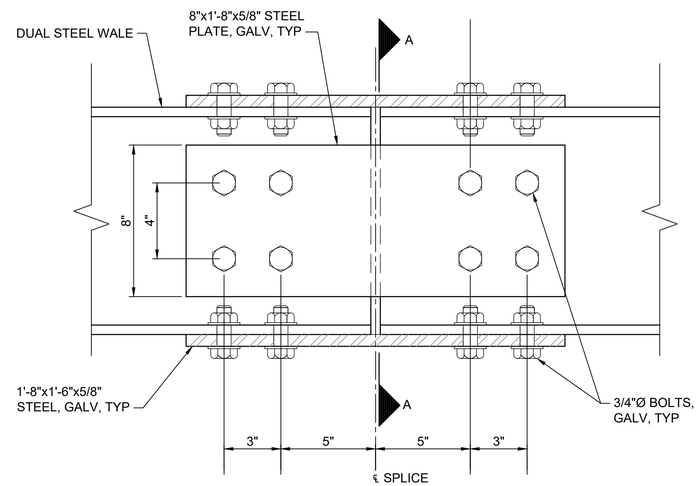
Sheet
Reference No.
S-302
INDEX: 28 OF 39

File: Q:\BR\210315\20 CADD_Active_construction set\210315S-302 - Plotted: 2/5/2025 11:05 p.m. by DOMINGUEZ, EDWIN - Saved: 11/24/2021 10:38 a.m. by GESPINO

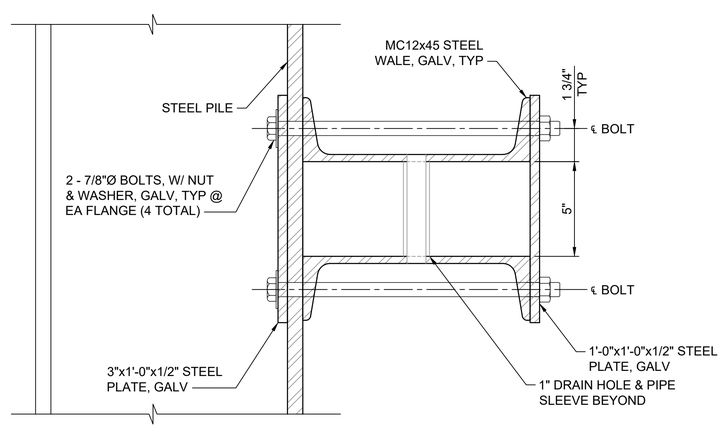


NOTE:
CONTRACTOR SHALL VERIFY DIMENSION PRIOR TO INSTALLING WALES.

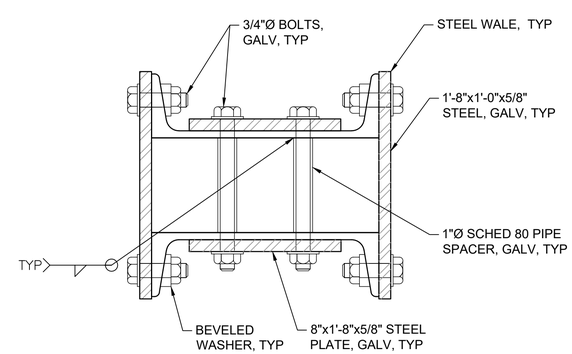
B3 S-301 TIE-ROD CONNECTION @ WALE DETAIL
SCALE: 3"=1'-0"



PLAN



A3 S-301 WALE-SHEET PILE CONNECTION DETAIL
SCALE: 3"=1'-0"



SECTION A-A

NOTE:
POSITION SPLICE AT CENTER OF SHEET PILE POCKET
BETWEEN TIE-ROD LOCATION AS NECESSARY.

B5 S-501 WALE SPLICE DETAIL
SCALE: 3"=1'-0"

6" 0'-0" 3" 6"
SCALE: 3"=1'-0"

PERMIT DRAWINGS
ISSUED: 2021-10-29
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

BULKHEAD DETAILS

Designed by: DJJ
Drawn by: WBT
Cad by: DJJ
Reviewed by: MEW
Submitted by: MARY BETH SULLIVAN
Date:
Rev.
M&N Project No. 210315
Drawing code:
Drawing Scale: MEW
Plot scale: 1:1 (D SHEET)

moffatt & nichol
11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000

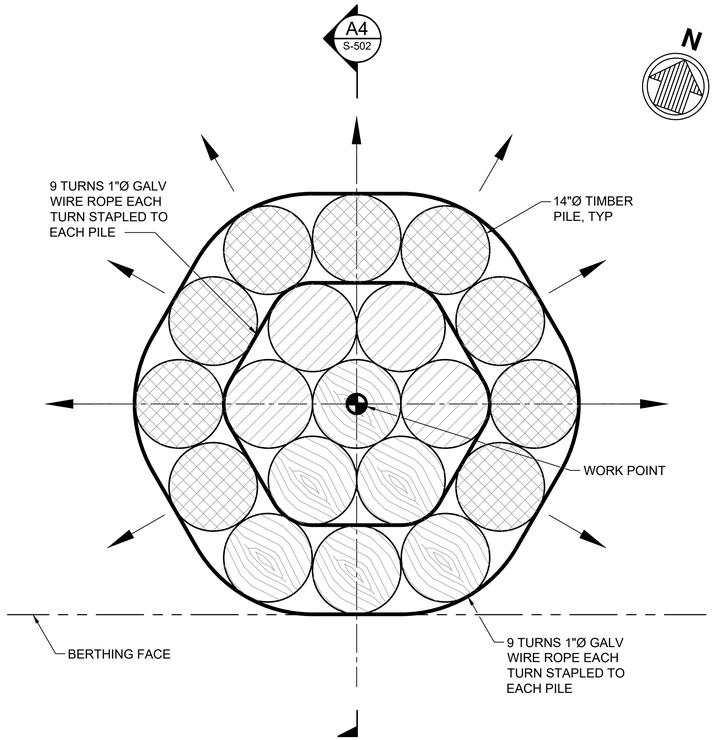
ALABAMA STATE PORT AUTHORITY
250 N. WATER STREET MOBILE, AL 36602

SEAL

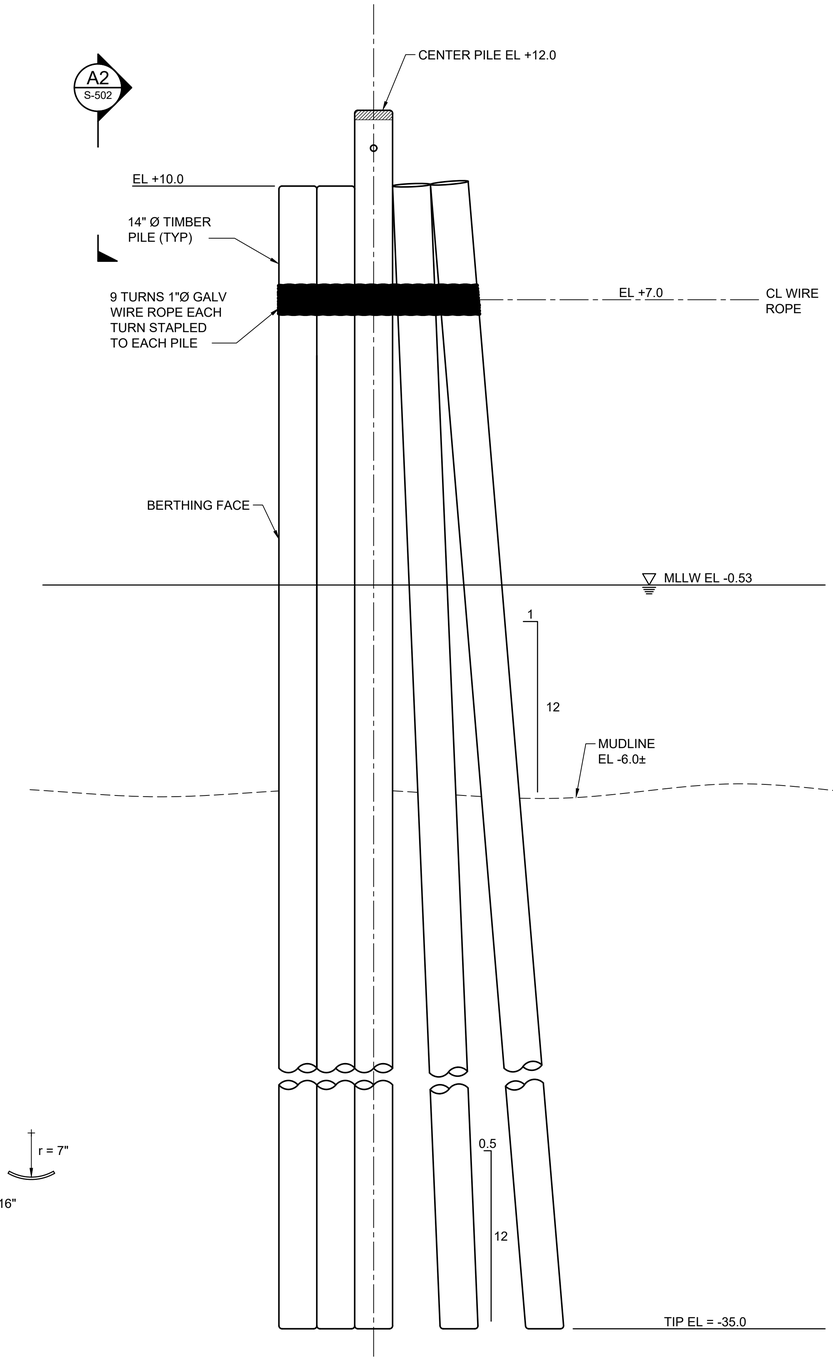
Sheet Reference No.
S-501
INDEX: 29 OF 39

File: Q:\BR\210315\20 CADD_Active_construction set\210315015-501, Plotted: 2/5/2025 11:05 p.m. by: DOMINGUEZ, EDVIN, Saved: 11/24/2021 10:38 a.m. by: GESPINO

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



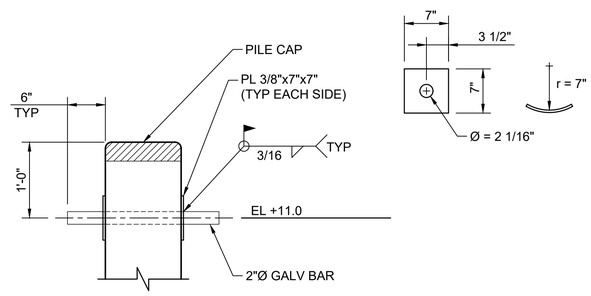
C1 S-102 PLAN - 19 TIMBER DOLPHIN
SCALE: 1"=1'-0"



A4 S-502 SECTION - TIMBER DOLPHIN
SCALE: 1/2"=1'-0"

LEGEND:

- WORK POINT
- DIRECTION OF BATTER
- PLUMB PILE
- 0.5:12 BATTER PILE
- 1:12 BATTER PILE



A2 S-502 ELEVATION - CENTER PILE MOORING BAR
SCALE: 1"=1'-0"

2'-0" 0'-0" 2'-0" 4'-0"
SCALE: 0'-0 1/2"=1'-0"

1'-0" 0'-0" 1'-0" 2'-0"
SCALE: 0'-1"=1'-0"

PERMIT DRAWINGS
ISSUED: 2021-10-29
NOT TO BE USED FOR CONSTRUCTION

ALABAMA STATE PORT AUTHORITY

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

TIMBER DOLPHIN DETAILS

Designed by: DJJ
Dwn by: VBT
Ckd by: DJJ
Reviewed by: MEW
Submitted by: MARY BETH SULLIVAN
Date:
Rev.
M&N Project No. 210315
Drawing code:
Drawing Scale:
Plot scale: 1:1 (D SHEET)

moffatt & nichol
11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000

250 N. WATER STREET
MOBILE, AL 36602

SEAL

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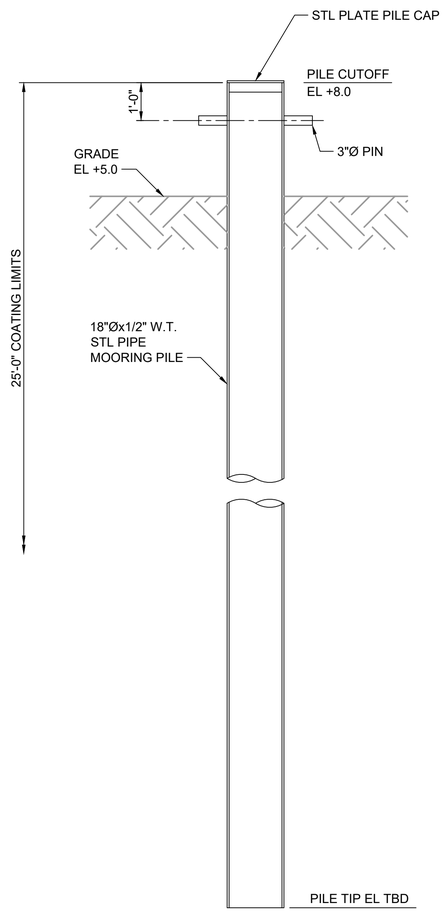
File: Q:\BR\210315\20 CADD_Active_construction set\210315015-502 - Plotted: 2/5/2025 11:06 p.m. by DOMINGUEZ, EDWIN - Saved: 11/24/2021 10:38 a.m. by GESPINO



B1 / S-102 MOORING PILE BOLLARD
SCALE: 1/2"=1'-0"

2'-0" 0'-0" 2'-0" 4'-0"
SCALE: 0'-0 1/2"=1'-0"

PERMIT DRAWINGS
ISSUED: 2021-10-29
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

PIPE BOLLARD DETAILS

Designed by: DJJ
Dwn by: WBT
Ckd by: DJJ
Date:
Rev.
M&N Project No. 210315
Drawing code:
Reviewed by: MEW
Submitted by: MARY BETH SULLIVAN
Drawing Scale:
Plot scale: 1:1 (D SHEET)

moffatt & nichol
11 N. WATER STREET,
SUITE 20220 MOBILE,
AL 36602 251-378-9000

250 N. WATER STREET
MOBILE, AL 36602

SEAL

Sheet
Reference No.
S-503
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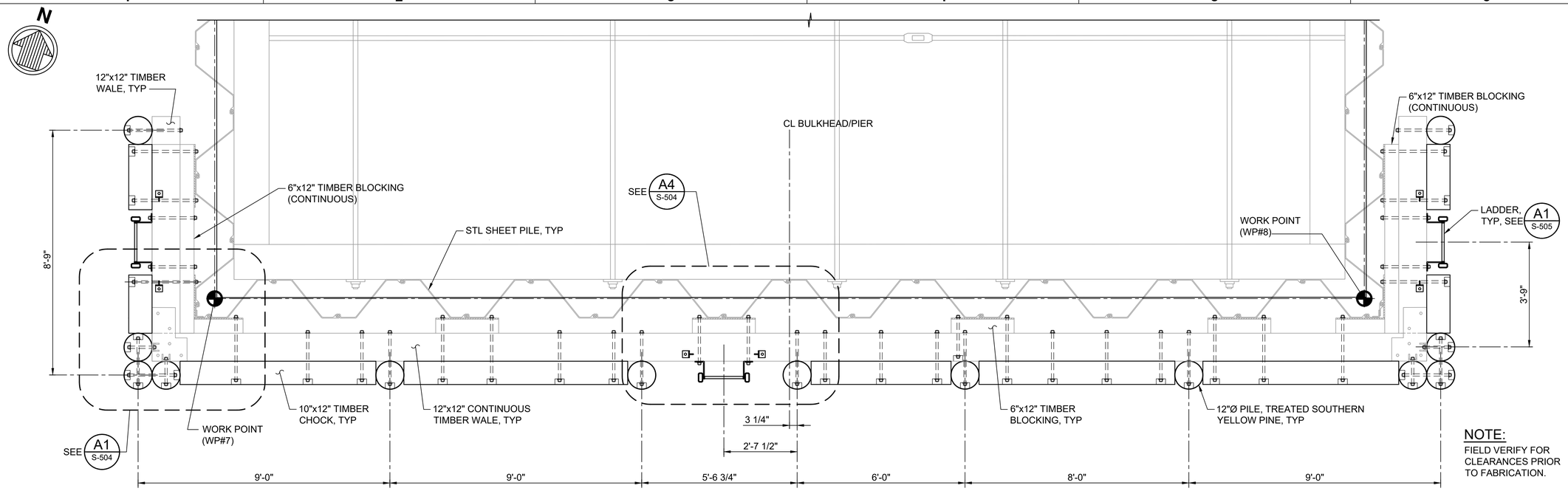
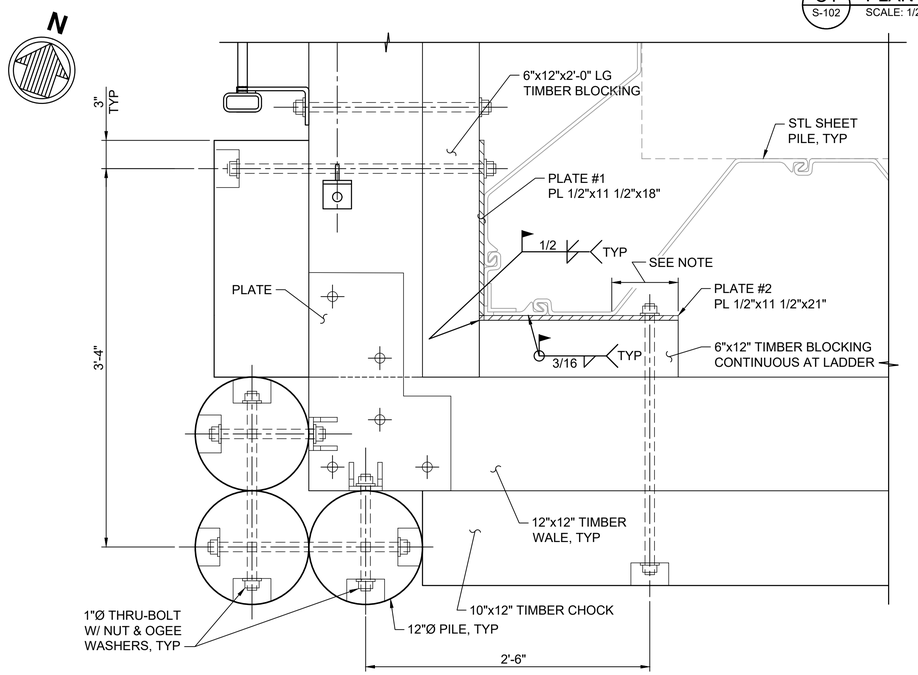
File: Q:\BR\210315\20 CADD_Active_construction set\210315015-503 - Plotted: 2/5/2025 11:06 p.m. by DOMINGUEZ, EDWIN - Saved: 11/24/2021 10:38 a.m. by GESPINO

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

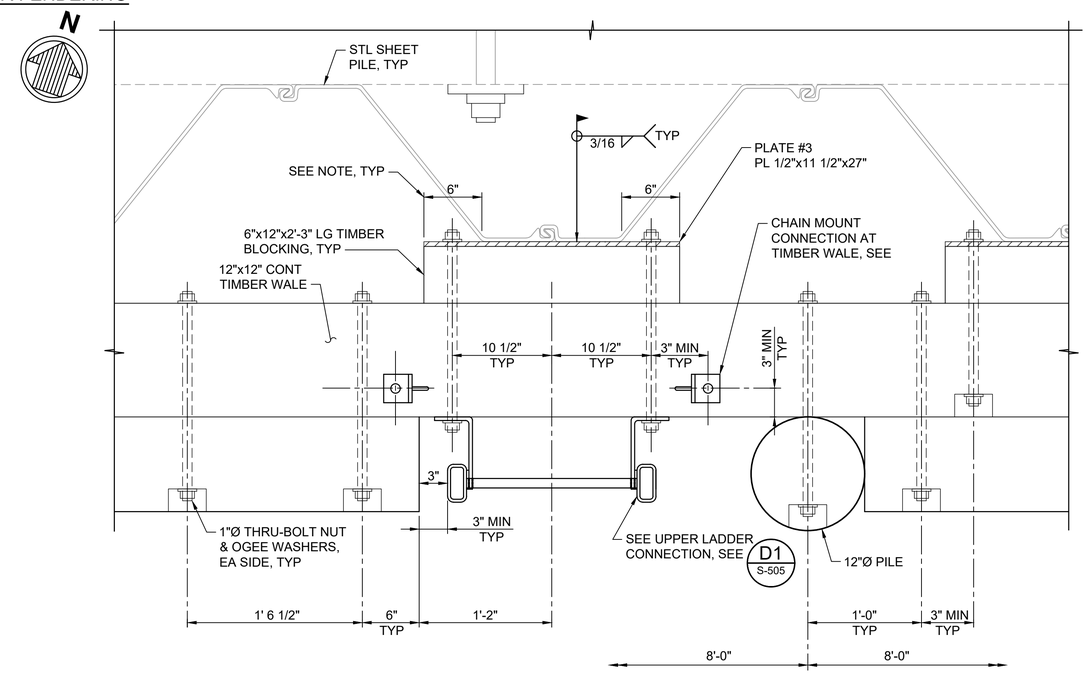


NOTE:
FIELD VERIFY FOR CLEARANCES PRIOR TO FABRICATION.

C1 S-102 PLAN - TIMBER FENDERING
SCALE: 1/2"=1'-0"



A1 S-504 PLAN - CORNER FENDERING
SCALE: 1 1/2"=1'-0



A4 S-504 PLAN - TYPCIAL FENDER CONNECTION
SCALE: 1 1/2"=1'-0"

2'-0" 0'-0" 2'-0" 4'-0"
SCALE: 1/2"=1'-0"

1'-0" 0'-0" 6" 1'-0"
SCALE: 1 1/2"=1'-0"

PERMIT DRAWINGS
ISSUED: 2021-10-29
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

TIMBER ACCESS
PLATFORM DETAILS

Designed by: DJJ
Dwn by: WBT
Cad by: DJJ
Reviewed by: MEW
Submitted by: MARY BETH SULLIVAN
Date:
Rev.
M&N Project No. 210315
Drawing code:
Drawing Scale:
Plot scale: 1:1 (D SHEET)

moffatt & nichol
11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000
250 N. WATER STREET MOBILE, AL 36602

SEAL

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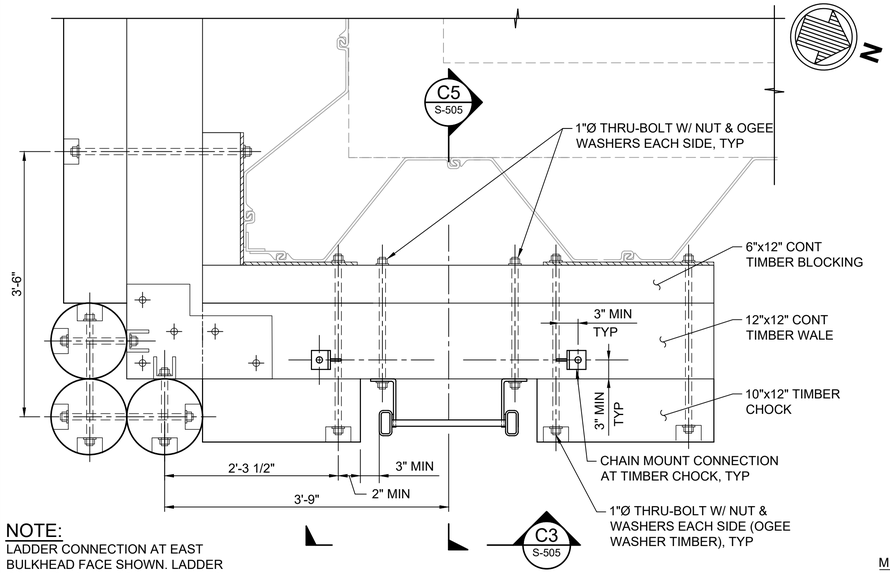
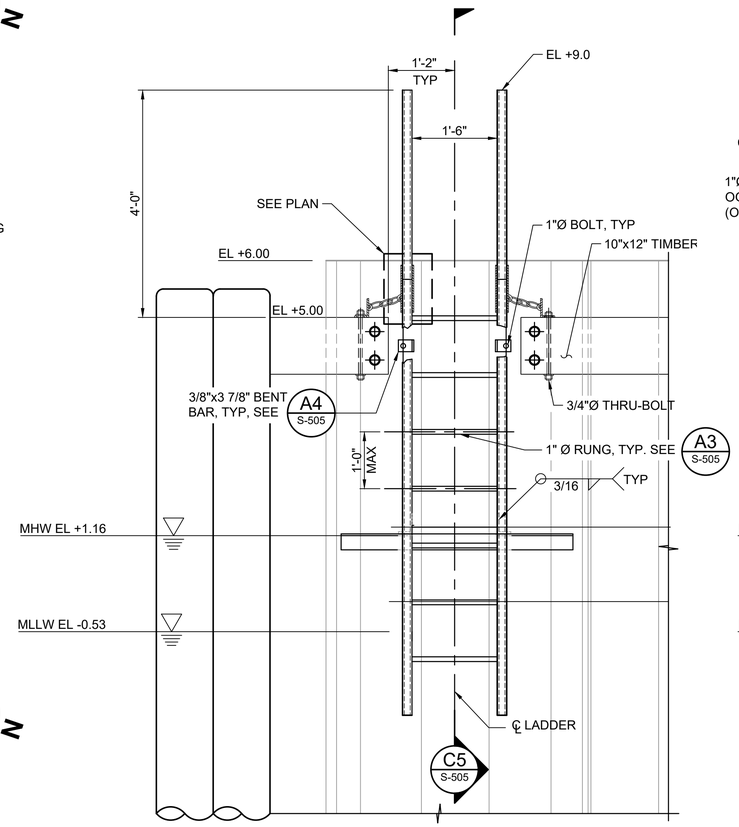
File: Q:\BR\210315\20 CADD_Active_construction set\210315015-504, Plotted: 2/5/2025 11:06 p.m. by: DOMINGUEZ, EDWIN ; Saved: 11/24/2021 10:39 a.m. by: GESPINO

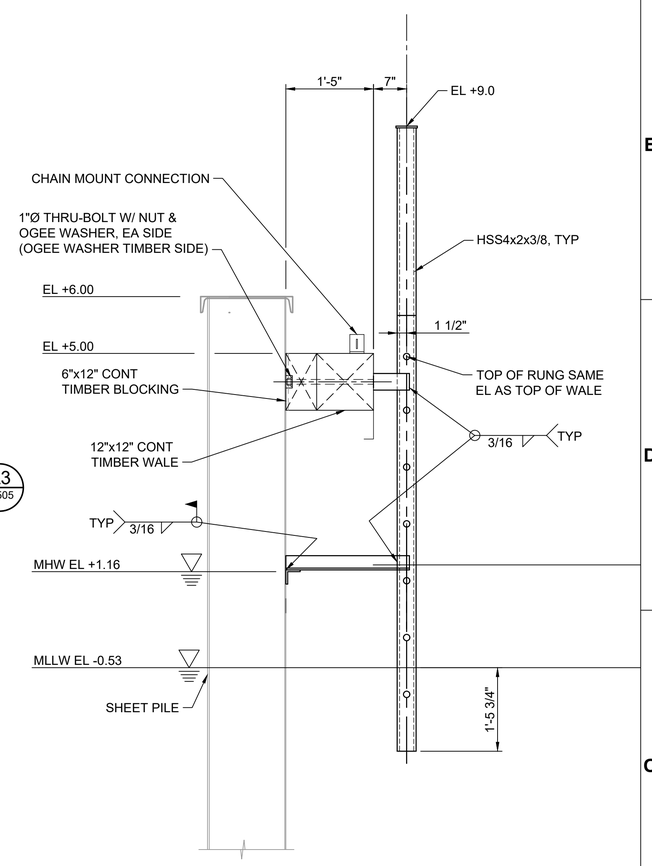


NOTE:
LADDER CONNECTION AT EAST BULKHEAD FACE SHOWN. LADDER CONNECTION AT SOUTH AND WEST BULKHEAD FACE SHALL BE SIMILAR, SEE PLAN C1 ON SHEET S-504.

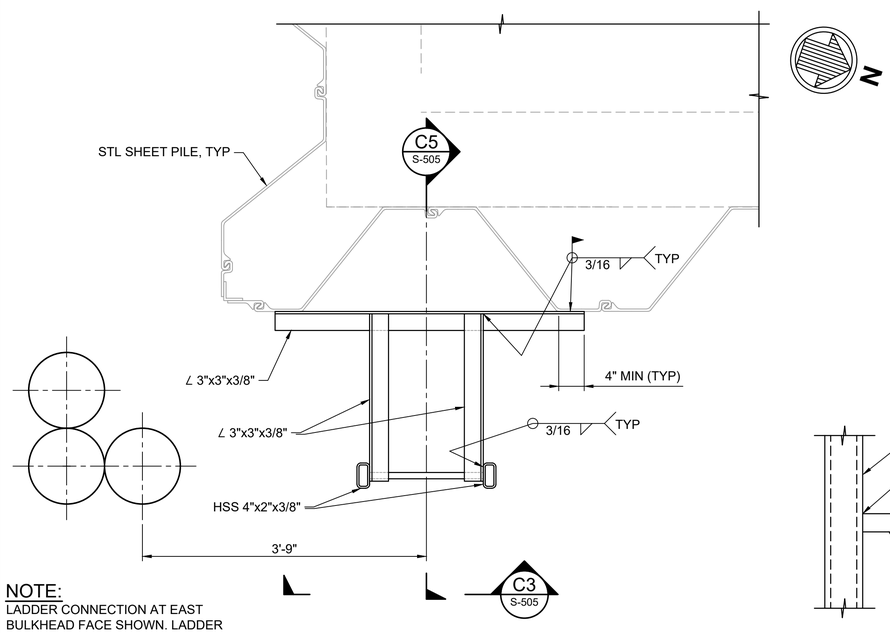
D1 S-504 PLAN - UPPER LADDER CONNECTION
SCALE: 1"=1'-0"



C3 S-505 ELEVATION - LADDER
SCALE: 3/4"=1'-0"

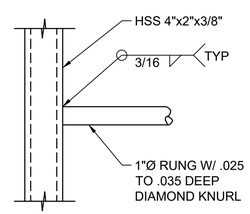


C5 S-505 SECTION - LADDER
SCALE: 3/4"=1'-0"

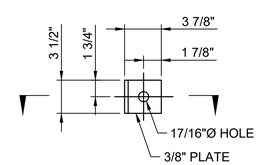


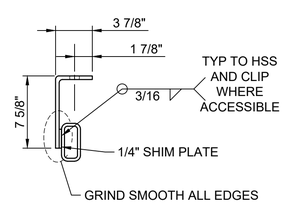
NOTE:
LADDER CONNECTION AT EAST BULKHEAD FACE SHOWN. LADDER CONNECTION AT SOUTH AND WEST BULKHEAD FACE SHALL BE SIMILAR, SEE PLAN C1 ON SHEET S-504.

A1 S-504 PLAN - LOWER LADDER CONNECTION
SCALE: 1"=1'-0"



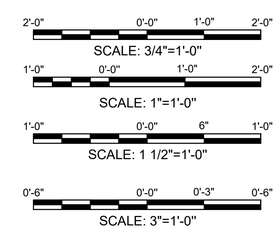
A3 S-505 LADDER RUNG
SCALE: 3"=1'-0"





A4 S-505 BENT CLIP
SCALE: 1 1/2"=1'-0"

NOTE:
ALL LADDER COMPONENTS SHALL BE STEEL AND SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.



PERMIT DRAWINGS
ISSUED: 2021-10-29
NOT TO BE USED FOR CONSTRUCTION

ALABAMA STATE PORT AUTHORITY

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

ACCESS LADDER DETAILS

Rev. | Date: | Designed by: DJJ | Dwn by: WBT | Ckd by: DJJ | Reviewed by: MEW | Submitted by: MARY BETH SULLIVAN | M&N Project No. 210315 | Drawing code: | Drawing Scale: | Plot scale: 1:1 (D SHEET)

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11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000

250 N. WATER STREET MOBILE, AL 36602

SEAL

Sheet Reference No.
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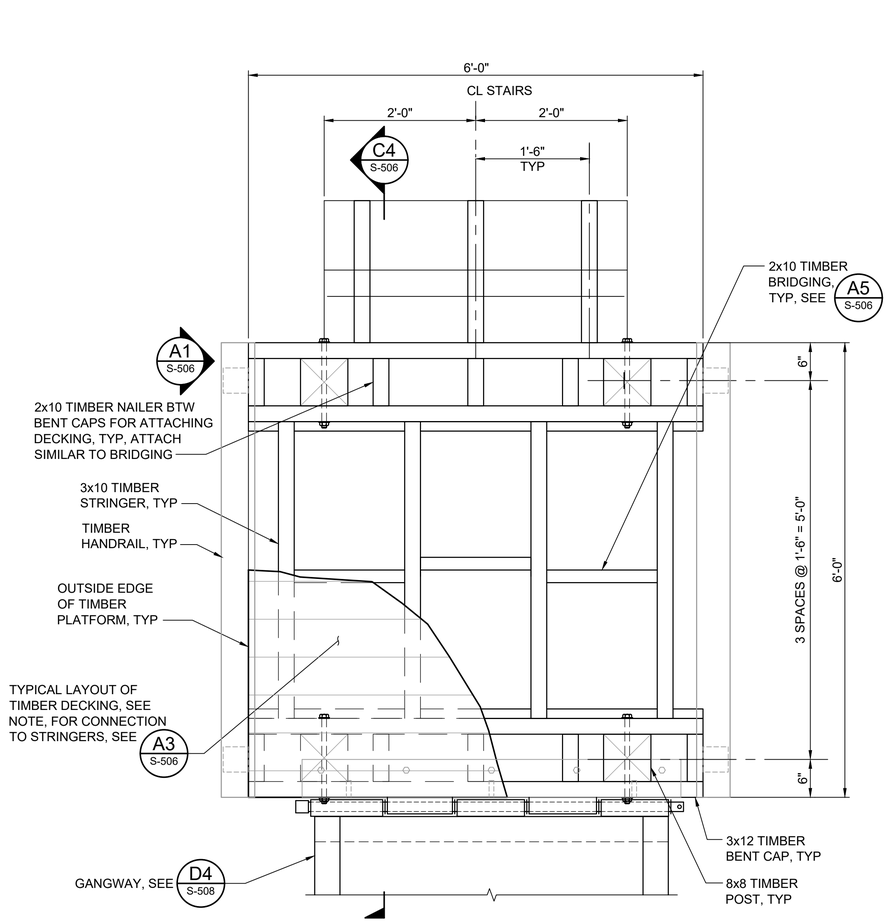
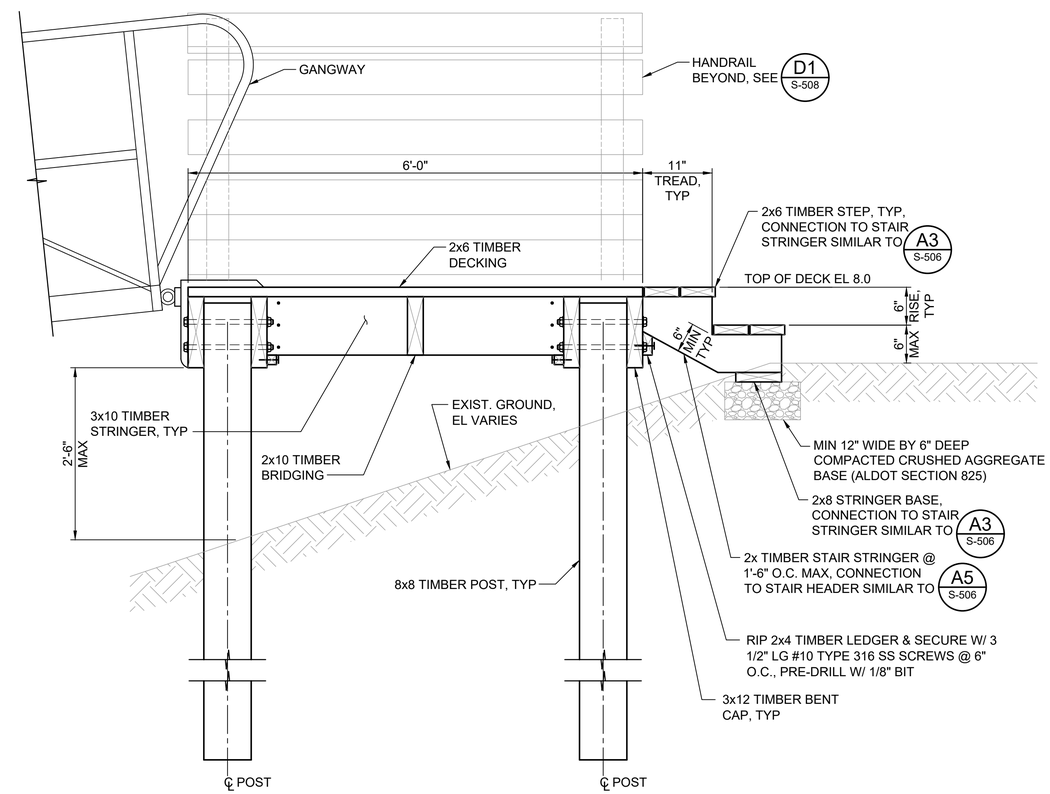
File: Q:\BR\210315\20 CADD_Active_construction set\210315015-505 - Plotted: 2/5/2025 11:06 p.m. by DOMINGUEZ, EDWIN - Saved: 11/24/2021 10:39 a.m. by GESPINO

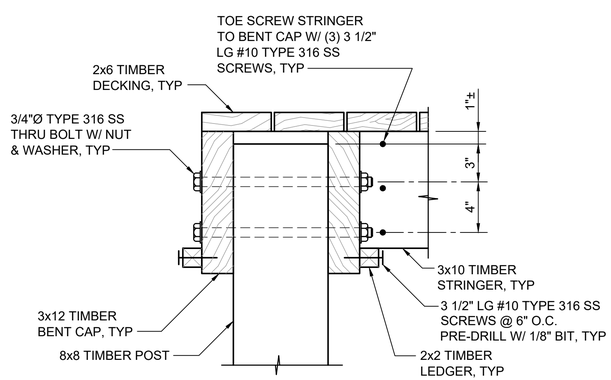


C1 S-103 TIMBER PLATFORM ENLARGEMENT PLAN
SCALE: 1"=1'-0"

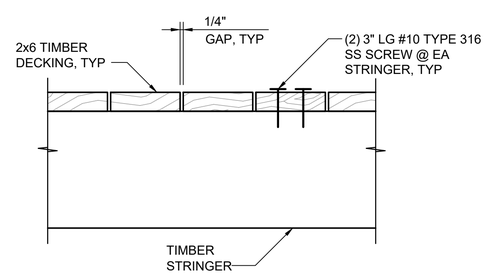


NOTE:
COMPACT FILL AROUND POST AFTER INSTALLATION.

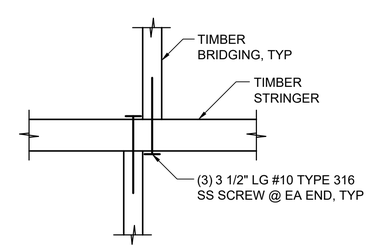
C4 S-506 SECTION
SCALE: 1"=1'-0"



A1 S-506 SECTION
SCALE: 2"=1'-0"



A3 S-506 DETAIL
SCALE: 2"=1'-0"



A5 S-506 DETAIL
SCALE: 2"=1'-0"

1'-0" 0'-0" 1'-0" 2'-0"
SCALE: 1"=1'-0"
0'-6" 0'-0" 0'-6" 1'-0"
SCALE: 2"=1'-0"

PERMIT DRAWINGS
ISSUED: 2021-10-29
NOT TO BE USED FOR CONSTRUCTION

ALABAMA STATE PORT AUTHORITY

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

TIMBER ACCESS PLATFORM

Designed by: DJJ
Dwn by: WBT
Cad by: DJJ
Reviewed by: MEW
Submitted by: MARY BETH SULLIVAN
M&N Project No. 210315
Drawing code:
Drawing Scale:
Plot scale: 1:1 (D SHEET)
Rev.
Date:

moffatt & nichol
11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000
250 N. WATER STREET MOBILE, AL 36602

SEAL

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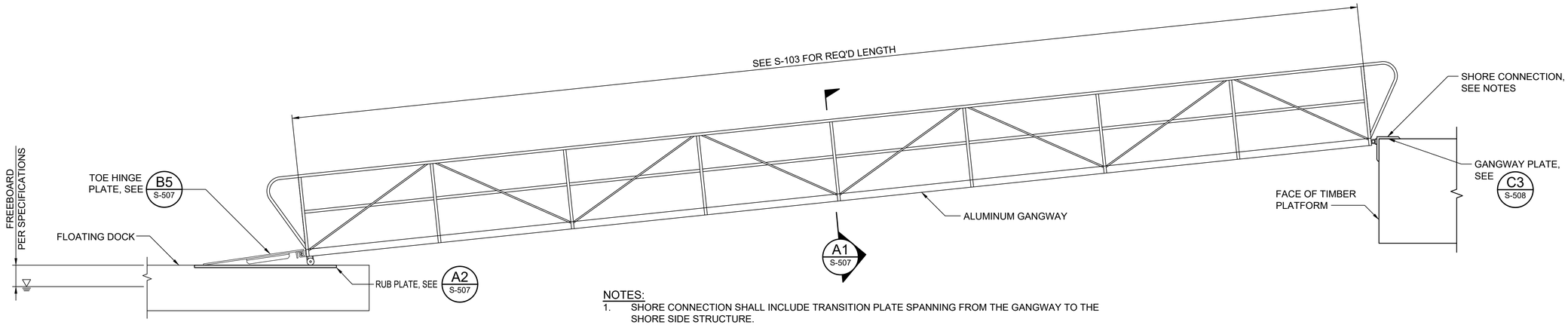
File: Q:\BR\210315\20 CADD_Active_construction set\210315\S-506 ; Plotted: 2/5/2025 11:06 p.m. by: DOMINGUEZ, EDWIN ; Saved: 11/24/2021 10:39 a.m. by: GESPINO

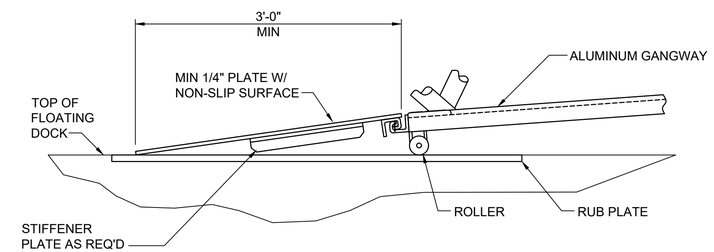
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



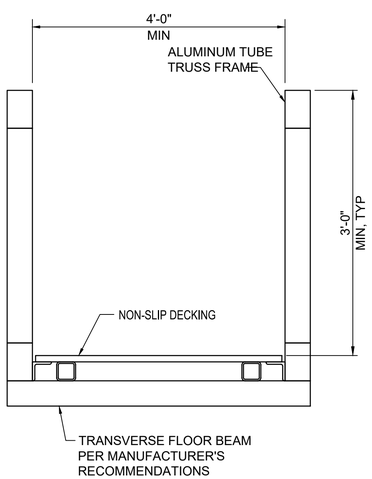
NOTES:

1. SHORE CONNECTION SHALL INCLUDE TRANSITION PLATE SPANNING FROM THE GANGWAY TO THE SHORE SIDE STRUCTURE.
2. SHORE CONNECTION SHALL BE INCLUDED WITH GANGWAY SUBMITTAL FOR APPROVAL.
3. SHORE CONNECTION SHALL BE DESIGNED TO MEET PERFORMANCE CRITERIA IN SPECIFICATION INCLUDING BUT NOT LIMITED TO CHANGES IN WATER LEVEL, LIVE LOAD, AND WEIGHT OF GANGWAY.

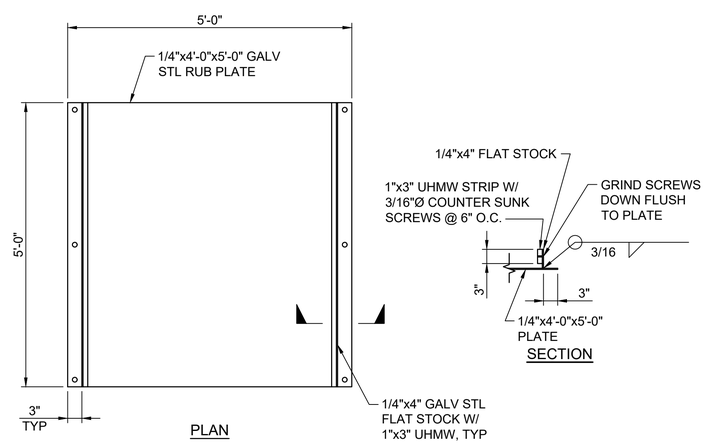
D1 S-102 TYPICAL GANGWAY ELEVATION
SCALE: NTS



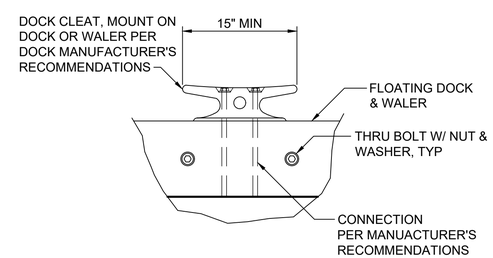
B5 S-507 TOE HINGE PLATE
SCALE: NTS



A1 S-507 SECTION
SCALE: NTS



A2 S-507 RUB PLATE
SCALE: NTS



A5 S-507 DOCK CLEAT
SCALE: NTS

PERMIT DRAWINGS
ISSUED: 2021-10-29
NOT TO BE USED FOR CONSTRUCTION

ALABAMA STATE PORT AUTHORITY

Mark	Description	Date	Appr.

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

GANGWAY DETAILS

Rev:
Date:
M&N Project No: 210315
Drawing code:
Drawing Scale:
Plot scale: 1:1 (0 SHEET)

Designed by: DJJ
Drawn by: WBT
Cad by: DJJ
Reviewed by: MEW
Submitted by: MARY BETH SULLIVAN

11 N. WATER STREET, SUITE 20220 MOBILE, AL 36602 251-378-9000
moffatt & nichol
250 N. WATER STREET MOBILE, AL 36602

SEAL

Sheet Reference No.
S-507
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File: Q:\BR\210315\20 CADD_Active_construction set\210315\S-507 ; Plotted: 2/5/2025 11:07 p.m. by: DOMINGUEZ, EDWIN ; Saved: 11/24/2021 10:39 a.m. by: GESPINO

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2400 ▪ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ▪ FAX (334) 271-7950

October 6, 2022

Bob Harris, P.E.
Alabama State Port Authority
Vice President, Technical Services
C/O
Mary Beth Sullivan
Moffatt & Nichol
11 N Water St
Suite 20220
Mobile, Alabama 36602

RE: State of Alabama Water Quality Certification (WQC) Pursuant to Clean Water Act (CWA) §401(a)
ASPA Upper Mobile Bay Beneficial Use Wetland Creation Site Project
South of U.S. Hwy 90/98 Causeway, Mobile/Baldwin Counties, Alabama
Latitude/Longitude Coordinates: 30.646906, -88.000935
U.S. Army Corps of Engineers (USACE) File No. SAM-2021-00246-DCH
Alabama Department of Environmental Management (ADEM) Tracking Code: ADEM-2021-292-WQC-COE-IP

Dear Mr. Harris:

On April 30, 2021 the Alabama Department of Environmental Management (ADEM), Alabama's 401 certifying authority, received the Alabama State Port Authority's (ASPA) pre-filing meeting request. The ADEM has completed its review of submitted materials related to ASPA's proposal to create a 1,200-acre beneficial use marsh in upper Mobile Bay as described in U.S. Army Corps of Engineers' December 2, 2021, Joint Public Notice SAM-2021-00246-DCH.

Action pertinent to WQC is required by CWA §401(a)(1), 33 U.S.C. §1251, et. seq. If conducted in accordance with the conditions prescribed herein, there is reasonable assurance that the discharge resulting from the proposed activities will not violate applicable water quality standards established under §303 of the CWA and §22-22-9(g), Code of Alabama (1975). By this letter all are hereby notified that CWA §401 WQC is granted. This WQC is limited to the approved activities described in the December 2, 2021, Joint Public Notice SAM-2021-00246-DCH and terminates concurrently with the expiration of the USACE permit to be issued.

Any significant deviation from the approved project design must not be implemented without prior written notice and approval from the ADEM. Upon such notice, the Director may require the submission of additional information and/or a new permit application, and additional fees may be required.

This certification does not authorize the filling any area of State waterbottoms containing submersed grassbeds - defined at ADEM Admin. Code r. 335-8-1-.02(iii).

In recognition that projects are site specific in nature and conditions can change during project implementation, the ADEM reserves the right to require the submission of additional information or require additional management measures to be implemented, as necessary on a case-by-case basis, in order to ensure the protection of water.

ADEM certifies that there are no applicable effluent limitations under §301 and §302 nor applicable standards under §306 and §307 of the CWA in regard to the activities specified. However, regulations promulgated by the

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (FAX)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 340-9333
(256) 340-9359 (FAX)

Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
(251) 304-1176
(251) 304-1189 (FAX)

EPA requiring discharge permits for storm water runoff (i.e. NPDES permits) from individual and commercial facilities may be applicable. This WQC does not address the requirements of those regulations.

In accepting this WQC from the State of Alabama, any duly authorized employee of the ADEM or its contractors, or Attorney General or District Attorney must be allowed to enter upon the premises on which this project is occurring for the purposes of ascertaining compliance with ADEM's Administrative Code.

Liability and responsibility for compliance with this concurrence are not delegable by contract or otherwise. Any agent, contractor, subcontractor, or other person employed to work on the project must understand the approved project design and associated activities. Any violations of the ADEM's Administrative Code may be considered violations of this WQC and may result in an enforcement action.

This WQC only addresses potential discharges to state waters resulting from approved activities and does not authorize any activity or result therefrom not specified herein, nor does this WQC convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to persons or property or invasion of other private rights, trespass, or any infringement of Federal, State, or local laws or regulations and in no way purports to vest in any person title to lands now owned by the State of Alabama nor shall it be construed as acquiescence by the State of Alabama of lands owned by the State that may be in anyone's possession. This WQC does not obviate the responsibility to acquire all other needed permits nor does this WQC, in any way, imply that the proposed activities comply with the requirements of any other jurisdictional entity nor does it imply that the project can or should be approved by any other jurisdictional entity.

This WQC is not transferable without prior written notice and approval of the ADEM.

Adherence to the following conditions is required in order to ensure protection of water quality.

1. Pursuant to the requirements of ADEM Admin. Code r. 335-6-10-.04(3), effective Best Management Practices (BMPs) must be implemented for prevention and control of nonpoint sources of pollutants, including sediment loss, originating on site during and after site development activities to prevent fill material from entering wetland areas and/or State waters in which disposal of fill has not been authorized by the ADEM. Effective erosion control measures, sediment control measures, and other site pollution management practices are required to be designed, implemented, and continually maintained consistent with the Alabama Handbook for Erosion Control, Sediment Control, and Stormwater Management on Construction Sites and Urban Areas. This condition is necessary to assure that any discharges resulting from land disturbance activities during project implementation will not result in excessive turbidity in the receiving water so as to cause the receiving water to fail to meet its water use criteria.

2. Pursuant to the requirements of ADEM Admin. Code r. 335-6-10-.06(a), appropriate BMPs to minimize turbidity impacts to the maximum extent practicable shall be implemented. This condition is necessary to assure that State waters will be free from substances attributable to sewage, industrial wastes or other wastes that could settle to form bottom deposits which are unsightly, putrescent or interfere directly or indirectly with any classified water use.

3. Pursuant to the requirements of ADEM Admin. Code r. 335-6-10-.09, turbidity generated during dredging activities must not cause substantial visible contrast nor result in an increase of more than fifty (50) Nephelometric turbidity units above background. This condition is necessary to assure that any discharges resulting from construction activities during project implementation will not result in excessive turbidity in the receiving water so as to cause the receiving water to fail to meet its water use criterion.

4. Pursuant to the requirements of ADEM Admin. Code r. 335-6-10-.09, turbidity generated during dredge material dewatering and/or placement activities must not cause substantial visible contrast nor result in an increase of more than fifty (50) Nephelometric turbidity units above background. This condition is

necessary to assure that any discharges resulting from construction activities during project implementation will not result in excessive turbidity in the receiving water so as to cause the receiving water to fail to meet its water use criterion.

5. Pursuant to the requirements of ADEM Admin. Code r. 335-6-12-.35(11), upon the loss or failure of any treatment facility, BMP, or other management control measure as identified by responsible on-site staff during day-to-day construction operations or as identified by ADEM technical staff during facility inspections, work/activity and all discharges shall, where necessary to maintain compliance with this WQC, be suspended, halted, reduced, or otherwise controlled until effective treatment is restored. This condition is necessary to assure that any discharges resulting from land disturbance activities during project implementation will not result in excessive turbidity in the receiving water so as to cause the receiving water to fail to meet its water use criterion.

6. Pursuant to the requirements of ADEM Admin. Code r. 335-8-2-.02(5), all materials used as fill shall be non-toxic, non-leaching, non-acid forming, and free of solid waste or other debris. This condition is necessary to assure that State waters will be free from substances which could cause a contravention of any water use criterion.

7. Upon reaching a 'no reason to believe' determination (Dredged Sediment Evaluation Protocol Framework, Moffatt & Nichol, 2022) based on analyses of samples collected from potential dredge areas, copies of all biological and chemical results utilized in making that determination should be provided to the Alabama Coastal Area Management Program prior to the discharge of dredged material into the beneficial use site. Those analyses may be submitted to: Coastal@adem.alabama.gov.

8. The Alabama Coastal Area Management Program should be notified at least 10 days prior to each event in which dredged material would be disposed in the beneficial use site. Notifications may be in the form of e-mails submitted to: Coastal@adem.alabama.gov.

And finally, upon receipt of the USACE permit, make careful note of the expiration date. Expired permits cannot simply be reactivated or extended. If the project will not be completed prior to the expiration of the permit, the USACE **and** the ADEM must be notified - preferably 60 days before the permit expiration date. If the permit expires before regulated activities authorized therein are completed, a new permit application will have to be submitted to the resource agencies for a full review which will include but not be limited to: public noticing, resolution of public comments, and remittance of new project review fees. In this circumstance, work may have to cease until a new permit has been issued.

Contact the Mobile-Coastal office anytime with questions. Always include the ADEM tracking code above when corresponding on this matter. Katie Smith is the Mobile-Coastal office contact for this project; she may be reached by phone at 251.304.1176 or by e-mail at katiem.smith@adem.alabama.gov.

Sincerely,

Anthony Scott Hughes, Chief
Field Operations Division

cc: ADCNR | (submerged.lands@dcnr.alabama.gov)
USACE | Jessica Comeaux (Jessica.C.Comeaux@usace.army.mil)

ASH/jsb/kms File:401WQ/683

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, MOBILE DISTRICT
P.O. BOX 2288
MOBILE, AL 36628-0001

CESAM-RD-A **December 2, 2021**
PUBLIC NOTICE NO. SAM-2021-00246-DCH

JOINT PUBLIC NOTICE
U.S. ARMY CORPS OF ENGINEERS AND
STATE OF ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

REQUEST TO DISCHARGE FILL MATERIAL IN MOBILE BAY TO CREATE 1,200 ACRES OF WETLAND HABITAT IN MOBILE, MOBILE COUNTY, ALABAMA

TO WHOM IT MAY CONCERN: This District has received an application for a Department of the Army (DA) permit pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403), and Section 404 of the Clean Water Act (33 U.S.C. 1344). Please communicate this information to interested parties.

APPLICANT: Alabama State Port Authority
Attention: Mr. Robert Harris
250 North Water Street Mobile,
Alabama 36602

AGENT: Moffatt & Nichol
Attention: Ms. Mary Beth Sullivan
11 North Water Street, Suite 20220
Mobile, Alabama 36606

LOCATION: The proposed project is located within Upper Mobile Bay; approximately 1.5 miles south of US Highway 90/98 causeway; at Latitude 30.646906°, Longitude -88.000935°; Mobile, Mobile County, Alabama.

PROJECT PURPOSE: The basic project purpose is to establish a large-scale, long-term beneficial use (BU) dredged-material placement area to create wetland habitat. The overall project purpose is to construct multiple individual Wetland Creation Cells (WCC), as needed, within three (3) phased Wetland Creation Areas (WCA) in order to use material dredged from the Upper Mobile Bay area to create up to 1,200 acres of intertidal wetland habitat in Upper Mobile Bay.

PROPOSED WORK: The applicant proposes the phased construction of a 1,200-acre beneficial used dredged-material placement (wetland creation) area in Upper Mobile Bay over a 20-year period, dependent on dredged material volumes and timing of maintenance dredging activities. The completed project would allow for the overall placement of up to 9.5 million cubic yards of material dredged from Upper Mobile Bay area within three (3) fully-enclosed WCA containment dikes protected by rock breakwaters or revetment at the south boundary of the project area progressing to the north boundary, as needed, into softer

containment structures. Three (3) types of shoreline protection and external containment structures are proposed, dependent on the controlling environmental conditions: Type I includes a rock breakwater with a maximum crest elevation of +4 feet NAVD88, a marsh buffer, and an internal earthen containment dike with a crest elevation of +6 feet NAVD88. Type II includes a sand containment dike protected by a rock revetment, with a crest elevation of +6 feet NAVD88. Type III includes a sand containment dike with a fortified core of constructed geotubes and a fronting beach, with a maximum crest elevation of +6 feet NAVD88. Project design elevations may be adjusted as the project is implemented, to account for sea level rise.

Individual WCC would be constructed within the larger WCAs to provide manageable-sized areas for material placement and targeted wetland habitat creation. Each cell is anticipated to be 40-80 acres in size. Construction of internal containment structures would proceed as existing WCC approach capacity to allow for continued dredge-material placement. Material obtained for construction of the internal containment dikes would be hydraulically or mechanically dredged within individual WCC or sourced from existing upland dredge placement areas for upper Mobile Harbor and transported by hopper barge to the WCA. If in-situ material is utilized, internal borrow areas would be filled over time and incorporated into habitat creation activities for each WCC.

Habitat creation would include the excavation of tidal creeks, tidal ponds, embayments, low- and high-marsh features, and scrub shrub mounds. Dredged material placed for marsh creation would be placed by hydraulic dredge lines. Dredged material construction fill elevation would not exceed +4 feet NAVD88 to accommodate settling to the wetland design target elevation of +1 feet NAVD88. Within the initial five years, approximately 100 acres of wetlands would be created through the placement of dredged material. Approximately 40-80 acres of wetlands would be created each following year, dependent on the volumes of material dredged by the Alabama State Port Authority, the U.S. Army Corps of Engineers, or other entities. Fill impacts for each area of the overall project are described in Table 1 below.

A corridor for vessels and equipment would be established to access the project site. The corridor would use areas where the minimal water depth is met for vessel access. Impacts to the water bottom are not anticipated for the project corridor. A Project Access Facility at the project site for equipment and personnel access and material offloading for use over the lifespan of the project would be constructed. This activity would require installation of steel sheet piles for construction of a bulkhead, and timber piles for mooring and berthing activities. The Project Access Facility would be constructed to a maximum elevation of +6 feet NAVD88 and be approximately 30 feet wide and 100 feet long. The Project Access Facility would intersect the external containment dike system to provide access throughout the project site.

Corridors for dredge pipelines would be established between the federal navigation channel and the project site. The corridor would include crossing(s) for the Mobile Ship Channel and would be routed through open water along a route that minimizes navigation impacts and impacts to benthic habitat, and avoids cultural resource and submerged aquatic vegetation (SAV) areas. During each dredge cycle, the dredge pipeline would be temporarily placed within the pipeline corridor. All dredged materials used for the project would be determined suitable for open-water disposal in accordance with the Southeast Regional Implementation

Manual (SERIM) Requirements and Procedures for the Evaluation of Ocean Disposal of Dredged Material in the Southeastern U.S. Atlantic and Gulf Coast Waters.

Table 1: Proposed Project Impacts

EXCAVATION AND FILL SUMMARY		
EXCAVATIONS - EXTERNAL CONTAINMENT	**VOLUME (cubic yards)**	**AREA (square feet)**
SOUTH WCA	974,156	2,630,221
MIDDLE WCA	659,716	1,781,234
NORTH WCA	606,240	1,636,849
EXCAVATIONS - INTERNAL CONTAINMENT	**VOLUME (cubic yards)**	**AREA (square feet)**
SOUTH WCA	349,744	944,309
MIDDLE WCA	293,829	793,339
NORTH WCA	214,799	579,958
FILL - DREDGE FILL FOR EXTERNAL CONTAINMENT	**VOLUME (cubic yards)**	**AREA (square feet)**
SOUTH WCA	487,078	1,262,836
MIDDLE WCA	329,858	1,027,635
NORTH WCA	303,120	818,425
FILL - DREDGE FILL FOR INTERNAL CONTAINMENT	**VOLUME (cubic yards)**	**AREA (square feet)**
SOUTH WCA	174,872	770,232
MIDDLE WCA	146,915	762,368
NORTH WCA	107,400	618,338
FILL - RIP RAP FOR EXTERNAL CONTAINMENT	**VOLUME (cubic yards)**	**AREA (square feet)**
SOUTH WCA	493,154	2,020,538
MIDDLE WCA	296,806	1,644,216
NORTH WCA	272,748	1,309,479
FILL - DREDGE FILL FOR WETLAND CREATION	**VOLUME (cubic yards)**	**AREA (square feet)**
SOUTH WCA	3,772,883	16,411,955
MIDDLE WCA	3,281,707	14,992,569
NORTH WCA	2,410,898	13,071,136

AVOIDANCE & MINIMIZATION: The applicant has indicated that avoidance measures such as the implementation of an exclusion zone and a soft start procedure (ramping up) in order to alert nearby sensitive species and allow them to move out of the area prior to construction activities could be used to minimize potential noise impacts to marine mammals. Additionally, the applicant has indicated that potential cultural resources have been identified and will be avoided prior to and during construction. The applicant has surveyed and avoided areas containing SAV and/or seagrass. The U.S. Army Corps of Engineers (USACE) has not

determined the adequacy of the applicant's avoidance and minimization efforts for the proposed activity.

MITIGATION: The provision of compensatory mitigation has not been proposed. The applicant has stated that while the project would result in the loss of 1,200 acres of estuarine water column and water bottoms, the ecological benefits of creating 1,200 acres of tidal marsh would offset the loss of functions and services provided by this resource.

WATER QUALITY / COASTAL ZONE MANAGEMENT: The applicant will apply for certification from the State of Alabama in accordance with Section 401(a)(1) of the Clean Water Act, as well as Coastal Zone Management (CZM) consistency certification in accordance with the Alabama Coastal Zone Management Program. Upon completion of the required advertising and public comment review, a determination relative to water quality certification and CZM consistency will be made by the Alabama Department of Environmental Management (ADEM) within an established reasonable period of time.

HISTORIC PROPERTIES: In accordance with Section 106 of the National Historic Preservation Act and Appendix C of 33 CFR Part 325, the undertaking defined in this notice is being considered for the potential to affect cultural and historic properties within the permit area. In accordance with Appendix C of 33 CFR Part 325, the Mobile District has determined the permit area consists of the entire undertaking in waters of the United States, which includes the footprint of the proposed dredge and fill areas that would be disturbed by construction of the project. The National Register of Historic Places will be consulted for properties listed, or eligible for listing, in the National Register, which are known to exist and would be affected by the proposed work. The Mobile District is seeking comments regarding the existence, or the potential for existence, of significant cultural and historic properties within the permit area. The applicant has provided a Phase I Cultural Resources Assessment of the project site. At this time, the USACE, Mobile District has made no determination regarding potential effects of the project on cultural/historic resources. Further coordination with the State Historic Preservation Officer and/or federally-recognized American Indian tribes will be performed as determined to be appropriate.

In addition, we are seeking comments from local historical societies, museums, universities, the U.S. Department of the Interior, National Park Service, Division of Archeological Services and concerned citizens regarding the existence or the potential for existence of significant cultural and historic properties within the permit area.

ESSENTIAL FISH HABITAT: This notice initiates the Essential Fish Habitat (EFH) consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. The proposed project would permanently impact 1,200 acres of estuarine water column and water bottoms. The applicant has provided an EFH Assessment and Marsh Planting and Monitoring Plan to the USACE, Mobile District which will be coordinated with the National Marine Fisheries Service (NMFS) as part of this consultation. Our initial determination is that the proposed action may adversely affect EFH or federally managed fisheries. However, such effects are mitigated through the avoidance of SAV/seagrass and the overall ecological benefits to creation of 1,200 acres of tidal marsh within Upper Mobile Bay. Our final

determination relative to project impacts and the need for mitigative measures is subject to review by and coordination with the National Marine Fisheries Service (NMFS).

ENDANGERED SPECIES: Preliminary review of this application and the U.S. Department of the Interior's List of Endangered and Threatened Wildlife and Plants indicate the following federally-listed species are known or expected to occur within the project area: Alabama red-bellied turtle (E), West Indian manatee (T), wood stork (T), green sea turtle (T), Kemp's Ridley sea turtle (E), Loggerhead sea turtle (T), and Gulf sturgeon (T). There is no designated critical habitat within the project action area. At this time, the USACE, Mobile District has made no determination with regard to potential effects of the project on the above-listed species. Further coordination with the U.S. Fish and Wildlife Service (USFWS) and NMFS will be performed as determined to be appropriate.

COMMENTS: This public notice is being distributed to all known interested persons in order to assist in developing facts on which a decision by the USACE can be based.
The Mobile District is soliciting comments from the public, federal, state and local agencies and officials, Indian tribes, and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the USACE to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed below. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity. Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state with particularity, the reasons for holding a public hearing. For accuracy and completeness of the record, all data in support of or in opposition to the proposed work should be submitted in writing, setting forth sufficient detail to furnish a clear understanding of the reasons for support or opposition.

The decision whether to issue a permit will be based on an evaluation of the probable impact, including cumulative impacts, of the proposed activity on the public interest.
That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, and in general, the needs and welfare of the people. Evaluation of the probable impacts involving deposits of dredged or fill material into waters of the United States will also include the application of guidelines established by the Administrator of the U.S. Environmental Protection Agency.

Correspondence concerning this notice should refer to Public Notice Number **SAM- 2021-00246-DCH,** and should be directed to the District Engineer, Mobile District, Regulatory

Division, Attention: **Mr. Dylan C. Hendrix,** Post Office Box 2288, Mobile, Alabama 36628-0001, or by e-mail at dylan.c.hendrix@usace.army.mil, or (251) 694-3772. Copies of all comments should be furnished to the ADEM at coastal@adem.alabama.gov, or sent to: Alabama Department of Environmental Management, Mobile Branch, Coastal Section, 3664 Dauphin Street, Suite B, Mobile, Alabama 36608.

All comments should be received no later than 30 days from the date of this Public Notice.

For additional information about our Regulatory Program, please visit our web site at www.sam.usace.army.mil/Missions/Regulatory.aspx.

MOBILE DISTRICT
U.S. Army Corps of Engineers

Attachments

UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT

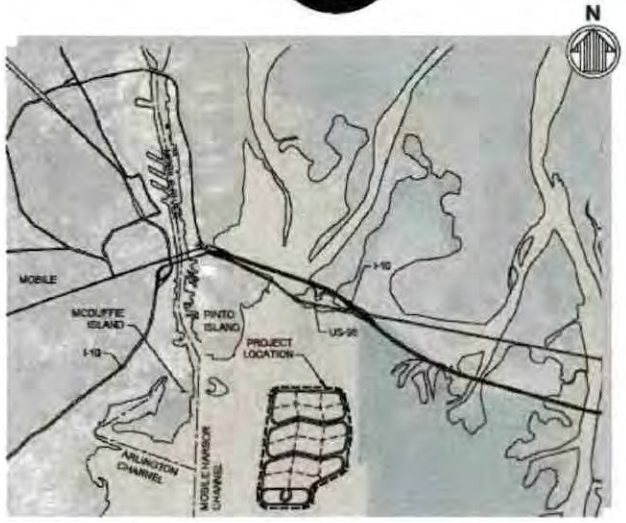
ALABAMA STATE PORT AUTHORITY

PERMIT DRAWINGS - NOT FOR CONSTRUCTION

VICINITY MAP
SCALE: NTS

INDEX OF DRAWINGS

SHEET INDEX	SHEET	DRAWING TITLE
1	G-001	TITLE SHEET
2	G-002	GENERAL NOTES
3	V-101	GENERAL CONDITIONS
4	V-102	ENV RONMENTAL AVOIDANCE PLAN
5	B-101	GENERAL SOIL BORING LOGS PLAN
6	C-101	WETLAND CREATION SITE LAYOUT
7	C-102	CONCEPTUAL WETLAND CREATION CELL DETA L
8	C-301	WETLAND CREATION AREA TYPICAL SECTION
9	C-320	CONTAINMENT D KE TYPICAL SECTIONS (1 OF 2)
10	C-321	CONTAINMENT D KE TYPICAL SECTIONS (2 OF 2)
11	C-501	TEMPORARY WARN NG SIGN DETAIL
12	C-502	TURBIDITY CURTA N DETAIL
13	C-503	BOX WEIR DETAIL
14	C-601	COORD NATE TABLES



LOCATION PLAN
SCALE: NTS

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

TITLE SHEET

Sheet Reference No.
G-001
INDEX: 1 OF 1

DRAWING SCALES SHOWN BASED ON 22 x 3 DRAWING

GENERAL NOTES

1. THIS DRAWING SET IS FOR PERMITTING PURPOSES ONLY AND IS NOT TO BE USED FOR CONSTRUCTION.
2. BACKGROUND AERIAL IMAGERY COURTESY OF MICROSOFT BING, 2021.
3. ALL HORIZONTAL COORDINATES ARE NAD 83 (2011), ALABAMA STATE PLANE, WEST ZONE, U.S. SURVEY FEET.
4. ALL ELEVATIONS REFERENCE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), U.S. SURVEY FEET (UNLESS OTHERWISE NOTED).
5. NO CONSTRUCTION EQUIPMENT OR ACTIVITIES MAY OPERATE, TRANSIT, STAGE OR STORE WITHIN THE AVOIDANCE AREAS AS SHOWN ON SHEET V-102.
6. ESTIMATED RANGE OF FULLY LOADED DRAFTS FOR VESSELS TO BE USED FOR CONSTRUCTION.
   a. 800 HP TUGS ..... 5-8 FT
   b. 2,000 HP TUGS ..... 10-14 FT
   c. WORK BOATS, TENDERS ..... 6-8 FT
   d. CREW BOATS ..... 2-4 FT
   e. WORK BARGES, FUEL BARGES ..... 4-6 FT
   f. 18" HYDRAULIC DREDGE ..... 6 FT
7. TURBIDITY CURTAINS SHALL BE INSTALLED BY CONTRACTOR AS NECESSARY TO PREVENT TURBIDITY IN EXCESS OF ADEM WATER QUALITY REQUIREMENTS.
8. CONTRACTOR SHALL PERFORM A PRE-CONSTRUCTION MAGNETOMETER SURVEY OF ANY DREDGING/EXCAVATION AREA.
9. WARNING SIGNS AND LIGHTS SHALL BE INSTALLED AS NECESSARY PER UNITED STATES COAST GUARD REQUIREMENTS, INCLUDING NECESSARY TEMPORARY LIGHTS AND SIGNAGE DURING CONSTRUCTION, AND PERMANENT LIGHTS AND SIGNAGE.
10. WHERE REFERENCED, DESIGN ELEVATIONS REFER TO LONG-TERM, POST-SETTLEMENT ELEVATIONS.
11. PROJECT ACCESS FACILITY TO BE CONSTRUCTED ALONG EASTERN REACH OF 100-ACRE WETLAND CREATION SITE FOR OFFLOADING OF MATERIALS, EQUIPMENT, AND PERSONNEL. THIS FACILITY SHALL BE APPROXIMATELY 30' BY 60', WITH ELEVATION NOT TO EXCEED +6.0' NAVD 88. STRUCTURE TO CONSIST OF A STEEL SHEETPILE BULKHEAD WITH EARTHEN AND GRAVEL BACKFILL, TIMBER FENDERING AND TIMBER PILE CLUSTERS TO BE INSTALLED FOR MOORING/BERTHING.

WETLAND CREATION SITE NOTES:

1. THESE PERMIT DRAWINGS SHOW THE 1,200-ACRE CONCEPTUAL WETLAND CREATION SITE LAYOUT FOR REFERENCE. EXACT WETLAND CREATION SITE TO BE DELINEATED DURING DETAILED DESIGN. CHANGES MAY BE NECESSARY BASED ON PENDING GEOTECHNICAL INVESTIGATIONS, WAVE OR HYDRODYNAMIC MODELING, OR OTHER DESIGN CONSIDERATIONS.
2. REQUESTING PERMIT FOR A 1,200-ACRE WETLAND CREATION SITE. THE WETLAND CREATION SITE IS TO CONSIST OF INDIVIDUAL WETLAND CREATION AREAS TO BE SEPARATED BY TIDAL CHANNELS. EACH WETLAND CREATION AREA WILL BE SEPARATED INTO APPROXIMATELY 40-ACRE WETLAND CREATION CELLS.
3. TIDAL CHANNELS SHALL BE SIZED TO PROVIDE HYDROLOGIC CONNECTION BETWEEN WETLANDS CELLS AND MOBILE BAY
4. INITIAL CONSTRUCTION SHALL CONSIST OF EXTERNAL CONTAINMENT FOR AN APPROXIMATELY 100-ACRE SITE WITHIN THE SOUTHERN WETLAND CREATION AREA AS SHOWN ON SHEET C-101, TWO 50-ACRE WETLAND CREATION CELLS WITHIN THIS AREA SHALL BE CONSTRUCTED.
5. THE REMAINING PORTION OF THE SOUTHERN WETLAND CREATION AREA, AS WELL AS THE MIDDLE WETLAND CREATION AREA AND NORTHERN WETLAND CREATION AREA SHALL BE CONSTRUCTED IN PHASES AS NECESSARY.
6. WETLAND CREATION SITE SHALL NOT EXCEED 1,200-ACRES.
7. WETLAND CREATION SITE SHALL NOT FILL WITHIN ENVIRONMENTALLY SENSITIVE AREAS INCLUDING EXISTING SUBAQUATIC VEGETATION (SAV) BEDS OR EXISTING WETLANDS.

DREDGING NOTES:

1. ANCHOR BUOYS, AND DREDGE PIPELINE (FLOATING OR SUBMERGED) WITHIN THE DREDGE PIPELINE CORRIDOR, THE ACCESS CORRIDOR, OR OTHER PUBLIC NAVIGABLE WATERWAYS SHALL BE MARKED IN ACCORDANCE WITH THE U.S. COAST GUARD REGULATIONS INCLUDING REQUIRED FLASHING LIGHTS, WARNING SIGNS AND MARKERS.
2. THE CONTRACTOR MAY DREDGE WITHIN THE BORROW AREAS TO THE ELEVATIONS INDICATED IN THESE DRAWINGS.
3. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT A COMMUNICATION PLAN TO THE OWNER AND THE USACE OPERATIONS DIVISION, WHICH PRECISELY DELINEATES THE DREDGE LOCATION, ATTENDANT PLANT, ANCHOR BUOYS, AND FLOATING OR SUBMERGED PIPELINE PURSUANT TO THE PROJECT SPECIFICATIONS.
4. HYDRAULIC AND/OR MECHANICAL DREDGING AND PLACEMENT IS PROPOSED FOR CONTAINMENT DIKE CONSTRUCTION. MATERIAL TO BE PLACED ALONG CENTERLINE OF CONTAINMENT DIKES AND/OR STOCKPILED THEN TRANSPORTED AND REWORKED TO CONSTRUCT CONTAINMENT DIKES WITH LAND-BASED EQUIPMENT.
5. TURBIDITY CURTAINS SHALL BE UTILIZED BY THE CONTRACTOR AS NECESSARY TO COMPLY WITH ADEM WATER QUALITY REQUIREMENTS. TRAINING/GUIDE DIKES MAY BE UTILIZED BY THE CONTRACTOR AHEAD OF THE DREDGE PIPELINE AS THE MATERIAL IS PLACED ALONG THE CONTAINMENT DIKE CENTERLINES IN ORDER TO MINIMIZE THE LOSSES AND SPREAD OF DREDGED MATERIAL.

CONTAINMENT DIKE NOTES:

1. CONTAINMENT DIKES TO CONSIST OF EITHER TYPE I, TYPE II, OR TYPE III CONTAINMENT AS SHOWN ON SHEETS C-320 AND C-321. EXACT CONTAINMENT STRUCTURES, INCLUDING HORIZONTAL AND VERTICAL DIMENSIONS FOR EACH REACH OF CONTAINMENT ARE TO BE DETERMINED DURING DETAILED ENGINEERING AND DESIGN BASED ON WAVE LOADING.
2. CONTAINMENT DIKE DESIGN ELEVATIONS SHALL NOT EXCEED +6.0 FEET NAVD 88.
3. UNLESS OTHERWISE INDICATED, PROJECT FEATURE INFLECTION POINT (PFIP) COORDINATES REFER TO THE CENTERLINE OF THE ROCK RIPRAP BREAKWATER.

PROPOSED DREDGE PIPELINE CORRIDOR NOTES:

1. TO FACILITATE TRANSPORT OF DREDGED MATERIAL FROM ASPA TERMINALS INCLUDING MCDUFFIE COAL TERMINAL, APM CONTAINER TERMINAL, AND PINTO ISLAND TERMINAL, 2-100' WIDE DREDGE PIPELINE CORRIDORS ARE PROPOSED AS SHOWN ON SHEET C-101.
2. THE DREDGE PIPELINE SHALL BE SUBMERGED AND PLACED ON THE WATER BOTTOMS, FLOATING DREDGE PIPELINE SHALL ONLY BE USED AS NECESSARY.
3. THE PROPOSED DREDGE PIPELINE CORRIDORS SHALL CROSS THE MOBILE HARBOR CHANNEL AT THE PFIPS SHOWN ON SHEET C-101. CHANNEL CROSSING SHALL BE COMPLETED FOLLOWING USACE CHANNEL CROSSING REGULATIONS IN ACCORDANCE WITH EM 385-1-1.

ABBREVIATIONS

AC	ACRES
APPROX	APPROXIMATE
BL	BASELINE
BM	BENCH MARK
BOT	BOTTOM
CL	CENTERLINE
CY	CUBIC YARD
DIA	DIAMETER
ELEV	ELEVATION
EXG	EXAGGERATION
EXIST	EXISTING
FT	FOOT or FEET
IN	INCH
ID	IDENTIFICATION
LB	POUND
MAX	MAXIMUM
MB	BORING LOG ID
MHW	MEAN HIGH WATER
MIN	MINIMUM
MLW	MEAN LOW WATER
MSL	MEAN SEA LEVEL
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
NAD 83	NORTH AMERICAN DATUM OF 1983
OZ	OUNCE
PFIP	PROJECT FEATURE INFLECTION POINT
TYP	TYPICAL
WCA	WETLAND CREATION AREA
WP	WORKING POINT

TIDAL DATUM INFORMATION:

WATER LEVELS (FEET)	
MHHW	+1.16'
MHW	+1.09'
MTL	+0.32'
NAVD 88 (DATUM)	+0.0'
MLW	-0.44'
MLLW	-0.53'

EXCAVATION AND FILL SUMMARY				
EXCAVATIONS - EXTERNAL CONTAINMENT	VOLUME		AREA	
SOUTH WCA	974,156	CY	2,630,221	SF
MIDDLE WCA	659,716	CY	1,781,234	SF
NORTH WCA	606,240	CY	1,636,849	SF
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MIDDLE WCA	146,915	CY	762,368	SF
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NORTH WCA	272,748	CY	1,309,479	SF
FILL - DREDGE FILL FOR WETLAND CREATION	VOLUME		AREA	
SOUTH WCA	3,772,883	CY	16,411,955	SF
MIDDLE WCA	3,281,707	CY	14,992,569	SF
NORTH WCA	2,410,898	CY	13,071,136	SF

1. INTERNAL IN-SITU BORROW AREA EXCAVATION VOLUME IS THE CUT VOLUME NECESSARY TO CONSTRUCT EXTERNAL AND INTERNAL CONTAINMENT DIKES, FOR THE NORTH, SOUTH, AND MIDDLE WCA, INCLUDING THE 100-ACRE SITE.
2. FILL VOLUME IS TO THE LONG-TERM DESIGN ELEVATION OF +1.0' NAVD 88.

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

UPPER MOBILE BAY
BENEFIC AL USE WETLAND CREATION S TE PROJECT

GENERAL NOTES

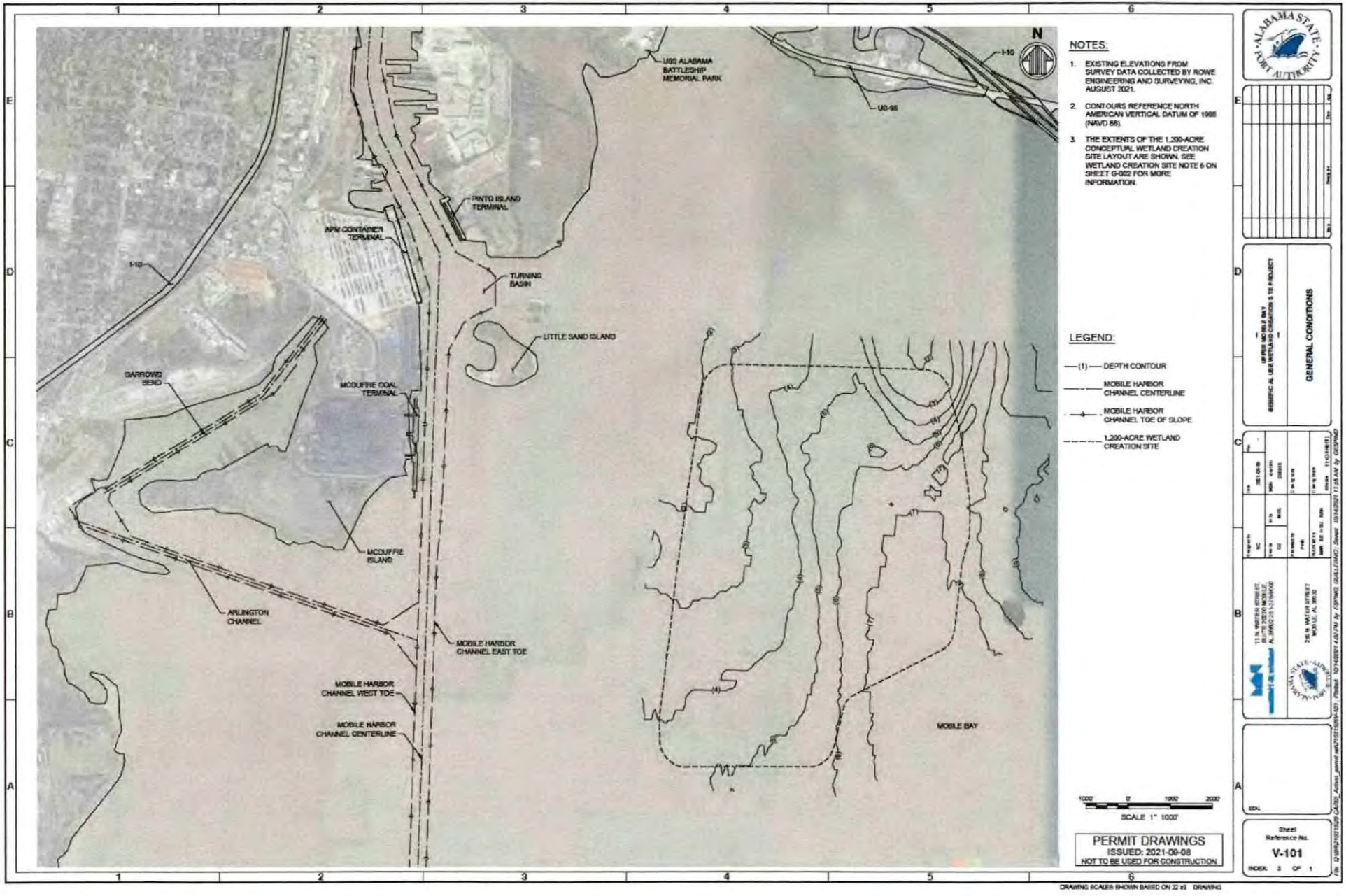
mofatt & nichol
11 N. WATER STREET
SUITE 10230 MOBILE
AL 36602 251-690-2900

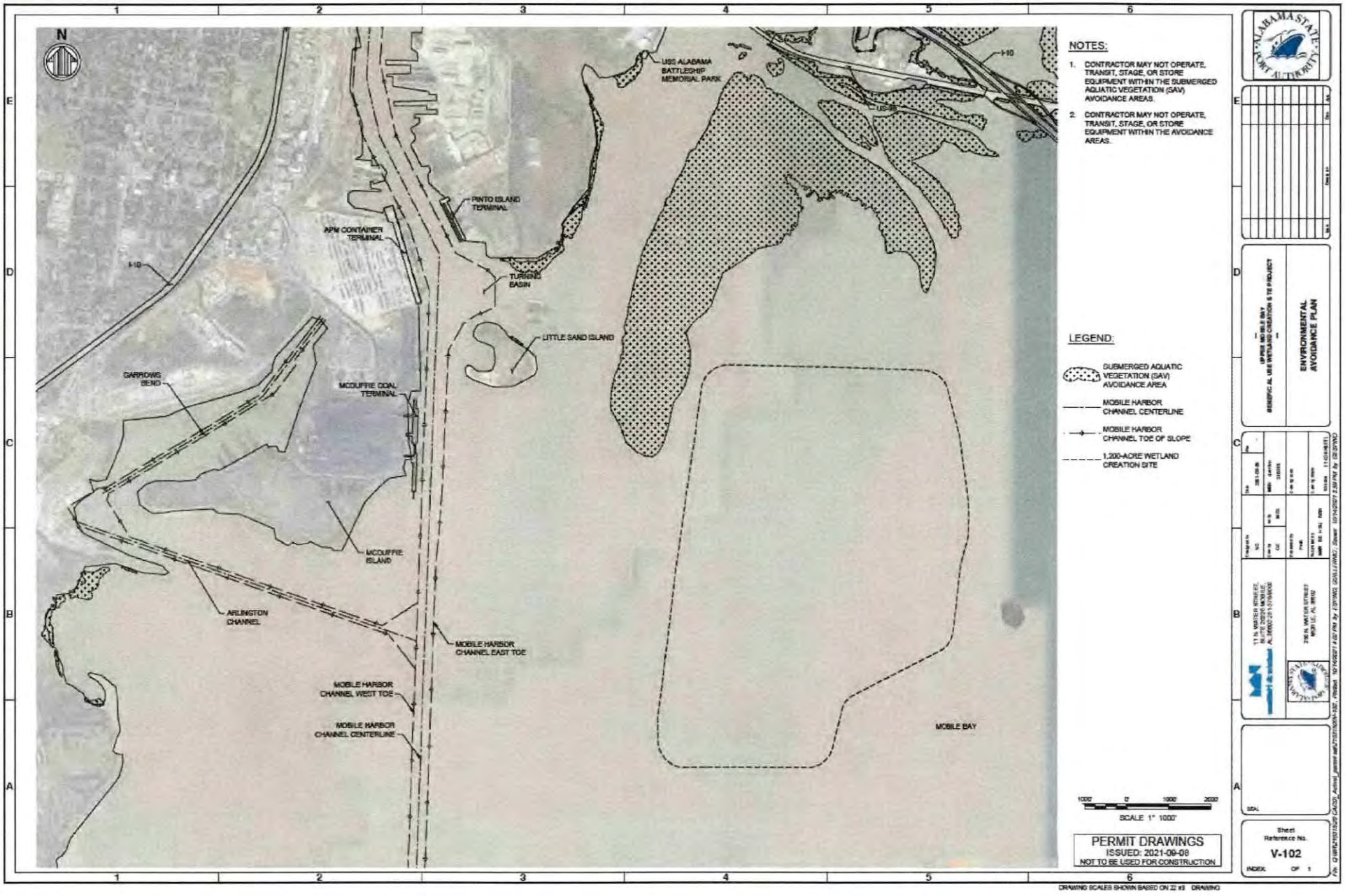
250 N. WATER STREET
MOBILE, AL 36602

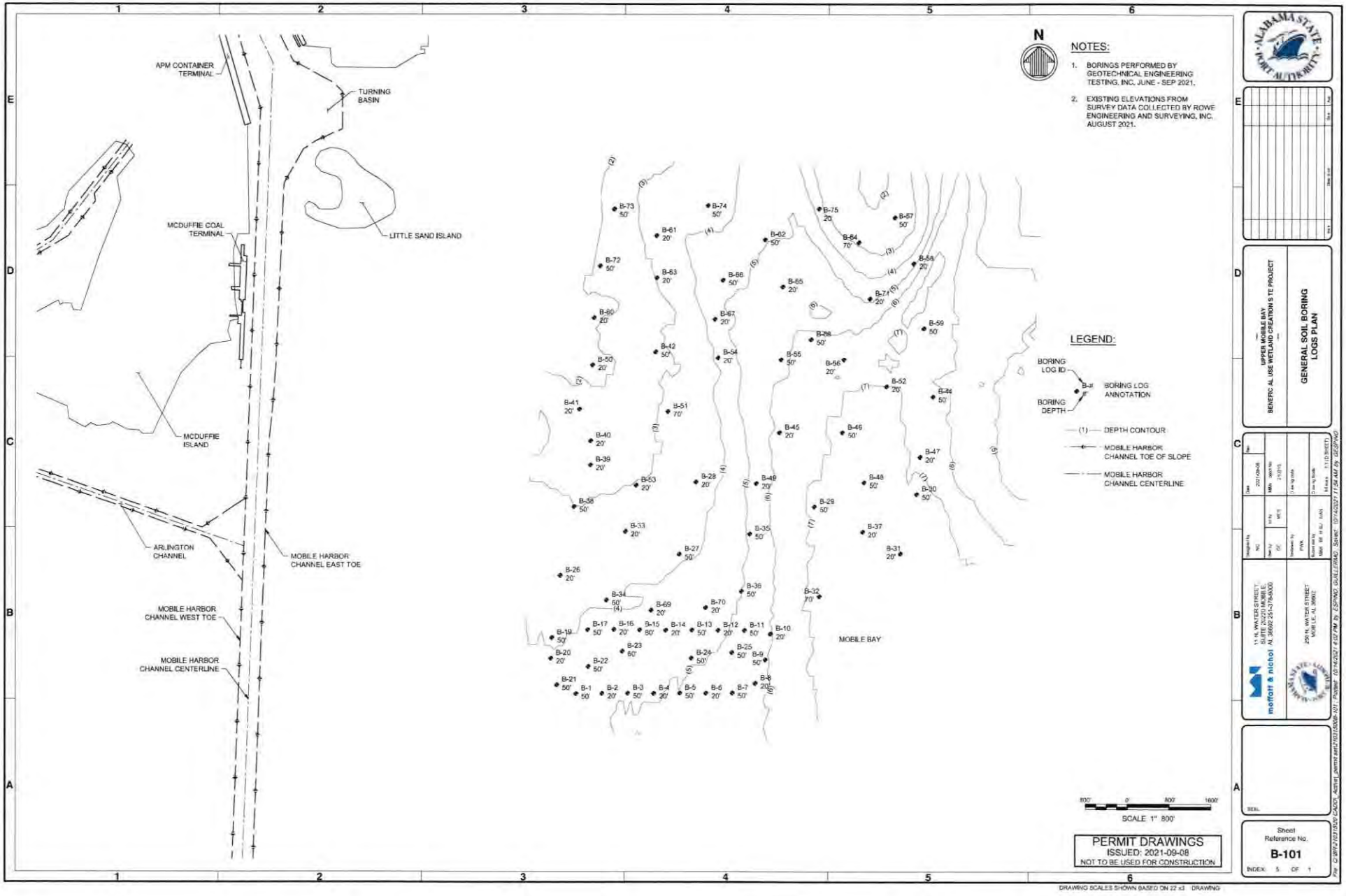
SEAL

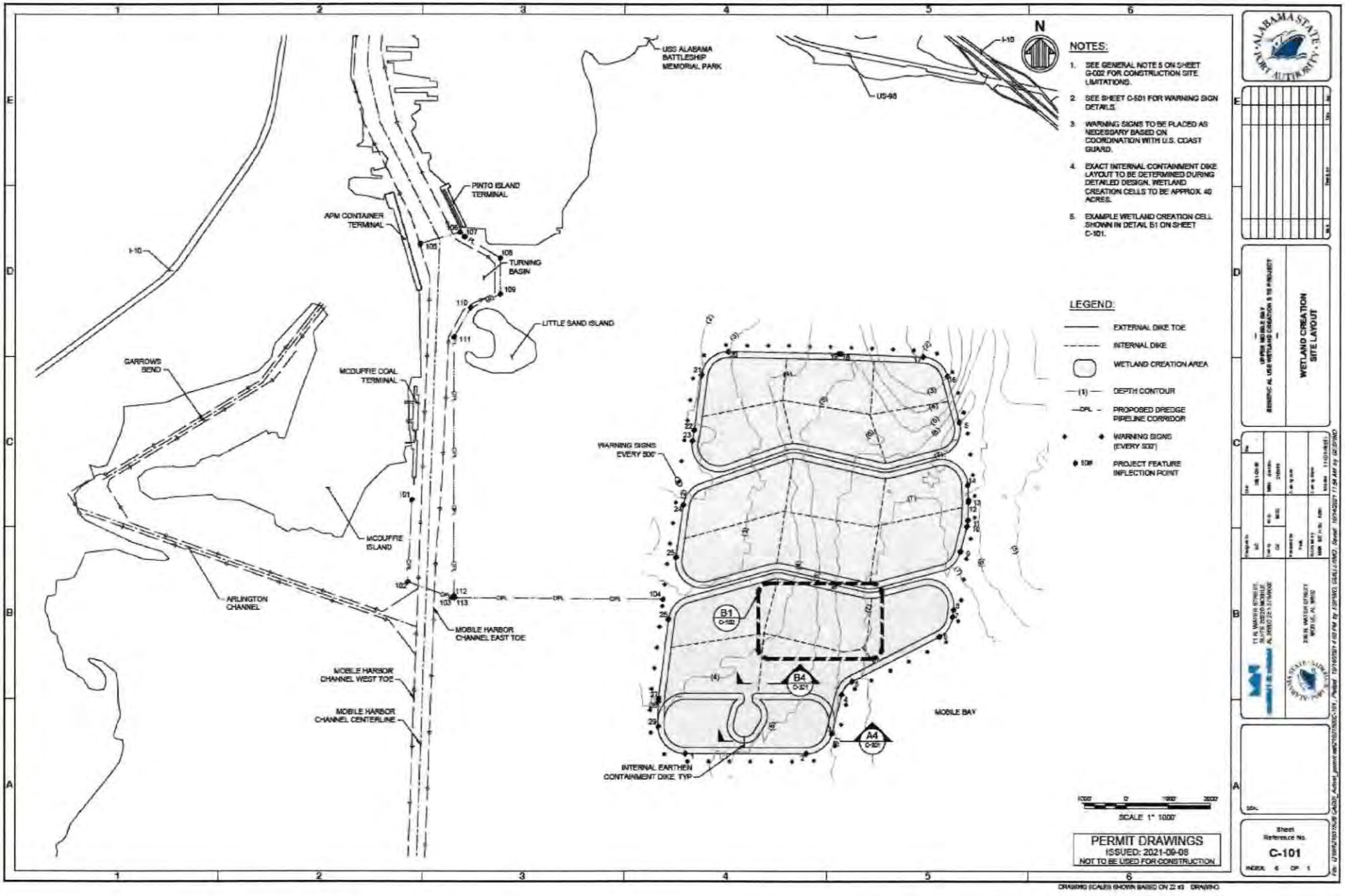
Sheet Reference No.
G-002
INDEX 2 OF 1

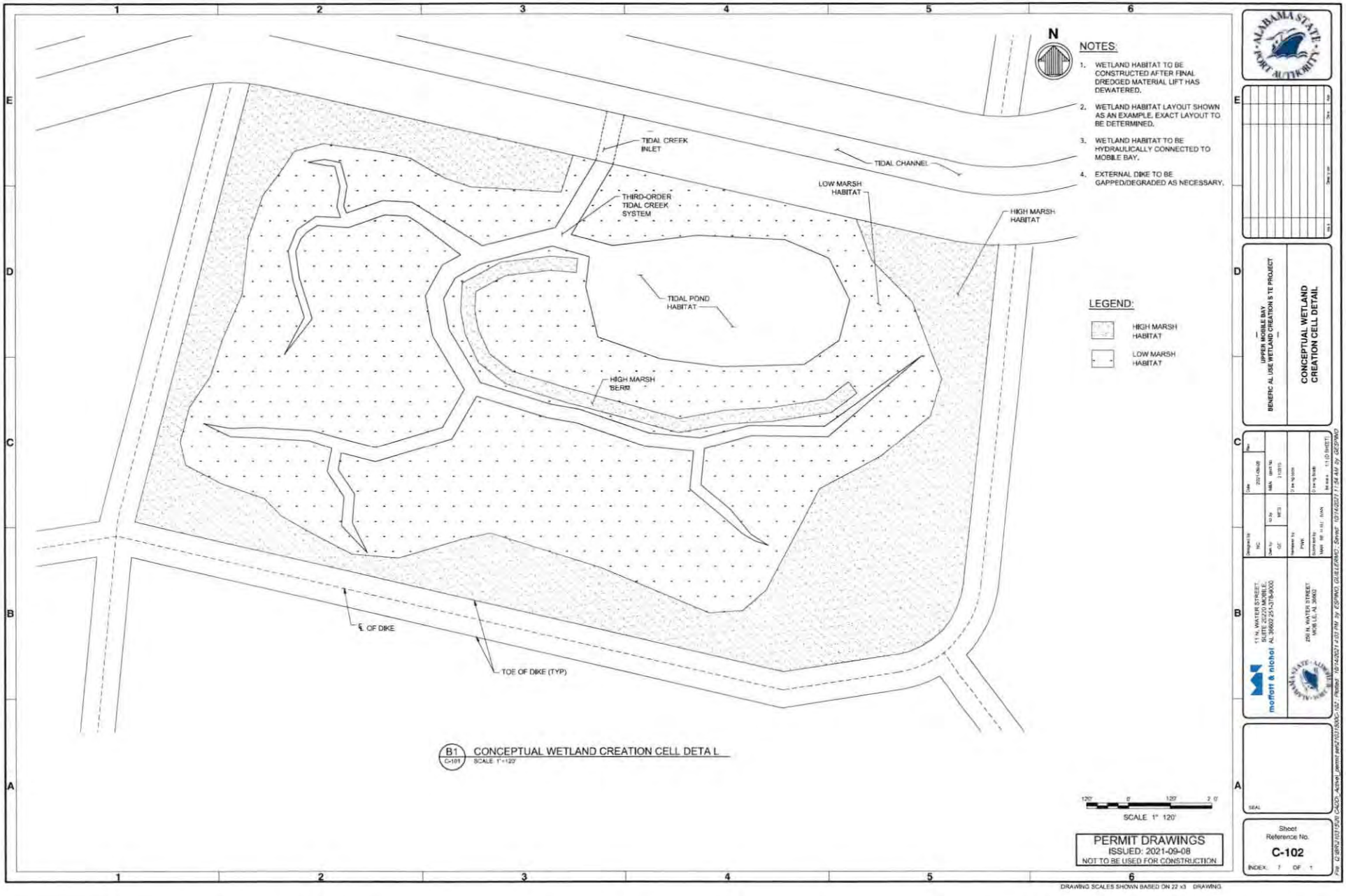
DRAWING SCALES SHOWN BASED ON 22 x 3 DRAWING


N
USS ALABAMA BATTLESHIP MEMORIAL PARK
I-10
US-98
PINTO ISLAND TERMINAL
APM CONTAINER TERMINAL
TURNING BASIN
LITTLE SAND ISLAND
GARROWS BEND
MCDUFFIE COAL TERMINAL
MCDUFFIE ISLAND
ARLINGTON CHANNEL
MOBILE HARBOR CHANNEL EAST TOE
MOBILE HARBOR CHANNEL WEST TOE
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE BAY
NOTES:
1. EXISTING ELEVATIONS FROM SURVEY DATA COLLECTED BY ROWE ENGINEERING AND SURVEYING, INC. AUGUST 2021.
2. CONTOURS REFERENCE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. THE EXTENTS OF THE 1,200-ACRE CONCEPTUAL WETLAND CREATION SITE LAYOUT ARE SHOWN. SEE WETLAND CREATION SITE NOTE 6 ON SHEET G-002 FOR MORE INFORMATION.
LEGEND:
(1) DEPTH CONTOUR
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE HARBOR CHANNEL TOE OF SLOPE
1,200-ACRE WETLAND CREATION SITE
SCALE 1" 1000'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
ALABAMA STATE PORT AUTHORITY
GENERAL CONDITIONS
V-101
INDEX 3 OF 1


N
USS ALABAMA BATTLESHIP MEMORIAL PARK
I-10
US-90
PINTO ISLAND TERMINAL
APM CONTAINER TERMINAL
TURNING BASIN
LITTLE SAND ISLAND
GARROWS BEND
MCDUFFIE COAL TERMINAL
MCDUFFIE ISLAND
ARLINGTON CHANNEL
MOBILE HARBOR CHANNEL EAST TOE
MOBILE HARBOR CHANNEL WEST TOE
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE BAY
NOTES:
1. CONTRACTOR MAY NOT OPERATE, TRANSIT, STAGE, OR STORE EQUIPMENT WITHIN THE SUBMERGED AQUATIC VEGETATION (SAV) AVOIDANCE AREAS.
2. CONTRACTOR MAY NOT OPERATE, TRANSIT, STAGE, OR STORE EQUIPMENT WITHIN THE AVOIDANCE AREAS.
LEGEND:
SUBMERGED AQUATIC VEGETATION (SAV) AVOIDANCE AREA
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE HARBOR CHANNEL TOE OF SLOPE
1,200-ACRE WETLAND CREATION SITE
1000 0 1000 2000
SCALE 1" 1000'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
ENVIRONMENTAL AVOIDANCE PLAN
Sheet Reference No.
V-102
INDEX OF 1
DRAWING SCALES SHOWN BASED ON 22 x 34 DRAWING

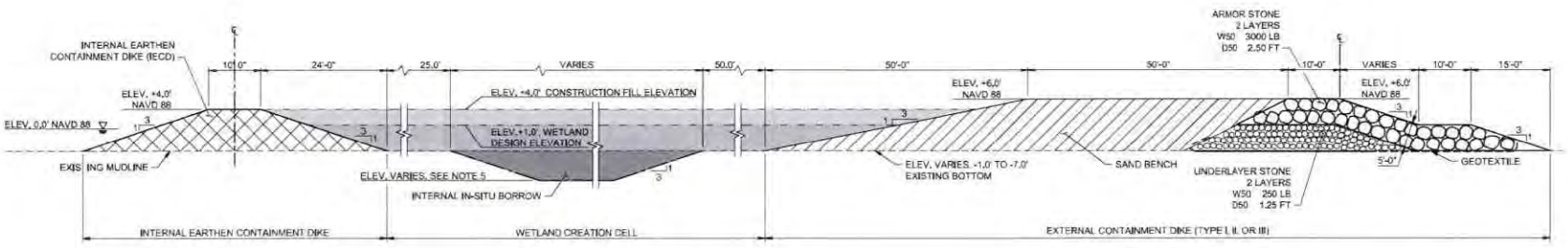

APM CONTAINER TERMINAL
TURNING BASIN
MCDUFFIE COAL TERMINAL
LITTLE SAND ISLAND
MCDUFFIE ISLAND
ARLINGTON CHANNEL
MOBILE HARBOR CHANNEL EAST TOE
MOBILE HARBOR CHANNEL WEST TOE
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE BAY
N
NOTES:
1. BORINGS PERFORMED BY GEOTECHNICAL ENGINEERING TESTING, INC. JUNE - SEP 2021.
2. EXISTING ELEVATIONS FROM SURVEY DATA COLLECTED BY ROWE ENGINEERING AND SURVEYING, INC. AUGUST 2021.
LEGEND:
BORING LOG ID
BORING LOG ANNOTATION
BORING DEPTH
(1) DEPTH CONTOUR
MOBILE HARBOR CHANNEL TOE OF SLOPE
MOBILE HARBOR CHANNEL CENTERLINE
SCALE 1" 800'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
UPPER MOBILE BAY
BENEFIC AL USE WETLAND CREATION S TE PROJECT
GENERAL SOIL BORING LOGS PLAN
Sheet Reference No.
B-101
INDEX: 5 OF 1
DRAWING SCALES SHOWN BASED ON 22 x3 DRAWING


NOTES:
1. SEE GENERAL NOTE 5 ON SHEET G-002 FOR CONSTRUCTION SITE LIMITATIONS.
2. SEE SHEET C-501 FOR WARNING SIGN DETAILS.
3. WARNING SIGNS TO BE PLACED AS NECESSARY BASED ON COORDINATION WITH U.S. COAST GUARD.
4. EXACT INTERNAL CONTAINMENT DIKE LAYOUT TO BE DETERMINED DURING DETAILED DESIGN. WETLAND CREATION CELLS TO BE APPROX. 40 ACRES.
5. EXAMPLE WETLAND CREATION CELL SHOWN IN DETAIL B1 ON SHEET C-101.
LEGEND:
EXTERNAL DIKE TOE
INTERNAL DIKE
WETLAND CREATION AREA
DEPTH CONTOUR
PROPOSED DREDGE PIPELINE CORRIDOR
WARNING SIGNS (EVERY 500')
PROJECT FEATURE INFLECTION POINT
N
USS ALABAMA BATTLESHIP MEMORIAL PARK
I-10
US-98
PINTO ISLAND TERMINAL
APM CONTAINER TERMINAL
TURNING BASIN
LITTLE SAND ISLAND
GARROWS BEND
MCDUFFIE COAL TERMINAL
MCDUFFIE ISLAND
ARLINGTON CHANNEL
MOBILE HARBOR CHANNEL EAST TOE
MOBILE HARBOR CHANNEL WEST TOE
MOBILE HARBOR CHANNEL CENTERLINE
WARNING SIGNS EVERY 500'
INTERNAL EARTHEN CONTAINMENT DIKE, TYP.
MOBILE BAY
B1 C-102
B4 C-501
A4 C-501
SCALE 1" 1000'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
WETLAND CREATION SITE LAYOUT
C-101
DRAWING SCALES SHOWN BASED ON 22 x 34 DRAWING


N
NOTES:
1. WETLAND HABITAT TO BE CONSTRUCTED AFTER FINAL DREDGED MATERIAL LIFT HAS DEWATERED.
2. WETLAND HABITAT LAYOUT SHOWN AS AN EXAMPLE. EXACT LAYOUT TO BE DETERMINED.
3. WETLAND HABITAT TO BE HYDRAULICALLY CONNECTED TO MOBILE BAY.
4. EXTERNAL DIKE TO BE GAPPED/DEGRADED AS NECESSARY.
TIDAL CREEK INLET
TIDAL CHANNEL
LOW MARSH HABITAT
THIRD-ORDER TIDAL CREEK SYSTEM
HIGH MARSH HABITAT
TIDAL POND HABITAT
HIGH MARSH BERM
℄ OF DIKE
TOE OF DIKE (TYP)
LEGEND:
HIGH MARSH HABITAT
LOW MARSH HABITAT
B1 C-101 CONCEPTUAL WETLAND CREATION CELL DETA L
SCALE 1" =120'
120' 0' 120' 2 0'
SCALE 1" 120'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
ALABAMA STATE PORT AUTHORITY
UPPER MOBILE BAY
BENEFIC AL USE WETLAND CREATION S TE PROJECT
CONCEPTUAL WETLAND CREATION CELL DETAIL
Date 2021-09-08
Designed by NC
Drawn by GC
Reviewed by PWK
Drawing Scale
maffatt & nichol
11 N. WATER STREET SUITE 23290 MOBILE, AL 36602 251-378-9000
250 N. WATER STREET MOBILE, AL 36602
SEAL
Sheet Reference No.
C-102
INDEX: 7 OF 7
DRAWING SCALES SHOWN BASED ON 22 x3 DRAWING

NOTES:

1. EXACT DIMENSIONS, INCLUDING ELEVATIONS, WIDTHS, LENGTHS, SLOPES, ETC. TO BE DETERMINED DURING DETAILED DESIGN.
2. DESIGN ELEVATIONS OF CONTAINMENT DIKES SHALL NOT EXCEED +6.0' NAVD 88.
3. DREDGED MATERIAL CONSTRUCTION FILL ELEVATION SHALL NOT EXCEED +4.0' NAVD 88. WETLAND DESIGN ELEVATION SHALL BE INTERTIDAL, ASSUMED TO BE +1.0' NAVD 88.
4. INTERNAL IN-SITU BORROW TO BE USED TO CONSTRUCT SAND BENCH AND INTERNAL EARTHEN CONTAINMENT DIKES. BORROW DEPTH SHALL NOT EXCEED -20.0' NAVD 88.
5. BORROW AREA DREDGE DEPTH VARIES DEPENDING ON SAND LAYER THICKNESS. CONTRACTOR SHALL NOT DREDGE BEYOND -20.0' NAVD 88.



A4 / C-101 WETLAND CREATION AREA TYPICAL SECTION
SCALE 3/32" 1'-0"

SCALE 3/32" 1'-0"

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

DRAWING SCALES SHOWN BASED ON 22 x3 DRAWING

ALABAMA STATE PORT AUTHORITY

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

WETLAND CREATION AREA TYPICAL SECTION

maffatt & nichol
11 N. WATER STREET, SUITE 22290 MOBILE, AL 36602 251-378-6000

250 N. WATER STREET MOBILE, AL 36602

SEAL

Sheet Reference No.
C-301
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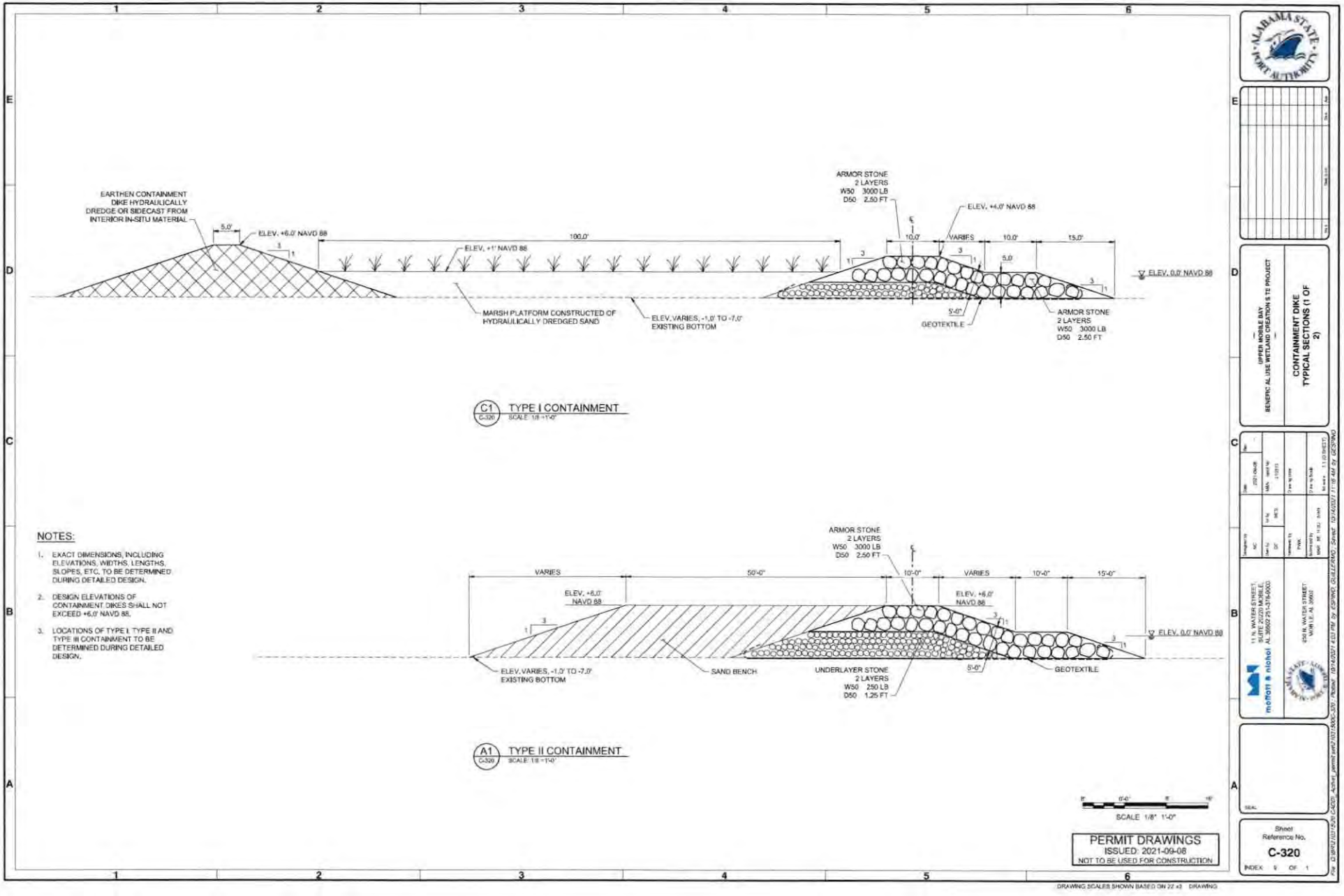
EARTHEN CONTAINMENT DIKE HYDRAULICALLY DREDGE OR SIDECAST FROM INTERIOR IN-SITU MATERIAL
5.0'
ELEV. +6.0' NAVD 88
100.0'
ELEV. +1' NAVD 88
MARSH PLATFORM CONSTRUCTED OF HYDRAULICALLY DREDGED SAND
ELEV. VARIES, -1.0' TO -7.0' EXISTING BOTTOM
ARMOR STONE 2 LAYERS W50 3000 LB D50 2.50 FT
ELEV. +4.0' NAVD 88
10.0'
VARIES
10.0'
15.0'
5.0'
5'-0"
GEOTEXTILE
ELEV. 0.0' NAVD 88
C1 C-320 TYPE I CONTAINMENT
SCALE 1/8" = 1'-0"
NOTES:
1. EXACT DIMENSIONS, INCLUDING ELEVATIONS, WIDTHS, LENGTHS, SLOPES, ETC. TO BE DETERMINED DURING DETAILED DESIGN.
2. DESIGN ELEVATIONS OF CONTAINMENT DIKES SHALL NOT EXCEED +6.0' NAVD 88.
3. LOCATIONS OF TYPE I, TYPE II AND TYPE III CONTAINMENT TO BE DETERMINED DURING DETAILED DESIGN.
VARIES
50'-0"
ELEV. +6.0' NAVD 88
ELEV. VARIES, -1.0' TO -7.0' EXISTING BOTTOM
SAND BENCH
UNDERLAYER STONE 2 LAYERS W50 250 LB D50 1.25 FT
ARMOR STONE 2 LAYERS W50 3000 LB D50 2.50 FT
10'-0"
VARIES
10'-0"
15'-0"
5'-0"
GEOTEXTILE
ELEV. 0.0' NAVD 88
A1 C-320 TYPE II CONTAINMENT
SCALE 1/8" = 1'-0"
SCALE 1/8" 1'-0"
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
ALABAMA STATE PORT AUTHORITY
UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION S TE PROJECT
CONTAINMENT DIKE TYPICAL SECTIONS (1 OF 2)
11 N. WATER STREET, SUITE 2290, MOBILE, AL 36602 251-376-0000
moffatt & nichol
250 N. WATER STREET MOBILE, AL 36602
Sheet Reference No.
C-320
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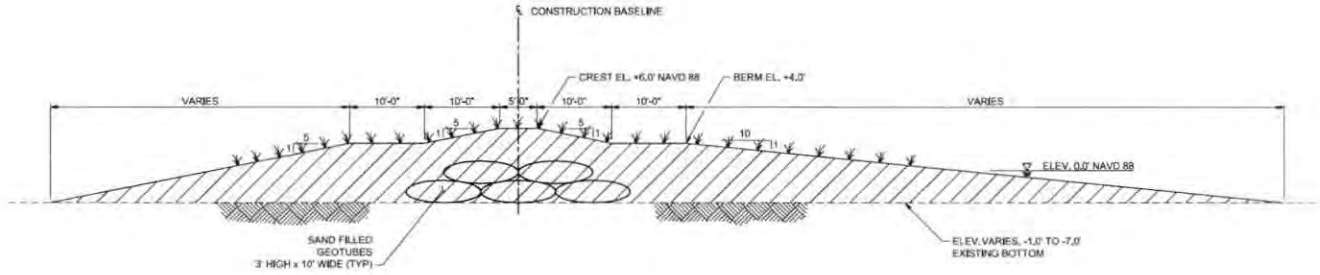
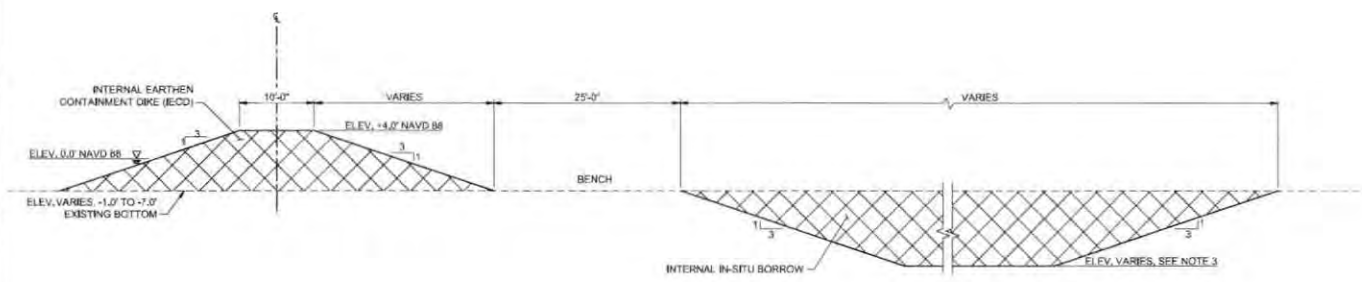
DRAWING SCALES SHOWN BASED ON 22 x 3 DRAWING



D4 C-321 TYPE III CONTAINMENT
SCALE: 1/8" =1'-0"



B4 C-101 NTERNAL EARTHEN CONTAINMENT D KES
SCALE: 1/8" =1'-0"

NOTES:

1. EXACT DIMENSIONS, INCLUDING ELEVATIONS, WIDTHS, LENGTHS, SLOPES, ETC, TO BE DETERMINED DURING DETAILED DESIGN.
2. THE INTERNAL IN-SITU BORROW AREAS PLANNED FOR EXTERNAL CONTAINMENT WILL ALSO BE UTILIZED FOR INTERNAL CONTAINMENT DIKE MATERIAL.
3. BORROW AREA DREDGE DEPTH VARIES DEPENDING ON SAND LAYER THICKNESS. CONTRACTOR SHALL NOT DREDGE BEYOND -20.0' NAVD 88.

SCALE 1/8" 1'-0"

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION S TE PROJECT

CONTAINMENT DIKE
TYPICAL SECTIONS (2 OF 2)

moffatt & nichol
11 N. WATER STREET, SUITE 1290, MOBILE, AL 36602 251.375.8000
230 N. WATER STREET MOBILE, AL 36602

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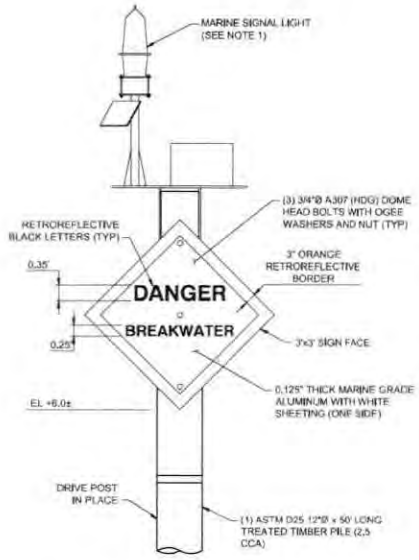
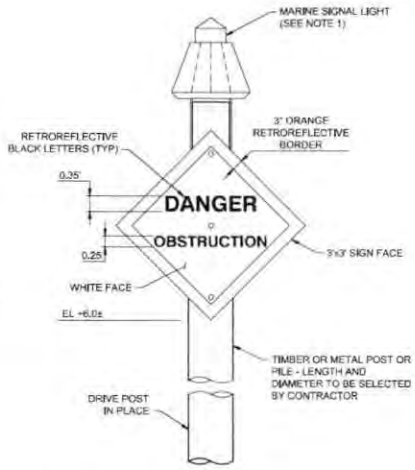
DRAWING SCALES SHOWN BASED ON 22 x 3 DRAWING



C1 C-101 PERMANENT WARNING SIGN DETAIL
SCALE: NTS



C2 C-101 TEMPORARY WARNING SIGN DETAIL
SCALE: NTS

LEGEND

HDG HOT DIP GALVANIZED
CCA CHROMATED COPPER ARSENATE

NOTES

1. MARINE SIGNAL LIGHT SHALL MEET REQUIREMENTS OF CFR TITLE 33, SUBPART 67.30 FOR CLASS "C" STRUCTURES AND HAVE AS MINIMUM THE FOLLOWING PROPERTIES
   RANGE 3 NAUTICAL MILES (25 CANDELA)
   LENS CLEAR
   SLOW FLASH 2.5 SEC
   VISIBILITY 360° HORIZON
   COLOR WHITE
2. CONTRACTOR SHALL COORDINATE WITH US COAST GUARD ON REQUIREMENTS OF TEMPORARY WARNING SIGNS, INCLUDING SIGN VERBIAGE AND PLACEMENT LOCATION, PRIOR TO INSTALLATION.
3. OTHER FORMS OF TEMPORARY WARNING SIGNS MAY BE USED WITH PRIOR APPROVAL OF US COAST GUARD AND ENGINEER'S REVIEW.
4. DURING CONSTRUCTION TEMPORARY WARNING SIGNS AND/OR BUOYS SHALL BE REQUIRED AS NECESSARY.
5. ALL SIGN FACES SHALL BE ORIENTED TO FACE PREDOMINANT APPROACH DIRECTION OF ONCOMING BOAT TRAFFIC.

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

TEMPORARY WARNING SIGN DETAIL

mottart & nichol
11 N. WATER STREET
SUITE 10205 MOBILE
AL 36602 251-378-6000

250 N. WATER STREET
MOBILE, AL 36602

Sheet Reference No.
C-501
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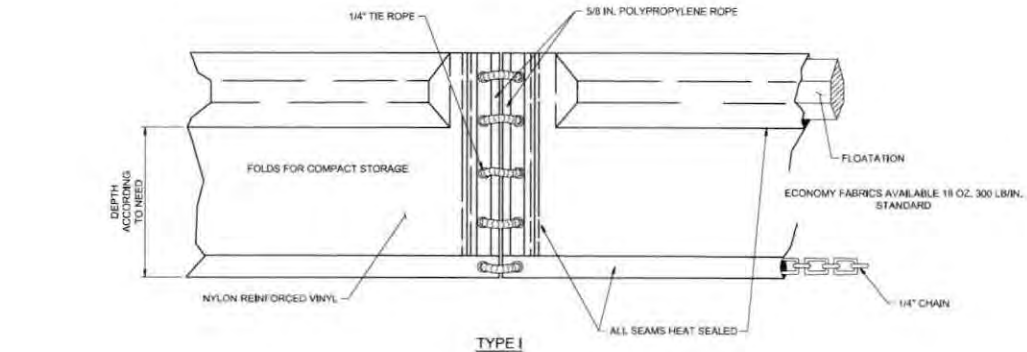
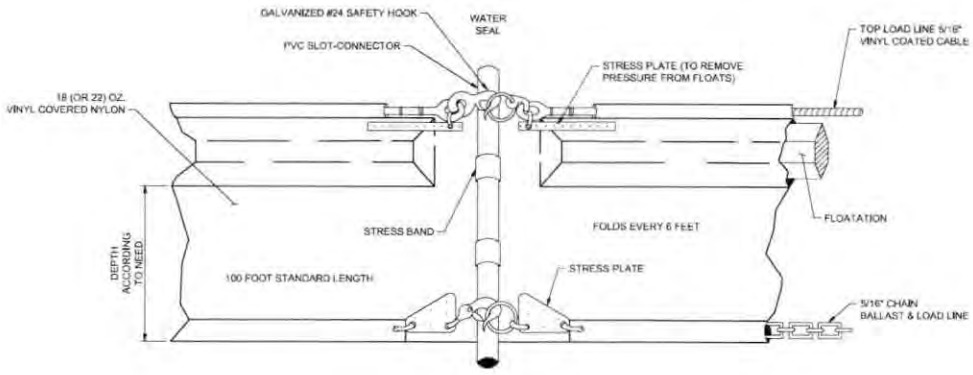
DRAWING SCALES SHOWN BASED ON 22 x3 DRAWING



TYPE I



TYPE II

SHACKLE CONNECTION

TURB DITY CONTROL NOTES:

1. CONTRACTOR SHALL SUBMIT TURBIDITY CONTROL PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN TURBIDITY CONTROL CURTAIN AROUND DREDGE FILL AREA. THE CONTRACTOR HAS THE OPTION TO ENCLOSE THE WATERSIDE OF THE SITE, WITHIN THE LIMITS OF DISTURBANCE, OR TO INSTALL AND MOVE THE CURTAIN IN STAGES. THE CONTRACTOR SHALL MAINTAIN SUCH CURTAINS AT ALL TIMES IN THE AREAS WHERE DREDGE FILL IS IN PROGRESS.
3. TURBIDITY SHALL BE MONITORED DAILY.
4. TURBIDITY CURTAINS SHALL BE SECURED WITH TEMPORARY STEEL OR TIMBER PILINGS AT SUFFICIENT SPACING TO MAINTAIN CONTROL/FUNCTION. A WEIGHT SYSTEM CAN ALSO BE UTILIZED IF PRACTICAL.
5. TURBIDITY CURTAINS SHALL BE SIMILAR TO EITHER THE TYPE I OR TYPE II CURTAINS SHOWN ON THIS SHEET.
6. MEASURES FOR REDUCING ENTRAPMENT RISK TO PROTECTED SPECIES WILL BE IMPLEMENTED.

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

TURBIDITY CURTAIN DETAIL

moffatt & nichol
11 N. WATER STREET SUITE 2700 MAIN E
MOBILE, AL 36602 251-375-8000

250 N. WATER STREET
MOBILE, AL 36602

Sheet Reference No.
C-502
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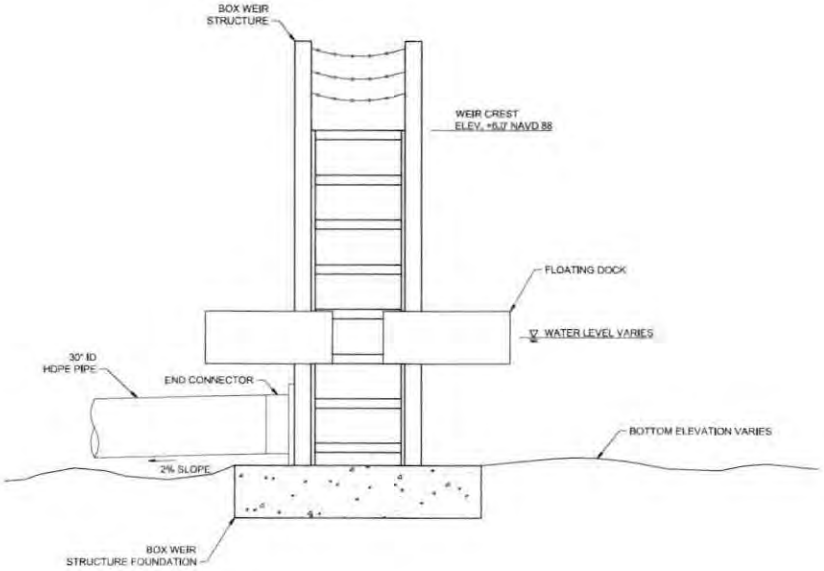
DRAWING SCALES SHOWN BASED ON 22 x 3 DRAWING



NOTES:

1. BOX RISER WEIRS PROPOSED FOR WETLAND CREATION CELL DREDGED MATERIAL DEWATERING.
2. 30" DIA HDPE PIPE ASSUMED.
3. 2 WEIRS MAY BE INSTALLED WITHIN A WETLAND CREATION CELL FOR REDUNDANCY.
4. ACCESS TO FLOATING DOCK BY GANGWAY FROM EXTERIOR DIKE.
5. HDPE PIPE TO BE ANCHORED AS NECESSARY.
6. HDPE PIPE TO BE INSTALLED AT APPROX. 2% SLOPE THROUGH EXTERNAL CONTAINMENT DIKE. OUTFALL ELEVATION TO BE DETERMINED.

SCALE 3/8" 1'-0"

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

BOX WEIR DETAIL

moffatt & nichol
111 N. WATER STREET
SUITE 2700 MAIL 1
MOBILE, AL 36602 251-375-8000

250 N. WATER STREET
MOBILE, AL 36602

Sheet Reference No.
C-503
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DRAWING SCALES SHOWN BASED ON 22 x 3 DRAWING

BORING POINT TABLE

POINT #	DEPTH	LATITUDE	LONGITUDE
B-1	50'	N30° 38' 0 .12	W88° 00' .87
B-2	20'	N30° 38' 0 .21	W88° 00' 39.15
B-3	50'	N30° 38' 0 .26	W88° 00' 33. 7
B-	20'	N30° 38' 0 .2	W88° 00' 27.7
B-6	50'	N30° 38' 0 .33	W88° 00' 22.02
B-6	20'	N30° 38' 0 .32	W88° 00' 16.36
B-7	50'	N30° 38' 0 . 2	W88° 00' 10.57
B-8	20'	N30° 38' 06.25	W88° 00' 05.60
B-9	50'	N30° 38' 10.72	W88° 00' 03. 3
B-10	20'	N30° 38' 15.59	W88° 00' 02.3
B-11	50'	N30° 38' 18.22	W88° 00' 08.00
B-12	20'	N30° 38' 16.22	W88° 00' 13.72
B-13	50'	N30° 38' 16.25	W88° 00' 19. 5
B-1	20'	N30° 38' 16.17	W88° 00' 25.17
B-15	50'	N30° 38' 16.22	W88° 00' 30.88
B-16	20'	N30° 38' 16.30	W88° 00' 36.62
B-17	50'	N30° 38' 16.21	W88° 00' 2.3
B-19	50'	N30° 38' 1 .68	W88° 00' 50.22
B-20	20'	N30° 38' 10.80	W88° 00' 50.
B-21	50'	N30° 38' 05.77	W88° 00' 9.10
B-22	50'	N30° 38' 05.28	W88° 00' 2.21
B-23	50'	N30° 38' 12.19	W88° 00' 3 .7
B-2	50'	N30° 38' 10.9	W88° 00' 19.55
B-25	50'	N30° 38' 12.05	W88° 00' 10.72
B-26	20'	N30° 38' 26. 5	W88° 00' 8. 5

BORING POINT TABLE

POINT #	DEPTH	LATITUDE	LONGITUDE
B-27	50'	N30° 38' 30.60	W88° 00' 22.32
B-28	20'	N30° 38' .3	W88° 00' 18.78
B-29	50'	N30° 38' 39.73	W87° 59' 52.98
B-30	50'	N30° 38' 2.21	W87° 59' 30.36
B-31	20'	N30° 38' 30.91	W87° 59' 33.87
B-32	70'	N30° 38' 22.73	W87° 59' 51.78
B-33	20'	N30° 38' 2 .91	W88° 00' 3 .21
B-3	60'	N30° 38' 21.8	W88° 00' 38.27
B-35	50'	N30° 38' 3 .56	W88° 00' 07.00
B-36	50'	N30° 38' 23.62	W88° 00' 08.70
B-37	20'	N30° 38' 35.02	W87° 59' 2.29
B-38	50'	N30° 38' 39.53	W88° 00' 5.53
B-39	20'	N30° 38' 7. 8	W88° 00' 1.96
B- 0	20'	N30° 38' 52.13	W88° 00' 1.93
B- 1	20'	N30° 38' 58.1	W88° 00' . .5
B- 2	50'	N30° 39' 09.08	W88° 00' 27.78
B-	50'	N30° 39' 00.81	W87° 59' 26.89
B- 3	20'	N30° 38' 53.87	W88° 00' 00.66
B- 6	50'	N30° 38' 53.93	W87° 59' 6.92
B- 7	20'	N30° 38' 9.28	W87° 59' 29.66
B- 8	50'	N30° 38' .39	W87° 59' 2.9
B- 9	20'	N30° 38' .11	W88° 00' 05.6
B-50	20'	N30° 39' 06.53	W88° 00' 1.63
B-51	70'	N30° 38' 57.79	W88° 00' 2. 99
B-52	20'	N30° 39' 02.71	W87° 59' 37.19

BORING POINT TABLE

POINT #	DEPTH	LATITUDE	LONGITUDE
B-53	20'	N30° 38' 3.66	W88° 00' 31.89
B-5	20'	N30° 39' 08.0	W88° 00' 1 .15
B-55	50'	N30° 39' 07.7	W88° 00' 00. 1
B-56	20'	N30° 39' 07.79	W87° 59' 8.58
B-57	50'	N30° 39' 3 .61	W87° 59' 35.50
B-58	20'	N30° 39' 26.10	W87° 59' 31.28
B-59	50'	N30° 39' 13.80	W87° 59' 28.99
B-60	20'	N30° 39' 15.52	W88° 00' 1.37
B-61	20'	N30° 39' 31.18	W88° 00' 27.89
B-62	50'	N30° 39' 30. 8	W88° 00' 0 .02
B-63	20'	N30° 39' 23.17	W88° 00' 27.60
B-6	70'	N30° 39' 00.06	W87° 59' 3.51
B-65	20'	N30° 39' 21.59	W88° 00' 00.15
B-66	50'	N30° 39' 22.78	W88° 00' 13.12
B-67	20'	N30° 39' 15.33	W88° 00' 1 .82
B-68	50'	N30° 39' 11.59	W87° 59' 53.91
B-69	20'	N30° 38' 19.97	W88° 00' 26. 3
B-70	20'	N30° 38' 20.50	W88° 00' 16. 7
B-71	20'	N30° 39' 19.36	W87° 59' 0.9
B-72	50'	N30° 39' 25.38	W88° 00' 0.97
B-73	50'	N30° 39' 08.17	W88° 00' 37.07
B-7	50'	N30° 39' 36.95	W88° 00' 16.52
B-75	20'	N30° 39' 36. 1	W87° 59' 62.32

WCA TABLE

POINT #	LATITUDE	LONGITUDE
1	N30° 38' 02.18	W88° 00' 3.71
2	N30° 38' 02.28	W88° 00' 10.63
3	N30° 38' 07.06	W88° 00' 03.52
	N30° 38' 16.22	W88° 00' 00.91
5	N30° 38' 19.33	W87° 59' 56.08
6	N30° 38' 29.96	W87° 59' 3 .11
7	N30° 38' 3 .70	W87° 59' 30.39
8	N30° 38' 36.36	W87° 59' 30.03
9	N30° 38' 50.21	W87° 59' 28.20
10	N30° 38' 56.2	W87° 59' 26. 5
11	N30° 38' 57.6	W87° 59' 26.23
12	N30° 39' 01.97	W87° 59' 26.11
13	N30° 39' 02. 3	W87° 59' 26.12
1	N30° 39' 06.02	W87° 59' 26.32
15	N30° 39' 21.0	W87° 59' 28.66

WCA TABLE

POINT #	LATITUDE	LONGITUDE
16	N30° 39' 21.80	W87° 59' 32.28
17	N30° 39' 36.50	W87° 59' 36.9
18	N30° 39' 37.15	W88° 00' 01.57
19	N30° 39' 37.16	W88° 00' 02.01
20	N30° 39' 37.57	W88° 00' 02.56
21	N30° 39' 31.98	W88° 00' 39.96
22	N30° 39' 18.85	W88° 00' 1.78
23	N30° 39' 16.27	W88° 00' 2.28
2	N30° 39' 00.96	W88° 00' .55
25	N30° 38' 8. 8	W88° 00' 8.56
26	N30° 38' 33.83	W88° 00' 8. 8
27	N30° 38' 15.05	W88° 00' 51.08
28	N30° 38' 1 .26	W88° 00' 51.15
29	N30° 38' 08.53	W88° 00' 51.13

DREDGE PIPELINE POINT TABLE

POINT #	LATITUDE	LONGITUDE
101	N30° 39' 01.87	W88° 01' 59.21'
102	N30° 38' 2.38	W88° 02' 00.20
103	N30° 38' 38.71	W88° 01' 7.96
10	N30° 38' 38.58	W88° 00' 9.98
105	N30° 0' 02.87	W88° 01' 57.32
106	N30° 0' 05.0	W88° 01' 6. 6
107	N30° 0' 0 .32	W88° 01' 5.11
108	N30° 39' 59.52	W88° 01' 35.21
109	N30° 39' 50.98	W88° 01' 35.15
110	N30° 39' 7.87	W88° 01' 3.37
111	N30° 39' 0.81	W88° 01' 7.88
112	N30° 38' 39.10	W88° 01' 7.5
113	N30° 38' 38.71	W88° 01' 7.31

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

DRAWING SCALES SHOWN BASED ON 22 x 3 DRAWING

ALABAMA STATE PORT AUTHORITY

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION & TE PROJECT

COORDINATE TABLES

Date: 2021-09-08
Scale: 1" = 1000'
Drawn by: CZ
Checked by: TGW
Approved by: MFG
Date Plotted: 2021-09-08
Date Plotted: 10/14/2021 4:24 PM by JSPRING, GUILLERMO - Sheet: 9/8/2021 11:27 AM by JSPRING

moffatt & nichol
11 N. WATER STREET
SUITE 27010 MOBILE
AL 36602 251.378.6000

250 N. WATER STREET
MOBILE, AL 36602

SEAL

Sheet Reference No.
C-601
INDEX: 1 OF 1

moffatt & nichol

11 N. Water Street, Suite 20220
Mobile, Alabama 36602

(251) 378-9009
www.moffattnichol.com

16 September 2021

Mr. Dylan Hendrix
U.S. Army Corps of Engineers
Mobile District, Regulatory Division
P.O. Box 2288
Mobile, AL 36628-0001

Subject: Standard Individual Permit (SAM-2021-00246-DCH) Application for Upper Mobile Bay Wetland Creation Project

Dear Mr. Hendrix:

The purpose of this letter is to request a Standard Individual Permit for a coastal restoration project located in Upper Mobile Bay, Alabama on behalf of the Alabama State Port Authority. The proposed project consists of constructing containment features to beneficially place maintenance dredged sediments from the federal channel and adjacent public berths to create 1200 acres of wetlands. A detailed description of the project location, approach, and construction methods are provided in the supplemental information to this Standard Individual Permit Application. The project planning for the creation of 1200 acres of wetland habitat, is being sponsored and administered by the Alabama State Port Authority with funding from the RESTORE Act, Bucket 2. Construction funds are being pursued from multiple sources.

Enclosed with the joint application is the following supplemental information and attachments:

- Section 5: Project Description
- Section 12: Other Authorization or Certifications.
- Section 13: Vicinity Map, Permit Drawings/Engineering Exhibits

Previously provided information to Dylan Hendrix on 08/13/2021 included:

- Draft Environmental Assessment and Essential Fish Habitat Documents
- 404b1 standard permit criteria document
- Submerged Aquatic Vegetation Survey Memorandum
- Draft Monitoring Plan

Previously provided information to Dylan Hendrix and Timothy Dodson-USACE archaeologist on 6/10/2021 included:

- Section 106 compliance report (Final_Mobile Harbor Survey_SEARCH -2013)
- Refinement Survey for Mobile Bay Beneficial Use_Tech Memo_SEARCH-April 2021

401 Water Quality Certification pre-filling is being provided simultaneously to this application. Should you need further information or have any questions regarding the information provided in this package, please do not hesitate to contact me at 251-378-9009 or msullivan@moffattnichol.com. Your consideration of our permit request is greatly appreciated and we look forward to your response.

Sincerely,

Mary E. Sullivan

Mary E. Sullivan
Project Manager
MOFFATT & NICHOL

cc: Coastal Section - Mobile Branch, ADEM; State Lands Division – Coastal Section, ADCNR

JOINT APPLICATION AND NOTIFICATION
U. S. DEPARTMENT OF ARMY, CORPS OF ENGINEERS
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

THIS FORM IS TO BE USED FOR PROPOSED ACTIVITIES IN WATERS OF THE UNITED STATES WITHIN THE POLITICAL BOUNDARIES OF THE STATE OF ALABAMA.

PLEASE TYPE OR PRINT IN INK

1. DATE: 09 / 16 / 2021
month day year

Application Number: _____
(Agency Use Only)

2. APPLICANT INFORMATION:

Name: Bob Harris
Company: Alabama State Port Authority
Mailing Address: 250 N. Water Street
Mobile, AL 36602

Telephone Number and Email (during business hours):
A/C (251) 441-7082
Email: bharris@asdd.com

3. PROJECT LOCATION:

Street Address: n/a
City/Community: Mobile
County: Mobile County
Name of Waterway: Upper Mobile Bay
Latitude: 30.646906
Longitude: -88.000935
(Provide Lat/Long in decimal degrees, if available)
Section n/a Township n/a Range n/a
County Parcel Identification Number (PID): n/a
(PID is typically located on property tax receipt)

4. DESIGNATION OF AGENT, STATEMENT OF AUTHORIZATION:

N/A ☐ (check here if applicant is not designating an agent)

I hereby designate and authorize

Moffatt & Nichol
(Print Name of Designated Agent)

to act on my behalf in the processing of this permit application and to furnish, upon request, supplemental information in support of the application.

Signature of Applicant: Bob Harris Date: 09/16/2021

AGENT INFORMATION:

Name: Mary Beth Sullivan
Company: Moffatt & Nichol
Mailing Address: 11 N. Water Street, Suite 20220
Mobile, AL 36602

Telephone Number and Email (during business hours):
A/C (251) 378-9009
Email: msullivan@moffattnichol.com

5. PROJECT DESCRIPTION: In addition to required attachments such as drawings/plans, provide a detailed narrative description of the project. Include all aspects of the project, describing completely and in detail. Provide the dimensions (in feet) of any structures such as piers, wharfs, bulkheads, pipelines, boathouses, boat ramps, groins, jetties, and appurtenances, as well as the dimensions (in feet/square feet) and volume (in cubic yards) of any dredging, excavation, or fill activities. Indicate the method(s) of construction and how the site would be accessed (i.e. by barge or land). Attach additional sheets if necessary.

See Section 5. of supplemental information

6. DREDGING: For projects with dredging, show locations and dimensions of proposed dredge area(s) on attached plans. Include existing and proposed depths. N/A ☐ (check here if dredging is not proposed)

a. New Work ☑ Maintenance Work ☐
b. Volume (cubic yards) of material to be removed: 3,098,486
c. Type of material (sand, muck, hard bottom, etc.): Clayey Sand
d. Surface area (square feet) impacted: 8,365,911
e. Method of dredging or excavation (hydraulic pump, mechanical, etc.): Hydraulic and Mechanical
f. Nature of area to be dredged (check all that apply) Upland ☐ Wetland ☐ Waterbottom ☑ Other ☐ (explain): n/a

7. DISCHARGE OF DREDGED OR FILL MATERIAL: For projects with discharge of dredged or fill material, show locations and dimensions of all disposal or fill areas on attached plans. N/A ☐ (check here if discharge of dredged or fill material is not proposed)

a. Volume (cubic yards) of fill: 12,077,439
b. Type of fill (sand, clay, rip-rap, etc.): Clayey Sand and Riprap
c. Surface area (square feet) impacted: 54,709,728
d. Source of fill material (check all that apply): Commercially obtained ☑ Dredged material ☑ Borrowed on-site ☑ Other ☐ (explain): See Section 5 - Project Description for supplemental information.
e. How will discharge material be contained? Specify containment and/or erosion control measures (i.e. Best Management Practices): See Section 5 - Project Description for supplemental information.
f. Nature of disposal/fill area(s) (check all that apply.) Upland ☐ Wetland ☐ Waterbottom ☑ Other ☐ (explain): n/a

8. ADDITIONAL INFORMATION: Provide information below relating to the proposed activity.

a. Are oyster reefs located within or near the project area? Yes ☐ No ☑ If yes, explain: n/a
b. Will this project result in the siting, construction, and/or operation of an energy-related facility? Yes ☐ No ☑
c. Is the project area greater than 5 acres in size? Yes ☑ No ☐
d. Is any portion of the activity for which authorization is sought now complete? Yes ☐ No ☑ If yes, explain: n/a

Month and year activity took place: n/a

e. If project is for maintenance work of existing structures or channels, describe legal authorization for the existing work. Provide permit number, dates, or other form of authorization: n/a

9. PURPOSE AND NEED: Describe the purpose and need of the project. Describe any public benefit, if applicable. Describe the relationship between the project and any secondary or future development the project is designed to support: See Section 5. Project Description

Intended use: Public ☐ Private ☐ Commercial ☐ Other ☐ (explain):

10. PROJECT SCHEDULE:

Proposed start date: September 2022 Proposed completion date: September 2042

11. ADJACENT PROPERTY OWNER NAMES AND MAILING ADDRESSES: Provide the names and mailing addresses of adjoining property owners, lessees, etc. whose property adjoins the project. Also, identify the location of each owner's property on the plan view drawings. Attach additional sheets as needed.

Owner's Name: n/a Owner's Name: n/a
Mailing Address: Mailing Address:

12. OTHER AUTHORIZATIONS OR CERTIFICATIONS: List all authorizations or certifications requested, received, and/or required from other federal, state, or local agencies for any structures, construction, discharges, or other activities described in or directly related to this application. Note: The signature in Section 14 certifies that application has been made to or that permits are not required from the following agencies. *If permits are not required, place "N/A" in space for Type of Approval.* See Section 12 of Supplemental Information.

Name of Federal, State, or Local Agency	Type of Approval	Identification No.	Date of Application	Date of Approval	Date of Denial
U.S. Army Corps of Engineers					
Alabama Dept. of Environmental Management (ADEM)					
Alabama Dept. of Conservation and Natural Resources, State Lands Division (ADCNR-SLD)					
Alabama State Docks					
City/County/Other:					

13. ATTACHMENTS: In addition to the completed application form, the following attachments are **REQUIRED**:

Vicinity Map: Show the location of the proposed site in relation to major highways, landmarks, and nearby streets.

Drawings: Provide plan view and cross-section or elevation view drawings of the project site. Drawings must:
1. Show fully-dimensioned and accurate representations of the existing and proposed structures and activities.
2. For projects located in or adjacent to waterways, clearly indicate the location of the Mean High Water and Mean Low Water lines (in tidally influenced areas) or the Ordinary High Water mark (in non-tidal creeks, rivers, etc.) along the shoreline or bank.
3. For projects located in or adjacent to waterways, include the width of the waterbody at the site location.

All attachments must be of reproducible quality. For hard copy applications, attachments must be on 8 ½ inch x 11 inch paper.

14. SIGNATURE OF APPLICANT OR AGENT (REQUIRED): Application is hereby made for authorization to conduct the activities described herein. I agree to provide any additional information/data that may be necessary to provide reasonable assurance or evidence to show that the proposed project will comply with the applicable state water quality standards or other environmental protection standards both during construction and after the project is completed. For projects within the coastal area of Mobile and Baldwin Counties, I certify that the proposed project for which authorization is sought complies with the approved Alabama Coastal Area Management Program and will be conducted in a manner consistent with the program. I agree to provide entry to the project site for inspectors from the environmental protection agencies for the purpose of making preliminary analyses of the site and monitoring permitted works. I certify that I am familiar with and responsible for the information contained in this application, and that to the best of my knowledge and belief such information is true, complete and accurate. I further certify that I possess the authority to undertake the proposed activities or I am acting as the duly authorized agent of the applicant.

Mary E. Sullivan
Signature of Applicant or Agent

09/16/2021
Date

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willingly falsifies, conceals, or covers up by any trick, scheme or device a material fact or make any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

15. APPLICATION SUBMISSION INFORMATION: Contact the U.S. Army Corps of Engineers prior to submitting the application if you have any questions or to request acceptable alternate content/format. **For electronic submittals (preferred method), please use the email addresses listed below.** An instruction package, example SPCC plans, and other information are available upon request. NOTE: Fees may be required in conjunction with ADEM certification. ADEM will contact the applicant with fee requirements. Fees may also be required by the ADCNR-SLD for dredging activities and projects impacting State-Owned Submerged Lands. ADCNR-SLD will contact the applicant with fee requirements.

Submit the completed and signed application (with original or digital signature) and attachments to the appropriate U.S. Army Corps of Engineers office below:

For activities in the *following counties* in Alabama: *Baldwin, Butler, Choctaw, Clarke, Coffee, Conecuh, Covington, Crenshaw, Dale, Escambia, Geneva, Henry, Houston, Morengo, Mobile, Monroe, Washington, and Wilcox*	For activities in *all other counties* in Alabama: *(Portions of northern Alabama counties may be within the U.S. Army Corps of Engineers Nashville District area of responsibility. Please contact the Nashville District Regulatory Division at (615) 369-7500 for more information)*
U.S. Army Corps of Engineers, Mobile District Attention: CESAM-RD-A Post Office Box 2288 Mobile, Alabama 36628-001 Phone: (251) 690-2658 Web: www.sam.usace.army.mil **Email: CESAM-RD@sam.usace.army.mil**	U.S. Army Corps of Engineers, Mobile District Attention: Regulatory Division, North Branch 218 Summit Parkway, Suite 222 Homewood, Alabama 35209 Phone: (205) 290-9096 Web: www.sam.usace.army.mil **Email: RD-N2@usace.army.mil**

Additionally, submit a signed paper or electronic copy of the application package to the appropriate state agencies below:

For activities in the *following counties* in Alabama: *Baldwin, Mobile, and Washington*		For activities *statewide* in Alabama: *(For northern counties, contact the Nashville District as noted above)*	
Coastal Section-Mobile Branch Field Operations Division, ADEM 3664 Dauphin Street, Suite B Mobile, AL 36608 Phone: (251) 304-1176 Fax: (251) 304-1189 Web: www.adem.state.al.us Email: coastal@adem.alabama.gov	ADCNR, State Lands Division Coastal Section 3115 Five Rivers Boulevard Spanish Fort, AL 36527 Phone: (251) 621-1216 Fax: (251) 621-1331 Web: www.outdooralabama.com	Field Operations Division, ADEM Post Office Box 301463 Montgomery, AL 36110-2059 Phone: (334) 394-4311 Fax: (334) 394-4326 Web: www.adem.state.al.us Email: fieldmail@adem.alabama.gov	Alabama State Port Authority Attn: Harbormaster P.O. Box 1588 Mobile, AL 36633 Phone: (251) 441-7074 Fax: (251) 441-7390 Web: www.asdd.com Email: harbormaster@asdd.com

Background

The *Upper Mobile Bay Beneficial Use Wetland Creation Site (Planning) Project* was recommended by the Gulf Coast Ecosystem Restoration Council (Council) for planning activities as part of the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf States Act (RESTORE Act) Initial Funded Priorities List (FPL). The RESTORE Act FPL used funds from the settlement with Transocean Deepwater Inc. to provide near-term, on-the-ground ecosystem benefits, while also conducting planning activities designed to build a foundation for future success as additional funds become available from other parties.

As approved in December 2015, the Upper Mobile Bay Beneficial Use Wetland Creation Site project provided planning funds to the U.S. Army Corps of Engineers (USACE). In May 2019, the Council amended its Initial FPL to make the State of Alabama the sponsor and direct recipient of the full funding amount previously approved for the Project. The proposed planning project would plan and permit a programmatic 1,200-acre Wetland Creation Site and develop the full design for the initial construction of approximately 100 acres of wetlands in the Upper Mobile Bay south of the US Highway 90/98 causeway. The intent is to establish a large-scale beneficial use (BU) dredged material placement area to restore approximately 1,200 acres of brackish tidal marsh in northern Mobile Bay. The project is an opportunity to further extend BU activities to habitat restoration and provide valuable ecosystem services to Mobile Bay.

Purpose / Need

The purpose of the *Upper Mobile Bay Beneficial Use Wetland Creation Site Project* is to construct the containment structures to allow dredged material to be beneficially used to create intertidal wetland habitat within a 1,200-acre Wetland Creation Site in the Upper Mobile Bay. This project would ensure that submerged sediments within Mobile Bay are kept within the bay system and are used beneficially to help restore coastal wetland habitats. The specific project objectives are to restore estuarine wetlands through the construction of a containment area and placement of dredged material which would improve water quality, provide habitat for living coastal and marine resources, and enhance the economy of the region by providing cost effective placement options of dredged material for the navigation related industries located along the Mobile River.

Wetlands and marshes are a valuable resource because they can reduce flood stages, stabilize banks, and improve water quality in addition to providing vital habitat for species. Alabama has experienced a loss of both coastal freshwater and estuarine marsh. It is estimated Alabama has lost as much as 50 percent of its wetlands in the last 200 years1. Alabama lost about 69 percent of its coastal freshwater marsh and 29 percent of its estuarine marsh from 1955 through 1979. The Mobile Bay ecosystem lost more than 10,000 acres of emergent estuarine marsh and probably more than 50 percent of the submerged aquatic

[1] Dahl, T.E., 1990, Wetlands – Losses in the United States, 1780's to 1980's: Washington, D.C., U.S. Fish and Wildlife Service Report to Congress.

vegetation in the bay between 1955 and 1979[2]. Reasons for coastal wetlands loss include development (industrial, commercial, and residential), erosion and subsidence, and natural succession from wetlands to uplands[3]. The majority of the loss of coastal wetlands in the Mobile Bay area was due to direct and indirect effects of dredging[4]. It was estimated that about 6,000 acres of marshland in the bay have been lost from dredging and about 2,200 acres of marshland created by deposition of dredged material[5]. This project would provide a 15 percent increase in this habitat type in Upper Mobile Bay as well as add more creeks and protected areas conducive to SAV growth that have also been lost in the last 70 years. Without restoration, valuable sediments would be lost to upland areas or open water and would not contribute to the restoration of coastal wetlands.

Project Area

The Project is located in the upper Mobile Bay, approximately 1.5 miles south of the US Highway 90/98 causeway between Mobile and Baldwin counties in Alabama.

General Project Approach

It is anticipated that construction of the containment structures for the Wetland Creation Site would be phased to build a 1,200-acre site for the creation of wetland habitat over the next 20 years, dependent on dredged material volumes and timing of maintenance dredging activities. The project elements include:

Wetland Creation Site: The 1,200 acre site where the wetland creation will occur.

Wetland Creation Area: An area within the Wetland Creation Site that will share an external dike system. Wetland Creation Areas will be separated by tidal channels. It is anticipated there would be three (3) Wetland Creation Areas.

[2] Watzin, M.C., Tucker, Sandy, and South, Celeste, in press, Environmental problems in the Mobile Bay ecosystem – the cumulative effects of human activities: Mobile, Ala., Mississippi – Alabama Sea Grant Consortium Publication.

[3] Roach, E.R., Watzin, M.C., Scurry, J.D., and Johnston, J.B., 1987, Wetland changes in coastal Alabama, in Lowery, T.A., ed., Proceedings of Symposium on the Natural Resources of the Mobile Bay Estuary, Mobile, Ala., February 10-12, 1987: Mobile, Ala., Auburn University, Alabama Sea Grant Extension Services and Alabama Cooperative Extension Service.

[4] Duke, Thomas, and Kruczynski, W. L., eds., 1992, Status and trends of emergent and submerged vegetated habitats. Gulf of Mexico, USA: The Environmental Protection Agency, Gulf of Mexico Program.

[5] Stout, J.P., 1979, Marshes of the Mobile Estuary – Status and evaluation, in Loyacano, H.A., Jr., and Smooth, J.P., eds., Proceedings of the Symposium on the Natural Resources of the Mobile Bay Estuary, Mobile, Ala., 1979: Mobile, Ala., U.S. Army Corps of Engineers, Mobile District.

Wetland Creation Cell: A sub-section of the Wetland Creation Area divided by internal containment dikes where dredged material will be placed. Wetland Creation Cells are anticipated to be 40-60 acres in size.

Project Access Facility: A constructed structure that will be used for equipment and personnel access, and material offloading for use over the lifespan of the project.

The Wetland Creation Site would be phased into three Wetland Creation Areas. The Wetland Creation Areas will be fully enclosed until establishment of wetlands, in order to contain dredged material used for wetland creation. Wetland Creation Areas will have perimeter containment dikes that are designed to withstand wind and wave forcing. Containment design may vary by reach, as south-facing dikes may require more robust shoreline protection features such as a rock breakwater or revetment, while north-facing dikes may allow for softer structures and will also serve as dredged material containment for wetland creation. Individual Wetland Creation Cells would be created within the larger Wetland Creation Areas to provide manageable sized areas for wetland construction, and each cell is anticipated to be 40-60 acres. Wetland Creation Cells are proposed to be created through construction of interior dikes to completely contain the dredged material and allow for dewatering, long-term settlement of sediments, and wetland habitat creation. Construction of the containment structures would be advanced as existing Wetland Creation Cells approach capacity to allow as-needed capacity for dredged material placement. As Wetland Creation Cells consolidate to an intertidal elevation, specific habitats would be constructed within each cell. Habitat creation may include the excavation of tidal creeks, tidal ponds, embayments, low- and high-marsh features, scrub-shrub mounds, or other features providing ecological uplift to the project site. External containment dikes would be degraded or gapped to provide hydrologic connectivity once the wetland vegetation has stabilized the dredge material.

It is envisioned Wetland Creation Area construction would begin adjacent to the southern boundary of the project area and progress north. As the wetlands become established in each cell, the stabilized area would serve as additional protection from wind and wave forcing.

The design of the Wetland Creation Site is based on the project objective for intertidal wetland habitat. This is the dominant habitat type in the project vicinity. The wetland design characteristics will mimic these habitats so they can withstand typical water level variances (inundation) at the project site. Standard tidal datums obtained from the NOAA tide gauge station Coast Guard Sector Mobile, AL, located approximately 3 miles east of the Wetland Creation Site were reviewed. For design purposes, mean high water (1.09 ft NAVD88-Geoid12B) was set as the high water benchmark. The low water benchmark was set at the mean low water level (-0.44 ft NAVD88-Geoid12B). The initial wetland design target elevation is +1 ft NAVD88.

Project design elevations may be adjusted as the project is implemented to account for sea level rise. Maintenance lifts would be designed and implemented for the containment features and the wetlands.

Sweet et al, (2017) [6] provides six GMSL scenarios for the U.S. Low (0.3 m), intermediate-low (0.5 m), intermediate (1 m), intermediate-high (1.5 m), high (2 m), and extreme (2.5 m). The Sea Level Rise and Coastal Flood Hazard Scenarios and Tools Interagency Task Force combine these scenarios with the Intergovernmental Panel on Climate Change RCP scenarios to provide SLR projection guidelines as a probabilistic assessment. The RCP scenarios include RCP 2.6 (strong emissions mitigation by 2100), RCP 4.5 (moderate emissions mitigation by 2100), and RCP 8.5 (no emissions mitigation by 2100). For design, the RCP4.5 Intermediate scenario was assumed.

Project Construction Activities

Project Corridor and Project Access Facility

A corridor for vessels and equipment would be established to access the Wetland Creation Site. The corridor is planned to use areas where the minimal water depth is met for vessel access. Impacts to the water bottom are not anticipated for the project corridor. No construction equipment or activities may disturb the water bottom (including anchoring or spudding) within the cultural resources avoidance areas, obstruction avoidance area, or SAV avoidance area. Construction of a Project Access Facility at the Wetland Creation Site for equipment and personnel access, and material offloading for use over the lifespan of the project is required. This activity would require installation of steel sheet piles for construction of a bulkhead, and timber piles for mooring and berthing activities.

The Project Access Facility would be constructed to a maximum elevation of +6 feet NAVD88 and be approximately 30 feet wide and 100 feet long. The Project Access Facility will intersect the external containment dike system which will provide access throughout the Wet Creation Site.

Containment Dike Construction

The use of in situ material is the preferred source material for construction of containment dikes. Preliminary soil boring logs indicate a 6- to 20-foot thick clayey-sand layer with generally 50-70% sands throughout the project site. Utilizing in situ material is more cost effective than importing off-site material and increases the capacity for material placement in the Wetland Creation Area by deepening the bottom of the individual Wetland Creation Cells. Internal borrow areas would be delineated from within Wetland Creation Cells and it is envisioned that cutter head dredges would be used to hydraulically transport and stockpile dredged material. Land-based equipment would then transport and place the material to construct the dikes. To maximize dredging operations, sand may be stockpiled within a Wetland Creation Area for future containment construction. When construction requires, containment material would be mechanically removed from the stockpile. Dewatering of the stockpile material would be controlled to manage water quality. Internal borrow areas would be filled over-time and be incorporated into habitat creation activities for each Wetland Creation Cell, reducing risks of water quality concerns. Alternatively,

[6] Sweet, W.V., Kopp, R.E., Weaver, C.P., Obeysekera, J., Horton, R.M., Thieler, E.R., and Zervas, C. 2017. *Global and Regional Sea Level Rise Scenarios for the United States*. NOAA Technical Report NOS CO-OPS 083. NOAA/NOS Center for Operational Oceanographic Products and Services

if it is determined that hydraulic dredging is not feasible, construction of the containment dikes may be completed with mechanical dredge equipment such as a clamshell, dragline, or bucket dredge.

Another potential source of material for containment is the upland dredge placement areas for the upper Mobile Harbor. The method for utilizing upland placement areas as project borrow areas includes movement of the placed dredged material through a conveyor belt and to a hopper dredge or hopper barge where it would then be transported to the Wetland Creation Site. At the site, this material could be utilized for construction of containment. This method would not require additional impacts to resources. Existing facilities would be used to load and transport the material, and the project's site access corridor, project access facility, and/or pipeline corridor would be utilized to transport the material.

Containment construction includes construction of box riser weirs to allow for de-watering of the placed material. De-watering of the material accelerates consolidation, leading to additional placement capacity. The management of surface water while placing dredged material within the Wetland Creation Cells would be accomplished by controlling the elevation of the weirs to regulate the depth of water ponded within the cell.

External containment dikes will be located around each Wetland Creation Area. They would be designed to allow a minimum of 2 feet of freeboard during construction, and internal containment would be required to meet the construction wetland fill elevation. Based on the construction wetland fill elevation of +4 feet, containment dikes would not exceed a crest elevation of +6.0 feet NAVD 88. A crest width of 10 ft and side slopes of 3H:1V are proposed. Excavation for material would not be allowed within 25 ft of a containment dike for slope stability and to allow an amphibious excavator to work from the bench. Borrow area dredge depth would vary depending on suitable material for containment construction, but the excavated depth would not exceed -20 feet NAVD 88.

Shoreline Protection of Containment Features

Some external containment features around the Wetland Creation Areas may require more robust protection from the prevailing winds and waves. This protection may include a rock riprap breakwater, rock revetment, or other fortifying material. Construction of the shoreline protection feature would require barges and large marine construction equipment. Equipment access for deeper draft vessels to the project site would be along the eastern side of the project site where the project's access corridor and Project Access Facility is established.

Shoreline protection requires a minimum elevation for +4 feet NAVD88. The shoreline protection may also serve as part of an external containment dike. In this scenario, the shoreline protection would not exceed +6 feet NAVD88. Three types of external are proposed:

> Type I includes a rock breakwater with a maximum crest elevation of +4 ft, and a marsh buffer which would be constructed of sandy material, and an internal earthen containment dike with a crest elevation of +6 ft. In this arrangement the earthen containment dike provides dredged material containment and the breakwater and marsh buffer is the shoreline protection feature for the Wetland Creation Area.
>
> Type II includes a sand containment dike protected by a rock revetment. The structure functions as containment and protection which requires a crest elevation of +6 ft. The revetment includes

armor stone and an underlayer of smaller bedding rock. Rock revetments are commonly used in marine environments as shoreline protection of dredge material placement areas.

Type III includes a sand containment dike with a fortified core constructed of geotubes (or other structure) and a fronting beach for additional protection and wave energy dissipation. The sand dike functions as containment which requires an elevation of +6 ft. The sand containment would be sacrificial during extreme events. The fortified core would function as containment of previously placed dredge material, as well as provide a level of protection. The fortified core would be constructed to an elevation of +4 ft. This type of containment could be useful for containment along reaches of the Wetland Creation Area not exposed to controlling environmental conditions from the south.

Material for Wetland Creation

The main source of BU material for wetland creation would be the maintenance dredging of the Mobile Ship Channel and adjacent public berths by the USACE and the Alabama State Port Authority. Maintenance dredging is performed to maintain navigable waters within the channel and the berths. This typically involves a 12–24-inch cutterhead suction dredge, but up to 30-inch dredges can be used. Maintenance dredging of the channel and berths is permitted independent of the *Upper Mobile Bay Beneficial Use Wetland Creation Site Project* and would continue to occur whether this project is implemented. The material dredged during maintenance events would be transported to the Wetland Creation Area through approximately 16- to 24-inch dredge pipeline and be beneficially used to create wetland habitat.

All dredged materials used for the project must be determined suitable for open-water disposal in accordance with the Southeast Regional Implementation Manual (SERIM) Requirements and Procedures for the Evaluation of Ocean Disposal of Dredged Material in the Southeastern U.S. Atlantic and Gulf Coast Waters.

Pipeline corridor

Corridors for dredge pipeline would be established between the port terminals and the Wetland Creation Site. The corridor would be required to include crossing(s) for the Mobile Ship Channel and would be routed through open water along a route that minimizes navigation impacts, impacts to benthic habitat, and avoids cultural resource and SAV areas. During each dredge cycle, the dredge pipeline would be temporarily placed within the pipeline corridor. The dredge pipeline would cross the Mobile Ship Channel following federal channel crossing procedures outlined in EM 38S-1-1, and other requirements necessary per coordination with USACE Navigation. The dredge pipeline would generally be submerged within the dredge pipeline corridor to minimize navigation impacts. Floating pipeline would only be used as necessary across the Mobile Ship Channel.

Dredged Material Placement and Wetland Creation

In the first five years, approximately 100 acres of wetlands would be created through placement of dredged material. After that, it is assumed approximately 40-80 acres of wetlands would be created each year based on the volumes of dredged material in the area by the ASPA, USACE, and other potential sources.

Dredged material would be placed by hydraulic dredging. The outfall of the dredge pipe would be placed within a fully contained Wetland Creation Cell. Once the dredged material is placed, it would be allowed to consolidate. Dredged material construction fill elevation shall not exceed +4 ft NAVD88 to accommodate settling to the wetland design target elevation. Multiple dredged material placement cycles may occur until target intertidal wetland elevations are reached. The material would then be formed into intertidal wetlands by adding typical habitat features. Habitat features would be dominated by low marsh (+1 ft NAVD88), but would also include high marsh, tidal creeks, berms adjacent to the creeks, embayments, SAV habitat, and tidal ponds among other habitat features. Tidal creeks would be constructed with amphibious excavators, and sidecast material would be used to construct berms adjacent the creeks. Tidal ponds would ideally be planned where internal borrow areas are located, as these areas would require additional dredged material to raise the bottom to intertidal wetland elevations. Embayments may also be planned at internal borrow areas for the same reason. Water bottom elevations of tidal ponds and tidal creeks would be planned to encourage growth of SAV. Wetland creation would also include degrading or gapping the containment features to provide connectivity to Mobile Bay. Tidal creek inlets would be constructed within the external dikes to connect tidal creeks to the tidal channels between the Wetland Creation Areas, or directly to Mobile Bay.

The following provides the status of review of authorizations or certifications received or applied for form federal, state, and local agencies (Table 1). There have been previous coordination efforts and others remain in progress or under review [e.g. an Environmental Assessment, Essential Fish Habitat review].

ASPA would ensure compliance with applicable state and local laws and other applicable federal laws and regulations relevant to the preferred project alternative, including technical assistance from appropriate regulatory agencies to identify compliance issues.

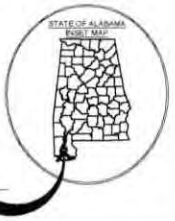
Table 1. Status of the environmental compliance laws and regulations. D = draft (provided to USACE); IP= in progress; NA = not applicable

Environmental Compliance Type Status	Status
FEDERAL	
NEPA – Environmental Assessment	D
NEPA – Environmental Impact Statement	NA
National Marine Sanctuaries Act	NA
Coastal Zone Management Act	IP
Fish and Wildlife Coordination Act	IP
CWA – 404 – Individual Permit	D
CWA – 404 – General Permit	NA
Rivers and Harbors Act – Section 408 – Memorandum for Record	IP
Rivers and Harbors Act – Section 10 – Permit	IP
Endangered Species Act – Section 7 – Informal and Formal Consultation	IP
Endangered Species Act – Section 7 - Biological Assessment	NA
Endangered Species Act – Section 7 – Biological Opinion	NA
Endangered Species Act – Section 7 – Permit for Take	NA
Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat - Consultation	D
Marine Mammal Protection Act – Incidental Take Permit (106)	NA
Migratory Bird Treaty Act	NA
Bald and Golden Eagle Protection Act – Consultation and Planning	NA
Marine Protection, Research and Sanctuaries Act – Section 103 permit	NA
BOEM Outer Continental Shelf Lands Act – Section 8 OCS Lands Sand permit	NA
National Historic Preservation Act (NHPA) Section 106 – Consultation and Planning ACHP, SHPO(s), and/or THPO(s)	D
STATE	
ADEM – USACE permit consultation and concurrence	D
ADEM – CWA Section 401 Water Quality Certification	IP
ADCNR – State Lands and Marine Resources consultation and concurrence	IP
ADCNR – Dredging permit	NA
Alabama State Port Authority	NA
LOCAL	
City	NA
County	NA

UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT

ALABAMA STATE PORT AUTHORITY

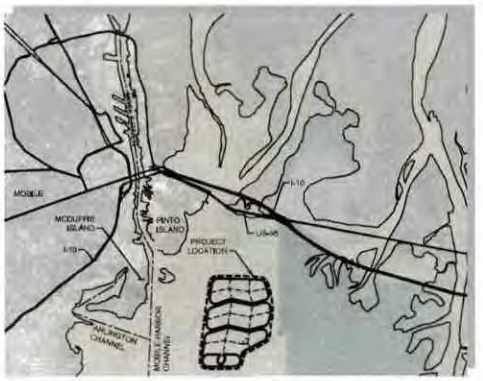
PERMIT DRAWINGS - NOT FOR CONSTRUCTION



VICINITY MAP
SCALE NTS

INDEX OF DRAWINGS

SHEET INDEX	SHEET	DRAWING TITLE
1	G-001	TITLE SHEET
2	G-002	GENERAL NOTES
3	V-101	GENERAL CONDITIONS
4	V-102	ENVIRONMENTAL & CULTURAL AVOIDANCE PLAN
5	B-101	GENERAL SOIL BORING LOGS PLAN
6	C-101	WETLAND CREATION SITE LAYOUT
7	C-102	CONCEPTUAL WETLAND CREATION CELL DETAIL
8	C-301	WETLAND CREATION AREA TYPICAL SECTION
9	C-320	CONTAINMENT DIKE TYPICAL SECTIONS (1 OF 2)
10	C-321	CONTAINMENT DIKE TYPICAL SECTIONS (2 OF 2)
11	C-501	TEMPORARY WARNING SIGN DETAIL
12	C-502	TURBIDITY CURTAIN DETAIL
13	C-503	BOX WEIR DETAIL
14	C-601	COORDINATE TABLES



LOCATION PLAN
SCALE NTS

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

ALABAMA STATE PORT AUTHORITY

UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT

TITLE SHEET

Sheet Reference No.
G-001

GENERAL NOTES

1. THIS DRAWING SET IS FOR PERMITTING PURPOSES ONLY AND IS NOT TO BE USED FOR CONSTRUCTION.
2. BACKGROUND AERIAL IMAGERY COURTESY OF MICROSOFT BING, 2021.
3. ALL HORIZONTAL COORDINATES ARE NAD 83 (2011), ALABAMA STATE PLANE, WEST ZONE, U.S. SURVEY FEET.
4. ALL ELEVATIONS REFERENCE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), U.S. SURVEY FEET (UNLESS OTHERWISE NOTED).
5. NO CONSTRUCTION EQUIPMENT OR ACTIVITIES MAY OPERATE, TRANSIT, STAGE OR STORE WITHIN THE AVOIDANCE AREAS AS SHOWN ON SHEET V-102.
6. ESTIMATED RANGE OF FULLY LOADED DRAFTS FOR VESSELS TO BE USED FOR CONSTRUCTION:
   a. 800 HP TUGS ..... 8-8 FT
   b. 2,000 HP TUGS ..... 10-14 FT
   c. WORK BOATS, TENDERS ..... 6-8 FT
   d. CREW BOATS ..... 2-4 FT
   e. WORK BARGES, FUEL BARGES ..... 4-6 FT
   f. 18" HYDRAULIC DREDGE ..... 8 FT
7. TURBIDITY CURTAINS SHALL BE INSTALLED BY CONTRACTOR AS NECESSARY TO PREVENT TURBIDITY IN EXCESS OF ADEM WATER QUALITY REQUIREMENTS.
8. CONTRACTOR SHALL PERFORM A PRE-CONSTRUCTION MAGNETOMETER SURVEY OF ANY DREDGING/EXCAVATION AREA.
9. WARNING SIGNS AND LIGHTS SHALL BE INSTALLED AS NECESSARY PER UNITED STATES COAST GUARD REQUIREMENTS, INCLUDING NECESSARY TEMPORARY LIGHTS AND SIGNAGE DURING CONSTRUCTION, AND PERMANENT LIGHTS AND SIGNAGE.
10. WHERE REFERENCED, DESIGN ELEVATIONS REFER TO LONG-TERM POST-SETTLEMENT ELEVATIONS.
11. PROJECT ACCESS FACILITY TO BE CONSTRUCTED ALONG EASTERN REACH OF 100-ACRE WETLAND CREATION SITE FOR OFFLOADING OF MATERIALS, EQUIPMENT, AND PERSONNEL. THIS FACILITY SHALL BE APPROXIMATELY 30' BY 50', WITH ELEVATION NOT TO EXCEED +5.0 NAVD 88. STRUCTURE TO CONSIST OF A STEEL SHEETPILE BULKHEAD WITH EARTHEN AND GRAVEL BACKFILL, TIMBER FENDERING AND TIMBER PILE CLUSTERS TO BE INSTALLED FOR MOORING/BERTHING.

WETLAND CREATION SITE NOTES

1. THESE PERMIT DRAWINGS SHOW THE 1,200-ACRE CONCEPTUAL WETLAND CREATION SITE LAYOUT FOR REFERENCE. EXACT WETLAND CREATION SITE TO BE DELINEATED DURING DETAILED DESIGN. CHANGES MAY BE NECESSARY BASED ON PENDING GEOTECHNICAL INVESTIGATIONS, WAVE OR HYDRODYNAMIC MODELING, OR OTHER DESIGN CONSIDERATIONS.
2. REQUESTING PERMIT FOR A 1,200-ACRE WETLAND CREATION SITE WITHIN THE OVERALL CULTURAL RESOURCE SURVEY AREA EXTENTS. THE WETLAND CREATION SITE IS TO CONSIST OF INDIVIDUAL WETLAND CREATION AREAS TO BE SEPARATED BY TIDAL CHANNELS. EACH WETLAND CREATION AREA WILL BE SEPARATED INTO APPROXIMATELY 40-ACRE WETLAND CREATION CELLS.
3. TIDAL CHANNELS SHALL BE SIZED TO PROVIDE HYDROLOGIC CONNECTION BETWEEN WETLANDS CELLS AND MOBILE BAY.
4. INITIAL CONSTRUCTION SHALL CONSIST OF EXTERNAL CONTAINMENT FOR AN APPROXIMATELY 100-ACRE SITE WITHIN THE SOUTHERN WETLAND CREATION AREA AS SHOWN ON SHEET C-101. TWO 50-ACRE WETLAND CREATION CELLS WITHIN THIS AREA SHALL BE CONSTRUCTED.
5. THE REMAINING PORTION OF THE SOUTHERN WETLAND CREATION AREA, AS WELL AS THE MIDDLE WETLAND CREATION AREA AND NORTHERN WETLAND CREATION AREA SHALL BE CONSTRUCTED IN PHASES AS NECESSARY.
6. WETLAND CREATION SITE SHALL NOT EXCEED 1,200-ACRES.
7. WETLAND CREATION SITE SHALL NOT FILL WITHIN IDENTIFIED CULTURAL RESOURCE AVOIDANCE AREAS, WITHIN IDENTIFIED OBSTRUCTION AVOIDANCE AREAS OR ENVIRONMENTALLY SENSITIVE AREAS INCLUDING EXISTING SUBAQUATIC VEGETATION (SAV) BEDS OR EXISTING WETLANDS.

DREDGING NOTES

1. ANCHOR BUOYS AND DREDGE PIPELINE (FLOATING OR SUBMERGED) WITHIN THE DREDGE PIPELINE CORRIDOR, THE ACCESS CORRIDOR, OR OTHER PUBLIC NAVIGABLE WATERWAYS SHALL BE MARKED IN ACCORDANCE WITH THE U.S. COAST GUARD REGULATIONS INCLUDING REQUIRED FLASHING LIGHTS, WARNING SIGNS AND MARKERS.
2. THE CONTRACTOR MAY DREDGE WITHIN THE BORROW AREAS TO THE ELEVATIONS INDICATED IN THESE DRAWINGS.
3. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT A COMMUNICATION PLAN TO THE OWNER AND THE USACE OPERATIONS DIVISION, WHICH PRECISELY DELINEATES THE DREDGE LOCATION, ATTENDANT PLANT, ANCHOR BUOYS, AND FLOATING OR SUBMERGED PIPELINE PURSUANT TO THE PROJECT SPECIFICATIONS.
4. HYDRAULIC AND/OR MECHANICAL DREDGING AND PLACEMENT IS PROPOSED FOR CONTAINMENT DIKE CONSTRUCTION. MATERIAL TO BE PLACED ALONG CENTERLINE OF CONTAINMENT DIKES AND/OR STOCKPILED THEN TRANSPORTED AND REWORKED TO CONSTRUCT CONTAINMENT DIKES WITH LAND-BASED EQUIPMENT.
5. TURBIDITY CURTAINS SHALL BE UTILIZED BY THE CONTRACTOR AS NECESSARY TO COMPLY WITH ADEM WATER QUALITY REQUIREMENTS. TRAINING/GUIDE DIKES MAY BE UTILIZED BY THE CONTRACTOR AHEAD OF THE DREDGE PIPELINE AS THE MATERIAL IS PLACED ALONG THE CONTAINMENT DIKE CENTERLINES IN ORDER TO MINIMIZE THE LOSSES AND SPREAD OF DREDGED MATERIAL.

CONTAINMENT DIKE NOTES

1. CONTAINMENT DIKES TO CONSIST OF EITHER TYPE I, TYPE II, OR TYPE III CONTAINMENT AS SHOWN ON SHEETS C-320 AND C-321. EXACT CONTAINMENT STRUCTURES, INCLUDING HORIZONTAL AND VERTICAL DIMENSIONS FOR EACH REACH OF CONTAINMENT ARE TO BE DETERMINED DURING DETAILED ENGINEERING AND DESIGN, BASED ON WAVE LOADING.
2. CONTAINMENT DIKE DESIGN ELEVATIONS SHALL NOT EXCEED +6.0 FEET NAVD 88.
3. UNLESS OTHERWISE INDICATED, PROJECT FEATURE INFLECTION POINT (PFIP) COORDINATES REFER TO THE CENTERLINE OF THE ROCK RIPRAP BREAKWATER.

PROPOSED DREDGE PIPELINE CORRIDOR NOTES

1. TO FACILITATE TRANSPORT OF DREDGED MATERIAL FROM ASRA TERMINALS INCLUDING MCDUFFIE COAL TERMINAL, APM CONTAINER TERMINAL, AND PRIME ISLAND TERMINAL, 2-100' WIDE DREDGE PIPELINE CORRIDORS ARE PROPOSED AS SHOWN ON SHEET C-101.
2. THE DREDGE PIPELINE SHALL BE SUBMERGED AND PLACED ON THE WATER BOTTOMS. FLOATING DREDGE PIPELINE SHALL ONLY BE USED AS NECESSARY.
3. THE PROPOSED DREDGE PIPELINE CORRIDORS SHALL CROSS THE MOBILE HARBOR CHANNEL AT THE PRIPS SHOWN ON SHEET C-101. CHANNEL CROSSING SHALL BE COMPLETED FOLLOWING USACE CHANNEL CROSSING REGULATIONS IN ACCORDANCE WITH EM 385-1-1.

ABBREVIATIONS

AC	ACRES
APPROX	APPROXIMATE
BL	BASELINE
BM	BENCH MARK
BOT	BOTTOM
CL	CENTERLINE
CY	CUBIC YARD
DIA	DIAMETER
ELEV	ELEVATION
EXC	EXAGGERATION
EXIST	EXISTING
FT	FOOT or FEET
IN	INCH
ID	IDENTIFICATION
LB	POUND
MAX	MAXIMUM
MB	BORING LOG ID
MHW	MEAN HIGH WATER
MIN	MINIMUM
M.W	MEAN LOW WATER
MSL	MEAN SEA LEVEL
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
NAD 83	NORTH AMERICAN DATUM OF 1983
OZ	OUNCE
PFIP	PROJECT FEATURE INFLECTION POINT
TYP	TYPICAL
WCA	WETLAND CREATION AREA
WP	WORKING POINT

TIDAL DATUM INFORMATION

WATER LEVELS (FEET)

MHHW	+1.19
MHW	+1.09
MTL	+0.32
NAVD 88 (DATUM)	+0.0
MLW	-0.44
MLLW	-0.53

EXCAVATION AND FILL SUMMARY

EXCAVATIONS - EXTERNAL CONTAINMENT	VOLUME		AREA	
SOUTH WCA	874,138	CY	2,830,221	SF
MIDDLE WCA	859,716	CY	1,791,234	SF
NORTH WCA	806,240	CY	1,636,849	SF
EXCAVATIONS - INTERNAL CONTAINMENT	VOLUME		AREA	
SOUTH WCA	349,744	CY	944,300	SF
MIDDLE WCA	293,639	CY	793,339	SF
NORTH WCA	214,766	CY	579,958	SF
FILL - DREDGE FILL FOR EXTERNAL CONTAINMENT	VOLUME		AREA	
SOUTH WCA	487,078	CY	1,262,636	SF
MIDDLE WCA	328,858	CY	1,027,635	SF
NORTH WCA	303,120	CY	818,428	SF
FILL - DREDGE FILL FOR INTERNAL CONTAINMENT	VOLUME		AREA	
SOUTH WCA	174,872	CY	770,232	SF
MIDDLE WCA	148,815	CY	792,368	SF
NORTH WCA	107,460	CY	618,338	SF
FILL - RIPRAP FOR EXTERNAL CONTAINMENT	VOLUME		AREA	
SOUTH WCA	493,154	CY	2,026,538	SF
MIDDLE WCA	296,806	CY	1,844,216	SF
NORTH WCA	272,748	CY	1,309,479	SF
FILL - DREDGE FILL FOR WETLAND CREATION	VOLUME		AREA	
SOUTH WCA	3,772,863	CY	16,411,868	SF
MIDDLE WCA	3,281,707	CY	14,962,569	SF
NORTH WCA	2,410,898	CY	13,071,136	SF

1. INTERNAL IN-SITU BORROW AREA EXCAVATION VOLUME IS THE CUT VOLUME NECESSARY TO CONSTRUCT EXTERNAL AND INTERNAL CONTAINMENT DIKES FOR THE NORTH, SOUTH, AND MIDDLE WCA, INCLUDING THE 100-ACRE SITE.
2. FILL VOLUME IS TO THE LONG-TERM DESIGN ELEVATION OF +1.0 NAVD 88.

PERMIT DRAWINGS
ISSUED 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

ALABAMA STATE PORT AUTHORITY

UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT

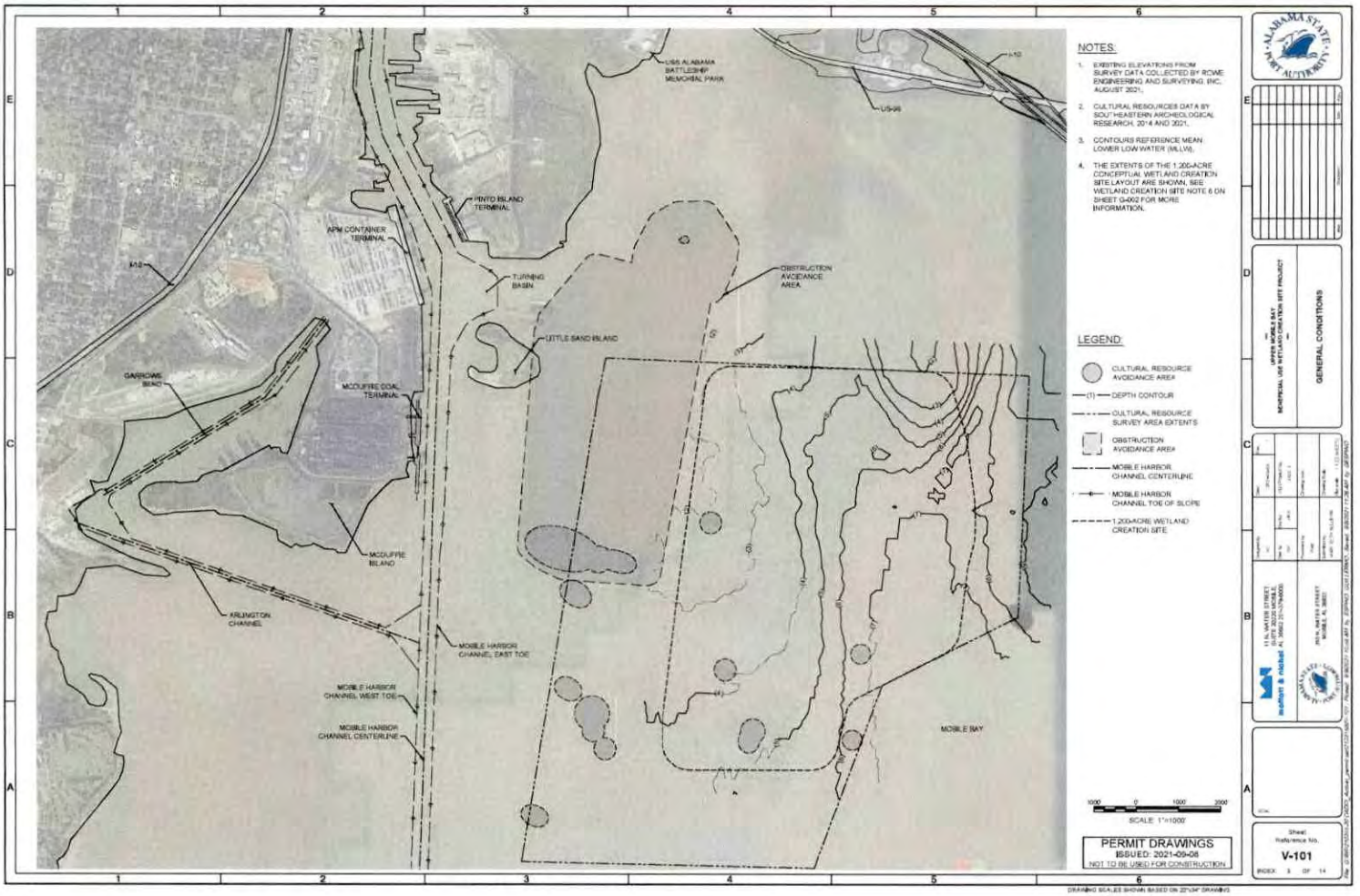
GENERAL NOTES

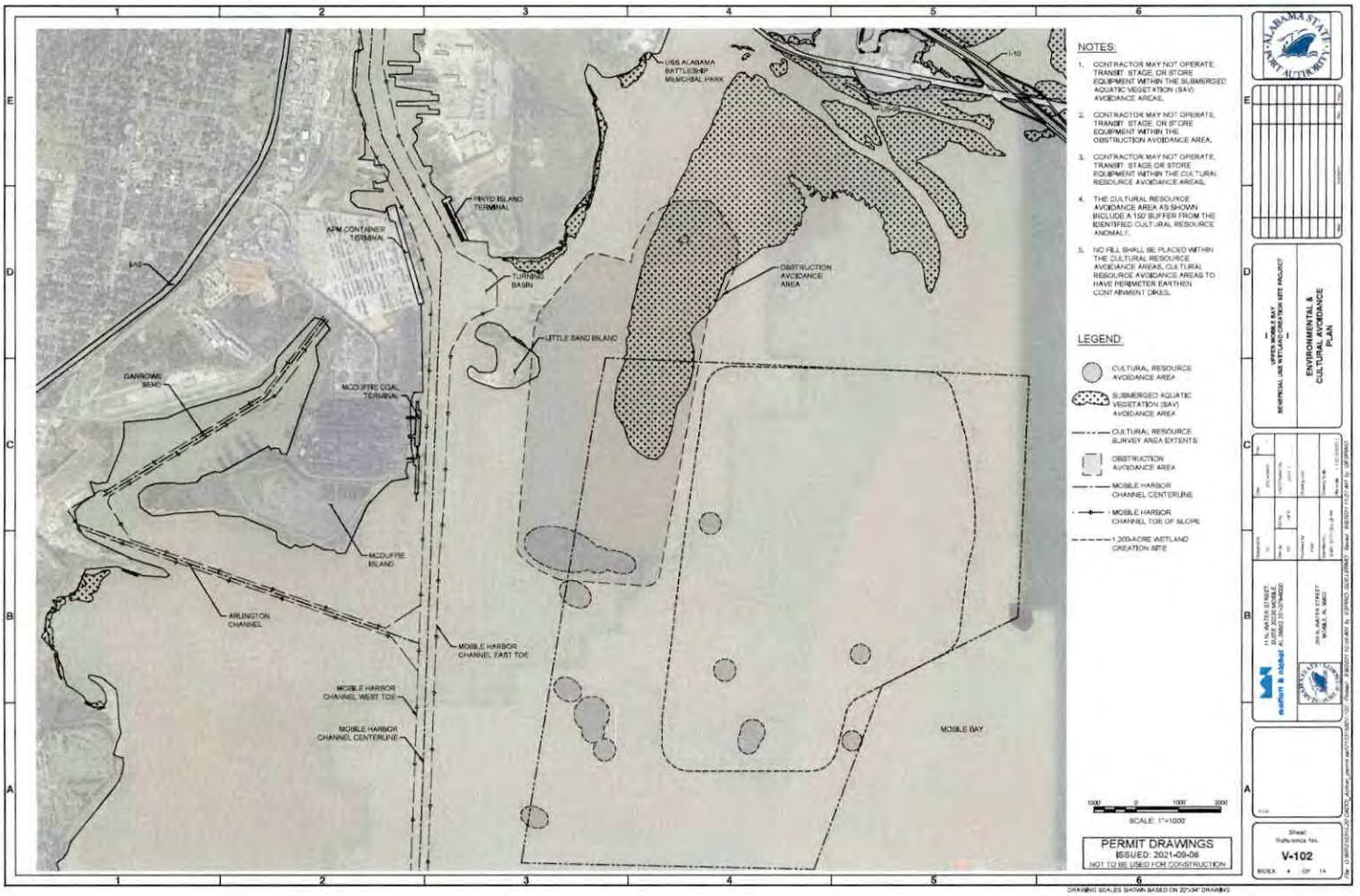
11 N. WATER STREET, SUITE 13290, MOBILE, AL 36602 (251) 415-7300

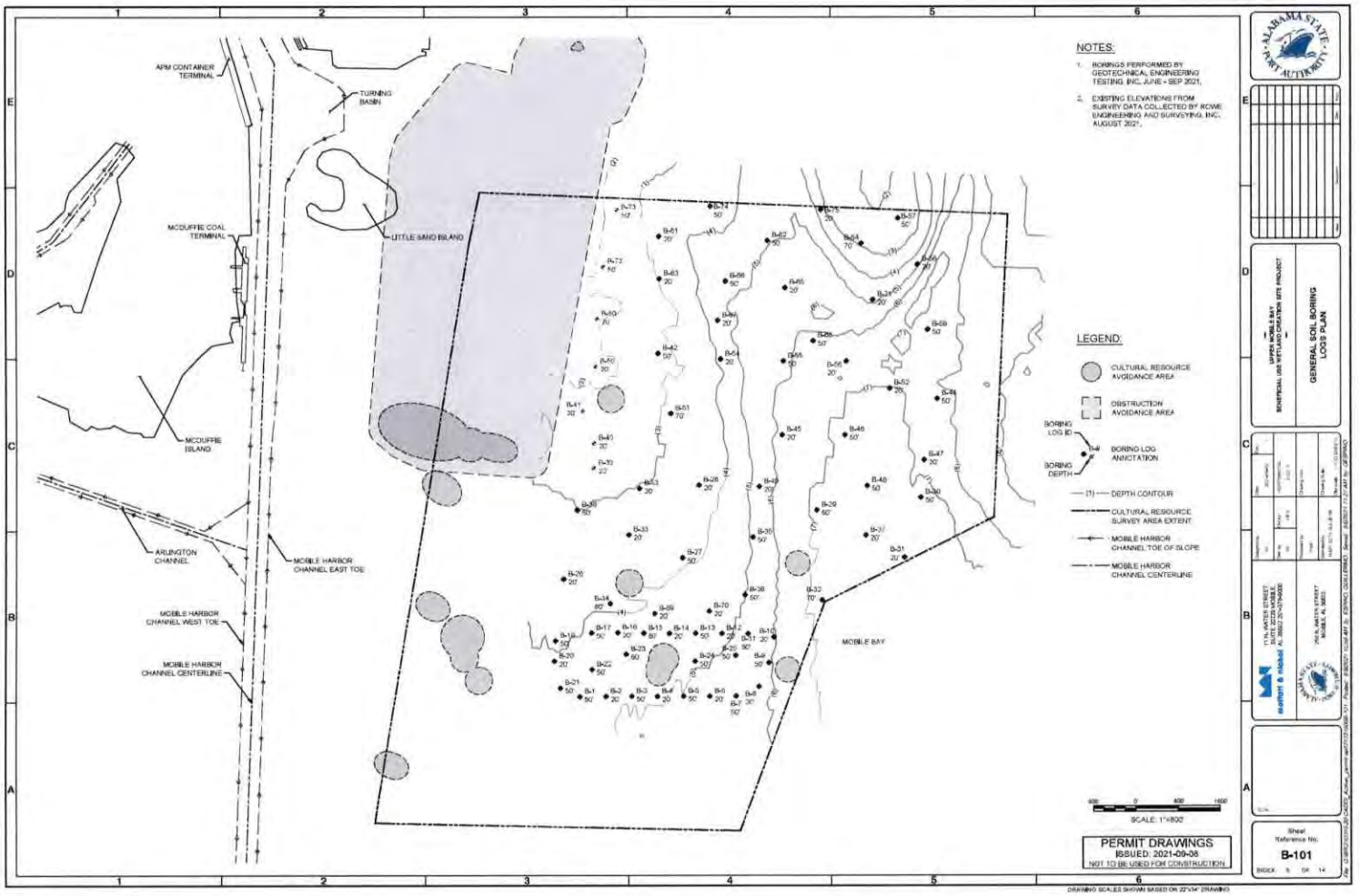
7000 N. MOPAS STREET, MOBILE, AL 36608

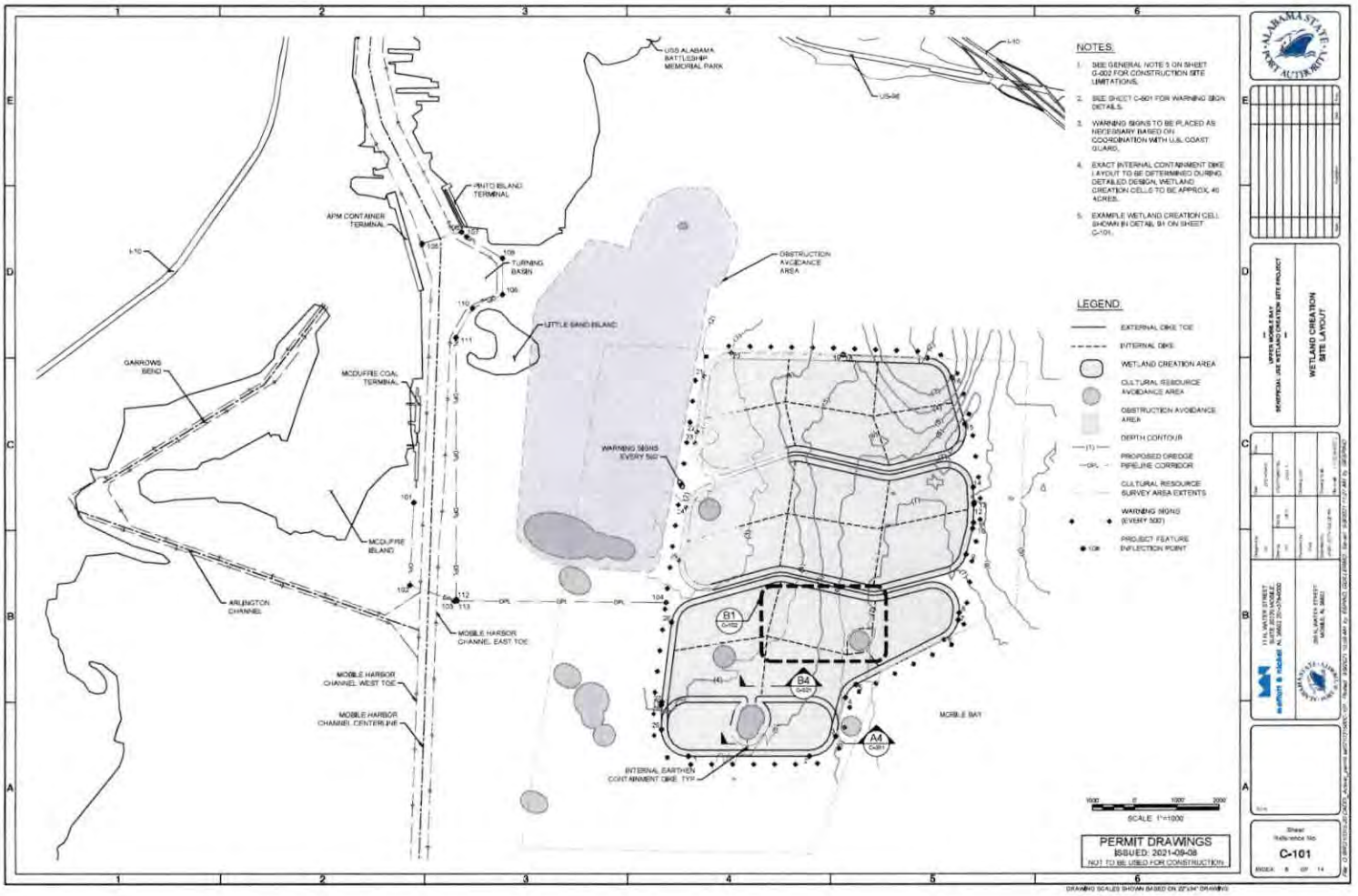
Sheet Reference No.
G-002
INDEX 3 OF 14

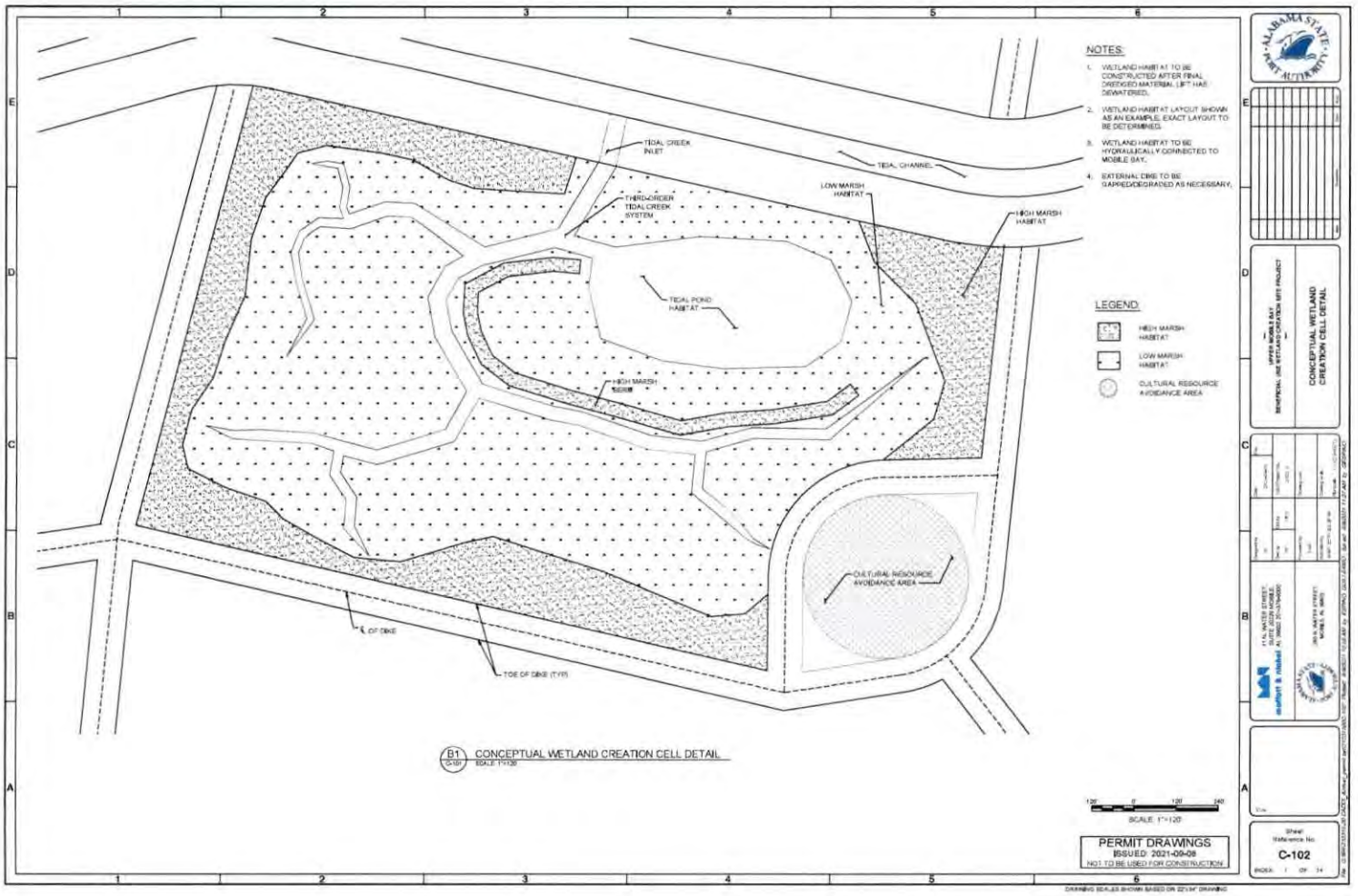
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

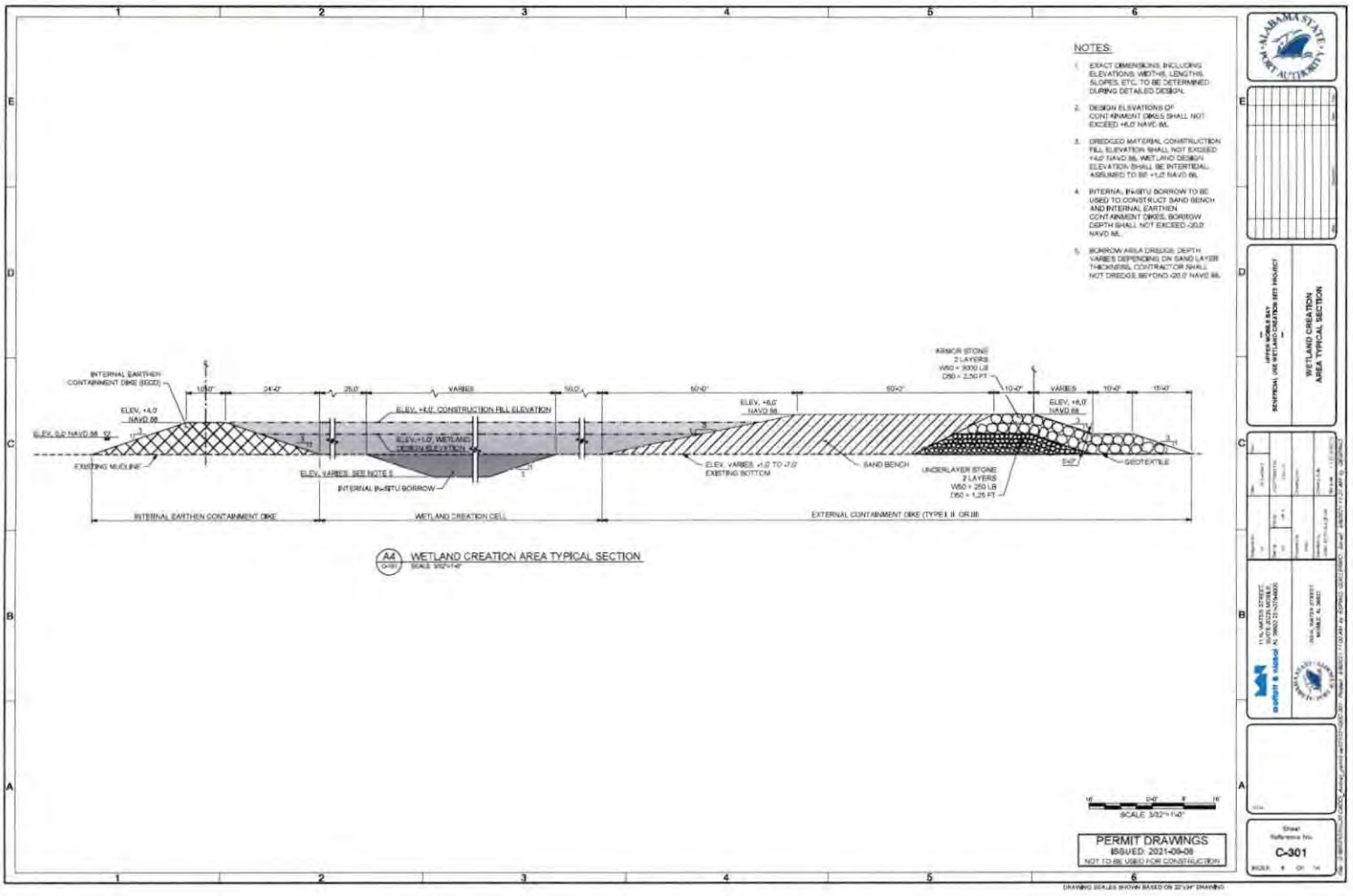

USS ALABAMA BATTLESHIP MEMORIAL PARK
US-98
I-10
PINTO ISLAND TERMINAL
APM CONTAINER TERMINAL
TURNING BASIN
OBSTRUCTION AVOIDANCE AREA
LITTLE SAND ISLAND
GARROWS BEND
MCDUFFIE COAL TERMINAL
MCDUFFIE ISLAND
ARLINGTON CHANNEL
MOBILE HARBOR CHANNEL, EAST TOE
MOBILE HARBOR CHANNEL WEST TOE
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE BAY
NOTES:
1. EXISTING ELEVATIONS FROM SURVEY DATA COLLECTED BY ROWE ENGINEERING AND SURVEYING, INC. AUGUST 2021.
2. CULTURAL RESOURCES DATA BY SOUTHEASTERN ARCHEOLOGICAL RESEARCH, 2014 AND 2021.
3. CONTOURS REFERENCE MEAN LOWER LOW WATER (MLLW).
4. THE EXTENTS OF THE 1,200-ACRE CONCEPTUAL WETLAND CREATION SITE LAYOUT ARE SHOWN. SEE WETLAND CREATION SITE NOTE 6 ON SHEET G-002 FOR MORE INFORMATION.
LEGEND:
CULTURAL RESOURCE AVOIDANCE AREA
(1) DEPTH CONTOUR
CULTURAL RESOURCE SURVEY AREA EXTENTS
OBSTRUCTION AVOIDANCE AREA
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE HARBOR CHANNEL TOE OF SLOPE
1,200-ACRE WETLAND CREATION SITE
SCALE 1"=1000'
PERMIT DRAWINGS
ISSUED: 2021-09-06
NOT TO BE USED FOR CONSTRUCTION
ALABAMA STATE PORT AUTHORITY
UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT
GENERAL CONDITIONS
Sheet Reference No.
V-101

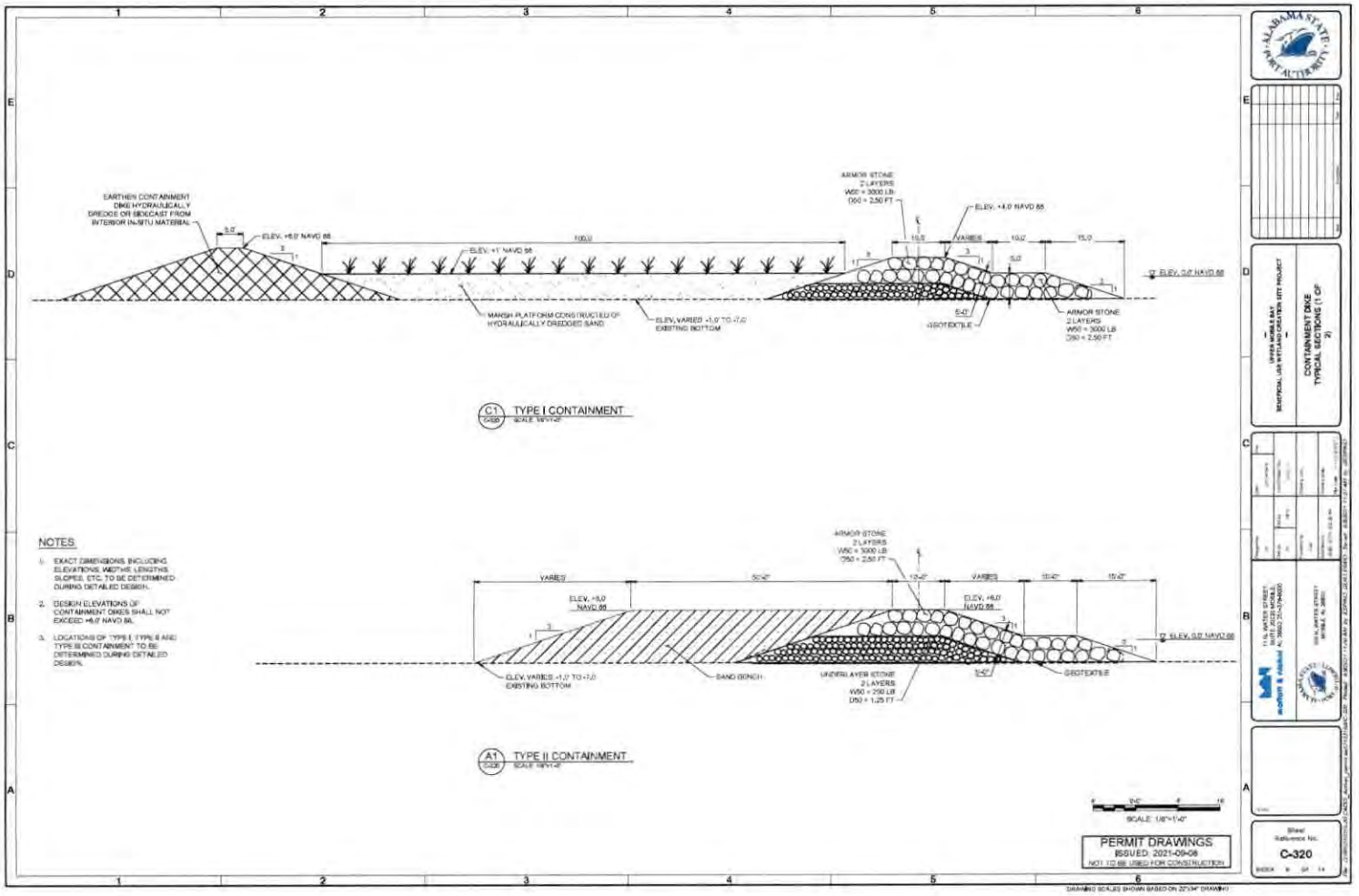

USS ALABAMA BATTLESHIP MEMORIAL PARK
I-10
PINTO ISLAND TERMINAL
APM CONTAINER TERMINAL
TURNING BASIN
OBSTRUCTION AVOIDANCE AREA
LITTLE SAND ISLAND
GARROWS BEND
MCDUFFIE COAL TERMINAL
MCDUFFIE ISLAND
ARLINGTON CHANNEL
MOBILE HARBOR CHANNEL EAST TOE
MOBILE HARBOR CHANNEL WEST TOE
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE BAY
NOTES:
1. CONTRACTOR MAY NOT OPERATE, TRANSIT, STAGE, OR STORE EQUIPMENT WITHIN THE SUBMERGED AQUATIC VEGETATION (SAV) AVOIDANCE AREAS.
2. CONTRACTOR MAY NOT OPERATE, TRANSIT, STAGE, OR STORE EQUIPMENT WITHIN THE OBSTRUCTION AVOIDANCE AREA.
3. CONTRACTOR MAY NOT OPERATE, TRANSIT, STAGE OR STORE EQUIPMENT WITHIN THE CULTURAL RESOURCE AVOIDANCE AREAS.
4. THE CULTURAL RESOURCE AVOIDANCE AREA AS SHOWN INCLUDE A 150' BUFFER FROM THE IDENTIFIED CULTURAL RESOURCE ANOMALY.
5. NO FILL SHALL BE PLACED WITHIN THE CULTURAL RESOURCE AVOIDANCE AREAS, CULTURAL RESOURCE AVOIDANCE AREAS TO HAVE PERIMETER EARTHEN CONTAINMENT DIKES.
LEGEND:
CULTURAL RESOURCE AVOIDANCE AREA
SUBMERGED AQUATIC VEGETATION (SAV) AVOIDANCE AREA
CULTURAL RESOURCE SURVEY AREA EXTENTS
OBSTRUCTION AVOIDANCE AREA
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE HARBOR CHANNEL TOE OF SLOPE
1,200-ACRE WETLAND CREATION SITE
SCALE: 1"=1000'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
ALABAMA STATE PORT AUTHORITY
UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT
ENVIRONMENTAL & CULTURAL AVOIDANCE PLAN
V-102

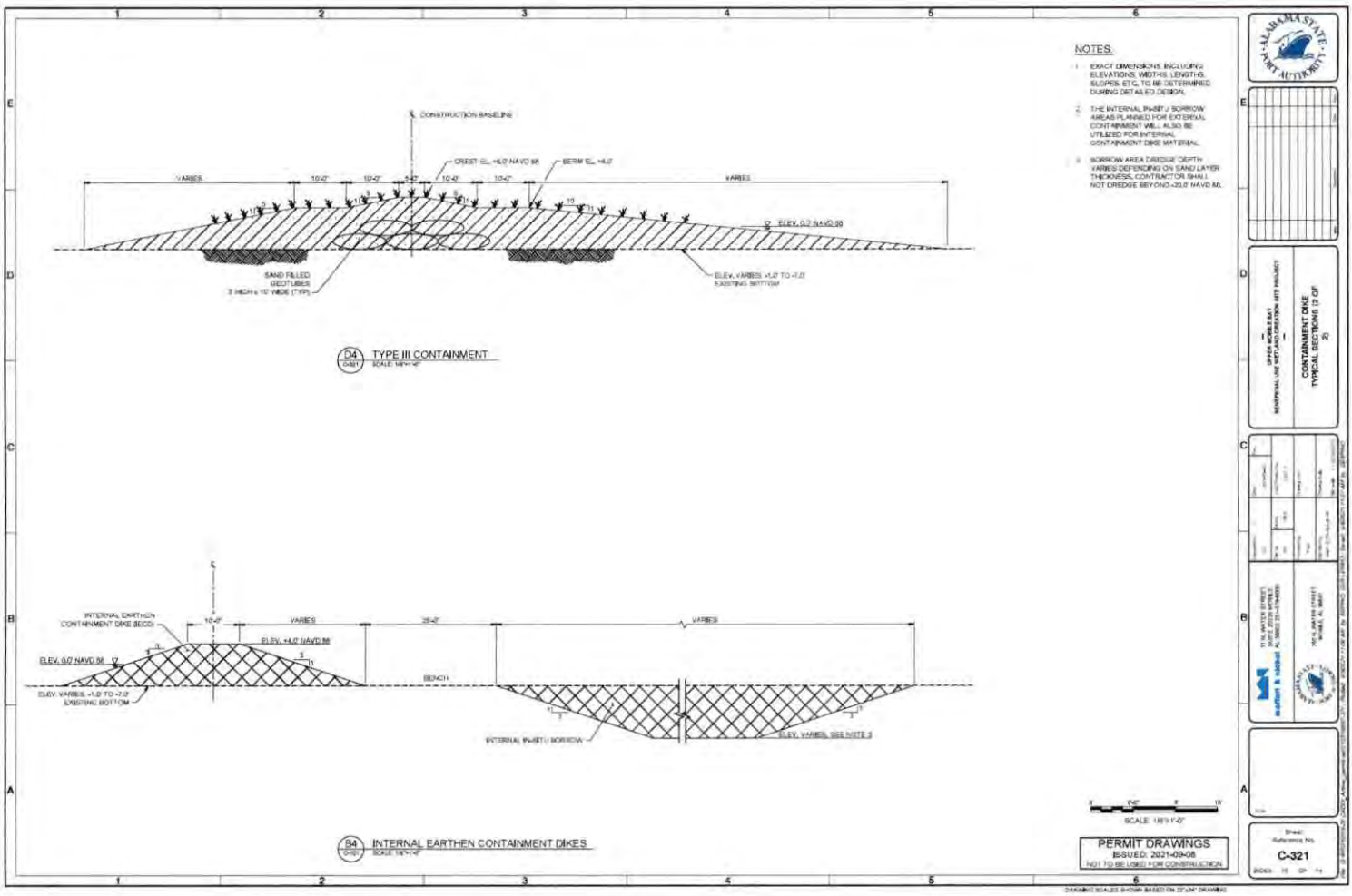

NOTES:
1. BORINGS PERFORMED BY GEOTECHNICAL ENGINEERING TESTING, INC. JUNE - SEP 2021.
2. EXISTING ELEVATIONS FROM SURVEY DATA COLLECTED BY RCME ENGINEERING AND SURVEYING, INC. AUGUST 2021.
LEGEND:
CULTURAL RESOURCE AVOIDANCE AREA
OBSTRUCTION AVOIDANCE AREA
BORING LOG ID
BORING DEPTH
BORING LOG ANNOTATION
DEPTH CONTOUR
CULTURAL RESOURCE SURVEY AREA EXTENT
MOBILE HARBOR CHANNEL TOE OF SLOPE
MOBILE HARBOR CHANNEL CENTERLINE
APM CONTAINER TERMINAL
TURNING BASIN
MCDUFFIE COAL TERMINAL
LITTLE SAND ISLAND
MCDUFFIE ISLAND
ARLINGTON CHANNEL
MOBILE HARBOR CHANNEL EAST TOE
MOBILE HARBOR CHANNEL WEST TOE
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE BAY
SCALE: 1"=800'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT
GENERAL SOIL BORING LOGS PLAN
Sheet Reference No.
B-101

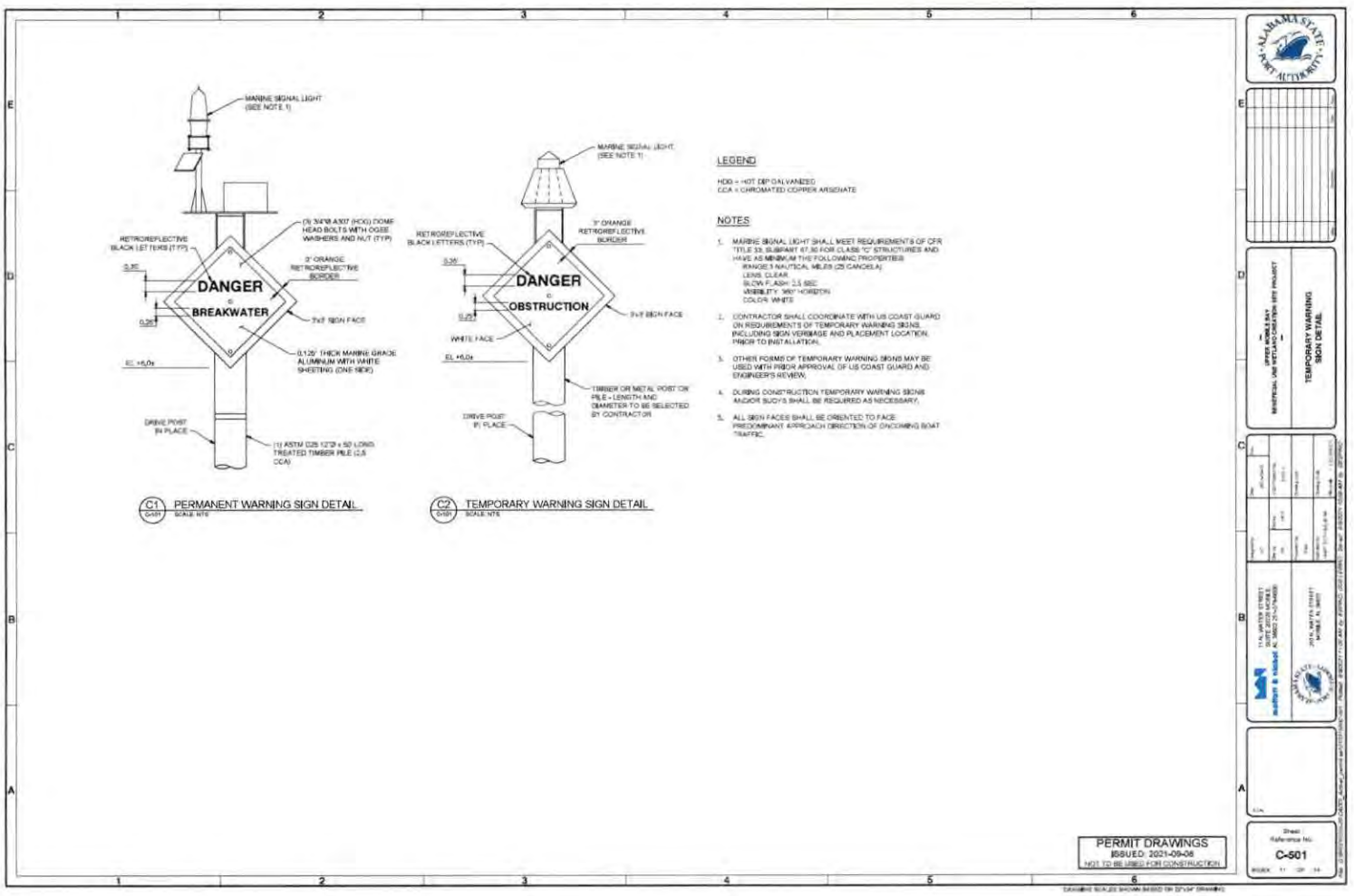

NOTES:
1. SEE GENERAL NOTE 5 ON SHEET G-002 FOR CONSTRUCTION SITE LIMITATIONS.
2. SEE SHEET C-501 FOR WARNING SIGN DETAILS.
3. WARNING SIGNS TO BE PLACED AS NECESSARY BASED ON COORDINATION WITH U.S. COAST GUARD.
4. EXACT INTERNAL CONTAINMENT DIKE LAYOUT TO BE DETERMINED DURING DETAILED DESIGN. WETLAND CREATION CELLS TO BE APPROX. 40 ACRES.
5. EXAMPLE WETLAND CREATION CELL SHOWN IN DETAIL B1 ON SHEET C-101.
LEGEND:
EXTERNAL DIKE TOE
INTERNAL DIKE
WETLAND CREATION AREA
CULTURAL RESOURCE AVOIDANCE AREA
OBSTRUCTION AVOIDANCE AREA
DEPTH CONTOUR
PROPOSED DREDGE PIPELINE CORRIDOR
CULTURAL RESOURCE SURVEY AREA EXTENTS
WARNING SIGNS (EVERY 500')
PROJECT FEATURE INFLECTION POINT
USS ALABAMA BATTLESHIP MEMORIAL PARK
PINTO ISLAND TERMINAL
APM CONTAINER TERMINAL
TURNING BASIN
LITTLE SAND ISLAND
OBSTRUCTION AVOIDANCE AREA
GARROWS BEND
MCDUFFIE COAL TERMINAL
WARNING SIGNS (EVERY 500')
MCDUFFIE ISLAND
ARLINGTON CHANNEL
MOBILE HARBOR CHANNEL, EAST TOE
MOBILE HARBOR CHANNEL, WEST TOE
MOBILE HARBOR CHANNEL, CENTERLINE
INTERNAL EARTHEN CONTAINMENT DIKE, TYP.
MOBILE BAY
I-10
US-98
B1
B4
A4
SCALE: 1"=1000'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
WETLAND CREATION SITE LAYOUT
C-101

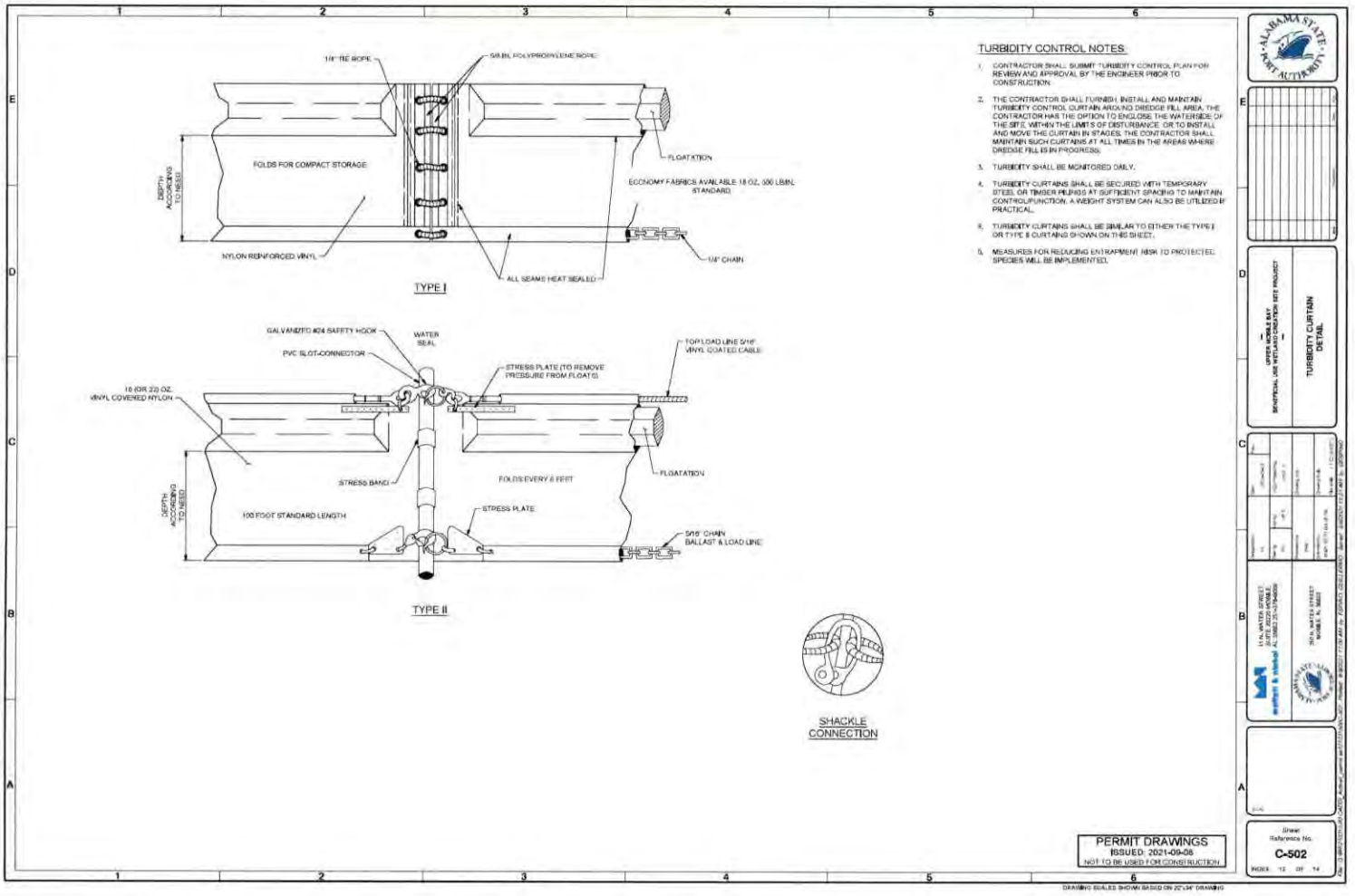

NOTES:
1. WETLAND HABITAT TO BE CONSTRUCTED AFTER FINAL DREDGED MATERIAL LIFT HAS DEWATERED.
2. WETLAND HABITAT LAYOUT SHOWN AS AN EXAMPLE. EXACT LAYOUT TO BE DETERMINED.
3. WETLAND HABITAT TO BE HYDRAULICALLY CONNECTED TO MOBILE BAY.
4. EXTERNAL DIKE TO BE CAPPED/DEGRADED AS NECESSARY.
TIDAL CREEK INLET
TIDAL CHANNEL
LOW MARSH HABITAT
THIRD-ORDER TIDAL CREEK SYSTEM
HIGH MARSH HABITAT
TIDAL POND HABITAT
HIGH MARSH
CULTURAL RESOURCE AVOIDANCE AREA
℄ OF DIKE
TOE OF DIKE (TYP)
LEGEND:
HIGH MARSH HABITAT
LOW MARSH HABITAT
CULTURAL RESOURCE AVOIDANCE AREA
B1 CONCEPTUAL WETLAND CREATION CELL DETAIL
SCALE: 1"=120'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
CONCEPTUAL WETLAND CREATION CELL DETAIL
C-102

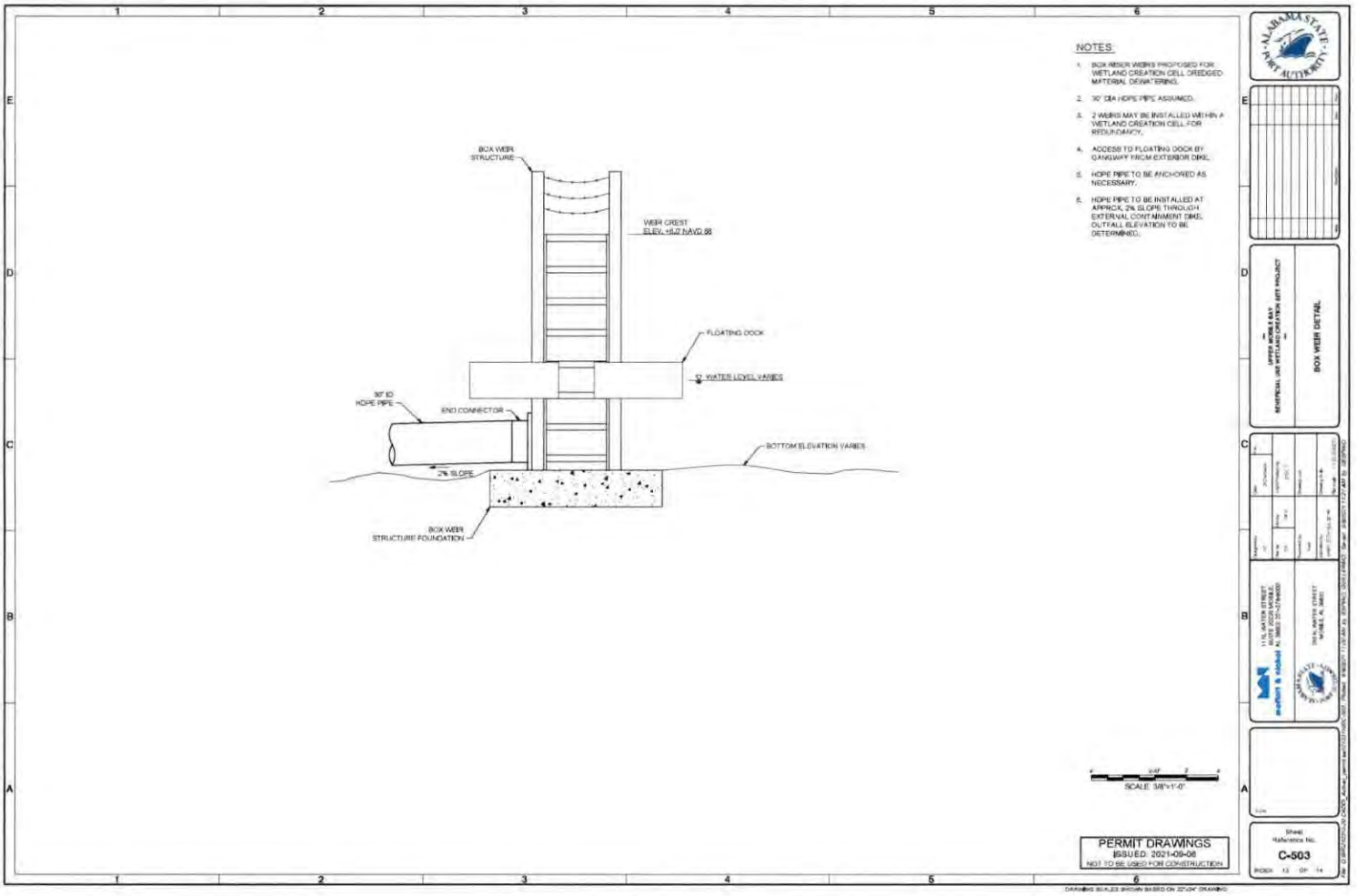

NOTES:
1. EXACT DIMENSIONS, INCLUDING ELEVATIONS, WIDTHS, LENGTHS, SLOPES, ETC. TO BE DETERMINED DURING DETAILED DESIGN.
2. DESIGN ELEVATIONS OF CONTAINMENT DIKES SHALL NOT EXCEED +6.0' NAVD 88.
3. DREDGED MATERIAL CONSTRUCTION FILL ELEVATION SHALL NOT EXCEED +4.0' NAVD 88. WETLAND DESIGN ELEVATION SHALL BE INTERTIDAL. ASSUMED TO BE +1.0' NAVD 88.
4. INTERNAL IN-SITU BORROW TO BE USED TO CONSTRUCT SAND BENCH AND INTERNAL EARTHEN CONTAINMENT DIKES. BORROW DEPTH SHALL NOT EXCEED -20.0' NAVD 88.
5. BORROW AREA DREDGE DEPTH VARIES DEPENDING ON SAND LAYER THICKNESS. CONTRACTOR SHALL NOT DREDGE BEYOND -20.0' NAVD 88.
INTERNAL EARTHEN CONTAINMENT DIKE (EDCD)
ELEV. +4.0' NAVD 88
ELEV. 0.0' NAVD 88
EXISTING MUDLINE
ELEV. +1.0' CONSTRUCTION FILL ELEVATION
ELEV. +1.0' WETLAND DESIGN ELEVATION
ELEV. VARIES SEE NOTE 3
INTERNAL IN-SITU BORROW
ELEV. VARIES +1.0' TO -7.0' EXISTING BOTTOM
SAND BENCH
ELEV. +6.0' NAVD 88
ARMOR STONE 2 LAYERS W50 = 3000 LB D50 = 2.50 FT
UNDERLAYER STONE 2 LAYERS W50 = 250 LB D50 = 1.25 FT
GEOTEXTILE
INTERNAL EARTHEN CONTAINMENT DIKE
WETLAND CREATION CELL
EXTERNAL CONTAINMENT DIKE (TYPE I, II OR III)
A4 WETLAND CREATION AREA TYPICAL SECTION
SCALE 3/32"=1'-0"
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
WETLAND CREATION AREA TYPICAL SECTION
C-301


EARTHEN CONTAINMENT DIKE HYDRAULICALLY DREDGE OR BIDCAST FROM INTERIOR IN-SITU MATERIAL
ELEV. +6.0' NAVD 88
ELEV. +1' NAVD 88
MARSH PLATFORM CONSTRUCTED OF HYDRAULICALLY DREDGED SAND
ELEV. VARIED -1.0' TO -7.0' EXISTING BOTTOM
ARMOR STONE 2 LAYERS W50 = 3000 LB D50 = 2.50 FT
ELEV. +4.0' NAVD 88
VARIES
GEOTEXTILE
0' ELEV. 0.0' NAVD 88
C1 TYPE I CONTAINMENT
NOTES
1. EXACT DIMENSIONS, INCLUDING ELEVATIONS, WIDTHS, LENGTHS, SLOPES, ETC. TO BE DETERMINED DURING DETAILED DESIGN.
2. DESIGN ELEVATIONS OF CONTAINMENT DIKES SHALL NOT EXCEED +6.0' NAVD 88.
3. LOCATIONS OF TYPE I, TYPE II AND TYPE III CONTAINMENT TO BE DETERMINED DURING DETAILED DESIGN.
ELEV. +5.0' NAVD 88
ELEV. VARIES -1.0' TO -7.0' EXISTING BOTTOM
SAND BENCH
UNDERLAYER STONE 2 LAYERS W50 = 750 LB D50 = 1.25 FT
A1 TYPE II CONTAINMENT
SCALE: 1/8"=1'-0"
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
CONTAINMENT DIKE TYPICAL SECTIONS (1 OF 2)
C-320


NOTES:
1. EXACT DIMENSIONS, INCLUDING ELEVATIONS, WIDTHS, LENGTHS, SLOPES, ETC., TO BE DETERMINED DURING DETAILED DESIGN.
2. THE INTERNAL INSET U BORROW AREAS PLANNED FOR EXTERNAL CONTAINMENT WILL ALSO BE UTILIZED FOR INTERNAL CONTAINMENT DIKE MATERIAL.
3. BORROW AREA DREDGE DEPTH VARIES DEPENDING ON SAND LAYER THICKNESS. CONTRACTOR SHALL NOT DREDGE BEYOND -20.0' NAVD 88.
CONSTRUCTION BASELINE
CREST EL. +6.0' NAVD 88
BERM EL. +4.0'
VARIES
10'-0"
5'-0"
ELEV. 0.0' NAVD 88
SAND FILLED GEOTUBES
ELEV. VARIES, +1.0' TO -1.0' EXISTING BOTTOM
D4 TYPE III CONTAINMENT
INTERNAL EARTHEN CONTAINMENT DIKE (BCCD)
ELEV. +4.0' NAVD 88
BENCH
INTERNAL INSET U BORROW
ELEV. VARIES, SEE NOTE 3
B4 INTERNAL EARTHEN CONTAINMENT DIKES
SCALE: 1"=1'-0"
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
C-321
CONTAINMENT DIKE TYPICAL SECTIONS (2 OF 2)


MARINE SIGNAL LIGHT (SEE NOTE 1)
RETROREFLECTIVE BLACK LETTERS (TYP)
DANGER
BREAKWATER
2" ORANGE RETROREFLECTIVE BORDER
3'x3' SIGN FACE
0.125" THICK MARINE GRADE ALUMINUM WITH WHITE SHEETING (ONE SIDE)
EL +6.0±
DRIVE POST IN PLACE
(1) ASTM D25 12"Ø x 50' LONG TREATED TIMBER PILE (CS CCA)
C1 G-501 PERMANENT WARNING SIGN DETAIL
SCALE: NTS
MARINE SIGNAL LIGHT (SEE NOTE 1)
RETROREFLECTIVE BLACK LETTERS (TYP)
2" ORANGE RETROREFLECTIVE BORDER
DANGER
OBSTRUCTION
3'x3' SIGN FACE
WHITE FACE
EL +6.0±
TIMBER OR METAL POST OR PILE - LENGTH AND DIAMETER TO BE SELECTED BY CONTRACTOR
DRIVE POST IN PLACE
C2 G-501 TEMPORARY WARNING SIGN DETAIL
SCALE: NTS
LEGEND
HDG = HOT DIP GALVANIZED
CCA = CHROMATED COPPER ARSENATE
NOTES
1. MARINE SIGNAL LIGHT SHALL MEET REQUIREMENTS OF CFR TITLE 33, SUBPART 67.30 FOR CLASS "C" STRUCTURES AND HAVE AS MINIMUM THE FOLLOWING PROPERTIES:
RANGE: 5 NAUTICAL MILES (25 CANDELA)
LENS: CLEAR
BLOW FLASH: 2.5 SEC
VISIBILITY: 360° HORIZON
COLOR: WHITE
2. CONTRACTOR SHALL COORDINATE WITH US COAST GUARD ON REQUIREMENTS OF TEMPORARY WARNING SIGNS, INCLUDING SIGN VERBIAGE AND PLACEMENT LOCATION, PRIOR TO INSTALLATION.
3. OTHER FORMS OF TEMPORARY WARNING SIGNS MAY BE USED WITH PRIOR APPROVAL OF US COAST GUARD AND ENGINEER'S REVIEW.
4. DURING CONSTRUCTION TEMPORARY WARNING SIGNS AND/OR BUOYS SHALL BE REQUIRED AS NECESSARY.
5. ALL SIGN FACES SHALL BE ORIENTED TO FACE PREDOMINANT APPROACH DIRECTION OF ONCOMING BOAT TRAFFIC.
PERMIT DRAWINGS
ISSUED: 2021-09-06
NOT TO BE USED FOR CONSTRUCTION
TEMPORARY WARNING SIGN DETAIL
C-501


1/4" TIE ROPE
5/8 IN. POLYPROPYLENE ROPE
FOLDS FOR COMPACT STORAGE
DEPTH ACCORDING TO NEED
FLOATATION
ECONOMY FABRICS AVAILABLE 18 OZ. 500 LBS/IN. STANDARD
NYLON REINFORCED VINYL
1/4" CHAIN
ALL SEAMS HEAT SEALED
TYPE I
GALVANIZED #24 SAFETY HOOK
WATER SEAL
PVC SLOT-CONNECTOR
STRESS PLATE (TO REMOVE PRESSURE FROM FLOATS)
TOP LOAD LINE 5/16" VINYL COATED CABLE
18 (OR 22) OZ. VINYL COVERED NYLON
STRESS BAND
FOLDS EVERY 8 FEET
FLOATATION
DEPTH ACCORDING TO NEED
100 FOOT STANDARD LENGTH
STRESS PLATE
5/16" CHAIN BALLAST & LOAD LINE
TYPE II
SHACKLE CONNECTION
TURBIDITY CONTROL NOTES:
1. CONTRACTOR SHALL SUBMIT TURBIDITY CONTROL PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN TURBIDITY CONTROL CURTAIN AROUND DREDGE FILL AREA. THE CONTRACTOR HAS THE OPTION TO ENCLOSE THE WATERSIDE OF THE SITE WITHIN THE LIMITS OF DISTURBANCE OR TO INSTALL AND MOVE THE CURTAIN IN STAGES. THE CONTRACTOR SHALL MAINTAIN SUCH CURTAINS AT ALL TIMES IN THE AREAS WHERE DREDGE FILL IS IN PROGRESS.
3. TURBIDITY SHALL BE MONITORED DAILY.
4. TURBIDITY CURTAINS SHALL BE SECURED WITH TEMPORARY STEEL OR TIMBER PILINGS AT SUFFICIENT SPACING TO MAINTAIN CONTROL/FUNCTION. A WEIGHT SYSTEM CAN ALSO BE UTILIZED IF PRACTICAL.
8. TURBIDITY CURTAINS SHALL BE SIMILAR TO EITHER THE TYPE I OR TYPE II CURTAINS SHOWN ON THIS SHEET.
9. MEASURES FOR REDUCING ENTRAPMENT RISK TO PROTECTED SPECIES WILL BE IMPLEMENTED.
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
TURBIDITY CURTAIN DETAIL
C-502
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING


NOTES:
1. BOX RISER WEIRS PROPOSED FOR WETLAND CREATION CELL DREDGED MATERIAL DEWATERING.
2. 30" DIA HDPE PIPE ASSUMED.
3. 2 WEIRS MAY BE INSTALLED WITHIN A WETLAND CREATION CELL FOR REDUNDANCY.
4. ACCESS TO FLOATING DOCK BY GANGWAY FROM EXTERIOR DIKE.
5. HDPE PIPE TO BE ANCHORED AS NECESSARY.
6. HDPE PIPE TO BE INSTALLED AT APPROX. 2% SLOPE THROUGH EXTERNAL CONTAINMENT DIKE. OUTFALL ELEVATION TO BE DETERMINED.
BOX WEIR STRUCTURE
WEIR CREST ELEV. +5.07 NAVD 88
FLOATING DOCK
WATER LEVEL VARIES
30" ID HDPE PIPE
END CONNECTOR
BOTTOM ELEVATION VARIES
2% SLOPE
BOX WEIR STRUCTURE FOUNDATION
SCALE: 3/8"=1'-0"
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
ALABAMA STATE PORT AUTHORITY
UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT
BOX WEIR DETAIL
C-503

BORING POINT TABLE

POINT #	DEPTH	LATITUDE	LONGITUDE
B-1	50	N30° 38' 04.12"	W88° 05' 44.85"
B-2	20	N30° 38' 04.21"	W88° 05' 26.10"
B-3	50	N30° 38' 04.28"	W88° 05' 55.47"
B-4	20	N30° 38' 04.24"	W88° 05' 27.74"
B-5	50	N30° 38' 04.33"	W88° 05' 23.22"
B-6	20	N30° 38' 04.32"	W88° 05' 16.30"
B-7	50	N30° 38' 04.42"	W88° 05' 10.57"
B-8	20	N30° 38' 06.26"	W88° 05' 05.80"
B-9	50	N30° 38' 10.72"	W88° 05' 03.43"
B-10	20	N30° 38' 15.04"	W88° 05' 03.34"
B-11	50	N30° 38' 16.22"	W88° 05' 06.00"
B-12	20	N30° 38' 16.22"	W88° 05' 13.72"
B-13	50	N30° 38' 16.25"	W88° 05' 16.45"
B-14	20	N30° 38' 16.17"	W88° 05' 25.17"
B-15	50	N30° 38' 16.22"	W88° 05' 30.68"
B-16	20	N30° 38' 16.30"	W88° 05' 34.02"
B-17	50	N30° 38' 16.21"	W88° 05' 43.34"
B-18	50	N30° 38' 14.88"	W88° 05' 55.22"
B-35	20	N30° 38' 15.40"	W88° 05' 50.44"
B-21	50	N30° 38' 05.77"	W88° 05' 46.10"
B-22	50	N30° 38' 06.20"	W88° 05' 42.21"
B-23	50	N30° 38' 15.18"	W88° 05' 34.79"
B-24	50	N30° 38' 15.84"	W88° 05' 16.55"
B-25	50	N30° 38' 13.05"	W88° 05' 13.72"
B-26	20	N30° 38' 08.40"	W88° 05' 46.40"

BORING POINT TABLE

POINT #	DEPTH	LATITUDE	LONGITUDE
B-27	50	N30° 38' 30.87"	W88° 05' 22.02"
B-28	20	N30° 38' 44.24"	W88° 05' 19.78"
B-29	50	N30° 38' 26.73"	W87° 59' 52.88"
B-30	50	N30° 38' 43.27"	W87° 59' 55.38"
B-31	20	N30° 38' 30.91"	W87° 59' 33.67"
B-32	70	N30° 38' 22.73"	W87° 59' 51.78"
B-33	20	N30° 38' 34.91"	W88° 00' 34.21"
B-34	50	N30° 38' 21.84"	W88° 00' 36.27"
B-35	50	N30° 38' 24.58"	W88° 00' 07.00"
B-36	50	N30° 38' 23.62"	W88° 00' 06.70"
B-37	20	N30° 38' 36.02"	W87° 59' 43.28"
B-38	50	N30° 38' 39.03"	W88° 00' 45.03"
B-39	20	N30° 38' 47.46"	W88° 00' 41.88"
B-40	20	N30° 38' 52.13"	W88° 00' 41.83"
B-41	20	N30° 38' 58.14"	W88° 00' 44.45"
B-42	50	N30° 38' 08.08"	W88° 00' 27.79"
B-44	50	N30° 38' 05.87"	W87° 59' 36.68"
B-45	20	N30° 38' 53.87"	W88° 00' 05.68"
B-46	50	N30° 38' 53.83"	W87° 59' 48.82"
B-47	20	N30° 38' 48.28"	W87° 59' 28.90"
B-48	50	N30° 38' 49.28"	W87° 59' 42.04"
B-49	20	N30° 38' 44.11"	W88° 00' 10.04"
B-50	20	N30° 38' 08.53"	W88° 00' 45.83"
B-51	70	N30° 38' 57.79"	W88° 00' 24.88"
B-52	20	N30° 38' 02.17"	W87° 59' 37.10"

BORING POINT TABLE

POINT #	DEPTH	LATITUDE	LONGITUDE
B-53	20	N30° 38' 43.88"	W88° 00' 31.88"
B-54	20	N30° 38' 34.04"	W88° 00' 14.15"
B-55	50	N30° 38' 01.74"	W88° 00' 35.41"
B-56	20	N30° 38' 07.79"	W87° 59' 45.88"
B-57	50	N30° 38' 34.81"	W87° 59' 35.50"
B-58	20	N30° 38' 26.10"	W87° 59' 31.28"
B-59	50	N30° 38' 13.80"	W87° 59' 28.88"
B-60	20	N30° 38' 15.52"	W88° 00' 41.37"
B-61	20	N30° 38' 31.18"	W88° 00' 27.98"
B-62	50	N30° 38' 30.48"	W88° 00' 04.22"
B-63	20	N30° 38' 23.17"	W88° 00' 17.60"
B-64	70	N30° 38' 30.08"	W87° 59' 43.51"
B-65	20	N30° 38' 21.58"	W88° 00' 55.15"
B-66	50	N30° 38' 22.79"	W88° 00' 13.12"
B-67	20	N30° 38' 15.53"	W88° 00' 14.82"
B-68	50	N30° 38' 11.58"	W87° 59' 53.81"
B-69	50	N30° 38' 18.87"	W88° 00' 38.43"
B-70	20	N30° 38' 20.50"	W88° 00' 18.41"
B-71	20	N30° 38' 18.58"	W87° 59' 45.84"
B-72	50	N30° 38' 25.48"	W88° 00' 40.07"
B-73	50	N30° 38' 36.17"	W88° 00' 37.27"
B-74	50	N30° 38' 38.80"	W88° 00' 16.52"
B-75	20	N30° 38' 38.41"	W87° 59' 52.22"

WCA TABLE

POINT #	LATITUDE	LONGITUDE
1	N30° 38' 52.11"	W88° 00' 43.77"
2	N30° 38' 52.28"	W88° 00' 10.82"
3	N30° 38' 07.06"	W88° 00' 03.62"
4	N30° 38' 16.22"	W88° 00' 00.01"
5	N30° 38' 18.32"	W87° 59' 56.06"
6	N30° 38' 20.88"	W87° 59' 54.11"
7	N30° 38' 34.70"	W87° 59' 52.30"
8	N30° 38' 36.38"	W87° 59' 30.01"
9	N30° 38' 50.21"	W87° 59' 28.20"
10	N30° 38' 58.24"	W87° 59' 35.45"
11	N30° 38' 57.84"	W87° 59' 25.23"
12	N30° 39' 01.82"	W87° 59' 25.11"
13	N30° 39' 03.41"	W87° 59' 26.12"
14	N30° 39' 06.02"	W87° 59' 25.32"
15	N30° 39' 21.04"	W87° 59' 28.89"

WCA TABLE

POINT #	LATITUDE	LONGITUDE
16	N30° 39' 31.88"	W87° 59' 52.26"
17	N30° 39' 28.50"	W87° 59' 39.84"
18	N30° 39' 37.10"	W88° 00' 31.87"
19	N30° 39' 37.18"	W88° 00' 03.01"
20	N30° 39' 37.57"	W88° 00' 32.84"
21	N30° 39' 31.98"	W88° 00' 36.88"
22	N30° 39' 15.85"	W88° 00' 41.78"
23	N30° 39' 16.37"	W88° 00' 42.28"
24	N30° 39' 00.96"	W88° 00' 44.85"
25	N30° 39' 45.46"	W88° 00' 48.58"
26	N30° 39' 33.63"	W88° 00' 46.46"
27	N30° 39' 15.08"	W88° 00' 91.08"
28	N30° 39' 14.38"	W88° 00' 51.13"
29	N30° 39' 18.53"	W88° 00' 51.13"

DREDGE PIPELINE POINT TABLE

POINT #	LATITUDE	LONGITUDE
101	N30° 38' 31.87"	W88° 01' 56.21"
102	N30° 38' 43.38"	W88° 02' 36.20"
103	N30° 38' 36.71"	W88° 01' 47.86"
104	N30° 38' 38.56"	W88° 00' 46.88"
105	N30° 40' 03.87"	W88° 01' 57.32"
106	N30° 40' 05.64"	W88° 01' 45.46"
107	N30° 40' 04.52"	W88° 01' 45.11"
108	N30° 39' 56.82"	W88° 01' 36.21"
109	N30° 38' 50.88"	W88° 01' 35.18"
110	N30° 38' 47.87"	W88° 01' 43.37"
111	N30° 38' 46.81"	W88° 01' 47.88"
112	N30° 38' 36.10"	W88° 01' 47.04"
113	N30° 38' 36.71"	W88° 01' 47.31"

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

COORDINATE TABLES

RUMPF & HUGHES
11 N. WATER STREET
SUITE 27-0 MOBILE, AL 36602 251-433-0662

JOHN WATTS STREET
MOBILE AL 36602

Sheet Reference no.
C-601
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UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT

FINAL MONITORING AND ADAPTATIVE MANAGEMENT PLAN

FEBRUARY 2025

Prepared by:

MOFFATT & NICHOL
11 N. Water Street, Suite 20220
Mobile, AL 36602
Tel: 251-378-9006

Contents

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1.0 Project Introduction

The Upper Mobile Bay Beneficial Use Wetland Creation Site (Planning) Project will create 1,200 acres of wetlands in the Upper Mobile Bay through the beneficial use of dredged material. This project will ensure that some of the sediments dredged from the Upper Mobile Bay area are used beneficially to restore coastal wetland habitats. Benefits resulting from this wetland creation project include increased wetland habitat for living coastal and marine organisms and implementation of improved dredging practices that support navigation-related commerce and thus the region's economy. The proposed project consists of two major features that will be monitored to inform adaptive management strategies and show project successes:

1. Creation of 1,200 acres of wetland habitat through the placement of dredged material over the next 20 years.
2. Construction of 5.5 miles of containment features to protect the created wetland habitat from the prevailing winds and waves along the south side of the project.

1.1 Project Approach

The Wetland Creation Site (WCS) footprint will be designed for 1,200 acres with the capacity for beneficial use placement of dredged material over a 20-year period. This footprint includes intertidal wetland habitat and internal and external containment dike features. Construction of the Wetland Creation Site will be phased, based on volumes and timing of maintenance dredging activities. and will be guided by adaptive design and management. The project nomenclature used through this section includes (Figure 1):

- Wetland Creation Site (WCS): The 1,200-acre site where the wetland creation will occur.
- Wetland Creation Area (WCA): An area within the Wetland Creation Site that will share an external dike system. WCAs will be separated by tidal channels. It is anticipated there would be three (3) Wetland Creation Areas.
- Wetland Creation Cell (WCC): A sub-section of the WCA divided by internal earthen containment dikes (created from *in situ* material) where dredged material will be placed. WCCs are anticipated to be 40-60 acres in size.

The physical construction of the WCAs will be initiated upon execution of a contract for that purpose. Project funding and permitting must be complete to allow the contract process to proceed. The WCS will have external perimeter containment dikes designed to withstand wind and wave forcing. The overall Wetland Creation Site will be grouped into three WCAs. Each WCA is planned to be approximately 400 acres. Each WCA will have exterior containment that consists of a wide (50-ft crest) sand berm and rock riprap revetment to protect the front slope of the sand berm from erosion. The exterior containment will form the entire perimeter of each WCA. The WCA containment is designed with three potential types of construction all utilizing a sand structure augmented with rock facing, rock breakwater and marsh complex or internal geotubes as site conditions and adaptive design and management determine based upon site conditions. WCAs will be separated by tidal channels.

Within these WCAs there will be individual WCCs to provide manageable sized areas for wetland construction. Interior and cross dikes constructed of *in situ* material will be constructed to form the WCCs within the WCA (see Figure 1). Each WCC is anticipated to be 40-60 acres (the initial construction will have two 50-acre cells), based on dredge material volume estimates required for a given year in the port's berths (approximately 350,000-500,000 cy/year). WCCs are proposed to be created through construction of interior dikes to completely contain the dredged fill material and allow for dewatering of the dredged material and settlement of sediments. After each WCC has been filled and an intertidal

elevation achieved, wetland habitat construction would occur. Primary target elevations range from 0 ft to +4ft. NAVD88 for tidal wetlands (high and low marsh) in this region (Berkowitz *et al.*, 2019). Varied habitat elevations are required to mimic natural systems and complement adjacent features such as the tidal creeks and ponds as well as tidal shrub habitat and dikes. This includes gapping of exterior and interior dikes to allow for fish and wildlife ingress and egress. Construction of the containment structures will be advanced as existing WCCs approach capacity and new dredging contracts are initiated to ensure as-needed capacity for dredged material placement.

As the dredged material within the WCCs consolidates to the target elevations and reaches capacity, specific habitats can be created within each cell. This may include the excavation of tidal creeks, tidal ponds, embayments, low- and high-marsh features, tidal shrub habitats, or other features providing ecological uplift to the project site. Based on consolidation properties of the dredged material it is expected that each WCC may require two to three lifts (separate dredge material placement events) to reach the intertidal wetland habitat elevation. After the final lift, wetland habitat features such as tidal creeks will be excavated from the wetland platform, and the wetland platform will be planted (Figure 2).

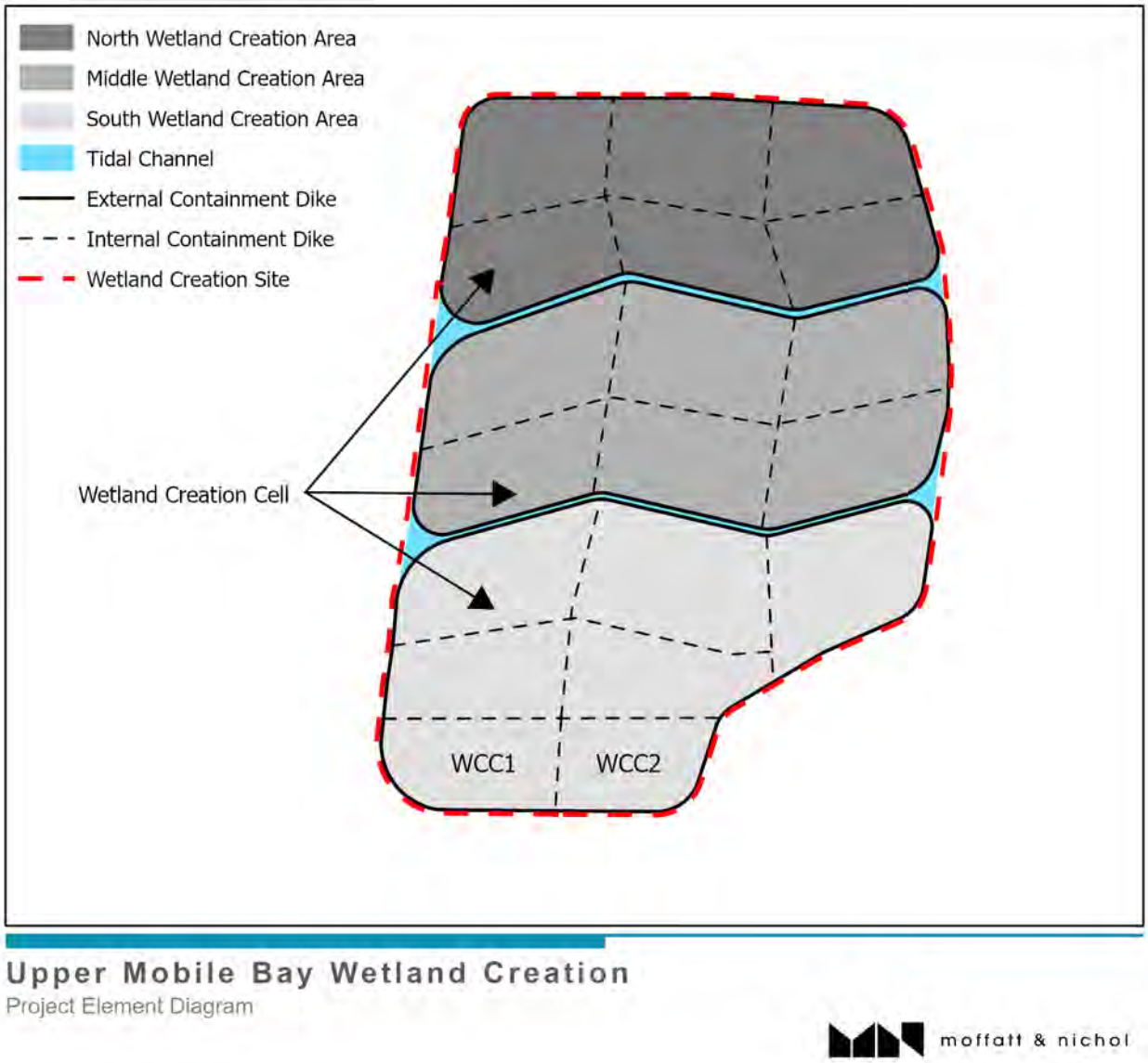

Figure 1. Diagram representing the Wetland Creation Site, the three Wetland Creation Areas, and the Wetland Creation Cells. External and internal containment dikes are indicated by black solid and dotted lines, respectively.

Figure 2. Rendering of the 1,200-acre Wetland Creation Area.

1.2 Project Timing

The timing of construction is completely dependent on construction funding and the implementation of contracted dredging actions. Timing of the WCA is fundamentally dependent upon obtaining funding for building the external containment dikes. The timing of the WCCs is dependent on the Port's dredging schedule which is typically two- or three-times per year. Engineers will receive necessary data to design specific WCCs and provide specifications for a dredging contactor based upon the volumes and other data associated with upcoming events. Upon a dredging contract being confirmed and/or executed, internal WCC dikes will be constructed. Considering this happens multiple times a year, any given WCC will be filled as quickly as possible. The timing of creation of the wetland platform is dependent on the nature of the maintenance dredging material (fine-grained soils such as silts and clays) to be placed within the WCCs. Based on past dredged sediment characteristics, the wetland platform will need to be constructed over two to three dredge events, or "lifts" of dredged material. After the placement of a sufficient number of lifts within each WCC, the dredged material will settle to within the targeted intertidal elevation range (+0 to +4'). Initial conservative settlement calculations indicate that with typical maintenance dredging material this process will take approximately three to four years, although less conservative assumptions would result in a shorter amount of time, such as if only one WCC is filled at a time instead of alternating dredge events between WCCs. The dredged material will then provide a suitable platform for the construction of a functioning marsh habitat. The establishment of marsh habitat will result in ecologically productive plant and animal habitats.

To increase the ecological production of the created habitat within each WCC, the exterior containment dike will be gapped, tidal creeks will be excavated, and the marsh platform will be planted. Gapping and tidal creek excavation will provide important pathways, increasing the health and resilience of the created wetlands while providing access to the habitat for the aquatic species.

Performance monitoring will occur once these construction activities are complete. This post-construction monitoring will take place over a five-year duration which will include three monitoring events in years one, three, and five.

1.3 MAM Purpose

This monitoring plan will be implemented to document the success of the creation of wetland habitat and its protective features. It will also inform potential short-term and long-term adaptive management actions as necessary.

Monitoring events will evaluate the following parameters:

1. Elevation of the containment features
2. Total areal coverage of Wetland Creation Cell habitats.
3. Elevation of Wetland Creation Cells.
4. Wetland vegetation species composition and percent cover

This MAM Plan serves as a framework for future MAM Plans to be developed with respect to the individual Wetland Creation Cell. This document specifies the performance monitoring parameters for each cell and their associated methods, timing and frequency, sample size, sites, performance criteria, metrics, and potential adaptive management actions. The respective MAM Plans will be finalized following completion of the post-construction/as-built surveys. These surveys and the metrics collected will be used to establish performance monitoring criteria with respect to the individual cell, as they were constructed. This MAM Plan is the basis for future MAM Plans with the understanding that it is a living

document that will be finalized in accordance with each Wetland Creation Cell and with consideration for lessons learned during previous efforts.

2.0 Monitoring Framework

The following monitoring framework has been developed through consideration for project goals with the purpose of documenting the ecosystem level changes as a result of project implementation and informing adaptive management actions. The goals of the Upper Mobile Bay Wetland Creation Project are to 1) create 1,200 acres of intertidal wetland by utilizing dredged material 2) create a containment feature system to protect the Wetland Creation Areas.

This framework outlines monitoring objectives, the methods by which to satisfy the monitoring objectives, the timing/frequency of monitoring activities, and the locations at which the activities will occur (Wetland Creation Areas and Reference Site). Table 1 summarizes the Monitoring Plan Framework for each monitoring phase (baseline, construction, and performance).

The monitoring will include documenting pre-construction conditions, documenting implementation of intertidal wetland creation, and determining if the containment features perform as designed. Construction monitoring will take place during construction activities by a qualified technical construction inspector and construction as-builts will be a baseline for performance criteria. Performance monitoring of the containment features and Wetland Creation Cells will be conducted post-construction in years one, three, and five.

Table 1. Monitoring Plan Framework

	Baseline Monitoring	**Construction Monitoring**	**Performance Monitoring**
Objective	Document existing conditions (pre-restoration) and collect data to support engineering and design	Evaluate if project was constructed according to plans and specifications and assess compliance with state water quality standards	Document existing conditions (post-restoration) and evaluate the need for adaptive management
Methods/ Parameters	*Conduct bathymetric survey of open water areas*	*Conduct bathymetric and topographic surveys (as-built) and collect aerial photography (metrics will be evaluated by Contractor):* • Containment feature total areal coverage and elevation • Total areal coverage of habitat • Elevation of habitat *Conduct ecological monitoring (metrics will be evaluated by Contractor*	*Conduct drone survey:* • Elevation and total areal coverage of containment features *Conduct bathymetric and/or drone surveys:* • Total areal coverage of created habitat • Elevation of created habitat and reference site *Conduct ecological monitoring of created habitat and reference site:* • Vegetation species composition • Vegetation percent cover

		and Construction Inspector): • Water quality • Vegetation planted *Ensure general adherence to the plans and specifications (performed by Construction Inspector)*	*Conduct water quality monitoring at created habitat and reference site* • Water quality including dissolved oxygen, temperature, salinity
Timing/ Frequency	Once before construction begins	Contractor performs as-built survey once, immediately following construction	Three events post-construction in years one, three, and five
Location	Proposed Wetland Creation Cell area to be built	Wetland Creation Cells	Wetland Creation Cells and reference site

3.0 Baseline Monitoring

3.1 Wetland Creation Site

Baseline monitoring will be conducted at the project footprint (Wetland Creation Site) and adjacent waters to document existing conditions (pre-restoration) and collect data to support engineering and design. Baseline monitoring will include bathymetric surveys and ecological surveys (as required).

3.2 Reference Site

Baseline monitoring of a wetland reference site will serve to establish the expected vegetation performance criteria for species composition and percent cover. The reference site will be used during all monitoring events to compare to the Wetland Creation Site. Two reference site alternatives are being considered based on a representative target habitat type (e.g., brackish intertidal marsh of Upper Mobile Bay) and size (60 acres) that is similar to the Wetland Creation Cells (Figure 3). Alternative 1 reference site is located to the west of the Wetland Creation Site adjacent to the Port Authority property. Alternative 2 is located to the east of the Wetland Creation Site at similar latitude between the Blakeley River and D'Olive Bay. These areas both include the targeted plant communities and the representative plants that are specified to be planted at the Wetland Creation Cells (*Juncus roemerianus, Sporobolus cynosuroides,* and *Baccharis halimifolia*) (Figure 3). Alternative 2 is the preferred reference site based on its open water position, although it does not contain all species that will be planted.

The vegetation species, as provided in by the Mobile Harbor General Reevaluation Report (GRR) assessments, at each of the alternate sites are identified in Figure 3. Given the position of the Wetland Creation Site in the upper bay, and likely salinities (oligohaline) to be experienced, we expect the newly created marsh will also be colonized by species observed in the proximity of the project, due to seed availability in the area and vegetative dispersion from adjacent areas. This would include Black needle rush (*Juncus romerianus*), Cattail (*Typha sp.*), Big Cordgrass (*Sporobolus cynosuroides*), Bulltongue, (*Sagittaria sp.*), and scrub-shrub species such as salt bush (*Baccharis halimifolia*), as dominant species.

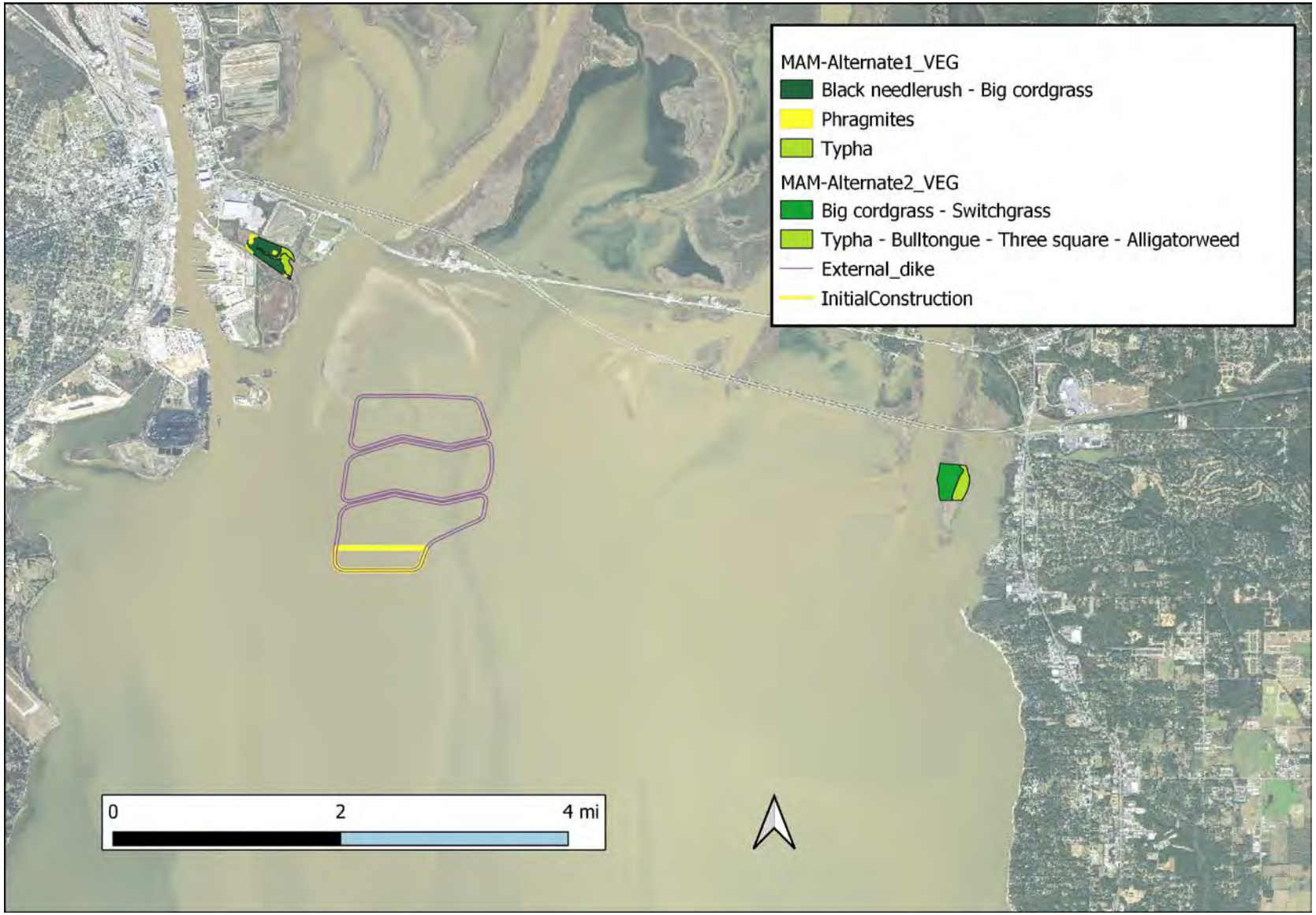

Figure 3. Alternative reference sites for vegetation monitoring. Vegetation species source from Mobile Harbor GRR data layers (extracted April 2022).

3.3 Hydrogeomorphic Model for Upper Mobile Bay Habitats

The Hydrogeomorphic (HGM) approach is one possible way to monitor success of the created wetlands especially for projects that increase wetlands quality and for comparing mitigation sites. Reference data for the upper Mobile Bay at the Meaher Park site are available, as indicated in the USACE Regional Guidebook for tidal fringe wetlands in Mississippi and Alabama (Shafer et al. 2007). This reference is useful in developing construction and restoration targets for wetland elevations, establishing fringing marsh edge, hydrologic connection to tidal waters, features which improve nekton and wildlife diversity. The project has incorporated many of the HGM variables in the design for each cell to improve habitat quality.

4.0 Construction Monitoring

Construction monitoring and as-built surveys will serve as the baseline upon which project performance will be evaluated. A general overview of construction monitoring is provided below for context, but construction monitoring is managed by construction engineering and inspection contracts and not part of performance monitoring. It is therefore not a component of this MAM Plan.

A competent and qualified technical construction inspector will be on-site during construction activities. The inspector will serve as the day-to-day liaison between the Owner/Engineer and the Contractor. The inspector will ensure that the project is constructed in compliance with the project construction plans and specifications. Project construction monitoring will involve water quality (turbidity) testing to ensure compliance with state water quality standards. Pre- and post-excavation bathymetry surveys will be performed to document the volume of sediment placed in the Wetland Creation Cells and the elevation of lifts. Construction monitoring of containment features will include visual surveys and photographs to document any mobilization and/or fracturing of rip-rap or other selected materials utilized to construct the containment features.

For construction monitoring, progress surveys will be performed by the contractor between lifts to evaluate the existing wetland elevation and to determine the needed volume to complete the cell. Once construction of the Wetland Creation Cells is complete and no more fill is required, a final as-built survey would be performed to document the post-construction conditions. This survey would be evaluated to ensure that the Wetland Creation Cells were constructed to the designed elevations. Tidal creeks and habitat features would then be excavated and a final as-built survey would be provided to document baseline conditions at the site from which project performance can be assessed.

5.0 Performance Monitoring

Performance monitoring is performed post-construction and should begin one year after finalization of the as-built survey. The timing of this will depend on the dredged material composition but is not expected to be more than four (4) years from the commencement of dredged material fill. Performance monitoring will use the final as-built survey as a baseline for performance evaluation.

The MAM Plan outlines the framework for post-construction Performance Monitoring, not construction monitoring. It addresses the performance monitoring parameters for each cell and their associated methods, timing and frequency, sample size, sites, performance criteria, metrics, and potential adaptive management actions. These variables are used to assess whether the project is performing as designed and as desired given existing conditions and lessons learned. These data are used to inform adaptive

management so that any issues may be addressed and design and implementation of future phases so that the project can satisfy its goals.

5.1 Parameters, Methods, Performance Criteria, and Adaptive Management Actions

In this section the parameters and their method(s), timing and frequency, sample size, site to be monitored, performance criteria, metrics, and adaptive management actions are outlined. The sampling plan layout for the monitoring events in a typical plan view of Wetland Creation Cell is provided in Figure 4. An example of the reporting table against performance criteria within cells, per metric tracked against as-built and reference site baseline (as appropriate for criteria) is provided in Table 2.

Parameter #1: Elevation of containment features

a) **Method**: A licensed surveyor in the State of Alabama to conduct drone survey methodology with 1.2 cm horizontal and 2cm vertical accuracy to determine the elevation of the containment features.[1] Elevation of habitats will be provided in NAVD88 with the GEOID stated and elevations will be provided with two decimal points.
b) **Timing and Frequency**: Performance monitoring events are conducted post-construction in years one, three, and five. Post-storm monitoring events if required will be conducted.
c) **Sample Size**: All external containment features
d) **Sites**: Created containment features
e) **Performance Criteria**:
   1. At Year 1 post-construction, the containment feature has settled 6 inches.
   2. At Year 3 and Year 5 post-construction, the containment feature is no longer losing elevation.
f) **Metric**: Elevation (inches) of external containment features
g) **Potential adaptive management actions**: 1) Add rocks or sediment to existing containment features to increase elevation, 2) Re-evaluate containment design for future phases.

Parameter #2: Total areal coverage of wetland cell habitats

a) **Method**: A licensed surveyor in the State of Alabama to conduct drone survey methodology with 1.2 cm horizontal and 2cm vertical accuracy to determine the total areal coverage of the wetland cell habitats.
b) **Timing and Frequency:** Performance monitoring events are conducted post-construction in years one, three, and five. Post-storm monitoring events if required will be conducted.
c) **Sample Size**: Wetland Creation Cell
d) **Sites**: Created Wetland Creation Cell
e) **Performance Criteria:**
   1. At Years 1, 3, and 5 post-construction the Wetland Creation Cell is X acres (*acreage to be established for each Wetland Creation Cell once finalized*).
   2. At Years 1, 3, and 5 post-construction the linear feet of the tidal creek is X ft (*linear feet to be established for each Wetland Creation Cell once excavation of tidal creeks is finalized*).
f) **Metric**: Acres of habitat; linear feet of tidal creeks.
g) **Potential adaptive management actions**:
   1. Add rocks or sediment to existing containment features to increase elevation.

[1] The drone typically used is RTK equipped and has an expected accuracy of 1.2cm horizontal and around 2cm vertical. Operators run check-sections with RTK and conventional to check the LiDAR Data. Additionally, they set targets with RTK and these are used to calibrate the data. LiDAR processing procedures will be used to filter the returns.

2. Re-evaluate containment design to improve protection of future Wetland Creation Cells.
3. Add more dredged material to increase the footprint.
4. Excavate the tidal creek to increase the linear feet of the habitat.

Parameter #3: Elevation of wetland cell habitats

a) **Method:** A licensed surveyor in the State of Alabama to conduct drone survey methodology with 1.2 cm horizontal and 2cm vertical accuracy to determine the elevation of the wetland cell habitats.
b) **Timing and Frequency:** Performance monitoring events are conducted post-construction in years one, three, and five. Post-storm monitoring events if required will be conducted.
c) **Sample Size:** Wetland Creation Cell and reference site.
d) **Sites**: Wetland Creation Cells and reference site.
e) **Performance Criteria**:
   1. At Years 1, 3, and 5 post-construction the elevation of the low marsh platform of the Wetland Creation Cell is between 0 and +2 ft NAVD88 and meet the geotechnical analysis and settlement curves.
   2. At Years 1, 3, and 5 post-construction the elevation of the high marsh platform of the Wetland Creation Cell is between +2 and +4 ft NAVD88 and meet the geotechnical analysis and settlement curves.
   3. At Years 1, 3, and 5 post-construction the elevation of the tidal shrub platform of the Wetland Creation Cell is between +3 and +4 ft NAVD88 and meet the geotechnical analysis and settlement curves.
   4. At Years 1, 3, and 5 post-construction the elevation of the tidal creek inlets and tidal ponds in the Wetland Creation Cell are between -6 and -2 ft NAVD88 and meet the geotechnical analysis and settlement curves.
   5. At Years 1, 3, and 5 post-construction the elevation of the tidal creeks in the Wetland Creation Cell are between -4 and 0 ft NAVD88 and meet the geotechnical analysis and settlement curves.
f) **Metric**: Elevation (feet) of habitats
g) **Potential adaptive management actions**:
   1. Add or re-grade sediment.
   2. Perform thin-layer placement of dredged material to raise the elevation of the created wetland area (See Section 7 for further long-term adaptive management framework details).
   3. Excavate tidal creek and/or tidal creek inlet.

Parameter #4: Vegetation species composition and percent cover

a) **Method #1:** Utilize unmanned aerial vehicle flown by a licensed small Unmanned Aerial System pilot to take pictures at 10 m altitude. Identify all wetland species present in permanently determined survey transect lines sampling points within a 1 m^2 sampling area. Field verify / ground-truth to determine the reliability of drone sampling in the future.
Method #2: Establish permanent sampling locations along the survey transect lines that capture differing vegetation zonation patterns (e.g., high marsh, low marsh, scrub-shrub berm). At each sampling location, three 1 m^2 quadrat replicate sampling plots are established. All plant species within a 1 m^2 fixed plot are identified and percent canopy cover recorded using Braun-blanquet percent cover categories (DISL 2021, Andrews, 2022). Photo documentation of quadrats is preferred.

b) **Timing and Frequency**: Performance monitoring events are conducted post construction in years one, three, and five at both the reference and project sites at the peak of the growing season (mid to late summer).
c) **Sample Size**: Three replicate sampling plots at permanent sampling locations, that capture the multiple habitats created, will be surveyed along established survey transects every 500 feet. Permanent sampling locations will be established along transects to ensure that all habitat types are being sampled. The sampling size will vary depending on the habitat types across a transect but should allow for statistically robust data gathering. Similar sample size will be conducted at the reference site.
d) **Sites**: Wetland creation site and reference site (Figure 4).
e) **Performance Criteria**:
   1. Native species are present and similar to the reference site. Undesirable vegetation is not present.
   2. Percent cover at year 1 post-planting is between 1-5% (BB 1); Year 3 is 26-50% (BB-3); and Year 5 is >75% (BB-5)
f) **Metric #1**: Average number of species present/ m^2 per habitat type (high, low marsh).
   Metric #2: Species (native and non-native) presence/ absence / m^2 per habitat type (high, low marsh)
   Metric #3: Average percent cover score per meter squared per habitat type (high, low marsh)
g) **Potential Adaptative Management Actions**: 1) Implement appropriate invasive species management techniques based on a case by case decision regarding whether or not the undesirable plant is a) providing fisheries habitat or b) can be removed without damaging wetland habitat 2) Plant additional native vegetation.

Parameter #5: Water Quality

h) **Method #1:** Utilize handheld probes to measure dissolved oxygen, temperature, and salinity during annual monitoring events.
i) **Timing and Frequency**: Performance monitoring events are conducted post construction in years one, three, and five at both the reference and project sites at the peak of the growing season (mid to late summer).
j) **Sample Size**: To be determined based on size of wetland area and habitat types. Samples will be taken in tidal creeks, tidal ponds, and wetland habitats along transects for water quality monitoring.
k) **Sites**: Wetland creation site and reference site (Figure 4).
l) **Performance Criteria**: Water quality parameters are not significantly different from reference site.
m) **Metric #1**: Dissolved oxygen, temperature, and salinity
n) **Potential Adaptative Management Actions**: Ensure that tidal creeks are open and flowing as designed. Corrective action includes excavating tidal creeks to allow flow.

6.0 Data and Reporting

Baseline data and performance monitoring data will be collected using established data procedures for raw and processed data formats. Parameter #1-3 will include horizontal and vertical datums and processed data spreadsheets. Parameter #4 will include field data sheets and field photos as well as processed data spreadsheets.

Data will be kept by the Alabama Port Authority and the USACE (as required). All data will be made freely available upon request. Data standards are representative of those required by the Federal RESTORE Council as provided in the Observational Data Plan Guidelines (RESTORE Council, 2021).

For each dataset to be collected, the following data and metadata will be provided:

a) Dataset Name
b) Summary scope of data collection (metrics being evaluated, frequency and duration of data collection, geographic coverage, and temporal resolution)
c) Data storage format (e.g. .xls, .csv, .geoTIFF, etc.)
d) Units of measure
e) Horizontal and vertical datums (if applicable)
f) QA/QC procedures
g) Responsible entity for the dataset (i.e., the entity that is collecting the data, ensuring its quality, and making it available to the public).
h) Dataset access information (e.g., name of established federal database)
i) Dataset access restrictions, if any (e.g., embargoed for research or litigation purposes)
j) Point of contact for questions and data requests (name, mailing address, electronic mailing address, and phone number)

Following RESTORE council guidelines, all field data collected will be submitted to the council accompanied by ISO 19115 compliant metadata compatible with the Council's MERLIN system.

A monitoring contractor will prepare and compile reports after each monitoring event is completed. A monitoring report template for reporting results will be created that will be populated by Wetland Creation Cell with results on metrics described above. Table 2 will be used to represent the processed data against the established performance criteria metrics. These metric targets will be established based on sediment source settlement rates for Parameter #1 and #3. Parameters #2 and #4 will be established for each Wetland Creation Cell per as-builts. Parameter #3 and #4 will be compared against a reference site to ensure habitat performance. The project will be tracked per wetland cell.

The detailed description of the Wetland Creation Cell for that year will be documented as well as the performance of cells that were created in previous years. The overall project performance will be summarized with an eye to long-term sustainability and lessons learned for future phase development and adaptive management strategies.

Reports will be submitted to the RESTORE Council, NMFS, and the USACE (as required) within 60 days of completion of monitoring tasks and provide a detailed discussion of the status of the shoreline protection structure and new wetland habitat. These reports will be provided following monitoring events.

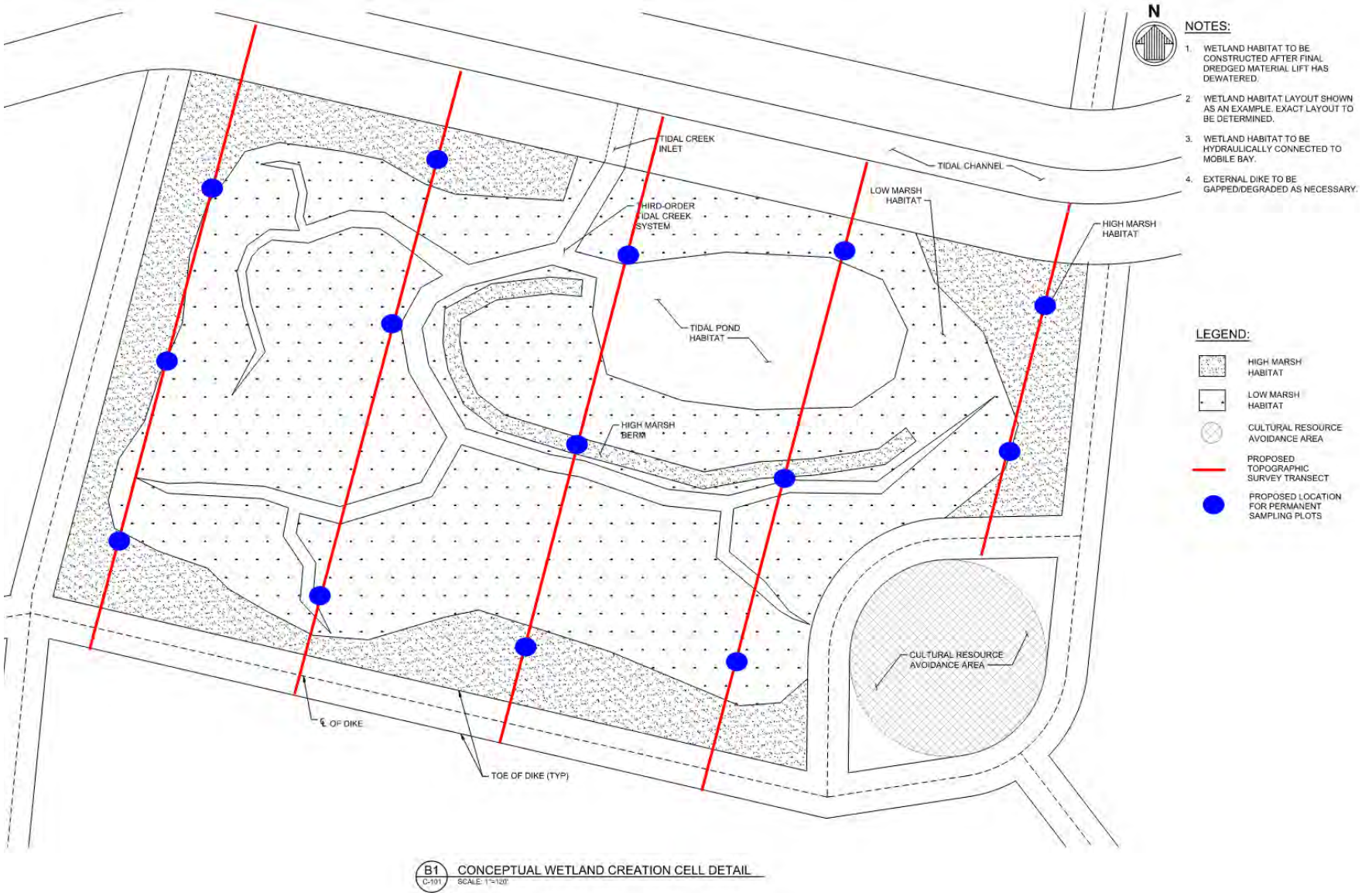

Figure 4. Typical plan view of Wetland Creation Cell and an example sampling plan for performance criteria.

Table 2. Example of summary table to track performance criteria against baseline and post-construction targets.

Parameter	Performance Criteria	Metric	Wetland Creation Cell #	As-built	Post-construction		Met Performance Criteria? (Y/N)
				Year 0	Year #		
					Reference	Project	
#1 - Elevation containment features	At Year 1 post-construction, the containment feature has settled 6 inches.	Elevation (inches) of external containment features			NA		
	At Year 3 and Year 5 post-construction, the containment feature is no longer losing elevation.						
#2 – Total areal coverage of wetland habitat	At Years 1, 3, and 5 post-construction the Wetland Creation Cell is X acres (acreage to be established for each Wetland Creation Cell once finalized).	Acres of habitat created; linear feet of tidal creeks					
	At Years 1, 3, and 5 post-construction the linear feet of the tidal creek is X ft (linear feet to be established for each Wetland Creation Cell once excavation of tidal creeks is finalized).				NA		
#3 - Elevation of wetland habitat	At Years 1, 3, and 5 post-construction the elevation of the low marsh platform of the Wetland Creation Cell is between 0 and +2 ft NAVD88 and high marsh is between +2 and +4 ft NAVD 88 and meet the geotechnical analysis and settlement curves.	Elevation (feet) of habitats					
	At Years 1, 3, and 5 post-construction the elevation of the tidal creek inlets and tidal ponds in the Wetland Creation Cell are between -6 and -2 ft NAVD88.						
	At Years 1, 3, and 5 post-construction the elevation of the tidal creeks in the Wetland Creation Cell are between -4 and 0 ft NAVD88.						
#4 - Vegetation species composition	Native species are present and similar to the reference site. Undesirable vegetation is not present.	Average number of species present/ m2 per habitat type (high, low marsh) Species (native and non-native) presence/ absence / m2 per habitat type (high, low marsh)					
	Performance Criteria #2: Percent cover at year 1 post-planting is between 1-5% (BB 1); Year 3 is 26-50% (BB-3); and Year 5 is >75% (BB-5)	Average percent cover score per meter squared per habitat type (high, low marsh)					
#4 - Vegetation percent cover	Percent cover at year 1 post-planting is between 1-5% (BB 1); Year 3 is 26-50% (BB-3); and Year 5 is >75% (BB-5)	Average percent cover score per meter squared per habitat type (high, low marsh)					

7.0 Long-term Sustainability and Adaptative Management Framework

Long-term adaptive management actions are those that would be required to maintain and extend the project lifespan or that provide insight into future phases of Wetland Creation Cell design. This framework is intended to guide development of adaptive management activities so that the functionality of the containment features is maintained, and the wetland is protected, the combination of which will support the ultimate goal of long-term sustainability of the site. Long-term sustainability and adaptive management planning should be regarded as a 'living' process to incorporate lessons learned with each phase of the project. These parameters will evolve through time with changing data, conditions, and coastal engineering and ecological practices. Adaptive management corrective actions for vegetation are more short-term actions (e.g., replanting or invasive species management). Reports following monitoring events will be shared with relevant resource agencies and their comments will be taken into consideration for adaptive design management.

The Long-term Sustainability and Adaptive Management Framework works in tandem with the Monitoring Plan performance criteria. The data collected towards the performance criteria will serve to show progress towards the metric targets based on design parameters (for the containment features) and vegetative success metrics. Adaptive management corrective actions will be triggered if performance criteria are not met. Essential parameters that will be visited in the long-term include the elevation and total areal coverage of target habitats and the elevation of containment features. The two primary adaptive management corrective actions for these parameters include thin-layer placement of dredged material or containment feature improvements. These parameters help to advance our understanding of project performance and restoration science and allow for lessons learned to be applied to future phases of the project. Other, less intensive, adaptive management actions associated with habitat parameters could involve invasive species control measures and replanting of vegetation. Long-term corrective actions discussed below are the most intensive adaptive management activities.

7.1 Design and Construction Adaptative Management

Coastal restoration and beneficial use of dredged material has advanced significantly in the last 20 years and will continue to advance to ensure we keep important sediments in our coastal systems. This project will also have many lessons learned as we move through phased construction and monitoring over the next 20 years. Building off the current state of knowledge, the proposed design and construction methods are tried and true against Alabama wave climates and storms. An important part of this project is the continued adaptive management of the design and construction to address any containment feature and habitat design modifications to ensure long term success in building and protecting these intertidal wetlands. The monitoring parameters described above will indicate adaptive management triggers for corrective actions and for informing future design modifications of Wetland Creation Cells. For example, the current gapping of wetland creations cells will allow for fish and wildlife to enter into the wetland, these tidal creeks will be monitored for elevation and total areal coverage to ensure water flow. In the event that storm damage has caused tidal creeks to have restricted flow, a suggested corrective action could be to excavate tidal creeks or create more gaps. This, in turn, will provide data to better design future tidal creeks gaps within the Wetland Creation Cells.

7.2 Long-term Adaptative Management

Coastal wetlands provide numerous ecosystem services including improved water quality, valuable habitat for fish and wildlife, and shoreline protection, but their resilience is largely a function of elevation. The plants that compose wetlands habitat have tolerance thresholds associated with the depth and frequency of inundation. This, in turn, is influenced by the elevation of the wetland platform. In coastal systems wetland stability can be threatened by increased severe weather events, subsidence, and sea level rise. These stressors, either independently or in conjunction with one another, can result in loss of wetland habitat. It is necessary that there be consideration and long-term planning for these stressors and the modified coastal processes, to promote long-term sustainability and protection of wetland restoration projects.

For the Upper Mobile Bay Wetlands Creation Project, the constructed containment features are designed to protect the restored wetland from erosion from daily, operational wave events throughout the project design life (current sea level rise predictions incorporated). The primary impediments to project longevity will be severe weather events and potentially accelerated rates of sea level rise. To mitigate against potential impacts and protect this valuable investment, it is necessary to plan for an adaptive management approach. Proposed adaptive management activities for the project include increasing the elevation of the wetland platform through thin-layer placement of sediment and enhancing the containment features to maintain design performance.

7.2.1 Thin-layer Placement of Sediment

A suitable approach for counteracting wetland loss is to artificially supply sediment in thin layers, also known as wetland nourishment or thin-layer placement (TLP). Artificial deposition of sediment would incrementally increase the wetland elevation to maintain the ecosystem relative to increasing water levels. Thin-layer placement techniques have the potential to restore damaged wetlands, proactively maintain healthy wetlands, and provide an opportunity for beneficial use of dredged material. Thin-layer placement of dredged material is an innovative and emerging practice and care must be taken to not damage the existing marsh habitat during and after sediment placement (M&N, 2020).

To perform this adaptive management action, the following tasks are required:

- Monitor for performance criteria that trigger the need for adaptive management activities.
- Define the adaptive management activity area requiring TLP.
- Perform physical and biological surveys of the activity area and characterize the site.
- Identify compromised or unique zones at the site which may require a modified activity approach.
- Identify sensitive areas to be protected during activity implementation.
- Perform an updated settlement analysis.
- Perform an updated SLR analysis.
- Perform an updated water level analysis.
- Outline the desired vegetation composition at the site and determine their preferred elevation.
- Define the target elevation(s) for the site.
- Estimate the volume of sediment required to accomplish activity goals (under limiting assumptions).

7.2.2 Containment Feature Enhancement

This activity would involve future addition of rock or containment features to maintain the containment feature performance standards over time in the face of rising water levels. For a detailed discussion, the reader is referred to the USACE Coastal Engineering Manual (USACE, 2002).

The rate of marsh edge retreat is correlated with the wave power impacting the shoreline. The critical wave power is the value that, if exceeded, results in marsh edge erosion. The critical wave power for marshes in coastal Alabama was found to be wave heights of approximately 0.5 ft (Roland and Douglass, 2005). Higher wave heights produce more wave power, so wave heights above this threshold would erode the marsh edge at a rate proportional to the difference over the threshold value. Wave transmission for varying design scenarios (i.e. surge and wave conditions) and containment feature crest elevations were computed to properly size the containment features. Transmission is a function of the significant wave height, crest freeboard, crest width, peak wave period, and containment feature front slope. The crest freeboard relative to the wave height has the greatest influence. Though extreme events are relatively uncommon, it is highly likely that an event resulting in some degree of erosion will occur over the design life. The structural integrity of the containment features was designed for more extreme conditions associated with a 25-year return period event. If these conditions occurred, damage to the containment features would be likely, but it is anticipated that they would be minimal, and repairs would be relatively straightforward and not prohibitively expensive.

The protection provided by the containment features will gradually decrease as water levels rise. In the event that SLR and/ or settlement rates exceed the projections used for the design, or an extreme storm event causes significant damage, enhancement or modifications to the containment features would likely be warranted. The modifications could include adding additional armor stone to the crest in alignment with the existing side slopes such that elevation is increased while the crest width is reduced, or adding additional stone to the crest and the front slope to preserve the crest width with increased elevations.

The future state of the containment features and the design conditions for 20+ years cannot be foreseen; therefore, providing specific modifications and the associated volume of rock would provide unsubstantiated guidance. As with the development of a TLP activity, it will be necessary for SLR, water level, wave, and settlement analyses to be updated in an on-going process with current data to inform modifications to the containment features and/or design of future containment features. The performance of the containment features in preventing significant marsh erosion for the intended conditions should also be accounted for at the time of any maintenance lifts.

To perform this adaptive management action, SLR, water level, wave height, and settlement analyses (geotechnical) need to be continually updated with current data to inform modifications and/or future design of the containment features. Continued monitoring of MAM plan containment feature elevation parameters will inform potential adaptative maintenance responses.

8.0 References

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Dauphin Island Sea Lab (DISL), (2021). Dauphin Island Sea Lab Biological Monitoring Plan for The Nature Conservancy Projects. Prepared by Dr. K. Heck and D. Byron. 16pp.

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RESTORE Council (2019). Observational Data Plan Guidelines. Prepared by the Federal RESTORE council for guidance to grant recipients. Pp. 212.

Shafer, D.J. Roberts, T.H., Peterson, M.S. and K. Schmid. (2007). A regional guidebook for applying the hydrogeomorphic approach to assessing the functions of tidal fringe wetlands along the Mississippi and Alabama Gulf Coast. ERDC/EL TR-07-2. USACE ERDC.

US Army Corps of Engineers (USACE), Vegetation wetlands data layers from the GRR EIS analysis for the Widening and Deepening of the Mobile Harbor Ship Channel. Data extracted, April 2022.

US Army Corps of Engineers (USACE) (2002). Coastal Engineering Manual. EM 1110-2-1100, Washington, DC.

moffatt & nichol
A l
11 North Water Street
Suite 20220
Mobile, Alabama 36602

(251) 378-9009
www.moffattnichol.com

Sediment Evaluation Protocol Framework Memorandum

To:	U.S. Army Corps of Engineers – Mobile District Jessica Comeaux
From:	Moffatt & Nichol on behalf of the Alabama Port Authority Don Blancher, PhD. BCES Meg Goecker Mindy Joiner
Project:	Upper Mobile Bay Beneficial Use Wetland Creation Site Project USACE Permit No. SAM-2021-00246-DCH APA Project No. 10792 M&N Project No. 210315
Subject:	USACE Permit Coordination – Sediment Evaluation Protocol Framework
Date:	March 6, 2025

The Alabama Port Authority (APA) submitted a permit application for the Upper Mobile Bay Beneficial Use Wetland Creation Site Project to the U.S. Army Corps of Engineers (USACE) on September 16, 2021. The proposed project includes phased construction of a 1,200-acre beneficial use dredged material placement (wetland creation) site south of the US Highway 90/98 causeway. The intent is to establish a large-scale beneficial use dredged material placement area to create approximately 1,200 acres of brackish tidal wetland in upper Mobile Bay. Moffatt & Nichol (M&N) is leading the design on behalf of the APA and is serving as the agent for the permit.

PURPOSE

The dredged sediment evaluation protocols were discussed and further detail was requested by the EPA. Included in this memorandum is a protocol framework to further consult on evaluation of potential dredged material to be placed in the BU facility that will meet State and EPA standards and regulations.

Alabama Port Authority
Beneficial Use Dredged Sediment Program
Dredged Sediment Evaluation Protocol Framework

Sediments which are proposed to be placed in the Alabama Port Authority's (APA) Upper Mobile Bay Beneficial Use Wetland Creation Site will be sampled for initial evaluation for open water and wetlands habitat suitability using the following protocol:

- Physical analyses of surficial sediment from four composite sediment samples for grain size, Atterberg limits, total solids, moisture content, bulk density and specific gravity.

- Chemical analyses of surficial sediment from one composite sediment sample from each dredge unit for the following project-specific target analytes: metals (including mercury), polycyclic aromatic hydrocarbons (PAHs), semivolatile organic compounds (SVOCs), polychlorinated biphenyl (PCB) congeners, chlorinated pesticides, dioxin and furan congeners, cyanide, total sulfides, ammonia, total Kjeldahl nitrogen (TKN), total phosphorus, nitrate/nitrite, and total organic carbon (TOC). Chemical Methods are presented in Table 1 and follow the testing methods recommended in the USEPA 2008 SERIM manual.

Suitability for placement within the Wetland Creation Site will be determined by comparison to:

1. Suitability of bulk sediments to be placed in the Beneficial Use site will be based on levels of contaminants detected in the material as compared to constituent levels found at Upper Mobile Bay reference site BU23-REF as reported in EVALUATION OF DREDGED MATERIAL PROPOSED FOR OPEN WATER BENEFICIAL USE MOBILE BAY, ALABAMA October 2024.
2. Exceedances of the above levels can apply optional effluent elutriate testing (EET) to evaluate the potential for chemicals to dissociate with sediment during placement. The elutriate samples will be prepared using sediment and water from the proposed dredge site. The elutriate test will be conducted in accordance with the following document, also known as "The Inland Testing Manual", USEPA/USACE 1998. The dissolved supernatant chemical concentrations will be compared to USEPA and State of Alabama Saltwater Aquatic Life Criteria as presented in Table 2.

All information supporting a determination of 'no reason to believe' will be provided to USACE, such as results of previous testing on site or nearby, information on dredge program, etc. for their final determination of suitability. Additionally, when testing is required, all sediment testing data will be provided to USACE for their final determination of suitability.

TABLE 1. ANALYTICAL TESTING SCHEME FOR DREDGED SEDIMENTS TO BE PLACED IN ALABAMA PORT AUTHORITIES BENEFICIAL USE SITE MOBILE BAY, ALABAMA.

		Dredged Material for Beneficial Use Site		
Physical / Chemical Constituent	**Methods**	**Composite Sediments** [(a)]	**Site Water and Elutriates**[(b)]	**Reference Surficial Sediment**[(c)]
Unified Soil Classification (includes Atterberg Limits and Grain Size)	ASTM D2487	X	--	X
Specific Gravity	ASTM D854	X	--	X
Total Solids	SM 2540G	X	--	X
Bulk Density	ASTM 2973	X	--	X
Semivolatile Organic Compounds (SVOCs) and Polycyclic Aromatic Hydrocarbons (PAHs)	SW846 8270D LL	X	X	X
Metals	SW846 6020A	X	X	X
Mercury	SW 846 /4/1B for sediment SW846 7470A for aqueous	X	X	X
Chlorinated Pesticides	SW846 8081B LL	X	X	X
Polychlorinated biphenyl (PCB) Congeners	SW846 8082A	X	X	X
Dioxin and Furan Congeners	EPA 1613B	X	X	X
Cyanide	SW846 9014	X	X	X
Total Sulfide	SW846 9030B/9034	X	X	X
Acid Volatile Sulfide (AVS)	EPA Draft 1991	X	--	X
Simultaneously Extracted Metals (SEM)	EPA Draft 1991	X	--	X
Nitrogen, Ammonia	EPA 350.1	X	X	X
Total Kjeldahl Nitrogen (TKN)	EPA 351.2	X	X	X
Nitrogen, nitrate	EPA 9056A	X	X	X
Nitrogen, nitrite	EPA 9056A	X	X	X
Total Phosphorous	SM 4500 P E	X	X	X
Total Organic Carbon (TOC)	Lloyd Kahn for sediment; SM 5310C for aqueous samples	X	X	X

Notes:

(a) Includes 1 composite sample per dredging unit; from 3 individual samples and 1 Mobile Bay composite reference sample (MB23-REF).

(b) Includes 1 site water samples collected from the Mobile River Berthing Areas, 1 dredging unit elutriates, and 1 equipment blank samples.

(c) Includes BU23-REF-1, BU23-REF-2, and BU23-REF-3 ASTM = ASTM International

EPA = U.S. Environmental Protection Agency

SM = Standard Methods for Water and Wastes

SOP = Standard Operating Procedure

TABLE 2. USEPA AND STATE OF ALABAMA ACUTE MARINE WATER QUALITY CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

		Saltwater Aquatic Life Criteria	
		USEPA	State of Alabama
Chemical Constituent	**Units**	**Acute [a]**	**Acute**
General Chemistry			
Ammonia	mg/L	-- [b]	--
Cyanide	µg/L	1 [c]	1
Metals			
Arsenic	µg/L	69 [d]	69
Cadmium	µg/L	33 [e]	40
Chromium (hexavalent)	µg/L	1,100 [f]	1,100
Copper	µg/L	4.8 [g]	4.8
Lead	µg/L	210 [h]	210
Mercury	µg/L	1.8 [i]	2.1
Nickel	µg/L	74 [j]	74
Selenium	µg/L	290 [k]	290
Silver	µg/L	1.9 [l, m]	1.9
Zinc	µg/L	90 [l]	90
Chlorinated Pesticides			
4,4'-DDT	µg/L	0.13 [l]	0.13
Aldrin	µg/L	1.3 [l]	1.3
Chlordane	µg/L	0.09 [l]	0.09
Dieldrin	µg/L	0.71 [l]	0.71
Endosulfan I	µg/L	0.034 [l, n]	0.034
Endosulfan II	µg/L	0.034 [l, n]	0.034
Endrin	µg/L	0.037	0.037
gamma-BHC (Lindane)	µg/L	0.16	0.16
Heptachlor	µg/L	0.053 [l]	0.053
Heptachlor epoxide	µg/L	0.053 [l]	0.053
Toxaphene	µg/L	0.21	0.21
SVOCs			
Pentachlorophenol	µg/L	13	13
Butyltins			
Tributyltin (TBT)	µg/L	0.42	0.42

Source: U.S. Environmental Protection Agency (USEPA). 2024. National Recommended Water Quality Criteria for saltwater.

Alabama Department of Environmental Management (ADEM). 2021. Administrative Code r. 335-6-10.

Superscripts:

a = Acute aquatic life criteria based on 1-hour average exposure concentrations.

b = Criterion for Total ammonia as nitrogen will be calculated based on site-specific salinity, water temperature, and pH.

c = Free cyanide as micrograms of cyanide per liter.

d = Total dissolved arsenic.

e = Dissolved cadmium.

f = Dissolved hexavalent chromium.

g = Dissolved copper.

h = Dissolved lead.

i = Dissolved mercury, derived from data for inorganic mercury (II), but is applied here to total mercury.

j = Dissolved nickel.

k = Dissolved selenium.

l = Instantaneous maximum.

m = Dissolved zinc.

n = Value for endosulfan I + endosulfan II.

Notes:

mg/L = Milligram(s) per liter.

µg/L = Microgram(s) per liter.

References

EA Engineering, Science and Technology. 2024. Evaluation of Dredged Materials Proposed for Open Water Beneficial Use, Mobile Bay Alabama. Report to Alabama Port Authority, Prepared for Moffatt & Nichol, Mobile, Alabama.

U.S. Environmental Protection Agency (USEPA) and U.S. Army Corps of Engineers (USACE). 1998. *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S.- Testing Manual: Inland Testing Manual*. EPA-823-B-98-004. USEPA Office of Water, Office of Science and Technology, Washington, D.C., and USACE Operations, Construction, and Readiness Division, Washington, D.C. February

USEPA. 2008. *Southeast Regional Implementation Manual (SERIM): Requirements and Procedures for Evaluation of Ocean Disposal of Dredged Material in Southeastern U.S. Atlantic and Gulf Coast Waters*. EPA 904-B-08-001. USEPA Region 4, Atlanta, Georgia and USACE, South Atlantic Division, Atlanta, Georgia.

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK OR EVENTS in ALABAMA

The project manager shall comply with the following conditions intended to protect manatees from direct project effects:

a. Instruct all personnel associated with the project/event about the potential presence of manatees and the need to avoid collisions with manatees. Advise all personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972, the Endangered Species Act of 1973, and Alabama Nongame Species Regulation.

b. Operate all vessels associated with the project/event at "no wake/idle" speeds at all times while in the project/event area, and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom when possible. All vessels will follow routes of deep water whenever possible.

c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.

d. All on-site project/event personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shut down if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.

e. Any collision with and/or injury to a manatee shall be reported immediately to the Dauphin Island Sea Lab's Manatee Sighting Network (1-866-493-5803) and the U.S. Fish and Wildlife Service in Daphne, Alabama, at (251) 441-5839 or (251) 441-5181 and emailed to: Alabama@fws.gov. Please report nonemergency manatee observations to the numbers above or online at: http://manatee.disl.org/.

f. Temporary signs using text exactly as below shall be posted prior to and during all in-water project or event activities. Signs shall be at least 8½" by 11" explaining the requirements for the "Idle/No Wake" and the shut down of in-water operations. Signs must be posted in locations prominently visible to all personnel engaged in water-related activities and placed visible to each vessel operator. All signs are to be removed by project manager upon completion of the project or event. Questions concerning these signs can be forwarded to the email address listed above. An example is enclosed and can be copied and used during construction/event activities.

Revised Jan 2015

CAUTION:
MANATEE HABITAT

IDLE SPEED IS REQUIRED IF OPERATING A VESSEL IN THE CONSTRUCTION OR EVENT AREA

All equipment must be SHUTDOWN if a manatee comes within 50 FEET of operation

Report any collision with and/or injury to a manatee immediately to:

Dauphin Island Sea Lab's Manatee Sighting Network:

1-866-493-5803

and the U.S. Fish and Wildlife Service in Daphne, AL:

(251) 441-5839 or (251) 441-5181

DEPARTMENT OF THE ARMY
U.S. ARMY COPRS OF ENGINEERS, MOBILE DISTRICT
100 CANAL STREET
MOBILE, AL 36602-1901

March 30, 2026

South Alabama Branch
Regulatory Division

SUBJECT: Department of the Army Permit Modification Number 1, File Number SAM-2021-00246-DCH, Alabama State Port Authority (ASPA), Upper Mobile Bay Beneficial Use Site, Mobile County, Alabama

Alabama State Port Authority (ASPA)
Attention: Ms. Gretchen Barrera, P.E.
Email Address: Gretchen.Barrera@alports.com
250 North Water Street
Mobile, Alabama 36602

Dear Ms. Barrera:

Reference is made to your November 03, 2025, request for **Modification Number 1** of your Department of the Army (DA) permit authorized under file number SAM-2021-00246-DCH. The original permit authorized the construction of a 1,200-acre dredged material beneficial use site in upper Mobile Bay, Alabama. The project is located within Upper Mobile Bay; approximately 1.5 miles south of US Highway 90/98 causeway; at Latitude 30.646906°, Longitude -88.000935°; Mobile, Mobile County, Alabama.

In accordance with your request, the subject DA permit as modified includes the following revised Special Condition:

"Special Condition W. The permittee will implement NMFS Southeast Region's Measures for Reducing Entrapment Risk to Protected Species (2012), Protected Species Construction Conditions (2021), and Vessel Strike Avoidance Measures (2021) during project construction. If a protected species is seen within 100 yards of the active daily construction operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a protected species. Operation of any mechanical construction equipment shall cease immediately if a protected species is seen within a 50-ft radius of the equipment. Activities may not resume until the species has departed the project area of its own volition."

If you have questions, please contact me at (251) 305-8963, or by e-mail at Dana.J.Leach@usace.army.mil. For additional information about our Regulatory Program, visit our web site at www.sam.usace.army.mil/Missions/Regulatory.aspx. Also, please take a moment to complete our customer satisfaction survey located near the

bottom of the webpage. Your responses are appreciated and will allow us to improve our services.

BY AUTHORITY OF THE SECRETARY OF THE ARMY:

KELCEY R. SHAW, PE, PMP
COLONEL, U.S. ARMY
(DISTRICT COMMANDER)

BY: Date: 2026.03.30 14:24:18 -05'00'
ELIZABETH A. HAMILTON
TEAM LEADER
SOUTH ALABAMA BRANCH
REGULATORY DIVISION

Attachments

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2400 ▪ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ▪ FAX (334) 271-7950

October 6, 2022

Bob Harris, P.E.
Alabama State Port Authority
Vice President, Technical Services
C/O
Mary Beth Sullivan
Moffatt & Nichol
11 N Water St
Suite 20220
Mobile, Alabama 36602

RE: State of Alabama Water Quality Certification (WQC) Pursuant to Clean Water Act (CWA) §401(a)
ASPA Upper Mobile Bay Beneficial Use Wetland Creation Site Project
South of U.S. Hwy 90/98 Causeway, Mobile/Baldwin Counties, Alabama
Latitude/Longitude Coordinates: 30.646906, -88.000935
U.S. Army Corps of Engineers (USACE) File No. SAM-2021-00246-DCH
Alabama Department of Environmental Management (ADEM) Tracking Code: ADEM-2021-292-WQC-COE-IP

Dear Mr. Harris:

On April 30, 2021 the Alabama Department of Environmental Management (ADEM), Alabama's 401 certifying authority, received the Alabama State Port Authority's (ASPA) pre-filing meeting request. The ADEM has completed its review of submitted materials related to ASPA's proposal to create a 1,200-acre beneficial use marsh in upper Mobile Bay as described in U.S. Army Corps of Engineers' December 2, 2021, Joint Public Notice SAM-2021-00246-DCH.

Action pertinent to WQC is required by CWA §401(a)(1), 33 U.S.C. §1251, et. seq. If conducted in accordance with the conditions prescribed herein, there is reasonable assurance that the discharge resulting from the proposed activities will not violate applicable water quality standards established under §303 of the CWA and §22-22-9(g), Code of Alabama (1975). By this letter all are hereby notified that CWA §401 WQC is granted. This WQC is limited to the approved activities described in the December 2, 2021, Joint Public Notice SAM-2021-00246-DCH and terminates concurrently with the expiration of the USACE permit to be issued.

Any significant deviation from the approved project design must not be implemented without prior written notice and approval from the ADEM. Upon such notice, the Director may require the submission of additional information and/or a new permit application, and additional fees may be required.

This certification does not authorize the filling any area of State waterbottoms containing submersed grassbeds - defined at ADEM Admin. Code r. 335-8-1-.02(iii).

In recognition that projects are site specific in nature and conditions can change during project implementation, the ADEM reserves the right to require the submission of additional information or require additional management measures to be implemented, as necessary on a case-by-case basis, in order to ensure the protection of water.

ADEM certifies that there are no applicable effluent limitations under §301 and §302 nor applicable standards under §306 and §307 of the CWA in regard to the activities specified. However, regulations promulgated by the

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (FAX)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (FAX)

Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
(251) 304-1176
(251) 304-1189 (FAX)

EPA requiring discharge permits for storm water runoff (i.e. NPDES permits) from individual and commercial facilities may be applicable. This WQC does not address the requirements of those regulations.

In accepting this WQC from the State of Alabama, any duly authorized employee of the ADEM or its contractors, or Attorney General or District Attorney must be allowed to enter upon the premises on which this project is occurring for the purposes of ascertaining compliance with ADEM's Administrative Code.

Liability and responsibility for compliance with this concurrence are not delegable by contract or otherwise. Any agent, contractor, subcontractor, or other person employed to work on the project must understand the approved project design and associated activities. Any violations of the ADEM's Administrative Code may be considered violations of this WQC and may result in an enforcement action.

This WQC only addresses potential discharges to state waters resulting from approved activities and does not authorize any activity or result therefrom not specified herein, nor does this WQC convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to persons or property or invasion of other private rights, trespass, or any infringement of Federal, State, or local laws or regulations and in no way purports to vest in any person title to lands now owned by the State of Alabama nor shall it be construed as acquiescence by the State of Alabama of lands owned by the State that may be in anyone's possession. This WQC does not obviate the responsibility to acquire all other needed permits nor does this WQC, in any way, imply that the proposed activities comply with the requirements of any other jurisdictional entity nor does it imply that the project can or should be approved by any other jurisdictional entity.

This WQC is not transferable without prior written notice and approval of the ADEM.

Adherence to the following conditions is required in order to ensure protection of water quality.

1. Pursuant to the requirements of ADEM Admin. Code r. 335-6-10-.04(3), effective Best Management Practices (BMPs) must be implemented for prevention and control of nonpoint sources of pollutants, including sediment loss, originating on site during and after site development activities to prevent fill material from entering wetland areas and/or State waters in which disposal of fill has not been authorized by the ADEM. Effective erosion control measures, sediment control measures, and other site pollution management practices are required to be designed, implemented, and continually maintained consistent with the Alabama Handbook for Erosion Control, Sediment Control, and Stormwater Management on Construction Sites and Urban Areas. This condition is necessary to assure that any discharges resulting from land disturbance activities during project implementation will not result in excessive turbidity in the receiving water so as to cause the receiving water to fail to meet its water use criteria.

2. Pursuant to the requirements of ADEM Admin. Code r. 335-6-10-.06(a), appropriate BMPs to minimize turbidity impacts to the maximum extent practicable shall be implemented. This condition is necessary to assure that State waters will be free from substances attributable to sewage, industrial wastes or other wastes that could settle to form bottom deposits which are unsightly, putrescent or interfere directly or indirectly with any classified water use.

3. Pursuant to the requirements of ADEM Admin. Code r. 335-6-10-.09, turbidity generated during dredging activities must not cause substantial visible contrast nor result in an increase of more than fifty (50) Nephelometric turbidity units above background. This condition is necessary to assure that any discharges resulting from construction activities during project implementation will not result in excessive turbidity in the receiving water so as to cause the receiving water to fail to meet its water use criterion.

4. Pursuant to the requirements of ADEM Admin. Code r. 335-6-10-.09, turbidity generated during dredge material dewatering and/or placement activities must not cause substantial visible contrast nor result in an increase of more than fifty (50) Nephelometric turbidity units above background. This condition is

necessary to assure that any discharges resulting from construction activities during project implementation will not result in excessive turbidity in the receiving water so as to cause the receiving water to fail to meet its water use criterion.

5. Pursuant to the requirements of ADEM Admin. Code r. 335-6-12-.35(11), upon the loss or failure of any treatment facility, BMP, or other management control measure as identified by responsible on-site staff during day-to-day construction operations or as identified by ADEM technical staff during facility inspections, work/activity and all discharges shall, where necessary to maintain compliance with this WQC, be suspended, halted, reduced, or otherwise controlled until effective treatment is restored. This condition is necessary to assure that any discharges resulting from land disturbance activities during project implementation will not result in excessive turbidity in the receiving water so as to cause the receiving water to fail to meet its water use criterion.

6. Pursuant to the requirements of ADEM Admin. Code r. 335-8-2-.02(5), all materials used as fill shall be non-toxic, non-leaching, non-acid forming, and free of solid waste or other debris. This condition is necessary to assure that State waters will be free from substances which could cause a contravention of any water use criterion.

7. Upon reaching a 'no reason to believe' determination (Dredged Sediment Evaluation Protocol Framework, Moffatt & Nichol, 2022) based on analyses of samples collected from potential dredge areas, copies of all biological and chemical results utilized in making that determination should be provided to the Alabama Coastal Area Management Program prior to the discharge of dredged material into the beneficial use site. Those analyses may be submitted to: Coastal@adem.alabama.gov.

8. The Alabama Coastal Area Management Program should be notified at least 10 days prior to each event in which dredged material would be disposed in the beneficial use site. Notifications may be in the form of e-mails submitted to: Coastal@adem.alabama.gov.

And finally, upon receipt of the USACE permit, make careful note of the expiration date. Expired permits cannot simply be reactivated or extended. If the project will not be completed prior to the expiration of the permit, the USACE **and** the ADEM must be notified - preferably 60 days before the permit expiration date. If the permit expires before regulated activities authorized therein are completed, a new permit application will have to be submitted to the resource agencies for a full review which will include but not be limited to: public noticing, resolution of public comments, and remittance of new project review fees. In this circumstance, work may have to cease until a new permit has been issued.

Contact the Mobile-Coastal office anytime with questions. Always include the ADEM tracking code above when corresponding on this matter. Katie Smith is the Mobile-Coastal office contact for this project; she may be reached by phone at 251.304.1176 or by e-mail at katiem.smith@adem.alabama.gov.

Sincerely,

Anthony Scott Hughes, Chief
Field Operations Division

cc: ADCNR | (submerged.lands@dcnr.alabama.gov)
USACE | Jessica Comeaux (Jessica.C.Comeaux@usace.army.mil)

ASH/jsb/kms File:401WQ/683

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, MOBILE DISTRICT
P.O. BOX 2288
MOBILE, AL 36628-0001

CESAM-RD-A **December 2, 2021**
PUBLIC NOTICE NO. SAM-2021-00246-DCH

JOINT PUBLIC NOTICE
U.S. ARMY CORPS OF ENGINEERS AND
STATE OF ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

REQUEST TO DISCHARGE FILL MATERIAL IN MOBILE BAY TO CREATE 1,200 ACRES OF WETLAND HABITAT IN MOBILE, MOBILE COUNTY, ALABAMA

TO WHOM IT MAY CONCERN: This District has received an application for a Department of the Army (DA) permit pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403), and Section 404 of the Clean Water Act (33 U.S.C. 1344). Please communicate this information to interested parties.

APPLICANT: Alabama State Port Authority
Attention: Mr. Robert Harris
250 North Water Street Mobile,
Alabama 36602

AGENT: Moffatt & Nichol
Attention: Ms. Mary Beth Sullivan
11 North Water Street, Suite 20220
Mobile, Alabama 36606

LOCATION: The proposed project is located within Upper Mobile Bay; approximately 1.5 miles south of US Highway 90/98 causeway; at Latitude 30.646906°, Longitude -88.000935°; Mobile, Mobile County, Alabama.

PROJECT PURPOSE: The basic project purpose is to establish a large-scale, long-term beneficial use (BU) dredged-material placement area to create wetland habitat. The overall project purpose is to construct multiple individual Wetland Creation Cells (WCC), as needed, within three (3) phased Wetland Creation Areas (WCA) in order to use material dredged from the Upper Mobile Bay area to create up to 1,200 acres of intertidal wetland habitat in Upper Mobile Bay.

PROPOSED WORK: The applicant proposes the phased construction of a 1,200-acre beneficial used dredged-material placement (wetland creation) area in Upper Mobile Bay over a 20-year period, dependent on dredged material volumes and timing of maintenance dredging activities. The completed project would allow for the overall placement of up to 9.5 million cubic yards of material dredged from Upper Mobile Bay area within three (3) fully-enclosed WCA containment dikes protected by rock breakwaters or revetment at the south boundary of the project area progressing to the north boundary, as needed, into softer

containment structures. Three (3) types of shoreline protection and external containment structures are proposed, dependent on the controlling environmental conditions: Type I includes a rock breakwater with a maximum crest elevation of +4 feet NAVD88, a marsh buffer, and an internal earthen containment dike with a crest elevation of +6 feet NAVD88. Type II includes a sand containment dike protected by a rock revetment, with a crest elevation of +6 feet NAVD88. Type III includes a sand containment dike with a fortified core of constructed geotubes and a fronting beach, with a maximum crest elevation of +6 feet NAVD88. Project design elevations may be adjusted as the project is implemented, to account for sea level rise.

Individual WCC would be constructed within the larger WCAs to provide manageable-sized areas for material placement and targeted wetland habitat creation. Each cell is anticipated to be 40-80 acres in size. Construction of internal containment structures would proceed as existing WCC approach capacity to allow for continued dredge-material placement. Material obtained for construction of the internal containment dikes would be hydraulically or mechanically dredged within individual WCC or sourced from existing upland dredge placement areas for upper Mobile Harbor and transported by hopper barge to the WCA. If in-situ material is utilized, internal borrow areas would be filled over time and incorporated into habitat creation activities for each WCC.

Habitat creation would include the excavation of tidal creeks, tidal ponds, embayments, low- and high-marsh features, and scrub shrub mounds. Dredged material placed for marsh creation would be placed by hydraulic dredge lines. Dredged material construction fill elevation would not exceed +4 feet NAVD88 to accommodate settling to the wetland design target elevation of +1 feet NAVD88. Within the initial five years, approximately 100 acres of wetlands would be created through the placement of dredged material. Approximately 40-80 acres of wetlands would be created each following year, dependent on the volumes of material dredged by the Alabama State Port Authority, the U.S. Army Corps of Engineers, or other entities. Fill impacts for each area of the overall project are described in Table 1 below.

A corridor for vessels and equipment would be established to access the project site. The corridor would use areas where the minimal water depth is met for vessel access. Impacts to the water bottom are not anticipated for the project corridor. A Project Access Facility at the project site for equipment and personnel access and material offloading for use over the lifespan of the project would be constructed. This activity would require installation of steel sheet piles for construction of a bulkhead, and timber piles for mooring and berthing activities. The Project Access Facility would be constructed to a maximum elevation of +6 feet NAVD88 and be approximately 30 feet wide and 100 feet long. The Project Access Facility would intersect the external containment dike system to provide access throughout the project site.

Corridors for dredge pipelines would be established between the federal navigation channel and the project site. The corridor would include crossing(s) for the Mobile Ship Channel and would be routed through open water along a route that minimizes navigation impacts and impacts to benthic habitat, and avoids cultural resource and submerged aquatic vegetation (SAV) areas. During each dredge cycle, the dredge pipeline would be temporarily placed within the pipeline corridor. All dredged materials used for the project would be determined suitable for open-water disposal in accordance with the Southeast Regional Implementation

Manual (SERIM) Requirements and Procedures for the Evaluation of Ocean Disposal of Dredged Material in the Southeastern U.S. Atlantic and Gulf Coast Waters.

Table 1: Proposed Project Impacts

EXCAVATION AND FILL SUMMARY		
EXCAVATIONS - EXTERNAL CONTAINMENT	**VOLUME (cubic yards)**	**AREA (square feet)**
SOUTH WCA	974,156	2,630,221
MIDDLE WCA	659,716	1,781,234
NORTH WCA	606,240	1,636,849
EXCAVATIONS - INTERNAL CONTAINMENT	**VOLUME (cubic yards)**	**AREA (square feet)**
SOUTH WCA	349,744	944,309
MIDDLE WCA	293,829	793,339
NORTH WCA	214,799	579,958
FILL - DREDGE FILL FOR EXTERNAL CONTAINMENT	**VOLUME (cubic yards)**	**AREA (square feet)**
SOUTH WCA	487,078	1,262,836
MIDDLE WCA	329,858	1,027,635
NORTH WCA	303,120	818,425
FILL - DREDGE FILL FOR INTERNAL CONTAINMENT	**VOLUME (cubic yards)**	**AREA (square feet)**
SOUTH WCA	174,872	770,232
MIDDLE WCA	146,915	762,368
NORTH WCA	107,400	618,338
FILL - RIP RAP FOR EXTERNAL CONTAINMENT	**VOLUME (cubic yards)**	**AREA (square feet)**
SOUTH WCA	493,154	2,020,538
MIDDLE WCA	296,806	1,644,216
NORTH WCA	272,748	1,309,479
FILL - DREDGE FILL FOR WETLAND CREATION	**VOLUME (cubic yards)**	**AREA (square feet)**
SOUTH WCA	3,772,883	16,411,955
MIDDLE WCA	3,281,707	14,992,569
NORTH WCA	2,410,898	13,071,136

AVOIDANCE & MINIMIZATION: The applicant has indicated that avoidance measures such as the implementation of an exclusion zone and a soft start procedure (ramping up) in order to alert nearby sensitive species and allow them to move out of the area prior to construction activities could be used to minimize potential noise impacts to marine mammals. Additionally, the applicant has indicated that potential cultural resources have been identified and will be avoided prior to and during construction. The applicant has surveyed and avoided areas containing SAV and/or seagrass. The U.S. Army Corps of Engineers (USACE) has not

determined the adequacy of the applicant's avoidance and minimization efforts for the proposed activity.

MITIGATION: The provision of compensatory mitigation has not been proposed. The applicant has stated that while the project would result in the loss of 1,200 acres of estuarine water column and water bottoms, the ecological benefits of creating 1,200 acres of tidal marsh would offset the loss of functions and services provided by this resource.

WATER QUALITY / COASTAL ZONE MANAGEMENT: The applicant will apply for certification from the State of Alabama in accordance with Section 401(a)(1) of the Clean Water Act, as well as Coastal Zone Management (CZM) consistency certification in accordance with the Alabama Coastal Zone Management Program. Upon completion of the required advertising and public comment review, a determination relative to water quality certification and CZM consistency will be made by the Alabama Department of Environmental Management (ADEM) within an established reasonable period of time.

HISTORIC PROPERTIES: In accordance with Section 106 of the National Historic Preservation Act and Appendix C of 33 CFR Part 325, the undertaking defined in this notice is being considered for the potential to affect cultural and historic properties within the permit area. In accordance with Appendix C of 33 CFR Part 325, the Mobile District has determined the permit area consists of the entire undertaking in waters of the United States, which includes the footprint of the proposed dredge and fill areas that would be disturbed by construction of the project. The National Register of Historic Places will be consulted for properties listed, or eligible for listing, in the National Register, which are known to exist and would be affected by the proposed work. The Mobile District is seeking comments regarding the existence, or the potential for existence, of significant cultural and historic properties within the permit area. The applicant has provided a Phase I Cultural Resources Assessment of the project site. At this time, the USACE, Mobile District has made no determination regarding potential effects of the project on cultural/historic resources. Further coordination with the State Historic Preservation Officer and/or federally-recognized American Indian tribes will be performed as determined to be appropriate.

In addition, we are seeking comments from local historical societies, museums, universities, the U.S. Department of the Interior, National Park Service, Division of Archeological Services and concerned citizens regarding the existence or the potential for existence of significant cultural and historic properties within the permit area.

ESSENTIAL FISH HABITAT: This notice initiates the Essential Fish Habitat (EFH) consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. The proposed project would permanently impact 1,200 acres of estuarine water column and water bottoms. The applicant has provided an EFH Assessment and Marsh Planting and Monitoring Plan to the USACE, Mobile District which will be coordinated with the National Marine Fisheries Service (NMFS) as part of this consultation. Our initial determination is that the proposed action may adversely affect EFH or federally managed fisheries. However, such effects are mitigated through the avoidance of SAV/seagrass and the overall ecological benefits to creation of 1,200 acres of tidal marsh within Upper Mobile Bay. Our final

determination relative to project impacts and the need for mitigative measures is subject to review by and coordination with the National Marine Fisheries Service (NMFS).

ENDANGERED SPECIES: Preliminary review of this application and the U.S. Department of the Interior's List of Endangered and Threatened Wildlife and Plants indicate the following federally-listed species are known or expected to occur within the project area: Alabama red-bellied turtle (E), West Indian manatee (T), wood stork (T), green sea turtle (T), Kemp's Ridley sea turtle (E), Loggerhead sea turtle (T), and Gulf sturgeon (T). There is no designated critical habitat within the project action area. At this time, the USACE, Mobile District has made no determination with regard to potential effects of the project on the above-listed species. Further coordination with the U.S. Fish and Wildlife Service (USFWS) and NMFS will be performed as determined to be appropriate.

COMMENTS: This public notice is being distributed to all known interested persons in order to assist in developing facts on which a decision by the USACE can be based.
The Mobile District is soliciting comments from the public, federal, state and local agencies and officials, Indian tribes, and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the USACE to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed below. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity. Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state with particularity, the reasons for holding a public hearing. For accuracy and completeness of the record, all data in support of or in opposition to the proposed work should be submitted in writing, setting forth sufficient detail to furnish a clear understanding of the reasons for support or opposition.

The decision whether to issue a permit will be based on an evaluation of the probable impact, including cumulative impacts, of the proposed activity on the public interest.
That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, and in general, the needs and welfare of the people. Evaluation of the probable impacts involving deposits of dredged or fill material into waters of the United States will also include the application of guidelines established by the Administrator of the U.S. Environmental Protection Agency.

Correspondence concerning this notice should refer to Public Notice Number **SAM- 2021-00246-DCH,** and should be directed to the District Engineer, Mobile District, Regulatory

Division, Attention: **Mr. Dylan C. Hendrix,** Post Office Box 2288, Mobile, Alabama 36628-0001, or by e-mail at dylan.c.hendrix@usace.army.mil, or (251) 694-3772. Copies of all comments should be furnished to the ADEM at coastal@adem.alabama.gov, or sent to: Alabama Department of Environmental Management, Mobile Branch, Coastal Section, 3664 Dauphin Street, Suite B, Mobile, Alabama 36608.

All comments should be received no later than 30 days from the date of this Public Notice.

For additional information about our Regulatory Program, please visit our web site at www.sam.usace.army.mil/Missions/Regulatory.aspx.

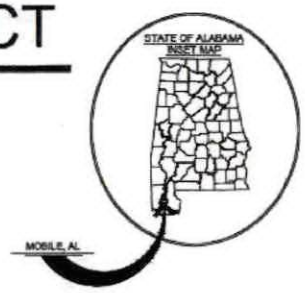
MOBILE DISTRICT
U.S. Army Corps of Engineers

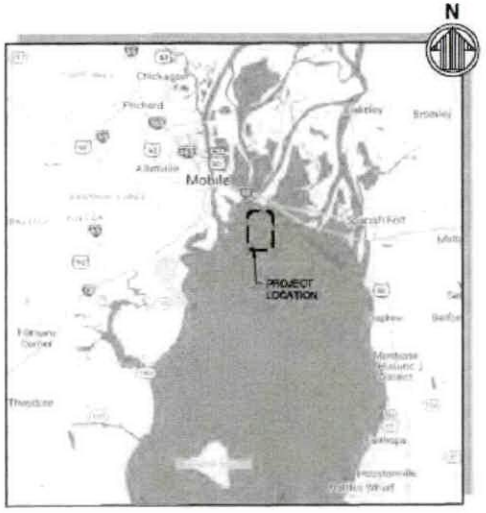
Attachments

UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT

ALABAMA STATE PORT AUTHORITY

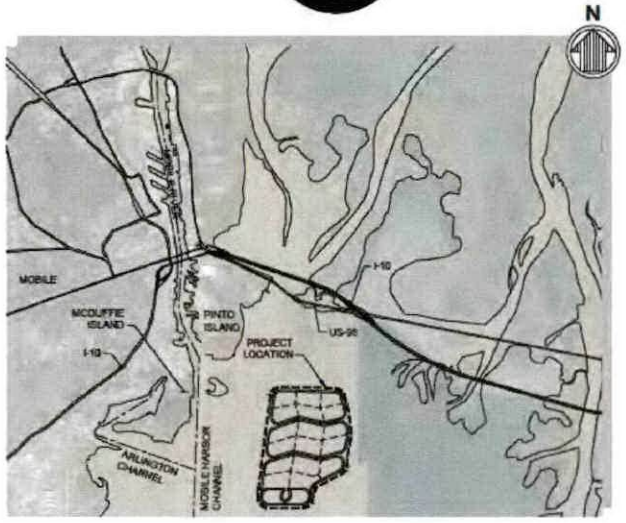
PERMIT DRAWINGS - NOT FOR CONSTRUCTION





VICINITY MAP
SCALE: NTS

INDEX OF DRAWINGS		
SHEET INDEX	SHEET	DRAWING TITLE
1	G-001	TITLE SHEET
2	G-002	GENERAL NOTES
3	V-101	GENERAL CONDITIONS
4	V-102	ENV RONMENTAL AVOIDANCE PLAN
5	B-101	GENERAL SOIL BORING LOGS PLAN
6	C-101	WETLAND CREATION SITE LAYOUT
7	C-102	CONCEPTUAL WETLAND CREATION CELL DETA L
8	C-301	WETLAND CREATION AREA TYPICAL SECTION
9	C-320	CONTAINMENT D KE TYPICAL SECTIONS (1 OF 2)
10	C-321	CONTAINMENT D KE TYPICAL SECTIONS (2 OF 2)
11	C-501	TEMPORARY WARN NG SIGN DETAIL
12	C-502	TURBIDITY CURTA N DETAIL
13	C-503	BOX WEIR DETAIL
14	C-601	COORD NATE TABLES



LOCATION PLAN
SCALE: NTS

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

TITLE SHEET

Sheet Reference No.
G-001
INDEX: 1 OF 1

DRAWING SCALES SHOWN BASED ON 22 x 3 DRAWING

GENERAL NOTES

1. THIS DRAWING SET IS FOR PERMITTING PURPOSES ONLY AND IS NOT TO BE USED FOR CONSTRUCTION.
2. BACKGROUND AERIAL IMAGERY COURTESY OF MICROSOFT BING, 2021.
3. ALL HORIZONTAL COORDINATES ARE NAD 83 (2011), ALABAMA STATE PLANE, WEST ZONE, U.S. SURVEY FEET.
4. ALL ELEVATIONS REFERENCE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), U.S. SURVEY FEET (UNLESS OTHERWISE NOTED).
5. NO CONSTRUCTION EQUIPMENT OR ACTIVITIES MAY OPERATE, TRANSIT, STAGE OR STORE WITHIN THE AVOIDANCE AREAS AS SHOWN ON SHEET V-102.
6. ESTIMATED RANGE OF FULLY LOADED DRAFTS FOR VESSELS TO BE USED FOR CONSTRUCTION.
   a. 800 HP TUGS.....6-8 FT
   b. 2,000 HP TUGS.....10-14 FT
   c. WORK BOATS, TENDERS.....6-8 FT
   d. CREW BOATS.....2-4 FT
   e. WORK BARGES, FUEL BARGES.....4-6 FT
   f. 18" HYDRAULIC DREDGE.....6 FT
7. TURBIDITY CURTAINS SHALL BE INSTALLED BY CONTRACTOR AS NECESSARY TO PREVENT TURBIDITY IN EXCESS OF ADEM WATER QUALITY REQUIREMENTS.
8. CONTRACTOR SHALL PERFORM A PRE-CONSTRUCTION MAGNETOMETER SURVEY OF ANY DREDGING/EXCAVATION AREA.
9. WARNING SIGNS AND LIGHTS SHALL BE INSTALLED AS NECESSARY PER UNITED STATES COAST GUARD REQUIREMENTS, INCLUDING NECESSARY TEMPORARY LIGHTS AND SIGNAGE DURING CONSTRUCTION, AND PERMANENT LIGHTS AND SIGNAGE.
10. WHERE REFERENCED, DESIGN ELEVATIONS REFER TO LONG -TERM, POST-SETTLEMENT ELEVATIONS.
11. PROJECT ACCESS FACILITY TO BE CONSTRUCTED ALONG EASTERN REACH OF 100-ACRE WETLAND CREATION SITE FOR OFFLOADING OF MATERIALS, EQUIPMENT, AND PERSONNEL. THIS FACILITY SHALL BE APPROXIMATELY 30' BY 50', WITH ELEVATION NOT TO EXCEED +6.0' NAVD 88. STRUCTURE TO CONSIST OF A STEEL SHEETPILE BULKHEAD WITH EARTHEN AND GRAVEL BACKFILL, TIMBER FENDERING AND TIMBER PILE CLUSTERS TO BE INSTALLED FOR MOORING/BERTHING.

WETLAND CREATION SITE NOTES:

1. THESE PERMIT DRAWINGS SHOW THE 1,200-ACRE CONCEPTUAL WETLAND CREATION SITE LAYOUT FOR REFERENCE. EXACT WETLAND CREATION SITE TO BE DELINEATED DURING DETAILED DESIGN. CHANGES MAY BE NECESSARY BASED ON PENDING GEOTECHNICAL INVESTIGATIONS, WAVE OR HYDRODYNAMIC MODELING, OR OTHER DESIGN CONSIDERATIONS.
2. REQUESTING PERMIT FOR A 1,200-ACRE WETLAND CREATION SITE. THE WETLAND CREATION SITE IS TO CONSIST OF INDIVIDUAL WETLAND CREATION AREAS TO BE SEPARATED BY TIDAL CHANNELS. EACH WETLAND CREATION AREA WILL BE SEPARATED INTO APPROXIMATELY 40-ACRE WETLAND CREATION CELLS.
3. TIDAL CHANNELS SHALL BE SIZED TO PROVIDE HYDROLOGIC CONNECTION BETWEEN WETLANDS CELLS AND MOBILE BAY
4. INITIAL CONSTRUCTION SHALL CONSIST OF EXTERNAL CONTAINMENT FOR AN APPROXIMATELY 100-ACRE SITE WITHIN THE SOUTHERN WETLAND CREATION AREA AS SHOWN ON SHEET C-101. TWO 50-ACRE WETLAND CREATION CELLS WITHIN THIS AREA SHALL BE CONSTRUCTED.
5. THE REMAINING PORTION OF THE SOUTHERN WETLAND CREATION AREA, AS WELL AS THE MIDDLE WETLAND CREATION AREA AND NORTHERN WETLAND CREATION AREA SHALL BE CONSTRUCTED IN PHASES AS NECESSARY.
6. WETLAND CREATION SITE SHALL NOT EXCEED 1,200-ACRES.
7. WETLAND CREATION SITE SHALL NOT FILL WITHIN ENVIRONMENTALLY SENSITIVE AREAS INCLUDING EXISTING SUBAQUATIC VEGETATION (SAV) BEDS OR EXISTING WETLANDS.

DREDGING NOTES:

1. ANCHOR BUOYS, AND DREDGE PIPELINE (FLOATING OR SUBMERGED) WITHIN THE DREDGE PIPELINE CORRIDOR, THE ACCESS CORRIDOR, OR OTHER PUBLIC NAVIGABLE WATERWAYS SHALL BE MARKED IN ACCORDANCE WITH THE U.S. COAST GUARD REGULATIONS INCLUDING REQUIRED FLASHING LIGHTS, WARNING SIGNS AND MARKERS.
2. THE CONTRACTOR MAY DREDGE WITHIN THE BORROW AREAS TO THE ELEVATIONS INDICATED IN THESE DRAWINGS.
3. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT A COMMUNICATION PLAN TO THE OWNER AND THE USACE OPERATIONS DIVISION, WHICH PRECISELY DELINEATES THE DREDGE LOCATION, ATTENDANT PLANT, ANCHOR BUOYS, AND FLOATING OR SUBMERGED PIPELINE PURSUANT TO THE PROJECT SPECIFICATIONS.
4. HYDRAULIC AND/OR MECHANICAL DREDGING AND PLACEMENT IS PROPOSED FOR CONTAINMENT DIKE CONSTRUCTION. MATERIAL TO BE PLACED ALONG CENTERLINE OF CONTAINMENT DIKES AND/OR STOCKPILED THEN TRANSPORTED AND REWORKED TO CONSTRUCT CONTAINMENT DIKES WITH LAND-BASED EQUIPMENT.
5. TURBIDITY CURTAINS SHALL BE UTILIZED BY THE CONTRACTOR AS NECESSARY TO COMPLY WITH ADEM WATER QUALITY REQUIREMENTS. TRAINING/GUIDE DIKES MAY BE UTILIZED BY THE CONTRACTOR AHEAD OF THE DREDGE PIPELINE AS THE MATERIAL IS PLACED ALONG THE CONTAINMENT DIKE CENTERLINES IN ORDER TO MINIMIZE THE LOSSES AND SPREAD OF DREDGED MATERIAL.

CONTAINMENT DIKE NOTES:

1. CONTAINMENT DIKES TO CONSIST OF EITHER TYPE I, TYPE II, OR TYPE III CONTAINMENT AS SHOWN ON SHEETS C-320 AND C-321. EXACT CONTAINMENT STRUCTURES, INCLUDING HORIZONTAL AND VERTICAL DIMENSIONS FOR EACH REACH OF CONTAINMENT ARE TO BE DETERMINED DURING DETAILED ENGINEERING AND DESIGN BASED ON WAVE LOADING.
2. CONTAINMENT DIKE DESIGN ELEVATIONS SHALL NOT EXCEED +6.0 FEET NAVD 88.
3. UNLESS OTHERWISE INDICATED, PROJECT FEATURE INFLECTION POINT (PFIP) COORDINATES REFER TO THE CENTERLINE OF THE ROCK RIPRAP BREAKWATER.

PROPOSED DREDGE PIPELINE CORRIDOR NOTES:

1. TO FACILITATE TRANSPORT OF DREDGED MATERIAL FROM ASPA TERMINALS INCLUDING MCDUFFIE COAL TERMINAL, APM CONTAINER TERMINAL, AND PINTO ISLAND TERMINAL, 2-100' WIDE DREDGE PIPELINE CORRIDORS ARE PROPOSED AS SHOWN ON SHEET C-101.
2. THE DREDGE PIPELINE SHALL BE SUBMERGED AND PLACED ON THE WATER BOTTOMS. FLOATING DREDGE PIPELINE SHALL ONLY BE USED AS NECESSARY.
3. THE PROPOSED DREDGE PIPELINE CORRIDORS SHALL CROSS THE MOBILE HARBOR CHANNEL AT THE PFIPS SHOWN ON SHEET C-101. CHANNEL CROSSING SHALL BE COMPLETED FOLLOWING USACE CHANNEL CROSSING REGULATIONS IN ACCORDANCE WITH EM 385-1-1.

ABBREVIATIONS

AC	ACRES
APPROX	APPROXIMATE
BL	BASELINE
BM	BENCH MARK
BOT	BOTTOM
CL	CENTERLINE
CY	CUBIC YARD
DIA	DIAMETER
ELEV	ELEVATION
EXG	EXAGGERATION
EXIST	EXISTING
FT	FOOT or FEET
IN	INCH
ID	IDENTIFICATION
LB	POUND
MAX	MAXIMUM
MB	BORING LOG ID
MHW	MEAN HIGH WATER
MIN	MINIMUM
MLW	MEAN LOW WATER
MSL	MEAN SEA LEVEL
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
NAD 83	NORTH AMERICAN DATUM OF 1983
OZ	OUNCE
PFIP	PROJECT FEATURE INFLECTION POINT
TYP	TYPICAL
WCA	WETLAND CREATION AREA
WP	WORKING POINT

TIDAL DATUM INFORMATION:

WATER LEVELS (FEET)

MHHW	+1.16'
MHW	+1.09'
MTL	+0.32'
NAVD 88 (DATUM)	+0.0'
MLW	-0.44'
MLLW	-0.53'

EXCAVATION AND FILL SUMMARY				
EXCAVATIONS - EXTERNAL CONTAINMENT	VOLUME		AREA	
SOUTH WCA	974,156	CY	2,630,221	SF
MIDDLE WCA	659,716	CY	1,781,234	SF
NORTH WCA	606,240	CY	1,636,849	SF
EXCAVATIONS - INTERNAL CONTAINMENT	VOLUME		AREA	
SOUTH WCA	349,256	CY	942,991	SF
MIDDLE WCA	293,829	CY	793,339	SF
NORTH WCA	214,799	CY	579,958	SF
FILL - DREDGE FILL FOR EXTERNAL CONTAINMENT	VOLUME		AREA	
SOUTH WCA	487,078	CY	1,262,836	SF
MIDDLE WCA	329,858	CY	1,027,635	SF
NORTH WCA	303,120	CY	818,425	SF
FILL - DREDGE FILL FOR INTERNAL CONTAINMENT	VOLUME		AREA	
SOUTH WCA	174,628	CY	770,232	SF
MIDDLE WCA	146,915	CY	762,368	SF
NORTH WCA	107,400	CY	618,338	SF
FILL - RIPRAP FOR EXTERNAL CONTAINMENT	VOLUME		AREA	
SOUTH WCA	493,154	CY	2,020,538	SF
MIDDLE WCA	296,806	CY	1,644,216	SF
NORTH WCA	272,748	CY	1,309,479	SF
FILL - DREDGE FILL FOR WETLAND CREATION	VOLUME		AREA	
SOUTH WCA	3,772,883	CY	16,411,955	SF
MIDDLE WCA	3,281,707	CY	14,992,569	SF
NORTH WCA	2,410,898	CY	13,071,136	SF

1. INTERNAL IN-SITU BORROW AREA EXCAVATION VOLUME IS THE CUT VOLUME NECESSARY TO CONSTRUCT EXTERNAL AND INTERNAL CONTAINMENT DIKES, FOR THE NORTH, SOUTH, AND MIDDLE WCA, INCLUDING THE 100-ACRE SITE.
2. FILL VOLUME IS TO THE LONG-TERM DESIGN ELEVATION OF +1.0' NAVD 88.

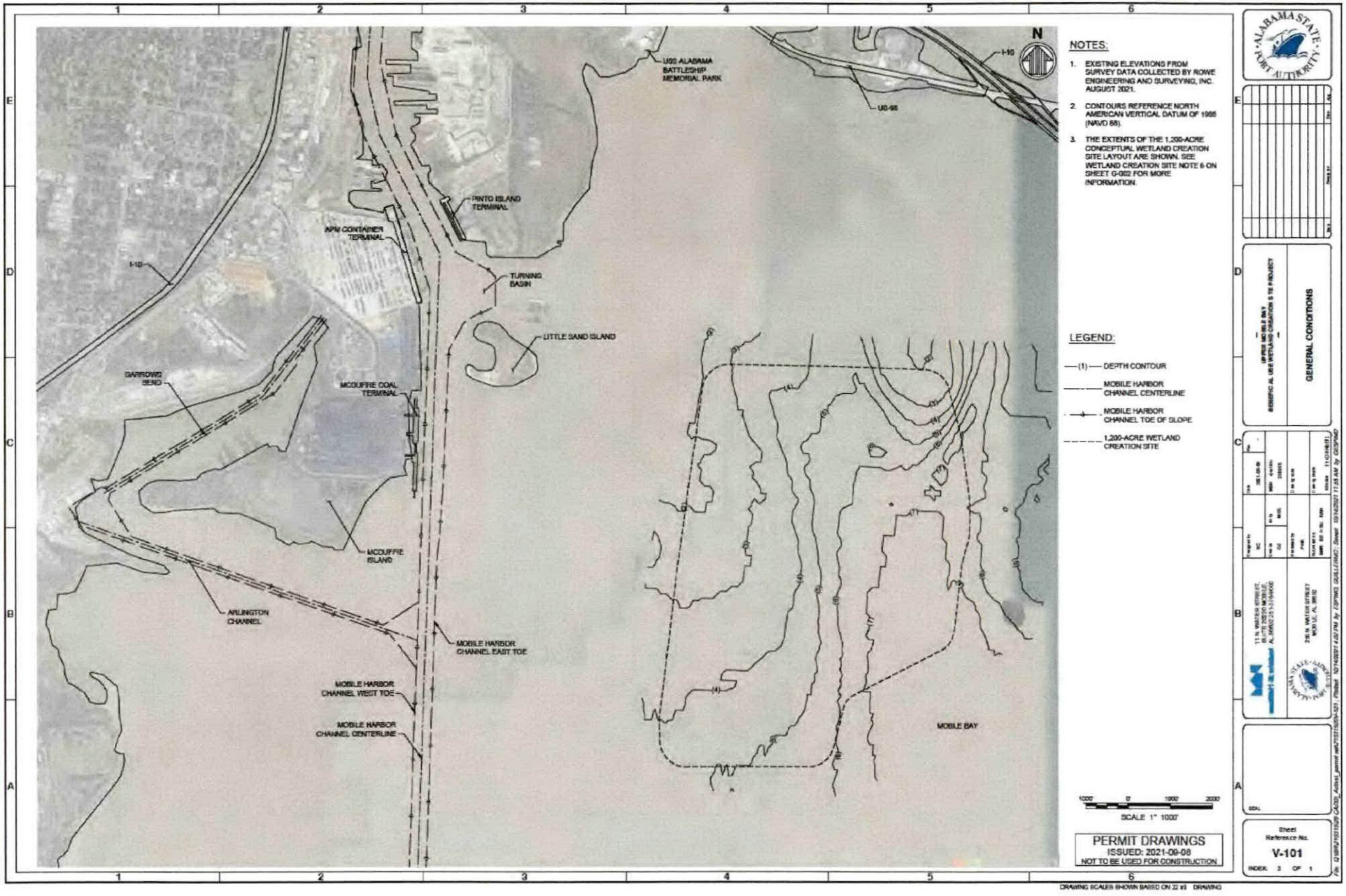
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

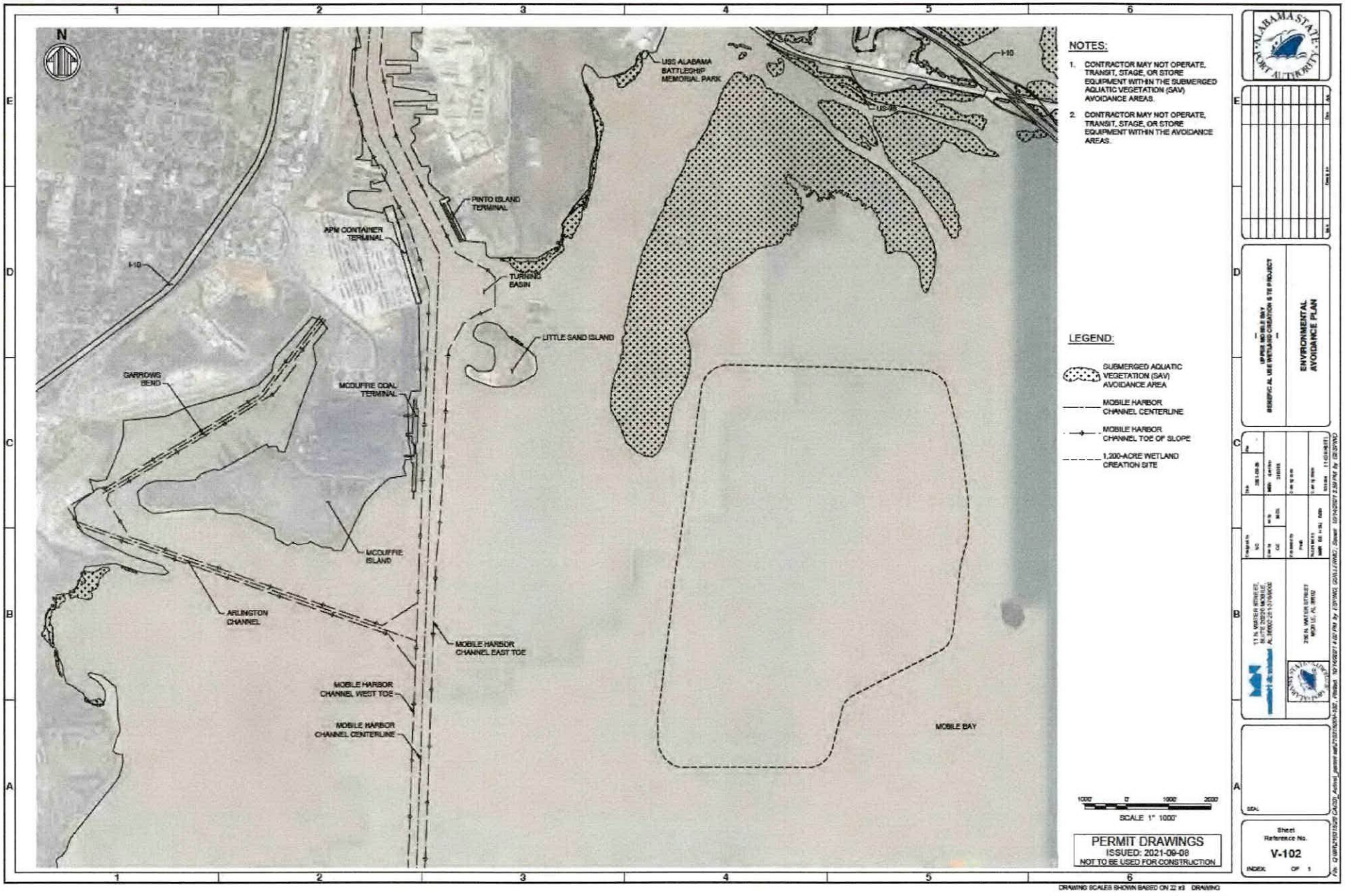
DRAWING SCALES SHOWN BASED ON 22 x 3 DRAWING

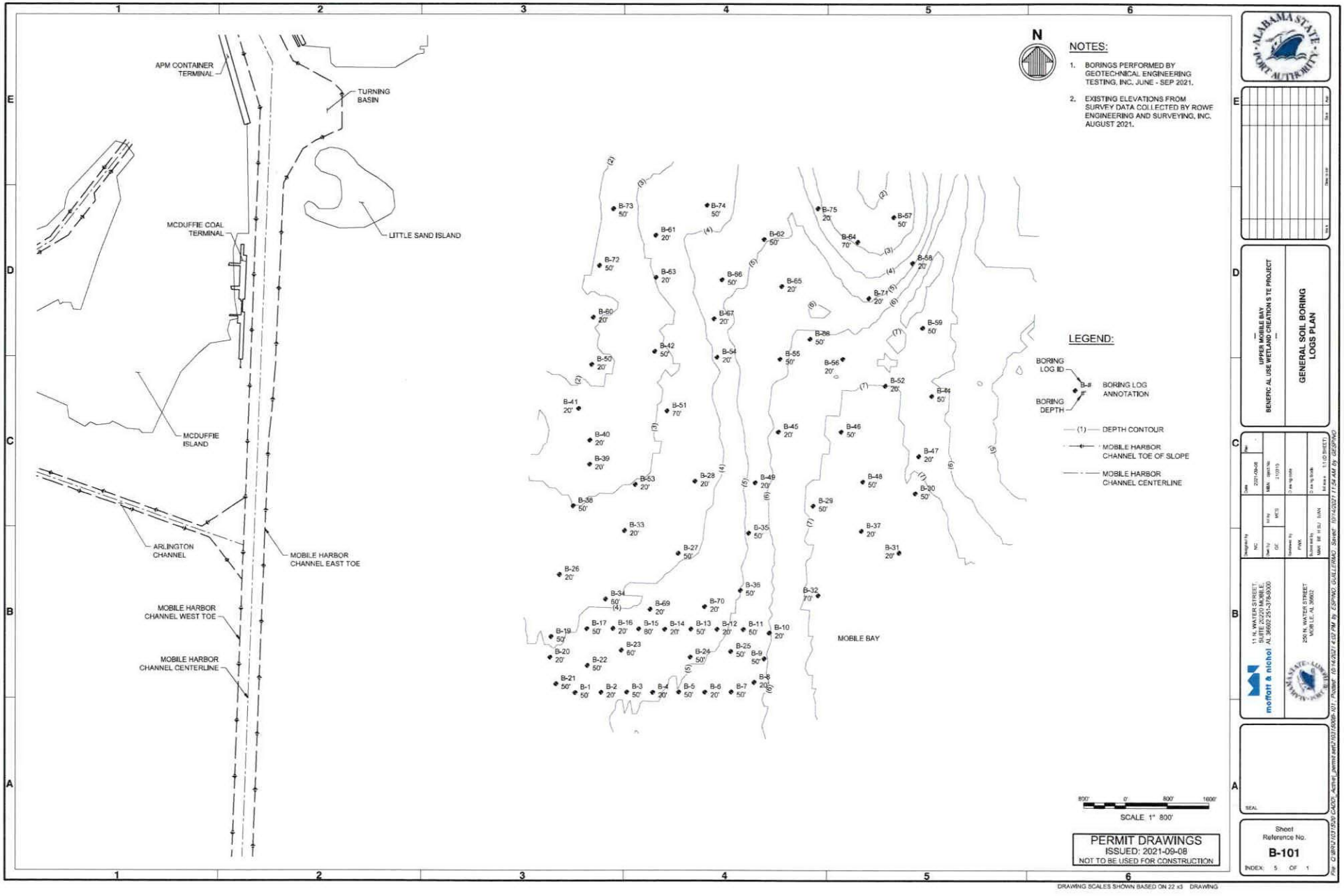
UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

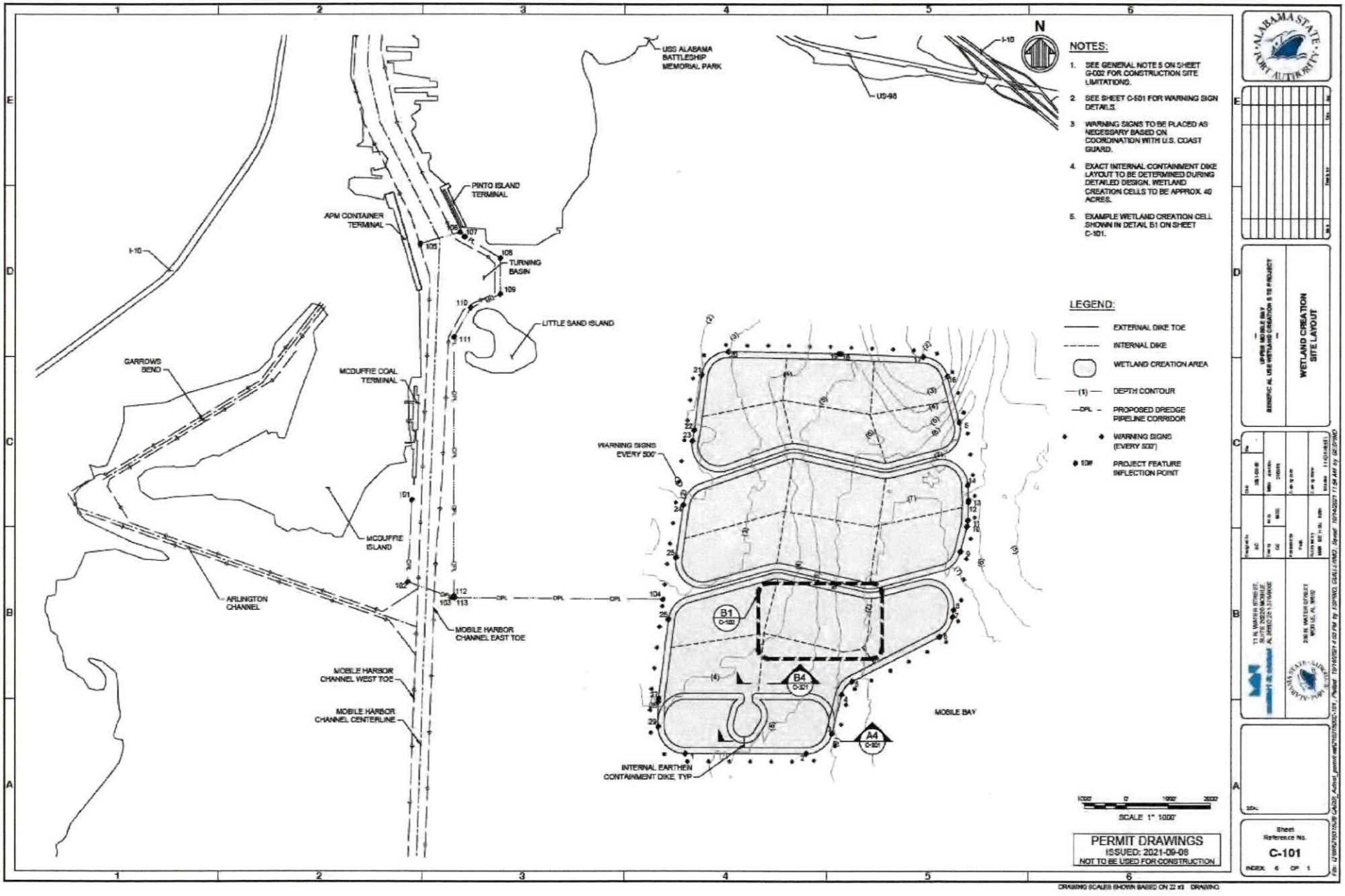
GENERAL NOTES

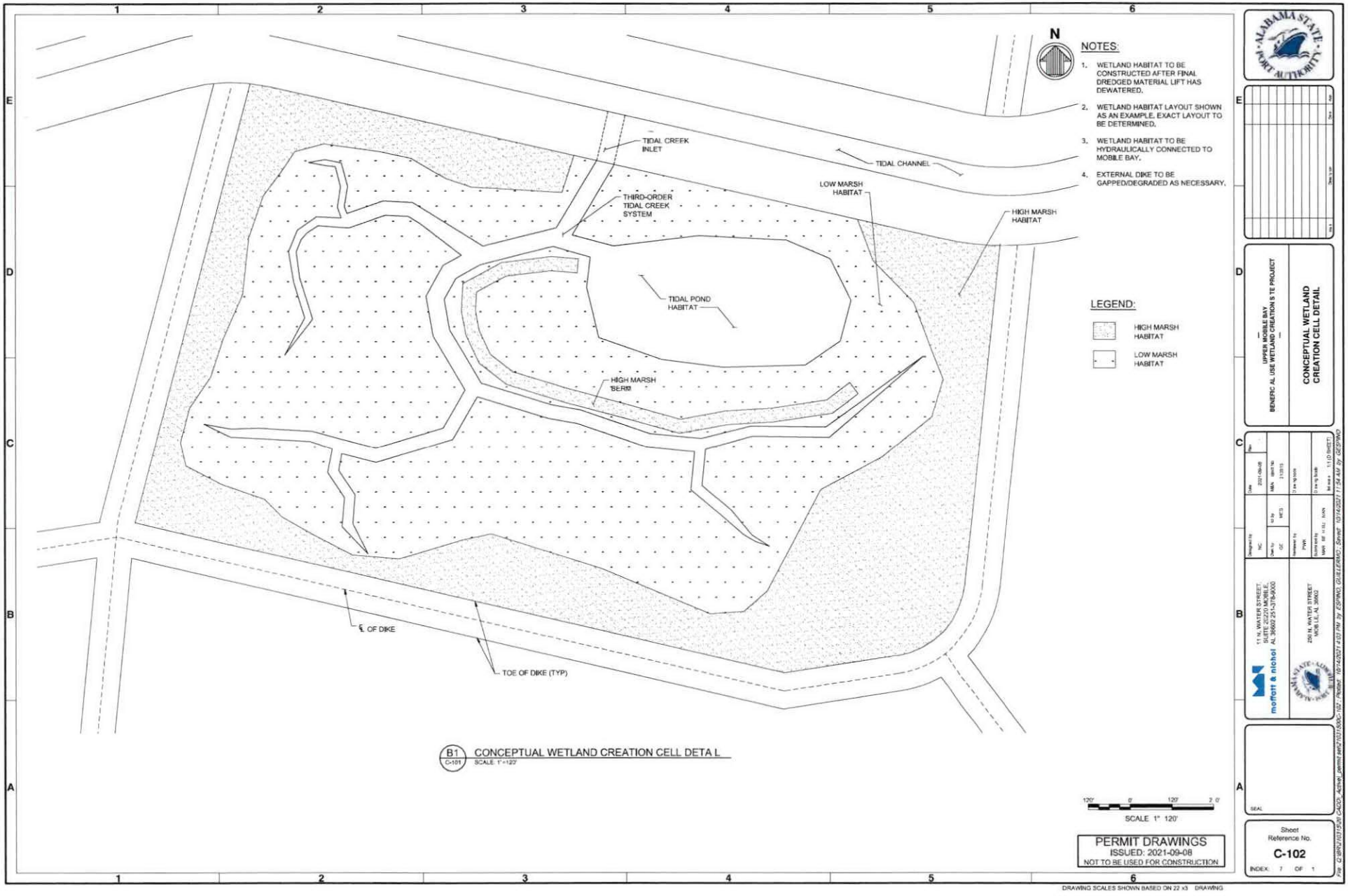
Sheet Reference No.
G-002
INDEX: 2 OF 1


N
USS ALABAMA BATTLESHIP MEMORIAL PARK
I-10
US-98
PINTO ISLAND TERMINAL
APM CONTAINER TERMINAL
TURNING BASIN
LITTLE SAND ISLAND
GARROWS BEND
MCDUFFIE COAL TERMINAL
MCDUFFIE ISLAND
ARLINGTON CHANNEL
MOBILE HARBOR CHANNEL EAST TOE
MOBILE HARBOR CHANNEL WEST TOE
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE BAY
NOTES:
1. EXISTING ELEVATIONS FROM SURVEY DATA COLLECTED BY ROWE ENGINEERING AND SURVEYING, INC. AUGUST 2021.
2. CONTOURS REFERENCE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. THE EXTENTS OF THE 1,200-ACRE CONCEPTUAL WETLAND CREATION SITE LAYOUT ARE SHOWN. SEE WETLAND CREATION SITE NOTE 6 ON SHEET G-002 FOR MORE INFORMATION.
LEGEND:
(1) DEPTH CONTOUR
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE HARBOR CHANNEL TOE OF SLOPE
1,200-ACRE WETLAND CREATION SITE
1000 0 1000 2000
SCALE 1" 1000'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
ALABAMA STATE PORT AUTHORITY
GENERAL CONDITIONS
Sheet Reference No.
V-101
INDEX 3 OF 1
DRAWING SCALES SHOWN BASED ON 22 x 34 DRAWING


N
USS ALABAMA BATTLESHIP MEMORIAL PARK
I-10
US-90
PINTO ISLAND TERMINAL
APM CONTAINER TERMINAL
TURNING BASIN
LITTLE SAND ISLAND
GARROWS BEND
MCDUFFIE COAL TERMINAL
MCDUFFIE ISLAND
ARLINGTON CHANNEL
MOBILE HARBOR CHANNEL EAST TOE
MOBILE HARBOR CHANNEL WEST TOE
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE BAY
NOTES:
1. CONTRACTOR MAY NOT OPERATE, TRANSIT, STAGE, OR STORE EQUIPMENT WITHIN THE SUBMERGED AQUATIC VEGETATION (SAV) AVOIDANCE AREAS.
2. CONTRACTOR MAY NOT OPERATE, TRANSIT, STAGE, OR STORE EQUIPMENT WITHIN THE AVOIDANCE AREAS.
LEGEND:
SUBMERGED AQUATIC VEGETATION (SAV) AVOIDANCE AREA
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE HARBOR CHANNEL TOE OF SLOPE
1,200-ACRE WETLAND CREATION SITE
1000 0 1000 2000
SCALE 1" 1000'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
ENVIRONMENTAL AVOIDANCE PLAN
Sheet Reference No.
V-102
DRAWING SCALES SHOWN BASED ON 22 x 34 DRAWING

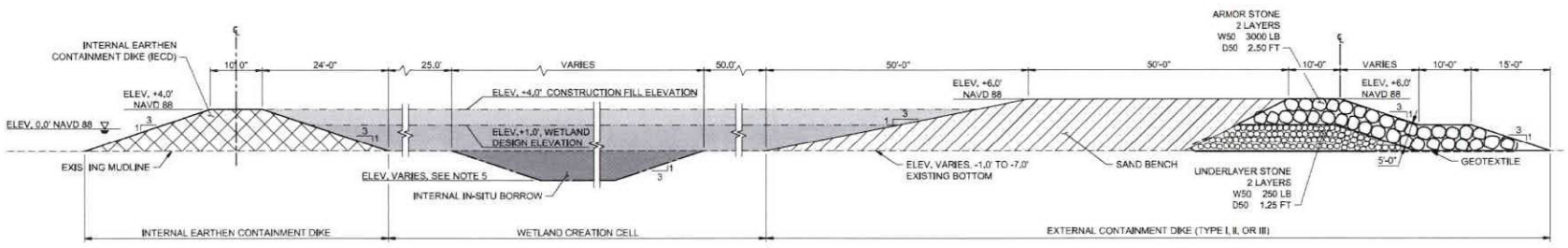

APM CONTAINER TERMINAL
TURNING BASIN
MCDUFFIE COAL TERMINAL
LITTLE SAND ISLAND
MCDUFFIE ISLAND
ARLINGTON CHANNEL
MOBILE HARBOR CHANNEL EAST TOE
MOBILE HARBOR CHANNEL WEST TOE
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE BAY
N
NOTES:
1. BORINGS PERFORMED BY GEOTECHNICAL ENGINEERING TESTING, INC. JUNE - SEP 2021.
2. EXISTING ELEVATIONS FROM SURVEY DATA COLLECTED BY ROWE ENGINEERING AND SURVEYING, INC. AUGUST 2021.
LEGEND:
BORING LOG ID
BORING DEPTH
B-# BORING LOG ANNOTATION
(1) DEPTH CONTOUR
MOBILE HARBOR CHANNEL TOE OF SLOPE
MOBILE HARBOR CHANNEL CENTERLINE
SCALE 1" 800'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
UPPER MOBILE BAY
BENEFIC AL USE WETLAND CREATION S TE PROJECT
GENERAL SOIL BORING LOGS PLAN
moffatt & nichol
Sheet Reference No.
B-101
INDEX: 5 OF 1


NOTES:
1. SEE GENERAL NOTE 5 ON SHEET G-002 FOR CONSTRUCTION SITE LIMITATIONS.
2. SEE SHEET C-501 FOR WARNING SIGN DETAILS.
3. WARNING SIGNS TO BE PLACED AS NECESSARY BASED ON COORDINATION WITH U.S. COAST GUARD.
4. EXACT INTERNAL CONTAINMENT DIKE LAYOUT TO BE DETERMINED DURING DETAILED DESIGN. WETLAND CREATION CELLS TO BE APPROX. 40 ACRES.
5. EXAMPLE WETLAND CREATION CELL SHOWN IN DETAIL B1 ON SHEET C-101.
LEGEND:
EXTERNAL DIKE TOE
INTERNAL DIKE
WETLAND CREATION AREA
DEPTH CONTOUR
PROPOSED DREDGE PIPELINE CORRIDOR
WARNING SIGNS (EVERY 500')
PROJECT FEATURE INFLECTION POINT
N
USS ALABAMA BATTLESHIP MEMORIAL PARK
I-10
US-98
PINTO ISLAND TERMINAL
APM CONTAINER TERMINAL
TURNING BASIN
LITTLE SAND ISLAND
GARROWS BEND
MCDUFFIE COAL TERMINAL
MCDUFFIE ISLAND
ARLINGTON CHANNEL
MOBILE HARBOR CHANNEL EAST TOE
MOBILE HARBOR CHANNEL WEST TOE
MOBILE HARBOR CHANNEL CENTERLINE
WARNING SIGNS EVERY 500'
INTERNAL EARTHEN CONTAINMENT DIKE, TYP.
MOBILE BAY
B1 C-102
B4 C-201
A4 C-201
SCALE 1" 1000'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
ALABAMA STATE PORT AUTHORITY
WETLAND CREATION SITE LAYOUT
Sheet Reference No.
C-101
INDEX 6 OF 1
DRAWING SCALES SHOWN BASED ON 22 x 34 DRAWING


N
NOTES:
1. WETLAND HABITAT TO BE CONSTRUCTED AFTER FINAL DREDGED MATERIAL LIFT HAS DEWATERED.
2. WETLAND HABITAT LAYOUT SHOWN AS AN EXAMPLE. EXACT LAYOUT TO BE DETERMINED.
3. WETLAND HABITAT TO BE HYDRAULICALLY CONNECTED TO MOBILE BAY.
4. EXTERNAL DIKE TO BE GAPPED/DEGRADED AS NECESSARY.
TIDAL CREEK INLET
TIDAL CHANNEL
LOW MARSH HABITAT
THIRD-ORDER TIDAL CREEK SYSTEM
HIGH MARSH HABITAT
TIDAL POND HABITAT
HIGH MARSH BERM
℄ OF DIKE
TOE OF DIKE (TYP)
LEGEND:
HIGH MARSH HABITAT
LOW MARSH HABITAT
B1 C-101 CONCEPTUAL WETLAND CREATION CELL DETA L
SCALE 1"=120'
120' 0' 120' 240'
SCALE 1" 120'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
ALABAMA STATE PORT AUTHORITY
UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT
CONCEPTUAL WETLAND CREATION CELL DETAIL
maffatt & nichol
11 N. WATER STREET
SUITE 22290 MOBILE
AL 36602 251-378-9000
250 N. WATER STREET
MOBILE, AL 36602
SEAL
Sheet Reference No.
C-102
INDEX: 7 OF 1
DRAWING SCALES SHOWN BASED ON 22 x3 DRAWING

NOTES:

1. EXACT DIMENSIONS, INCLUDING ELEVATIONS, WIDTHS, LENGTHS, SLOPES, ETC. TO BE DETERMINED DURING DETAILED DESIGN.
2. DESIGN ELEVATIONS OF CONTAINMENT DIKES SHALL NOT EXCEED +6.0' NAVD 88.
3. DREDGED MATERIAL CONSTRUCTION FILL ELEVATION SHALL NOT EXCEED +4.0' NAVD 88. WETLAND DESIGN ELEVATION SHALL BE INTERTIDAL, ASSUMED TO BE +1.0' NAVD 88.
4. INTERNAL IN-SITU BORROW TO BE USED TO CONSTRUCT SAND BENCH AND INTERNAL EARTHEN CONTAINMENT DIKES. BORROW DEPTH SHALL NOT EXCEED -20.0' NAVD 88.
5. BORROW AREA DREDGE DEPTH VARIES DEPENDING ON SAND LAYER THICKNESS. CONTRACTOR SHALL NOT DREDGE BEYOND -20.0' NAVD 88.



A4 / C-101 WETLAND CREATION AREA TYPICAL SECTION
SCALE: 3/32" =1'-0"

SCALE 3/32" 1'-0"

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

DRAWING SCALES SHOWN BASED ON 22 x3 DRAWING

ALABAMA STATE PORT AUTHORITY

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

WETLAND CREATION AREA TYPICAL SECTION

moffatt & nichol
11 N. WATER STREET, SUITE 2270 MOBILE, AL 36602 251-378-6000

250 N. WATER STREET MOBILE, AL 36602

Shoal Reference No.
C-301
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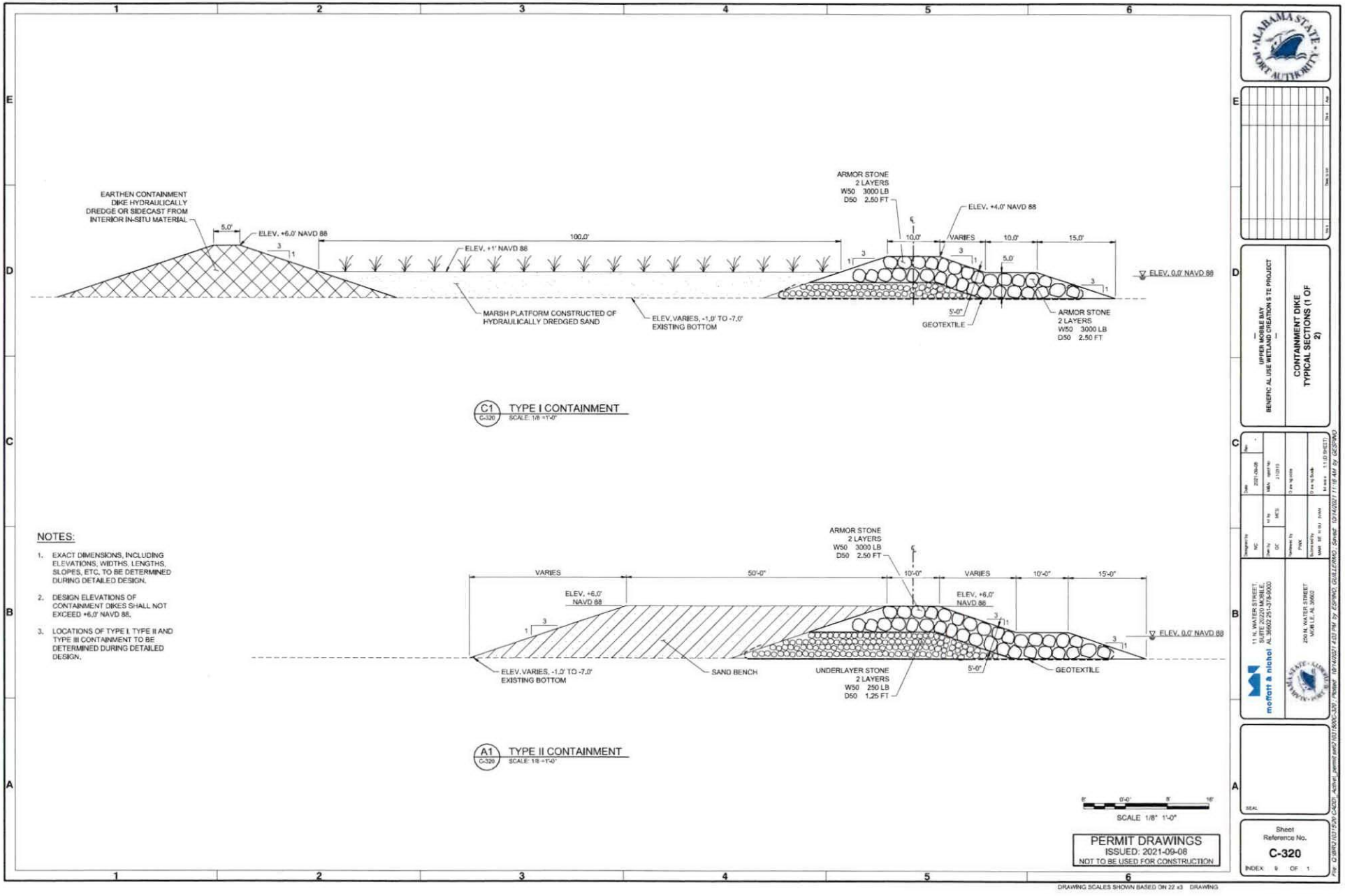
EARTHEN CONTAINMENT DIKE HYDRAULICALLY DREDGE OR SIDECAST FROM INTERIOR IN-SITU MATERIAL
5.0'
ELEV. +6.0' NAVD 88
3
1
100.0'
ELEV. +1' NAVD 88
MARSH PLATFORM CONSTRUCTED OF HYDRAULICALLY DREDGED SAND
ELEV. VARIES, -1.0' TO -7.0' EXISTING BOTTOM
ARMOR STONE 2 LAYERS W50 3000 LB D50 2.50 FT
ELEV. +4.0' NAVD 88
10.0'
VARIES
10.0'
15.0'
5.0'
ELEV. 0.0' NAVD 88
5'-0"
GEOTEXTILE
ARMOR STONE 2 LAYERS W50 3000 LB D50 2.50 FT
C1 C-320 TYPE I CONTAINMENT
SCALE: 1/8 =1'-0"
NOTES:
1. EXACT DIMENSIONS, INCLUDING ELEVATIONS, WIDTHS, LENGTHS, SLOPES, ETC. TO BE DETERMINED DURING DETAILED DESIGN.
2. DESIGN ELEVATIONS OF CONTAINMENT DIKES SHALL NOT EXCEED +6.0' NAVD 88.
3. LOCATIONS OF TYPE I, TYPE II AND TYPE III CONTAINMENT TO BE DETERMINED DURING DETAILED DESIGN.
VARIES
50'-0"
ELEV. +6.0' NAVD 88
ELEV. VARIES, -1.0' TO -7.0' EXISTING BOTTOM
SAND BENCH
ARMOR STONE 2 LAYERS W50 3000 LB D50 2.50 FT
10'-0"
VARIES
10'-0"
15'-0"
ELEV. +6.0' NAVD 88
ELEV. 0.0' NAVD 88
UNDERLAYER STONE 2 LAYERS W50 250 LB D50 1.25 FT
5'-0"
GEOTEXTILE
A1 C-320 TYPE II CONTAINMENT
SCALE: 1/8 =1'-0"
SCALE 1/8" 1'-0"
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
ALABAMA STATE PORT AUTHORITY
UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT
CONTAINMENT DIKE TYPICAL SECTIONS (1 OF 2)
moffatt & nichol
Sheet Reference No.
C-320
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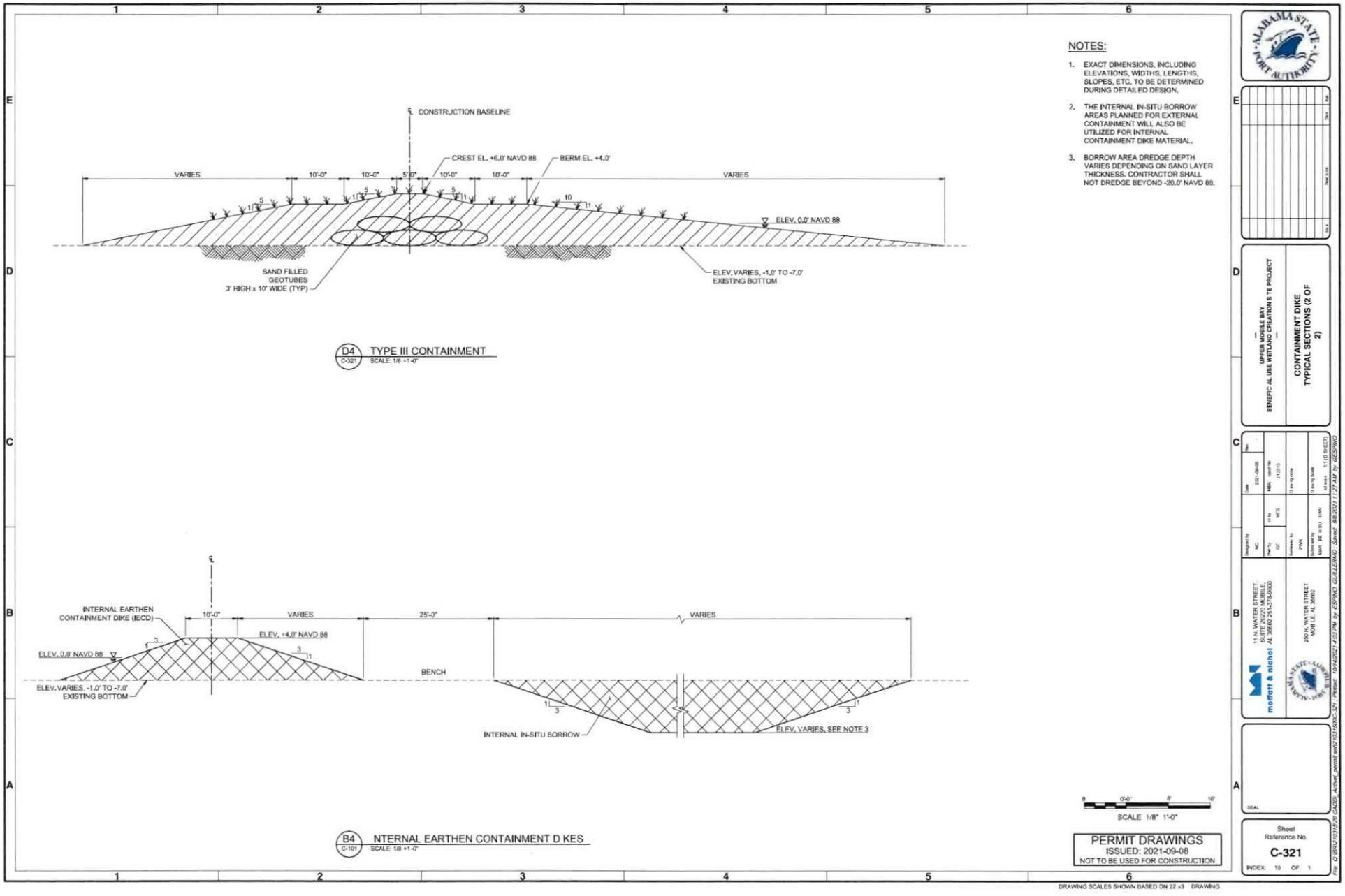
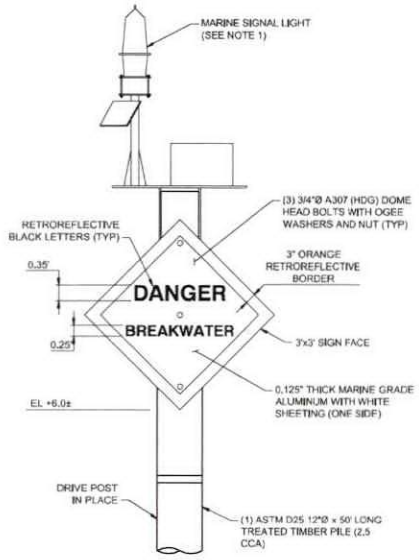
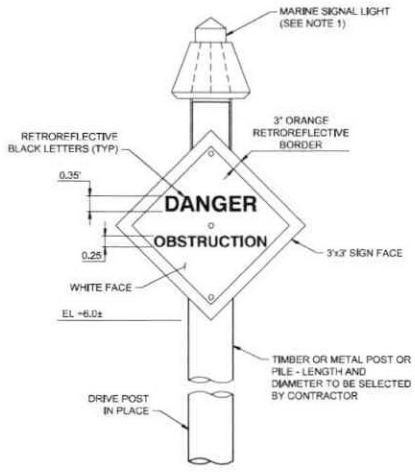
DRAWING SCALES SHOWN BASED ON 22 x 3 DRAWING


NOTES:
1. EXACT DIMENSIONS, INCLUDING ELEVATIONS, WIDTHS, LENGTHS, SLOPES, ETC, TO BE DETERMINED DURING DETAILED DESIGN.
2. THE INTERNAL IN-SITU BORROW AREAS PLANNED FOR EXTERNAL CONTAINMENT WILL ALSO BE UTILIZED FOR INTERNAL CONTAINMENT DIKE MATERIAL.
3. BORROW AREA DREDGE DEPTH VARIES DEPENDING ON SAND LAYER THICKNESS. CONTRACTOR SHALL NOT DREDGE BEYOND -20.0' NAVD 88.
CONSTRUCTION BASELINE
CREST EL. +6.0' NAVD 88
BERM EL. +4.0'
VARIES
10'-0"
5'-0"
ELEV. 0.0' NAVD 88
SAND FILLED GEOTUBES 3' HIGH x 10' WIDE (TYP)
ELEV. VARIES, -1.0' TO -7.0' EXISTING BOTTOM
D4 C-321 TYPE III CONTAINMENT
SCALE: 1/8 =1'-0"
INTERNAL EARTHEN CONTAINMENT DIKE (IECD)
ELEV. +4.0' NAVD 88
25'-0"
BENCH
INTERNAL IN-SITU BORROW
ELEV. VARIES, SEE NOTE 3
B4 C-101 NTERNAL EARTHEN CONTAINMENT D KES
SCALE: 1/8 =1'-0"
SCALE 1/8" 1'-0"
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
ALABAMA STATE PORT AUTHORITY
UPPER MOBILE BAY
BENEFIC AL USE WETLAND CREATION S TE PROJECT
CONTAINMENT DIKE
TYPICAL SECTIONS (2 OF 2)
moffatt & nichol
230 N. WATER STREET
MOBILE, AL 36602
SEAL
Sheet Reference No.
C-321
INDEX 10 OF 1
DRAWING SCALES SHOWN BASED ON 22 x3 DRAWING



C1 C-101 PERMANENT WARNING SIGN DETAIL
SCALE: NTS



C2 C-101 TEMPORARY WARNING SIGN DETAIL
SCALE: NTS

LEGEND

HDG HOT DIP GALVANIZED
CCA CHROMATED COPPER ARSENATE

NOTES

1. MARINE SIGNAL LIGHT SHALL MEET REQUIREMENTS OF CFR TITLE 33, SUBPART 67.30 FOR CLASS "C" STRUCTURES AND HAVE AS MINIMUM THE FOLLOWING PROPERTIES
   RANGE 3 NAUTICAL MILES (25 CANDELA)
   LENS CLEAR
   SLOW FLASH 2.5 SEC
   VISIBILITY 360° HORIZON
   COLOR WHITE
2. CONTRACTOR SHALL COORDINATE WITH US COAST GUARD ON REQUIREMENTS OF TEMPORARY WARNING SIGNS, INCLUDING SIGN VERBIAGE AND PLACEMENT LOCATION, PRIOR TO INSTALLATION.
3. OTHER FORMS OF TEMPORARY WARNING SIGNS MAY BE USED WITH PRIOR APPROVAL OF US COAST GUARD AND ENGINEER'S REVIEW.
4. DURING CONSTRUCTION TEMPORARY WARNING SIGNS AND/OR BUOYS SHALL BE REQUIRED AS NECESSARY.
5. ALL SIGN FACES SHALL BE ORIENTED TO FACE PREDOMINANT APPROACH DIRECTION OF ONCOMING BOAT TRAFFIC.

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT
TEMPORARY WARNING SIGN DETAIL

moffatt & nichol
11 N. WATER STREET
SUITE 20220 MOBILE
AL 36602 251-378-9000

250 N. WATER STREET
MOBILE, AL 36602

SEAL

Sheet Reference No.
C-501
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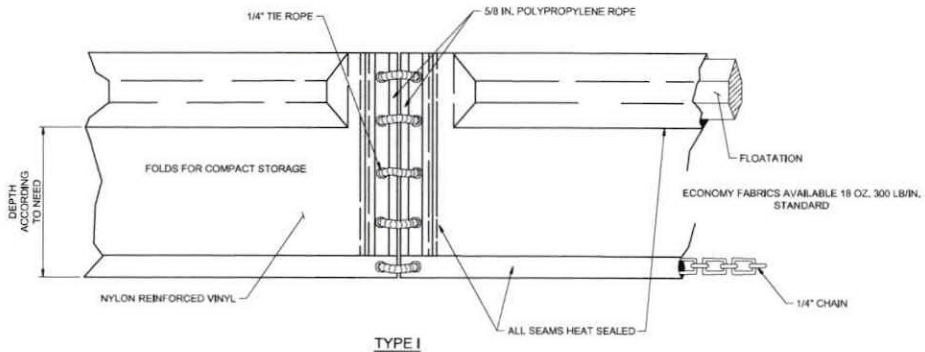
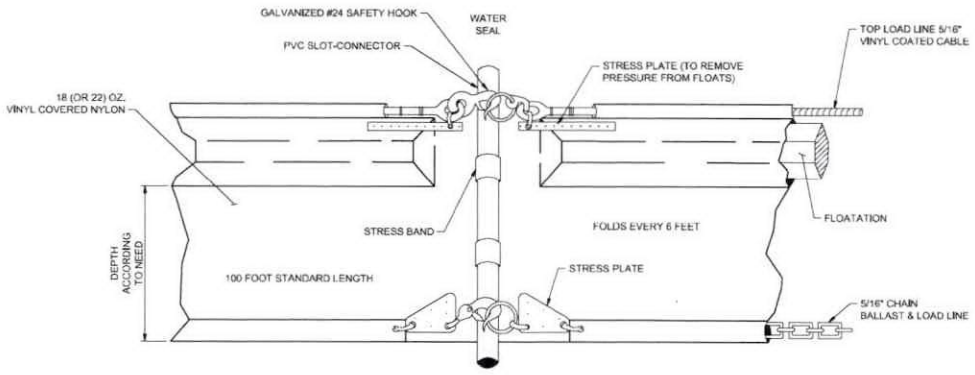
DRAWING SCALES SHOWN BASED ON 22 x3 DRAWING



TYPE I



TYPE II

SHACKLE CONNECTION

TURB DITY CONTROL NOTES:

1. CONTRACTOR SHALL SUBMIT TURBIDITY CONTROL PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN TURBIDITY CONTROL CURTAIN AROUND DREDGE FILL AREA. THE CONTRACTOR HAS THE OPTION TO ENCLOSE THE WATERSIDE OF THE SITE, WITHIN THE LIMITS OF DISTURBANCE, OR TO INSTALL AND MOVE THE CURTAIN IN STAGES. THE CONTRACTOR SHALL MAINTAIN SUCH CURTAINS AT ALL TIMES IN THE AREAS WHERE DREDGE FILL IS IN PROGRESS.
3. TURBIDITY SHALL BE MONITORED DAILY.
4. TURBIDITY CURTAINS SHALL BE SECURED WITH TEMPORARY STEEL OR TIMBER PILINGS AT SUFFICIENT SPACING TO MAINTAIN CONTROL/FUNCTION. A WEIGHT SYSTEM CAN ALSO BE UTILIZED IF PRACTICAL.
5. TURBIDITY CURTAINS SHALL BE SIMILAR TO EITHER THE TYPE I OR TYPE II CURTAINS SHOWN ON THIS SHEET.
6. MEASURES FOR REDUCING ENTRAPMENT RISK TO PROTECTED SPECIES WILL BE IMPLEMENTED.

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

TURBIDITY CURTAIN DETAIL

moffatt & nichol
11 N. WATER STREET, SUITE 2700 MAIN ST.
MOBILE, AL 36602 251-375-8000

250 N. WATER STREET
MOBILE, AL 36602

Sheet Reference No.
C-502
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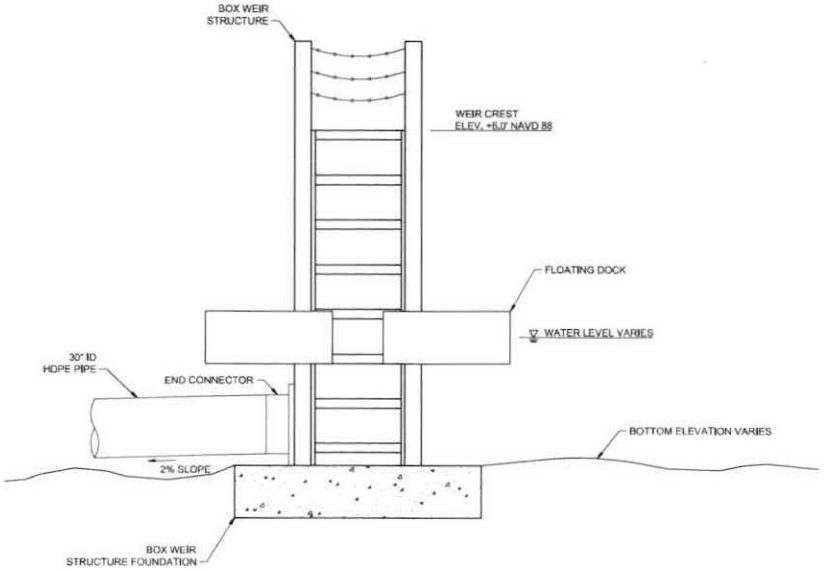
DRAWING SCALES SHOWN BASED ON 22 x3 DRAWING



NOTES:

1. BOX RISER WEIRS PROPOSED FOR WETLAND CREATION CELL DREDGED MATERIAL DEWATERING.
2. 30" DIA HDPE PIPE ASSUMED.
3. 2 WEIRS MAY BE INSTALLED WITHIN A WETLAND CREATION CELL FOR REDUNDANCY.
4. ACCESS TO FLOATING DOCK BY GANGWAY FROM EXTERIOR DIKE.
5. HDPE PIPE TO BE ANCHORED AS NECESSARY.
6. HDPE PIPE TO BE INSTALLED AT APPROX. 2% SLOPE THROUGH EXTERNAL CONTAINMENT DIKE. OUTFALL ELEVATION TO BE DETERMINED.

SCALE 3/8" 1'-0"

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

BOX WEIR DETAIL

moffatt & nichol
111 N. WATER STREET
SUITE 270 MAIL 1
MOBILE, AL 36602 251-378-8000

250 N. WATER STREET
MOBILE, AL 36602

Sheet Reference No.
C-503
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DRAWING SCALES SHOWN BASED ON 22 x 3 DRAWING

BORING POINT TABLE

POINT #	DEPTH	LATITUDE	LONGITUDE
B-1	50'	N30° 38' 0 .12	W88° 00' .87
B-2	20'	N30° 38' 0 .21	W88° 00' 39.15
B-3	50'	N30° 38' 0 .26	W88° 00' 33. 7
B-	20'	N30° 38' 0 .2	W88° 00' 27.7
B-6	50'	N30° 38' 0 .33	W88° 00' 22.02
B-6	20'	N30° 38' 0 .32	W88° 00' 16.30
B-7	50'	N30° 38' 0 . 2	W88° 00' 10.57
B-8	20'	N30° 38' 06.25	W88° 00' 05.60
B-9	50'	N30° 38' 10.72	W88° 00' 03. 3
B-10	20'	N30° 38' 15.59	W88° 00' 02.3
B-11	50'	N30° 38' 16.22	W88° 00' 08.09
B-12	20'	N30° 38' 16.22	W88° 00' 13.72
B-13	50'	N30° 38' 16.25	W88° 00' 19. 5
B-1	20'	N30° 38' 16.17	W88° 00' 25.17
B-15	80'	N30° 38' 16.22	W88° 00' 30.89
B-16	20'	N30° 38' 16.30	W88° 00' 36.62
B-17	50'	N30° 38' 16.21	W88° 00' 2.3
B-19	50'	N30° 38' 1 .68	W88° 00' 50.22
B-20	20'	N30° 38' 10.80	W88° 00' 50.
B-21	50'	N30° 38' 05.77	W88° 00' 9.10
B-22	50'	N30° 38' 06.28	W88° 00' 2.21
B-23	80'	N30° 38' 12.19	W88° 00' 3 .7
B-2	50'	N30° 38' 10.9	W88° 00' 19.55
B-25	50'	N30° 38' 12.05	W88° 00' 10.72
B-26	20'	N30° 38' 26. 5	W88° 00' 8. 5

BORING POINT TABLE

POINT #	DEPTH	LATITUDE	LONGITUDE
B-27	50'	N30° 38' 30.60	W88° 00' 22.32
B-28	20'	N30° 38' .3	W88° 00' 18.78
B-29	50'	N30° 38' 39.73	W87° 59' 52.98
B-30	50'	N30° 38' 2.21	W87° 59' 30.36
B-31	20'	N30° 38' 30.91	W87° 59' 33.87
B-32	70'	N30° 38' 22.73	W87° 59' 51.76
B-33	20'	N30° 38' 3 .91	W88° 00' 3 .21
B-3	60'	N30° 38' 21.8	W88° 00' 38.27
B-35	50'	N30° 38' 3 .56	W88° 00' 07.00
B-36	50'	N30° 38' 23.62	W88° 00' 08.70
B-37	20'	N30° 38' 35.02	W87° 59' 2.29
B-38	50'	N30° 38' 39.53	W88° 00' 5.53
B-39	20'	N30° 38' 7. 6	W88° 00' 1.96
B- 0	20'	N30° 38' 52.13	W88° 00' 1.93
B- 1	20'	N30° 38' 58.1	W88° 00' . 5
B- 2	50'	N30° 39' 09.08	W88° 00' 27.78
B-	50'	N30° 39' 00.81	W87° 59' 26.89
B- 5	20'	N30° 38' 53.87	W88° 00' 00.66
B- 6	50'	N30° 38' 53.93	W87° 59' 6.92
B- 7	20'	N30° 38' 9.28	W87° 59' 29.66
B- 8	50'	N30° 38' .39	W87° 59' 2.9
B- 9	20'	N30° 38' .11	W88° 00' 05.6
B-50	20'	N30° 39' 06.53	W88° 00' 1.63
B-51	70'	N30° 38' 57.79	W88° 00' 2.99
B-52	20'	N30° 39' 02.71	W87° 59' 37.19

BORING POINT TABLE

POINT #	DEPTH	LATITUDE	LONGITUDE
B-53	20'	N30° 38' 3.66	W88° 00' 31.89
B-5	20'	N30° 39' 08.0	W88° 00' 1 .15
B-55	50'	N30° 39' 07.7	W88° 00' 00. 1
B-56	20'	N30° 39' 07.79	W87° 59' 6.58
B-57	50'	N30° 39' 3 .81	W87° 59' 35.50
B-58	20'	N30° 39' 26.10	W87° 59' 31.28
B-59	50'	N30° 39' 13.80	W87° 59' 28.99
B-60	20'	N30° 39' 15.52	W88° 00' 1.37
B-61	20'	N30° 39' 31.18	W88° 00' 27.69
B-62	50'	N30° 39' 30. 8	W88° 00' 0 .02
B-63	20'	N30° 39' 23.17	W88° 00' 27.50
B-6	70'	N30° 39' 30.06	W87° 59' 3.51
B-65	20'	N30° 39' 21.59	W88° 00' 00.15
B-66	50'	N30° 39' 22.76	W88° 00' 13.12
B-67	20'	N30° 39' 15.33	W88° 00' 1 .82
B-68	50'	N30° 39' 11.59	W87° 59' 53.91
B-69	20'	N30° 38' 19.97	W88° 00' 28. 3
B-70	20'	N30° 38' 20.50	W88° 00' 16. 7
B-71	20'	N30° 39' 19.36	W87° 59' 0.9
B-72	50'	N30° 39' 25.38	W88° 00' 0.07
B-73	50'	N30° 39' 36.17	W88° 00' 37.07
B-7	50'	N30° 39' 38.95	W88° 00' 16.52
B-75	20'	N30° 39' 38. 1	W87° 59' 52.32

WCA TABLE

POINT #	LATITUDE	LONGITUDE
1	N30° 38' 02.16	W88° 00' 3.71
2	N30° 38' 02.28	W88° 00' 10.63
3	N30° 38' 07.06	W88° 00' 03.52
	N30° 38' 16.22	W88° 00' 00.91
5	N30° 38' 19.33	W87° 59' 58.08
6	N30° 38' 29.96	W87° 59' 3 .11
7	N30° 38' 3 .70	W87° 59' 30.30
8	N30° 38' 36.36	W87° 59' 30.03
9	N30° 38' 50.21	W87° 59' 28.20
10	N30° 38' 56.2	W87° 59' 26. 5
11	N30° 38' 57.8	W87° 59' 26.23
12	N30° 39' 01.97	W87° 59' 26.11
13	N30° 39' 02. 3	W87° 59' 26.12
1	N30° 39' 06.02	W87° 59' 28.32
15	N30° 39' 21.0	W87° 59' 28.66

WCA TABLE

POINT #	LATITUDE	LONGITUDE
16	N30° 39' 31.89	W87° 59' 32.28
17	N30° 39' 36.50	W87° 59' 38.9
18	N30° 39' 37.15	W88° 00' 01.57
19	N30° 39' 37.16	W88° 00' 02.01
20	N30° 39' 37.57	W88° 00' 32.56
21	N30° 39' 31.96	W88° 00' 39.86
22	N30° 39' 18.85	W88° 00' 1.78
23	N30° 39' 16.27	W88° 00' 2.28
2	N30° 39' 00.96	W88° 00' .55
25	N30° 38' 8. 6	W88° 00' 6.56
26	N30° 38' 33.63	W88° 00' 8. 8
27	N30° 38' 15.05	W88° 00' 51.08
28	N30° 38' 1 .26	W88° 00' 51.13
29	N30° 38' 08.53	W88° 00' 51.13

DREDGE PIPELINE POINT TABLE

POINT #	LATITUDE	LONGITUDE
101	N30° 39' 01.87	W88° 01' 59.21
102	N30° 38' 2.38	W88° 02' 00.20
103	N30° 38' 38.71	W88° 01' 7.96
10	N30° 38' 38.56	W88° 00' 9.98
105	N30° 0' 02.87	W88° 01' 57.32
106	N30° 0' 05.6	W88° 01' 6. 6
107	N30° 0' 0 .52	W88° 01' 5.11
108	N30° 39' 59.52	W88° 01' 35.21
109	N30° 39' 50.98	W88° 01' 35.15
110	N30° 39' 7.87	W88° 01' 3.37
111	N30° 39' 0.81	W88° 01' 7.88
112	N30° 38' 39.10	W88° 01' 7.5
113	N30° 38' 38.71	W88° 01' 7.31

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

ALABAMA STATE PORT AUTHORITY

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

COORDINATE TABLES

moffatt & nichol
11 N. WATER STREET
SUITE 27010 MOBILE
AL 36602 251-379-9000

250 N. WATER STREET
MOBILE, AL 36602

Sheet Reference No.
C-601
INDEX: 1 OF 1

DRAWING SCALES SHOWN BASED ON 22 x 3 DRAWING

moffatt & nichol

11 N. Water Street, Suite 20220
Mobile, Alabama 36602

(251) 378-9009
www.moffattnichol.com

16 September 2021

Mr. Dylan Hendrix
U.S. Army Corps of Engineers
Mobile District, Regulatory Division
P.O. Box 2288
Mobile, AL 36628-0001

Subject: Standard Individual Permit (SAM-2021-00246-DCH) Application for Upper Mobile Bay Wetland Creation Project

Dear Mr. Hendrix:

The purpose of this letter is to request a Standard Individual Permit for a coastal restoration project located in Upper Mobile Bay, Alabama on behalf of the Alabama State Port Authority. The proposed project consists of constructing containment features to beneficially place maintenance dredged sediments from the federal channel and adjacent public berths to create 1200 acres of wetlands. A detailed description of the project location, approach, and construction methods are provided in the supplemental information to this Standard Individual Permit Application. The project planning for the creation of 1200 acres of wetland habitat, is being sponsored and administered by the Alabama State Port Authority with funding from the RESTORE Act, Bucket 2. Construction funds are being pursued from multiple sources.

Enclosed with the joint application is the following supplemental information and attachments:

- Section 5: Project Description
- Section 12: Other Authorization or Certifications.
- Section 13: Vicinity Map, Permit Drawings/Engineering Exhibits

Previously provided information to Dylan Hendrix on 08/13/2021 included:

- Draft Environmental Assessment and Essential Fish Habitat Documents
- 404b1 standard permit criteria document
- Submerged Aquatic Vegetation Survey Memorandum
- Draft Monitoring Plan

Previously provided information to Dylan Hendrix and Timothy Dodson-USACE archaeologist on 6/10/2021 included:

- Section 106 compliance report (Final_Mobile Harbor Survey_SEARCH -2013)
- Refinement Survey for Mobile Bay Beneficial Use_Tech Memo_SEARCH-April 2021

401 Water Quality Certification pre-filling is being provided simultaneously to this application. Should you need further information or have any questions regarding the information provided in this package, please do not hesitate to contact me at 251-378-9009 or msullivan@moffattnichol.com. Your consideration of our permit request is greatly appreciated and we look forward to your response.

Sincerely,

Mary E. Sullivan

Mary E. Sullivan
Project Manager
MOFFATT & NICHOL

cc: Coastal Section - Mobile Branch, ADEM; State Lands Division – Coastal Section, ADCNR

JOINT APPLICATION AND NOTIFICATION
U. S. DEPARTMENT OF ARMY, CORPS OF ENGINEERS
ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

THIS FORM IS TO BE USED FOR PROPOSED ACTIVITIES IN WATERS OF THE UNITED STATES WITHIN THE POLITICAL BOUNDARIES OF THE STATE OF ALABAMA.

PLEASE TYPE OR PRINT IN INK

1. DATE: 09 / 16 / 2021
month day year

Application Number: _____
(Agency Use Only)

2. APPLICANT INFORMATION:

Name: Bob Harris
Company: Alabama State Port Authority
Mailing Address: 250 N. Water Street
Mobile, AL 36602

Telephone Number and Email (during business hours):
A/C (251) 441-7082
Email: bharris@asdd.com

3. PROJECT LOCATION:

Street Address: n/a
City/Community: Mobile
County: Mobile County
Name of Waterway: Upper Mobile Bay
Latitude: 30.646906
Longitude: -88.000935
(Provide Lat/Long in decimal degrees, if available)
Section n/a Township n/a Range n/a
County Parcel Identification Number (PID): n/a
(PID is typically located on property tax receipt)

4. DESIGNATION OF AGENT, STATEMENT OF AUTHORIZATION:

N/A ☐ (check here if applicant is not designating an agent)

I hereby designate and authorize

Moffatt & Nichol
(Print Name of Designated Agent)

to act on my behalf in the processing of this permit application and to furnish, upon request, supplemental information in support of the application.

Signature of Applicant: Bob Harris Date: 09/16/2021

AGENT INFORMATION:

Name: Mary Beth Sullivan
Company: Moffatt & Nichol
Mailing Address: 11 N. Water Street, Suite 20220
Mobile, AL 36602

Telephone Number and Email (during business hours):
A/C (251) 378-9009
Email: msullivan@moffattnichol.com

5. PROJECT DESCRIPTION: In addition to required attachments such as drawings/plans, provide a detailed narrative description of the project. Include all aspects of the project, describing completely and in detail. Provide the dimensions (in feet) of any structures such as piers, wharfs, bulkheads, pipelines, boathouses, boat ramps, groins, jetties, and appurtenances, as well as the dimensions (in feet/square feet) and volume (in cubic yards) of any dredging, excavation, or fill activities. Indicate the method(s) of construction and how the site would be accessed (i.e. by barge or land). Attach additional sheets if necessary.

See Section 5. of supplemental information

6. DREDGING: For projects with dredging, show locations and dimensions of proposed dredge area(s) on attached plans. Include existing and proposed depths. N/A ☐ (check here if dredging is not proposed)

a. New Work ☑ Maintenance Work ☐
b. Volume (cubic yards) of material to be removed: 3,098,486
c. Type of material (sand, muck, hard bottom, etc.): Clayey Sand
d. Surface area (square feet) impacted: 8,365,911
e. Method of dredging or excavation (hydraulic pump, mechanical, etc.): Hydraulic and Mechanical
f. Nature of area to be dredged (check all that apply) Upland ☐ Wetland ☐ Waterbottom ☑ Other ☐ (explain): n/a

7. DISCHARGE OF DREDGED OR FILL MATERIAL: For projects with discharge of dredged or fill material, show locations and dimensions of all disposal or fill areas on attached plans. N/A ☐ (check here if discharge of dredged or fill material is not proposed)

a. Volume (cubic yards) of fill: 12,077,439
b. Type of fill (sand, clay, rip-rap, etc.): Clayey Sand and Riprap
c. Surface area (square feet) impacted: 54,709,728
d. Source of fill material (check all that apply): Commercially obtained ☑ Dredged material ☑ Borrowed on-site ☑ Other ☐ (explain): See Section 5 - Project Description for supplemental information.
e. How will discharge material be contained? Specify containment and/or erosion control measures (i.e. Best Management Practices): See Section 5 - Project Description for supplemental information.
f. Nature of disposal/fill area(s) (check all that apply.) Upland ☐ Wetland ☐ Waterbottom ☑ Other ☐ (explain): n/a

8. ADDITIONAL INFORMATION: Provide information below relating to the proposed activity.

a. Are oyster reefs located within or near the project area? Yes ☐ No ☑ If yes, explain: n/a
b. Will this project result in the siting, construction, and/or operation of an energy-related facility? Yes ☐ No ☑
c. Is the project area greater than 5 acres in size? Yes ☑ No ☐
d. Is any portion of the activity for which authorization is sought now complete? Yes ☐ No ☑ If yes, explain: n/a
Month and year activity took place: n/a
e. If project is for maintenance work of existing structures or channels, describe legal authorization for the existing work. Provide permit number, dates, or other form of authorization: n/a

9. PURPOSE AND NEED: Describe the purpose and need of the project. Describe any public benefit, if applicable. Describe the relationship between the project and any secondary or future development the project is designed to support: See Section 5. Project Description

Intended use: Public ☐ Private ☐ Commercial ☐ Other ☐ (explain):

10. PROJECT SCHEDULE:
Proposed start date: September 2022 Proposed completion date: September 2042

11. ADJACENT PROPERTY OWNER NAMES AND MAILING ADDRESSES: Provide the names and mailing addresses of adjoining property owners, lessees, etc. whose property adjoins the project. Also, identify the location of each owner's property on the plan view drawings. Attach additional sheets as needed.

Owner's Name: n/a Owner's Name: n/a
Mailing Address: Mailing Address:

12. OTHER AUTHORIZATIONS OR CERTIFICATIONS: List all authorizations or certifications requested, received, and/or required from other federal, state, or local agencies for any structures, construction, discharges, or other activities described in or directly related to this application. Note: The signature in Section 14 certifies that application has been made to or that permits are not required from the following agencies. *If permits are not required, place "N/A" in space for Type of Approval.* See Section 12 of Supplemental Information.

Name of Federal, State, or Local Agency	Type of Approval	Identification No.	Date of Application	Date of Approval	Date of Denial
U.S. Army Corps of Engineers					
Alabama Dept. of Environmental Management (ADEM)					
Alabama Dept. of Conservation and Natural Resources, State Lands Division (ADCNR-SLD)					
Alabama State Docks					
City/County/Other:					

13. ATTACHMENTS: In addition to the completed application form, the following attachments are **REQUIRED**:

Vicinity Map: Show the location of the proposed site in relation to major highways, landmarks, and nearby streets.

Drawings: Provide plan view and cross-section or elevation view drawings of the project site. Drawings must:
1. Show fully-dimensioned and accurate representations of the existing and proposed structures and activities.
2. For projects located in or adjacent to waterways, clearly indicate the location of the Mean High Water and Mean Low Water lines (in tidally influenced areas) or the Ordinary High Water mark (in non-tidal creeks, rivers, etc.) along the shoreline or bank.
3. For projects located in or adjacent to waterways, include the width of the waterbody at the site location.

All attachments must be of reproducible quality. For hard copy applications, attachments must be on 8 ½ inch x 11 inch paper.

14. SIGNATURE OF APPLICANT OR AGENT (REQUIRED): Application is hereby made for authorization to conduct the activities described herein. I agree to provide any additional information/data that may be necessary to provide reasonable assurance or evidence to show that the proposed project will comply with the applicable state water quality standards or other environmental protection standards both during construction and after the project is completed. For projects within the coastal area of Mobile and Baldwin Counties, I certify that the proposed project for which authorization is sought complies with the approved Alabama Coastal Area Management Program and will be conducted in a manner consistent with the program. I agree to provide entry to the project site for inspectors from the environmental protection agencies for the purpose of making preliminary analyses of the site and monitoring permitted works. I certify that I am familiar with and responsible for the information contained in this application, and that to the best of my knowledge and belief such information is true, complete and accurate. I further certify that I possess the authority to undertake the proposed activities or I am acting as the duly authorized agent of the applicant.

Mary E. Sullivan
Signature of Applicant or Agent

09/16/2021
Date

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willingly falsifies, conceals, or covers up by any trick, scheme or device a material fact or make any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

15. APPLICATION SUBMISSION INFORMATION: Contact the U.S. Army Corps of Engineers prior to submitting the application if you have any questions or to request acceptable alternate content/format. **For electronic submittals (preferred method), please use the email addresses listed below.** An instruction package, example SPCC plans, and other information are available upon request. NOTE: Fees may be required in conjunction with ADEM certification. ADEM will contact the applicant with fee requirements. Fees may also be required by the ADCNR-SLD for dredging activities and projects impacting State-Owned Submerged Lands. ADCNR-SLD will contact the applicant with fee requirements.

Submit the completed and signed application (with original or digital signature) and attachments to the appropriate U.S. Army Corps of Engineers office below:

For activities in the *following counties* in Alabama: *Baldwin, Butler, Choctaw, Clarke, Coffee, Conecuh, Covington, Crenshaw, Dale, Escambia, Geneva, Henry, Houston, Marengo, Mobile, Monroe, Washington, and Wilcox*	For activities in *all other counties* in Alabama: *(Portions of northern Alabama counties may be within the U.S. Army Corps of Engineers Nashville District area of responsibility. Please contact the Nashville District Regulatory Division at (615) 369-7500 for more information)*
U.S. Army Corps of Engineers, Mobile District Attention: CESAM-RD-A Post Office Box 2288 Mobile, Alabama 36628-001 Phone: (251) 690-2658 Web: www.sam.usace.army.mil **Email: CESAM-RD@sam.usace.army.mil**	U.S. Army Corps of Engineers, Mobile District Attention: Regulatory Division, North Branch 218 Summit Parkway, Suite 222 Homewood, Alabama 35209 Phone: (205) 290-9096 Web: www.sam.usace.army.mil **Email: RD-N2@usace.army.mil**

Additionally, submit a signed paper or electronic copy of the application package to the appropriate state agencies below:

For activities in the *following counties* in Alabama: *Baldwin, Mobile, and Washington*		For activities *statewide* in Alabama: *(For northern counties, contact the Nashville District as noted above)*	
Coastal Section-Mobile Branch Field Operations Division, ADEM 3664 Dauphin Street, Suite B Mobile, AL 36608 Phone: (251) 304-1176 Fax: (251) 304-1189 Web: www.adem.state.al.us Email: coastal@adem.alabama.gov	ADCNR, State Lands Division Coastal Section 3115 Five Rivers Boulevard Spanish Fort, AL 36527 Phone: (251) 621-1216 Fax: (251) 621-1331 Web: www.outdooralabama.com	Field Operations Division, ADEM Post Office Box 301463 Montgomery, AL 36110-2059 Phone: (334) 394-4311 Fax: (334) 394-4326 Web: www.adem.state.al.us Email: fieldmail@adem.alabama.gov	Alabama State Port Authority Attn: Harbormaster P.O. Box 1588 Mobile, AL 36633 Phone: (251) 441-7074 Fax: (251) 441-7390 Web: www.asdd.com Email: harbormaster@asdd.com

Background

The *Upper Mobile Bay Beneficial Use Wetland Creation Site (Planning) Project* was recommended by the Gulf Coast Ecosystem Restoration Council (Council) for planning activities as part of the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf States Act (RESTORE Act) Initial Funded Priorities List (FPL). The RESTORE Act FPL used funds from the settlement with Transocean Deepwater Inc. to provide near-term, on-the-ground ecosystem benefits, while also conducting planning activities designed to build a foundation for future success as additional funds become available from other parties.

As approved in December 2015, the Upper Mobile Bay Beneficial Use Wetland Creation Site project provided planning funds to the U.S. Army Corps of Engineers (USACE). In May 2019, the Council amended its Initial FPL to make the State of Alabama the sponsor and direct recipient of the full funding amount previously approved for the Project. The proposed planning project would plan and permit a programmatic 1,200-acre Wetland Creation Site and develop the full design for the initial construction of approximately 100 acres of wetlands in the Upper Mobile Bay south of the US Highway 90/98 causeway. The intent is to establish a large-scale beneficial use (BU) dredged material placement area to restore approximately 1,200 acres of brackish tidal marsh in northern Mobile Bay. The project is an opportunity to further extend BU activities to habitat restoration and provide valuable ecosystem services to Mobile Bay.

Purpose / Need

The purpose of the *Upper Mobile Bay Beneficial Use Wetland Creation Site Project* is to construct the containment structures to allow dredged material to be beneficially used to create intertidal wetland habitat within a 1,200-acre Wetland Creation Site in the Upper Mobile Bay. This project would ensure that submerged sediments within Mobile Bay are kept within the bay system and are used beneficially to help restore coastal wetland habitats. The specific project objectives are to restore estuarine wetlands through the construction of a containment area and placement of dredged material which would improve water quality, provide habitat for living coastal and marine resources, and enhance the economy of the region by providing cost effective placement options of dredged material for the navigation related industries located along the Mobile River.

Wetlands and marshes are a valuable resource because they can reduce flood stages, stabilize banks, and improve water quality in addition to providing vital habitat for species. Alabama has experienced a loss of both coastal freshwater and estuarine marsh. It is estimated Alabama has lost as much as 50 percent of its wetlands in the last 200 years1. Alabama lost about 69 percent of its coastal freshwater marsh and 29 percent of its estuarine marsh from 1955 through 1979. The Mobile Bay ecosystem lost more than 10,000 acres of emergent estuarine marsh and probably more than 50 percent of the submerged aquatic

[1] Dahl, T.E., 1990, Wetlands – Losses in the United States, 1780's to 1980's: Washington, D.C., U.S. Fish and Wildlife Service Report to Congress.

vegetation in the bay between 1955 and 1979[2]. Reasons for coastal wetlands loss include development (industrial, commercial, and residential), erosion and subsidence, and natural succession from wetlands to uplands[3]. The majority of the loss of coastal wetlands in the Mobile Bay area was due to direct and indirect effects of dredging[4]. It was estimated that about 6,000 acres of marshland in the bay have been lost from dredging and about 2,200 acres of marshland created by deposition of dredged material[5]. This project would provide a 15 percent increase in this habitat type in Upper Mobile Bay as well as add more creeks and protected areas conducive to SAV growth that have also been lost in the last 70 years. Without restoration, valuable sediments would be lost to upland areas or open water and would not contribute to the restoration of coastal wetlands.

Project Area

The Project is located in the upper Mobile Bay, approximately 1.5 miles south of the US Highway 90/98 causeway between Mobile and Baldwin counties in Alabama.

General Project Approach

It is anticipated that construction of the containment structures for the Wetland Creation Site would be phased to build a 1,200-acre site for the creation of wetland habitat over the next 20 years, dependent on dredged material volumes and timing of maintenance dredging activities. The project elements include:

Wetland Creation Site: The 1,200 acre site where the wetland creation will occur.

Wetland Creation Area: An area within the Wetland Creation Site that will share an external dike system. Wetland Creation Areas will be separated by tidal channels. It is anticipated there would be three (3) Wetland Creation Areas.

[2] Watzin, M.C., Tucker, Sandy, and South, Celeste, in press, Environmental problems in the Mobile Bay ecosystem – the cumulative effects of human activities: Mobile, Ala., Mississippi – Alabama Sea Grant Consortium Publication.

[3] Roach, E.R., Watzin, M.C., Scurry, J.D., and Johnston, J.B., 1987, Wetland changes in coastal Alabama, in Lowery, T.A., ed., Proceedings of Symposium on the Natural Resources of the Mobile Bay Estuary, Mobile, Ala., February 10-12, 1987: Mobile, Ala., Auburn University, Alabama Sea Grant Extension Services and Alabama Cooperative Extension Service.

[4] Duke, Thomas, and Kruczynski, W. L., eds., 1992, Status and trends of emergent and submerged vegetated habitats. Gulf of Mexico, USA: The Environmental Protection Agency, Gulf of Mexico Program.

[5] Stout, J.P., 1979, Marshes of the Mobile Estuary – Status and evaluation, in Loyacano, H.A., Jr., and Smooth, J.P., eds., Proceedings of the Symposium on the Natural Resources of the Mobile Bay Estuary, Mobile, Ala., 1979: Mobile, Ala., U.S. Army Corps of Engineers, Mobile District.

Wetland Creation Cell: A sub-section of the Wetland Creation Area divided by internal containment dikes where dredged material will be placed. Wetland Creation Cells are anticipated to be 40-60 acres in size.

Project Access Facility: A constructed structure that will be used for equipment and personnel access, and material offloading for use over the lifespan of the project.

The Wetland Creation Site would be phased into three Wetland Creation Areas. The Wetland Creation Areas will be fully enclosed until establishment of wetlands, in order to contain dredged material used for wetland creation. Wetland Creation Areas will have perimeter containment dikes that are designed to withstand wind and wave forcing. Containment design may vary by reach, as south-facing dikes may require more robust shoreline protection features such as a rock breakwater or revetment, while north-facing dikes may allow for softer structures and will also serve as dredged material containment for wetland creation. Individual Wetland Creation Cells would be created within the larger Wetland Creation Areas to provide manageable sized areas for wetland construction, and each cell is anticipated to be 40-60 acres. Wetland Creation Cells are proposed to be created through construction of interior dikes to completely contain the dredged material and allow for dewatering, long-term settlement of sediments, and wetland habitat creation. Construction of the containment structures would be advanced as existing Wetland Creation Cells approach capacity to allow as-needed capacity for dredged material placement. As Wetland Creation Cells consolidate to an intertidal elevation, specific habitats would be constructed within each cell. Habitat creation may include the excavation of tidal creeks, tidal ponds, embayments, low- and high-marsh features, scrub-shrub mounds, or other features providing ecological uplift to the project site. External containment dikes would be degraded or gapped to provide hydrologic connectivity once the wetland vegetation has stabilized the dredge material.

It is envisioned Wetland Creation Area construction would begin adjacent to the southern boundary of the project area and progress north. As the wetlands become established in each cell, the stabilized area would serve as additional protection from wind and wave forcing.

The design of the Wetland Creation Site is based on the project objective for intertidal wetland habitat. This is the dominant habitat type in the project vicinity. The wetland design characteristics will mimic these habitats so they can withstand typical water level variances (inundation) at the project site. Standard tidal datums obtained from the NOAA tide gauge station Coast Guard Sector Mobile, AL, located approximately 3 miles east of the Wetland Creation Site were reviewed. For design purposes, mean high water (1.09 ft NAVD88-Geoid12B) was set as the high water benchmark. The low water benchmark was set at the mean low water level (-0.44 ft NAVD88-Geoid12B). The initial wetland design target elevation is +1 ft NAVD88.

Project design elevations may be adjusted as the project is implemented to account for sea level rise. Maintenance lifts would be designed and implemented for the containment features and the wetlands.

Sweet et al, (2017) [6] provides six GMSL scenarios for the U.S. Low (0.3 m), intermediate-low (0.5 m), intermediate (1 m), intermediate-high (1.5 m), high (2 m), and extreme (2.5 m). The Sea Level Rise and Coastal Flood Hazard Scenarios and Tools Interagency Task Force combine these scenarios with the Intergovernmental Panel on Climate Change RCP scenarios to provide SLR projection guidelines as a probabilistic assessment. The RCP scenarios include RCP 2.6 (strong emissions mitigation by 2100), RCP 4.5 (moderate emissions mitigation by 2100), and RCP 8.5 (no emissions mitigation by 2100). For design, the RCP4.5 Intermediate scenario was assumed.

Project Construction Activities

Project Corridor and Project Access Facility

A corridor for vessels and equipment would be established to access the Wetland Creation Site. The corridor is planned to use areas where the minimal water depth is met for vessel access. Impacts to the water bottom are not anticipated for the project corridor. No construction equipment or activities may disturb the water bottom (including anchoring or spudding) within the cultural resources avoidance areas, obstruction avoidance area, or SAV avoidance area. Construction of a Project Access Facility at the Wetland Creation Site for equipment and personnel access, and material offloading for use over the lifespan of the project is required. This activity would require installation of steel sheet piles for construction of a bulkhead, and timber piles for mooring and berthing activities.

The Project Access Facility would be constructed to a maximum elevation of +6 feet NAVD88 and be approximately 30 feet wide and 100 feet long. The Project Access Facility will intersect the external containment dike system which will provide access throughout the Wet Creation Site.

Containment Dike Construction

The use of in situ material is the preferred source material for construction of containment dikes. Preliminary soil boring logs indicate a 6- to 20-foot thick clayey-sand layer with generally 50-70% sands throughout the project site. Utilizing in situ material is more cost effective than importing off-site material and increases the capacity for material placement in the Wetland Creation Area by deepening the bottom of the individual Wetland Creation Cells. Internal borrow areas would be delineated from within Wetland Creation Cells and it is envisioned that cutter head dredges would be used to hydraulically transport and stockpile dredged material. Land-based equipment would then transport and place the material to construct the dikes. To maximize dredging operations, sand may be stockpiled within a Wetland Creation Area for future containment construction. When construction requires, containment material would be mechanically removed from the stockpile. Dewatering of the stockpile material would be controlled to manage water quality. Internal borrow areas would be filled over-time and be incorporated into habitat creation activities for each Wetland Creation Cell, reducing risks of water quality concerns. Alternatively,

[6] Sweet, W.V., Kopp, R.E., Weaver, C.P., Obeysekera, J., Horton, R.M., Thieler, E.R., and Zervas, C. 2017. *Global and Regional Sea Level Rise Scenarios for the United States*. NOAA Technical Report NOS CO-OPS 083. NOAA/NOS Center for Operational Oceanographic Products and Services

if it is determined that hydraulic dredging is not feasible, construction of the containment dikes may be completed with mechanical dredge equipment such as a clamshell, dragline, or bucket dredge.

Another potential source of material for containment is the upland dredge placement areas for the upper Mobile Harbor. The method for utilizing upland placement areas as project borrow areas includes movement of the placed dredged material through a conveyor belt and to a hopper dredge or hopper barge where it would then be transported to the Wetland Creation Site. At the site, this material could be utilized for construction of containment. This method would not require additional impacts to resources. Existing facilities would be used to load and transport the material, and the project's site access corridor, project access facility, and/or pipeline corridor would be utilized to transport the material.

Containment construction includes construction of box riser weirs to allow for de-watering of the placed material. De-watering of the material accelerates consolidation, leading to additional placement capacity. The management of surface water while placing dredged material within the Wetland Creation Cells would be accomplished by controlling the elevation of the weirs to regulate the depth of water ponded within the cell.

External containment dikes will be located around each Wetland Creation Area. They would be designed to allow a minimum of 2 feet of freeboard during construction, and internal containment would be required to meet the construction wetland fill elevation. Based on the construction wetland fill elevation of +4 feet, containment dikes would not exceed a crest elevation of +6.0 feet NAVD 88. A crest width of 10 ft and side slopes of 3H:1V are proposed. Excavation for material would not be allowed within 25 ft of a containment dike for slope stability and to allow an amphibious excavator to work from the bench. Borrow area dredge depth would vary depending on suitable material for containment construction, but the excavated depth would not exceed -20 feet NAVD 88.

Shoreline Protection of Containment Features

Some external containment features around the Wetland Creation Areas may require more robust protection from the prevailing winds and waves. This protection may include a rock riprap breakwater, rock revetment, or other fortifying material. Construction of the shoreline protection feature would require barges and large marine construction equipment. Equipment access for deeper draft vessels to the project site would be along the eastern side of the project site where the project's access corridor and Project Access Facility is established.

Shoreline protection requires a minimum elevation for +4 feet NAVD88. The shoreline protection may also serve as part of an external containment dike. In this scenario, the shoreline protection would not exceed +6 feet NAVD88. Three types of external are proposed:

> Type I includes a rock breakwater with a maximum crest elevation of +4 ft, and a marsh buffer which would be constructed of sandy material, and an internal earthen containment dike with a crest elevation of +6 ft. In this arrangement the earthen containment dike provides dredged material containment and the breakwater and marsh buffer is the shoreline protection feature for the Wetland Creation Area.
>
> Type II includes a sand containment dike protected by a rock revetment. The structure functions as containment and protection which requires a crest elevation of +6 ft. The revetment includes

armor stone and an underlayer of smaller bedding rock. Rock revetments are commonly used in marine environments as shoreline protection of dredge material placement areas.

Type III includes a sand containment dike with a fortified core constructed of geotubes (or other structure) and a fronting beach for additional protection and wave energy dissipation. The sand dike functions as containment which requires an elevation of +6 ft. The sand containment would be sacrificial during extreme events. The fortified core would function as containment of previously placed dredge material, as well as provide a level of protection. The fortified core would be constructed to an elevation of +4 ft. This type of containment could be useful for containment along reaches of the Wetland Creation Area not exposed to controlling environmental conditions from the south.

Material for Wetland Creation

The main source of BU material for wetland creation would be the maintenance dredging of the Mobile Ship Channel and adjacent public berths by the USACE and the Alabama State Port Authority. Maintenance dredging is performed to maintain navigable waters within the channel and the berths. This typically involves a 12–24-inch cutterhead suction dredge, but up to 30-inch dredges can be used. Maintenance dredging of the channel and berths is permitted independent of the *Upper Mobile Bay Beneficial Use Wetland Creation Site Project* and would continue to occur whether this project is implemented. The material dredged during maintenance events would be transported to the Wetland Creation Area through approximately 16- to 24-inch dredge pipeline and be beneficially used to create wetland habitat.

All dredged materials used for the project must be determined suitable for open-water disposal in accordance with the Southeast Regional Implementation Manual (SERIM) Requirements and Procedures for the Evaluation of Ocean Disposal of Dredged Material in the Southeastern U.S. Atlantic and Gulf Coast Waters.

Pipeline corridor

Corridors for dredge pipeline would be established between the port terminals and the Wetland Creation Site. The corridor would be required to include crossing(s) for the Mobile Ship Channel and would be routed through open water along a route that minimizes navigation impacts, impacts to benthic habitat, and avoids cultural resource and SAV areas. During each dredge cycle, the dredge pipeline would be temporarily placed within the pipeline corridor. The dredge pipeline would cross the Mobile Ship Channel following federal channel crossing procedures outlined in EM 385-1-1, and other requirements necessary per coordination with USACE Navigation. The dredge pipeline would generally be submerged within the dredge pipeline corridor to minimize navigation impacts. Floating pipeline would only be used as necessary across the Mobile Ship Channel.

Dredged Material Placement and Wetland Creation

In the first five years, approximately 100 acres of wetlands would be created through placement of dredged material. After that, it is assumed approximately 40-80 acres of wetlands would be created each year based on the volumes of dredged material in the area by the ASPA, USACE, and other potential sources.

Dredged material would be placed by hydraulic dredging. The outfall of the dredge pipe would be placed within a fully contained Wetland Creation Cell. Once the dredged material is placed, it would be allowed to consolidate. Dredged material construction fill elevation shall not exceed +4 ft NAVD88 to accommodate settling to the wetland design target elevation. Multiple dredged material placement cycles may occur until target intertidal wetland elevations are reached. The material would then be formed into intertidal wetlands by adding typical habitat features. Habitat features would be dominated by low marsh (+1 ft NAVD88), but would also include high marsh, tidal creeks, berms adjacent to the creeks, embayments, SAV habitat, and tidal ponds among other habitat features. Tidal creeks would be constructed with amphibious excavators, and sidecast material would be used to construct berms adjacent the creeks. Tidal ponds would ideally be planned where internal borrow areas are located, as these areas would require additional dredged material to raise the bottom to intertidal wetland elevations. Embayments may also be planned at internal borrow areas for the same reason. Water bottom elevations of tidal ponds and tidal creeks would be planned to encourage growth of SAV. Wetland creation would also include degrading or gapping the containment features to provide connectivity to Mobile Bay. Tidal creek inlets would be constructed within the external dikes to connect tidal creeks to the tidal channels between the Wetland Creation Areas, or directly to Mobile Bay.

The following provides the status of review of authorizations or certifications received or applied for form federal, state, and local agencies (Table 1). There have been previous coordination efforts and others remain in progress or under review [e.g. an Environmental Assessment, Essential Fish Habitat review].

ASPA would ensure compliance with applicable state and local laws and other applicable federal laws and regulations relevant to the preferred project alternative, including technical assistance from appropriate regulatory agencies to identify compliance issues.

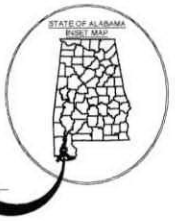
Table 1. Status of the environmental compliance laws and regulations. D = draft (provided to USACE); IP= in progress; NA = not applicable

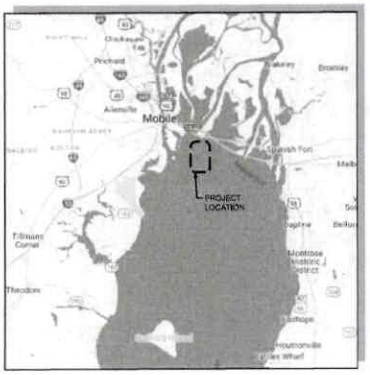
Environmental Compliance Type Status	Status
FEDERAL	
NEPA – Environmental Assessment	D
NEPA – Environmental Impact Statement	NA
National Marine Sanctuaries Act	NA
Coastal Zone Management Act	IP
Fish and Wildlife Coordination Act	IP
CWA – 404 – Individual Permit	D
CWA – 404 – General Permit	NA
Rivers and Harbors Act – Section 408 – Memorandum for Record	IP
Rivers and Harbors Act – Section 10 – Permit	IP
Endangered Species Act – Section 7 – Informal and Formal Consultation	IP
Endangered Species Act – Section 7 - Biological Assessment	NA
Endangered Species Act – Section 7 – Biological Opinion	NA
Endangered Species Act – Section 7 – Permit for Take	NA
Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat - Consultation	D
Marine Mammal Protection Act – Incidental Take Permit (106)	NA
Migratory Bird Treaty Act	NA
Bald and Golden Eagle Protection Act – Consultation and Planning	NA
Marine Protection, Research and Sanctuaries Act – Section 103 permit	NA
BOEM Outer Continental Shelf Lands Act – Section 8 OCS Lands Sand permit	NA
National Historic Preservation Act (NHPA) Section 106 – Consultation and Planning ACHP, SHPO(s), and/or THPO(s)	D
STATE	
ADEM – USACE permit consultation and concurrence	D
ADEM – CWA Section 401 Water Quality Certification	IP
ADCNR – State Lands and Marine Resources consultation and concurrence	IP
ADCNR – Dredging permit	NA
Alabama State Port Authority	NA
LOCAL	
City	NA
County	NA

UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT

ALABAMA STATE PORT AUTHORITY

PERMIT DRAWINGS - NOT FOR CONSTRUCTION

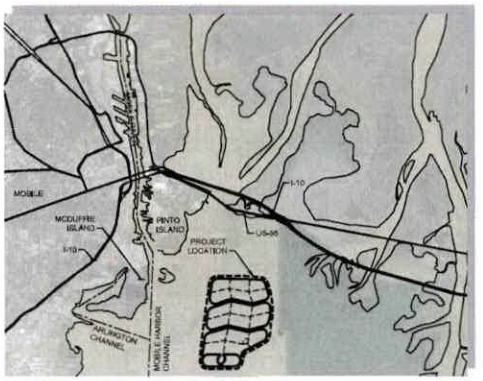




VICINITY MAP
SCALE NTS

INDEX OF DRAWINGS

SHEET INDEX	SHEET	DRAWING TITLE
1	G-001	TITLE SHEET
2	G-002	GENERAL NOTES
3	V-101	GENERAL CONDITIONS
4	V-102	ENVIRONMENTAL & CULTURAL AVOIDANCE PLAN
5	B-101	GENERAL SOIL BORING LOGS PLAN
6	C-101	WETLAND CREATION SITE LAYOUT
7	C-102	CONCEPTUAL WETLAND CREATION CELL DETAIL
8	C-301	WETLAND CREATION AREA TYPICAL SECTION
9	C-320	CONTAINMENT DIKE TYPICAL SECTIONS (1 OF 2)
10	C-321	CONTAINMENT DIKE TYPICAL SECTIONS (2 OF 2)
11	C-501	TEMPORARY WARNING SIGN DETAIL
12	C-502	TURBIDITY CURTAIN DETAIL
13	C-503	BOX WEIR DETAIL
14	C-601	COORDINATE TABLES



LOCATION PLAN
SCALE NTS

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

ALABAMA STATE PORT AUTHORITY

TITLE SHEET

Sheet Reference No.
G-001

GENERAL NOTES

1. THIS DRAWING SET IS FOR PERMITTING PURPOSES ONLY AND IS NOT TO BE USED FOR CONSTRUCTION.
2. BACKGROUND AERIAL IMAGERY COURTESY OF MICROSOFT BING, 2021.
3. ALL HORIZONTAL COORDINATES ARE NAD 83 (2011), ALABAMA STATE PLANE, WEST ZONE, U.S. SURVEY FEET.
4. ALL ELEVATIONS REFERENCE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), U.S. SURVEY FEET (UNLESS OTHERWISE NOTED).
5. NO CONSTRUCTION EQUIPMENT OR ACTIVITIES MAY OPERATE, TRANSIT, STAGE OR STORE WITHIN THE AVOIDANCE AREAS AS SHOWN ON SHEET V-102.
6. ESTIMATED RANGE OF FULLY LOADED DRAFTS FOR VESSELS TO BE USED FOR CONSTRUCTION.
   a. 800 HP TUGS ..... 8-8 FT
   b. 2,000 HP TUGS ..... 10-14 FT
   c. WORK BOATS, TENDERS ..... 6-8 FT
   d. CREW BOATS ..... 2-4 FT
   e. WORK BARGES, FUEL BARGES ..... 4-6 FT
   f. 14" HYDRAULIC DREDGE ..... 6 FT
7. TURBIDITY CURTAINS SHALL BE INSTALLED BY CONTRACTOR AS NECESSARY TO PREVENT TURBIDITY IN EXCESS OF ADEM WATER QUALITY REQUIREMENTS.
8. CONTRACTOR SHALL PERFORM A PRE-CONSTRUCTION MAGNETOMETER SURVEY OF ANY DREDGING/EXCAVATION AREA.
9. WARNING SIGNS AND LIGHTS SHALL BE INSTALLED AS NECESSARY PER UNITED STATES COAST GUARD REQUIREMENTS INCLUDING NECESSARY TEMPORARY LIGHTS AND SIGNAGE DURING CONSTRUCTION, AND PERMANENT LIGHTS AND SIGNAGE.
10. WHERE REFERENCED DESIGN ELEVATIONS REFER TO LONG-TERM, POST-SETTLEMENT ELEVATIONS.
11. PROJECT ACCESS FACILITY TO BE CONSTRUCTED ALONG EASTERN REACH OF 100-ACRE WETLAND CREATION SITE FOR OFFLOADING OF MATERIALS, EQUIPMENT, AND PERSONNEL. THIS FACILITY SHALL BE APPROXIMATELY 30' BY 50', WITH ELEVATION NOT TO EXCEED +6.0' NAVD 88. STRUCTURE TO CONSIST OF A STEEL SHEETPILE BULKHEAD WITH EARTHEN AND GRAVEL BACKFILL. TIMBER FENDERING AND TIMBER PILE CLUSTERS TO BE INSTALLED FOR MOORING/BERTHING.

WETLAND CREATION SITE NOTES:

1. THESE PERMIT DRAWINGS SHOW THE 1,200-ACRE CONCEPTUAL WETLAND CREATION SITE LAYOUT FOR REFERENCE. EXACT WETLAND CREATION SITE TO BE DELINEATED DURING DETAILED DESIGN. CHANGES MAY BE NECESSARY BASED ON PENDING GEOTECHNICAL INVESTIGATIONS, WAVE OR HYDRODYNAMIC MODELING, OR OTHER DESIGN CONSIDERATIONS.
2. REQUESTING PERMIT FOR A 1,200-ACRE WETLAND CREATION SITE WITHIN THE OVERALL CULTURAL RESOURCE SURVEY AREA EXTENTS. THE WETLAND CREATION SITE IS TO CONSIST OF INDIVIDUAL WETLAND CREATION AREAS TO BE SEPARATED BY TIDAL CHANNELS. EACH WETLAND CREATION AREA WILL BE SEPARATED INTO APPROXIMATELY 40-ACRE WETLAND CREATION CELLS.
3. TIDAL CHANNELS SHALL BE SIZED TO PROVIDE HYDROLOGIC CONNECTION BETWEEN WETLANDS CELLS AND MOBILE BAY.
4. INITIAL CONSTRUCTION SHALL CONSIST OF EXTERNAL CONTAINMENT FOR AN APPROXIMATELY 100-ACRE SITE WITHIN THE SOUTHERN WETLAND CREATION AREA AS SHOWN ON SHEET C-101. TWO 50-ACRE WETLAND CREATION CELLS WITHIN THIS AREA SHALL BE CONSTRUCTED.
5. THE REMAINING PORTION OF THE SOUTHERN WETLAND CREATION AREA, AS WELL AS THE MIDDLE WETLAND CREATION AREA AND NORTHERN WETLAND CREATION AREA SHALL BE CONSTRUCTED IN PHASES AS NECESSARY.
6. WETLAND CREATION SITE SHALL NOT EXCEED 1,200-ACRES.
7. WETLAND CREATION SITE SHALL NOT FILL WITHIN IDENTIFIED CULTURAL RESOURCE AVOIDANCE AREAS, WITHIN IDENTIFIED OBSTRUCTION AVOIDANCE AREAS OR ENVIRONMENTALLY SENSITIVE AREAS INCLUDING EXISTING SUBAQUATIC VEGETATION (SAV) BEDS OR EXISTING WETLANDS.

DREDGING NOTES:

1. ANCHOR BUOYS, AND DREDGE PIPELINE (FLOATING OR SUBMERGED) WITHIN THE DREDGE PIPELINE CORRIDOR, THE ACCESS CORRIDOR, OR OTHER PUBLIC NAVIGABLE WATERWAYS SHALL BE MARKED IN ACCORDANCE WITH THE U.S. COAST GUARD REGULATIONS INCLUDING REQUIRED FLASHING LIGHTS, WARNING SIGNS AND MARKERS.
2. THE CONTRACTOR MAY DREDGE WITHIN THE BORROW AREAS TO THE ELEVATIONS INDICATED IN THESE DRAWINGS.
3. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT A COMMUNICATION PLAN TO THE OWNER AND THE USACE OPERATIONS DIVISION, WHICH PRECISELY DELINEATES THE DREDGE LOCATION, ATTENDANT PLANT, ANCHOR BUOYS, AND FLOATING OR SUBMERGED PIPELINE PURSUANT TO THE PROJECT SPECIFICATIONS.
4. HYDRAULIC AND/OR MECHANICAL DREDGING AND PLACEMENT IS PROPOSED FOR CONTAINMENT DIKE CONSTRUCTION. MATERIAL TO BE PLACED ALONG CENTERLINE OF CONTAINMENT DIKES AND/OR STOCKPILED THEN TRANSPORTED AND REWORKED TO CONSTRUCT CONTAINMENT DIKES WITH LAND-BASED EQUIPMENT.
5. TURBIDITY CURTAINS SHALL BE UTILIZED BY THE CONTRACTOR AS NECESSARY TO COMPLY WITH ADEM WATER QUALITY REQUIREMENTS. TRAINING/GUIDE DIKES MAY BE UTILIZED BY THE CONTRACTOR AHEAD OF THE DREDGE PIPELINE AS THE MATERIAL IS PLACED ALONG THE CONTAINMENT DIKE CENTERLINES IN ORDER TO MINIMIZE THE LOSSES AND SPREAD OF DREDGED MATERIAL.

CONTAINMENT DIKE NOTES:

1. CONTAINMENT DIKES TO CONSIST OF EITHER TYPE I, TYPE II, OR TYPE III CONTAINMENT AS SHOWN ON SHEETS C-320 AND C-321. EXACT CONTAINMENT STRUCTURES, INCLUDING HORIZONTAL AND VERTICAL DIMENSIONS FOR EACH REACH OF CONTAINMENT ARE TO BE DETERMINED DURING DETAILED ENGINEERING AND DESIGN, BASED ON WAVE LOADING.
2. CONTAINMENT DIKE DESIGN ELEVATIONS SHALL NOT EXCEED +6.0 FEET NAVD 88.
3. UNLESS OTHERWISE INDICATED, PROJECT FEATURE INFLECTION POINT (PFIP) COORDINATES REFER TO THE CENTERLINE OF THE ROCK RIPRAP BREAKWATER.

PROPOSED DREDGE PIPELINE CORRIDOR NOTES:

1. TO FACILITATE TRANSPORT OF DREDGED MATERIAL FROM ASPA TERMINALS INCLUDING MCDUFFIE COAL TERMINAL, APM CONTAINER TERMINAL, AND PINTO ISLAND TERMINAL, 2-100' WIDE DREDGE PIPELINE CORRIDORS ARE PROPOSED AS SHOWN ON SHEET C-101.
2. THE DREDGE PIPELINE SHALL BE SUBMERGED AND PLACED ON THE WATER BOTTOMS. FLOATING DREDGE PIPELINE SHALL ONLY BE USED AS NECESSARY.
3. THE PROPOSED DREDGE PIPELINE CORRIDORS SHALL CROSS THE MOBILE HARBOR CHANNEL AT THE PFIPS SHOWN ON SHEET G-101. CHANNEL CROSSING SHALL BE COMPLETED FOLLOWING USACE CHANNEL CROSSING REGULATIONS IN ACCORDANCE WITH EM 385-1-1.

ABBREVIATIONS

AC	ACRES
APPROX	APPROXIMATE
BL	BASELINE
BM	BENCH MARK
BOT	BOTTOM
CL	CENTERLINE
CY	CUBIC YARD
DIA	DIAMETER
ELEV	ELEVATION
EXG	EXAGGERATION
EXIST	EXISTING
FT	FOOT or FEET
IN	INCH
ID	IDENTIFICATION
LB	POUND
MAX	MAXIMUM
MB	BORING LOG ID
MHW	MEAN HIGH WATER
MIN	MINIMUM
MLW	MEAN LOW WATER
MSL	MEAN SEA LEVEL
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
NAD 83	NORTH AMERICAN DATUM OF 1983
OZ	OUNCE
PFIP	PROJECT FEATURE INFLECTION POINT
TYP	TYPICAL
WCA	WETLAND CREATION AREA
WP	WORKING POINT

TIDAL DATUM INFORMATION:

WATER LEVELS (FEET)

MHHW	+1.18'
MHW	+1.09'
MTL	+0.32'
NAVD 88 (DATUM)	+0.0'
MLW	-0.44'
MLLW	-0.53'

EXCAVATION AND FILL SUMMARY

EXCAVATIONS - EXTERNAL CONTAINMENT	VOLUME		AREA	
SOUTH WCA	974,138	CY	2,830,221	SF
MIDDLE WCA	859,718	CY	1,791,234	SF
NORTH WCA	606,240	CY	1,636,849	SF
EXCAVATIONS - INTERNAL CONTAINMENT	VOLUME		AREA	
SOUTH WCA	340,744	CY	944,300	SF
MIDDLE WCA	293,829	CY	793,339	SF
NORTH WCA	214,799	CY	579,958	SF
FILL - DREDGE FILL FOR EXTERNAL CONTAINMENT	VOLUME		AREA	
SOUTH WCA	467,078	CY	1,262,836	SF
MIDDLE WCA	329,658	CY	1,027,635	SF
NORTH WCA	303,120	CY	818,426	SF
FILL - DREDGE FILL FOR INTERNAL CONTAINMENT	VOLUME		AREA	
SOUTH WCA	174,872	CY	770,232	SF
MIDDLE WCA	146,915	CY	782,368	SF
NORTH WCA	107,400	CY	618,338	SF
FILL - RIPRAP FOR EXTERNAL CONTAINMENT	VOLUME		AREA	
SOUTH WCA	493,154	CY	2,020,538	SF
MIDDLE WCA	296,806	CY	1,644,216	SF
NORTH WCA	272,748	CY	1,309,479	SF
FILL - DREDGE FILL FOR WETLAND CREATION	VOLUME		AREA	
SOUTH WCA	3,772,863	CY	16,411,955	SF
MIDDLE WCA	3,281,707	CY	14,992,569	SF
NORTH WCA	2,410,896	CY	13,071,136	SF

1. INTERNAL IN-SITU BORROW AREA EXCAVATION VOLUME IS THE CUT VOLUME NECESSARY TO CONSTRUCT EXTERNAL AND INTERNAL CONTAINMENT DIKES FOR THE NORTH, SOUTH, AND MIDDLE WCA, INCLUDING THE 100-ACRE SITE.
2. FILL VOLUME IS TO THE LONG-TERM DESIGN ELEVATION OF +1.0' NAVD 88.

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

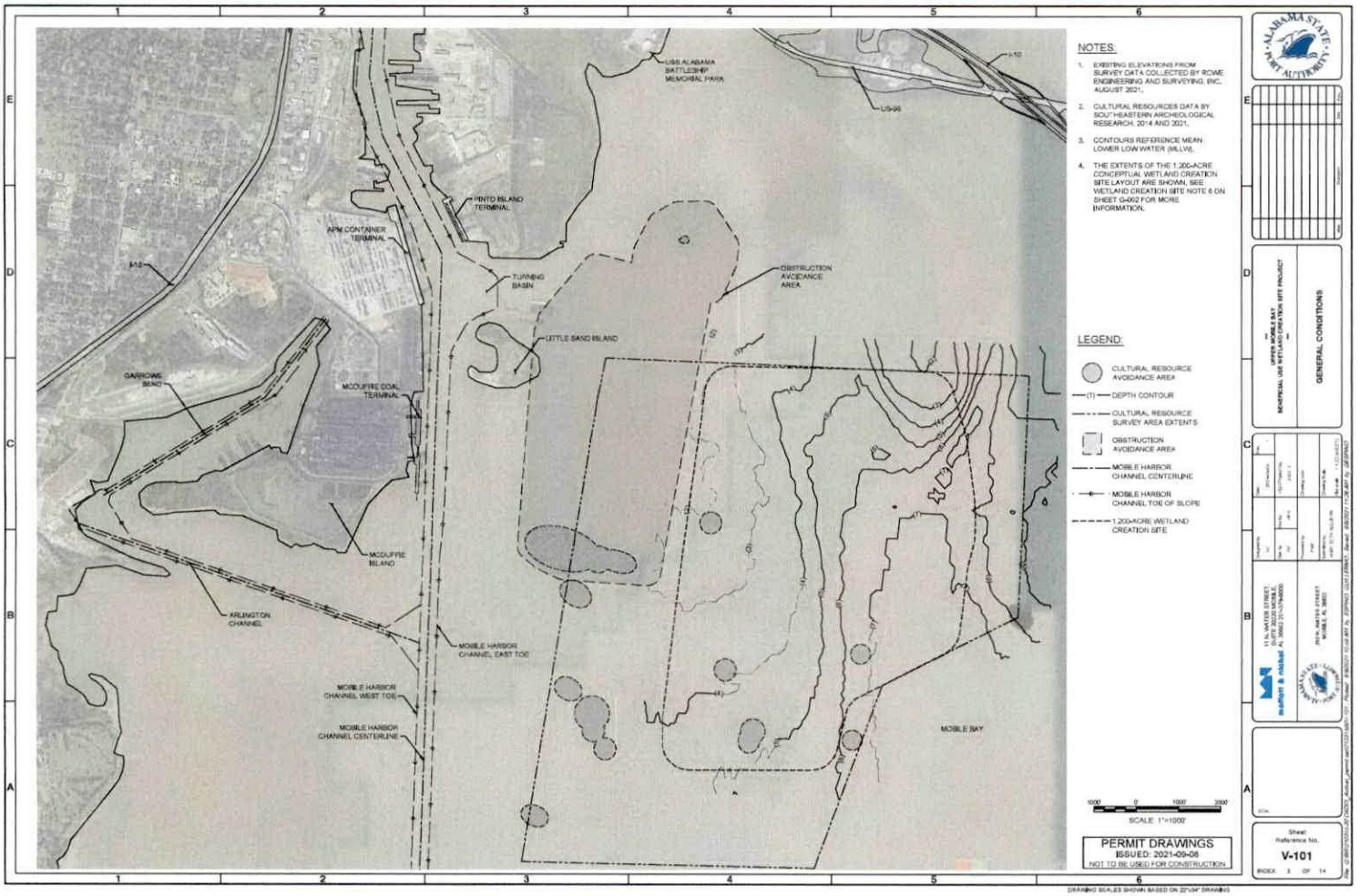
UPPER MOBILE BAY BENEFICIAL USE WETLAND CREATION SITE PROJECT

GENERAL NOTES

11 N. WATER STREET SUITE 13290 MOBILE, AL 36602 251-415-7350

2001 N. WATER STREET MOBILE, AL 36602

Sheet Reference No.
G-002
INDEX 2 OF 14


USS ALABAMA BATTLESHIP MEMORIAL PARK
US-90
I-10
PINTO ISLAND TERMINAL
APM CONTAINER TERMINAL
I-10
TURNING BASIN
OBSTRUCTION AVOIDANCE AREA
LITTLE SAND ISLAND
GARROWS BEND
MCDUFFIE COAL TERMINAL
MCDUFFIE ISLAND
ARLINGTON CHANNEL
MOBILE HARBOR CHANNEL EAST TOE
MOBILE HARBOR CHANNEL WEST TOE
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE BAY
NOTES:
1. EXISTING ELEVATIONS FROM SURVEY DATA COLLECTED BY ROWE ENGINEERING AND SURVEYING, INC. AUGUST 2021.
2. CULTURAL RESOURCES DATA BY SOUTHEASTERN ARCHEOLOGICAL RESEARCH, 2014 AND 2021.
3. CONTOURS REFERENCE MEAN LOWER LOW WATER (MLLW).
4. THE EXTENTS OF THE 1,200-ACRE CONCEPTUAL WETLAND CREATION SITE LAYOUT ARE SHOWN. SEE WETLAND CREATION SITE NOTE 6 ON SHEET G-002 FOR MORE INFORMATION.
LEGEND:
CULTURAL RESOURCE AVOIDANCE AREA
(1) DEPTH CONTOUR
CULTURAL RESOURCE SURVEY AREA EXTENTS
OBSTRUCTION AVOIDANCE AREA
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE HARBOR CHANNEL TOE OF SLOPE
1,200-ACRE WETLAND CREATION SITE
1000 0 1000' 2000'
SCALE 1"=1000'
PERMIT DRAWINGS
ISSUED: 2021-09-06
NOT TO BE USED FOR CONSTRUCTION
ALABAMA STATE PORT AUTHORITY
UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT
GENERAL CONDITIONS
Sheet Reference No.
V-101
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USS ALABAMA BATTLESHIP MEMORIAL PARK
I-10
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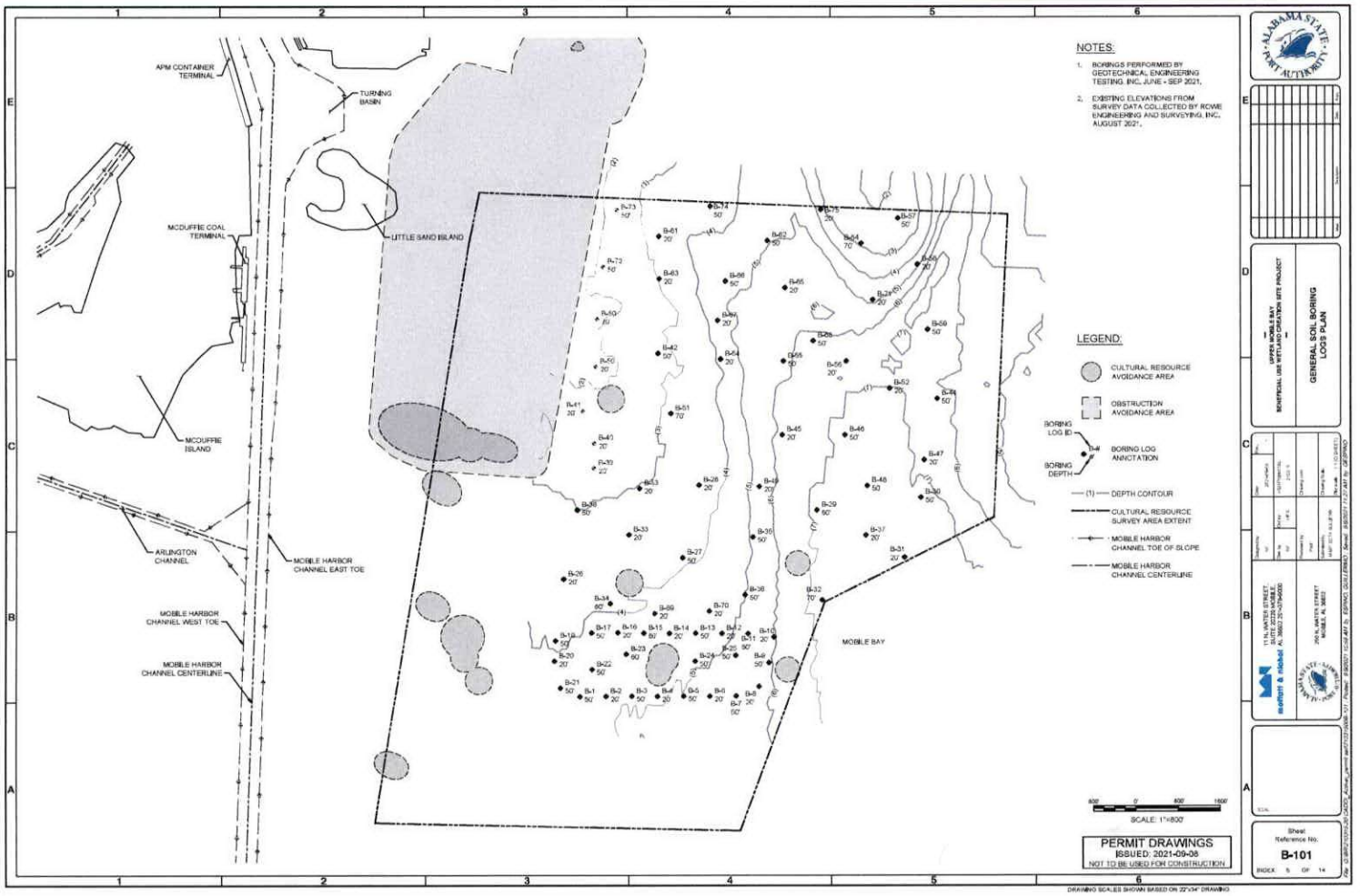
PINTO ISLAND TERMINAL
APM CONTAINER TERMINAL
TURNING BASIN
OBSTRUCTION AVOIDANCE AREA
LITTLE SAND ISLAND
DARROWE BEND
MCDUFFIE COAL TERMINAL
MCDUFFIE ISLAND
ARLINGTON CHANNEL
MOBILE HARBOR CHANNEL EAST TOE
MOBILE HARBOR CHANNEL WEST TOE
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE BAY
NOTES:
1. CONTRACTOR MAY NOT OPERATE, TRANSIT, STAGE, OR STORE EQUIPMENT WITHIN THE SUBMERGED AQUATIC VEGETATION (SAV) AVOIDANCE AREAS.
2. CONTRACTOR MAY NOT OPERATE, TRANSIT, STAGE, OR STORE EQUIPMENT WITHIN THE OBSTRUCTION AVOIDANCE AREA.
3. CONTRACTOR MAY NOT OPERATE, TRANSIT, STAGE OR STORE EQUIPMENT WITHIN THE CULTURAL RESOURCE AVOIDANCE AREAS.
4. THE CULTURAL RESOURCE AVOIDANCE AREA AS SHOWN INCLUDE A 150' BUFFER FROM THE IDENTIFIED CULTURAL RESOURCE ANOMALY.
5. NO FILL SHALL BE PLACED WITHIN THE CULTURAL RESOURCE AVOIDANCE AREAS, CULTURAL RESOURCE AVOIDANCE AREAS TO HAVE PERIMETER EARTHEN CONTAINMENT DIKES.
LEGEND:
CULTURAL RESOURCE AVOIDANCE AREA
SUBMERGED AQUATIC VEGETATION (SAV) AVOIDANCE AREA
CULTURAL RESOURCE SURVEY AREA EXTENTS
OBSTRUCTION AVOIDANCE AREA
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE HARBOR CHANNEL TOE OF SLOPE
1,200-ACRE WETLAND CREATION SITE
SCALE: 1"=1000'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
ALABAMA STATE PORT AUTHORITY
UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT
ENVIRONMENTAL & CULTURAL AVOIDANCE PLAN
Sheet Reference No.
V-102
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING


NOTES:
1. BORINGS PERFORMED BY GEOTECHNICAL ENGINEERING TESTING, INC. JUNE - SEP 2021.
2. EXISTING ELEVATIONS FROM SURVEY DATA COLLECTED BY ROWE ENGINEERING AND SURVEYING, INC., AUGUST 2021.
LEGEND:
CULTURAL RESOURCE AVOIDANCE AREA
OBSTRUCTION AVOIDANCE AREA
BORING LOG ID
BORING DEPTH
BORING LOG ANNOTATION
DEPTH CONTOUR
CULTURAL RESOURCE SURVEY AREA EXTENT
MOBILE HARBOR CHANNEL TOE OF SLOPE
MOBILE HARBOR CHANNEL CENTERLINE
APM CONTAINER TERMINAL
TURNING BASIN
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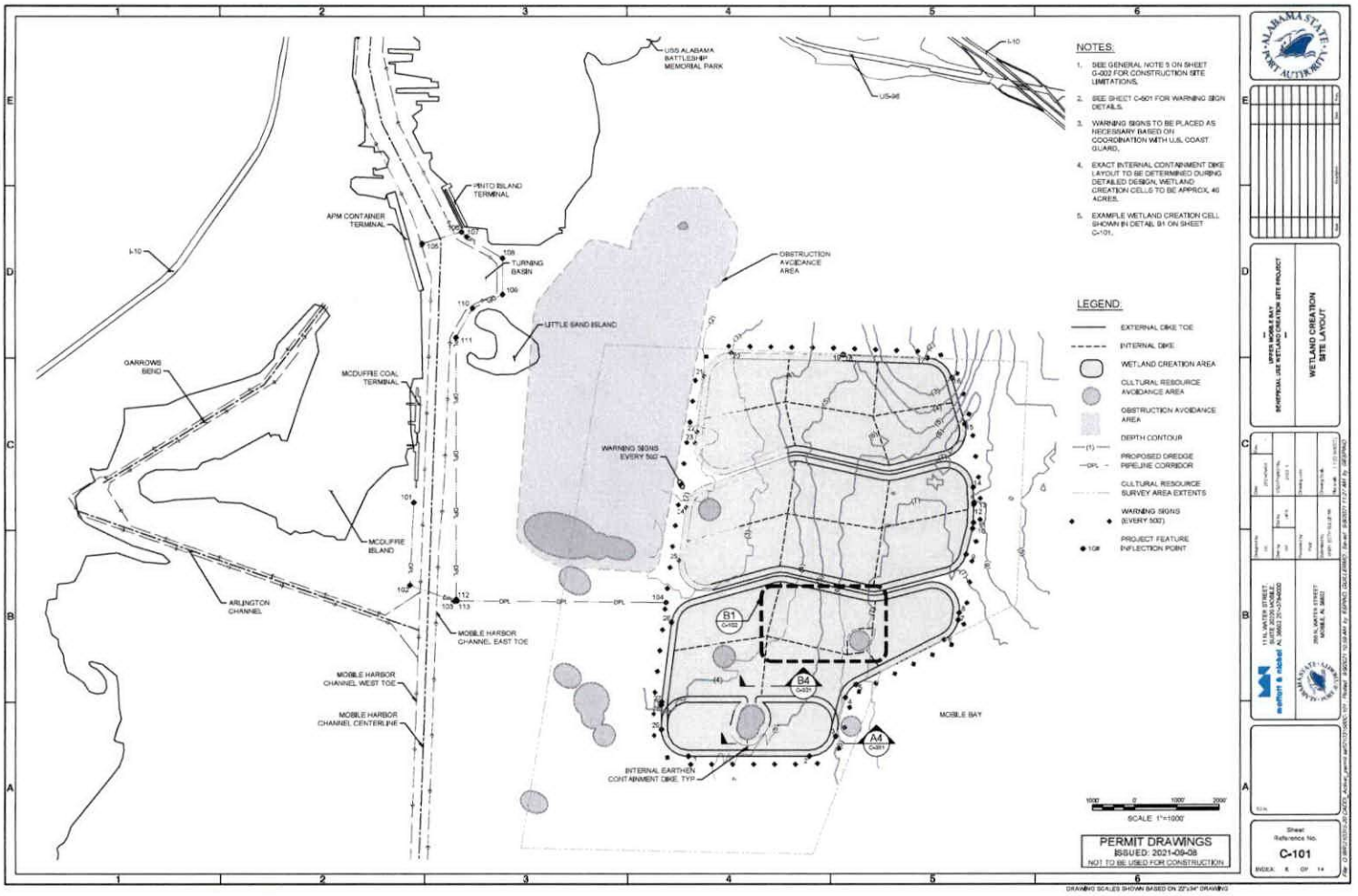
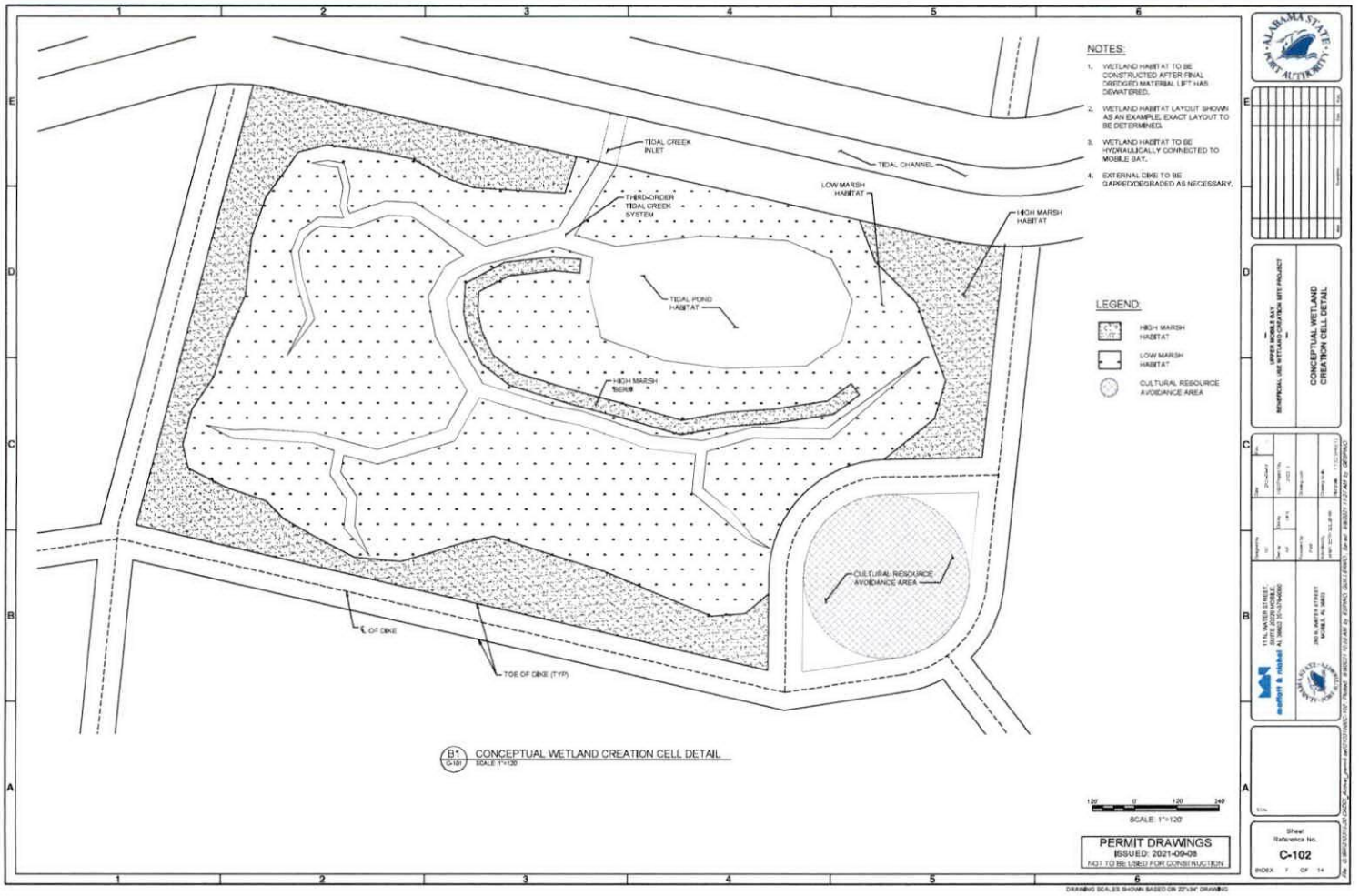
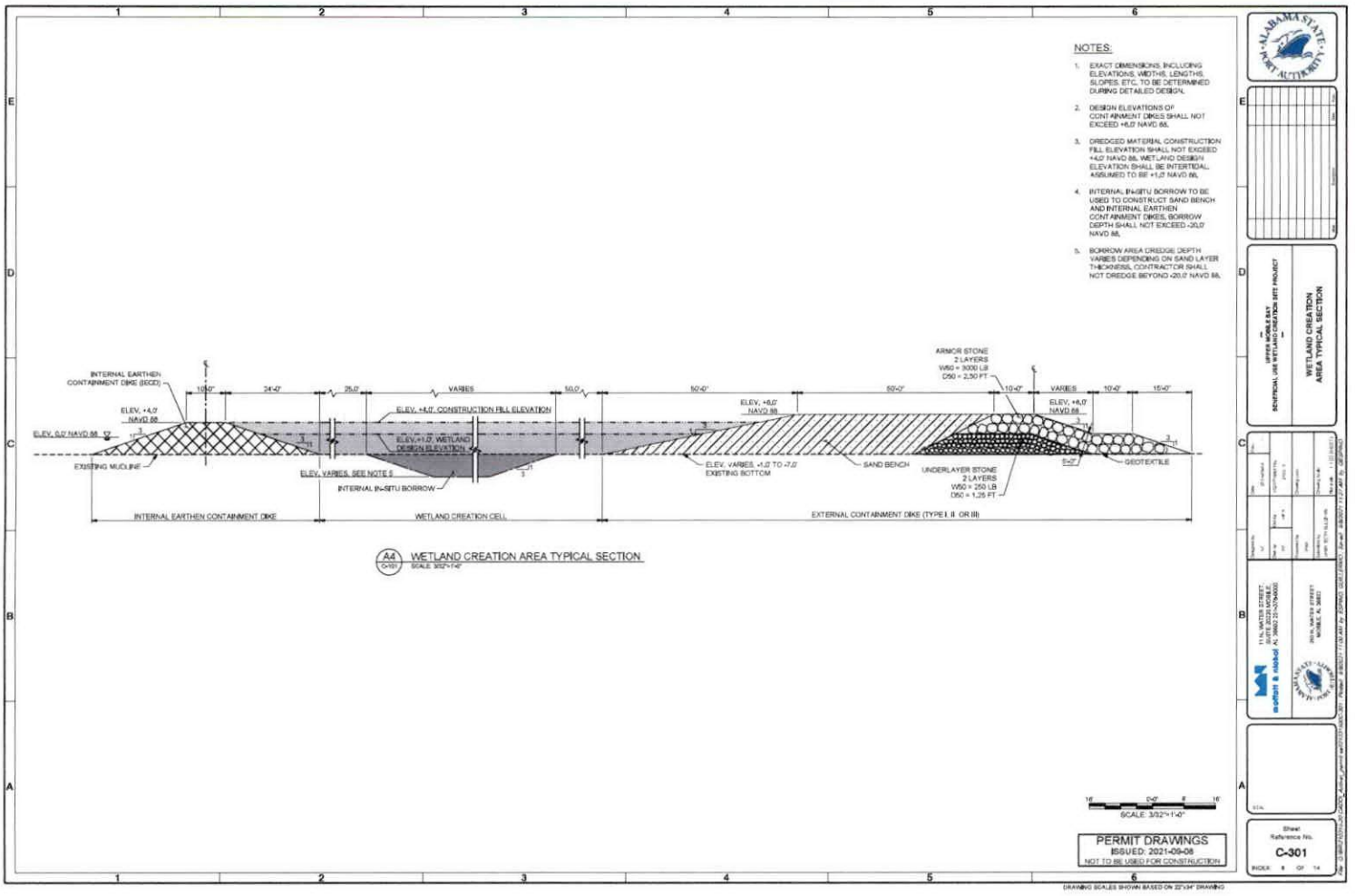
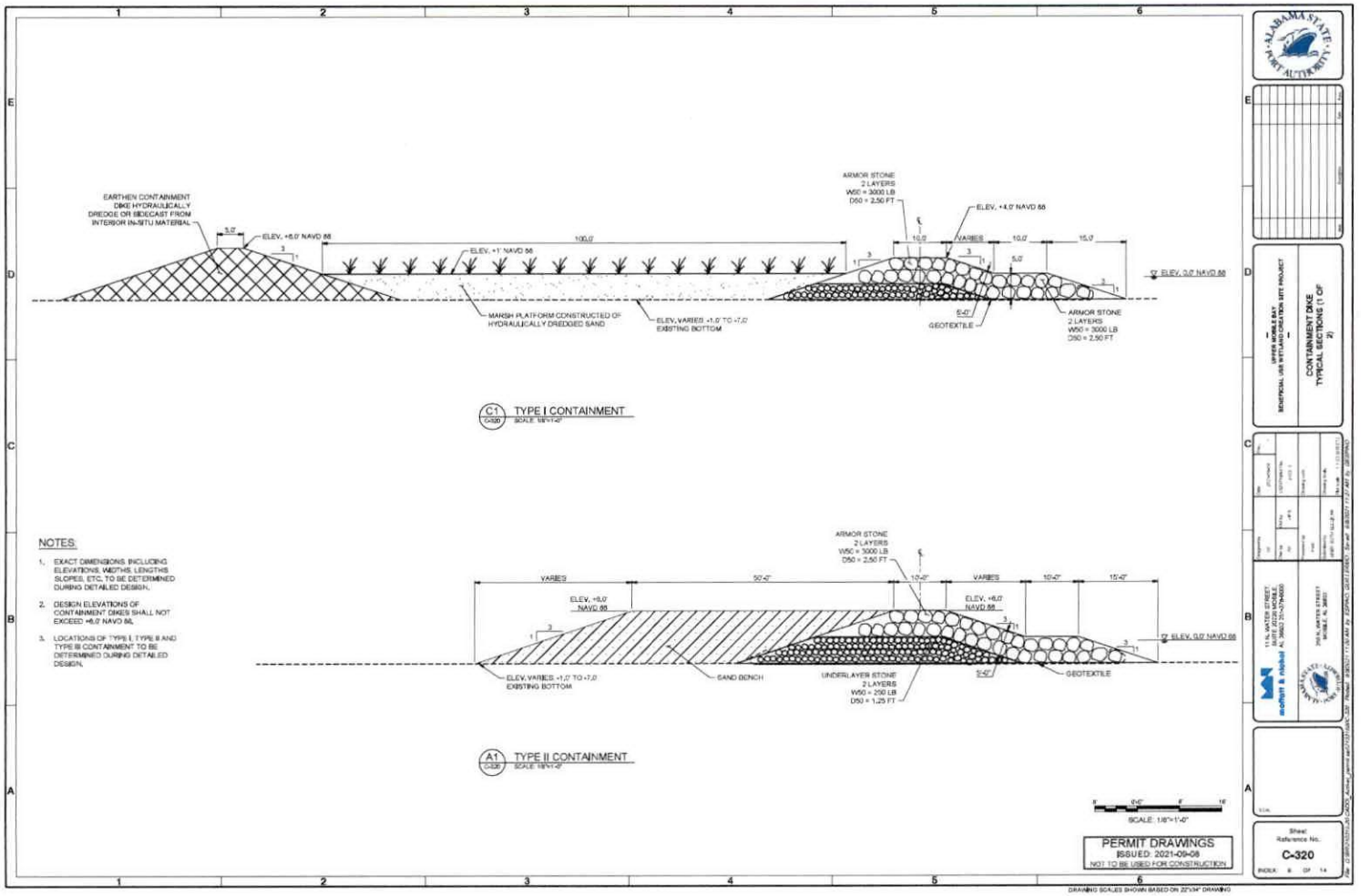
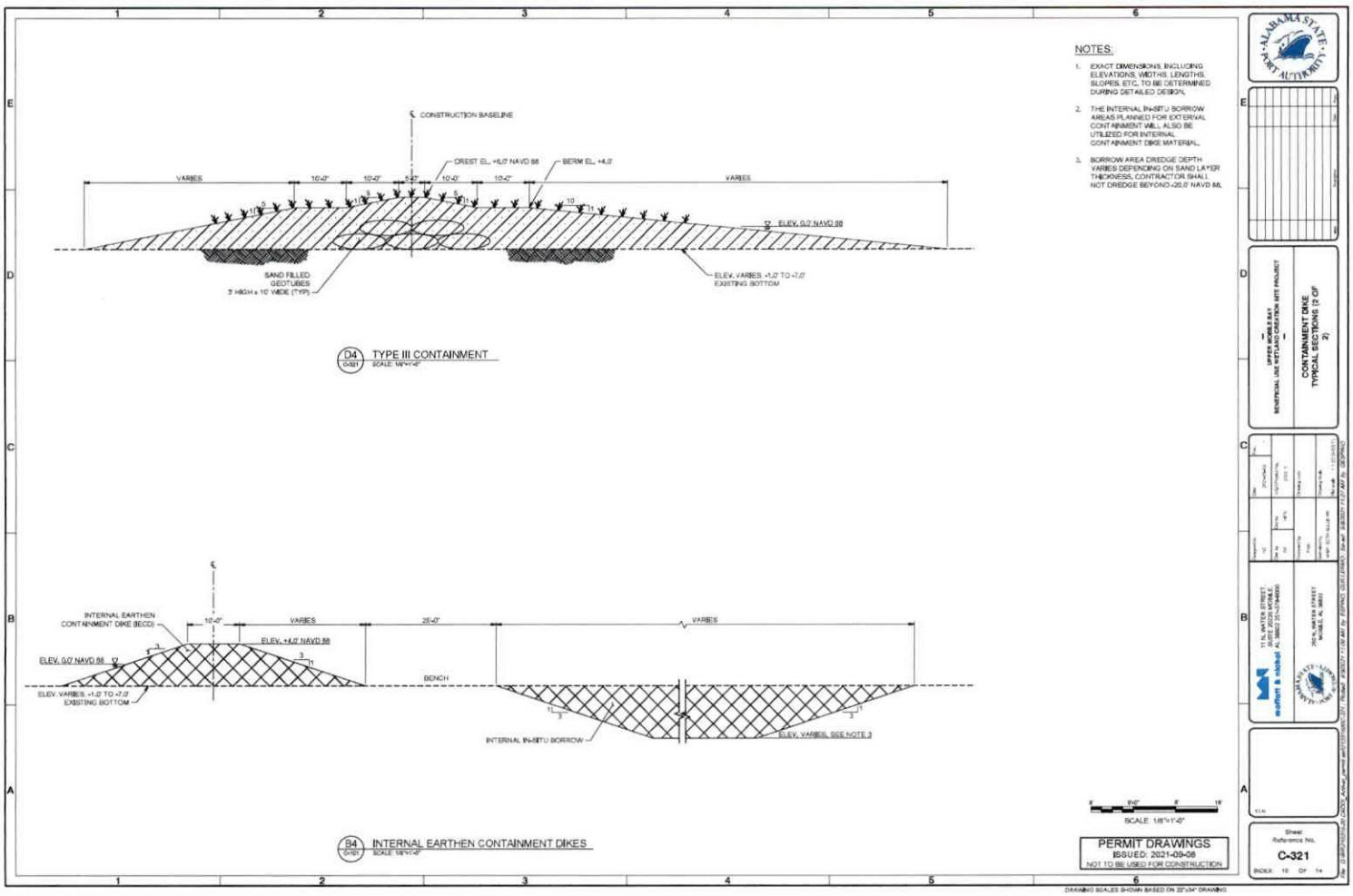
LITTLE SAND ISLAND
MCDUFFIE ISLAND
ARLINGTON CHANNEL
MOBILE HARBOR CHANNEL EAST TOE
MOBILE HARBOR CHANNEL WEST TOE
MOBILE HARBOR CHANNEL CENTERLINE
MOBILE BAY
SCALE: 1"=800'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT
GENERAL SOIL BORING LOGS PLAN
Sheet Reference No.
B-101
SHEET 5 OF 14

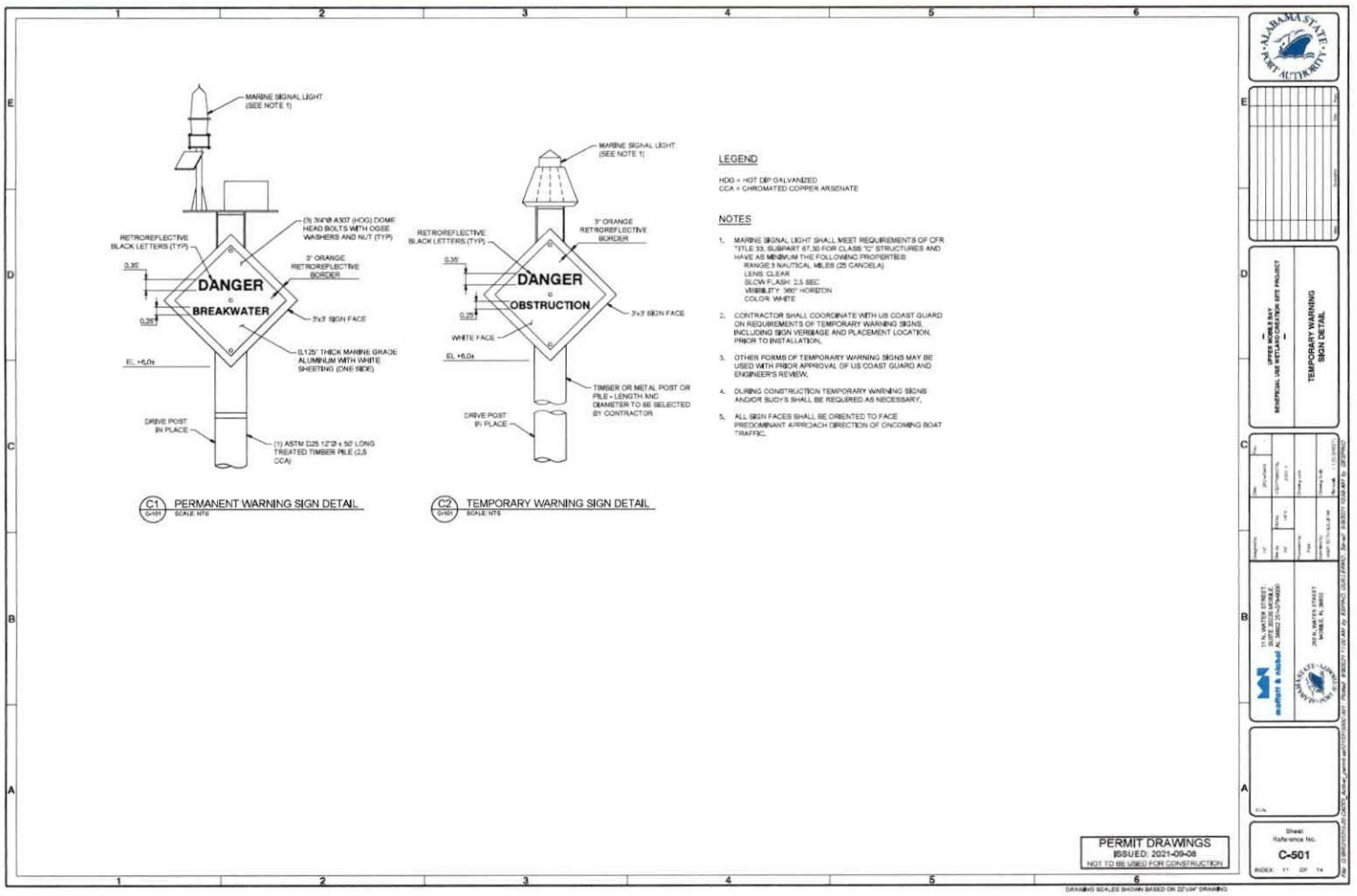

NOTES:
1. SEE GENERAL NOTE 5 ON SHEET G-002 FOR CONSTRUCTION SITE LIMITATIONS.
2. SEE SHEET C-501 FOR WARNING SIGN DETAILS.
3. WARNING SIGNS TO BE PLACED AS NECESSARY BASED ON COORDINATION WITH U.S. COAST GUARD.
4. EXACT INTERNAL CONTAINMENT DIKE LAYOUT TO BE DETERMINED DURING DETAILED DESIGN. WETLAND CREATION CELLS TO BE APPROX. 46 ACRES.
5. EXAMPLE WETLAND CREATION CELL SHOWN IN DETAIL B1 ON SHEET C-101.
LEGEND:
EXTERNAL DIKE TOE
INTERNAL DIKE
WETLAND CREATION AREA
CULTURAL RESOURCE AVOIDANCE AREA
OBSTRUCTION AVOIDANCE AREA
DEPTH CONTOUR
PROPOSED DREDGE PIPELINE CORRIDOR
CULTURAL RESOURCE SURVEY AREA EXTENTS
WARNING SIGNS (EVERY 500')
PROJECT FEATURE INFLECTION POINT
SCALE: 1"=1000'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
WETLAND CREATION SITE LAYOUT
C-101
USS ALABAMA BATTLESHIP MEMORIAL PARK
PINTO ISLAND TERMINAL
APM CONTAINER TERMINAL
TURNING BASIN
LITTLE SAND ISLAND
OBSTRUCTION AVOIDANCE AREA
GARROWS BEND
MCDUFFIE COAL TERMINAL
WARNING SIGNS EVERY 500'
MCDUFFIE ISLAND
ARLINGTON CHANNEL
MOBILE HARBOR CHANNEL, EAST TOE
MOBILE HARBOR CHANNEL, WEST TOE
MOBILE HARBOR CHANNEL CENTERLINE
INTERNAL EARTHEN CONTAINMENT DIKE, TYP.
MOBILE BAY
I-10
US-98
B1
B4
A4

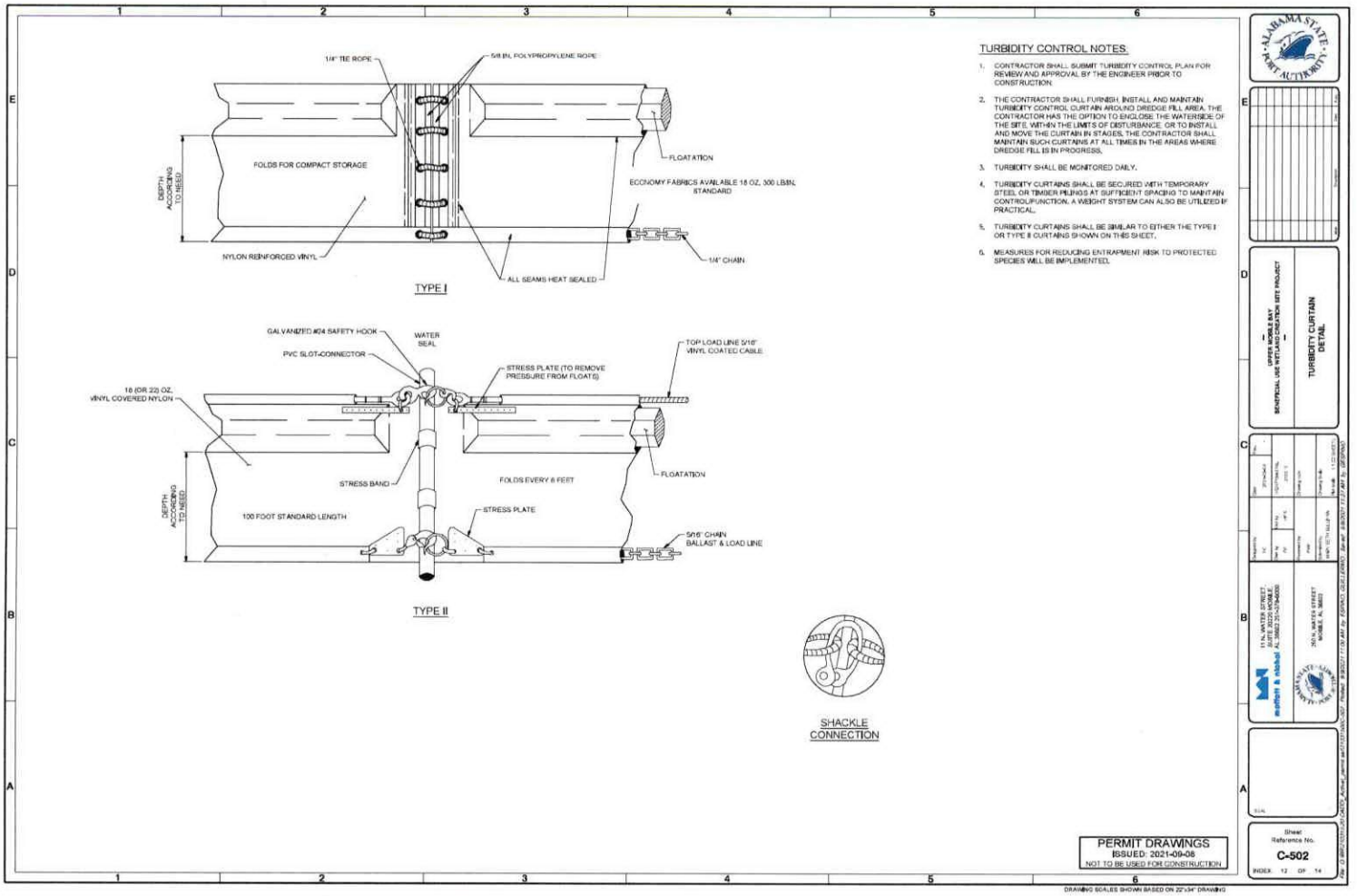

NOTES:
1. WETLAND HABITAT TO BE CONSTRUCTED AFTER FINAL DREDGED MATERIAL LIFT HAS DEWATERED.
2. WETLAND HABITAT LAYOUT SHOWN AS AN EXAMPLE, EXACT LAYOUT TO BE DETERMINED.
3. WETLAND HABITAT TO BE HYDRAULICALLY CONNECTED TO MOBILE BAY.
4. EXTERNAL DIKE TO BE GAPPED/DEGRADED AS NECESSARY.
TIDAL CREEK INLET
TIDAL CHANNEL
LOW MARSH HABITAT
THIRD-ORDER TIDAL CREEK SYSTEM
HIGH MARSH HABITAT
TIDAL POND HABITAT
HIGH MARSH BERM
CULTURAL RESOURCE AVOIDANCE AREA
℄ OF DIKE
TOE OF DIKE (TYP)
LEGEND:
HIGH MARSH HABITAT
LOW MARSH HABITAT
CULTURAL RESOURCE AVOIDANCE AREA
B1 C-101 CONCEPTUAL WETLAND CREATION CELL DETAIL
SCALE: 1"=120'
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
CONCEPTUAL WETLAND CREATION CELL DETAIL
C-102

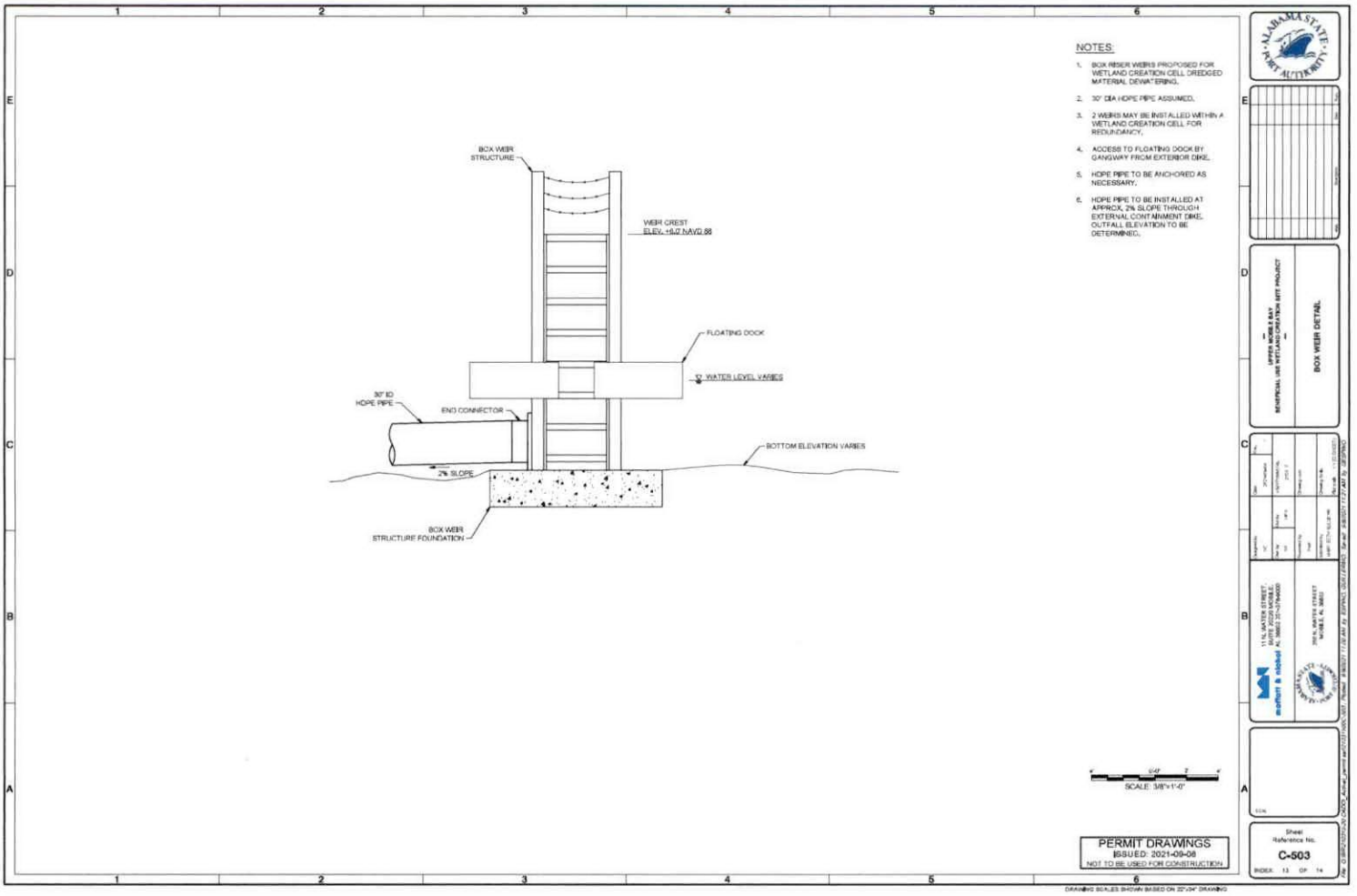

NOTES:
1. EXACT DIMENSIONS, INCLUDING ELEVATIONS, WIDTHS, LENGTHS, SLOPES, ETC. TO BE DETERMINED DURING DETAILED DESIGN.
2. DESIGN ELEVATIONS OF CONTAINMENT DIKES SHALL NOT EXCEED +6.0' NAVD 88.
3. DREDGED MATERIAL CONSTRUCTION FILL ELEVATION SHALL NOT EXCEED +4.0' NAVD 88. WETLAND DESIGN ELEVATION SHALL BE INTERTIDAL, ASSUMED TO BE +1.0' NAVD 88.
4. INTERNAL IN-SITU BORROW TO BE USED TO CONSTRUCT SAND BENCH AND INTERNAL EARTHEN CONTAINMENT DIKES. BORROW DEPTH SHALL NOT EXCEED -20.0' NAVD 88.
5. BORROW AREA DREDGE DEPTH VARIES DEPENDING ON SAND LAYER THICKNESS. CONTRACTOR SHALL NOT DREDGE BEYOND -20.0' NAVD 88.
INTERNAL EARTHEN CONTAINMENT DIKE (EECD)
ELEV. +4.0' NAVD 88
ELEV. 0.0' NAVD 88
EXISTING MUDLINE
10'-0"
24'-0"
25.0'
VARIES
10.0'
50'-0"
ELEV. +4.0' CONSTRUCTION FILL ELEVATION
ELEV. +1.0' WETLAND DESIGN ELEVATION
ELEV. VARIES, SEE NOTE 5
INTERNAL IN-SITU BORROW
ELEV. +6.0' NAVD 88
ELEV. VARIES, +1.0' TO -7.0' EXISTING BOTTOM
SAND BENCH
ARMOR STONE
2 LAYERS
W50 = 3000 LB
D50 = 2.30 FT
UNDERLAYER STONE
2 LAYERS
W50 = 250 LB
D50 = 1.25 FT
ELEV. +4.0' NAVD 88
GEOTEXTILE
INTERNAL EARTHEN CONTAINMENT DIKE
WETLAND CREATION CELL
EXTERNAL CONTAINMENT DIKE (TYPE I, II OR III)
A4 C-301 WETLAND CREATION AREA TYPICAL SECTION
SCALE: 3/32"=1'-0"
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
WETLAND CREATION AREA TYPICAL SECTION
C-301


EARTHEN CONTAINMENT DIKE HYDRAULICALLY DREDGE OR SIDECAST FROM INTERIOR IN-SITU MATERIAL
ELEV. +6.0' NAVD 88
ELEV. +1' NAVD 88
100.0'
MARSH PLATFORM CONSTRUCTED OF HYDRAULICALLY DREDGED SAND
ELEV. VARIES -1.0' TO +7.0 EXISTING BOTTOM
ARMOR STONE 2 LAYERS W50 = 3000 LB D50 = 2.50 FT
ELEV. +4.0' NAVD 88
VARIES
GEOTEXTILE
0' ELEV. 0.0' NAVD 88
C1 TYPE I CONTAINMENT
NOTES:
1. EXACT DIMENSIONS, INCLUDING ELEVATIONS, WIDTHS, LENGTHS SLOPES, ETC. TO BE DETERMINED DURING DETAILED DESIGN.
2. DESIGN ELEVATIONS OF CONTAINMENT DIKES SHALL NOT EXCEED +6.0' NAVD 88.
3. LOCATIONS OF TYPE I, TYPE II AND TYPE III CONTAINMENT TO BE DETERMINED DURING DETAILED DESIGN.
ELEV. +6.0' NAVD 88
50'-0"
SAND BENCH
UNDERLAYER STONE 2 LAYERS W50 = 250 LB D50 = 1.25 FT
A1 TYPE II CONTAINMENT
SCALE: 1/8"=1'-0"
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
CONTAINMENT DIKE TYPICAL SECTIONS (1 OF 2)
C-320


NOTES:
1. EXACT DIMENSIONS, INCLUDING ELEVATIONS, WIDTHS, LENGTHS, SLOPES, ETC, TO BE DETERMINED DURING DETAILED DESIGN.
2. THE INTERNAL IN-SITU BORROW AREAS PLANNED FOR EXTERNAL CONTAINMENT WILL ALSO BE UTILIZED FOR INTERNAL CONTAINMENT DIKE MATERIAL.
3. BORROW AREA DREDGE DEPTH VARIES DEPENDING ON SAND LAYER THICKNESS, CONTRACTOR SHALL NOT DREDGE BEYOND -20.0' NAVD 88.
CONSTRUCTION BASELINE
CREST EL. +5.0' NAVD 88
BERM EL. +4.0'
VARIES
10'-0"
5'-0"
ELEV. 0.0' NAVD 88
SAND FILLED GEOTUBES 3' HIGH x 10' WIDE (TYP)
ELEV. VARIES, +1.0' TO -7.0' EXISTING BOTTOM
D4 TYPE III CONTAINMENT
INTERNAL EARTHEN CONTAINMENT DIKE (BCD)
ELEV. +4.0' NAVD 88
25'-0"
BENCH
INTERNAL IN-SITU BORROW
ELEV. VARIES, SEE NOTE 3
B4 INTERNAL EARTHEN CONTAINMENT DIKES
SCALE: 1/8"=1'-0"
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
ALABAMA STATE PORT AUTHORITY
UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT
CONTAINMENT DIKE
TYPICAL SECTIONS (2 OF 2)
C-321


MARINE SIGNAL LIGHT (SEE NOTE 1)
RETROREFLECTIVE BLACK LETTERS (TYP)
(3) 3/4"Ø A307 (HDG) DOME HEAD BOLTS WITH OGEE WASHERS AND NUT (TYP)
3" ORANGE RETROREFLECTIVE BORDER
0.35'
0.25'
DANGER
BREAKWATER
3'x3' SIGN FACE
0.125" THICK MARINE GRADE ALUMINUM WITH WHITE SHEETING (ONE SIDE)
EL. +6.0±
DRIVE POST IN PLACE
(1) ASTM D25 12"Ø x 50' LONG TREATED TIMBER PILE (2.5 CCA)
C1 G-501 PERMANENT WARNING SIGN DETAIL
SCALE: NTS
MARINE SIGNAL LIGHT (SEE NOTE 1)
RETROREFLECTIVE BLACK LETTERS (TYP)
3" ORANGE RETROREFLECTIVE BORDER
0.35'
0.25'
DANGER
OBSTRUCTION
3'x3' SIGN FACE
WHITE FACE
EL. +6.0±
TIMBER OR METAL POST OR PILE - LENGTH AND DIAMETER TO BE SELECTED BY CONTRACTOR
DRIVE POST IN PLACE
C2 G-501 TEMPORARY WARNING SIGN DETAIL
SCALE: NTS
LEGEND
HDG = HOT DIP GALVANIZED
CCA = CHROMATED COPPER ARSENATE
NOTES
1. MARINE SIGNAL LIGHT SHALL MEET REQUIREMENTS OF CFR TITLE 33, SUBPART 67.30 FOR CLASS "C" STRUCTURES AND HAVE AS MINIMUM THE FOLLOWING PROPERTIES:
RANGE: 5 NAUTICAL MILES (25 CANDELA)
LENS: CLEAR
SLOW FLASH: 2.5 SEC
VISIBILITY: 360° HORIZON
COLOR: WHITE
2. CONTRACTOR SHALL COORDINATE WITH US COAST GUARD ON REQUIREMENTS OF TEMPORARY WARNING SIGNS, INCLUDING SIGN VERBIAGE AND PLACEMENT LOCATION, PRIOR TO INSTALLATION.
3. OTHER FORMS OF TEMPORARY WARNING SIGNS MAY BE USED WITH PRIOR APPROVAL OF US COAST GUARD AND ENGINEER'S REVIEW.
4. DURING CONSTRUCTION TEMPORARY WARNING SIGNS AND/OR BUOYS SHALL BE REQUIRED AS NECESSARY.
5. ALL SIGN FACES SHALL BE ORIENTED TO FACE PREDOMINANT APPROACH DIRECTION OF ONCOMING BOAT TRAFFIC.
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
TEMPORARY WARNING SIGN DETAIL
Sheet Reference No.
C-501


1/4" TIE ROPE
5/8 IN. POLYPROPYLENE ROPE
FOLDS FOR COMPACT STORAGE
DEPTH ACCORDING TO NEED
FLOATATION
ECONOMY FABRICS AVAILABLE 18 OZ. 300 LB/IN. STANDARD
NYLON REINFORCED VINYL
1/4" CHAIN
ALL SEAMS HEAT SEALED
TYPE I
GALVANIZED #24 SAFETY HOOK
WATER SEAL
PVC SLOT-CONNECTOR
STRESS PLATE (TO REMOVE PRESSURE FROM FLOATS)
TOP LOAD LINE 5/16" VINYL COATED CABLE
18 (OR 22) OZ. VINYL COVERED NYLON
STRESS BAND
FOLDS EVERY 8 FEET
FLOATATION
100 FOOT STANDARD LENGTH
STRESS PLATE
5/16" CHAIN BALLAST & LOAD LINE
TYPE II
SHACKLE CONNECTION
TURBIDITY CONTROL NOTES
1. CONTRACTOR SHALL SUBMIT TURBIDITY CONTROL PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN TURBIDITY CONTROL CURTAIN AROUND DREDGE FILL AREA. THE CONTRACTOR HAS THE OPTION TO ENCLOSE THE WATERSIDE OF THE SITE, WITHIN THE LIMITS OF DISTURBANCE, OR TO INSTALL AND MOVE THE CURTAIN IN STAGES. THE CONTRACTOR SHALL MAINTAIN SUCH CURTAINS AT ALL TIMES IN THE AREAS WHERE DREDGE FILL IS IN PROGRESS.
3. TURBIDITY SHALL BE MONITORED DAILY.
4. TURBIDITY CURTAINS SHALL BE SECURED WITH TEMPORARY STEEL OR TIMBER PILINGS AT SUFFICIENT SPACING TO MAINTAIN CONTROL/FUNCTION. A WEIGHT SYSTEM CAN ALSO BE UTILIZED IF PRACTICAL.
5. TURBIDITY CURTAINS SHALL BE SIMILAR TO EITHER THE TYPE I OR TYPE II CURTAINS SHOWN ON THIS SHEET.
6. MEASURES FOR REDUCING ENTRAPMENT RISK TO PROTECTED SPECIES WILL BE IMPLEMENTED.
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING
TURBIDITY CURTAIN DETAIL
C-502


NOTES:
1. BOX RISER WEIRS PROPOSED FOR WETLAND CREATION CELL DREDGED MATERIAL DEWATERING.
2. 30" DIA HDPE PIPE ASSUMED.
3. 2 WEIRS MAY BE INSTALLED WITHIN A WETLAND CREATION CELL FOR REDUNDANCY.
4. ACCESS TO FLOATING DOCK BY GANGWAY FROM EXTERIOR DIKE.
5. HDPE PIPE TO BE ANCHORED AS NECESSARY.
6. HDPE PIPE TO BE INSTALLED AT APPROX. 2% SLOPE THROUGH EXTERNAL CONTAINMENT DIKE. OUTFALL ELEVATION TO BE DETERMINED.
BOX WEIR STRUCTURE
WEIR CREST ELEV. +9.0' NAVD 88
FLOATING DOCK
WATER LEVEL VARIES
30" ID HDPE PIPE
END CONNECTOR
BOTTOM ELEVATION VARIES
2% SLOPE
BOX WEIR STRUCTURE FOUNDATION
SCALE: 3/8"=1'-0"
PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION
BOX WEIR DETAIL
C-503

BORING POINT TABLE

POINT #	DEPTH	LATITUDE	LONGITUDE
B-1	50	N30° 38' 04.12"	W88° 05' 44.83"
B-2	20	N30° 38' 04.21"	W88° 05' 26.16"
B-3	50	N30° 38' 04.30"	W88° 05' 33.47"
B-4	20	N30° 38' 04.24"	W88° 05' 27.74"
B-5	50	N30° 38' 04.33"	W88° 05' 22.02"
B-6	20	N30° 38' 04.32"	W88° 05' 16.30"
B-7	50	N30° 38' 04.42"	W88° 05' 10.57"
B-8	20	N30° 38' 06.26"	W88° 05' 05.80"
B-9	50	N30° 38' 10.72"	W88° 05' 03.43"
B-10	20	N30° 38' 15.08"	W88° 05' 03.34"
B-11	50	N30° 38' 15.22"	W88° 05' 06.00"
B-12	20	N30° 38' 15.22"	W88° 05' 13.72"
B-13	50	N30° 38' 16.25"	W88° 05' 16.45"
B-14	20	N30° 38' 16.17"	W88° 05' 25.17"
B-15	80	N30° 38' 16.22"	W88° 05' 30.88"
B-16	20	N30° 38' 16.30"	W88° 05' 36.52"
B-17	50	N30° 38' 16.21"	W88° 05' 43.34"
B-18	50	N30° 38' 14.88"	W88° 05' 50.22"
B-20	20	N30° 38' 15.80"	W88° 05' 50.44"
B-21	50	N30° 38' 05.77"	W88° 05' 48.10"
B-22	50	N30° 38' 06.28"	W88° 05' 42.21"
B-23	80	N30° 38' 13.18"	W88° 05' 34.74"
B-24	50	N30° 38' 10.94"	W88° 05' 16.35"
B-25	50	N30° 38' 12.05"	W88° 05' 15.72"
B-26	20	N30° 38' 28.45"	W88° 05' 46.45"

BORING POINT TABLE

POINT #	DEPTH	LATITUDE	LONGITUDE
B-27	50	N30° 38' 30.83"	W88° 05' 23.52"
B-28	20	N30° 38' 44.24"	W88° 05' 18.78"
B-29	50	N30° 38' 26.73"	W87° 59' 52.86"
B-30	50	N30° 38' 43.21"	W87° 59' 30.38"
B-31	20	N30° 38' 30.91"	W87° 59' 33.67"
B-32	70	N30° 38' 22.73"	W87° 59' 51.78"
B-33	20	N30° 38' 34.91"	W88° 00' 34.21"
B-34	60	N30° 38' 21.84"	W88° 00' 36.27"
B-35	50	N30° 38' 34.38"	W88° 00' 07.00"
B-36	50	N30° 38' 23.82"	W88° 00' 08.70"
B-37	20	N30° 38' 35.02"	W87° 59' 42.28"
B-38	50	N30° 38' 39.63"	W88° 00' 45.03"
B-39	20	N30° 38' 47.46"	W88° 00' 41.88"
B-40	20	N30° 38' 52.13"	W88° 00' 41.83"
B-41	20	N30° 38' 58.14"	W88° 00' 44.46"
B-42	50	N30° 38' 08.06"	W88° 00' 27.78"
B-44	50	N30° 38' 05.81"	W87° 59' 26.88"
B-45	20	N30° 38' 03.82"	W88° 00' 06.98"
B-46	50	N30° 38' 03.83"	W87° 59' 48.82"
B-47	20	N30° 38' 48.28"	W87° 59' 28.90"
B-48	50	N30° 38' 44.28"	W87° 59' 42.04"
B-49	20	N30° 38' 44.11"	W88° 00' 05.84"
B-50	20	N30° 38' 08.53"	W88° 00' 41.83"
B-51	70	N30° 38' 57.79"	W88° 00' 24.88"
B-52	20	N30° 38' 52.77"	W87° 59' 37.14"

BORING POINT TABLE

POINT #	DEPTH	LATITUDE	LONGITUDE
B-53	20	N30° 38' 43.88"	W88° 00' 31.88"
B-54	20	N30° 38' 06.04"	W88° 00' 14.15"
B-55	50	N30° 38' 07.74"	W88° 00' 06.41"
B-56	20	N30° 38' 07.79"	W87° 59' 48.68"
B-57	50	N30° 38' 34.81"	W87° 59' 35.50"
B-58	20	N30° 38' 26.10"	W87° 59' 31.28"
B-59	50	N30° 38' 13.80"	W87° 59' 28.88"
B-60	30	N30° 38' 15.53"	W88° 00' 41.37"
B-61	20	N30° 38' 31.18"	W88° 00' 27.99"
B-62	50	N30° 38' 30.48"	W88° 00' 04.02"
B-63	20	N30° 38' 23.17"	W88° 00' 17.06"
B-64	70	N30° 38' 30.06"	W87° 59' 43.51"
B-65	20	N30° 38' 21.58"	W88° 00' 05.15"
B-66	50	N30° 38' 22.78"	W88° 00' 13.12"
B-67	20	N30° 38' 15.33"	W88° 00' 14.82"
B-68	50	N30° 38' 11.58"	W87° 59' 53.81"
B-69	30	N30° 38' 18.87"	W88° 00' 38.43"
B-70	20	N30° 38' 20.92"	W88° 00' 18.47"
B-71	20	N30° 38' 18.38"	W87° 59' 45.84"
B-72	50	N30° 38' 25.38"	W88° 00' 40.07"
B-73	50	N30° 38' 36.17"	W88° 00' 37.07"
B-74	50	N30° 38' 36.88"	W88° 00' 18.53"
B-75	20	N30° 38' 38.41"	W87° 59' 52.33"

WCA TABLE

POINT #	LATITUDE	LONGITUDE
1	N30° 38' 02.16"	W88° 00' 43.71"
2	N30° 38' 02.28"	W88° 00' 10.63"
3	N30° 38' 07.06"	W88° 00' 03.52"
4	N30° 38' 16.22"	W88° 00' 00.01"
5	N30° 38' 18.33"	W87° 59' 58.04"
6	N30° 38' 28.58"	W87° 59' 34.11"
7	N30° 38' 34.70"	W87° 59' 30.30"
8	N30° 38' 38.38"	W87° 59' 30.03"
9	N30° 38' 50.21"	W87° 59' 28.20"
10	N30° 38' 56.24"	W87° 59' 28.45"
11	N30° 38' 57.64"	W87° 59' 26.23"
12	N30° 39' 01.87"	W87° 59' 26.11"
13	N30° 39' 02.41"	W87° 59' 26.12"
14	N30° 39' 06.22"	W87° 59' 26.32"
15	N30° 39' 21.04"	W87° 59' 28.69"

WCA TABLE

POINT #	LATITUDE	LONGITUDE
16	N30° 38' 31.88"	W87° 59' 52.28"
17	N30° 38' 38.50"	W87° 59' 38.94"
18	N30° 38' 37.10"	W88° 00' 01.87"
19	N30° 38' 37.18"	W88° 00' 02.01"
20	N30° 38' 37.57"	W88° 00' 32.56"
21	N30° 39' 31.98"	W88° 00' 39.88"
22	N30° 39' 16.88"	W88° 00' 41.78"
23	N30° 39' 16.37"	W88° 00' 42.38"
24	N30° 39' 00.98"	W88° 00' 44.88"
25	N30° 38' 48.46"	W88° 00' 46.56"
26	N30° 38' 33.63"	W88° 00' 48.46"
27	N30° 38' 15.08"	W88° 00' 51.08"
28	N30° 38' 14.28"	W88° 00' 51.13"
29	N30° 38' 05.52"	W88° 00' 51.13"

DREDGE PIPELINE POINT TABLE

POINT #	LATITUDE	LONGITUDE
101	N30° 38' 01.87"	W88° 01' 58.21"
102	N30° 38' 42.38"	W88° 02' 35.20"
103	N30° 38' 38.71"	W88° 01' 47.99"
104	N30° 38' 34.56"	W88° 00' 49.88"
105	N30° 40' 02.87"	W88° 01' 57.32"
106	N30° 40' 05.84"	W88° 01' 46.48"
107	N30° 40' 04.52"	W88° 01' 45.11"
108	N30° 38' 59.52"	W88° 01' 35.21"
109	N30° 38' 50.08"	W88° 01' 35.15"
110	N30° 38' 47.87"	W88° 01' 43.37"
111	N30° 39' 40.61"	W88° 01' 47.88"
112	N30° 38' 38.10"	W88° 01' 47.54"
113	N30° 38' 38.71"	W88° 01' 47.31"

PERMIT DRAWINGS
ISSUED: 2021-09-08
NOT TO BE USED FOR CONSTRUCTION

ALABAMA STATE PORT AUTHORITY

UPPER MOBILE BAY
BENEFICIAL USE WETLAND CREATION SITE PROJECT

COORDINATE TABLES

Sheet Reference No.
C-601
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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

APPENDIX C: USACE DISPOSAL AREA AGREEMENT

AGREEMENT BETWEEN
THE UNITED STATES ARMY ENGINEER DISTRICT, MOBILE
AND
JOHN DOE
FOR REMOVAL OF DREDGE DISPOSAL MATERIAL

THIS AGREEMENT, as set forth below, between the **United States Army Engineer District, Mobile**, hereinafter the "**Mobile District**," whose address is P.O. Box 2288, Mobile, Alabama 36628, acting on behalf of the **United States of America**, and **John Doe,** whose address is_____, is premised upon the following conditions.

WHEREAS, the **Mobile District**, in operating and maintaining the navigable waterways of the United States for which the **Mobile District** has responsibility, requires periodic removal of dredge disposal material (hereinafter "material") from its diked dredge disposal areas located adjacent to said navigable waterways to ensure adequate material capacity for continued use of these areas; and

WHEREAS, **John Doe** is hereby willing to accept a nonexclusive right to remove and use material from the **Mobile District's** dredge material disposal area at Disposal Area Site "Disposal Area NAME", located on the Channel NAME in the County of __, State of Alabama.

NOW THEREFORE, in consideration of the foregoing premises and other good and valuable consideration, the receipt of which is hereby acknowledged, the **Mobile District** and **John Doe** do hereby agree as follows:

1. The purpose of this agreement is to evidence the respective commitments of the **Mobile District** and **John Doe** to the premises set forth above, to-wit:

(a). The **Mobile District** agrees to provide material from its "Disposal Area NAME" disposal area to **John Doe**. It is expressly understood by **John Doe** that before removal and transport of material from the "Disposal Area NAME" disposal area**,** all necessary environmental approval and regulatory clearances, as may be necessary, shall be obtained from the **Mobile District** or other state or Federal agencies for the removal, transport, or storage of the material.

(b). **John Doe** agrees to remove the material, without reservation as to the type or character of the material being removed from the "Disposal Area NAME" disposal area. It is estimated that XXX CY of total material is available from this disposal area, but not guaranteed, for removal from the "Disposal Area NAME" disposal area. The removal of material by **John Doe** will begin during calendar year 2026 and will extend for a five-year period from the execution date of this agreement, unless otherwise extended in writing by the parties hereto. The **Mobile District** retains the absolute right to cancel this agreement before the above-stated period expires if **John Doe** has not begun to expeditiously prosecute removal of material from the "Disposal Area NAME" disposal area within six months of the execution date of this Agreement, or

if **John Doe** ceases to expeditiously prosecute removal of material from the "Disposal Area NAME" disposal area at any time during the above-stated period, or if the **Mobile District** determines it is in its best interest to terminate said agreement for any reason. The execution date of this Agreement is the date the District Engineer for the **Mobile District** signs the Agreement. Failure to notify **John Doe** or to exercise such right by the government at the end of said six-month period shall not constitute a waiver of the Government's right to cancel at a later date.

(c). **John Doe** affirms that he has the financial capability, equipment, and expertise to remove the material to meet the terms of the schedule of removal as set forth above.

2. **John Doe** will be responsible, at his sole cost and expense, for the loading of all material at the "Disposal Area NAME" disposal area. Further, if Government provided access is not available or cannot be made available to "Disposal Area NAME" disposal area, **John Doe** will be responsible for obtaining its own access.

3. **John Doe** understands that his work and/or equipment in the "Disposal Area NAME" disposal area may be subjected to a Mine Safety and Health Administration (hereinafter "MSHA") safety inspection. In the event MSHA performs a safety inspection of the "Disposal Area NAME" disposal area, **John Doe** will be responsible, at his sole cost and expense, to comply with MSHA regulations, and for all fines or penalties that may be imposed as a result thereof.

4. **John Doe** shall notify the **Mobile District** in writing thirty (30) days prior to initiation of his removal of the material from the "Disposal Area NAME" disposal area of the beginning date of removal and loading in order that the **Mobile District** may coordinate the material removal with **John Doe**.

5. The **Mobile District** for the **United States of America**, under the terms of this agreement, shall be not held responsible for damages to property or injuries to persons which may arise from or be incident to the exercise of the conditions agreed to herein, or for damages to the property of **John Doe** or injuries to the person of its officers, agents, or employees or others who may be on the "Disposal Area NAME" disposal area at their invitation or the invitation of any one of them, and **John Doe**, shall hold harmless and indemnify the **Mobile District** from any and all claims, but not including damages due to the fault or negligence of the **Mobile District** or its contractors. Further, these same terms and conditions set forth herein shall apply to the use of any Government-provided access by **John Doe**. **John Doe** also agrees to restore any damage to "Disposal Area NAME" disposal area, including, but not limited to, any confinement diking, fencing, access roads/gates, or other property.

6. The **Mobile District** assumes no responsibility of the suitability for use or for the character of the material to be removed from the "Disposal Area NAME" disposal area. The conditions set forth in paragraph 5 above shall also apply to this paragraph.

7. The **Mobile District** reserves the right of principal use of the "Disposal Area NAME" disposal area, and **John Doe** agrees that should "Disposal Area NAME"

disposal area be required for disposal of material by virtue of the **Mobile District's** dredging program, it will defer to any **Mobile District** management decision on material removal and capacity of the "Disposal Area NAME" disposal area while removing material under the terms of this Agreement.

8. **John Doe** agrees that the nonexclusive right to remove material from the "Disposal Area NAME" disposal area is non-transferable and non-assignable to any other party unless approval is obtained by the **Mobile District**.

IN WITNESS WHEREOF, the parties hereto, the **Mobile District** and **John Doe**, by the authority of the undersigned signatories, have set their hands and seals this _____ day of _____, 2026.

UNITED STATES ARMY ENGINEER DISTRICT, MOBILE

_____

Kelcey R. Shaw, P.E.
Colonel, U.S. Army
District Commander

Witness:_____

John Doe

_____

John Doe

Witness: _____

STATE OF ALABAMA
COUNTY OF WASHINGTON

I, _____, a notary public, in and for said County in said State, hereby certify XXXXX, whose name as Sole Owner, is signed to the foregoing Agreement and who is known to me, acknowledged before me on this day that, being informed of the contents of the Agreement, he, in his capacity as Owner, and with full authority, executed the same voluntarily for and as the act of said limited corporation.

Given under my hand this the _____ day of _____, 20__.

_____
Notary Public

My commission expires_____