

**Shadowlawn, LLC Living Shoreline
Project Narrative for CMPA and Nationwide Permit
54 Application**

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Applicant Information

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The proposed project is located on Borrel Creek, a tidal tributary in St. Marys, Camden County, Georgia. The existing project location consists of a residential lot with a private recreational dock and an upland residence. The shoreline surrounding the property consists primarily of tidal marsh and intertidal creek bank habitats adjacent to existing upland lawn and structures.

The southern shoreline has undergone extensive erosion over the past several decades and continues to pose an erosion threat due to the inability of marsh grass to naturally stabilize the shoreline where the creek bends from a northward direction to a more southward direction. The project will be minimal in scope to only impact the erosional area while leaving the larger marsh habitat to the west in its natural state.

Existing Conditions

The subject property, owned by Shadowlawn, LLC, is located at 101 David Porter Court, St. Marys, Georgia 31558, and fronts the shoreline of Borrell Creek, a tidal waterway. The existing shoreline within the project area consists of an approximately 4.8-foot bluff. There is no bulkline or other form of shoreline armoring present, and no marsh vegetation occurs along the bluff face. At the bottom of the bluff is sparse marsh vegetation over approximately 2,800 SF of the project area. This spartina grass will be harvested prior to grading and kept onsite in temporary saltwater pools until being replanted into the living shoreline. The existing dock on the property is a private single-family residential dock and exempt from the CMPA.

The upland portion of the property is developed with a single-family residence, swimming pool, and associated improvements. An existing elevated walkway extends from the upland area across the shoreline and into the waterway. The Mean High Water line, Mean Low Water line, CMPA jurisdictional line, and 25-foot marsh buffer have been delineated and are depicted on the attached exhibits. The site is subject to normal tidal action and wave energy characteristic of the area.

The attached Existing Conditions exhibit shows the current shoreline configuration, upland development, and regulatory boundaries.

Purpose and Need

The purpose of the project is to stabilize and restore an actively eroding shoreline segment along Borrell Creek on the Shadowlawn property through implementation of living shoreline techniques. The project will protect the Conservation Values of the Property as established in the Deed of Conservation Easement granted to the Atlantic Coast Conservancy, Inc. in 2016, preserve natural shoreline processes, enhance coastal habitat, and provide long-term protection for existing improvements, including the elevated walkway that extends across the shoreline into the waterway.

The Shadowlawn property is subject to a perpetual conservation easement that protects significant natural, scenic, aesthetic, watershed, wildlife, forest, open space, aquatic, marine, and plant habitat features. These Conservation Values include tidal salt marshes, riparian buffers along Dark Entry Creek and Burrells Creek, and maritime forest and coastal hammocks. The easement establishes Resource Protection Areas, including a 100-foot riparian buffer along Dark Entry Creek and protections around the tidal salt marsh perimeter, to preserve these high-priority habitats in perpetuity. The Property lies within the high-priority St. Marys watershed and supports habitats identified in the Georgia Comprehensive Wildlife Conservation Strategy. The easement's stated purpose is to ensure the Property remains predominantly in its natural condition and to prevent any use that would impair or interfere with these Conservation Values.

The need for the project is driven by documented shoreline erosion along the project shoreline. As shown in the attached exhibits, the existing shoreline consists of an approximately 4.8-foot bluff with no bulkline or other armoring. The bluff itself is not vegetated, but existing marsh grass occurs below the bluff and will be harvested and replanted into the living shoreline. The upland area immediately landward of the bluff supports residential improvements, including a single-family residence, swimming pool, and associated features. An existing elevated walkway extends from the upland across the shoreline and into Borrell Creek. The attached Existing Conditions exhibit and aerial photography depict steep and unstable banks, localized scour, and loss of stabilizing shoreline vegetation. Shoreline retreat has reduced the buffer between tidal waters and the upland, bringing the actively eroding bluff face closer to existing improvements.

This shoreline condition occurs within a sensitive coastal environment characterized by tidal marshes, estuarine waters, and the high-priority habitats protected under the conservation easement. The project shoreline serves as an important transition zone between developed uplands and the surrounding marsh ecosystem. Continued erosion would result in ongoing sediment inputs to Borrell Creek, degradation of marsh edge habitat, impairment of the Conservation Values protected by the easement, and increased risk to the existing elevated walkway and adjacent upland areas.

The proposed living shoreline has been designed to address these conditions through a nature-based approach that restores stable shoreline grades, re-establishes marsh vegetation, reduces erosion, and improves habitat conditions while remaining consistent with the conservation easement's requirements to preserve relatively natural habitat and avoid impairment of the Property's Conservation Values. This approach maintains natural shoreline functions and increases resilience to tidal action, storm events, and sea level rise in a manner compatible with the easement's emphasis on low-impact uses and protection of riparian and marsh resources.

Without implementation of the project, shoreline retreat is expected to continue, resulting in further loss of upland area, increased sediment delivery to the creek and marsh system, ongoing degradation of priority coastal habitat, and an elevated risk to the existing walkway and the Conservation Values of the Property. The project is therefore necessary to protect natural, scenic, and existing man-made resources while supporting the long-term purposes of the conservation easement.

Proposed Conditions

The proposed living shoreline was developed following detailed site reconnaissance, review of existing topographic conditions, vegetation observations, and evaluation of the eroding shoreline along Borrell Creek on the Shadowlawn property. The design objective is to restore a stable and self-sustaining transition between the upland and the tidal system while protecting the Conservation Values established under the Deed of Conservation Easement granted to the Atlantic Coast Conservancy, Inc. The approach restores natural shoreline functions, re-establishes marsh vegetation along the unvegetated bluff and existing marsh grass below the bluff, and provides long-term protection for the existing elevated walkway and adjacent upland areas without impairing the Property's protected riparian buffers, tidal salt marsh, or scenic and habitat values.

The project utilizes a layered living shoreline approach consisting of shoreline regrading to a stable 3:1 slope, Flexamat Plus articulated matting, rip rap toe and edge protection, native marsh vegetation establishment, and upland transition plantings. Each component has been designed to function together as an integrated system consistent with the conservation easement's requirements to preserve relatively natural habitat and prevent impairment of Conservation Values.

Shoreline Regrading

The first component is regrading of the existing shoreline. Existing conditions consist of an approximately 4.8-foot bluff with no bulkline or armoring. The bluff itself is not vegetated, but existing marsh grass occurs below the bluff and will be harvested and replanted into the living shoreline. These steep, unstable banks are the result of ongoing tidal action and wave energy and are incapable of supporting a stable marsh platform.

Regrading creates a uniform 3:1 slope that reconnects the upland with the tidal system. The gentler profile dissipates wave energy over a larger area, reduces erosive forces on the shoreline face, and provides suitable elevations for marsh vegetation establishment. All grading is performed from the upland with no foreign fill introduced to the site. Grading limits are confined to the minimum area necessary and are designed to blend into adjacent stable shoreline areas while avoiding unnecessary disturbance to existing marsh vegetation outside the project footprint. Disturbed work areas will be restored to pre-construction conditions upon completion.

Flexamat Plus Armoring System

Following grading, Flexamat Plus is installed over the regraded shoreline profile and serves as the primary structural stabilization component. The system was selected because it provides immediate erosion protection while allowing vegetation establishment and long-term ecological function.

The Flexamat Plus is placed directly on the prepared subgrade and extends from the upper transition zone to the lower shoreline elevations. At the toe of the slope, the lower portion of the mat is installed within a trench excavated below finished grade to create a buried anchor that prevents movement and protects against undermining. Installation follows manufacturer guidelines with continuous matting across the slope, and secure abutment seams using stainless steel ties or U-anchors with geogrid extensions where required.

Unlike conventional hardened armoring, the open structure of the Flexamat Plus allows sediment accumulation and root penetration through the mat, promoting marsh development while providing resistance to tides, wave energy, and localized scour. The system functions as a living shoreline component rather than a permanent hardened surface.

Rip Rap Toe and Edge Protection

Following Flexamat installation, rip rap toe and edge protection is placed over the lower portion of the trenched and exposed Flexamat at the toe of the shoreline and along the edges adjacent to the existing walkway. The rip rap (Type 3 granite stone) is not intended as the primary stabilization feature. Instead, it serves as a protective scour apron and ballast system that secures the lower edge of the Flexamat and prevents undermining where erosive forces are concentrated.

Rip rap is also placed at the edges of the system, including beneath and adjacent to the existing elevated walkway, to prevent localized scour and edge failure. This configuration creates a heavily protected transition between the creek bottom and the stabilized shoreline while maintaining a softer overall profile than conventional rip rap armoring alone. The rip rap and Flexamat function together as an integrated system, with the mat providing continuous slope coverage and the rip rap providing additional resistance at the location of greatest erosive energy.

Marsh Vegetation Design

Establishment of native tidal marsh vegetation is a core component of the design. Vegetation will serve as the long-term stabilization mechanism by trapping sediments, dissipating wave energy, stabilizing soils through root development, and enhancing habitat value.

The planting plan is based on site-specific observations and is designed to restore marsh vegetation along the unvegetated bluff and existing marsh grass below the bluff. *Spartina alterniflora* is proposed as the primary species in the lower, regularly flooded intertidal elevations, consistent with its natural dominance in adjacent marsh areas. Above this zone, the planting transitions to a high-marsh community dominated by *Borrchia frutescens* (sea oxeye daisy) with associated native high-marsh and transition species.

All plant material will be native species appropriate to the site's hydrologic conditions. Disturbed areas within the jurisdiction will be replanted with native vegetation, and work areas will be restored to match surrounding conditions. This approach restores ecological function while creating a shoreline that is visually and functionally consistent with the protected marsh resources on the Property.

Upland Transition Zone

The uppermost portion of the project includes establishment of native upland and transitional vegetation immediately landward of the marsh planting zone. This area provides additional soil

stabilization, reduces stormwater velocities, improves infiltration, and creates a gradual ecological transition from upland to marsh habitat. Vegetation in this zone will be native species consistent with the existing upland character of the Property and the conservation easement's protection of maritime forest and coastal hammock habitat values.

Long-Term Function of the Living Shoreline

The proposed living shoreline is designed to function as a dynamic, self-reinforcing system. Immediately following construction, the rip rap toe and Flexamat provide structural stability and protection from erosive forces. As vegetation becomes established, root systems stabilize soils, stems dissipate wave energy, and trapped sediments promote natural marsh development and accretion.

Over time, the living components become increasingly dominant, transforming the shoreline from a stabilized bank into a functioning marsh-edge ecosystem. The result is long-term erosion protection that preserves natural tidal processes, supports fish and wildlife habitat, improves water quality, and enhances resilience to future storm events and sea level rise while remaining fully consistent with the Conservation Values and perpetual protections established under the conservation easement.

This integrated, nature-based design represents the least environmentally damaging practicable alternative for addressing the documented erosion while protecting the Property's protected resources and existing improvements.

Summary of Project Impacts

The proposed project consists of a single living shoreline restoration area designed to stabilize the actively eroding shoreline segment along Borrell Creek on the Shadowlawn property. The project will restore a stable shoreline profile, re-establish marsh vegetation along the unvegetated bluff and existing marsh grass below the bluff, protect the existing elevated walkway, and enhance ecological function while remaining consistent with the Conservation Values protected under the property's conservation easement.

The project includes shoreline regrading to a stable 3:1 slope, installation of Flexamat Plus, rip rap toe and edge protection, marsh vegetation planting, and upland transition plantings. All work will be performed from the upland with no foreign fill introduced. Disturbed work areas will be restored upon completion of construction.

Structure Name	Proposed Length (LF)	Proposed Width (FT)	Proposed Area (SF)	Proposed Volume (CY)
Grading	≈180'	≈32.5'	5,875 (4,225 CMPA)	N/A
Flexamat	≈180'	≈32'	5,767 (4,117 CMPA)	N/A
Rip Rap Toe	≈250'	≈4'	1,000 (952 CMPA)	74.07 (70.52 CMPA)
Marsh Planting	≈180'	Variable	2,947 (All CMPA)	N/A
Upland Planting	≈180'	Variable	5,683 (Upland)	N/A

Impact Calculation Methodology

The project consists of multiple overlapping treatment components, including shoreline grading, Flexamat Plus installation, rip rap toe and edge protection, marsh vegetation establishment, and

upland transition plantings. These individual components are provided separately to accurately describe the scope of work and quantities associated with each construction element.

The reported quantities should not be interpreted as cumulative impact areas. Many of the proposed activities occur within the same physical footprint and therefore overlap substantially. For example, portions of the shoreline will be graded and subsequently stabilized with Flexamat Plus, while those same areas will later receive native vegetation plantings. Rip rap toe protection is installed within portions of the Flexamat footprint (particularly at the trenched toe and edges) and does not represent a separate area of disturbance. Conversely, certain portions of the project may receive Flexamat or vegetation treatments with minimal additional grading.

Because the various treatment components overlap to varying degrees throughout the project, summation of the individual quantities would significantly overstate the actual area affected. The construction quantities presented herein are intended to describe the extent of each project element rather than define a total impact footprint. The overall limits of disturbance and project footprint are depicted on the permit exhibits and are best represented by the plan-view limits shown on the attached construction drawings.

Accordingly, project impacts should be evaluated based on the overall limits of disturbance rather than by summing the individual construction quantities associated with each project component.

Buffer Impacts

The project does not have an upland component as it does not qualify under 391-2-3-.02, Regulation of Upland Component of a Project. Georgia DNR EPD has verified that this project will not require a buffer variance, this coordination is provided in the Appendices.

Method of Construction

All work will be completed from the upland side of the property using low-ground-pressure equipment and standard construction practices. Equipment will be limited to that necessary for grading, Flexamat installation, rip rap placement, and vegetative planting. Work will be sequenced to minimize disturbance:

- (1) removal of overhanging/undercut vegetation (if present),
- (2) grading of the bluff to 2H:1V slope,
- (3) installation of Flexamat layer, and
- (4) placement of Type 3 rip rap toe.
- (5) planting vegetation

The contractor will verify existing conditions, permit limits, and tidal conditions prior to commencement. Work limits will be clearly marked. Construction access will utilize the existing upland driveway and lot interior, avoiding unnecessary disturbance to adjacent marsh or properties. Any temporary materials or equipment will be removed following completion of the work. Best management practices will be employed throughout.

CMPA Compliance Applicability

The proposed project is shoreline stabilization (bank stabilization) in tidal waters subject to the Coastal Marshlands Protection Act (O.C.G.A. § 12-5-280 et seq.). The work qualifies for review as a minor activity necessary to protect existing and proposed upland development (single-family

residence) from active erosion. The project is less than 1/10th of an acre of impacts to coastal marshlands.

Compliance with Application Requirements (O.C.G.A. § 12-5-286(b))

The joint application satisfies each requirement as follows:

- (1) The name and address of the applicants are provided on the Joint Application Form and in the Applicant Information section of this narrative.
- (2) A plan or drawing showing the applicants' proposal and the manner or method by which such proposal shall be accomplished, identifying the coastal marshlands affected, is included in the permit drawings submitted with the application.
- (3) A plat of the area in which the proposed work will take place is provided (Recorded Plat, Survey prepared by Jackson Surveying and Permit Exhibits).
- (4) Reasonable evidence of ownership and lawful authority is provided via the recorded Limited Warranty Deed (Book 2052, Page 759).
- (5) A list of all adjoining landowners together with their addresses is included in the application packet (Adjacent Property Owner notification documentation).
- (6) A letter from the local governing authority (City of St. Marys) stating that the proposal is not violative of any zoning law has been requested and will be provided as soon as it becomes available.
- (7) The non-refundable application fee will be paid to the Department in the amount required.
- (8) A description of alternative sites and why they are not feasible is addressed in the Alternatives Analysis section below.
- (9) A statement from the applicants that inquiry has been made to appropriate authorities confirming the site is not over a landfill or hazardous waste site and is otherwise suitable for the proposed project is included in the application packet.
- (10) Water quality certification requirements have been satisfied through the blanket authorization issued by EPD for the use of Nationwide Permit 54.
- (11) Certification of adherence to soil and erosion control responsibilities is provided in this narrative and will be implemented through the project's Erosion and Sediment Control Plan.
- (12) All additional information required by the Committee to properly evaluate the application is included in the complete application packet, including drawings, surveys, jurisdictional determination, species assessments, historic resources review, and this narrative. Additional information will be provided upon request.

Compliance with CMPA Standards for Shoreline Stabilization / Bank Protection

The project satisfies all applicable standards for shoreline stabilization activities:

- The project is necessary to protect an existing and proposed upland educational use from active erosion.
- The stabilization is limited to the minimum area required (180 linear feet of actively eroding bluff only).
- The design (graded 3H:1V slope with living shoreline) is the least environmentally damaging practicable alternative, as detailed in the Alternatives Analysis.
- Professional drawings and exhibits are provided.
- Post-construction documentation (as-built survey if required) will be submitted.

- The applicants have the capacity and legal authority to comply with all permit conditions.

CMPA Public Interest Statement

The proposed project is not contrary to the public interest under the Coastal Marshlands Protection Act. The project consists of targeted shoreline stabilization to address active erosion on a residential lot while avoiding vegetated marsh entirely. The living shoreline design ensures that tidal waters can continue to flow freely, resulting in only minimal impacts confined to the eroded bluff area. The three CMPA public interest criteria are addressed below.

A. Navigation and Natural Flow

The proposed project will not create an unreasonably harmful obstruction to or alteration of the natural flow of navigational water within the affected area. The living shoreline will be placed along the graded shoreline at the existing bank toe and will not encroach into the waterway beyond mean low water. The waterway at this location is approximately 200 feet wide at MLW and the stabilization remains well outside of the navigable channel. The sloped, permeable rip rap design allows tidal currents and water flow to pass freely. This configuration preserves the natural flow regime and prevents any material obstruction to navigation.

B. Erosion, Shoaling, and Stagnation

The proposed stabilization will not result in unreasonably harmful or increased erosion, shoaling of channels, or stagnant areas of water. By grading to a stable 3H:1V slope and armoring with a living shoreline, the project will eliminate the existing source of erosion and prevent further sediment input into Borrel Creek. No dredging or foreign earthfill is proposed. The permeable nature of the Flexamat and vegetative layers promotes natural drainage and sediment transport. Construction best management practices will control any temporary turbidity. Long-term, the project will reduce erosion, shoaling, and potential stagnation by stabilizing the bank.

C. Fish, Shrimp, Oysters, Crabs, Clams, Wildlife, and Other Resources

The project will not unreasonably interfere with the conservation of fish, shrimp, oysters, crabs, clams, wildlife, or other coastal resources. The project footprint contains existing marsh grass below the unvegetated bluff, which will be harvested and replanted into the final living shoreline; stabilization is primarily confined to the eroded bluff area. The rip rap design provides intertidal habitat complexity beneficial to aquatic species. Construction impacts are minimal and temporary, with best management practices (including silt curtains if needed) to protect water quality. Overall, the project will have a beneficial long-term effect by protecting the shoreline and preventing further degradation of adjacent marsh and creek resources.

Adjacent Landowners

The project is located entirely on Parcel 135 094R, owned by the applicant. Adjacent property owners (upstream and downstream) will be notified in accordance with CMPA requirements. The Camden County qPublic parcel records and addresses are included in this application packet.

Landfill/Hazardous Waste Statement

The application packet includes the required landfill/hazardous waste statement and map. The applicants will not knowingly use or place hazardous materials in jurisdictional areas. Any petroleum

products, oils, fuels, or construction chemicals used during construction will be managed so that they do not enter tidal waters, marsh, or drainage ditches.

Historic/Cultural Resources

A review of the Georgia Natural, Archaeological, and Historic Resources GIS (GNAHRGIS) database and National Register of Historic Places was completed for the project area. The review identified no historic resources.

Water Quality Certification

The Georgia DNR EPD has issued blanket 401 WQC for the use of a Nationwide Permit 54. This WQC is included in the attached Regional Conditions.

Soil and Erosion Control Statement

The proposed project will comply with all applicable soil erosion and sediment control responsibilities under the Georgia Erosion and Sedimentation Act and local ordinances. The upland grading will be conducted in accordance with best management practices, including silt fencing, temporary stabilization, and final vegetative stabilization where appropriate. The project will not result in sedimentation of the waterway.

Turbidity Statement

The proposed project will be performed in a manner that minimizes turbidity. Work will be limited to the smallest practicable area and will be conducted during appropriate tidal conditions. Silt curtains or other controls will be used if necessary, during rip rap placement. All disturbed areas will be stabilized immediately upon completion of grading and armoring.

Endangered Species and Protected Resources

A review of federally listed species and designated critical habitat was completed utilizing the U.S. Fish and Wildlife Service Information for Planning and Consultation (IPaC) system for the Shadowlawn Living Shoreline project (Project Code: 2026-0091025). The IPaC review identified the following threatened, endangered, or proposed species as potentially occurring in the project area or vicinity:

Mammals: Tricolored bat (*Perimyotis subflavus*) (Proposed Endangered) and West Indian manatee (*Trichechus manatus*) (Threatened)

Birds: Eastern black rail (*Laterallus jamaicensis jamaicensis*) (Threatened) and Whooping crane (*Grus americana*) (Experimental Population, Non-Essential – Eastern Migratory Population)

Reptiles: Eastern indigo snake (*Drymarchon couperi*) (Threatened), Green sea turtle (*Chelonia mydas*) (Threatened – North Atlantic DPS), Hawksbill sea turtle (*Eretmochelys imbricata*) (Endangered), and Southern hognose snake (*Heterodon simus*) (Proposed Threatened)

Insects: Monarch butterfly (*Danaus plexippus*) (Proposed Threatened)

No critical habitat for any listed species occurs within the project area under U.S. Fish and Wildlife Service jurisdiction.

The proposed project consists of a single living shoreline restoration area designed to stabilize the actively eroding shoreline segment along Borrell Creek on the Shadowlawn property. The project will restore a stable shoreline profile, re-establish marsh vegetation along the unvegetated bluff and existing marsh grass below the bluff, protect the existing elevated walkway, and enhance ecological function while remaining consistent with the Conservation Values protected under the property's conservation easement. All work will be conducted from the upland, with in-water and intertidal construction limited to periods of low tide.

The project is limited to a previously disturbed and actively eroding shoreline bluff with no bulkline or armoring. The bluff itself is not vegetated, but existing marsh grass occurs below the bluff and will be harvested and replanted into the living shoreline. The surrounding area includes existing residential development (residence, pool, and associated improvements) and an elevated walkway extending into the creek. The project does not involve impacts to ocean beaches, dunes, nesting habitat, or other features essential for sea turtles, shorebirds, or other coastal listed species. Suitable habitat for the eastern indigo snake, tricolored bat, eastern black rail, southern hognose snake, and monarch butterfly is either absent from the project footprint or will not be adversely altered by the proposed activities.

Because all in-water and intertidal work will occur only at low tide, West Indian manatees and sea turtles (green and hawksbill) will not be present in the work area. These species require sufficient water depth for access and foraging; low-tide conditions in this shallow tidal creek segment preclude their presence. Accordingly, the project will have no effect on these species.

The living shoreline design restores native marsh vegetation along the unvegetated bluff and existing marsh grass below the bluff, and maintains natural shoreline processes. This habitat enhancement is consistent with the conservation easement's goals of protecting tidal salt marsh, riparian buffers, and wildlife habitat values. No tree clearing or impacts to forested habitat that could affect tricolored bats will occur. The project footprint does not contain suitable burrows or other features for the eastern indigo snake or southern hognose snake, and the limited upland grading is confined to already developed residential areas.

Based on the IPaC review, project-specific habitat assessment, low-tide work restriction, and the nature of the living shoreline restoration activities, the proposed project is not expected to result in adverse effects to federally listed species or designated critical habitat. The applicant will comply with any species-specific conservation measures, time-of-year restrictions, or permit conditions imposed during the federal and state permit review process.

Alternatives Analysis

The applicant evaluated multiple alternatives for addressing the documented shoreline erosion along Borrell Creek on the Shadowlawn property. Alternatives considered included the No Action Alternative, traditional bulkhead construction, traditional rip rap stabilization, and the proposed living shoreline. Each alternative was evaluated based on its ability to protect existing improvements (including the elevated walkway), preserve the Conservation Values established under the

property's Deed of Conservation Easement, maintain natural shoreline processes, restore ecological function, and achieve the overall project purpose.

No Action Alternative

Under the No Action Alternative, no shoreline stabilization measures would be implemented. Existing erosion processes would continue to act upon the shoreline, resulting in continued loss of upland area and further degradation of the shoreline. Site observations and the attached exhibits confirm that the project shoreline currently consists of an approximately 4.8-foot bluff with no existing bulkline or armoring. The bluff itself is not vegetated, but existing marsh grass occurs below the bluff and will be harvested and replanted into the living shoreline. An existing elevated walkway extends from the upland across the shoreline into Borrell Creek.

The No Action Alternative would fail to achieve the project purpose of stabilizing the eroding shoreline, protecting the existing elevated walkway and adjacent upland areas, and restoring ecological function. Continued erosion would result in ongoing sediment inputs to Borrell Creek, further degradation of the marsh edge, and increased risk to the existing walkway and upland improvements. In addition, continued degradation of the shoreline would be inconsistent with the Conservation Values protected under the property's conservation easement. Therefore, the No Action Alternative was rejected.

Bulkhead Alternative

Construction of a bulkhead or other vertical shoreline stabilization structure was evaluated as a potential alternative. Bulkheads function by reflecting wave energy rather than dissipating it, which frequently results in increased scour at the base of the structure and progressive loss of intertidal habitat immediately waterward of the wall.

Implementation of a bulkhead along the Shadowlawn shoreline would replace the existing eroding bluff and upland-marsh transition with a hardened vertical edge. This would eliminate opportunities for marsh vegetation establishment, sediment retention, and natural shoreline processes. A bulkhead would also be inconsistent with the conservation easement's purpose of preserving relatively natural habitat and preventing impairment of the Property's Conservation Values, including tidal salt marsh, riparian buffers, and scenic qualities. Because a bulkhead would result in greater environmental impacts and reduced ecological function compared to the proposed project, this alternative was rejected.

Traditional Rip Rap Stabilization Alternative

Traditional rip rap stabilization was also evaluated as a potential shoreline protection measure. While rip rap can provide effective erosion control, it functions primarily as a hardened shoreline stabilization method and generally provides fewer ecological benefits than a properly designed living shoreline.

A rip rap-only design would require substantially more stone coverage along the shoreline and would create a more heavily armored and less natural transition between the upland and the tidal system. Although some vegetation may eventually establish between stones, a traditional rip rap shoreline would not restore marsh vegetation along the unvegetated bluff and existing marsh grass below the bluff, nor would it provide the same opportunities for marsh expansion, sediment capture, and long-term ecological enhancement as the proposed living shoreline. In addition, a rip rap-only approach

would be less consistent with the conservation easement's emphasis on preserving natural shoreline functions and habitat values.

Because the traditional rip rap alternative would provide fewer ecological benefits and result in a more heavily armored shoreline than necessary, it was rejected.

Proposed Living Shoreline Alternative

The proposed living shoreline combines shoreline regrading to a stable 3:1 slope, installation of Flexamat Plus, limited rip rap toe and edge protection, native marsh vegetation establishment, and upland transition plantings to create a stable and self-sustaining shoreline system.

The design was developed to restore natural shoreline conditions along Borrell Creek. Regrading creates suitable elevations and a stable profile for marsh establishment while dissipating wave energy over a larger area than the existing near-vertical bluff. Flexamat Plus provides immediate erosion protection and allows vegetation to establish through and around the stabilization system. Rip rap is limited to the lower toe of the shoreline and selected edges (including areas adjacent to the existing elevated walkway), where it functions as scour protection for the Flexamat rather than as the primary stabilization method. All work will be performed from the upland with no foreign fill introduced, and disturbed areas will be restored upon completion.

The vegetation plan restores native marsh species along the unvegetated bluff and existing marsh grass below the bluff. *Spartina alterniflora* is proposed in lower elevations subject to regular tidal inundation, with a transition to sea oxeye daisy (*Borrchia frutescens*) and associated high-marsh species in the upper elevations. This approach restores natural ecological gradients and functions while providing long-term shoreline stability.

Compared to the other alternatives evaluated, the proposed living shoreline provides the greatest balance of shoreline protection, habitat restoration, and consistency with the conservation easement. The project protects the existing elevated walkway and adjacent upland areas while restoring marsh vegetation, preserving natural shoreline processes, and enhancing ecological function in a manner that supports the Conservation Values protected under the easement. The nature-based design also increases long-term resilience to tidal action, storm events, and sea level rise.

Accordingly, the proposed living shoreline represents the least environmentally damaging practicable alternative and is the preferred alternative for achieving the project purpose and need.

NWP 54 Compliance

The proposed project has been designed to satisfy the requirements of Nationwide Permit 54 (Living Shorelines). The project consists of shoreline regrading, Flexamat stabilization, limited rip rap toe protection, native marsh vegetation establishment, and upland transition plantings to stabilize actively eroding shoreline segments while maintaining and enhancing natural shoreline functions.

Consistent with the intent of NWP 54, the project incorporates a substantial biological component through establishment of native marsh vegetation. Plant species were selected based on site-specific observations of existing marsh communities and include *Spartina alterniflora* within lower marsh elevations and sea oxeye daisy with associated high-marsh species within upper marsh

transition zones. The proposed living shoreline is designed to replicate natural shoreline conditions while providing long-term erosion protection.

Structural stabilization measures have been limited to the minimum necessary to protect the shoreline. Flexamat serves as the primary stabilization feature, while rip rap is restricted to the lower toe of the shoreline where it functions as scour protection for the Flexamat system. The project maintains natural tidal exchange, preserves the land-water interface, and is expected to enhance shoreline habitat and ecological function.

The project is less than 500 linear feet in length and complies with the applicable terms and conditions of Nationwide Permit 54, Savannah District Regional Conditions, and all applicable Nationwide Permit General Conditions. Based on the project design and incorporation of substantial native vegetation, the proposed activity qualifies for authorization under Nationwide Permit 54.

Justification Statement

The proposed Shadowlawn Living Shoreline Project is fully justified and should be authorized under the Coastal Marshlands Protection Act and Nationwide Permit 54. The project addresses documented shoreline erosion along Borrell Creek on the Shadowlawn property, where an actively eroding approximately 4.8-foot bluff with no existing bulkline or armoring is threatening the stability of the existing elevated walkway and adjacent upland areas. The bluff itself is not vegetated, but existing marsh grass occurs below the bluff and will be harvested and replanted into the living shoreline.

The proposed project has been specifically designed to stabilize the shoreline while preserving and enhancing coastal resources in a manner consistent with the Conservation Values protected under the property's Deed of Conservation Easement. Unlike traditional hardened shoreline stabilization methods, the living shoreline utilizes a combination of shoreline regrading to a stable 3:1 slope, Flexamat Plus stabilization, limited rip rap toe and edge protection, native marsh vegetation establishment, and upland transition plantings to create a resilient and self-sustaining shoreline system. The design restores marsh vegetation along the unvegetated bluff and existing marsh grass below the bluff, maintains natural tidal exchange, enhances shoreline habitat, and provides long-term protection for the existing elevated walkway without the use of a full bulkhead or extensive hard armoring.

The project represents the least environmentally damaging practicable alternative and is consistent with current state and federal preferences for nature-based shoreline stabilization. All work will be conducted from the upland with no foreign fill introduced, and disturbed areas will be restored upon completion. The proposed living shoreline will provide long-term protection for existing improvements while improving habitat quality, reducing shoreline erosion and sediment inputs to Borrell Creek, and enhancing the ecological functions of the marsh-upland transition zone in a manner that supports the Conservation Values protected under the conservation easement.

The project complies with applicable Coastal Marshlands Protection Act requirements, Nationwide Permit 54 criteria, Savannah District Regional Conditions, and Georgia Coastal Management Program policies. The proposed activity is expected to result in long-term environmental benefits and is not contrary to the public interest. Accordingly, approval of the proposed living shoreline is warranted.

Conclusion

The proposed Shadowlawn Living Shoreline Project represents a sustainable and environmentally responsible approach to addressing documented shoreline erosion along Borrell Creek. The project has been carefully designed to stabilize an actively eroding shoreline segment through implementation of a nature-based living shoreline that combines shoreline regrading to a stable 3:1 slope, Flexamat Plus stabilization, limited rip rap toe and edge protection, native marsh vegetation establishment, and upland transition plantings.

The proposed design will provide long-term protection for the existing elevated walkway and adjacent upland areas, restore marsh vegetation along the unvegetated bluff and existing marsh grass below the bluff, reduce shoreline erosion and sediment transport, and enhance the ecological functions of the marsh-upland transition zone. By utilizing native vegetation and minimizing the extent of structural stabilization measures, the project maintains natural shoreline processes while improving shoreline resilience and habitat quality in a manner consistent with the Conservation Values protected under the property's conservation easement.

The proposed living shoreline represents the least environmentally damaging practicable alternative and is consistent with the objectives of the Coastal Marshlands Protection Act, Nationwide Permit 54, and the Georgia Coastal Management Program. The project is expected to provide long-term environmental benefits while protecting existing improvements and coastal resources.

Shadowlawn, LLC respectfully requests issuance of the necessary Coastal Marshlands Protection Act authorization, revocable license, and verification under Nationwide Permit 54. All required application materials, including permit drawings, supporting exhibits, environmental review documentation, and this project narrative, have been provided for review. Should additional information be required, we would be pleased to assist.

Sam LaBarba
LaBarba Environmental Services
June 24, 2026



COASTAL RESOURCES DIVISION

ONE CONSERVATION WAY • BRUNSWICK, GA 31520 • 912-264-7218

WALTER RABON
COMMISSIONER

DOUG HAYMANS
DIRECTOR

June 26, 2026

Shawdowlawn, LLC
4702 Woodland Drive East
Tifton, GA 31793

Re: Coastal Marshlands Protection Act (CMPA), Jurisdictional Determination Verification, 101 David Porter Court, Moeckel Place, Borrell Creek, Camden County, Georgia

Dear Shadowlawn, LLC:

Our office has received the survey and plat, dated March 24, 2026, prepared by Jackson Surveying, Inc., No. 2804 entitled "*Map to Show CMPA Jurisdiction Line Survey of a PortionI of Lot 3A, Phase III, Moeckel Place, City of St. Marys, 29th G.M.D., Camden County, Georgia (According to Plat Recorded in P.B. 4, PG. 140-B of the Public Records of Said County)*" prepared for Shadowlawn, LLC. Based on my site inspection, February 23, 2026, this plat and survey generally depict the delineation of the coastal marshlands boundary as required by the State of Georgia for jurisdiction under the authority of the Coastal Marshlands Protection Act O.C.G.A. § 12-5-280 et seq.

The Coastal Marshlands Protection Act O.C.G.A. § 12-5-280 et seq. delineation of this parcel is subject to change due to environmental conditions and legislative enactments. This jurisdiction line is valid for one year from date of the delineation. It will normally expire on February 23, 2027 but may be voided should legal and/or environmental conditions change.

This letter does not relieve you of the responsibility of obtaining other state, local, or federal permission relative to the site. Authorization by the Coastal Marshlands Protection Committee or this Department is required prior to any construction or alteration in the marsh jurisdictional area. We appreciate you providing us with this information for our records. If you have any questions, please contact me at (912) 264-7218.

Sincerely,

Beth Byrnes
Coastal Permit Coordinator
Marsh and Shore Management Program

Enclosure: *Map to Show CMPA Jurisdiction Line Survey of a PortionI of Lot 3A, Phase III, Moeckel Place, City of St. Marys, 29th G.M.D., Camden County, Georgia (According to Plat Recorded in P.B. 4, PG. 140-B of the Public Records of Said County)*

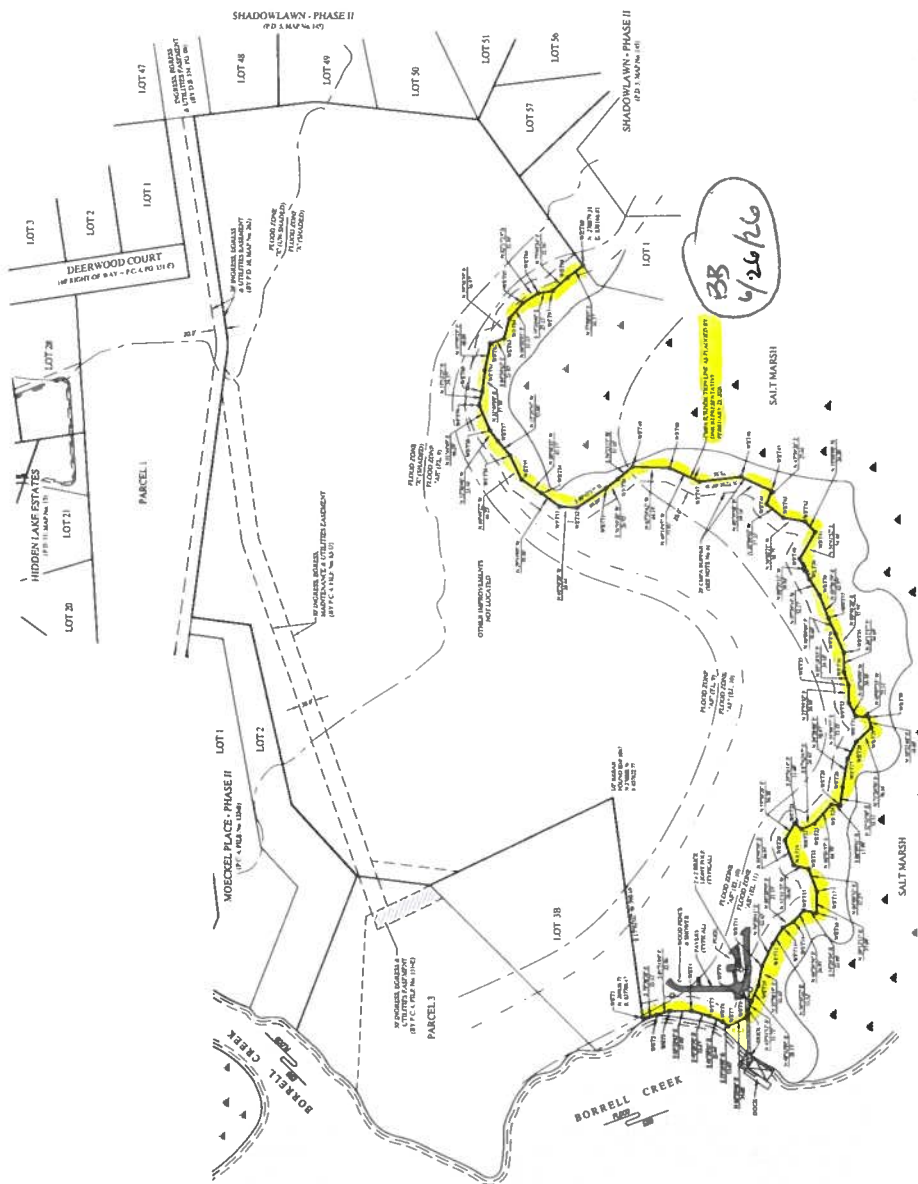
File: JDS20260048

FOR SHADOWLAWN, LLC.



NOTES:

- THE ABOVE INFORMATION WAS OBTAINED FROM A SOURCE WHOSE CREDIBILITY HAS NOT BEEN EVALUATED BY THE FBI. THE SOURCE HAS BEEN ADVISED THAT THE INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE.



CLOSURE
PROPERTY CODED **UNCLAS** REASON: 4A V9-A
ADDITIONAL TALKING OF AIR FIGHT
THIS MAP ON PLAT 1843 HAS CALCULATED FOR
DISTANCE AND IT WAS TO BE ACCURATE WITHIN ONE
FOOT IN 12,000 FEET.
REQUISITION LISTED BY AIR FIGHT MEANS REFERENCE
TO PARAGRAPH 11-1, AIR FORCE REGULATION.



JACKSON SURVEYING, INC.

DATE OF PLAT: MARCH 24, 2028
DATE OF FIELD SURVEY: MARCH 02, 2028



City of St. Marys
Community Development

418 Osborne Street
St. Marys, Georgia 31558
(912) 510-4032

July 17, 2026

Mr. Sam LaBarba
Owner
LaBarba Environmental Services
139 Altama Connector, #161
Brunswick, GA. 31525

Re: Zoning Certification for Shadowlawn LLC Living Shoreline, St Marys – GA CMPA Permit Application

This letter certifies that the activities contained within the above-referenced permit application and as depicted on the attached plan set, are consistent with the City of St Marys Zoning Ordinance. The project site, as shown on the attached City of St. Marys Zoning Map (Exhibit A), is a Planned Development District. The proposed use and activities are not in violation of this zoning classification.

The City of St. Marys hereby approves the concept plans in their entirety, with the contingency of Georgia Department of Natural Resources approval.

If there are any questions regarding this approval, please contact me.

Sincerely,

A handwritten signature in blue ink, appearing to read "JAIME STEIN".

Jaime Stein, AICP
Community Development Director
Jaime.stein@stmarysga.gov

SHADOWLAWN LIVING SHORELINE CMPA APPLICATION



Digitally signed by Jaime Stein, AICP
DN: C=US,
E=jaime.stein@cityofmarys.ga.gov, O=City of
St. Marys, OU=City of St. Marys, CN=Jaime Stein, AICP
Location: City of St. Marys
Reason: I am approving this document
Contact Info: 912-510-4006
Date: 2026.07.17 15:01:37-0400'

PREPARED FOR:
SHADOWLAWN, LLC
101 DAVID PORTER CT.
ST. MARYS, GA 31558

LABARBA ENVIRONMENTAL SERVICES
139 ALTAMA CONN. #161
BRUNSWICK, GA 31525

NOT RELEASED
FOR
CONSTRUCTION

LEGEND

These standard symbols will
be found in the drawing.

- MEAN LOW WATER
- MEAN HIGH WATER
- HIGH TIDE LINE
- OYSTERS
- RIP RAP
- FLEXAMAT
- MARSH VEG PLANTING
- TRANS. VEG PLANTING
- UPLAND VEG PLANTING

LABARBA ENVIRONMENTAL SERVICES
BRUNSWICK, GA
PREPARED FOR:
SHADOWLAWN, LLC

COVER

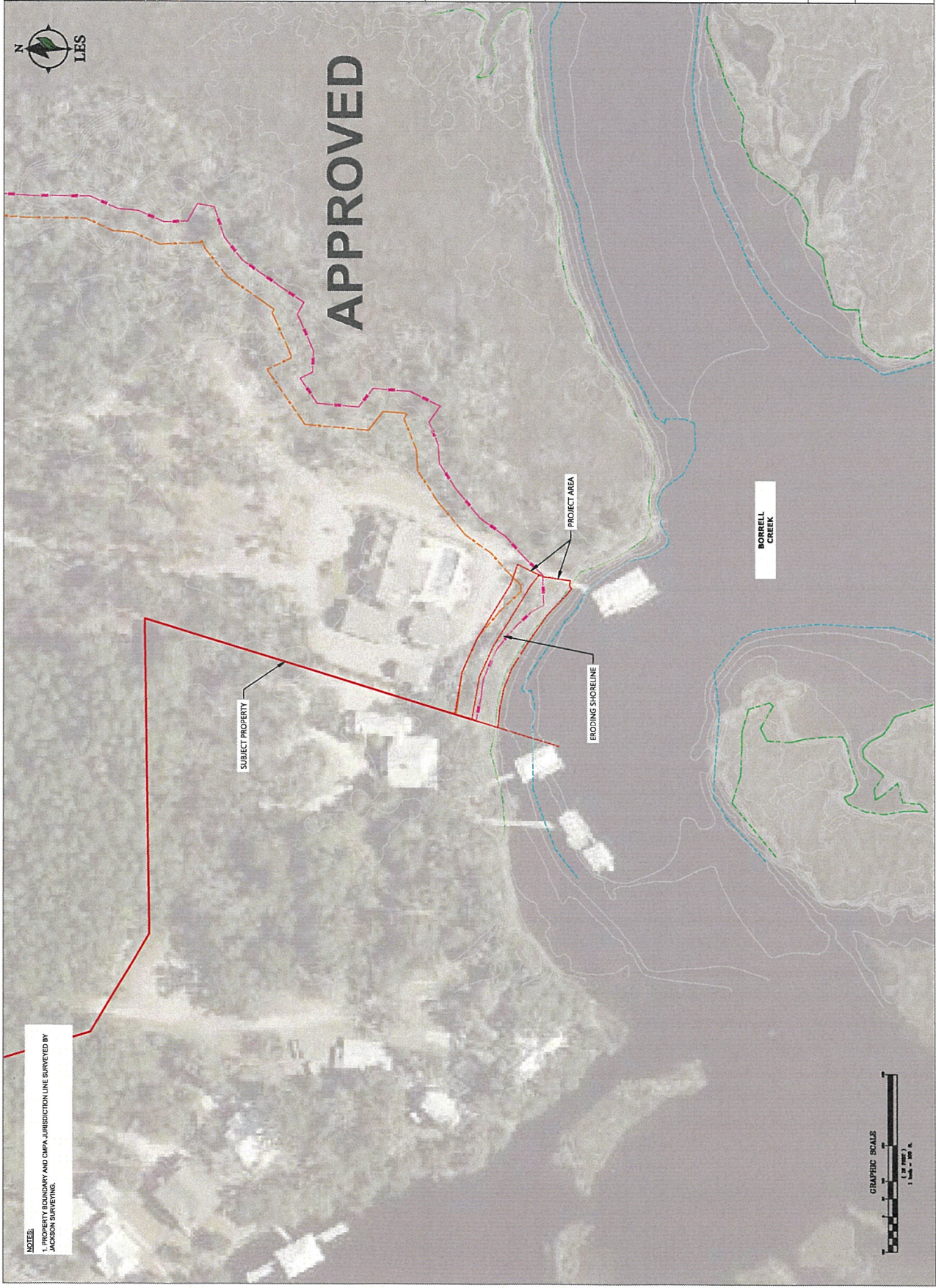
DATE: 5/17/2026
SCALE: NTS

1

SHEET:

ORIGINAL ISSUE DATE: 5/17/26

CONTENTS		
SHEET		DATE
1	COVER	5/17/26
2	PROJECT LOCATION	5/17/26
3	EXISTING CONDITIONS	5/17/26
4	GRADING	5/17/26
5	FLEXAMAT	5/17/26
6	RIP RAP	5/17/26
7	VEGETATION PLANTING	5/17/26
8-9	FLEXAMAT MATERIALS	5/17/26
10	3D RENDERINGS	5/17/26



NOTES:
1. PROPERTY BOUNDARY AND CMPA JURISDICTION LINE SURVEYED BY JACKSON SURVEYING.



NOT RELEASED
FOR
CONSTRUCTION

LEGEND

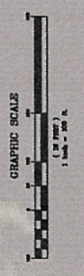
- Shaded relief indicates areas that will be found in the dredging.
- MEAN LOW WATER
- MEAN HIGH WATER
- HIGH TIDE LINE/CMPA LINE
- 25' MARSH BUFFER
- OYSTERS
- RIP RAP
- FLEZAMAT
- MARSH YED PLANTING
- TRANS. YED PLANTING
- UPLAND YED PLANTING

LABARBA ENVIRONMENTAL SERVICES
BRUNSWICK, GA
PREPARED FOR:
SHADOWLAWN, LLC

PROJECT LOCATION

DATE: 5/17/2026
SCALE: NTS

2
SHEET:





NOTES:
1. NO EXISTING SHORELINE ARMCHING.
2. APPROXIMATE 45' BLUFF FROM UPLAND AREA TO RIVER WITH NO EXISTING MARSH VEGETATION.



NOT RELEASED
FOR
CONSTRUCTION

LEGEND

- These standard symbols will be found in the drawing.
- MEAN LOW WATER
 - MARSH VEG LINE
 - HIGH TIDE LINE/CHPA LINE
 - 25' MARSH BUFFER
 - OYSTERS
 - RIP RAP
 - FLEXMAT
 - MARSH VEG PLANTING
 - TRANS. VEG PLANTING
 - UPLAND VEG PLANTING

EXISTING CONDITIONS

LABARBA ENVIRONMENTAL SERVICES
BRUNSWICK, GA
PREPARED FOR:
SHADOWLAWN, LLC

DATE: 5/17/2026
SCALE: NTS

3
SHEET:



- NOTES:
1. MINIMUM LOCAL GRADING WILL BE COMPLETED TO OBTAIN A 4:1 SLOPE.
 2. NO FOREIGN FILL WILL BE INTRODUCED TO THE SITE.
 3. ANY EXISTING MARSH VEGETATION WILL BE SAVED AND REPLANTED INTO LIVING SHORELINE.
 4. MINOR GRADING AREA:
1,650 SF ON UPLAND
4,225 SF IN CMPA JURISDICTION

EQUIPMENT OPERATED FROM UPLAND

LIVING SHORELINE AREA
GRADED TO 3:1 SLOPE

25' MARSH BUFFER

LABARBA ENVIRONMENTAL SERVICES
BRUNSWICK, GA
PREPARED FOR:
SHADOWLAWN, LLC

GRADING

DATE: 5/17/2026
SCALE: NTS

4
SHEET:

NOT RELEASED
FOR
CONSTRUCTION

LEGEND

- These standard symbols will be found in the drawings.
- MEAN LOW WATER
 - MARSH VEG LINE
 - HIGH TIDE LINE/CMPA LINE
 - 25' MARSH BUFFER
 - OYSTERS
 - RIP RAP
 - FLEXMATS
 - MARSH VEG PLANTING
 - TRANS. VEG PLANTING
 - UPLAND VEG PLANTING



NOT RELEASED
FOR
CONSTRUCTION

- LEGEND
- These standard symbols will be found in the drawing.
- MEAN LOW WATER
 - MARSH VEG LINE
 - HIGH TIDE LINE/CLMPA LINE
 - 25' MARSH BUFFER
 - OYSTERS
 - RIP RAP
 - FLEXAMAT
 - MARSH VEG PLANTING
 - TRANS. VEG PLANTING
 - UPLAND VEG PLANTING

FLEXAMAT

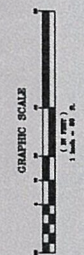
LABARBA ENVIRONMENTAL SERVICES
BRUNSWICK, GA
PREPARED FOR:
SHADOWLAWN, LLC

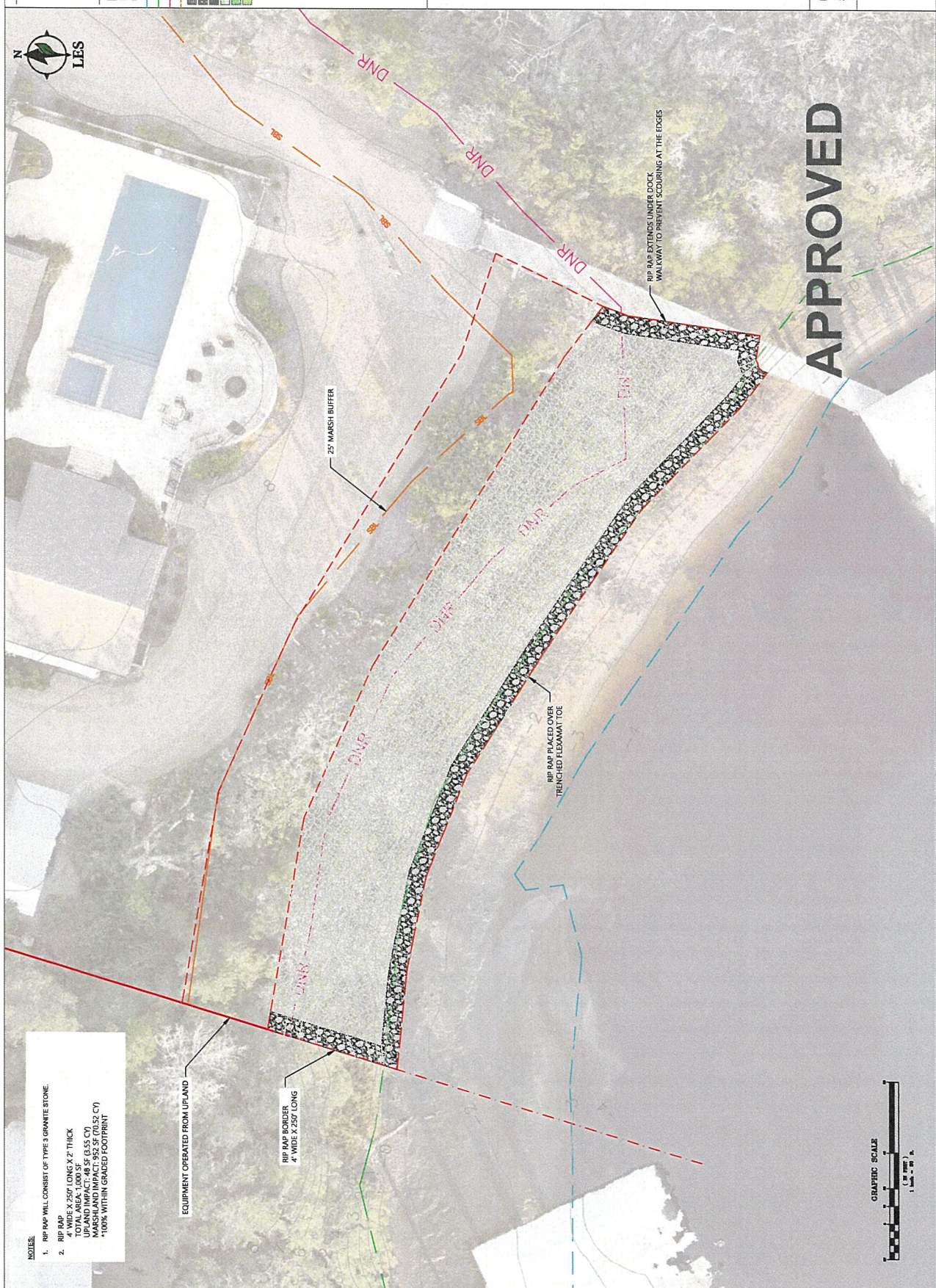
DATE: 5/17/2026
SCALE: NTS

5

SHEET:

- NOTES:
1. FLEXAMAT WILL BE INSTALLED PER MANUFACTURER GUIDELINES.
 2. FLEXAMAT AREA
1,650 SF ON UPLAND
4,117 SF IN CLMPA JURISDICTION
*100% WITHIN GRADED FOOTPRINT





NOT RELEASED
FOR
CONSTRUCTION

- LEGEND
- MEAN LOW WATER
 - MARSH VEG LINE
 - HIGH TIDE LINE/CHPA LINE
 - 25' MARSH BUFFER
 - OYSTERS
 - RIP RAP
 - FLEXAMAT
 - MARSH VEG PLANTING
 - TRANS. VEG PLANTING
 - UPLAND VEG PLANTING

RIP RAP TOE & EDGE PROTECTION

LABARBA ENVIRONMENTAL SERVICES
BRUNSWICK, GA

PREPARED FOR:
SHADOWLAWN, LLC

DATE: 5/17/2026
SCALE: NTS

6

SHEET:

- NOTES:
1. RIP RAP WILL CONSIST OF TYPE 3 GRANITE STONE.
 2. RIP RAP: 25' LONG X 2' THICK
TOTAL AREA: 1,000 SF
UPLAND IMPACT: 48 SF (3.35 CY)
MARSHLAND IMPACT: 392 SF (70.32 CY)
100% WITHIN GULFED FOOTPRINT

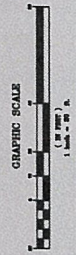
EQUIPMENT OPERATED FROM UPLAND

RIP RAP BORDER
4" WIDE X 250' LONG

RIP RAP PLACED OVER
TRENCHED FLEXAMAT TOE

RIP RAP EXTENDS UNDER DOCK
WALKWAY TO PREVENT SCOURING AT THE EDGES

APPROVED





NOT RELEASED FOR CONSTRUCTION

LEGEND

7

DATE: 5/17/2026
SCALE: NTS

SHEET:

LABARBA ENVIRONMENTAL SERVICES
BRUNSWICK, GA
PREPARED FOR:
SHADOWLAWN, LLC

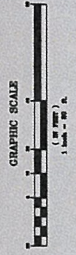
VEGETATION PLAN

- NOTES:
- TOTAL PLANTED AREA 8,800 SF
5,683 SF ON UPLAND
*INCLUDES PERMANENT IMPACT AREAS AS WELL AS THE TEMPORARY WORK AREA
2,947 SF IN CMPA JURISDICTION
*INCLUDES ALL SECTIONS IMPACTED IN MARSH EXCEPT FOR THE RIP RAP AREAS
 - PLANTS IN JURISDICTION WILL CONSIST OF:
SPARTINA ALTERNIFLORA
BACCHARIS HALIMIFOLIA
BACCHARIS ANGUSTIFOLIA
IVA FRUTESCENS
 - UPLAND WILL BE REPLANTED WITH ANY PLANTS OR TREES THAT ARE DISTURBED DURING CONSTRUCTION. ALL REPLACEMENT PLANTS WILL BE NATIVE

WORK AREA RESTORED TO PREVIOUS GRASS AND LANDSCAPED CONDITIONS

MARSH VEGETATION PLANTED

APPROVED



NOT RELEASED
FOR
CONSTRUCTION

LEGEND

These stippled symbols will
be found in the drawing:
MEAN LOW WATER
MEAN HIGH WATER
HIGH TIDE LINE
OYSTERS
RIP RAP
FLEXAMAT
MARSH VEG PLANTING
THICK VEG PLANTING
UPLAND VEG PLANTING

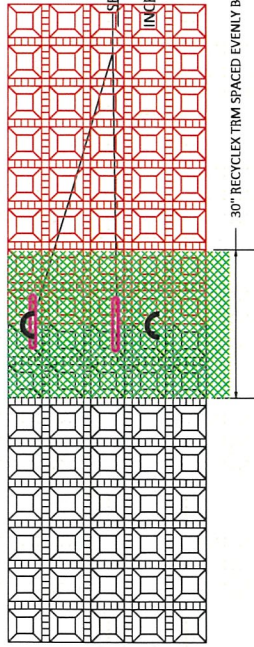
MATERIALS
LABARBA ENVIRONMENTAL SERVICES
BRUNSWICK, GA
PREPARED FOR:
SHADOWLAWN, LLC

DATE: 5/17/2026
SCALE: NTS

8

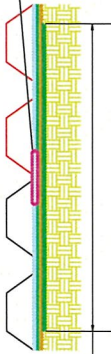
SHEET:

ABUTMENT METHOD FOR SHORELINE WIDTH LESS THAN 16'



30" RECYCLEX TRM SPACED EVENLY BETWEEN EACH MAT AT THE SEAM

SECURE ABUTMENT SEAM WITH 20"
STAINLESS STEEL ZIP TIES IN 1'
INCREMENTS THE LENGTH OF THE SEAM.



PROFILE VIEW OF SLOPE AND ANCHOR TRENCH

EMBED TOP EDGE OF MAT 12" AT 45 DEGREES INTO
THE SLOPE



APPROVED

FLEXAMAT PLUS - SHORELINE ARMORING

CONSTRUCTION NOTES:

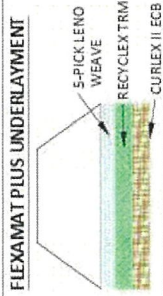
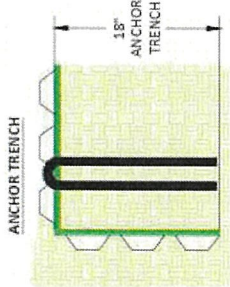
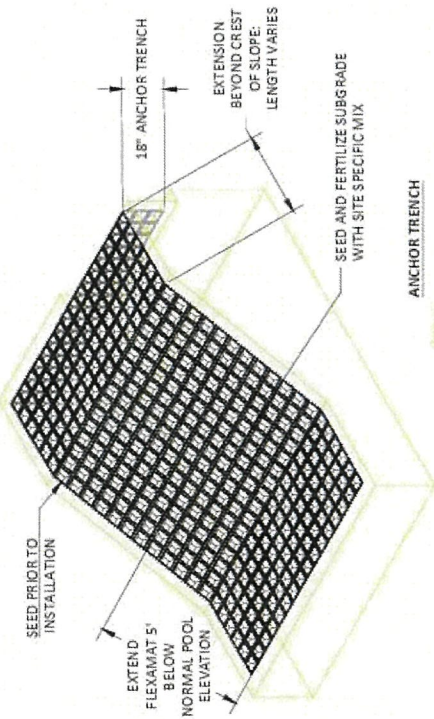
1. AN ENGINEER OR MANUFACTURER REPRESENTATIVE SHALL BE ONSITE FOR THE START OF THE INSTALLATION.
2. ALL SUBGRADE SURFACES PREPARED FOR PLACEMENT OF MATS SHALL BE SMOOTH AND FREE OF ALL ROCKS, STICKS, ROOTS, OTHER PROTRUSIONS, OR DEBRIS OF ANY KIND.
3. PRIOR TO FLEXAMAT PLUS INSTALLATION, SEED AND FERTILIZE SUBGRADE WITH SITE SPECIFIC SEED MIX IN ACCORDANCE WITH THE PROJECT PLANS AND SPECIFICATIONS.
4. INSTALL FLEXAMAT PLUS ROLLS, MATS SHALL BE CONTINUOUS FOR ENTIRE LENGTH OF SLOPE.
- 4.1. MATTING SHALL EXTEND 3' BELOW ORDINARY WATER LEVEL.
5. AT MAT ABUTMENT SEAMS, INSTALL RECYCLEX TRM SEAMS EVENLY UNDER EACH MAT.
6. SECURE ABUTMENT SEAMS IN 2' INCREMENTS USING STAINLESS STEEL ZIP TIES OR #3 REBAR - 18" U-ANCHORS. ZIP TIES SHALL ENCOMPASS 3 CORDS OF GRID OF EACH ABUTTING MAT OR GEOGRID EXTENSION. U-ANCHORS SHALL ENCOMPASS 2 CORDS OF GEOGRID OF EACH ABUTTING MAT OR GEOGRID EXTENSIONS.
7. AT THE BEGINNING AND END OF THE SHORELINE PROTECTION, EMBED THE MAT 18" PAST THE ANTICIPATED SCOUR POINT. FILL AND COMPACT TERMINATION TRENCH WITH COHESIVE SOIL.
8. RECESS TOP TWO BLOCKS OF MAT INTO THE SLOPE.

MOTZ
ENTERPRISES, INC.

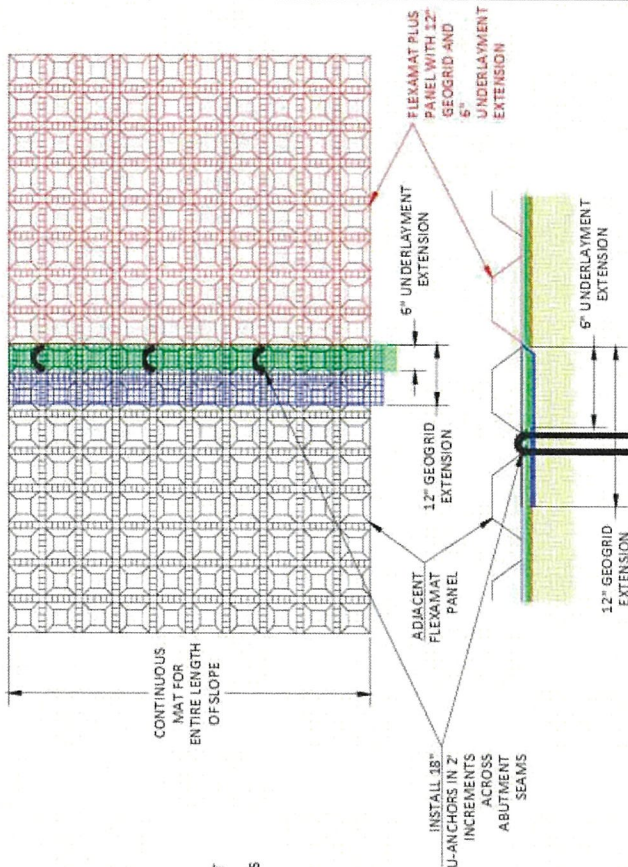
Flexamat
(513)772-6689
Info@Flexamat.com
Flexamat.com



METHOD FOR INSTALLING ANCHOR TRENCHES



METHOD FOR ABUTMENT SEAMS PARALLEL TO FLOW



LEGEND

Three standard symbols will be found in the drawing.

MEAN LOW WATER	MEAN HIGH WATER	HIGH TIDE LINE
OYSTERS	RP MAT	FLEXAMAT
MARKER VEG PLANTING	UPLAND VEG PLANTING	

NOT RELEASED FOR CONSTRUCTION

LABARBA ENVIRONMENTAL SERVICES
BRUNSWICK, GA
PREPARED FOR:
SHADOWLAWN, LLC

DATE: 5/17/2026
SCALE: NTS

9
SHEET:

Zulu Marine
7505 Waters Ave
Savannah Ga



REV - 1

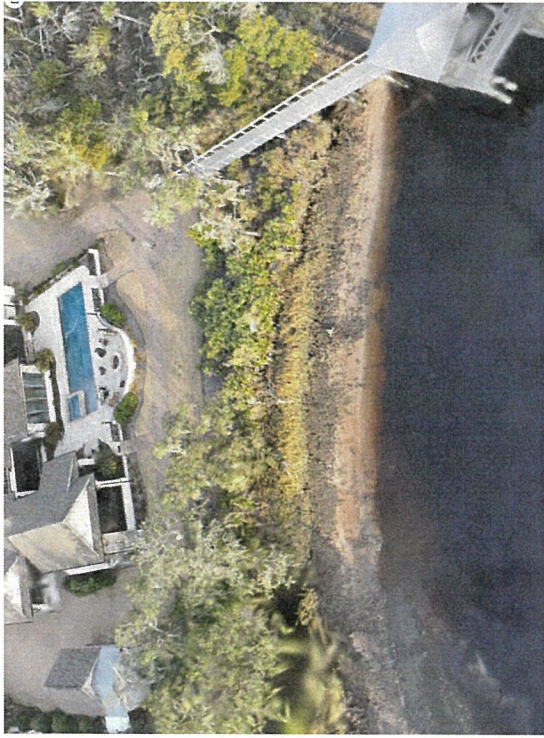
FLEXAMAT PLUS - WAVE IMPACT SHORELINE ARMORING

CONSTRUCTION NOTES:

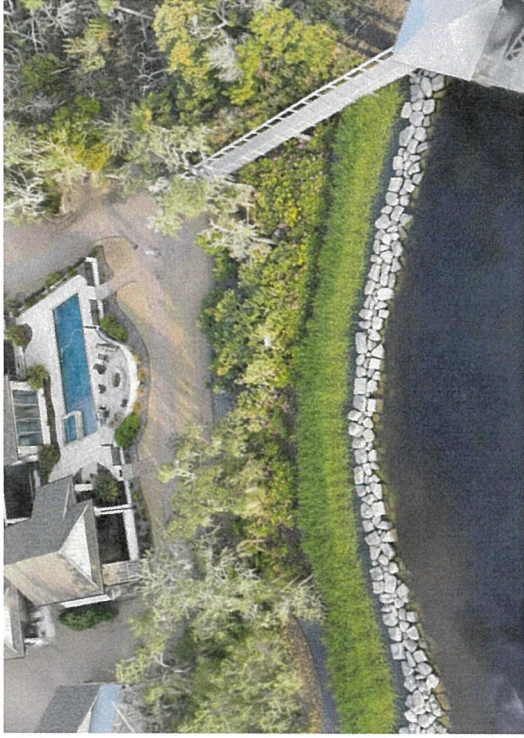
1. AN ENGINEER OR MANUFACTURERS REPRESENTATIVE SHALL BE ONSITE FOR THE START OF THE INSTALLATION.
2. ALL SUBGRADE SURFACES PREPARED FOR PLACEMENT OF MATS SHALL BE SMOOTH AND FREE OF ALL ROCKS, STICKS, OTHER PROTRUSIONS, OF DEBRIS OF ANY KIND.
3. PRIOR TO FLEXAMAT PLUS INSTALLATION, SEED AND FERTILIZE THE SUBGRADE WITH SITE SPECIFIC SEED MIX IN ACCORDANCE WITH THE PROJECT PLANS AND SPECIFICATIONS.
4. INSTALL FLEXAMAT ROLLS THAT ARE 15.5' WIDE AND INCLUDE A 12" GEOGRID AND 6" PLUS UNDERLAYMENT EXTENSION FOR OVERLAPPING MATS. THE TOP EDGE OF MAT SHALL BE RECESSED 18" INTO THE SLOPE. INSTALL SUBSEQUENT MATS OVER THE 12" GEOGRID AND 6" PLUS EXTENSION OF THE DOWNSTREAM MAT INSTALLED ADJACENT MAT. MATS SHALL BE CONTINUOUS FOR ENTIRE LENGTH OF SLOPE.
5. SECURE OVERLAP SEAMS IN 2' INCREMENTS USING 18" U-ANCHORS. U-ANCHORS SHALL EXTEND AROUND 2 CORDS OF GEOGRID ON EACH MAT.
6. AT THE BEGINNING AND END OF THE SHORELINE/LEVEE PROTECTION, EMBED THE MAT 18" PAST THE ANTICIPATED SCOUR POINT. FILL AND COMPACT TERMINATION TRENCH WITH COHESIVE SOIL.
7. EXTEND FLEXAMAT 5' BELOW ORDINARY POOL ELEVATION.

APPROVED

EXISTING CONDITIONS



PROPOSED CONDITIONS (RENDERING)



NOT RELEASED
FOR
CONSTRUCTION

LEGEND

These standard symbols will
be found in the drawing.

- MEAN LOW WATER
- MEAN HIGH WATER
- HIGH TIDE LINE
- OYSTERS
- RIP RAP
- FLEXAMAT
- MARSH VEG PLANTING
- TRANS. VEG PLANTING
- UPLAND VEG PLANTING

LABARBA ENVIRONMENTAL SERVICES
BRUNSWICK, GA
PREPARED FOR:
SHADOWLAWN, LLC

RENDERING

DATE: 5/17/2026
SCALE: NTS

10

SHEET:

APPROVED

