

Lovers Key - Bonita Beach Nourishment Project
Lee County, Florida
TECHNICAL SPECIFICATIONS
JANUARY 31, 2024

TS-01 MOBILIZATION:

A. GENERAL – The Work specified in this section consists of the preparatory efforts and operations in mobilizing for beginning Work on the Project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies and incidentals to the Project area, and for the establishment of temporary offices, buildings, safety equipment and first-aid supplies, water supply, electric supply, sanitary facilities, transportation facilities, and other facilities as required by the General Conditions; the Special Provisions; and Federal, State and local laws and regulations. All costs for providing the bond and insurance required for this Project shall be included within the bid item for Mobilization. Mobilization involves the moving of all equipment, including, but not limited to, dredges and other excavation equipment; pipeline; barges and tugs; and support vessels; to the Project area. It also includes arrangements for on-site storage and maintenance of said equipment, as well as access to the Work Areas for all equipment. Further, it includes construction access and staging, construction access and staging restoration, and maintenance of traffic.

B. WORK AREAS

1. Limits of Construction – The Project is located in Lee County, Florida. The Work Areas include the Lovers Key Beach Fill (LKBF) between approximate Stations 5+00 and 68+00; Bonita Beach Fill (BBF) between approximate Stations 105+00 and 145+00; South Bonita Beach Fill (SBBF) between approximate Stations 145+00 and 235+00; Borrow Area; and Pipeline Corridors in the Gulf of Mexico. The Project area contains sensitive environmental habitats such as hardbottom, seagrass beds, mangroves, and oyster beds. The Contractor shall avoid these habitats and is responsible for environmental protection.

The limits of construction available to the Contractor for accomplishing the Work include the construction access and staging areas, Beach Fill templates from the landward limit of fill to the toe of fill, Borrow Area, and Pipeline Corridors. The Contractor may not store plant or equipment including pipeline in excess of what is needed for this Contract. Furthermore, the Contractor shall not place said material or equipment landward of the Beach Fill templates except within the designated and approved construction access and staging areas. The Contractor shall not operate equipment nor install pipeline above Mean High Water (MHW) north of Station 105+00 or south of Station 240+00 for the BBF and SBBF Work Areas without written authorization from the County.

The Contractor shall not store or stockpile tools, equipment, materials, within littoral zones, wetlands, or elsewhere within surface waters of the State without prior written approval from the County and regulatory agencies unless designated on the Contract Plans. Storing, stockpiling, or accessing of equipment on, in, over, or through areas with benthic biological resources (including beds of submerged aquatic vegetation, wetlands, oyster reefs or hardbottom) is prohibited unless it occurs within a Work Area or ingress/egress corridor that is specifically approved by the Permits. Anchoring or spudding of vessels and barges within areas with benthic biological resources is also prohibited. The Contractor shall not conduct their operations or store Project-related equipment in, on or over dunes, or otherwise impact dune vegetation.

2. Environmental Window –All Work for BBF and SBBF must be completed between November 1 and April 30 to comply with the Permits. All Work shall be subject to the environmental protection plans defined in the Permits and these Specifications.

3. Security – The Contractor is permitted to exclude the public from their Work Areas as necessary to perform the Work. The Contractor shall exclude the public from access to the discharge end of their pipeline. Enforcement shall be the Contractor's responsibility at the Contractor's expense. The enforcement shall be coordinated with local enforcement agencies and will be subject to approval of the County. The Contractor shall erect, maintain, and move as necessary, a restrictive barrier around the discharge of the hydraulic pipeline. The barrier shall be constructed so as to prevent the public from approaching the

discharge and any dike area from any direction closer than 100 feet. The Contractor shall post signs in a conspicuous manner stating: "DANGER - HIGH PRESSURE DISCHARGE FROM DREDGE." Additionally, the Contractor shall place a safety person at the discharge end of the disposal pipeline. The safety person shall be present at all times during discharge operations and will maintain radio communication between the dredge and the disposal operation.

4. Construction Access and Staging – The temporary construction access and staging areas are shown on the Contract Plans. They include the Equipment Access Route from Estero Boulevard on the north end of Lover Key State Park traversing south of the bridge construction to the LKBF Work Area; Equipment Landing Zone on the southern end of Lovers Key State Park and Equipment Access Route to the LKBF Work Area, Little Hickory Island Beach Park, New Pass Access and Staging Area, and New Pass Marine Staging Area. The Contractor shall work cooperatively with the County and property owners for usage of the construction access and staging areas. No dredging of the New Pass Marine Staging Area shall be allowed. Designated contractor parking spaces and pipeline storage and assembly areas will be determined at the pre-construction meeting. The public beach parks will remain open during construction and the Contractor will have to conduct their Work accordingly.

The Contractor shall confine their plant, equipment and operations of personnel to areas permitted by law, ordinances, permits and the requirements of the Contract Documents, and shall not unreasonably encumber the premises with plant or equipment. The Contractor must control noise and must control wind-blown sand, silt, and dust while using each construction access and staging area. The Contractor is responsible for preparation and restoration of each area. The Contractor is required to submit a construction access and staging plan and construction access and staging restoration plan prior to its usage. Disposal of any cleared vegetation, debris and rubbish shall be in a manner acceptable to the County. All construction areas shall be restored to pre-construction conditions, or better as part of demobilization. Sites shall be graded to prevent standing water. All permits or surveys necessary to render the construction access are solely the responsibility of the Contractor to obtain. A pre-construction video shall be collected by the Contractor to document the existing conditions of the land-based construction access and staging areas prior to the Contractor accessing these areas. The Contractor shall provide a copy of the video to the County upon request. A minimum of 48-hour written notice shall be provided to the County for delivery of large equipment including, but not limited to, dozers, graders, backhoes, loaders, and excavators, and sediment pipeline.

Alternative and/or additional access and staging areas may be proposed by the Contractor. Procurement of additional temporary upland construction access areas shall be obtained by and at the expense of the Contractor. The Contractor is required to submit a signed agreement with any private property owner to the County, and a construction access plan and construction access restoration plan for review and approval by the County for each alternate construction access obtained by the Contractor prior to its usage in accordance with the Special Provisions.

The Contractor shall minimize vehicle tracking of sediment from the Work Areas by use of Best Management Practices (BMPs) such as stone pads, concrete or steel wash racks, or equivalent systems. Street sweeping must be used if such BMPs are not adequate to prevent sediment from being tracked onto roadways.

5. Noise – The Contractor shall conduct their operations so as to comply with all Federal, State, and local laws pertaining to noise. The Contractor shall use a decibel meter and keep records as necessary to verify the Work is being conducted accordingly. Dredges and booster pumps used on this Work shall be equipped with satisfactory mufflers or other sound abatement devices to reduce engine noise. Selection of booster pump locations shall be approved by the County prior to placement. The selected locations shall minimize impacts to navigation and residential areas to the greatest extent possible. If a booster pump is placed within 250 feet of a residential structure, a temporary berm must be constructed between the booster pump and the structure. The berm shall be of sufficient height to abate the noise level of the booster pump and shall be restored to pre-construction conditions prior to Beach Fill acceptance. All hauling and excavating equipment shall also be equipped with satisfactory mufflers or other noise abatement devices.

6. Lighting – The Contractor shall conduct their operations so as to comply with all Federal, State, and local laws including, but not limited to, pertaining to lighting including sea turtle protection safeguards during sea turtle nesting season described in the Permits.

7. Protection of Existing Facilities – During staging, construction access, excavation, sediment transport, sediment placement, and site restoration, the Contractor shall implement BMPs to protect the facilities within and adjacent to the Work Areas and to prevent damage thereto by the Contractor's operations. The Contractor shall provide the County in their Work Plan how they will accomplish this Work including, but not limited to, use of small equipment and hand labor as necessary to protect the structures. The Contractor will be responsible for the cost to repair any damage to existing structures (e.g., utilities, seawalls, revetments, sand bags, upland development, landscaping, aids to navigation) caused by the Work in accordance with all Federal, State, and local regulations. Final payment shall be withheld until the repairs are made and approved by the County.

C. DREDGING AND NAVIGATIONAL AIDS

1. General – Signal lights, signage, and aids shall be utilized to designate the Work Areas and New Pass Marine Staging Area and shall be displayed and operated in accordance with the regulations of the U.S. Coast Guard (USCG) as set forth in Commandant USCG Instruction M16672.2, Navigation Rules: International-Inland (COMDTINST M16672.2), or 33 CFR 81 Appendix A (International) and 33 CFR 84 through 33 CFR 89 (Inland), as applicable.

2. Relocation of Navigational Aids – Temporary removal of any navigational aids (e.g., piles, buoys, markers, signs) located within or near the areas required to be dredged or filled and any material stockpile areas shall be coordinated by Contractor with the County and USCG prior to removal. The Contractor shall coordinate with the County and USCG concerning the position and manner to which the navigational aids shall be relocated. The Contractor shall not otherwise remove, change the location of, obstruct, willfully damage, make fast to, or interfere with any navigational aid. The Contractor shall notify, in writing, the County and the USCG seven (7) days prior to dredging or conducting Work adjacent to any navigational aids which shall require relocation of the aid to facilitate the Work. A copy of the notification and any USCG responses shall be provided to the County. Temporary removal, storage, and reinstallation of any navigational aid shall be at the Contractor's expense.

3. New Pass Marine Staging Area - Lighted temporary navigational aids shall be installed at intervals required by the USCG to sufficiently alert the public of the staging areas location and limits. The Contractor shall obtain a temporary Permit from the USCG for all lighted buoys to be placed in the water prior to installation. The Permit application submitted to the USCG shall state the position, color, and the date to be installed and removed for all temporary navigational aid markers. Copies of application and Permit shall be submitted to the County seven (7) days prior to commencement of operations.

The Contractor shall operate and maintain all the lighted temporary navigational aids. Buoys shall be sufficiently weighted to prevent movement by normal wave and current action and vessel wakes. All lighted temporary navigational aids shall be checked daily for any that may be missing, damaged, incorrectly positioned, or have inoperable lighting. All lighted temporary navigational aids that are found to be missing, damaged, or inoperable shall be replaced within twenty-four (24) hours. Should lighted temporary navigational aids leave positioned locations, the Contractor shall relocate immediately and adjust anchoring to prevent subsequent movement.

The Contractor shall remove all lighted temporary navigational aids, piles, chains, and anchors from the New Pass Marine Staging Area upon completion and acceptance of the Work.

4. Dredging Aids – The Contractor shall obtain approval from the USCG for all dredging aids, including, but not limited to, temporary navigational aids, warning signs, buoys, and lights that are required in conducting the Work specified in this Contract. Dredging aid markers shall not be colored or placed in a manner that they will obstruct or be confused with navigational aids. All dredging aids, signs, buoys, and or lights must meet USCG regulations referenced herein. The Contractor shall obtain a temporary Permit from the USCG for all buoys or dredging aid markers to be placed in the water prior to installation. The Permit application submitted to the USCG shall state the position, color, and the date to be installed and removed for all dredging aid markers. Copies of application and Permit shall be submitted to the County seven (7) days prior to commencement of operations.

Lighted dredging aids to navigation shall be installed prior to any dredging equipment entering the Borrow Area. Lighted dredging aids shall be installed at intervals required by the USCG. The Contractor shall notify the USCG in accordance with these Specifications. The notification shall contain maps and descriptions of lighted dredging aids to navigation for inclusion in the Local Notice to Mariners. Copies shall be provided to the County.

The Contractor shall operate and maintain all the lighted aids. If buoys are used, they shall be sufficiently anchored to prevent movement by normal wave and current action and vessel wakes. All dredging aids shall be checked daily for any that may be missing, damaged, incorrectly positioned, or have inoperable lighting. All dredging aids that are found to be missing, damaged, or inoperable shall be replaced within twenty-four (24) hours. Should dredging aids leave positioned locations, the Contractor shall relocate immediately and adjust anchoring to prevent subsequent movement.

The Contractor shall prepare and maintain a method of inventory for all dredging aids used in the construction of the Project. The log shall include information concerning the location, installation, maintenance, and recovery of all dredging aids. The Contractor shall make this log available for review by the County upon request. Upon completion of the Work, the Contractor shall furnish the log to the County.

The Contractor shall remove all lighted dredging aids, piles, chains, and anchors from the Work Areas upon completion and acceptance of the Work.

D. SEDIMENT PIPELINE MARKERS – Pipeline Corridors have been identified on the Contract Plans. Deviations from or relocation of these corridors are subject to review and approval by the Federal and State regulatory agencies. Should the Contractor request a deviation or relocation of these corridors, it shall be the responsibility of the Contractor to apply for and obtain the required Permit modifications from the Florida Department of Environmental Protection (FDEP) and U.S. Army Corps of Engineers (USACE). The Contractor shall provide the approved permit modifications and approvals to the County prior to installing the sediment pipeline, hydraulic unloaders, and/or booster pumps.

No anchoring shall be allowed outside of the approved limits of anchoring and corridors unless approved by the County. If pilings are used for anchorage, the pilings shall be well marked and removed in their entirety upon completion of the Contractor's operations. If the piles cannot be removed completely, they must be removed to a minimum of 10 (ten) feet below the existing seafloor. Any damages to private or public property resulting from the Contractor's operations shall be repaired by the Contractor at their own expense.

All sediment pipeline markers must meet USCG regulations as set forth in Commandant USCG Instruction M16672.2, Navigation Rules: International-Inland (COMDTINST M16672.2), or 33 CFR 81 Appendix A (International) and 33 CFR 84 through 33 CFR 89 (Inland), as applicable. The Contractor shall obtain a temporary Permit from the USCG for all buoys or markers to be placed in the water prior to installation. The Permit application shall state the position, color, date to be installed and removed for all sediment pipeline markers and be submitted to the USCG. Copies of application and Permit shall be submitted to the County seven (7) calendar days prior to commencement of operations.

All submerged pipelines installed within or crossing navigable waters shall be marked in accordance with USCG regulations referenced herein. Lights shall be installed and maintained on the floating pipeline in accordance with USCG regulations referenced herein. The sediment pipeline markers shall be lighted for 24-hour operation. The Contractor shall notify the USCG in accordance with these Specifications. The notification shall contain maps and descriptions of lighted sediment pipeline markers for inclusion in the Notice to Mariners. No requirements of these Specifications shall supersede the USCG regulations.

The Contractor shall operate and maintain all the sediment pipeline markers. Sediment pipeline markers shall be checked daily for any that may be missing, damaged, incorrectly positioned, or have inoperable lighting. Missing, damaged, or inoperable markers shall be replaced within 24 hours. Should markers leave positioned locations, the Contractor shall relocate immediately and adjust anchoring to prevent subsequent movement.

The Contractor shall prepare and maintain a method of inventory for all sediment pipeline markers used in the construction of the Project. The log shall include information concerning the location, installation, maintenance, and recovery of all sediment pipeline markers. The Contractor shall make this log available for review by the County upon request. Upon completion of the Work, the Contractor shall furnish the log to the County.

The Contractor shall remove all sediment pipeline markers, piles, chains, anchors, and concrete mats from the Work Areas upon completion and acceptance of the Work.

E. ARBITRARY DEMOBILIZATION – The County will pay for mobilization and demobilization only once. Should the Contractor demobilize prior to completing the Project, such demobilization and subsequent remobilization shall be at no cost to the County. If the Contractor elects to demobilize prior to completing the Work, except for the protection of personnel, plant, or equipment prior to a storm or relocation to another fill template within the Project, and the Work Areas are impacted by a Major Storm, defined as a storm given a name by the National Oceanic and Atmospheric Administration in the vicinity of the Work Area requiring demobilization of personnel and equipment for safety, the County shall re-survey the same survey transects as prescribed for the pre-construction survey and such expense shall be deducted from monies owed to the Contractor.

If arbitrary demobilization should occur during construction, upon return to the Project area from an arbitrary demobilization, the Contractor shall the fill templates for a distance of 500 linear feet from the last point of sediment discharge in the direction(s) of the previously accepted sections. If a segment is discontinuous, this requirement shall apply to both ends of the discontinuous fill that had previously been accepted. It shall be the responsibility of the Contractor, at no cost to the County, to refill any previously accepted fill sections back to the minimum acceptance elevations and slopes within the 500-foot area surveyed. If an additional survey(s) are required due to arbitrary demobilization by the Contractor, then the cost of the County conducting the survey(s) shall be deducted from the monies owed to the Contractor.

F. METHOD OF MEASUREMENT – The lump sum quantity for Mobilization shall be the lump sum amount and shall include all items, devices, materials, labor, operations, and all Work as described herein.

G. BASIS OF PAYMENT – The Work and incidental costs specified herein shall be paid at the Contract Lump Sum Price for the Bid Item "Mobilization." Thirty percent (30%) of the lump sum price will be paid to the Contractor upon placement of the sediment pipeline from the selected Pump-Out Area to the first Beach Fill. Thirty percent (30%) of the lump sum price will be paid to the Contractor after commencement and placement of 7,500 cubic yards of sediment in a 24-hour period. Ten percent (10%) of the lump sum price will be paid to the Contractor upon placement of the sediment pipeline to the second Beach Fill. The remaining thirty percent (30%) of the lump sum price will be paid to the Contractor upon completion of all punch list items and demobilization of the plant and equipment, and upon final completion and acceptance of all Work. Acceptance shall be at the sole discretion of the County and may be based on one or more of the following: Contractor's Daily Reports, observations by the County's representative, and Surveys.

Bid Item No. 1

Mobilization

Lump Sum (LS)

TS-02 BEACH FILL:

A. BEACH FILL CONSTRUCTION

1. General – The Contractor shall, prior to placement of fill, remove from the Beach Fills all snags, trees, stumps, driftwood, sharp objects, manmade and similar debris lying within the limits of the Beach Fills. Manmade debris includes, but is not limited to, concrete, rebar, timber piles, tiebacks, broken concrete sheet pile, broken steel sheet pile, etc. All materials removed shall be disposed of in areas provided by and at the expense of the Contractor and approved by the County.

The Contractor shall not stockpile pipe, any other equipment, or debris outside of the Contractor's Work Area.

The Contractor shall provide and maintain ten (10) foot wide sand ramps over the pipeline, spaced at a maximum of every 100 feet and at existing beach access points, to allow public access from the uplands to the shoreline.

The cross sections shown on the Contract Plans are for the purpose of estimating the theoretical amount of fill needed and will be used in making any changes in the lines and grades. The beach and dune are subject to changes and the elevations on the beach and dune at the time the Work is done may vary from the elevations shown on the Contract Plans. The County reserves the right to vary the width and grade of the templates from the lines and grades shown on the Contract Plans in order to establish uniform beaches and/or dunes.

All sediment excavated from the Borrow Area shall be transported to and deposited on the Beach Fills within the lines, grades, and cross sections shown on the Contract Plans except as may be modified by these Specifications. Except as specified herein, the Contractor shall maintain and protect the fill in a satisfactory condition at all times until acceptance of the Work. The fill shall be free of clay lenses, rock, or silt pockets.

Per the Special Provisions, the Contractor shall protect and/or support the utilities which may be in conflict with the construction of the Project. Per these Specifications, the Contractor shall protect the existing facilities within and adjacent to the Work Area.

The sediment shall be placed and brought to rest on the beach to the lines, grades, and cross sections indicated on the Contract Plans unless otherwise provided for herein or at the direction of the County. Tapers with minimum lengths indicated on the Contract Plans shall be constructed at the ends of each Beach Fill wherein construction grades shall be transitioned to meet existing grades.

Placement of sediment shall not encroach landward beyond the existing seaward edge of the continuous vegetation line or structures encountered adjacent to the Beach Fills. The Contractor shall exercise due caution when placing sediment near structures/vegetation so as not to damage the structures/vegetation. The Contractor shall complete the Beach Fill templates adjacent to the structures located within the Beach Fill limits. The Contractor shall provide the County in their Work Plan how they will accomplish this Work including, but not limited to, use of small equipment and hand labor as necessary to protect the structures. The Contractor will be responsible for the cost to repair any damage caused by the Work. Final payment shall be withheld until the repairs are made and approved in writing by the County.

If any material is deposited other than in places designated or approved, the Contractor may be required to remove such misplaced material and redeposit it where directed at the Contractor's expense in accordance with these Specifications and the Special Provisions.

Throughout fill placement, the Contractor shall level escarpments that exceed eighteen inches (18") in height for a length of 100 feet or more. Escarpment leveling shall be coordinated with the County and sea turtle monitors.

Any grade stakes used in the Work Areas shall be made of steel pipe or rebar that shall be completely removed intact by the Contractor after filled cross sections have been accepted by the County. Any

excavation required to remove the stakes shall be backfilled. Grade stakes shall be flagged to increase visibility. The Contractor shall prepare and maintain a method of inventory for all grade stakes used in the construction of the Project. The log shall include information concerning the location, installation, and recovery of all grade stakes. The Contractor shall make this log available for review by the County upon request. Upon completion of the Work, the Contractor shall furnish the log to the County. Upon full acceptance by the County of a section of the Work Area, the Contractor shall conduct a search to find each and every grade stake placed by the Contractor. Sections of the Work Area upon which the search for, and removal of grade stakes shall be documented in the Daily Progress Report form. Any grade stakes left in the Beach Fill will be the sole responsibility and liability of the Contractor. Any injuries to people or damage to property which may occur because grades stakes were left in the Beach Fill by the Contractor will be the responsibility and the liability of the Contractor. If the Contractor fails to remove grade stakes in a timely manner, the County may have the stakes removed and deduct the cost associated with such removal from the Contractor's payment.

2. Fill Stabilization – Temporary longitudinal dikes and spreader/pocket pipe shall be used as necessary to prevent gulying and erosion of the sediment and to retain the sediment on the beach within the limits of the fill cross section as required by the Permits and these Specifications. As the Work progresses, dikes or mounds shall be constructed as necessary to direct the pipeline discharge longitudinally along the beach to avoid transverse gulying directly from the discharge point to the Gulf, to build the new berm to design grade, to meet water quality standards, and to keep material within the construction toe of fill. More than one series of longitudinal dikes may be required to meet these requirements. When discharging slurried sediment onto the beach from a pipeline, the Contractor shall employ BMPs to reduce turbidity. At a minimum, these BMPs shall include the use of shore-parallel sediment dikes to promote settlement of suspended sediment on the beach before return water from the dredged discharge reenters the Gulf of Mexico. The pipeline discharge location shall have a minimum set-back of 50 feet from open water, or at the landward end of the beach berm (without disturbing the dune), whichever is less. The Contractor will not be held responsible for erosion caused by waves after the sediment has been satisfactorily placed and Beach Fill accepted except that the Contractor will be required to perform the dressing specified herein. No undrained pockets shall be left in any fill section during or upon completion of the Work. The Contractor shall not allow pipeline discharge water to flow landward of the fill section or water to pond between the fill and upland.

3. SBBF Alternate Construction Method – The County permitted an alternate construction method for SBBF. As shown on the Contract Plans, the Contractor may construct a temporary containment area to stockpile sand that is excavated from the Borrow Area and transported to the Beach Fill. A temporary sand dike may be constructed by excavating in-situ sand or pumped sand to form a perimeter berm. The berm shall be constructed starting as the toe of the outer slope of the dike, maintaining appropriate side slopes to crown elevation, then minimum crown width, then maintaining appropriate side slopes to the interior toe that provides a uniform dike around the entire perimeter of the disposal area. As the sand-water slurry is deposited, Work shall be scheduled to ensure that the berm will not be overtopped. If the containment cell approaches capacity, filling shall be stopped as necessary to allow for cell dewatering. Dredged sediment shall not be placed higher than one (1) foot below the crown of the berm. Internal weirs, culverts, risers, or other acceptable means of allowing transfer of dredge effluent from one internal spoil cell to another shall be installed. Turbidity shall be controlled to meet the Permit Conditions for Water Quality. Once the sand is dewatered, the Contractor may use mechanical equipment (e.g., offroad trucks, loaders, graders) to transport and place the sand along SBBF. If the Contractor elects to use this method, the temporary containment area and stockpiles within BBF must be degraded, dressed, tilled, and cleaned up in accordance with these Specifications prior to April 25.

4. Protection Conditions – The following protection conditions are specified in the Permits and relate to construction of the Beach Fills.

Between February 15 and October 31, the Contractor shall inspect the Work Areas that have excavations and temporary alterations of beach topography each day, to determine which areas have deviations (such as depressions, ruts, holes and vehicle tracks) capable of trapping flightless shorebird chicks or marine turtle hatchlings. If so, the deviations shall be filled or leveled from the natural beach profile prior to 9:00 p.m. each day. The beach surface shall also be inspected subsequent to completion of the Work, and all tracks, mounds, ridges or impressions, etc. left by construction equipment on the beach shall be leveled. All debris found on the Beach Fills shall be removed from the beach during daylight hours only, and shall

not commence until completion of daily monitoring surveys, to the maximum extent practicable prior to any placement of sediment.

Between February 15 and October 31, staging areas and temporary storage for construction equipment and pipes shall be located off the beach and dune to the maximum extent practicable. Nighttime storage of construction equipment that is not in use shall be located off the beach. All construction pipes that are in use on the beach shall be located as far landward as possible without compromising the integrity of the existing or reconstructed dune system. Pipes placed parallel to an existing dune shall be 5 to 10 feet away from the toe of the dune. If it is necessary to extend construction pipes past known shorebird nesting sites shown on the Contract Plans, then those pipes shall be placed landward of the site before birds are active in that area. No pipe or sediment shall be placed seaward of a shorebird nesting site during the shorebird nesting season.

Between February 15 and October 31, all vehicles shall operate in accordance with the Florida Fish and Wildlife Conservation Commission (FWC) BMPs for Operating Vehicles on the Beach (<http://myfwc.com/conservation/you-serve/wildlife/beachdriving/>). Specifically, the vehicle shall be operated at speeds less than six (6) miles per hour and run at or below the high-tide line (wet sand beach). All personnel associated with the Contractor shall be instructed about the potential presence of protected species, and the need to avoid injury and disturbance to these species. When flightless chicks are present within or adjacent to travel corridors, construction-related vehicles shall not be driven through the corridor unless an approved shorebird monitor is present and accompanies the vehicle.

Between February 15 and August 31, the County's Bird Monitors shall establish a disturbance-free buffer zone around any location within the Work Areas where the Bird Monitor has observed shorebirds engaged in breeding behavior, including territory defense. A 300-foot buffer shall be established around each nest or around the perimeter of each colonial nesting area. A 300-foot buffer shall also be placed around the perimeter of areas where shorebirds are seen digging nest scrapes or defending nest territories. All construction activities, movement of vehicles, stockpiling of equipment, and pedestrian traffic are prohibited in the buffer zone. Smaller, site-specific buffers may be established if approved in writing by the FWC Regional Biologist. Travel corridors shall be designated and marked outside the buffer areas for pedestrian, equipment or vehicular traffic. The Bird Monitors shall keep breeding sites under sufficient surveillance to determine if birds appear agitated or disturbed by construction or other activities in adjacent areas. If birds appear to be agitated or disturbed by these activities, then the Bird Monitors shall immediately widen the buffer zone to a sufficient size to protect breeding birds. Heavy equipment, other vehicles, or pedestrians may transit past breeding areas in these corridors. However, other activities such as stopping or turning heavy equipment and vehicles shall be prohibited within the designated travel corridors adjacent to the breeding site. When flightless chicks are present within or adjacent to travel corridors, movement of vehicles shall be adequately monitored by the Contractor's shorebird personnel or the County's Bird Monitors. The Contractor, with the oversight of their shorebird personnel or the County's Bird Monitors, shall avoid any chicks that may be in the path of moving vehicles and to level any tracks, ruts or holes that may be capable of trapping flightless chicks, while avoiding any impacts to the chicks. Any injury or death of a shorebird (including crushing eggs or young) resulting from construction activities shall be reported immediately to the FWC Regional Biologist.

Between April 15 and October 31, the Contractor shall not advance the fill within the LKBF more than 500 feet along the shoreline between dusk and the following day, until the daily marine turtle nesting survey is completed, and the beach has been cleared for fill advancement. The Contractor shall work cooperatively with the County and their sea turtle monitors for reporting and clearing of the beach; and for sea turtle nest relocations. Direct lighting of the beach and nearshore waters shall be limited to the immediate area of active construction. Lighting on offshore and onshore equipment shall be minimized by reducing the number of fixtures, shielding, lowering the height and appropriately placing fixtures to avoid excessive illumination of the water's surface and sea turtle nesting beach. The intensity of lighting shall be reduced to the minimum standard required for general construction area safety. Shields shall be affixed to the light housing on dredges, booster pumps, hydraulic unloaders, and land-based lights and shall be large enough to block lamp light from being transmitted outside the construction area or to the adjacent marine sea turtle nesting beach. The Contractor may also consider use of long wavelength (greater than 560 nanometers and absent wavelengths below 560 nanometers) light sources such as amber, orange, or red LEDs without the use of filters, gels, or lenses to help minimize lighting impacts on sea turtle nesting.

5. Tilling, Dressing and Final Cleanup – Upon completion of construction operations in each Beach Fill, the beach above MHW shall be graded and dressed throughout the Contractor's Work Area to remove ruts, humps, and depressions in the beach surface resulting from construction operations. A positive uniform slope shall be created from the continuous vegetation/armoring line to MHW.

In accordance with the Permits, immediately after completion and acceptance by the County of each Beach Fill, the Contractor shall perform the following Work. Till the fill area from the seaward edge of the continuous vegetation\structure line to MHW with equipment operated so as to penetrate and loosen beach sediment (a) to a depth of thirty-six inches (36") and (b) laterally without leaving unloosened compact sediment between the adjacent paths of tines or penetrating part of the equipment in accordance with the Permits. Suitable equipment is Caterpillar D9L/No. 9 Adjustable Parallelogram Multi-shank Ripper or approved equal. Either during or upon completion of any tilling, the beach shall be dragged using a non-compacting tow to remove any ruts created by the tilling process.

Final clean-up shall include the removal of all the Contractor's plant and equipment either for disposal or re-use and, if required, restoration of landscaping. Plant and/or equipment to be disposed of shall only be disposed of in a manner and at locations approved by the County. Except as noted herein, the final clean-up within the Contractor's Work Area shall be completed within the Contract Time or Environmental Window, whichever is more restrictive. If not done by the Contractor within five (5) days of the conclusion of the Contract Time or Environmental Window, whichever is more restrictive, then the County may have the said Work completed at the Contractor's expense. Unless otherwise approved in writing by the County, the Contractor shall not be permitted to abandon their plant or equipment.

B. BORROW AREA DREDGING

1. Excavation – The permitted methods for excavation include using a hopper dredge with pump-out capability through a sediment pipeline from a Pump-Out Area or a hydraulic cutterhead dredge with scow barges and pump-out capability through a sediment pipeline from a Pump-Out Area. All excavation shall be performed within the limits of the Borrow Area as depicted on the Contract Plans. Pump-Out Areas and waterborne booster locations shall be located within the limits of the Borrow Area, Pump-Out Areas, and Pipeline Corridors shown on the Contract Plans. All excavation shall be performed in accordance with the Borrow Area Conservation Plan described in these Specifications. Variations in the composition, grain size, shell content, and silt content of the dredge material should be expected.

Excavation and filling operations shall be done in a manner that will minimize turbidity of the water at the dredge sites and at the discharge from the Beach Fills and adhere to State water quality standards. If excess turbidity occurs, the Contractor shall change the operating procedure to reduce the degree of turbidity. Stringent turbidity controls and monitoring are required and described in the Permits and these Specifications. The Contractor shall implement BMPs to meet water quality standards and as necessary employ selective discharge and/or alternating pumping locations or other methods in the event turbidity generated during the construction approaches the limits of water quality standards.

From April 15 through November 15, all lighting aboard dredges, pump-out barges, hydraulic unloaders, and booster barges operating within three (3) nautical miles (NM) of sea turtle nesting beaches shall be limited to the minimal lighting necessary to comply with USCG and/or OSHA requirements. All non-essential lighting on the equipment shall be minimized through reduction, shielding, lowering, and appropriate placement of lights to minimize illumination of the water to reduce potential disorientation effects on female sea turtles approaching the nesting beaches and sea turtle hatchlings making their way seaward from their natal beaches. The Contractor may also consider use of long wavelength (greater than 560 nanometers and absent wavelengths below 560 nanometers) light sources such as amber, orange, or red LEDs without the use of filters, gels, or lenses to help minimize lighting impacts on sea turtle nesting.

2. Character of Materials – The sediment within the Borrow Area are documented by interpretation of geophysical data including sidescan sonar and seismic subbottom surveys, vibracore samples, and classifications by laboratory tests on samples from the cores. These data are included with the Contract Documents. While the cores are representative of subsurface conditions at their respective locations and vertical reaches, local variations in the characteristics of the subsurface materials within the Borrow Area

are to be expected. Accordingly, prospective bidders shall form their own conclusions based on the geophysical and geotechnical information provided. Refer to the Permits, Contract Plans, and these Specifications for Borrow Area restrictions. The Contractor shall immediately notify the County of any differing site conditions in accordance with the Contract Documents. The Contractor is put on notice that materials outside and below the Borrow Area limits may contain rock fragments and/or continuous rock surfaces. Vibracore samples are available for inspection upon request.

The Borrow Area contains substantial quantities of fine-grained sediment. The Contractor should note that the fine grained portion of the sediment may remain in suspension generating turbidity. The Contractor may have to adjust their production rate to control turbidity and meet stringent water quality standards. The Borrow Area also contain substantial quantities of coarse-grained sand and shell. The Contractor should note that the coarse material may require special handling procedures to transport it the required distance to the fill templates, and to avoid placing coarse material in excess of the standards defined in the Permits.

3. Sediment Quality Assurance/Quality Control Plan – A Sediment Quality Assurance/Quality Control Plan (Sediment QA/QC Plan) is included in the Permits and is incorporated into these Specifications by reference. Sediment quality specifications are provided for the dredge sediment within a range of acceptable quality values which must be met for final acceptance. The sediment quality specifications take into account the variability of sediment within the Borrow Area and represent values which may reasonably be attained given what is known about the sediment to be dredged. The Sediment QA/QC Plan defines the responsibilities for both the County and Contractor with respect to providing compatible sediment to construct the Beach Fills.

Compatible sediment is defined in the Sediment QA/QC Plan as follows. All sediment placed on or near the beach shall be sand that is similar to that already existing at the beach site in both coloration and grain size distribution. All such sediment shall be free of construction debris, rocks, or other foreign matter, and shall not contain, on average, greater than 5% fines (i.e., silt and clay passing the #230 sieve), and shall not contain, on average, greater than 5% coarse material (retained on the #4 sieve) as described in the Permits.

As part of their quality control, the Contractor's onsite personnel shall be trained and experienced in beach nourishment and construction inspection and be knowledgeable of the Project design and sediment characteristics. The sediment quality and the quality control measures to be implemented by the Contractor defined in the Sediment QA/QC Plan shall be discussed as a matter of importance at the pre-construction meeting. The Contractor shall work cooperatively with the County to implement the Sediment QA/QC Plan and avoid the placement of non-compatible sediment within the Beach Fills.

The County shall have the authority to interpret the provisions of the Sediment QA/QC Plan, regulatory requirements, and other criteria in order to determine whether the sediment being placed in the fill template is acceptable or unsatisfactory. However, the Contractor shall be responsible for assuring the quality of the placed sediment complies with the determination.

The Quality Control provisions of the Sediment QA/QC Plan specify the Contract requirements placed on the Contractor to perform all Work within the construction tolerances of the proposed dredge cuts, to promptly modify dredging activity should non-compatible sediment be encountered, and to take remedial actions should non-compatible sediment be placed. The County reserves the right to relocate the Contractor within the dredge limits to avoid placement of non-compatible sediment. Relocations to avoid non-compatible sediment shall be at no additional cost to the County and shall not be a basis of claim for additional cost or time.

If non-compatible sediment is encountered during excavation or sediment placement, the Contractor shall immediately notify the County verbally, providing the time, location, and source of the non-compatible sediment. The Contractor shall also immediately cease dredging operations and raise the elevation of the suction head or cutterhead a minimum of 0.5 feet and observe the quality of the sediment being excavated at that time. The Contractor shall continue to adjust the elevation of the suction head or cutterhead until compatible sediment is dredged. If the Contractor is still unable to find compatible sediment at higher elevations in the same portion of the Borrow Area, the Contractor shall (a) notify the County verbally and report the encounter with the non-compatible sediment on their Daily Progress Report, providing the location in Florida State Plane Coordinates of the area of rock, rubble or debris, and (b) move the Contractor's dredging operations to another area within the Borrow Area. The County reserves the right to

conduct a survey of the Borrow Area to determine compliance with the Sediment QA/QC Plan. The Contractor shall cooperate with the County to shut down their dredging operation during this survey to allow for safe operations of the survey vessel and crew.

If the Contractor fails to comply with the Sediment QA/QC Plan and these Specifications to avoid non-compatible sediment, then rock, rubble or debris which is excavated and placed on the beach may be required by the County to be removed from the Beach Fill by the Contractor, totally at the Contractor's expense. If the Contractor fails to remove the rock, rubble or debris, to the satisfaction of the County, such debris may be removed by the County, and the cost of such removal may be deducted from any payment due or to become due to the Contractor or may be recovered under the Contractor's bond.

No excavation shall occur below the permitted dredging depth or outside the permitted dredging limits defined in the Contract and Permits. This provision does not apply to the slopes of the dredge cuts; that is, the Contractor will not be held responsible for sediment running from outside the limits when they are excavating at an edge of the Borrow Area. Material that is excavated from unpermitted areas will not be paid for under this Contract. Excavation in such an area is a violation of Permits for this Work. The County will perform pre-dredge and post-dredge surveys of the Borrow Area. If surveys and construction observations determine that excavation has been performed outside or below the permitted limits resulting in placement of non-compatible sediment, the quantity of material dredged from these areas will be computed and subtracted from the pay quantity. Locations outside and below the permitted limits may contain material deposits that are undesirable for beach nourishment. Further, the Contractor shall remediate the Beach Fills to remove non-compatible sediment excavated from unpermitted areas as required by the permitting agencies and at the Contractor's expense.

Non-compatible sediment shall be determined by the Permit agencies and County based on the compatible sediment definition. The Contractor will be required to compensate the County for any costs, fines, or other expenses related to Permit violations resulting from Contractor failure to comply with the Permits and/or associated with dredging outside or below the permitted dredge limits. Compensation will be in the form of a deduction from any payment due or to become due to the Contractor or may be recovered under the Contractor's bond.

In accordance with the Sediment QA/QC Plan and these Specifications, the Contractor shall provide in their Work Plan a Noncompliant Contingency Plan to handle the removal and disposal of non-compatible sediment in the event it is encountered during dredging and fill placement. The Noncompliant Contingency Plan is subject to review and approval by the Permit agencies. The method by which the Contractor removes the non-compatible sediment shall be of their own design and shall be constructed to ensure the removal of all such rock, rubble, or debris. Crushing of rock and dispersing it within the Beach Fill shall not be allowed. The Plan shall include at a minimum how the Contractor will properly notify the County if non-compatible sediment is encountered; how the Contractor will report the encounters in their Daily Progress Report such as approximate elevation and position in the Project datums as well as station and offset from the survey baselines (Borrow Area and Beach Fill Template); who will conduct the laboratory testing and analyses; control measures to adjust operations; and remedial actions such as blending, screening, removal, and disposal.

4. Dredge Quality Management Program (DQM) – The Contractor is required to implement a DQM that is consistent with these Specifications and Permits. The Contractor's DQM shall be submitted with their Work Plan for review and approval by the County prior to mobilization. This includes sediment excavation, transport, and pump-out. The location of the master global positioning system (GPS) antenna on the dredge and the distance and direction from the master GPS antenna to the bottom of the excavation device shall be reported on the Daily Reports.

The Contractor is required to have continuously operated electronic positioning equipment that will locate the dredge when operating in the Borrow Area. The Contractor shall keep this equipment functioning on the dredge at all times during construction. The Contractor is required to calibrate the equipment as required by the manufacturer. Proof of calibration shall be submitted to the County. Continuous locations of the dredge shall be made at all times during dredging operations. The location is to be by computed coordinates in the Florida State Plane West grid coordinates, North American Datum of 1983 (NAD 83) GEOID18, U.S. survey feet with a probable range error not to exceed +/-3 feet. Positions shall be recorded at least every

two (2) minutes along the track of cutterhead dredge and at least every 10 seconds along the track of a hopper dredge. The Contractor's method of location of the dredge shall be submitted to the County for review and approval with the Work Plan.

The Contractor is also required to have a continuously operated dredging depth indicator capable of gauging the depth being dredged at all times for the cutter of a cutterhead dredge and each dragarm (port & starboard) for hopper dredges. The instrument shall be of electronic recorder type. The indicators shall be in plain view of operators and be adjusted to the reference datum, North American Vertical Datum of 1988 (NAVD88), GEOID18, U.S. survey feet. The Contractor shall use surveying equipment and methodology accordance with the State of Florida requirements for topographic and hydrographic surveys to achieve this vertical datum. The vertical positioning equipment will maintain a vertical accuracy of +/-0.5 feet with continuous applicable tidal corrections measured at the Borrow Area. Proposed tide correction methods and measurements must be included in the DQM. Data shall be recorded at intervals to correspond with horizontal location control reporting.

For cutterhead dredges the Contractor shall compile from the silent inspector (DQM computer) a daily electronic dredge log providing at a minimum the date (mm/dd/yy), time (hh:mm:ss), cutterhead location (NAD 83 X-Y, feet), cutterhead elevation (NAVD88, feet), the tide (NAVD88, feet), pump rpm, slurry density, and slurry velocity. For hopper dredges the Contractor shall compile from the silent inspector a daily electronic dredge log providing at a minimum the date (mm/dd/yy), time (hh:mm:ss), dredge location (NAD 83, X-Y, feet), port dragarm location (NAD 83, X-Y, feet), port dragarm elevation (NAVD88, feet), port pump rpm, port dragarm slurry density, port dragarm slurry velocity, starboard dragarm location (NAD 83, X-Y, feet), starboard dragarm elevation (NAVD88, feet), starboard pump rpm, starboard dragarm slurry density, and starboard dragarm slurry velocity.

The Contractor shall prepare a daily plot of the locational fixes collected that includes the Florida State Plane Coordinate grid system and the Borrow Area limits. The Contractor shall prepare daily graphs depicting the cutterhead and/or dragarm elevations corrected for tide elevation and referenced to NAVD88 and referenced to time. The format of the plot and graphs may be subject to approval by the County. A printout of the cutterhead and/or dragarm horizontal positions in Florida State Plane Coordinates, the cutterhead and/or dragarm depths corrected for tide elevation and referenced to NAVD88 and the time, will be maintained for each printed fix. A computer file (in ASCII format) copy of the position data will be provided to the County as part of the Daily Report.

The Contractor shall provide the daily electronic dredge logs, printouts of the dredge logs, daily locational plots, and daily cutterhead and/or dragarm elevation graphs by 1:00 pm the following day to the County. The Contractor shall notify the County immediately of any violation of the permitted Borrow Area limits, both horizontal and vertical.

Should the Contractor, during dredging operations, encounter any objects within the Borrow Area which could be a hazard to navigation, they will notify the County and the USCG Marine Safety Office immediately as to the location of said object for the USCG to put out a Notice to Mariners. The Contractor shall furnish a description of the object, the latitude and longitude of the reported object, and any pertinent information necessary to alert mariners in the Project Area.

5. Cut Sequence – The Contractor must submit a proposed cut sequence with their Work Plan for approval by the County prior to mobilization. Excavation of sediment from the Borrow Area shall be in accordance with these Specifications and Permits, and in conformity to the lines, grades, and elevations shown on the Contract Plans or as directed by the County. Utilization and sequence of the Borrow Area are at the Contractor's discretion subject to County's review and approval of the cut sequence and the Environmental Window. In order to ensure that the Borrow Area is used efficiently, and the material left in the Borrow Area is practicable to dredge in a subsequent event, the Contractor is required to adhere to the following parameters contained in the Borrow Area Conservation Plan described herein when developing their cut sequence. The cut sequence shall reflect consideration of these parameters. Deviations from the parameters may be proposed in the Contractor's Work Plan subject to review and approval by the County.

- Borrow Area cuts shall parallel each other.

- Borrow Area cuts may consist of pairs of corresponding cuts. For example, Cut 1a could be oriented towards the southwest following the azimuth of the southern boundary while Cut 1b could be oriented towards the northwest following the azimuth of the eastern boundary. This option is provided to allow dredging along different headings as wind, wave, and current patterns necessitate.
- Each Borrow Area cut must be completed prior to proceeding to the next cut. If pairs of cuts are sequenced, then corresponding cuts such as Cut 1a and Cut 1b, shall be completed concurrently. This shall be repeated until the design grade is achieved, or the Work is completed during the final cut.
- All dredging shall be performed in a uniform and continuous manner to avoid creating multiple holes, valleys, or ridges.
- The permitted volume of sediment exceeds the volume required to complete LKBF, BBF, and SBBF. The remaining volume of sediment within the Borrow Area will be utilized to complete future beach nourishment projects.

The County desires to have the Borrow Area excavated to remove the significant majority of the compatible sediment within the permitted dredge depths. There is no allowance for the excavator to go below the bottom of the maximum permitted dredge cut. Operation of the plant and equipment below this limit is a violation of the Permits and Contract.

Detailed geophysical survey including bathymetry, magnetometer, side-scan sonar, and subbottom surveys were conducted of the Borrow Area and described in the consulting reports contained in the Contract Documents.

6. Hopper Dredge Equipment and Operational Procedures – If the Contractor elects to utilize hopper dredges, they shall comply with the requirements of the Permits and these Specifications. The Contractor shall ensure that all personnel involved in operating hopper dredges receive thorough training on measures of dredge operation that will minimize takes of sea turtles. It shall be the goal of each hopper dredging operation to establish operating procedures that are consistent with those that have been used successfully during hopper dredging in other regions of the coastal United States, and which have proven effective in reducing turtle/dredge interactions.

Hopper dredge dragheads shall be equipped with sea turtle deflectors which are rigidly attached. Deflectors shall be solid with no openings in the face. The Contractor shall submit in their Work Plan detailed drawings showing the proposed device and its attachment to their equipment for review and approval by the County prior to mobilization. Other designs will be considered provided sufficient information is included indicating a particular modification is effective in minimizing potential sea turtle takes. The Contractor shall submit in writing any alternative deflector design they wish to be considered to the County three (3) weeks in advance of the proposed utilization of such design or within the Work Plan. The County will coordinate with the National Marine Fisheries Service (NMFS) on the effectiveness of this alternate design. The NMFS shall make the approval or disapproval of the alternate design. The Contractor shall not presume that a decision on an alternative design will be provided during the contracting period. The Contractor's unit price shall be based on the original, solid faced deflector design. No adjustment in Unit Price will be made for the approval or denial of an alternate deflector design. No dredging shall be performed by a hopper dredge without an installed sea turtle deflector device approved by the County.

The leading vee-shaped portion of the deflector shall have an included angle of less than 90 degrees. Internal reinforcement shall be installed in the deflector to prevent structural failure of the device. The leading edge of the deflector shall be designed to have a plowing effect of at least six-inch (6") depth when the drag head is being operated. Appropriate instrumentation or indicator shall be used and kept in proper calibration to insure the critical "approach angle". (Information Only Note: The design "approach angle" or the angle of lower drag head pipe relative to the average sediment plane is very important to the proper operation of a deflector. If the lower drag head pipe angle in actual dredging conditions varies tremendously from the design angle of approach used in the development of the deflector, the six-inch (6") plowing effect does not occur. Therefore, every effort should be made to ensure this design "approach angle" is maintained with the lower drag pipe.

If adjustable depth deflectors are installed, they shall be rigidly attached to the draghead using either a hinged aft attachment point or an aft trunnion attachment point in association with an adjustable pin front attachment point or cable front attachment point with a stop set to obtain the six-inch (6") plowing effect.

This arrangement allows fine-tuning the six-inch (6") plowing effect for varying depths. After the deflector is properly adjusted there shall be NO openings between the deflector and the draghead more than four-inches by four-inches (4" x 4").

100% inflow screening of dredged material is required, and 100% overflow screening is recommended. If conditions prevent 100% inflow screening, inflow screening may be reduced gradually, as further detailed herein, but 100% overflow screening is then required.

The hopper's inflow screens should have four-inch by four-inch (4" x 4") screening. If the Contractor, in consultation with observers and the draghead operator, determines that the draghead is clogging and reducing production substantially, the screens may be modified sequentially: mesh size may be increased to six-inch by six-inch (6" x 6"), then nine-inch by nine-inch (9" x 9"), then twelve-inch by twelve-inch (12" x 12") openings. Clogging should be greatly reduced with these flexible options; however, further clogging may compel removal of the screening altogether, in which case effective 100% overflow screening is mandatory. The Contractor shall notify County beforehand if inflow screening is going to be reduced or eliminated and provide details of how effective overflow screening will be achieved.

Standard operating procedure shall be that dredging pumps shall be disengaged by the operator when the dragheads are not firmly on the bottom, to prevent impingement or entrainment of sea turtles within the water column. This precaution is especially important during the cleanup phase of dredging operations when the draghead frequently comes off the bottom and can suck in turtles resting in the shallow depressions between the high spots the draghead is trimming off.

The Contractor shall notify the County and the Sea Turtle Stranding and Salvage Network state representative (1-904-573-3930 or Allen.Foley@myfwc.com) (STSSN) of the start-up and completion of hopper dredging and relocation trawling operations. Further, in the event of learning of any sea turtle strandings that bear signs of potential draghead impingement or entrainment in the Project area, the Contractor shall notify the County and STSSN within 48 hours. Information on any such strandings will be reported by the County in writing within 30 days of Project completion to the NMFS Southeast Regional Office. Because the deaths of these turtles, if hopper dredge related, have already been accounted for in the NMFS jeopardy analysis, these strandings will not be counted against the take limit.

C. PIPELINE CORRIDORS

1. General – The Pipeline Corridors are defined as the Work Areas for sediment pipeline installation and operation between the Pump-Out Areas and the Beach Fills, for equipment anchoring, and for pump-out operations. Allowable anchor area limits vary by location and are shown on the Contract Plans. There shall be no bottom disturbing activity, including anchoring, spudding, or surface penetrations outside of the permitted limits. Excess plant, equipment, and materials shall not be stored within the permitted limits.

There are Anchor Avoidance Areas located within the Pipeline Corridors as shown on the Contract Plans. There shall be no bottom disturbing activity, including anchoring, spudding, or surface penetrations, in the Anchor Avoidance Areas.

2. Sediment Pipeline Installation – The sediment pipeline shall be placed within the limits of the Pipeline Corridors. No excavation or trenching is permitted in the installation of the sediment pipeline. The sediment pipeline shall be marked in accordance with USCG regulations and these Specifications at all times. In the event the Contractor elects to submerge their pipeline, the pipeline shall rest on the bottom, and the top of the submerged pipeline and any anchor securing the submerged pipeline shall be no higher than the authorized depth for any navigation channel in which the submerged pipeline is placed. Should the Contractor elect to use a pipeline material which is buoyant or semi-buoyant, such as HDPE pipe or similar low-density materials, the Contractor shall securely anchor the pipeline to prevent the pipeline from lifting off the bottom under all conditions. Should any portion of the sediment pipeline not rest on the bottom, it will be considered a floating pipeline and shall be required to be made visible on the water's surface and clearly marked. Unless otherwise provided for herein, in no case shall the pipeline be allowed to fluctuate between the surface and the bottom or lie partly submerged except in the immediate vicinity of a booster pump.

3. Operation And Maintenance – The Contractor shall maintain a tight sediment pipeline at all times. The joints shall be so constructed as to preclude spillage and leakage. The Pipeline Corridors shall be visually inspected by the Contractor daily during period of active pump-out operations for signs of slicks, plumes, boils, or other surface anomalies that would indicate leaks, seepage, ruptures, or failures. The Contractor shall report the results of the inspections and indicate all occurrences in the Contractor's Daily Progress Report. All leaks shall be promptly repaired, and the dredging operations shall be suspended until complete repair has been made to the satisfaction of the County. The Contractor will transport the County to the leak repair site for visual observation if so requested by the County. Failure to repair leaks or change the method of operation which is resulting in significant leakage will result in suspension of dredging operations and require prompt repair or change of operation to prevent leakage as a prerequisite to the resumption of dredging. Suspension of dredging due to a leak shall not be a basis of claim for additional cost or time. Significant leakage shall be defined as such that it exceeds turbidity and water quality standards or results in loss of material as may be considered significant by the County. Sediment loss as a result of leaks in the sediment pipeline may be determined by the County as misplaced materials and subject to removal in accordance with these Specifications.

D. MEASUREMENT, PAYMENT, AND ACCEPTANCE

1. General – The Contractor will receive no payment for any sediment which is not contained within the limits of the Beach Fills shown on the Contract Plans, and not contiguous to the fill template and above the pre-construction profile. The Contractor must place a minimum of 95% of the design volume between pay profile lines in order to be considered for payment of each individual acceptance section, unless otherwise accepted by the County in writing.

Payment will be authorized only for sediment placement (a) within the fill template plus tolerances specified herein, and (b) for compensating slope adjustment if allowed as specified herein. The County shall require the Contractor to refill any deficient section of beach to at least meet the template within the vertical tolerances. The County will withhold payment for those acceptance sections of beach which do not meet the minimum fill requirement until the appropriate fill placement, grading, and dressing have been completed by the Contractor and accepted by the County. Any material placed more than 0.5 feet above the template may be left in place at the discretion of the County; however, this volume will not be included in the pay quantities.

The constructed beach contour lines between pay profiles will be approximately parallel and straight line, indicating that the Contractor attempted to construct a uniform (non-cusped) beach between the profile lines. If the County observe or believe they have observed any attempt to under-fill the beach between pay profile lines, a survey may be conducted by the County to quantify the amount of under-filling. In the event under-filling has been found to occur, the cost of additional surveys shall be deducted from payment to the Contractor. The Contractor will place additional fill until the beach is uniform in appearance and dimensions between pay profile lines provides a minimum of 95% of the design fill in order to qualify for payment of that acceptance section.

2. Tolerance – A tolerance of five-tenths (0.5) of one foot above the prescribed berm grade and slopes shall be allowed, subject to a minimum of 95% of the design volume between pay profile lines. The tolerances are provided to accommodate construction inaccuracies but shall not be used to increase the pay volume above that prescribed on the Bid Schedule in each individual Beach Fill acceptance section.

3. Compensating Slope – It is recognized that during placement of the fill, waves, currents and other conditions may, to some degree or another, adjust the slope of the placed fill to some geometry different than the design fill template. However, the County does not desire to allow in advance for consideration of a compensating slope payment. Following placement and pay surveys of sufficient fill to assess the actual slope adjustment, the Contractor may request that review and revisit this specification. If payment for compensating slope is subsequently authorized by the County, such payments will be made under the procedures outlined as follows.

Fill placed outside the Beach Fill templates will be credited under the following circumstance. Seaward of the berm, sediment measured outside the template can be counted towards the pay quantity to the extent that it compensates for a deficit within the design template. This applies only to sediment measured

contiguous to the construction profile seaward of the berm and the quantity cannot exceed the deficit volume. This provision is a tolerance in the measurement of sediment provided to accommodate for construction inaccuracies and variability but shall not be used to increase the pay volume. This provision, allowing for compensating volumes on the seaward face of the construction profile, shall be applied only within individual acceptance sections and not from one acceptance section to another. All other requirements of this specification for measurement and payment remain in effect.

4. Beach Fill Acceptance Sections – Beach Fill acceptance sections shall be 1,000 feet in continuous length unless otherwise noted herein. The basis of measurement will be the pre-placement cross sections and the post-placement cross sections of the Beach Fills. From the gross quantities so determined, the quantity of sediment lying beyond the theoretical cross section templates and outside the tolerance specified herein and subject to adjustment by “Compensating Slope” described herein for the completed acceptance section will be deducted and the net amount used for payment on a per cubic yard basis at the unit price per cubic yard for Bid Items “Beach Fill-Lovers Key”, “Beach Fill-Bonita Beach, and “Beach Fill-South Bonita Beach”.

The Contractor is required to make his own measurements and observations of each completed acceptance section to ensure they have achieved the design grades, slopes, and elevations as shown on the Contract Plans, then contact the County and request the acceptance survey. The Contractor shall contact the County in writing a minimum of forty-eight (48) hours in advance to request each acceptance survey. The County shall conduct the surveys as soon as practical subject to weather conditions. In the event the County’s acceptance survey indicates that the Contractor has not achieved the completed beach section in accordance with the Contract Documents, the Contractor shall refill the section and request a resurvey. The cost of an acceptance section re-survey, equal to \$2,800 per acceptance section, shall be at the expense of the Contractor, until the Work is accepted, which shall be deducted from the progress payments accordingly.

At the sole discretion of the County, Contractor surveys conducted in accordance with the most recent State of Florida and USACE requirements for topographic and hydrographic surveys may be used as acceptance surveys. The Contractor surveys may be used for any acceptance section, or for none; and the use of such surveys by the County at one or more sections shall not be taken as an indication that the Contractor surveys will be relied upon in other areas.

The intent of the activities described in these Specifications is to measure quantities of sediment placed on the beach for payment and acceptance. Because of the natural movement of the placed sediment by waves, tides and currents, and the possibility of substantial movement during severe weather events, the County reserves the right to survey at the County’s cost the completed and uncompleted sections of the Beach Fills for the purpose of computing quantities of sediment which may have been naturally transported from a completed section to an uncompleted section, or vice versa, and to incorporate those quantities in the computation of pay quantities.

5. Method of Measurement – The Beach Fill quantities, as shown on the bid form, are approximate and are given only as a basis of calculation for award of the Contract. The actual quantity may vary substantially from the estimated amount; however, the Contractor shall not exceed bid quantity without written approval from the County. The quantity to be paid for in this specification shall be paid for in cubic yards once satisfactorily completed and accepted. The Beach Fill volumes (cubic yards) shall be calculated by the County using a Triangulated Irregular Network surface to surface comparison method (Civil3D or Hypack).

6. Basis of Payment – Payment shall be made for materials and Work specified in connection with debris removal from the Beach Fills prior to sediment placement and proper disposal; security; layout of the Work and construction stake-out; Borrow Area excavation; sediment QA/QC; transport to and placement of sediment on the Beach Fills; sand ramps; removal, separation, and disposal of any debris encountered while dredging; escarpment removal; beach tilling, dressing and final clean-up; and all other appropriate costs in connection therewith or incidental thereto; which shall also include all other items of cost required by the Contract for which a separate payment is not provided for herein. This Work shall be included in the applicable Contract unit price per cubic yard for Bid Items “Beach Fill-Lovers Key”, “Beach Fill-Bonita Beach”, and “Beach Fill-South Bonita Beach”.

TS-03 ENVIRONMENTAL PROTECTION:

A. GENERAL – For the purpose of these Specifications, environmental protection is defined as the retention of the environment in its natural state to the greatest possible extent during Project construction and to enhance the natural appearance in its final condition. Environmental protection requires consideration of air, water, and land, and involves noise, solid waste-management as well as other pollutants. Solid wastes (including clearing debris) shall be placed in Contractor-provided containers that are emptied on a regular schedule. The Contractor will empty containers when three-quarters full and will avoid overflow conditions. All handling and disposal shall be conducted to prevent contamination. In order to prevent any environmental pollution arising from the construction activities in the performance of this Contract, the Contractor and their Subcontractors shall comply with all applicable Federal, State and local laws and regulations concerning environmental pollution control and abatement. Compliance by Subcontractors will be the responsibility of the Contractor.

B. LANDSCAPE PROTECTION – The environmental resources within the Project area and those affected outside the limits of permanent Work under this Contract shall be protected during the entire period of this Contract. The Contractor shall confine their activities to areas defined by the Contract Documents. Prior to the beginning of any construction, the Contractor shall identify all land resources to be preserved within the Contractor's Work Area. The Contractor shall not remove, cut, deface, injure, or destroy land resources, including trees, shrubs, vines, grasses, topsoil, and land forms without special permission from the County. Trees damaged beyond restoration shall be removed and disposed of by the Contractor in a manner approved by the County. Trees that are to be removed because of damage shall be replaced at the Contractor's expense by nursery-grown trees of the same species or a species approved by the County. The size and quality of nursery-grown trees shall also be approved by the County. No ropes, cables, or guy wires 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.

Prior to any construction, the Contractor shall mark the areas that are not required to accomplish all Work to be performed under this Contract. Isolated areas within the general Work Area which are to be saved and protected shall also be marked or fenced. The Contractor shall protect from damage all existing trees designated to remain and protect tree roots from noxious materials in solution caused by run-off or spillage. No materials, trailers, or equipment shall be stored within the dripline of any protected tree. Survey monuments and markers shall be protected before construction operations commence. The Contractor shall convey to their personnel the purpose of marking and/or protection of all necessary objects.

C. LOCATION OF STORAGE FACILITIES – The Contractor's storage areas required in the performance of the Work shall be located upon existing cleared portions of the job site or areas to be cleared and shall require written approval of the County. The Contractor shall not store oil or fuel on-site, or equipment that is not required for the daily construction activities. A metal pan with sides a minimum of four inches (4") high shall be placed under the equipment or adjacent area during refueling or lubrication refilling activities. The pan shall have a capacity equal to the capacity of the fuel/lubrication oil supply cans used and catch any spills or leaks during the refueling/refilling activity. Fluids caught in the pan shall be contained and either transported off-site or used in the equipment. Under no condition shall the materials be discharged on-site or into adjacent waters.

No storage of equipment or materials shall take place outside of the areas of impact as authorized by these Specifications or the Permits. The Contractor shall ensure that no impacts to wetlands or other surface waters occur during all ingress and egress activities. Those properties adjacent to the waterways that are considered surface waters or wetlands shall be left in their natural state. These areas shall not be used for parking, equipment storage, materials storage or as a staging area for construction. These areas shall not be filled or cleared.

D. EROSION CONTROL, CLEANUP AND RESTORATION – The Contractor shall implement BMPs to control off-site tracking of soil by vehicles and construction equipment and a procedure for cleanup and

reporting of non-storm water discharges, such as contaminated groundwater or accidental spills. Contractor shall be responsible for management and implementation of all associated Permit conditions and requirements. The Contractor shall not begin any soil disturbing activities until the County approves of the Contractor's Environmental Protection and Pollution Control Plan, including all required signed certification statements. Special measures shall be taken by the Contractor to prevent bilge pump discharge, chemicals, fuels, oils, greases, bituminous materials, waste, herbicides and insecticides, or other effluents from entering public waters. In the event of a spill, the Contractor shall immediately implement their spill plan and containment equipment, and immediately notify the applicable Federal, State and local agencies, as well as, the County.

Disposal of any materials, wastes, effluent, trash, garbage, oil, grease, chemicals, etc., in areas adjacent to streams or other waters of the State shall not be permitted. If any waste material is dumped in unauthorized areas, the Contractor shall remove the material and restore the area to the original condition before being disturbed. If necessary, contaminated ground shall be excavated, disposed of in an approved off-site facility, then replaced with suitable fill material, compacted and finished with topsoil and planted as required to re-establish vegetation by the Contractor at the Contractor's expense as directed by the County. The Contractor shall obliterate all signs of construction Work Areas, waste materials, or any other vestiges of construction as directed by County. The Work Areas shall be restored by the Contractor to near natural conditions.

E. ENDANGERED SPECIES PROTECTION

1. General – The Contractor shall comply with Federal, State and local regulations and the Permits, as applicable to the time of actual construction activities.

2. Marine Animals – In order to ensure that marine animals including, but not limited to, whales, dolphins, manatees, marine turtles, giant manta ray, and smalltooth sawfish, are not adversely affected by the construction activities, the Contractor shall comply with the Protection Conditions for Construction required by the Permits. The Contractor is responsible for the monitoring and reporting requirements required by the Permits. The Contractor is responsible for all on-site Project personnel and shall require them to observe water-related activities for the presence of marine animals and the need to avoid collisions with (and injury to) the protected marine species. The Contractor shall be responsible for harm to these resources and shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing marine animals, which are protected under the Endangered Species Act, Marine Mammal Protection Act, Marine Turtle Protection Act, and Florida Manatee Sanctuary Act.

For a vessel underway, such as a hopper dredge or support vessel, traveling within or between operations must follow these speed and distance requirements while ensuring vessel safety: all personnel working onboard will report ESA-listed species observed in the area to the vessel captain; if an ESA-listed species is spotted within the vessel's path, initiate evasive maneuvers to avoid collision.

If a North Atlantic right whale is spotted, the vessel shall slow to 10 knots and maintain a distance of at least 1,500 ft in accordance with the North Atlantic Right Whale Protection Rule (62 FR 6729 provides a distance of 500 yards, which is equal to 1,500 ft). The Contractor shall report the observation to 1-877-WHALE-HELP. If a whale (other than a North Atlantic right whale) is spotted, the vessel shall maintain a distance of at least 300 ft.

The Contractor shall report sightings (not encountered, collided with, or injured by a project covered SERO-2023-00260 00268 Batch 2 Nourishment) of the following species:

- Giant manta ray: report sightings by E-mail at: manta.ray@noaa.gov.
- Whale: report all whale sightings to the NMFS Southeast Marine Mammal Stranding Hotline at (877) WHALE-HELP (877-942-5343).
- Smalltooth sawfish: Report sightings to 1-844-SAWFISH or email Sawfish@MyFWC.com.

The Contractor shall immediately report any collision with an ESA-listed species to the USACE and BOEM according to the Permits and to NMFS consistent with the reporting requirements in the NMFS BO. A vessel collision with an ESA-listed species is counted as take for the Project.

The Contractor shall immediately report a take of specific species as listed below. A link to the most current contact information may also be available at (<https://dqm.usace.army.mil/odess/#/technicalInfo>).

- Sea turtle take: Report to the appropriate state species representative (<https://www.fisheries.noaa.gov/state-coordinators-sea-turtle-stranding-and-salvage-network>).
- Smalltooth sawfish take: report to 1-844-4SAWFISH or email Sawfish@MyFWC.com.

The Contractor shall immediately report any collision with a marine mammal to the Southeast Regional Marine Mammal Stranding hotline at 1-877-WHALE-HELP (1-877-942-5343) for guidance. This includes both ESA and non-ESA listed marine mammals.

3. Nesting Sea Turtles – The Contractor shall comply with the Protection Conditions for Construction required by the Permits and these Specifications. Specific dates relevant to increased sea turtle protection conditions on the Beach Fills begin on April 15 and continue until the last nest has hatched. The Contractor shall cooperate fully with the County and their monitors to comply with Federal, State and local regulations, and the Permits. The County is responsible for the sea turtle monitoring, nest relocations, and reporting as required by Federal, State and local regulations. The Contractor shall attend the Permit required pre-construction meeting specific to nesting sea turtle protection.

4. Shorebirds – In order to ensure that shorebirds are not adversely affected by the construction activities, the Contractor shall comply with the Protection Conditions for Construction required by the Permits and these Specifications. Specific dates relevant to increased protection conditions begin on February 15 and end on September 1 or when there is no more breeding activity, whichever is later. The Contractor shall cooperate fully with the County and their Bird Monitors to comply with the Permits. The County is responsible for the shorebird monitoring and reporting as required by Federal, State and local regulations. The Contractor is responsible for shorebird protection described in these Specifications.

5. Gopher Tortoises – The Contractor shall advise all construction personnel that gopher tortoises are listed by the State of Florida as a Threatened Species and protected. The Contractor shall construct the Project in such a manner as not to impact gopher tortoises. Construction access and staging cannot commence until the Contractor has surveyed and cleared the construction access and staging area and dune template limits on the LKBF for gopher tortoises. If a gopher tortoise is found that cannot be avoided and protected throughout construction activities, the Contractor shall work cooperatively with the County to either identify a new Work area or the County can successfully relocate the gopher tortoise(s). The Contractor shall keep construction activities under surveillance, management, and control to prevent impacts to gopher tortoises and their burrows. The Contractor shall stay at least 25 feet from the entrance of individual burrows.

F. METHOD OF MEASUREMENT – The Environmental Protection quantity shall be the lump sum amount and shall include all items, devices, materials, labor, operations, and all Work as described herein. Progress payments may be made based on the volume dredged and accepted divided by the total volume to be dredged.

G. BASIS OF PAYMENT – Payment shall be made for materials and Work specified in connection with implementing Federal and State endangered and threatened species protection conditions; implementing habitat and resource protection measures; and environmental permit compliance; and all other appropriate costs in connection therewith or incidental thereto. This Work shall be included in the applicable Contract lump sum price for Bid Item “Environmental Protection”.

Bid Item No. 3	Environmental Protection	Lump Sum (LS)
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TS-04 ENDANGERED SPECIES OBSERVERS (HOPPER DREDGING):

A. GENERAL – The Contractor shall conduct their Work and operate their equipment to minimize the possibility of taking sea turtles and giant manta rays and to comply with the requirements of the Permits and these Specifications.

B. OBSERVERS – The Contractor shall arrange for FWC and NMFS approved Endangered Species Observers (Observers) to live aboard the hopper dredges to monitor every load, 24 hours per day, for evidence of dredge-related impacts to protected species, particularly sea turtles and giant manta rays and their remains. Observer coverage sufficient for 100% monitoring (e.g., two observers) of hopper dredging operations is required aboard the hopper dredges during Project construction. When the dredge is transiting, observers will maintain a bridge watch for protected species and keep a logbook noting the date, time, location, species, number of animals, distance and bearing from dredge, direction of travel, and other information, for all sightings.

Observers must be trained and have experience to operate on the specific equipment they are aboard (e.g., hopper dredge, relocation trawler). Observers must have training and/or experience to identify and handle all species that may occur in the geographic area of the Project. Observers must be trained to safely install the specific tags being used and/or collect genetic samples required under the NMFS GRBO. ESA-listed species specific safe handling procedures, tagging procedures, and genetic sampling procedures must be followed, as outlined in the NMFS BO and GRBO. The Observers must carry a copy of the applicable Permits while on the vessel for easy reference. The NMFS BO and GRBO serves as the authority for the Observers to handle, tag, and genetic sample ESA-listed species for the Project. The Observers must not be assigned any other task (i.e. captain or other vessel crew position or task) while performing their role of Observer. The Observers must stand watch to detect ESA-listed species in the area and to alert the captain of their presence to avoid vessel collision whenever the vessel is moving. The on-duty Observer will only be responsible for standing watch and not performing other tasks such as inspecting or handling captures when the vessel is in motion.

C. OBSERVATION FORMS – The results of the monitoring shall be recorded by the Observers on the Endangered Species Observer Program Load Data Form, Endangered Species Observer Program Daily Report, and Endangered Species Observer Program Weekly Summary. The observations forms and reports will be completed regardless of whether any takes occur. Unless otherwise specified herein, the observation forms and reports shall be submitted to the County at each Progress Meeting.

D. DREDGING TAKE – The NMFS Gulf Regional Biological Opinion (GRBO) authorizes the annual lethal or injurious incidental take of eight (8) loggerhead turtles, four (4) Kemp’s ridley turtles, three (3) green turtles, and one (1) Hawksbill turtle for all hopper dredging projects in the Gulf of Mexico.

Handling of captured marine turtles during hopper dredging activities shall be conducted only by the Observers and who are duly authorized to conduct such activities through NMFS approval and a valid Marine Turtle Permit issued by the FWC, pursuant to Chapter 68E-1,F.A.C. The Observers shall immediately notify the County; NMFS Protected Resources Division (PRD) via phone at 727-824-5312 or fax at 727-824-5309 and e-mail at takereport.omfsr@noaa.gov; and STSSN Coordinator via e-mail at Allen.Foley@myfwc.com if the dredge takes a sea turtle, or other threatened or endangered species.

E. DREDGE TAKE REPORTING –The Observers shall prepare and submit a dredge take report for any incidental take by hopper dredges to the NMFS PRD via phone at 727-824-5312 or fax at 727-824-5309, and e-mail at takereport.omfsr@noaa.gov, STSSN Coordinator via e-mail at Allen.Foley@myfwc.com, BOEM at dredgeinfo@boem.gov and the County within 24 hours of any sea turtle or other listed species take observed.

The Observers shall prepare and submit a final report summarizing the results of the hopper dredging and any documented sea turtle takes to the NMFS Southeast Regional Office via e-mail at takereport.omfsr@noaa.gov, STSSN Coordinator via e-mail at Allen.Foley@myfwc.com, BOEM at dredgeinfo@boem.gov, and the County within 30 working days of completion of the dredging and trawling operations. The report shall contain information on the location (specific channel/area dredged), start-up and completion dates, cubic yards of material dredged, problems encountered, incidental takes and sightings of protected species, mitigative actions taken (if relocation trawling, the number and species of turtles relocated), screening type (inflow, overflow) utilized, daily water temperatures, name of dredge, names of endangered species observers, percent observer coverage, and any other information the observer deems relevant.

F. GIANT MANTA RAYS – In accordance with the NMFS Biological Opinion for this Project, the Contractor shall provide take reports regarding all interactions with giant manta ray that occur during the Project. The Contractor shall minimize the likelihood of injury or mortality to giant manta ray resulting from relocation trawling and subsequent handling of animals.

The Observers shall report all known captures of ESA-listed species and any other takes of ESA-listed species to the NMFS SERO PRD. If and when the Contractor becomes aware of any known reported capture, entanglement, stranding, or other take of giant manta ray, the Observers shall report it to NMFS SERO PRD via the NMFS SERO Endangered Species Take Report Form (<https://forms.gle/85fP2da4Ds9jEL829>). The Observers shall reference this Opinion by the NMFS tracking number (SERO-2023-00260 Batch 2 Beach Nourishment) and date of issuance – August 25, 2023. The form shall be completed for each individual known reported capture, entanglement, stranding, or other take incident for giant manta ray. The form shall include the species name, state the date and time of the incident, general location and activity resulting in capture, condition of the species (i.e., alive, dead, sent to rehabilitation), size of the individual, behavior, identifying features (i.e., presence of tags, scars, or distinguishing marks), and any photos that may have been taken.

G. METHOD OF MEASUREMENT – The Endangered Species Observers (Hopper Dredging) quantity shall be the number of days and shall include all items, devices, materials, labor, operations, reporting, and all Work as described herein.

H. BASIS OF PAYMENT – Payment shall be made for materials and Work specified in connection with Endangered Species Observers (Hopper Dredging) and all other appropriate costs in connection therewith or incidental thereto. This Work shall be included in the applicable Contract unit price per day for Bid Item “Endangered Species Observers (Hopper Dredging)”.

Bid Item No. 4	Endangered Species Observers (Hopper Dredging)	Days
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TS-05 RELOCATION TRAWLING (HOPPER DREDGING):

A. GENERAL - Any activity involving the use of nets to harass and/or to capture and handle marine turtles and giant manta rays in Florida waters requires a Marine Turtle Permit from the FWC and approval by the NMFS prior to trawling. The Contractor shall conduct their Work and operate their equipment to minimize the possibility of taking sea turtles and giant manta rays and to comply with the requirements of the Permits and these Specifications.

The Contractor shall arrange for FWC and NMFS approved Observers to live aboard the trawlers at all times to monitor all tows for endangered and threatened species, and record water temperatures, bycatch information, and any sightings of protected species in the area. The Observers are responsible for all handling and reporting of ESA-listed species. Trawling crew may assist in the general removal of species from the nets and data recording only and the Observers are responsible for all tagging, genetic sampling, and assuring information reported is accurate. All crew aboard the vessel are responsible for monitoring for the presence of ESA-listed species in the area and reporting to the vessel captain and Observers.

B. RELOCATION TRAWLING TAKE LIMITS – The NMFS GRBO authorizes the annual non-lethal take of 300 sea turtles (of loggerhead, green, Kemp’s ridley, leatherback, and hawksbill or combination of) and an annual lethal or injurious take of up to two (2) sea turtles by trawlers conducting relocation trawling for all dredging projects covered under the NMFS GRBO including, but not limited to, the Contract.

C. RELOCATION TRAWLING REQUIREMENTS – Relocation trawling shall be conducted for hopper dredging operations during Project construction as follows:

1. Relocation Trawling: Relocation trawling (a minimum of twelve (12) hours/day) shall be conducted for the three (3) days (72 hours) immediately prior to commencement of hopper dredging operations, to reduce the abundance of sea turtles in and adjacent to the Work Area, and continue throughout hopper dredging operations for the duration of the Project.

2. Trawl Time: Trawl tow-time duration shall not exceed 42 minutes (doors in-doors out) and trawl speeds shall not exceed 3.5 knots.

3. Handling During Trawling: Sea turtles and giant manta rays captured pursuant to relocation trawling shall be handled in a manner designed to ensure their safety and viability, and shall be released over the side of the vessel, away from the propeller, and only after ensuring that the vessel's propeller is in the neutral, or disengaged, position (i.e., not rotating).

4. Captured Turtle Holding Conditions: Sea turtles may be held briefly for the collection of important scientific measurements, prior to their release. Captured sea turtles shall be kept moist, and shaded whenever possible, until they are released, according to the requirements specified herein.

5. Scientific Measurements: When safely possible, all sea turtles shall be measured (standard carapace measurements including body depth), tagged, weighed, and a tissue sample taken prior to release. When safely possible, all giant manta ray shall be measured (fork length and total length), tagged, weighed, and a tissue sample taken prior to release. Any external tags shall be noted and data recorded into the Observer's log. Only NMFS and FWS approved Observers shall conduct the tagging/measuring/weighing/tissue sampling operations.

6. Take and Release Time During Trawling: Sea turtles shall be kept no longer than 12 hours prior to release and shall be released not less than three (3) NM from the dredge site. If two or more released sea turtles are later recaptured, subsequent sea turtle captures shall be released not less than five (5) NM away. If it can be done safely and without injury to the sea turtle, sea turtles may be transferred onto another vessel for transport to the release area to enable the relocation trawler to keep sweeping the dredge site without interruption.

7. Injuries and Incidental Take Limits: Any protected species injured or killed during or as a consequence of relocation trawling shall count toward the Gulf-wide limit for injurious or lethal takes during relocation trawling. Minor skin abrasions resulting from trawl capture are considered non-injurious. Injured sea turtles shall be immediately transported to the nearest sea turtle rehabilitation facility.

8. Turtle Flipper External Tagging: All sea turtles captured by relocation trawling shall be flipper-tagged prior to release with external tags which shall be obtained prior to construction from the University of Florida's Archie Carr Center for Sea Turtle Research, <http://accstr.ufl.edu/cmttp.html>, by contacting Alan Bolten, Archie Carr Center for Sea Turtle Research, University of Florida, PO Box 118525, Gainesville, FL 32611, 352-392-5194, abolten@ufl.edu. This opinion serves as the permitting authority for the Observers aboard these relocation trawlers to flipper-tag with external-type tags (e.g., Inconel tags) captured sea turtles. Columbus crabs or other organisms living on external sea turtle surfaces may also be sampled and removed under this authority.

9. PIT Tagging: This opinion serves as the permitting authority for the Observers aboard a relocation trawler to PIT tag captured sea turtles. PIT tagging of sea turtles is not required to be done, if the Observers do not have prior training or experience in said activity; however, if the observer has received prior training in PIT tagging procedures, then the Observers shall PIT tag the animal prior to release (in addition to the standard external tagging).

Sea turtle PIT tagging must then be performed in accordance with the NMFS Southeast Fisheries Science Center (SEFSC) protocols. PIT tags used must be sterile, individually-wrapped tags to prevent disease transmission. PIT tags should be 125-kHz, glass-encapsulated tags-the smallest ones made. Note: If scanning reveals a PIT tag and it was not difficult to find, then do not insert another PIT tag; simply record the tag number and location, and frequency, if known. If for some reason the tag is difficult to detect (e.g., tag is embedded deep in muscle), then insert one in the other shoulder.

10. Other Sampling Procedures: All other tagging and external or internal sampling procedures (e.g., bloodletting, laparoscopies, anal and gastric lavages, mounting satellite or radio transmitters, etc.) performed on live sea turtles are not permitted under this opinion unless the Observers hold a valid sea turtle research permit authorizing the activity.

11. PIT-Tag Scanning Requirements: All sea turtles captured by relocation trawling or dredges shall be thoroughly scanned for the presence of PIT tags prior to release using a multi-frequency scanner powerful enough to read multiple frequencies (including 125- and 134-kHz tags) and read tags deeply embedded in muscle tissue (e.g., manufactured by Trovan, Biomark, or Avid). Sea turtles whose scans show they have been previously PIT tagged shall nevertheless be externally flipper tagged.

12. Handling Fibropapillomatose Turtles: The Observers are not required to handle or sample viral fibropapilloma tumors if they believe there is a health hazard to themselves and choose not to. When handling sea turtles infected with fibropapilloma tumors, observers must either: 1) Clean all equipment that comes in contact with the turtle (i.e., tagging equipment, tape measures) with mild bleach solution, between the processing of each turtle; or 2) maintain a separate set of sampling equipment for handling animals displaying fibropapilloma tumors or lesions.

13. Requirement and Authority to Conduct Tissue Sampling/or Genetic Analyses: The NMFS Biological Opinion serves as the permitting authority for the Observers aboard a relocation trawler or hopper dredge to tissue-sample live- or dead-captured sea turtles without the need for an ESA section 10 permit. All live or dead sea turtles captured by relocation trawling and hopper dredging shall be tissue-sampled prior to release. Sampling shall continue uninterrupted until such time as NMFS determines and notifies in writing that it has sufficient samples from specific areas across the Gulf of Mexico in order to obtain reliable genetic information on the nesting or sub-population identity of sea turtles being captured or lethally taken, to improve the effectiveness of future consultations.

Sea turtle tissue samples shall be taken in accordance with the NMFS SEFSC procedures for sea turtle genetic analyses. The Contractor shall ensure that tissue samples taken are collected and stored properly and mailed by the Observers within 60 days of the completion of dredging to: NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center, Attn: Lisa Belskis, 75 Virginia Beach Drive, Miami, Florida 33149. Proof of delivery shall be provided to the County.

14. Giant manta ray captured by relocation trawling will be handled by the Observers aboard the trawler who will be responsible for collecting measurements, recording and reporting data, tagging, and taking genetic samples of the captured species in accordance with the Permits.

D. REPORTING – Sea turtle data collected (PIT tag scan data and external tagging data) shall be submitted by the Observers to the NMFS Southeast Fisheries Science Center, Attn: Lisa Belskis, 75 Virginia Beach Drive, Miami, Florida 33149. All sea turtle data collected shall be submitted by the Observers in electronic format within 60 days of Project completion to Lisa.Belskis@noaa.gov and Sheryan.Epperly@noaa.gov. Sea turtle external flipper tag and PIT tag data generated and collected by relocation trawlers shall also be submitted to the Cooperative Marine Turtle Tagging Program (CMTTP), on the appropriate CMTTP form, at the University of Florida's Archie Carr Center for Sea Turtle Research.

The Observers shall e-mail reports to the FWC's Imperiled Species Management Section (MTP@MyFWC.com) and the County on Friday of each week that trawling is conducted in Florida waters. These weekly reports shall include the species and number of turtles captured, their general health, and release information. A summary report of all trawling activity (including non-capture trawling) shall be submitted by the Observers to MTP@myfwc.com and the County within 30 days of completion of the dredging and trawling operations. The summary report shall be recorded on a FWC-approved Excel spreadsheet (available at <http://myfwc.com/media/3168/Trawl-Report-Template.pdf>), and shall list all sea turtles captured, the measurements of all captured turtles, the location of captures (latitude and longitude in decimal degrees), the location of tow start-stop points (latitude and longitude in decimal degrees), and times for the start-stop points of the tows (including tows when no sea turtles are captured).

After the final relocation trawling event, the Observers shall submit a summary report of capture, entanglement, stranding, or other take of giant manta ray to NMFS SERO PRD by email: nmfs.ser.esa.consultations@noaa.gov. Emails and reports shall reference this NMFS Biological Opinion by the NMFS tracking number (SERO-2023-00260 Batch 2 Beach Nourishment) and date of issuance – August 25, 2023. The report shall contain the following information: the total number of giant manta ray captures, entanglements, strandings, or other take that was reported during the relocation trawling.

E. METHOD OF MEASUREMENT – The Relocation Trawling (Hopper Dredging) quantity shall be the number of days and shall include all items, devices, materials, labor, operations, sampling, testing, reporting, and all Work as described herein.

F. BASIS OF PAYMENT – Payment shall be made for materials and Work specified in connection with Relocation Trawling (Hopper Dredging), reporting, tissue sampling; and all other appropriate costs in connection therewith or incidental thereto. This Work shall be included in the applicable Contract unit price per day for Bid Item “Relocation Trawling (Hopper Dredging).”

Bid Item No. 5	Relocation Trawling (Hopper Dredging)	Days
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TS-06 SHOREBIRD PROTECTION:

A. PROTECTION – Beginning February 15 and ending on September 1 or when there is no more breeding activity, whichever is later, the Contractor shall carefully mark and stake the boundaries of the Work Areas prior to construction in the respective fill area. During construction the Contractor shall work cooperatively with the County to establish, mark, and sign disturbance-free buffer zones, pedestrian accesses, and travel corridors. The Contractor is responsible for all markers and signs which shall be constructed with materials to be highly visible and semi-permanent and shall meet the requirements of the Permits. The Contractor shall submit within the Work Plan the materials proposed for the markers and signs for approval by the County. The Contractor shall maintain the markers and signs in good order for the duration of construction. The Contractor shall install predator-proof trash receptacles as required by the Permits. All markers, signs, and trash receptacles shall be removed from the Work Areas and properly disposed of at proper facility provided by the Contractor prior to demobilization. Historical nesting areas and are shown on the Contract Plans. However, nesting may occur outside of these areas. All markers shall be removed from the Work Areas and properly disposed of by the Contractor within 1 week of the final construction acceptance survey.

B. NON-INJURIOUS DETERRENTS – Between February 15 and ending on September 1 or or when there is no more breeding activity, whichever is later, non-injurious deterrents may be deployed by the Contractor within the Work Area, including, but not limited to, Beach Fills, travel corridors along the beach, and travel corridors to and from the construction access and staging areas. Non-injurious deterrents such as the placement of predator decoys, pennants, pinwheels, inflatable tubes, flagging, or orange fencing material on the beach or continued human presence may be used. The types of non-injurious deterrents, as well as their spatial and temporal deployment, shall be changed frequently to reduce the chances that birds become habituated to the methods. Timing, persistence, organization, and diversity of non-injurious deterrents are crucial in deterring birds from establishing active nests. The Contractor’s proposed non-injurious deterrents are subject to approval by the Federal and State agencies. All non-injurious deterrents shall be coordinated with the County prior to use. The County is processing an Incidental Take Permit (ITP) with the FWC for use of non-injurious deterrents in historical nesting areas. The ITP will be provided to the Contractor prior to commencement of Work.

C. PERSONNEL – To minimize impacts to birds, the Contractor shall employ FWC pre-approved biologists familiar with protected birds to allow for easy identification of birds encountered during the execution of Work under this Contract. Non-injurious deterrents should be conducted by experienced personnel who are familiar with shorebird ecology and are familiar with the proposed non-injurious deterrents . The Contractor shall provide the County with the credentials of the personnel and non-injurious deterrents for approval by the Federal and State agencies prior to mobilization. All non-injurious deterrents shall be conducted by or under supervision of the approved biologists who are familiar with the proposed methods.

D. NOTIFICATIONS AND REPORTING – When nesting occurs within the Project Area, the Contractor shall maintain a notification system and shall include maps showing the location of the Work Area, bird nesting buffers, approved travel corridors, and avoidance areas. The notifications shall clearly indicate the current status of avoidance areas, any marking schemes, and any other information needed to ensure Work continues without disturbance to the nesting birds. Notifications shall be issued to the County and construction crew daily while bird nests are present in the Work Areas. In the event that an egg is

spotted, the County shall be contacted immediately. A 150 ft nest buffer area shall be established by the approved personnel and all activities within the buffer area, including deterrents, must cease.

In the event that the Contractor discovers the initiation of bird nesting within 300 ft of the Work Area, then the County must be contacted immediately, required nest buffers established, and more measures deployed within the remaining Work Area outside the established nest buffer. The Contractor should evaluate impacts to the Work, if applicable, and inform the County of plans to adjust construction activities. For situations that may require temporary adjustments, the Contractor may make recommendations as to what potential nesting buffer encroachment is required to ensure the nesting birds are not disturbed or harassed from their nest, but still allows the continuation of Work. Recommendations shall include documented justification and be provided to the County as soon as possible following identification of a nest. Determination of any nest buffer encroachments are at the County's discretion and will be based on coordination with FWC.

The Contractor shall submit daily reports including maps for all activities at the Work Area including, but not limited to, bird surveys, nest locations, weather conditions, non-injurious deterrent activities, manpower, equipment, techniques, etc. In addition, photographs and GPS coordinates shall be provided for each identified nest and other pertinent feature. Deliverable of a spreadsheet in Microsoft Excel format with nest locations, dates of nest discovery, dates of nest examinations including the last date checked, and the nest fate shall be provided to the County on a weekly basis.

E. METHOD OF MEASUREMENT – The Shorebird Protection quantity shall be by the day and shall include all items, devices, materials, labor, operations, and all Work as described herein..

F. BASIS OF PAYMENT – Payment shall be made for materials and Work specified in connection with; implementing Federal and State shorebird protection conditions; non-injurious deterrents; installation and removal of Work Area markers; signage; installation and removal of predator-proof trash receptacles; and all other appropriate costs in connection therewith or incidental thereto. This Work shall be included in the applicable Contract unit price per day for Bid Item “Shorebird Protection.”

Bid Item No. 6	Shorebird Protection	Each (Day)
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TS-07 SUBMERGED SEDIMENT PIPELINE MONITORING

A. GENERAL – Any submerged sediment pipelines installed within the Pipeline Corridors shall be surveyed with side scan sonar, multibeam bathymetry, or swath bathymetry for movement, breakage, or leaks resulting in sediment discharge on the water bottom. Surveys shall be conducted at intervals consistent with the BOEM NNA including pre-construction (post-pipeline installation), to coincide with the placement of 50% of the LKBF volume and 50% of the combined BBF and SBBF volume, and post-construction (post-pipeline removal) for each Pipeline Corridor.

Additional inspection surveys shall be conducted immediately upon detection of any loss of pressure indicative of leaks, the passage of a severe storm event, and/or evidence of pipeline disturbance by other activities such as fishing vessels, etc. Inspection survey reports with quality control analysis must be submitted to the County for acceptance within 14 calendar days of completion of each survey.

If, prior to Project completion and final demobilization, the dredge plant and supporting equipment (e.g. booster pumps) are temporarily or arbitrarily demobilized from the Work Area for more than 14 calendar days, a monitoring survey of the sediment pipeline shall be conducted within 21 calendar days of the temporary or arbitrary demobilization.

All surveying Work listed in this section shall be performed under the direct supervision of a qualified hydrographic surveyor approved by the County and BOEM.

B. ACCURACY AND METHODOLOGY – Surveys, error analysis, and reporting associated with the Pipeline Corridors shall be performed in accordance with the most recent edition of NOAA's Office of Coast Survey Hydrographic Survey Field Procedure Manual. Survey standards and requirements are specified and can be found on the Coast Survey Document Library.

(<https://nauticalcharts.noaa.gov/publications/standards-and-requirements.html>)

All multibeam surveys shall have one hundred percent coverage. All survey lines shall extend a minimum of 200 ft beyond the allowable anchor area limits of the Pipeline Corridors. All bathymetric data will be roll, pitch, heave, and tide corrected using BMPs. Sound velocity corrections will be applied based on measurements made during and throughout the duration of the survey using a profiling sound velocity meter to obtain water column sound velocities with casts that log the entire water column to the seafloor.

Surveys shall be conducted using kinematic GPS referenced to a GPS base station occupying an established (NAVD88 vertical control) monument within ten (10) miles of the survey area or a National Geodetic Survey real-time network; or referenced to a water-level gauge deployed within the vicinity of the Work Area, unless alternative methods are approved by the County and BOEM. Surveys shall be referenced to the same water-level gauge, tide gauge, real-time network and/or benchmark, etc. Surveys not tide corrected in real-time or by water-level gauge collecting tide correction at an appropriate time interval during the survey will not be accepted.

The surveys shall be repeatable and compared to prior surveys for any alignment, stability, and integrity issues.

C. REPORTING – An uncertainty or error analysis shall be conducted on the bathymetric dataset based on calculated differences of measured elevations at all transect crossings. Other BMPs typically employed to identify potential errors or quantify uncertainty, such as daily bar-checks, shall be conducted and documented. An inspection survey report, uncertainty analysis report, field notes, and metadata shall be submitted to the County with the processed bathymetric data products must be submitted to the County for acceptance within 14 calendar days of completion of each survey.

D. METHOD OF MEASUREMENT – The Submerged Sediment Pipeline Monitoring shall be the price per survey amount and shall include all items, devices, materials, labor, operations, and all Work as described herein.

E. BASIS OF PAYMENT – Payment shall be made Work specified in connection with the submerged sediment pipeline monitoring and all other appropriate costs in connection therewith or incidental thereto. This Work shall be included in the applicable Contract unit price per survey for Bid Item “Submerged Sediment Pipeline Monitoring.”

Bid Item No. 7 Submerged Sediment Pipeline Monitoring Surveys

TS-08 TURBIDITY MONITORING:

A. GENERAL – The Contractor is responsible for the turbidity monitoring and reporting subject to the requirements of the Permits. Specifically, in order to assure that turbidity levels do not exceed the compliance standards established in the Permits, construction at the Project shall be monitored closely by an independent third party with formal training in water quality monitoring and professional experience in turbidity monitoring for coastal construction projects. Also, an individual familiar with beach construction techniques and turbidity monitoring shall be present at all times when fill material is discharged on the Beach Fills. This individual shall have authority to alter construction techniques or shut down the dredging or beach construction operations if turbidity levels exceed the compliance standards established in the Permits. The names and qualifications of those individuals performing these functions, along with 24-hour contact information, shall be submitted to the County and FDEP for approval by the Federal and State agencies prior to commencement of Work. The submittal shall also include the scope of work for the turbidity monitoring to ensure that the right equipment is available to conduct the monitoring correctly at any location and under any conditions; and an example of the geo-referenced map that will be provided with turbidity reports, including aerial photography and the boundaries for benthic resources.

B. TURBIDITY MONITORING – The Work covered by this section consists of furnishing all labor, materials, and equipment, and performing all Work required to obtain, analyze, and report the results of monitoring for turbidity. Turbidity levels may not exceed State Water Quality Standards as prescribed in the

Permits. Analysis of turbidity samples shall be performed in compliance with DEP-SOP-001/01 FT 1600 Field Measurement of Turbidity:
<http://publicfiles.dep.state.fl.us/dear/sas/sopdoc/2008sops/ft1600.pdf>.

The Contractor is responsible for the turbidity monitoring and reporting as required by the Permits. Failure to comply with this requirement is grounds for suspension of dredging operations. The Contractor shall retain a pre-approved independent third party with formal training in water quality monitoring and professional experience in turbidity monitoring for coastal construction projects in Florida. An individual familiar with beach construction techniques and turbidity monitoring shall be present at all times when turbidity generating activities are occurring.

1. Procedures – Turbidity monitoring procedures are as stated in the Permits. Turbidity is to be measured in Nephelometric Turbidity Units (NTUs) and shall be analyzed on site as soon as possible after collection.

Frequency: Monitoring for a **cutterhead dredge** shall be conducted 3 times daily, approximately 4 hours apart, and at any other time that there is a likelihood of an exceedance of the turbidity standard, during all dredging and sediment placement operations. Monitoring for a **hopper dredge** shall be conducted for each hopper dredge load during daylight hours. At the dredge site, sampling shall be conducted after overflow from the hopper begins and the associated turbidity plume has reached the edge of the mixing zone. At the fill placement site, sampling shall be conducted after discharge from the hopper begins and the associated turbidity plume has reached the edge of the mixing zone. Sampling shall be conducted while the highest Project-related turbidity levels are crossing the edge of the mixing zone. Since turbidity levels can be related to pumping rates, the dredge pumping rates shall be recorded, and provided to the FDEP upon request. The compliance samples and the corresponding background samples shall be collected at approximately the same time, i.e., one shall immediately follow the other.

Background Locations: Sampling shall occur at surface (approximately one foot below the surface), mid-depth (for sites with depths greater than 6 feet), and bottom (approximately 6 feet above the bottom for sites with depths greater than 25 feet). All background sampling shall occur clearly outside the influence of any artificially generated turbidity plume or the influence of an outgoing inlet plume.

Borrow Area: Samples shall be collected at least 980 feet up-current from source of turbidity at the dredge site.

Beach Fills: Samples shall be collected at least 1,640 feet up-current from any portion of the beach that has been, or is being, filled during the current construction event, at the same distances offshore as the associated compliance and intermediate samples.

Compliance Locations: Sampling shall occur at surface (approximately one foot below the surface), mid-depth (for sites with depths greater than 6 feet), and bottom (approximately 6 feet above the bottom for sites with depths greater than 25 feet).

Borrow Area: Samples shall be collected 500 feet down-current from the cutterhead or the hopper dredge overflow point, and from any other source of turbidity generated by the dredge, in the densest portion of any visible turbidity plume. If no plume is visible, follow the likely direction of flow.

Beach Fills: Samples shall be collected where the densest portion of the turbidity plume crosses the edge of the mixing zone polygon. For BBF, the mixing zone polygon measures up to 500 feet offshore and up to 2,130 feet alongshore from the point where the return water from the dredged discharge reenters the Gulf of Mexico. For LKBF, the mixing zone polygon measures up to 980 feet offshore and up to 8,200 feet alongshore from the point where the return water from the dredged discharge reenters the Gulf of Mexico.

For each sampling event, compliance samples shall be collected within the area of highest turbidity at **both** the rip current location and the longshore drift location. Note: If the plume flows parallel to the shoreline, the densest portion of the plume may cross the mixing zone polygon at a distance less than the maximum offshore dimension of the mixing zone. In that case, it may be necessary to access the sampling location from the shore, in water that is too shallow for a boat. If the plume flows offshore, it may cross the mixing

zone polygon at a distance less than the maximum alongshore dimension of the mixing zone, and the sample would be collected at that point.

Intermediate Monitoring: Samples shall be collected in the densest portion of the turbidity plume, at the surface, mid-depth and (for sites with depths greater than 25 feet) 6 feet from the bottom. The intermediate sampling points at BBF and SBBF shall be approximately 500 feet, 980 feet, and 1,640 feet down-current from the point where the return water from the dredged discharge reenters the Gulf of Mexico (if those points are located inside the mixing zone). The intermediate sampling points for LKBF shall be 500 feet, 1,640 feet, 3,280 feet, 4,920 feet, and 6,560 feet down-current from the point where the return water from the dredged discharge reenters the Gulf of Mexico (if those points are located inside the mixing zone).

Calibration: The instruments used to measure turbidity shall be fully calibrated with primary standards within one month of the commencement of the Project, and at least once a month throughout the Project. Calibration with secondary standards shall be verified each morning prior to use, after each time the instrument is turned on, and after field sampling using two secondary turbidity “standards” that bracket the anticipated turbidity samples. If the post-sampling calibration value deviates more than 8% from the previous calibration value, results shall be reported as estimated and a description of the problem shall be included in the field notes.

Modifications: If the turbidity monitoring protocol specified above prevents the collection of accurate data, the person in charge of the turbidity monitoring shall contact the FDEP JCP Compliance Officer to establish a more appropriate protocol. Once approved in writing by the FDEP, the new protocol shall be implemented through an administrative permit modification.

2. Compliance – The compliance locations given above shall be considered the limits of the temporary mixing zone for turbidity allowed during construction. If monitoring reveals turbidity levels at the compliance sites that are greater than 29 NTUs above the corresponding background turbidity levels, construction activities shall **cease immediately** and not resume until corrective measures have been taken and turbidity has returned to acceptable levels. This turbidity monitoring shall continue every hour until background turbidity levels are restored or until otherwise directed by the County or FDEP.

Any Project-associated turbidity source other than dredging or sediment placement in the Beach Fills (e.g., scow or pipeline leakage) shall be monitored as close to the source as possible. If the turbidity level exceeds 29 NTUs above background, the construction activities related to the exceedance shall cease immediately and not resume until corrective measures have been taken and turbidity has returned to acceptable levels. This turbidity monitoring shall continue every hour until background turbidity levels are restored or until otherwise directed by the County or FDEP.

C. TURBIDITY REPORTING – All reporting shall be via email to the FDEP at JCPCCompliance@dep.state.fl.us and the County and include in the subject line, “This information is provided in partial fulfillment of the monitoring requirements for the Bonita Beach and Lovers Key Beach Nourishment Project, Permit No. 0311811-004-JM.”

1. Weekly Reporting – All turbidity monitoring data shall be submitted within one (1) week of analysis. The data shall be presented in tabular format, indicating the measured turbidity levels at the compliance sites for each depth, the corresponding background levels at each depth and the number of NTUs over background at each depth. Any exceedances of the turbidity standard (29 NTUs above background) shall be highlighted in the table. In addition to the raw and processed data, the reports shall also contain the following information: time of day samples were taken; dates of sampling and analysis; GPS location of sample (when possible, coordinates should be provided in decimal degrees with a 5 decimal level of precision (i.e., 0.00001) and the datum); depth of water body; depth of each sample; antecedent weather conditions, including wind direction and velocity; tidal stage and direction of flow; and water temperature; geo-referenced map, overlaid on an aerial photograph (Beach Fills) or nautical chart (Borrow Area), indicating the sampling locations, dredging and discharge locations, direction of flow, and benthic resources; statement describing the methods used in collection, handling, storage and analysis of the samples; statement by the individual responsible for implementation of the sampling program concerning the authenticity, precision, limits of detection, calibration of the meter, accuracy of the data and precision of the GPS measurements; and when samples cannot be collected, an explanation in the report shall be

included. If the Contractor's independent monitor is unable to collect samples due to severe weather conditions, they shall include a copy of a current report from a reliable, independent source, such as an online weather service.

2. Exceedances – If the turbidity level exceeds 29 NTUs above background during dredging or sediment placement, the Contractor shall immediately report the occurrence via email to the County and FDEP JCPCCompliance@dep.state.fl.us. The subject line of the email shall state "TURBIDITY EXCEEDANCE for the Bonita Beach and Lovers Key Beach Nourishment Project, Permit No. 0311811-004-JM." If the Project-associated turbidity level exceeds 29 NTUs above background outside of dredging or sediment placement areas, the Contractor shall report the occurrence via email to the County and FDEP JCPCCompliance@dep.state.fl.us within 24 hours of the time the Contractor first becomes aware of the discharge. The subject line of the email shall state "OTHER PROJECT-ASSOCIATED DISCHARGE, TURBIDITY EXCEEDANCE."

When reporting a turbidity exceedance, the following information shall be included: Project Name; Permit Number; location and level (NTUs above background) of the turbidity exceedance; time and date that the exceedance occurred; and time and date that construction ceased. Prior to re-commencing the construction, a report shall be emailed to the County and FDEP with the same information that was included in the "Exceedance Report", plus the following information: turbidity monitoring data collected during the shutdown documenting the decline in turbidity levels and achievement of acceptable levels; corrective measures that were taken; and cause of the exceedance.

D. METHOD OF MEASUREMENT – The Turbidity Monitoring quantity shall be the lump sum amount and shall include all items, devices, materials, labor, operations, and all Work as described herein. Progress payments may be made based on the volume dredged and accepted divided by the total volume to be dredged.

E. BASIS OF PAYMENT – Payment shall be made for materials and Work specified in connection with installation and maintenance of turbidity controls; best management practices; turbidity monitoring; and environmental permit compliance; and all other appropriate costs in connection therewith or incidental thereto. This Work shall be included in the applicable Contract lump sum price for Bid Item "Turbidity Monitoring."

Bid Item No. 8

Turbidity Monitoring

Lump Sum (LS)