Deepwater Horizon Natural Resource Damage Assessment
Florida Trustee Implementation Group

Draft Restoration Plan 3 and Environmental Assessment: Water Quality

March 2024

Cover photograph credits:

Kyle Miller, Florida Fish and Wildlife Conservation Commission

Executive Summary

In the spring of 2010, the *Deepwater Horizon* (DWH) mobile drilling unit exploded, resulting in loss of life and a massive release of oil and natural gas from the BP Exploration and Production, Inc. (BP) Macondo well. Extensive response actions, including cleanup activities and actions to prevent the oil from reaching sensitive resources, were undertaken; however, many of these response actions had collateral impacts on the environment and natural resource services. The oil and other substances released from the well, in combination with the extensive response actions, together make up the DWH oil spill.

Pursuant to the Oil Pollution Act (OPA), Title 33 United States Code §§ 2701 et seq., and the laws of individual affected states, federal and state agencies, Indian tribes, and foreign governments act as trustees on behalf of the public to assess injuries to natural resources and their services that result from an oil spill incident, and to plan for restoration to compensate for those injuries. Under the authority of OPA, the DWH Trustees conducted a natural resource damage assessment (NRDA) to assess the impacts of the DWH oil spill on natural resources and their services and prepared the 2016 *Deepwater Horizon Oil Spill Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement* (PDARP/PEIS) which outlines the type of restoration needed to compensate the public for the diverse suite of injuries that occurred at both regional and local scales as well as the funding allocations to each Restoration Type.

In the PDARP/PEIS, the Trustees identified the need for a comprehensive restoration plan at a programmatic level to guide and direct an ecosystem-level restoration effort, based on four programmatic Restoration Goals: Restore and Conserve Habitat; Restore Water Quality; Replenish and Protect Living Coastal and Marine Resources; and Provide and Enhance Recreational Opportunities. In addition, a fifth Restoration Goal, Provide for Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation, supports the Restoration Types under the Restoration Goals and informs overall decision-making (see Figure 5.4-1 in the PDARP/PEIS).

Draft Restoration Plan 3 and Environmental Assessment

The Florida Trustee Implementation Group (FL TIG) is responsible for restoring natural resources and their services within the Florida Restoration Area that were injured by the DWH oil spill. The FL TIG includes Trustees from two state and four federal agencies: the Florida Department of Environmental Protection; the Florida Fish and Wildlife Conservation Commission; the United States Department of Commerce, represented by the National Oceanic and Atmospheric Administration; the United States Department of the Interior, represented by the United States Fish and Wildlife Service, National Park Service, and Bureau of Land Management; the United States Department of Agriculture; and the United States Environmental Protection Agency.

The FL TIG has prepared this Draft Restoration Plan 3 and Environmental Assessment (RP3/EA) to address, in part, injury to natural resources and natural resource services in the Florida Restoration Area resulting from the DWH oil spill. The purpose of restoration, as discussed in this RP3/EA and detailed in the PDARP/PEIS, is to make the environment and the public whole by implementing restoration actions that return injured natural resources and their services to baseline conditions and compensate for interim losses, in accordance with OPA and consistent with associated OPA NRDA regulations. This RP3/EA

includes a description and evaluation of 13 restoration projects, also called restoration alternatives,[1] consistent with the Water Quality Restoration Type from the PDARP/PEIS. Table ES-1 lists the reasonable range of alternatives, noting those that are preferred for funding by the FL TIG in this RP3/EA.

Table ES-1 The Reasonable Range of Restoration Alternatives Proposed in this RP3/EA

Alternative		Estimated Project Costs
WQ1, Pensacola and Perdido Watersheds Microbial Source Tracking (Planning) This project would collect information needed to identify sources of bacterial pollution and prioritize water quality restoration strategies and activities in the Pensacola and Perdido Bay watersheds. Planning activities would include: (1) analysis of existing data, (2) subject matter expert engagement, (3) field reconnaissance, (4) water quality field sampling, and (5) final report development.	Preferred	$3,001,000
WQ2, Pensacola Bay Unpaved Roads Initiative Phase 2 (Planning) This project would complete engineering and design of site-specific enhancements at unpaved road-stream crossings in Escambia, Santa Rosa, and Okaloosa Counties. This project is Phase 2 of a planning initiative that builds upon the FL TIG's RP1/EA *Pensacola Bay Unpaved Roads Initiative (Planning and Design)* project. Planning activities would include: (1) conducting public meetings, (2) producing final project design plans, (3) securing environmental permits, and (4) developing construction cost estimates.	Preferred	$527,000
WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements This project would retrofit existing stormwater retention ponds and install additional stormwater infrastructure to support stormwater treatment, thereby improving water quality in the Pensacola Bay watershed. Restoration activities would include: (1) floodplain restoration within Robins Ridge Stream, (2) installation of stormwater filtering structures at Coronet Drive, and (3) installation of stormwater filtering media infrastructure within the Cardinal Cove stormwater ponds.	Preferred	$6,300,000
WQ4, Hollice T. Williams Stormwater Park This project would assist in revitalizing Hollice T. Williams Park as a stormwater park that captures runoff and pollutants, metals, and sediments from stormwater runoff within the basin and reduces nutrient loading to improve water quality flowing into Pensacola Bay. Restoration activities would include: (1) converting a 10-acre portion of the existing park into a stormwater park and (2) installing green stormwater treatment infrastructure such as wet-detention ponds with littoral wetland vegetation, pre-treatment systems for sediment and trash removal, and pervious pavers.	Preferred	$5,450,000

[1] The terms "project" and "alternative" are used interchangeably throughout this RP3/EA.

Alternative		Estimated Project Costs
WQ5, Gulf Breeze Septic to Sewer Conversion This project would improve water quality in Santa Rosa Sound and Pensacola Bay by reducing nutrient loading from antiquated septic systems by connecting homes that are served by septic systems to municipal sewer. Restoration activities would include decommissioning of up to 1,030 residential septic tanks and replacement with connections to municipal sewage systems.	Preferred	$12,830,000
WQ6, Santa Rosa County Septic to Sewer Conversion The project would improve water quality in the Pensacola Bay watershed by connecting homes in Santa Rosa County, currently served by septic systems, to a central wastewater treatment system. Restoration activities would include: (1) analysis of existing data and prioritization of conversion areas and (2) decommissioning of up to 900 residential septic tanks and replacement with connections to municipal sewage systems.	Preferred	$22,797,000
WQ7, Choctawhatchee Bay Unpaved Roads Initiative This project would stabilize 12 unpaved road crossings and streambanks to reduce erosion and sedimentation within the Choctawhatchee Bay watershed. Restoration activities would include: (1) roadway improvements such as adjusting elevation profiles, installing sub-bases, and paving roadways, and (2) drainage improvements such as replacing culverts and stabilizing ditches and shoulders.	Preferred	$17,277,000
WQ8, Swift Creek Hydrologic Restoration This project would partially restore Roberts Pond, a recreational impoundment, by reestablishing a natural stream channel and reconnecting the floodplain and riparian zone for Swift Creek, a tributary of Choctawhatchee Bay. Restoration activities include reducing the size of the recreational impoundment by: (1) constructing a berm to impound a smaller portion of the floodplain, (2) removing the existing spillway and box culvert at the pond, (3) constructing a bridge over Swift Creek, and (4) partially restoring the creek channel.	-	$8,500,000
WQ9, Springfield Stream and Wetland Enhancement This project would restore two degraded tributaries that drain into Lake Martin along St. Andrew Bay, addressing flooding issues within the City of Springfield and improving water quality and community resiliency. Restoration activities would include: (1) removing sediment, organic matter, debris, and invasive vegetation from the tributaries; (2) planting native vegetation; and (3) creating stormwater wetlands.	-	$8,410,000
WQ10, Telogia Creek Watershed Water Quality Improvements This project would implement site-specific surface water and aquatic habitat improvements in Telogia Creek to improve water quality flowing into the Ochlockonee Bay watershed. Restoration activities would include: (1) data synthesis and evaluation, (2) field reconnaissance, (3) water impairment hotspot analysis, and (4) identification and implementation of restoration actions (e.g., restoring riparian buffer zones, addressing unpaved roads and associated erosion at stream crossings, or collaborating with landowners to identify and implement best management practices) at up to 13 sites.	Preferred	$2,700,000

Alternative		Estimated Project Costs
WQ11, Lower Suwannee National Wildlife Refuge Hydrologic Restoration Phase 2 (Planning) This project would complete engineering and design of site-specific enhancements at low water crossings on Lower Suwannee National Wildlife Refuge in Levy and Dixie Counties. This project is Phase 2 of a planning initiative that builds upon the FL TIG's RP1/EA *Lower Suwannee National Wildlife Refuge Hydrologic Restoration – Planning and Design* project. Planning activities would include: (1) producing project design plans, (2) securing environmental permits, and (3) developing construction cost estimates.	Preferred	$1,600,000
WQ12, Bond Farm Hydrologic Enhancement Impoundment This project would initiate restoration of historic hydrologic flow ways in the Charlotte Harbor and Caloosahatchee watersheds by managing surface waters that flow through the Yucca Pens Unit of the Babcock-Webb Wildlife Management Area into eastern Charlotte Harbor and the Caloosahatchee River. Restoration activities would include the construction of a 538-acre hydrologic enhancement impoundment that would store excess surface water during the wet season and release the water downstream during the dry season to restore natural flow regimes.	Preferred	$38,500,000
WQ13, Bond Farm Hydrologic Enhancement Southwest Discharge Structure (Planning) This project would design a water conveyance structure for the WQ12, *Bond Farm Hydrologic Enhancement Impoundment* project that would further facilitate freshwater flows through Gator Slough, restore hydroperiods in surrounding wetlands, and assist in reduction of peak flows to downstream estuarine waters in the Charlotte Harbor and Caloosahatchee watersheds. Planning activities would include: (1) producing project design plans and (2) securing environmental permits.	Preferred	$500,000
	Sum (Preferred)	**$111,482,000**

Public Participation in this RP3/EA

The FL TIG prepared this RP3/EA to (1) inform the public about DWH NRDA restoration planning efforts in the Florida Restoration Area, (2) present analyses on the potential restoration benefits and environmental consequences of the reasonable range of restoration alternatives, and (3) seek public comment on this RP3/EA.

The public is encouraged to review and comment on this RP3/EA during the 30-day comment period following public notice. The deadline for submitting written comments is specified in the public notice published in the Federal Register and on the National Park Service's Planning, Environment, and Public Comment website (see link below). Comment period information, and other details, can also be found on the Trustees' website.[2] During the comment period, comments can be submitted by any of following methods:

[2] The Trustees' website can be found at www.gulfspillrestoration.noaa.gov.

- **Online.** https://parkplanning.nps.gov/FLTIGRP3
- **By mail.** Hard copy addressed to U.S. Fish and Wildlife Service Gulf Restoration Office, 1875 Century Blvd., Atlanta, GA 30345. To be considered, mailed comments must be postmarked on or before the comment deadline.
- **During the public webinar.** See Section 1.6 for details on the webinar.

Please note that personal identifying information included in the submitted comments (such as name, address, phone number, and email address) may be made publicly available at any time. Personal information is not required to submit comments.

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List of Abbreviations/Acronyms

B	
BAM	Bio-sorption activated media
BMAP	Basin Management Action Plan
BMP	Best management practice
BP	BP Exploration and Production, Inc.
BWWMA	Fred C. Babcock/Cecil M. Webb Wildlife Management Area
C	
CFR	Code of Federal Regulations
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
D	
DIVER	Data Integration Visualization Exploration and Reporting
DOI	U.S. Department of the Interior
DWH	*Deepwater Horizon*
E	
E&D	Engineering and design
EFH	Essential Fish Habitat
EO	Executive Order
ESA	Endangered Species Act of 1973
F	
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
FL TIG	Florida Trustee Implementation Group
FONSI	Finding of No Significant Impact
FWC	Florida Fish and Wildlife Conservation Commission
G	
GIS	Geographic information system
Gulf	Gulf of Mexico
H	
HEI	Hydrologic enhancement impoundment

M	
MAM	Monitoring and adaptive management
MBTA	Migratory Bird Treaty Act
MMPA	Marine Mammal Protection Act
MST	Microbial source tracking
N	
NEPA	National Environmental Policy Act of 1969
NFWF-GEBF	National Fish and Wildlife Foundation Gulf Environmental Benefit Fund
NGO	Non-governmental organization
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NRDA	Natural Resource Damage Assessment
NWFWMD	Northwest Florida Water Management District
NWR	USFWS National Wildlife Refuge
O	
OFW	Outstanding Florida waterbody
OPA	Oil Pollution Act of 1990
P	
PDARP/PEIS	2016 *Deepwater Horizon* Oil Spill: Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement
R	
RESTORE Act	Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act
RHA	Rivers and Harbors Act of 1899
ROD	Record of Decision
RP/EA	Restoration Plan and Environmental Assessment
S	
SAV	Submerged aquatic vegetation
SOPs	Standard operating procedures
SRWMD	Suwannee River Water Management District
SWFWMD	Southwest Florida Water Management District

SWIM	Surface Water Improvement and Management
U	
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service

1 Introduction, Purpose and Need, and Public Participation

This Draft Restoration Plan 3 and Environmental Assessment: Water Quality (herein referred to as RP3/EA) was prepared by the Florida Trustee Implementation Group (FL TIG). The FL TIG includes Trustees from two state and four federal agencies: the Florida Department of Environmental Protection (FDEP); the Florida Fish and Wildlife Conservation Commission (FWC); the National Oceanic and Atmospheric Administration (NOAA); the United States Department of the Interior (DOI); the United States Department of Agriculture (USDA); and the United States Environmental Protection Agency (USEPA). The FL TIG is responsible for restoring natural resources and services in the Florida Restoration Area that were injured or lost as a result of the *Deepwater Horizon* (DWH) oil spill.

The FL TIG prepared this RP3/EA to continue restoration of natural resources and the services they provide that were injured or lost as a result of the DWH oil spill, inform the public about the DWH Natural Resource Damage Assessment (NRDA) restoration planning efforts, and seek public comment on the identified reasonable range of alternatives for restoration of injured resources. This RP3/EA was prepared in accordance with the *Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement* (PDARP/PEIS; DWH Trustees, 2016) and the Record of Decision (ROD)[3], the Oil Pollution Act of 1990 (OPA), and the National Environmental Policy Act of 1969 (NEPA) and its implementing regulations. This RP3/EA focuses on a reasonable range of alternatives to restore water quality injuries in the Florida Restoration Area. In this RP3/EA, the FL TIG identifies its preferred alternatives, which the TIG believes would best compensate the public for part of the injuries caused by the DWH oil spill in the Florida Restoration Area.

1.1 Background and Summary of Settlement

On April 20, 2010, the DWH mobile drilling unit exploded, caught fire, and eventually sank in the Gulf of Mexico (Gulf), resulting in a massive release of oil and other substances from BP Exploration and Production, Inc.'s (BP's) Macondo well and causing pervasive natural resource injuries across the northern Gulf. Extensive response actions, including cleanup activities and actions to try to prevent the oil from reaching sensitive resources, were undertaken to try to reduce harm to people and the environment. However, many of these response actions had collateral impacts on the environment and natural resource services. The breadth of injuries incurred from the incident are described in Chapter 4 of the PDARP/PEIS.

Under the authority of OPA, a council of federal and state trustees (DWH Trustees[4]) was established to assess natural resource injuries resulting from the incident and to work to make the environment and public whole for those injuries. In accordance with OPA and the OPA NRDA regulations, in February 2016, the DWH Trustees issued a PDARP/PEIS and subsequent ROD detailing a specific, proposed plan to fund and implement restoration projects across the Gulf with available restoration funds. The PDARP/PEIS sets forth the process for DWH restoration planning to select specific projects for implementation including outlining programmatic Restoration Goals and Restoration Types (see Figure

[3] The PDARP/PEIS, ROD, and Consent Decree can be found on the DWH Trustee website: www.gulfspillrestoration.noaa.gov/.

[4] The Trustees are the entities authorized under OPA to act on behalf of the public to assess the natural resource injuries resulting from the DWH oil spill and to develop and implement project-specific restoration plans to compensate for those injuries. Together with the members of the FL TIG, state Trustees authorized by the governors of Alabama, Mississippi, Louisiana, and Texas compose, as a whole, the Trustee Council.

5.4-1 of the PDARP/PEIS). The PDARP/PEIS also establishes a distributed governance structure that assigns a TIG for each of the eight Restoration Areas.[5] The FL TIG makes all restoration decisions for the funding allocated to the Florida Restoration Area. Chapter 7 of the PDARP/PEIS provides detailed information on the Trustees and the TIG governance structure. In April 2016, the U.S. District Court for the Eastern District of Louisiana entered a Consent Decree resolving civil claims by the Trustees against BP arising from the DWH oil spill.

1.2 Restoration Planning by the Florida TIG

Restoration planning from the DWH oil spill began in Florida on April 20, 2011, as part of the Early Restoration Framework Agreement where BP agreed to provide up to $1 billion toward Early Restoration projects in the Gulf.[6] Twenty-nine Early Restoration projects are or have been implemented within the Florida Restoration Area by the FL TIG, and several additional projects are being implemented by other TIGs in Florida. Restoration planning continued with the release of two post-settlement restoration plans in 2019 and 2021.[7]

In November 2022, the FL TIG invited the public to submit project ideas for restoration in Florida related to the Water Quality Restoration Type. The FL TIG subsequently screened 34 project submissions. In August 2023, following the completion of screening, the FL TIG posted a public notice on the DWH Trustee website indicating that the TIG was initiating this RP3/EA (Section 1.6).

Table 1-1 shows the total FL TIG settlement funds, funds allocated for planning and projects, and funds proposed for this RP3/EA. For the most up-to-date project information, see NOAA's Data Integration Visualization Exploration and Reporting (DIVER) website.[8]

[5] Restoration Areas: Restoration in Alabama, Florida, Louisiana, Mississippi, Texas, Regionwide, Open Ocean, and Adaptive Management and Unknown Conditions.

[6] The Early Restoration Framework Agreement can be found at https://www.fws.gov/doiddata/dwh-ar-documents/994/DWH-AR0233493.pdf.

[7] The 2019 Final Restoration Plan 1 and Environmental Assessment: Habitat Projects on Federally Managed Lands; Nutrient Reduction; Water Quality; and Provide and Enhance Recreational Opportunities (RP1/EA) can be found at https://www.gulfspillrestoration.noaa.gov/media/document/2019-03-fl-final-rp-1-eafull-plan-appendices-signed0pdf, and the 2021 Final Restoration Plan 2 and Environmental Assessment: Habitat Projects on Federally Managed Lands; Sea Turtles; Marine Mammals; Birds; and Provide and Enhance Recreational Opportunities (RP2/EA) can be found at https://www.gulfspillrestoration.noaa.gov/media/document/2021-06-fl-finalfl-tigrp2ea1pdf.

[8] NOAA's DIVER Explorer for DWH restoration projects can be accessed at www.diver.orr.noaa.gov.

Table 1-1 FL TIG Funds by Restoration Goal and Underlying Restoration Type

PDARP/PEIS Programmatic Restoration Goal	Restoration Type	Total FL TIG Settlement Funds	Funds Allocated[9]	Funds Proposed in this RP3/EA	Funds Remaining
Restore and Conserve Habitat	Wetlands, Coastal and Nearshore Habitats	$20,629,367	$15,626,264	-	$5,003,103
	Habitat Projects on Federally Managed Lands	$17,500,000	$16,619,481	-	$880,519
Restore Water Quality	Nutrient Reduction	$35,000,000	$5,284,826	-	$29,715,174
	Water Quality	$300,000,000	$17,811,020	$111,482,000	$170,706,980
Replenish and Protect Living Coastal and Marine Resources	Sea Turtles	$20,000,000	$6,559,587	-	$13,440,413
	Marine Mammals	$5,000,000	$5,020,129	-	-
	Birds	$42,835,000	$19,251,603	-	$23,583,397
	Oysters	$25,370,596	$8,173,408	-	$17,197,188
Provide & Enhance Recreational Opportunities	Provide & Enhance Recreational Opportunities	$183,817,680	$169,773,039	-	$14,044,641
Monitoring & Adaptive Management	N/A	$10,000,000	$1,473,993	-	$8,526,007
Administrative Oversight and Comprehensive Planning	N/A	$20,000,000	$3,505,000	-	$16,495,000
	Total:	**$680,152,643**	**$269,098,350**	**$111,482,000**	**$299,572,293**

1.3 Oil Pollution Act and National Environmental Policy Act Compliance

As an oil pollution incident, the DWH oil spill is subject to the provisions of OPA (33 United States Code [U.S.C.] § 2701 *et seq*.). A primary goal of OPA is to make the environment and public whole for injuries

[9] This includes funds allocated to restoration planning (e.g., plan development), Early Restoration projects, FL TIG RP1/EA and RP2/EA projects, activities that inform restoration planning (e.g., address data gaps), and monitoring and adaptive management activities, as reported through the NOAA DIVER website. Data is current as of February 2024.

to natural resources and services resulting from an incident involving an oil discharge or substantial threat of an oil discharge.

Federal trustees must comply with NEPA (42 United States Code [U.S.C.] § 4321 *et seq*.), its regulations (40 Code of Federal Regulations [CFR] §§ 1500-1508), and agency-specific NEPA procedures when proposing restoration projects. The NEPA analysis associated with this integrated OPA/NEPA document is being prepared in accordance with amendments to NEPA under the Fiscal Responsibility Act of 2023. The PDARP/PEIS was intended to be used to tier the NEPA analysis in subsequent restoration plans prepared by the TIGs (40 CFR § 1501.11; see Chapter 6 of the PDARP/PEIS). A tiered environmental analysis is an analysis that focuses on project-specific issues and summarizes or references (rather than repeats) the broader issues discussed in a programmatic NEPA analysis, in this case the PDARP/PEIS. The NEPA analysis in this RP3/EA tiers from the PDARP/PEIS, where applicable. Additionally, the FL TIG relies on incorporation by reference of existing NEPA analyses, management plans, studies, or other relevant material (40 CFR § 1501.12), and adoption of existing NEPA analyses (40 CFR § 1506.3), where applicable, in the analysis of impacts in this RP3/EA (Chapter 4).

EPA is the lead federal Trustee for preparing this RP3/EA pursuant to NEPA (40 CFR § 1501.7). The other federal and state Trustees of the FL TIG are acting as cooperating agencies for the purposes of compliance with NEPA in the development of this RP3/EA (40 CFR §§ 1501.8 and 1508.1). Each federal cooperating agency on the FL TIG will review the analysis for adequacy in meeting the standards set forth in its own NEPA implementing procedures and subsequently adopt the NEPA analysis, if appropriate (40 CFR § 1506.3). Adoption of the EA would be completed via signature on the relevant NEPA decision document.

This RP3/EA includes a preliminary finding of no significant impact (FONSI) in Section 4.4. USEPA's NEPA implementing procedures at 40 CFR § 6.203(b)(1) state that "[a]t least thirty (30) calendar days before making the decision on whether, and if so how, to proceed with a proposed action, the Responsible Official must make the EA and preliminary FONSI available for review and comment to the interested federal agencies, state and local governments, federally recognized Indian tribes and the affected public. The Responsible Official must respond to any substantive comments received and finalize the EA and FONSI before making a decision on the proposed action." The required 30-day public comment period commences upon publication of the Notice of Availability (NOA) of the RP3/EA in the Federal Register.

1.4 Purpose and Need

The FL TIG has undertaken this restoration planning effort to meet the purpose of contributing to the compensation for and restoration of natural resources and their services injured in the Florida Restoration Area resulting from the DWH oil spill. This RP3/EA is consistent with the PDARP/PEIS, which identified extensive and complex injuries to natural resources and their services across the Gulf, as well as a need and plan for comprehensive restoration consistent with OPA. This RP3/EA falls within the scope of the purpose and need identified in the PDARP/PEIS. As described in Section 5.3 of the PDARP/PEIS, the Restoration Goals (first column, Table 1-1) work independently and together to benefit injured resources and services. The reasonable range of restoration alternatives in this RP3/EA address one of the programmatic Restoration Goals: Restore Water Quality. Additional information about the purpose and need for DWH NRDA restoration can be found in Section 5.3.2 of the PDARP/PEIS.

1.5 Proposed Action and Alternatives

The FL TIG proposes to undertake the restoration alternatives identified as preferred in this RP3/EA to provide compensatory restoration towards meeting the Restore Water Quality Restoration Goal identified in the PDARP/PEIS (Section 1.5) and the Water Quality Restoration Type.

Table 1-2 identifies the reasonable range of restoration alternatives evaluated in this RP3/EA, including those identified as "preferred" by the FL TIG for implementation following approval of the final RP3/EA. The preferred alternatives would be implemented over approximately the next 5-10 years. Figure 1-1 provides the approximate location of each restoration alternative. The FL TIG proposes to use approximately $111.5 million of the FL TIG settlement funds in this RP3/EA (i.e., the estimated cost of the preferred restoration alternatives). This would leave a balance across all FL TIG Restoration Types of approximately $300 million and any unallocated earned interest remaining for future restoration plans, restoration planning activities, or monitoring and adaptive management activities and administrative oversight. Detailed information on all alternatives can be found in Section 2.4.

Table 1-2 The Reasonable Range of Restoration Alternatives Proposed in this RP3/EA (listed geographically from west to east)

Alternative		Estimated Project Costs
WQ1, Pensacola and Perdido Watersheds Microbial Source Tracking (Planning) This project would collect information needed to identify sources of bacterial pollution and prioritize water quality restoration strategies and activities in the Pensacola and Perdido Bay watersheds. Planning activities would include: (1) analysis of existing data, (2) subject matter expert engagement, (3) field reconnaissance, (4) water quality field sampling, and (5) final report development.	Preferred	$3,001,000
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WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements This project would retrofit existing stormwater retention ponds and install additional stormwater infrastructure to support stormwater treatment, thereby improving water quality in the Pensacola Bay watershed. Restoration activities would include: (1) floodplain restoration within Robins Ridge Stream, (2) installation of stormwater filtering structures at Coronet Drive, and (3) installation of stormwater filtering media infrastructure within the Cardinal Cove stormwater ponds.	Preferred	$6,300,000
WQ4, Hollice T. Williams Stormwater Park This project would assist in revitalizing Hollice T. Williams Park as a stormwater park that captures runoff and pollutants, metals, and sediments from stormwater runoff within the basin and reduces nutrient loading to improve water quality flowing into Pensacola Bay. Restoration activities would include: (1) converting a 10-acre portion of the existing park into a stormwater park and (2) installing green stormwater treatment infrastructure such as wet-detention ponds with littoral wetland vegetation, pre-treatment systems for sediment and trash removal, and pervious pavers.	Preferred	$5,450,000

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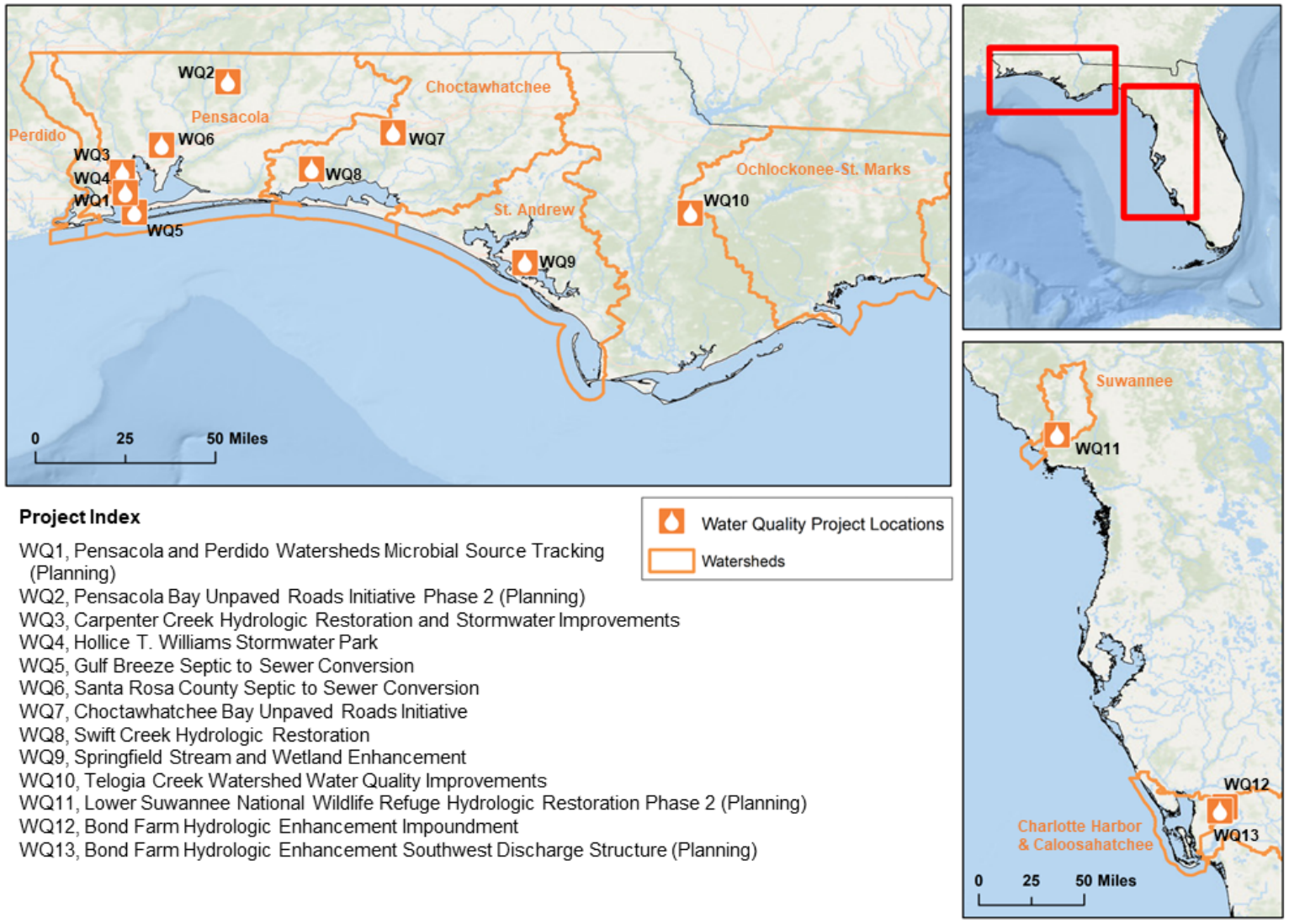
WQ9, Springfield Stream and Wetland Enhancement This project would restore two degraded tributaries that drain into Lake Martin along St. Andrew Bay, addressing flooding issues within the City of Springfield and improving water quality and community resiliency. Restoration activities would include: (1) removing sediment, organic matter, debris, and invasive vegetation from the tributaries; (2) planting native vegetation; and (3) creating stormwater wetlands.	-	$8,410,000
WQ10, Telogia Creek Watershed Water Quality Improvements This project would implement site-specific surface water and aquatic habitat improvements in Telogia Creek to improve water quality flowing into the Ochlockonee Bay watershed. Restoration activities would include: (1) data synthesis and evaluation, (2) field reconnaissance, (3) water impairment hotspot analysis, and (4) identification and implementation of restoration actions (e.g., restoring riparian buffer zones, addressing unpaved roads and associated erosion at stream crossings, or collaborating with landowners to identify and implement best management practices) at up to 13 sites.	Preferred	$2,700,000

Alternative		Estimated Project Costs
WQ11, Lower Suwannee National Wildlife Refuge Hydrologic Restoration Phase 2 (Planning) This project would complete engineering and design of site-specific enhancements at low water crossings on Lower Suwannee National Wildlife Refuge in Levy and Dixie Counties. This project is Phase 2 of a planning initiative that builds upon the FL TIG's RP1/EA *Lower Suwannee National Wildlife Refuge Hydrologic Restoration – Planning and Design* project. Planning activities would include: (1) producing project design plans, (2) securing environmental permits, and (3) developing construction cost estimates.	Preferred	$1,600,000
WQ12, Bond Farm Hydrologic Enhancement Impoundment This project would initiate restoration of historic hydrologic flow ways in the Charlotte Harbor and Caloosahatchee watersheds by managing surface waters that flow through the Yucca Pens Unit of the Babcock-Webb Wildlife Management Area into eastern Charlotte Harbor and the Caloosahatchee River. Restoration activities would include the construction of a 538-acre hydrologic enhancement impoundment that would store excess surface water during the wet season and release the water downstream during the dry season to restore natural flow regimes.	Preferred	$38,500,000
WQ13, Bond Farm Hydrologic Enhancement Southwest Discharge Structure (Planning) This project would design a water conveyance structure for the WQ12, *Bond Farm Hydrologic Enhancement Impoundment* project that would further facilitate freshwater flows through Gator Slough, restore hydroperiods in surrounding wetlands, and assist in reduction of peak flows to downstream estuarine waters in the Charlotte Harbor and Caloosahatchee watersheds. Planning activities would include: (1) producing project design plans and (2) securing environmental permits.	Preferred	$500,000
	Sum (Preferred)	**$111,482,000**

Figure 1-1 Approximate Locations of the Reasonable Range of Restoration Alternatives Proposed in this RP3/EA



Project Index

WQ1, Pensacola and Perdido Watersheds Microbial Source Tracking (Planning)
WQ2, Pensacola Bay Unpaved Roads Initiative Phase 2 (Planning)
WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements
WQ4, Hollice T. Williams Stormwater Park
WQ5, Gulf Breeze Septic to Sewer Conversion
WQ6, Santa Rosa County Septic to Sewer Conversion
WQ7, Choctawhatchee Bay Unpaved Roads Initiative
WQ8, Swift Creek Hydrologic Restoration
WQ9, Springfield Stream and Wetland Enhancement
WQ10, Telogia Creek Watershed Water Quality Improvements
WQ11, Lower Suwannee National Wildlife Refuge Hydrologic Restoration Phase 2 (Planning)
WQ12, Bond Farm Hydrologic Enhancement Impoundment
WQ13, Bond Farm Hydrologic Enhancement Southwest Discharge Structure (Planning)

1.5.1 Natural Recovery/No Action Alternative

Under the Natural Recovery/No Action Alternative, the FL TIG would not select and implement any of the restoration alternatives proposed in this RP3/EA (Section 3.6). In the PDARP/PEIS, the Trustees analyzed the Natural Recovery/No Action Alternative programmatically and found that it would not meet the purpose and need for restoring lost natural resources and their services. A No Action Alternative is included in this RP3/EA analysis pursuant to NEPA as a "…benchmark, enabling decisionmakers to compare the magnitude of environmental effects of the action alternatives" (CEQ, 1981). The No Action alternative is analyzed in Chapter 4.

1.5.2 Severability of Projects

Restoration alternatives identified in this RP3/EA are independent of each other and may be selected independently by the FL TIG. A decision not to select one or more of the alternatives does not affect the FL TIG's selection of any remaining alternatives.

1.6 Public Involvement

On November 7, 2022, the FL TIG posted a public invitation on the DWH Trustees' website to submit project ideas for restoration in Florida related to the Water Quality Restoration Type.[10] A total of 34 submissions were received and screened.

On August 7, 2023, the FL TIG posted a public notice on the DWH Trustees' website indicating that the TIG was initiating restoration planning for this RP3/EA.[11] The public is encouraged to review and comment on this RP3/EA during the 30-day comment period following the public NOA. Comments can be submitted during the comment period by any of the following methods:

Online. https://parkplanning.nps.gov/FLTIGRP3

By mail. Hard copy addressed to U.S. Fish and Wildlife Service Gulf Restoration Office, 1875 Century Blvd., Atlanta, GA 30345.

To be considered, mailed comments must be postmarked on or before the comment deadline specified in the Federal Register, on the National Park Service's Planning, Environment, and Public Comment website, and on the Trustees' website.

During the public webinar. The FL TIG will hold a public webinar to facilitate the public review and comment process. Members of the public can register for the webinar using the following link: https://attendee.gotowebinar.com/register/8172353705750284118. The webinar date and time are as follows:

- Wednesday, March 27, 2024, at 3 p.m. Eastern Time / 2 p.m. Central Time

After the close of the comment period, the FL TIG will consider all comments received and revise this RP3/EA, as appropriate. A summary of comments received and the FL TIG's responses where applicable will be included in the final RP3/EA.

[10] The invitation to submit project ideas can be found at www.gulfspillrestoration.noaa.gov/2022/11/submit-project-ideas-florida-s-third-restoration-plan.

[11] The Notice of Intent to begin restoration planning can be found at www.gulfspillrestoration.noaa.gov/2023/08/florida-trustees-initiate-planning-third-post-settlement-restoration-plan-and-environmental.

Please note that personal identifying information included in the submitted comments (such as name, address, phone number, and email address) may be made publicly available at any time. Personal information is not required to submit comments.

1.7 Administrative Record

The DWH Trustees opened a publicly available Administrative Record for the DWH oil spill NRDA,[12] including restoration planning activities, concurrently with publication of the 2010 Notice of Intent (NOI; pursuant to 15 CFR § 990.45). DOI is the lead federal Trustee for maintaining the Administrative Record. Information about restoration project implementation is being provided to the public through the Administrative Record and other outreach efforts (Section 1.6), including the DWH Trustee and the Florida DWH websites.[13]

1.8 Coordination with Other Gulf Restoration Programs

As discussed in Section 1.5.6 of the PDARP/PEIS, coordination with other Gulf restoration programs promotes successful implementation of restoration projects and optimizes ecosystem recovery. The FL TIG is committed to coordinating with other DWH oil spill and Gulf restoration programs (e.g., the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States [RESTORE] Act, the National Fish and Wildlife Foundation's Gulf Environmental Benefit Fund [NFWF-GEBF]) to maximize the overall ecosystem impact of restoration efforts and ensure effective use of funds by identifying synergies and reducing potential redundancies in project selection. This coordination would ensure that funds are allocated for critical restoration projects across the Gulf and specifically within Florida.

Of relevance to this RP3/EA, substantial investments have been made on watershed-level water quality improvements across the Gulf restoration programs in Florida. For example, projects across RESTORE (e.g., the *Eleven Mile Creek Restoration* Pot 1 project), NFWF-GEBF (e.g., the *Bayou Chico Restoration* project), and the *WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements* alternative in this RP3/EA seek to restore water quality in Pensacola Bay by reducing erosion from streams within the watershed. DWH-funded projects within Florida are described on the DWH Trustee, Florida DWH, NFWF-GEBF,[14] and RESTORE websites.[15] Restoration alternatives evaluated in this RP3/EA that leverage funds from RESTORE or NFWF-GEBF are identified within the project descriptions in Section 2.4.

1.9 Next Steps

This RP3/EA is intended to provide the public and decision makers with information and analysis on the FL TIG's proposal to implement the proposed action described in this RP3/EA, which includes restoration alternatives to restore water quality. To help inform the TIG's decision on which alternatives to propose for implementation, the environmental impacts of the alternatives are assessed in Appendix A and summarized in Chapter 4. This RP3/EA, together with public review and comment, is intended to

[12] The DWH Administrative Record can be found at www.doi.gov/deepwaterhorizon/adminrecord.

[13] The Florida DWH website can be found at www.deepwaterhorizonflorida.com.

[14] The NFWF-GEBF website can be found at www.nfwf.org/gulf/Pages/GEBF-Florida.aspx.

[15] The RESTORE website can be found at www.restorethegulf.gov/.

guide the TIG's selection of projects for implementation in the subsequent final RP3/EA that best meet the purpose and need as described in Section 1.4 above.

2 Restoration Planning Process

NRDA restoration under OPA is a process that includes evaluating injuries to natural resources and their services to determine the types and extent of restoration needed to address the injuries. Restoration activities need to produce benefits that are related to or have a nexus (i.e., connection) to natural resource injuries and service losses resulting from a spill. As part of the NRDA process, the Trustees consider a reasonable range of restoration alternatives[16] before selecting their preferred alternative(s) (15 CFR § 990.53(a)(2)). The OPA NRDA regulations (15 CFR Part 990) provide factors (also referred to as evaluation standards) to be used by Trustees to evaluate projects designed to compensate the public for injuries caused by oil spills.

The FL TIG developed a screening process, described in this chapter, based on the OPA NRDA regulations at 15 CFR § 990.53 to help identify the reasonable range of alternatives evaluated in this RP3/EA. The reasonable range of alternatives is consistent with the DWH Trustees' selected programmatic alternative and the goals identified in the PDARP/PEIS. This chapter summarizes the injuries addressed by this RP3/EA and the projects considered in the reasonable range of alternatives. The restoration planning process was also conducted in accordance with the Consent Decree, the Trustee Council's Standard Operating Procedures (SOPs, DWH Trustees, 2021a), OPA NRDA regulations, and NEPA and its implementing regulations (40 CFR §§ 1500-1508).

2.1 Summary of Injuries Addressed in this RP3/EA

Chapter 4 of the PDARP/PEIS summarizes the injury assessment, which documents the nature, degree, and extent of injuries from the DWH oil spill to both natural resources and the services they provide. Restoration projects identified in this RP3/EA and in future FL TIG restoration plans are designed to address injuries to Restoration Types in the Florida Restoration Area resulting from the spill. This RP3/EA proposes alternatives for the Water Quality Restoration Type described in the PDARP/PEIS. This section summarizes the most relevant information from Chapter 4 of the PDARP/PEIS injury assessment and establishes the nexus for restoration planning for this Restoration Type.

Water quality is intricately linked to the health and resilience of coastal and marine habitats and resources (e.g., Bricker et al., 2008). Due to the connectivity of the Gulf ecosystem, actions related to reducing pollution and hydrologic degradation and creating, restoring, and enhancing coastal wetlands are expected to have cascading ecological benefits, increasing the overall health and productivity of the Gulf, thereby restoring natural resources injured by the DWH oil spill. In the Florida Restoration Area, these actions exhibit strong ecological linkages to coastal habitats and communities, benefit recreational uses, and contribute to the overall health and resiliency of Florida's coastal ecosystems. Specifically, improving water quality in coastal areas would reduce the occurrence of beach closures, restrictions on shellfish harvesting, and degradation of aquatic habitat quality that could compromise human health and recreational uses.

[16] For the purposes of this RP/EA, each project evaluated in the reasonable range is considered a separate alternative; therefore, the terms "project" and "alternative" are used interchangeably.

2.2 Screening for Reasonable Range of Alternatives

In developing a reasonable range of alternatives suitable for addressing the injuries caused by the DWH oil spill, the FL TIG considered the programmatic Restoration Goals and Restoration Types specified in the PDARP/PEIS, the screening factors in the OPA NRDA regulations (15 CFR § 990.54), input from the public, the current and future availability of funds under the DWH NRDA settlement payment schedule, projects already funded by the FL TIG or other DWH restoration funding sources (e.g., NFWF-GEBF and RESTORE Act), and projects already funded or proposed to be funded by other sources. Consistent with Section 9.4.1.4 of the Trustee Council's SOPs, the FL TIG considered project ideas submitted by the public, non-governmental organizations (NGOs), and local, state, and federal agencies. A summary of the OPA evaluation standards is provided in Section 3.1. The FL TIG's screening process for this RP3/EA is described in Section 2.2.

2.2.1 Identification of Restoration Alternatives and Eligibility Screening

On November 7, 2022, the FL TIG invited the public to submit project ideas related to the Water Quality Restoration Type through December 22, 2022. Project ideas needed to be submitted or previously submitted ideas needed to be updated during the solicitation period to be considered in this RP3/EA.[17] Consistent with Section 9.4.1.4 of the Trustee Council's SOPs, the FL TIG also considered project ideas developed by FL TIG Trustees and project ideas from Gulf restoration reports, management plans, or related efforts. The FL TIG considered project ideas pertaining to the following Restoration Approaches:

- Reduce pollution and hydrologic degradation to coastal watersheds.
- Reduce nutrient loads.
- Create, restore, and enhance coastal wetlands.
- Protect and conserve marine, coastal, estuarine, and riparian habitats.

The FL TIG received 34 individual project ideas from members of the public, NGOs, local and state agencies, and FL TIG Trustees. The FL TIG reviewed the PDARP/PEIS programmatic Restoration Goals and developed a set of screening criteria for evaluating the project ideas to establish a reasonable range of alternatives for this RP3/EA. The FL TIG evaluated the 34 project ideas according to these screening criteria, as described below and summarized in Figure 2-1.

2.2.2 Primary Screening

Beginning in early 2023, the FL TIG conducted primary screening of the 34 submitted projects. Projects that were inconsistent with the solicitation request (e.g., did not address the specified Restoration Approaches and techniques), had insufficient information for evaluation, were already required by local, state, or federal law, had already been fully funded, or were duplicates of project ideas submitted through the DWH Trustee (federal) and FL DWH (state) portals, were removed from further consideration. Additionally, per the primary screening criteria, the FL TIG removed project ideas that would likely have other sources of funding. This included project ideas that solely involved the replacement or rehabilitation of wastewater treatment, wastewater collection, or other related infrastructure (which could be funded using wastewater treatment funds) and project ideas that involved the planning and/or implementation of living shorelines, oyster reefs, or marine debris projects (which could be funded through other Restoration Types). This step resulted in a total of 19 projects that were carried through to secondary screening.

[17] Projects could be revised and/or submitted to the DWH Trustee website (www.gulfspillrestoration.noaa.gov/restoration/give-us-your-ideas) or Florida DWH (www.deepwaterhorizonflorida.com) submission portals.

2.2.3 Secondary Screening

Next, the FL TIG conducted secondary screening. Project ideas were evaluated for the extent to which they addressed the Water Quality Restoration Type goals from the PDARP/PEIS, particularly, consistency with Restoration Approaches and techniques listed in the PDARP/PEIS and the ability to provide measurable, cost-effective water quality benefits. This step resulted in a total of 17 projects that were carried through to tertiary screening.

2.2.4 Tertiary Screening

Next, the FL TIG conducted tertiary screening. Project ideas were evaluated for the extent to which they addressed TIG-specific goals and priorities for this RP3/EA, such as leveraging or building on other DWH-funded restoration projects (e.g., NRDA, RESTORE Act, NFWF-GEBF), consistency with the goals and objectives of state or federal water quality restoration or regional plans (e.g., Surface Water Improvement and Management [SWIM] Plans, 319 Plans, National Resources Conservation Service Plans, Total Maximum Daily Loads, Basin Management Action Plans [BMAPs], Comprehensive Conservation and Management Plans), protecting critical areas for water quality restoration (e.g., aquifers, recharge areas), contributing to restoration for lost recreational opportunities, and addressing existing or legacy threats to water quality from stormwater, wastewater, or septic systems.

In addition, the FL TIG factored in estimated project costs with available settlement funds, and the "readiness to proceed" of the remaining projects (i.e., the extent to which they were ready to be implemented if funding was received). As a result, 13 projects were carried through to final screening.

2.2.5 Final Screening

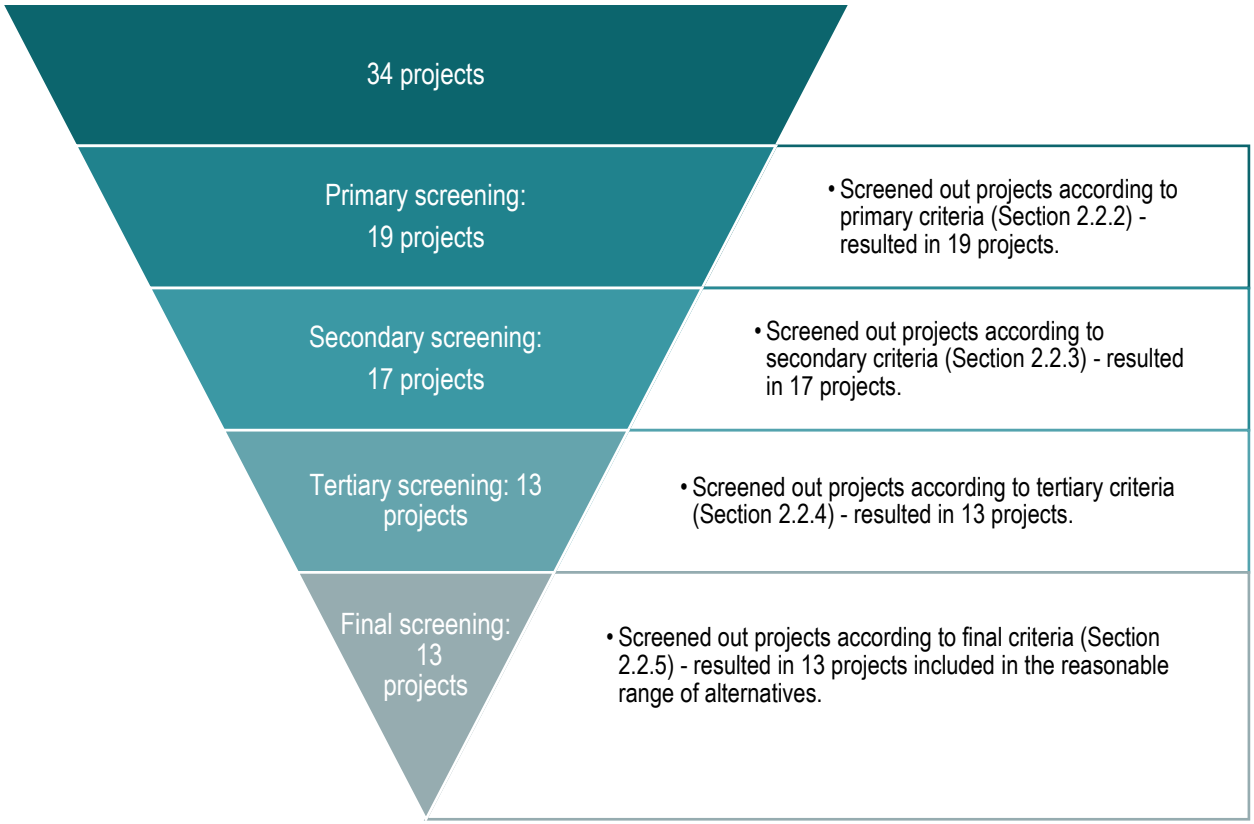
Lastly, the FL TIG completed final screening by conducting a preliminary OPA NRDA screening based on the project information available at the time and regarding the following evaluation standards as set forth in 15 CFR § 990.54:[18]

- The cost to carry out the alternative (e.g., cost to benefit ratio).
- The extent to which each alternative is expected to meet the Trustees' goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses.
- The likelihood of success of each alternative.
- The extent to which each alternative would prevent future injury as a result of the incident and avoid collateral injury as a result of implementing the alternative.
- The extent to which each alternative benefits more than one natural resource and/or service.
- The effect of each alternative on public health and safety.

Overall, no projects were removed during the final screening. Therefore, 13 projects are included in the reasonable range of alternatives for evaluation in this RP3/EA (Figure 2.1; Section 2.4).

[18] The FL TIG also conducted a thorough OPA NRDA evaluation of the reasonable range of alternatives (see Chapter 3).

Figure 2-1 FL TIG Screening Process Summary for this RP3/EA



2.3 Alternatives Not Considered for Further Evaluation in this Plan

The FL TIG's decision to advance 13 of the 34 projects to the reasonable range of alternatives is based on balancing the considerations outlined above in the context of the full suite of restoration alternatives being advanced for analysis in this RP3/EA. Specifically, the FL TIG's decision to evaluate the 13 alternatives in the reasonable range was based on consideration of how well a project idea met the following criteria: (1) the project was at an appropriate stage of development; (2) the project could be completed for a cost appropriate for this RP3/EA; and/or (3) project proponents could leverage additional sources of funding, outside of DWH NRDA, to supplement TIG funding. Projects that are not further evaluated in this RP3/EA may be included and potentially selected in a future restoration plan.

2.4 Reasonable Range of Restoration Alternatives Considered

From the process described above, the FL TIG identified a reasonable range of 13 Water Quality restoration alternatives for further consideration and evaluation in this RP3/EA (Table 2-1). Summaries of each of these alternatives are provided in the following subsections of this chapter. OPA NRDA and NEPA evaluations of these alternatives are provided in Chapter 3 and Appendix A of this RP3/EA, respectively. A No Action Alternative is included in this RP3/EA pursuant to NEPA as a "…benchmark, enabling decision makers to compare the magnitude of environmental effects of the action alternatives."

Table 2-1 Reasonable Range of Alternatives Considered in this RP3/EA

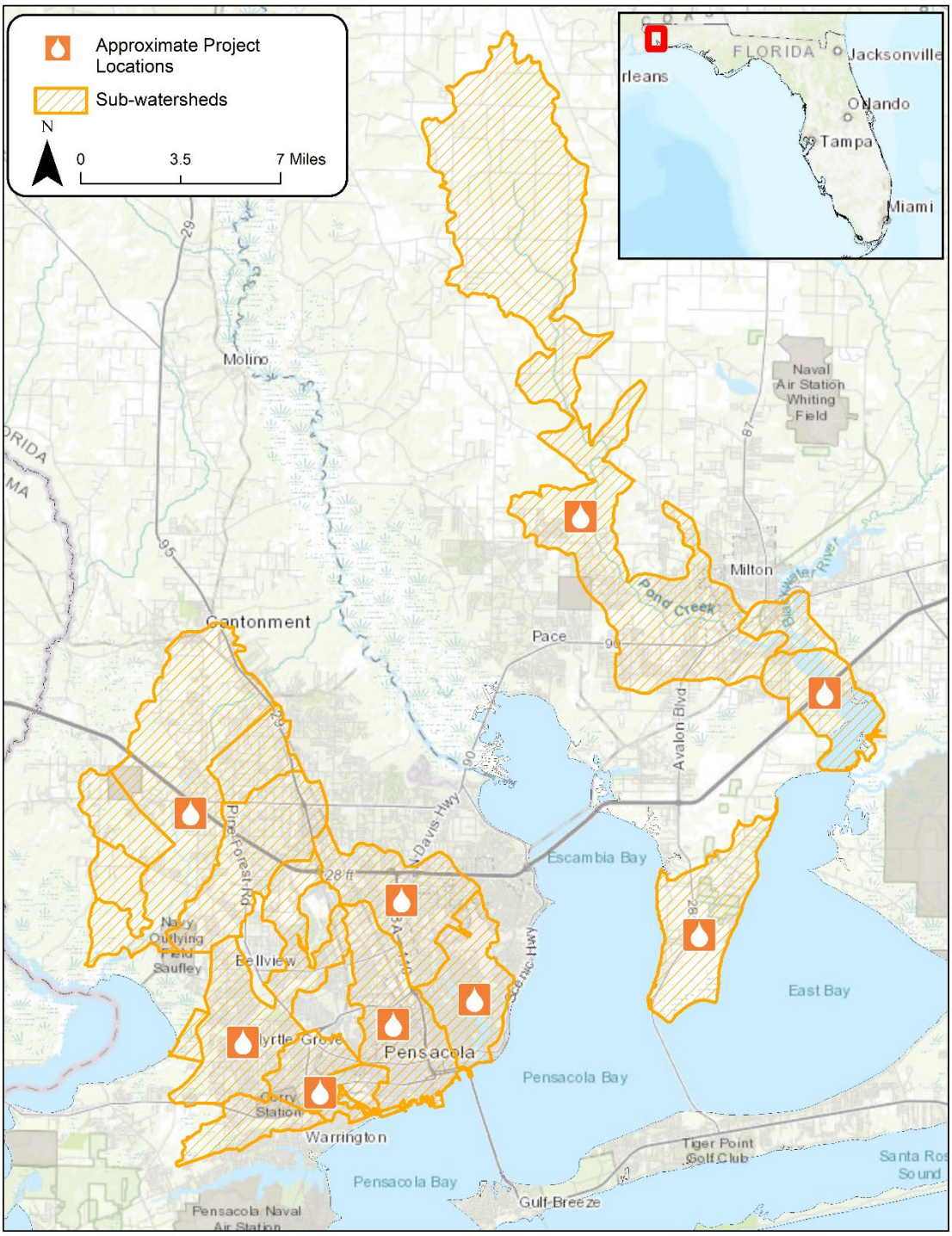
Alternative	Estimated Project Costs
Perdido and Pensacola Bay Watersheds	
WQ1, Pensacola and Perdido Watersheds Microbial Source Tracking (Planning)	$3,001,000
WQ2, Pensacola Bay Unpaved Roads Initiative Phase 2 (Planning)	$527,000
WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements	$6,300,000
WQ4, Hollice T. Williams Stormwater Park	$5,450,000
WQ5, Gulf Breeze Septic to Sewer Conversion	$12,830,000
WQ6, Santa Rosa County Septic to Sewer Conversion	$22,797,000
Choctawhatchee-St. Andrew Bay Watersheds	
WQ7, Choctawhatchee Bay Unpaved Roads Initiative	$17,277,000
WQ8, Swift Creek Hydrologic Restoration	$8,500,000
WQ9, Springfield Stream and Wetland Enhancement	$8,410,000
Ochlockonee-St. Marks Bay Watershed	
WQ10, Telogia Creek Watershed Water Quality Improvements	$2,700,000
Suwannee Watershed	
WQ11, Lower Suwannee National Wildlife Refuge Hydrologic Restoration Phase 2 (Planning)	$1,600,000
Charlotte Harbor and Caloosahatchee Watersheds	
WQ12, Bond Farm Hydrologic Enhancement Impoundment	$38,500,000
WQ13, Bond Farm Hydrologic Enhancement Southwest Discharge Structure (Planning)	$500,000

2.4.1 WQ1, Pensacola and Perdido Watersheds Microbial Source Tracking (Planning) (preferred)

Restoration Approach
Reduce pollution and hydrologic degradation to coastal watersheds (PDARP/PEIS Section 5.5.5.2)
Restoration Techniques
Resource-level monitoring and adaptive management to address critical uncertainties (i.e., microbial source tracking to support decision-making)
Project Goal
Identify sources of bacterial pollution in Pensacola and Perdido Bay watersheds and prioritize restoration strategies and activities for future implementation.
Project Location
Perdido and Pensacola Bay watersheds (Figure 2-2)
Project Summary
This project would be implemented by the FDEP FL TIG Trustee in coordination with Pensacola and Perdido Bays Estuary Program, Emerald Coast Utilities Authority, Escambia and Santa Rosa Counties, and the City of Pensacola. This project would collect information needed to identify sources of bacterial pollution and prioritize restoration strategies and activities in the Pensacola and Perdido Bay watersheds. The project would utilize FDEP's Fecal Indicator Toolkit (FDEP, 2018) and the microbial source tracking (MST) framework to structure sampling design and prioritization of sampling locations. Specifically, this project would: • **Analyze existing data** to identify areas with persistent bacterial issues and areas of suspected impairment and hotspots. • **Establish an advisory panel of experts** to guide project development and implementation. • **Conduct field reconnaissance** ("Walk the Watershed") to better understand the watershed's hydrology, sewer and stormwater infrastructure locations, and potential bacterial sources. • **Conduct field sample and laboratory analyses** to monitor and investigate areas with fecal indicator bacteria. A tiered approach would be implemented where initial, broad-scale exploratory sampling would be conducted to identify targeted sampling of source locations. Laboratory analyses would detect and quantify specific microorganisms from field samples. • **Develop a report of microbial sources** in the area, including a hotspot map and list of identified sources of microbial pollutants, a prioritized list of microbial source reduction projects, and a hotspot map and list of identified sources of nutrients in the sub-watersheds. This report would be used to inform potential future NRDA or non-NRDA funded restoration projects. Impaired water quality within Pensacola Bay, the Perdido River, and the Perdido Bay watershed impacts recreational activities and shellfish harvesting operations. Within the Pensacola Bay watershed, the Florida Department of Agriculture and Consumer Services finalized an expanded shellfish harvesting prohibited area in Escambia Bay and East Bay due to consistent exceedances in bacteria concentrations. Project activities would be conducted for sub-watersheds that have been verified as impaired by FDEP or have recurring bacterial issues and that have restricted shellfish harvesting. These include Blackwater River, Blackwater Bay, Garcon Point, Elevenmile Creek, Carpenter Creek, Bayou Texar, Bayou Marcus, Bruce Beach, and Bayou Chico. Additionally, sources of nutrient hotspots would be assessed for Bayou Marcus, Elevenmile Creek, Carpenter Creek, and Bayou Chico. The project team would use a combination of visual onsite assessments, fecal indicator bacterial testing, and laboratory methods to identify the source(s) of bacterial pollution in each sub-watershed assessed. Up to 500 site visits could be

completed for each sub-watershed. Field samples could be collected as discrete sampling events by foot, vehicle, or vessel.
General Project Activities and Implementation Timing
Project activities include planning, desktop data analyses, field sampling and reconnaissance, and laboratory analyses of field samples. This project would be completed in approximately 5 years. Years 1 and 2 would include analysis of existing data, hotspot identification, establishment of a community advisory panel, and planning for field reconnaissance and sampling. Field reconnaissance, sampling, and laboratory analysis would commence in Year 2 and continue through Year 4. Year 5 would include final report writing.
Maintenance
No short- or long-term maintenance activities are anticipated, as this project is a planning initiative.
Monitoring
Consistent with Section 10 of the Trustee Council's SOPs, a monitoring and adaptive management (MAM) plan is not required for projects with only planning activities, and therefore, a MAM plan for this project has not been developed.
Costs
The estimated costs are $3,001,000, which include planning, implementation (site visits, sample collection and analysis, data quality assurance and quality control, report writing), and oversight.

Figure 2-2 WQ1, Pensacola and Perdido Watersheds Microbial Source Tracking (Planning) (preferred): General Project Location

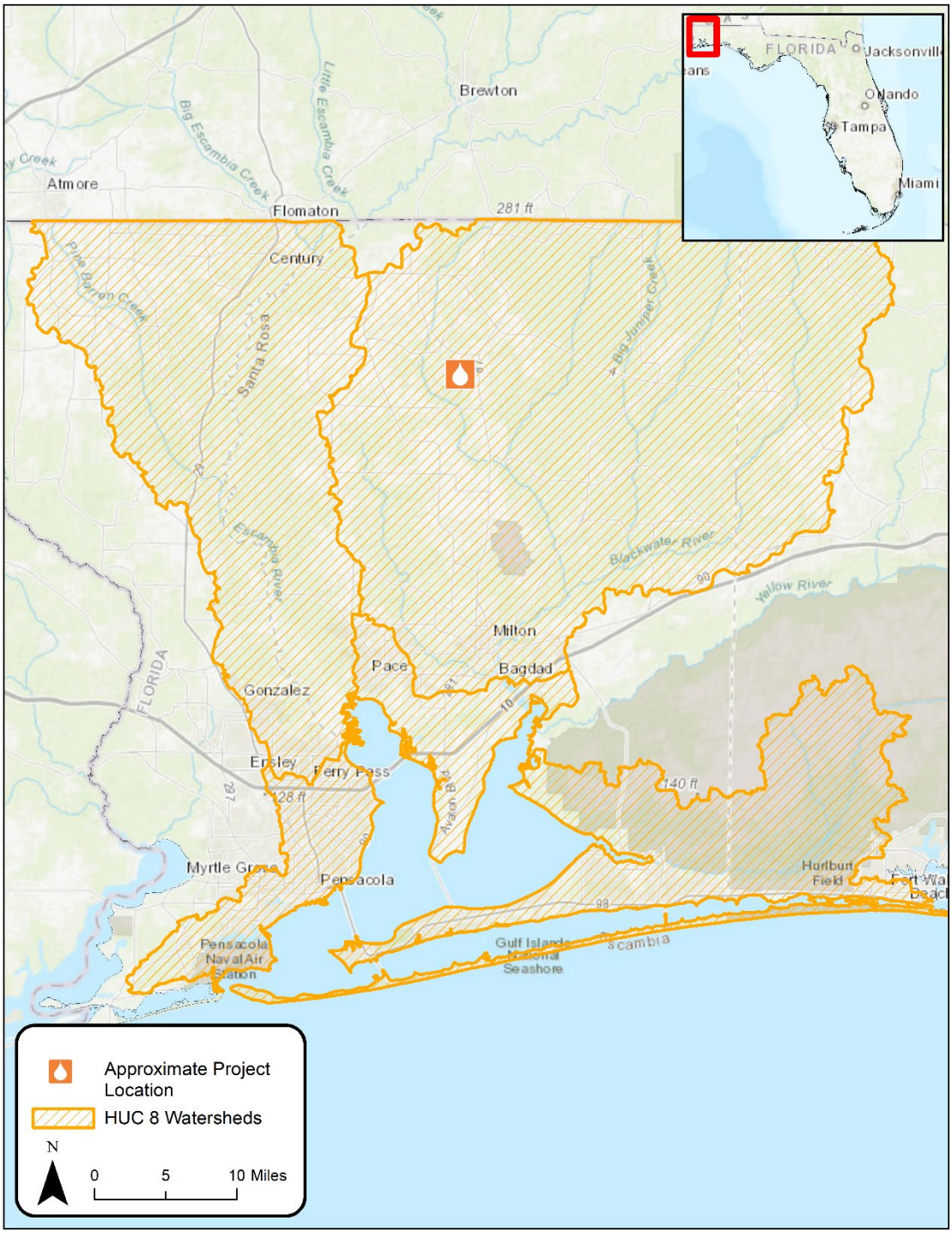


2.4.2 WQ2, Pensacola Bay Unpaved Roads Initiative Phase 2 (Planning) (preferred)

Restoration Approach
Reduce pollution and hydrologic degradation to coastal watersheds (PDARP/PEIS Section 5.5.5.2)
Restoration Technique
Erosion and sediment control practices (PDARP/PEIS Appendix 5.D.2.2)
Project Goal
Complete planning and design of priority road crossing for potential future restoration activities to reduce sediment loading into the Pensacola Bay watershed.
Project Location
Escambia, Santa Rosa, and Okaloosa Counties (Figure 2-3)
Project Summary
This project would be implemented by the FDEP FL TIG Trustee in coordination with the U.S. Fish and Wildlife Service (USFWS), the Northwest Florida Water Management District (NWFWMD), and Escambia, Santa Rosa, and Okaloosa Counties. This project is Phase 2 of a planning initiative that builds upon the FL TIG RP1/EA *Pensacola Bay Unpaved Roads Initiative (Planning and Design)* project ("Phase 1 project"). Under the Phase 1 project unpaved stream crossings were assessed, and those that contributed the largest sediment loads to the Pensacola Bay watershed were identified; further, 30 percent design plans are under development, which will include site-specific solutions at 15 priority locations to eliminate or reduce sediment loading to associated habitat and resources. Under this proposed Phase 2 project, 100 percent design plans would be developed, and environmental and local permits would be secured for the priority sites identified in the Phase 1 project. This would ensure these Phase 2 priority sites are ready to proceed for future funding opportunities. Specifically, this project would: • **Conduct public meetings** to receive public input on the proposed restoration activities. • **Produce project design plans** for the priority sites. • **Secure environmental and local permits** for the priority sites. • **Develop construction cost estimates** for the priority sites. In 2007, USFWS conducted the *Northwest Florida County-Maintained Unpaved Road-Stream Crossings Inventory* and identified 2,777 unpaved, county-maintained road and stormwater drainage crossings in 16 northwest Florida counties (USFWS, 2007). Results showed that Pensacola Bay had over 300 unpaved road sites, the second most in northwest Florida. Unpaved roads cause significant erosion and sediment loading to nearshore water bodies (DWH Trustees, 2016). Their construction and maintenance can impact water quality in adjacent streams and the connected, downstream aquatic ecosystems (Gucinski et al., 2001). Sediment runoff can interfere with downstream growth and development of algae, phytoplankton, and submerged aquatic vegetation (SAV) by absorbing or scattering solar radiation needed for photosynthesis. A range of practices can be used to minimize erosion and the transport of sediment downstream. Erosion and sediment control practices for unpaved roads might entail paving the unpaved road from hill crest to hill crest, using less erosive aggregate material, raising the road profile, installing grade breaks, incorporating additional drainage outlets, or removing roadside ditches and replacing them with vegetated swales. The 100 percent design plans developed under this project would identify the best practices to be used at each site.

General Project Activities and Implementation Timing
Project activities include planning, public meetings, engineering and design (E&D), acquiring permits, and estimating construction costs. The project would take approximately 2 years to complete.
Maintenance
No short- or long-term maintenance activities are anticipated, as this project is a planning initiative.
Monitoring
Consistent with Section 10 of the Trustee Council's SOPs, a MAM plan is not required for projects with only planning activities, and therefore, a MAM plan for this project has not been developed.
Costs
The estimated costs are $527,000, which includes planning, E&D, acquiring permits, and oversight.

Figure 2-3 WQ2, Pensacola Bay Unpaved Roads Initiative Phase 2 (Planning) (preferred): General Project Location

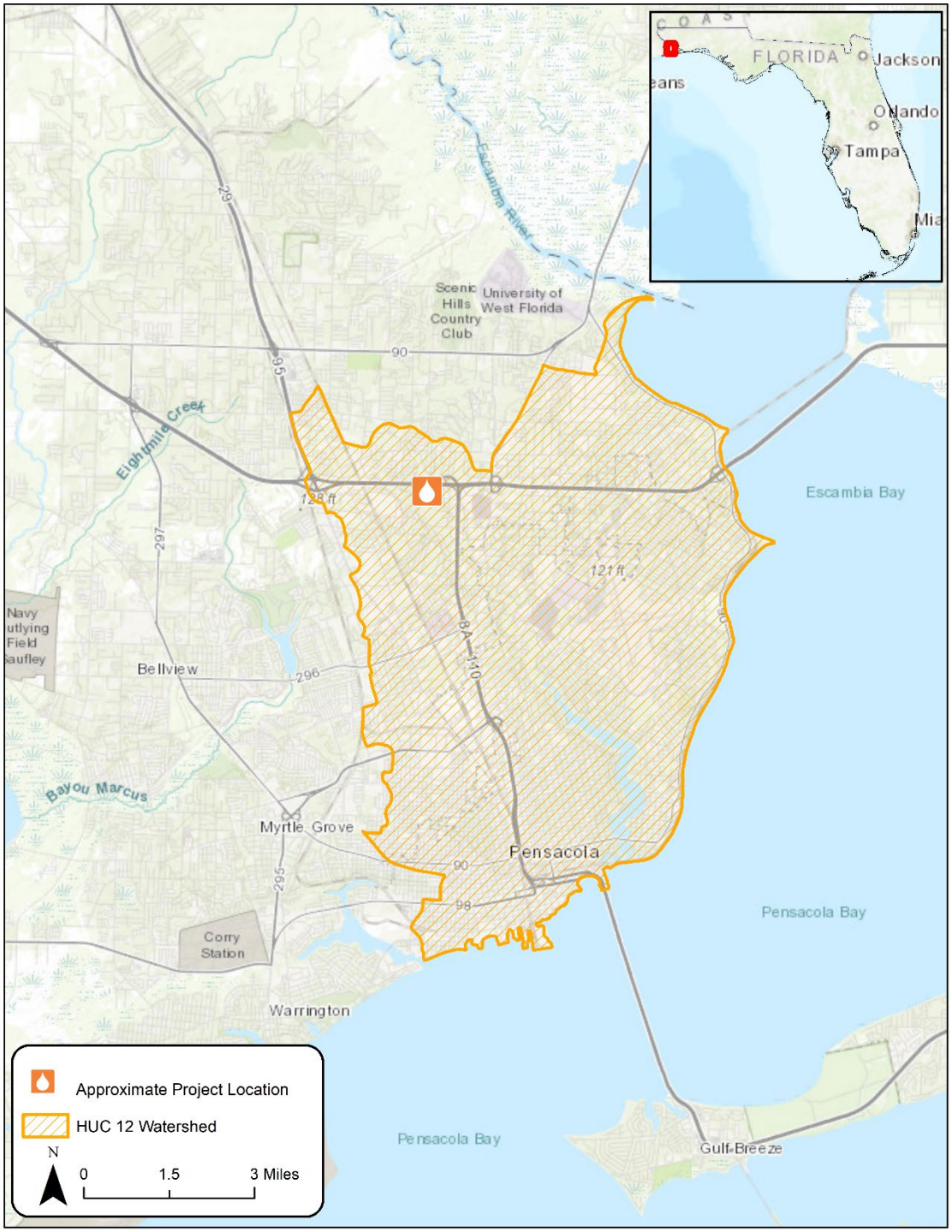


2.4.3 WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements (preferred)

Restoration Approach
Reduce pollution and hydrologic degradation to coastal watersheds (PDARP/PEIS Section 5.5.5.2)
Restoration Technique
Traditional stormwater control measures; Erosion and sediment control practices (PDARP/PEIS Appendix 5.D.2.2)
Project Goal
Improve water quality in the Carpenter Creek watershed by reducing sediment loading and restoring stream habitat.
Project Location
Carpenter Creek Headwaters, Escambia County (Figure 2-4)
Project Summary
This project would be implemented by the FDEP FL TIG Trustee in coordination with the Escambia County. The project would retrofit existing stormwater management systems and install additional stormwater infrastructure to provide additional water treatment, and thereby improve water quality in the Pensacola Bay watershed. The project would implement recommendations in the *Carpenter Creek Watershed Master Plan* (Escambia County, 2022), which included proposed sites and activities for stream restoration and stormwater treatment activities. Specifically, the project would: • **Restore 1,540 linear feet of Robins Ridge Stream and construct two detention ponds.** The stream restoration would provide the drainage corridor a larger floodplain/wetland area to stabilize the stream channel, preventing erosion and reducing downstream sediment loads. A bottomland meander belt and headwater channel would be contoured through the bottomland forest (by moving/removing sediment). Native vegetation would be planted along the restored meander belt for stabilization. • **Install multiple stormwater filtering structures** containing sediment settling chambers to capture and treat stormwater in drainageways near Coronet Drive. The structures would remove nitrogen, phosphorus, and suspended solids. • **Enhance existing stormwater ponds** by installing bio-sorption activated media (BAM) stormwater infrastructure at three dry retention ponds near Cardinal Cove to reduce pollution influx into Carpenter Creek and remove energy from the system during heavy rainfall events. The Carpenter Creek watershed is highly urbanized and developed with residential, commercial, and industrial areas. The high degree of impervious surfaces, relatively well-drained soils, and presence of multiple pollutant sources contribute to water quality impairment within the watershed. Water quality assessment results indicated that total phosphorus, fecal indicator bacteria, and dissolved oxygen are the major impairment concerns. The *Pensacola Bay SWIM Plan* (NWFWMD, 2017a) and the *Carpenter Creek Watershed Master Plan* note that the implementation of best management practices (BMPs) for the urban watershed is needed for Carpenter Creek. The plans also note that restoration of the stream's natural sinuosity would assist with the assimilation of urban waste loads and attenuate floodwaters bringing sediment to Bayou Texar. The project would reduce pollutant loading and hydrologic degradation in the watershed, which flows into coastal waters. The restored floodplain area would improve the bottomland forest habitat and provide for species that depend on these habitats, stabilize soils, and reduce erosion and sediment loading into Carpenter Creek.

General Project Activities and Implementation Timing
Project activities include planning, E&D, construction of stormwater improvements and floodplain restoration, and post-construction monitoring. This project would take approximately 5 years. Year 1 would include planning, E&D, and acquiring permits. Years 2 and 3 would include land access and construction. Years 4 and 5 would include post-construction monitoring.
Maintenance
Revegetation of areas disturbed by construction activities would require short-term repair and maintenance. Over the long-term, Escambia County (using County funds) would conduct routine maintenance of the stormwater treatment facilities, including berms and water control structures; maintain invasive plant control within water storage areas and floodplain restoration areas; remove debris and accumulated sediments from baffle boxes and settling chambers; and replace expended BAM.
Monitoring
Project monitoring details are provided in the project MAM plan in Appendix B.
Costs
The estimated costs are $6,300,000, which includes planning, E&D, acquiring permits, implementation, maintenance, monitoring, oversight, and contingency.

Figure 2-4 **WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements (preferred): General Project Location**



2.4.4 WQ4, Hollice T. Williams Stormwater Park (preferred)

Restoration Approach

Reduce pollution and hydrologic degradation to coastal watersheds (PDARP/PEIS Section 5.5.5.2)

Restoration Techniques

Traditional stormwater control measures; Low-impact development practices (PDARP/PEIS Appendix 5.D.2.2)

Project Goal

Improve water quality by implementing both traditional and green stormwater infrastructure techniques to capture and treat runoff that flows into Pensacola Bay.

Project Location

Hollice T. Williams Park, City of Pensacola (Figure 2-5)

Project Summary

This project would be implemented by the FDEP FL TIG Trustee in coordination with the City of Pensacola and Escambia County. This project would build on the RESTORE Act Direct Component *Planning Assistance for the Hollice T. Williams Stormwater Park* project, which conducted planning work and E&D for revitalizing the existing Hollice T. Williams Park. A portion of the park would be enhanced and redesigned to function as a stormwater park that captures runoff and pollutants, metals, and sediments from the runoff within the basin and reduce nutrient loading to improve water quality within Pensacola Bay. The park would treat runoff from portions of a 145-acre drainage basin to the east and portions of the 1600-acre Long Hollow basin to the north.

Specifically, this project would:

- **Revitalize a 10-acre portion of the existing Hollice T. Williams Park as a stormwater park** that would capture and treat runoff during rain events. The project would consist of removing existing park infrastructure (e.g., grass, trees, trash cans, and lighting) and using traditional and green stormwater infrastructure techniques including wet-detention ponds with littoral wetland vegetation, pre-treatment systems to remove sediments and trash, and pervious pedestrian surfaces.

This project would contribute to the creation of a larger, 60-acre stormwater park covering 1.3 miles of greenway (Hollice T. Williams Park) under the I-110 interstate within Pensacola. This project would include stormwater control features within the northernmost 10-acre portion of the park (i.e., between Maxwell and Avery Streets). State and local funds would be used to complete the recreational features (e.g., landscaping, lighting, educational signage, bike racks, paved paths, picnic tables and benches, playgrounds, parking areas, trash cans) within the 10-acre portion and complete the remaining 50 acres of the stormwater park.

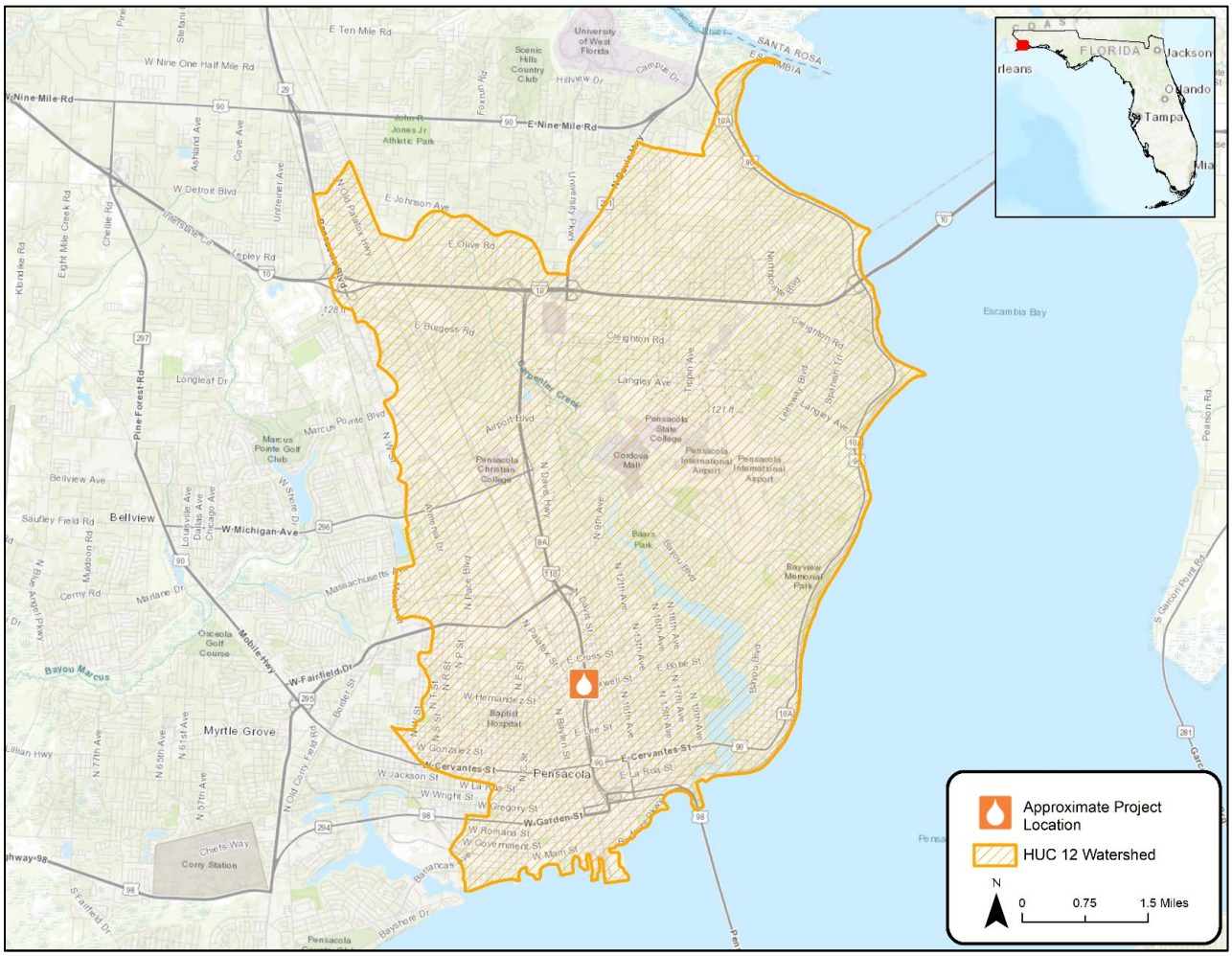
Hollice T. Williams Park is located within a highly urbanized and developed watershed. The I-110 roadway system is elevated over the park, and the project site is bordered by residential, commercial, and industrial areas. The high degree of impervious surfaces, relatively well-drained soils, and presence of multiple pollutant sources contribute to water quality issues within the watershed. Water quality assessment results indicate that total phosphorus, fecal indicator bacteria, and dissolved oxygen are the major impairment concerns. This project applies innovative approaches to designed, multi-functional stormwater retention areas that can be used as passive recreational areas during dry conditions. Furthermore, the project would utilize green stormwater infrastructure techniques, providing multiple ecological benefits and reducing pollutant and nutrient runoff.

General Project Activities and Implementation Timing

Project activities include planning, acquiring permits, construction of the stormwater park, and post-construction monitoring.

This project would take approximately 3 years. Years 1 and 2 would include planning, acquiring permits, and construction. Year 3 would include post-construction monitoring.
Maintenance
Short-term maintenance would include revegetation of areas disturbed by construction. Over the long term, the City of Pensacola would conduct routine operations and maintenance of stormwater treatment facilities including berms and water control structures, invasive plant control within water storage areas, and removal of debris and accumulated sediments from stormwater pre-treatment systems and from pond areas.
Monitoring
Project monitoring details are provided in the project MAM plan in Appendix B.
Costs
The estimated costs are $5,450,000, which includes planning, E&D, acquiring permits, implementation, monitoring, oversight, and contingency. As noted above, leveraged funds would be used to complete this project. The City of Pensacola received approximately $25,000,000 in state funds to complete recreational elements and for planning and construction of stormwater treatment in the other 50 acres of the park.

Figure 2-5 WQ4, Hollice T. Williams Stormwater Park (preferred): General Project Location



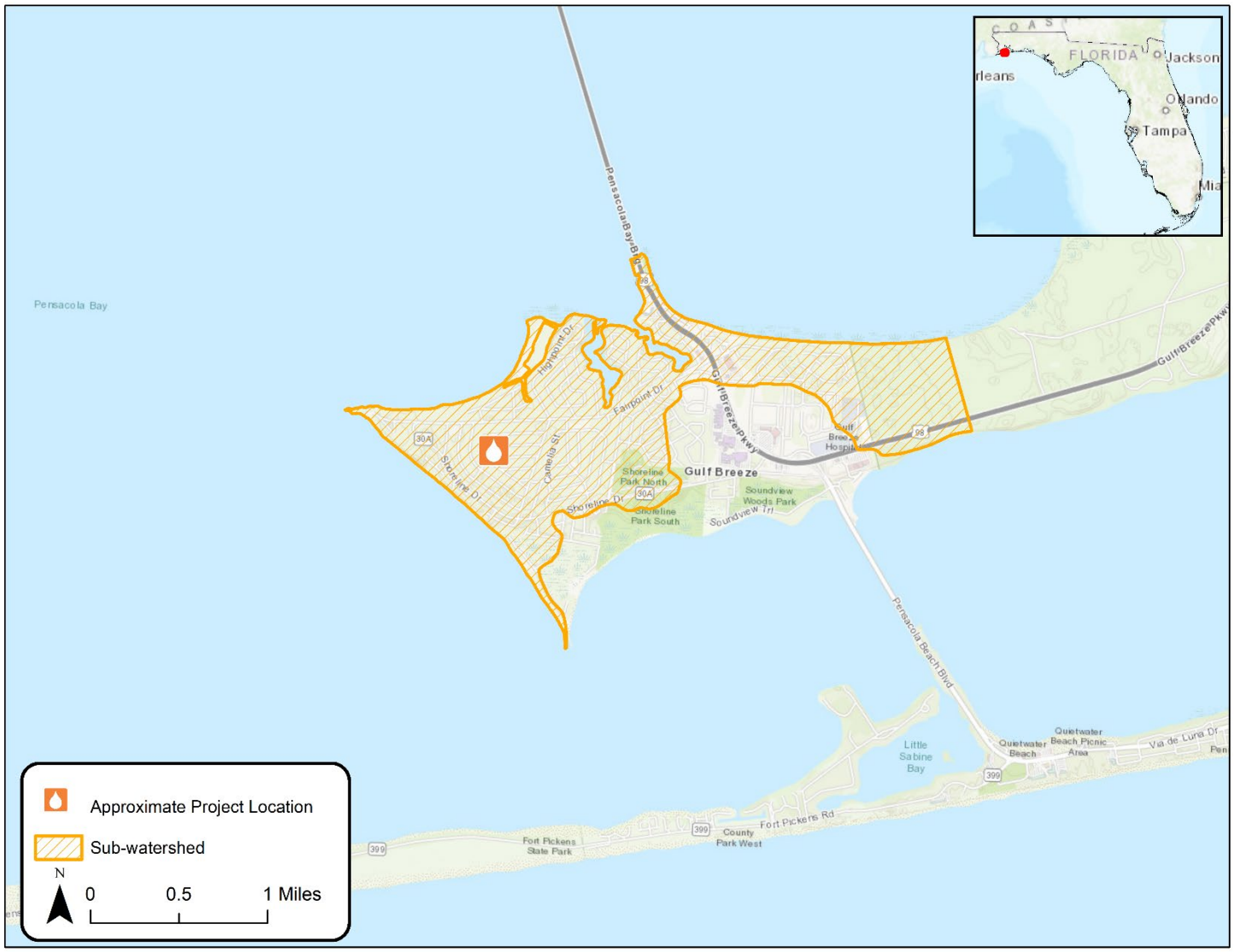
2.4.5 WQ5, Gulf Breeze Septic to Sewer Conversion (preferred)

Restoration Approaches
Reduce pollution and hydrologic degradation to coastal watersheds (PDARP/PEIS Section 5.5.5.2)
Restoration Techniques
Septic tank decommissioning[19] and expansion of sewer system connections
Project Goal
Improve water quality in Santa Rosa Sound and Pensacola Bay by eliminating bacterial pollution and nutrient exports from existing septic systems.
Project Location
City of Gulf Breeze, Santa Rosa County (Figure 2-6)
Project Summary
This project would be implemented by the FDEP FL TIG Trustee in coordination with the City of Gulf Breeze and the Pensacola and Perdido Bay Estuary Program. The project would improve water quality in Santa Rosa Sound and Pensacola Bay by reducing nutrient loading from antiquated septic systems by connecting homes that are served by septic systems to an advanced (i.e., higher than the typical secondary treatment level provided by most facilities) wastewater treatment plant. Specifically, the project would: • **Decommission residential septic tanks and connect homes to the municipal sewage system.** Up to 1,030 residences across 11 proposed septic to sewer areas would be converted from septic to gravity sewer systems or low-pressure grinder pumps and piped into the City's centralized sewage transmission and connection system. Effluent would be added to the City's reclamation facility at Tiger Point. • **Monitor waterways** prior to and following the septic tank conversion. Gulf Breeze is a peninsular community with a high water table, making the area sensitive to leakages from failing septic systems. Untreated wastewater discharges disease-causing pathogens and nitrates into coastal waters, causing potential health concerns for the local populace (if close to a drinking water well), increased algal growth, and lowered dissolved oxygen levels. This, in turn, can endanger shellfish beds (USEPA, 2023a). On-site costs for septic tank decommissioning and connections to the sewer system would be covered (through this project or by the City of Gulf Breeze) for all residences that opt in prior to commencement of construction activities. After any construction activities are complete, residences that have not connected to the sewer system would have 60 days to connect after receiving notice from the City, in accordance with Florida statutes.
General Project Activities and Implementation Timing
Project activities would include planning, implementation, and administrative oversight. E&D would occur with leveraged funds from the City of Gulf Breeze. This project would take approximately 6 years. Implementation would occur in the following stages across the 11 proposed septic to sewer areas, and post-implementation monitoring would occur in Year 6. • Year 1: residences near Bay Cliffs Rd., Eufaula St., Fairpoint Dr., Florida Ave., and Montrose Blvd. • Year 2: residences near Highpoint Dr.

[19] Septic tank decommissioning involves pumping out the tank contents, rupturing the bottom to prevent water retention, and filling the tank with clean, compacted fill to grade.

• Year 3: residences near Gilmore Dr., Hoffman Bayou, and San Carlos Ave. • Year 4: residences near Warwick St. • Year 5: residences near Poinciana Dr.
Maintenance
Short-term maintenance activities include revegetating disturbed areas following construction and monitoring the new sewer connections for leaks. Over the long-term, Gulf Breeze would conduct weekly visual checks of infrastructure to identify leaks or damage and respond to emergencies at residences as needed.
Monitoring
Project monitoring details are provided in the project MAM plan in Appendix B.
Costs
The estimated NRDA costs are $12,830,000, which include implementation, monitoring, maintenance, and oversight. The total project implementation costs are estimated at $23,489,200. Gulf Breeze would leverage other funding sources for the remainder of the E&D and implementation funding.

Figure 2-6 WQ5, Gulf Breeze Septic to Sewer Conversion (preferred): General Project Location

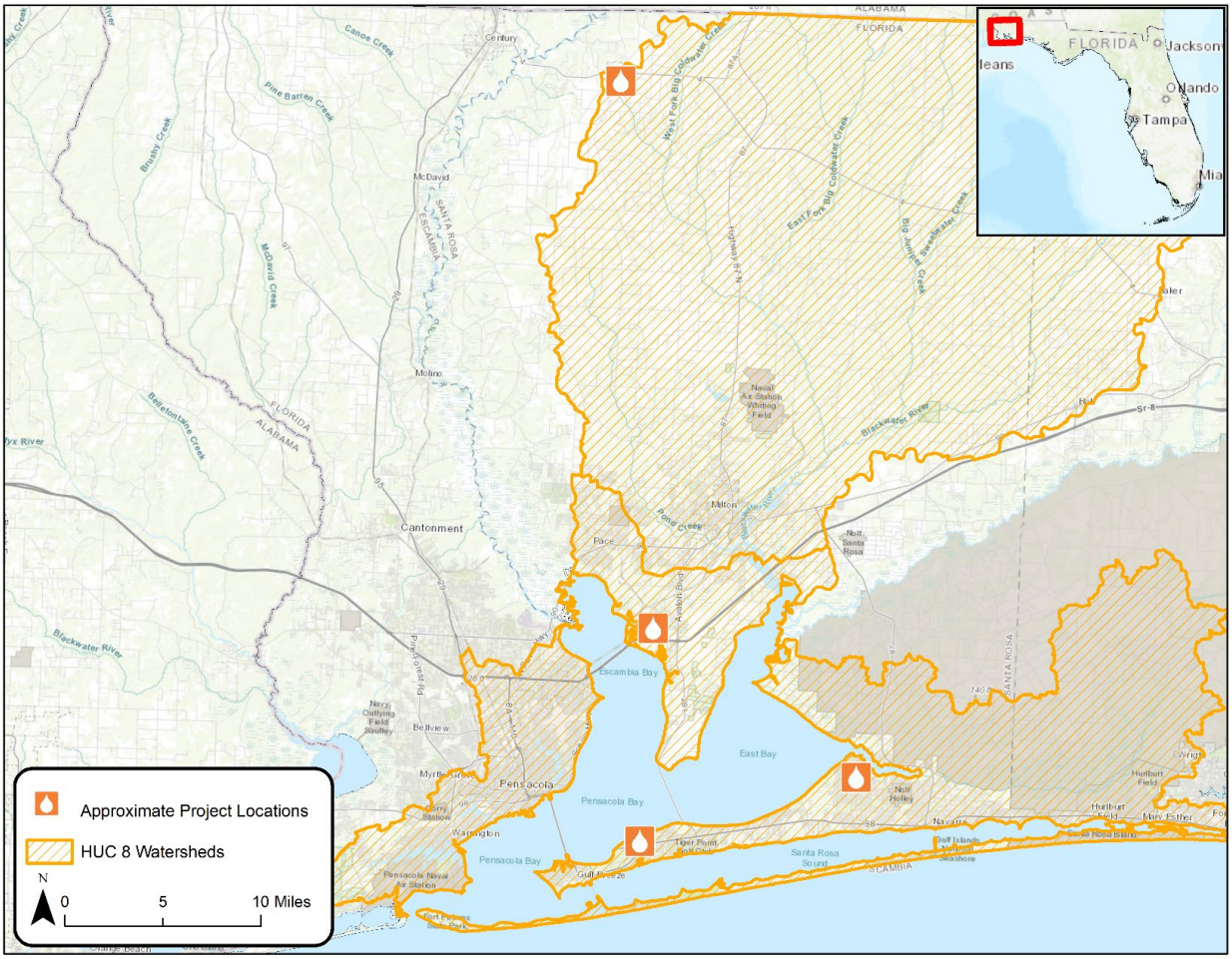


2.4.6 WQ6, Santa Rosa County Septic to Sewer Conversion (preferred)

Restoration Approach
Reduce pollution and hydrologic degradation to coastal watersheds (PDARP/PEIS Section 5.5.5.2)
Restoration Technique
Septic tank decommissioning and expansion of sewer system connections
Project Goal
Improve water quality in East Bay, Escambia Bay, and Pensacola Bay by eliminating bacterial pollution and nutrient exports from septic systems.
Project Location
Santa Rosa County (Figure 2-7)
Project Summary
This project would be implemented by the FDEP FL TIG Trustee in coordination with Santa Rosa County. The project would improve water quality in the Pensacola Bay watershed by connecting homes currently served by septic systems to central wastewater treatment systems. Specifically, the project would: • **Analyze existing data** to characterize and prioritize septic to sewer conversion areas. • **Decommission residential septic tanks and replace them with connections to the municipal sewage system.** Up to 900 residences would be converted from septic to sewer. Septic tanks would be replaced with gravity sewer systems or low-pressure grinder pumps and piped into each city's municipal centralized sewage transmission and connection system. • **Monitor waterways** prior to and following the septic tank conversion. In Santa Rosa County, approximately 47,000 residential septic tank systems are in use, 60 percent of which are single-family homes (Cannon, 2018). Historical reports indicate that many of the septic systems are not actively managed, permitted, and/or maintained, with Harmes (2021) reporting that as many as 40 percent of septic tank systems may be poorly maintained. Improper and irregular maintenance as well as aging septic systems may generate system failures, fostering bacterial and viral pathogen growth. Solids may migrate into drain fields and clog septic systems, potentially contaminating groundwater with pathogens and nitrates (USEPA, 2023a). Florida has a relatively high water table, with most septic tanks sitting only a few feet above the table. Untreated wastewater discharges disease-causing pathogens and nitrates into coastal waters, causing potential health concerns for the local populace (if close to a drinking water well), increasing algal growth, and lowering dissolved oxygen levels. This, in turn, can endanger shellfish beds (USEPA, 2023a). This project would reduce discharge of pollutants, nutrients, and pathogens into tributaries of the Pensacola Bay watershed. This project is a multi-jurisdictional collaborative septic to sewer conversion program that involves four water utility partners serving Santa Rosa County: the Pace Water System, the Gulf Breeze Regional Water System, the Holley Navarre Water System, and the Town of Jay. Up to 352 residences would be converted to sewer within the Pace Water System (within the Bayou Ridge, Twin Hills, Old Arcadia, Floridatown, and Crystal Creek residential areas). Up to 219 residences (separate from those covered under *WQ5, Gulf Breeze Septic to Sewer Conversion*) would be converted to sewer in the City of Gulf Breeze Water System (within the West Bayshore area). Up to 194 residences would be converted within the Holley Navarre Water System (near Tom King Bayou). Up to 130 residences would be converted to sewer within Jay (rural residences near the Pensacola Bay watershed headwaters). On-site costs for septic tank decommissioning and connections to the sewer system would be covered for all residences that opt in prior to completion of construction activities (through this project or by the utility companies). Project area residents and property owners would be notified by letter at least 365 days in advance of the opportunity to participate in the program; the letter would include information about FL Statute 381.00655 regarding connection requirements. When

sewer becomes available, a second notification would be sent. Residences that have not connected to the sewer would have 1 year to connect after receiving the notice.
General Project Activities and Implementation Timing
Project activities include planning, data analysis and site identification, E&D, construction, and monitoring. This project would take approximately 5 years. Project timelines would vary across the utility partners. Generally, site selection, planning, and E&D would occur in Years 1 and 2; construction would occur in Years 2 and 3; and post-construction maintenance and monitoring would occur in Years 4 and 5.
Maintenance
Short-term maintenance activities include revegetating disturbed areas following construction and monitoring of the new sewer connections for leaks. Over the long term, the water utilities would conduct visual checks of infrastructure to identify leaks or damage and respond to emergencies at residences as needed.
Monitoring
Project monitoring details are provided in the project MAM plan in Appendix B.
Costs
The estimated costs are $22,797,000, which includes planning, E&D, implementation, monitoring, and oversight.

Figure 2-7 WQ6, Santa Rosa County Septic to Sewer Conversion (preferred): General Project Location

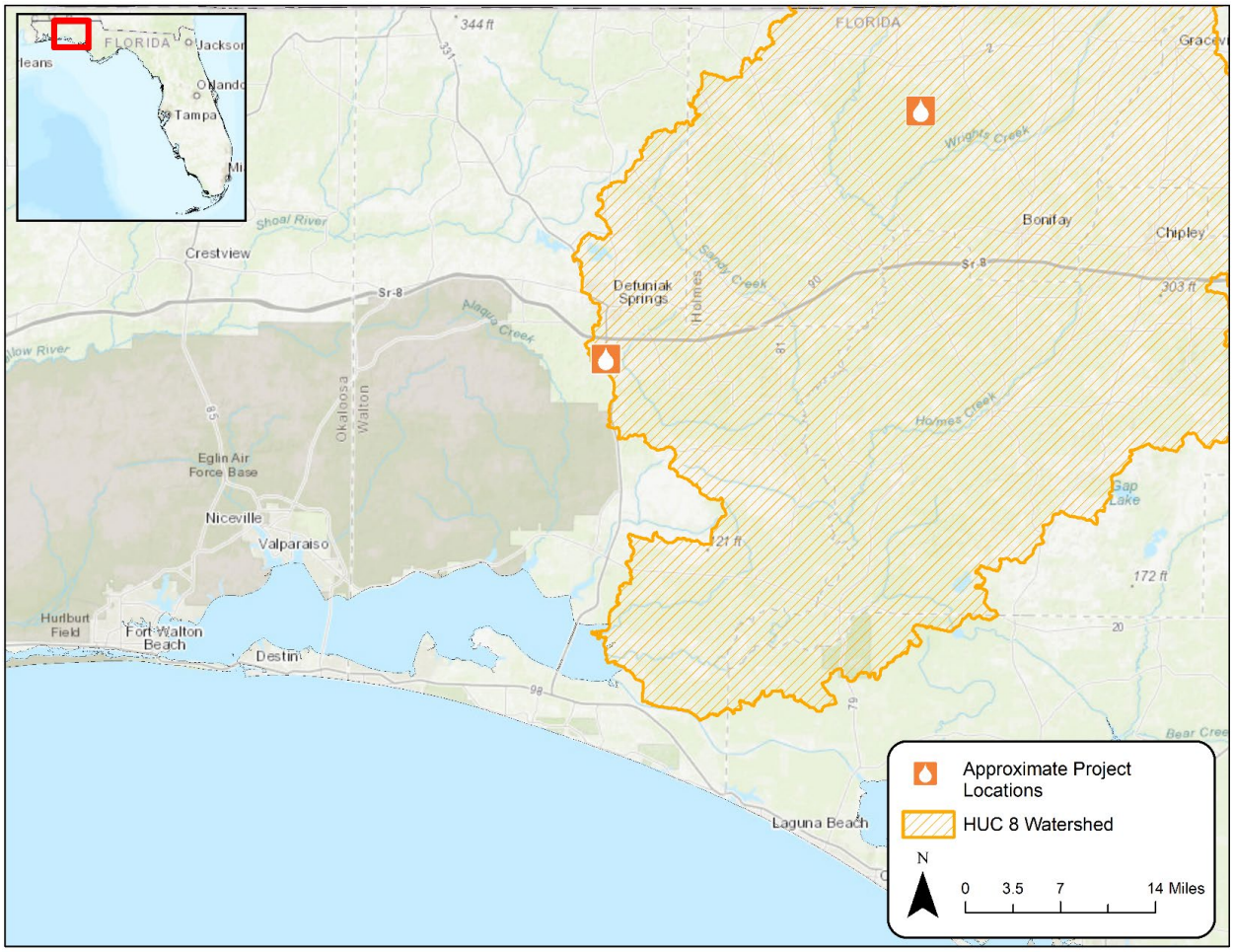


2.4.7 WQ7, Choctawhatchee Bay Unpaved Roads Initiative (preferred)

Restoration Approach
Reduce pollution and hydrologic degradation to coastal watersheds (PDARP/PEIS Section 5.5.5.2)
Restoration Technique
Erosion and sediment control practices (PDARP/PEIS Appendix 5.D.2.2)
Project Goal
Reduce sediment loading at unpaved road crossings in the Choctawhatchee Bay watershed through roadway and drainage improvements.
Project Location
Washington and Holmes Counties (Figure 2-8)
Project Summary
This project would be implemented by the FDEP FL TIG Trustee in coordination with Washington and Holmes Counties. This project would construct and implement road enhancements at 12 sites that were designed and permitted through the NFWF-GEBF *Water Quality Improvements to Enhance Fisheries Habitat in the Lower Choctawhatchee River Basin – Phase 1* project. Specifically, this project would: • **Implement roadway improvements** including adjusting the elevation profile of the road or installing road sub-bases and paving the roadway near a crossing. • **Implement drainage improvements** including installing/replacing culverts and stabilizing ditches and shoulders. Unpaved roads cause significant erosion and sediment loading to nearshore water bodies (DWH Trustees, 2016). Sediment can interfere with downstream growth and development of algae, phytoplankton, and SAV by absorbing or scattering solar radiation needed for photosynthesis. In 2007, USFWS conducted the *Northwest Florida County-Maintained Unpaved Road-Stream Crossings Inventory* and identified 2,777 unpaved road and stormwater drainage crossings on county-maintained roads in 16 northwest Florida counties (USFWS, 2007). Results found that the Choctawhatchee Bay watershed had the largest number of unpaved, county-maintained roads in northwest Florida, with over 2,000 unpaved road sites in Walton, Holmes, and Washington Counties. This project would include the implementation phase of the planning, E&D, and permitting work conducted under the NFWF-GEBF Phase 1 project. Unpaved roadways in the Choctawhatchee basin are relatively narrow with limited rights-of-way and steep slopes both laterally and vertically along the road. These restrictions inhibit the use of typical stormwater improvements like dry or wet retention ponds and wide swales. As such, this project involves alternate roadway and drainage improvements, such as adjusting the elevation profile of the road, paving roadways near stream crossings, replacing culverts, and stabilizing ditches to reduce the velocity of stormwater flows and reduce erosion. This would help reduce the transport of sediments and soils and improve water quality through reduced loading to nearby water bodies. This project would build on USFWS work in the Chipola and Yellow River watersheds to stabilize numerous crossings and streambanks (that was conducted primarily under the Partners for Fish and Wildlife and National Fish Passage Programs) and would also expand on completed USEPA unpaved road and stream crossing stabilization projects in Northwest Florida (e.g., *Oakwood Hills Road/Stream Crossing Stabilization* project).
General Project Activities and Implementation Timing
Project activities include construction/implementation, maintenance, and monitoring. This project would take approximately 3 years. Construction would occur in Years 1 and 2. Monitoring would occur in Year 3.

Maintenance
Short- and long-term maintenance of the enhanced roadways and drainages would be conducted by county road departments.
Monitoring
Project monitoring details are provided in the project MAM plan in Appendix B.
Costs
The estimated costs are $17,277,000, which includes implementation, monitoring, oversight, and contingency.

Figure 2-8 WQ7, Choctawhatchee Bay Unpaved Roads Initiative (preferred): General Project Location



2.4.8 WQ8, Swift Creek Hydrologic Restoration

Restoration Approaches

Reduce pollution and hydrologic degradation to coastal watersheds; Create, restore, and enhance coastal wetlands (PDARP/PEIS Section 5.5.5.2)

Restoration Technique

Restore hydrologic connections to enhance coastal habitats (PDARP/PEIS Appendix 5.D.1.1)

Project Goal

Improve water quality conditions in Swift Creek by restoring natural hydrology.

Project Location

Niceville, Okaloosa County (Figure 2-9)

Project Summary

This project would be implemented by the DOI FL TIG Trustee in coordination with Eglin Air Force Base (U.S. Department of Defense), the USFWS, Northwest Florida State College, and the Florida Department of Transportation (FDOT). This project would restore the natural hydrology of Swift Creek, a tributary of Choctawhatchee Bay that originates within Eglin Air Force Base and discharges into coastal waters, by reconnecting the floodplain and riparian zone for Swift Creek; and would also partially restore Roberts Pond, a recreational impoundment, which is one of the primary contributors to water quality degradation in Swift Creek and downstream areas.

Specifically, this project would:

- **Reduce the size of the Roberts Pond recreational impoundment.** To reduce the pond size, the project would:
  - **Construct a berm** to separate Swift Creek from the recreational pond.
  - **Excavate and construct an off-channel recreational pond** in the relic pond bed.
- **Remove the concrete spillway and box culvert** at Roberts Pond.
- **Construct a bridge** over Swift Creek.
- **Restore one mile of stream channel** in the relic pond bed.

This project would also include several recreational enhancements that would be funded through non-NRDA funds, such as state and local funds. These enhancements would include a boardwalk on the berm, parking area, and picnic pavilion.

Swift Creek and areas downstream suffer from reduced water quality and biological integrity (e.g., elevated nutrient and fecal coliform levels, high temperatures, altered hydrology) due to several anthropogenic sources, including primarily Roberts Pond. Roberts Pond (also known as College Pond) was constructed in 1966 as a recreational impoundment (e.g., for fishing, kayaking, and other activities) with a concrete spillway at College Blvd. Currently, the concrete spillway and box culvert under College Blvd show signs of degradation and the water regulatory structure is no longer operational, meaning there is no current means for flood management on Swift Creek.

In addition to water quality improvements for Swift Creek and Choctawhatchee Bay by restoring natural hydrology and sediment transport, this project would serve to restore habitat for the recently Endangered Species Act (ESA)-delisted Okaloosa darter (*Etheostoma okaloosae*).

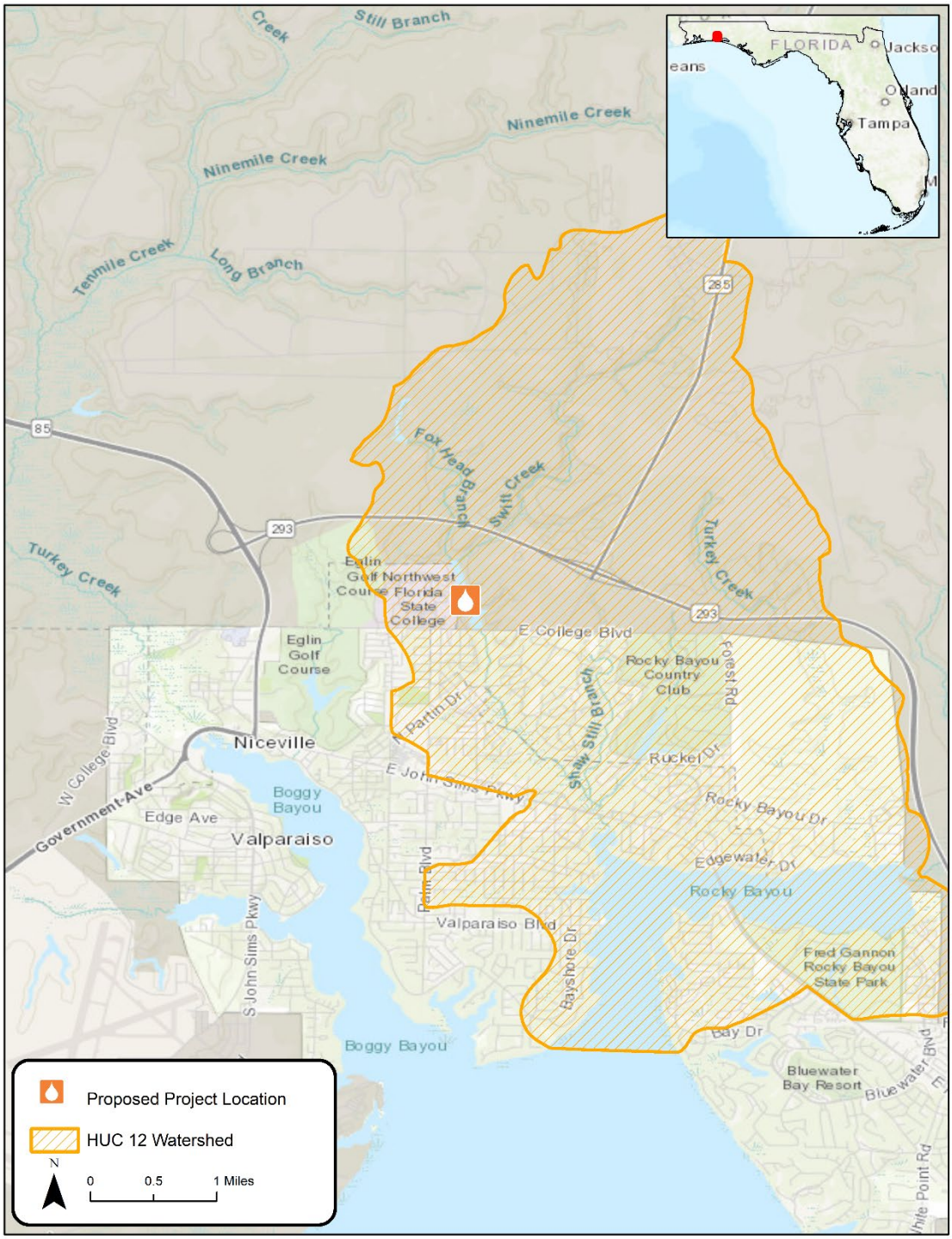
General Project Activities and Implementation Timing

Project activities include planning, E&D, acquiring permits, construction, maintenance, and monitoring.

This project would take approximately 5 years. Years 1 and 2 would include planning, E&D, and acquiring permits. Year 3 and 4 would include construction. Year 5 would include maintenance and monitoring.

Maintenance
Revegetation of areas disturbed by construction activities would require short-term maintenance. Over the long term, FDOT would maintain the bridge constructed along College Blvd, Northwest Florida State College would conduct routine maintenance for the recreational facilities, and USFWS would maintain the stream habitat.
Monitoring
This project has not been identified as a preferred alternative by the FL TIG at this time, and therefore, a project MAM plan has not been developed.
Costs
The estimated costs are $8,500,000, which includes planning, E&D, acquiring permits, implementation, maintenance, and monitoring.

Figure 2-9 WQ8, Swift Creek Hydrologic Restoration: General Project Location

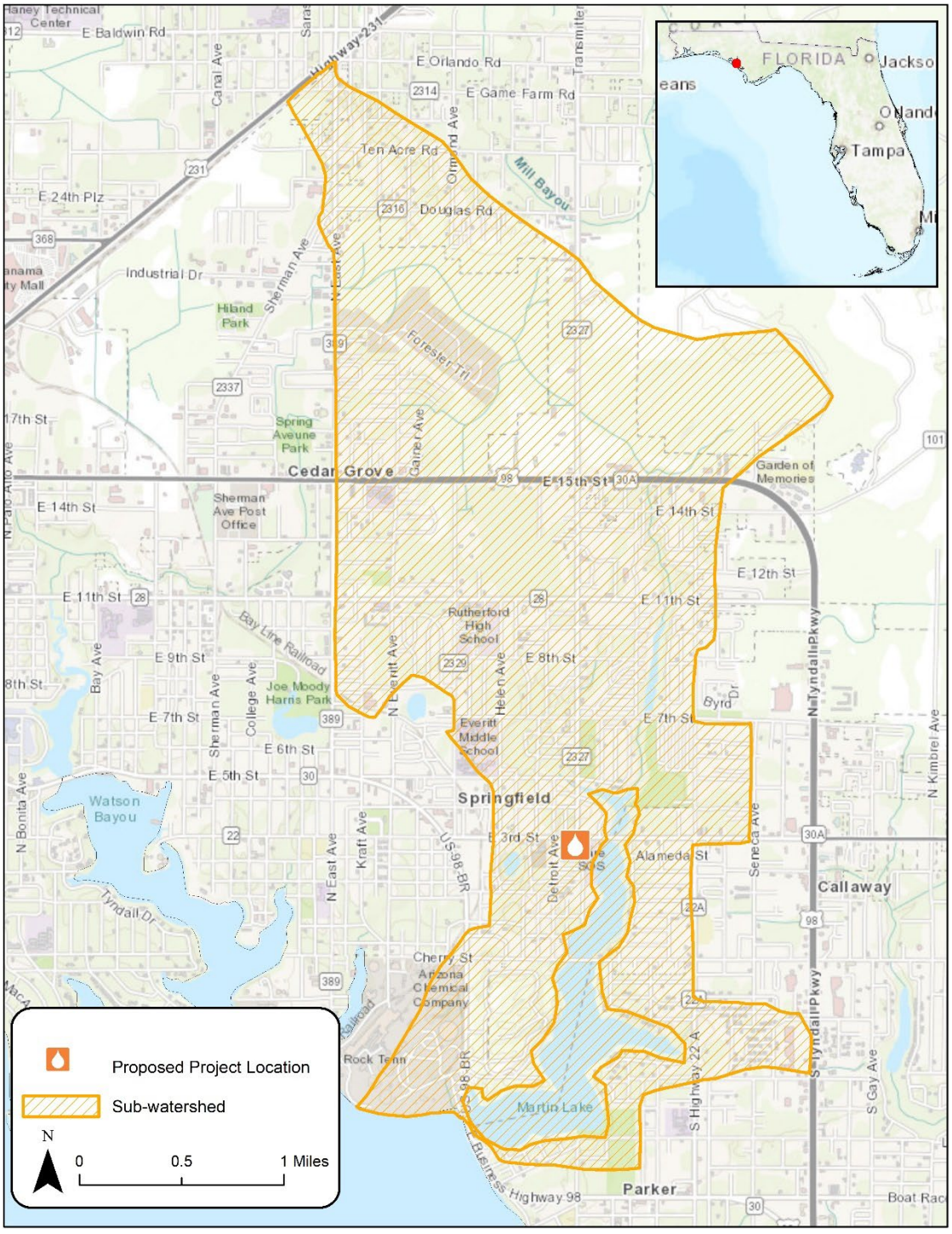


2.4.9 WQ9, Springfield Stream and Wetland Enhancement

Restoration Approaches
Reduce pollution and hydrologic degradation to coastal watersheds; Create, restore, and enhance coastal wetlands (PDARP/PEIS Section 5.5.5.2)
Restoration Technique
Restore hydrologic connections to enhance coastal habitats (PDARP/PEIS Appendix 5.D.1.1)
Project Goal
Improve water quality by restoring two degraded tributaries of Lake Martin.
Project Location
City of Springfield, Bay County (Figure 2-10)
Project Summary
This project would be implemented by the FDEP FL TIG Trustee in coordination with the City of Springfield and NWFWMD. This project would restore two degraded tributaries that drain into Lake Martin along St. Andrew Bay. The project would incorporate existing information into a community-supported design to enhance the two tributaries, address flooding issues within Springfield, and improve water quality and community resiliency. Specifically, this project would: • **Remove sediment, organic matter, debris, and invasive vegetation** from tributary channels. • **Plant native vegetation** to restore natural floodplain function. • **Create additional stormwater wetlands** so that the water entering the natural tributary floodplain wetland system meets water quality standards. Springfield, which encompasses the floodplain and the western half of Lake Martin proper, was directly impacted by Hurricane Michael in 2018. To aid in the recovery efforts, the USEPA led a Recovery and Resiliency Partnership Project to help cities impacted by the hurricane. The project identified numerous wetlands and stormwater management enhancements that would increase community resilience, address flooding, and ultimately improve water quality in Lake Martin and St. Andrew Bay. Given the priority placed on Lake Martin flooding, the U.S. Army Corps of Engineers (USACE) completed a hydrologic and hydraulic study and analysis of flood management opportunities for the Lake Martin basin. The study resulted in numerous recommendations, many of which would be addressed by this proposed project including wetland retention, native plantings, and waterway restoration to reduce sediments and nutrients entering the waterway (USACE, 2021). Further, Florida State University was awarded a National Coastal Resilience Fund grant from NFWF for $510,000 to develop preliminary, community-approved designs for wetland habitat restoration of the two main tributaries that feed Lake Martin along St. Andrew Bay.
General Project Activities and Implementation Timing
Project activities include planning, E&D, acquiring permits, construction, and monitoring. This project would take approximately 6 to 8 years. Year 1 would include planning, E&D, and acquiring permits. Years 2 and 3 would include construction. Post-construction monitoring would be implemented in approximately Years 4 through 6 or 8.
Maintenance
Short-term maintenance activities would include revegetation of areas disturbed by construction activities. Long-term maintenance activities would be conducted by Springfield and could include invasive plant control within wetlands and

floodplain restoration areas, erosion repair within restored stream channels, and maintenance or replacement of planted wetland plants.
Monitoring
This project has not been identified as a preferred alternative by the FL TIG at this time, and therefore, a project MAM plan has not been developed.
Costs
The estimated costs are $8,410,000, which includes E&D, acquiring permits, implementation, oversight, and contingency.

Figure 2-10 WQ9, Springfield Stream and Wetland Enhancement: General Project Location



2.4.10 WQ10, Telogia Creek Watershed Water Quality Improvements (preferred)

Restoration Approaches

Reduce pollution and hydrologic degradation to coastal watersheds; Create, restore, and enhance coastal wetlands (PDARP/PEIS Section 5.5.5.2)

Restoration Techniques

Erosion and sediment control practices; Restore hydrologic connections to enhance coastal habitats (PDARP/PEIS Appendix 5.D.1.1 and 5.D.2.2)

Project Goal

Improve water quality in the Telogia Creek subbasin by reducing sediment, nutrient, and pollutant loading and improving habitat stability and natural flow regimes.

Project Location

Telogia Creek subbasin, Lower Ochlockonee River, Gadsden and Liberty Counties (Figure 2-11)

Project Summary

This project would be implemented by the DOI FL TIG Trustee in coordination with the USFWS Panama City Ecological Services Office, USDA, U.S. Forest Service, and academic institutions. This project would improve surface water and aquatic habitat quality by implementing a variety of activities such as restoring eroding stream channels, establishing riparian buffers, improving unpaved road crossings, and restoring hydrologic connectivity throughout the Telogia Creek watershed. Similar to FL TIG RP1/EA projects, this project would be conducted in phases, where Phase 1 includes data compilation and synthesis, and Phase 2 includes planning and implementation of restoration activities identified and prioritized as part of Phase 1 activities.

Specifically, the project would:

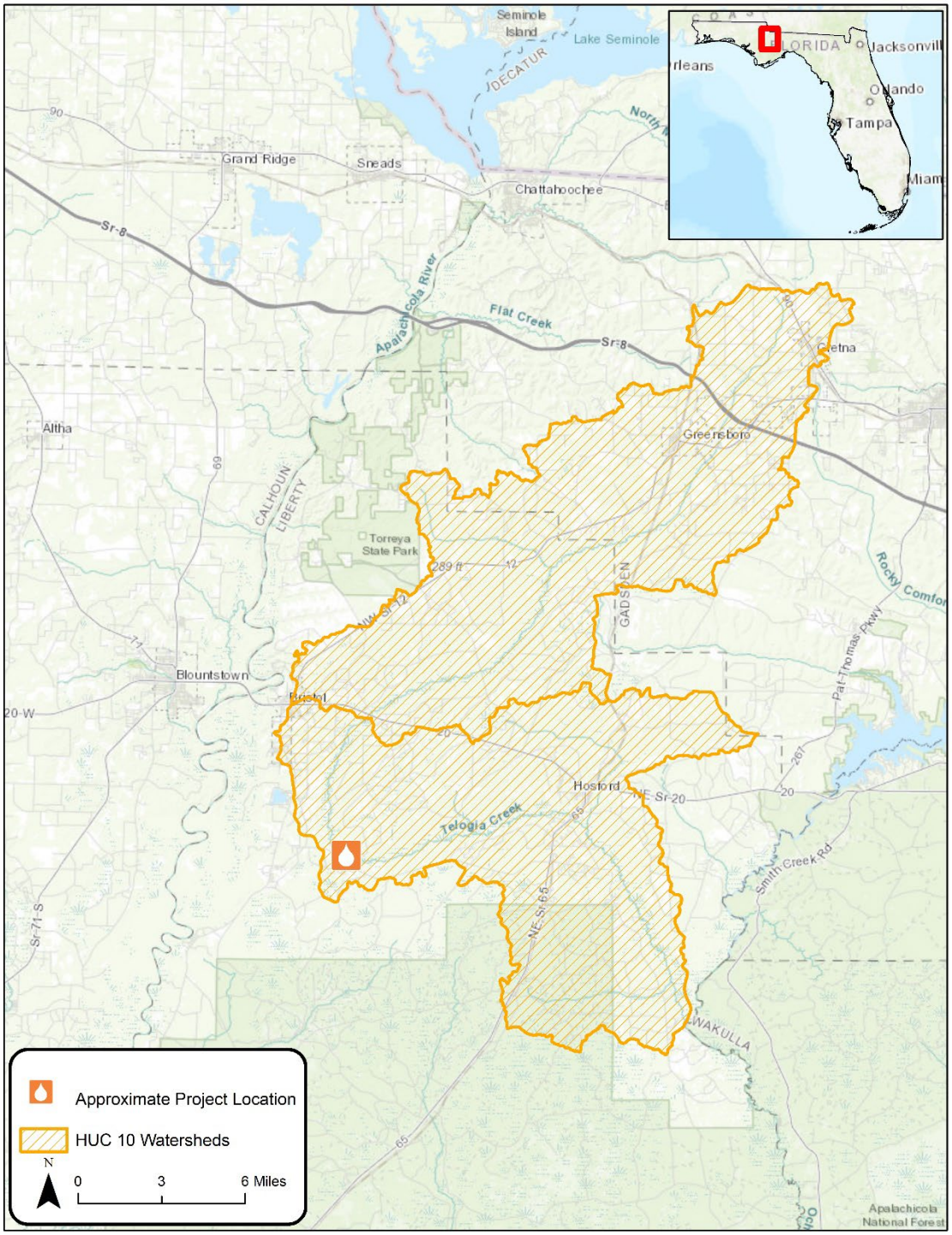
- In Phase 1,
    - **Gather and synthesize existing data** to identify areas of potential water quality impairment along Telogia Creek.
    - **Conduct field reconnaissance** to gather site-specific observations of these impaired areas.
    - **Identify hotspot areas** where water quality is impacted that could be targeted in Phase 2.
- In Phase 2,
    - **Implement site-specific restoration actions at up to 13 sites,** such as restoring riparian buffer zones, addressing unpaved roads and associated erosion at stream crossings (e.g., by placing or replacing inadequate culverts with bridge spans or larger culverts that maintain floodplains and flows, hilltop-to-hilltop paving, use of pervious pavement), or collaborating with landowners to identify and implement agricultural or silvicultural BMPs.

According to the *Ochlockonee River and Bay SWIM Plan*, the upper watershed is characterized by high concentrations of agricultural and rural residential land uses, and these uses have contributed to water quality issues within the watershed (NWFWMD, 2017b). State of Florida water quality assessment results indicated that nitrogen concentrations are increasing in Telogia Creek (FDEP, 2020; NWFWMD, 2017b). The SWIM plan identified the Telogia Creek watershed as a focus area to improve surface water and aquatic habitat quality and lists implementation of agricultural BMPs, establishment of riparian buffers, and improvement of unpaved road erosion issues among the actions needed for the watershed. The plan also notes opportunities for restoration of the stream's natural flow regime (e.g., replacing ineffective culverts) which would improve water quality.

This project would take a quantitative and qualitative approach to assess site-specific water quality impairment at locations along the entire length of Telogia Creek using a scoring system based on the USFWS "riverine threats assessment" protocol (USFWS, 2014; Rosgen, 1996). A combination of geographic information system (GIS) land use-land cover

analyses and aerial photography examinations would be used to identify areas of potential impairment which would then be visually inspected in the field. GIS data, combined with spatial ecology datasets, would be evaluated to identify hot spot areas where water quality is impacted and could be targeted for site-specific improvements in Phase 2.
General Project Activities and Implementation Timing
Project activities include planning, data collection and evaluation, restoration site selection, E&D, construction/implementation, and monitoring. This project would take approximately 6 years. Years 1 and 2 would include data collection evaluation, site selection, and E&D. Years 3 through 5 would include construction/implementation and Years 3 through 6 would include post-construction monitoring as sites are completed.
Maintenance
Short-term maintenance would include revegetation of areas disturbed during construction, vegetation management at restored sites, and rehabilitation of alterations to restored areas.
Monitoring
Project monitoring details are provided in the project MAM plan in Appendix B.
Costs
The estimated costs are $2,700,000, which includes planning, E&D, implementation, maintenance, monitoring, oversight, and contingency. The USFWS would provide in-kind monetary support, including staff time, to leverage NRDA funds.

Figure 2-11 WQ10, Telogia Creek Watershed Water Quality Improvements (preferred): General Project Location

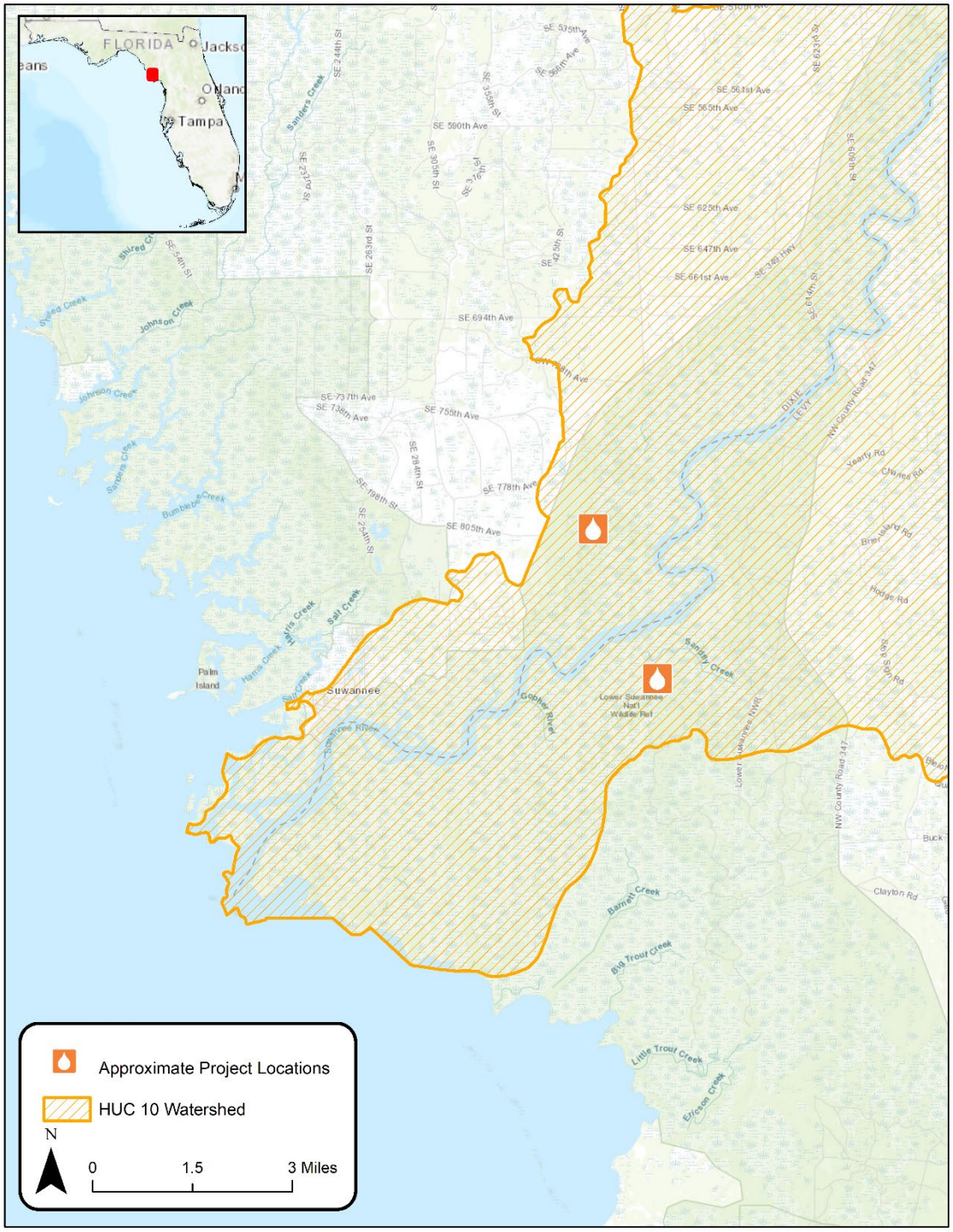


2.4.11 WQ11, Lower Suwannee National Wildlife Refuge Hydrologic Restoration Phase 2 (Planning) (preferred)

Restoration Approaches
Reduce pollution and hydrologic degradation to coastal watersheds; Create, restore, and enhance coastal wetlands (PDARP/PEIS Section 5.5.5.2)
Restoration Techniques
Restore hydrologic connections to enhance coastal habitats (PDARP/PEIS Appendix 5.D.1.1)
Project Goal
Increase water conveyance across the Lower Suwannee National Wildlife Refuge to improve water quality and quantity for estuarine-dependent resources and address chronic ecosystem degradation.
Project Location
Lower Suwannee National Wildlife Refuge, Dixie and Levy Counties (Figure 2-12)
Project Summary
This project would be implemented by the DOI FL TIG Trustee in coordination with the Lower Suwannee National Wildlife Refuge (NWR) and Suwannee River Water Management District (SRWMD). This project is Phase 2 planning and design, that builds upon the FL TIG's RP1/EA *Lower Suwannee National Wildlife Refuge Hydrologic Restoration – Planning and Design* project ("Phase 1 project"). The Phase 1 project modeled the NWR's hydrologic system and identified road sections that, when improved, would help restore hydrologic connections (SRWMD, 2022). The Phase 1 report detailed three restoration scenarios for Dixie and Levy Counties. Under this proposed Phase 2 project, 100 percent design plans would be developed, and environmental and local permits would be secured for the priority restoration scenarios identified in the Phase 1 project. This would ensure these Phase 2 priority restoration scenarios are ready to proceed for future funding opportunities. Specifically, this project would, • **Produce project design plans** for the priority restoration scenarios in Dixie and Levy Counties. • **Secure environmental and local permits** for the priority restoration scenarios. • **Develop construction cost estimates** for the priority restoration scenarios The Suwannee River flows through the NWR and discharges to Suwannee Sound and the Gulf. Roads across the NWR, such as Dixie County Mainline and Levy County Nature Drive, impede the natural overland sheet flow to the Suwannee River and the estuarine waters of Suwannee Sound. The roads currently serve as dikes and levees that impound natural freshwater flow, cause flooding, and increase inland evapotranspiration. This impediment to natural flow leads to reduced sediment and water transport to the coast, trapped salt water during storm surge events which promotes forest die-off, and altered marsh, coastal, and estuarine ecologies. This project would build on the data gathering and planning work done in Phase 1 to perform planning, E&D, and permitting for roadway and drainage improvements (e.g., elevating the road surface height, replacing undersized culverts, and adding new culverts and short bridges over constrained creeks). These design plans would ensure the project is ready to proceed for future funding opportunities. Eventual implementation actions would improve water quantity (i.e., move more water to Suwannee River and Sound) by allowing more water to flow beneath roads, and improve water quality by increasing freshwater input and restoring the natural estuarine environment near the coast, benefitting estuarine-dependent water column resources, oysters, and SAV. Future climate and weather projections model increased sea level rise and storm rainfall for the State of Florida (Hall et al., 2021; Obeysekera, et al., 2021). This combination increases coastal water elevations and, with more rainfall, increases flood risks as low-gradient landscapes cannot shed water fast enough. During low rainfall periods, establishing a natural hydrologic flow regime would ensure sufficient water delivery to the coast to maintain the estuarine salt-freshwater

balance, which benefits ecologically, recreationally, and economically important estuarine species and their prey (e.g., oyster reefs, juvenile nursery habitat, Gulf sturgeon habitat).
General Project Activities and Implementation Timing
Project activities include planning, E&D, acquiring permits, and estimating construction costs. This project would take approximately 2 years.
Maintenance
No short- or long-term maintenance activities are anticipated, as this project is a planning initiative.
Monitoring
Consistent with Section 10 of the Trustee Council's SOPs, a MAM plan is not required for projects with only planning activities, and therefore, a MAM plan for this project has not been developed.
Costs
The estimated costs are $1,600,000, which includes planning, E&D, acquiring permits, and oversight.

Figure 2-12 WQ11, Lower Suwannee National Wildlife Refuge Hydrologic Restoration Phase 2 (Planning) (preferred): General Project Location

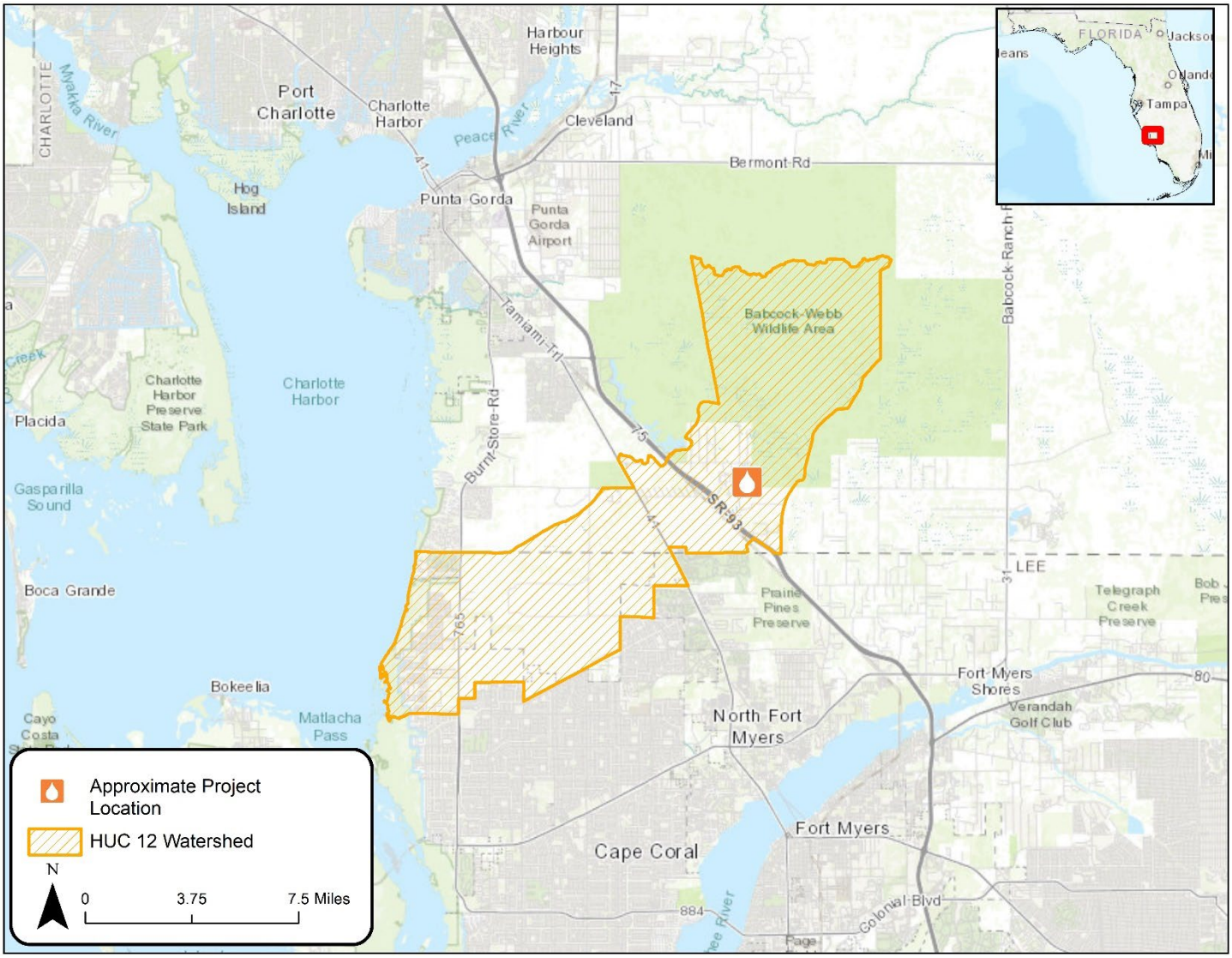


2.4.12 WQ12, Bond Farm Hydrologic Enhancement Impoundment (preferred)

Restoration Approaches
Reduce pollution and hydrologic degradation to coastal watersheds; Create, restore, and enhance coastal wetlands (PDARP/PEIS Section 5.5.5.2)
Restoration Technique
Restore hydrologic connections to enhance coastal habitats (PDARP/PEIS Appendix 5.D.1.1)
Project Goal
Restore hydrologic connections in the Charlotte Harbor watershed through the installation of a hydrologic enhancement impoundment.
Project Location
Bond Farm, Fred C. Babcock/Cecil M. Webb Wildlife Management Area, Charlotte County (Figure 2-13)
Project Summary
This project would be implemented by the FWC FL TIG Trustee in coordination with the Fred C. Babcock/Cecil M. Webb Wildlife Management Area (BWWMA, which is managed by FWC). This project would reduce hydrologic degradation in the BWWMA through the construction of a hydrologic enhancement impoundment (HEI) to manage surface water flows. This alternative builds on work conducted in the FL TIG RP1/EA *Lower Charlotte Harbor Flatwoods Hydrologic Restoration Initiative, Yucca Pens Unit (Planning & Design)* project, which developed a science-based, data-driven Strategic Hydrological Planning tool that provided guidance for restoration and management of surface waters that flow through the Yucca Pens Unit of the BWWMA into eastern Charlotte Harbor and the Caloosahatchee River (Coastal and Heartland National Estuary Partnership, 2023). Specifically, this project would: • **Construct a 538-acre HEI** that would store excess surface water from the BWWMA during the wet season and release the water downstream primarily through Prairie Pines during the dry season (until construction of a southwest discharge). The BWWMA lies at the headwaters of the Gator Slough watershed, which historically drained southwest via the Yucca Pens Unit towards Matlacha Pass and Charlotte Harbor to the Gulf. Surface water flows off the BWWMA have been altered by various land management and land use changes. Today, the BWWMA experiences a deeper and longer duration of seasonal flooding. Surface water draining from the BWWMA headwaters has been restricted, and wet season stages and hydroperiods in the southwest portions are now wetter than typical for the historic vegetative communities. The Bond Farm property, which is within the historic flow way for much of the BWWMA, was purchased in 2015 by the State of Florida to be merged with the BWWMA and managed by FWC. The goal of this acquisition was to help alleviate drainage issues in BWWMA by converting the property to a HEI that captures, stores, and conveys water. While this proposed HEI project is independent of, and does not rely on, the ultimate selection or funding of the proposed planning project, *WQ13, Bond Farm Hydrologic Enhancement Southwest Discharge Structure (Planning) (preferred)*, the FL TIG notes that any future construction of a southwest discharge structure would further facilitate flows through the Gator Slough watershed by restoring hydroperiods in wetlands upstream on the BWWMA and downstream on the Yucca Pens Unit and reducing peak flow to the downstream estuarine waters of Matlacha Pass and Charlotte Harbor to the Gulf. The incorporation of a HEI as a component of environmental restoration, particularly in South Florida, has become an industry standard largely due to the Comprehensive Everglades Restoration Plan. The project would help restore seasonal high-water levels and wetland hydroperiods in portions of the BWWMA. The project would store up to 4 feet of excess surface water from the BWWMA during the wet season and release the water downstream during the onset of the dry season to restore seasonal high-water levels and wetland hydroperiods in portions of the BWWMA.

General Project Activities and Implementation Timing
Project activities include acquiring permits, pre-construction monitoring, construction, post-construction monitoring, and maintenance. This project would take approximately 10 years. Years 1 and 2 would include pre-construction monitoring, acquiring permits, and procuring materials. Years 3 and 4 would include construction. Years 5 through 10 would include post-construction monitoring.
Maintenance
The BWWMA would conduct all short- and long-term maintenance at the site, including procedures and repairs for all electrical and mechanical equipment as well as grass maintenance/repair, road access/maintenance, seepage canal maintenance, and replacement of stilling wells and float switches.
Monitoring
Project monitoring details are provided in the project MAM plan in Appendix B.
Costs
The estimated costs are $38,500,000, which includes planning, E&D, implementation, construction oversight, and contingency. Maintenance and monitoring costs would be covered using state funds.

Figure 2-13 **WQ12, Bond Farm Hydrologic Enhancement Impoundment (preferred) & WQ13, Bond Farm Hydrologic Enhancement Southwest Discharge Structure (Planning) (preferred): General Project Location**



2.4.13 WQ13, Bond Farm Hydrologic Enhancement Southwest Discharge Structure (Planning) (preferred)

Restoration Approaches
Reduce pollution and hydrologic degradation to coastal watersheds; Create, restore, and enhance coastal wetlands (PDARP/PEIS Section 5.5.5.2)
Restoration Technique
Restore hydrologic connections to enhance coastal habitats (PDARP/PEIS Appendix 5.D.1.1)
Project Goal
The goal of this project is to design and acquire permits for a discharge structure to convey waters from the Bond Farm impoundment into Yucca Pens Unit of the BWWMA.
Project Location
Bond Farm, BWWMA, Charlotte County (Figure 2-13)
Project Summary
This project would be implemented by the FWC FL TIG Trustee in coordination with the BWWMA. This project would design and acquire permits for a discharge structure that, if proposed and selected for construction in a future RP/EA or other funding mechanism, would enhance the HEI proposed in the WQ12, *Bond Farm Hydrologic Enhancement Impoundment (preferred)* project and further facilitate freshwater flows through the Gator Slough watershed, restore hydroperiods in surrounding wetlands, and reduce peak flows to downstream estuarine waters. Specifically, this project would: • **Engineer and design** a discharge structure to convey water flows from the proposed Bond Farm HEI. • **Obtain environmental permits** to construct and operate the designed structure. The discharge structure proposed for E&D would convey water from any future Bond Farm HEI to the western property boundary. Water would flow through existing culverts under I-75 and would connect to a future drainage easement which would discharge into the Yucca Pens Unit of the BWWMA. This alternative would modify a section of the proposed HEI's west berm and seepage canal; incorporate a gated gravity flow or a pump station discharge; convey flows to existing, unmodified I-75 culverts; and provide for both automatic and manual controls. Water would flow via the future drainage easement to the Yucca Pens Unit as a timed release to reduce the potential for dry-out and extend the wet season hydroperiod. Upon completion of the flow way, Gator Slough would receive less water, which would reduce water surges to Matlacha Pass, Charlotte Harbor, and the Gulf. The E&D and permitting of this proposed discharge structure can be selected and funded without the selection and construction of the proposed WQ12 project by the FL TIG, which could be built with another funding source. In-field activities during E&D may include topographic or geotechnical surveys or ESA-listed species surveys.
General Project Activities and Implementation Timing
Project activities include planning, E&D, and acquiring permits. The project would take approximately 2 years.
Maintenance
No short- or long-term maintenance activities are anticipated, as this project is a planning initiative.
Monitoring
Consistent with Section 10 of the Trustee Council's SOPs, a MAM plan is not required for projects with only planning activities, and therefore, a MAM plan for this project has not been developed.

Costs
The estimated costs are $500,000, which includes planning, E&D, acquiring permits, and contingency.

3 OPA NRDA Evaluation of Alternatives

The FL TIG developed a reasonable range of restoration alternatives for consideration and evaluation in this RP3/EA. The screening process to identify the alternatives and project descriptions are provided in Chapter 2. This chapter provides an OPA NRDA analysis of each alternative considered in this RP3/EA. To avoid redundancy, a summary of the OPA NRDA evaluation standards (Section 3.1), monitoring requirements (Section 3.2), estimated project costs (Section 3.3), and BMPs (Section 3.4) are provided at the beginning of this chapter. These are followed by project-specific OPA NRDA evaluations (Section 3.5). The last sections evaluate the Natural Recovery/No Action Alternative (Section 3.6) and provide a summary and conclusions of the OPA NRDA evaluation of all alternatives (Section 3.7).

3.1 Summary of OPA NRDA Evaluation Standards

According to the OPA NRDA regulations, Trustees are responsible for identifying a reasonable range of alternatives (15 CFR § 990.53(a)(2)) that can be evaluated according to the OPA NRDA evaluation standards (15 CFR § 990.54). Chapter 2 describes the screening and identification of a reasonable range of alternatives for evaluation under OPA. Chapter 3 describes the Trustees' evaluation of the reasonable range of alternatives to identify preferred restoration alternatives based on, at a minimum, the following standards found in 15 CFR § 990.54(a):

- The cost to carry out the alternative (Cost-effectiveness).
- The extent to which each alternative is expected to meet the Trustees' goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses (Goals and objectives).
- The likelihood of success of each alternative.
- The extent to which each alternative would prevent future injury resulting from the incident and avoid collateral injury resulting from implementing the alternative (Avoid collateral injury).
- The extent to which each alternative benefits more than one natural resource and/or service (Benefits).
- The effect of each alternative on public health and safety (Health and safety).

Based on the evaluation of the standards listed above, and after incorporating any other screening criteria identified by the Trustees (Section 2.2), the Trustees select preferred restoration alternative(s). If the Trustees conclude that two or more alternatives are equally preferable, the OPA NRDA regulations provide that the most cost-effective alternative must be chosen (15 CFR § 990.54(b)).

3.2 Monitoring Requirements

When developing a restoration plan under the OPA NRDA regulations, Trustees establish restoration objectives that are specific to the natural resources that were injured (15 CFR § 990.55(b)(2)). These objectives should clearly specify the desired project outcome and the performance criteria by which successful restoration under OPA would be determined including criteria that would necessitate corrective actions (15 CFR § 990.55(b)(2)). Should a corrective action become necessary from unanticipated conditions, the Implementing Trustee would evaluate the corrective action for consistency with the OPA and NEPA analyses conducted in this RP3/EA in accordance with Section 9.5.2 of the Trustee Council's SOPs. Regulatory requirements for the monitoring component of a restoration plan are further described in 15 CFR § 990.55(b)(3). The DWH Trustees identified "Monitoring, Adaptive Management, and Administrative Oversight" as one of the programmatic Restoration Goals in the PDARP/PEIS. As described in Chapter 5, Appendix E of the PDARP/PEIS, the Trustees committed to a MAM framework

that incorporates best available science into planning and design of each alternative, identifies and reduces key uncertainties, tracks and evaluates progress towards Restoration Goals, and determines the need for corrective actions (DWH Trustees, 2021b). The MAM framework provides a flexible, science-based approach to implement and monitor restoration.

The FL TIG developed draft MAM plans for each of the preferred alternatives identified in this RP3/EA that include implementation (Appendix C). These MAM plans outline the monitoring needed to evaluate each alternative's progress toward meeting project-specific objectives, appropriate corrective actions, and adaptive management where applicable. The plans included in Appendix C are consistent with the requirements and guidelines set forth in the PDARP/PEIS (DWH Trustees, 2016), the Trustee Council's SOPs (DWH Trustees, 2021a), and the Trustees' MAM Manual (DWH Trustees, 2021b). Monitoring goals, objectives, parameters, potential corrective actions, and monitoring schedules are included. The MAM plans are intended to be updated as needed to reflect changing conditions and to incorporate new information as it becomes available. For example, if initial data analysis indicates that the sampling design for the alternative is inadequate, or if any uncertainties are resolved or new uncertainties are identified during implementation and monitoring of the alternative, the plan may need to be revised. Updates to MAM plans and any additional details concerning the status of monitoring activities will be made publicly available through DIVER.

3.3 Estimated Project Costs

The cost provided for each restoration alternative is the estimated cost to implement the specific restoration project. Cost estimates incorporate contingencies and reflect the most current designs and information available to the FL TIG at the time of completing this RP3/EA. For those projects proposed as planning, or phased projects, the estimated cost includes planning, E&D, acquiring permits, and/or other activities needed to facilitate development of the potential project that could be considered by the FL TIG for implementation in a future restoration plan or other available funding. For those projects proposed for implementation, estimated costs reflect all costs associated with implementing each alternative, potentially including but not limited to planning, revising/finalizing E&D, acquiring permits, construction or implementation, contingency, maintenance, monitoring, and Trustee oversight. Should budgets change prior to or during project implementation, Implementing Trustees would seek FL TIG approval for updated budgets.

3.4 Best Management Practices

As part of the environmental compliance process, federal regulatory agencies provide guidance on BMPs such as project design criteria, lessons learned, and expert advice. DWH Trustees incorporate appropriate BMPs into planning and design to avoid or minimize impacts on natural resources, including protected and listed species and their habitats. BMPs are identified in required permits, consultations, or environmental reviews, including those described in Appendix 6.A of the PDARP/PEIS (DWH Trustees, 2016). BMPs that each project would employ are described within each project's environmental analysis in Appendix A. Through technical assistance with regulatory agencies, additional BMPs may be identified for implementation and would be cataloged in compliance documents.

3.5 OPA NRDA Evaluation of the Reasonable Range of Alternatives

Below is an evaluation of each of the projects in the reasonable range against the OPA NRDA standards. Full project descriptions for these alternatives are provided in Section 2.4.

3.5.1 *WQ1, Pensacola and Perdido Watersheds Microbial Source Tracking (Planning)* (preferred)

OPA NRDA Evaluation Standard	Evaluation
Cost-effectiveness	The estimated cost of $3,001,000 includes planning, implementation, and oversight. The costs to carry out this alternative are based on similar projects to gather information for water quality restoration planning and FDEP's experience, and, in the judgment of the FL TIG, are reasonable and appropriate.
Goals and Objectives	This project is consistent with the Restore Water Quality Restoration Goal and underlying Water Quality Restoration Type. This project would utilize FDEP's MST framework to identify sources of bacterial pollution in impaired Florida waterbodies, providing guidance to resource management agencies on the restoration and management of these waterbodies within the Pensacola and Perdido Bay watersheds. This project has a clear nexus to the spill as it would inform future restoration projects that, if implemented, would improve water quality and benefit coastal habitats injured by the spill.
Likelihood of Success	This project involves data analysis and field sampling efforts. FDEP created the MST framework for assessing watershed impairment and routinely conducts similar analysis projects. As such, the FL TIG anticipates that this project would have a high likelihood of success.
Avoid Collateral Injury	This project focuses on identifying sources of bacterial pollution through GIS analysis and water monitoring and sample collection efforts; these activities pose no direct or indirect risk of collateral injury to natural resources.
Benefits	This project would provide information to support future restoration planning efforts within the Pensacola and Perdido Bay watersheds by identifying sources of bacterial pollution and identifying and prioritizing restoration activities. This project would inform future restoration planning that, if implemented, would improve water quality in impaired watersheds and would enhance coastal habitats impacted by the spill and provide ancillary benefits to fish and wildlife.
Health and Safety	This is a planning project, and as such, the FL TIG does not anticipate any impacts to public health and safety. Sampling efforts would not pose any risks to public health, and in-field safety protocols would be followed. This project would inform future restoration planning that, if implemented, would improve water quality and reduce bacterial pollution, benefitting public health.
Summary: Based, in part, on the OPA evaluation of the cost-effectiveness, goals/objectives, likelihood of success, benefits, and health and safety standards, this project was identified as a preferred restoration alternative in this RP3/EA.	

3.5.2 WQ2, *Pensacola Bay Unpaved Roads Initiative Phase 2 (Planning)* (preferred)

OPA NRDA Evaluation Standard	Evaluation Summary
Cost-effectiveness	The estimated cost of $527,000 includes planning, E&D, acquiring permits, and oversight. The costs to carry out this alternative are based on similar E&D projects and FDEP's experience with the FL TIG RP1/EA *Pensacola Bay Unpaved Roads Initiative (Planning and Design)* project, and, in the judgment of the FL TIG, are reasonable and appropriate.
Goals and Objectives	This project is consistent with the Restore Water Quality Restoration Goal and underlying Water Quality Restoration Type. This project would produce final E&D plans and cost estimates for restoration of unpaved road crossings within Escambia, Santa Rosa, and Okaloosa Counties. Unpaved road stream crossings introduce sedimentation into watersheds, which can interfere with downstream growth and development of algae, phytoplankton, and SAV. This project has a clear nexus to the spill as it would design and permit restoration actions at unpaved stream crossings that, if implemented, would reduce erosion and sedimentation, thereby improving water quality and benefitting coastal habitats that were injured by the spill.
Likelihood of Success	This project involves standard E&D efforts, and builds on Phase I E&D work conducted through the FL TIG RP1/EA *Pensacola Bay Unpaved Roads Initiative (Planning and Design)* project. As such, the FL TIG anticipates this project would have a high likelihood of success.
Avoid Collateral Injury	This project would finalize E&D plans to reduce sediment loading from unpaved roads; these activities pose no direct or indirect risk of collateral injury to natural resources.
Benefits	This project would complete E&D of unpaved roadway enhancements that would ensure priority sites are ready to proceed for future funding opportunities. If implemented in the future, the restoration actions would reduce nutrient exports, erosion, and sediment loading at stream crossings in Escambia, Santa Rosa, and Okaloosa Counties, thereby enhancing coastal habitats and species injured by the spill. Long-term benefits of these restoration actions to the resources impacted by the spill, if implemented in the future, would include improved health of coastal habitats.
Health and Safety	This is an E&D project, and as such, the FL TIG does not anticipate any impacts to public health and safety. This project would complete E&D for restoration activities at unpaved roads that, if implemented, would decrease watershed sedimentation, improve water quality, and reduce risk of road wash-outs, benefitting public health and safety.
Summary: Based, in part, on the OPA evaluation of the cost-effectiveness, goals/objectives, likelihood of success, benefits, and health and safety standards, this project was identified as a preferred restoration alternative in this RP3/EA.	

3.5.3 WQ3, *Carpenter Creek Hydrologic Restoration and Stormwater Improvements* (preferred)

OPA NRDA Evaluation Standard	Evaluation Summary
Cost-effectiveness	The estimated cost of $6,300,000 includes planning, E&D, acquiring permits, implementation, monitoring, oversight, and contingency. The costs to carry out this alternative are based on similar projects to restore stream habitat and enhance stormwater infrastructure and FDEP's experience, and, in the judgment of the FL TIG, are reasonable and appropriate.
Goals and Objectives	This project is consistent with the Restore Water Quality Restoration Goal and underlying Water Quality Restoration Type. This project would retrofit existing stormwater management systems, install additional systems, and conduct stream restoration activities within the Carpenter Creek watershed to provide additional stormwater treatment and improve water quality in Carpenter Creek and Bayou Texar. This project has a clear nexus to the spill as it would reduce sediment loading and improve water quality in coastal habitats that were injured by the spill.
Likelihood of Success	This project includes standard approaches to stream restoration and stormwater management that have been successfully implemented by FDEP and Escambia County. Additionally, the proposed restoration actions are consistent with watershed management recommendations evaluated in the *Carpenter Creek Watershed Master Plan* (Escambia County, 2022). As such, the FL TIG anticipates this project would have a high likelihood of success.
Avoid Collateral Injury	This project focuses on installing and retrofitting existing stormwater management systems and stream restoration activities. Construction activities would be designed, permitted, and implemented to avoid collateral injury, such as conducting pre-construction monitoring and implementing erosion control measures. As such, the FL TIG does not anticipate collateral injury to natural resources.
Benefits	This project would reduce sediment loading and treat stormwater flowing into the Carpenter Creek watershed, reducing erosion and nutrient loading. Improving water quality would enhance coastal habitats injured by the spill and provide benefits to fish and wildlife. Long-term benefits to the resources impacted by the spill include improved health of coastal habitats.
Health and Safety	The FL TIG does not anticipate impacts to public health and safety. Reductions in nutrients, fecal bacteria, and sedimentation in the watershed would improve water quality, benefitting public health.
Summary: Based, in part, on the OPA evaluation of the cost-effectiveness, goals/objectives, likelihood of success, benefits, and health and safety standards, this project was identified as a preferred restoration alternative in this RP3/EA.	

3.5.4 WQ4, *Hollice T. Williams Stormwater Park* (preferred)

OPA NRDA Evaluation Standard	Evaluation Summary
Cost-effectiveness	The estimated cost of $5,450,000 includes planning, E&D, acquiring permits, implementation, monitoring, oversight, and contingency. The costs to carry out this alternative are based on similar projects to construct green infrastructure and stormwater control measures and FDEP's experience, and, in the judgment of the FL TIG, are reasonable and appropriate.
Goals and Objectives	This project is consistent with the Restore Water Quality Restoration Goal and underlying Water Quality Restoration Type. This project would construct a stormwater park in the 10-acre northern portion of the existing Hollice T. Williams Park that captures and treats runoff, reducing pollutant and nutrient loading into Pensacola Bay. This project has a clear nexus to the spill as it would reduce untreated stormwater runoff into Pensacola Bay, improving water quality and coastal habitats in areas injured by the spill.
Likelihood of Success	This project would utilize traditional stormwater control measures and green infrastructure to capture and treat stormwater runoff. Pensacola has successfully implemented these techniques at other stormwater parks, such as Admiral Mason Park. As such, the FL TIG anticipates this project would have a high likelihood of success.
Avoid Collateral Injury	This project focuses on improving infrastructure at the existing Hollice T. Williams Park to capture and treat stormwater runoff. Construction activities would be permitted and would implement BMPs, such as implementing erosion control measures, to avoid collateral injury. As such, the FL TIG does not anticipate collateral injury to natural resources.
Benefits	This project would reduce untreated stormwater runoff to Pensacola Bay, capturing nutrients, bacteria, and sediment that flows into the watershed during storm events. Improving water quality would enhance coastal habitats injured by the spill and provide benefits to fish and wildlife. Long-term benefits to the resources impacted by the spill include improved health of coastal habitats.
Health and Safety	The FL TIG does not anticipate impacts to public health and safety. Capturing and treating stormwater runoff would improve water quality that would benefit public health.
Summary: Based, in part, on the OPA evaluation of the cost-effectiveness, goals/objectives, likelihood of success, benefits, and health and safety standards, this project was identified as preferred restoration alternative in this RP3/EA.	

3.5.5 WQ5, *Gulf Breeze Septic to Sewer Conversion* (preferred)

OPA NRDA Evaluation Standard	Evaluation Summary
Cost-effectiveness	The estimated cost of $12,830,000 includes implementation, monitoring, maintenance, and oversight. The costs to carry out this alternative are based on similar septic to sewer conversion projects and FDEP's experience, and, in the judgment of the FL TIG, are reasonable and appropriate. Additionally, E&D and implementation costs would be leveraged with Gulf Breeze funding.
Goals and Objectives	This project is consistent with the Restore Water Quality Restoration Goal and underlying Water Quality Restoration Type. This project would decommission residential septic tanks and connect residences to the municipal sewer system in Gulf Breeze to reduce bacterial pollution to Santa Rosa Sound and Pensacola Bay. This project has a clear nexus to the spill as it would reduce nutrient exports to waterbodies and improve coastal habitats injured by the spill.
Likelihood of Success	This project includes standard techniques for septic tank decommissioning that have been (or are being) successfully implemented by FDEP, such as the FL TIG RP1/EA *City of Carrabelle's Lighthouse Estates: Septic Tank Abatement – Phase II* project. As such, the FL TIG anticipates this project would have a high likelihood of success.
Avoid Collateral Injury	This project would decommission existing septic systems on residential properties and add connections to the municipal sewer line. Construction activities would be permitted and occur in previously developed areas and road rights of way and would be designed to avoid collateral injury. As such, the FL TIG does not anticipate collateral injury to natural resources.
Benefits	This project would reduce bacterial pollution to Santa Rosa Sound and Pensacola Bay by decommissioning antiquated septic tanks that can discharge pathogens and nutrients into coastal waters. Improving water quality would enhance coastal habitats impacted by the spill and provide ancillary benefits to fish and wildlife. Long-term benefits to the resources impacted by the spill include improved health of coastal habitats.
Health and Safety	The FL TIG does not anticipate impacts to public health and safety. Reducing pathogen and nutrient discharges into coastal waters, and near drinking water and irrigation wells, would benefit public health and safety.
Summary: Based, in part, on the OPA evaluation of the cost-effectiveness, goals/objectives, likelihood of success, benefits, and health and safety standards, this project was identified as preferred restoration alternative in this RP3/EA.	

3.5.6 WQ6, *Santa Rosa County Septic to Sewer Conversion* (preferred)

OPA NRDA Evaluation Standard	Evaluation Summary
Cost-effectiveness	The estimated cost of $22,797,000 includes planning, E&D, implementation, monitoring, and oversight. The costs to carry out this alternative are based on similar septic to sewer conversion projects and FDEP's experience, and, in the judgment of the FL TIG, are reasonable and appropriate.
Goals and Objectives	This project is consistent with the Restore Water Quality Restoration Goal and underlying Water Quality Restoration Type. This project would decommission septic systems within Santa Rosa County and replace them with connections to municipal sewer systems to reduce bacterial pollution to the Pensacola Bay watershed. This project has a clear nexus to the spill as it would reduce nutrient exports to waterbodies and improve coastal habitats injured by the spill.
Likelihood of Success	This project includes standard techniques for septic tank decommissioning that have been (or are being) successfully implemented by FDEP, such as the FL TIG RP1/EA *City of Carrabelle's Lighthouse Estates: Septic Tank Abatement – Phase II* project. As such, the FL TIG anticipates this project would have a high likelihood of success.
Avoid Collateral Injury	This project would decommission existing septic systems on residential properties and add connections to municipal sewer lines. Construction activities would be permitted and occur in previously developed areas and road rights of way and would be designed to avoid collateral injury. As such, the FL TIG does not anticipate collateral injury to natural resources.
Benefits	This project would reduce bacterial pollution to Pensacola Bay by decommissioning antiquated septic tanks that can discharge pathogens and nutrients into coastal waters. Improving water quality would enhance coastal habitats impacted by the spill and provide ancillary benefits to fish and wildlife. Long-term benefits to the resources impacted by the spill include improved health of coastal habitats.
Health and Safety	The FL TIG does not anticipate impacts to public health and safety. Reducing pathogen and nutrient discharges into coastal waters, and near drinking water and irrigation wells, would benefit public health and safety.
Summary: Based, in part, on the OPA evaluation of the cost-effectiveness, goals/objectives, likelihood of success, benefits, and health and safety standards, this project was identified as preferred restoration alternative in this RP3/EA.	

3.5.7 WQ7, *Choctawhatchee Bay Unpaved Roads Initiative* (preferred)

OPA NRDA Evaluation Standard	Evaluation Summary
Cost-effectiveness	The estimated cost of $17,277,000 includes implementation, monitoring, oversight, and contingency. The costs to carry out this alternative are based on cost estimates developed under the NFWF-GEBF Phase 1 project and FDEP's experience with similar projects to improve unpaved road stream crossings, and, in the judgment of the FL TIG, are reasonable and appropriate.
Goals and Objectives	This project is consistent with the Restore Water Quality Restoration Goal and underlying Water Quality Restoration Type. This project would enhance unpaved road stream crossings in Holmes and Washington Counties to reduce sediment loading from these crossings into the Choctawhatchee Bay watershed. This project has a clear nexus to the spill as it would reduce sedimentation in Choctawhatchee Bay, improving water quality and coastal habitats in areas directly injured by the spill.
Likelihood of Success	This project would build on strategic watershed planning and design of specific restoration actions conducted under the NFWF-GEBF *Water Quality Improvements to Enhance Fisheries Habitat in the Lower Choctawhatchee River Basin – Phase 1* project. The project would implement standard unpaved road improvements to reduce sediment loading into stream crossings. As such, the FL TIG anticipates this project would have a high likelihood of success.
Avoid Collateral Injury	This project would enhance unpaved stream crossings to reduce sediment loading into the Choctawhatchee Bay watershed. Construction activities would be permitted and would include BMPs to avoid collateral injury, such as implementing erosion control measures. As such, the FL TIG does not anticipate collateral injury to natural resources.
Benefits	This project would reduce sediment loading into waterways from unpaved road crossings at streams, reducing sedimentation in Choctawhatchee Bay. Improving water quality would enhance coastal habitats impacted by the spill and provide ancillary benefits to fish and wildlife. Long-term benefits to the resources impacted by the spill include improved health of coastal habitats.
Health and Safety	The FL TIG does not anticipate impacts to public health and safety. Reducing sedimentation would improve water quality in the Choctawhatchee Bay watershed, and stabilizing roadways would decrease the risk of road washouts, which would both benefit public health and safety.
Summary: Based, in part, on the OPA evaluation of the cost-effectiveness, goals/objectives, likelihood of success, benefits, and health and safety standards, this project was identified as preferred restoration alternative in this RP3/EA.	

3.5.8 WQ8, *Swift Creek Hydrologic Restoration*

OPA NRDA Evaluation Standard	Evaluation Summary
Cost-effectiveness	The estimated cost of $8,500,000 includes planning, E&D, acquiring permits, implementation, maintenance, and monitoring. The costs to carry out this alternative are based on similar stream restoration projects and DOI's experience, and, in the judgment of the FL TIG, are reasonable and appropriate.
Goals and Objectives	This project is consistent with the Restore Water Quality Restoration Goal and underlying Water Quality Restoration Type. This project would remove a spillway and box culvert, replace these structures with a bridge, and restore a portion of Swift Creek's floodplain corridor to improve flow into the watershed. This project has a clear nexus to the spill as it would restore natural hydrology to Swift Creek and reduce nutrient transport and increase water flows into Choctawhatchee Bay, improving water quality in coastal habitats impacted by the spill.
Likelihood of Success	This project includes complex hydrologic restoration techniques that have not been implemented in other restoration projects implemented by the FL TIG Trustees to-date. In addition, a lack of acceptance from some nearby landowners with regard to Roberts Lake and the Swift Creek floodplain may affect the feasibility of the project. Lastly, maintaining a portion of the recreational pond within the restored floodplain could reduce the likelihood of the alternative successfully restoring water quality within the watershed.
Avoid Collateral Injury	This project would restore a portion of Swift Creek's natural hydrology through various, permitted construction activities. The removal of the existing impoundment would be conducted in a manner to avoid collateral injury and reduce a pulse of nutrients into the creek. As such, the FL TIG does not anticipate collateral injury to natural resources.
Benefits	While the project would restore the natural hydrology of a portion of Swift Creek, there is uncertainty regarding the degree of water quality benefits (e.g., reduction in nutrient loading, sediment loading) that this restoration alternative would provide. In addition, the proposed recreational pond would reduce the level of benefits to the floodplain and natural hydrology by potentially introducing additional pollutants to the system.
Health and Safety	The FL TIG does not anticipate impacts to public health and safety. Public health may benefit from improved water quality from hydrologic restoration.
Summary: Based on the OPA evaluations, specifically the likelihood of success and benefits (to injured resources) for the project costs when compared with the other alternatives, this project was not identified as a preferred restoration alternative by the FL TIG in this RP3/EA.	

3.5.9 WQ9, *Springfield Stream and Wetland Enhancement*

OPA NRDA Evaluation Standard	Evaluation Summary
Cost-effectiveness	The estimated cost of $8,410,000 includes E&D, acquiring permits, implementation, oversight, and contingency and are based on conceptual plan costs provided by the City of Springfield.
Goals and Objectives	This project would hydrologically enhance two debris-obstructed tributaries that drain into Lake Martin along St. Andrew Bay, primarily addressing flooding issues within Springfield and improving water quality and community resiliency. While the proposed project techniques (hydrologic restoration) are consistent with the Water Quality Restoration Type techniques listed in the PDARP/PEIS, the FL TIG notes that the Lake Martin drainage basin is not currently listed as an impaired Florida waterbody (FDEP, 2023), so there is uncertainty regarding the extent to which the project would improve water quality and restore for natural resource injuries, and in turn contribute to the Water Quality Restoration Type goals. As such, the project does not have as clear a nexus to the DWH oil spill injuries, relative to other alternatives evaluated in this RP3/EA.
Likelihood of Success	This project includes standard approaches to hydrologic restoration that have been successfully implemented by FDEP and others in the past. As such, the FL TIG anticipates this project would have a high likelihood of success.
Avoid Collateral Injury	This project would restore hydrology of tributaries to Lake Martin through various in-stream and wetland enhancements. Construction activities would be designed and permitted to avoid collateral injury, such as implementing pre-construction monitoring and erosion control measures. As such, the FL TIG does not anticipate collateral injury to natural resources.
Benefits	While the project would restore natural hydrology of tributaries to Lake Martin to primarily address flooding issues, there is uncertainty regarding the level of water quality benefits (e.g., reduction in nutrient loading, sediment loading) and associated ancillary benefits to habitats and wildlife that this restoration would provide.
Health and Safety	The FL TIG does not anticipate impacts to public health and safety. Improvements in flooding reduction and water quality through hydrologic restoration would benefit public health.
Summary: Based on the OPA evaluations, specifically goals and objectives and benefits (to injured resources) when compared with the other alternatives, this project was not identified as a preferred restoration alternative by the FL TIG in this RP3/EA.	

3.5.10 WQ10, *Telogia Creek Watershed Water Quality Improvements* (preferred)

OPA NRDA Evaluation Standard	Evaluation Summary
Cost-effectiveness	The estimated cost of $2,700,000 includes planning, E&D, implementation, maintenance, monitoring, oversight, and contingency. The costs to carry out this alternative are based on similar data gathering and hydrologic restoration projects and DOI's experience, and, in the judgment of the FL TIG, are reasonable and appropriate. Additionally, project costs would be leveraged with USFWS base funding.
Goals and Objectives	This project is consistent with the Restore Water Quality Restoration Goal and underlying Water Quality Restoration Type. This project would restore riparian buffer zones, address unpaved roads and associated erosion at stream crossings, and/or identify and implement agricultural or silvicultural BMPs in the Telogia Creek subbasin to reduce non-point source pollutants and improve water quality flowing into the Lower Ochlockonee River and Ochlockonee Bay. This project has a clear nexus to the spill as it would improve water quality in coastal habitats injured by the spill.
Likelihood of Success	This project would be implemented in a phased approach to assess areas of water quality impairment along Telogia Creek, then plan and implement site-specific restoration actions. Anticipated restoration actions include standard erosion and sediment control measures and hydrologic restoration techniques that have been successfully implemented by DOI and the FL TIG in the past. As such, the FL TIG anticipates this project would have a high likelihood of success.
Avoid Collateral Injury	Construction activities would be permitted and implemented in a manner to avoid collateral injury, such as conducting pre-construction monitoring and implementing erosion control measures. As such, the FL TIG does not anticipate collateral injury to natural resources.
Benefits	This project aims to reduce sediment and nutrient loading into the Lower Ochlockonee River and Ochlockonee Bay. These water quality improvements would enhance coastal habitats impacted by the spill and provide ancillary benefits to fish and wildlife. Long-term benefits to the resources impacted by the spill include improved health of coastal habitats.
Health and Safety	The FL TIG does not anticipate impacts to public health and safety. Water quality improvements from reduced sedimentation, erosion, and non-point source pollution would benefit public health.
Summary: Based, in part, on the OPA evaluation of the cost-effectiveness, goals/objectives, likelihood of success, benefits, and health and safety standards, this project was identified as preferred restoration alternative in this RP3/EA.	

3.5.11 WQ11, *Lower Suwannee National Wildlife Refuge Hydrologic Restoration Phase 2 (Planning)* (preferred)

OPA NRDA Evaluation Standard	Evaluation Summary
Cost-effectiveness	The estimated cost of $1,600,000 includes planning, E&D, and acquiring permits. The costs to carry out this alternative are based on similar projects and DOI's experience, and, in the judgment of the FL TIG, are reasonable and appropriate.
Goals and Objectives	This project is consistent with the Restore Water Quality Restoration Goal and underlying Water Quality Restoration Type. This project would complete E&D and planning to ensure project actions (such as improving road and water conveyance structures to restore overland sheet flow) are ready to proceed for future funding opportunities. This project has a clear nexus to the spill as it would complete E&D and planning for future actions, that if implemented, would improve water quality in coastal habitats impacted by the spill.
Likelihood of Success	This project includes standard approaches to completing E&D and planning for road and water conveyance structures that have been successfully implemented by DOI and the FL TIG. This project builds upon the FL TIG's RP1/EA *Lower Suwannee National Wildlife Refuge Hydrologic Restoration – Planning and Design* which identified specific road sections that, when removed, would help restore hydrologic connections. As such, the FL TIG anticipates this project would have a high likelihood of success.
Avoid Collateral Injury	This project would finalize E&D plans to enhance overland sheet flow to estuarine habitats through roadway improvements; these planning and E&D activities pose no direct or indirect risk of collateral injury to natural resources.
Benefits	This project would finalize E&D plans to ensure future restoration actions are ready to proceed for future funding opportunities. If implemented, these restoration actions would increase overland sheet flow and improve hydrologic connections within Levy and Dixie Counties, providing freshwater flows to estuaries and associated estuarine wildlife, thereby enhancing coastal habitats and species injured by the spill. Long-term benefits of these restoration actions to the resources impacted by the spill, if implemented, would include improved health of coastal habitats.
Health and Safety	This is an E&D project, and as such, the FL TIG does not anticipate any impacts to public health and safety. This project would complete E&D for restoration activities that, if implemented, reduces the risk of floodwater overtopping roads, benefitting public safety.
Summary: Based, in part, on the OPA evaluation of the cost-effectiveness, goals/objectives, likelihood of success, benefits, and health and safety standards, this project was identified as a preferred restoration alternative at this time.	

3.5.12 WQ12, *Bond Farm Hydrologic Enhancement Impoundment* (preferred)

OPA NRDA Evaluation Standard	Evaluation Summary
Cost-effectiveness	The estimated cost of $38,500,000 includes planning, E&D, implementation, oversight, and contingency. The costs to carry out this alternative are based on similar HEI construction projects and FWC's experience, and, in the judgment of the FL TIG, are reasonable and appropriate. Additionally, monitoring and maintenance costs would be leveraged with state funding.
Goals and Objectives	This project is consistent with the Restore Water Quality Restoration Goal and underlying Water Quality Restoration Type. This project would construct an HEI that stores excess surface water from the BWWMA during the wet season and releases it downstream during the dry season to improve natural water levels and hydroperiods. This project has a clear nexus to the spill as it would improve coastal habitats injured by the spill.
Likelihood of Success	This project would construct an HEI that stores and conveys excess surface water. This technique has been successfully implemented in South Florida, most notably with restoration projects in the Comprehensive Everglades Restoration Plan. As such, the FL TIG anticipates this project would have a high likelihood of success.
Avoid Collateral Injury	Although construction of the HEI would result in flooding and loss of wetlands within the project area in the near-term, and possibly long-term changes to some wetland habitat types, the existing habitat is altered from agricultural use. Further, the restoration of natural historic flows and hydroperiods would provide long-term benefits to an even greater acreage of wetlands and other natural resources across the BWWMA and downstream. Accordingly, this project is not anticipated to cause collateral injury to natural resources. In addition, during construction, activities would be permitted and conducted according to conditions outlined in those permits (such as monitoring for ESA-listed species and implementing BMPs) to avoid or minimize impacts to protected species.
Benefits	This project would facilitate flows through the Gator Slough watershed and restore hydroperiods in wetlands upstream on the BWWMA. Improving hydrologic connections and water flows would enhance coastal habitats impacted by the spill and provide ancillary benefits to fish and wildlife. Long-term benefits to the resources impacted by the spill include improved health of coastal habitats.
Health and Safety	The FL TIG does not anticipate impacts to public health and safety. Water quality improvements from restoring natural water flow regimes would benefit public health.
Summary: Based, in part, on the OPA evaluation of the cost-effectiveness, goals/objectives, likelihood of success, benefits, and health and safety standards, this project was identified as a preferred restoration alternative at this time.	

3.5.13 WQ13, Bond Farm Hydrologic Enhancement Southwest Discharge Structure (Planning) (preferred)

OPA NRDA Evaluation Standard	Evaluation Summary
Cost-effectiveness	The estimated cost of $500,000 includes planning, E&D, acquiring permits, and contingency. The costs to carry out this alternative are based on similar E&D projects and FWC's experience, and, in the judgment of the FL TIG, are reasonable and appropriate.
Goals and Objectives	This project is consistent with the Restore Water Quality Restoration Goal and underlying Water Quality Restoration Type. This project would design and acquire permits for an additional discharge structure that, if constructed, would convey water flows from the proposed *WQ12, Bond Farm Hydrologic Enhancement Impoundment (preferred)* project to the western property boundary to restore hydroperiods in upstream and downstream wetlands and reduce peak flow to downstream estuarine waters. This project has a clear nexus to the spill as it would improve coastal habitats injured by the spill.
Likelihood of Success	This project involves standard E&D activities, and builds on work conducted in the FL TIG RP1/EA *Lower Charlotte Harbor Flatwoods Hydrologic Restoration Initiative, Yucca Pens Unit (Planning & Design)* project that guided the identification of restoration and management actions. As such, the FL TIG anticipates this project would have a high likelihood of success.
Avoid Collateral Injury	This project focuses on E&D and acquiring permits for a discharge structure; these activities pose no direct or indirect risk of collateral injury to natural resources.
Benefits	This project would finalize E&D plans and acquire permits for a discharge structure that, if constructed, would manage surface water flows to Charlotte Harbor and the Gulf. Improving hydrologic connections and water flows would enhance coastal habitats impacted by the spill and provide ancillary benefits to fish and wildlife. If the E&D plans are implemented in the future, long-term benefits to the resources impacted by the spill include improved health of coastal habitats.
Health and Safety	This is an E&D project, and as such, the FL TIG does not anticipate any impacts to public health and safety. This project would conduct E&D activities that, if implemented, would lead to water quality improvements from restoring natural water flow regimes, which would benefit public health.
Summary: Based, in part, on the OPA evaluation of the cost-effectiveness, goals/objectives, likelihood of success, benefits, and health and safety standards, this project was identified as a preferred restoration alternative at this time.	

3.6 Natural Recovery/No Action Alternative

Pursuant to the OPA NRDA regulations, the PDARP/PEIS considered "a natural recovery alternative in which no human intervention would be taken to directly restore injured natural resources and services to baseline" (40 CFR § 990.53[b][2]). Under a natural recovery alternative, no additional restoration would be done by the FL TIG to accelerate the recovery of water quality in the Florida Restoration Area using DWH NRDA funding at this time.

The FL TIG would allow natural recovery processes to occur, which could result in one of four outcomes for injured resources: (1) gradual recovery, (2) partial recovery, (3) no recovery, or (4) further deterioration. Although injured resources could presumably recover to or near baseline conditions under this scenario, recovery would take much longer compared to a scenario in which restoration actions were undertaken. Given that technically feasible Restoration Approaches are available to compensate for interim natural resource and service losses, in the PDARP/PEIS, the DWH Trustees rejected this alternative from further OPA evaluation in subsequent restoration planning. Based on this determination, and incorporating that analysis by reference herein, the FL TIG did not further evaluate natural recovery as a viable alternative under OPA.[20]

3.7 OPA Evaluation Conclusions

As described above, the FL TIG conducted an OPA NRDA evaluation of each of the projects included in the reasonable range of alternatives for this RP3/EA. The FL TIG's choice of preferred alternatives is based on this evaluation (described above) and informed by the NEPA analysis presented in Chapter 4.

[20] A No Action Alternative for the Restoration Type is included in this RP/EA analysis pursuant to NEPA as a "…benchmark, enabling decision-makers to compare the magnitude of environmental effects of the action alternatives." The environmental consequences of the NEPA No Action Alternative are considered separately in Chapter 4 and the NEPA Supporting Documentation Report in Appendix A.

4 Environmental Assessment

4.1 Overview of the NEPA Approach

NEPA (40 CFR §1502.16) requires federal agencies to comparatively evaluate the environmental effects of the alternatives under consideration, including effects to physical, biological, and socioeconomic resources. This integrated OPA/NEPA document is being prepared under amendments to NEPA authorized in the Fiscal Responsibility Act of 2023. As such, NEPA conclusions presented herein are informed by the NEPA Supporting Documentation Report in Appendix A.

The NEPA analysis describes anticipated adverse and beneficial environmental impacts of the preferred and non-preferred alternatives. Together, these constitute the reasonable range of alternatives for this RP3/EA. A No Action Alternative is also analyzed (Appendix A.4). The NEPA Supporting Documentation Report is consistent with the PDARP/PEIS, which is incorporated by reference, and tiers where applicable. Resources analyzed and impact definitions (minor, moderate, major) align with the PDARP/PEIS (Appendix C).[21] Appendix A is organized to describe impacts in a manner that avoids redundancy and unnecessary information by (A.1) discussing activities that do not require further NEPA analysis; (A.2) analyzing resources with similar impacts across alternatives; and (A.3) focusing on project-specific impacts by watershed.

To determine whether an action has the potential to result in significant impacts, the context and intensity of the proposed action are considered. Context refers to the area of impacts (local, statewide, etc.) and duration (i.e., whether they are short- or long-term). Intensity refers to the severity of impact and could include the timing of the action (e.g., more intense impacts would occur during critical periods like high visitation or wildlife breeding/rearing). Intensity is also described in terms of whether the impact would be beneficial or adverse. "Adverse" is used in Appendix A and this chapter only to describe the federal Trustees' evaluation under NEPA. This term is defined and applied differently in consultations pursuant to ESA and other protected resource statutes. The analysis characterizes adverse impacts as short- or long-term and minor, moderate, or major. The analysis of beneficial impacts focuses on the duration (short- or long-term) and does not attempt to specify the intensity of the benefit (Appendix C).

The NEPA Supporting Documentation Report provided in Appendix A and the conclusions provided in this chapter address direct, indirect, and cumulative impacts of the proposed alternatives. Section A.5 and Appendix 6.B of the PDARP/PEIS (Cumulative Impacts) are incorporated by reference into the cumulative impacts analysis, including the methodologies for assessing cumulative impacts, identification of affected resources, and the cumulative impacts scenario. Further, brief project descriptions focusing on activities that would result in environmental impacts are provided in Appendix A.3; Section 2.4 provides complete project descriptions for each alternative.

To streamline the NEPA process and present a concise document that provides sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a FONSI, and to aid the FL TIG's compliance with NEPA (40 CFR § 1506.3, 40 CFR § 1508.9), relevant information from

[21] Physical Resources: Geology and Substrates, Hydrology and Water Quality, Air Quality, Noise; Biological Resources: Habitats, Wildlife Species (including Birds), Marine and Estuarine Fauna (Fish, Shellfish, Benthic Organisms), Protected Species; Socioeconomic Resources: Socioeconomics and Environmental Justice, Cultural Resources, Infrastructure, Land and Marine Management, Tourism and Recreational Use, Fisheries and Aquaculture, Marine Transportation, Aesthetics and Visual Resources, Public Health and Safety, including Flood and Shoreline Protection.

existing plans, studies, and other materials has been incorporated by reference. Agencies should "focus on significant environmental issues" and, for issues that are not significant, there should be "only enough discussion to show why more study is not warranted" (40 CFR §§ 1502.1 and 1502.2). All source documents relied upon for the NEPA analyses are available and links are provided in the environmental consequences discussion where applicable.

4.2 Overview of the Florida Watersheds

A brief summary of the affected environments relevant to the alternatives evaluated in this RP3/EA, organized by watershed, is provided below. Detailed descriptions of the Florida watersheds and project affected environments can be found in Appendix A.

4.2.1 Perdido and Pensacola Bay Watersheds

The Perdido and Pensacola Bay watersheds occur across Escambia, Santa Rosa, and portions of Okaloosa Counties. The Perdido Bay watershed consists of approximately 1,100 square miles across Alabama and Florida, and the Pensacola Bay watershed consists of about 6,800 square miles across Alabama and Florida, including the Escambia, Blackwater, Yellow, and East Bay Rivers, flowing into Escambia Bay, Pensacola Bay, Blackwater Bay, East Bay, and Santa Rosa Sound (NWFWMD, 2017c; NWFWMD 2017d). Water quality concerns for the watersheds include point and nonpoint source pollution and resulting degradation of aquatic habitat, particularly SAV, and several waterbodies are designated as Outstanding Florida Waterbodies (OFW) by FDEP. Natural systems priorities in these watersheds include altered riparian habitats and hydrology, wetland loss and degradation, vulnerable estuarine and coastal habitats, legacy pollutants in substrates, shoreline and streambank erosion, sediment deposition, saltwater intrusion, and sea level rise. Population growth is also a key consideration in the health and management of the watersheds. Higher-than-expected population growth may lead to increased strain on aging and inadequate storm- and wastewater infrastructure.

4.2.2 Choctawhatchee-St. Andrews Bay Watershed

The Choctawhatchee Bay watershed consists of approximately 5,218 square miles across Alabama and Florida, with approximately 2,087 square miles, or 40 percent, of the watershed occurring within Florida, in Okaloosa, Walton, and Washington Counties (NWFWMD 2017a and NWFWMD 2017e). The Choctawhatchee River's tributaries include Holmes, Wrights, Bruce, and Pine Log Creeks, and Alaqua, Rock, Black, and Turkey Creeks empty directly to Choctawhatchee Bay. The St. Andrew Bay watershed is approximately 1,156 miles long, occurring in Florida's Bay and Gulf Counties. The Choctawhatchee Bay watershed centers around a major river (the Choctawhatchee River), whereas the smaller St. Andrew Bay watershed consists of St. Andrew Bay, West, North, East, and St. Joseph Bays, Econfina Creek, Deer Point Lake Reservoir, and several other smaller tributaries and waterbodies. Nonpoint source pollution from runoff is a primary water quality concern in the watersheds, particularly with regards to hydrologic connectivity to groundwater and pollutant transport. Further, several segments of the watersheds and beaches have been designated as impaired due to nutrients, bacteria, dissolved oxygen, or metals. Management priorities include water quality initiatives such as stormwater improvements, sediment reduction, and septic conversions and wastewater enhancements (NWFWMD, 2017a; NWFWMD, 2017e). Lastly, population growth is a consideration in water quality management in this region, with populations in both watersheds projected to increase by approximately 20 percent by 2030, putting additional strain on storm- and wastewater infrastructure.

4.2.3 Ochlockonee-St. Marks Watershed

The Ochlockonee River and Bay watershed covers part of southern Georgia and includes Ochlockonee River and Bay and their tributaries, located primarily in Gadsden, Liberty, Leon, and Wakulla Counties and part of coastal Franklin County in Florida (NWFWMD, 2017b). The Telogia Creek, a tributary of Ochlockonee River, headwaters lie in northern Gadsden County, just south of the Florida-Georgia state line. Telogia Creek discharges into the Ochlockonee River in northern Liberty County. The Ochlockonee River flows south until it discharges into Ochlockonee Bay, a subset of the broader Apalachee Bay (NWFWMD, 2017b). The natural stream flow regime along Telogia Creek has been affected by historical development, stream channelization, and impoundments (NWFWMD, 2017b). The NWFWMD previously designated the northern Telogia Creek watershed as a Water Resource Caution Area due to limited availability of surface and groundwater (NWFWMD, 2017b). Sources of water quality impairment in the Ochlockonee River watershed, including the Telogia Creek subbasin, primarily stem from agricultural land use in the northern portion of the watershed. While Telogia Creek itself is not listed as an impaired waterbody, tributary creeks and streams are designated as impaired for bacteria and dissolved oxygen (FDEP, 2023a). However, bacterial pollution continues to be a concern in Telogia Creek (NWFWMD, 2017b). Untreated runoff and effluent are also of concern (NWFWMD, 2017b). The Ochlockonee River is designated as an OFW (FDEP, 2023b).

4.2.4 Charlotte Harbor and Caloosahatchee Watershed

The Charlotte Harbor watershed includes the Greater Charlotte Harbor (Peace River, Myakka River, and Charlotte Harbor proper), Lemon Bay, Dona and Roberts Bay (together known as Coastal Venice Basin), the Caloosahatchee River, Pine Island Sound, and Matlacha Pass (Southwest Florida Water Management District [SWFWMD], 2020). The watershed begins in the headwaters of the Peace River in Polk County and extends southward, covering parts of eight counties and approximately 4,670 square miles. The Bond Farm property sits in the westernmost portion of the Charlotte Harbor watershed, the south-central portion of the BWWMA, and directly east of the Yucca Pens Unit. Bond Farm and the BWWMA are a part of the Gator Slough subbasin of the Charlotte Harbor watershed, which historically drained southwest through the Yucca Pens Unit towards Matlacha Pass and eventually into Charlotte Harbor. Surface water flows from the BWWMA to Yucca Pens have been altered by land use changes, inhibiting surface water flows downstream. Altered hydrology and extensive development in the broader Charlotte Harbor area have resulted in widespread water quality impairment. Gator Slough and Powell Creek (the waterbody flowing through the Prairie Pines Preserve) are designated as impaired waterbodies for nutrients and bacteria, respectively (FDEP, 2023a). Waterbodies upstream on the BWWMA are designated as impaired for bacteria and dissolved oxygen (FDEP, 2023a). Both Matlacha Pass and Gasparilla Sound-Charlotte Harbor are both designated as OFW Aquatic Preserves (FDEP, 2023b).

4.3 Summary of Environmental Consequences

The analysis of environmental consequences for each alternative in this RP3/EA can be found in the NEPA Supporting Documentation Report in Appendix A. Table 4-1 summarizes direct and indirect impacts of each alternative and the No Action Alternative. The environmental analysis demonstrated that there would primarily be short- and long-term minor, but also some moderate, adverse impacts as well as environmental benefits from implementation of the RP3/EA alternatives.

In general, implementation of the RP3/EA alternatives would result in short-term, minor-to-moderate adverse impacts to physical resources including geology and substrates, air quality, and hydrology and water quality. There would be only some long-term, minor adverse effects to geology and substrates associated with alternatives that involve sediment removal for implementation. All of the RP3/EA

alternatives would benefit hydrology and water quality by reducing sources of water quality impairment in Florida's watersheds.

Biological resources would primarily experience short-term, minor-to-moderate adverse impacts from human- and construction-related disturbance (e.g., foot traffic, human presence) associated with project implementation. Some alternatives would have long-term, minor-to-moderate adverse impacts on biological resources, primarily to habitats because of habitat alterations. However, biological resources would also experience long-term benefits from improved water quality and hydrologic restoration. The FL TIG has completed technical assistance reviews with relevant regulatory agencies regarding potential adverse impacts to protected species and habitats for each preferred alternative for which implementation is proposed. For WQ8 and WQ9 (non-preferred alternatives), the FL TIG would coordinate and complete consultation with relevant regulatory agencies, if necessary, regarding potential adverse impacts to protected species and habitats prior to project implementation. Implementing Trustees would conduct due diligence to ensure that no unanticipated effects to listed species and habitats would occur. Adverse impacts would be minimized by following mitigation measures, BMPs, and other guidance developed during the permitting process, environmental reviews, consultation process, and other relevant regulatory requirements. The FL TIG would also consider best practices referenced in Section 6.15 and Appendix 6.A of the PDARP/PEIS (DWH Trustees, 2016). See Table 5-1 for environmental compliance status of each alternative.

Lastly, for socioeconomic resources, the RP3/EA alternatives would result in short-term, negligible-to-minor adverse impacts to socioeconomics, infrastructure, tourism and recreation, and aesthetics and visual resources. No long-term adverse impacts are anticipated. Further, most projects in this RP3/EA would result in short- and long-term benefits to socioeconomic resources (in particular, socioeconomics, infrastructure, land and marine management, tourism and recreation, aesthetics and visual resources, and public health and safety).

The No Action Alternative is anticipated to result in long-term, minor-to-major adverse impacts from continued watershed and habitat degradation.

Alternatives that include only planning activities would have limited adverse impacts, and at most, would cause short-term, minor localized impacts. Adverse impacts to the biological and physical environment could include short-term disturbance of habitats and species, minor emissions from vehicles, and minor disturbance to terrestrial and riverine environments.

Table 4-1 Summary of the Direct and Indirect Impacts of the Reasonable Range of Restoration Alternatives

Project	Physical Resources	Biological Resources	Socioeconomic Resources
No Action	Geology and Substrates: long-term, minor adverse impacts from continued erosion, flooding, and stormwater pulses. Hydrology and Water Quality: long-term, major adverse impacts from continued erosion and sediment loading, nutrient and bacteria seepage from inadequate stormwater and septic infrastructure, and hydrologic fragmentation. Air Quality: no effect from no action. Noise: no effect from no action.	Habitats: long-term, moderate adverse impacts from degraded hydrologic connectivity between habitats, habitat impairment, and continued spread of invasive species. Wildlife Species: long-term, moderate adverse impacts, particularly to fish, wetland birds, and other wildlife due to hydrologic fragmentation, reduced wetland habitat availability, and continued establishment and spread of invasive species. Marine and Estuarine Fauna: long-term, moderate adverse impacts from continued water quality and hydrologic degradation in upstream environments. Protected Species: long-term, moderate impacts from continued habitat and water quality degradation.	Socioeconomics and Environmental Justice: no effect from no action. Cultural Resources: no effect from no action. Infrastructure: long-term, minor adverse impacts from continued erosion of unpaved roads and degradation of stormwater and septic infrastructure. Land and Marine Management: long-term, minor adverse impacts from continued hydrologic and water quality degradation on managed lands. Tourism and Recreational Use: long-term, minor adverse impacts from lost tourism and recreational opportunities due to water quality impairment. Fisheries and Aquaculture: long-term, minor adverse impacts from continued fishery closures due to water quality impairment. Marine Transportation: no effect from no action. Aesthetics and Visual Resources: long-term, minor adverse impacts from continued hydrologic and water quality degradation and associated ecological impacts. Public Health and Safety: long-term, minor adverse impacts from water quality impairment.
WQ1, Pensacola and Perdido Watersheds Microbial Source Tracking (Planning) (preferred)	Geology and Substrates: short-term, minor adverse impacts from ground disturbance during implementation (e.g., sampling). Hydrology and Water Quality: indirect benefits from completion of water quality restoration planning activities. Air Quality: short-term, minor adverse impacts from vessel and vehicle emissions during implementation. Noise: short-term, minor adverse impacts from vessel and vehicle operations during implementation.	Habitats: short-term, minor adverse impacts from habitat disturbance during implementation (e.g., sampling); indirect benefits from completion of water quality restoration planning activities. Wildlife Species: short-term, minor adverse impacts from human disturbance during implementation (e.g., sampling); indirect benefits from completion of water quality restoration planning activities. Marine and Estuarine Fauna: no effect, as work would occur in upland areas or upstream tributaries. Protected Species: short-term, minor adverse impacts from habitat disturbance during implementation (e.g., sampling); indirect benefits	Socioeconomics and Environmental Justice: no effect from planning activities. Cultural Resources: no effect, as planning activities would involve minimal ground disturbance. Infrastructure: no effect, as work would occur from existing facilities. Land and Marine Management: no effect from planning activities. Tourism and Recreational Use: indirect benefits from completion of water quality restoration planning activities. Fisheries and Aquaculture: indirect benefits from completion of water quality restoration planning activities. Marine Transportation: no effect from planning activities.

Project	Physical Resources	Biological Resources	Socioeconomic Resources
		from completion of water quality restoration planning activities.	Aesthetics and Visual Resources: indirect benefits from completion of water quality restoration planning activities. Public Health and Safety: indirect benefits from completion of water quality restoration planning activities.
WQ2, Pensacola Bay Unpaved Roads Initiative Phase 2 (Planning) (preferred)	Geology and Substrates: short-term, minor adverse impacts from ground disturbance during implementation (e.g., field surveys). Hydrology and Water Quality: indirect benefits from completion of water quality restoration planning activities. Air Quality: short-term, minor adverse impacts from vehicle emissions during implementation. Noise: short-term, minor adverse impacts from vehicle operations during implementation.	Habitats: short-term, minor adverse impacts from habitat disturbance during implementation (e.g., field surveys); indirect benefits from completion of water quality restoration planning activities. Wildlife Species: short-term, minor adverse impacts from human disturbance during implementation (e.g., field surveys); indirect benefits from completion of water quality restoration planning activities. Marine and Estuarine Fauna: no effect, as work would occur in upland areas or upstream tributaries. Protected Species: short-term, minor adverse impacts from habitat disturbance during implementation (e.g., field surveys); indirect benefits from completion of water quality restoration planning activities.	Socioeconomics and Environmental Justice: no effect from planning activities. Cultural Resources: no effect, as planning activities would involve minimal ground disturbance. Infrastructure: no effect, as work would occur from existing facilities. Land and Marine Management: no effect from planning activities. Tourism and Recreational Use: indirect benefits from completion of water quality restoration planning activities. Fisheries and Aquaculture: indirect benefits from completion of water quality restoration planning activities. Marine Transportation: no effect from planning activities. Aesthetics and Visual Resources: indirect benefits from completion of water quality restoration planning activities. Public Health and Safety: indirect benefits from completion of water quality restoration planning activities.
WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements (preferred)	Geology and Substrates: short-term, moderate adverse impacts from in-stream construction; direct benefits from reduced erosion. Hydrology and Water Quality: short-term, minor impacts from construction-related erosion and sedimentation; direct benefits from reduced hydrological degradation and stormwater management.	Habitats: short-term, moderate adverse impacts from vegetation removal and in-stream construction; long-term, minor adverse impacts from vegetation loss and habitat modification; direct benefits to habitat quality from reduced flooding, improved water quality, and invasive species removal. Wildlife Species: short-term, moderate adverse impacts from temporary loss of urban refuge and benthic habitat; direct benefits to wildlife through wetland habitat and water quality improvements.	Socioeconomics and Environmental Justice: short-term, minor adverse impacts from construction-related disturbance; direct benefits from construction jobs during implementation and reduction of property risk. Cultural Resources: no effect from project activities. Infrastructure: short-term, minor adverse impacts from potential retention pond dewatering during implementation; direct benefits from improvements to stormwater retention and filtering infrastructure. Land and Marine Management: indirect benefits from the achievement of restoration and land management objectives. Tourism and Recreational Use: indirect benefits from the improvement of water quality, habitats, and wildlife important to tourism and recreation.

Project	Physical Resources	Biological Resources	Socioeconomic Resources
	Air Quality: short-term, minor adverse impacts from equipment and vehicle emissions during implementation. Noise: short-term, minor adverse impacts from equipment and vehicle operations during implementation.	Marine and Estuarine Fauna: indirect benefits from improvements to upstream hydrology and water quality. Protected Species: short-term, minor impacts from vegetation removal; direct benefits from wetland habitat and water quality improvements.	Fisheries and Aquaculture: indirect benefits from improvement of upstream water quality, benefiting downstream fish habitat. Marine Transportation: no effect from project activities. Aesthetics and Visual Resources: short-term, minor adverse impacts from clearing, construction, and machinery in publicly visible areas; indirect benefits from restored water quality and resulting benefits to coastal habitats and wildlife. Public Health and Safety: indirect benefits from reduced flooding, nutrient and pathogen loading into watersheds, and waterborne illness.
WQ4, Hollice T. Williams Stormwater Park (preferred)	Geology and Substrates: short-term, minor adverse impacts from sediment disruption during implementation; long-term, minor adverse impacts from increased recreational use and foot traffic. Hydrology and Water Quality: short-term, minor adverse impacts from sediment runoff during implementation; direct benefits from improved stormwater flow and filtration. Air Quality: short-term, minor adverse impacts from equipment and vehicle emissions during implementation. Noise: short-term, minor adverse impacts from equipment and vehicle operations during implementation.	Habitats: direct benefits from revegetation after construction. Wildlife Species: short-term, minor adverse impacts from human activity, landscaping removal, and equipment use during implementation; direct benefits from improved site and water quality. Marine and Estuarine Fauna: indirect benefits from improvements to upstream hydrology and water quality. Protected Species: short-term, minor impacts from vegetation removal; direct benefits from improved site and water quality.	Socioeconomics and Environmental Justice: direct benefits from construction jobs during implementation and reduction of property risk. Cultural Resources: no effect from project activities. Infrastructure: direct benefits from improved stormwater retention and filtering infrastructure. Land and Marine Management: indirect benefits from the achievement of restoration and management objectives. Tourism and Recreational Use: short-term, minor adverse impacts from closure of the existing park during implementation; direct benefits from increased recreational opportunities and improved amenities. Fisheries and Aquaculture: indirect benefits from improvement of upstream water quality, benefitting downstream fish habitat. Marine Transportation: no effect from project activities. Aesthetics and Visual Resources: short-term, minor adverse impacts from clearing, construction, and machinery in publicly visible areas; indirect benefits from restored water quality and resulting benefits to coastal habitats and wildlife. Public Health and Safety: indirect benefits from reduced flooding and nutrient and pathogen loading into watersheds.
WQ5, Gulf Breeze Septic to Sewer	Geology and Substrates: short-term, minor adverse impacts from septic tank decommissioning; long-term, minor adverse impacts from	Habitats: direct benefits from improved water quality. Wildlife Species: short-term, minor adverse impacts from human activity and ground disturbance during	Socioeconomics and Environmental Justice: direct benefits from new construction jobs, from coverage of sewer connection costs for

Project	Physical Resources	Biological Resources	Socioeconomic Resources
Conversion (preferred)	permanent soil removal for sewer pump installation. Hydrology and Water Quality: short-term, minor adverse impacts from sediment runoff during implementation; direct benefits from reduced nutrient and pathogen discharge into the watershed. Air Quality: short-term, minor adverse impacts from equipment and vehicle emissions during implementation. Noise: short-term, minor adverse impacts from equipment and vehicle operations during implementation.	implementation; direct benefits from improved water quality and resulting enhancement in habitat quality. Marine and Estuarine Fauna: indirect benefits from improvements to upstream water quality. Protected Species: short-term, minor adverse impacts from landscaping removal; direct benefits from improved water quality and resulting enhancement in habitat quality.	homeowners, and to residents for no longer using the current aging, ineffective septic tanks. Cultural Resources: no effect from project activities. Infrastructure: short-term, minor adverse impacts from potential, localized operational shut-down of municipal sewer systems during implementation; direct benefits from the decommissioning of aging, ineffective septic tanks. Land and Marine Management: no effect from project activities. Tourism and Recreational Use: indirect benefits from the improvement of water quality, habitats, and wildlife important to tourism and recreation. Fisheries and Aquaculture: indirect benefits from improvement of upstream water quality, benefitting downstream fish habitat. Marine Transportation: no effect from project activities. Aesthetics and Visual Resources: short-term, minor adverse impacts from clearing, construction, and machinery in publicly visible areas; indirect benefits from restored water quality and the resulting benefits to coastal habitats and wildlife. Public Health and Safety: indirect benefits from reduced nutrient and pathogen loading into watersheds and reductions in waterborne illness.
WQ6, Santa Rosa County Septic to Sewer Conversion (preferred)	Geology and Substrates: short-term, minor adverse impacts from septic tank decommissioning; long-term, minor adverse impacts from permanent soil removal for sewer pump installation. Hydrology and Water Quality: short-term, minor adverse impacts from sediment runoff during implementation; direct benefits from reduced nutrient and pathogen discharge into the watershed.	Habitats: direct benefits from improved water quality. Wildlife Species: short-term, minor adverse impacts from human activity and ground disturbance during implementation; direct benefits from improved water quality and resulting enhancement in habitat quality. Marine and Estuarine Fauna: indirect benefits from improvements to upstream hydrology and water quality. Protected Species: short-term, minor adverse impacts from landscaping removal and habitat disturbance during implementation; direct benefits from improved water quality and resulting enhancement in habitat quality.	Socioeconomics and Environmental Justice: direct benefits from new construction jobs, from coverage of sewer connection costs for homeowners, and to residents from no longer using aging, ineffective septic tanks. Cultural Resources: no effect from project activities. Infrastructure: short-term, minor adverse impacts from potential, localized operational shut-down of municipal sewer systems during implementation; direct benefits from the abatement of aging, ineffective septic tanks. Land and Marine Management: no effect from project activities. Tourism and Recreational Use: indirect benefits from the improvement of water quality, habitats, and wildlife important to tourism and recreation. Fisheries and Aquaculture: indirect benefits from improvement of upstream water quality, benefitting downstream fish habitat.

Project	Physical Resources	Biological Resources	Socioeconomic Resources
	Air Quality: short-term, minor adverse impacts from equipment and vehicle emissions during implementation. Noise: short-term, minor adverse impacts from equipment and vehicle operations during implementation.		Marine Transportation: no effect from project activities. Aesthetics and Visual Resources: short-term, minor adverse impacts from clearing, construction, and machinery in publicly visible areas; indirect benefits from restored water quality and the resulting benefits to coastal habitats and wildlife. Public Health and Safety: indirect benefits from reduced nutrient and pathogen loading into watersheds, thereby reducing waterborne illness.
WQ7, Choctawhatchee Bay Unpaved Roads Initiative (preferred)	Geology and Substrates: short-term, moderate adverse impacts from soil disturbance, removal, and compaction during construction; direct benefits from reduced erosion. Hydrology and Water Quality: short-term, minor adverse impacts to water quality from sedimentation during construction; direct benefits from improved water flow and reduced sedimentation. Air Quality: short-term, minor adverse impacts from equipment and vehicle emissions during construction. Noise: short-term, minor adverse impacts from equipment and vehicle operations during construction.	Habitats: short-term, minor adverse impacts from construction; long-term, minor adverse impacts from net loss of wetland habitats; direct benefits from improved water quality and hydrology and resulting habitat quality enhancements. Wildlife Species: short-term, minor adverse impacts from human activity and ground disturbance during construction; direct benefits from improved water quality and resulting habitat quality enhancements. Marine and Estuarine Fauna: indirect benefits from improved upstream hydrology and water quality. Protected Species: short-term, minor impacts from vegetation removal and habitat disturbance during implementation; direct benefits from improved water quality and resulting habitat quality enhancement.	Socioeconomics and Environmental Justice: direct benefits from creation of construction jobs and reduction in risk of road washouts. Cultural Resources: no effect from project activities. Infrastructure: short-term, minor adverse impacts from localized traffic pattern alterations during implementation; direct benefits from improved stability of roadway and water conveyance infrastructure. Land and Marine Management: no effect from project activities. Tourism and Recreational Use: indirect benefits from improved water quality, habitats, and wildlife important to tourism and recreation. Fisheries and Aquaculture: indirect benefits from improved upstream water quality, benefitting downstream fish habitat. Marine Transportation: no effect from project activities. Aesthetics and Visual Resources: short-term, minor adverse impacts from construction and machinery in publicly visible areas; indirect benefits from restored water quality and the resulting benefits to coastal habitats and wildlife. Public Health and Safety: indirect benefits from reduced nutrient and pathogen loading into watersheds, reduction in risk of road washouts.
WQ8, Swift Creek Hydrologic Restoration	Geology and Substrates: short-term, moderate adverse impacts from construction-related sediment disruption and erosion. Hydrology and Water Quality: short-term, moderate adverse impacts from sedimentation, drainage of the	Habitats: short-term, moderate adverse impacts from clearing, dewatering, excavation, and other construction activities; long-term, minor adverse impacts from habitat loss; direct benefits from improvements in water quality and reduced flooding. Wildlife Species: short-term, moderate adverse impacts from avoidance, disruption, and	Socioeconomics and Environmental Justice: short-term, minor adverse impacts from disruption to traffic, parking, and recreational use; direct benefits from construction jobs and indirect benefits from improved water quality and reduction in property flood risk. Cultural Resources: no effect from project activities.

Project	Physical Resources	Biological Resources	Socioeconomic Resources
	existing pond and exposure of pollutant-laden lacustrine sediments; direct benefits from restored hydrology and improved attenuation of stormwater flows. Air Quality: short-term, minor adverse impacts from equipment and vehicle emissions during implementation. Noise: short-term, minor adverse impacts from equipment and vehicle operations during implementation.	displacement due to dewatering, excavation, and other construction-related activity; direct benefits from improved water quality and hydrology and resulting habitat enhancement. Marine and Estuarine Fauna: indirect benefits from improvements to upstream hydrology and water quality. Protected Species: short-term, minor adverse impacts from avoidance, displacement, and habitat loss from clearing; direct benefits from improved water quality and resulting habitat enhancement.	Infrastructure: short-term, minor adverse impacts from localized traffic disruption and dewatering of the existing recreational pond; direct benefits from improved stormwater flow capacity and recreational infrastructure. Land and Marine Management: no effect from project activities. Tourism and Recreational Use: short-term, minor adverse impacts from temporary disruption or closures of existing recreational areas; direct benefits from creation of recreational amenities. Fisheries and Aquaculture: indirect benefits from improvement of upstream water quality, benefitting downstream fish habitat. Marine Transportation: no effect from project activities. Aesthetics and Visual Resources: short-term, minor adverse impacts from construction and machinery in publicly visible areas; indirect benefits from restored water quality and resulting benefits to coastal habitats and wildlife. Public Health and Safety: indirect benefits from reduced nutrient and pathogen loading into watersheds.
WQ9, Springfield Stream and Wetland Enhancement	Geology and Substrates: short-term, moderate adverse impacts from sediment removal/manipulation; direct benefits from reduced erosion after stream channel restoration. Hydrology and Water Quality: short-term, minor adverse impacts from construction-related erosion; direct benefits from improvements to hydrology, floodwater storage and treatment capacity, and reduced sedimentation. Air Quality: short-term, minor adverse impacts from equipment and vehicle emissions during implementation.	Habitats: short-term, moderate adverse impacts to riparian and wetland habitat from clearing and vegetation removal, sediment removal, and construction activities; direct benefits from native vegetation replanting and hydrologic and wetland restoration. Wildlife Species: short-term, minor adverse impacts from habitat disturbance, displacement, or avoidance behaviors due to construction activity; direct benefits from improved water quality and hydrology and resulting habitat enhancement. Marine and Estuarine Fauna: indirect benefits from improvements to upstream hydrology and water quality. Protected Species: short-term, minor adverse impacts from habitat disturbance, displacement, or avoidance behaviors due to presence of	Socioeconomics and Environmental Justice: short-term, minor adverse impacts from road closures or traffic delays; direct benefits from local construction jobs and increased visitation to the area and indirect benefits from reduced property flood risks. Cultural Resources: no effect from project activities. Infrastructure: short-term, minor adverse impacts from dewatering of retention pond and stormwater infrastructure during implementation; direct benefits from improvement of stormwater management capacity and treatment. Land and Marine Management: no effect from project activities. Tourism and Recreational Use: direct benefits from potential increase in visitation to the area; indirect benefits from the improvement of water quality, habitats, and wildlife important to tourism and recreation. Fisheries and Aquaculture: indirect benefits from improved upstream water quality, benefitting downstream fish habitat. Marine Transportation: no effect from project activities.

Project	Physical Resources	Biological Resources	Socioeconomic Resources
	Noise: short-term, minor adverse impacts from equipment and vehicle operations during implementation.	construction activity; direct benefits from improved water quality and hydrology and resulting habitat enhancement.	Aesthetics and Visual Resources: short-term, minor adverse impacts from construction and machinery in publicly visible areas; indirect benefits from restored water quality and resulting benefits to coastal habitats and wildlife. Public Health and Safety: indirect benefits from reduced nutrient and pathogen loading into watersheds and improved floodwater management capacity.
WQ10, Telogia Creek Watershed Water Quality Improvements (preferred)	Geology and Substrates: short-term, moderate adverse impacts from soil disturbance, removal, and compaction during implementation; direct benefits from reduced erosion. Hydrology and Water Quality: short-term, minor adverse impacts from sediment runoff; direct benefits from restored hydrology and reduced nutrient and pathogen loading. Air Quality: short-term, minor adverse impacts from equipment and vehicle emissions and traffic during implementation. Noise: short-term, minor adverse impacts from equipment and vehicle operations during implementation.	Habitats: short-term, moderate adverse impacts from in-stream restoration and vegetation removal; long-term, minor adverse impacts from in-stream construction and potential loss of habitat for roadway enhancements; direct benefits from improved water quality and hydrology and resulting habitat quality enhancement. Wildlife Species: short-term, moderate adverse impacts from displacement and disturbance during construction; direct benefits from improved water and habitat quality. Marine and Estuarine Fauna: indirect benefits from improvements to upstream hydrology and water quality. Protected Species: short-term, minor adverse impacts from vegetation removal, in-stream construction, human activity, and ground disturbance; direct benefits from improved water and habitat quality.	Socioeconomics and Environmental Justice: short-term, minor adverse impacts from construction-related disturbance; direct benefits from construction jobs during implementation, improved road stability, and reduction of property risk. Cultural Resources: no effect from project activities. Infrastructure: short-term, minor adverse impacts from localized traffic pattern alterations during roadway enhancement implementation; direct benefits from improved stability of roadway and stormwater infrastructure. Land and Marine Management: no effect from project activities. Tourism and Recreational Use: indirect benefits from improved water quality, habitats, and wildlife important to tourism and recreation. Fisheries and Aquaculture: indirect benefits from improvement of upstream water quality, benefitting downstream fish habitat. Marine Transportation: no effect from project activities. Aesthetics and Visual Resources: short-term, minor adverse impacts from construction and machinery in publicly visible areas; indirect benefits from the improvement of water quality, habitats, and wildlife important to tourism and recreation. Public Health and Safety: indirect benefits from reduced nutrient and pathogen loading into watersheds, thereby reducing waterborne illness.
WQ11, Lower Suwannee National Wildlife Refuge Hydrologic Restoration	Geology and Substrates: short-term, minor adverse impacts from ground disturbance during implementation (e.g., field surveys).	Habitats: short-term, minor adverse impacts from habitat disturbance during implementation (e.g., field surveys); indirect benefits from completion of water quality restoration planning activities. Wildlife Species: short-term, minor adverse impacts from human disturbance during implementation	Socioeconomics and Environmental Justice: no effect from planning activities. Cultural Resources: no effect, as planning activities would involve minimal ground disturbance. Infrastructure: no effect, as work would occur from existing facilities.

Project	Physical Resources	Biological Resources	Socioeconomic Resources
Phase 2 (Planning) (preferred)	Hydrology and Water Quality: indirect benefits from completion of water quality restoration planning activities. Air Quality: short-term, minor adverse impacts from vessel and vehicle emissions during implementation (e.g., field surveys). Noise: short-term, minor adverse impacts from vessel and vehicle operations during implementation (e.g., field surveys).	(e.g., field surveys); indirect benefits from completion of water quality restoration planning activities. Marine and Estuarine Fauna: no effect, as work would occur in upland areas or upstream tributaries. Protected Species: short-term, minor adverse impacts from habitat disturbance during implementation (e.g., field surveys); indirect benefits from completion of water quality restoration planning activities.	Land and Marine Management: indirect benefits from the planning of activities that would achieve restoration and management objectives. Tourism and Recreational Use: indirect benefits from completion of water quality restoration planning activities. Fisheries and Aquaculture: indirect benefits from completion of water quality restoration planning activities. Marine Transportation: no effect from planning activities. Aesthetics and Visual Resources: indirect benefits from completion of water quality restoration planning activities. Public Health and Safety: indirect benefits from completion of water quality restoration planning activities.
WQ12, Bond Farm Hydrologic Enhancement Impoundment (preferred)	Geology and Substrates: short-term, moderate adverse impacts from sediment disruption, excavation, dredging, and filling. Hydrology and Water Quality: short-term, minor adverse impacts from construction-related sedimentation; direct benefits from restored hydrologic function/flow. Air Quality: short-term, minor adverse impacts from equipment and vehicle emissions during implementation. Noise: short-term, minor adverse impacts from equipment and vehicle operations during implementation.	Habitats: short-term, moderate adverse impacts from construction-related disturbance; long-term, moderate adverse impacts from alteration of habitat types through clearing, dredging, filling, and impoundment flooding; direct benefits from restoration of natural hydrology and hydroperiods on the BWWMA. Wildlife Species: short-term, moderate impacts from displacement due to clearing and other activities and avoidance behavior due to human presence; direct benefits from restoration of natural hydrology. Marine and Estuarine Fauna: indirect benefits from improvements to upstream hydrology. Protected Species: short-term, minor impacts from disturbance or avoidance behavior due to construction activities; direct benefits from restoration of natural hydrology.	Socioeconomics and Environmental Justice: direct benefits from new construction jobs during implementation and reduction of downstream flood risk. Cultural Resources: no effect from project activities. Infrastructure: no effect from project activities. Land and Marine Management: indirect benefits from the planning of activities that would achieve restoration and management objectives. Tourism and Recreational Use: indirect benefits from the improvement of habitats and wildlife important to tourism and recreation. Fisheries and Aquaculture: indirect benefits from improvement of upstream hydrology, benefitting downstream fish habitat. Marine Transportation: no effect from project activities. Aesthetics and Visual Resources: short-term, minor adverse impacts from construction and machinery in publicly visible areas; indirect benefits from improved hydrology, habitats, and wildlife important to tourism and recreation. Public Health and Safety: indirect benefits from reduced flooding periods.
WQ13, Bond Farm Hydrologic Enhancement	Geology and Substrates: short-term, minor adverse impacts from ground	Habitats: short-term, minor adverse impacts from habitat disturbance during implementation (e.g., field	Socioeconomics and Environmental Justice: no effect from planning activities.

Project	Physical Resources	Biological Resources	Socioeconomic Resources
Southwest Discharge Structure (Planning) (preferred)	disturbance during implementation (e.g., field surveys). Hydrology and Water Quality: indirect benefits from completion of water quality restoration planning activities. Air Quality: short-term, minor adverse impacts from vessel and vehicle emissions during implementation. Noise: short-term, minor adverse impacts from vessel and vehicle operations during implementation.	surveys); indirect benefits from completion of water quality restoration planning activities. Wildlife Species: short-term, minor adverse impacts from human disturbance during implementation (e.g., field surveys); indirect benefits from completion of water quality restoration planning activities. Marine and Estuarine Fauna: no effect, as work would occur in upland areas or upstream tributaries. Protected Species: short-term, minor adverse impacts from habitat disturbance during implementation (e.g., field surveys); indirect benefits from completion of water quality restoration planning activities.	Cultural Resources: no effect, as planning activities would involve minimal ground disturbance. Infrastructure: no effect, as work would occur from existing facilities. Land and Marine Management: indirect benefits from the planning of activities that would achieve restoration and management objectives. Tourism and Recreational Use: indirect benefits from completion of water quality restoration planning activities. Fisheries and Aquaculture: indirect benefits from completion of water quality restoration planning activities. Marine Transportation: no effect from planning activities. Aesthetics and Visual Resources: indirect benefits from completion of water quality restoration planning activities. Public Health and Safety: indirect benefits from completion of water quality restoration planning activities.

4.4 Preliminary Finding of No Significant Impact

In this RP3/EA, the FL TIG addresses NEPA requirements by tiering from environmental analyses conducted in the PDARP/PEIS, evaluating existing analyses, and preparing environmental consequences analyses for the alternatives as appropriate. Based on the programmatic analysis provided by the PDARP/PEIS, consideration of the environmental consequences in this RP3/EA, and the proposed mitigation measures, the FL TIG's preliminary findings indicate that the alternatives evaluated would not result in any significant impacts on the human environment in accordance with the guidelines for determining the significance of proposed federal actions (40 CFR §1508.27). If the preliminary findings are confirmed after public comments are addressed, the FL TIG will issue a FONSI appended to the Final RP3/EA.

5 Compliance with Other Environmental Laws and Regulations

The FL TIG will ensure compliance with all applicable state and local laws and other applicable federal laws and regulations relevant to the proposed restoration alternatives. The FL TIG has completed technical assistance reviews with relevant agencies for protected species and their habitats under the ESA, Magnuson-Stevens Fishery Conservation and Management Act (which defines essential fish habitat [EFH]), Marine Mammal Protection Act (MMPA), and other federal statutes, where appropriate. Compliance with Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (RHA), as well as technical assistance reviews for cultural resources under the National Historic Preservation Act (NHPA), will be completed prior to project implementation. Finally, USEPA, as the federal NEPA lead, has submitted a consistency determination with the Coastal Zone Management Act (CZMA) to FDEP for the preferred alternatives.

The current compliance status for each preferred alternative at the time of this RP3/EA is provided below in Table 5-1. The status of each statute by project is sorted into the following categories:

- Complete (C): indicates that the requirements have been met and a response was received from the appropriate agency(ies).
- In Progress (IP): indicates that compliance reviews have been requested but an answer has not yet been received from the regulatory agency(ies).
- No Effect (NE): indicates that, through technical assistance reviews, the relevant agency(ies) determined there is no effect from the preferred alternative to species or habitats protected under the applicable statute.
- Phased Compliance (Ph): indicates that for a preferred alternative, compliance will need to be revaluated after initial planning has occurred and locations and methodologies for the work are determined. At that time, the FL TIG will have the information necessary to fully evaluate the potential effects.
- Not Applicable (N/A): indicates that the statute is not applicable to a preferred alternative, often due to the scope and/or location of the activities to be carried out under the alternative.

Projects involving in-water work may require authorization pursuant to the CWA Section 404 and/or the RHA. Any work in waters of the U.S., including wetlands, associated with the alternatives would be coordinated with FDEP and the USACE pursuant to Section 404 of the CWA and the RHA. Coordination with FDEP and USACE and final authorization pursuant to CWA and RHA where applicable would be completed prior to final design and construction.

Wherever existing consultations or permits are present, they will be reviewed to determine if the consultations/permits are still valid or if re-initiation of any consultations or permits are necessary. Implementing Trustees are required to implement alternative-specific mitigation measures (including BMPs) identified in this RP3/EA, biological evaluation forms, and completed consultations/permits. Oversight, provided by the Implementing Trustees, would include due diligence to ensure that no unanticipated effects to listed species and habitats occur, including ensuring that BMPs are implemented and continue to function as intended. As noted above, pursuant to the CZMA, federal activities must be consistent to the maximum extent practicable with the federally approved coastal management programs for states where the activities would affect a coastal use or resource. Federal Trustees are submitting consistency determinations for state review coincident with public review of this RP3/EA.

Federal environmental compliance responsibilities and procedures will follow the Trustee Council's SOPs, specifically Section 9.4.6 (DWH Trustees, 2021a). Following these SOPs, the Implementing Trustees for each alternative will ensure that the status of environmental compliance (e.g., completed, in

progress) is tracked through DIVER. The Implementing Trustees will keep a record of compliance documents (e.g., ESA letters, permits) and ensure that they are submitted for inclusion in the Administrative Record. Additional information specific to each preferred alternative regarding the environmental compliance requirements and their status is provided in Appendix A.

Table 5-1 Current Status of Federal Regulatory Compliance Reviews and Approvals of Preferred Alternatives at Release of this RP3/EA

Preferred Alternatives	Coastal Zone Management Act (CZMA)	Endangered Species Act – Section 7 (National Marine Fisheries Service [NMFS])	Endangered Species Act – Section 7 (USFWS)	Magnuson Stevens Act (EFH) (NMFS)	Marine Mammal Protection Act (MMPA) (NMFS)	Marine Mammal Protection Act (MMPA) (USFWS)	National Historic Preservation Act (NHPA)	Rivers and Harbors Act/Clean Water Act	Bald and Golden Eagle Protection Act	Migratory Bird Treaty Act (MBTA)	Coastal Barrier Resources Act
WQ1, Pensacola and Perdido Watersheds Microbial Source Tracking (Planning) (preferred)	IP	C-NLAA	IP-NLAA	N/A	N/A	N/A	IP	N/A	IP	IP	N/A
WQ2, Pensacola Bay Unpaved Roads Initiative Phase 2 (Planning) (preferred)	IP	N/A	IP-NLAA	N/A	N/A	N/A	IP	N/A	IP	IP	N/A
WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements (preferred)	IP	N/A	IP -NE	N/A	N/A	N/A	IP	IP	IP	IP	N/A
WQ4, Hollice T. Williams Stormwater Park (preferred)	IP	N/A	IP -NE	N/A	N/A	N/A	IP	N/A	IP	IP	N/A
WQ5, Gulf Breeze Septic to Sewer Conversion (preferred)	IP	N/A	IP-NE	N/A	N/A	N/A	IP	N/A	IP	IP	IP
WQ6, Santa Rosa County Septic to Sewer Conversion (preferred)	IP	N/A	IP -NE	N/A	N/A	N/A	IP	N/A	IP	IP	IP
WQ7, Choctawhatchee Bay Unpaved Roads Initiative (preferred)	IP	N/A	IP-NLAA	N/A	N/A	N/A	IP	C-EC	IP	IP	N/A
WQ10, Telogia Creek Watershed Water Quality Improvements (preferred)	IP	N/A	IP -Ph	N/A	N/A	N/A	IP	IP-Ph	IP	IP	N/A
WQ11, Lower Suwannee National Wildlife Refuge Hydrologic Restoration Phase 2 (Planning) (preferred)	IP	C-NE	IP-NLAA	C-NE	N/A	N/A	IP	N/A	IP	IP	N/A

Preferred Alternatives	Coastal Zone Management Act (CZMA)	Endangered Species Act – Section 7 (National Marine Fisheries Service [NMFS])	Endangered Species Act – Section 7 (USFWS)	Magnuson Stevens Act (EFH) (NMFS)	Marine Mammal Protection Act (MMPA) (NMFS)	Marine Mammal Protection Act (MMPA) (USFWS)	National Historic Preservation Act (NHPA)	Rivers and Harbors Act/Clean Water Act	Bald and Golden Eagle Protection Act	Migratory Bird Treaty Act (MBTA)	Coastal Barrier Resources Act
WQ12, Bond Farm Hydrologic Enhancement Impoundment (preferred)	IP	N/A	IP-NLAA	N/A	N/A	N/A	IP	C-EC	IP	IP	N/A
WQ13, Bond Farm Hydrologic Enhancement Southwest Discharge Structure (Planning) (preferred)	IP	N/A	IP-NLAA	N/A	N/A	N/A	IP	N/A	IP	IP	N/A

C: Complete	IP: In progress
C-EC: Complete, covered by existing compliance	IP-NE: In progress, no effect
C-NE: Complete, no effect	IP-NLAA: In progress, not likely to adversely affect
C-NLAA: Complete, not likely to adversely affect	IP-Ph: In progress, phased compliance
C-Ph: Complete, phased compliance	N/A: Not applicable

5.1 Additional Laws

Examples of applicable laws or executive orders (EOs) include, but are not necessarily limited to, those listed below. Additional detail on each of these can be found in the PDARP/PEIS (Chapter 6; DWH Trustees, 2016a). Additional federal laws may apply to the preferred alternatives considered in this RP3/EA. Legal authorities applicable to restoration alternative development were fully described in the context of the DWH restoration planning in the PDARP/PEIS, Section 6.9 Compliance with Other Applicable Authorities and Appendix 6.D Other Laws and Executive Orders. That material is incorporated by reference here.

- Endangered Species Act (16 U.S.C. §§ 1531 *et seq*.)
- Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§ 1801 *et seq*.)
- Marine Mammal Protection Act (16 U.S.C. §§ 1361 *et seq*.)
- Coastal Zone Management Act (16 U.S.C. §§ 1451 *et seq*.)
- National Historic Preservation Act (16 U.S.C. §§ 470 *et seq*.)
- Coastal Barrier Resources Act (16 U.S.C. §§ 3501 *et seq*.)
- Migratory Bird Treaty Act (16 U.S.C. §§ 703 *et seq*.)
- Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668 *et seq*.)
- Clean Air Act (42 U.S.C. §§ 7401 *et seq*.)
- Federal Water Pollution Control Act (Clean Water Act, 33 U.S.C. §§ 1251 *et seq*.)
- Rivers and Harbors Act (33 U.S.C. §§ 401 *et seq*.)
- Marine Protection, Research, and Sanctuaries Act (16 U.S.C. §§ 1431 *et seq*. and 33 U.S.C. §§ 1401 *et seq*.)
- Estuary Protection Act (16 U.S.C. §§ 1221–1226)
- Archaeological Resource Protection Act (16 U.S.C. §§ 470aa–470mm)
- National Marine Sanctuaries Act (16 U.S.C. §§ 1431 *et seq*.)
- Farmland Protection Policy Act (7 U.S.C. §§ 4201–4209)
- EO 11988: Floodplain Management (May 24, 1977), as amended
- EO 11990: Protection of Wetlands (May 24, 1977), as amended
- EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Feb. 11, 1994), as amended
- EO 12962: Recreational Fisheries (June 7, 1995), as amended
- EO 13007: Indian Sacred Sites
- EO 13045: Protection of Children from Environmental Health Risks and Safety Risks (Apr. 23, 1997), as amended
- EO 13112: Safeguarding the Nation from the Impacts of Invasive Species (Feb. 3, 1999), as amended
- EO 13175: Consultation and Coordination with Indian Tribal Governments (Nov. 6, 2000)
- EO 13186: Responsibilities of Federal Agencies to Protect Migratory Birds (Jan. 10, 2001)
- EO 13693: Planning for Federal Sustainability in the Next Decade
- EO 13985: Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (Jan. 20, 2021)
- EO 13990: Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis (Jan. 20, 2021)
- EO 14008: Tackling the Climate Crisis at Home and Abroad (Jan. 27, 2021)
- EO 14072: Strengthening the Nation's Forests, Communities, and Local Economies (Apr. 22, 2022)

- EO 14096: Revitalizing Our Nation's Commitment to Environmental Justice for All (Apr. 21, 2023)

Appendix A. National Environmental Policy Act Supporting Documentation Report

This appendix contains the National Environmental Policy Act (NEPA) supporting documentation that informs the NEPA analysis presented in Chapter 4. Table A-1 directs readers to the locations of detailed analysis for each project's impacts to physical, biological, and socioeconomic resources within this Restoration Plan 3 and Environmental Assessment (RP3/EA). The remainder of this appendix is organized as follows.

Table A-1 Location of NEPA Analyses by Resource for Alternatives in Appendix A of this RP3/EA

Project	Physical Resources	Biological Resources	Socioeconomic Resources
WQ1, Pensacola and Perdido Watersheds Microbial Source Tracking (Planning) (preferred)	Geology and Substrates: A.1.1 Hydrology and Water Quality: A.1.1 Air Quality: A.1.1 Noise: A.1.1	Habitats: A.1.1 Wildlife Species: A.1.1 Marine and Estuarine Fauna: A.1.1 Protected Species: A.1.1	Socioeconomics and Environmental Justice: A.1.1 Cultural Resources: A.1.1 Infrastructure: A.1.1 Land and Marine Management: A.1.1 Tourism and Recreational Use: A.1.1 Fisheries and Aquaculture: A.1.1 Marine Transportation: A.1.1 Aesthetics and Visual Resources: A.1.1 Public Health and Safety: A.1.1
WQ2, Pensacola Bay Unpaved Roads Initiative Phase 2 (Planning) (preferred)	Geology and Substrates: A.1.1 Hydrology and Water Quality: A.1.1 Air Quality: A.1.1 Noise: A.1.1	Habitats: A.1.1 Wildlife Species: A.1.1 Marine and Estuarine Fauna: A.1.1 Protected Species: A.1.1	Socioeconomics and Environmental Justice: A.1.1 Cultural Resources: A.1.1 Infrastructure: A.1.1 Land and Marine Management: A.1.1 Tourism and Recreational Use: A.1.1 Fisheries and Aquaculture: A.1.1 Marine Transportation: A.1.1 Aesthetics and Visual Resources: A.1.1 Public Health and Safety: A.1.1
WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements (preferred)	Geology and Substrates: A.3.2.2.2.1 Hydrology and Water Quality: A.3.2.2.2.1 Air Quality: A.2.1.1.1 Noise: A.2.1.1.2	Habitats: A.3.2.2.2.2 Wildlife Species: A.3.2.2.2.2 Marine and Estuarine Fauna: A.2.1.2.1 Protected Species: A.3.2.2.2.2	Socioeconomics and Environmental Justice: A.3.2.2.2.3 (Socioeconomics) & A.2.1.3.1 (Environmental Justice) Cultural Resources: A.2.1.3.2 Infrastructure: A.2.1.3.3 Land and Marine Management: A.2.1.3.4 Tourism and Recreational Use: A.2.1.3.5

Project	Physical Resources	Biological Resources	Socioeconomic Resources
			Fisheries and Aquaculture: A.2.1.3.6 Marine Transportation: A.2.1.3.7 Aesthetics and Visual Resources: A.2.1.3.8 Public Health and Safety: A.2.1.3.9
WQ4, Hollice T. Williams Stormwater Park (preferred)	Geology and Substrates: A.3.2.3.2.1 Hydrology and Water Quality: A.3.2.3.2.1 Air Quality: A.2.1.1.1 Noise: A.2.1.1.2	Habitats: A.3.2.3.2.2 Wildlife Species: A.3.2.3.2.2 Marine and Estuarine Fauna: A.2.1.2.1 Protected Species: A.3.2.3.2.2	Socioeconomics and Environmental Justice: A.3.2.3.2.3 (Socioeconomics) & A.2.1.3.1 (Environmental Justice) Cultural Resources: A.2.1.3.2 Infrastructure: A.2.1.3.3 Land and Marine Management: A.2.1.3.4 Tourism and Recreational Use: A.2.1.3.5 Fisheries and Aquaculture: A.2.1.3.6 Marine Transportation: A.2.1.3.7 Aesthetics and Visual Resources: A.2.1.3.8 Public Health and Safety: A.2.1.3.9
WQ5, Gulf Breeze Septic to Sewer Conversion (preferred)	Geology and Substrates: A.3.2.4.2.1 Hydrology and Water Quality: A.3.2.4.2.1 Air Quality: A.2.1.1.1 Noise: A.2.1.1.2	Habitats: A.3.2.4.2.2 Wildlife Species: A.3.2.4.2.2 Marine and Estuarine Fauna: A.2.1.2.1 Protected Species: A.3.2.4.2.1	Socioeconomics and Environmental Justice: A.3.2.4.2.3 (Socioeconomics) & A.2.1.3.1 (Environmental Justice) Cultural Resources: A.2.1.3.2 Infrastructure: A.2.1.3.3 Land and Marine Management: A.2.1.3.4 Tourism and Recreational Use: A.2.1.3.5 Fisheries and Aquaculture: A.2.1.3.6 Marine Transportation: A.2.1.3.7 Aesthetics and Visual Resources: A.2.1.3.8 Public Health and Safety: A.2.1.3.9
WQ6, Santa Rosa County Septic to Sewer Conversion (preferred)	Geology and Substrates: A.3.2.4.2.1 (septic to sewer activities)	Habitats: A.3.2.4.2.2 (septic to sewer activities)	Socioeconomics and Environmental Justice: A.3.2.4.2.3 (Socioeconomics; septic to sewer activities) & A.2.1.3.1 (Environmental Justice)

Project	Physical Resources	Biological Resources	Socioeconomic Resources
	Hydrology and Water Quality: A.3.2.4.2.1 (septic to sewer activities) Air Quality: A.2.1.1.1 Noise: A.2.1.1.2	Wildlife Species: A.3.2.4.2.2 (septic to sewer activities) Marine and Estuarine Fauna: A.2.1.2.1 Protected Species: A.3.2.4.2.2 (septic to sewer activities)	Cultural Resources: A.2.1.3.2 Infrastructure: A.2.1.3.3 Land and Marine Management: A.2.1.3.4 Tourism and Recreational Use: A.2.1.3.5 Fisheries and Aquaculture: A.2.1.3.6 Marine Transportation: A.2.1.3.7 Aesthetics and Visual Resources: A.2.1.3.8 Public Health and Safety: A.2.1.3.9
WQ7, Choctawhatchee Bay Unpaved Roads Initiative (preferred)	Geology and Substrates: A.3.3.2.2.1 Hydrology and Water Quality: A.3.3.2.2.1 Air Quality: A.2.1.1.1 Noise: A.2.1.1.2	Habitats: A.3.3.2.2.2 Wildlife Species: A.3.3.2.2.2 Marine and Estuarine Fauna: A.2.1.2.1 Protected Species: A.3.3.2.2.2	Socioeconomics and Environmental Justice: A.3.3.2.2.3 (Socioeconomics) & A.2.1.3.1 (Environmental Justice) Cultural Resources: A.2.1.3.2 Infrastructure: A.2.1.3.3 Land and Marine Management: A.2.1.3.4 Tourism and Recreational Use: A.2.1.3.5 Fisheries and Aquaculture: A.2.1.3.6 Marine Transportation: A.2.1.3.7 Aesthetics and Visual Resources: A.2.1.3.8 Public Health and Safety: A.2.1.3.9
WQ8, Swift Creek Hydrologic Restoration	Geology and Substrates: A.3.3.3.2.1 Hydrology and Water Quality: A.3.3.3.2.1 Air Quality: A.2.1.1.1 Noise: A.2.1.1.2	Habitats: A.3.3.3.2.2 Wildlife Species: A.3.3.3.2.2 Marine and Estuarine Fauna: A.2.1.2.1 Protected Species: A.3.3.3.2.2	Socioeconomics and Environmental Justice: A.3.3.3.2.3 (Socioeconomics) & A.2.1.3.1 (Environmental Justice) Cultural Resources: A.2.1.3.2 Infrastructure: A.2.1.3.3 Land and Marine Management: A.2.1.3.4 Tourism and Recreational Use: A.2.1.3.5 Fisheries and Aquaculture: A.2.1.3.6 Marine Transportation: A.2.1.3.7 Aesthetics and Visual Resources: A.2.1.3.8

Project	Physical Resources	Biological Resources	Socioeconomic Resources
			Public Health and Safety: A.2.1.3.9
WQ9, Springfield Stream and Wetland Enhancement	Geology and Substrates: A.3.3.4.2.1 Hydrology and Water Quality: A.3.3.4.2.1 Air Quality: A.2.1.1.1 Noise: A.2.1.1.2	Habitats: A.3.3.4.2.2 Wildlife Species: A.3.3.4.2.2 Marine and Estuarine Fauna: A.2.1.2.1 Protected Species: A.3.3.4.2.2	Socioeconomics and Environmental Justice: A.3.3.4.2.3 (Socioeconomics) & A.2.1.3.1 (Environmental Justice) Cultural Resources: A.2.1.3.2 Infrastructure: A.2.1.3.3 Land and Marine Management: A.2.1.3.4 Tourism and Recreational Use: A.2.1.3.5 Fisheries and Aquaculture: A.2.1.3.6 Marine Transportation: A.2.1.3.7 Aesthetics and Visual Resources: A.2.1.3.8 Public Health and Safety: A.2.1.3.9
WQ10, Telogia Creek Watershed Water Quality Improvements (preferred)	Geology and Substrates: A.3.2.2.2.1 (in-stream restoration), A.3.3.2.2.1 (paving road stream crossings and replacing existing culverts), & A.3.4.1.1.1 (agricultural/silvicultural best management practices [BMPs]) Hydrology and Water Quality: A.3.2.2.2.1 (in-stream restoration), A.3.3.2.2.1 (paving road stream crossings and replacing existing culverts), & A.3.4.1.1.1 (agricultural/silvicultural BMPs) Air Quality: A.2.1.1.1 Noise: A.2.1.1.2	Habitats: A.3.2.2.2.2 (in-stream restoration), A.3.3.2.2.2 (paving road stream crossings and replacing existing culverts), & A.3.4.1.1.2 (agricultural/silvicultural BMPs) Wildlife Species: A.3.2.2.2.2 (in-stream restoration), A.3.3.2.2.2 (paving road stream crossings and replacing existing culverts), & A.3.4.1.1.2 (agricultural/silvicultural BMPs) Marine and Estuarine Fauna: A.2.1.2.1 Protected Species: A.3.2.2.2.2 (in-stream restoration), A.3.3.2.2.2 (paving road stream crossings and replacing existing culverts), & A.3.4.1.1.2 (agricultural/silvicultural BMPs)	Socioeconomics and Environmental Justice: A.3.2.2.2.1 (Socioeconomics; in-stream restoration); A.3.3.2.2.3 (Socioeconomics; paving road stream crossings and replacing existing culverts), A.3.4.1.1.3 (Socioeconomics; agricultural/silvicultural BMPs) & A.2.1.3.1 (Environmental Justice) Cultural Resources: A.2.1.3.2 Infrastructure: A.2.1.3.3 Land and Marine Management: A.2.1.3.4 Tourism and Recreational Use: A.2.1.3.5 Fisheries and Aquaculture: A.2.1.3.6 Marine Transportation: A.2.1.3.7 Aesthetics and Visual Resources: A.2.1.3.8 Public Health and Safety: A.2.1.3.9
WQ11, Lower Suwannee National Wildlife Refuge Hydrologic Restoration	Geology and Substrates: A.1.1 Hydrology and Water Quality: A.1.1	Habitats: A.1.1 Wildlife Species: A.1.1	Socioeconomics and Environmental Justice: A.1.1 Cultural Resources: A.1.1

Project	Physical Resources	Biological Resources	Socioeconomic Resources
Phase 2 (Planning) (preferred)	Air Quality: A.1.1 Noise: A.1.1	Marine and Estuarine Fauna: A.1.1 Protected Species: A.1.1	Infrastructure: A.1.1 Land and Marine Management: A.1.1 Tourism and Recreational Use: A.1.1 Fisheries and Aquaculture: A.1.1 Marine Transportation: A.1.1 Aesthetics and Visual Resources: A.1.1 Public Health and Safety: A.1.1
WQ12, Bond Farm Hydrologic Enhancement Impoundment (preferred)	Geology and Substrates: A.3.5.1.2.1 Hydrology and Water Quality: A.3.5.1.2.1 Air Quality: A.2.1.1.1 Noise: A.2.1.1.2	Habitats: A.3.5.1.2.2 Wildlife Species: A.3.5.1.2.2 Marine and Estuarine Fauna: A.2.1.2.1 Protected Species: A.3.5.1.2.2	Socioeconomics and Environmental Justice: A.3.5.1.2.3 (Socioeconomics) & A.2.1.3.1 (Environmental Justice) Cultural Resources: A.2.1.3.2 Infrastructure: A.2.1.3.3 Land and Marine Management: A.2.1.3.4 Tourism and Recreational Use: A.2.1.3.5 Fisheries and Aquaculture: A.2.1.3.6 Marine Transportation: A.2.1.3.7 Aesthetics and Visual Resources: A.2.1.3.8 Public Health and Safety: A.2.1.3.9
WQ13, Bond Farm Hydrologic Enhancement Southwest Discharge Structure (Planning) (preferred)	Geology and Substrates: A.1.1 Hydrology and Water Quality: A.1.1 Air Quality: A.1.1 Noise: A.1.1	Habitats: A.1.1 Wildlife Species: A.1.1 Marine and Estuarine Fauna: A.1.1 Protected Species: A.1.1	Socioeconomics and Environmental Justice: A.1.1 Cultural Resources: A.1.1 Infrastructure: A.1.1 Land and Marine Management: A.1.1 Tourism and Recreational Use: A.1.1 Fisheries and Aquaculture: A.1.1 Marine Transportation: A.1.1 Aesthetics and Visual Resources: A.1.1 Public Health and Safety: A.1.1

A.1 Planning Activities that Do Not Require Further NEPA Analysis

This section summarizes impacts from project activities that are fully analyzed in the PDARP/PEIS and require no additional NEPA analysis. As discussed in the *Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan/Programmatic Environmental Impact Statement* (PDARP/PEIS; Chapter 6), projects may include planning activities such as engineering and design (E&D), acquiring permits, and data-related tasks such as gathering, compiling, and evaluating information. In some cases, these activities are the project output, with implementation analyzed in a future restoration plan; in other cases, these activities are part of scoping for a project that would be implemented as part of this RP3/EA. Planning activities are intended to improve understanding of natural resources, site characteristics, and project design details, and in turn, inform and maximize efficacy of restoration efforts. The Florida Trustee Implementation Group (FL TIG) proposes several projects in this RP3/EA that include planning activities. These are summarized for each alternative below. The complete project descriptions for these alternatives are provided in Section 2.4.

The following projects include planning activities only, and as such, are not analyzed further in subsequent sections.

- *WQ1, Pensacola and Perdido Watersheds Microbial Source Tracking (Planning) (preferred)*: planning, desktop analyses of existing data, field sampling water collection and reconnaissance via foot, vehicle, or small boat, and laboratory analyses of field samples.
- *WQ2, Pensacola Bay Unpaved Roads Initiative Phase 2 (Planning) (preferred)*: planning, public meetings, E&D, acquiring permits, and estimating construction costs.
- *WQ11, Lower Suwannee National Wildlife Refuge Hydrologic Restoration Phase 2 (Planning) (preferred)*: planning, E&D, and acquiring permits.
- *WQ13, Bond Farm Hydrologic Enhancement Southwest Discharge Structure (Planning) (preferred)*: planning, E&D (including in-field species, topographic, and geotechnical surveys), and acquiring permits.

The following projects include planning activities as part of a larger project. The remaining project activities are analyzed in the project-specific sections below.

- *WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements (preferred)*: planning and E&D.
- *WQ4, Hollice T. Williams Stormwater Park (preferred)*: planning and acquiring permits.
- *WQ5, Gulf Breeze Septic to Sewer Conversion (preferred)*: planning and E&D[22].
- *WQ6, Santa Rosa County Septic to Sewer Conversion (preferred)*: planning, desktop analysis of existing data, and E&D.
- *WQ8, Swift Creek Hydrologic Restoration*: planning, E&D, and acquiring permits.
- *WQ9, Springfield Stream and Wetland Enhancement*: planning, E&D, and acquiring permits.
- *WQ10, Telogia Creek Watershed Water Quality Improvements (preferred)*: planning, desktop analyses of existing data, field reconnaissance via foot, vehicle, or small boat, site identification, and E&D.
- *WQ12, Bond Farm Hydrologic Enhancement Impoundment (preferred)*: acquiring permits.

[22] E&D activities for the *WQ5, Gulf Breeze Septic to Sewer Conversion (preferred)* project would occur using leveraged, non-Natural Resource Damage Assessment (NRDA) funds. However, the activity is analyzed herein as a connected action.

A.1.1 Environmental Consequences

The planning activities included in the alternatives listed above are expected to maximize the effectiveness of water quality restoration activities, including floodplain, stormwater, and wastewater management infrastructure improvements, and to enhance understanding of sources of water quality impairment and hydrologic degradation in the project areas. Implementation of these restoration activities is anticipated to result in long-term benefits to physical and biological resources.

Geology and substrates could experience short-term, minor adverse impacts from ground disturbance resulting from field work; noise (i.e., the soundscape) could experience short-term, minor adverse impacts from increased human activity during implementation of planning activities; and air quality could experience short-term, minor adverse impacts from vehicle and vessel emissions during implementation. Geology and substrates and hydrology and water quality would experience indirect benefits from the potential implementation of restoration activities informed during planning.

Temporary adverse impacts to habitats, wildlife, and protected species could include short-term, minor disturbance from human presence during field work. All biological resources (including marine and estuarine fauna) would experience indirect benefits from the potential implementation of restoration activities informed during planning and associated water quality benefits.

Data compilation and desktop analysis is typically conducted from existing facilities and without impacts to the environment. No short- or long-term adverse impacts are anticipated for socioeconomic resources. Tourism and recreational use, fisheries and aquaculture, aesthetics and visual resources, and public health and safety would experience indirect benefits from the potential implementation of restoration activities informed during planning and associated water quality benefits.

After review, the FL TIG determined that the environmental consequences that may occur as a result of planning activities in the alternatives considered in this RP3/EA fall within the range of impacts described in Section 6.4.14 of the PDARP/PEIS. As such, no additional analysis of the environmental consequences of these activities is necessary. For all projects for which implementation is proposed in this RP3/EA, a NEPA analysis of implementation impacts can be found in Appendix A.3.

A.2 Resources Analyzed in this RP3/EA

To avoid redundancy, projects addressed in this RP3/EA were reviewed to determine whether any resources would experience no impacts, negligible impacts, or similar minor adverse impacts common to all alternatives such that the resource would not require detailed analysis. The subset of resource categories that experience no impacts to minor adverse impacts similarly across all alternatives are described in Appendix A.2.1, rather than being repeated for each alternative.

Resource categories that are analyzed in greater detail (where applicable) include those resources where impacts are distinct and specific to the individual alternatives. These resource categories are listed below and are described in the respective subsection for each alternative.

- **Physical Resources** – Geology and Substrates, Hydrology and Water Quality
- **Biological Resources** – Habitats, Wildlife Species, Protected Species
- **Socioeconomic Resources** – Socioeconomics

A.2.1 Resources with Similar Impacts Common to All Alternatives

This section includes an analysis of the environmental consequences for the subset of resource categories that experience no impacts to minor adverse impacts similarly across all alternatives. Refer to Appendix A.3 for a description of the affected environments for each alternative.

A.2.1.1 Physical Resources

A.2.1.1.1 Air Quality

The United States Environmental Protection Agency (USEPA) defines ambient air in 40 Code of Federal Regulations (CFR) Part 50 as "that portion of the atmosphere, external to buildings, to which the general public has access." In compliance with the 1970 Clean Air Act (CAA) and the 1977 and 1990 CAA Amendments, USEPA has promulgated National Ambient Air Quality Standards (NAAQS). The NAAQS include primary standards which set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. To date, USEPA has issued NAAQS for seven criteria pollutants: carbon monoxide, sulfur dioxide, particles with a diameter less than or equal to a nominal 10 microns, particles with a diameter less than or equal to a nominal 2.5 microns, ozone, nitrogen dioxide, and lead. Individual states may promulgate their own ambient air quality standards for these criteria pollutants if they are at least as stringent as the federal standards. None of the projects are located in a county currently listed on USEPA's nonattainment counties for any criteria pollutant (USEPA, 2023b).

Greenhouse gases (GHGs) are chemical compounds found in Earth's atmosphere that absorb and trap infrared radiation as heat. The principal GHGs emitted into the atmosphere through human activities are carbon dioxide, methane, nitrous oxide, and fluorinated gases, such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

- Carbon dioxide enters the atmosphere through the burning of fossil fuels (coal, natural gas, and oil), solid waste, trees, and wood products, and resulting from certain chemical reactions (e.g., cement manufacturing). Carbon dioxide is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- Fluorinated gases are sometimes used as substitutes for stratospheric ozone-depleting substances (e.g., chlorofluorocarbons, hydrochlorofluorocarbons, halons). Hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride are synthetic, powerful GHGs that are emitted from a variety of industrial processes.

Chapter 6 of the PDARP/PEIS found that short-term, minor adverse impacts to air quality may occur during construction associated with projects under the Water Quality Restoration Type. Past project-specific NEPA evaluations of *Deepwater Horizon* (DWH) Water Quality Restoration Type projects similar to those proposed in this RP3/EA found that project impacts would be consistent with the PDARP/PEIS findings.

Most alternatives in this RP3/EA are anticipated to involve construction/implementation activities, local transport of personnel conducting project activities, and/or vehicle and vessel transportation for construction/implementation. As such, adverse air quality impacts would be localized and occur primarily during active construction/implementation activities from emissions generated by construction or project implementation equipment and vehicles (e.g., boats, cars/trucks). Engine exhaust from construction/implementation equipment would increase criteria air pollutants, GHGs, and other air pollutants. Because of the small scale and short duration of the construction/implementation portion (at most, two years) of the applicable alternatives, and the low level of increased vehicle and/or vessel traffic anticipated to be generated by the projects, impacts to air quality are expected to be short-term, minor,

and localized. These activities are not expected to cause an exceedance of the NAAQS, even when considered together with other area emissions.

A.2.1.1.2 Noise

The PDARP/PEIS (Chapter 6) states the primary sources of terrestrial noise in the coastal environment are transportation and construction-related activities, which is consistent with areas affected by this RP3/EA. The primary sources of ambient (background) noise in the project areas for this RP3/EA are vehicle operations, city-based ambient noise, recreational boating vessels, and natural sounds such as wind and wildlife. The level of noise in the project areas varies depending on the season, time of day, number and types of noise sources, and distance from the noise source.

The PDARP/PEIS found that adverse impacts to ambient noise associated with most of the Restoration Approaches relevant to this RP3/EA would be short-term and minor. Consistent with the PDARP/PEIS and past evaluations of DWH NRDA restoration projects in Florida, projects in this RP3/EA would result in short-term, minor adverse impacts to the soundscape from construction equipment and human presence during implementation. Construction-related noise would conclude once implementation is completed.

A.2.1.2 Biological Resources

A.2.1.2.1 Marine and Estuarine Fauna (Fish, Shellfish, Benthic Organisms)

Florida's estuarine and nearshore environments contain ecologically diverse habitat types such as seagrasses/submerged aquatic vegetation (SAV), reefs, and mangroves which support numerous fish, water column and benthic invertebrates, marine mammals, and sea turtles. Many recreationally and commercially important marine and estuarine fauna utilize coastal habitats as nursery habitats and for foraging and resting. The health of Florida's marine and estuarine fauna is directly tied to water quality and the health of coastal habitats.

All alternatives in this RP3/EA would be implemented in upstream tributaries/riverine waters. No work would occur in marine or estuarine habitats. As such, there would be no direct adverse impacts to marine and estuarine fauna. Erosion control measures (e.g., silt curtains, hale bales, turbidity curtains) would be implemented during construction to reduce erosion into local waterways. As such, indirect adverse impacts from this erosion would be negligible. Consistent with the PDARP/PEIS, projects in this RP3/EA would result in long-term benefits to marine and estuarine fauna from improved water quality and hydrology in Florida watersheds and associated estuary benefits from reduced pollutant, sediment, and bacterial loadings and restored flows.

A.2.1.3 Socioeconomic Resources

A.2.1.3.1 Environmental Justice

The intent of an environmental justice evaluation under Executive Order (EO) 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All* (2023) is to "provide opportunities for early and meaningful involvement in the environmental review process by communities with environmental justice concerns potentially affected by a proposed action." The purpose of EO 14096 is to advance environmental justice through the analysis of direct and indirect effects of federal actions on communities with environmental justice concerns.

Table A-2 presents general demographic data for the counties in which the reasonable range of alternatives are planned, including employment, income, and poverty status (U.S. Census Bureau, 2023). State- and national-level data are included for comparison. Alternatives analyzed in this RP3/EA span 11 Florida Gulf Coast counties, from Escambia (at the Florida-Alabama state line) to Charlotte County (in

Peninsular Florida). These counties range in size from a population of 7,976 in Liberty County to 321,905 in Escambia County.

Communities with environmental justice concerns were identified using methods outlined in the USEPA's *Promising Practices for EJ Methodologies in NEPA Reviews* (USEPA, 2016). First, counties with high proportions of minority populations were identified as those with more than 50 percent minority populations. These counties were then compared to the Florida State average to evaluate which counties have meaningfully greater minority populations (i.e., those with a percentage of persons in poverty that is at least 10 percent greater than the Florida State average). Second, counties with high proportions of low-income populations were identified as those with a percentage of individuals in poverty that is greater than or equal to the Florida State poverty level. Based on these steps, eight counties were identified as containing either minority or low-income populations (indicated with gray shading in Table A-2): Escambia, Holmes, Washington, Bay, Liberty, Gadsden, Dixie, and Levy Counties.

Table A-2 County, State, and National Demographic Information

Location	Project(s) in Associated Location	Population (2020)	Percent Minority Population (2021)	Percent of population age 25 or older with high school education or higher (2017-2021)	Percent of population age 16 or older in civilian labor force (2017-2021)	Median household income, 2021 dollars (2017-2021)	Percent of persons in poverty (2021)
Escambia County	WQ1, WQ2, WQ3, WQ4	321,905	31.2%	90.6%	57.2%	$56,605	18.5%
Santa Rosa County	WQ1, WQ2, WQ5, WQ6	188,000	13.7%	92.3%	55.8%	$77,260	8.9%
Okaloosa County	WQ2, WQ8	211,668	19.6%	92.9%	57.9%	$67,390	9.7%
Holmes County	WQ7	19,653	11.7%	80.5%	47.6%	$41,809	20.0%
Washington County	WQ7	25,318	19.4%	83.6%	44.8%	$41,806	19.2%
Bay County	WQ9	175,216	18.7%	90.1%	59.0%	$60,473	13.9%
Liberty County	WQ10	7,976	22.1%	77.0%	40.9%	$42,438	23.1%
Gadsden County	WQ10	43,826	57.8%	80.8%	49.3%	$42,661	25.8%
Dixie County	WQ11	16,759	12.6%	80.9%	41.1%	$44,287	23.4%
Levy County	WQ11	42,915	13.5%	87.6%	49.9%	$43,029	18.8%
Charlotte County	WQ12, WQ13	186,847	9.8%	91.8%	42.4%	$57,887	10.9%
Florida	**N/A**	**31,538,187**	**23.2%**	**89.0%**	**59.0%**	**$61,777**	**12.7%**
United States of America	**N/A**	**308,745,538**	**24.2%**	**88.5%**	**63.0%**	**$64,994**	**11.6%**

The FL TIG determined whether project impacts would cause disproportionate adverse impacts to communities with environmental justice concerns using the following multistep process. This determination is based on whether short- or long-term adverse impacts would remain after accounting for best management practices (BMPs) and other potential mitigation measures.

1. Evaluated each alternatives' impacts to physical, biological, and socioeconomic resources to identify impacts to the general population.
2. Evaluated if the distribution of impacts for each alternative would differ significantly between the general county populations and communities with environmental justice concerns. Specifically, the FL TIG considered whether human health and environmental impacts would be:
    - Predominantly borne by communities with environmental justice concerns;
    - Above generally accepted norms;
    - Likely to appreciably exceed the risk or rate to the general population;
    - Occurring in populations affected by cumulative or multiple adverse exposures from environmental hazards; and
    - Identified as significant and adverse.
3. Evaluated BMPs and other relevant mitigation measures for effectiveness in avoiding or reducing adverse impacts identified in the above steps.
4. Analyzed opportunities for the meaningful engagement of persons and communities with environmental justice concerns given the following considerations:
    - Timely opportunities for members of the public to share information or concerns and participate in the decision-making process was provided;
    - Public input was fully considered as a part of the decision-making process; and
    - Persons and communities affected by Federal activities were sought out and their involvement was encouraged.
5. When appropriate, the FL TIG evaluated alternatives for their potential to support the creation of high-quality and well-paying jobs for people who are part of communities with environmental justice concerns.

Due to the limited duration and magnitude of impacts of proposed alternatives, adverse impacts associated with alternatives would not disproportionately burden communities with environmental justice concerns. While some short-term, minor adverse impacts to socioeconomic resources are anticipated, these adverse effects would not be predominantly borne by communities with environmental justice concerns. Short-term minor, adverse impacts to socioeconomics resources are anticipated to occur in Okaloosa and Santa Rosa Counties, neither of which have environmental justice concerns. Short-term, minor adverse impacts to socioeconomic resources from construction-related activities are anticipated to occur in Escambia, Liberty, and Gadsden Counties, which have been identified as low-income and/or minority populations. However, these impacts would not exceed generally accepted norms for infrastructure improvements. In addition, construction-related disturbances would be mitigated by limiting construction to business hours, moving equipment to minimize effects on residential areas, and hiring local workers to complete these short-term projects. The implementation of BMPs (e.g., erosion control measures) would further reduce the magnitude of adverse human health and environmental impacts. The projects in this RP3/EA would provide direct and indirect benefits to water quality, which would provide long-term benefits to communities with environmental justice concerns.

In summary, projects proposed in this RP/EA are not anticipated to result in disproportionate adverse impacts to communities with environmental justice concerns.

A.2.1.3.2 Cultural Resources

Cultural resources are evidence of past human activity and encompass a range of traditional, archaeological, and built assets, including culturally important landscapes and present-day culturally significant uses of the environment. In the U.S., cultural resources include historic properties listed in, or eligible for listing in the National Register of Historic Places (36 C.F.R 60 [(a-d]). The National Historic Preservation Act of 1966 (NHPA), as amended (16 U.S.C. 470(1)), defines a historic property as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register [of Historic Places]." Historic properties include built resources (bridges, buildings, piers, etc.), archaeological sites, and traditional cultural properties that are significant for their association with practices or beliefs of a living community that are both fundamental to that community's history and a piece of the community's cultural identity. Although often associated with Tribal traditions, these properties also may be important for their significance to other ethnic groups or communities. Historic properties also include submerged resources.

As stated in the PDARP/PEIS, all projects implemented under subsequent restoration plans and tiered NEPA analyses consistent with the PDARP/PEIS would secure all necessary state and federal permits, authorizations, consultations, or other regulatory processes, and ensure the project is in accordance with all applicable laws and regulations concerning the protection of cultural and historic resources. For some projects in this RP3/EA, the action would involve a study, analysis, or program that would not have the potential to affect cultural resources. For any activities with the potential to affect cultural resources, NHPA Section 106 consultations would be completed before those activities would occur. The status of compliance reviews for preferred projects, as of the publication of this RP3/EA, is provided in Table 5-1.

Project areas do not include any sites listed on the National Register of Historic Places. Project areas will be surveyed as needed, and any appropriate avoidance measures for cultural resources will be developed through consultation with the State Historic Preservation Office and all interested Tribes. As a result, project activities are not anticipated to have adverse impacts on cultural resources.

A.2.1.3.3 Infrastructure

Infrastructure includes public services and utilities. Project activities would create/enhance existing infrastructure to improve conveyance, storage, and treatment of surface water, stormwater runoff, and wastewater in urban areas. During construction/implementation, some short-term, minor adverse impacts to infrastructure could occur from: localized traffic pattern alterations during the construction of roadway improvements (i.e., for WQ7, WQ8, WQ10); temporary, localized operational shutdowns of municipal sewer systems during septic to sewer conversions (i.e., for WQ5, WQ6); and retention pond dewatering during enhancements to stormwater retention features (i.e., for WQ3, WQ8, WQ9). Ultimately, projects are expected to have short-term, minor adverse impacts and would be designed to improve wastewater management, stormwater retention and filtering infrastructure, and county roadways, thereby resulting in long-term benefits to infrastructure.

A.2.1.3.4 Land and Marine Management

Project activities proposed in this RP3/EA do not involve changes in land and marine management. Project activities would not require variances or zoning changes, or amendments to land use, area comprehensive, or management plans; thus, no adverse impacts to overall use or management are expected. One project (WQ10) would include working with willing landowners to voluntarily identify and implement agricultural or silvicultural BMPs on private lands. Some projects would occur within existing managed lands (e.g., WQ3 and WQ4 within municipal-managed lands; WQ11 on the Lower Suwannee

NWR; WQ12 and 13 on the Fred C. Babcock/Cecil M. Webb Wildlife Management Area [BWWMA]); restoration actions proposed in this RP3/EA are consistent with and would help achieve restoration and management objectives for these managed areas, and as such, would benefit land and marine management.

A.2.1.3.5 Tourism and Recreational Use

Project activities proposed in this RP3/EA would largely not adversely impact tourism and recreation due to the scope of project activities and locations (e.g., commercial/residential and rural areas). One project (WQ8) would decrease the size of a recreational impoundment on Swift Creek that is currently used for fishing, kayaking, walking, and wildlife viewing; a smaller, recreational pond would be created as part of the project alongside the restored floodplain channel. Closing the recreational impoundment during construction to protect public health and safety would result in short-term, minor adverse impacts and reducing the footprint of the recreational area would result in long-term, minor adverse impacts to tourism and recreation. A second project (WQ4) would include converting an existing park to a stormwater park that captures and treats runoff during storm events. The existing park would close during construction to protect public safety, resulting in short-term, minor adverse impacts to tourism and recreation. However, the enhanced park would include new recreational features,[23] providing long-term benefits.

Two projects (WQ8 and WQ9) would create and enhance existing recreational elements such as parking areas, trails, boardwalks, a gazebo, a pavilion, a kayak launch, and an educational kiosk, providing long-term benefits. All implementation projects would provide long-term benefits to tourism and recreation by improving local water quality in the coastal environment, enhancing habitats and wildlife that contribute to nature-based tourism and wildlife viewing.

A.2.1.3.6 Fisheries and Aquaculture

No commercial fisheries or aquaculture operations in project areas would be directly adversely affected by the projects proposed under the projects included in this RP3/EA. All projects would occur in upland areas or upstream tributaries to marine environments. Erosion control measures (e.g., silt curtains, hay bales, turbidity curtains) would be implemented during construction to reduce erosion into watersheds that could indirectly adversely affect fisheries and aquaculture operations. As such, no direct or indirect adverse impacts are anticipated. Fisheries and aquaculture operations would benefit from all implementation alternatives by improvements to water quality flowing into the marine and estuarine environment. Recreational fisheries are analyzed as part of Tourism and Recreation.

A.2.1.3.7 Marine Transportation

Alternatives under consideration in this RP3/EA would not affect marine transportation due to their locations (upland areas, upstream tributaries) and scope. As such, the FL TIG does not anticipate any adverse impacts to marine transportation from any alternative in this RP3/EA.

A.2.1.3.8 Aesthetics and Visual Resources

Proposed restoration activities would restore water quality by primarily enhancing existing infrastructure in developed areas or restoring hydrologic flow ways. All alternatives proposed for implementation (WQ3, WQ4, WQ5, WQ6, WQ7, WQ8, WQ9, WQ10, WQ11, WQ12) would include construction, localized land-clearing, and machinery in publicly visible areas. Construction activities would be

[23] The recreational features would be constructed using leveraged, non-NRDA funding. However, impacts from the activity are analyzed herein as a connected action under NEPA.

temporary and localized, resulting in short-term, minor adverse impacts to aesthetics and visual resources. Additionally, many of the proposed locations are uninhabited (e.g., conservation lands) or in rural areas (e.g., WQ7, WQ10, WQ12). The view scape would have long-term benefits from all implementation alternatives from restored water quality and resulting benefits to coastal habitats and wildlife.

A.2.1.3.9 Public Health and Safety, Including Flood and Shoreline Protection

None of the alternatives in this RP3/EA would adversely affect public health or safety. Threats to public health and safety from construction activities would be mitigated through construction BMPs, including adequate staging of equipment and limitation of public access to equipment and staging areas. BMPs in accordance with Occupational Safety and Health Administration, state, and local requirements would be incorporated into construction activities onsite to ensure the proper handling, storage, transport, and disposal of all hazardous materials. Personal protective equipment would be required for all construction personnel and authorized access zones would be established at the perimeter of the worksite during construction. Additionally, implementation of projects included in this RP3/EA would not increase shoreline erosion or create other health and safety concerns. Public health and safety would benefit from reduced flooding events and reduced nutrient and pathogen loading into watersheds, decreasing incidences of waterborne illnesses. Further, public health and safety would benefit from improved roadway stability and reduced instances of washout for WQ7.

A.3 Resource Impacts Specific to Each Alternative by Watershed

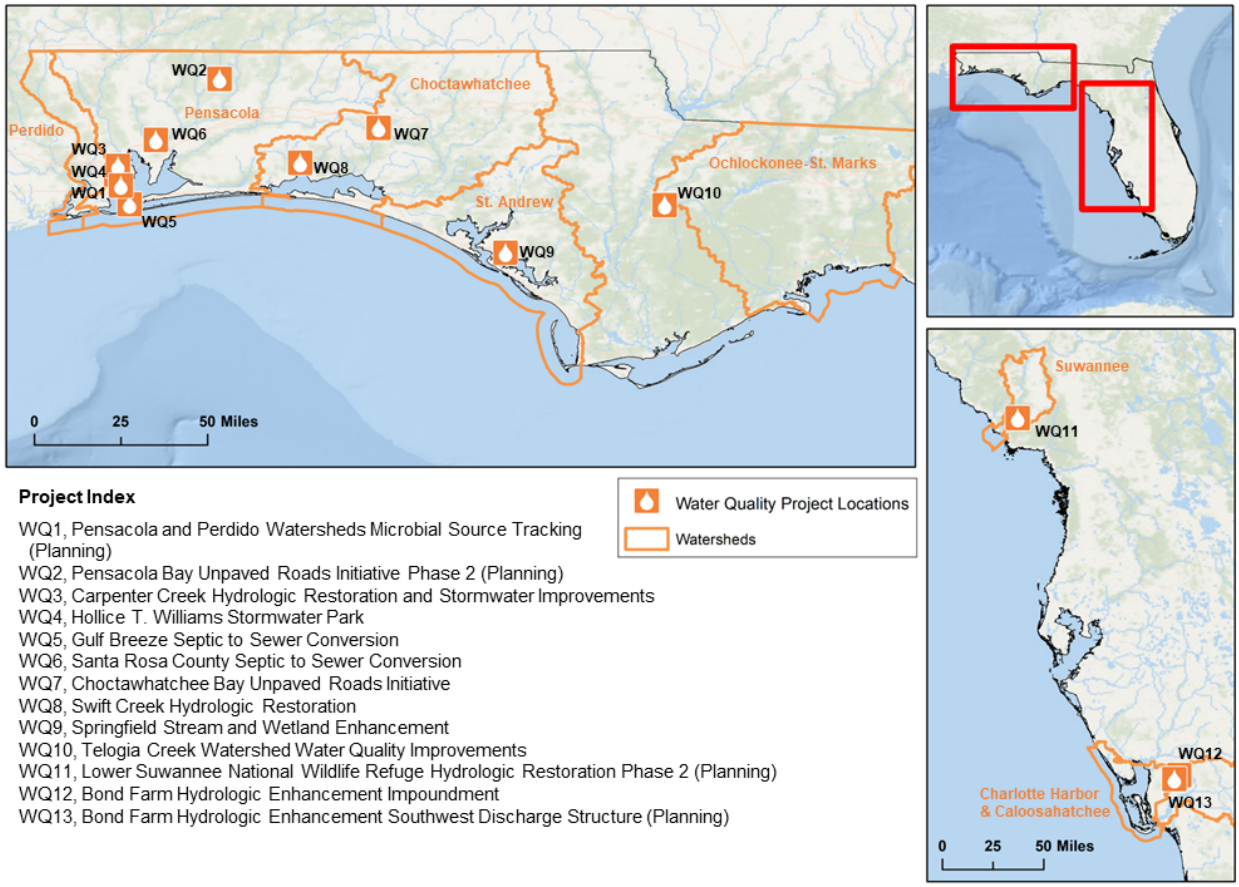
This section includes an analysis of the environmental consequences for the remaining resource categories for each alternative for which implementation is proposed in this RP3/EA, organized by watershed: Perdido and Pensacola Bay (A.3.2), Choctawhatchee-St. Andrew Bay (A.3.3), Ochlockonee-St. Marks (A.3.4), and Charlotte Harbor and Caloosahatchee (A.3.5).

The FL TIG has completed technical assistance with relevant regulatory agencies regarding potential adverse impacts to protected species and habitats for each preferred alternative for which implementation is proposed. For WQ8 and WQ9 (non-preferred alternatives), the FL TIG would coordinate and complete consultation with relevant regulatory agencies, if necessary, regarding potential adverse impacts to protected species and habitats prior to project implementation. See Chapter 5, Table 5-1 for environmental compliance status of each alternative.

A.3.1 Overview of the Florida Watersheds

A brief summary of the affected environments relevant to the alternatives evaluated in this RP3/EA, organized by watershed, is provided below. Detailed descriptions of the Florida watersheds and project affected environments can be found in Appendices A.3.2-A.3.4. Figure A-1 shows the distribution of the Florida watersheds and projects across the Panhandle and Florida Peninsula.

Figure A-1 Florida Watersheds and Approximate Project Locations



Project Index

WQ1, Pensacola and Perdido Watersheds Microbial Source Tracking (Planning)
WQ2, Pensacola Bay Unpaved Roads Initiative Phase 2 (Planning)
WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements
WQ4, Hollice T. Williams Stormwater Park
WQ5, Gulf Breeze Septic to Sewer Conversion
WQ6, Santa Rosa County Septic to Sewer Conversion
WQ7, Choctawhatchee Bay Unpaved Roads Initiative
WQ8, Swift Creek Hydrologic Restoration
WQ9, Springfield Stream and Wetland Enhancement
WQ10, Telogia Creek Watershed Water Quality Improvements
WQ11, Lower Suwannee National Wildlife Refuge Hydrologic Restoration Phase 2 (Planning)
WQ12, Bond Farm Hydrologic Enhancement Impoundment
WQ13, Bond Farm Hydrologic Enhancement Southwest Discharge Structure (Planning)

A.3.1.1 Perdido and Pensacola Bay Watersheds

The Perdido and Pensacola Bay watersheds occur across Escambia, Santa Rosa, and portions of Okaloosa Counties. The Perdido Bay watershed consists of approximately 1,100 square miles across Alabama and Florida, and the Pensacola Bay watershed consists of about 6,800 square miles across Alabama and Florida, including the Escambia, Blackwater, Yellow, and East Bay Rivers, flowing into Escambia Bay, Pensacola Bay, Blackwater Bay, East Bay, and Santa Rosa Sound (NWFWMD, 2017c; NWFWMD 2017d). Water quality concerns for the watersheds include point and nonpoint source pollution and resulting degradation of aquatic habitat, particularly SAV, and several waterbodies are designated as Outstanding Florida Waterbodies (OFW) by FDEP. Natural systems priorities in these watersheds include altered riparian habitats and hydrology, wetland loss and degradation, vulnerable estuarine and coastal habitats, legacy pollutants in substrates, shoreline and streambank erosion, sediment deposition, saltwater intrusion, and sea level rise. Population growth is also a key consideration in the health and management of the watersheds. Higher-than-expected population growth may lead to increased strain on aging and inadequate storm- and wastewater infrastructure.

A.3.1.2 Choctawhatchee-St. Andrews Bay Watershed

The Choctawhatchee Bay watershed consists of approximately 5,218 square miles across Alabama and Florida, with approximately 2,087 square miles, or 40 percent, of the watershed occurring within Florida, in Okaloosa, Walton, and Washington Counties (NWFWMD 2017a and NWFWMD 2017e). The

Choctawhatchee River's tributaries include Holmes, Wrights, Bruce, and Pine Log Creeks, and Alaqua, Rock, Black, and Turkey Creeks empty directly to Choctawhatchee Bay. The St. Andrew Bay watershed is approximately 1,156 miles long, occurring in Florida's Bay and Gulf Counties. The Choctawhatchee Bay watershed centers around a major river (the Choctawhatchee River), whereas the smaller St. Andrew Bay watershed consists of St. Andrew Bay, West, North, East, and St. Joseph Bays, Econfina Creek, Deer Point Lake Reservoir, and several other smaller tributaries and waterbodies. Nonpoint source pollution from runoff is a primary water quality concern in the watersheds, particularly with regards to hydrologic connectivity to groundwater and pollutant transport. Further, several segments of the watersheds and beaches have been designated as impaired due to nutrients, bacteria, dissolved oxygen, or metals. Management priorities include water quality initiatives such as stormwater improvements, sediment reduction, and septic conversions and wastewater enhancements (NWFWMD, 2017a; NWFWMD, 2017e). Lastly, population growth is a consideration in water quality management in this region, with populations in both watersheds projected to increase by approximately 20 percent by 2030, putting additional strain on storm- and wastewater infrastructure.

A.3.1.3 Ochlockonee-St. Marks Watershed

The Ochlockonee River and Bay watershed covers part of southern Georgia and includes Ochlockonee River and Bay and their tributaries, located primarily in Gadsden, Liberty, Leon, and Wakulla Counties and part of coastal Franklin County in Florida (NWFWMD, 2017b). The Telogia Creek, a tributary of Ochlockonee River, headwaters lie in northern Gadsden County, just south of the Florida-Georgia state line. Telogia Creek discharges into the Ochlockonee River in northern Liberty County. The Ochlockonee River flows south until it discharges into Ochlockonee Bay, a subset of the broader Apalachee Bay (NWFWMD, 2017b). The natural stream flow regime along Telogia Creek has been affected by historical development, stream channelization, and impoundments (NWFWMD, 2017b). The NWFWMD previously designated the northern Telogia Creek watershed as a Water Resource Caution Area due to limited availability of surface and groundwater (NWFWMD, 2017b). Sources of water quality impairment in the Ochlockonee River watershed, including the Telogia Creek subbasin, primarily stem from agricultural land use in the northern portion of the watershed. While Telogia Creek itself is not listed as an impaired waterbody, tributary creeks and streams are designated as impaired for bacteria and dissolved oxygen (FDEP, 2023a). However, bacterial pollution continues to be a concern in Telogia Creek (NWFWMD, 2017b). Untreated runoff and effluent are also of concern (NWFWMD, 2017b). The Ochlockonee River is designated as an OFW (FDEP, 2023b).

A.3.1.4 Charlotte Harbor and Caloosahatchee Watershed

The Charlotte Harbor watershed includes the Greater Charlotte Harbor (Peace River, Myakka River, and Charlotte Harbor proper), Lemon Bay, Dona and Roberts Bay (together known as Coastal Venice Basin), the Caloosahatchee River, Pine Island Sound, and Matlacha Pass (Southwest Florida Water Management District [SWFWMD], 2020). The watershed begins in the headwaters of the Peace River in Polk County and extends southward, covering parts of eight counties and approximately 4,670 square miles. The Bond Farm property sits in the westernmost portion of the Charlotte Harbor watershed, the south-central portion of the BWWMA, and directly east of the Yucca Pens Unit. Bond Farm and the BWWMA are a part of the Gator Slough subbasin of the Charlotte Harbor watershed, which historically drained southwest through the Yucca Pens Unit towards Matlacha Pass and eventually into Charlotte Harbor. Surface water flows from the BWWMA to Yucca Pens have been altered by land use changes, inhibiting surface water flows downstream. Altered hydrology and extensive development in the broader Charlotte Harbor area have resulted in widespread water quality impairment. Gator Slough and Powell Creek (the waterbody flowing through the Prairie Pines Preserve) are designated as impaired waterbodies for nutrients and bacteria, respectively (FDEP, 2023a). Waterbodies upstream on the BWWMA are designated as impaired for

bacteria and dissolved oxygen (FDEP, 2023a). Both Matlacha Pass and Gasparilla Sound-Charlotte Harbor are both designated as OFW Aquatic Preserves (FDEP, 2023b).

A.3.2 Perdido and Pensacola Bay Watersheds Projects

Four projects are located in the Perdido and Pensacola Bay watersheds (Figure A-1):

- WQ3, *Carpenter Creek Hydrologic Restoration and Stormwater Improvements (preferred)*.
- WQ4, *Hollice T. Williams Stormwater Park (preferred)*.
- WQ5, *Gulf Breeze Septic to Sewer Conversion (preferred)*.
- WQ6, *Santa Rosa County Septic to Sewer Conversion (preferred)*.

A.3.2.1 Area Overview

The following description of the Perdido and Pensacola Bay watersheds incorporates by reference the FL TIG RP1/EA *Section 4.5 Perdido River and Bay Watershed* and *Section 4.6 Pensacola Bay Watershed*. These descriptions are summarized below, with additional detail as necessary for information not found within the FL TIG RP1/EA. All watershed information in this section originates from the Perdido River and Bay and Pensacola Bay System Surface Water Improvement and Management (SWIM) plans (Northwest Florida Water Management District [NWFWMD], 2017c and NWFWMD 2017d, respectively), unless otherwise cited.

The Perdido Bay watershed consists of approximately 1,100 square miles across Alabama and Florida, where the Perdido River forms the boundary between the two states. A total of 350 square miles of the Perdido watershed occurs in Florida, where the watershed meets the Pensacola metropolitan area. The Pensacola Bay watershed consists of about 6,800 square miles across Alabama and Florida, including the Escambia, Blackwater, Yellow, and East Bay Rivers, flowing into Escambia Bay, Pensacola Bay, Blackwater Bay, East Bay, and Santa Rosa Sound.

Water quality concerns for the Perdido and Pensacola Bays include point and nonpoint source pollution and resulting degradation of aquatic habitat, particularly SAV. Point and nonpoint source water pollution from sediment, nutrients, chemicals, and bacteria are of particular concern. Erosion from construction activities, abandoned clay pits, high prevalence of unpaved roads, and agricultural and silvicultural use has led to sediment runoff, which buries downstream shellfish beds, blocks light in the water column for SAV, and alters hydrologic characteristics and flood storage capacity of waterbodies. Nutrient inflows arise from stormwater runoff, agricultural and silvicultural activity, and aging or broken infrastructure such as leaking pipes and septic fields. These factors exacerbate other water quality concerns, including bacteria and dissolved oxygen. The Pensacola Bay watershed has documented several groundwater contamination events tied to past industrial use, and the area includes five documented USEPA National Priority List Superfund sites. In the Perdido and Pensacola Bay watersheds combined, the Florida Department of Environmental Protection (FDEP) has identified at least 150 impaired waterbody segments (FDEP, 2023a).

Natural systems priorities in these watersheds include altered riparian habitats and hydrology, wetland loss and degradation, vulnerable estuarine and coastal habitats, legacy pollutants in substrates, shoreline and streambank erosion, sediment deposition, saltwater intrusion, and sea level rise.

A.3.2.1.1 Physical Resources

Like other watersheds in Florida's Panhandle region, the Perdido and Pensacola Bay watersheds are located within the wider Gulf coastal plain physiographic region. The Perdido and Pensacola Bay watersheds exhibit regional variations in their geological composition. Both watersheds are divided between two geologic regions, the western highlands in the north and the Gulf coastal lowlands in the

south. The western highlands are characterized by more variable topography, sandy soils, drier conditions, and large clay deposits atop limestone bedrock, while the Gulf coastal lowlands involve lower elevations and extensive dunes and beach systems along the coastline. The surface geology of the Perdido Bay watershed region is comprised primarily of sandy clays in the north, sands in the southwest, limestone in the east, and organic peat, muck, and other decomposing plant litter in low-lying areas. The overall region was formed through sediment deposition upon the coastal shelf during the last glacial maximum (i.e., when sea levels were low). Primary geologic and hydrologic functions of the Perdido and Pensacola Bay watersheds include water storage, flood attenuation, groundwater recharge, regulation of freshwater inflows into coastal waterbodies, erosion control, and nutrient cycling. Much of the watershed area is designated as Zone A within the Federal Emergency Management Agency (FEMA) 100-year floodplain (i.e., areas with a 1 percent annual chance of flooding) (FEMA, 2023).

Several waterbodies are designated as Outstanding Florida Waterbodies (OFW) by FDEP in the Perdido and Pensacola Bay watersheds. Waters in Santa Rosa Sound and around Fair Point Peninsula are designated as OFW for Gulf Islands National Seashore. Waters in lower Pensacola Bay are designated as OFW for Fort Pickens State Park Aquatic Preserve. Blackwater Bay and upper East Bay are designated as OFW for the Yellow River Marsh Aquatic Preserve and finally, Blackwater River is also designated as an OFW (FDEP, 2023b).

A.3.2.1.2 Biological Resources

The Perdido and Pensacola Bay watersheds are biologically diverse, containing several types of riparian, estuarine, and marine habitats such as alluvial and blackwater rivers, floodplain swamps, tidal marshes, SAV, oyster beds, sand, mud, and hard-bottom communities. In the watersheds' estuarine habitats, multiple species of SAV can be found, though these are sensitive to water quality impairment and coverage has declined from historic ranges. Upland areas within these watersheds are typically more developed, involving a range of pine plantations, agricultural lands, and residential and urban development. Many historic upland pine forests have been harvested for timber and converted to commercial use, though undeveloped upland forest habitat is still present. In both watersheds, open water and open land account for less than 3 percent of the area, with a majority of area comprised of upland forest and wetlands. Key wetland habitat types in these watersheds include inland wet prairie and tidal marshes.

The watersheds' diverse habitats support a variety of species, including several state- and/or federally-threatened and endangered plants and animals. Wetland, estuarine, and marine systems support many species of wildlife, fish, and shellfish, and serve as permanent and seasonal breeding, foraging, and migratory habitat.

A.3.2.1.3 Socioeonomic Resources

The Perdido and Pensacola Bay watersheds occur across Escambia, Santa Rosa, and portions of Okaloosa Counties.

Escambia County has a total population of 324,878 people, an increase of 0.9 percent since 2020, based on the 2022 U.S. Census. Approximately 69 percent of the county population are white, 23 percent are black or African American, with the remaining population including small percentages of American Indian, Asian, and Pacific Islander. About 7 percent identify as Hispanic or Latino origin.[24] Median household income reported in 2022 in the county was $61,642 and the percent of the county residents in

[24] Individuals who identify as Hispanic or Latino origin may be of any race. As such, the numbers may sum to more than 100 percent.

poverty accounted for 16.4 percent of the population. Most of the county residents (90.8 percent) are high school graduates or higher.

Santa Rosa County has a total population of 198,268 people, an increase of 5.5 percent since 2020, based on the 2022 U.S. Census. Approximately 86 percent of the county population are white, 7 percent are black or African American, with the remaining population including small percentages of American Indian, Asian, and Pacific Islander. About 7 percent identify as Hispanic or Latino origin. Median household income reported in 2022 was $84,715 and the residents in poverty accounted for 9.4 percent of the county's population. Most of the county residents (91.8 percent) are high school graduates or higher. The county unemployment rate was 4.5 percent in 2020.

Okaloosa County has a total population of 216,482 people, an increase of 2.3 percent since 2020, based on the 2022 U.S. Census. Approximately 80 percent of the county population are white, 11 percent are black or African American, with the remaining population including small percentages of American Indian, Asian, and Pacific Islander. About 11 percent identify as Hispanic or Latino origin. Median household income reported in 2022 was $73,988 and residents in poverty accounted for 8 percent of the county's population. Most of the county residents (93 percent) are high school graduates or higher.

Escambia, Santa Rosa, and Okaloosa Counties constitute most of the watersheds and experienced an average growth rate of 14.5 percent between 2010 and 2020. While demographic statistics vary slightly among these counties, they are generally representative of Florida as a whole, particularly for the percent of the population with a high school education and in the labor force. In Santa Rosa and Okaloosa Counties, the percent of white individuals and median income are slightly higher than the State's average, and percent of population living in poverty is slightly lower. In Escambia County, the percent of white individuals is slightly lower that the State's average, and median income and percent living in poverty are closer to average.

Population growth is a key consideration in the health and management of the Perdido and Pensacola Bay watersheds. Based on the growth projections provided in the 2017 SWIM plans as compared to 2020 U.S. Census data, the actual population growth in Escambia County outpaced expected growth by over 8,000 individuals, or approximately 3 percent of the projected 2020 population estimate. In Santa Rosa and Okaloosa Counties, the actual population growth outpaced expected growth by over 10,000 individuals, or approximately 6 percent of the projected 2020 estimates (U.S. Census Bureau, 2023). This higher-than-expected population growth has increased the strain on aging and inadequate storm- and wastewater infrastructure in the Panhandle.

A.3.2.2 WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements (preferred)

The goal of this project is to improve water quality in the Carpenter Creek watershed by reducing sediment loading and conducting stream restoration. Project activities most relevant to the assessment of environmental consequences include:

- **In-stream restoration and creation of retention ponds at Robins Ridge Stream.** Approximately 1,540 linear feet of stream would be restored and two retention ponds totaling approximately 1 acre would be created through sediment removal and bank stabilization (Figure A-2). A 65-foot meander belt (covering approximately 2.5 acres) with a 6-foot-wide natural headwater channel would be contoured within the existing 150-to-200-foot-wide bottomland forest by mechanically moving and/or removing sediment and vegetation. Native vegetation would be planted along the restored meander belt for stabilization.

- **Install multiple stormwater filtering structures.** Four drainageways leading into a stormwater ditch near Coronet Drive would be retrofitted with baffle boxes that would remove nitrogen, phosphorous, and suspended solids (Figure A-3).
- **Enhance existing stormwater ponds.** Bio-sorption activated media (BAM) would be installed along the bottom and at outfalls of three existing dry stormwater retention ponds near the Cardinal Cove development, south of I-10 (Figure A-4). These outfalls would reduce pollution influx into Carpenter Creek and remove energy from the system during heavy rainfall events.

Figure A-2 Conceptual Drawing of the Robins Ridge Stream Restoration (Escambia County, 2022)

Figure A-3 Conceptual Drawing of the Coronet Drive Stormwater Structure Installation Sites (Escambia County, 2022)

Figure A-4 Conceptual Drawing of the Installations at the Existing Stormwater Pond South of I-10 (Escambia County, 2022)

A.3.2.2.1 Affected Environment

The Carpenter Creek headwaters lie in south-central Escambia County, just north of I-10 near Olive Road. Carpenter Creek flows south from its headwaters under I-10 and 12th Avenue before discharging into Bayou Texar, which subsequently discharges into Pensacola Bay. The project area is within a heavily developed and urban drainage, with structures including the I-10 highway, residential areas, and unpaved access paths. The FL TIG's RP1/EA analysis of *Carpenter Creek Headwaters Water Quality Improvements* project provides information about the physical, biological, and socioeconomic resources within the Carpenter Creek watershed and is incorporated by reference herein and summarized below.

A.3.2.2.1.1 Physical Resources

This project would occur at three sites in the Carpenter Creek headwaters: near East Burgess Road, Coronet Drive, and the Cardinal Cove subdivision. Upland soils at the three sites primarily consist of Bonifay loamy sands (0 to 5 percent slopes), Dorovan mucks, and Troup-Poarch complex sediments (8 to 12 percent slopes) (United States Department of Agriculture [USDA], 2023). Sediments and soils at the Coronet Drive and Cardinal Cove project sites were previously disturbed through the creation of drainage ditches and stormwater retention ponds.

Carpenter Creek is an urban drainage basin that receives large volumes of stormwater runoff from the metropolitan Pensacola area. The high levels of unattenuated stormwater runoff and reduced riparian area has increased sediment depositions in the lower reaches of Carpenter Creek and altered hydrology at the mouth of the creek and upper Bayou Texar. The project sits within FEMA-designated Flood Zone AE, which is designated as primary regulatory floodways (FEMA, 2023).

Due to the large volume of stormwater runoff and associated pollutants, the Carpenter Creek watershed is listed as an impaired waterbody for bacteria and nutrients (FDEP, 2023a). Ongoing restoration of the Carpenter Creek watershed seeks to address *E. coli* impairment. Various proposed stormwater infrastructure along the creek aims to attenuate stormwater runoff and capture pollutants flowing into the watershed.

A.3.2.2.1.2 Biological Resources

Habitats within the project area are primarily disturbed, developed drainage ditches and stormwater retention ponds (Coronet Drive and Cardinal Cove) and degraded stream habitat (Robins Ridge). The Coronet Drive project site is characterized by a vegetated stormwater ditch that discharges into Carpenter Creek. Stormwater filtering structures (e.g., baffle boxes) would be installed leading into the ditch to filter out sediment and pollutants from flowing water. The Cardinal Cove project site is characterized by developed stormwater retention ponds that release water into Carpenter Creek. The retention ponds capture stormwater flowing out from the adjacent residential developments. Stormwater filtering media (e.g., BAM) and spreader swales would be installed at the outfalls of these retention ponds.

The Robins Ridge project site is characterized as a heavily eroding tributary of Carpenter Creek (Escambia County, 2022). The habitat is comprised of freshwater forested/shrub wetland and bottomland forest, surrounded by residential developments. Native vegetation associated with these wetlands typically includes black tupelo (*Nyssa sylvatica*), bald cypress (*Taxodium distichum*), sweetbay (*Magnolia virginiana*), swamp tupelo (*Nyssa biflora*), red maple (*Acer rubrum*), and scattered pine (*Pinus spp*.). The stream channel receives large volumes of stormwater runoff from the surrounding urban areas, resulting in high-velocity flows through the tributary which limit native plant growth. Instead, high-velocity flows and urban disturbance have contributed to the establishment of invasive and nonnative plant species along the stream channel and in wetlands. The air potato (*Dioscorea bulbifera*) is the primary invasive plant in the watershed, with the popcorn tree (*Tiadica sebifera*) and privet (*Ligustrum sinense*) as other commonly found invasive species.

Carpenter Creek is located in a heavily urbanized area and serves as a refuge for wildlife such as migratory and resident birds, small mammals (e.g., raccoons, rabbits), reptiles, and amphibians. It provides a wetland corridor for wetland-dependent species (e.g., birds and small mammals) to travel between uplands and downstream Bayou Texar and Pensacola Bay. Due to the limited natural habitat that exists within the project area (most of which is highly degraded), protected species are unlikely to be present at the project site (Table A-3).

Table A-3 Federally-Listed Species Potentially Occurring in the *WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements (preferred)* Project Area

Common Name	Scientific Name	Habitat	Status	Likelihood
Alligator snapping turtle	*Macrochelys temminckii*	Riverine: deep, flooded channels within bald cypress and tupelo forests.	T	Unlikely
Eastern black rail	*Laterallus jamaicensis*	Estuarine: herbaceous wetland with elevated refugia; Palustrine: herbaceous wetland with elevated refugia	T	Unlikely

Common Name	Scientific Name	Habitat	Status	Likelihood
Eastern indigo snake	*Drymarchon couperi*	Terrestrial: mesic flatwoods, upland pine forest, sandhills scrub, scrubby flatwoods, rockland hammock, ruderal.	T	Unlikely
Gulf sturgeon	*Acipenser oxyrinchus*	Estuarine: various; Marine: various habitats; Riverine: alluvial and blackwater streams.	T	Unlikely
Note: Species determined to be "unlikely" to be found in the action area are not addressed further in the environmental analysis. CH=Critical Habitat, E=Endangered, T=Threatened, SAT=Similarity of Appearance (Threatened), SSC=Species of Special Concern				

A.3.2.2.1.3 Socioeconomic Resources

Appendix A.3.2.1.3 summarizes the demographics of Escambia County. The proposed location is north of the City of Pensacola limits, in unincorporated areas of Escambia County; the project site is located on parcels that are adjacent to the headwaters of Carpenter Creek. Most of the surrounding environment is residential and there are several housing developments immediately adjacent to the project area. The project sites are currently characterized by existing, ineffective stormwater retention ponds and degraded stream habitat.

A.3.2.2.2 Environmental Consequences

The following evaluation of the environmental consequences of this proposed project incorporates by reference previous DWH water quality environmental assessments, including the FL TIG RP1/EA *Carpenter Creek Headwaters Water Quality Improvements* project. This analysis concluded that the project, which included in-stream restoration and construction of stormwater ponds, would have short-term, minor adverse to physical (e.g., geology and substrates, water quality) and biological (e.g., habitats, freshwater fish, and wildlife) resources from construction activities. The analysis also concluded that the project would not result in any long-term adverse impacts and would provide benefits to socioeconomic resources (e.g., through increased job opportunities) and water quality, hydrology, habitat, fish, and wildlife. Table A-1 directs readers to the location of detailed analyses of this project's impacts on physical, biological, and socioeconomic resources within this RP3/EA.

A.3.2.2.2.1 Physical Resources

In-stream restoration

In-stream restoration activities would result in short-term, moderate adverse impacts to physical resources. A meander belt would be contoured and stabilized by mechanically moving and removing sediment and vegetation. This digging would have short-term, moderate adverse impacts to geology and substrates. However, the FL TIG does not consider the removal of sediment from the system to be a long-term, adverse impact to geology and substrates, due to current high levels of erosion and water quality and biological habitat impairment from sedimentation in Carpenter Creek. Any removed sediment would be contained and disposed of in an appropriate upland disposal site to avoid introducing the sediment into local waterways.

Vegetation removal, movement of sediment, and temporary use of equipment on site, such as backhoes and small skid steers, may result in short-term, minor adverse impacts to water quality from construction-related erosion and sedimentation. Erosion control BMPs would be implemented to mitigate water quality impacts. All equipment would be staged in previously disturbed areas to reduce disturbance to geology and substrates that could contribute to erosion into local waterbodies.

Long-term benefits to physical resources, including geology and substrates and hydrology and water quality, are anticipated for both the project site and downstream waters due to reductions in erosion and sedimentation. The existing hydrology currently contributes to localized flooding and results in poor

water quality from sediment and pollutant loading, including nitrogen and fecal indicator bacteria, into waters that flow downstream to Bayou Texar and Pensacola Bay. In-stream restoration would improve local hydrology by creating a larger alluvial floodplain and riparian forest that would mitigate high-water flows through the creek, thereby reducing flooding events and allowing for settling of sediments and other pollutants.

Install stormwater filtering structures and enhancing existing stormwater ponds
Installing four baffle boxes at the entrance to the existing stormwater drainage ditch near Coronet Drive and installing BAM and stormwater swales at the existing stormwater ponds near Cardinal Cove, would result in negligible to short-term, minor adverse impacts on the physical environment from disturbance to substrates and water quality from equipment use and installation activities. Installation would occur entirely in previously disturbed areas, equipment would be staged on disturbed ground to the extent possible, and BMPs would be implemented to minimize erosion and sediment runoff.

Long-term benefits to physical resources, including geology, substrates, and water quality, are anticipated for both the project site and downstream waters in Bayou Texar and Pensacola Bay. The installation of baffle boxes and BAM would reduce pollutant loading in the basin. A single baffle box can remove up to 20 percent of nitrogen, 29 percent of phosphorus, and 90 percent of total suspended solids in the waterflow. In addition, stormwater swales would slow stormwater runoff, thereby reducing erosion and sedimentation and improving water quality.

Summary
In summary, this project is anticipated to result in short-term, minor-to-moderate adverse impacts and long-term benefits to physical resources.

A.3.2.2.2.2 Biological Resources

In-stream restoration
In-stream restoration would occur in a highly degraded tributary of Carpenter Creek, located between two residential subdivisions. The tributary currently receives high levels of stormwater runoff and associated sediments and pollutants from the impervious surfaces in the subdivisions. Project activities would move/remove sediment and existing vegetation to create a more natural meander belt and plant native vegetation to stabilize the restored channel.

Vegetation removal and in-stream construction would result in short-term, moderate adverse impacts to wetland and riparian habitats. The floodplain and retention pond construction would include removal of approximately 1.5 acres of vegetation. Approximately 1 acre of vegetation would be planted once construction is complete to stabilize the meander belt, resulting in a net loss of approximately 0.5 acres of vegetation. This anticipated loss in vegetation and habitat alterations would result in long-term, minor adverse impacts. Vegetation removal and replanting activities could result in an increased opportunity for the spread of non-native species. However, planting of native vegetation would mitigate the spread of non-native species and the project would also involve invasive species monitoring and control activities. Equipment would be staged in previously disturbed areas, such as parking lots, minimizing additional impact to habitats. Any work in waters of the U.S., including wetlands, associated with this alternative would be coordinated with the United States Army Corps of Engineers (USACE) and/or FDEP pursuant to Section 404 of the Clean Water Act (CWA) and the Rivers and Harbors Act (RHA). Coordination and final authorization pursuant to the CWA/RHA would be completed prior to final design and construction.

Construction activities, including in-stream construction and increased human activity, would also result in short-term, minor-to-moderate adverse impacts to wildlife in the area, particularly benthic organisms. However, benthic organisms are expected to recolonize the area shortly after habitat restoration is complete. Vegetation removal during construction would decrease the available urban refuge for birds,

mammals, and reptiles. However, any conservation measures included in the CWA Section 404 permit to mitigate impacts to wildlife would be implemented. While protected species are unlikely to be present in the action area, increased human activity during implementation activities could result in short-term, minor adverse impacts from disturbance.

This project would result in long-term benefits to the in-stream and riparian forest habitat by restoring the system into a more resilient, natural ecosystem that contributes to improved floodwater attenuation and water quality at the site and in downstream waters. An improvement in habitat and water quality would subsequently result in long-term benefits for freshwater and terrestrial wildlife, including protected species.

Install stormwater filtering structures and enhance existing stormwater ponds
Baffle box installation and stormwater pond enhancement activities would occur in previously disturbed and developed areas, and as such, would have negligible adverse impact to habitats. However, increased human activity and the use of machinery during implementation would result in short-term, minor adverse impacts to wildlife and protected species as a result of increased disturbance in the area and could lead to wildlife flushing. However, these impacts would be temporary. The stormwater filtering structures and stormwater pond enhancements would result in long-term benefits for habitats and wildlife (including protected species) due to decreased pollutant loading into the system resulting in reduced habitat degradation.

Summary
In summary, this project is anticipated to result in short- and long-term, minor-to-moderate adverse impacts and long-term benefits to biological resources.

A.3.2.2.2.3 Socioeconomic Resources

Construction activities for the in-stream restoration, stormwater filtering structures installation, and stormwater pond enhancements would occur in residential areas and could result in short-term, minor adverse impacts to residents from increased human activity and construction-related disturbance. However, construction activities would occur during business hours, minimizing potential impacts. Equipment staging and parking for construction activities would occur in areas least likely to disturb residents, if possible, but could occur from public roadways which could temporarily displace residential parking. This project may also result in a short-term increase in construction jobs during implementation, providing benefits for the local economy. Improvements in water quality and flood management could result in long-term benefits to socioeconomic resources such as property values and reductions in property risk.

Summary
In summary, this project is anticipated to result in short-term, minor adverse impacts as well as short- and long-term benefits to socioeconomic resources.

A.3.2.3 WQ4, Hollice T. Williams Stormwater Park (preferred)

The goal of this project is to improve water quality by implementing both traditional and green stormwater infrastructure techniques to capture and treat runoff that flows into Pensacola Bay. Project activities most relevant to the assessment of environmental consequences include:

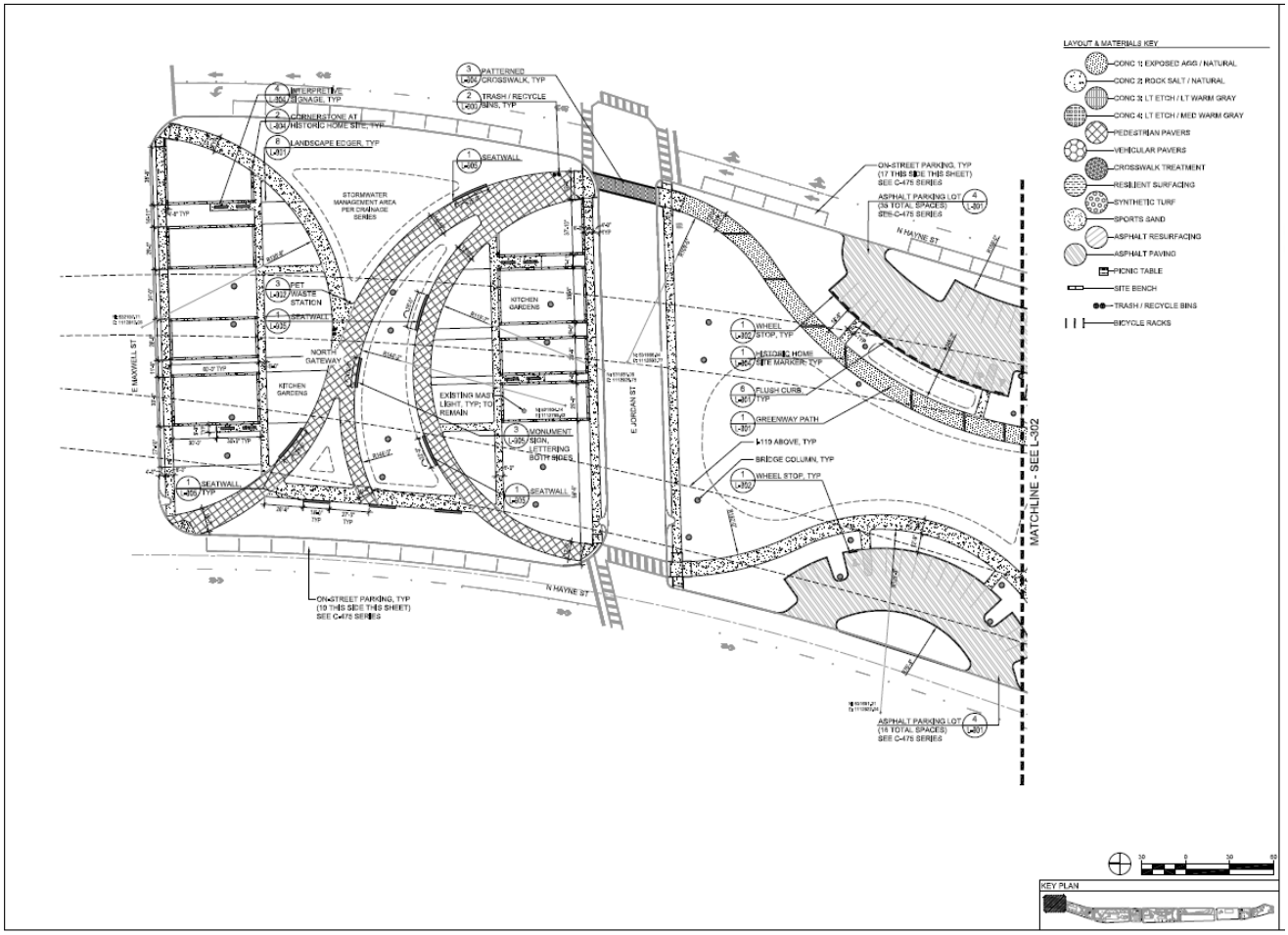
- **Revitalization of a 10-acre portion of the existing park as a stormwater park.** Hollice T. Williams Park, a greenway under Interstate-110 (I-110) (Figure A-5), would be partially converted into a stormwater park that captures and treats runoff during storm events. DWH NRDA funds would specifically be used to enhance the northern-most 10 acres between Maxwell and Avery Streets by demolishing existing park infrastructure (clearing the existing 10 acres of

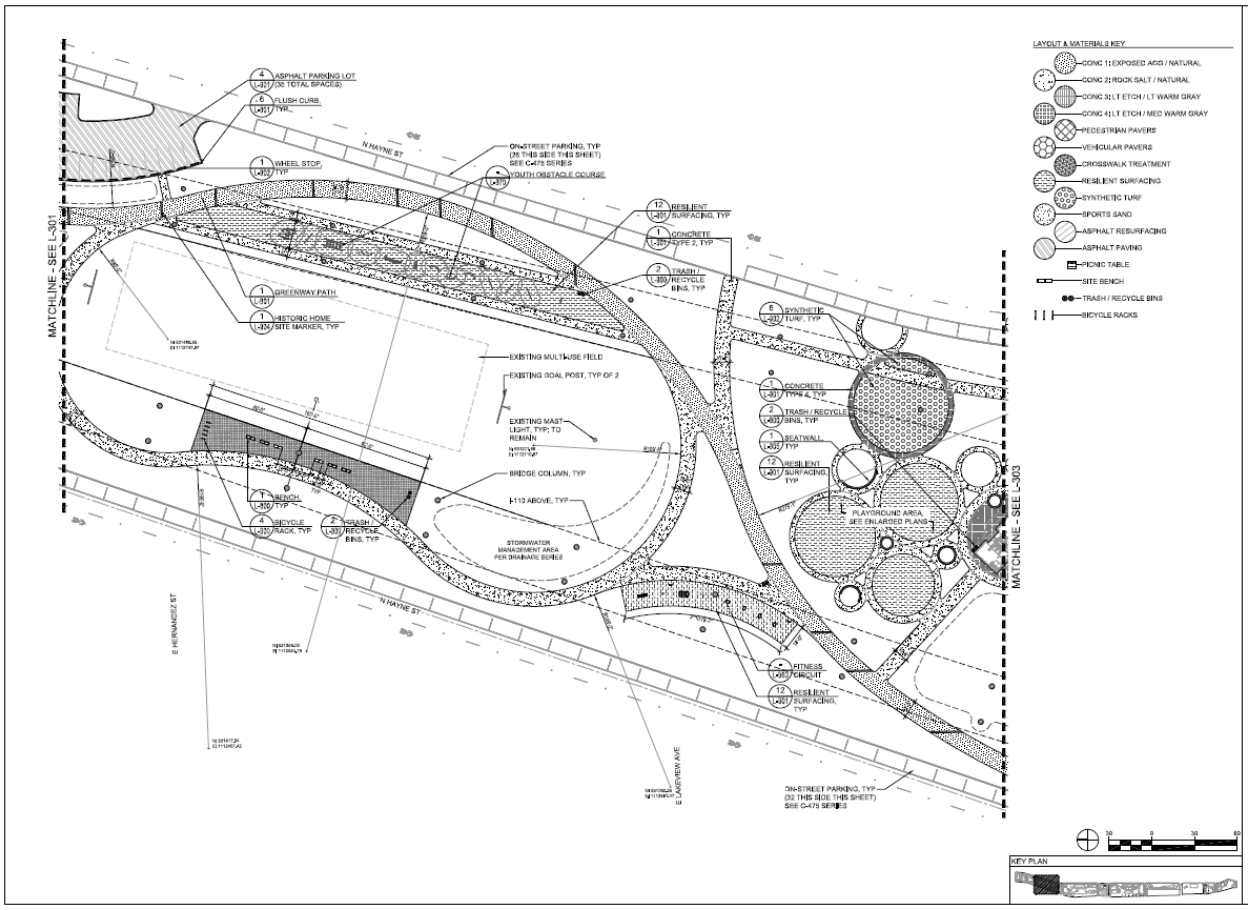
grass and trees, removing existing trash cans and lighting, demolishing existing concrete pads); constructing the stormwater park layout; and constructing stormwater-specific elements such as wet-detention ponds with littoral wetland vegetation, pre-treatment systems (e.g., baffle boxes) to remove sediments and trash, and pervious pedestrian surfaces (Figure A-6). Funds would be leveraged outside of NRDA for park landscaping, lighting, recreational elements (educational signage, bike racks, paved paths, picnic tables and benches, and playgrounds), parking areas, and trash cans within the 10-acre footprint.[25]

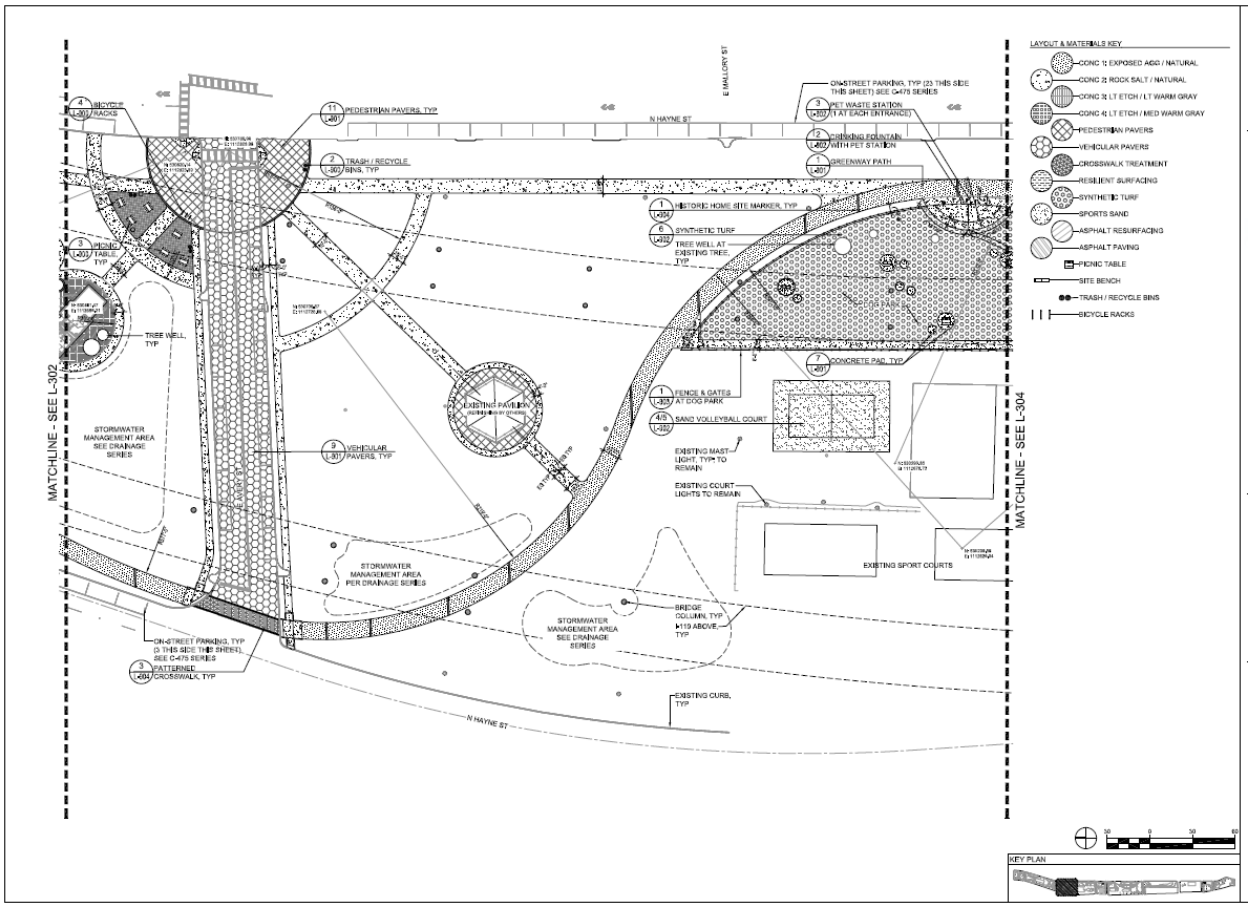
Figure A-5 Hollice T. Williams Park Footprint (outlined in red)

[25] While the construction of recreational elements would occur using non-NRDA funds, they are analyzed herein as a connected action under NEPA.

Figure A-6 Conceptual Design Plans for Hollice T. Williams Park Between Maxwell and Avery Streets




LAYOUT & MATERIALS KEY
CONC 1 | EXPOSED AGG / NATURAL
CONC 2 | ROCK SALT / NATURAL
CONC 3 | LT ETCH / LT WARM GRAY
CONC 4 | LT ETCH / MED WARM GRAY
PEDESTRIAN PAVERS
VEHICULAR PAVERS
CROSSWALK TREATMENT
RESILIENT SURFACING
SYNTHETIC TURF
SPORTS SAND
ASPHALT RESURFACING
ASPHALT PAVING
PICNIC TABLE
SITE BENCH
TRASH / RECYCLE BINS
BICYCLE RACKS
MATCHLINE - SEE L-301
MATCHLINE - SEE L-303
N HAYNE ST
E HERNANDEZ ST
E LAKEVIEW AVE
ON-STREET PARKING, TYP (35 THIS SIDE THIS SHEET) SEE C-475 SERIES
EXISTING MULTI-USE FIELD
EXISTING GOAL POST, TYP OF 2
EXISTING MAST LIGHT, TYP; TO REMAIN
BRIDGE COLUMN, TYP
I-110 ABOVE, TYP
STORMWATER MANAGEMENT AREA PER DRAINAGE SERIES
PLAYGROUND AREA SEE ENLARGED PLANS
ON-STREET PARKING, TYP (32 THIS SIDE THIS SHEET) SEE C-475 SERIES
KEY PLAN



A.3.2.3.1 Affected Environment

Hollice T. Williams Park sits within the highly developed and urbanized Pensacola Bay watershed, which is subject to elevated pollutant and nutrient loadings from stormwater runoff. The project area is just north of downtown Pensacola, under the I-110 overpass. Project activities would specifically occur in the northern-most 10 acres of the park between Maxwell and Avery Streets. The existing park would be re-designed as a stormwater park that would capture and treat runoff during storm events. The U.S. Federal Highway Administration's (FHWA) *Environmental Assessment for Interstate 10 and Interstate 110* provides information about the physical, biological, and socioeconomic resources under the I-110 overpass and is incorporated by reference and summarized below (FHWA, 2000).

A.3.2.3.1.1 Physical Resources

Soils found in the I-110 corridor are generally well-drained sands, sandy loams, and poorly drained mixed alluvial soils (FHWA, 2000). Upland soils in the project area consist primarily of Lakeland sands (0 to 5 percent slopes and 8 to 12 percent slopes) (USDA, 2023). Substrates have been previously disturbed through the creation of the I-110 overpass and associated pilings and the creation of existing infrastructure at Hollice T. Williams Park.

Hollice T. Williams Park sits within the metropolitan Pensacola drainage basin that runs off directly into Pensacola Bay. The high levels of unattenuated and untreated stormwater runoff has contributed to the degradation of the bay, leading to its designation as an impaired waterbody for nutrients and bacteria (FDEP, 2023a). I-110 primarily uses open drainage systems, with water running off the roadway into the surrounding urban environment.

A.3.2.3.1.2 Biological Resources

The project area is primarily urban and developed land, ranging from low to high intensities. Limited natural habitats remain in the metropolitan area, primarily within unmaintained, vegetated rights-of-way along the I-110 corridor (FHWA, 2000). Naturally occurring vegetation in these areas consists of pines, laurel (*Quercus laurifolia*) and water (*Quercus nigra*) oak, sweetgum (*Liquidambar styraciflua*), and red cedar (*Juniperus virginiana*), among others. Hollice T. Williams Park is characterized as developed greenspace, with limited landscaping vegetation (e.g., grass, trees). The park may serve as resting, nesting, and foraging areas for urban-dwelling birds, small mammals (e.g., raccoons, opossums, squirrels), and reptiles. Due to the limited natural habitat that exists within the project area, protected species are unlikely to be present (Table A-4).

Table A-4 Federally-Listed Species Potentially Occurring in the *WQ4, Hollice T. Williams Stormwater Park (preferred)* Project Area

Common Name	Scientific Name	Habitat	Status	Likelihood
Alligator snapping turtle	*Macrochelys temminckii*	Riverine: deep, flooded channels within bald cypress and tupelo forests.	T	Unlikely
Eastern black rail	*Laterallus jamaicensis*	Estuarine: herbaceous wetland with elevated refugia; Palustrine: herbaceous wetland with elevated refugia.	T	Unlikely
Eastern indigo snake	*Drymarchon couperi*	Terrestrial: mesic flatwoods, upland pine forest, sandhills scrub, scrubby flatwoods, rockland hammock, ruderal.	T	Unlikely

Note: Species determined to be "unlikely" to be found in the action area are not addressed further in the environmental analysis.
CH=Critical Habitat, E=Endangered, T=Threatened, SAT=Similarity of Appearance (Threatened), SSC=Species of Special Concern

A.3.2.3.1.3 Socioeconomic Resources

Appendix A.3.2.1.3 summarizes demographics of Escambia County. The proposed location is in Pensacola; the project site is located at the existing Hollice T. Williams Park, under the I-110 overpass. Areas immediately adjacent to the park are primarily residential, with commercial areas (e.g., downtown Pensacola) south of the park.

A.3.2.3.2 Environmental Consequences

Table A-1 directs readers to the location of detailed analyses of this project's impacts on physical, biological, and socioeconomic resources within this RP3/EA.

A.3.2.3.2.1 Physical Resources

The conversion of a 10-acre portion of the existing Hollice T. Williams Park to a stormwater park and the subsequent installation of recreational amenities would involve the use of medium-weight construction equipment, such as bulldozers, excavators, backhoes, forklifts, pavers, asphalt machines, rollers, tractor trailers, generators, dump trucks, dewatering equipment, pick-up trucks for staff, and hand tools. Project activities would require removal of landscaping and infrastructure, excavation and grading of stormwater features, revegetation/landscaping, installation of numerous recreational amenities (e.g., educational signage, bike racks, paved paths, picnic tables and benches, and playgrounds), and the development of parking areas. Existing landscaping grass and trees along the current 10-acre greenway would be removed, as well as existing trash, lighting, and concrete infrastructure. Irrigation, plumbing, and electrical infrastructure would be installed to support the recreational infrastructure. These activities would result in short-term adverse impacts to geology and substrates during construction activities from

digging, landscaping removal, and sediment removal. However, since all construction activities would occur in previously disturbed/developed areas (the site was previously constructed as a greenway under the I-110 overpass; Figure 4-4), these adverse impacts would be minor.

Project activities may also result in short-term, minor adverse impacts to hydrology and water quality. Removal of existing infrastructure and vegetation may destabilize soils over the construction period, leading to increased erosion and runoff and thereby adversely impacting downstream water quality. Foot, vehicle, and heavy equipment traffic may serve to further destabilize existing soils. Erosion control BMPs would be implemented, and equipment would be staged on prior disturbed areas to the extent possible. Such measures would include permanent planting, sodding and permanent or temporary seeding, artificial coverings, buffer zones, and silt fences or other barrier devices. Proposed stormwater retention features would serve as temporary sediment basins during construction. Revegetation and landscaping of the site would help to restabilize disturbed sediments. In addition to the short-term impacts during construction, this project is anticipated to result in a minor permanent loss of pervious area. Under existing conditions, the site has approximately 2.5 acres of impervious and 20 acres of pervious surfaces. The final proposed project site would have approximately 5 acres of impervious and 18 acres of pervious surfaces. Stormwater runoff may concentrate around edges of impervious surfaces such as parking lots, paths, and buildings, leading to small-scale erosion and sediment transport, which in turn may impact water quality. However, these impacts would be offset by the installation of stormwater management features (wet-detention ponds with littoral wetland vegetation, pre-treatment systems to remove sediments and trash, and use of pervious pavers) which would capture and treat stormwater runoff, reducing the energy in the system, and in turn reducing erosion.

With the additional recreational amenities, the site may experience increased visitation and an increase in foot traffic, which could result in long-term, minor adverse impacts to geology and substrates. However, as noted above, the site is previously disturbed, and activity would be concentrated on pathways and paved areas, minimizing adverse impacts on vegetated areas. Trace pollutants from paving, vehicle traffic, and refuse in the form of litter or other waste from visitors may also impact water quality, but the addition of trash receptacles would minimize impacts.

The constructed stormwater park is anticipated to result in long-term benefits to physical resources. Currently, the site experiences localized flooding during storm events. The stormwater features would capture and treat stormwater, reducing erosion and pollutant and nutrient loading into local waterways.

Summary
In summary, this project is anticipated to result in short- and long-term, minor adverse impacts and long-term benefits to physical resources.

A.3.2.3.2.2 Biological Resources

The project site is a disturbed urban area that does not include natural habitats, only minor landscaped areas with minimal grass and trees. As such, this project would have negligible adverse impacts to habitats. Revegetation activities after construction is complete would include planting approximately 220 trees, resulting in long-term benefits.

During construction activities, short-term, minor adverse impacts to wildlife are anticipated as a result of increased human activity, vegetation removal, and the use of construction equipment. These adverse impacts would be temporary, and given the lack of natural habitat in the area, areas for refuge are negligible. As such, impacts to wildlife are anticipated to be minimal. While protected species are unlikely to be present in the action area, increased human activity during implementation activities could result in short-term, minor adverse impacts from disturbance.

The stormwater park is anticipated to result in long-term benefits to habitat and wildlife (including protected species). The park would include native plants, additional trees, and vegetated areas that would provide additional refuge for wildlife to rest or forage. In addition, the proposed stormwater infrastructure would improve habitat quality in downstream waters by reducing pollutant runoff into Pensacola Bay.

Summary
In summary, this project is anticipated to result in short-term, minor adverse impacts and long-term benefits to biological resources.

A.3.2.3.2.3 Socioeconomic Resources

As noted above, the existing park is located under the I-110 overpass. As such, any adverse impacts resulting from construction activities and increased human activity and disturbance are unlikely to substantively change the already disturbed environment for residents or businesses near the area. Construction-related disturbance would be further mitigated by limiting construction to business hours.

The project would result in short- and long-term benefits to socioeconomic resources from increases in short-term local jobs. In the long-term, economic activity may improve due to the creation of new and improved stormwater management and reduced flood risks, and residents would benefit from the additional recreational amenities.

Summary
In summary, this project is anticipated to result in short- and long-term benefits to socioeconomic resources.

A.3.2.4 WQ5, Gulf Breeze Septic to Sewer Conversion (preferred)

The goal of this project is to improve water quality in Santa Rosa Sound and Pensacola Bay by eliminating bacterial pollution and nutrient exports from existing septic systems. Project activities most relevant to the assessment of environmental consequences include:

- **Septic tank decommissioning.** Septic tanks from up to 1,030 residences on or near Bay Cliffs Road, Eufala Street, Fairpoint Drive, Florida Avenue, Gilmore Drive, Highpoint Drive, Hoffman Bayou area, Montrose Boulevard, Poinciana area, San Carlos Avenue, and Warwick Street within the City of Gulf Breeze (see Figure A-7) would be excavated, pumped empty, the bottom would be punctured to prevent water retention, and the tank would be filled with clean, compacted fill to grade.
- **Installation of municipal sewer connections.** Gravity sewer systems or low-pressure grinder pumps would be installed and connected to the Gulf Breeze municipal sewage system, ultimately connecting to the Tiger Point Reclamation Facility. Installation would require excavation at a minimum of 30 inches to an average of 5 feet for low-pressure system mains, or up to 12 feet for gravity systems. Where low-pressure systems are used, a low-pressure pump would be installed at 5 foot-depth. A buried wire or wire in conduit from the existing electrical service panel would be installed to connect to the pump control panel. Off-site construction work would include infrastructure adjustments within the rights of way, including gravity and force mains, services to the properties, manholes, and lift stations. Vegetation would be planted along disturbed areas for stabilization.

Figure A-7 Gulf Breeze Areas Targeted for Septic to Sewer Conversion

A.3.2.4.1 Affected Environment

This project would conduct residential septic to municipal sewer conversion for 11 existing residential developments in Gulf Breeze, which sits on the Fairpoint Peninsula, south of the City of Pensacola, across Pensacola Bay. Surface water runoff and shallow groundwater outflows drain off the peninsula into the surrounding Pensacola Bay and Santa Rosa Sound, which contains sensitive estuarine habitats such as SAV, wetlands, and shellfish beds. The project area is within heavily developed, residential areas characterized by single-family homes and recreational parks.

A.3.2.4.1.1 Physical Resources

Soils in the project area are typical of coastal communities and primarily consist of Kureb, Leon, and Pactolus loamy sands in areas that are nearly level or slightly sloping (USDA, 2023). Remaining upland soil types include Bohicket and Handsboro soils and Dorovan-Palmico association. Sediments and soils have been disturbed through the development of single-family homes, roads, and installation of septic systems.

The Fairpoint Peninsula has a relatively high water table, resulting in surface waters draining off of the land directly into Pensacola Bay. Residential areas targeted in this project are located in areas of minimal flood hazard (FEMA, 2023). Fairpoint Peninsula is bounded to the west and north by the middle of Pensacola Bay and bounded to the south by English Navy Cove and the Santa Rosa Sound. Urban development and untreated wastewater leaks from antiquated residential septic systems have resulted in

elevated bacterial and pollutant loading into Pensacola Bay. Waters running off of the Fairpoint Peninsula are designated as impaired for *E. coli* and dissolved oxygen, while Pensacola Bay, which is directly adjacent to the Peninsula, is designated as impaired for nutrients (FDEP, 2023a).

A.3.2.4.1.2 Biological Resources

The project area is primarily urban and developed land, ranging from low to high intensities. Limited natural habitats remain in Gulf Breeze, primarily south of Shoreline Drive. Habitats in these areas include pinelands and hardwood hammocks and forests characterized by slash pine (*Pinus elliotti*), saw palmetto (*Serenoa palmetto*), and cabbage palm (*Sabal palmetto*). Residential developments contain private landscaping with trees/shrubs, grasses, and gardens. Invasive plant species present in Gulf Breeze include beach vitex (*Vitex rotundifolia*), cogon grass (*Imperata cylindrica*), and giant salvinia (*Salvinia molesta*). Residential landscaping and gardens may serve as resting and foraging areas for urban-dwelling birds, small mammals (e.g., raccoons, opossums, squirrels), and reptiles. Due to the limited natural habitat that exists within the project area, protected species are unlikely to be present (Table A-5).

Table A-5 Federally-Listed Species Potentially Occurring in the *WQ5, Gulf Breeze Septic to Sewer Conversion (preferred)* Project Area

Common Name	Scientific Name	Habitat	Status	Likelihood
Alligator snapping turtle	*Macrochelys temminckii*	Riverine: deep, flooded channels within bald cypress and tupelo forests.	T	Unlikely
Eastern black rail	*Laterallus jamaicensis*	Estuarine: herbaceous wetland with elevated refugia; Palustrine: herbaceous wetland with elevated refugia.	T	Unlikely
Eastern indigo snake	*Drymarchon couperi*	Terrestrial: mesic flatwoods, upland pine forest, sandhills scrub, scrubby flatwoods, rockland hammock, ruderal.	T	Unlikely
Reticulated flatwoods salamander	Ambystoma bishopi	Palustrine: wet flatwoods, dome swamp, basin swamp; Terrestrial: mesic flatwoods (reproduces in ephemeral wetlands within this community).	T	Unlikely

Note: Species determined to be "unlikely" to be found in the action area are not addressed further in the environmental analysis.
CH=Critical Habitat, E=Endangered, T=Threatened, SAT=Similarity of Appearance (Threatened), SSC=Species of Special Concern

A.3.2.4.1.3 Socioeconomic Resources

Appendix A.3.2.1.3 summarizes demographics of Santa Rosa County. The project is located within Gulf Breeze; the project targets residential septic to municipal sewer conversions for 11 neighborhoods. Residential housing developments surround most of the action areas, with the Bay Cliffs and Poinciana neighborhoods close to commercial development. This project would decommission privately-owned, residential septic systems and add connections to Gulf Breeze's municipal sewer system.

A.3.2.4.2 Environmental Consequences

The following evaluation of the environmental consequences of this proposed project incorporates by reference previous DWH water quality environmental assessments, including the FL TIG RP1/EA *City of Carrabelle's Light House Estates: Septic Tank Abatement, Phase II* project. This analysis concluded that the project, which included the decommissioning of approximately 110 septic systems and connection to sewer lines, would have short-term, minor adverse impacts on geology and substrates and the local economy from construction activities, though these activities would occur entirely in previously disturbed areas; short-term, minor impacts on biological resources; short-term benefits to the local economy through job creation; and would result in long-term benefits to water quality, biological resources, and local economic resources such as tourism and recreation. Table A-1 directs readers to the location of

detailed analyses of this project's impacts on physical, biological, and socioeconomic resources within this RP3/EA.

A.3.2.4.2.1 Physical Resources

Septic tank decommissioning

Septic tank decommissioning for approximately 1,030 residences would involve physical disturbance to soils when digging to excavate and unearth septic tanks. Tanks would be emptied of waste, crushed, and the void space filled with clean, compacted fill, during which soils in the area would be disturbed due to increased human activity and equipment use. These activities are anticipated to result in short-term, minor adverse impacts to the geology and substrates during implementation. Short-term, minor adverse impacts to hydrology and water quality may arise from increased erosion and sediment runoff during construction activities. However, BMPs would be employed to reduce erosion and runoff, and revegetation of impacted areas would assist with stabilization after construction is complete.

Long-term benefits to water quality are expected for both the project site and surrounding waters, as the removal of aging, failing, unmaintained, or ineffective septic tanks would reduce a primary source of bacterial and nutrient pollution in the watershed.

Installation of municipal sewer connections

The connection to municipal sewer networks would require excavating to approximately 2.5 to 12 feet in depth for the installation of gravity sewer systems or low-pressure grinder pumps and for the installation of buried wire or wire in conduit. The excavation and boring to install pipes for municipal sewer connections would cause short-term, minor adverse impacts to geology and substrates. Some sediment may need to be removed to install pumps, resulting in long-term, minor adverse impacts to geology and substrates.

Long-term benefits to water quality and hydrology are expected for both the project site and surrounding watershed by connecting these properties to the Tiger Point Reclamation Facility which has superior wastewater treatment capability compared to the residential septic tanks. In addition, the facility also releases treated water for beneficial reuse, such as residential and commercial property irrigation, which may benefit local hydrology by reducing pressure on freshwater systems or groundwater for irrigation.

Summary

In summary, this project is anticipated to result in short- and long-term, minor adverse impacts and long-term benefits to physical resources.

A.3.2.4.2.2 Biological Resources

Implementation of on-site project activities would require temporary use of small-to-medium, lightweight equipment, such as backhoes, mini-backhoes, excavators, mini-excavators, boring equipment, trenchers, pipe-laying machinery, hand equipment, bulldozers, roller/compactors, pavers, testing equipment, standard pickup trucks, and possibly dewatering equipment, depending on the site. Septic to sewer conversions (septic tank abatement and installation of municipal sewer connections and related infrastructure adjustments) would take place entirely in previously disturbed areas and public rights-of-way. Any necessary construction vehicles and staging equipment would utilize existing roads, parking areas, and other disturbed sites, and BMPs would be implemented to minimize erosion and runoff. Off-site construction work, including infrastructure adjustments within the rights of way, such as gravity and force mains, services to the property, manholes, and lift stations, would also be concentrated in previously disturbed areas. As such, adverse impacts to terrestrial habitats would be negligible.

Short-term, minor adverse impacts to terrestrial wildlife could occur during construction due to increased human activity and ground disturbance. However, due to the residential setting of these septic to sewer

conversions and the previously disturbed nature of all project sites, adverse impacts to wildlife and protected species are anticipated to be minimal. All work would be performed on existing disturbed rights of way and developed private property with at least 200 feet of clearance from jurisdictional wetlands. No work would take place on undeveloped lots, and all sites would be revegetated after construction to restore stability.

Long-term benefits to habitats, wildlife, and protected species would occur from water quality improvements and subsequent improvements in habitat quality resulting from the reduction of bacterial and nutrient pollution in the watershed.

Summary
In summary, this project is anticipated to result in short-term, minor adverse impacts and long-term benefits to biological resources.

A.3.2.4.2.3 Socioeconomic Resources

Adverse impacts to local businesses and economic activity during construction are expected to be negligible due to the residential nature of the targeted project sites. Florida statutes require that private landowners who have septic tanks connect to available sewer systems within one year of the system coming online for connections; this often involves landowners paying a connection fee. This project would cover all on-site connection costs for residents who agree to connect to the sewer system prior to the commencement of construction activities. As such, the project would result in an economic benefit to landowners who opt-in. These individuals would further experience long-term benefits from no longer using aging, ineffective septic tanks. Finally, the project would benefit local socioeconomics by providing short-term construction jobs.

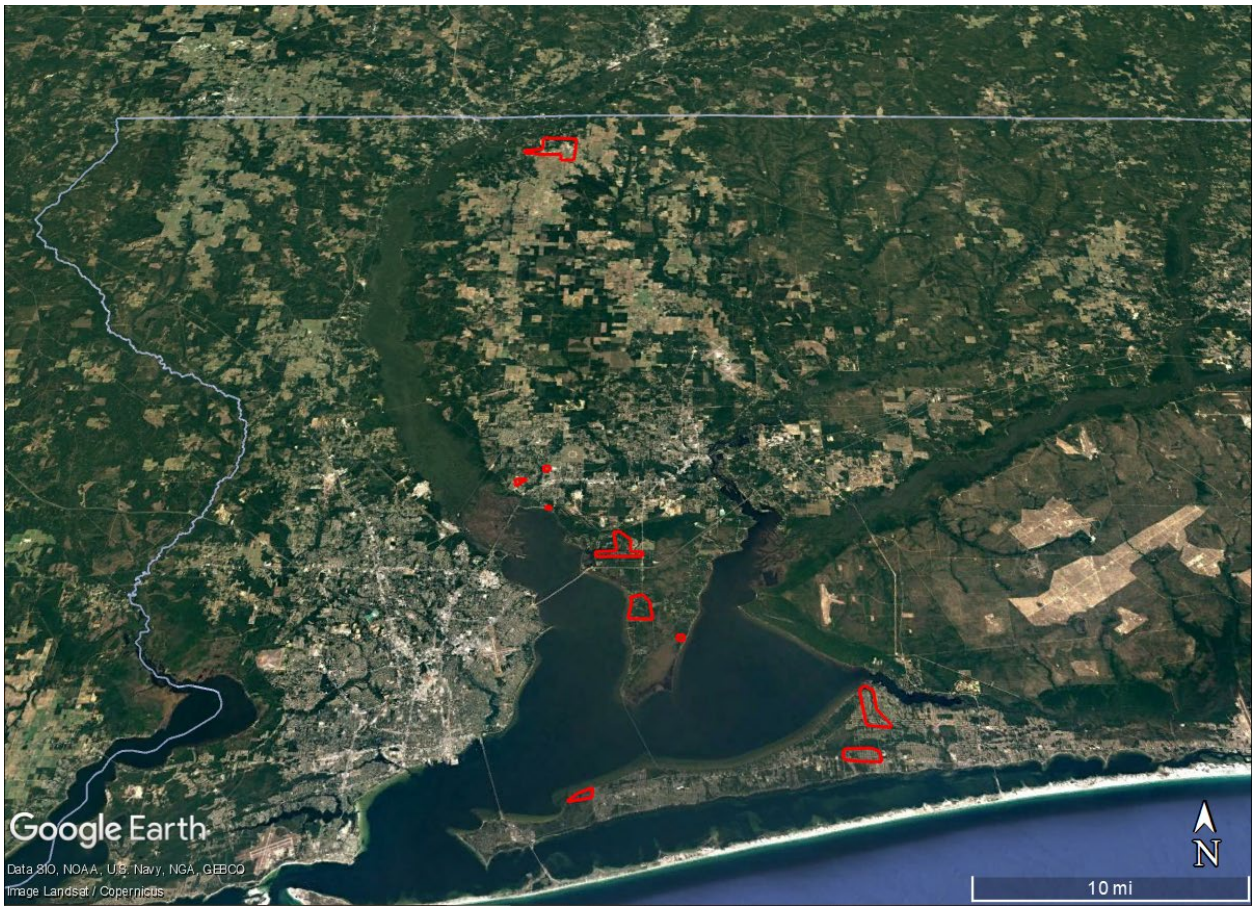
Summary
In summary, this project is anticipated to result in benefits to socioeconomic resources.

A.3.2.5 WQ6, Santa Rosa County Septic to Sewer Conversion (preferred)

The goal of this project is to improve water quality in East Bay, Escambia Bay, and Pensacola Bay by eliminating bacterial pollution and nutrient exports from septic systems. Project activities most relevant to the assessment of environmental consequences include:

- **Septic tank decommissioning.** Septic tanks from up to 900 residences in Santa Rosa County would be excavated, pumped empty, the bottom punctured to prevent water retention, and be filled with clean, compacted fill to grade.
- **Installation of municipal sewer connections.** Gravity sewer systems or low-pressure grinder pumps would be installed and linked to the wastewater collection and treatment systems of the Gulf Breeze Regional Water System, the Holley Navarre Water System, the Pace Water System, and the Town of Jay Utilities (Figure A-8). Installation would likely entail excavation at a minimum of 30 inches to an average of 5 feet for low-pressure system mains, or up to 12 feet for gravity systems. Where low-pressure systems are used, a low-pressure pump would be installed at 5 foot-depth. A buried wire or wire in conduit from the existing electrical service panel would be installed to connect to the pump control panel. Off-site construction work would include infrastructure adjustments within the rights of way, including gravity and force mains, services to the property, manholes, and lift stations. Vegetation would be planted along disturbed areas for stabilization.

Figure A-8 Santa Rosa County Regions Targeted for Sewer Conversion



A.3.2.5.1 Affected Environment

This project would conduct residential septic to municipal sewer conversion for up to 900 residences across four communities in Santa Rosa County. Surface- and shallow groundwater from these communities flow into the broader Pensacola Bay and Santa Rosa Sound via small tributary creeks, direct surface water runoff, and shallow groundwater outflows. These estuaries contain sensitive habitats such as SAV, wetlands, and shellfish beds. The project area is within heavily developed, residential areas characterized by single-family homes and recreational parks.

A.3.2.5.1.1 Physical Resources

Septic to sewer conversions would occur throughout Santa Rosa County, in areas including the City of Gulf Breeze, the unincorporated community of Pace, the Town of Jay, and the City of Navarre. Upland soils throughout Santa Rosa County are typically loamy sands with low-grade slopes. Upland soils near Pace are characterized by Troup loamy, Meadowbrook fine, Pactolus loamy, and Mulat loamy fine sands (0 to 5 percent slopes) (USDA, 2023). Other soils are primarily Dorovan-Palmico associations. Upland soils in Jay consist primarily of Lucy loamy sands, Red Bay sandy loam, Troup loam sand, and Troup Orangeburg complex (0 to 12 percent slopes). Soils in Gulf Breeze are primarily Lakeland sands. Substrates within Navarre contain Lakeland, Ortega, and Pactolus loamy sands (0 to 30 percent slopes). Other soil types include Brovan-Palmico association and Bohicket and Handsboro soils (USDA, 2023). Various FEMA-designated flood zones are present in the project area, with the lowest minimum flood level in Gulf Breeze at 10 feet (FEMA, 2023).

The broader Pensacola Bay system includes Escambia Bay, Santa Rosa Sound, East Bay, and Blackwater Bay. The system is tidally influenced, with marine and estuarine waters passing through Pensacola Pass. Estuarine waters are also exchanged between Pensacola and Choctawhatchee Bay through the Santa Rosa Sound. Gulf Breeze sits on the broader Pensacola Bay; Navarre sits along East Bay and the Santa Rosa Sound; Pace is located along the northern edge of Escambia Bay; and Jay sits in the northern portion of the watershed, along tributary creeks and streams (Figure A-7). Runoff from urban areas and untreated wastewater from antiquated residential septic systems has resulted in numerous waterbodies in the Pensacola Bay watershed impaired for bacteria (*E. coli*, fecal coliform bacteria) (FDEP, 2023a).

A.3.2.5.1.2 Biological Resources

The project area is primarily urban and developed land, ranging from low to high intensities. Areas surrounding Jay are less developed, with high proportions of agricultural/pasture lands. Natural habitats in Santa Rosa County comprise scattered evergreen forests, woody wetlands, and emergent herbaceous wetlands. Evergreen forest vegetation includes the slash pine, cabbage palm, Geiger tree (*Cordia sebestena*), and bald cypress. These habitats host a variety of animals, including Sherman's fox squirrels (*Sciurus niger shermani*), pocket gophers (*Geomys pinetis*), bobwhite quails (*Colinus virginianus*), and the Florida mouse (*Peromyscus floridanus*). Heavy development and urbanization have resulted in the introduction of invasive plant species to evergreen forests, including the silk tree (*Albizia julibrissin*), coral vine (*Antigonon leptopus*), Brazilian pepper tree (*Schinus terebinthifolia*), air potato, and torpedograss (*Panicum repens*).

With the exception of Jay, the remaining project areas are adjacent to freshwater woody and emergent herbaceous wetlands, characterized by maidencane, softstem bulrush, and duck potato. Wetlands provide habitat for a variety of reptiles, small terrestrial mammals, and resident and migratory birds (e.g., great blue heron). Invasive plants in these wetland habitats include Australian pine (*Casurina equisetifolia*), suckering Australian pine (*Casuarina glauca*), and wild taro (*Colocasia esculenta*).

Residential landscaping and gardens may serve as resting, nesting, and foraging areas for urban-dwelling birds, small mammals (e.g., raccoons, opossums, squirrels), and reptiles. Due to the limited natural habitat that exists within the project area, protected species are unlikely to be present (Table A-6).

Table A-6 Federally Listed Species Potentially Occurring in the *WQ6, Santa Rosa County Septic to Sewer Conversion (preferred)* Project Area

Common Name	Scientific Name	Habitat	Status	Likelihood
Alligator snapping turtle	*Macrochelys temminckii*	Riverine: deep, flooded channels within bald cypress and tupelo forests.	T	Unlikely
Choctaw bean	*Villosa choctawensis*	Riverine: creeks, streams, and rivers with silty sand or sandy clay substrates.	E	Unlikely
Eastern black rail	*Laterallus jamaicensis*	Estuarine: herbaceous wetland with elevated refugia; Palustrine: herbaceous wetland with elevated refugia	T	Unlikely
Eastern indigo snake	*Drymarchon couperi*	Terrestrial: mesic flatwoods, upland pine forest, sandhills scrub, scrubby flatwoods, rockland hammock, ruderal.	T	Unlikely
Narrow pigtoe	*Fusconaia escambia*	Riverine: medium creeks to medium rivers characterized by sand or sand and gravel substrate.	T	Unlikely
Reticulated flatwoods salamander	*Ambystoma bishopi*	Palustrine: wet flatwoods, dome swamp, basin swamp; Terrestrial: mesic flatwoods (reproduces in ephemeral wetlands within this community).	T	Unlikely
Red-cockaded woodpecker	*Leuconotopicus borealis*	Terrestrial: mature pine forests.	E	Unlikely

Common Name	Scientific Name	Habitat	Status	Likelihood
Round ebonyshell	*Rusconaia rotulata*	Riverine: small to medium rivers characterized by sand, small gravel, or sandy mud substrate.	E	Unlikely
Southern kidneyshell	*Ptychobranchus jonesi*	Riverine: medium creeks to small rivers characterized by firm sand substrate.	E	Unlikely
Southern sandshell	*Hamiota australis*	Riverine: small creeks and rivers characterized by sand or sand and fine gravel substrate.	T	Unlikely
Note: Species determined to be "unlikely" to be found in the action area are not addressed further in the environmental analysis. CH=Critical Habitat, E=Endangered, T=Threatened, SAT=Similarity of Appearance (Threatened), SSC=Species of Special Concern				

A.3.2.5.1.3 Socioeconomic Resources

Appendix A.3.2.1.3 summarizes the demographics of Santa Rosa County. The project is located within four communities within Santa Rosa County: Gulf Breeze, Pace, Jay, and Navarre. The project would conduct septic to sewer conversion near the following neighborhoods: the West Bayshore area of Gulf Breeze; the Bayou Ridge, Twin Hills, Old Arcadia, Floridatown, and Crystal Creek areas of Pace; rural homesteads near the Pensacola Bay headwaters in Jay; and the Tom King Bayou area in Navarre. These areas are comprised of residential developments with limited commercial businesses.

A.3.2.5.2 Environmental Consequences

Septic tank decommissioning and conversion to municipal sewer activities under this project are similar or identical in nature to the activities that would occur during implementation of the *WQ5, Gulf Breeze Septic to Sewer Conversion (preferred)* project. It is anticipated that the environmental consequences to physical, biological, and socioeconomic resources from those activities would also be very similar. To reduce redundancy, the following discussion of environmental consequences is limited to those activities, techniques, and anticipated impacts that are unique to this project. Table A-1 directs readers to the location of detailed analyses of this project's impacts on physical, biological, and socioeconomic resources within this RP3/EA.

A.3.2.5.2.1 Physical Resources

Physical impacts resulting from this project's activities are similar to those discussed in Appendix A.3.2.4.2.1 *WQ5, Gulf Breeze Septic to Sewer Conversion* (*preferred*). In summary, this project is anticipated to result in short- and long-term, minor adverse impacts and long-term benefits to physical resources.

A.3.2.5.2.2 Biological Resources

Biological impacts as a result of these project activities are similar to those discussed in Appendix A.3.2.4.2.2, *WQ5, Gulf Breeze Septic to Sewer Conversion (preferred)*. In summary, this project is anticipated to result in short-term, minor adverse impacts and long-term benefits to biological resources.

A.3.2.5.2.3 Socioeconomic Resources

Socioeconomic impacts as a result of these project activities are similar to those discussed in Appendix A.3.2.4.2.3, *WQ5, Gulf Breeze Septic to Sewer Conversion (preferred)*. In summary, this project is anticipated to result in benefits to socioeconomic resources.

A.3.3 Choctawhatchee-St. Andrew Bay Watershed Projects

Three projects are located in the Choctawhatchee-St. Andrew Bay watershed (Figure A-1):

- WQ7, *Choctawhatchee Bay Unpaved Roads Initiative (preferred)*.

- WQ8, *Swift Creek Hydrologic Restoration*.
- WQ9, *Springfield Stream and Wetland Enhancement.*

A.3.3.1 Area Overview

The following section incorporates by reference the FL TIG RP1/EA*, Choctawhatchee River and Bay Watershed* and *St. Andrew Bay Watershed* affected environment description. These descriptions are summarized below, with additional detail as necessary for information not found within the FL TIG RP1/EA. All watershed information in this overview originates from the Choctawhatchee River and Bay and St. Andrew Bay watershed SWIM plans (NWFWMD 2017a and NWFWMD 2017e, respectively) unless otherwise cited.

The Choctawhatchee Bay watershed consists of approximately 5,218 square miles across Alabama and Florida, with approximately 2,087 square miles, or 40 percent, of the watershed occurring within Florida, in Okaloosa, Walton, and Washington Counties. The Choctawhatchee River's tributaries include Holmes, Wrights, Bruce, and Pine Log Creeks, and Alaqua, Rock, Black and Turkey Creeks which empty directly into Choctawhatchee Bay. The St. Andrew Bay watershed is approximately 1,156 miles long, occurring in Florida's Bay and Gulf Counties. The Choctawhatchee Bay watershed centers around a major river (the Choctawhatchee River), whereas the smaller St. Andrew Bay watershed consists of St. Andrew Bay, West, North, East, and St. Joseph Bays, Econfina Creek, Deer Point Lake Reservoir, and several other smaller tributaries and waterbodies.

Nonpoint source pollution is a primary water quality concern in the watersheds, especially regarding potential transport to groundwater. Pollution drivers in this region include stormwater runoff, deficient septic tanks and wastewater management, marinas, urban development, agricultural and silvicultural practices, and erosion from construction sites, abandoned clay pits, and unpaved roads. Runoff from developed areas along the bays has been identified as a primary source of nonpoint pollution.

Over 150 segments of the Choctawhatchee-St. Andrews Bay watershed are designated as impaired due to nutrients, bacteria, dissolved oxygen, or metals (FDEP, 2023a). Management priorities include water quality initiatives such as stormwater improvements, sediment reduction, and septic conversions and wastewater enhancements. Other initiatives to protect water systems include hydrologic restoration, strategic land conservation, and development of riparian buffer zones.

A.3.3.1.1 Physical Resources

The Choctawhatchee-St. Andrew Bay watershed is within the Gulf coastal plain physiographic region, in the western highlands and Gulf coastal lowlands localized physiographic sub-regions. The Choctawhatchee Bay watershed also contains the river valley lowlands localized physiographic sub-region, which follows the Choctawhatchee River floodplain and has predominantly hydric soils. The localized geologic characteristics in the watershed vary to the west and east of the river. To the west, surficial deposits cover sand, clay, shale, sandstone, and limestone layers. To the east, including the St. Andrew Bay watershed, limestone and dolomite comprise a platform of carbonate bedrock with limestone nearer the surface. This porous limestone results in numerous aquifer springs and sinkholes in the watersheds, which results in a relatively high level of hydrologic connectivity with groundwater. The southern region of the watersheds contains lowland wetland areas with substrates composed of sands and decaying organic matter, including peat and muck.

The Choctawhatchee Bay watershed also contains steephead ravines, a unique feature highly concentrated in this region. Unlike the more common gully-eroded valleys, which form as a result of surface water erosion, steephead ravines form through erosion from groundwater seepage. Finally, the Choctawhatchee River is designated as an OFW (FDEP, 2023b).

A.3.3.1.2 Biological Resources

Much of the Choctawhatchee-St. Andrew Bay watershed is managed through public and private conservation initiatives. The watershed contains many habitat types, including 35 distinct natural communities identified by the Florida Natural Areas Inventory. Both watersheds contain upland, coastal, wetland, aquatic, estuarine, and marine habitats (e.g., riparian bottomland forest, freshwater aquifer springs, estuary, barrier islands, tidal marshes, tupelo and cypress swamps, coastal dune lakes, oyster beds, sand and mud flats, and SAV). St. Andrew and St. Joseph Bays are less turbid than other coastal areas and together host approximately 19,000 acres of SAV. Coastal dune lakes are a particularly unique habitat feature along the coastline and serve as an important habitat for migrating birds, aquatic plants, and animals, and facilitate eco-based recreational use. Upland habitats include hardwood forests, scrub, and flatwoods, though the historic range of species such as longleaf pine forests and old-growth cypress stands has diminished.

The array of habitats within these watersheds supports a diversity of species, many of them unique or protected. Upland areas are home to several protected species, including the gopher tortoise and eastern indigo snake, among others. Steephead ravines support rare plants and amphibians. Several tributaries contain protected freshwater mussels, the Okaloosa darter, and critical habitat for Gulf sturgeon. Similarly, the region's beaches and coastal dune lakes provide habitat to snowy plovers, the Choctawhatchee beach mouse, shorebirds, and sea turtles.

More than half of the Choctawhatchee Bay watershed consists of upland forests. About 20 percent of the watershed is used for agriculture, with the rest composed of wetlands and developed land. Only 2 percent of the area is open water or open land. Similarly, the St. Andrew Bay watershed is primarily covered by upland forest, followed by wetlands, developed land, and agriculture. The prevalence of springs within this watershed provides groundwater input to riparian and wetland systems.

A.3.3.1.3 Socioeonomic Resources

Within Florida, the Choctawhatchee-St. Andrews Bay watershed occurs across a portion of Okaloosa, Walton, Washington, Holmes, and Bay Counties. A summary of demographics for Okaloosa County is provided in Appendix A.3.2.1.3.

Walton County has a total population of 83,304 people, an increase of 10.6 percent since 2020, based on the 2022 U.S. Census. Approximately 90 percent of the county population are white, 5 percent are black or African American, with the remaining population including small percentages of American Indian, Asian, and Pacific Islander. About 7 percent identify as Hispanic or Latino origin. Median household income reported in 2022 was $74,832 and residents in poverty accounted for 11.1 percent of the county's population. Most of the county residents (91.9 percent) are high school graduates or higher.

Washington County has a total population of 324,878 people, an increase of 0.9 percent since 2020, based on the 2022 U.S. Census. Approximately 81 percent of the county population are white, 13 percent are black or African American, with the remaining population including small percentages of American Indian, Asian, and Pacific Islander. About 5 percent identify as Hispanic or Latino origin. Median household income reported in 2022 was $47,536 and residents in poverty accounted for 19.4 percent of the county's population. Most of the county residents (83.1 percent) are high school graduates or higher.

Holmes County has a total population of 19,651 people, with no increase since 2020, based on the 2022 U.S. Census. Approximately 88 percent of the county population are white, 7 percent are black or African American, with the remaining population including small percentages of American Indian, Asian, and Pacific Islander. About 3 percent identify as Hispanic or Latino origin. Median household income reported in 2022 was $46,063 and residents in poverty accounted for 19.6 percent of the county's population. Most of the county residents (82.7 percent) are high school graduates or higher.

Bay County has a total population of 185,134 people, an increase of 5.7 percent since 2020, based on the 2022 U.S. Census. Approximately 81 percent of the county population are white, 12 percent are black or African American, with the remaining population including small percentages of American Indian, Asian, and Pacific Islander. About 8 percent identify as Hispanic or Latino origin. Median household income reported in 2022 was $65,999 and residents in poverty accounted for 11.9 percent of the county's population. Most of the county residents (90.4 percent) are high school graduates or higher.

The demographic characteristics vary slightly among these counties. Bay County is near state averages in percent of the population with a high school education, percent in the labor force, and median income. In Okaloosa, Walton, and Bay Counties, the percent of white individuals are slightly higher than state averages. Walton County has a lower percentage of the population with a high school education, a lower percentage of the population in the labor force, and a lower median income when compared with state averages.

Population growth is a consideration in water quality management in this region. Choctawhatchee and St. Andrew Bay watershed experienced a 40 and 34 percent, respectively, increase in population from 1990 to 2010. Their populations are projected to increase another 23 and 20 percent respectively by 2030. This trend occurs Washington County as well. The primary population centers within the watershed are concentrated along the coastlines surrounding Choctawhatchee and St. Andrew Bays. These increases in population size may contribute to strain on aging storm- and wastewater infrastructure.

A.3.3.2 WQ7, Choctawhatchee Bay Unpaved Roads Initiative (preferred)

The goal of this project is to reduce sediment loading at unpaved road crossings in the Choctawhatchee Bay watershed through roadway and drainage improvements. Project activities most relevant to the assessment of environmental consequences include:

- **Paving roadways.** At each of the 12 sites (Figure A-9), unpaved roads would be graded, filled with road base, and paved. Each site would have two 10-foot paved travel lanes with 2-foot paved shoulders. Where the paved roadway is adjacent to riprap, the roads would have a 10-foot paved shoulder.
- **Constructing sodded and concrete ditches.** Adjacent to the paved roadways, sodded and/or concrete ditches would be constructed to convey water parallel to the roadway. These ditches would outfall at the stream crossings.
- **Replacing or placing culverts.** Culverts under existing unpaved roadways would be replaced to convey stream flow under the newly paved roadway. Additionally, smaller culverts would be placed along the sodded and/or concrete ditches where these ditches cross residential driveways to convey water under the driveways.
- **Installing riprap.** Alabama Class II (stones ranging from 10 to 200 pounds) riprap would be installed upstream and downstream of the stream culverts and at ditch outfalls at stream crossings. Twenty-four inches of riprap would be placed over D2 filter fabric to stabilize the water conveyance structures.

Table A-7 summarizes site-specific restoration actions.

Table A-7 Summary of Unpaved Road Enhancements at the 12 Sites in Holmes and Washington Counties

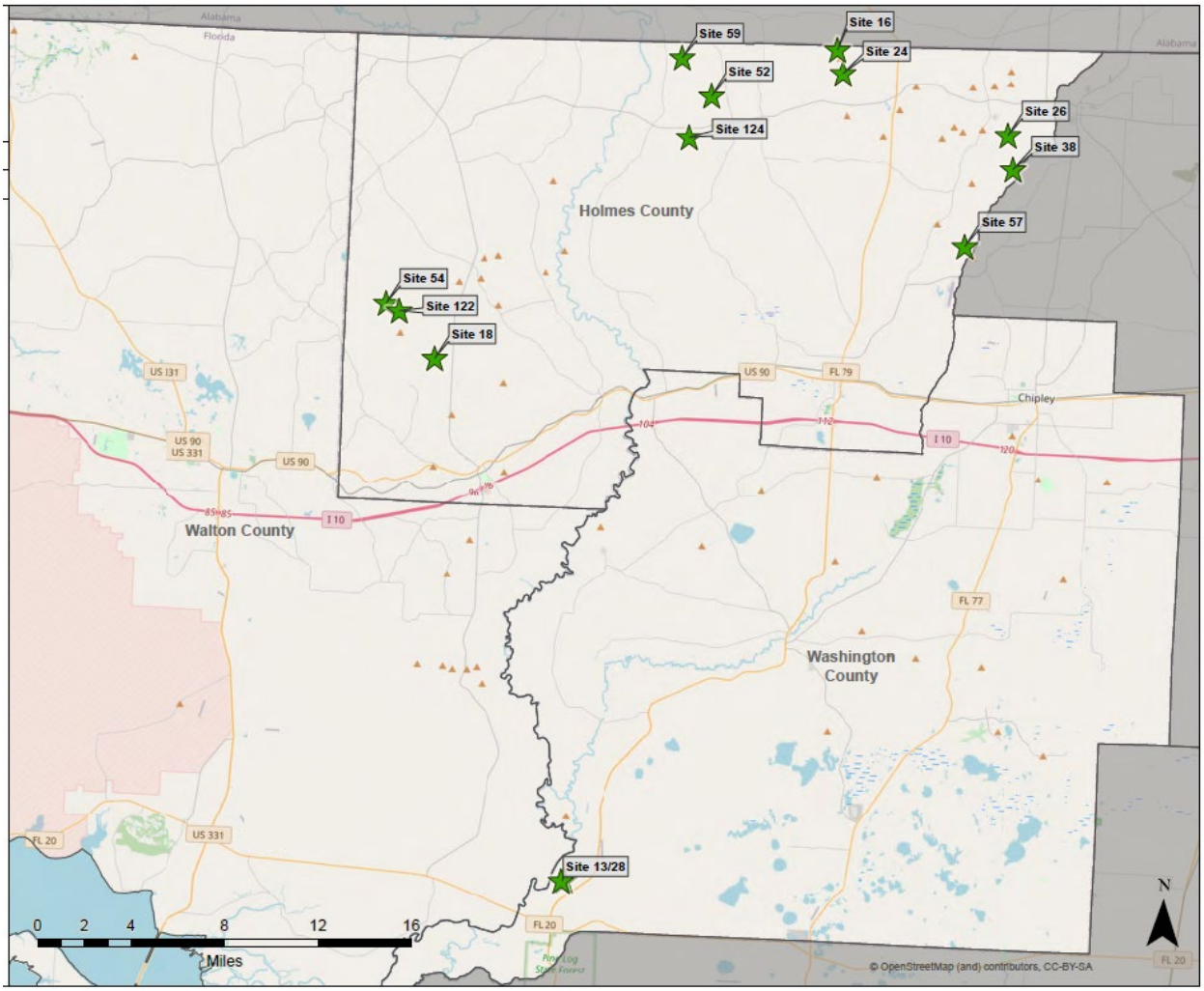
Road Site (County)	Summary of Enhancements
Coates Road – Site 16 (Holmes County)	• Approximately 3,000 linear feet of roadway would be paved. Approximately 6,500 cubic yards of existing unpaved roadway would be excavated to grade the road. Approximately 9,000 square yards of road base would be placed. Approximately 730 tons of asphalt would be placed to create a 1.5-inch-thick road. • Approximately 1,600 square yards of concrete ditches and 7,000 square yards of sodded ditches would be constructed along the roadway. • Approximately 130 linear feet of 36-inch culverts would be replaced under the roadway. An additional 115 linear feet of 18-inch culverts and approximately 50 linear feet of 24-inch culverts would be installed along the new ditches where they intersect with driveways. • Approximately 350 square yards of Alabama Class II riprap would be installed upstream and downstream of the stream culvert.
Line Road – Site 18 (Holmes County)	• Approximately 700 linear feet of roadway would be paved. Approximately 300 cubic yards of existing unpaved roadway would be excavated to grade the road. Approximately 1,450 cubic yards of fill would be placed to contour the roadbed. Approximately 1,700 square yards of road base would be placed. Approximately 140 tons of asphalt would be placed to create a 1.5-inch-thick road. • Approximately 350 square yards of concrete ditches and 1,300 square yards of sodded ditches would be constructed along the roadway. • Approximately 25 linear feet of 18-inch culverts would be installed along the new ditches where they intersect with driveways. • Approximately 15 square yards of Alabama Class II riprap would be installed at the ditch outfall.
Coates Road – Site 24 (Holmes County)	• Approximately 2,700 linear feet of roadway would be paved. Approximately 1,500 cubic yards of existing unpaved roadway would be excavated to grade the road. Approximately 2,100 cubic yards of fill would be placed to contour the roadbed. Approximately 8,900 square yards of road base would be placed. Approximately 750 tons of asphalt would be placed to create a 1.5-inch-thick road. Approximately 350 linear feet of guardrail would be installed along the road edge. • Approximately 5,000 square yards of sodded ditches would be constructed along the roadway. • Approximately 25 linear feet of 18-inch culverts would be installed along the new ditches where they intersect with driveways. • Approximately 350 square yards of Alabama Class II riprap would be installed at the ditch outfall.
Golden Road – Site 26 (Holmes County)	• Approximately 2,000 linear feet of roadway would be paved. Approximately 6,800 cubic yards of existing unpaved roadway would be excavated to grade the road. Approximately 3,700 cubic yards of this excavated dirt would be used to contour the roadbed. Approximately 9,500 square yards of road base would be placed. Approximately 790 tons of asphalt would be placed to create a 1.5-inch-thick road.

Road Site (County)	Summary of Enhancements
	• Approximately 4,200 square yards of concrete ditches and 4,100 square yards of sodded ditches would be constructed along the roadway. • Approximately 70 linear feet of 48-inch culverts would be replaced under the roadway. An additional 75 linear feet of 24-inch culverts would be installed along the new ditches where they intersect with driveways. • Approximately 360 square yards of Alabama Class II riprap would be installed at the ditch outfall.
Woodham/Chestnut/Spruce Road – Site 38 (Holmes County)	• Approximately 2,400 linear feet of roadway would be paved. Approximately 2,700 cubic yards of existing unpaved roadway would be excavated to grade the road. Approximately 2,200 cubic yards of this excavated dirt would be used to contour the roadbed. Approximately 4,600 square yards of road base would be placed. Approximately 400 tons of asphalt would be placed to create a 1.5-inch-thick road. • Approximately 900 square yards of concrete ditches and 11,200 square yards of sodded ditches would be constructed along the roadway. • Approximately 60 linear feet of 30-inch culverts and 80 linear feet of 24-inch culverts would be replaced under the roadway to convey the stream. An additional 90 linear feet of 18-inch culverts would be installed along the new ditches where they intersect with driveways. • Approximately 750 square yards of Alabama Class II riprap would be installed at either end of the culverts.
Esker H. Martin Road – Site 52 (Holmes County)	• Approximately 3,000 linear feet of roadway would be paved. Approximately 2,800 cubic yards of existing unpaved roadway would be excavated to grade the road. An additional 600 cubic yards of fill would be used to contour the roadbed. Approximately 10,300 square yards of road base would be placed. Approximately 850 tons of asphalt would be placed to create a 1.5-inch-thick road. • Approximately 2,800 square yards of concrete ditches and 4,000 square yards of sodded ditches would be constructed along the roadway. • Approximately 120 linear feet of 48-inch culverts would be replaced under the roadway to convey the stream. An additional 50 linear feet of 18-inch culverts would be installed along the new ditches where they intersect with driveways. • Approximately 750 square yards of Alabama Class II riprap would be installed at either end of the culverts.
John Paul Road – Site 54 (Holmes County)	• Approximately 2,000 linear feet of roadway would be paved. Approximately 5,100 cubic yards of existing unpaved roadway would be excavated to grade the road. Approximately 1,000 cubic yards of this excavated dirt would be used to contour the roadbed. Approximately 8,100 square yards of road base would be placed. Approximately 670 tons of asphalt would be placed to create a 1.5-inch-thick road. • Approximately 7,300 square yards of sodded ditches would be constructed along the roadway. • Approximately 180 linear feet of 48-inch culverts would be replaced under the roadway to convey the stream. • Approximately 400 square yards of Alabama Class II riprap would be installed at either end of the culverts.

Road Site (County)	Summary of Enhancements
Coleman Worley Lane – Site 57 (Holmes County)	• Approximately 1,300 linear feet of roadway would be paved. Approximately 2,000 cubic yards of existing unpaved roadway would be excavated to grade the road. Approximately 500 cubic yards of this excavated dirt would be used to contour the roadbed. Approximately 4,500 square yards of road base would be placed. Approximately 375 tons of asphalt would be placed to create a 1.5-inch-thick road. • Approximately 1,200 square yards of concrete ditches and 2,400 square yards of sodded ditches would be constructed along the roadway. • Approximately 56 linear feet of 36-inch culverts would be replaced under the roadway to convey the stream. An additional 25 linear feet of 18-inch culverts would be installed along the new ditches where they intersect with driveways. • Approximately 330 square yards of Alabama Class II riprap would be installed at either end of the culverts.
Love Road – Site 59 (Holmes County)	• Approximately 2,500 linear feet of roadway would be paved. Approximately 2,400 cubic yards of existing unpaved roadway would be excavated to grade the road. Approximately 2,100 cubic yards of this excavated dirt would be used to contour the roadbed. Approximately 8,300 square yards of road base would be placed. Approximately 690 tons of asphalt would be placed to create a 1.5-inch-thick road. Approximately 350 linear feet of guardrail would be installed along the road edge. • Approximately 3,000 square yards of concrete ditches and 4,300 square yards of sodded ditches would be constructed along the roadway. • Approximately 48 linear feet of 30-inch culverts would be replaced under the roadway to convey the stream. An additional 80 linear feet of 18-inch culverts would be installed along the new ditches where they intersect with driveways. • Approximately 210 square yards of Alabama Class II riprap would be installed at either end of the culverts.
Pleasant Ridge Road – Site 122 (Holmes County)	• Approximately 2,800 linear feet of roadway would be paved. Approximately 3,000 cubic yards of existing unpaved roadway would be excavated to grade the road. Approximately 1,000 cubic yards of this excavated dirt would be used to contour the roadbed. Approximately 7,500 square yards of road base would be placed. Approximately 650 tons of asphalt would be placed to create a 1.5-inch-thick road. • Approximately 2,000 square yards of concrete ditches and 3,600 square yards of sodded ditches would be constructed along the roadway. • Approximately 90 linear feet of 24-inch culverts would be replaced under the roadway to convey the stream. An additional 60 linear feet of 18-inch culverts would be installed along the new ditches where they intersect with driveways. • Approximately 470 square yards of Alabama Class II riprap would be installed at either end of the culverts.
Route 65 – Site 124 (Holmes County)	• Approximately 3,000 linear feet of roadway would be paved. Approximately 1,800 cubic yards of existing unpaved roadway would be excavated to grade the road. An additional 80 cubic yards of fill would be used to contour the roadbed. Approximately 8,400 square yards of road base would be placed. Approximately 690 tons of asphalt would be placed to create a 1.5-inch-thick road. Approximately 100 linear feet of guardrail would be installed along the road edge.

Road Site (County)	Summary of Enhancements
	• Approximately 2,800 square yards of concrete ditches and 2,800 square yards of sodded ditches would be constructed along the roadway. • Approximately 30 linear feet of 24-inch culverts would be replaced under the roadway to convey the stream. • Approximately 710 square yards of Alabama Class II riprap would be installed at either end of the culverts.
Bell Community Road – Sites 13 and 28 (Washington County)	• Approximately 1,200 linear feet of roadway would be paved. Approximately 4,300 cubic yards of existing unpaved roadway would be excavated to grade the road. Approximately 800 cubic yards of this excavated dirt would be used to contour the roadbed. Approximately 5,100 square yards of road base would be placed. Approximately 420 tons of asphalt would be placed to create a 1.5-inch-thick road. • Approximately 1,300 square yards of concrete ditches and 3,300 square yards of sodded ditches would be constructed along the roadway. • Approximately 110 linear feet of 48-inch culverts and 60 linear feet of 30-inch culverts would be replaced under the roadway to convey the stream. • Approximately 700 square yards of Alabama Class II riprap would be installed at either end of the culverts.

Figure A-9 Twelve Unpaved Road Stream Crossings in Holmes and Washington Counties



A.3.3.2.1 Affected Environment

The Choctawhatchee River headwaters lie in southeast Alabama. The Choctawhatchee River flows south from its headwaters through Holmes, Walton, and Washington Counties in Florida before discharging into Choctawhatchee Bay. This project would address erosion from unpaved roads at tributary creeks and streams within the watershed, minimizing sediment loading into Choctawhatchee Bay.

A.3.3.2.1.1 Physical Resources

Most of the project sites are located in Holmes County, within the far upstream reaches of the Florida portion of the Choctawhatchee Bay watershed. The Washington County project site is the most-downstream, approximately 25 river-miles upstream of the confluence of the Choctawhatchee River with the Bay. Project sites are located at highly degraded tributary creeks and streams, where erosion has resulted in high levels of sedimentation and pollution. Numerous waterbodies within the Choctawhatchee River drainage are listed as impaired for metals, bacteria, and nutrients (FDEP, 2023a). Soil types across the project locations are primarily loamy sands on low-grade slopes, including Dothan and Fuquay loamy sands (USDA, 2023; FDEP, 2021). Table A-8 summarizes the physical resources at the 12 project sites, as outlined in the project *Pre-Construction Condition Report* (FDEP, 2021).

Table A-8 A Summary of Physical Resources at the 12 Project Sites

Road Site (County)	Physical Resources Summary
Coates Road – Site 16 (Holmes County)	• Coates Road is in northern Holmes County near the Florida-Georgia state line. The project location falls within the Ten Mile Creek watershed, which drains into Wrights Creek, and subsequently into the Choctawhatchee River. • Soils in this location are primarily Fuquay loamy sand (1 to 8 percent slopes), Dothan loamy sand (2 to 5 percent slopes), and Stilson loamy sand (1 to 3 percent slopes). • Wrights Creek is listed as an impaired waterbody for metals and bacteria.
Line Road – Site 18 (Holmes County)	• Line Road is in southwest Holmes County. Line Road intersects North Highway 81. The project area is adjacent to Goose Branch of Blue Creek, which drains into the Choctawhatchee River. • Soils in this location are primarily Lucy loamy, Fuquay, and Troup sands (1 to 8 percent slopes).
Coates Road – Site 24 (Holmes County)	• This project location is southeast of Site 16, which also falls on Coates Road. • Soils in this location are primarily Fuquay loamy sand (1 to 8 percent slopes), Dothan loamy sand (2 to 5 percent slopes), and Stilson loamy sand (1 to 3 percent slopes).
Golden Road – Site 26 (Holmes County)	• This project location falls within northeast Holmes County. Golden Road falls partially within the Wrights Creek watershed and the upper Holmes Creek watershed, which drain into the Choctawhatchee River. • Soils in this location are primarily Dothan loamy sand (2 to 5 percent slopes) and Ardilla loamy sand (0 to 2 percent slopes). • Wrights Creek is listed as an impaired waterbody for metals and bacteria.
Woodham/Chestnut/Spruce Road – Site 38 (Holmes County)	• This project location falls within northeast Holmes County, just south of Site 26 on Golden Road. Woodham, Chestnut, and Spruce Roads fall within the Holmes Creek watershed, which drains into the Choctawhatchee River. • Soils in this location are primarily Dothan loamy sand (5 to 8 percent slopes), Ardilla loamy sand (0 to 2 percent slopes), and Bibb association.
Esker H. Martin Road – Site 52 (Holmes County)	• This project location is in north-central Holmes County. Esker H. Martin Road intersects the Bee Branch of East Pittman Creek, which flows into the Choctawhatchee River. • Soils in this location are primarily Dothan loamy sands (2 to 8 percent slopes) and Orangeburg loamy sands (5 to 8 percent slopes).
John Paul Road – Site 54 (Holmes County)	• This project location is in west Holmes County. John Paul Road is adjacent to Otter Creek, which flows into Blue Creek and eventually into the Choctawhatchee River. • Soils in this location are primarily Pantego complex and Fuquay loamy and Bonifay sands (1 to 8 percent slopes).
Coleman Worley Lane – Site 57 (Holmes County)	• The project location is in east Holmes County, located southwest of site 38. Coleman Worley Lane is located within the Holmes Creek watershed, which drains into the Choctawhatchee River.

Road Site (County)	Physical Resources Summary
	• Soils in this location are primarily Dothan loamy sand (2 to 5 percent slopes) and Fuquay loamy sand (1 to 8 percent slopes).
Love Road – Site 59 (Holmes County)	• The project location is in north Holmes County, located northwest of Site 52. Love Road is located just north of East Pittman Creek, which flows into the Choctawhatchee River. • Soils in this location are primarily Dothan loamy sand (2 to 8 percent slopes).
Pleasant Ridge Road – Site 122 (Holmes County)	• Pleasant Ridge Road is near Site 54 on John Paul Road. This project location is adjacent to Otter Creek, which flows into Blue Creek and eventually into the Choctawhatchee River. • Soils in this location are primarily Fuquay loamy sand (1 to 8 percent slopes) and Dothan complexes.
Route 65 – Site 124 (Holmes County)	• Route 65 is located in north Holmes County, just south of Sites 59 and 52. The project location falls within the Sikes Creek watershed, which flows into the Choctawhatchee River. • Soils in this project location are primarily Dothan loamy sand (2 to 8 percent slopes) with some Pansey loamy sand and Ardilla loamy sand (0 to 2 percent slopes). • Sikes Creek is designated as an impaired waterbody for dissolved oxygen.
Bell Community Road – Sites 13 and 28 (Washington County)	• Bell Community Road is located in southwest Washington County. The project area is located near the mainstem Choctawhatchee River, which drains into Choctawhatchee Bay. • Soils in this project location are primarily Lakeland sand (0 to 5 percent slopes) with some Pickney and Pamlico soils and Blanton-Bonneau complex (0 to 5 percent slopes). • The mainstem Choctawhatchee River in the reach near Bell Community Road is designated as an impaired waterbody for metals.

A.3.3.2.1.2 Biological Resources

Primary habitat types include developed lands (pasture) and natural habitats including evergreen forest, shrub, and grassland habitats. Plant species in evergreen forest habitats include slash pine, sabal palm (*Sabal palmetto*), and Geiger trees. Timber harvesting from pine plantations occurs within Holmes County. Scrub habitats include saw palmetto, sand live oak (*Quercus geminata*), Chapman's oak (*Quercus chapmanii*), and myrtle oak (*Quercus myrtifolia*) vegetation. Grassland habitats are characterized by saw palmetto and fetterbush (*Lyonia lucida*) vegetation. Prescribed burns are needed to maintain this habitat type. Wildlife inhabiting these habitats include mammals, birds (e.g., Kirtland's warbler [*Setophaga kirtlandii*]), and reptiles (e.g., Florida pine snake [*Pituophis melanoleucus*]).

Wetlands in the project areas include woody and herbaceous wetlands. Vegetation in woody wetlands includes bald cypress, black gum, water tupelo, red maple, and swamp ash (*Fraxinus nigra*). Wildlife inhabiting wetlands includes gray bats (*Myotis grisescens*), wood stork, and the little blue heron, among others. Vegetation in herbaceous emergent wetlands includes pickerel weed (*Pontederia cordata*), sawgrass (*Cladium jamaicense*), and maidencane. Wildlife includes wading birds such as the little blue heron and tricolored heron (*Egretta tricolor*).

Table A-9 summarizes the biological resources at the 12 project sites, as outlined in the project *Pre-Construction Condition Report* (FDEP, 2021). Based on information from the U.S. Fish and Wildlife

Service's (USFWS) Information for Planning and Consultation site (USFWS, 2023), Endangered Species Act (ESA) -listed species are found in Washington and Holmes Counties but known distributions do not occur near the project sites (Table A-10). Unpaved-road stream crossings have been identified as threats to ESA-listed freshwater mussels from increased sedimentation in the Choctawhatchee Bay watershed.

Table A-9 A Summary of Biological Resources at the 12 Project Sites

Road Site (County)	Biological Resources Summary
Coates Road – Site 16 (Holmes County)	• Habitat types within the project area primarily include developed land, evergreen forests, cultivated crops, and pasture. • Freshwater woody wetlands are the primary wetland types in the project area, with some scattered emergent herbaceous wetlands.
Line Road – Site 18 (Holmes County)	• Habitat types within the project area primarily include developed open space, developed land ranging from low to medium intensities and evergreen forests. Shrub, cultivated crop, and pasture habitats are scattered throughout. • Freshwater woody wetlands are the primary wetland types in the project area.
Coates Road – Site 24 (Holmes County)	• Habitat types within the project area include developed areas ranging from low to medium intensities and shrub and evergreen forest habitats. Pasture habitats are scattered throughout. • Freshwater woody wetlands are scattered throughout the project area.
Golden Road – Site 26 (Holmes County)	• Habitat types within the project area include developed areas ranging from low to high intensities, in addition to cultivated crops, shrubs, and evergreen forest habitats. • Freshwater woody wetlands and emergent herbaceous wetlands are scattered throughout the project area.
Woodham/Chestnut/Spruce Road – Site 38 (Holmes County)	• Habitat types within the project area include cultivated crops, evergreen forests, mixed forests, and grasslands. Developed areas in the project area are of a low intensity. • Freshwater woody wetlands are scattered throughout the project area.
Esker H. Martin Road – Site 52 (Holmes County)	• Habitat types within the project area include cultivated crops, pasture, shrub, evergreen forest, and mixed forest habitats. Developed areas are primarily open space. • Esker H. Martin Road crosses through a designated freshwater woody wetland habitat. Freshwater emergent herbaceous wetlands are scattered throughout.
John Paul Road – Site 54 (Holmes County)	• Habitat types within the project area include evergreen forest, shrub, and grassland habitats. Developed areas range from low to medium intensity. • The project area is located within a designated freshwater woody wetland habitat.
Coleman Worley Lane – Site 57 (Holmes County)	• Habitat types within the project area include shrub, evergreen forest, mixed forest, and cultivated crop habitats. • Freshwater woody wetlands are scattered throughout the project area.

Road Site (County)	Biological Resources Summary
Love Road – Site 59 (Holmes County)	• The project area falls between a designated evergreen forest and a shrub/scrub habitat. Pasture and grassland habitats are also present within the project area. Developed areas include open space. • Some freshwater woody wetlands are present within the project area.
Pleasant Ridge Road – Site 122 (Holmes County)	• The project location falls within a designated evergreen forest habitat, with scattered shrub and scrub and cultivated crop habitats throughout. Developed areas range from low to medium intensity with some open space. • Freshwater woody wetlands are present throughout the project area.
Route 65 – Site 124 (Holmes County)	• Habitat types within this project location primarily include evergreen forest, mixed forest, deciduous forest, shrub, and pasture habitats. Developed areas range from low to medium intensity, although most developed areas are open space. • Freshwater woody wetlands are present throughout the project area, with some freshwater emergent herbaceous wetlands scattered throughout.
Bell Community Road – Sites 13 and 28 (Washington County)	• Habitat types within this project location primarily include evergreen and shrub habitats, with pasture, deciduous forest, and grassland habitats scattered throughout. Developed areas range from low to medium intensity, although the majority of developed areas are open space. • Freshwater woody wetlands and emergent herbaceous wetlands are both present within the project area.

Table A-10 Federally-Listed Species Potentially Occurring in the *WQ7, Choctawhatchee Bay Unpaved Roads Initiative (preferred)* Project Area

Common Name	Scientific Name	Habitat	Status	Likelihood
Alligator snapping turtle	*Macrochelys temminckii*	Riverine: deep, flooded channels within bald cypress and tupelo forests.	T	Unlikely
Choctaw bean	*Villosa choctawensis*	Riverine: creeks, streams, and rivers with silty sand or sandy clay substrates.	E, CH	Unlikely
Eastern indigo snake	*Drymarchon couperi*	Terrestrial: mesic flatwoods, upland pine forest, sandhills scrub, scrubby flatwoods, rockland hammock, ruderal.	T	Unlikely
Fuzzy pigtoe	*Pleurobema strodaenum*	Riverine: stream channels with stable substrates, natural flow regimes, and intact riparian areas.	T, CH	Unlikely
Gentian pinkroot	*Spigelia gentianoides*	Terrestrial: well-drained upland pinelands in limestone outcrops and calcareous soils.	E	Unlikely
Gulf sturgeon	*Acipenser oxyrinchus*	Estuarine: various; Marine: various habitats; Riverine: alluvial and blackwater streams.	T, CH	Unlikely
Papery whitlow-wort	*Paronychia chartacea*	Terrestrial: karst ponds or sandhill upland lakes.	T	Unlikely
Reticulated flatwoods salamander	*Ambystoma bishopi*	Palustrine: wet flatwoods, dome swamp, basin swamp; Terrestrial: mesic flatwoods (reproduces in ephemeral wetlands within this community).	T, CH	Unlikely
Southern kidneyshell	*Ptychobranchus jonesi*	Riverine: medium creeks to small rivers characterized by firm sand substrate.	E, CH	Unlikely

Common Name	Scientific Name	Habitat	Status	Likelihood
Southern sandshell	*Hamiota australis*	Riverine: small creeks and rivers characterized by sand or sand and fine gravel substrate.	T, CH	Unlikely
Tapered pigtoe	*Fusconaia burkei*	Riverine: stream channels with stable substrates, natural flow regimes, and intact riparian areas.	T, CH	Unlikely
Note: Species determined to be "unlikely" to be found in the action area are not addressed further in the environmental analysis. CH=Critical Habitat, E=Endangered, T=Threatened, SAT=Similarity of Appearance (Threatened), SSC=Species of Special Concern				

A.3.3.2.1.3 Socioeconomic Resources

Appendix A.3.3.1.3 summarizes the demographics of Holmes and Washington Counties. The project is located within five communities within Holmes and Washington Counties: Bonifay, Ponce de Leon, Graceville, Ebro, and Westville. This project would address unpaved road-stream crossings on county roads. These roads are located in rural areas, with limited residential buildings and surrounding pastures.

A.3.3.2.2 Environmental Consequences

Table A-1 directs readers to the location of detailed analyses of this project's impacts on physical, biological, and socioeconomic resources within this RP3/EA.

A.3.3.2.2.1 Physical Resources

For all construction activities described below, equipment, vehicle, and foot traffic associated with construction, transportation, or storage of materials may loosen or compact soils. In the short-term, the site and downstream water quality may experience minor adverse impacts due to an increase in erosion and sediment runoff. To the extent possible, construction equipment and materials would be staged in previously disturbed areas. Further, BMPs such as silt fences, compost filter socks at existing ditches, and turbidity barriers, would be implemented to reduce erosion into wetlands and waterways.

Paving roadways

Roadway paving for this project would require the use of heavy equipment for excavation, fill, grading, paving, and transportation of asphalt, as well as dump trucks for transporting earth and pick-up trucks for construction teams. Finished roadways would be approximately 1.5 inches thick and have two 10-foot paved travel lanes. Shoulders would generally be 2 feet wide and would expand to 10 feet wide where adjacent to riprap. In total, this project would involve excavating 39,200 cubic yards and filling 15,530 cubic yards of sediment. A total of 85,900 square yards of road base would be laid and 26,600 linear feet of roadway would be paved with 7,155 tons of asphalt. In total, 800 linear feet of guardrail would be placed along these roadways.

Short-term, moderate adverse impacts to physical resources are anticipated as a result of soil disturbance, removal, and compaction during excavation, grading, and paving of the roadway. However, this disturbance would predominantly occur in previously disturbed areas along the existing unpaved roadways. For sites that have a net removal of sediment, the FL TIG does not consider the sediment removal to have a long-term, adverse impact to geology and substrates, due to existing erosion issues and water quality and biological habitat impairment from sedimentation. Construction activities could also result in short-term, minor adverse impacts to hydrology and water quality due to increased erosion and sediment runoff during implementation, but as noted above, BMPs would be implemented to mitigate these impacts to the extent possible.

Paving the roadways, in combination with the draining improvements, such as adjusting the elevation profile of the road would reduce the velocity of stormwater flows and reduce erosion and sediment transport, leading to long-term benefits in water quality for the 12 affected sites and the watershed.

Constructing sodded and concrete ditches and replacing or placing culverts
The installation of sodded and/or concrete ditches and culverts to convey water parallel to and underneath the roadways/driveways would require the use of equipment for digging, excavation, contouring, and laying of concrete or sod or culvert infrastructure. Trucks would also be required to transport materials and staff to the site. Across all 12 sites, this project would involve creation of up to 20,150 square yards of concrete ditches, 56,300 square yards of sodded ditches, 480 linear feet of 48-inch culverts, 186 linear feet of 36-inch culverts, 168 linear feet of 30-inch culverts, 325 linear feet of 24-inch culverts, and 470 linear feet of 18-inch culverts. These construction and installation activities are anticipated to result in short-term, moderate adverse impacts to geology and substrates and water quality. However, disturbance would primarily occur alongside previously disturbed existing roadways. Also, as noted above, BMPs would minimize erosion and sediment transport during construction.

Long-term benefits to sediment stability, hydrology, and water quality are anticipated from the construction of sodded and concrete ditches and culverts. Providing stabilized, designated channels for stormwater flow alongside paved roads, under existing paved roadways, and under driveways would decrease erosion and reduce sediment loading in the local water bodies and greater watershed area.

Installing riprap
Riprap installment would require the use of equipment for excavation, contouring, and large rock placement, as well as trucks for transport of riprap materials to the site. Across all 12 sites, approximately 5,395 square yards of Alabama Class II riprap would be installed, containing stones ranging from 10 to 200 pounds placed on top of D2 filter fabric to stabilize substrate. Riprap would be installed in approximately 24-inch segments placed upstream and downstream of culverts and ditch outfalls to reduce sediment flow. Short-term, minor adverse impacts to geology and substrates may result from installation of riprap; however, disturbance would primarily occur in previously disturbed area, specifically, in the above-described ditches adjacent to culverts.

Long-term benefits to sediment stability, hydrology, and water quality are anticipated from riprap installation. Riprap would serve to stabilize sediments along culverts, trap sediments and other pollutants in the water flows, and thereby decrease erosion and improve on-site and regional water quality.

Summary
In summary, this project is anticipated to result in short-term, minor-to-moderate adverse impacts and long-term benefits to physical resources.

A.3.3.2.2.2 Biological Resources

Project construction activities are anticipated to adversely impact wetland habitats, including freshwater forested wetlands, riverine habitats, and surface waters and ponds. Short-term, minor adverse impacts would occur during construction from vegetation clearing, riprap placement, and creating sodded/paved drainage ditches. The dredging and filling of Class III waters for this project has been permitted by the FDEP and USACE under multiple CWA Section 404 general permit authorizations. Impacted habitats and areas vary by proposed site location and include approximately 2 acres of surface waters and wetlands at Sites 16, 24, 26, 38, 52, 54, 59, 122, and 124 in Holmes County and approximately 0.5 acres of riverine, surface water, and pond habitats at Sites 13 and 28 in Washington County. No adverse impacts are anticipated to wetlands or other surface water habitats as a result of construction activities proposed for Sites 13, 18, and 57. The project is anticipated to result in a net loss of under 2 acres of freshwater forested wetlands and approximately 0.5 acres of surface water habitat, which would result in long-term, minor adverse impacts to habitats.

Short-term, minor adverse impacts to wildlife and protected species may result from implementation of this project. Excavation, grading, and installation of water management infrastructure may cause short-

term, minor adverse impacts to wildlife that rest, forage, or reproduce near the project sites. Mobile species may avoid the area during construction, and vegetation or aquatic species in nearby waters and wetlands may be adversely affected by the water quality impacts of ground disturbance, such as sediment runoff causing increased turbidity. BMPs would be implemented to minimize this runoff and to survey for and minimize harm to any protected species in the project area. While the project sites may be surrounded by intact habitat, short-term impacts to habitat and wildlife are anticipated to be minor due to the already-disturbed nature of the roadways where project implementation activities would occur and the degraded quality of habitat. While protected species are unlikely to be present in the action area, increased human activity during implementation activities could result in short-term, minor adverse impacts from disturbance.

In the long-term, implementation of this project would improve the quality of the remaining wetlands and surface water habitats by stabilizing dirt roads that are currently a source of erosion and sediment runoff. Improving water quality flowing into these habitats and reducing sedimentation and erosion would benefit wetland vegetation, water column invertebrates (e.g., ESA-listed freshwater mussels), and other aquatic organisms by improving habitat quality.

Summary
In summary, this project is anticipated to result in short- and long-term, minor adverse impacts and long-term benefits to biological resources.

A.3.3.2.2.3 Socioeconomic Resources

Adverse impacts to local economic activity or businesses would be negligible due to the isolated nature of unpaved roads and primarily residential use of the project areas. Implementation of this project would provide short-term economic benefits to the project area through the creation of construction jobs. Long-term socioeconomic benefits may include improved regional water quality, reducing intensity of treatments or closures, and improving stability of the roads, reducing the need for repairs or risk of costly future washouts in places where streamflow is currently unmanaged. In summary, this project is anticipated to result in short- and long-term benefits to socioeconomic resources.

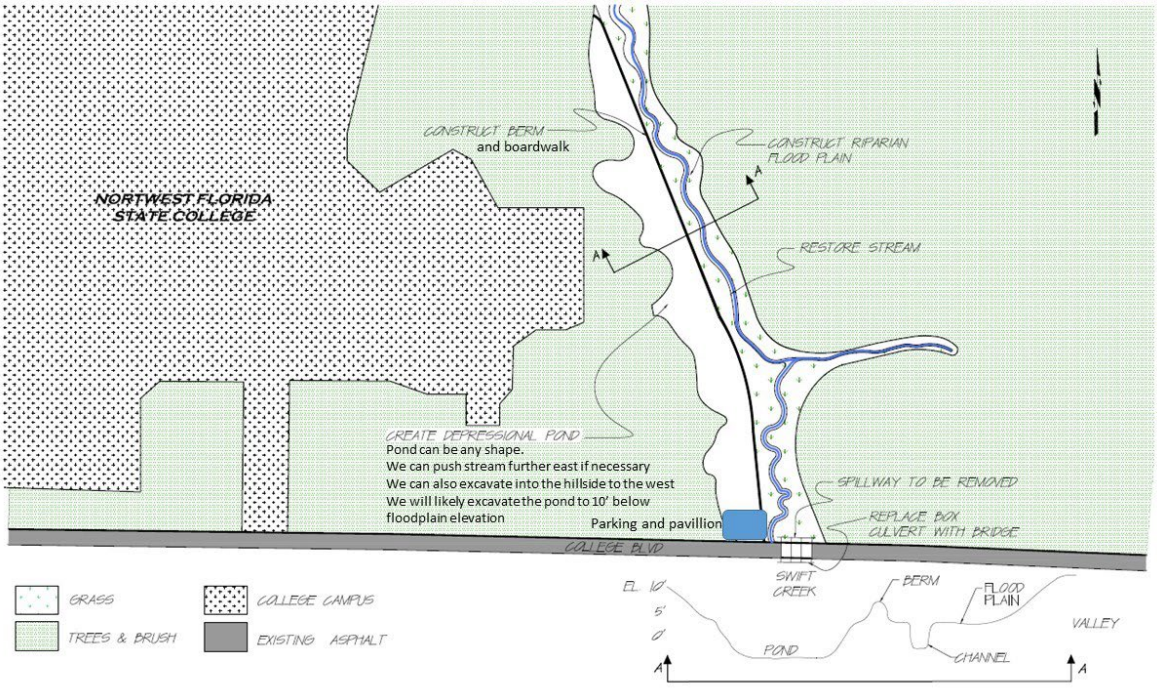
A.3.3.3 WQ8, Swift Creek Hydrologic Restoration

The goal of this project is to improve water quality conditions in Swift Creek through restoration of natural hydrology. Project activities most relevant to the assessment of environmental consequences include:

- **Removal of an existing concrete spillway and box culvert.** The current degraded concrete spillway and box culvert at Roberts Pond would be removed and replaced with the bridge described below. The existing pond would be dewatered through limited releases of the water downstream and pumping and off-site disposal.
- **Construct a bridge over Swift Creek.** A bridge of sufficient width to span Roberts Pond and Swift Creek, approximately 500 feet long by 100 feet wide, would be constructed to replace the removed box culvert and to support traffic on College Boulevard.
- **Construct a berm.** A berm approximately 1,200 feet long and between 5 and 10 feet high would be constructed through the existing lakebed to create a barrier between the stream restoration area and the smaller recreational pond (Figure A-10). The berm would be created using sediments excavated from the stream channel (see below).

- **Excavate and construct an off-channel recreational pond.** An approximately 5-acre pond would be excavated to the west of the berm. The pond bed would be excavated to approximately 10 feet below the floodplain.
- **Rebuild the Swift Creek stream channel.** Natural channel design would be used to rebuild approximately 2,500 linear feet of Swift Creek in the former Roberts Pond bed. The existing pond bed would be excavated to rebuild a stream channel and riparian flood plain approximately 10 feet above the channel. Excavated pond areas would be revegetated with native vegetation.
- **Construct recreational enhancements.** [26] An 0.5-acre paved parking area would be constructed at the southern end of recreational pond along College Blvd. A picnic pavilion would be constructed in the lot footprint. A recreational boardwalk would be constructed along the berm, approximately 1,200 feet long.

Figure A-10 Conceptual Drawing of the Swift Creek Stream Restoration



A.3.3.3.1 Affected Environment

Swift Creek headwaters lie in southeast Okaloosa County, within Eglin Air Force Base. The Fox Head Branch flows south into Roberts Pond, after which Swift Creek continues to flow south into Rocky Bayou, which empties into Choctawhatchee Bay. Project activities would occur at Roberts Pond, a recreational impoundment adjacent to Northwest Florida State College and East College Blvd. The existing impoundment would be reduced in size and partially re-constructed into a more natural stream channel.

[26] While the construction of recreational elements would occur using non-NRDA funds, they are analyzed herein as a connected action under NEPA.

A.3.3.3.1.1 Physical Resources

Upland soils at Roberts Pond are primarily Lakeland soils (0 to 30 percent slopes) (USDA, 2023). Sediments and soils were previously disturbed through the development of the recreational impoundment in 1966.

The impoundment infrastructure contains a box culvert and spillway that are currently showing signs of degradation. Additionally, the water regulatory structure is non-operational, so floodwaters flowing down Swift Creek are unmitigated and result in high erosion and sedimentation. These structures have degraded the hydrology of Swift Creek. The Fox Head Tributary of Swift Creek flows south into Roberts Pond, where Swift Creek continues to flow south under East College Boulevard before meeting with other creek branches including the Shaw Still Branch. Swift Creek flows into Rocky Bayou before draining into Choctawhatchee Bay. The lower reaches of Swift Creek, at the confluence with Rocky Bayou, are designated as an impaired waterbody for bacteria and dissolved oxygen (FDEP, 2023).

A.3.3.3.1.2 Biological Resources

Roberts Pond is neighbored by Northwest Florida State College, which includes barren land and urban development ranging from low to high intensities. The project area includes disturbed evergreen forest with scattered shrub and scrub habitats. Freshwater emergent wetlands are present immediately upstream of and freshwater forested/shrub wetlands are present downstream of Roberts Pond. Native vegetation associated with these wetlands includes blackgum, bald cypress, sweetbay, swamp tupelo, red maple, and scattered pine. These habitats support a range of common wildlife, including the little blue heron, white tailed deer (*Odocoileus virginianus*), and various migratory bird species. The recently ESA-delisted Okaloosa darter (*Etheostoma okaloosae*) occupies the lower reaches of Swift Creek below Roberts Pond. The removal of the Roberts Pond impoundment is anticipated to open large portions of suitable stream habitat for the darter (88 F.R. 123 [June 28, 2023]). Other protected species are unlikely to occur at the project site, due to its urban location and disturbed habitat (Table A-11).

Table A-11 Federally-Listed Species Potentially Occurring in the *WQ8, Swift Creek Hydrologic Restoration* Project Area

Common Name	Scientific Name	Habitat	Status	Likelihood
Alligator snapping turtle	*Macrochelys temminckii*	Riverine: deep, flooded channels within bald cypress and tupelo forests.	T	Unlikely
Eastern black rail	*Laterallus jamaicensis*	Estuarine: herbaceous wetland with elevated refugia; Palustrine: herbaceous wetland with elevated refugia.	T	Unlikely
Eastern indigo snake	*Drymarchon couperi*	Terrestrial: mesic flatwoods, upland pine forest, sandhills scrub, scrubby flatwoods, rockland hammock, ruderal.	T	Unlikely
Gulf sturgeon	*Acipenser oxyrinchus*	Estuarine: various; Marine: various habitats; Riverine: alluvial and blackwater streams.	T	Unlikely
Red-cockaded woodpecker	Leuconotopicus borealis	Terrestrial: mature pine forests.	E	Potentially

Note: Species determined to be "unlikely" to be found in the action area are not addressed further in the environmental analysis.
CH=Critical Habitat, E=Endangered, T=Threatened, SAT=Similarity of Appearance (Threatened), SSC=Species of Special Concern

A.3.3.3.1.3 Socioeconomic Resources

Appendix A.3.2.1.3 summarizes the demographics of Okaloosa County. The project is located within Niceville, adjacent to the Northwest Florida State College campus. Areas surrounding Roberts Lake are comprised of residential developments (south) and military bases (Eglin Air Force Base, north).

A.3.3.3.2 Environmental Consequences

Table A-1 directs readers to the location of detailed analyses of this project's impacts on physical, biological, and socioeconomic resources within this RP3/EA.

A.3.3.3.2.1 Physical Resources

Implementation of this project could require equipment such as pickup trucks, dewatering equipment, construction trailers, tractor trailers, small excavators, bulldozers, forklifts, cranes, pile drivers, and pavers, among others. Excavation would be necessary for spillway and box culvert removal, contouring of the stream bed, pond, and floodplain, as well as possibly for bridge construction and recreational infrastructure implementation. Filling and grading may be needed for construction of the berm, floodplain, and parking lot. The bridge, pavilion, and boardwalk may require pile drivers, and the bridge, pavilion, and parking lot construction would require paving. The sediment removal and transport for these activities would result in short-term, moderate adverse impacts to geology and substrates during construction activities. Further, foot, vehicle, and equipment traffic across the site would cause soil compaction in some areas and loosening in others. Equipment staging, transport of necessary materials across the site, and subsequent on-site storage of materials could also result in short-term, minor adverse impacts to geology and substrates. To minimize ground disruption, equipment and materials would be staged on disturbed areas where possible, BMPs would be implemented, and disturbed areas would be revegetated with grass or trees and brush as required to stabilize the sediment.

Project implementation would also likely result in short-term, minor-to-moderate adverse impacts to hydrology and water quality. Construction activities could lead to erosion and sedimentation in the short-term. The impoundment drainage, which would occur prior to the spillway removal and other construction activities, may cause nutrient or sediment pulses downstream. In addition, drainage would expose aquatic or wetland-obligate vegetation in and around Roberts Pond, as well as lacustrine sediments dense in pollutants and organic matter. BMPs would be implemented to minimize sediment runoff, control stormwater, and protect downstream water quality. Excavated sediments would be contained and disposed of offsite in an appropriate upland disposal site.

Finally, vegetation, including woody trees and shrubs, would be removed to construct the parking lot and pavilion site and other recreational improvements, which would result in localized erosion and sedimentation during construction. However, where possible, disturbed areas would be revegetated once construction is complete. The parking lot, pavilion, and boardwalk would create approximately 14,000 combined square feet of impervious area where stormwater may run off around the edges of these structures, leading to minor localized erosion and sediment transport in the long-term.

While the project would change the floodplain's hydrology, the FL TIG does not consider this an adverse impact. Rather, the project would restore more natural hydrologic function, resulting in long-term benefits to hydrology and water quality. The existing box culvert and spillway are structurally unsound and ineffective, providing no capacity for floodwater attenuation. The removal of these structures and subsequent replacement by a bridge would restore natural stream flow. The excavation and re-contouring of the site's pond, stream channel, and floodplain would improve the hydrology and water quality of Swift Creek and downstream water quality by restoring freshwater movement, reducing flooding, and reducing sediment and nutrient transport.

Summary

In summary, this project is anticipated to result in short-term, minor-to-moderate adverse impacts and long-term benefits to physical resources.

A.3.3.3.2.2 Biological Resources

Dewatering, infrastructure removal, excavation, and construction activities would have short-term, minor-to-moderate adverse impacts on aquatic, wetland, and terrestrial habitats and wildlife during construction. Dewatering may be necessary for implementation which could disrupt and decrease the availability of aquatic and wetland habitat during construction and displace wildlife in the short-term. Excavation activities may physically remove aquatic and terrestrial invertebrates living in the lacustrine and wetland sediments. In addition, the use of equipment and increased human activity from construction could cause short-term avoidance behavior among mobile wildlife in the area. While BMPs would be implemented to minimize sediment transport and erosion, pulses in nutrients or sediments during construction may have short-term, minor-to-moderate adverse impacts on aquatic habitats and species at the site and downstream.

The proposed recreational improvements are anticipated to result in long-term, minor adverse impacts to wildlife and habitats due to the removal of vegetation and clearing and paving for the parking area (approximately 0.5 acres of woody vegetation would be permanently removed, resulting in a minor loss of habitat in the long-term). The additional recreational amenities are not anticipated to result in greater disturbance to wildlife due to human activity in the area in the long-term compared to existing recreational conditions.

Potential protected species at the project sites and effects from the project activities include the following:

Red-cockaded woodpecker: The red-cockaded woodpecker occupies open pine woodlands and savannahs. Their roosting, nesting, and foraging habitat relies on mature pine trees in which they create cavities. Eglin Air Force Base, immediately north of the project site, contains a primary core population of red-cockaded woodpeckers; as such, they may be present around the project site and flush from the area during construction. As such, this project would have short-term, minor adverse impacts to the red-cockaded woodpecker.

Although this project is anticipated to result in some short-term, minor-to-moderate, and long-term, minor adverse impacts to biological resources, the improvements to habitat and the natural hydrology in the area would result in long-term benefits to habitat quality and wildlife, including protected species. While habitat would be displaced in the short-term, the restoration of a portion of Swift Creek's natural stream flow would improve water quality, and therefore habitat quality, for Roberts Pond, the newly formed stretch of Swift Creek, and downstream waters.

Summary
In summary, this project is anticipated to result in short- and long-term, minor-to-moderate adverse impacts and long-term benefits to biological resources.

A.3.3.3.2.3 Socioeconomic Resources

Construction activities would result in short-term, minor adverse impacts to socioeconomic resources by disrupting local residents from increased traffic, limitations to available parking, and possible disruptions in recreational use at the site during construction. Implementation of this project would provide short-term economic benefits to the project area through the creation of construction jobs. Long-term socioeconomic benefits may include improved regional water quality, decreased flood risk resulting from the removal of the defunct spillway, and reductions in risks of property loss.

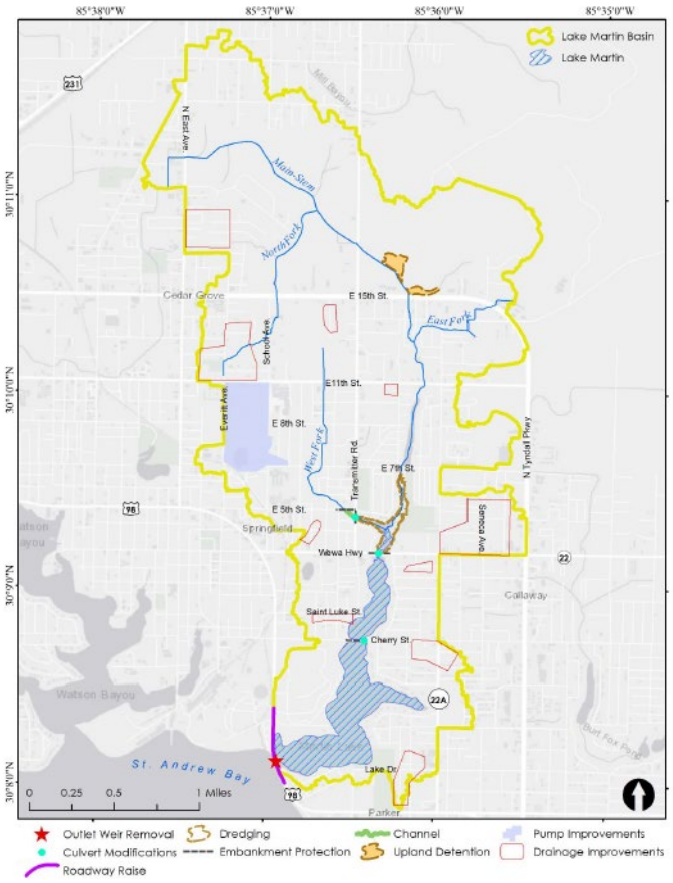
Summary
In summary, this project is anticipated to result in short-term, minor adverse impacts as well as short- and long-term benefits to socioeconomic resources.

A.3.3.4 WQ9, Springfield Stream and Wetland Enhancement

The goal of this project is to improve water quality through restoration of two degraded tributaries of Lake Martin. Project activities most relevant to the assessment of environmental consequences include:

- **Clearance and revegetation of tributary channels.** Sediment, nutrient-laden organic matter, debris, and invasive vegetation would be physically excavated or dredged from the West Fork and mainstem Springfield Stream (Figure A-11). Approximately 145,000 cubic yards of sediment and 9 acres of exotic plants would be removed. Approximately 15 acres of native wetland vegetation would be planted within the cleared area to stabilize the floodplain and restore wetland function.

Figure A-11 Conceptual Restoration Plans for Lake Martin Tributaries (USACE, 2021)



A.3.3.4.1 Affected Environment

The Springfield Stream headwaters lie in central Bay County, between Highways 98 and 231 north of Panama City, Florida. Springfield Stream meanders to the southeast through North Springfield, discharging into Lake Martin. The project area is within a heavily developed and urban watershed, with numerous bridges/culverts, residential areas, and commercial and industrial sites. Construction activities would involve clearing and revegetating tributary channels.

A.3.3.4.1.1 Physical Resources

This project would occur at multiple sites along the West Fork and mainstem of Springfield Stream. Soils in areas surrounding Lake Martin include Troup (0 to 5 percent slopes), Foxworth (5 to 8 percent slopes), Lakeland (0 to 8 percent slopes), and Albany (0 to 2 percent slopes) sands. Near the West Fork and mainstem, soils are primarily Albany sand (0 to 2 percent slopes), Plummer sand, and Pamlico-Dorovan complex soils (USDA, 2023). Sediments and soils have been previously disturbed through the substantial urban development in the Springfield area.

Lake Martin is an urban drainage basin that receives large volumes of stormwater runoff from the metropolitan Springfield and Panama City area. Springfield Stream is fed by multiple forks that feed into the northern-most extent of Lake Martin. These forks flow through heavily urbanized and residential areas. The south-bound flow is maintained by culverts under bridges that span the tributaries. Cherry Street and East 3rd Street span Lake Martin, with water flows maintained by culverts. Lake Martin itself is over 1.5 miles long, with the southern-most extent emptying into St. Andrew Bay via an outlet weir under East Highway 98.

The drainage basin's altered hydrology and high proportion of impervious surfaces has made Springfield highly susceptible to flooding; it experienced substantial impacts from Hurricane Michael in 2018 (USACE, 2021). Lake Martin and the downstream-extent of Springfield Stream fall within FEMA-designated flood zone AE, with a minimum flood elevation of 9 feet (FEMA, 2023).

While Lake Martin itself is not designated as an impaired waterbody, adjacent drainages are listed as impaired for bacteria and dissolved oxygen (FDEP, 2023a).

A.3.3.4.1.2 Biological Resources

Habitat types in the Lake Martin basin are primarily developed urban areas ranging from low to high intensities with scattered evergreen forest and freshwater woody, emergent herbaceous, and shrub wetlands. Native vegetation associated with these wetlands includes blackgum, bald cypress, sweetbay, swamp tupelo, red maple, and scattered pine. A wide variety of freshwater fish inhabit Springfield Stream and Lake Martin, including the striped (*Morone saxatilis*), white (*Morone chrysops*), and largemouth (*Micropterus salmoides*) bass and bluegill (*Lepomis macrochirus*). Wetland habitats may support ESA-listed species and provide critical habitat for the Panama City crayfish; wetland restoration and enhancement has been identified as critical activities for the recovery of the crayfish (Table A-12).

Table A-12 Federally-Listed Species Potentially Occurring in the *WQ9, Springfield Stream and Wetland Enhancement* Project Area

Common Name	Scientific Name	Habitat	Status	Likelihood
Alligator snapping turtle	*Macrochelys temminckii*	Riverine: deep, flooded channels within bald cypress and tupelo forests.	T	Potentially
Eastern black rail	*Laterallus jamaicensis*	Estuarine: herbaceous wetland with elevated refugia; Palustrine: herbaceous wetland with elevated refugia	T	Unlikely
Eastern indigo snake	*Drymarchon couperi*	Terrestrial: mesic flatwoods, upland pine forest, sandhills scrub, scrubby flatwoods, rockland hammock, ruderal.	T	Unlikely
Godfrey's butterwort	*Pinguicula ionantha*	Palustrine: seepage bogs in grassy pine flatwoods and grassy savannahs.	T	Unlikely
Panama City crayfish	*Procambarus econfinae*	Estuarine: flatwood wetlands; Palustrine: flatwood wetlands.	T, CH	Potentially
Telephus spurge	*Euphorbia telephioides*	Palustrine: edges of forested or shrubby wetlands, seepage bogs;	T	Unlikely

Common Name	Scientific Name	Habitat	Status	Likelihood
		Terrestrial: savannahs.		
White birds-in-a-nest	Macbridea alba	Palustrine: edges of forested or shrubby wetlands, seepage bogs; Terrestrial: savannahs.	T	Unlikely
Note: Species determined to be "unlikely" to be found in the action area are not addressed further in the environmental analysis. CH=Critical Habitat, E=Endangered, T=Threatened, SAT=Similarity of Appearance (Threatened), SSC=Species of Special Concern				

A.3.3.4.1.3 Socioeconomic Resources

Appendix A.3.3.1.3 summarizes the demographics of Bay County. The project is located within Springfield, Florida, which is designated as an area of low-moderate income. Project activities would occur within the channels of the West Branch and mainstem Springfield Stream, which are surrounded by residential developments. Some commercial buildings are interspersed in the residential developments, with a large concentration of commercial buildings to the east of Lake Martin. Industrial quarries and refineries are located along the western shoreline.

A.3.3.4.2 Environmental Consequences

Table A-1 directs readers to the location of detailed analyses of this project's impacts on physical, biological, and socioeconomic resources within this RP3/EA.

A.3.3.4.2.1 Physical Resources

Implementation of this project may involve heavy machinery such as backhoes and suction dredges, dump trucks to move sediment and organic matter, and machinery or hand tools to remove invasive vegetation. Approximately 145,000 cubic yards of sediment and nutrient-laden organic matter, debris, and 9 acres of invasive vegetation would be removed from the West Fork and mainstem Springfield Stream. To stabilize the stream bank and restore wetland function, approximately 4 acres of stormwater wetlands would be formed and up to 15 acres of native wetland vegetation would be planted within the area disturbed by excavation and dredging.

Short-term, moderate adverse impacts to geology and substrates are anticipated from sediment removal from the tributary channels. During these activities, increased sediment runoff is likely from sediment removal and movement actions and could lead to downstream, short-term, minor adverse impacts to water quality. Excavation, dredging, and the use of heavy equipment and vehicles may result in the loosening and compaction of soils and temporary erosion. In addition, the disturbance of currently settled sediment, organic matter, and debris in the water channel may cause a temporary pulse of these pollutants at the site and downstream. BMPs would be implemented to mitigate runoff and minimize impacts, such as interim use of approximately 6,000 linear feet silt fences and 1,000 linear feet of floating turbidity barriers. Excavated and dredged material, laden with sediment and pollutants, would be transported off-site and placed in an appropriate upland disposal site. To the extent possible, all equipment staging would occur on previously disturbed areas to minimize adverse impacts. In addition, the project site would be replanted with native park and wetland vegetation to restabilize the area.

Long-term benefits to substrate stability and downstream hydrology and water quality are anticipated. Removal of sediment, debris, and organic matter buildup from the stream channel would address current impediments to natural water flow. Wetland vegetation would improve floodwater storage capacity and treatment, attenuate high water flows, and reduce erosion and sedimentation. In addition, the replacement of invasive vegetation with native species would improve bank stability and water quality.

In summary, this project is anticipated to result in short-term, minor-to-moderate adverse impacts and long-term benefits to physical resources.

A.3.3.4.2.2 Biological Resources

Invasive vegetation clearance and revegetation efforts would disturb riparian wetland habitat in the short-term. In addition to the above-described excavation and dredging of 145,000 cubic yards of material, approximately 13 acres would be cleared, which may involve removal of trees, brush, grasses, stumps, roots, and other debris. Up to 4 acres would be enhanced to stormwater wetlands and revegetated with pond plantings. To restore the tributary channels, approximately 9 acres of invasive vegetation would be removed and replaced with native wetland vegetation. Any work in waters of the U.S., including wetlands, associated with this alternative would be coordinated with the USACE and/or FDEP pursuant to Section 404 of CWA and RHA. Coordination and final authorization pursuant to the CWA/RHA would be completed prior to final design and construction.

Short-term, moderate adverse impacts are anticipated for riparian and wetland habitat from construction activities and sediment and vegetation removal. Excavation and dredging activities would impact aquatic habitat and wildlife due to sediment removal, runoff, and resulting increased turbidity, though this would be minimized through the use of BMPs, including silt fences and floating turbidity barriers. Presence of construction equipment and staff would cause temporary avoidance behavior and short-term, minor adverse impacts to wildlife, including protected species. Potential protected species at the project sites and effects from the project activities include the following:

Alligator snapping turtle: The alligator snapping turtle occupies floodplain swamp forest habitats dominated by bald cypress and water tupelo trees and with tannic or turbid waters. Within the Apalachicola Unit, nest predation is the primary conservation concern for the alligator snapping turtle. They may occupy emergent herbaceous and woody wetlands present in the project area. Project areas would be surveyed for the turtles prior to implementation, and USFWS would be consulted to identify conservation measures to mitigate adverse impacts to the species during construction. As such, this project would have short-term, minor adverse impacts to the alligator snapping turtle.

Panama City crayfish: The Panama City crayfish historically occupied shallow and ephemeral fresh waterbodies in open pine flatwoods and prairie-marsh habitats. Development within their historic range has severely degraded crayfish habitat, and they are now known to inhabit ephemeral freshwater in grassy, gently-sloped ditches and swales, slash pine plantations, and utility rights-of-way. They often occupy areas with herbaceous vegetation and little-to-no shrub or tree cover. Project areas would be surveyed for the crayfish prior to implementation, and USFWS would be consulted to identify conservation measures to mitigate adverse impacts to the species during construction. As such, this project would have short-term, minor adverse impacts to the Panama City crayfish.

Long-term benefits to habitat and wildlife are anticipated as a result of tributary restoration and stormwater wetland creation. Restoring water flow and wetland function would improve water quality and habitat quality for aquatic and wetland-associated species (including protected species such as the Panama City crayfish) at the site and downstream. Replacement of invasive vegetation with native wetland species would also increase ecological function and improve the overall health of the habitat in the long-term.

In summary, this project is anticipated to result in short-term, minor-to-moderate adverse impacts and long-term benefits to biological resources.

A.3.3.4.2.3 Socioeconomic Resources

Impacts to local businesses and economic activity during construction are expected to be minimal (short-term, minor adverse impacts) due to the primarily residential nature of the local urban environment. Some

road closures or traffic delays may occur, though these would be minimized to the extent possible. Wetland creation and tributary restoration are expected to provide both short- and long-term socioeconomic benefits for the area. In the short-term, project implementation could cause an increase in available construction jobs. In the long-term, stream restoration would reduce flooding risks, intensity, and duration, which could provide local socioeconomic benefits through reduced property risks in the long-term.

In summary, this project is anticipated to result in short-term, minor adverse impacts as well as short- and long-term benefits to socioeconomic resources.

A.3.4 Ochlockonee-St. Marks Watershed Projects

A.3.4.1 WQ10, Telogia Creek Watershed Water Quality Improvements (preferred)

The goal of the project is to improve water quality in the Telogia Creek subbasin by reducing sediment, nutrient, and pollutant loading and improving habitat stability and natural flow regimes. Appendix A.1 described Phase I data evaluation and field reconnaissance activities that do not require further NEPA analysis. Phase II project activities most relevant to the assessment of environmental consequences include:

- **In-stream restoration.** Riparian buffers would be restored through nature-based engineering techniques. Sediment and detritus would be mechanically moved and/or removed to stabilize stream banks and create meander belts to slow water flows. Invasive vegetation would be mechanically removed, and native vegetation would be planted to stabilize the restored stream banks.
- **Paving roadways.** At unpaved road stream crossings, roads would be graded, filled with road base, and paved. Paved roadways would include travel lanes and shoulders for safety. Paving roadways would often be co-implemented with water conveyance structures, such as culverts (described below).
- **Replacing or placing culverts.** Culverts under existing unpaved roadways or at other water conveyance locations would be replaced to improve conveyance of stream flows. Rip rap may be installed at the culvert input and outfalls to improve stability and prevent erosion.
- **Implementing agricultural or silvicultural BMPs.** Project partners would help voluntarily participating landowners by developing conservation plans that identify natural resource concerns and conservation practices landowners can voluntarily implement to reduce nutrient and sediment runoff. The conservation planning and implementation would be completed independently in small watersheds with the goal of making and observing a measurable impact. This would be accomplished through technical and financial assistance to willing private and public landowners. Eligible landowners include owners of undeveloped forested upland headwaters, farms, and ranches. This project would implement standard USEPA and USDA best practices, as relevant. Practices expected to be implemented as part of this project (and commonly applied by USEPA and USDA) potentially include, but are not limited to, the following activities: riparian forest buffer; filter strips; riparian herbaceous cover; water and sediment control basins; stormwater runoff control; critical area planting; livestock access controls; grassed waterways; urban forestry; and/or bioswales.

A.3.4.1.1 Affected Environment

The Telogia Creek headwaters lie in northern Gadsden County, just south of the Florida-Georgia state line. Telogia Creek is a tributary of the Ochlockonee River, and therefore, the Telogia Creek subbasin

falls within the greater Ochlockonee River watershed. Telogia Creek discharges into the Ochlockonee River in northern Liberty County. The Ochlockonee River flows south until it discharges into Ochlockonee Bay, a subset of the broader Apalachee Bay. Phase I would include data-gathering activities and field reconnaissance along the length of Telogia Creek and identification of site-specific restoration actions. The following sections provide a summary of the physical, biological, and socioeconomic resources in the Telogia Creek subbasin. The *Ochlockonee River and Bay SWIM Plan* (NWFWMD, 2017b) provides information about the physical and biological resources within the Ochlockonee River watershed and is incorporated by reference herein and summarized below.

A.3.4.1.1.1 Physical Resources

Upland soils in the Telogia Creek subbasin are primarily Lakeland soils (0 to 15 percent slopes), frequently flooded Bibb and Surrency soils (0 to 2 percent slopes), and frequently flooded Pickeny, Dorovan, and Bibb complexes (USDA, 2023). Sediments and soils within the creek bed have been disturbed in various areas through hydrologic degradation and the installation of water conveyance structures (e.g., culverts). Within the broader subbasin, the physical topography has been altered via ditching, road construction, and landscape alterations to support extensive agricultural and silvicultural (i.e., commercial tree cultivation) land use.

Telogia Creek is a subbasin within the broader Ochlockonee River watershed. Larger tributaries of Telogia Creek include Mule, Yellow, and Juniper Creeks, among numerous smaller creeks and streams. The natural stream flow regime along Telogia Creek has been affected by historical development, stream channelization, and impoundments (NWFWMD, 2017b). The NWFWMD previously designated the northern Telogia Creek watershed as a Water Resource Caution Area due to limited availability of surface and groundwater (NWFWMD, 2017b).

Sources of water quality impairment in the Ochlockonee River watershed, including the Telogia Creek subbasin, primarily occur in the northern portion of the watershed from agricultural land use. While Telogia Creek itself is not listed as an impaired waterbody, tributary creeks and streams are designated as impaired for bacteria and dissolved oxygen (FDEP, 2023a). However, bacterial pollution continues to be a concern in Telogia Creek (NWFWMD, 2017b). Additionally, fertilizer application and harvesting of silvicultural products produces untreated runoff that introduces nutrients and sediments into the system (NWFWMD, 2017b). Finally, untreated effluent from residential septic systems also contributes to bacterial and nutrient loading throughout the Ochlockonee River watershed, particularly in the Telogia Creek subbasin (NWFWMD, 2017b). The Ochlockonee River is designated as an OFW (FDEP, 2023b).

A.3.4.1.1.2 Biological Resources

The Telogia Creek subbasin is comprised of a variety of natural habitats (evergreen forest, grasslands, freshwater woody wetlands, and shrublands) and altered agricultural and silvicultural lands. There are some scattered developed areas ranging from low to high intensity, primarily around small towns. Much of the remaining undeveloped, natural habitat is protected and managed as conservation lands (e.g., Apalachicola National Forest, Torreya State Park, Robert Brent Wildlife Management Area [WMA]).

Woody wetlands are present throughout the project area and are the primary habitat types in the Telogia Creek floodplain. Primary vegetation in these habitats include blackgum, longleaf pine, and slash pine. Upland areas altered for agriculture and silvicultural use are primarily composed of pine plantations containing slash and longleaf pine (*Pinus palustris*). Natural habitats within the watershed provide foraging, nesting, and resting areas for a variety of recreationally important species such as birds, freshwater fish (e.g., redbreast sunfish [*Lepomis auratus*], catfish [*Ictaluridae* family]), (*Anas spp*.), deer, and squirrels (*Sciurus spp.*). The Florida Fish and Wildlife Conservation Commission (FWC) has designated the Telogia Creek subbasin as a Strategic Habitat Conservation area for the Florida black bear

(*Ursus americanus floridanus*) and wading birds. The Ochlockonee River watershed contains multiple ESA-listed freshwater mussel colonies, in addition to protected plants, birds, and reptiles (Table A-13). Downstream reaches of the Ochlockonee River, below the confluence with Telogia Creek (i.e., the project area), are designated critical habitat for the purple bankclimber (*Elliptoideus sloatianus*), a freshwater mussel.

Table A-13 Federally Listed Species Potentially Occurring in the *WQ10, Telogia Creek Watershed Water Quality Improvements (preferred)* Project Area

Common Name	*Scientific Name*	Habitat	Status	Likelihood
Alligator snapping turtle	*Macrochelys temminckii*	Riverine: deep, flooded channels within bald cypress and tupelo forests.	T	Potentially
Eastern indigo snake	*Drymarchon couperi*	Terrestrial: mesic flatwoods, upland pine forest, sandhills scrub, scrubby flatwoods, rockland hammock, ruderal.	T	Unlikely
Eastern black rail	*Laterallus jamaicensis*	Estuarine: herbaceous wetland with elevated refugia; Palustrine: herbaceous wetland with elevated refugia.	T	Unlikely
Fringed campion	*Silene polypetala*	Terrestrial: drainages in mesic habitats.	E	Potentially
Godfrey's butterwort	*Pinguicula ionantha*	Palustrine: seepage bogs in grassy pine flatwoods and grassy savannahs.	T	Unlikely
Gulf sturgeon	*Acipenser oxyrinchus*	Estuarine: various; Marine: various habitats; Riverine: alluvial and blackwater streams.	T	Unlikely
Ochlockonee moccasinshell	*Medionidus simpsonianus*	Riverine: streams characterized by sand, gravel, and/or cobble substrate; larval stages parasitize fish hosts.	E	Unlikely
Purple bankclimber	*Elliptoideus sloatianus*	Riverine: streams characterized by sand, gravel, and/or cobble substrate.	E	Unlikely
Red-cockaded woodpecker	*Leuconotopicus borealis*	Terrestrial: mature pine forests.	E	Potentially
White birds-in-a-nest	*Macbridea alba*	Palustrine: edges of forested or shrubby wetlands, seepage bogs; Terrestrial: savannahs.	T	Unlikely

Note: Species determined to be "unlikely" to be found in the action area are not addressed further in the environmental analysis.
CH=Critical Habitat, E=Endangered, T=Threatened, SAT=Similarity of Appearance (Threatened), SSC=Species of Special Concern

A.3.4.1.1.3 Socioeconomic Resources

Gadsden County has a total population of 43,403 people, a decrease of 1 percent since 2020, based on the 2022 U.S. Census. Approximately 42 percent of the county population are white, 55 percent are black or African American, with the remaining population including small percentages of American Indian, Asian, and Pacific Islander. About 12 percent identify as Hispanic or Latino origin. Median household income reported in 2022 was $45,721 and residents in poverty accounted for 26 percent of the county's population. Most of the county residents (80.3 percent) are high school graduates or higher.

Liberty County has a total population of 7,603 people, a decrease of 4.7 percent since 2020, based on the 2022 U.S. Census. Approximately 78 percent of the county population are white, 18 percent are black or African American, with the remaining population including small percentages of American Indian, Asian, and Pacific Islander. About 8 percent identify as Hispanic or Latino origin. Median household income

reported in 2022 in the county was $51,723 and residents in poverty accounted for 21.9 percent of the county's population. Most of the county residents (81 percent) are high school graduates or higher.

The project would occur at multiple locations within the Telogia Creek sub-watershed of the Ochlockonee Bay watershed. The Telogia Creek sub-watershed is primarily rural, with small towns, homesteads, and industrial agricultural/silvicultural parcels running the length of the creek.

A.3.4.1.2 Environmental Consequences

Restoration activities could be implemented in Phase 2 at up to 13 sites. As noted in the project description in Section 2.4 and Appendix A.3.4.1, specific sites for these activities have not yet been identified. Once specific sites are identified, any additional environmental review would occur during implementation planning. The Implementing Trustee would review and affirm that the site-specific conditions are consistent with those described in this RP3/EA. If the site-specific conditions indicate that the impacts would not be consistent with those described in this RP3/EA, the FL TIG would determine whether to undertake additional site-specific environmental review, consistent with NEPA and other environmental compliance requirements, or forego implementation at that location. Any necessary additional NEPA analysis would be prepared by the Implementing Trustee or appropriate federal agency and included in the Administrative Record and NOAA's Data Integration Visualization Exploration and Reporting (DIVER) website once completed.

The FL TIG analyzed the impacts of working with landowners to voluntarily implement agricultural or silvicultural BMPs in its RP1/EA, which is incorporated by reference herein (FL TIG, 2019). The RP1/EA found that these activities would have short- and long-term, minor adverse impacts to physical resources from ground disturbance associated with construction activities; short-term, minor adverse impacts to biological resources from altered land management practices; and no impacts to socioeconomic resources.

In-stream restoration, paving road stream crossings, and replacing existing culverts under this project are similar or identical in nature to the activities that would occur during implementation of the *WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements (preferred)* and *WQ7, Choctawhatchee Bay Unpaved Roads Initiative (preferred)* projects. It is anticipated that the environmental consequences to physical, biological, and socioeconomic resources from those activities would also be similar. To reduce redundancy, the following discussion of environmental consequences is limited to those activities, techniques, and anticipated impacts that are unique to this project. Table A-1 directs readers to the location of detailed analyses of this project's impacts on physical, biological, and socioeconomic resources within this RP3/EA.

A.3.4.1.2.1 Physical Resources

Physical impacts resulting from this project's in-stream restoration activities are similar to those discussed in Appendix A.3.2.2.2.1 *WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements (preferred)* and physical impacts from paving roadways and replacing and placing culverts are similar to those discussed in Appendix A.3.3.2.2.1 *WQ7, Choctawhatchee Bay Unpaved Roads Initiative (preferred)*.

Implementing agricultural or silvicultural BMPs

Implementation of water quality BMPs in agricultural or silvicultural lands may involve minor soil compaction or erosion from installation activities, equipment, vehicles, or foot traffic. While these would not be expected to adversely impact local hydrology, soil disruption may cause short-term, minor adverse impacts to water quality from sediment runoff. To minimize any physical impacts, relevant stormwater and sediment BMPs would be implemented, and equipment and materials would utilize previously disturbed ground where possible.

The implementation of agricultural or silvicultural BMPs would provide long-term benefits to the local water quality. Under current conditions, water quality is impacted by fecal coliform bacteria, dissolved oxygen, and nitrogen. Working with landowners to reduce sediment, nutrient, and pollutant discharge would improve water quality at local project sites and downstream reaches.

Summary
In summary, this project is anticipated to result in short-term, minor-to-moderate adverse impacts and long-term benefits to physical resources.

A.3.4.1.2.2 Biological Resources

Biological impacts resulting from this project's in-stream restoration activities are similar to those discussed in Appendix A.3.2.2.2.2 *WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements (preferred)* and biological impacts from paving roadways and replacing and placing culverts are similar to those discussed in Appendix A.3.3.2.2.2 *WQ7, Choctawhatchee Bay Unpaved Roads Initiative (preferred)*.

Implementing agricultural or silvicultural BMPs
Implementation of water quality BMPs in agricultural or silvicultural lands may cause temporary disruption to terrestrial, wetland, and aquatic habitat during construction, installation, or planting. Equipment, vehicles, and increased human activities could displace wildlife in the short-term. Vehicles, equipment, and materials would be located and staged on previously disturbed sites to the extent possible. Wetland habitat may be impacted, depending on the specific location of BMPs, though measures would be taken during planning to avoid, minimize, or constrain impacts to the site area to the extent possible. Measures to avoid long-term habitat impacts, such as fragmentation, would be incorporated during planning and design for each site.

Potential protected species at the project sites and effects from the project activities include the following:

Alligator snapping turtle: The alligator snapping turtle occupies floodplain swamp forest habitats dominated by bald cypress and water tupelo trees and with tannic or turbid waters. Within the Apalachicola Unit, nest predation is the primary conservation concern for the alligator snapping turtle. They may occupy emergent herbaceous and woody wetlands present in the project area. Project areas would be surveyed for the alligator snapping turtle prior to implementation, and the USFWS would be consulted to identify conservation measures to mitigate adverse impacts to the species during construction. As such, this project would have short-term, minor adverse impacts to the alligator snapping turtle.

Fringed campion: The fringed campion is a flowering plant found at 11 sites in Florida, of which 10 are in Gadsden County. The fringed campion historically occupied mesic habitats such as upland dry sites and pine forests. Host habitats have severely degraded from silviculture, erosion, urbanization, and storm-related impacts (most recently, Hurricane Michael). Project areas would be surveyed for the plant prior to implementation, and the USFWS would be consulted to identify conservation measures to mitigate adverse impacts to the species during construction. As such, this project would have short-term, minor adverse impacts to the fringed campion.

Red-cockaded woodpecker: The red-cockaded woodpecker occupies open pine woodlands and savannahs. Their roosting, nesting, and foraging habitat relies on mature pine trees in which they create cavities. Apalachicola National Forest, located south of Telogia Creek, contains a primary core population of red-cockaded woodpeckers; as such, they may be present around the project site and flush from the area during construction. As such, this project would have short-term, minor adverse impacts to the red-cockaded woodpecker.

This project is anticipated to have long-term benefits to wildlife and habitats. Some activities could include plants in riparian forest and other habitats, improving currently degraded habitats. Water quality improvements would benefit the overall health of the habitats, and in particular, improve habitat quality for downstream, ESA-listed aquatic species including freshwater mussels.

Summary
In summary, this project is anticipated to result in short- and long-term, minor-to-moderate adverse impacts and long-term benefits to biological resources.

A.3.4.1.2.3 Socioeconomic Resources

Socioeconomic impacts resulting from this project's in-stream restoration activities are similar to those discussed in Appendix A.3.2.2.2.3 *WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements (preferred)* and socioeconomic impacts from paving roadways and replacing and placing culverts are similar to those discussed in Appendix A.3.3.2.2.3 *WQ7, Choctawhatchee Bay Unpaved Roads Initiative (preferred)*.

Implementing agricultural or silvicultural BMPs
To the extent possible, installation of BMPs would be designed to minimize disturbance to agricultural and silvicultural activities, and any adverse impacts would be short-term and minor. Due to the primarily residential, agricultural nature of the targeted project areas, economic impacts to local businesses are not anticipated. Short-term economic benefits may result from an increase in construction jobs associated with project activities.

Summary
In summary, this project is anticipated to result in short-term, minor adverse impacts and short-term benefits to socioeconomic resources.

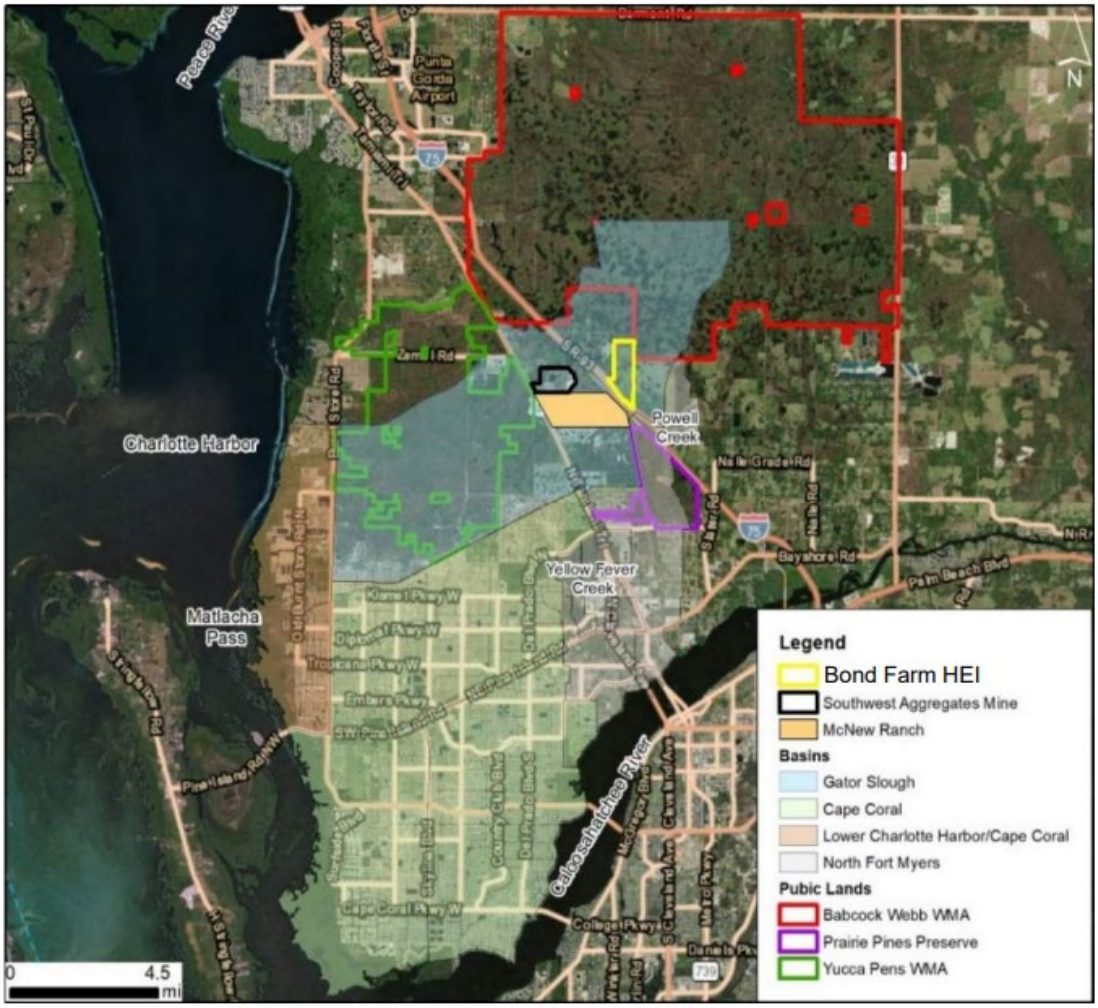
A.3.5 Charlotte Harbor and Caloosahatchee Watersheds Projects

A.3.5.1 WQ12, *Bond Farm Hydrologic Enhancement Impoundment* (preferred)

The goal of this project is to restore hydrologic connections through the installation of a hydrologic enhancement impoundment. Project activities most relevant to the assessment of environmental consequences include:

- **Construct a 538-acre hydrologic enhancement impoundment (HEI)** that would store up to 2,150 acre-feet of excess surface water from BWWMA during the wet season and release the water downstream primarily through Prairie Pines during the dry season (Figure A-12). The impoundment would include berms approximately 8 feet high to store surface water up to 4 feet, flashboard risers, stop logs, small vertical lift gates, and two small pump stations. Approximately 484,000 cubic yards of sediment would be excavated, and 394,000 cubic yards would be filled.

Figure A-12 Proposed Location of the HEI (shown in yellow)



A.3.5.1.1 Affected Environment

The Bond Farm property sits in the western-most portion of the Charlotte Harbor watershed, the south-central portion of the BWWMA, and directly east of the Yucca Pens Unit (Figure 4-11). The headwaters of the Gator Slough subbasin fall within the BWWMA, with water historically flowing southwest through Gator Slough through the Yucca Pens Units to Matlacha Pass and Charlotte Harbor. The *BWWMA Management Plan* (FWC, 2014) and the *Charlotte Harbor SWIM Plan Update* (Southwest Florida Water Management District [SWFWMD], 2020) provide information about the physical, biological, and socioeconomic resources within the BWWMA and Charlotte Harbor watershed and are incorporated by reference herein and summarized below.

A.3.5.1.1.1 Physical Resources

This project would occur on the Bond Farm property, a subset of the BWWMA. Soils within the project area are primarily Wabasso, Pineda, Oldsmar, and Felda fine sands (0 to 2 percent slopes) (USDA, 2023). Soils and sediment were previously disturbed via the use of Bond Farm as private pasture/agriculture lands. The property has existing berms and varied topography that result in pooling surface water.

Bond Farm and the BWWMA are a part of the Gator Slough subbasin of the Charlotte Harbor watershed, which historically drained southwest through the Yucca Pens Unit towards Matlacha Pass and eventually into Charlotte Harbor. Surface water flows from the BWWMA to Yucca Pens have been altered by land use changes, inhibiting surface water flows downstream. This has resulted in historically low flows through the Yucca Pens Unit and prolonged high-water periods on the BWWMA. Downstream-most portions of Gator Slough, near the confluence with Matlacha Pass, are FEMA-designated flood zones AE and VE, with a minimum flooding elevation of 9 feet (FEMA, 2023).

Altered hydrology and extensive development in the broader Charlotte Harbor area have resulted in widespread water quality impairment. Gator Slough and Powell Creek (the waterbody flowing through the Prairie Pines Preserve) are designated as impaired waterbodies for nutrients and bacteria, respectively (FDEP, 2023a). Waterbodies upstream on the BWWMA are designated as impaired for bacteria and dissolved oxygen (FDEP, 2023a). Both Matlacha Pass and Gasparilla Sound-Charlotte Harbor are both designated as OFW Aquatic Preserves (FDEP, 2023b).

A.3.5.1.1.2 Biological Resources

Habitats within the Bond Farm property have been altered from the site's prior use as agricultural/pasture lands. Today, Bond Farm is composed of altered evergreen forest and freshwater woody and emergent herbaceous wetland habitat types. The BWWMA more generally contains similar habitat types, although mesic and wet flatwoods can be found within the managed area. Vegetation within woody wetland habitats is typically closed canopy with pond cypress (*Taxodium ascendens*) and slash pine, while herbaceous wetlands are dominated by pickerel weed, bull tongue arrowhead (*Sagittaria lancifolia*), and maidencane. Mesic flatwoods are pine canopy forests with slash and longleaf pine. Wet flatwoods are also pine canopy forests with more hydrophytic herbaceous species and less shrubs than mesic flatwoods. ESA-listed plant species are present on the broader BWWMA (i.e., not in the project area), including the beautiful pawpaw (*Deeringothamnus rugelli*), blueflower butterwort (*Pinguicula caerulea*), and cardinal airplant (*Tillandsia fasciculata*). Invasive plant species are also managed across the BWWMA, including the Asian sword fern (*Nephrolepis brownii*), Australian pine, and torpedo grass.

Ecologically productive habitats on the BWWMA support a variety of birds, small mammals, and reptiles. Avian guilds founds on the BWWMA include wading birds (e.g., the ESA-listed Florida sandhill crane [*Grus canadensis pratensis*] and wood stork), nesting shorebirds, raptors (e.g., the barn owl [*Tyto alba*], common night hawk [*Chordeiles minor*], and ESA-listed burrowing owl [*Athene cunicularia*]), and songbirds (e.g., the common yellowthroat (*Geothlypis trichas*]). Common mammal groups include bats (e.g., the big brown bat [*Eptesicus fuscus*] and the ESA-listed Florida bonneted bat [*Eumops glaucinus floridanus*]), rabbits (e.g., marsh rabbit [*Sylvilagus palustris*]), rodents (e.g., the ESA-listed Sherman's fox squirrel [*Sciurus niger shermani*]), and river otters (*Lontra canadensis*). In addition to common reptiles, the BWWMA provides habitat for the ESA-listed eastern indigo snake (*Drymarchon couperi*) and gopher tortoise. Since the Bond Farm site is altered habitat from long-term agricultural use, little natural habitat exists to support ESA-listed species; no critical habitats are present in the action area (Table A-14).

Table A-14 Federally-Listed Species Potentially Occurring in the *WQ12, Bond Farm Hydrologic Enhancement Impoundment (preferred)* Project Area

Common Name	Scientific Name	Habitat	Status	Likelihood
Aboriginal prickly-apple	*Harrisia (=Cereus) aboriginum (=gracilis)*	Terrestrial: coastal strand or tropical coastal hammocks; typically found on shell middens.	E	Unlikely

Common Name	Scientific Name	Habitat	Status	Likelihood
Audubon's crested caracara	*Polyborus plancus audubonii*	Terrestrial: upland prairie containing wet areas and scattered cabbage palm.	T	Potentially
Beautiful pawpaw	*Deeringothamnus pulchellus*	Terrestrial: poorly drained sands in slash or longleaf pine-saw palmetto flatwoods.	E	Unlikely
Eastern black rail	*Laterallus jamaicensis*	Estuarine: herbaceous wetland with elevated refugia; Palustrine: herbaceous wetland with elevated refugia.	T	Unlikely
Eastern indigo snake	*Drymarchon couperi*	Terrestrial: mesic flatwoods, upland pine forest, sandhills scrub, scrubby flatwoods, rockland hammock, ruderal.	T	Potentially
Everglade snail kite	*Rostrhamus sociabilis plumbeus*	Palustrine: various, primarily in marsh and lake system within the Everglades.	E	Unlikely
Florida bonneted bat	*Eumops floridanus*	Palustrine: forested wetland, herbaceous wetland, scrub-shrub wetland; Terrestrial: upland forest, upland shrub.	E	Likely
Florida panther	*Puma concolor coryi*	Terrestrial: rockland forest. Palustrine: various.	E	Unlikely
Gopher tortoise	*Gopherus polyphemus*	Terrestrial: sandhills, scrub, scrubby flatwoods, xeric hammocks, coastal strand, ruderal.	T	Potentially
Red-cockaded woodpecker	*Leuconotopicus borealis*	Terrestrial: mature pine forests.	T	Potentially
Wood stork	*Mycteria americana*	Estuarine: marshes; Lacustrine: floodplain lakes, marshes (feeding); Palustrine: marshes, swamps, roadside ditches.	T	Likely

Note: Species determined to be "unlikely" to be found in the action area are not addressed further in the environmental analysis.
CH=Critical Habitat, E=Endangered, T=Threatened, SAT=Similarity of Appearance (Threatened), SSC=Species of Special Concern

A.3.5.1.1.3 Socioeconomic Resources

Charlotte County has a total population of 202,661 people, an increase of 8.5 percent since 2020, based on the 2022 U.S. Census. Approximately 90 percent of the county population are white, 6 percent are black or African American, with the remaining population including small percentages of American Indian, Asian, and Pacific Islander. About 8 percent identify as Hispanic or Latino origin. Median household income reported in 2022 was $62,164 and residents in poverty accounted for 9.1 percent of the county's population. Most of the county residents (91.9 percent) are high school graduates or higher.

The project would occur on the Bond Farm property, a unit of the BWWMA. The property was purchased by the State of Florida in 2015 to merge with the BWWMA, for the purposes of constructing an HEI that would capture surface water in the wet season and release it downstream into the Yucca Pens Unit in the dry season. Bond Farm is approximately 10 miles north of downtown Fort Myers. It is primarily surrounded by undeveloped conservation lands and agricultural fields. The Charlotte Correctional Institution is immediately adjacent to Bond Farm.

A.3.5.1.2 Environmental Consequences

Table A-1 directs readers to the location of detailed analyses of this project's impacts on physical, biological, and socioeconomic resources within this RP3/EA.

A.3.5.1.2.1 Physical Resources

Implementation of this alternative would require use of heavy construction equipment, such as backhoes, excavators, pans, graders, bulldozers, trucks, dewatering pumps, ditch witches, and a crane or lift station. Equipment would be staged in a cleared site within the project site boundary, up to 5 acres in size. The staging site would include an office, supply containers, and equipment and material storage. The project would require excavation of approximately 483,630 cubic yards of earth and filling of approximately 394,404 cubic yards. This excavation would utilize about two excavators, one pan, and four to six dump trucks. Finally, the project would also require dredging of up to 74 acres of freshwater wetlands and up to 8 acres of other surface waters and the filling of approximately 44 acres of wetland and 13 acres of other surface waters. Approximately 448 acres of wetlands and 23 acres of other surface waters would be flooded, resulting in the final 669-acre flow equalization basin. Dewatering pumps would be used throughout the project duration.

The sediment removal and movement, dredging, and filling activities proposed for this project would result in short-term, moderate adverse impacts on geology and substrates. In addition to the disturbance to sediments from dredging and excavation, foot, vehicle, and equipment use across the site could compact and loosen soils, leading to erosion and sedimentation in the short-term. The sediment transport and increased erosion could cause short-term adverse impacts on local and downstream water quality. BMPs would be implemented to minimize sediment runoff and protect downstream water quality, and any sediment removed from the site would be disposed of in an appropriate upland disposal site. Vegetation clearing to create the HEI would also adversely impact geology and substrates as soils are disturbed during removal efforts. Soil may also be loosened leading to increased erosion and sedimentation in the short-term.

While these activities would alter the site's topography and hydrologic flows in the long-term, the project would have long-term benefits to physical resources. The alterations to hydrologic flows would return to the site to more natural, historic flow conditions, leading to overall improvements to water quality. As such, the FL TIG does not consider these long-term impacts to be adverse. Seasonal high-water levels and wetland hydroperiods would be restored in portions of the BWWMA. Water would be retained during the wet season and released during the dry season, reducing the intensity and duration of seasonal flooding and restoring a more natural topography. These actions would also help alleviate drainage issues, restore hydroperiods in upstream and downstream wetlands, and reduce peak flow to estuarine waters, improving downstream water quality.

Summary

In summary, this project is anticipated to result in short-term, moderate adverse impacts and long-term benefits to physical resources.

A.3.5.1.2.2 Biological Resources

The alteration of habitat involved in this project may result in short- and long-term, minor-to-moderate adverse impacts for terrestrial and wetland habitat and associated wildlife. The dredging and filling of Class III waters for this project has been permitted by the FDEP under the State's 404 Program Individual Permit number 0375475-004. Dredging would occur in up to 74 acres of freshwater wetlands and up to 8 acres of other surface waters, and filling would occur in up to 44 acres of wetland and 13 acres of other surface waters, and up to 450 acres of wetlands and 23 acres of other surface waters would be flooded. In total, these activities would modify 567 acres of wetlands and 44 acres of surface waters.

Construction activities are anticipated to result in short-term, minor-to-moderate adverse effects on local habitats and wildlife. Equipment use, increased human activity, and traffic during construction may cause wildlife to avoid the area. While BMPs would be implemented to minimize sediment transport and

erosion, water quality pulses during construction may have short-term, negligible-to-minor impacts on aquatic species at the site and downstream. Clearing up to 5 acres may be necessary for equipment staging; though all staging would be within the site boundaries and is included in the permits obtained for the project. While construction may occur year-round, activity would pause during the wet season if dewatering equipment are not sufficient to maintain dry working conditions.

As required by the permit under the CWA Section 404, BMPs and conservation measures would be implemented to minimize adverse impacts to terrestrial habitats and protected species. Potential protected species at the project site, effects from the project activities, and conservation measures required under the CWA Section 404 permit include:

Audubon's crested caracara, Florida sandhill crane, red-cockaded woodpecker, and state-listed wading birds: Project activities such as clearing, dredging, or filling may impact birds by affecting nesting or foraging habitat, or by causing temporary avoidance behavior. To avoid impacts to protected birds, including Audubon's crested caracara, the Florida sandhill crane, red-cockaded woodpecker, and other state-listed wading birds, pre-construction surveys would be conducted to ensure nests (or cavity trees, in the case of the red-cockaded woodpecker) for these species are not present. If there is evidence of nesting found, nest avoidance buffers would be implemented. For the Audubon's crested caracara and the red-cockaded woodpecker, if a nest or cavity tree is found, the USFWS and FWC would be notified and a management plan would be developed. As such, this project would have short-term, negligible-to-minor adverse impacts on these protected birds.

Bald eagle: Clearing for construction, as well as habitat modification from dredging, filling, and flooding activities, may alter bald eagle nesting habitat. To avoid impacts to bald eagles, preconstruction surveys would be conducted to ensure nests are not present. If a bald eagle nest is found within 660 feet of the proposed action area, USFWS and FWC would be notified to determine if additional steps are necessary. Thus, this project may have short-term, negligible-to-minor adverse impacts to bald eagles.

Eastern indigo snake and gopher tortoise: Project activities may alter current eastern indigo snake and gopher tortoise habitat or cause avoidance behavior due to construction noise and presence of human activity. Gopher tortoise have been previously encountered in the project vicinity, and eastern indigo snakes often co-inhabit gopher tortoise burrows. During construction, this project would comply with the USFWS's *Standard Protection Measures for the Eastern Indigo Snake* (2013), including the inspection of holes, cavities, or other snake refugia, and ceasing construction if the snakes are found. If gopher tortoise burrows or individuals are found, an avoidance buffer of at least 25 feet would be implemented, USFWS would be notified, and the individual eastern indigo snake or gopher tortoise may be subject to removal and relocation. As a result, this project may have short-term, negligible-to-minor adverse impacts to eastern indigo snakes and gopher tortoises.

Florida bonneted bat: Clearing activities may alter current Florida bonneted bat habitat or cause temporary avoidance behavior due to the presence of human activity. To avoid impacts to Florida bonneted bats, the project would ensure compliance with the USFWS *Best Management Practices for Development Projects*. Therefore, this project may have short-term, negligible-to-minor adverse impacts to Florida bonneted bats.

Least terns and nesting shorebirds: Construction activities associated with this project may alter nesting habitat for least terns or other nesting shorebirds or cause temporary avoidance of the project area. To avoid impacts to least terns and other nesting shorebirds, construction activities would be minimized to the extent possible during nesting season, and preconstruction nesting surveys would be implemented. If found, active nests would require implementation of a 300-foot nest avoidance buffer. As such, project activities could have short-term, negligible-to-minor adverse impacts to least terns or nesting shorebirds.

Wood Stork: Construction activities may alter wood stork foraging habitat or cause temporary avoidance behavior. To avoid and mitigate any potential impacts to wood stork, wetland mitigation measures and monitoring requirements would be implemented, with particular attention to core foraging habitat on the mitigation plot at the BWWMA. As such, this project may have short-term, negligible-to-minor adverse impacts to wood storks.

Long-term benefits to habitat quality and wildlife, including protected species, are expected from the implementation of this project through the restoration of natural hydrology and reduction of flooding. While approximately 567 acres of wetlands and 44 acres of surface waters would be impacted by dredging and filling, the health of BWWMA's wetlands and associated wildlife would benefit from the restored natural hydrology and resulting reduction of flooding. The newly created 538-acre HEI would also provide habitat and refuge for wildlife. In addition to the direct and indirect benefits from the project itself, a mitigation project designed to offset any long-term impacts would implement an additional 2,108 acres of hydrologic enhancement work at the adjacent BWWMA, designed to reduce vegetative stress, restore woody vegetation growth rates, and re-establish natural vegetation.

Summary
In summary, this project is anticipated to result in short- and long-term, minor-to-moderate adverse impacts and long-term benefits to biological resources.

A.3.5.1.2.3 Socioeconomic Resources

As this project is taking place in a primarily rural, protected area, adverse economic impacts to local businesses or residents are not expected. In the long-term, the project may provide economic benefits through the short-term increase in construction jobs and the long-term increase of visitors to the WMA.

Summary
In summary, this project is anticipated to result in short- and long-term benefits to socioeconomic resources.

A.4 No Action Alternative Analysis

Under the No Action Alternative, the RP3/EA alternatives would not occur. Long-term, moderate-to-major adverse impacts to water quality and hydrology would continue in the coastal areas addressed by the projects due to: runoff of untreated and excess volumes of stormwater into aging and inadequate urban stormwater catchments and waterbodies; erosion and sediment loading from dirt roads that cross tributaries to Florida waterbodies and critical habitat; surface water runoff and groundwater seepage of nutrients and bacteria from aging and inadequate septic systems into impaired waters; and hydrologic fragmentation and alterations that reduce or eliminate tidal exchange and/or fish and wildlife access between floodplains, rivers and streams, and estuaries. Habitats and wildlife would not be disturbed by short-term impacts of construction activities necessary to install and/or replace stormwater infrastructure, stabilize and pave roads, replace residential septic tanks with municipal sewer service, remove impediments to hydrology in streams and floodplains, or other hydrologic restoration activities.

Without these projects or projects similar in scope and size, designated water quality impairments (e.g., nutrients and sediments) would not be addressed, resulting in continued long-term adverse impacts to physical, biological, and socioeconomic resources. In addition, hydrologic fragmentation and degradation would continue to adversely impact fish and wildlife by reducing connections between estuaries, rivers, streams, and wetlands, precluding fish access into floodplains, reducing available habitat for wading birds and other wetland dependent species, and providing continued opportunities for further establishment and spread of invasive and exotic species, which would continue to adversely impact habitat and resources of native species.

A.5 NEPA Cumulative Impacts Analysis

Council on Environmental Quality (CEQ) regulations for implementing NEPA require the assessment of cumulative impacts in the decision-making process. CEQ defines cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR §1508.7). As stated in the CEQ handbook, *Considering Cumulative Effects* (CEQ, 1997), cumulative impacts need to be analyzed in terms of the specific resource, ecosystem, and human community being affected and should focus on impacts that are truly meaningful. Cumulative impacts should be considered for all alternatives, including the No Action Alternative.

The PDARP/PEIS (Section 6.17.2) states that consideration of cumulative impacts of proposed alternatives in RP/EAs should build on the programmatic analyses and focus on site-specific issues (DWH Trustees, 2016). This is consistent with CEQ guidance regarding effective use of programmatic NEPA analysis. Section 6.6 and Appendix 6.B of the PDARP/PEIS are incorporated by reference herein, including the methodologies for assessing cumulative impacts, identification of affected resources, and the cumulative impacts scenario. The PDARP/PEIS found that implementation of restoration projects under the Water Quality Restoration Type would be consistent with the PDARP/PEIS Restoration Goals and would not be expected to contribute substantially to short- and long-term adverse cumulative impacts on physical, biological, or socioeconomic resources when analyzed in combination with other past, present, and reasonably foreseeable future actions.

Section 6.6.2 of the PDARP/PEIS outlines the following steps involved in a cumulative impact analysis: (1) identify the resources affected, (2) establish the boundaries of analysis, (3) identify the cumulative impacts scenario, and (4) conduct a cumulative impacts analysis.

Regarding identification of the resources affected, the CEQ handbook states that the analysis must first determine the realistic potential for the resource to sustain itself in the future and whether the proposed action would affect this potential; therefore, the baseline condition of the resource should include a description of how conditions have changed over time and how they are likely to change in the future if the proposed action is not implemented. The baseline condition should also include other ongoing actions, as discussed in Section 6.6.4 of the PDARP/PEIS (DWH Trustees, 2016).

To properly bound the cumulative impacts analysis, the CEQ handbook recommends determining appropriate spatial and temporal impact boundaries. The alternatives analyzed in this RP3/EA would have local and minor-to-moderate adverse impacts, most of which would be short-term in duration (i.e., during implementation). Therefore, the FL TIG considered these short-term adverse impacts in concert with other present actions (i.e., actions with impacts that would overlap with the implementation stage of the alternatives), thus limiting the temporal boundary of the analysis to the construction/implementation phases. In determining the spatial boundary, the FL TIG considered the programmatic analysis of cumulative impacts in the PDARP/PEIS, which analyzed impacts on a regional, ecosystem scale (DWH Trustees, 2016). The spatial boundary of the cumulative impacts analysis in this RP3/EA is on a local scale. In summary, the analysis boundaries for this RP3/EA include the Florida Gulf Coast, including coastal uplands and riverine habitats over a 1-10-year implementation of the alternatives (with most alternatives estimated to take approximately 1-5 years for implementation).

To identify the cumulative impacts scenario, the PDARP/PEIS describes the affected environment and evaluates the impacts of restoration as well as programmatic development activities by considering cumulative impacts from implementation of DWH Early Restoration. The PDARP/PEIS analysis is incorporated by reference, where applicable (DWH Trustees, 2016). No significant cumulative impacts

were concluded in this analysis. Where applicable, each RP/EA's cumulative impacts analysis should build on previous plans, incorporating only impacts not considered in previous analyses.

For past, present, and reasonably foreseeable future actions, past activities that have contributed to the current condition of resources are described and analyzed in Chapter 6 of the PDARP/PEIS and are not repeated in this analysis. The FL TIG identified relevant present and reasonably foreseeable future actions not analyzed in the previous documents and considered their potential impacts in the analysis (Table A-15). Applicable to the Water Quality Restoration Type, these include restoration related to the DWH oil spill such as habitat and hydrologic restoration that would benefit water quality and other ongoing activities such as military operations, marine transportation, energy activities, dredged material disposal, marine mineral mining, fisheries and aquaculture, tourism and recreation, and coastal development and land use. Where these actions are planned and/or ongoing, they may apply as present and reasonably foreseeable future actions.

Appendix A.3 analyzes the environmental consequences for each of the alternatives proposed for implementation in this RP3/EA. The alternatives evaluated in this RP3/EA are designed to improve environmental quality. Adverse effects would not be anticipated to extend beyond the implementation period for most projects. Some resource areas would be affected over the long-term, some beneficially and some adversely. None of the projects included in this RP3/EA would result in any long-term adverse effects that rise above a moderate adverse impact. For example, most of the projects would result in short-term, minor-to-moderate adverse impacts to geology and substrates, air quality, and hydrology and water quality during construction activities, and short- and long-term, minor-to-moderate adverse impacts on habitat and wildlife. Biological resources would primarily experience short-term, minor adverse impacts from human disturbance associated with project implementation. Socioeconomic resources would also experience only short-term, minor adverse impacts. Additionally, for many of the resources, projects are anticipated to result in no long-term adverse effects but do have long-term benefits.

As such, the FL TIG concluded that although some of the projects may have an incremental contribution to adverse cumulative impacts, the contribution would not be substantial over the long-term. Many of the alternatives have the potential to provide long-term beneficial cumulative impacts to physical, biological, and socioeconomic resources. Thus, the FL TIG concludes that the Water Quality Restoration Type alternatives in this RP3/EA would not contribute substantially to adverse cumulative impacts when added to other past, present, or reasonably foreseeable future actions.

Table A-15 Summary of the Past, Present, and Reasonably Foreseeable Future Actions Considered in the Cumulative Impacts Analysis

Action Description	Key Resource Areas and Potential for Adverse Cumulative Impacts
Restoration Related to the DWH Oil Spill (funded by NRDA, National Fish and Wildlife Foundation's Gulf Environmental Benefit Fund [NFWF-GEBF], Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States [RESTORE] Act, Gulf of Mexico Research Initiative [GOMRI])	
Project types funded by DWH would improve living coastal and marine resources (habitat, birds, fish, sea turtles, oysters, and marine mammals), water quality, and coastal resilience through shoreline protection, habitat protection, and acquisition. Other projects restore and enhance public access, recreational use opportunities, and infrastructure. Projects that are recently completed, planned, or are in process are listed below. Note that some projects benefit multiple resources. **Wetlands Coastal Nearshore Habitat:** Seven Runs Creek Easement; Suwannee River Partnership Irrigation Water Enhancement Program (Implementation); Tampa Bay National Estuary Program (Implementation); Palm River Restoration Project Phase II, East McKay Bay (Implementation); Robinson Preserve Wetlands Restoration (Implementation); 17-1: Cockroach Bay Aquatic Preserve Land Acquisition and Ecosystem Restoration; Bayou Drive Repair And Restoration; Comprehensive Watershed Improvement Plan Project Development And Permitting; Government Street Regional Stormwater Pond at Corrine Park Jones; Bayou Chico Restoration; Destin Harbor, Joe's Bayou, and Indian Bayou Water Quality Improvement; Boggy Bayou Watershed Water Quality Improvement; MK Ranch Hydrologic Restoration; Apalachicola River Slough Restoration- Phase I; St. Marks National Wildlife Refuge Saltmarsh Restoration- Phase I; Lake Wimico Acquisition and Management; Florida (Pensacola Beach) Dune Restoration Project; Florida Cat Point Living Shoreline Project; Florida Pensacola Bay Living Shoreline Project; Florida Seagrass Recovery Project; Lower Suwannee National Wildlife Refuge Hydrologic Restoration - Planning and Design; Perdido Key Dune Restoration Project; Seagrass Recovery Project at Gulf Islands National Seashore, Florida District; Lower Suwannee National Wildlife Refuge Hydrologic Restoration - Planning and Design; Rattlesnake Bluff Road and Riverbank Restoration; Carpenter Creek Headwaters Water Quality Improvements; Pensacola Beach Reclaimed Water System Expansion; Alligator Lake Coastal Dune Lake Hydrologic Restoration; City of Port St. Joe Stormwater Improvements; City of Carrabelle's Lighthouse Estates: Septic Tank Abatement - Phase II; Lower Charlotte Harbor Flatwoods Hydrologic Restoration Initiative, Yucca Pens Unit (Planning and Design); Pensacola Bay and Perdido River Watersheds - Nutrient Reduction; Lower Suwannee River Watershed - Nutrient Reduction; Gulf Coast Conservation Reserve Program (GCCRP) (Planning & Implementation) – Florida; Ladson Tract Conservation Easement; Ecological and Economic Impacts of Land-Use and Climate Change on Coastal Food Webs and Fisheries; 24-1: Adaptive Planning and Compliance Project; White Island Restoration; 16-2: Wastewater Collection System Improvements - E&D; 1-1: Bayou Chico Contaminated Sediment Remediation Project - E&D; Apalachicola River Ecosystem Land Acquisition & Management; Predicting benefits in Panhandle Estuary Systems: A partnership to quantify impacts, stressors, and outcomes using adaptive management frameworks; 13-1: NW Quadrant Sewer Force Main Project – Construction; Florida Strategic Gulf Coast Land Acquisition Program (Planning & Implementation): Apalachicola River Ecosystem Land Acquisition Workplan: Upper Phase III A; 8-1: Wakulla Springshed Water Quality Protection Program - Otter Creek WWTF Construction; 3-4: Shoal River Headwaters Protection Program-Phase I Construction; 15-1: Port Richey Watershed Stormwater Management Project-Construction; Florida Water Quality Improvement Program (Planning); Florida Gulf Coast Resiliency Program (Planning); 2-1: Santa Rosa Sound Water Quality Improvement Program - Monitoring **Beach/Terrestrial:** Ft. De Soto Park Dune Walkovers; St. Joseph Peninsula Beach Restoration; Escribano Point Coastal Habitat Acquisition and Restoration - Phase I; Restoration and Management of Escribano Point Coastal Habitat - Phase II; Restoration of Florida's Coastal Dune Lakes Restoration of Florida's Coastal Dune Lakes - Phase II; Panhandle Dune Restoration; Decision support for multi-species coastal habitat management on properties with multi-use objectives; East Bay Living Shoreline and Seagrass Project; 16-3: Land Acquisition for Floodplain Restoration and Resiliency	Geology and substrates; Hydrology and water quality; Habitats; Marine and estuarine fauna; Terrestrial wildlife; Protected species; Land and marine management; Fisheries and aquaculture.

Action Description	Key Resource Areas and Potential for Adverse Cumulative Impacts
Oyster Restoration: Apalachicola Bay Oyster Restoration (Implementation); 12-2: Suwannee Sound / Cedar Key Oyster Restoration; Santa Rosa County Oyster Habitat Restoration Project; Oyster Restoration in the Pensacola Bay System; Yellow River Aquatic Preserve Shoreline Restoration Apalachicola Bay Oyster Restoration; Oyster Reef Habitat Restoration in Saint Andrew Bay; Pensacola East Bay Oyster Habitat Restoration Project - Phase I; Recovery and Resilience of Oyster Reefs in the Big Bend of Florida; Pensacola East Bay Oyster Habitat Restoration - Phase II; Apalachicola Bay Oyster Reef Restoration- Phase II; Florida Oyster Cultch Placement Project; Conducting Habitat Suitability Analyses to Identify Optimal Oyster Restoration Locations Along Florida's Gulf Coast; 18-6: Applied Research for Shellfish Aquaculture; 18:1 - Manatee River Oyster Restoration; 13-3: Artificial Reef Program – Implementation **SAV:** Beach Haven - Joint Stormwater & Wastewater Improvement Project - Phase II (Implementation); Tampa Bay restoration and *Pyrodinium bahamense* blooms dynamics: Filling knowledge gaps to enhance recovery; Using ecosystem modeling to understand the impacts of seagrass restoration and red tides on sea turtles, marine mammals, and seabirds on the West Florida Shelf; Seagrass Conservation through Actionable Research: Management Areas for Prevention of Scarring (SCAR MAPS) **Multiple/Other:** Biodegradation of "Hidden" High Molecular Weight Polycyclic Aromatic Hydrocarbons: Closing Critical Research Gaps; Escribano Point Apalachicola Watershed Agriculture Water Quality Improvement (Implementation); Dry Tortugas and Lower Keys High Frequency Radars; Taking the Pulse of the West Florida Shelf at a Hypothesized Loop Current Control Point; 16-1: Lake Seminole Sediment Removal; Orange Lake Restoration Project; Alafia Bank Shoreline Restoration and Management; Lanark Reef Shorebird Protection; Restoration Benefits to Wading Bird Habitat In Florida Bay; Coastal Bird Habitat Stewardship in Florida; Migratory Bird Habitat Development in Coastal Florida; U.S. Gulf Shorebird Assessment and Management Plan; Comprehensive Panhandle Coastal Bird Conservation; Florida Shorebird Conservation Initiative; Restoring Florida's Shorebird & Seabird Population. Phase I; Southwest Florida Wading Bird Nesting Island Enhancement; Wulfert Bayous Bird Nesting Habitat Restoration Franklin County Living Shoreline; FL TIG-FWC Administrative Oversight and Comprehensive Planning; St. Vincent National Wildlife Refuge Predator Control; Beach and Dune Habitat Protection at Gulf Islands National Seashore; Invasive Plant Removal at Gulf Islands National Seashore; Gulf Islands National Seashore (Florida) Night Sky Restoration (Planning and Design); 22-1: Comprehensive Watershed Improvement Program - Monitoring and Master Plan; 5-2: St. Andrew Bay Stormwater Improvement Program – St. Andrew Bay Watch – Water Quality Monitoring; Planning Assistance For The Eleven Mile Creek Stream Restoration Design; Restoring Florida's Shorebird and Seabird Populations - Phase II; 18-2: Portosueno Park Living Shoreline; St. Vincent National Wildlife Refuge Access and Recreational Improvements through Acquisition at Indian Pass; Pensacola Beach Fort Pickens Road Wildlife Lighting Retrofits; Egmont Key National Wildlife Refuge Vegetation Management and Dune Retention; Plant Removal And Habitat Improvement In Walton County's Rare Coastal Dune Lakes Project 3; Tampa Bay restoration and *Pyrodinium bahamense* blooms dynamics: Filling knowledge gaps to enhance recovery; Gomez Key Oyster Reef Expansion and Breakwaters for American Oystercatchers; Northeast Florida Coastal Predation Management; Florida Shorebird and Seabird Stewardship and Habitat Management – 5 Years; Perdido Key Sediment Placement; Johnson Beach Access Management and Habitat Protection; Coastal Dune Lakes Hydrological Restoration Project; Florida Gulf Coast Tributaries Hydrologic Restoration Program; Coastal Environmental Sensitivity Index Mapping of Florida Gulf Coast; Pasco Energy And Marine Centers Restoration And Research Project; 3-5: Veterans Park Living Shoreline **Water Quality/ Lakes and Rivers:** Apalachicola Watershed Agriculture Water Quality Improvement (Implementation); 16-1: Lake Seminole Sediment Removal; Orange Lake Restoration Project; 22-1: Comprehensive Watershed Improvement Program - Monitoring and Master Plan; 5-2: St. Andrew Bay Stormwater Improvement Program – St. Andrew Bay Watch – Water Quality Monitoring; Planning Assistance For The Eleven Mile Creek Stream Restoration Design; Plant Removal And Habitat Improvement In Walton County's Rare Coastal Dune Lakes Project 3; Coastal Dune Lakes Hydrological Restoration Project; Florida Gulf Coast Tributaries Hydrologic Restoration Program; Lisenby Avenue Stormwater Management; Destin Harbor Stormwater Management; Tanglewood and Overbrook Stormwater Management; Spring Street Stormwater Management; Fort Walton Beach	

Action Description	Key Resource Areas and Potential for Adverse Cumulative Impacts
Stormwater Management; Dirt Road Paving Districts 1, 4, 5; North Bay Wastewater System Reuse; 6-1: St. Joseph Bay/Chipola River Sewer Improvement Program **Recreational Use:** Facilities Construction At The Sunwest Park Project; Carl Gray Park Boat Ramp; Porter Park Improvements; Florida Maritime Museum Facility Enhancement; Walton County Artificial Reef Construction- Miramar/Frangista Project 1; Economic Revitalization Of Niceville's Historic Old Downtown; Captain Royal Melvin Heritage Park And Plaza; Blackwater Heritage State Trail Infrastructure Improvements; Florida Boat Ramp Enhancement and Construction Project; Apalachicola River Wildlife and Environmental Area Fishing and Wildlife Viewing Access Improvements; Bald Point State Park Recreation Areas; Beach Enhancement Project at Gulf Islands National Seashore; Big Lagoon State Park Boat Ramp Improvement Bob Sikes Pier, Parking, and Trail Restoration; City of Parker - Oakshore Drive Pier; Deer Lake State Park Development; Developing Enhanced Recreational Opportunities on Escribano Point Portion of the Yellow River WMA; Enhancement of Franklin County Parks and Boat Ramps; Florida Artificial Reef Creation and Restoration; Gulf County Recreation Projects; Gulf Islands National Seashore Ferry Project; Navarre Beach Park Coastal Access and Dune Restoration; Navarre Beach Park Gulfside Walkover Complex; Norriego Point Restoration and Recreation Project; Northwest Florida Estuarine Habitat Restoration, Protection and Education - Fort Walton Beach; Scallop Enhancement for Increased Recreational Fishing Opportunity in the Florida Panhandle; Shell Point Beach Nourishment; Strategically Provided Boat Access Along Florida's Gulf Coast; Wakulla County Mashes Sands Park Improvements; Walton County Boardwalks and Dune Crossovers; Florida Coastal Access Project; Rehabilitation of Okaloosa Unit Recreational Facilities at Gulf Islands National Seashore; Perdido River and Bay Paddle Trail; Carpenter Creek Headwaters Park Amenities; Joe's Bayou Recreation Area Improvements; Topsail Hill Preserve State Park Improvements; Camp Helen State Park Improvements; St. Andrews State Park Improvements St. Marks National Wildlife Refuge Coastal Trail Connection, Spring Creek to Port Leon; 14-1: Artificial Reef Program - E&D and Monitoring; Howard Creek Lower Landing Acquisition; Ted Sperling Park At South Lido Beach Improvements; 18-10: Kingfish Boat Ramp Renovation and Expansion – Construction; Pensacola Community Maritime Park Public Fishing Marina; Baars Park and Sanders Beach Kayak Fishing Trail Access Upgrades Gulf Breeze Parks Boating and Fishing Access Upgrades; Lincoln Park Boat Ramp and Dock Improvements; Florida Artificial Reef Creation and Restoration – Phase 2; Apollo Beach Recreational Sportfish Hatchery Facility; 10-2: Hodges Park Rehabilitation; 15-5: Artificial Reef Program - Hudson Reef; 8-2: Coastal Access Program – Bayside Marina; Promoting Eco-Tourism In Levy County Via Outdoor Electronic Information Kiosk; 10-1: Spring Warrior – Acquisition	
Military Operations	
The U.S. Air Force and U.S. Navy conduct military operations within federally designated areas of Florida for the purposes of personnel training, research, design, testing, and evaluation. The Navy facilities are located in Pensacola, Panama City, Key West, Homestead, Mayport, Jacksonville, and some other smaller stations, which conduct training and operations in Florida coastal waters.	Geology and substrates; Hydrology and water quality; Habitats; Marine and estuarine fauna; Essential fish habitat (EFH); Land and marine management; Fisheries and aquaculture.
Marine Transportation	
Marine Highway Corridors are used for port development, shipping and maritime services, and associated navigation, channel construction, and maintenance. Future actions are likely to occur along corridors (M10) or at ports in Florida as maritime traffic is expected to increase.	Hydrology and water quality; Habitats; Marine and estuarine fauna; EFH; Land and marine management; Fisheries and aquaculture.
Dredged Material Disposal	
Navigational channels, marinas, and other publicly used water bottoms are dredged as needed to maintain navigability. Dredged materials are either beneficially used as part of another project or deposited in a designated disposal location.	Geology and substrates; Hydrology and water quality; Habitats; Marine and estuarine fauna; Protected species; EFH; Land and marine management; Fisheries and aquaculture.

Action Description	Key Resource Areas and Potential for Adverse Cumulative Impacts
Marine Mineral Mining, Including Sand and Gravel Mining	
According to the United States Geological Survey (USGS), in 2014[27], the value of Florida's nonfuel mineral production was $2.89 billion. Florida is the only state producing staurolite; leads in the production of attapulgite, peat, and phosphate rock; and is a major producer of masonry and Portland cements, titanium concentrates (ilmenite), and zirconium concentrates (USGS 2014).	Geology and substrates; Hydrology and water quality; Habitats; Marine and estuarine fauna; Protected species; EFH; Land and marine management; Fisheries and aquaculture.
Fisheries and Aquaculture	
FWC is responsible for regulating recreational and commercial fishing within Florida state waters. The agency provides licenses and permits; sets catch limits, quotas, and seasons; regulates harvest and processing; and provides technical assistance. The Florida Department of Agriculture and Consumer Services is responsible for regulating aquaculture activities within Florida state waters and leases coastal submerged lands for aquaculture.	Geology and substrates; Hydrology and water quality; Habitats; Marine and estuarine fauna; Protected species; EFH; Land and marine management; Fisheries and aquaculture.
Tourism and Recreation	
Examples include park upgrades to walking and biking paths.	Geology and substrates; Habitats; Terrestrial wildlife; Protected species; EFH; Land and marine management.
Coastal Development and Land Use	
Examples of coastal development activities include commercial, residential, and other development; roadway maintenance and improvement; structural and nonstructural risk reduction projects; marsh creation; sediment diversions; and hydrologic and ridge restoration.	Geology and substrates; Hydrology and water quality; Habitats; Marine and estuarine fauna; Terrestrial wildlife; Protected species; EFH; Land and marine management; Fisheries and aquaculture.

[27] The most recent annual report; source: USGS. 2014. 2014 Minerals Yearbook: Florida. Available at www.usgs.gov/centers/nmic/mineral-industry-florida.

A.6 Comparison of Alternatives

The environmental analysis demonstrated that there would primarily be minor, but also some moderate short- and long-term adverse impacts as well as environmental benefits from implementation of the RP3/EA alternatives. In general, implementation of the RP3/EA alternatives would result in short-term, minor-to-moderate adverse impacts to physical resources including geology and substrates, air quality, and hydrology and water quality. There would be only some long-term, minor adverse effects to geology and substrates associated with alternatives that involve sediment removal for implementation. All of the RP3/EA alternatives would result in benefits to hydrology and water quality by reducing sources of water quality impairment in Florida watersheds.

Biological resources would primarily experience short-term, minor-to-moderate adverse impacts from human- and construction-related disturbance (e.g., foot traffic, human presence) associated with project implementation. Some alternatives would have long-term, minor-to-moderate adverse impacts on biological resources, primarily habitats, from habitat alterations. However, biological resources would experience long-term benefits from improved water quality and hydrologic restoration.

Lastly, for socioeconomic resources, the RP3/EA alternatives would result in short-term, negligible-to-minor adverse impacts to socioeconomics, infrastructure, tourism and recreation, and aesthetics and visual resources. No long-term adverse impacts are anticipated. Further, most projects in this RP3/EA would result in short- and long-term benefits to socioeconomic resources (in particular, socioeconomics, infrastructure, land and marine management, tourism and recreation, aesthetics and visual resources, and public health and safety).

The No Action Alternative is anticipated to result in long-term, minor-to-major adverse impacts. A summary of impacts for each restoration alternative and the No Action Alternative is provided in Table A-16.

Alternatives that include planning activities would also have limited adverse impacts, and at most, would cause short-term, minor localized impacts. Adverse impacts to the biological and physical environment could include short-term disturbance of habitats and species, minor emissions from vehicles, and minor disturbance to terrestrial and riverine environments. Implementing Trustees would conduct due diligence to ensure that no unanticipated effects to listed species and habitats would occur. Adverse impacts would be minimized by following mitigation measures, BMPs, and other guidance developed during the permitting process, environmental reviews, consultation process, and other relevant regulatory requirements. The FL TIG would also consider best practices referenced in Section 6.15 and Appendix 6.A of the PDARP/PEIS (DWH Trustees, 2016).

Table A-16 Summary of the Direct and Indirect Impacts of the Reasonable Range of Restoration Alternatives

Project	Geology and Substrates	Hydrology and Water Quality	Air Quality	Noise	Habitats	Wildlife Species	Marine and Estuarine Fauna	Protected Species	Socioeconomics and Environmental Justice	Cultural Resources	Infrastructure	Land and Marine Management	Tourism and Recreational Use	Fisheries and Aquaculture	Marine Transportation	Aesthetics and Visual Resources	Public Health and Safety
No Action	I	**L**	NE	NE	L	L	L	L	NE	NE	I	I	I	I	NE	I	I
WQ1, Pensacola and Perdido Watersheds Microbial Source Tracking (Planning) (preferred)	s	+	s	s	s,+	s,+	NE	s,+	NE	NE	NE	NE	+	+	NE	+	+
WQ2, Pensacola Bay Unpaved Roads Initiative Phase 2 (Planning) (preferred)	s	+	s	s	s,+	s,+	NE	s,+	NE	NE	NE	NE	+	+	NE	+	+
WQ3, Carpenter Creek Hydrologic Restoration and Stormwater Improvements (preferred)	S,+	s,+	s	s	S,I,+	S,+	+	s,+	s,+	NE	s,+	+	+	+	NE	s,+	+
WQ4, Hollice T. Williams Stormwater Park (preferred)	s,I	s,+	s	s	+	s,+	+	s,+	+	NE	+	+	s,+	+	NE	s,+	+
WQ5, Gulf Breeze Septic to Sewer Conversion (preferred)	s,I	s,+	s	s	+	s,+	+	s,+	+	NE	s,+	NE	+	+	NE	s,+	+
WQ6, Santa Rosa County Septic to Sewer Conversion (preferred)	s,I	s,+	s	s	+	s,+	+	s,+	+	NE	s,+	NE	+	+	NE	s,+	+
WQ7, Choctawhatchee Bay Unpaved Roads Initiative (preferred)	S,+	s,+	s	s	s,I,+	s,+	+	s,+	+	NE	s,+	NE	+	+	NE	s,+	+
WQ8, Swift Creek Hydrologic Restoration	S	S,+	s	s	S,I,+	S,+	+	s,+	s,+	NE	s,+	NE	s,+	+	NE	s,+	+
WQ9, Springfield Stream and Wetland Enhancement	S	s,+	s	s	S,+	s,+	+	s,+	s,+	NE	s,+	NE	+	+	NE	s,+	+
WQ10, Telogia Creek Watershed Water Quality Improvements (preferred)	S,+	s,+	s	s	S,I,+	S,+	+	s,+	s,+	NE	s,+	+	+	+	NE	s,+	+
WQ11, Lower Suwannee National Wildlife Refuge Hydrologic Restoration Phase 2 (Planning) (preferred)	s	+	s	s	s,+	s,+	NE	s,+	NE	NE	NE	+	+	+	NE	+	+
WQ12, Bond Farm Hydrologic Enhancement Impoundment (preferred)	S	s,+	s	s	S,L,+	S,+	+	s,+	+	NE	NE	+	+	+	NE	s,+	+
WQ13, Bond Farm Hydrologic Enhancement Southwest Discharge Structure (Planning) (preferred)	s	+	s	s	s,+	s,+	NE	s,+	NE	NE	NE	+	+	+	NE	+	+

+ Beneficial effect
NE No effect
s Short-term, minor adverse effect
S Short-term, moderate adverse effect
S Short-term, major adverse effect
l Long-term, minor adverse effect
L Long-term, moderate adverse effect
L Long-term, major adverse effect

Appendix B. List of Preparers and Reviewers

Name	Position
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Benjamin Battle	USDA Representative for Florida TIG
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Nadia Martin	Principal, IEc
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Jaime Hodgdon	Technical Consultant, IEc
Maya Chandar-Kouba	Research Analyst, IEc

Appendix C. Impact Intensity Definitions

The intensity definitions used in the evaluation of potential environmental impacts from the reasonable range of alternatives considered in this RP3/EA are provided below. These definitions are also provided in Table 6.3-2 in the PDARP/PEIS.

Resource	Impact Duration	Minor Intensity	Moderate Intensity	Major Intensity
Geology and Substrates	Short-term: During construction period. Long-term: Over the life of the project or longer.	Disturbance to geologic features or soils could be detectable but could be small and localized. There could be no changes to local geologic features or soil characteristics. Erosion and/or compaction could occur in localized areas.	Disturbance could occur over local and immediately adjacent areas. Impacts on geology or soils could be readily apparent and result in changes to the soil character or local geologic characteristics. Erosion and compaction impacts could occur over local and immediately adjacent areas.	Disturbance could occur over a widespread area. Impacts on geology or soils could be readily apparent and could result in changes to the character of the geology or soils over a widespread area. Erosion and compaction could occur over a widespread area. Disruptions to substrates or soils may be permanent.
Hydrology and Water Quality	Short-term: During construction period. Long-term: Over the life of the project or longer.	Hydrology: The effect on hydrology could be measurable, but it could be small and localized. The effect could only temporarily alter the area's hydrology, including surface and groundwater flows. Water quality: Impacts could result in a detectable change to water quality, but the change could be expected to be small and localized. Impacts could quickly become undetectable. State water quality standards as required by the Clean Water Act could not be exceeded. Floodplains: Impacts may result in a detectable change to natural and beneficial floodplain values, but the change could be expected to be small, and localized. There could be no appreciable increased risk of flood loss including impacts on human safety, health, and welfare. Wetlands: The effect on wetlands could be measurable but small in terms of area and the nature of the impact. A small impact on the size, integrity, or	Hydrology: The effect on hydrology could be measurable, but small and limited to local and adjacent areas. The effect could permanently alter the area's hydrology, including surface and groundwater flows. Water quality: Impacts on water quality could be observable over a relatively large area. Impacts could result in a change to water quality that could be readily detectable and limited to local and adjacent areas. Change in water quality could persist; however, it could likely not exceed state water quality standards as required by the Clean Water Act. Floodplains: Impacts could result in a change to natural and beneficial floodplain values and could be readily detectable but limited to local and adjacent areas. Location of operations in floodplains could increase risk of flood loss, including impacts on human safety, health, and welfare. Wetlands: The action could cause a measurable effect on wetlands indicators (size, integrity, or connectivity) or could result in a permanent loss of wetland acreage across local and adjacent areas. However, wetland	Hydrology: The effect on hydrology could be measurable and widespread. The effect could permanently alter hydrologic patterns including surface and groundwater flows. Water quality: Impacts could likely result in a change to water quality that could be readily detectable and widespread. Impacts could likely result in exceedance of state water quality standards and/or could impair designated uses of a waterbody. Floodplains: Impacts could result in a change to natural and beneficial floodplain values that could have substantial consequences over a widespread area. Location of operations could increase risk of flood loss, including impacts on human safety, health, and welfare. Wetlands: The action could cause a permanent loss of wetlands across a widespread area. The character of the wetlands could be changed so that the functions typically provided by the wetland could be permanently lost.

Resource	Impact Duration	Minor Intensity	Moderate Intensity	Major Intensity
		connectivity could occur; however, wetland function could not be affected and natural restoration could occur if left alone.	functions could only be permanently altered in limited areas.	
Air Quality	Short-term: During construction period. Long-term: Over the life of the project or longer.	The impact on air quality may be measurable but could be localized and temporary, such that the emissions do not exceed USEPA's *de minimis* criteria for a general conformity determination under the Clean Air Act (40 CFR 93.153).	The impact on air quality could be measurable and limited to local and adjacent areas. Emissions of criteria pollutants could be at USEPA's *de minimis* criteria levels for general conformity determination.	The impact on air quality could be measurable over a widespread area. Emissions would be high, such that they could exceed USEPA's *de minimis* criteria for a general conformity determination.
Noise	Short-term: During construction period. Long-term: Over the life of the project.	Increased noise could attract attention, but its contribution to the soundscape would be localized and unlikely to affect current user activities.	Increased noise could attract attention and contribute to the soundscape, including in local areas and those adjacent to the action, but could not dominate. User activities could be affected.	Increased noise could attract attention and dominate the soundscape over widespread areas. Noise levels could eliminate or discourage user activities.
Habitats	Short-term: Lasting less than two growing seasons. Long-term: Lasting longer than two growing seasons.	Impacts on native vegetation may be detectable but could not alter natural conditions and could be limited to localized areas. Infrequent disturbance to individual plants could be expected but would not affect local or range-wide population stability. Infrequent or insignificant one-time disturbance to locally suitable habitat could occur, but sufficient habitat could remain functional at both the local and regional scales to maintain the viability of the species. Opportunity for increased spread of non-native species could be detectable but temporary and localized and could not displace native species populations and distributions.	Impacts on native vegetation could be measurable but limited to local and adjacent areas. Occasional disturbance to individual plants could be expected. These disturbances could adversely affect local populations but could not be expected to affect regional population stability. Some impacts might occur in key habitats, but sufficient local habitat could retain function to maintain the viability of the species both locally and throughout its range. Opportunity for increased spread of non-native species could be detectable and limited to local and adjacent areas but could only result in temporary changes to native species population and distributions.	Impacts on native vegetation could be measurable and widespread. Frequent disturbances of individual plants could be expected, with adverse impacts on both local and regional population levels. These disturbances could adversely affect range-wide population stability. Some impacts might occur in key habitats, and habitat impacts could adversely affect the viability of the species both locally and throughout its range. Actions could result in the widespread increase of non-native species and result in broad and permanent changes to native species populations and distributions.
Wildlife Species (including birds)	Short-term: Lasting up to two breeding seasons,	Impacts on native species, their habitats, or the natural processes sustaining them could be detectable, but localized, and could not	Impacts on native species, their habitats, or the natural processes sustaining them could be measurable but limited to local and adjacent areas. Occasional responses to disturbance by	Impacts on native species, their habitats, or the natural processes sustaining them could be detectable and widespread. Frequent responses to disturbance by some individuals

Resource	Impact Duration	Minor Intensity	Moderate Intensity	Major Intensity
	depending on length of breeding season. Long-term: Lasting more than two breeding seasons.	measurably alter natural conditions. Infrequent responses to disturbance by some individuals could be expected but without interference to feeding, reproduction, resting, migrating, or other factors affecting population levels. Small changes to local population numbers, population structure, and other demographic factors could occur. Sufficient habitat could remain functional at both the local and range-wide scales to maintain the viability of the species. Opportunity for increased spread of non-native species could be detectable but temporary and localized, and these species could not displace native species populations and distributions.	some individuals could be expected, with some adverse impacts on feeding, reproduction, resting, migrating, or other factors affecting local population levels. Some impacts might occur in key habitats. However, sufficient population numbers or habitat could retain function to maintain the viability of the species both locally and throughout its range. Opportunity for increased spread of non-native species could be detectable and limited to local and adjacent areas, but could only result in temporary changes to native species population and distributions.	could be expected, with adverse impacts on feeding, reproduction, migrating, or other factors resulting in a decrease in both local and range-wide population levels and habitat type. Impacts could occur during critical periods of reproduction or in key habitats and could result in direct mortality or loss of habitat that might affect the viability of a species. Local population numbers, population structure, and other demographic factors might experience large changes or declines. Actions could result in the widespread increase of non-native species and result in broad and permanent changes to native species populations and distributions.
Marine and Estuarine Fauna (fish, shellfish, benthic organisms)	Short-term: Lasting up to two spawning seasons, depending on length of season. Long-term: Lasting more than two spawning seasons.	Impacts could be detectable and localized but small. Disturbance of individual species could occur; however, there could be no change in the diversity or local populations of marine and estuarine species. Any disturbance could not interfere with key behaviors such as feeding and spawning. There could be no restriction of movements daily or seasonally. Opportunity for increased spread of non-native species could be detectable but temporary and localized and these species could not displace native species populations and distributions.	Impacts could be readily apparent and result in a change in marine and estuarine species populations in local and adjacent areas. Areas being disturbed may display a change in species diversity; however, overall populations could not be altered. Some key behaviors could be affected but not to the extent that species viability is affected. Some movements could be restricted seasonally. Opportunity for increased spread of non-native species could be detectable and limited to local and adjacent areas but could only result in temporary changes to native species population and distributions.	Impacts could be readily apparent and could substantially change marine and estuarine species populations over a wide-scale area, possibly river-basin-wide. Disturbances could result in a decrease in fish species diversity and populations. The viability of some species could be affected. Species movements could be seasonally constrained or eliminated. Actions could result in the widespread increase of non-native species and result in broad and permanent changes to native species populations and distributions.
Protected Species	Short-term: Lasting up to one breeding/growing season. Long-term: Lasting more	Impacts on protected species, their habitats, or the natural processes sustaining them could be detectable, but small and localized, and could not measurably alter natural conditions. Impacts could likely result in a "may affect, not likely to adversely affect"	Impacts on protected species, their habitats, or the natural processes sustaining them could be detectable and some alteration in the numbers of protected species or occasional responses to disturbance by some individuals could be expected, with some negative impacts to feeding, reproduction, resting, migrating, or	Impacts on protected species, their habitats, or the natural processes sustaining them could be detectable, widespread, and permanent. Substantial impacts to the population numbers of protected species, or interference with their survival, growth, or reproduction could be expected. There could be impacts to key

Resource	Impact Duration	Minor Intensity	Moderate Intensity	Major Intensity
	than one breeding/ growing season.	determination for at least one listed species.	other factors affecting local and adjacent population levels. Impacts could occur in key habitats, but sufficient population numbers or habitat could remain functional to maintain the viability of the species both locally and throughout their range. Some disturbance to individuals or impacts to potential or designated critical habitat could occur. Impacts could likely result in a "may affect, likely to adversely affect" determination for at least one listed species. No adverse modification of critical habitat could be expected.	habitat, resulting in substantial reductions in species numbers. Results in an "is likely to jeopardize proposed or listed species/adversely modify proposed or designated critical habitat (impairment)" determination for at least one listed species.
Socioeconomics and Environmental Justice	Short-term: During construction period. Long-term: Over the life of the project or longer.	A few individuals, groups, businesses, properties, or institutions could be affected. Impacts could be small and localized. These impacts are not expected to substantively alter social and/or economic conditions. Actions could not disproportionately affect minority and low-income populations.	Many individuals, groups, businesses, properties, or institutions could be affected. Impacts could be readily apparent and detectable in local and adjacent areas and could have a noticeable effect on social and/or economic conditions. Actions could disproportionately affect minority and low-income populations. However, the impact could be temporary and localized.	A large number of individuals, groups, businesses, properties, or institutions could be affected. Impacts could be readily detectable and observed, extend over a widespread area, and have a substantial influence on social and/or economic conditions. Actions could disproportionately affect minority and low-income populations, and this impact could be permanent and widespread.
Cultural Resources	Short-term: During construction period. Long-term: Over the life of the project or longer.	The disturbance of a site(s), building, structure, or object could be confined to a small area with little, if any, loss of important cultural information potential.	Disturbance of a site(s), building, structure, or object not expected to result in a substantial loss of important cultural information.	Disturbance of a site(s), building, structure, or object could be substantial and may result in the loss of most or all its potential to yield important cultural information.
Infrastructure	Short-term: During construction period. Long-term: Over the life of the project or longer.	The action could affect public services or utilities, but the impact could be localized and within operational capacities. There could be negligible increases in local daily traffic volumes resulting in perceived inconvenience to drivers but no actual disruptions to traffic.	The action could affect public services or utilities in local and adjacent areas, and the impact could require the acquisition of additional service providers or capacity. Detectable increase in daily traffic volumes (with slightly reduced speed of travel), resulting in slowed traffic and delays, but no change in level of service (LOS). Short service interruptions (temporary closure for a few hours) to roadway and railroad traffic could occur.	The action could affect public services or utilities over a widespread area resulting in the loss of certain services or necessary utilities. Extensive increase in daily traffic volumes (with reduced speed of travel) resulting in an adverse change in LOS to worsened conditions. Extensive service disruptions (temporary closure of one day or more) to roadways or railroad traffic could occur.

Resource	Impact Duration	Minor Intensity	Moderate Intensity	Major Intensity
Land and Marine Management	Short-term: During construction period. Long-term: Over the life of the project or longer.	The action could require a variance or zoning change or an amendment to a land use, area comprehensive, or management plan but could not affect overall use and management beyond the local area.	The action could require a variance or zoning change or an amendment to a land use, area comprehensive, or management plan and could affect overall land use and management in local and adjacent areas.	The action could cause permanent changes to and conflict with land uses or management plans over a widespread area.
Tourism and Recreational Use	Short-term: During construction period. Long-term: Over the life of the project or longer.	There could be partial developed recreational site closures to protect public safety. The same site capacity and visitor experience could remain unchanged after construction. The impact could be detectable and/or could only affect some recreationists. Users could likely be aware of the action but changes in use could be slight. There could be partial closures to protect public safety. Impacts could be local. There could be a change in local recreational opportunities; however, it could affect relatively few visitors or could not affect any related recreational activities.	There could be complete site closures to protect public safety. However, the sites could be reopened after activities occur. There could be slightly reduced site capacity. The visitor experience could be slightly changed but still available. The impact could be readily apparent and/or could affect many recreationists locally and in adjacent areas. Users could be aware of the action. There could be complete closures to protect public safety. However, the areas could be reopened after activities occur. Some users could choose to pursue activities in other available local or regional areas.	All developed site capacity could be eliminated because developed facilities could be closed and removed. Visitors could be displaced to facilities over a widespread area, and visitor experiences could no longer be available in many locations. The impact could affect most recreationists over a widespread area. Users could be highly aware of the action. Users could choose to pursue activities in other available regional areas.
Fisheries and Aquaculture	Short-term: Lasting up to two spawning seasons, depending on length of season. Long-term: Lasting more than two spawning seasons.	A few individuals, groups, businesses, properties, or institutions could be affected. Impacts could be small and localized. These impacts are not expected to substantively alter social and/or economic conditions	Many individuals, groups, businesses, properties, or institutions could be affected. Impacts could be readily apparent and detectable in local and adjacent areas and could have a noticeable effect on social and/or economic conditions.	A large number of individuals, groups, businesses, properties, or institutions could be affected. Impacts could be readily detectable and observed, extend over a widespread area, and could have a substantial influence on social and/or economic conditions.
Marine Transportation	Short-term: During construction period.	The action could affect public services or utilities, but the impact could be localized and within operational capacities.	The action could affect public services or utilities in local and adjacent areas, and the impact could require the acquisition of additional service providers or capacity.	The action could affect public services utilities over a widespread area resulting in the loss of certain services or necessary utilities.

Resource	Impact Duration	Minor Intensity	Moderate Intensity	Major Intensity
	Long-term: Over the life of the project or longer.	There could be negligible increases in local daily marine traffic volumes, resulting in perceived inconvenience to operators but no actual disruptions to transportation.	Detectable increase in daily marine traffic volumes could occur (with slightly reduced speed of travel), resulting in slowed traffic and delays. Short service interruptions could occur (temporary delays for a few hours).	Extensive increase in daily marine traffic volumes could occur (with reduced speed of travel), resulting in extensive service disruptions (temporary closure of one day or more).
Aesthetics and Visual Resources	Short-term: During construction period. Long-term: Over the life of the project or longer.	There could be a change in the viewshed that was readily apparent but could not attract attention, dominate the view, or detract from current user activities or experiences.	There could be a change in the viewshed that was readily apparent and attracts attention. Changes could not dominate the viewscape, although they could detract from the current user activities or experiences.	Changes to the characteristic views could dominate and detract from current user activities or experiences.
Public Health and Safety, Including Flood and Shoreline Protection	Short-term: During construction period. Long-term: Over the life of the project or longer.	Actions could not result in (1) soil, groundwater, and/or surface water contamination; (2) exposure of contaminated media to construction workers or transmission line operations personnel; and/or (3) mobilization and migration of contaminants currently in the soil, groundwater, or surface water at levels that could harm the workers or general public. Increased risk of potential hazards (e.g., increased likelihood of storm surge) to visitors, residents, and workers from decreased shoreline integrity could be temporary and localized.	Actions could result in (1) exposure, mobilization and/or migration of existing contaminated soil, groundwater, or surface water to an extent that requires mitigation; and/or (2) could introduce detectable levels of contaminants to soil, groundwater, and/or surface water in localized areas within the project boundaries such that mitigation/remediation is required to restore the affected area to the pre-construction conditions. Increased risk of potential hazards to visitors, residents, and workers from decreased shoreline integrity could be sufficient to cause a permanent change in use patterns and area avoidance in local and adjacent areas.	Actions could result in (1) soil, groundwater, and/or surface water contamination at levels exceeding federal, state, or local hazardous waste criteria, including those established by 40 CFR 261; (2) mobilization of contaminants currently in the soil, groundwater, or surface water, resulting in exposure of humans or other sensitive receptors such as plants and wildlife to contaminant levels that could result in health effects; and (3) the presence of contaminated soil, groundwater, or surface water within the project area, exposing workers and/or the public to contaminated or hazardous materials at levels exceeding those permitted by the federal OSHA in 29 CFR 1910. Increased risk of potential hazards to visitors, residents, and workers from decreased shoreline integrity could be substantial and could cause permanent changes in use patterns and area avoidance over a widespread area.

Appendix D. Project Monitoring and Adaptive Management Plans

MAM plans for each of the preferred alternatives are provided below.

Carpenter Creek Hydrologic Restoration and Stormwater Improvements: Monitoring and Adaptive Management Plan

Prepared by: Florida Department of Environmental Protection

Draft Version Date: 12/15/2023

Introduction

This monitoring and adaptive management (MAM) plan follows guidance provided in the Programmatic Damage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS; Deepwater Horizon [DWH] Natural Resource Damage Assessment [NRDA] Trustees, 2016), MAM Manual Version 2.0 (DWH NRDA Trustees, 2021) by identifying the monitoring needed to evaluate progress toward meeting project objectives and to support any necessary adaptive management of the project. Where applicable, it identifies key sources of uncertainty and incorporates monitoring data and decision points that address these uncertainties. As not all projects would have the same sources and degrees of uncertainty, this project-specific MAM plan is scaled according to the level of uncertainty, scope, scale, and Restoration Type associated with this project.

This plan is a living document and may be updated as needed to reflect changing conditions and/or new information. Any future revisions to this MAM plan would be made publicly available through the Data Integration Visualization Exploration and Reporting (DIVER) Explorer (www.diver.orr.noaa.gov) and accessible through the Trustees' website (www.gulfspillrestoration.noaa.gov).

Project Overview

This project would be implemented as restoration for the DWH oil spill NRDA, consistent with the PDARP/PEIS.

- Programmatic Goal: Restore Water Quality
- Restoration Type: Water Quality
- Restoration Approaches: Reduce pollution and hydrologic degradation to coastal watersheds (PDARP/PEIS Section 5.5.5.2)
- Restoration Techniques: Traditional stormwater control measures; Erosion and sediment control practices (PDARP/PEIS Appendix 5.D.2.2)

This restoration project would be implemented in the Carpenter Creek headwaters, Escambia County, Florida. The project involves a combination of improvements to stormwater treatment infrastructure and stream restoration activities that aim to decrease sediment loading and restore stream hydrology. Specific stormwater treatment activities include installing multiple stormwater filtering structures containing sediment settling chambers to capture and treat stormwater in drainageways near Coronet Drive, and installing bio-sorption activated media stormwater infrastructure, or other technology, at three dry retention ponds near Cardinal Cove to reduce pollution influx into Carpenter Creek and remove energy from the system during heavy rainfall events. Proposed stream restoration activities consist of contouring a bottomland meander belt and headwater channel to stabilize water conveyance through 1,540 feet of Robins Ridge Stream. The goal of this project is to retrofit existing and install new stormwater management systems along with stream restoration activities in the City of Pensacola and Escambia County to provide additional treatment, and thereby improve water quality in Carpenter Creek and Bayou Texar, that flows into Pensacola Bay.

The Implementing Trustee of this project is the Florida Department of Environmental Protection (FDEP) in coordination with Escambia County.

Restoration Type Goals and Project Restoration Objectives

The Restoration Type goals relevant to this project, as identified in the PDARP/PEIS, are:

- Reduce pollutant loadings, including nutrients and pathogens, to priority watersheds along the Florida coast that are threatened by chronic eutrophication, harmful algal blooms, hypoxia, habitat losses, or beach and shellfish closures associated with water quality degradation.
- Where appropriate, co-locate pollutant reduction projects with other restoration projects to enhance ecological services provided by other restoration approaches.

The restoration objectives for this project are:

- Engineer and construct stormwater control enhancements at three sites in the watershed and restore 1,500 feet of alluvial floodplain.
- Improve water quality and reduce sediment loading in Carpenter Creek and Bayou Texar by providing additional water treatment and reducing pollution and hydrologic degradation.
- Improve ecological conditions in the restored floodplain.

Performance criteria would be used to determine restoration success or the need for corrective action in accordance with 15 Code of Federal Regulations 900.55(b)(1)(vii). Specific, measurable performance criteria are defined, as applicable, for monitoring parameters associated with the restoration objective in Section 3.0.

Adaptive Management

Due to the nature of this project, and the use of standard monitoring techniques that have been successfully implemented in similar projects, the Florida Trustee Implementation Group (FL TIG) does not anticipate the need for rigorous adaptive management of the project. If project objectives are not being met, the FL TIG would identify corrective actions as necessary.

Project Monitoring, Performance Criteria, and Potential Corrective Actions

The proposed monitoring for this restoration project was developed to evaluate project performance and potential corrective actions, if needed. Information on each parameter is provided below, organized by objective (Table 1). Note that Table 1 does not include all possible options for corrective actions; rather, it includes a list of potential actions for each individual parameter to be considered if the project is not performing as expected once implemented. Other corrective actions may be identified post-implementation, as appropriate.

Monitoring for this project would include sampling of seven to ten storm events, which are generally categorized as greater than 0.20 inches and less than 1.5 inches of rain. However, this would depend on field conditions and storm events; actual rainfall may vary as well as the drainage area, amount of impervious area, and the time of concentration. Monitoring would generally be conducted at two locations: inflows and outflows from a representative stormwater management site after construction.

Table 1 Monitoring Parameters

Objective 1: Engineer and construct stormwater control enhancements at three sites in the watershed and restore 1,500 feet of alluvial floodplain.

Monitoring Parameter[28]	Purpose	Method(s)	Timing, Frequency, Duration of Data Collection	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Structural Integrity (Completed as Designed)	Monitor progress towards meeting the restoration objective	Review as-built drawings and Professional Engineer Certification of Completion of Construction	Once post construction	3 sites	Features constructed are in substantial conformance with approved plans	Reconstruct features to be in substantial conformance with approved plans
Conservation Improvements, Water Quality (Number of Improvements Implemented by Activity)	Document restoration actions	Count of the number of improvements implemented	Once after project execution is complete	All improvements implemented; all 3 sites	N/A	N/A

[28] Bolding indicates core performance monitoring parameters identified under the *Reduce Pollution and Hydrologic Degradation to Coastal Watershed* Restoration Approach in the MAM Manual (DWH NRDA Trustees, 2021)

Objective 2: Improve water quality and reduce sediment loading in Carpenter Creek and Bayou Texar by providing additional water treatment and reducing pollution and hydrologic degradation.

Monitoring Parameter	Purpose	Method(s)	Timing, Frequency, Duration of Data Collection	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Total Nitrogen (TN)	Evaluate extent to which implemented conservation improvements reduce pollutant loadings	Weighted composite samples taken over the storm hydrograph	7-10 storm events; typically, the samples would be composited over the inflow hydrograph at the inflow and for up to a 36-hour period at outflow station, depending upon the time of concentration and water flows	Inflows and outflows for each storm event from constructed features; each composite would include at least 6 evenly distributed sub-samples.	N/A	N/A
Total Phosphorus (TP)	Evaluate extent to which implemented conservation improvements reduce pollutant loadings	Weighted composite samples taken over the storm hydrograph	7-10 storm events; typically, the samples would be composited over the inflow hydrograph at the inflow and for up to a 36-hour period at outflow station, depending upon the time of concentration and water flows	Inflows and outflows for each storm event from constructed features; each composite would include at least 6 evenly distributed sub-samples	N/A	N/A
Total Suspended Solids (TSS)	Evaluate extent to which implemented conservation improvements reduce pollutant loadings	Weighted composite samples taken over the storm hydrograph	7-10 storm events; typically, the samples would be composited over the inflow hydrograph at the inflow and for up to a 36-hour period at outflow station, depending upon the time of concentration and water flows	Inflows and outflows for each storm event from constructed feature; each composite would include at least 6 evenly distributed sub-samples.	N/A	N/A

Objective 3: Improve ecological conditions in the restored floodplain.

Monitoring Parameter	Purpose	Method(s)	Timing, Frequency, Duration of Data Collection	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Florida Wetland Condition Index (Elevation, Habitat; Survival, Vegetation; Percent Cover, Vegetation; Species Composition, Vegetation; Percent Cover, Other;[29] Species Composition, Other)	Use the Florida Wetland Condition Index to monitor effectiveness of the floodplain restoration. Effectiveness is determined by comparing pre- vs post-implementation Index scores	Transect monitoring of floodplain restoration	Elevations pre-construction and post construction. Vegetation monitoring 2 times a year for 2 years post construction	At least 5 transects in the Robins Ridge Stream restoration footprint	N/A	N/A

[29] Percent Cover, Other and Species Composition, Other would be used to monitor invasive vegetation within the restored floodplain.

Monitoring Schedule

The schedule for project monitoring is shown in Table 2 by monitoring parameter.

Table 2 Monitoring Schedule

Monitoring Parameters	Pre-Implementation	Implementation	Post-Implementation
Structural Integrity (Completed as Designed)	-	-	X
Conservation Improvements, Water Quality (Number of Improvements Implemented by Activity)	-	-	X
Total Nitrogen (TN)	-	-	X
Total Phosphorus (TP)	-	-	X
Total Suspended Solids (TSS)	-	-	X
Florida Wetland Condition Index (Elevation, Habitat; Survival, Vegetation; Percent Cover, Vegetation; Species Composition, Vegetation; Percent Cover, Other; Species Composition, Other)	X	-	X

Evaluation

The FL TIG anticipates conducting an evaluation of the project monitoring data collected (as described above) to help answer the following questions:

- Was the project's restoration objective achieved? If not, is there a reason why it was not met?
- Did the project produce unanticipated results?
- Were there unanticipated events related to the project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?

Data Management

Data Description

See Table 1 above for details on how data would be recorded, the type of data that would be collected, the data standards that would be followed, the timing and frequency of data collection and processing, the location of data collection, and the quantity of data that are expected.

Data Review and Clearance

Project partners would record data in Microsoft Excel and send the data and a draft monitoring report to FDEP DWH staff within 2 months of the calendar year ending. FDEP DWH staff would conduct quality assure/quality control (QA/QC) reviews of the monitoring data and report and coordinate with project partners should any changes be necessary. After all identified errors are addressed, the monitoring data and report would be considered QA/QC'ed. FDEP would give the other FL TIG members time to review the monitoring data and report before making such information publicly available.

Data Storage and Accessibility

The QA/QC'ed annual monitoring report would be stored in DIVER. The report would be submitted by FDEP within 4 months of the calendar year ending.

Data Sharing

The monitoring data and report would be made publicly available through DIVER within 6 months of the calendar year ending.

Reporting

Reporting activities for this project include:

- Reporting on general MAM activities in DIVER on an annual basis.
- Developing a Final MAM Report before a project is closed out.

Roles and Responsibilities

Monitoring data associated with this MAM plan would be collected, reviewed, and reported by FDEP.

References

DWH NRDA Trustees. 2016. *Deepwater Horizon* Oil Spill: Final Programmatic Damage Assessment and Restoration Plan (PDARP) and Final Programmatic Environmental Impact Statement (PEIS). Available: www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

DWH NRDA Trustees. 2021. Monitoring and Adaptive Management Procedures and Guidelines Manual Version 2.0. Appendix to the Trustee Council Standard Operating Procedures for Implementation of the Natural Resource Restoration for the DWH Oil Spill. December. Available: https://www.gulfspillrestoration.noaa.gov/monitoring-and-adaptive-management

Hollice T. Williams Stormwater Park: Monitoring and Adaptive Management Plan

Prepared by: Florida Department of Environmental Protection

Draft Version Date: 12/15/2023

Introduction

This monitoring and adaptive management (MAM) plan follows guidance provided in the Programmatic Damage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS; Deepwater Horizon [DWH] Natural Resource Damage Assessment [NRDA] Trustees, 2016), MAM Manual Version 2.0 (DWH NRDA Trustees, 2021) by identifying the monitoring needed to evaluate progress toward meeting project objectives and to support any necessary adaptive management of the project. Where applicable, it identifies key sources of uncertainty and incorporates monitoring data and decision points that address these uncertainties. As not all projects would have the same sources and degrees of uncertainty, this project-specific MAM plan is scaled according to the level of uncertainty, scope, scale, and Restoration Type associated with this project.

This plan is a living document and may be updated as needed to reflect changing conditions and/or new information. Any future revisions to this MAM plan would be made publicly available through the Data Integration Visualization Exploration and Reporting (DIVER) Explorer (www.diver.orr.noaa.gov) and accessible through the Trustees' website (www.gulfspillrestoration.noaa.gov).

Project Overview

This project would be implemented as restoration for the DWH oil spill NRDA, consistent with the PDARP/PEIS.

- Programmatic Goal: Restore Water Quality
- Restoration Type: Water Quality
- Restoration Approaches: Reduce pollution and hydrologic degradation to coastal watersheds (PDARP/PEIS Section 5.5.5.2)
- Restoration Techniques: Traditional stormwater control measures; Low-impact development practices (PDARP/PEIS Appendix 5.D.2.2)

This restoration project would be implemented at Hollice T. Williams Park in Pensacola, Florida. The project would convert a 10-acre portion of the existing park to a stormwater park that captures runoff and pollutants, metals, and sediments from the runoff within the basin to reduce nutrient loading and improve water quality within Pensacola Bay. The park would treat runoff from portions of a 145-acre drainage basin to the east and portions of the 1700-acre Long Hollow basin to the north. Enhancements to the park, for stormwater capture, would include traditional and green stormwater infrastructure techniques including wet-detention ponds with littoral wetland vegetation, pre-treatment systems to remove sediment and trash, and pervious pedestrian surfaces.

The Implementing Trustee of this project is the Florida Department of Environmental Protection (FDEP) in coordination with the City of Pensacola.

Restoration Type Goals and Project Restoration Objectives

The Restoration Type goals relevant to this project, as identified in the PDARP/PEIS, are:

- Reduce pollutant loadings, including nutrients and pathogens, to priority watersheds along the Florida coast that are threatened by chronic eutrophication, harmful algal blooms, hypoxia, habitat losses, or beach and shellfish closures associated with water quality degradation.
- Where appropriate, co-locate pollutant reduction projects with other restoration projects to enhance ecological services provided by other restoration approaches.

The restoration objectives for this project are:

- Construct green stormwater infrastructure at Hollice T. Williams Park that captures stormwater runoff and associated pollutants.
- Improve water quality flowing into Pensacola Bay by providing additional stormwater treatment.

Performance criteria would be used to determine restoration success or the need for corrective action in accordance with 15 Code of Federal Regulations 900.55(b)(1)(vii). Specific, measurable performance criteria are defined, as applicable, for monitoring parameters associated with the restoration objective in Section 3.0.

Adaptive Management

Due to the nature of this project, and the use of standard monitoring techniques that have been successfully implemented in similar projects, the Florida Trustee Implementation Group (FL TIG) does not anticipate the need for rigorous adaptive management of the project. If project objectives are not being met, the FL TIG would identify corrective actions as necessary.

Project Monitoring, Performance Criteria, and Potential Corrective Actions

The proposed monitoring for this restoration project was developed to evaluate project performance and potential corrective actions, if needed. Information on each parameter is provided below, organized by objective (Table 1). Note that Table 1 does not include all possible options for corrective actions; rather, it includes a list of potential actions for each individual parameter to be considered if the project is not performing as expected once implemented. Other corrective actions may be identified post-implementation, as appropriate.

Monitoring for this project would include sampling of seven to ten storm events, which are generally categorized as greater than 0.20 inches and less than 1.5 inches of rain. However, this would depend on field conditions and storm events; actual rainfall may vary as well as the drainage area, amount of impervious area, and the time of concentration. Monitoring would generally be conducted at two locations: inflows and outflows from a representative stormwater management site after construction.

Table 1 Monitoring Parameters

Objective 1: Construct green stormwater infrastructure at Hollice T. Williams Park that captures stormwater runoff and associated pollutants.

Monitoring Parameter[30]	Purpose	Method(s)	Timing, Frequency, Duration of Data Collection	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Structural Integrity (Completed as Designed)	Monitor progress towards meeting the restoration objective	Review as-built drawings and Professional Engineer Certification of Completion of Construction	Once post construction	1 site	Features constructed are in substantial conformance with approved plans	Reconstruct features to be in substantial conformance with approved plans
Conservation Improvements, Water Quality (Number of Improvements Implemented by Activity)	Document restoration actions	Count of the number of improvements implemented	Once after project execution is complete	All improvements implemented	N/A	N/A

[30] Bolding indicates core performance monitoring parameters identified under the *Reduce Pollution and Hydrologic Degradation to Coastal Watershed* Restoration Approach in the MAM Manual (DWH NRDA Trustees, 2021)

Objective 2: Improve water quality flowing into Pensacola Bay by providing additional stormwater treatment.

Monitoring Parameter	Purpose	Method(s)	Timing, Frequency, Duration of Data Collection	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Total Nitrogen (TN)	Evaluate extent to which implemented conservation improvements reduce pollutant loadings	Weighted composite samples taken over the storm hydrograph	7-10 storm events; typically, the samples would be composited over the inflow hydrograph at the inflow and for up to a 36-hour period at outflow station, depending upon the time of concentration and water flows	Inflows and outflows for each storm event from constructed features; each composite would include at least 6 evenly distributed sub-samples	N/A	N/A
Total Phosphorus (TP)	Evaluate extent to which implemented conservation improvements reduce pollutant loadings	Weighted composite samples taken over the storm hydrograph	7-10 storm events; typically, the samples would be composited over the inflow hydrograph at the inflow and for up to a 36-hour period at outflow station, depending upon the time of concentration and water flows	Inflows and outflows for each storm event from constructed features; each composite would include at least 6 evenly distributed sub-samples	N/A	N/A
Total Suspended Solids (TSS)	Evaluate extent to which implemented conservation improvements reduce pollutant loadings	Weighted composite samples taken over the storm hydrograph	7-10 storm events; typically, the samples would be composited over the inflow hydrograph at the inflow and for up to a 36-hour period at outflow station, depending upon the time of concentration and water flows	Inflows and outflows for each storm event from constructed feature; each composite would include at least 6 evenly distributed sub-samples	N/A	N/A

Monitoring Schedule

The schedule for project monitoring is shown in Table 2 by monitoring parameter.

Table 2 Monitoring Schedule

Monitoring Parameters	Pre-Implementation	Implementation	Post-Implementation
Structural Integrity (Completed as Designed)	-	-	X
Conservation Improvements, Water Quality (Number of Improvements Implemented by Activity)	-	-	X
Total Nitrogen (TN)	-	-	X
Total Phosphorus (TP)	-	-	X
Total Suspended Solids (TSS)	-	-	X

Evaluation

The FL TIG anticipates conducting an evaluation of the project monitoring data collected (as described above) to help answer the following questions:

- Was the project's restoration objective achieved? If not, is there a reason why it was not met?
- Did the project produce unanticipated results?
- Were there unanticipated events related to the project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?

Data Management

Data Description

See Table 1 above for details on how data would be recorded, the type of data that would be collected, the data standards that would be followed, the timing and frequency of data collection and processing, the location of data collection, and the quantity of data that are expected.

Data Review and Clearance

Project partners would record data in Microsoft Excel and send the data and a draft monitoring report to FDEP DWH staff within 2 months of the calendar year ending. FDEP DWH staff would conduct quality assure/quality control (QA/QC) reviews of the monitoring data and report and coordinate with project partners should any changes be necessary. After all identified errors are addressed, the monitoring data and report would be considered QA/QC'ed. FDEP would give the other FL TIG members time to review the monitoring data and report before making such information publicly available.

Data Storage and Accessibility

The QA/QC'ed annual monitoring report would be stored in DIVER. The report would be submitted by FDEP within 4 months of the calendar year ending.

Data Sharing

The monitoring data and report would be made publicly available through DIVER within 6 months of the calendar year ending.

Reporting

Reporting activities for this project include:

- Reporting on general MAM activities in DIVER on an annual basis.
- Developing a Final MAM Report before a project is closed out.

Roles and Responsibilities

Monitoring data associated with this MAM plan would be collected, reviewed, and reported by FDEP.

References

DWH NRDA Trustees. 2016. *Deepwater Horizon* Oil Spill: Final Programmatic Damage Assessment and Restoration Plan (PDARP) and Final Programmatic Environmental Impact Statement (PEIS). Available: www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

DWH NRDA Trustees. 2021. Monitoring and Adaptive Management Procedures and Guidelines Manual Version 2.0. Appendix to the Trustee Council Standard Operating Procedures for Implementation of the Natural Resource Restoration for the DWH Oil Spill. December. Available: https://www.gulfspillrestoration.noaa.gov/monitoring-and-adaptive-management

Gulf Breeze Septic to Sewer Conversion: Monitoring and Adaptive Management Plan

Prepared by: Florida Department of Environmental Protection

Draft Version Date: 12/15/2023

Introduction

This monitoring and adaptive management (MAM) plan follows guidance provided in the Programmatic Damage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS; Deepwater Horizon [DWH] Natural Resource Damage Assessment [NRDA] Trustees, 2016), MAM Manual Version 2.0 (DWH NRDA Trustees, 2021) by identifying the monitoring needed to evaluate progress toward meeting project objectives and to support any necessary adaptive management of the project. Where applicable, it identifies key sources of uncertainty and incorporates monitoring data and decision points that address these uncertainties. As not all projects would have the same sources and degrees of uncertainty, this project-specific MAM plan is scaled according to the level of uncertainty, scope, scale, and Restoration Type associated with this project.

This plan is a living document and may be updated as needed to reflect changing conditions and/or new information. Any future revisions to this MAM plan would be made publicly available through the Data Integration Visualization Exploration and Reporting (DIVER) Explorer (www.diver.orr.noaa.gov) and accessible through the Trustees' website (www.gulfspillrestoration.noaa.gov).

Project Overview

This project would be implemented as restoration for the DWH oil spill NRDA, consistent with the PDARP/PEIS.

- Programmatic Goal: Restore Water Quality
- Restoration Type: Water Quality
- Restoration Approaches: Reduce pollution and hydrologic degradation to coastal watersheds (PDARP/PEIS Section 5.5.5.2)
- Restoration Techniques: Septic tank decommissioning and expansion of sewer system connections

This restoration project would be implemented in the City of Gulf Breeze, Santa Rosa County, Florida. The project would connect up to 1,030 residences, across 11 proposed areas, to municipal sewer facilities with advanced wastewater treatment capabilities, decreasing nutrient loading by abating outdated residential septic tanks that leak pathogens and nutrients into coastal waters. Septic to sewer conversion would be conducted at residences located on or near Bay Cliffs Road, Eufala Street, Fairpoint Drive, Florida Avenue, Gilmore Drive, Highpoint Drive, Hoffman Bayou, Montrose Boulevard, Poinciana Drive, San Carlos Avenue, and Warwick Street.

The Implementing Trustee is Florida Department of Environmental Protection (FDEP) in coordination with Gulf Breeze, and the Pensacola and Perdido Bay Estuary Program (PPBEP).

Restoration Type Goals and Project Restoration Objectives

The Restoration Type goals relevant to this project, as identified in the PDARP/PEIS, are:

- Reduce pollutant loadings, including nutrients and pathogens, to priority watersheds along the Florida coast that are threatened by chronic eutrophication, harmful algal blooms, hypoxia, habitat losses, or beach and shellfish closures associated with water quality degradation.

- Where appropriate, co-locate pollutant reduction projects with other restoration projects to enhance ecological services provided by other restoration approaches.

The restoration objectives for this project are:

- Complete septic to sewer conversion for 1,030 residences within the City of Gulf Breeze.
- Improve water quality flowing into Pensacola Bay by reducing pollutant loadings.

Performance criteria would be used to determine restoration success or the need for corrective action in accordance with 15 Code of Federal Regulations 900.55(b)(1)(vii). Specific, measurable performance criteria are defined, as applicable, for monitoring parameters associated with the restoration objective in Section 3.0.

Adaptive Management

Due to the nature of this project, and the use of standard restoration techniques that have been successfully implemented in similar projects, the Florida Trustee Implementation Group (FL TIG) does not anticipate the need for rigorous adaptive management of the project. If project objectives are not being met, the FL TIG would identify corrective actions as necessary.

Project Monitoring, Performance Criteria, and Potential Corrective Actions

The proposed monitoring for this restoration project was developed to evaluate project performance and potential corrective actions, if needed. Information on each parameter is provided below, organized by objective (Table 1). Note that Table 1 does not include all possible options for corrective actions; rather, it includes a list of potential actions for each individual parameter to be considered if the project is not performing as expected once implemented. Other corrective actions may be identified post-implementation, as appropriate.

Table 1 Monitoring Parameters

Objective 1: Complete septic to sewer conversion for 1,030 residences within the City of Gulf Breeze.

Monitoring Parameter[31]	Purpose	Method(s)	Timing, Frequency, Duration of Data Collection	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Structural Integrity (Completed as Designed)	Monitor progress towards meeting the restoration objective	Review as-built drawings and Professional Engineer Certification of Completion of Construction	Once post construction	1,030 residences	Features constructed are in substantial conformance with approved plans	Reconstruct features to be in substantial conformance with approved plans
Conservation Improvements, Water Quality (Number of Improvements Implemented by Activity)	Document restoration actions	Count of the number of septic tanks removed and parcels connected to central wastewater treatment	Once after project execution is complete	N/A	N/A	N/A

[31] Bolding indicates core performance monitoring parameters identified under the *Reduce Pollution and Hydrologic Degradation to Coastal Watershed* Restoration Approach in the MAM Manual (DWH NRDA Trustees, 2021)

Objective 2: Improve water quality flowing into Pensacola Bay by reducing pollutant loadings.

Monitoring Parameter	Purpose	Method(s)	Timing, Frequency, Duration of Data Collection	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Fecal Coliform Bacteria	Evaluate extent to which implemented conservation improvements reduce pollutant loadings	Per FDEP protocols	Monthly data collection prior to conversion and after conversion starting 6 months prior to conversion and finishing 12 months after conversion	To be determined by PPBEP based on hydrologic flow throughout sub-watersheds	N/A	N/A
Total Nitrogen (TN)	Evaluate extent to which implemented conservation improvements reduce pollutant loadings	Per FDEP protocols	Monthly data collection prior to conversion and after conversion starting 6 months prior to conversion and finishing 12 months after conversion	To be determined by PPBEP based on hydrologic flow throughout sub-watersheds	N/A	N/A
Total Phosphorous (TP)	Evaluate extent to which implemented conservation improvements reduce pollutant loadings	Per FDEP protocols	Monthly data collection prior to conversion and after conversion starting 6 months prior to conversion and finishing 12 months after conversion	To be determined by PPBEP based on hydrologic flow throughout sub-watersheds	N/A	N/A

Monitoring Schedule

The schedule for project monitoring is shown in Table 2 by monitoring parameter.

Table 2 Monitoring Schedule

Monitoring Parameters	Pre-Implementation	Implementation	Post-Implementation
Structural Integrity (Completed as Designed)	N/A	N/A	X
Conservation Improvements, Water Quality (Number of Improvements Implemented by Activity)	N/A	N/A	X
Fecal Coliform Bacteria	X	X	X
Total Nitrogen (TN)	X	X	X
Total Phosphorous (TP)	X	X	X

Evaluation

The FL TIG anticipates conducting an evaluation of the project monitoring data collected (as described above) to help answer the following questions:

- Was the project's restoration objective achieved? If not, is there a reason why it was not met?
- Did the project produce unanticipated results?
- Were there unanticipated events related to the project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?

Data Management

Data Description

See Table 1 above for details on how data would be recorded, the type of data that would be collected, the data standards that would be followed, the timing and frequency of data collection and processing, the location of data collection, and the quantity of data that are expected.

Data Review and Clearance

Project partners would record data in Microsoft Excel and send the data and a draft monitoring report to FDEP DWH staff within 2 months of the calendar year ending. FDEP DWH staff would conduct quality assure/quality control (QA/QC) reviews of the monitoring data and report and coordinate with project partners should any changes be necessary. After all identified errors are addressed, the monitoring data and report would be considered QA/QC'ed. FDEP would give the other FL TIG members time to review the monitoring data and report before making such information publicly available.

Data Storage and Accessibility

The QA/QC'ed annual monitoring report would be stored in DIVER. The report would be submitted by FDEP within 4 months of the calendar year ending.

Data Sharing

The monitoring data and report would be made publicly available through DIVER within 6 months of the calendar year ending.

Reporting

Reporting activities for this project include:

- Reporting on general MAM activities in DIVER on an annual basis.
- Developing a Final MAM Report before a project is closed out.

Roles and Responsibilities

Monitoring data associated with this MAM plan would be collected, reviewed, and reported by FDEP.

References

DWH NRDA Trustees. 2016. *Deepwater Horizon* Oil Spill: Final Programmatic Damage Assessment and Restoration Plan (PDARP) and Final Programmatic Environmental Impact Statement (PEIS). Available: www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

DWH NRDA Trustees. 2021. Monitoring and Adaptive Management Procedures and Guidelines Manual Version 2.0. Appendix to the Trustee Council Standard Operating Procedures for Implementation of the Natural Resource Restoration for the DWH Oil Spill. December. Available: https://www.gulfspillrestoration.noaa.gov/monitoring-and-adaptive-management

Santa Rosa County Septic to Sewer Conversion: Monitoring and Adaptive Management Plan

Prepared by: Florida Department of Environmental Protection

Draft Version Date: 12/15/2023

Introduction

This monitoring and adaptive management (MAM) plan follows guidance provided in the Programmatic Damage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS; Deepwater Horizon [DWH] Natural Resource Damage Assessment [NRDA] Trustees, 2016), MAM Manual Version 2.0 (DWH NRDA Trustees, 2021) by identifying the monitoring needed to evaluate progress toward meeting project objectives and to support any necessary adaptive management of the project. Where applicable, it identifies key sources of uncertainty and incorporates monitoring data and decision points that address these uncertainties. As not all projects would have the same sources and degrees of uncertainty, this project-specific MAM plan is scaled according to the level of uncertainty, scope, scale, and Restoration Type associated with this project.

This plan is a living document and may be updated as needed to reflect changing conditions and/or new information. Any future revisions to this MAM plan would be made publicly available through the Data Integration Visualization Exploration and Reporting (DIVER) Explorer (www.diver.orr.noaa.gov) and accessible through the Trustees' website (www.gulfspillrestoration.noaa.gov).

Project Overview

This project would be implemented as restoration for the DWH oil spill NRDA, consistent with the PDARP/PEIS.

- Programmatic Goal: Restore Water Quality
- Restoration Type: Water Quality
- Restoration Approaches: Reduce pollution and hydrologic degradation to coastal watersheds (PDARP/PEIS Section 5.5.5.2)
- Restoration Techniques: Septic tank decommissioning and expansion of sewer system connections

This restoration project would be implemented in wastewater collection service areas in Santa Rosa County, Florida: Gulf Breeze Regional Water System, Holley Navarre Water System, Pace Water System, and the Town of Jay. This project would implement a multi-jurisdictional, collaborative septic tank to sewer conversion program to convert up to 900 residences from septic tanks to municipal sewer. The project would aim to eliminate septic tank discharges of pollutants, nutrients, and pathogens into sensitive areas near waterways that discharge into East Bay, Escambia Bay, and Pensacola Bay.

The implementing trustee is the Florida Department of Environmental Protection (FDEP) in coordination with Santa Rosa County partners, including the County, the Pensacola and Perdido Bay Estuary Program (PPBEP), Pace Water System, Gulf Breeze Water System, Holley Navarre Water System, and the Town of Jay.

Restoration Type Goals and Project Restoration Objectives

The Restoration Type goals relevant to this project, as identified in the PDARP/PEIS, are:

- Reduce pollutant loadings, including nutrients and pathogens, to priority watersheds along the Florida coast that are threatened by chronic eutrophication, harmful algal blooms, hypoxia, habitat losses, or beach and shellfish closures associated with water quality degradation.

- Where appropriate, co-locate pollutant reduction projects with other restoration projects to enhance ecological services provided by other restoration approaches.

The restoration objectives for this project are:

- Complete septic to sewer conversion for 900 residences within Santa Rosa County.
- Improve water quality flowing into Pensacola Bay by reducing pollutant loadings.

Performance criteria would be used to determine restoration success or the need for corrective action in accordance with 15 Code of Federal Regulations 900.55(b)(1)(vii). Specific, measurable performance criteria are defined, as applicable, for monitoring parameters associated with the restoration objective in Section 3.0.

Adaptive Management

Due to the nature of this project, and the use of standard monitoring techniques that have been successfully implemented in similar projects, the Florida Trustee Implementation Group (FL TIG) does not anticipate the need for rigorous adaptive management of the project. If project objectives are not being met, the FL TIG would identify corrective actions as necessary.

Project Monitoring, Performance Criteria, and Potential Corrective Actions

The proposed monitoring for this restoration project was developed to evaluate project performance and potential corrective actions, if needed. Information on each parameter is provided below, organized by objective (Table 1). Note that Table 1 does not include all possible options for corrective actions; rather, it includes a list of potential actions for each individual parameter to be considered if the project is not performing as expected once implemented. Other corrective actions may be identified post-implementation, as appropriate.

Table 1 Monitoring Parameters

Objective 1: Complete septic to sewer conversion for up to 900 residences within Santa Rosa County.

Monitoring Parameter[32]	Purpose	Method(s)	Timing, Frequency, Duration of Data Collection	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Structural Integrity (Completed as Designed)	Monitor progress towards meeting the restoration objective	Review as-built drawings and Professional Engineer Certification of Completion of Construction	Once post construction	Up to 900 residences	Features constructed are in substantial conformance with approved plans	Reconstruct features to be in substantial conformance with approved plans
Conservation Improvements, Water Quality (Number of Improvements Implemented by Activity)	Document restoration actions	Count of the number of septic tanks removed and parcels connected to central wastewater treatment	Once after project execution is complete	N/A	N/A	N/A

[32] Bolding indicates core performance monitoring parameters identified under the *Reduce Pollution and Hydrologic Degradation to Coastal Watershed* Restoration Approach in the MAM Manual (DWH NRDA Trustees, 2021)

Objective 2: Improve water quality flowing into Pensacola Bay by reducing pollutant loadings.

Monitoring Parameter	Purpose	Method(s)	Timing, Frequency, Duration of Data Collection	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Fecal Coliform Bacteria	Evaluate extent to which implemented conservation improvements reduce pollutant loadings	Per FDEP protocols	Monthly data collection prior to conversion and after conversion starting 6 months prior to conversion and finishing 12 months after conversion	To be determined by PPBEP based on hydrologic flow throughout sub-watersheds	N/A	N/A
Total Nitrogen (TN)	Evaluate extent to which implemented conservation improvements reduce pollutant loadings	Per FDEP protocols	Monthly data collection prior to conversion and after conversion starting 6 months prior to conversion and finishing 12 months after conversion	To be determined by PPBEP based on hydrologic flow throughout sub-watersheds	N/A	N/A
Total Phosphorous (TP)	Evaluate extent to which implemented conservation improvements reduce pollutant loadings	Per FDEP protocols	Monthly data collection prior to conversion and after conversion starting 6 months prior to conversion and finishing 12 months after conversion	To be determined by PPBEP based on hydrologic flow throughout sub-watersheds	N/A	N/A

Monitoring Schedule

The schedule for project monitoring is shown in Table 2 by monitoring parameter.

Table 2 Monitoring Schedule

Monitoring Parameters	Pre-Implementation	Implementation	Post-Implementation
Structural Integrity (Completed as Designed)	-	-	X
Conservation Improvements, Water Quality (Number of Improvements Implemented by Activity)	-	-	X
Fecal Coliform Bacteria	X	X	X
Total Nitrogen (TN)	X	X	X
Total Phosphorous (TP)	X	X	X

Evaluation

The FL TIG anticipates conducting an evaluation of the project monitoring data collected (as described above) to help answer the following questions:

- Was the project's restoration objective achieved? If not, is there a reason why it was not met?
- Did the project produce unanticipated results?
- Were there unanticipated events related to the project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?

Data Management

Data Description

See Table 1 above for details on how data would be recorded, the type of data that would be collected, the data standards that would be followed, the timing and frequency of data collection and processing, the location of data collection, and the quantity of data that are expected.

Data Review and Clearance

Project partners would record data in Microsoft Excel and send the data and a draft monitoring report to FDEP DWH staff within 2 months of the calendar year ending. FDEP DWH staff would conduct quality assure/quality control (QA/QC) reviews of the monitoring data and report and coordinate with project partners should any changes be necessary. After all identified errors are addressed, the monitoring data and report would be considered QA/QC'ed. FDEP would give the other FL TIG members time to review the monitoring data and report before making such information publicly available.

Data Storage and Accessibility

The QA/QC'ed annual monitoring report would be stored in DIVER. The report would be submitted by FDEP within 4 months of the calendar year ending.

Data Sharing

The monitoring data and report would be made publicly available through DIVER within 6 months of the calendar year ending.

Reporting

Reporting activities for this project include:

- Reporting on general MAM activities in DIVER on an annual basis.
- Developing a Final MAM Report before a project is closed out.

Roles and Responsibilities

Monitoring data associated with this MAM plan would be collected, reviewed, and reported by FDEP, in coordination with PPBEP. PPBEP would:

- Establish water quality improvement targets based on baseline data collected and assessed, evaluation of project areas, and estimated septic systems coming offline.
- Track metrics associated the number of septic tanks that have been abated and converted within Santa Rosa County.
- In collaboration with Santa Rosa County staff, monitor water quality status and trends to evaluate project effectiveness at the watershed-scale, a component of PPBEP's Comprehensive Monitoring Strategy, and supplemental to the existing Bays, Bayous, and Sounds Water Quality Monitoring Program.
- Report results and metrics in PPBEP's biennial State of the Bays Report Card.
- Coordinate with Santa Rosa County and the utilities on the development of a centralized sewer connection campaign, specifically targeted in areas near surface waters.
- Provide data collected to FDEP in accordance with the provisions of Section 6.

References

DWH NRDA Trustees. 2016. *Deepwater Horizon* Oil Spill: Final Programmatic Damage Assessment and Restoration Plan (PDARP) and Final Programmatic Environmental Impact Statement (PEIS). Available: www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

DWH NRDA Trustees. 2021. Monitoring and Adaptive Management Procedures and Guidelines Manual Version 2.0. Appendix to the Trustee Council Standard Operating Procedures for Implementation of the Natural Resource Restoration for the DWH Oil Spill. December. Available: https://www.gulfspillrestoration.noaa.gov/monitoring-and-adaptive-management

Choctawhatchee Bay Unpaved Roads Initiative: Monitoring and Adaptive Management Plan

Prepared by: Florida Department of Environmental Protection

Draft Version Date: 12/15/2023

Introduction

This monitoring and adaptive management (MAM) plan follows guidance provided in the Programmatic Damage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS; Deepwater Horizon [DWH] Natural Resource Damage Assessment [NRDA] Trustees, 2016), MAM Manual Version 2.0 (DWH NRDA Trustees, 2021) by identifying the monitoring needed to evaluate progress toward meeting project objectives and to support any necessary adaptive management of the project. Where applicable, it identifies key sources of uncertainty and incorporates monitoring data and decision points that address these uncertainties. As not all projects would have the same sources and degrees of uncertainty, this project-specific MAM plan is scaled according to the level of uncertainty, scope, scale, and Restoration Type associated with this project.

This plan is a living document and may be updated as needed to reflect changing conditions and/or new information. Any future revisions to this MAM plan would be made publicly available through the Data Integration Visualization Exploration and Reporting (DIVER) Explorer (www.diver.orr.noaa.gov) and accessible through the Trustees' website (www.gulfspillrestoration.noaa.gov).

Project Overview

This project would be implemented as restoration for the DWH oil spill NRDA, consistent with the PDARP/PEIS.

- Programmatic Goal: Restore Water Quality
- Restoration Type: Water Quality
- Restoration Approaches: Reduce pollution and hydrologic degradation to coastal watersheds (PDARP/PEIS Section 5.5.5.2)
- Restoration Techniques: Erosion and sediment control practices (PDARP/PEIS Appendix 5.D.2.2)

This restoration project would be implemented at 12 stream crossings in the Choctawhatchee Bay watershed in Washington and Holmes Counties. This project would implement roadway improvements at the unpaved stream crossings, such as adjusting the elevation profile of the road, installing and paving sub-bases with asphalt, replacing culverts, sodding ditches and shoulders, and stabilizing ditches with riprap. These enhancements would reduce stream erosion and sedimentation into the Choctawhatchee Bay watershed.

The implementing trustee is the Florida Department of Environmental Protection (FDEP) in coordination with Holmes and Washington Counties.

Restoration Type Goals and Project Restoration Objectives

The Restoration Type goals relevant to this project, as identified in the PDARP/PEIS, are:

- Reduce pollutant loadings, including nutrients and pathogens, to priority watersheds along the Florida coast that are threatened by chronic eutrophication, harmful algal blooms, hypoxia, habitat losses, or beach and shellfish closures associated with water quality degradation.
- Where appropriate, co-locate pollutant reduction projects with other restoration projects to enhance ecological services provided by other restoration approaches.

The restoration objective for this project is:

- Construct traditional erosion and sediment control measures at 12 unpaved road-stream crossings in the Choctawhatchee Bay watershed.

Performance criteria would be used to determine restoration success or the need for corrective action in accordance with 15 Code of Federal Regulations 900.55(b)(1)(vii). Specific, measurable performance criteria are defined, as applicable, for monitoring parameters associated with the restoration objective in Section 3.

Adaptive Management

While this project includes the use of standard construction methods, the application of unpaved road enhancements to address watershed erosion and sedimentation is fairly novel and subject to impacts from storm events. Throughout project implementation, corrective actions would be identified as necessary. This MAM Plan may be updated in the future to include additional details on adaptive management of this project.

One of the key uncertainties for this project is completing the construction of erosion and sediment control measures on-time and on-budget. To adaptively manage the project, and increase the likelihood of achieving the project objective, FDEP project personnel would conduct targeted monitoring and use the monitoring data to refine future management actions. For this project, the principles of adaptive management may be applied in several ways.

- Regular progress meetings would be held between project partners and construction contractors to address construction issues in a timely manner.
- Regular progress meetings would be held between FDEP and project partners to identify and address budget issues in a timely manner. If needed, scope changes would be identified to keep the project in-budget, subject to the approval of the FL TIG.
- To the extent practicable, construction activities would be scheduled during the drier, winter season.
- Should large storm events occur, site inspection would occur shortly after the storms to identify and address impacts.

Project Monitoring, Performance Criteria, and Potential Corrective Actions

The proposed monitoring for this restoration project was developed to evaluate project performance and potential corrective actions, if needed. Information on each parameter is provided below, organized by objective (Table 1). Note that Table 1 does not include all possible options for corrective actions; rather, it includes a list of potential actions for each individual parameter to be considered if the project is not performing as expected once implemented. Other corrective actions may be identified post-implementation, as appropriate.

Monitoring for this project would include sampling from seven to ten storm events. If possible, monitored events would be discrete rainfall events generally consisting of greater than 0.20 inches and less than 1.5 inches of rain. However, this would depend on field conditions and storm events; actual rainfall may vary as well as the drainage area, amount of impervious area, and time of concentration. Monitoring would generally be conducted at two locations: inflows and outflows from a representative stormwater management site after construction.

Table 1 Monitoring Parameters

Monitoring Parameter[33]	Purpose	Method(s)	Timing, Frequency, Duration of Data Collection	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Structural Integrity (Completed as Designed)	Monitor progress towards the restoration objective	Review of as-built drawings and Professional Engineer Certification of Completion of Construction	Once post construction	12 sites	Features constructed are in substantial conformance with approved plans	Reconstruct features to be in substantial conformance with approved plans
Conservation Improvements, Water Quality (Number of Improvements Implemented by Activity)	Document restoration actions	Count of the number of improvements implemented	Once after project execution is complete	All improvements implemented; all 12 sites	N/A	N/A

[33] Bolding indicates core performance monitoring parameters identified under the *Reduce Pollution and Hydrologic Degradation to Coastal Watershed* Restoration Approach in the MAM Manual (DWH NRDA Trustees, 2021)

Monitoring Schedule

The schedule for project monitoring is shown in Table 2 by monitoring parameter.

Table 2 Monitoring Schedule

Monitoring Parameters	Pre-Implementation	Implementation	Post-Implementation
Structural Integrity (Completed as Designed)	-	-	X
Conservation Improvements, Water Quality (Number of Improvements Implemented by Activity)	-	-	X

Evaluation

The FL TIG anticipates conducting an evaluation of the project monitoring data collected (as described above) to help answer the following questions:

- Was the project's restoration objective achieved? If not, is there a reason why it was not met?
- Did the project produce unanticipated results?
- Were there unanticipated events related to the project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?

Data Management

Data Description

See Table 1 above for details on how data would be recorded, the type of data that would be collected, the data standards that would be followed, the timing and frequency of data collection and processing, the location of data collection, and the quantity of data that are expected.

Data Review and Clearance

Project partners would record data in Microsoft Excel and send the data and a draft monitoring report to FDEP DWH staff within 2 months of the calendar year ending. FDEP DWH staff would conduct quality assure/quality control (QA/QC) reviews of the monitoring data and report and coordinate with project partners should any changes be necessary. After all identified errors are addressed, the monitoring data and report would be considered QA/QC'ed. FDEP would give the other FL TIG members time to review the monitoring data and report before making such information publicly available.

Data Storage and Accessibility

The QA/QC'ed annual monitoring report would be stored in DIVER. The report would be submitted by FDEP within 4 months of the calendar year ending.

Data Sharing

The monitoring data and report would be made publicly available through DIVER within 6 months of the calendar year ending.

Reporting

Reporting activities for this project include:

- Reporting on general MAM activities in DIVER on an annual basis.
- Developing a Final MAM Report before a project is closed out.

Roles and Responsibilities

Monitoring data associated with this MAM plan would be collected, reviewed, and reported by FDEP.

References

DWH NRDA Trustees. 2016. *Deepwater Horizon* Oil Spill: Final Programmatic Damage Assessment and Restoration Plan (PDARP) and Final Programmatic Environmental Impact Statement (PEIS). Available: www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

DWH NRDA Trustees. 2021. Monitoring and Adaptive Management Procedures and Guidelines Manual Version 2.0. Appendix to the Trustee Council Standard Operating Procedures for Implementation of the Natural Resource Restoration for the DWH Oil Spill. December. Available: https://www.gulfspillrestoration.noaa.gov/monitoring-and-adaptive-management

Telogia Creek Watershed Water Quality Improvements: Monitoring and Adaptive Management Plan

Prepared by: U.S. Department of the Interior

Draft Version Date: 12/15/2023

Introduction

This monitoring and adaptive management (MAM) plan follows guidance provided in the Programmatic Damage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS; Deepwater Horizon [DWH] Natural Resource Damage Assessment [NRDA] Trustees, 2016), MAM Manual Version 2.0 (DWH NRDA Trustees, 2021) by identifying the monitoring needed to evaluate progress toward meeting project objectives and to support any necessary adaptive management of the project. Where applicable, it identifies key sources of uncertainty and incorporates monitoring data and decision points that address these uncertainties. As not all projects would have the same sources and degrees of uncertainty, this project-specific MAM plan is scaled according to the level of uncertainty, scope, scale, and Restoration Type associated with this project.

This plan is a living document and may be updated as needed to reflect changing conditions and/or new information. Any future revisions to this MAM plan would be made publicly available through the Data Integration Visualization Exploration and Reporting (DIVER) Explorer (www.diver.orr.noaa.gov) and accessible through the Trustees' website (www.gulfspillrestoration.noaa.gov).

Project Overview

This project would be implemented as restoration for the DWH oil spill NRDA, consistent with the PDARP/PEIS.

- Programmatic Goal: Restore Water Quality
- Restoration Type: Water Quality
- Restoration Approaches: Reduce pollution and hydrologic degradation to coastal watersheds (PDARP/PEIS Section 5.5.5.2)
- Restoration Techniques: Erosion and sediment control practices; Restore hydrologic connections to enhance coastal habitats (PDARP/PEIS Appendix 5.D.1.1 and 5.D.2.2)

This restoration project would be implemented in the Telogia Creek subbasin of the Ochlockonee Bay watershed in Liberty and Gadsden Counties, Florida. This project would take a phased approach to improve understanding of water quality impairment in Telogia Creek, then implement site-specific restoration actions. Phase I includes evaluation of existing data, field reconnaissance, and identification of hotspots of water quality impairment in the watershed. Phase II would include site-specific restoration actions at up to 13 sites such as addressing erosion of unpaved roads at stream crossings, partnering with landowners to implement agricultural and silvicultural best management practices, and restoring hydrologic connectivity. The goal of this project is to reduce sediment, nutrient, and other pollutant loads, improve habitat stability, and restore natural flow regimes, thereby improving water quality in Telogia Creek and the greater Ochlockonee River watershed.

The Implementing Trustee for this project is the U.S. Department of Interior (DOI), in coordination with the U.S. Fish and Wildlife Service Panama City Ecological Services Office, U.S. Department of Agriculture, U.S. Forest Service, and academic institutions.

Restoration Type Goals and Project Restoration Objectives

The Restoration Type goal relevant to this project, as identified in the PDARP/PEIS, is:

- Reduce pollutant loadings, including nutrients and pathogens, to priority watersheds along the Florida coast that are threatened by chronic eutrophication, harmful algal blooms, hypoxia, habitat losses, or beach and shellfish closures associated with water quality degradation.

The restoration objectives for this project are:

- Improve understanding of sources of water quality impairment in the Telogia Creek basin by conducting data collection and analysis effort.
- Engineer and construct site-specific restoration activities.
- Improve water quality in the Telogia Creek basin by reducing sediment, nutrient, and/or pathogen loadings.

Performance criteria would be used to determine restoration success or the need for corrective action in accordance with 15 Code of Federal Regulations 900.55(b)(1)(vii). Specific, measurable performance criteria are defined, as applicable, for monitoring parameters associated with the restoration objective in Section 3.0.

Adaptive Management

Due to the nature of this project, and the use of standard monitoring techniques that have been successfully implemented in similar projects, the Florida Trustee Implementation Group (FL TIG) does not anticipate the need for rigorous adaptive management of the project. If project objectives are not being met, the FL TIG would identify corrective actions as necessary.

Project Monitoring, Performance Criteria, and Potential Corrective Actions

The proposed monitoring for this restoration project was developed to evaluate project performance and potential corrective actions, if needed. Information on each parameter is provided below, organized by objective (Table 1). Note that Table 1 does not include all possible options for corrective actions; rather, it includes a list of potential actions for each individual parameter to be considered if the project is not performing as expected once implemented. Other corrective actions may be identified post-implementation, as appropriate.

Restoration Objective 1, "Improve understanding of sources of water quality impairment in the Telogia Creek basin by conducting data collection and analysis effort" would be reported on during project implementation. For example, MAM reports may document the type of data that is collected and analyzed and the utility of that data for improving understanding of water quality impairment hotspots. Additional information about project reporting can be found in Section 7.

Table 1 Monitoring Parameters

Objective 1: Engineer and construct site-specific restoration activities.

Monitoring Parameter[34]	Purpose	Method(s)	Timing, Frequency, Duration of Data Collection	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Structural Integrity (Completed as Designed)	Monitor progress towards meeting the restoration objective	Review of as-built drawings and/or Professional Engineer Certification of Completion of Construction	Once post construction	To be determined during Phase 1	Features constructed are in substantial conformance with approved plans	Reconstruct features to be in substantial conformance with approved plans.
Conservation Improvements, Water Quality (Number of Improvements Implemented by Activity)	Document restoration actions	Count of the number of improvements implemented	Once after project execution is complete	All improvements implemented; to be determined during Phase 1	N/A	N/A

[34] Bolding indicates core performance monitoring parameters identified under the *Reduce Pollution and Hydrologic Degradation to Coastal Watershed* Restoration Approach in the MAM Manual (DWH NRDA Trustees, 2021)

Objective 2: Improve water quality in the Telogia Creek basin by reducing sediment, nutrient, and/or pathogen loadings.

Monitoring Parameter	Purpose	Method(s)	Timing, Frequency, Duration of Data Collection	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Total Nitrogen (TN)	Evaluate extent to which implemented conservation improvements reduce pollutant loadings	Weighted composite samples taken from project sites	Once immediately after construction; after the first rainfall event with 1 inch in a 24-hour window; semi-annually for years 1 and 2; and annually for years 3 and 4	At the site of all improvements implemented; total to be determined during Phase 1	N/A	N/A
Total Phosphorus (TP)	Evaluate extent to which implemented conservation improvements reduce pollutant loadings	Weighted composite samples taken from project sites	Once immediately after construction; after the first rainfall event with 1 inch in a 24-hour window; semi-annually for years 1 and 2; and annually for years 3 and 4	At the site of all improvements implemented; total to be determined during Phase 1	N/A	N/A
Total Suspended Solids (TSS)	Evaluate extent to which implemented conservation improvements reduce pollutant loadings	Weighted composite samples taken from project sites	Once immediately after construction; after the first rainfall event with 1 inch in a 24-hour window; semi-annually for years 1 and 2; and annually for years 3 and 4	At the site of all improvements implemented; total to be determined during Phase 1	N/A	N/A

Monitoring Schedule

The schedule for project monitoring is shown in Table 2 by monitoring parameter.

Table 2 Monitoring Schedule

Monitoring Parameters	Pre-Implementation	Implementation	Post-Implementation
Structural Integrity (Completed as Designed)	-	-	X
Conservation Improvements, Water Quality (Number of Improvements Implemented by Activity)	-	-	X
Total Nitrogen (TN)	-	-	X
Total Phosphorus (TP)	-	-	X
Total Suspended Solids (TSS)	-	-	X

Evaluation

The FL TIG anticipates conducting an evaluation of the project monitoring data collected (as described above) to help answer the following questions:

- Was the project's restoration objective achieved? If not, is there a reason why it was not met?
- Did the project produce unanticipated results?
- Were there unanticipated events related to the project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?

Data Management

Data Description

See Table 1 above for details on how data would be recorded, the type of data that would be collected, the data standards that would be followed, the timing and frequency of data collection and processing, the location of data collection, and the quantity of data that are expected.

Data Review and Clearance

Project partners would record data in Microsoft Excel and send the data and a draft monitoring report to DOI DWH staff within 2 months of the calendar year ending. DOI DWH staff would conduct quality assure/quality control (QA/QC) reviews of the monitoring data and report and coordinate with project partners should any changes be necessary. After all identified errors are addressed, the monitoring data and report would be considered QA/QC'ed. DOI would give the other FL TIG members time to review the monitoring data and report before making such information publicly available.

Data Storage and Accessibility

The QA/QC'ed annual monitoring report would be stored in DIVER. The report would be submitted by DOI within 4 months of the calendar year ending.

Data Sharing

The monitoring data and report would be made publicly available through DIVER within 6 months of the calendar year ending.

Reporting

Reporting activities for this project include:

- Reporting on general MAM activities in DIVER on an annual basis.
- Developing a Final MAM Report before a project is closed out.

Roles and Responsibilities

Monitoring data associated with this MAM plan would be collected, reviewed, and reported by DOI.

References

DWH NRDA Trustees. 2016. *Deepwater Horizon* Oil Spill: Final Programmatic Damage Assessment and Restoration Plan (PDARP) and Final Programmatic Environmental Impact Statement (PEIS). Available: www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

DWH NRDA Trustees. 2021. Monitoring and Adaptive Management Procedures and Guidelines Manual Version 2.0. Appendix to the Trustee Council Standard Operating Procedures for Implementation of the Natural Resource Restoration for the DWH Oil Spill. December. Available: https://www.gulfspillrestoration.noaa.gov/monitoring-and-adaptive-management

Bond Farm Hydrologic Enhancement Impoundment: Monitoring and Adaptive Management Plan

Prepared by: Florida Fish and Wildlife Conservation Commission

Draft Version Date: 12/15/2023

Introduction

This monitoring and adaptive management (MAM) plan follows guidance provided in the Programmatic Damage Assessment and Restoration Plan and Programmatic Environmental Impact Statement (PDARP/PEIS; Deepwater Horizon [DWH] Natural Resource Damage Assessment [NRDA] Trustees, 2016), MAM Manual Version 2.0 (DWH NRDA Trustees, 2021) by identifying the monitoring needed to evaluate progress toward meeting project objectives and to support any necessary adaptive management of the project. Where applicable, it identifies key sources of uncertainty and incorporates monitoring data and decision points that address these uncertainties. As not all projects would have the same sources and degrees of uncertainty, this project-specific MAM plan is scaled according to the level of uncertainty, scope, scale, and Restoration Type associated with this project.

This plan is a living document and may be updated as needed to reflect changing conditions and/or new information. Any future revisions to this MAM plan would be made publicly available through the Data Integration Visualization Exploration and Reporting (DIVER) Explorer (www.diver.orr.noaa.gov) and accessible through the Trustees' website (www.gulfspillrestoration.noaa.gov).

Project Overview

This project would be implemented as restoration for the DWH oil spill NRDA, consistent with the PDARP/PEIS.

- Programmatic Goal: Restore Water Quality
- Restoration Type: Water Quality
- Restoration Approaches: Reduce pollution and hydrologic degradation to coastal watersheds; Create, restore, and enhance coastal wetlands (PDARP/PEIS Section 5.5.5.2)
- Restoration Technique: Restore hydrologic connections to enhance coastal habitats (PDARP/PEIS Appendix 5.D.1.1)

This restoration project would be implemented at Bond Farm, Fred C. Babcock/Cecil M. Webb Wildlife Management Area (BWWMA), Charlotte County. The project would construct a 538-acre hydrologic enhancement impoundment (HEI) that would store excess surface water from the BWWMA during the wet season and release the water downstream during the dry season to the headwaters of Powell Creek, Gator Slough, and Prairie Pines Preserve. The HEI would store up to 2,150 acre-feet of water. This alternative is a component of the Charlotte Harbor Flatwoods Initiative, whose intent is to restore historic freshwater flow in the wetland systems to Charlotte Harbor and the Caloosahatchee River.

The Implementing Trustee is the Florida Fish and Wildlife Conservation Commission in coordination with BWWMA staff.

Restoration Type Goals and Project Restoration Objectives

The Restoration Type goals relevant to this project, as identified in the PDARP/PEIS, are:

- Mitigate high-volume flows and prevent dramatic shifts in salinity that threaten many coastal habitats and resources along the Gulf Coast.

The restoration objective for this project is:

- Construct a 538-acre HEI to capture and store excess surface water from BWWMA during the wet season and release the water downstream during the dry season.

Performance criteria would be used to determine restoration success or the need for corrective action in accordance with 15 Code of Federal Regulations 900.55(b)(1)(vii). Specific, measurable performance criteria are defined, as applicable, for monitoring parameters associated with the restoration objective in Section 3.0.

Adaptive Management

Due to the nature of this project, and the use of standard monitoring techniques that have been successfully implemented in similar projects, the Florida Trustee Implementation Group (FL TIG) does not anticipate the need for rigorous adaptive management of the project. If project objectives are not being met, the FL TIG would identify corrective actions as necessary.

Project Monitoring, Performance Criteria, and Potential Corrective Actions

The proposed monitoring for this restoration project was developed to evaluate project performance and potential corrective actions, if needed. Information on each parameter is provided below, organized by objective (Table 1). Note that Table 1 does not include all possible options for corrective actions; rather, it includes a list of potential actions for each individual parameter to be considered if the project is not performing as expected once implemented. Other corrective actions may be identified post-implementation, as appropriate.

Table 1 Monitoring Parameters

Monitoring Parameter[35]	Purpose	Method(s)	Timing, Frequency, Duration of Data Collection	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
Structural Integrity (Completed as Designed)	Monitor progress towards meeting the restoration objective	Review contractor reports, on-site inspections, and comparison of construction to as-built drawings or other planning materials	Approximately monthly during construction and once at the end of construction warranty period, unless otherwise provided by the contract	Approximately monthly during construction and at the end of construction	HEI is constructed and completed as designed and specified in the construction contract (total permitted project area is 678.67 acres)	Resolution with contractor such that the terms of the contract are met
Conservation Improvements, Water Quality (Number of Improvements Implemented by Activity)	Document restoration actions	Count of the number of improvements implemented	Once after project execution is complete	At the site of all improvements implemented	N/A	N/A
Elevation, Water Level (m)	Evaluate the extent to which implemented conservation improvement restore downstream freshwater levels. On BWWMA, the target water level reduction for each vegetative community is between 0.1-1.0 feet. On	Install Bluetooth-enabled piezometers with digital data loggers to evaluate the duration and timing of flooding and to monitor the hydrologic landscape	Pre-construction, daily water levels would be collected to document baseline conditions. Post-construction, daily water levels would be collected for 5 consecutive years. Data would be	In-situ daily monitoring events (1-year pre- and 5-years post-construction) at 10 sites (6 on BWWMA and 4 on Bond Farm)	N/A	N/A

[35] Bolding indicates core performance monitoring parameters identified under the *Reduce Pollution and Hydrologic Degradation to Coastal Watershed* Restoration Approach in the MAM Manual (DWH NRDA Trustees, 2021)

Monitoring Parameter[35]	Purpose	Method(s)	Timing, Frequency, Duration of Data Collection	Sample Size and Sites	Performance Criteria	Potential Corrective Action(s)
	Bond Farm, timing of water capture and storage would vary dependent on the onset of the wet season rainfall. The HEI is estimated to store up to 4 feet of water for approximately 4 to 6 months annually during the wet season.	on the BWWMA and Bond Farm	downloaded quarterly, as conditions allow.			

Monitoring Schedule

The schedule for project monitoring is shown in Table 2 by monitoring parameter.

Table 2 Monitoring Schedule

Monitoring Parameters	Pre-Implementation	Implementation	Post-Implementation
Structural Integrity (Completed as Designed)	-	-	X
Conservation Improvements, Water Quality (Number of Improvements Implemented by Activity)	-	-	X
Elevation, Water Level	X	-	X

Evaluation

The FL TIG anticipates conducting an evaluation of the project monitoring data collected (as described above) to help answer the following questions:

- Was the project's restoration objective achieved? If not, is there a reason why it was not met?
- Did the project produce unanticipated results?
- Were there unanticipated events related to the project that potentially affected the monitoring results (e.g., hurricanes)?
- Were any of the uncertainties identified prior to project implementation resolved?
- Were any new uncertainties identified?

Data Management

Data Description

See Table 1 above for details on how data would be recorded, the type of data that would be collected, the data standards that would be followed, the timing and frequency of data collection and processing, the location of data collection, and the quantity of data that are expected.

Data Review and Clearance

Project partners would record data in Microsoft Excel and send the data and a draft monitoring report to FWC DWH staff within 2 months of the calendar year ending. FWC DWH staff would conduct quality assure/quality control (QA/QC) reviews of the monitoring data and report and coordinate with project partners should any changes be necessary. After all identified errors are addressed, the monitoring data and report would be considered QA/QC'ed. FWC would give the other FL TIG members time to review the monitoring data and report before making such information publicly available.

Data Storage and Accessibility

The QA/QC'ed annual monitoring report would be stored in DIVER. The report would be submitted by FWC within 4 months of the calendar year ending.

Data Sharing

The monitoring data and report would be made publicly available through DIVER within 6 months of the calendar year ending.

Reporting

Reporting activities for this project include:

- Reporting on general MAM activities in DIVER on an annual basis.
- Developing a Final MAM Report before a project is closed out.

Roles and Responsibilities

Monitoring data associated with this MAM plan would be collected, reviewed, and reported by FWC.

References

DWH NRDA Trustees. 2016. *Deepwater Horizon* Oil Spill: Final Programmatic Damage Assessment and Restoration Plan (PDARP) and Final Programmatic Environmental Impact Statement (PEIS). Available: www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

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