Draft Supplement to the

Final Damage Assessment and Restoration Plan and Environmental Assessment for the

Malone Service Company Superfund Site,

Texas City, Galveston County, Texas

Prepared by:

National Oceanic and Atmospheric Administration

on behalf of the

U.S. Department of Commerce

U.S. Fish and Wildlife Service

on behalf of the

U.S. Department of the Interior

Texas Commission on Environmental Quality

Texas General Land Office

and

Texas Parks and Wildlife Department

Contents

1 Introduction 3

1.1 Proposed Action, Purpose, and Need 4

1.2 Authority 4

1.3 NEPA Compliance 4

1.4 Public Participation 5

1.5 Administrative Record 5

2 Site and Injury Overview 6

2.1 Site Background 6

2.2 Injury Assessment Summary 6

3 Restoration Planning Process 7

3.1 Pierce Marsh Restoration Project Summary and Update 7

3.2 Campbell Bayou Freshwater Wetland Restoration Project Summary and Update 7

3.3 Virginia Point Peninsula Preserve Project Summary and Update 7

3.4 Swan Lake Marsh Restoration Project Summary 8

4 Alternatives Evaluation 8

4.1 Swan Lake Marsh Restoration (Preferred Alternative) 8

4.1.1 Project Description 8

4.1.2 Evaluation 9

4.2 No Action Alternative 11

4.3 Other Alternatives 11

5 NEPA Summary 11

5.1 Affected Environment 12

5.2 NEPA Environmental Consequences Analysis 13

5.2.1 Environmental and Socio-Economic Impacts Evaluation 13

5.2.2 Impacts that are Reasonably Foreseeable and have a Reasonably Close Causal Relationship to the Proposed Action and Alternatives 14

5.2.3 Impacts When Combined With Past, Present, and Reasonably Foreseeable Actions 17

6 Compliance With Other Key Federal Statutes, Regulations, and Policies 19

7 List of Preparers 19

8 References 20

1 INTRODUCTION

The National Oceanic and Atmospheric Administration (NOAA), the US Fish and Wildlife Service (USFWS), the Texas Commission on Environmental Quality (TCEQ), the Texas General Land Office (GLO), and the Texas Parks and Wildlife Department (TPWD) (collectively, the Trustees) are proposing to supplement the Final Damage Assessment and Restoration Plan and Environmental Assessment for the Malone Service Company Superfund Site, Texas City, Galveston County, Texas (Final DARP/EA or DARP/EA) (August 2015) and implement the Swan Lake Marsh Restoration project, which was described as a non-preferred estuarine marsh restoration alternative in the Final DARP/EA.

In August 2015, the Trustees released the Final DARP/EA to the public, which outlined the Trustees' preferred restoration to compensate the public for natural resources and natural resource services injured, lost, or destroyed as a result of releases at and from the National Priorities List (NPL) Superfund site known as the Malone Service Company (MSC) Superfund Site (Site). The Trustees selected three preferred restoration alternatives, including one estuarine marsh restoration project (Pierce Marsh Restoration), one freshwater restoration project (Campbell Bayou Freshwater Wetland Restoration), and one terrestrial project (Removal of Invasive and Exotic Plants with Enhancement of Existing Terrestrial Areas on the Virginia Point Peninsula Point Preserve). Pursuant to the consent decree entered by the U.S. District Court for the Southern District of Texas on July 13, 2012 (Civil Action No. 3:12-cv-00210) (Consent Decree), which resolves the Trustees' natural resource damages claims, the three restoration projects were to be implemented by the Trustees through the use of settlement funds in the amount of $2,878,962.

Ultimately, the Pierce Marsh Restoration project was unable to provide all the necessary restoration credits for the MSC Site because its credits were split among several Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) cases that contributed funds to complete the project. MSC Site settlement funds were used to restore approximately 28 acres, leaving a balance of approximately 10 acres to achieve the full compensation (38.48 acres) required for damages assessed in this case. Additional restoration is required. Therefore, the Trustees propose to supplement the Final DARP/EA and implement the Swan Lake Marsh Restoration project to fulfill this obligation. Similar to the Pierce Marsh Restoration project, funds for the Swan Lake Marsh Restoration project will be combined from multiple sources to complete construction of approximately 45 acres, and up to 185 acres, of intertidal marsh habitat. The MSC Site settlement funds will be sufficient to finance the outstanding requirement of approximately 10 acres.

The Trustees evaluated the Swan Lake Marsh Restoration project in Section 7.1.2.4 of the Final DARP/EA under CERCLA, and that evaluation is incorporated by reference in this Draft Supplement to the Final DARP/EA (Draft Supplement). While not selected as part of the Proposed Action for estuarine marsh restoration in the Final DARP/EA, the Trustees determined that the Swan Lake Marsh Restoration project meets all of their restoration goals and objectives as well as the Trustees' restoration evaluation and screening criteria (see Sections 6.1 and 6.2 of the Final DARP/EA).

1.1 PROPOSED ACTION, PURPOSE, AND NEED

Proposed Action. The Trustees' Proposed Action is to complete intertidal marsh creation activities within the Lower Galveston Bay watershed. For the Swan Lake Marsh Restoration project, the Trustees propose to construct intertidal marsh in the Galveston Bay estuary encompassing at least 45 acres (total). The Trustees expect that the project would provide ecological services, similar in type and quality, to those of a natural estuarine marsh of equivalent size. As described in the Final DARP/EA, the Trustees would excavate fill material overburden from the adjacent uplands and fill submerged areas to achieve intertidal elevations. The area would then be planted with native species. The Trustees propose to use the settlement funds paid to the Trustees pursuant to Section 16 of the Consent Decree to implement the Swan Lake Marsh Restoration project evaluated in the Final DARP/EA.

Purpose. The purpose of the Proposed Action is to restore benthic habitat to compensate the public for natural resources, including ecological services, injured, lost, or destroyed due to releases of hazardous substances at and from the MSC Site. The purpose of this Draft Supplement is to describe the restoration action the Trustees now propose to partially address those injuries and to provide updates on the selected and implemented projects previously described in the Final DARP/EA.

Need. In order to achieve this purpose, the Trustees must evaluate alternative restoration measures that will adequately compensate the public for the injured resources and the services they provide. The Draft Supplement incorporates by reference portions of the CERCLA and NEPA evaluation of the Swan Lake Marsh Restoration project prepared for the Final DARP/EA.

1.2 AUTHORITY

This Draft Supplement was prepared jointly by the Trustees pursuant to their respective authority and responsibilities as natural resource trustees under the CERCLA, 42 U.S.C. § 9601 et seq.; the Federal Water Pollution Control Act, 33 U.S.C. § 1251, et seq. (also known as the Clean Water Act or CWA), and other applicable federal or state laws, including Subpart G of the National Oil and Hazardous Substances Contingency Plan (NCP), at 40 C.F.R. §§ 300.600 through 300.615, and DOI's CERCLA Natural Resource Damage Assessment regulations at 43 C.F.R. Part 11 (Natural Resource Damage Assessment, or NRDA, regulations) which provide guidance for this restoration planning process under the CERCLA.

1.3 NEPA COMPLIANCE

Actions undertaken by the Trustees to restore natural resources or services under CERCLA and other federal laws are subject to the National Environmental Policy Act (NEPA, 42 U.S.C. § 4321 et seq.); and the regulations guiding its implementation at 40 C.F.R. Parts 1500 through 1508[1]. NEPA outlines the responsibilities of federal agencies, including documentation of environmental analyses. In general, federal agencies contemplating implementation of a major federal action must produce an environmental impact statement (EIS) if the action is expected to have significant adverse impacts on the quality of the human environment. When it is uncertain whether a contemplated action is likely to

[1]This Draft Supplement is being prepared using the 2020 CEQ NEPA Regulations. The effective date of the 2020 CEQ NEPA Regulations was September 14, 2020, and reviews begun after this date are required to apply the 2020 regulations unless there is a clear and fundamental conflict with an applicable statute. 85 Fed. Reg. at 43372-73 (§§ 1506.13, 1507.3(a)). This Draft Supplement was initiated on November 9, 2020 and accordingly proceeds under the 2020 regulations.

have significant impacts, federal agencies prepare an environmental assessment (EA) to evaluate the need for an EIS. If the EA demonstrates that the proposed action will not significantly impact the quality of the human environment, the agency issues a Finding of No Significant Impact (FONSI), which satisfies the requirements of NEPA, and no EIS is required.

NOAA was the lead federal agency for the NEPA evaluation in the Final DARP/EA and is the lead federal agency for preparation of this Draft Supplement. This document incorporates by reference the Affected Environment described in the Final DARP/EA, describes the purpose and need for the proposed restoration action, assesses the restoration action's applicability and potential impact on the quality of the physical, biological and cultural environment, and summarizes the opportunity the Trustees will provide for public participation in the decision-making process. This information will be used to make a threshold determination as to whether preparation of an EIS is required prior to selection of the final restoration action.

1.4 PUBLIC PARTICIPATION

The Trustees have prepared this Draft Supplement to provide the public with information on the proposed change in restoration action. Public review of the action proposed in this Draft Supplement is an integral and important part of the restoration planning process and is consistent with applicable state and federal laws and regulations, including NEPA and its implementing regulations, and the guidance for restoration planning found within 43 C.F.R. Part 11.

The Draft Supplement is being made available for review and comment by the public for a period of 30 days. A copy of the Draft Supplement is available for download from the NOAA Damage, Assessment, Remediation, and Restoration Program webpage here:

https://darrp.noaa.gov/hazardous-waste/malone-service-company

Comments on the Draft Supplement can be submitted during the comment period to Mr. Mike Cave by email at michael.cave@tceq.texas.gov or at the address provided below:

> Texas Commission on Environmental Quality
> MC-136, P.O. Box 13087
> Austin, TX 78711-3087

The deadline for submitting written comments on the document is specified in the public notice published in the Texas Register. The Trustees will consider all written comments received during the public comment period prior to approving and adopting a Final Supplement to the Final DARP/EA. Written comments received and the Trustees' responses to those comments, whether in the form of plan revisions or written explanations, will be summarized in the Final Supplement to the Final DARP/EA.

1.5 ADMINISTRATIVE RECORD

The Trustees have maintained records documenting the information considered and actions taken by the Trustees during this restoration planning process, and these records collectively comprise the Trustees' administrative record (AR) supporting the Final DARP/EA. Information and documents, including any public comments submitted on this Draft Supplement, are included in this AR as received or completed. These records are available here:

https://www.diver.orr.noaa.gov/web/guest/diver-admin-record/6809.

2 SITE AND INJURY OVERVIEW

This Draft Supplement summarizes the Site background and the injury assessment. For more details, please see Sections 2 and 4 of the Final DARP/EA, which are incorporated by reference.

2.1 SITE BACKGROUND

The Site is bordered to the east by Western Galveston Bay and to the northeast by Swan Lake, an embayment of Galveston Bay. The estuarine marsh associated with the Site was evaluated for injury. The Site encompasses approximately 150 acres, of which the former operating area is approximately 75 acres. MSC began operating the site in 1964 as a reclamation plant for waste oils and chemicals. The MSC facility was permitted as a commercial storage, processing, and disposal facility authorized to store and process industrial solids in 1984. The permit authorized the discharge of storm water runoff.

The State of Texas filed suit against MSC due to improper waste disposal and waste permit violations. Based on a jury finding that MSC seriously violated its permits, judgment was entered against MSC on August 14, 1989 and became final in 1993. In 1995, the TCEQ filed an application to revoke MSC's hazardous waste storage and injection well permits. After a hearing requested by MSC, the permits were revoked on May 6, 1997. All waste shipments to the Site ceased in January 1996 prior to the final Order revoking the permits.

The Trustees determined that three categories of injury resulted at the Site: 1) benthic invertebrate injury in marsh estuarine sediments adjacent to the Site; 2) injury to wildlife due to oil in a terrestrial environment on-site; and 3) injury to freshwater resources such as benthic invertebrates and wildlife exposed to contaminated sediments on-site. The Trustees determined the required estuarine wetland restoration acreage is 38.48 acres; the required freshwater restoration acreage is 13.97 acres; and the required terrestrial restoration acreage is 2.73 acres.

2.2 INJURY ASSESSMENT SUMMARY

As described in the Final DARP/EA, the Trustees determined that the contaminants threatening trust natural resources were polycyclic aromatic hydrocarbons (PAHs), PCBs, dichlorodiphenyltrichloroethane (DDT) and metabolites and heavy metals, specifically arsenic, cadmium, chromium, copper, lead, nickel, mercury, and zinc. These compounds have been shown to cause a range of toxic responses in marine and estuarine organisms including mortality, reduced growth, and diminished reproductive capacity. These compounds are designated as "hazardous substances" under CERCLA, a designation that includes solutions and mixtures of these substances. See 42 U.S.C. §9701(14) (A) and 40 C.F.R. §116.4. These hazardous substances were found in the soils and adjacent wetland sediments at or near the Site.

The Trustees chose to focus exclusively on injury to the benthic community. The rationale behind this decision was two-fold. One, injury and subsequent restoration scaling to the benthic community could be conducted in a protective yet cost-effective manner. Two, restoration for benthic injury would provide additional ecological service flows to other resources (e.g., fish, birds, and wildlife) potentially injured at the Site.

3 RESTORATION PLANNING PROCESS

The overall goal of the restoration planning process is to identify restoration alternatives that are appropriate to restore, rehabilitate, replace, or acquire natural resources and their services equivalent to natural resources injured or lost as a result of releases of hazardous substances.

As described in the Final DARP/EA, and in accordance with NRDA regulations, the Trustees evaluated a reasonable range of project alternatives that could be used to restore or enhance both freshwater and estuarine marsh habitat and terrestrial resources in the lower Galveston Bay area. Due to the size of the injury and the estimated restoration benefits for each project, the Trustees selected three restoration alternatives for implementation: the Pierce Marsh Restoration project for estuarine marsh, the Campbell Bayou Freshwater Wetland Restoration project for freshwater marsh, and the Virginia Point Peninsula Preserve project for terrestrial resources. The alternatives were considered carefully by the Trustees based on criteria outlined in Sections 6 and 7 of the Final DARP/EA. While the Swan Lake Marsh Restoration project met the Trustees' restoration goals and criteria, the Trustees selected the Pierce Marsh Restoration project as the preferred alternative for estuarine restoration in the Final DARP/EA because it was determined to most cost effectively compensate the public for natural resource injuries related to hazardous substance releases at and from the Site. The Final DARP/EA alternatives evaluation concluded that, if future circumstances allowed, the Swan Lake Marsh Restoration alternative could still be considered a viable project.

3.1 PIERCE MARSH RESTORATION PROJECT SUMMARY AND UPDATE

The Pierce Marsh Restoration project included design and transformation of open water area into shallow coastal wetlands using dredged material. Construction started in 2016. This process restored and created habitat for fish and wildlife, improved water quality and increased needed storm buffers. Monitoring activities will begin in 2021 and will be concluded in 2023. Ultimately, the 70-acre project was unable to provide all of the necessary restoration credits for the MSC Site because its credits were split among several CERCLA cases that contributed funds to complete the project. MSC Site settlement funds were used to restore approximately 28 acres, leaving a balance of approximately 10 acres to achieve the full compensation (38.48 acres) required for damages assessed in this case. Additional restoration is required.

3.2 CAMPBELL BAYOU FRESHWATER WETLAND RESTORATION PROJECT SUMMARY AND UPDATE

The Campbell Bayou Freshwater Wetland Restoration project restores approximately 25 acres of emergent wetlands by enhancing water flow and vegetation management. The project will increase the volume of rainfall runoff flows through the wetlands, and into tidal waters, creating longer hydro-period wetlands. The goal is to restore natural hydrology to the freshwater marsh system, improving the overall health and function of benthic and marsh habitat. The project will be implemented by the Trustees. This project is being prepared for initiation.

3.3 VIRGINIA POINT PENINSULA PRESERVE PROJECT SUMMARY AND UPDATE

The Virginia Point Peninsula Preserve project involves removal of non-native, invasive plants such as the Chinese tallow tree (*Tridica sebifera*), deep-rooted sedge (*Cyperus entrerianus*) and salt cedar (*Tamarix ramosissima*) within the Preserve. The project also involves enhancement of currently elevated areas

within the preserve in which there is existing woody vegetation to reintegration into coastal prairie. In addition, there will be tree planting around the former gas exploration site and along an elevated upland birding trail with existing adjacent freshwater borrow areas. This project is currently in the planning stages.

3.4 SWAN LAKE MARSH RESTORATION PROJECT SUMMARY

The Trustees are now proposing to implement the Swan Lake Marsh Restoration project evaluated in the Final DARP/EA and described more fully in Section 4.1 of this Draft Supplement. Specifically, the Trustees are proposing to undertake additional intertidal marsh restoration adjacent to the MSC site in the lower Galveston Bay estuary to provide the remaining required approximately 10 acres to achieve the compensation required under the DARP/EA for intertidal marsh. Similar to Pierce Marsh, funds for Swan Lake will be combined from multiple sources to complete construction of approximately 45 acres, and up to 185 acres, of intertidal marsh habitat, which will be planted with native smooth cord grass. The Trustees expect that the project would eventually provide ecological services equivalent to those of a natural brackish marsh of equivalent size. The MSC Site contribution will be sufficient to fund the outstanding requirement of approximately 10 acres.

4 ALTERNATIVES EVALUATION

4.1 SWAN LAKE MARSH RESTORATION (PREFERRED ALTERNATIVE)

4.1.1 PROJECT DESCRIPTION

As described in the Final DARP/EA, the Swan Lake Marsh Restoration project (Proposed Project) was originally designed to create approximately 45 acres of intertidal marsh habitat in the lower Galveston Bay estuary. The Trustees are now proposing the project as a component of a larger initiative to restore approximately 185 acres of intertidal marsh in Swan Lake. An alternative analysis, completed in 2019, identifies alternative construction methods based on potential sediment sources and marsh designs. A feasibility study (HDR, 2019) for up to 185 acres of marsh was conducted to analyze the practicality of each alternative and a conceptual design was selected.

This restoration action involves marsh creation through excavation of fill material overburden and filling of adjacent submerged areas to achieve intertidal elevations (Figure 1). Project construction would include placing sediment from an offsite source (e.g., upland or submerged dredged material) within the marsh restoration footprint at elevations suitable to support intertidal wetlands and planting native marsh vegetation (e.g., smooth cordgrass). The goals of this project would be (1) to increase tidal exchange, thereby increasing the benthic productivity of the project area, and (2) to create sustainable, functionally equivalent brackish marsh.

Figure 1: Swan Lake Feasibility Study, 2019.

Building on the existing marsh complex and the use of fill material outside of the existing breakwaters would add to the productivity of the area. Swan Lake's condition and features present opportunities to re-establish elevations needed to support marsh vegetation and restoration of proper hydrologic exchange. As in the case of the completed restoration at Pierce Marsh, the project would convert shallow open water to marsh, optimizing wetland habitat while minimizing impacts to existing habitat and organism usage. By project completion, at least 45 acres and up to approximately 185 acres would be planted at the Proposed Project. A conceptual design has been selected for permitting. Permitting and final engineering and design would be expected to take place in 2021, with construction following in 2022.

Detailed results would be included in a final report for the Proposed Project, and post-construction monitoring would be aligned with metrics used to monitor the Pierce Marsh project and other marsh restoration projects on the upper Texas coast.

4.1.2 EVALUATION

This Draft Supplement incorporates by reference the evaluation of the Swan Lake Marsh Restoration project contained in Sections 6.2 and 7.1 of the Final DARP/EA. While the originally proposed Swan Lake Marsh Restoration project and evaluation was premised on the creation of approximately 45 acres of intertidal marsh, as described in Section 7.1.2.4 of the Final DARP/EA, the Trustees are now proposing to create potentially up to 185 total acres of intertidal marsh in Swan Lake. Despite this potential increase in project footprint, the Trustees have determined that the project remains consistent with the original restoration goals and objectives in the Final DARP/EA and is consistent with the CERCLA evaluation of

the original Swan Lake Marsh Restoration project described in Sections 6.2 and 7.1 (also see Table 6-1) of the Final DARP/EA.

As described in the Final DARP/EA, implementation of the Swan Lake Marsh Restoration project, in addition to the Pierce Marsh Restoration project, provides an opportunity for cost-effective estuarine habitat creation and enhancement, by completing salt marsh restoration with a strong nexus to the injured habitats. In addition to the benefits expected from the Pierce Marsh Restoration project—including, but not limited to, benthic and pelagic habitat improvement—the Proposed Project would be expected to improve water quality and increase habitat complexity and species diversity in the vicinity of the restored site. Estuarine marsh creation is an activity routinely undertaken by the Trustees and it is anticipated the constructed marsh would be largely self-sustaining, require minimal intervention following construction to achieve functional success, and would provide an uninterrupted flow of services into the future.

Swan Lake consists of approximately 640 acres of open water and marsh complex. The southern shores of Swan Lake and the shell islands are tidally influenced wetlands and marshes. The depth of Swan Lake ranges to approximately 3 to 5 feet, and the substrate consists of varying depths of semi-consolidated, fine-grained organic mud overlying a firm clay substrate. There is free exchange of water between Swan Lake and Galveston Bay.

The Proposed Project will be located directly adjacent to the MSC Site on the east and northeast, extending to the shore of Swan Lake and Galveston Bay. Approximately 1.61 miles (8,500 feet) of wetlands frontage is adjacent to the Project Site (TNRCC, 1998), including intertidal salt marsh habitat to the north dominated by stands of smooth cordgrass (*Spartina alterniflor*a), saltgrass (*Distichlis spicata*), and needle rush (*Juncus roemerianus*), with several meandering small tidal creeks and pockets of water. Narrow elevated areas exist near the outer edges of the marsh with inclusions of sumpweed *(Iva frutescens*) and scattered eastern baccharis (*Baccharis halimifolia*). Bayward from these features are sandflats that are exposed during low tidal stages. Although oysters (Crassostrea virginica) have been observed in Swan Lake, there are no current oyster leases. Quigg et al. (2010) stated that few, if any, oyster reefs were located within Swan Lake.

The sediments within Swan Lake and the Galveston Bay Estuary support benthic organisms found in salt marshes and unvegetated subtidal sediments, including various annelid worms, small crustaceans (amphipods, isopods, copepods, and juvenile decapods), mollusks, and other small bottom-dwellers. Among these benthic organisms are herbivores (organisms that eat algae or other live plant material), detritivores (organisms that feed on decaying organic matter in surface sediments or sediment-bound nutrients and organic substances not generally available to epiphytic or pelagic organisms), carnivores (organisms that prey on other benthic organisms), and omnivores (organisms that feed on both plant and animal matter). These organisms provide the nutritional base for developing stages of many finfish and shellfish and, thus, affect all trophic levels in the Galveston Bay Estuary. The activities of benthic organisms are important in conditioning wetlands and subtidal habitats and in the decomposition and nutrient cycling that occur in these areas. In sum, benthic communities provide important ecological services primarily related to food production, decomposition and energy cycling that affect nearly all organisms within an estuarine system. A potential adverse impact on benthic populations has the potential to impact biota in nearly all trophic levels of the Galveston Bay Estuary.

Based on the evaluation of the Swan Lake Marsh Restoration project provided here and in the Final DARP/EA, the Trustees have determined that the creation of at least 45 acres, and potentially up to 185 acres, of intertidal marsh in Swan Lake is a viable alternative for estuarine restoration that will compensate the public for natural resource injuries related to hazardous substance releases at and from the MSC Site. Upon completion, this project will restore and provide long-term resiliency of the natural resources and the ecosystem, including fisheries, marine and wildlife habitats, and coastal wetlands.

4.2 No Action Alternative

As described in the Final DARP/EA, the alternatives under consideration by the Trustees must include a No Action Alternative as prescribed by 40 C.F.R. § 1502.14. Under the No Action Alternative evaluated in this Draft Supplement, the Trustees would not select and implement the Swan Lake Marsh Restoration project. Therefore, under this alternative, providing additional compensation to the public for the resource losses attributed to the MSC Site would be delayed pending the completion of a future restoration plan. While the remedial activities at the Site addressed the actions needed to allow injured resources to recover, the remedial activities did not compensate the public for interim ecological resource service losses. Such compensation serves to make the public whole for the full harm done to natural resources injured by the release of hazardous substances from the Site. Accordingly, the No Action Alternative would not meet the restoration criteria established in the Final DARP/EA or the purpose and need of this Draft Supplement.

4.3 Other Alternatives

In addition to the Proposed Project, the Trustees reconsidered other marsh, freshwater wetlands, and on-site terrestrial habitat restoration alternatives that were originally identified, but ultimately found to be non-preferred, in the Final DARP/EA (Sections 6 and 7). The Trustees have determined that those alternatives remain non-viable and non-preferred for the reasons previously discussed in the CERCLA evaluation of restoration alternatives in Section 7 of the Final DARP/EA; therefore, those restoration alternatives are not considered for further analysis in this Draft Supplement.

5 NEPA SUMMARY

This Draft Supplement describes and evaluates the potential impacts of the proposed action, i.e., creating at least 45 acres, and up to approximately 185 acres, of estuarine marsh habitat in the lower Galveston Bay estuary through implementation of the Swan Lake Marsh Restoration project described in the Final DARP/EA and further refined in this Draft Supplement. In Section 7 of the Final DARP/EA, the Trustees evaluated the potential for restoration actions associated with all preferred alternatives (Marsh, Freshwater Wetlands and Ponds, and Terrestrial Habitat Onsite) to impact the following: the physical environment (air and noise pollution, water quality, geological and energy resources, and contaminants), the biological environment (benthos, finfish, vegetation, wildlife, and endangered species), socioeconomic environment (environmental justice, recreation, commercial fishing, traffic, and cultural resources), and the potential for cumulative impacts. As a non-preferred alternative in the Final DARP/EA, the Swan Lake Marsh Restoration project was not included in that document's NEPA analysis; therefore, impacts to these resources are analyzed in this Draft Supplement (Section 5.2).

5.1 AFFECTED ENVIRONMENT

The Affected Environment of the proposed action is within Swan Lake and the Galveston Bay Estuary. The physical, biological, cultural, and socioeconomic environment are described in the Final DARP/EA (Section 3) and are incorporated by reference and briefly summarized here.

The Galveston Bay Estuary is the seventh largest estuary in the United States and the largest in Texas. Galveston Bay Estuary is a system composed of four main bodies (Galveston Bay, Trinity Bay, West Bay, and East Bay) and several small, shallow, productive side bays. The estuary is typically 6 to 12 feet deep. The surface area of the estuary is approximately 600 square miles. The estuary contains significant amounts of coastal wetlands that provide nursery areas for the estuarine fishery resources and important habitat for avian and mammalian fauna. Approximately 61% of the estuarine shoreline is vegetated by intertidal emergent plant communities, or coastal wetlands, totaling 108,200 acres. The upper and lower portions of the estuary are designated by the TCEQ for contact recreation, high quality aquatic habitat, and shellfish waters.

The MSC Site is located adjacent to the south shore of Swan Lake and the western shore of Lower Galveston Bay. Swan Lake and Lower Galveston Bay are part of the Galveston Bay System. The water bodies are geographically naturally separated by a series of small shell islands but are connected through Campbell Bayou. Much of the area consists of marsh and slow-moving coastal bayous. The Site is bordered to the east by Galveston Bay and to the northeast by Swan Lake, a sub-bay of Lower Galveston Bay. Several industrial facilities, including the closed Solutia South 20 site, the GCWDA Campbell Bayou facility, and a closed Texas City landfill are located west of the Site. Protected marsh and wetlands owned by Scenic Galveston, Inc. border the southern portions of the Site. The Site encompasses approximately 150 acres, of which the former operating area is approximately 100 acres. Terrestrial and aquatic habitats are present within the Site, which is encircled by a 14-foot high flood control “hurricane” levee.

The Swan Lake/Galveston Bay wetlands in the Site vicinity are classified as both estuarine, intertidal, unconsolidated shoreline, irregularly exposed and estuarine, intertidal, emergent, persistent, regularly flooded. Wetlands are also identified along the shell islands between Swan Lake and Galveston Bay. The National Wetlands Inventory Map for the Virginia Point quadrangle classifies the swamp/marsh land adjacent to the Site as being intertidal, estuarine, unconsolidated shore, irregularly exposed lands, and intertidal estuarine, emergent, persistent, regularly flooded lands. These areas follow the shoreline of Swan Lake and along the southeast and south along the shoreline of Galveston Bay to Virginia Point. The Site area and areas adjacent to the site to the north, west, and south are classified as being primarily uplands (DOI, 1992).

MSC was issued a permit by the U.S. Army Corps of Engineers (USACE) on December 18, 1980 for the construction and maintenance of a bulkhead in the wetland area adjacent to Swan Lake (Application No. 4720). The purpose of this bulkhead was to complete the flood protection levee surrounding the facility. Construction of this levee isolated and encroached upon 1.38 acres of existing wetland and upland areas. To mitigate encroachment on the wetlands, MSC planted 2.38 acres of smooth cordgrass adjacent to Swan Lake (MSC, 1994). The USACE also completed the construction of intermittent rock jetties across the mouth of Swan Lake as a part of the remedy for the Tex Tin Superfund Site in spring of 2007. Also, in 2007, the Trustees constructed approximately 77 acres of marsh using Tex Tin settlement funds.

As the proposed restoration in Swan Lake is located adjacent to the MSC Site, as well as near the Tex Tin Corporation NPL Site and other industrial facilities, the Trustees examined historical and recent contaminant screening sediment data (EPA 1998, EPA 2000, URS Corp. 2007, HDR 2019). After review of the data from the documents above, it appears that the Wah Chang Ditch that drains into Swan Lake may continue to receive a higher loading of contaminants from upstream sources relative to other locations in Swan Lake. However, the restoration activities in open water areas of Swan Lake, as proposed in this plan, are appropriate and are not likely to cause or contribute to significant environmental impacts. Accordingly, the Trustees will use this knowledge to inform later design steps, which could include additional sampling and/or design modifications and BMPs, to prevent resuspension of existing contaminated sediment.

This project is a part of a larger restoration effort within Swan Lake to restore marsh habitat lost from erosion and industrialization. The projects contribute towards the high priority goal of wetland restoration, creation, and protection, as identified in the Galveston Bay National Estuary Program's Comprehensive Conservation and Management Plan for the Galveston Bay Ecosystem. This project is complimentary to similar shoreline protection and restoration projects at Dollar Bay/Moses Lake and Virginia Point, also located along the western shore of Galveston Bay.

5.2 NEPA Environmental Consequences Analysis

This section analyzes the environmental impacts of the proposed action and reasonable alternatives to the proposed action. "Impacts" (or "effects") are changes to the human environment from the proposed action or alternatives that are "reasonably foreseeable" and have a "reasonably close causal relationship" to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives (C.F.R. 1508.1(g)).

The Proposed Project involves the creation of at least 45 acres and up to approximately 185 acres of marsh within the Swan Lake footprint while maintaining significant marsh edge interface with shallow open water behind the existing breakwater. This action will increase habitat function in Swan Lake and will generally provide improved nursery, foraging, and cover habitat for numerous species of fish that utilize fringe marsh, as well as other species that inhabit or utilize interior estuarine marsh and surrounding areas. Aesthetic and recreational benefits would be extended to humans using the area.

5.2.1 Environmental and Socio-Economic Impacts Evaluation

Preferred Alternative: The environmental and socio-economic impacts of the described restoration action in Swan Lake are largely beneficial. The Proposed Project entails the creation of at least 45 acres and up to approximately 185 acres of marsh within Swan Lake, which is adjacent to conserved lands and owned by the State of Texas. Given the setting and information available, the Trustees do not believe there is any meaningful uncertainty as to potential effects or unknown risks to the environment associated with implementing the selected actions.

No Action Alternative: The NEPA requires consideration of a "no action" alternative. Under this alternative, no direct action would be taken to restore injured natural resources; instead, the natural processes for recovery of the injured natural resources would be allowed to occur. The principal advantages of this approach are the ease of implementation and cost-effectiveness. This approach relies on the capacity of the ecosystem to "self-heal." While some natural recovery of the injured natural

resources in the estuarine marsh adjacent to the Site has likely occurred over time, compensation for significant interim losses would not be provided under the No Action recovery alternative. Losses were suffered in the marsh, and technically feasible, cost-effective alternatives exist to compensate for these loses. Therefore, the No Action Alternative is not proposed as a compensatory restoration alternative.

5.2.2 Impacts that are Reasonably Foreseeable and have a Reasonably Close Causal Relationship to the Proposed Action and Alternatives

The Trustees evaluated the potential for restoration actions associated with both the proposed and the No Action Alternative to impact the following: the physical environment (air and noise pollution, water quality, geological and energy resources, and contaminants), the biological environment (fisheries, vegetation, wildlife, and endangered species), the cultural and human use environment (environmental justice, recreation, traffic, and cultural resources), and the potential for cumulative impacts.

5.2.2.1 Physical Environment

Air Quality

Preferred Alternative: Minor temporary adverse impacts would result from the proposed construction activities. Exhaust emissions from heavy equipment contain air pollutants, but these emissions would only occur during the construction phase of the project, the amounts would be small, and should be quickly dissipated by prevailing winds. There would be no long-term adverse impacts to air quality.

No Action Alternative: There would be no adverse impacts to air quality from the No Action Alternative.

Water Quality

Preferred Alternative: In the short term, during the period of construction, earth moving activities (either the mining or placement of sediments) will increase turbidity in the immediate vicinity of Swan Lake and the adjacent marsh to some degree. Increased suspended sediments can affect benthic filter feeders and young fish by damaging gills and feeding tissues. Submerged aquatic vegetation may be affected by increased light attenuation in the water column. However, the tidal bay ecosystem is adapted to relatively high levels of suspended sediments, and best management practices (containment berms, erosion control, etc.) should be employed to minimize the extent, duration, and intensity of water quality impacts during construction. Over the longer term, the selected restoration action will re-establish, enhance and increase estuarine marsh at the Project Site, and help improve local water quality via filtration of larger volumes of water as a result of more frequent exchange. Therefore, long-term beneficial impacts to water quality are expected with the proposed action. The conversion of marsh habitat to open water habitat in Galveston Bay predicates the demand for the expansion of emergent vegetative communities in the area.

No Action Alternative: Under the No Action Alternative, surface water quality benefits anticipated in the greater Galveston Bay ecosystem due to the proposed compensatory actions would not occur.

Noise

Preferred Alternative: Noise associated with earth-moving equipment represents a short-term adverse impact during the construction phase. It may periodically and temporarily disturb wildlife in the immediate vicinity of the site, or cause movement of wildlife away from the site to other ecologically

suitable areas of West Bay in the Galveston Bay Estuary. Similarly, recreating humans may avoid this area due to noise during construction, but as with wildlife, such disruption will be limited to the construction phase, and there are many comparable substitute recreation sites readily available within the general area. No long-term adverse effects would occur as a result of noise during construction.

No Action Alternative: There would be no adverse impacts to noise from the No Action Alternative.

Geology

Preferred Alternative: The proposed restoration action does not include activities with the potential to directly or indirectly affect, positively or adversely, the geology of the area. The project site is currently comprised by an open water and tidal marsh complex. These habitats are not unique in the Galveston Bay Estuary. Artificial uplands and open water are displacing highly functional wetland habitat, resulting in a current net loss of habitats and habitat productivity compared to a pre-artificial disturbance condition. The marsh creation would improve wetland habitat function but would not displace or diminish unique geographic areas. No unique or rare habitat would be destroyed due to project implementation.

No Action Alternative: The No Action Alternative would not result in any impacts to the geology of the area.

Energy

Preferred Alternative: No energy production, transport, or infrastructure occurs in the immediate vicinity of Swan Lake. Further, none of the components of the proposed action involves activities or potential results that could directly or indirectly affect, positively or adversely, energy production, transport, or infrastructure in this area of coastal Texas.

No Action Alternative: The No Action Alternative would not result in any impacts to energy production, transport, or infrastructure.

Contaminants

Preferred Alternative: Marsh creation activities are not expected to have any impacts on public health and safety. The marsh that would result from implementation of the proposed restoration project would not present any unique physical hazards to humans. No pollution or toxic discharges would be associated with marsh creation.

No Action Alternative: The No Action Alternative would not result in any contaminants released into the environment.

5.2.2.2 Biological Environment

Preferred Alternative: The proposed project is within Swan Lake, which is located on the Central Migratory Flyway. The Flyway is within the area encompassed by the Texas Mid-Coast Initiative Area of the Gulf Coast Joint Venture of the North American Waterfowl Management Plan. This area contains high priority populations of wintering ducks as well as shore and wading birds most commonly associated with coastal wetlands. Swan Lake is located near nesting islands in West Bay including North Deer Island, and thus serves as an important feeding area during nesting season. Wading birds and shorebirds utilize the mudflats and shallow marsh ponds located throughout the area.

During the active restoration phase of this proposed project, short-term and localized adverse impacts to birds and other wildlife could occur from increased noise levels from vehicle traffic and use of large equipment, including placement or excavation of uplands or submerged lands. Increases in turbidity within and near the proposed project site during construction could also adversely impact birds and other wildlife. These effects will be minor and short-term and are not expected to influence long-term use of the area by wildlife such as wintering ducks, shore birds, or wading birds.

Mobile fish and invertebrates would probably not be affected, since these would most likely leave the area and return after project completion. The Trustees do not believe that the proposed project would have a net adverse effect on vegetation and wildlife. Any wildlife that may be present in the area during restoration activities are likely mobile and would move during construction activity. There is adequate habitat adjacent to the area to they would have sufficient space for refuge during operations. Ultimately, the wildlife, invertebrate, and wetland plant communities would be positively impacted by the enhancement of wetland services that would be achieved through the proposed project restoration activities.

Increased turbidity and sedimentation near the project and dredge areas may affect fish and filter feeders in the local area by clogging gills, increasing mucus production, and smothering organisms found in the shallow open-water area. Efforts will be taken to avoid any oyster reefs if discovered during the restoration planning process. Mobile fish and invertebrates would probably not be affected, since these would most likely leave the area and return after project completion. Increased noise levels due to the operation of earth-moving equipment would also cause mobile fish to leave the area until operations end. Although some EFH would be adversely impacted by placement of sediments in open water areas, EFH would be mainly positively impacted by the re-establishment and creation of marsh achieved through the proposed restoration action. The areas of marsh serve as habitat for prey species of some of the managed fish as well as provide a nursery for the larvae and juvenile stages of many managed species.

As noted in the Final DARP/EA (Section 3.4), several federal and state-listed species may be present in Galveston County. The proposed action is not likely to adversely affect threatened or endangered species or their designated critical habitats. The Trustees will ensure the proposed restoration actions will be in accordance with the ESA via the USACE permitting process. Some listed species, such as the brown pelican, white-face ibis, and bald eagle, would benefit from the restoration projects.

No Action: The No Action Alternative would not result in any impacts to the plants, animals, or protected species in the area.

5.2.2.3 Cultural and Human Environment

Environmental Justice

Preferred Alternative: The proposed project does not have the potential to adversely or disproportionately affect minority or low-income populations in the Texas City area, including economically, socially, or in terms of conditions affecting their health. Restoration projects have been implemented in Swan Lake previously. The proposed restoration project has no unique attributes or characteristics in that regard. The proposed activities would help restore an environment that is of benefit to all citizens.

No Action Alternative: By taking No Action, there would be no enhanced benefits to the public from increased acreage of marsh. The lack of meaningful recovery would contribute adversely to the economic and social well-being of all citizens.

Recreation

Preferred Alternative: The noise and increased turbidity of surface waters arising from earth-moving activities during project construction are expected to discourage and decrease recreational activities such as boating, fishing, and bird watching in the vicinity of the site during construction. Any such affect will be limited to the period of construction and should be minor, as there are many comparable substitute recreation sites readily available within nearby Pierce Marsh. Over the longer term, the proposed restoration action will increase the quality, productivity, and quantity of marsh habitat in this area. The marsh habitat in Swan Lake is a foundation for many recreational activities (e.g., fishing, bird watching, etc.) and the improvement in site conditions will enhance opportunities for, and quality of, a variety of recreational uses.

No Action Alternative: The No Action Alternative would not implement the proposed actions and therefore would not result in any increased opportunities for recreational use.

Traffic

Preferred Alternative: Land-based equipment traffic will occur at the site during the period of construction. There is little to no other land-based traffic around Swan Lake, so no effects on other land-based traffic will occur. Once construction is complete, the added land-based equipment traffic will end. No long-term impacts to traffic in the area are indicated.

No Action Alternative: The No Action Alternative would have no effect on traffic in the area.

Cultural Resources

Preferred Alternative: There are no known historic sites or significant cultural, scientific, or historic resources in the area that would be affected by the proposed restoration actions.

No Action Alternative: The No Action Alternative would have no effect on cultural resources in the area.

Following publication of this Draft Supplement, the Trustees will initiate consultation with NOAA's Habitat Conservation Division, the U.S. Fish and Wildlife Service, and the State Historic Preservation Office to ensure the Swan Lake Marsh Restoration project's environmental compliance and consistency with all federal, state, and local laws and regulations (see Section 6 of this Draft Supplement). All such consultations with be completed prior to project implementation.

5.2.3 Impacts When Combined With Past, Present, and Reasonably Foreseeable Actions

Preferred Alternative: When combined with the potential effects from the past, present, and reasonably foreseeable actions described in Section 5.2.2, the proposed restoration in Swan Lake is expected to result in positive impacts by reversing the trend of conversion of estuarine marsh to open water within the greater Galveston Bay ecosystem. The direct effects of the potential project are local; however, the nature of a tidally-influenced estuarine system implies that beneficial impacts to one area can affect the system on a regional scale.

While the project actions would not result in any change in the larger current pattern of hydrologic discharge, boat traffic, economic activity, or land use, the creation of spawning habitat for estuarine fish species may contribute to an improved fishery. The addition of submerged aquatic vegetation has the direct potential to improve water quality and indirectly through the establishment of filter feeding benthos. The creation and enhancement of wildlife habitat supplements existing habitat in the region, increasing the resiliency of bird and mammal populations that utilize the network of wetlands and wildlife corridors of the greater ecosystem. It is not likely that the proposed restoration would have any additive effects to commercial marine vessel traffic, or vice versa, since the marsh creation project is outside of any shipping lane.

Overall, there are likely to be no significant adverse cumulative impacts from the proposed action. A net cumulative beneficial impact may result from the synergy with previous and current restoration efforts, as well as future restoration activities. The proposed marsh restoration action in Swan Lake on the West Bay in the Galveston Bay Estuary included in this Final DARP/EA was considered in light of multiple planning efforts and opportunities in the region. This project builds upon prior and anticipated conservation activities implemented by the Texas natural resource agencies—TPWD, TCEQ, and the Texas GLO--and partnerships and organizations such as the Galveston Bay Estuary Program, the Galveston Bay Foundation, and Ducks Unlimited. Further, the actions selected are intended to compensate the public, i.e., make the public and the environment whole, for resources injuries caused by releases of hazardous substances into the watershed.

No Action Alternative: As described in Section 4.2 in this Draft Supplement, under the No Action Alternative, the Trustees would not select and implement a restoration project using the settlement funds previously allocated to the MSC restoration projects, at this time.

When combined with the potential effects from the past, present, and reasonably foreseeable actions described in Section 5.2.2, the No Action Alternative is expected to result in adverse impacts and would not provide the conditions necessary for recovery of the injured estuarine marsh. With No Action, key natural resources and services might not ever return to baseline. Marshes maintain the productivity of coastal ecosystems. They provide wildlife with nutrition and refuge from predators. Marsh wetlands can trap, precipitate, transform, recycle, and export waterborne sediments, nutrients, trace metals, and organic waste, and improve the quality of water leaving the marsh (Mitsch and Gosselink, 1993). Marshes are also effective in decreasing storm surge impacts. These ecosystems are increasingly threatened by human activities, such as coastal development, oil and gas exploration, marine transportation, and interruption of sediment cycles as well as natural events such as mean sea level rise, subsidence, catastrophic weather events, and high tides. If the proposed project is not implemented an opportunity would be lost to increase coastal wetlands and degradation of the shoreline will continue.

Accordingly, the No Action Alternative would not be expected to result in any beneficial impacts for the physical, biological, and socioeconomic environments.

6 COMPLIANCE WITH OTHER KEY FEDERAL STATUTES, REGULATIONS, AND POLICIES

Legal authority associated with the proposed restoration action were fully described in the Final DARP/EA in Section 8 and are incorporated by reference here. As described in Section 5.2 of this Draft Supplement, the Trustees will initiate consultation with the appropriate agencies and offices to ensure compliance with the following authorities:

- Magnuson-Stevens Fishery Conservation and Management Act
- Endangered Species Act
- Coastal Zone Management Act
- National Historic Preservation Act

Additional applicable federal and state laws may include, but are not limited to:

- Clean Water Act
- Rivers and Harbors Act
- Fish and Wildlife Conservation Act
- Fish and Wildlife Coordination Act
- Marine Mammal Protection Act
- Migratory Bird Treaty Act
- Information Quality Guidelines issued pursuant to Public Law 106-554
- Executive Order 12898 (59 Fed. Reg. 7629) - Environmental Justice
- Executive Order Number 11514 (35 Fed. Reg. 4247) - Protection and Enhancement of Environmental Quality
- Executive Order Number 11990 (42 Fed. Reg. 26,961) - Protection of Wetlands
- Executive Order Number 12962 (60 Fed. Reg. 30,769) - Recreational Fisheries

Prior to project implementation, the Trustees will ensure that the proposed restoration actions are in compliance with all relevant federal, state and local laws and regulations.

7 LIST OF PREPARERS

Agency	Name	Position
State of Texas		
Texas Commission on Environmental Quality	Mike Cave	Natural Resource Trustee
Texas General Land Office	Allison Fischer	Natural Resource Trustee
Texas Parks and Wildlife Department	Adriana Leiva	Natural Resource Trustee

Texas Parks and Wildlife Department	Johanna Gregory Belsssner	Natural Resource Trustee
Texas Parks and Wildlife Department	Angela Schrift	Natural Resource Trustee
Department of the Interior		
Solicitor's Office	Lisa Stevens	Attorney-Advisor
United States Fish and Wildlife Service	Denise Ruffino	Natural Resource Trustee
National Oceanic and Atmospheric Administration		
Restoration Center	Jamie Schubert	Natural Resource Trustee, Marine Habitat Resource Specialist
Restoration Center	Stephanie Powers	Natural Resource Trustee, Marine Habitat Resource Specialist
Office of General Counsel	Christopher Plaisted	Attorney-Advisor

8 REFERENCES

EPA. 1998. U.S. Environmental Protection Agency Environmental Response Team Center Office of Emergency and Remedial Response. Final Ecological Risk Assessment, Tex Tin Superfund Site, Swan Lake Study Area, Texas City, TX. September 1998.

EPA. 2000. U.S. Environmental Protection Agency Environmental Response Team Center Office of Emergency and Remedial Response. Final Report for Tex Tin Site, Swan Lake Marsh, Texas City, TX. March 2000.

DOI. 1992. U.S. Department of the Interior, Fish and Wildlife Service. National Wetlands Inventory. Virginia Point, Texas Quadrangle. Wetlands Map.

HDR. 2019. Swan Lake Restoration Feasibility Study, Swan Lake Restoration Planning Project, CEPRA 1636, Texas City, Texas. November 2019.

Mitsch, W.J. and J.G. Gosselink. 1993. Wetlands. Second Edition. New York: Van Nostrand Reinhold.

MSC. 1994. Baseline Risk Assessment for Closure of the Settling Basin. Malone Service Company Swan Lake Facility. October 1994.

Quigg, A.S., R. Windham, Z. Zhang, R.F. Swartz, A. Anis, and S. Ray. 2010. Swan Lake: Pilot Study Site Utilizing Processed Industrial Wastewater to Manage Salinity in Lower Galveston Bay, Texas A&M University, Galveston, Texas. November 2010.

TNRCC. 1998. Screening Site Inspection Report. Volume I, II and III of III for Malone Service Company, Inc., Texas City, Galveston County, Texas. TXD 980864789. Houston, TX: Prepared for the U.S. Environmental Protection Agency.

URS Corp. 2007. FINAL Baseline Ecological Risk Assessment at the Malone Services Company Superfund Site, Texas City, Galveston County, Texas. Prepared for Malone Cooperating Parties for Submittal to the USEPA. January 2007.