Draft Environmental Assessment for the Minor Boundary Modification of Bayou Sauvage National Wildlife Refuge

Orleans Parish, Louisiana

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Environmental Assessment for the Minor Boundary Modification for Bayou Sauvage National Wildlife Refuge

This Environmental Assessment (EA) is being prepared to evaluate the effects associated with this proposed action and to comply with the National Environmental Policy Act (NEPA) in accordance with Council on Environmental Quality regulations (40 CFR 1500-1509) and Department of the Interior (43 CFR 46; 516 DM 8) and U.S. Fish and Wildlife Service (550 FW 3) regulations and policies. NEPA requires examination of the effects of proposed actions on the natural and human environment. Appendix A outlines all law and executive orders evaluated through this Environmental Assessment.

Proposed Action

The U.S. Fish and Wildlife Service (Service) is proposing to modify the Bayou Sauvage National Wildlife Refuge (NWR, refuge) Approved Acquisition Boundary (AAB) by removing 1,331 acres from the current AAB and adding 2,220 acres (see Appendix B). Upon approval of the minor boundary modification, the refuge would acquire the added acreage from willing sellers only.

A proposed action may evolve during the NEPA process as the agency refines its proposal and gathers feedback from the public, tribes, and other agencies. Therefore, the final proposed action may be different from the original. The proposed action will be finalized at the conclusion of the public comment period for the EA.

Background

National wildlife refuges are guided by the mission and goals of the National Wildlife Refuge System (NWRS), the purposes of an individual refuge, Service policy, and laws and international treaties. Relevant guidance includes the NWRS Administration Act (NWRSAA) of 1966, as amended by the NWRS Improvement Act of 1997, Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations and Service Manual.

Bayou Sauvage NWR, located in the City of New Orleans in Orleans Parish, Louisiana, is managed as part of the Southeast Louisiana National Wildlife Refuges Complex (Refuge Complex). It was established in April 1990 pursuant to the Emergency Wetlands Resources Act of 1986, 16 USC §3901(b) (Public Law 99-645, Title V, Section 502). The primary purposes of the refuge, as defined by the following authorities, are to:

Emergency Wetlands Resources Act of 1986, 16 U.S.C. 3901 (b)

- enhance the populations of migratory, shore, and wading birds within the refuge;
- encourage natural diversity of fish and wildlife species within the refuge;
- protect the threatened and endangered species and otherwise provide for the conservation and management of fish and wildlife within the refuge;
- fulfill the international treaty obligations of the United States respecting fish and wildlife;
- protect the archaeological resources of the refuge;
- provide opportunities for fish- and wildlife-dependent public uses and recreation in an urban setting

North American Wetlands Conservation Act, 16 U.S.C. 4401 2(b)

- protect, enhance, restore, and manage an appropriate distribution and diversity of wetland ecosystems and other habitats for migratory birds and other fish and wildlife in North America;
- maintain current or improved distributions of migratory bird populations; and
- sustain an abundance of waterfowl and other migratory birds consistent with the goals of the North American Waterfowl Management Plan and the international obligations contained in the migratory bird treaties and conventions and other agreements with Canada, Mexico, and other countries.

The mission of the NWRS, as outlined by the NWRSAA, as amended by the NWRS Improvement Act (16 U.S.C. 668dd et seq.), is

> *"... to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans"*

Additionally, the NWRSAA mandates the Secretary of the Interior in administering the NWRS (16 U.S.C. 668dd[a][4]) to

- provide for the conservation of fish, wildlife, and plants, and their habitats within the NWRS;
- ensure that the biological integrity, diversity, and environmental health of the NWRS are maintained for the benefit of present and future generations of Americans;
- ensure that the mission of the NWRS, described at 16 U.S.C. 668dd(a)(2), and the purposes of each refuge are carried out;
- ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges and the fish and wildlife agency of the states in which the units of the NWRS are located;

- assist in the maintenance of adequate water quantity and water quality to fulfill the mission of the NWRS and the purposes of each refuge;
- recognize compatible wildlife-dependent recreational uses as the priority general public uses of the NWRS through which the American public can develop an appreciation for fish and wildlife;
- ensure that opportunities are provided within the NWRS for compatible wildlife-dependent recreational uses; and
- monitor the status and trends of fish, wildlife, and plants in each refuge.

The acres proposed for subtraction are predominately fragmented saltwater marsh outside of the Hurricane Protection Levee System (HPLS). Land loss in this area is expected to continue at a rapid rate due to subsidence, erosion, future storm events and sea level rise (SLR; Glick et al. 2013, Mo et al. 2020, U.S. Fish and Wildlife Service [USFWS] 2008). The lands being subtracted are not owned by the Service. They are privately owned and currently leased to a hunting club. The area is only accessible by boat and there is no opportunity to purchase or manage this area as part of the refuge. Due to the rapid erosion of this area along the Louisiana coast, there is a loss of habitat within the proposed subtraction area. This loss of habitat results in the lands within the subtraction area no longer meeting the purposes of the refuge.

The acreage proposed for addition is inside the HPLS and is protected from saltwater intrusion and storm impacts. This area consists of swamp, impounded freshwater marsh, natural levee ridges, spoil banks, bayous and pond habitats that allow for good biological productivity and high species diversity of both terrestrial and aquatic organisms. These acres are owned by a willing seller and include multiple locations that are suitable for public use sites. These acres will be a community asset supporting the Urban Wildlife Conservation Program and present a greater potential for fulfilling the purposes of the refuge and the mission of the NWRS.

Purpose and Need for the Proposed Action

The proposed boundary modification follows the official Service land acquisition policy of acquiring “lands and waters … for the conservation of fish and wildlife and related habitat and to provide wildlife-oriented public use for educational and recreational purposes” (USFWS 1996).

The purpose of this proposed action is to support land acquisition that will expand access and further support the Urban Wildlife Refuge Initiative. The land to be added presents a greater potential for fulfilling the purposes of the refuge and the mission of the NWRS than do the lands to be subtracted. The purposes of the proposed action are in accordance with the mission and goals of the NWRS as set forth in the NWRSAA. Purposes include, but are not limited to:

- Increasing public access—Presently, the vast majority of the refuge is only accessible by boat. Adding this acreage into the acquisition boundary may expand public access to the

refuge, thereby supporting the Urban Wildlife Refuge Initiative to increase the Service's relevancy to urban citizens.

- Benefiting migratory birds of conservation concern—The tract to be added provides additional stopover habitat for neo-tropical migrants.
- Promoting the North American Waterfowl Management Plan—The proposed addition provides a diversity of habitat that would further support wintering waterfowl.

The proposed acquisition boundary modification would help meet Goal 2 of the refuge's Comprehensive Conservation Plan's (CCP, USFWS 2009) of restoring and maintaining fresh and brackish marsh systems and hardwood ridges to ensure healthy and viable ecological communities, with emphasis on migratory birds and threatened and endangered species. It also would support Objective 2.1 of the CCP: Over the 15-year life of the CCP, acquire lands that provide resource and public use values from willing sellers by fee-title purchase, donation, mitigation purchase and transfer, or other viable means (USFWS 2009).

In addition, future acquisition of the impounded freshwater marsh and associated lands would help fulfill Habitat Management Objective 3: Marsh Restoration, as detailed in the refuge's Habitat Management Plan (HMP, USFWS 2013a). Objective 3 affirms that the refuge will opportunistically reestablish and restore intermediate and brackish marsh communities, as funding permits, by acquiring lands from willing sellers. It further states that the lands are to be managed or restored to benefit wildlife and fisheries and to provide opportunities for compatible public uses.

The need for the proposed minor acquisition boundary modification by Bayou Sauvage NWR is to remove acres of fragmented saltwater marsh that no longer meet the purposes of the refuge and to add contiguous acres that include freshwater marsh and hardwood ridges that support a diversity of wildlife and will help support and improve public access.

Marsh loss is the most critical issue affecting habitat management. In the Lake Pontchartrain Basin, more than 66,000 acres (>22 percent) of marsh have converted to open water since 1932. Within Bayou Sauvage NWR, a habitat damage assessment conducted following Hurricane Katrina revealed approximately 658 acres (11 percent) of tidally influenced marsh and 1,089 acres (16 percent) of impounded marsh were converted to open water during the storm (USFWS 2013a.) The damage assessment further calculated a 9 percent reduction in carrying capacity for migrating and wintering waterfowl (Ecology and Environment 2007). Therefore, marsh restoration is a significant management objective critical to accomplishing refuge habitat goals.

The proposed action also is to provide opportunities for the refuge to further engage the local community in wildlife conservation by acquiring land in an urban setting that will help meet the Service's priorities and mandates, as outlined by the NWRSAA in 16 U.S.C. 668dd(a)(4)(K), to "provide increased opportunities for families to experience compatible wildlife-dependent recreation."

Alternatives

Alternative A – Retention of Current Approved Acquisition Boundary [No Action Alternative]

Under Alternative A, the Service would not modify the AAB, accept donations, or acquire any land within the proposed addition areas. Permanent changes in land use on unacquired tracts are probable. The natural resources within the addition area likely would not be protected. Private-owned tracts may be sold to other private or commercial entities that may manage or develop the land in a way that will result in a loss of marsh and other natural habitats and of public access. Public access to the refuge would not be improved or expanded. The 900 unacquired acres in the current AAB would remain within the boundary but are unlikely to be acquired.

Alternative B – Modification of Approved Acquisition Boundary [Proposed Action Alternative]

The refuge has prepared a Minor Boundary Modification Decision Report (see Appendix C) to this document to provide more details regarding the Proposed Action Alternative.

Under the Proposed Action, the refuge would remove 1,331 acres from its current AAB, which would result in those areas no longer being eligible for acquisition by the Service. The Service also would add 2,220 acres to its AAB. This is the preferred alternative. It would enable the Service to protect vulnerable habitats, such as swamp, impounded freshwater marsh, bayous and ponds, and associated wildlife. It also would provide an opportunity to expand public access to the refuge to help meet the challenge of getting people outside and connecting them with nature. With the Urban Wildlife Conservation Program, the Service strives to be a part of communities by developing refuges and programs near urban areas, where 80 percent of Americans live, to inspire the next generation of outdoor enthusiasts and ensure long-term conservation of our natural resources.

This alternative would enable the refuge to accomplish the following objectives listed in the refuge's CCP (USFWS 2009):

- Goal 2. Habitat Management—Restore and maintain fresh and brackish marsh systems and hardwood ridges to ensure healthy and viable ecological communities
- Goal 3. Visitor Services—Provide public use opportunities consistent with the NWRS mission that capitalize on the unique urban proximity of Bayou Sauvage NWR.

The land to be added to the AAB is available to the refuge from a willing seller, pending approval of the proposed action. The refuge plans to use a combination of funding sources, including the Land and Water Conservation Fund and the North American Wetland Conservation Act, to initially purchase approximately 750 of the 2,220 acres. This alternative offers increased

opportunities for protection of natural resources and for expansion of priority public uses, including wildlife observation and photography, thereby fulfilling the Service's mandate under the NWRSAA to provide for the conservation of fish, wildlife, and plants, and their habitats within the NWRS; ensure that the biological integrity, diversity, and environmental health of the NWRS are maintained for the benefit of present and future generations of Americans; and ensure that opportunities are provided within the NWRS for compatible wildlife-dependent recreational uses. The Service has determined that the proposed action is compatible with the purposes of Bayou Sauvage NWR and the mission of the NWRS.

Affected Environment and Environmental Consequences

This section is organized by affected resource categories and, for each affected resource, discusses both (1) the existing environmental and socioeconomic baseline in the action area for each resource and (2) the effects and impacts of the proposed action and any alternatives on each resource. The effects and impacts of the proposed action considered here are changes to the human environment, whether adverse or beneficial, that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives. This EA includes the written analyses of the environmental consequences on a resource only when the impacts on that resource could be more than negligible and therefore considered an "affected resource." Any resources that will not be more than negligibly impacted by the action have been dismissed from further analyses. Table 1 provides a summary of the expected level of impacts for the proposed action and alternatives by resource category.

Bayou Sauvage NWR consists of approximately 24,651 acres in Orleans Parish, Louisiana. (see Appendix B). It is the second largest NWR located in an urban area of the U.S. and is one of the last remaining marsh areas adjacent to the south shores of Lake Pontchartrain and Lake Borgne. The refuge is primarily open water, brackish marsh, intermediate marsh, scrub-shrub habitat, and coastal hardwood forest. The proposed subtraction area is located south of, and not adjacent to, the refuge. The proposed addition area is located southwest of the refuge and shares approximately 3 miles of the current refuge border (see Appendix B). Tables 1-6 provide brief descriptions of each resource affected by the proposed action.

For more information regarding the affected environment and the general characteristics of the refuge's environment, please see section II of the refuge's Comprehensive Conservation Plan (USFWS 2009) and section II of the refuge's Habitat Management Plan (USFWS 2013).

TABLE 1. POTENTIAL FOR BENEFICIAL AND ADVERSE IMPACTS FROM PROPOSED ACTION AND ALTERNATIVES

Resources	**Not Applicable:** Resource does not exist in project area	**No/Negligible Impacts:** Exists but no or negligible impacts	**Greater than Negligible Impacts:** Impacts analyzed in this EA
Habitat and Vegetation (including vegetation of special management concern)	☐	☐	☒
Terrestrial and Aquatic Wildlife	☐	☐	☒
Threatened and Endangered Species and Other Special Status Species	☐	☐	☒
Geology and Soils	☐	☒	☐
Air Quality	☐	☒	☐
Water Quality	☐	☐	☒
Floodplains	☒	☐	☐
Wilderness	☒	☐	☐
Visitor Use and Experience	☐	☐	☒
Cultural Resources	☐	☐	☒
Refuge Management and Operations	☐	☐	☒
Socioeconomics	☐	☐	☒

For each resource of the refuge, Tables 2-6 provide:

1. a brief description of the relevant general features of the affected environment;
2. a description of relevant environmental trends and planned actions;
3. a brief description of the affected resources in the proposed action area; and
4. impacts, including both direct and indirect effects, of the proposed action and any alternatives on those resources.

TABLE 2. NATURAL RESOURCES

Habitat and Vegetation

Affected Environment Description

Located within the city limits of New Orleans, LA, Bayou Sauvage NWR is the second largest refuge located in an urban area of the U.S. It comprises 24,651 acres of predominantly wetlands and is bordered on three sides by water: Lake Pontchartrain to the north, Chef Menteur Pass on the east, and Lake Borgne to the south. The western side of the refuge is bordered by the Maxent Canal and fastlands that consist of bottomland hardwood habitat and exotic species, such as Chinese tallow (*Triadica sebifera)* and Chinaberry (*Melia azedarach*). Unleveed portions of the refuge consist of estuarine tidal marshes and shallow water. The HPLS, along with roadbeds, created freshwater impoundments which altered the plant communities as well as the fish communities within these impoundments. Small forested areas exist on the low, natural ridges formed along natural drainages and along manmade canals.

The land and canals adjacent to the refuge, including in the proposed addition area, contain exotic plants and animals (e.g., Chinese tallow, Chinaberry, water hyacinth [*Eichhornia crassipes*], feral hogs [*Sus scrofa*], and nutria [*Myocastor coypus*]) that adversely impact the refuge's habitat and native wildlife. Control of these exotic and invasive species on the refuge cannot be accomplished while adjacent areas serve as a reservoir for these species. Control of these species would need to be addressed on property acquired by the refuge.

Environmental Trends and Planned Actions Description

Between 1932 to 2010, 27 percent of the Louisiana coastal marshes were lost (Mo et al. 2020). Human population increases and associated development, invasive species, and climate change, (e.g., rising temperatures, more extreme droughts, more severe storms, and SLR), are expected to continue affecting habitat and vegetation both surrounding and on the refuge. The relative SLR rate in the Louisiana coast is among the world's highest, at 12 ± 8 mm per year (Jankowski et al. 2017) Mo et al. (2020) found that coastal marshes were resilient against hurricanes on a landscape scale, but concluded that more study is needed to understand the combined effects of climatic and human activity factors on the sustainability of coastal ecosystems and the long-term results of large ecosystem management projects (Mo et al. 2020).

Municipal growth could threaten the proposed acreage, if not acquired by the refuge. Currently, there is construction underway near the southwest border of the refuge, approximately two miles from the current refuge boundary and half a mile from the boundary of the proposed addition, to recover apartment buildings destroyed by Hurricane Katrina. Commercial and

industrial development are a possibility because of the acreage being located within the city limits of New Orleans. Increased development would destroy native habitat and vegetation.

Anticipated Impacts

Alternative A:

Under this alternative, the land inside the AAB but outside the HPLS would continue to transition to open water due to SLR, thereby leaving a large part of acreage in the AAB in a state not suitable for future refuge acquisition even if the owners were willing to sell.

Privately owned wetlands inside the HPLS could eventually be developed and used for agricultural, commercial, residential, and/or industrial purposes. Development in wetland habitats is currently regulated by the U.S. Army Corps of Engineers' Section 404 (Clean Water Act) permit program. This program only requires permits for the discharge of dredge and fill material in wetlands. Section 404 also provides exemptions for normal ranching, farming, and silviculture practices. However, if these practices convert wetlands into non-wetlands, Section 404 includes a "recapture" provision, voiding the exemption and requiring a 404 permit. According to the U.S. Department of the Interior (1994), Section 404 does not restrict activities that may alter wetlands (e.g., excavation, drainage, clearing, flooding, or constriction of water supply), when such activities do not involve the discharge of dredge or fill material. As a result of this jurisdictional restriction, a substantial portion of wetland alterations are not covered by the Section 404 program. Furthermore, Section 404 primarily addresses the physical loss of wetlands and does not cover degradation or contamination (U.S. Department of Interior 1994).

Alternative B:

The proposed action would add 2,220 acres of wetland habitat to the AAB. Protection of this acreage would preserve valuable wetland habitat to support native plants and wildlife and provide ecosystem services, such as flood mitigation, water quality improvement, and prevention of soil subsidence (U.S. Environmental Protection Agency [US EPA] n.d.). With the acquisition of these lands, the refuge could also better control invasive, exotic plants and animals that adversely impact habitat and native wildlife.

As in Alternative A, the area that would be removed from the AAB is expected to continue to submerge because of SLR, thereby leaving habitat that is less desirable for biodiversity.

Terrestrial and Aquatic Wildlife

Affected Environment Description

Bayou Sauvage NWR was established to provide wintering habitat for migratory birds and waterfowl and is home to 340 species of birds (USFWS 2009). The geographical position of the refuge as an oasis in the midst of development makes it an important resting and feeding area to trans-Gulf migratory songbirds. The area is located in the Gulf Coastal Prairie area in Bird Conservation Region 37 and hosts high-priority birds of concern including prothonotary warbler (*Protonotaria citrea*), sedge wren (*Cistothorus stellaris*), Swainson's warbler (*Limnothlypis swainsonii*), and painted bunting (*Passerina ciris*). Common mammals are white-tailed deer (*Odocoileus virginianus*), eastern gray squirrels (*Sciurus carolinensis*), North American river otter (*Lontra canadensis*), raccoon (*Procyon lotor*), feral hog, nutria, and American mink (*Neovison vison*). American alligators (*Alligator mississippiensis)* and a variety of other reptiles and amphibians inhabit the refuge. Freshwater species of fish common on the refuge include largemouth bass (*Micropterus salmoides)* and a variety of catfish, crappie, and bream. Common saltwater species include flounder (*Paralichthys spp*), red fish (*Sciaenops ocellatus)*, speckled sea trout (*Cynoscion nebulosus*), and a variety of crabs and shrimp. See Appendix I in the refuge's CCP (USFWS 2009) for a list of wildlife species of concern and/or significance for management purposes.

Non-native, invasive species currently thrive on the refuge and surrounding areas. Of special management concern are feral hogs that compete with native wildlife for food and space; damage native plant communities by rooting, wallowing, and trampling; and are a significant source of predation of eggs and newly hatched young of ground-nesting birds, amphibians, reptiles, and small mammals (Mississippi State University 2021).

Environmental Trends and Planned Actions Description

An encompassing data search presented in Science magazine in 2019 reported a net loss of 2.9 billion birds, or 29% of 1970 abundance, of the 529 species listed. Overall proportional loss was greatest among species overwintering in coastal regions of North America (Rosenberg et al. 2019). North American waterbirds, often useful as indicators of environmental quality and ecosystem health, are also in decline. Of 210 species of waterbirds, including seabirds, coastal waterbirds, wading birds, and marsh birds utilizing aquatic habitats in the Americas, one-third are considered to be at risk of serious population loss (Kushlan et al. 2002). Kushlan et al. (2002) suggest that the solution to recovering these species lies in conservation of aquatic habitats through multiuse management.

Holcomb et al. (2015 and 2019), in the state Wildlife Action Plan (SWAP), identify 64 mussel species, 35 crawfish species, 140 species of reptiles and amphibians, 70 mammal species, over 450 bird species, and hundreds of inland and marine fishes in Louisiana. Many of these species are experiencing declines, and some are at risk. SWAP provides detailed descriptions of the habitats, assessment of threats to those habitats, and conservation actions needed to address those threats. Conservation actions identified include the need for limiting habitat fragmentation, degradation, and conversion of habitats by agriculture and residential and commercial development. SWAP defines Conservation Opportunity Areas where partners are needed to create opportunities for conservation in identified priority geographic areas, and Bayou Sauvage NWR is located in the Gulf Coast Prairies and Marshes area.

Anticipated Impacts

Alternative A:

Under this alternative, the land outside the HPLS would continue to deteriorate, thereby leaving a large part of acreage in the AAB in a state not suitable for future acquisition. Opportunities to acquire land for the refuge that would benefit wildlife would potentially be lost to development or overrun with exotic plant and animal species, which have an adverse impact on native habitats and wildlife biodiversity.

Additionally, wildlife would remain at risk of illegal harvest on the proposed addition area. During the migratory waterfowl hunting season, poachers have been documented accessing the property and shooting over the limit of ducks. There is also illegal take of deer and rabbits as well as considerable poaching of alligators and trapping of other reptile species for exploitation in the illegal pet trade.

Alternative B:

The proposed addition area contains suitable habitat for a diversity of wetland-dependent wildlife, including wading birds, shorebirds, songbirds, colonial nesting birds, small mammals, freshwater turtles and other reptiles and amphibians, and invertebrates. Under this alternative, the refuge could better control invasive, exotic plants and animals that adversely impact habitat and native wildlife. Controlling exotic species would promote propagation of native plant and animal species. This management action would be initially costly, but the expense of controlling these species would decrease over time.

Similar to Alternative A, the land outside of the HPLS would continue to deteriorate, resulting in loss of value for meeting refuge purposes and the mission of the NWRS. The area for removal from the AAB is experiencing inundation from SLR and will transition to submerged habitat in the future.

Threatened and Endangered Species and Other Special Status Species

Affected Environment Description

Listed as threatened species under the Endangered Species Act of 1973 (ESA, 16 U.S.C. §1531 et seq.), Gulf sturgeon (*Acipenser oxyrhinchus desotoi*) and West Indian manatees (*Trichechus manatus*) may be found seasonally on Bayou Sauvage NWR (USFWS 2009). The Gulf sturgeon, a subspecies of the Atlantic sturgeon, is a primitive fish that spends the winters feeding on invertebrates in the Gulf of Mexico and its estuaries and travels upstream in spring to freshwater spawning grounds (USFWS 2018). They are known to forage in Lake Pontchartrain along the shores of the refuge. Much of the river, bay and nearshore areas throughout its range, including areas of the refuge, are considered critical habitat (USFWS 2013b). The West Indian manatee lives in marine, brackish, and freshwater systems in coastal and riverine areas. They have been seen foraging along the shorelines on the refuge in Lake Pontchartrain and in associated canals in the summer (USFWS 2009). Waters in and around Bayou Sauvage NWR are included in the designated critical habitat, as defined by the ESA. In addition to being a federally threatened species, the West Indian manatee's conservation status is listed as critically imperiled in Louisiana (NatureServe 2021).

Lake Borgne is included in the critical habitat designation for the Gulf sturgeon (USFWS and National Oceanic and Atmospheric Administration [NOAA] 2003), so Gulf sturgeon habitat may be found in the area to be removed from the AAB. With or without Service ownership and protection, it is expected that this acreage will not be developed and will continue to convert to open water with the effects of SLR. Suitable Gulf sturgeon habitat is not found in the area proposed for addition to the AAB. Critical habitat for the West Indian manatee is not found on the acreage proposed for removal from the AAB, and suitable manatee habitat is not found on the acreage proposed for addition (see Appendix D).

A pair of bald eagles (*Haliaeetus leucocephalus*), a species afforded special protection under the Bald and Golden Eagle Protection Act enacted in 1940 and amended many times, have nested for several years on the area proposed for addition (P. Dixon, personal communication). The alligator snapping turtle (*Macrochelys temminckii*), listed as a vulnerable species in Louisiana and petitioned for protection under the ESA (Louisiana Department of Wildlife and Fisheries 2020), is also found in the freshwater habitats included in the acres proposed for addition. Alligator snapping turtle populations have declined due to habitat degradation and overharvesting for commercial and recreational purposes (USFWS 2015). No bald eagle nests have been identified on the area to be removed from the AAB, and the area does not contain suitable habitat for the alligator snapping turtle.

Environmental Trends and Planned Actions Description

In 1991, Gulf sturgeon were listed as threatened after their population was greatly reduced or eliminated throughout much of their range because of overfishing, dam construction, and habitat degradation (NOAA 2021). According to NOAA, current threats to sturgeon populations include contaminants, dredging, dams, and climate change. Pollution and contamination from industrial, agricultural, and municipal activities cause a variety of physical, behavioral, and physiological impacts to sturgeon worldwide. As bottom feeders, sturgeon are susceptible to chemicals and metals that settle to the river bottom and are incorporated into the food web. Dredging operations may also destroy their feeding areas as well as disrupt spawning migrations. Dams significantly impact the sturgeon by blocking passage to their upstream spawning habitats. Global climate change may cause changes in Gulf sturgeon habitat through saltwater intrusion and changes in water temperature (NOAA 2021).

Listed as endangered in 1967, the West Indian manatee's population status was downlisted to threatened in 2017. Primary threats to this species include habitat loss and fragmentation, collision with boats, and entanglements in fishing gear. Natural threats include harmful algal blooms, cold weather, tropical storms and hurricanes, tidal entrapments, and disease (USFWS 2019b). The Florida manatee population has climbed from 1,267 in 1991 to 6,620 in 2017 (Ball et al. 2020) and estimates are now as high as 13,000 (USFWS 2019b). Increased population numbers will inevitably lead to more human-manatee conflicts, especially watercraft collisions. West Indiana manatees are protected by the Florida Manatee Sanctuary Act (§379.2431(2), Florida Statutes) and federally protected by the Marine Mammal Protection Act and the ESA.

The bald eagle was removed from the Endangered and Threatened Species list in 2007, and populations have more than quadrupled since 2009 (USFWS 2020).

Declines in alligator snapping turtle populations have led to the current review by the Service for federal protection. In 2004, Louisiana became the last state to ban commercial harvest of the turtle; Louisiana still allows restricted fishing of these turtles by individuals. The U.S. Geological Survey (USGS) has an active research project collecting individual movement, growth, and population dynamics data with the goal of updating known occupancy as part of a multi-state analysis assist in conserving this species (USGS n.d.-a).

The Service will continue to monitor these species and will strive to protect their habitats.

Anticipated Impacts

Alternative A:

No or minor adverse or beneficial effects to federally listed threatened or endangered species or their critical habitats are expected under this alternative. Since the acres currently in the AAB are unlikely to be acquired, no beneficial effect from refuge management of these wetlands would be realized. Gulf sturgeon habitat may be found in the area to be removed from the AAB; however, it is expected that this acreage will not be developed and will continue to convert to open water with the effects of SLR. Suitable Gulf sturgeon habitat is not found on the acreages proposed for addition to the AAB. The tract proposed for subtraction from the AAB does not contain critical habitat for the West Indian manatee or suitable habitat for the alligator snapping turtle. No changes to the current land use practices on this tract are expected, so no impacts would result from not acquiring this acreage. Also, no bald eagle nests are known to exist on the tract proposed for removal from the AAB.

Any protection for threatened and endangered species and other special status species and their habitats afforded by the refuge acquiring the proposed addition acreage would not be realized.

Alternative B:

Beneficial effects on species of concern are expected under this alternative. Acquisition of the land would provide greater protection for the bald eagle by protecting an active nest, and the freshwater habitat it contains is suitable for the alligator snapping turtle.

As in Alternative A, no adverse effects would result from removal of the acres currently in the AAB because they do not provide critical habitat for the West Indian manatee or suitable habitat for the alligator snapping turtle, and no bald eagle nests have been identified on the area. Although the area to be removed from the AAB contains habitat for the Gulf sturgeon, no changes to the current land use practices are expected and this area will continue to convert to open water with the effects of SLR.

Water Quality

Affected Environment Description

The natural hydrology of the refuge has been altered considerably by human activities, including construction of roads, railroads, levees, spoil deposits, and canals. Natural drainage provided by the Bayou Sauvage freshwater channel network, surface runoff, and estuarine tidal channels was adversely impacted by construction of hurricane flood protection levees in the mid-1950s. Under normal conditions, water inside the refuge is basically fresh. During Hurricane Katrina in August 2005, some of the hurricane protection levees failed and introduced saline waters for a prolonged period. Headwater flooding from the Mississippi River has been eliminated. Backwater flooding has been reduced in extent and duration in all major backwater areas, and distributary flooding has been eliminated or restricted to designated outlets. Headwater and backwater flood events from alluvial valley tributaries have also been reduced in extent, frequency, and duration. Conversely, the frequency and duration of flooding has increased in all non-leveed areas. The floodplain available for flood water storage has been reduced by 90 percent and the flood storage capacity has been reduced from 60 to 12 days of mean daily discharge. The Environmental Protection Agency has identified the Mississippi Delta as an area of significant concern for surface and groundwater quality. See the section on Hydrology and Water Quality and Quantity in the refuge's CCP for a more detailed discussion.

Environmental Trends and Planned Actions Description

Human activities greatly influence water quality in estuaries and coastal environments along the northern Gulf of Mexico, with excess nutrients (from fertilizer, sewage treatment plant discharge, detergents, storm water runoff, cars and power plants, and even pet waste [US EPA 2012]) being the primary cause of degraded water quality (Kennicutt 2017). Water quality degradation, in turn, has created "the largest zone of oxygen-depleted coastal waters in the western Atlantic Ocean" and leads to altered ecosystem structure and functioning, including habitat loss, decreased marine biodiversity, and altered marine food webs (Rabalais et al. 2002). According to Kennicutt's 2007 review of periodic summaries spanning over two decades (from the 1990s to the mid-2000s) by various federal, state, and local organizations, the ecological condition of the coastal northern Gulf of Mexico was assessed as fair to poor and water quality was fair. The Lake Pontchartrain shorelines have some of the most severe water quality problems caused by urban stormwater runoff (USGS n.d.-b). To address this ongoing issue, the Lake Pontchartrain Basin Restoration Act of 2000 (H.R. 2957 — 106th Congress) authorizes funding to implement water quality restoration projects that also protect and restore habitat.

Compounding human activities, storm events also affect coastal Louisiana's water quality. Following Hurricane Katrina, 80 percent of New Orleans was flooded by as much as 30 feet of water that was polluted with petroleum products, industrial chemicals, raw sewage, dead animals, and other debris (Roper et al. 2006). Lake Pontchartrain and the Mississippi River received the contaminated flood waters pumped from inside the HPLS. Storm surges also cause saltwater inundation of impounded freshwater marshes, causing ecosystem changes and habitat destruction. Research conducted after Hurricane Katrina on a natural levee ridge forest at Bayou Sauvage, Louisiana, estimates that recovery rates to pre-hurricane salinity measurements in soils and nearby pond sediments may take two decades or more (Keim et al. 2019). Post-Hurricane Katrina construction improvements to the storm surge barriers along southern Louisiana may help protect New Orleans as well as freshwater natural resources during future storm events.

Population growth and climate change, including stronger and more frequent storm events, are expected to continue to challenge water quality along the southern coast of Louisiana.

Anticipated Impacts

Alternative A:

Under Alternative A, any impacts to water quality within the area to be removed from the AAB are expected to continue as in the current state under private ownership since this property would not be acquired by the refuge. Protection of natural resources within the proposed addition area also would be at the discretion of private landowners and contingent upon enforcement of existing Federal, state, and local regulatory authorities, such as the Clean Water Act and state water quality and pollution requirements.

This area is one of the last, large undeveloped areas in Orleans Parish. Presently, some of the property is being used by the Vietnamese community to grow various farm crops. It is unknown as to what fertilizers are being used to promote growth of these crops; there exists the potential for adverse impacts to water quality. There is a small pumping station located on this property to divert storm water into the Maxent Canal, and this water is eventually discharged into the refuge via Pump Station 15.

Alternative B:

Acquisition of this property this would reduce the potential for adverse water quality issues that could impact the refuge and would provide protection of natural resources within the proposed addition area. Enforcement of existing Federal, state, and local regulatory authorities, such as the Clean Water Act and state water quality and pollution requirements, would be easier to maintain if this property were managed as part of Bayou Sauvage NWR.

If the proposed acres for addition were not acquired by the refuge and were instead developed, storm water runoff would be unable to penetrate impervious surfaces of residential or commercial development. Increased surface runoff would accelerate erosion and degrade aquatic habitat (US EPA 1999). Increased stormwater runoff could also pose a threat to public health, as it could raise the concentration of pollutants in recreational waters (US EPA 1999).

TABLE 3. AFFECTED VISITOR USE AND EXPERIENCE

Visitor Use and Experiences
Affected Environment Description
The Bayou Lacombe Visitor Center provides a hub for visitation for the Refuge Complex that comprises nine refuges. The combined annual visitation is estimated at over 900,000, and annual visitation for Bayou Sauvage NWR is about 270,000. Trails, roadways, waterways, and canoe and boat launches provide access to refuge outdoor recreation opportunities. The priority public uses of the refuge are fishing, hunting, wildlife observation, wildlife photography, and environmental education and interpretation. There are several public access points for fishing activities, including a handicap accessible fishing pier on Highway 90 at the Wayside Park location along the Bayou Sauvage waterway. The refuge hosts youth waterfowl hunts and is exploring expanding opportunities to include other migratory birds, big game, and incidental take of some species. The refuge is part of the "America's Wetland Birding Trail," and wildlife viewing and photography are very popular activities on the refuge. A popular destination for visitors and tourists to view the diverse flora and fauna of the area, the Ridge Trail includes a 2/3-mile-long interpretive boardwalk loop that includes an observation deck that looks out over bottomland hardwood forest and marsh. The boardwalk and observation deck were destroyed during Hurricane Katrina but have been rebuilt as part of the recovery process. Bayou Sauvage NWR offers a variety of both on-site and in-classroom environmental education programs. Guided, interpretive tours are offered throughout the refuge and include canoeing, biking, birding, and nature walks. Self-guided tours are also available throughout the refuge. For current information on the many access points and activities offered, visit the refuge's website at https://www.fws.gov/refuge/Bayou_Sauvage/.

Environmental Trends and Planned Actions Description

Outdoor recreation is expected to continue to be an important part of the American culture. Visitors who use the refuge would continue to participate in wildlife-dependent recreation, including fishing, hunting, wildlife observation, photography, and environmental education and interpretation. Wildlife-dependent recreation would be expected to continue to be a socioeconomic driver locally, regionally, and at the state level. Any future development of trails or access to support any wildlife-dependent recreational opportunities on the refuge would likely occur where the Service can acquire lands, especially near urban settings, and see a need for more outdoor recreational opportunities. Such acquisitions and program development would go through additional environmental review. The demand for wildlife-dependent recreation is likely to fluctuate in relation to changes in the area's population. Without a proportional increase in publicly accessible recreation areas, pressure on existing public land may increase with population increase. Overcrowded recreation areas would increase pollution and wildlife disturbance and decrease the quality of wildlife-dependent recreation in these areas.

Anticipated Impacts

Alternative A:

Lands currently in the acquisition boundary but outside of the HPLS will continue to transition from tidal marsh to open water and become part of Lake Borgne. Under this alternative, the refuge would be left with lands or, in some cases, open water that would not serve the purposes of the refuge, including public use. In addition, this land currently is used for private hunting and fishing, and the owners are not willing to sell the property.

The area proposed for addition currently does not offer any public or private opportunities for visitors, and no additional public use opportunities would be expected to be developed under this alternative.

Alternative B:

By improving access to the refuge, this alternative would expand wildlife-dependent recreational opportunities within the city limits of New Orleans, only 15 minutes from the French Quarter and downtown. The Ridge Trail, parking lot, restrooms, and picnic pavilion are located adjacent to the proposed addition area and would facilitate access to the area. The addition area also encompasses several freshwater ponds that provide habitat for several species of fish, including desirable sport fishes (e.g., bass, catfish, crappie, minnows, and bream) along with waterfowl and other birds. These ponds and the larger Lakes Michoud and

Marseille have the potential to provide opportunities for wildlife observation and photography as well as bank fishing. Presently, most fishing on the refuge is by bank fishers.

Public access for priority recreation, including wildlife observation and photography, may be available immediately upon acquisition of the land. Additional habitat restoration and appropriate planning actions would be required to open the area to consumptive wildlife-dependent recreation (i.e., fishing and hunting).

TABLE 4. CULTURAL RESOURCES

Cultural Resources

Affected Environment Description

Indigenous Native Americans were present in the area dating back to 1800 B.C. The original inhabitants were nomadic hunters, who later gave way to sedentary mound building cultures. In 1993, a Phase I Archaeological Survey identified eight archaeological sites and one "Spot Find" on refuge property or potential property. Two sites recognized for their archaeological significance, Big Oak Island and Little Oak Island, have been placed on the National Register of Historic Places because of their ability to contribute to an understanding of the history of the region. Extensive studies of the Big and Little Oak Island sites began in 1935 and have revealed artifacts thought to be from the Tchefuncte people who were located primarily in the Pontchartrain basin. There are still sites that have not been extensively examined and have the potential to contain significant cultural remains (USFWS 2009).

In 1699, French explorer Jean-Baptiste Le Moyne de Bienville explored and named the areas surrounding Lake Pontchartrain, however, historical records reveal that the majority of the refuge area saw little settlement and development prior to the 20th century. Even after that date, most settlement in the area occurred on lands just outside of the present refuge boundary (USFWS 2009).

Environmental Trends and Planned Actions Description

The Service values and protects its archaeological and historical resources, as defined in the National Historic Preservation Act of 1966, the Native American Grave Protection and Repatriation Act of 1990, and the Archaeological Resources Protection Act of 1979. As identified in Objective 4.1 in the refuge CCP, the Service will enforce all Federal and state laws applicable to the refuge and will protect all known archaeological sites on the refuge from illegal take or damage. Areas identified with cultural resources are not currently featured

as public use areas due to the likelihood of theft and other adverse effects, and it is unlikely that such areas would be opened to the public.

Anticipated Impacts

Section 106 of the National Historic Preservation Act of 1966, as amended, and Section 14 of the Archaeological Resources Protection Act require the Service to evaluate the effects of any of its actions on cultural resources (e.g., historic, architectural, archaeological) that are listed, or eligible for listing, in the National Register of Historic Places (NRHP).

Alternative A:

Sections 106 and 110 do not apply to the proposed subtraction area since the Service does not own or manage this area. Negative impacts are expected in the addition area if these lands are not acquired and protected by the Service.

Alternative B

Under this alternative, negative impacts are not expected in the area proposed for removal from the AAB. In the area proposed for addition to the AAB, the refuge would provide greater protection for a four-acre Native American archaeological site known as Big Oak Island. This site is on the National Register of Historic Places because it contributes to the understanding of the history of the region and the Tchefuncte people.

The Service has completed a site file review of the proposed addition area as a first step in satisfying Section 110 responsibilities (R. Kanaski, personal communication, February 9, 2021) and believes that the proposed acquisition of lands will have no adverse effect on any known or yet-to-be identified NRHP-eligible cultural resources. Information regarding recorded sites and survey areas will be included in the decision-making processes and appropriate management plans regarding any areas being brought into the refuge acquisition boundaries. If, in the future, the Service plans or permits any actions that might affect eligible cultural resources, appropriate site identifications, evaluations, and protection measures, as specified in the regulations and in Service directives and manuals, would be carried out.

TABLE 5. REFUGE MANAGEMENT AND OPERATIONS

Land Use on the Refuge

Affected Environment Description

Presently, the refuge has very little infrastructure. There are two refuge-owned boat launches. The one located on Highway 11 accommodates motorized vessels that are limited to 25 HP or less. The other one, the Joe Madere Marsh Canoe Launch, has a picnic pavilion and a short boardwalk that leads to a marsh overlook.

Located on U.S. Highway 90 two miles west of the junction with U.S. Highway 11, the Ridge Trail interpretive boardwalk area provides refuge access for the public and includes a parking lot, restrooms, and picnic pavilion.

Levees and drainage canals traverse the refuge and impound sections of freshwater habitat buffered from the effects of storms and saltwater intrusion. Feral hogs, an invasive species on the refuge and surrounding lands, are destructive to roads and are a primary source of damage to the Maxent Canal levee and the HPLS because of their rooting behavior.

The area being removed from the acquisition boundary comprises brackish marsh that is presently being used by a local hunting club for hunting and fishing.

There are no infrastructure improvements on the property that is being considered for inclusion into the acquisition boundary. The land is not actively used at this time; however, illegal hunting and collecting of wildlife for the black-market pet trade have been documented to occur on this property.

Environmental Trends and Planned Actions Description

The land being removed from the acquisition boundary is brackish marsh that is fragmented and experiencing high rates of erosion and subsidence. Land that is being proposed for inclusion into the acquisition boundary is located within the HPLS and has some potential for commercial development. The surrounding neighborhoods have not grown since Hurricane Katrina, but residential development would also be a possibility.

Anticipated Impacts

Alternative A:

Lands currently in the acquisition boundary but outside of the HPLS will continue to subside and become part of Lake Borgne. Under this alternative, the land would not meet the purposes

of the refuge and have little public use value for the programs supported by the refuge. This land currently is used for private hunting and fishing, and the owners are not willing to sell the property.

Under this alternative, costly damage by feral hogs to infrastructure, such as canals, levees, and roads, would go unchecked in the proposed addition area. Commercial and residential development would also remain a possibility.

Alternative B:

The area proposed for addition to the acquisition boundary under this alternative is located within the HPLS and would provide the refuge with the opportunity to meet goals and objectives, including protecting and restoring wetland ecosystems and providing opportunities for fish- and wildlife-dependent public uses in an urban setting, identified in the establishing legislation for the refuge. These lands also would provide the refuge with opportunities to meet goals outlined by the current presidential administration, such as conserving land and water and fighting climate change (Executive Order 14008, 2021). Control of exotic species, especially feral hogs, would benefit wildlife habitat and protect roads, canals, and levees and reduce costly repairs to these structures.

Effects to the area to be removed under this alternative would be similar to Alternative A, given that the owners are not willing sellers and the land use is not expected to change from its current use for private hunting and fishing.

Administration

Affected Environment Description

Current refuge staff consists of one full-time, GS-12 refuge manager. Administered as part of the Refuge Complex, the refuge receives some additional support from a GS-12 supervisory park ranger and a GL-9 wildlife officer. There is no annual budget for Bayou Sauvage NWR.

Environmental Trends and Planned Actions Description

There is considerable demand for environmental education and outreach programs in the greater New Orleans area. The refuge has partnered with various environmental organizations to conduct on- and off-site refuge programs. The demand by the public for more green space and outdoor recreation has grown during the pandemic. The refuge is experiencing record numbers of visitors with 161,700 for 2020, up from an average of 155,059 from 2018 through 2019 and an average of 86,830 from 2015 through 2017.

Anticipated Impacts

Alternative A:

Administrative costs would remain the same. Refuge staff would continue to administer educational programs and manage existing public use areas; however, minimal growth is expected under this alternative. Refuge accessibility would remain a limiting factor.

Alternative B:

Additional staff would be needed to maximize public use opportunities on additional, accessible lands. Associated costs would include part-time and/or full-time staff, utilities, and standard management operations. Implementation of the proposed action is expected to consume 20% of staff hours which, without added staff, could adversely impact priority refuge operations such as habitat restoration and wildlife management.

Additional funding would be required to restore and maintain newly added properties. The refuge, in collaboration with several partners, is currently working to secure funding that would help offset these additional costs and provide a secure funding source for future needs. Acquired funding would cover the costs associated with habitat restoration, management, and expansion of public use programs.

TABLE 6. SOCIOECONOMICS

Local and Regional Economies

Affected Environment Description

According to City-Data.com, the economy of New Orleans is dominated by oil and gas activities, tourism, the port and ship/boat building, and aerospace. Universities, hospitals, legal and other professional services, along with key installations of the U.S. Navy and other military operations in the region adds to the economic base (City-Data.com 2021). While most tourism is centered around the French Quarter (America's largest Mardi Gras festival) and river-boat gambling, ecotourism supports many private businesses in the New Orleans area. Eco tours of coastal Louisiana are available by airboats, pontoon boats, canoes and kayaks.

Environmental Trends and Planned Actions Description

Population growth and commercial business activity have declined or remained stagnant in this part of New Orleans, with houses near the proposed addition left vacant after Hurricane Katrina and because of subsidence. However, there is construction underway near the southwest border of the refuge, approximately two miles from the current refuge boundary and half a mile from the boundary of the proposed addition, to recover apartment buildings destroyed by Hurricane Katrina. Stormwater runoff from this area and the adjacent neighborhood are pumped into drainage canals that run into the proposed addition and refuge lands. Increased development would be expected to increase polluted stormwater runoff affecting the refuge.

In response to environmental challenges in coastal Louisiana, such as Hurricane Katrina in 2005, the BP oil spill in the Gulf of Mexico in 2010, sinking land and coastal land loss, rising sea levels, and flood control challenges, researchers and economic developers expect environmental businesses to drive the economic growth in the New Orleans area for the foreseeable future (The Times-Picayune 2019). Businesses, especially in water management, have the potential to be a long-lasting driver for the regional economy (The Data Center 2020).

Wildlife-dependent recreation is expected to continue to be a socioeconomic driver locally, regionally, and at the state and national levels. According to a 2017 report on the economic contributions by NWR visitors, recreation visits contributed approximately $3.2 billion to the economy nationally, which is a 20% increase in economic output from 2011. As a boost to the local economy, non-resident visitors contributed 83 percent of the total expenditures (USFWS 2019a).

Anticipated Impacts

Alternative A:

Lands currently in the acquisition boundary but outside of the HPLS will continue to subside and become part of Lake Borgne. Under this alternative, the lands in the area proposed for removal would not meet the purposes of the refuge, including those public uses offered by the refuge. In addition, this land currently is used for private hunting and fishing, and the owners are not willing to sell the property. This alternative does offer some degree of economic stimulus for the community from the private hunting club but increased public visitation to the refuge and associated economic benefits to the local economy would not be realized.

Land that is being proposed for inclusion into the acquisition boundary would not be acquired by the Service; public recreation and commercial ecotourism opportunities would not be developed in this area. Residential and commercial development would remain a possibility.

Alternative B:

Under this alternative, land ownership by the Service would preclude any future residential or commercial development by the private sector. However, this acquisition would provide increased ecotourism opportunities, particularly in the form of bird watching. This tract of land is a hotspot for birders from across the world. Bird watching is extremely popular and adds significantly to local economies. According to the 2016 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, approximately 48 percent of all dollars spent in 2016 for wildlife-related recreation was due to wildlife watching, of which birds attracted the biggest following. Wildlife observation participants 16 years or older spent $75.9 billion (DOI et al. 2018). This acquisition would also increase fishing opportunities that would have positive economic impacts to the local economy.

Climate Change

Affected Environment Description

The area proposed for subtraction is located outside of the HPLS and is affected by saltwater intrusion. Land loss due to subsidence, erosion, future storm events and SLR is expected to continue.

The acreage proposed for addition is located inside the HPLS and is thus largely protected from saltwater intrusion and storm impacts. The impounded freshwater marsh provides good biological productivity and high species diversity of both terrestrial and aquatic organisms.

Environmental Trends and Planned Actions Description

According to the Fourth National Climate Assessment by the U.S. Global Change Research Program (USGCRP 2018), "without substantial and sustained global mitigation and regional adaptation efforts, climate change is expected to cause growing losses to American infrastructure and property and impede the rate of economic growth over this century." Low-lying regions in the southeast are expected to experience daily high-tide flooding by 2100 (USGCRP 2018). Warmer temperatures, more severe droughts and floods, and SLR could have a wide range of impacts. All of these stresses can add to existing stresses on resources caused by other influences, such as population growth, land-use changes, and pollution.

Tidal marshes are among the most susceptible ecosystems to the effects of climate change, especially accelerated SLR. Rising sea level may result in tidal marsh submergence (Moorhead and Brinson 1995) and habitat migration as salt marshes transgress landward and replace tidal freshwater and brackish marsh (Park et al. 1991). Sea Level Affecting Marshes Model (SLAMM, Clough and Park 2006) simulations for Bayou Sauvage NWR predict substantial habitat changes as a result of sea-level rise (USFWS 2008). According to the 2008 report, tidal marshes are expected to be one of the most affected habitats, with extensive conversion of marshes to open water likely. Tidal flat areas may expand in both the short- and long-term, with some tidal flats converting to open water. Conversion of swamp and freshwater marshes to open water is expected (USFWS 2008). Possible levee breaches may also lead to short-term habitat changes.

Anticipated Impacts

Alternative A:

Under this alternative, lands that are in the acquisition boundary but outside of the HPLS would continue to degrade and become part of Lake Borgne. This would leave the refuge with lands or, in some cases, open water that has little to no wildlife value.

While the lands in the proposed acquisition area would remain within the protection of the levee system, possible development could reduce the effectiveness of the marsh areas to buffer against flooding resulting from future storm events. Also, habitat restoration would likely not occur, and the carbon storage capacity of this area would not be realized.

Alternative B:

The proposed action would help minimize the effects of climate change by preserving the carbon storage capacity of forested wetlands that would be added to the refuge AAB. The acquisition of the proposed 2,220-acre tract would prevent the development of this property into residential and commercial buildings and may allow future habitat restoration, including reforestation. Reforestation can help combat climate change by mitigating atmospheric carbon dioxide pollution and sequestering carbon for long-term storage (Nave 2019). Efforts are already underway to reforest a portion of the land that was acquired from private ownership by the refuge in 2007.

Effects to the area to be removed under this alternative would be similar to Alternative A, given that the owners are not willing sellers and the area is outside of the HPLS. SLR is expected to cause a transition in this area from tidal marsh to open water. The refuge, even if acquisition were possible, could not prevent the effects of SLR to these areas.

Environmental Justice

Affected Environment Description

Minority or low-income populations are located within Orleans Parish (where the refuge is located) and the four parishes (St. Tammany, Jefferson, St. Bernard, and Plaquemines) adjacent to Orleans Parish. According to 2019 data, all five parishes have a higher percentage of families below the poverty line (Orleans, 23.5%; St. Tammany, 11.5%; Jefferson, 14.6%; St. Bernard, 19.2%; and Plaquemines, 15.1) compared to the U.S. at 10.5% (U.S. Census Bureau 2020). The poverty rate in Louisiana (19.0%) also is higher than the U.S. Compared to the 23.7% of the U.S. population and 37.2% of the Louisiana population represented by minorities, St. Tammany Parish (16.8%), Jefferson Parish (35.1%), St. Bernard Parish

(29.9%), and Plaquemines Parish (30.6%) are more similar to Louisiana and the U.S. overall, while Orleans Parish (65.1%) has a higher percentage of minorities. (U.S. Census Bureau 2020).

Environmental Trends and Planned Actions Description

The population of New Orleans is currently declining at a rate of -0.22% annually since 2016 but has increased by 12.97% with an estimated 388,424 in 2020 since the most recent census, which recorded 343,829 in 2010 (World Population Review 2021). According to The Data Center, an independent and neutral nonprofit organization, median household income in Orleans Parish has risen about 14 percent ($39,842 to $45,614) from 1999 to 2019. The African American population has been trending downward in Orleans Parish since 2017, while the Hispanic population is rising in the metro area. Hispanic, Asian, and African American populations increased from 2019 to 2020 in most of the parishes surrounding New Orleans (The Data Center 2020).

Anticipated Impacts

Alternative A:

Under this alternative, lands that are within the acquisition boundary but outside of the HPLS would continue to subside and eventually become part of Lake Borgne. This would leave the land with little value to meet the purposes of the refuge, including public use value. There would be no increased opportunity to reach underserved communities.

Public use opportunities would also not be expanded to the areas proposed for addition under Alternative B.

Alternative B:

Alternative B would greatly improve the refuge's potential to reach underserved communities. A significant portion of New Orleans's population depends on mass transit to move about the city. Presently, the closest stop to the refuge is approximately two miles from the Ridge Trail entrance off Highway 90. Acquiring the proposed tract of land would put the closest stop within a few hundred feet of the refuge. Also, acquisition of these lands would preclude commercial development in the area adjacent to the refuge.

Under Alternative B, the effects on the area proposed for removal from the AAB would be similar to Alternative A. The refuge would not acquire the properties due to changes in the land and the lack of willing sellers. It is expected that the area would continue to transition to open water and the wildlife and public use values would decrease.

Monitoring

If the preferred alternative is selected, we would continue to monitor the control of exotic invasive species and adapt our management practices to prevent the expansion of these species, especially as it relates to the control of water hyacinth. Control of this species would be critical in the growth and expansion of visitor services programs. We would also monitor the impacts, both positive and negative, on effectiveness of our urban initiatives and our environmental education programs.

Summary of Analysis

The purpose of this EA is to briefly provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

Alternative A – Retention of Current Approved Acquisition Boundary [No Action Alternative]

As described above, this alternative would retain lands within the acquisition boundary that are outside of the HPLS. Without levee protection and influenced by climate change, the land will continue to degrade and is expected to eventually become part of Lake Borgne. This would leave the refuge with lands or, in some cases, open water that would not meet the purposes of the refuge or have added public use value. As a result, there would be no increased opportunity to reach the American public, especially underserved communities, to foster the appreciation and stewardship for fish and wildlife necessary in maintaining a robust wildlife refuge system.

The lands proposed for addition to the AAB would not be acquired under this alternative. Privately owned wetlands inside the HPLS could eventually be developed and used for agricultural, commercial, residential, and/or industrial purposes. Opportunities to acquire land for the refuge that would benefit wildlife would potentially be lost to development or overrun with exotic plant and animal species, which would have an adverse impact on native habitats, wildlife biodiversity, and infrastructure. If developed, adverse impacts to water quality from polluted storm water runoff would be expected. Loss of wetlands from private development would reduce the effectiveness of the marsh areas to buffer against flooding, and lack of habitat restoration would likely decrease the potential for carbon storage capacity in this area. Public use opportunities, including those benefiting underserved communities, would not be expanded under this alternative, and public recreation and commercial ecotourism opportunities would not be developed in this area.

Alternative B – Modification of Approved Acquisition Boundary [Proposed Action Alternative]

As described above, this alternative meets the purposes and needs of Bayou Sauvage NWR by increasing public access and opportunities for wildlife-dependent uses, such as wildlife observation and environmental education. Presently, the vast majority of the refuge is accessible only by boat. The proposed addition offers land access, including a city mass transit stop within a few hundred feet of the refuge, as it is located adjacent to an exit off of Interstate 10 to the northwest and the Ridge Trail parking lot and public use facilities to the east. Located entirely within the City of New Orleans, adding this acreage into the acquisition boundary would help the refuge reach underserved communities and support the Urban Wildlife Refuge Initiative of inspiring Americans to connect with nature and become stewards of the environment.

Acquiring this tract would also allow for economic growth for the New Orleans East communities, especially in the form of ecotourism. Several local businesses cater to tourists seeking to experience nature and learn about coastal Louisiana. At least one business has already expressed an interest to the refuge in expanding services for nature enthusiasts. The canals, lakes and freshwater ponds contained on this property would increase the opportunity for outdoor related businesses.

This alternative would meet wildlife objectives by protecting a diversity of habitats that provide stopover sites for neo-tropical migratory birds and resources for wintering waterfowl. Protection of this acreage would conserve valuable wetland habitat that supports native plants and wildlife and would give the refuge better control of invasive, exotic plants and animals that adversely impact habitat and native wildlife.

In addition to more habitat and wildlife management opportunities and responsibilities, acquisition of the proposed lands would require an expanded law enforcement presence to serve the increased number of visitors and to curtail any illegal uses of the property and natural resources.

Under Alternative B, the effects on the area proposed for removal from the AAB would be similar to Alternative A. Located outside of the HPLS, this acreage would continue transitioning from wetlands to open water, resulting in loss of value for meeting refuge purposes and the mission of the NWRS. The refuge would not acquire the properties due to changes in the land and the lack of willing sellers. Wildlife and public use values would decrease as the habitat is submerged due to SLR.

The Service has determined that the proposed action would benefit the refuge, Complex, and NWRS and is compatible with the purposes of Bayou Sauvage NWR and the mission of the NWRS.

List of Sources, Agencies and Persons Consulted

The following agencies, organizations, and tribes were consulted in the development of this EA:

Louisiana Department of Wildlife and Fisheries
Louisiana Division of Historic Preservation
Office of Coastal Management, Louisiana Department of Natural Resources
Regional Planning Commission, District One
Alabama-Coushatta Tribe of Texas
Chitimacha Tribe of Louisiana
Coushatta Tribe of Louisiana
Jena Band of Choctaw Indians
Mississippi Band of Choctaw Indians
Muscogee Creek Nation
Tunica-Biloxi Indian Tribe of Louisiana
Audubon Nature Institute
Common Ground Relief
Cowen Institute for Public Education
Friends of Louisiana Wildlife Refuges
Groundwork New Orleans
Lake Pontchartrain Basin Foundation
Limitless Vistas
Louisiana Master Naturalist
Louisiana Outdoor Outreach Program
National Park Service
Orleans Audubon Society
Tulane University
University of New Orleans
Zeta Phi Beta Sorority, New Orleans chapter

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Public Outreach

As outlined above, the Service contacted the State of Louisiana and local Native American Tribes to address their concerns early in the planning process. The EA was made available for 14 days for public review and comment beginning on and ending close of business on at the Refuge Complex office, on the refuge website https://www.fws.gov/refuge/Bayou_Sauvage/ , Refuge Complex Facebook page https://www.facebook.com/SoutheastLouisiana/, at https://www.nola.com/, The Advocate, and in The New Orleans Advocate and The Times Picayune. A printed copy of the Draft ROW CD is available upon request. Due to the current health and safety concerns related to COVID-19, physical copies of the CD were not posted. All comments received become part of the official public record. We will handle all requests for such comments in accordance with the Freedom of Information Act and National Environmental Policy Act regulations in 40 CFR §1506.6(f).

Determination

This section will be filled out upon completion of any public comment period and at the time of finalization of the Environmental Assessment.

- ☐ The Service's action will not result in a significant impact on the quality of the human environment. See the attached **"Finding of No Significant Impact."**
- ☐ The Service's action **may significantly affect** the quality of the human environment and the Service will prepare an Environmental Impact Statement.

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Appendix A

Multiple other statutes, Executive Orders, and regulations apply; the most notable are included here.

Cultural Resources

- American Indian Religious Freedom Act, as amended, 42 USC §§1996 – 1996a; 43 CFR Part 7
- Antiquities Act of 1906, 16 USC §§431-433; 43 CFR Part 3
- Archaeological Resources Protection Act of 1979, 16 USC §§470aa – 470mm; 18 CFR Part 1312; 32 CFR Part 229; 36 CFR Part 296; 43 CFR Part 7
- National Historic Preservation Act of 1966, as amended, 16 USC §§470-470x-6; 36 CFR Parts 60, 63, 78, 79, 800, 801, and 810
- Paleontological Resources Protection Act, 16 USC §§470aaa – 470aaa-11
- Native American Graves Protection and Repatriation Act, 25 USC §§3001-3013; 43 CFR Part 10
- Executive Order 11593 – Protection and Enhancement of the Cultural Environment, 36 Fed. Reg. 8921 (1971)
- Executive Order 13007 – Indian Sacred Sites, 61 Fed. Reg. 26771 (1996)

Fish and Wildlife

- Bald and Golden Eagle Protection Act, as amended, 16 USC §§668-668c, 50 CFR 22
- Endangered Species Act of 1973, as amended, 16 USC §§1531-1544; 36 CFR Part 13; 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, and 450
- Fish and Wildlife Act of 1956, 16 USC §§742 a-m
- Lacey Act, as amended, 16 USC §3371 et seq.; 15 CFR Parts 10, 11, 12, 14, 300, and 904
- Migratory Bird Treaty Act, as amended, 16 USC §§703-712; 50 CFR Parts 10, 12, 20, and 21
- Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001)

Natural Resources

- Clean Air Act, as amended, 42 USC §§7401-7671q; 40 CFR Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR Part 23
- Wilderness Act, 16 USC §1131 et seq.
- Wild and Scenic Rivers Act, 16 USC §1271 et seq.
- Executive Order 13112 – Invasive Species, 64 Fed. Reg. 6183 (1999)

Water Resources

- Coastal Zone Management Act of 1972, 16 USC §1451 et seq.; 15 CFR Parts 923, 930, 933
- Federal Water Pollution Control Act of 1972 (commonly referred to as Clean Water Act), 33 USC §1251 et seq.; 33 CFR Parts 320-330; 40 CFR Parts 110, 112, 116, 117, 230-232, 323, and 328
- Rivers and Harbors Act of 1899, as amended, 33 USC §401 et seq.; 33 CFR Parts 114, 115, 116, 321, 322, and 333
- Safe Drinking Water Act of 1974, 42 USC §300f et seq.; 40 CFR Parts 141-148
- Executive Order 11988 – Floodplain Management, 42 Fed. Reg. 26951 (1977)
- Executive Order 11990 – Protection of Wetlands, 42 Fed. Reg. 26961 (1977)

Appendix B

Map of Bayou Sauvage National Wildlife Refuge, including the Approved Acquisition Boundary, the proposed subtraction area, and the proposed addition area.

Appendix C

Decision Report

Proposed Minor Boundary Modification of

Bayou Sauvage National Wildlife Refuge

Orleans Parish, Louisiana

U.S. Fish and Wildlife Service
Interior Regions 2 and 4
Atlanta, GA

May 2021

I. OBJECTIVES

The U.S. Fish and Wildlife Service (Service) is proposing to modify Bayou Sauvage National Wildlife Refuge's (NWR, refuge) Approved Acquisition Boundary (AAB) by removing 1,331 acres from the current AAB and adding 2.220 acres (Figure 1). Upon approval of the minor boundary modification, the refuge would acquire the added acreage from willing sellers only. The purpose of this project is to remove land that is no longer available or compatible with the mission and goals of the refuge and the National Wildlife Refuge System (Refuge System) and add land to protect freshwater marshes and associated wetlands that provide valuable habitat for native species, including migratory birds. This boundary modification would also enable the refuge to expand its public use program.

The scope of this Decision Report is limited to the proposed expansion of the acquisition boundary of Bayou Sauvage NWR. The report is not intended to cover the specific method(s) of land acquisition that may be used, nor the development and implementation of detailed, specific programs for the administration and management of those lands. If the refuge is expanded and the needed lands or interests in lands are acquired, the Service will modify the refuge's existing management plans to incorporate the new lands and resources under its control. The updated management plans would be developed in accordance with the requirements set forth by the Department of the Interior and the National Environmental Policy Act.

Figure 1. Proposed Expansion Boundary for Bayou Sauvage National Wildlife Refuge

II. LOCATION AND SIZE

Bayou Sauvage NWR is located in east Orleans Parish, Louisiana, entirely within the corporate limits of the City of New Orleans. The property is traversed by U.S. Highway 90, U.S. Highway 11, and Interstate 10. The 24,651-acre refuge was authorized on November 10, 1986, under a provision of the Emergency Wetlands Resources Act of 1986. Virtually the entire site consists of wetlands bordered on three sides by water: Lake Pontchartrain on the north, Chef Menteur Pass on the east, and Lake Borgne on the south. Leveed and drained former wetlands border the western side of the refuge, west of the Maxent Canal. Over 60 percent of the refuge is freshwater emergent marsh and shrub/scrub forest enclosed by hurricane protection levees. The remaining unleveed portions of the refuge are estuarine tidal marshes and shallow water areas.

The Service established the refuge in April 1990 and it was expanded in 1998 with an additional 12,000 acres and again in 2007 with 2,200 acres. The current approved acquisition boundary for the refuge is 33,200 acres. Presently, the refuge owns fee title to 22,265 acres and manages another 445 under lease from the City of New Orleans. There are approximately 9,634 acres within the approved boundary that are still in private ownership.

III. DESCRIPTION OF SUBTRACTION AND ADDITION AREAS

Subtraction Area

The subtraction area consists of 1,331 acres of predominately fragmented saltwater marsh outside of the Hurricane Protection Levee System (HPLS). These tidal marshes are dominated by wiregrass. Land loss is occurring in this area and is expected to continue at a rapid rate due to subsidence, erosion, future storm events, and sea level rise (Glick et al. 2013, Mo et al. 2020, U.S. Fish and Wildlife Service [USFWS] 2008). The lands being subtracted are not owned by the Service but are privately owned and currently leased to a hunting club. The area is only accessible by boat and there is no foreseeable opportunity to purchase or manage this area as part of the refuge. Due to the rapid erosion of this area along the Louisiana coast, there is a loss of habitat within the proposed subtraction area. This loss of habitat results in the lands within the subtraction area no longer meeting the purposes of the refuge.

Addition Area

The addition area consists of 2,220 acres inside the HPLS and is protected from saltwater intrusion and storm impacts. It consists of swamp, impounded freshwater marsh, natural levee ridges, spoil banks, bayous and pond habitats that allow for good biological productivity and high species diversity of both terrestrial and aquatic organisms. These acres are owned by a willing seller and include multiple locations that are suitable for public use sites. This area would be a community asset supporting the Urban Wildlife Conservation Program and has great potential for fulfilling the purposes of the refuge and the mission of the Refuge System.
The leveed wetlands are diverse, with the dominant vegetation species being wiregrass, fall panicum, switchgrass, sprangletop, and coastal waterhyssop. The freshwater bodies are

characterized by coontail, water celery, and southern niad. Terrestrial vegetation, often characterized by native species such as live oak, black willow, and other mixed hardwoods as well as exotic species including Chinese tallow and Chinaberry, is associated with the higher levee ridges, which are well-drained and typically above the reach of saline waters. For more information on the habitat resources on Bayou Sauvage NWR, refer to pages 22-25 in the refuge's CCP (USFWS 2009).

IV. MAJOR FISH AND WILDLIFE VALUES

The listed threatened faunal species that use the refuge are Gulf sturgeon (*Acipenser oxyrhinchus desotoi)* and West Indian manatee (*Trichechus manatus,* USFWS 2020). The proposed subtraction area borders areas of Lake Borgne, where both of these species may be found seasonally. Although the area to be removed may provide minimal aquatic habitat needed by these species, there will be no adverse impact to either species as no changes to the current land use practices are expected. The proposed addition area does not directly support either of these threatened species.

Located along the southwest border of Lake Borgne, the tidal marshes in the subtraction area serve as estuarine nurseries for various fish species, crabs, and shrimp (USFWS 2009). However, affected by saltwater intrusion and erosion, the subtraction area offers a less diverse habitat than the addition area to support native wildlife and migratory birds. The variety of vegetation, from freshwater marshes to upland ridges, in the addition area provides a diverse habitat for wildlife species. The trust species to benefit from the acquisition are waterfowl, shorebirds, wading birds, and neotropical migrants.

Comprising swamp, impounded freshwater marsh, natural levee ridges, spoil banks, bayous and ponds, the addition area provides habitat for nesting, roosting, and feeding for numerous species of birds. Wintering waterfowl are substantial at times, and tens of thousands of ducks stop at the refuge during their winter migration. Gadwall (*Mareca strepera)*, blue-winged teal (*Spatula discors*), green-winged teal (*Anas crecca*), mallard (*Anas platyrhynchos*), Northern shoveler (*Spatula clypeata*), Northern pintail (*Anas acuta*), and lesser scaup (*Aythya affinis*) are the species most commonly seen in the winter, while wood duck (*Aix sponsa*), fulvous whistling-duck (*Dendrocygna bicolor*), black-bellied whistling-duck (*Dendrocygna autumnalis*), and mottled duck (*Anas fulvigula*) stay for longer periods and nest on the refuge (USFWS 2009). Thousands of shore birds, such as various plovers and sandpipers, willet (*Tringa semipalmata*), black-necked stilt (*Himantopus mexicanus*), American oystercatcher (*Haematopus palliatus*), and killdeer (*Charadrius vociferus*), flock to Bayou Sauvage NWR to indulge in the copious amounts of invertebrates. Wading birds are common on the refuge and include various species of herons, egrets, ibis, bitterns, terns, and gulls. The refuge is also home to several species of raptors, including bald eagles (*Haliaeetus leucocephalus*), northern harriers (*Circus hudsonius*), and numerous hawk species (USFWS 2013).

The addition area encompasses Lakes Michoud and Marseille and several smaller freshwater ponds that provide habitat for bass, catfish, crappie, minnows, and bream. This area has the potential to provide bank fishing opportunities. Presently, most fishing on the refuge is by bank fishers.

V. RELATIONSHIP OF PROJECT TO ECOSYSTEM MANAGEMENT GOALS AND OBJECTIVES

Bayou Sauvage NWR lies within a physiographic region designated by the Service as the Lower Mississippi River Ecosystem (LMRE). The LMRE serves as the primary wintering habitat for mid-continent waterfowl populations, as well as breeding and migration habitat for migratory songbirds returning from Central and South America. The proposed addition of wetlands would help the refuge contribute to LMRE's goals (USFWS 2002) to:

- conserve, enhance, protect, and monitor migratory bird populations and their habitats in the LMRE;
- protect, restore, and manage the wetlands of the LMRE;
- protect, restore, and manage the fisheries and other aquatic resources historically associated with the wetlands and waters of the LMRE;
- restore, manage, and protect national wildlife refuges and national fish hatcheries; and
- increase public awareness and support for LMRE resources and their management.

Specifically, acquisition of the proposed area would enable the refuge to contribute to two main LMRE priorities. First, it would offer opportunities to continue to work with the Louisiana Coastal Wetlands Program Federal Task Force, (established in the 1990 Coastal Wetlands Planning, Protection and Restoration Act [16 U.S.C. 3951-3956]), private landowners, and other entities to protect and restore coastal wetlands, consistent with the Coast 2050 Plan to provide for a sustainable coastal ecosystem by the year 2050 (Reed and Wilson 2004). Secondly, the location of the proposed addition within the city limits of New Orleans, Louisiana, and adjacent to an already constructed exit off of Interstate 10 would provide excellent public access to the refuge to facilitate opportunities for priority, wildlife-dependent public uses identified in the National Wildlife Refuge System Improvement Act of 1997. According to the Improvement Act, the six priority uses–hunting, fishing, wildlife observation and photography, and environmental education and interpretation–are to receive enhanced consideration in refuge planning and management.

LMRE goals reflect the goals of numerous plans and initiatives, including the Partners in Flight Bird Conservation Plan, North American Waterfowl Management Plan, Gulf Coast Joint Venture-Mississippi River Coastal Wetlands Initiative, North American Waterbird Conservation Plan, United States Shorebird Conservation Plan, and the North American Bird Conservation Initiative. Local efforts that would be supported by the proposed action include the Coast 2050 Plan, Louisiana Coastal Area-Ecosystem Restoration Plan, Lake Pontchartrain Basin Foundation, New Directions 2025-Orleans Parish Conservation Plan, and the Lake Pontchartrain Estuary Conservation Planning Project.

VI. THREATS

The tract to be included in the AAB is adjacent to the refuge along the southwest border and is bordered on its southwest side by residential development in New Orleans East. The primary threat to this landscape is land-use conversion from wetlands to residential, commercial, and industrial development. The proposed area of addition is located adjacent to an exit off of Interstate 10 within the limits of the City of New Orleans and is protected within the HPLS. These attributes enhance the opportunity and or likelihood for construction within this tract. Inundation from sea level rise is the primary threat to the area to be removed from the AAB.

VII. ALTERNATIVES

In determining how to best protect the project lands identified in this document, the Service considered and evaluated two alternative actions (USFWS 2021).

Alternative A: Retention of Current Approved Acquisition Boundary [No Action Alternative]

Under Alternative A, the Service would not modify the AAB, accept donations, or acquire any land within the proposed addition areas. Permanent changes in land use on unacquired tracts are probable. The natural resources within the proposed addition area likely would not be protected. Private-owned tracts may be sold to other private or commercial entities that may manage or develop the land in a way that will result in a loss of marsh and other natural habitats and of public access. Public access to the refuge would not be improved or expanded. The 900 unacquired acres in the current AAB would remain within the boundary but are unlikely to be acquired.

Alternative B: Modification of Approved Acquisition Boundary [Proposed Action Alternative]

Under the Proposed Action, the refuge would remove 1,331 acres from its current AAB, which would result in those areas no longer being eligible for acquisition by the Service. The Service also would add 2,220 acres to its AAB. This is the preferred alternative, as it would enable the Service to protect valuable wetland habitats and associated wildlife. It also would provide an opportunity to expand public access to the refuge to help meet the challenge of getting people outside and connecting them with nature.

VIII. BENEFITS

This proposal offers increased opportunities for protection of natural resources and for expansion of priority public uses.

The proposed action would allow the Service to protect vulnerable wetland habitat, such as swamp, impounded freshwater marsh, bayous, and ponds, for the benefit of aquatic and wetland species, including migratory birds. It also would provide ecosystem services, such as flood mitigation,

hurricane protection, water quality improvement, and control of marsh subsidence and erosion (USFWS 2021).

Acquisition of the proposed area within New Orleans would provide an opportunity to expand public access to the refuge. The addition of these lands would support the Service's Urban Wildlife Conservation Program (USFWS 2019) initiative to strive to be a part of communities by developing refuges and programs near urban areas to inspire the next generation of outdoor enthusiasts and to ensure long-term conservation of our natural resources. It is anticipated that the proposed project lands would offer outstanding opportunities for wildlife-dependent public use and environmental education, including education about the importance of our natural resources specific to coastal Louisiana.

IX. ESTIMATED COST

The land acquisition costs would be based on the current fair market value assessed by the Service at the time of purchase. A recent appraisal commissioned in 2019 by the property owners, Little Pine, Inc., estimated value at $2,243 per acre.

X. ENVIRONMENTAL CONTAMINANTS AND HAZARDOUS WASTE

A Level I contaminant survey was conducted on the entire area to be added, and no hazardous substances or other environmental problems were revealed.

XI. CULTURAL AND HISTORIC RESOURCE IMPACTS

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and Section 14 of the Archaeological Resources Protection Act require the Service to evaluate the effects of any of its actions on cultural resources (e.g., historic, architectural, and archaeological) that are listed, or eligible for listing, in the National Register of Historic Places (NRHP). Section 110 of the NHPA ensures that historic preservation is fully integrated into the ongoing programs of all Federal agencies.

Sections 106 and 110 do not apply to the proposed subtraction area since the Service does not own or manage this area. The Service has completed a site file review of the proposed addition area as a first step in satisfying Section 110 responsibilities, and no adverse effects are expected on any known or yet-to-be identified NRHP-eligible cultural resources on the proposed acquisition of lands. Beneficial effects are expected in the form of protection by the Service of the cultural resources on lands that would be acquired. Information regarding recorded sites and survey areas will be included in the decision-making processes and appropriate management plans regarding any areas being brought into the refuge acquisition boundaries. If, in the future, the Service plans or permits any actions that might affect eligible cultural resources, appropriate site identifications,

evaluations, and protection measures, as specified in the regulations and in Service directives and manuals, would be carried out.

XII. REFERENCES

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Appendix D

Minor Boundary Modification of Bayou Sauvage National Wildlife Refuge

Biological Assessment

Prepared using IPaC

Generated by Shelley Stiaes (shelley_stiaes@fws.gov)

May 4, 2021

The purpose of this Biological Assessment (BA) is to assess the effects of the proposed project and determine whether the project may affect any Federally threatened, endangered, proposed or candidate species. This BA is prepared inaccordance with legal requirements set forth under Section 7 of the Endangered Species Act (16 U.S.C. 1536 (c)).

In this document, any data provided by U.S. Fish and Wildlife Service is based on data as of May 4, 2021.

Prepared using IPaC version 5.58.0

Minor Boundary Modification of Bayou Sauvage National Wildlife Refuge Biological Assessment

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1 Description of The Action

1.1 Project Name

Minor Boundary Modification of Bayou Sauvage National Wildlife Refuge

1.2 Executive Summary

The need for the proposed minor acquisition boundary modification by Bayou Sauvage NWR is to remove acres of fragmented saltwater marsh that no longer meet the purposes of the refuge and to add contiguous acres that include freshwater marsh and hardwood ridges that support a diversity of wildlife and will help support and improve public access.

Effect determination summary

1.4 Project Description

1.4.1 Location

LOCATION
Orleans and St. Bernard counties, Louisiana

1.4.2 Description of project habitat

Located within the city limits of New Orleans, LA, Bayou Sauvage NWR is the second largest refuge located in an urban area of the U.S. It comprises 24,651 acres of predominantlywetlands and is bordered on three sides by water: Lake Pontchartrain to the north, Chef MenteurPass on the east, and Lake Borgne to the south. The western side of the refuge is bordered bythe Maxent Canal and fast lands that consist of bottomland hardwood habitat and exotic species, such as Chinese tallow (Triadica sebifera) and Chinaberry (Melia azedarach). Unleveed portions of the refuge consist of estuarine tidal marshes and shallow water. The HPLS,along with roadbeds, created freshwater impoundments which altered the plant communitiesas well as the fish communities within these impoundments. Small forested areas exist on thelow, natural ridges formed along natural drainages and along manmade canals.

1.4.3 Project proponent information

Provide information regarding who is proposing to conduct the project, and their contact information. Please provide details on whether there is a Federal nexus.

Requesting Agency
DEPT OF THE INTERIOR

Fish and Wildlife Service (FWS)

FULL NAME
Shelley Stiaes

STREET ADDRESS
61389 Highway 434

CITY	STATE	ZIP
Lacombe	LA	70445

PHONE NUMBER	E-MAIL ADDRESS
(985) 882-2026	shelley_stiaes@fws.gov

Lead agency
Lead agency is the same as requesting agency

1.4.4 Project purpose

The proposed acquisition boundary modification would help meet Goal 2 of the refuge's Comprehensive Conservation Plan's (CCP, USFWS 2009) of restoring and maintaining fresh and brackish marsh systems and hardwood ridges to ensure healthy and viable ecological communities, with emphasis on migratory birds and threatened and endangered species. It also would support Objective 2.1 of the CCP: Over the 15-year life of the CCP, acquire lands that provide resource and public use values from willing sellers by fee-title purchase, donation, mitigation purchase and transfer, or other viable means (USFWS 2009).

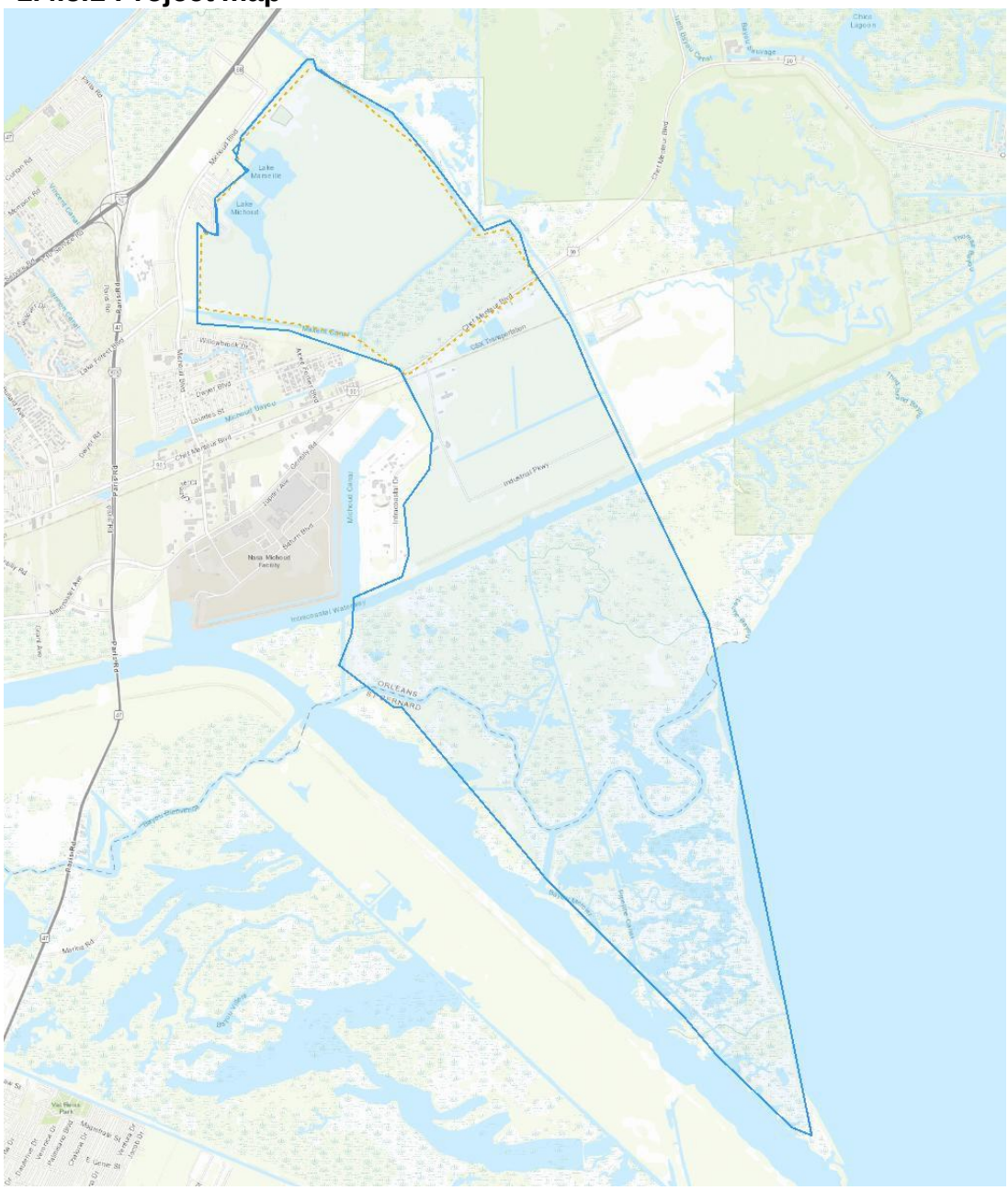
In addition, future acquisition of the impounded freshwater marsh and associated lands would help fulfill Habitat Management Objective 3: Marsh Restoration, as detailed in the refuge's Habitat Management Plan (HMP, USFWS 2013a). Objective 3 affirms that the refuge will opportunistically reestablish and restore intermediate and brackish marsh communities, as funding permits, by acquiring lands from willing sellers. It further states that the lands are to be managed or restored to benefit wildlife and fisheries and to provide opportunities for compatible public uses.

The need for the proposed minor acquisition boundary modification by Bayou Sauvage NWR is to remove acres of fragmented saltwater marsh that no longer meet the purposes of the refuge and to add contiguous acres that include freshwater marsh and hardwood ridges that support a diversity of wildlife and will help support and improve public access.

1.4.5 Project type and deconstruction

This project is a no construction project.

1.4.5.1 Project map



LEGEND

Project footprint

Layer 1: Land exchange

1.4.5.2 land exchange

Activity start date
June 01, 2021

Activity end date
April 07, 2022

Stressors
This activity is not expected to have any impact on the environment.

Description
The proposed acquisition boundary modification would help meet Goal 2 of the refuge's Comprehensive Conservation Plan's (CCP, USFWS 2009) of restoring and maintaining fresh and brackish marsh systems and hardwood ridges to ensure healthy and viable ecological communities, with emphasis on migratory birds and threatened and endangered species. It also would support Objective 2.1 of the CCP:Over the 15-year life of the CCP, acquire lands that provide resource and public usevalues from willing sellers by fee-title purchase, donation, mitigation purchase and transfer, or other viable means (USFWS 2009).

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The need for the proposed minor acquisition boundary modification by Bayou Sauvage NWR is to remove acres of fragmented saltwater marsh that no longer meet the purposes of the refuge and to add contiguous acres that include freshwatermarsh and hardwood ridges that support a diversity of wildlife and will help support and improve public access.

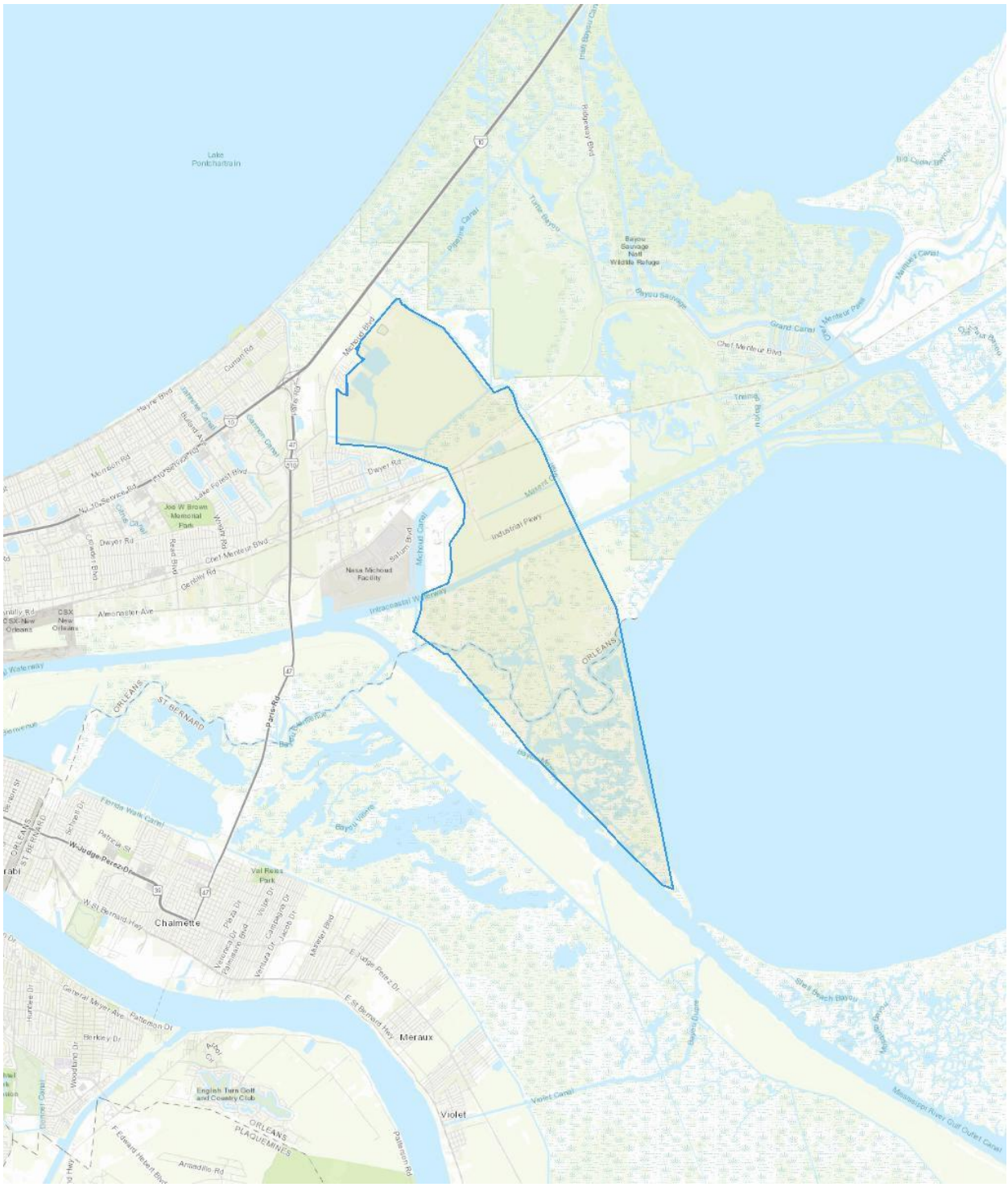
Marsh loss is the most critical issue affecting habitat management. In the Lake Pontchartrain Basin, more than 66,000 acres (>22 percent) of marsh have convertedto open water since 1932. Within Bayou Sauvage NWR, a habitat damage assessment conducted following Hurricane Katrina revealed approximately 658 acres (11 percent) of tidally influenced marsh and 1,089 acres (16 percent) of impounded marsh were converted to open water during the storm (USFWS 2013a.) The damage assessment further calculated a 9 percent reduction in carrying capacity for migrating and wintering waterfowl (Ecology and Environment 2007).
Therefore, marsh restoration is a significant management objective critical to accomplishing refuge habitat goals.

The proposed action also is to provide opportunities for the refuge to further engage the local community in wildlife conservation by acquiring land in an urban setting thatwill help meet the Service's priorities and mandates, as outlined by the NWRSAA in 16 U.S.C. 668dd(a)(4)(K), to "provide increased opportunities for families to experience compatible wildlife-dependent recreation."

1.4.6 Anticipated environmental stressors

Describe the anticipated effects of your proposed project on the aspects of the land, air and water that will occur due to the activities above. These should be based on the activity deconstructions done in the previous section and will be used to inform the action area.

1.5 Action Area



1.6 Conservation Measures

Describe any proposed measures being implemented as part of the project that are designed to reduce the impacts to the environment and their resulting effects to listed species. To avoid extra verbiage, don't list measures that have no relevance to the species being analyzed.

No conservation measures have been selected for this project.

1.7 Prior Consultation History

None

1.8 Other Agency Partners and Interested Parties

None

1.9 Other Reports and Helpful Information

None

2 Species Effects Analysis

This section describes, species by species, the effects of the proposed action on listed, proposed, and candidate species, and the habitat on which they depend. In this document, effects are broken down as direct interactions (something happening directlyto the species) or indirect interactions (something happening to the environment on which a species depends that could then result in effects to the species).

These interactions encompass effects that occur both during project construction and those which could be ongoing after the project is finished. All effects, however, shouldbe considered, including effects from direct and indirect interactions and cumulative effects.

2.1 Eastern Black Rail

This species has been excluded from analysis in this environmental review document.

Relevant documentation

- Eastern Black Rail SE REFUGES Intra-agency Section 7 consultation INTERIM guidance_FINAL_hr

Justification for exclusion

We do not have any record of the known occurrences on Bayou Sauvage, nor do we

have the marsh elevation needed to support the habitat required;

2.2 Gulf Sturgeon

This species has been excluded from analysis in this environmental review document.

Justification for exclusion

Although the acreage that is being taken out of the approved acquisition contains habitat for the Gulf Sturgeon (Acipenser oxyrinchus) and the West Indian Manatee (Trichechus manatus), there will be no adverse impact to either species, there will be nochanges to the current land use practices.

2.3 West Indian Manatee

This species has been excluded from analysis in this environmental review document.

Justification for exclusion

Although the acreage that is being taken out of the approved acquisition contains habitat for the Gulf Sturgeon (Acipenser oxyrinchus) and the West Indian Manatee (Trichechus manatus), there will be no adverse impact to either species, there will be nochanges to the current land use practices.

3 Critical Habitat Effects Analysis

3.1 Gulf Sturgeon Critical Habitat

This critical habitat has been excluded from analysis in this environmental review document.

Justification for exclusion

Although the acreage that is being taken out of the approved acquisition contains habitat for the Gulf Sturgeon (Acipenser oxyrinchus) and the West Indian Manatee (Trichechus manatus), there will be no adverse impact to either species, there will be nochanges to the current land use practices.

4 Summary Discussion, Conclusion, And Effect Determinations

4.1 Effect Determination Summary

SPECIES (COMMON NAME) OR CRITICAL HABITAT	SCIENTIFIC NAME	LISTING STATUS	PRESENT IN ACTION AREA	EFFECT DETERMINATION
Eastern Black Rail	Laterallus jamaicensis ssp. jamaicensis	Threatened	No	NE
Gulf Sturgeon	Acipenser oxyrinchus (=oxyrhynchus) desotoi	Threatened	No	NE
West Indian Manatee	Trichechus manatus	Threatened	No	NE
Gulf Sturgeon critical habitat	Acipenser oxyrinchus (=oxyrhynchus) desotoi	Final	No	NE

4.2 Summary Discussion

Environmental Trends and Planned Actions Description

In 1991, Gulf sturgeon were listed as threatened after their population was greatly reduced or eliminated throughout much of their range because of overfishing, dam construction, and habitat degradation (NOAA 2021). According to NOAA, current threatsto sturgeon populations include contaminants, dredging, dams, and climate change. Pollution and contamination from industrial, agricultural, and municipal activities cause a variety of physical, behavioral, and physiological impacts to sturgeon worldwide. As bottom feeders, sturgeon are susceptible to chemicals and metals that settle to the river bottom and are incorporated into the food web. Dredging operations may also destroy their feeding areas as well as disrupt spawning migrations. Dams significantly impact the sturgeon by blocking passage to their upstream spawning habitats. Global climate change may cause changes in Gulf sturgeon habitat through saltwater intrusion and changes in water temperature (NOAA 2021).

Listed as endangered in 1967, the West Indian manatee's population status was downlisted to threatened in 2017. Primary threats to this species include habitat loss and fragmentation, collision with boats, and entanglements in fishing gear. Natural threats include harmful algal blooms, cold weather, tropical storms and hurricanes, tidal entrapments, and disease (USFWS 2019b). The Florida manatee population has climbed from 1,267 in 1991 to 6,620 in 2017 (Ball et al. 2020) and estimates are now as high as 13,000 (USFWS 2019b). Increased population numbers will inevitably lead to more human-manatee conflicts, especially watercraft collisions. West Indiana manatees are protected by the Florida Manatee Sanctuary Act (§379.2431(2), Florida Statutes) and federally protected by the Marine Mammal Protection Act and the ESA.

The Service will continue to monitor these species and strive to protect their habitats.

4.3 Conclusion

Acquisition of this property this would reduce the potential for adverse water quality issues that could impact the refuge and would provide protection of natural resources within the proposed addition area. Enforcement of existing Federal, state, and local regulatory authorities, such as the Clean Water Act and state water quality and pollution requirements, would be easier to maintain if this property were managed as part of Bayou Sauvage NWR.

If the proposed acres for addition were not acquired by the refuge and were instead developed, storm water runoff would be unable to penetrate impervious surfaces of residential or commercial development. Increased surface runoff would accelerate erosion and degrade aquatic habitat (EPA 1999). Increased stormwater runoff could also pose a threat to public health, as it could raise the concentration of pollutants in recreational waters (EPA 1999)

Outdoor recreation is expected to continue to be an important part of the American culture. Visitors who use the refuge would continue to participate in wildlife-dependent recreation, including fishing, hunting, wildlife observation, photography, and environmental education and interpretation. Wildlife-dependent recreation would be expected to continue to be a socioeconomic driver locally, regionally, and at the state level. Any future development of trails or access to support any wildlife-dependent recreational opportunities on the refuge would likely occur where the Service can acquire lands, especially near urban settings, and see a need for more outdoor recreational opportunities. Such acquisitions and program development would go through additional environmental review. The demand for wildlife-dependent recreation is likely to fluctuate in relation to changes in the area's population. Without a proportional increase in publicly accessible recreation areas, pressure on existing publicland may increase with population increase. Overcrowded recreation areas would increase pollution and wildlife disturbance and decrease the quality of wildlife- dependent recreation in these areas.