

Chapter 1. Introduction, Purpose and Need, and Issues

1.1 Introduction

Nisqually National Wildlife Refuge (NWR or Refuge) is located at the southern end of Puget Sound, Washington in the Nisqually River delta (Figure 1.1-1). The 2,925-acre Refuge, located in Thurston and Pierce counties, is managed by the U.S. Fish and Wildlife Service (Service) and protects one of the few relatively undeveloped large estuaries remaining in Puget Sound. The Refuge has international significance as a staging area, sanctuary, and migration stopover for migratory birds of the Pacific Flyway. The Refuge also has regional importance as migration and rearing habitat for salmon, particularly the Federally listed fall chinook salmon.

The south Puget Sound region, with its rapidly growing urban development, is undergoing dramatic changes in population and landscape. Some areas within the study area that are currently proposed for development are ecologically inseparable from Refuge habitats. Eighty percent of estuarine habitat has been lost in Puget Sound in the last 150 years, contributing to the decline of many fish and wildlife that depend on estuaries, including several salmon species (Dean et al. 2000). The Refuge's diked freshwater wetlands were historically estuarine and habitat quality has declined.

Located on the Interstate 5 (I-5) corridor 20 miles from Tacoma and only 8 miles from Olympia, Nisqually NWR has become an urban Refuge easily accessible to outdoor enthusiasts. Visitor use and interest in the Refuge have increased as residential developments expand in the nearby cities of Lacey, DuPont, Olympia, and the Seattle-Tacoma area. Thousands of students and teachers participate in the Refuge's environmental education program. The Refuge is an ideal setting to provide an improved and expanded education program to respond to this growing need. More than 100,000 visitors come to Nisqually NWR each year to participate in wildlife interpretation, wildlife observation, environmental education, photography, boating, fishing, and shellfishing. As Refuge use has increased, so have conflicts among visitors and concerns over meeting the needs of fish and wildlife species.

This document is a Final Comprehensive Conservation Plan and Environmental Impact Statement (Final CCP/EIS) for Nisqually NWR. This Final CCP/EIS evaluates and compares four alternatives containing programs for habitat restoration, Refuge boundary expansion, and related environmental education and recreational opportunities. It also identifies the effects of restoration, Refuge expansion, and visitor use on key physical, biological, social, and cultural resources. The Service's Regional Director in Portland, Oregon is the responsible official for approving the Final CCP/EIS and signing the Record of Decision (ROD). The National Director of the Service has final authority on the proposed expansion of Nisqually NWR. Once the ROD is signed, the CCP will be separated from the Final EIS, and the CCP will guide management of Refuge operations, habitat restoration, and visitor services for the next 15 years. Significant text changes from the Draft CCP/EIS are presented as highlighted (shaded) text in this revised, Final CCP/EIS document.

The currently approved Refuge boundary totals 3,936 acres. Figure 1.1-2 identifies the CCP Study Area, which includes areas for potential Refuge expansion. The CCP Study Area totals 9,326 acres and includes the bluffs east of the Refuge and lands south of I-5 along approximately 6 miles of the Nisqually River corridor and 2.5 miles up McAllister Creek to its headwaters at McAllister Springs. The Refuge is currently managed under an outdated 1978 Conceptual Plan (CH2M Hill et al. 1978) and a new CCP is needed to more effectively address the highest priority natural resource needs in the face of changing conditions since the Nisqually NWR was established in 1974.

1.2 Proposed Action

The Service proposes to adopt and implement a Comprehensive Conservation Plan (CCP) for Nisqually National Wildlife Refuge (NWR). The Service examined four alternatives for future management at Nisqually NWR. Of these alternatives, Alternative D has been selected as the agency Preferred Alternative. All Action Alternatives (B, C, and D) address the major issues and relevant mandates identified in the CCP process and are consistent with principles of sound fish and wildlife management. For details on the specific components and actions comprising the range of alternatives, see Chapter 2.

1.3 Purpose and Need for the Comprehensive Conservation Plan

The purpose of the proposed Comprehensive Conservation Plan is to provide the Service, the National Wildlife Refuge System (NWRS or System), partners, and citizens with a management plan for improving fish and wildlife habitat conditions and Refuge infrastructure, for wildlife and public use on Nisqually NWR over the next 15 years. The National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57) requires that all National Wildlife Refuges be managed in accordance with an approved CCP by 2012. An approved CCP will ensure that the Service manages Nisqually NWR to achieve the Refuge purposes, vision, and goals and to help fulfill the mission of the NWRS. Specifically, the Service needs to establish a CCP to: (1) determine if the Refuge boundary should be expanded; (2) consider restoration of historic estuarine habitat; (3) address waterfowl hunting and related needs for sufficient wildlife sanctuary; (4) address the compatibility and quality of wildlife-dependent recreation and environmental education; and (5) provide a basis for budget requests to support the Refuge's operational needs for staffing, operations, maintenance, and capital improvements.

1.4 Legal and Policy Guidance

Nisqually NWR and its management and administrative activities are managed as part of the NWRS or System within a framework provided by legal and policy guidelines. The Refuge is guided by the mission and goals of the NWRS, the purpose of the Refuge as described in its acquisition authority, Service policy, Federal laws and executive orders, and international treaties. Below is a discussion of concepts and guidance for the System covered in the NWRS Administration Act of 1966, the Refuge Recreation Act of 1962, Title 50 of the Code of Federal Regulations (CFR), the Fish and Wildlife Service Manual (USFWS 1981), and, more recently, through the National Wildlife Refuge System Improvement Act of 1997. A list of other laws and executive orders that may affect the CCP for Nisqually NWR or the Service's implementation of the CCP is provided in Appendix D.

Figure 1.1-1, Regional Context - 8 ½ x 11, B&W

Figure 1.1-1

BACK SIDE

Figure 1.1-2 Current Ownership within CCP Study Area 8 ½ x 11, color

[Color Figure]

FIGURE 1.1-2

BACK SIDE

1.4.1 The U.S. Fish and Wildlife Service

Nisqually NWR is managed by the U.S. Fish and Wildlife Service within the Department of the Interior. The Service is the primary Federal agency responsible for conserving and enhancing the nation's fish and wildlife populations and their habitats. Although the Service shares this responsibility with other Federal, State, tribal, local, and private entities, the Service has specific trust responsibilities for migratory birds, threatened and endangered species, and certain anadromous fish and marine mammals. The Service also has similar trust responsibilities for the lands and waters it administers to support the conservation and enhancement of fish and wildlife.

1.4.2 National Wildlife Refuge System

The mission of the National Wildlife Refuge System 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.” (16 U.S.C. 668dd et seq.)

Starting with the first Refuge, Florida's Pelican Island established in 1903 by President Theodore Roosevelt, the NWRS has grown to 100 million acres in size, including 542 National Wildlife Refuges. The NWRS is the largest collection of lands specifically managed for fish and wildlife conservation in the nation. The needs of wildlife and their habitats come first on Refuges, in contrast to other public lands which are managed for multiple uses.

The administration, management, and growth of the NWRS are guided by the following goals (Director's Order No. 132, as amended on March 31, 2003):

- Fulfill our statutory duty to achieve Refuge purpose(s) and further the System mission.
- Conserve, restore where appropriate, and enhance all species of fish, wildlife, and plants that are endangered or threatened with becoming endangered.
- Perpetuate migratory bird, interjurisdictional fish, and marine mammal populations.
- Conserve a diversity of fish, wildlife, and plants.
- Conserve and restore where appropriate representative ecosystems of the United States, including the ecological processes characteristic of those ecosystems.
- Foster understanding and instill appreciation of native fish, wildlife, and plants, and their conservation, by providing the public with safe, high quality, and compatible wildlife-dependent public use. Such use includes hunting, fishing, wildlife observation and photography, and environmental education and interpretation.

1.4.2.1 National Wildlife Refuge System Improvement Act

The National Wildlife Refuge System Improvement Act of 1997 (Improvement Act) amends the Refuge System Administration Act of 1966 by defining a unifying mission for all Refuges, including a new process for determining compatible uses on Refuges, and requiring that each Refuge be managed under a CCP. The Act expressly states that wildlife conservation is the priority of NWRS lands and that the Secretary of the Interior shall ensure that the biological integrity, diversity, and environmental health of Refuge lands are maintained. Each Refuge must be managed to fulfill the NWRS mission and the specific purposes for which the Refuge was established. The first priority of each Refuge is to conserve, manage, and, if needed, restore fish and wildlife populations and habitats according to its purpose. The Service has statutory authority under the National Wildlife Refuge Administration Act and the Improvement Act to regulate activities that occur on water bodies “within” a Refuge. The Improvement Act requires that a CCP be completed for each Refuge by the year 2012 and that the public have an opportunity for active involvement in plan development and revision. It is Service policy that CCPs are developed in an open public process and that the agency is committed to securing public input throughout the process.

Compatibility Policy

Lands within the NWRS are different from other, multiple-use public lands in that they are closed to all public uses unless specifically and legally opened. No Refuge use may be allowed unless it is determined to be compatible. A compatible use is a use that, in the sound professional judgement of the Refuge Manager, will not materially interfere with or detract from the fulfillment of the mission of the NWRS or the purposes of the Refuge. The Improvement Act identifies six priority wildlife-dependent recreational uses: hunting, fishing, wildlife observation, photography, environmental education, and interpretation. As priority public uses of the NWRS, they receive priority consideration over other public uses in planning and management.

Biological Integrity, Diversity, and Environmental Health Policy

The Improvement Act directs the Service to “ensure that the biological integrity, diversity, and environmental health of the NWRS are maintained for the benefit of present and future generations of Americans...” The policy is an additional directive for Refuge managers to follow while achieving Refuge purpose(s) and System mission. It provides for the consideration and protection of the broad spectrum of fish, wildlife, and habitat resources found on Refuges and associated ecosystems. When evaluating the appropriate management direction for Refuges, Refuge managers will use sound professional judgment to determine their Refuges’ contribution to biological integrity, diversity, and environmental health at multiple landscape scales. Sound professional judgment incorporates field experience, knowledge of Refuge resources, Refuge role within an ecosystem, applicable laws, and best available science, including consultation with others both inside and outside the Service.

1.4.2.2 Research Natural Area Policy

Research Natural Areas (RNA) have special status on lands managed by the Service. Guidance for the operation of RNAs is provided in Section 8 RM 10 of the Service's Refuge Manual. The purposes of RNAs are:

- (1) *"...to preserve adequate examples of all major ecosystem types or other outstanding physical or biological phenomena;"*
- (2) *"To provide research and educational opportunities for scientists and others in the observation, study, and monitoring of the environment;"* and
- (3) *"...to preserve a full range of genetic and behavioral diversity for native plants and animals, including endangered or threatened species.."*

According to the Manual:

"activities on RNAs are limited to research, study, observation, monitoring, and educational activities that are non-destructive, non-manipulative, and maintain unmodified conditions. Picnicking, camping, collecting plants, gathering nuts and herbs, picking berries, hunting, fishing, trapping, and other public uses which contribute to modification of a Research Natural Area should be discontinued or expressly prohibited if such uses threaten serious impairment of research and education values." (USFWS 1981)

1.5 History of Refuge Establishment and Purpose

The Nisqually River delta is located approximately 20 miles southwest of Tacoma and 8 miles northeast of Olympia, Washington, in Pierce and Thurston counties. The proximity to these two major urban centers has exposed the delta to numerous development threats over the years. In 1965, the Port of Tacoma proposed developing 1,100 acres of the Nisqually River Estuary as a deepwater port facility. Largely as a result of citizen efforts led by conservationist and teacher Margaret McKenny and the Nisqually Delta Association, the proposal was denied (Burg 1984). In 1967, the Port of Olympia proposed development of an aluminum mill on the delta (Stevenson 1998). In 1966 and 1967, to further stave off development, the Washington State Department of Game (now the Washington Department of Fish and Wildlife [WDFW]) purchased holdings of approximately 616 acres of delta tidelands and salt marshes (USFWS 1977; Guth 1998).

In 1970, the Nisqually River Task Force (see Section 5.4.2) was created to assist in preserving and protecting the river and delta. In 1971, in recognition of the significance of the area as a natural estuarine and aquatic ecosystem, the U.S. Department of the Interior designated the estuarine portion of the Nisqually River delta as a National Natural Landmark (see Figure 1.1-2). The Nisqually River Task Force recommended in 1972 that the delta be set aside as a National Wildlife Refuge.

In February 1974, in recognition of the area's unique fish and wildlife resources, the Brown Farm property and tidelands were acquired for inclusion in the NWRS as Nisqually NWR. In total, 1,285 acres of diked grasslands, freshwater marshes, and tidelands were initially purchased with funds approved by the Migratory Bird Conservation Commission under authority of the

Migratory Bird Conservation Act and subsequently placed under the management of the Service (Hesselbart 1977a). Revenue received from Duck Stamps is the primary source of funding for those lands purchased under the Migratory Bird Conservation Act. However, three additional funding sources include appropriations authorized by the Wetlands Loan Act; import duties collected on arms and ammunition; and receipts from the sale of Refuge admission permits. Nisqually NWR was established with the following purposes:

“for use as an inviolate sanctuary, or for any other management purpose, for migratory birds” (16 U.S.C. ss 715d, Migratory Bird Conservation Act)

“... for the development, advancement, management, conservation, and protection of fish and wildlife resources ... 16 U.S.C. 742f(a)(4) ... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude” ... 16 U.S.C. 742f(b)(1) (Fish and Wildlife Act of 1956)

In 1977, an Environmental Assessment (EA) was completed in order to expand the Refuge boundary and authorize the acquisition of approximately 3,780 acres of delta lands (USFWS 1977). One year later, a Conceptual Plan and associated Environmental Assessment were developed for the Refuge (CH2M Hill et al. 1978). These documents provided initial direction for managing wildlife, habitat, and public use. The Conceptual Plan designated a Research Natural Area (RNA) in the northeast corner and habitat management, surface water control, and haying within the diked interior to provide forage and cover for waterfowl.

In 1996, the Service acquired a 107-acre parcel on the top of the West Bluff. Funding for this parcel came from the Land and Water Conservation Fund, which is supported by proceeds from off-shore oil and gas development. A total of 516 acres of tidelands was also transferred from the Department of Army to the Refuge.

The Service has acquired 76% (or 2,925 acres) within the approved Refuge boundary. These lands consist primarily of the Nisqually River, the delta estuary, McAllister Creek, diked freshwater wetlands and grasslands, and upland bluffs to the west. The diked area includes approximately 1,000 acres of Refuge lands between the Nisqually River and McAllister Creek. Refuge buildings, roads, parking lots, and an old orchard are located at the southeast corner of the Refuge, near the river.

In November 2000, Congress appropriated an additional \$2 million of Land and Water Conservation Funds which was earmarked for a land purchase on the East Bluff of the delta. Operation and maintenance funding is provided in an annual appropriation to the Department of the Interior from the United States Congress.

1.6 Refuge Vision and Goals

1.6.1 Vision

Nisqually National Wildlife Refuge is a landmark in the Pacific Northwest, located where the freshwater of the Nisqually River flows into Puget Sound. The estuary created by this mixing of fresh and saltwater is the richest kind of habitat known. Because of its biological significance, the

Nisqually delta was registered as a National Natural Landmark. More than 275 species of migratory birds, many runs of salmon, and numerous other species come to rest, feed, nest, spawn, and grow. More than 100,000 visitors also come to view this special place each year, to enjoy and learn about these fish and wildlife and their habitats, and to share in the experiences of the delta.

The Service has a unique opportunity to restore Nisqually NWR as an historic tidal system, thereby benefitting many fish and wildlife species that depend on estuaries, including several salmon species and a wide variety of migratory birds. This restoration effort will contribute significantly to Puget Sound, where 80% of estuarine habitat has been lost in the last 150 years. Many migratory fish and wildlife move across the Refuge boundary into the lower Nisqually River watershed on a daily basis. Expanded land protection will be based on ecological needs to allow the Refuge to more effectively protect and restore the Nisqually delta, freshwater wetlands, and riparian forests critical to these fish and wildlife.

Nisqually NWR is located within 100 miles of more than 4 million people, providing tremendous opportunities for many to learn about and experience the diverse habitats, fish and wildlife, and restoration of an historic system. A model environmental education program will reach a diverse group of tomorrow's stewards and leaders, to help them learn about and participate in the protection and care of our natural areas. Quality wildlife-dependent recreation will be provided to thousands of people so they can enjoy the abundance of fish and wildlife in a diversity of habitats. New, accessible Refuge headquarters facilities provide an ideal venue for these opportunities.

Through strong partnerships and innovative outreach efforts, the Refuge will provide a unique opportunity to develop a model National Wildlife Refuge, providing leadership in habitat restoration and management, land protection, environmental education, and quality wildlife-dependent recreation. With the support of partners and the community, the Refuge will provide a focal point in the Nisqually River watershed and throughout Puget Sound to demonstrate sound land stewardship and restoration of native habitats on a large scale to benefit salmon and migratory birds. This is an unparalleled opportunity for people to learn about and help build the future of Nisqually National Wildlife Refuge.

1.6.2 Goals

The following goals provide guiding principles for Nisqually NWR. They are consistent with Refuge purposes, Refuge System goals, the Improvement Act, Service policy, and international treaties. These goals apply to all alternatives in the CCP/EIS.

- Goal 1: Conserve, manage, restore, and enhance native habitats and associated plant and wildlife species representative of the Puget Sound lowlands, with a special emphasis on migratory birds and salmonids.*
- Goal 2: Support recovery and protection efforts for Federal and State threatened and endangered species, species of concern, and their habitats.*
- Goal 3: Provide quality environmental education opportunities focusing on the fish, wildlife, and habitats of the Nisqually River delta and watershed.*
- Goal 4: Provide quality wildlife-dependent recreation, interpretation, and outreach opportunities to enhance public appreciation, understanding, and enjoyment of*

fish, wildlife, habitats, and cultural resources of the Nisqually River delta and watershed.

1.7 Comprehensive Conservation Planning Process

This CCP/EIS for Nisqually NWR is intended to meet the dual requirements of compliance with the Improvement Act and the National Environmental Policy Act (NEPA). NEPA and the Improvement Act require the Service to actively seek public involvement in the preparation of environmental documents. NEPA also requires the Service to seriously consider all reasonable alternatives to its Preferred Alternative including the “No Action” alternative, which represents continuation of current conditions and management practices. Chapter 2 presents the alternatives for Refuge management.

Key steps in the CCP/EIS process include:

1. Form the Planning Team and conduct pre-planning
2. Initiate public involvement and scoping
3. Identify issues and develop vision and goal statements
4. Develop alternatives and assess their environmental effects
5. Identify the Preferred Alternative
6. Publish the CCP and NEPA Document
7. Revise the CCP and Publish a Final Plan
8. Implement the CCP

1.7.1 The Nisqually NWR CCP Process

During the summer of 1995, Nisqually NWR staff initiated preliminary habitat management planning. Interest was based on a desire to reevaluate how habitat was managed and to guide improvements for areas of deteriorating habitat quality. After the Refuge experienced severe flooding in 1996, comprehensive planning was initiated, and public scoping meetings were held during 1996 and 1997 to gather comments on issues to be addressed in the CCP. The CCP process is guided by the Refuge Planning Chapter of the Fish and Wildlife Service Manual (Part 602 FW2.1, Draft November 1996 and Final, June 2000).

In 1997, a core team of Refuge and Regional Office staff was established to prepare the CCP. An internal Service technical work group was also formed to advise on the technical aspects and management strategies of the plan. This technical work group met five times during the planning process to review and comment on the progress of the plan. The list of preparers as well as other participants can be found in Chapters 6 and Appendix H.

During 1997, the Refuge also established a cooperative management agreement with Ducks Unlimited (DU) to assist with the CCP and provide technical support on habitat management and restoration. In early 1998, the Service and DU hired ENSR, a Redmond, Washington-based consulting firm, to prepare a hydrodynamic and sediment transport model to assess restoration alternatives on the Nisqually River delta. The model and evaluation of restoration alternatives were presented in a technical report completed by ENSR in May 1999. A summary of this report can be found in Appendix J.

In this same month, an analysis in support of the CCP, titled “The Regional Context of Intertidal Habitat Restoration in the Nisqually River Delta” was produced by Curtis Tanner (1999). Also, a “Characterization of Fishes in the Nisqually River, Estuary, and Reach” was developed by Carrie Cook-Tabor (1999) in support of the planning process. In September 2000, the Service hired EDAW, Inc., an environmental consulting firm, to assist the agency in completing the CCP/EIS and assist with public involvement.

Coordination and cooperation among participating stakeholders was a fundamental element of the CCP/EIS. The Planning Team consulted with and considered the interests of many agencies and organizations. Chapter 6 provides additional details on coordination with the following groups:

- U.S. Fish and Wildlife Service
- Washington Department of Fish and Wildlife (WDFW)
- Nisqually Indian Tribe
- Nisqually River Council
- Friends and Volunteers of Nisqually NWR
- City of Olympia
- City of DuPont
- Thurston County Planning
- Pierce County Planning
- Fort Lewis Military Reservation
- Weyerhaeuser Corporation
- National Oceanic and Atmospheric Administration (NOAA) Fisheries

1.7.2 Public Involvement

Public involvement is an important component of Federal planning and was given considerable attention in the Nisqually NWR CCP process. Public involvement began with a preliminary scoping meeting on July 25, 1996. To date, Refuge staff have given more than 50 presentations to a variety of groups. Tools used to encourage public involvement included public meetings, planning update newsletters, workbooks, workshops, presentations, web pages, and Federal Register notices. **This Final CCP/EIS was revised from the Draft CCP/EIS (released in December 2002) based on extensive public comment received on the draft document. The full comment and response process is described in detail in Appendix M.** Chapter 6 provides more details on public involvement activities.

1.8 Planning Issues, Concerns, and Opportunities

Issues, concerns, and opportunities were identified through discussions with key contacts, workshop participants, and through the public scoping process. The following section summarizes issues, concerns, and opportunities from all public input received throughout the planning scoping efforts. Seven major issues were identified, as listed and described below.

Issue 1: Refuge Boundary Expansion

Should the Service play a larger role in protecting the lower Nisqually watershed and expand its Refuge boundary and, if so, what areas should be included?

Nisqually NWR currently consists of just under 3,000 acres. If all the lands within the currently approved Refuge boundary were acquired, the Refuge would consist of 3,936 acres. When the Refuge was established, protection was focused on the part of the delta that was imminently threatened with development. This CCP provides an opportunity to consider whether the original boundary is sufficient to make the Refuge ecologically whole and meet today's vision and goals for the Refuge, or whether additional lands beyond the approved Refuge boundary should be protected and included within an expanded Refuge boundary. These considerations include whether expansion is needed to protect all the habitat components necessary to sustain habitat quality in the delta and whether additional protection is needed for wetlands and riparian habitat used by Refuge wildlife in the lower Nisqually watershed.

For example, should the Refuge expand its boundary onto lands along the East Bluff of the delta? If these lands were acquired and added to the Refuge, they would receive greater protection and management. Under Refuge management, the East Bluff would provide greater protection for wildlife by providing an almost continuous (except for the railroad tracks) corridor of habitats from wetlands to forested uplands, as well as improve habitat quality and protection of the watershed. This corridor would help protect the stability of the steep bluff, reducing erosion and sedimentation, and contributing to improved water quality. A visual buffer would also help preserve the character of the delta for years to come. A similar corridor has been acquired on the West Bluff, including forested uplands along the slope, crest, and top of the bluff. Properties on the East Bluff of the delta are privately owned; major development is currently proposed, including bluff-top lands.

The current Refuge and the adjacent habitats of the Nisqually Valley on the south side of I-5 and along the Nisqually River and McAllister Creek are ecologically inseparable. Many migratory birds move between these areas on a daily basis to feed and roost. Salmon migrate through the Refuge into the rivers and creeks of the Nisqually Valley. These areas have high wetland and riparian restoration potential to recreate freshwater wetlands and improve the river corridor. Freshwater wetland restoration in the lower watershed could also offset the potential conversion of diked freshwater wetlands back to estuary. Public comments have indicated widespread support for Refuge expansion, including on the East Bluff.

Issue 2: Habitat Restoration and Management of the Diked Area

Should Nisqually NWR restore historical estuarine habitat and, if so, to what extent should this occur?

This issue focuses primarily on the 1,000 acres of former estuarine habitat within the Brown Farm Dike. This area was historically a major part of the Nisqually delta estuary but was diked for farming in the late 1800s. This habitat is currently managed by the Service as a mosaic of freshwater wetlands and non-native grasslands to benefit a variety of migratory waterfowl and

other migratory birds. Many species of ducks, geese, shorebirds, waterbirds, songbirds, raptors, invertebrates, and mammals use this area. The dike trails allow easy access to portions of these habitats, providing excellent wildlife viewing, photography, and educational opportunities.

Since Refuge establishment, frequent and costly breaching of the dike has occurred. In 1973, the northwest section of the dike along McAllister Creek breached and was quickly repaired (Klotz et al. 1978). On December 4, 1975, excessive river flood waters, high tide on the sound, and debris in the flooding river caused the dike again to breach approximately 1½ miles north of I-5 on the Nisqually River. Approximately 150 linear feet of the dike were destroyed, 400 feet severely undercut, and another 100 feet were damaged. Repairs to the dike were made in 1975. In 1979, material was added to the top and sides of the dike to raise its level to 12.5 feet on the Nisqually side and 12 feet on the McAllister side. New tide gates were also installed (Stevenson 1998). Major winter storms and high Nisqually River flows during November 1995 eroded riparian forest along the river and damaged the Nisqually River dike. Repairs using riprap (bank stabilization material) occurred in December 1995 and January 1996. In February 1996, a severe flood inundated most of the Refuge. Flooding and high river flows created two breaches and severe erosion along the Nisqually River dike. At the south end of the Refuge, overflow channels from the Nisqually River and McAllister Creek were also a major source of flood waters. Ninety-five percent of the diked interior flooded, damaging buildings, water control structures, boardwalks, and trails. The diked interior was flooded with up to 4 feet of water for days and in some places for weeks. Emergency dike repairs were conducted as a temporary measure until planning could be completed. Headquarters facilities replacement was largely completed in 1999.

In late 1996, subsequent flooding, heavy snowfall, ice, and high winds once again caused damage to the dike adjacent to the riprap repair of the previous year. Emergency repairs were completed by February 1997. Approximately \$400,000 was spent on emergency dike repairs in 1996 and 1997. Flooding and the effects of riprap repairs, which deflected erosive energy to the north, resulted in the erosion of about 400 feet of riparian habitat as well. A 1998 engineering survey recommended extensive repairs on much of the dike along McAllister Creek. The February 28, 2001 Nisqually Earthquake also caused extensive damage to much of the dike system, which is still being assessed. The entire dike system would require major repairs to bring it up to today's safety and structural standards.

During the past 20 years, management of the diked area has become increasingly difficult, and habitat quality has declined for the following reasons:

- Reed canary grass, a highly invasive exotic plant, is rapidly spreading throughout much of the area and now occupies more than a third of the total acreage.
- Water level management capabilities are extremely limited, and portions of the diked area are becoming too wet to easily manage.
- Plant succession has been allowed to occur in large sections of the diked area, allowing wetlands and grasslands to gradually convert to shrub habitats, reducing the value for waterfowl, shorebirds, and waterbirds.
- The 100-year-old dike system has required major repairs in 1973, 1975, 1979, 1996, and 1997 and currently needs major repair work. Saltwater seepage occurs along substantial portions of the dike.

This diked habitat, now isolated from tidal influence, was historically part of the Nisqually Estuary. The footprint of this salt marsh system is still visible within the dike in the form of a network of sloughs and channels that spread across the land. Estuaries, and their associated mudflats, salt marshes, tidal channels, and open waters, are one of the most productive habitats on earth. However, the location of estuaries has made them vulnerable to development. In Puget Sound alone, 80% of estuarine habitat has been lost to diking, filling, and development (Dean et. al. 2000). Even more has been lost throughout the West Coast. As estuarine habitat has diminished, associated fish and wildlife have also declined. For example, many salmon species and runs have declined severely in the Puget Sound area.

Through public scoping, the Refuge has learned that some people would like the entire diked area to be restored as historical estuarine habitat to maximize the recovery of anadromous (migratory) fish and benefit migratory birds; to restore a type of habitat now rare in Puget Sound; to bring back an historic, more natural system; and to potentially reduce the costs of future flooding and dike repairs. Others believe that only a portion of the diked area should be restored to contribute to estuarine, wildlife, and fish recovery, with the remaining area managed as freshwater and grassland habitat. Still others believe that the area should be retained and improved as freshwater and grassland habitats with no tidal restoration, so that the existing mixture of habitats is retained and the trail system is left in its current condition.

Issue 3: Environmental Education

Should the Refuge expand its environmental education program and facilities to serve the growing urban community?

Environmental education is a priority use of the NWRS and a high priority use for urban Refuges like Nisqually NWR. The Refuge is ideally located to reach a diverse group of students in the growing urban community surrounding the Refuge. Public scoping identified environmental education as a highly valued purpose and activity of Nisqually NWR. For all these reasons, Refuge staff consider environmental education to be one of the highest and best public uses on the Refuge. As many as 5,000 students and teachers from King, Pierce, Thurston, and Mason counties participate annually in the Refuge's limited environmental education program. The Refuge provides educators and youth professionals with volunteer support, indoor and outdoor facilities, and limited equipment. Demand by school groups is growing throughout the year, with the highest use period from early April through mid-June and a growing demand in the summer months as well. The current environmental education program and facilities and programs are inadequate to meet the current and projected future demands for environmental education opportunities. The Twin Barns Education Center served as a temporary education facility. Safety concerns from the recent earthquake required moving the education program out of the Twin Barns and into a trailer by the maintenance shop. The Refuge is currently seeking funding to build a new education center with greatly improved facilities and to resolve this safety issue and support an enlarged, high quality program.

A focus group of educators identified several opportunities for improving the Refuge's education program. These included a watershed stewardship theme; having additional trained staff and volunteers; providing interpretation for all important ecological features of the Refuge; participation in restoration and research as a means to educate; and user-friendly facilities, gear, and equipment.

The private, non-profit Nisqually Reach Nature Center at Luhr Beach is located within the CCP Study Area and doubles as a wildlife interpretation center and an educational center for school children ranging from 3rd to 12th grades, supporting up to 2000 students per year. The educational focus at the Nature Center is on the marine environment. The Service sees an opportunity to develop and strengthen a partnership with the Nisqually Reach Nature Center to provide a coordinated environmental education program in the Nisqually delta area.

Issue 4: Wildlife Observation, Hiking, and Trail Configuration

What areas of the Refuge will be accessed by trails and available to visitors if estuarine restoration occurs?

The Refuge supports 7 miles of trails, including the 5½-mile Brown Farm Dike Trail and the 1-mile Twin Barns Loop Trail. The Twin Barns Loop Trail was improved in 1999, is fully accessible, and provides interpretive and educational information. The use and location of the Twin Barns Loop Trail will not change based on decisions in this CCP/EIS. Three miles of the Brown Farm Dike Trail closes annually during the waterfowl hunting season to provide increased sanctuary for waterfowl and other birds and to ensure visitor safety due to the waterfowl hunting occurring on adjacent WDFW lands. Changes to the Brown Farm Dike Trail would be necessary under all estuarine restoration alternatives. In some cases, the length of the trail would be greatly reduced. Effects of these changes could be reduced through the construction of new trails in other locations or construction of boardwalk trails in estuarine areas. Many hiking groups and birdwatchers have provided comments on this topic. Many people commented that whatever the configuration of the trail system, for example, if the 5½-mile loop is reduced, access should be provided so that visitors can see wildlife and the variety of habitats on the Refuge and learn about estuarine and freshwater habitat management and restoration. Some people feel that trails should not be reduced or changed. Others believe that if breaches are created in the dikes, the breaches should be bridged if possible, and the Brown Farm Dike should be retained in its current state to support the existing loop trail. Numerous comments suggested new trail options, including building boardwalks into restored estuarine areas. Many commentors expressed discontent with seasonal trail closures due to hunting. The majority of respondents did support seasonal closures if needed to protect wildlife. The majority of commentors also said that fish and wildlife and habitat needs should take priority in making trail and restoration decisions.

Issue 5: Waterfowl Hunting on Nisqually NWR

How can unauthorized hunting on the Refuge be resolved? Is sufficient wildlife sanctuary currently provided within the Refuge? Should waterfowl hunting occur on Nisqually NWR? Would consolidation of hunting on Refuge and State lands in the tidflats provide the best location for a hunting area? Should the Service in cooperation with the WDFW take a more direct role in managing the waterfowl hunting program?

Since its establishment, Nisqually NWR has never been formally opened to waterfowl hunting. However, waterfowl hunting is a popular State-managed activity that occurs in the delta, October through January each year. Estimated use ranges from 1,100 to 2,100 hunter visits per season (USFWS data). Waterfowl hunting is permitted on three parcels (inholdings within the Refuge boundary) owned by WDFW. These parcels have irregular boundaries and are not distinguished

from Refuge lands by boundary markers, so hunters often hunt on Refuge lands. Except in limited areas where some posting has been done, the Refuge has not enforced the hunting closure. Unauthorized hunting is occurring on large portions of Refuge tideflats, providing insufficient sanctuary for migratory birds.

The Research Natural Area (RNA) is also hunted in the eastern half of the tideflats. This area should remain closed to hunting as a sanctuary area since, by policy, hunting and other consumptive uses are not allowed in RNAs. Restoration proposals to remove the north and west dikes associated with tidal restoration could remove a visual landmark out in the delta. This physical change could lead to further confusion and “encroachment” by hunters on Refuge lands.

The original 1918 Migratory Bird Treaty Act required that all Refuges be inviolate sanctuaries and deemed that Refuges’ primary purposes were as breeding grounds and habitat for migratory birds. Migratory bird hunting was prohibited. The 1938 amendment to the Act gave Refuge managers the authority to decide if, when, and how bird hunting would be allowed. The subsequent 1949 Duck Stamp Act allowed waterfowl hunting on all Refuges but restricted the percentage of each Refuge open to hunting. No more than 40% of the area purchased with Migratory Bird dollars may be opened at one time for hunting of migratory game birds or resident species of birds.

Many public comments have been received for and against waterfowl hunting. Some commentors believe that the Refuge should be open to waterfowl hunting to improve public hunting opportunities in south Puget Sound. Others specifically requested walk-in and accessible hunting opportunities. Many commentors requested that the current confusion be resolved and the program be managed consistently throughout the delta. Many believe that if hunting is allowed on the Refuge, additional restrictions are needed to ensure that waterfowl hunting is a high quality and safe experience, and sufficient wildlife sanctuary is provided on the Refuge. Others feel if hunting is allowed on the Refuge, it should not conflict with other users, including trail users and kayakers. Seasonal trail closures, required because of the lack of separation between uses, are a source of considerable conflict for many Refuge visitors, and many commentors expressed discontent with these closures. Many commentors believe that the Refuge should not be open to waterfowl hunting and that the Refuge tideflats should provide sanctuary. Hunting programs typically require a sizable effort to ensure a high quality experience and sufficient resource protection, including administrative effort, law enforcement, education, posting, writing and distributing literature, presentations, public contact, and monitoring. Additional staff would be required, and the hunting program could reduce resources and labor available for other high priority programs, such as environmental education.

The CCP process provides an opportunity to reevaluate waterfowl hunting in the delta and consider implementation, consolidation, or enforcement of closure of a waterfowl hunting program on Refuge lands to resolve the current unauthorized hunting on a closed Refuge. Resolution of this issue requires close coordination with WDFW because they control the hunting access at Luhr Beach, and they own the land and waters where the primary hunting occurs. If a decision is made to open parts of the Refuge to hunting, the Service would need to prepare a Hunting Plan consistent with the CCP and stipulations in the compatibility determination (Appendix G.4), and formally open the Refuge to waterfowl hunting.

Issue 6: Fishing and Shellfishing

What opportunities should the Refuge provide for bank fishing, boat fishing, and shellfishing?

The Refuge offers fishing for salmon, steelhead, and cutthroat trout in McAllister Creek and the Nisqually River, and for shellfish and bottomfish in the tideflats. No fishing is allowed inside the dike. Some fishing and shellfishing occur within the RNA although this is not allowed by Service policy. Public comments identified concerns over limited access and opportunities for bank fishing, increases in use and crowding, conflicts with other users, and the need for fishing facilities accessible to people with disabilities. One group suggested additional opportunities for youth fishing, such as constructing a pond on the Refuge. Refuge concerns include the challenges of enforcing wildlife sanctuary areas from human disturbance, providing quality fishing and shellfishing opportunities with both boat and foot access, potential loss of current foot access (McAllister bankfishing), and construction and maintenance costs of sites that are accessible to people with disabilities. Concerns have been raised about the effects of shellfishing, particularly foot access in the Luhr Beach area, on sensitive tideflat habitats, shellfish, and wildlife, caused by trampling, harvesting, and human disturbance. If a decision is made to change the current fishing program, the Service would need to prepare a Fishing Plan consistent with the CCP and stipulations in the compatibility determination (Appendix G.3).

Issue 7: Boating

Is boating a compatible use and, if so, what restrictions are necessary?

Limited launch sites, shallow water conditions, and narrow boating corridors along the Nisqually River and McAllister Creek currently limit the amount of boat traffic in the Refuge. However, boat use, estimated at 6,700 visits per year for motorized and non-motorized use, is increasing. General power boating is not a priority activity of the NWRS. This use is distinguished from boating associated with fishing or other priority public uses. High speeds and erosion caused by boat wakes, pollution, and wildlife disturbance are the primary management concerns. Luhr Beach is the only public water access site in the Nisqually delta. Visitors from this site enter the Refuge or cross Refuge waters to recreate primarily on the Refuge or on State lands within the Refuge. Luhr Beach is managed by WDFW. Under current conditions, the State and Nature Center staff have control over public access for water-based activities on the Refuge, including waterfowl hunting, kayaking, small craft motorized boating, personal watercraft, and shellfishing. However, no public information about the Refuge is available to visitors at this site. A public parking area provides visitors with convenient foot access to Refuge tideflats, shorelines, and bank fishing sites. Other launch sites in south Puget Sound are also potential sources. Lack of access control, disturbance to Refuge wildlife, conflicts with other Refuge visitors, and the absence of educational materials at launch sites are Refuge management concerns. The potential for dike removal has also raised new concerns over wildlife disturbance by boaters in areas that are currently closed. Under Thurston County regulations, all watercraft are restricted to a speed of 5 mph within 200 feet of any shoreline; however, it is minimally enforced. If portions of the dike are removed for tidal restoration, this speed restriction regulation becomes less effective in the Nisqually delta because shoreline locations would be altered.

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