Environmental Assessment for a Youth Waterfowl Hunt on Tualatin River National Wildlife Refuge

Washington County, Oregon

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1.0 PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

Located on the outskirts of Portland, Tualatin River National Wildlife Refuge is part of a complex that includes the Wapato Lake National Wildlife Refuge, and is one of a handful of urban national wildlife refuges in the country. This Environmental Assessment covers only Tualatin River National Wildlife Refuge (refuge). Situated within the floodplain of the Tualatin River, the refuge comprises less than 1 percent of the 712-square-mile watershed. Yet, due to its richness and diversity of habitats, it supports some of the most abundant and varied wildlife in the watershed. The refuge is home to nearly 200 species of birds, over 28 species of mammals, 14 species of reptiles and amphibians, and a wide variety of invertebrates, fish, and plants. The refuge has also become a place where people can experience and learn about wildlife and the places they call home. Established in 1992 under the guidelines of the U.S. Fish and Wildlife Service's (USFWS's; Service's) Urban Refuge Policy (341 FW 1), the refuge has served nearly 140,000 visitors annually, increasing every year since it opened to the public in 2006.

The refuge is comprised of five subunits: Atfálat'i, Onion Flats, Riverboat, Rock Creek, and Tualatin River, and is located in the northern portion of the Willamette Valley, in Washington County, Oregon (see Appendix A, Map 1). The overall management focus cited in the Land Protection Plan (USFWS 1992) is to "protect, enhance, and manage upland, wetland, and riparian habitats for a variety of migratory birds and resident fish and wildlife, as well as for the enjoyment of people." Currently, the established acquisition boundary of the refuge totals 3,060 acres, with 1,339 acres under management. The refuge may purchase lands within the boundary from willing sellers. Land currently owned or managed by the refuge is distributed among the five management units as follows: Riverboat (348 acres); Tualatin River (221 acres); Atfálat'i (555 acres); Onion Flats (139 acres); and Rock Creek (75 acres). The refuge's landscape is predominately flat bottomland bordered by uplands. Habitats consist of rivers and streams; herbaceous and scrub-shrub wetlands; riparian forests; wet meadows; oak savanna; and mixed coniferous/deciduous forested uplands.

The refuge has a rich history in community involvement, beginning with the establishment of the refuge itself. In the late 1980s and early 1990s, many local residents and leaders recognized that the Tualatin River and its floodplain had been highly modified by both agriculture and urbanization. This recognition fueled a desire by local communities to preserve open green space and create an area where future generations could enjoy outdoor recreation and interpretation, while also leaving an educational legacy for children. This led a small group of citizens and local leaders to approach the Service to request having part of the 100-year floodplain, just north of Sherwood, be set aside as a national wildlife refuge. At the same time, the Service identified a need to protect and enhance floodplains, wetlands, riparian habitats, and upland buffers for a variety of wildlife and for the enjoyment of people—in particular in urban areas. In 1992, grassroots and governmental support coalesced, and the Tualatin River National Wildlife Refuge became part of the National Wildlife Refuge System (Refuge System).

In 2010 The U.S. Fish and Wildlife Service embarked upon a comprehensive planning process for the refuge. Finalized in September of 2013, this Comprehensive Conservation Plan and Environmental Assessment (CCP/EA) provides the guidance for the management of refuge habitats and wildlife and the administration of public uses on refuge lands and waters for the next 15 years.

The goals and objectives identified in the CCP/EA for wildlife-dependent recreation included all of the "Big 6"priority public uses (hunting, fishing, environmental education and interpretation, wildlife observation and photography) as defined by the National Wildlife Refuge System Improvement Act of 1997, including waterfowl hunting. Specifically, the CCP/EA states:

Goal 12: Provide refuge visitors with diverse, compatible, and high-quality opportunities to participate in wildlife-dependent recreation and interpretation.

Objective 12.3: Provide opportunities for youth to participate in high-quality waterfowl hunting on the Riverboat Unit of the refuge.

Waterfowl hunting on the Riverboat Unit should:

- Place a priority on safety (hunters are spaced appropriately, spatial separation exists between hunt areas and areas open to other recreational use, law enforcement presence is adequate, etc.)
- Include clear and concise regulations that are readily available
- Pose minimal conflict with wildlife and habitat objectives
- Pose minimal conflict with other priority public use activities
- Pose minimal conflict with neighboring lands
- Promote stewardship and conservation
- Provide youth with quality hunting experiences that include hunter education and mentorships in coordination with ODFW
- Promote understanding and appreciation of natural resources
- Provide reliable/reasonable opportunity to experience wildlife
- Use accessible facilities that blend into the landscape

1.2 PROPOSED ACTION

The Service is proposing to initiate an annual, safe, high quality, walk-in controlled youth waterfowl hunting program beginning in the fall of 2015 on portions of the Riverboat Unit of Tualatin River NWR. The hunt will create a safe and quality recreational opportunity providing youths a reasonable opportunity to harvest game.

1.3 PURPOSE AND NEED

In accordance with the National Wildlife Refuge System Administration Act of 1966, as amended, hunting is a priority wildlife-dependent public use on national wildlife refuges. Public land for waterfowl hunting is in limited supply, especially near large metropolitan areas (U.S. Department of the Interior [USDOI] et al 2014) such as Portland. In the United States, there has been an

increase in hunting participation in recent years. Between 2001 and 2011 the percentage of citizens hunting in the United States increased by 5% (USFWS 2012). In Oregon, approximately 181,000 resident adult and 17,000 resident youth hunters spent 2.1 million days afield during 2011 (USDOI et al 2014). However, in Oregon the number of adult resident hunters declined from 236,000 in 2001 to 181,000 in 2011(USDOI et al 2014). The percentage of youth 15 years of age and younger in urban areas who participated in hunting or fishing was lower than youth in rural areas (USDOI et al 2014). According to Raftovich et al (2014) there were approximately 20,400 and 15,700 active waterfowl hunters in Oregon during 2012 and 2013, respectively. Often the reason for declines in the number of hunters includes a lack of public hunting opportunities. On the nearby Sauvie Island State Wildlife Area there are just 5 youth only hunting days offered during the regular state waterfowl hunting season (ODFW 2014b). This youth waterfowl hunt would provide a much needed area for youth to engage in a quality wildlife dependent recreational activity. Opportunities to hunt in the greater Portland area are increasingly scarce due to an ever-growing population, urbanization, and a relative lack of public lands open to these uses. Hunting (both for and against) was the subject of more letters and e-mails received during scoping for the CCP than any other topic. In particular, the waterfowl hunting community has expressed a very strong interest in sharing hunting traditions with youth. Opening the refuge to waterfowl hunting would provide the public an opportunity to hunt in proximity to the urban area, in uncrowded and relatively natural environments, and at a reasonable cost. The habitat and wildlife objectives for the Riverboat Unit are very likely to support quality waterfowl hunts as the refuge has been restoring habitat used by waterfowl. Refuge hunting opportunities will be offered consistent with state hunting regulations, and with management plans for applicable species and the Pacific Flyway Council's (PFC's) plans for cackling Canada geese (PFC 1999) and dusky Canada geese (PFC 2008).

Hunters have helped buy land for the Refuge System for 70 years through the purchase of Migratory Bird Hunting and Conservation Stamps—also known as Duck Stamps—and continue to support and advocate for refuges and conservation. Hunters also participate and share in wildlife photography, education, and interpretation while hunting. These activities will promote and support the mission of the Refuge System.

1.4 OTHER NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DOCUMENTS

The Tualatin River NWR CCP/EA was completed in September of 2013. This document provides guidance in refuge management of all programs for the next 15 years. For a complete review of all refuge management goals and objectives, as well as the environmental assessment (EA), see http://pacific.fws.gov/planning for Tualatin River's Final CCP.

Consistent with NEPA, its implementing regulations, and Service NEPA procedures, the Environmental Assessment for a Youth Waterfowl Hunt on the Tualatin River NWR has been prepared to evaluate the effects on the human environment of opening portions of the refuge to youth waterfowl hunting.

1.5 DECISION TO BE MADE

Based on the analysis documented in this Environmental Assessment and supporting documents, the Regional Chief of Refuges for the U.S. Fish and Wildlife Service Pacific Region will determine whether or not to initiate a controlled youth waterfowl hunt on the Riverboat Unit of the refuge, and whether or not preparation of an Environmental Impact Statement (EIS) is necessary. If the Regional Chief determines that the hunting programs should be initiated and that an EIS is not necessary, a Finding of No Significant Impact (FONSI) would be prepared, which would highlight the alternative selected for implementation. Following the signing of the FONSI, the preferred alternative in this Environmental Assessment would be implemented.

1.6 ISSUES

The issues that have been identified by the Service to be important in the decision making process to implement controlled youth waterfowl hunts are biological, social, and economic in nature. No impacts would be expected on physical resources such as soil, water and air. The issues include impacts on; waterfowl; wetland and wet prairie habitats and their associated wildlife species; federally-listed threatened species; and human concerns about cultural resources, impacts to private land, recreation, and economics.

2.1 ALTERNATIVES INCLUDING THE PREFERRED ALTERNATIVE

2.2 INTRODUCTION

This section outlines two alternatives for youth waterfowl hunting on the refuge. The action alternative (Alternatives B) will provide high quality wildlife dependent recreation to youth. Initiating a youth waterfowl hunt on the refuge would provide a compatible recreational hunting opportunity to the public not currently available on the refuge.

2.3 ALTERNATIVES

2.3.1 ALTERNATIVE A - NO ACTION

Under the No Action Alternative, no youth waterfowl hunting would be allowed on the refuge. The Riverboat Unit of the refuge would remain closed to all public use.

2.3.2 ALTERNATIVE B – CONTROLLED YOUTH WATERFOWL HUNT ON THE RIVERBOAT UNIT OF THE REFUGE (PREFERRED ALTERNATIVE)

Beginning in the fall of 2015, the refuge proposes to implement a controlled youth waterfowl hunt on about 50 acres in the Riverboat Unit consistent with State and federal regulations and refuge specific regulations.

The hunt would create a safe and quality recreational opportunity providing a reasonable opportunity to harvest game. Hunting will be conducted on a maximum of one weekend-day per week (alternating Saturdays and Sundays) and a maximum of one selected weekday per week. Hunters will be selected by a random drawing prior to hunt days. Four permanent blinds would be established including one ADA accessible blind. Hunters would be required to hunt from these established blinds. Designated parking areas would be established and trails would be marked and

maintained to the blind sites (See Appendix A, Map 4). Hunting will be restricted to youth hunters 17 years of age and younger. A maximum of two hunting youth will be allowed per hunting blind. At least one supervising adult must accompany youth hunters. Non-hunters may also occupy the blind with a hunting youth and adult supervisor for a maximum occupancy of 4 persons per blind. Disabled youth hunters must possess an Oregon Disabilities Hunting and Fishing Permit issued by the Oregon Department of Fish and Wildlife to qualify for preference in using the ADA blind (See http://www.dfw.state.or.us/resources/hunting/disability for further information). Hunting permits are required and must be turned in at the end of the hunting day with harvest recorded. License requirements are the same as those required by the State of Oregon, including State waterfowl validation (14 years and older), and Federal Duck Stamp (16 years and older). Decoys, other personal property, and trash must be removed. Dogs are allowed for retrieving waterfowl. Only shotguns no larger than 12 ga capable of holding no more than 3 rounds of ammunition are allowed. Only Federally-approved non-toxic shot is permitted, shot size will be limited to BB.

3.1 AFFECTED ENVIRONMENT

3.2 GENERAL OVERVIEW OF THE REFUGE ENVIRONMENT

The refuge is located in Washington County in northwestern Oregon (see Appendix A, Map 1), at the northern end of the Willamette Valley in the Tualatin River watershed, between the Coast Range Mountains and the Willamette River. Much of the refuge lies within the Tualatin River floodplain. Major tributaries that drain into the refuge include Chicken and South Rock Creeks (see Appendix A, Map 3). Many smaller perennial and ephemeral streams also drain into the basin. Elevation within the refuge ranges from about 105 feet to 300 feet. The Tualatin River Valley consists of low foothills, terraces, alluvial fans, and floodplains. The floodplains are subject to frequent flooding during winter and spring. However, changes due to agriculture, urbanization, and flood control projects have altered historic flooding patterns.

3.3 BIOLOGICAL ENVIRONMENT

3.3.1 WATERFOWL

This section will focus on one of the refuge's most abundant wildlife groups: waterfowl. Much of the refuge's management efforts are to provide suitable habitat for migrating and wintering waterfowl. The refuge maintains eight managed wetlands and numerous unmanaged wetland areas, wet prairies, croplands, and uplands for waterfowl. The refuge has recorded 21 species of ducks, seven species of geese, six subspecies of Canada geese, as well as tundra swans and coots. By far the most abundant species of duck recorded during weekly surveys in migration and winter on the refuge is northern pintail (Anas acuta). Next in abundance are mallards (A. platyrhynchos), green-winged teal (A. crecca), northern shovelers (A. clypeata), and American wigeons (A. americana), respectively. The most abundant geese using the refuge are cackling Canada geese (Branta canadensis minima), and other Canada goose subspecies. Migrating waterfowl typically show up to the refuge in very small numbers during September. In October large numbers of cackling Canada geese arrive and near the end of October a large spike in duck numbers is evident. These waterfowl usually remain on the refuge in large numbers until mid- to late-December when seasonal rains provide shallow water on many nearby agricultural lands and waterfowl disperse to those lands or continue to migrate southward. Substantial numbers of waterfowl still remain on the

refuge until the waterfowl hunting season ends near the end of January. At that time hunting disturbance on private duck hunting clubs and agricultural lands is significantly reduced and many waterfowl disperse to those areas off refuge to forage and roost.

Continental waterfowl populations fluctuate annually based on a number of factors including the abundance of wetlands on breeding grounds, spring and summer weather conditions, available nesting habitat, and winter survival. Since 1955, when formal breeding waterfowl population surveys began, the number of breeding waterfowl has gone from a low of 27.6 million to a high of 57.2 million birds (USFWS 2014, Figure 2).

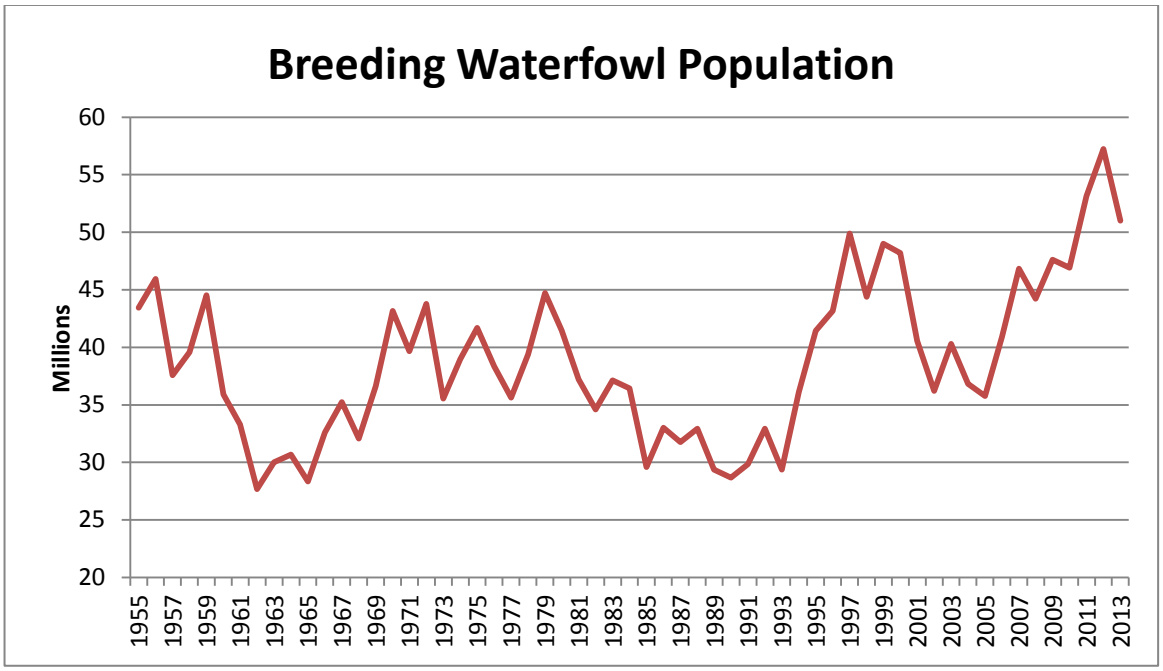

Figure 2. Continental waterfowl breeding population 1955-2013 across the traditional survey area (from Zimpfer et al 2014).

In recent decades waterfowl populations have remained high allowing for liberal harvest regulations under the Adaptive Harvest Management (AHM) program (USFWS 2014b). The Pacific flyway is considered separately from the other three flyways in setting hunting regulations and is based on the population status of western mallards (USFWS 2014c.) For the 2014-15 waterfowl hunting season the USFWS will again propose the liberal regulatory alternative for all four flyways based on current population models.

3.3.2 HERBACEOUS WETLAND, WET PRAIRIE, AND ASSOCIATED WILDLIFE

Herbaceous Wetlands and Associated Wildlife:

Currently the refuge has about 268 acres of herbaceous wetlands on three of the refuge's five units including the Riverboat Unit. These wetlands consist of a mixed of managed (those with artificial water control) and unmanaged areas. Managed wetlands are typically drawn down in late spring/early summer to promote the germination and growth of moist-soil plants. During summer

refuge wetlands are largely dry and provide little in the way of resources for the few resident waterfowl that remain to breed here. In fall, wetlands are slowly refilled to provide waterfowl access to the plants that have been growing during summer. These moist-soil plants provide both seeds and vegetative matter for waterfowl forage. Wetlands are filled as the season progresses to provide food resources throughout the migrating and wintering periods. Water is maintained in wetlands through spring and as plant materials decay they provide a substrate for invertebrates to thrive. These invertebrates are consumed by waterfowl and are important resources for protein and calcium essential for migration and subsequent egg production.

In addition to waterfowl, many species of birds, mammals, reptiles and amphibians use these areas during at least part of their life cycle. Raptors such as bald eagles (Haliaeetus leucocephalus), peregrine falcons (Falco peregrinus), and red-tailed hawks (Buteo jamaicansis) frequent wetland areas for foraging. Marsh birds such as American bitterns (Botaurus lentiginosus), Virginia rails (Rallus limicola), and soras (Porzana carolina) use these wetlands for breeding and foraging. Many species of neotropical migrant and resident songbirds use wetlands for foraging and breeding. Typical breeders include common yellowthroat (Geothlypis trichas), marsh wren (Cistothours palustris), and song sparrows (Melospiza melodia). Mammals such as beavers (Castor canadensis), mink (Mustela vison), and non-native nutria (Myocastor coypus) are common in refuge wetlands. Reptiles such as common garter snake (Thamnophis sirtalis) and painted turtles (Chrysemys picta) are often observed during spring and summer in wetlands. Common amphibians recorded include rough-skinned newts (Taricha granulosa) and northern red-legged frogs (Rana aurora).

Wetlands in the United States have been declining for decades and from 2004 to 2009 the Conterminous United States lost an estimated 62,300 acres (Dahl 2011). Loss of wetlands contributes to habitat loss, fragmentation, and reduced hydrologic function. Restoring and maintaining refuge wetlands contributes to both local populations of fish and wildlife as well as on a broader scale to those species which are migratory and use these areas only temporarily.

Wet Prairie and Associated Wildlife:

Currently the refuge manages about 58 acres of wet prairie habitat. Wet prairie is dominated by native herbaceous plants such as sedges, rushes, grasses, and forbs that are generally less than 3 feet tall. There are few to no trees or shrubs. Wet prairie is characterized by generally poorly drained soils that may be saturated or have standing water from November through April. These habitat types on the refuge are typically inundated by either back flooding of the river onto floodplain areas or by ponding of rainwater in shallow basins. This habitat type has undergone a dramatic decline since Euro-American settlement due to conversion to other uses and lack of fire, which has allowed the encroachment of woody species, thus changing the vegetation community. Noss et al. (1995) state that 99.9 percent of all prairie habitats in the Willamette Valley have been lost. Much of the habitat that remains is in degraded condition due to the influence of invasive and non-native species and lack of periodic fire to properly maintain function. Further, restored sites are confounded by a lack of available native seed types to foster adequate diversity. However, more native seed and plant varieties are becoming available as more entities embark on restoration of wet prairies. As with other rare habitat types, Metro, Natural Resources Conservation Service, and other organizations are conducting restoration and enhancement of this habitat type throughout the Tualatin River Valley. As these projects proceed, knowledge is gained and shared about

methods and tools used to effectively manage wet prairie habitats. Wet prairie supports a number of listed plant species (Bradshaw's lomatium [Lomatium bradshawii], Willamette daisy [Erigeron decumbens var. decumbens], Nelson's checker-mallow) and species of concern (upland larkspur [Delphinium nuttallii], peacock larkspur [Delphinium pavonaceum], Sierra horkelia [Horkelia congesta ssp. Congesta], Columbian whitetop aster [Sericocarpus rigidus]) (USFWS 2010), although the only listed plant currently occurring on the refuge is Nelson's checker-mallow. A number of other species use wet prairies during all or part of their life cycles. Chorus frogs (Pseudacris regilla), northern red-legged frogs, northwestern (Ambystoma gracile) and long-toed salamanders (A. macrodactylum), and rough-skinned newts breed and lay eggs in shallow, vegetated wet areas in spring; wading birds such as great blue herons (Ardea herodial) and great egrets (Casmerodius albus) also forage in the shallow pools or dry margins of wet prairies. Wilson's snipe (Gallinago delicata) nest in the wet grasses of the prairie. Black-tailed deer (Odocoileus hemionus) forage on grasses and forbs, while mink hunt for birds and rodents. In winter, large numbers of waterfowl rest and forage on the numerous seeds and plants in the flooded prairie.

Other Habitat types and Associated Wildlife:

Other habitat types in the general vicinity of the youth waterfowl hunt area include bottomland riparian forest and oak savanna. Riparian forest on the refuge supports a myriad of breeding and migrating songbirds, amphibians and reptiles, resident mammals, and anadromous fish. Mature bottomland riparian forests are characterized by Oregon ash (Fraxinus latifolia), bigleaf maple (Acer macrophyllum), scattered grand (Abies grandis) and Douglas-fir (Pseudotsuga menziesii), and western red-cedar (Thuja plicata) in the overstory, with sword fern (Polystichum munitum), snowberry (Symphoricarpos albus), and willow (Salix sp.) in the understory. There are many acres of this habitat type on the refuge that have been recently restored and would not have all these attributes yet. This forest type typically occurs in floodplains and other areas with moist soils. Plants here are adapted to winter and spring flooding and may be inundated or experience saturated soil for several months of the year. This habitat type typically occurs along streams and rivers and provides movement corridors for wildlife among habitat patches. Bottomland riparian forest in the greater Willamette Valley has been severely reduced since historic times due to draining and timber harvest, conversion to agricultural and urban uses, and stream alterations. Riparian forest within the Tualatin River Basin is highly fragmented. Metro, Clean Water Services, and others are working to restore riparian forest on many of their land holdings within the basin. The refuge has also engaged in restoration of bottomland riparian forest on several sites. Bottomland riparian forest supports a host of bird species and guilds including warblers, woodpeckers, raptors, flycatchers, and hummingbirds. Amphibians such as northern red-legged frogs, salamanders, and rough-skinned newts may spend part of their life cycles in riparian forests. Reptiles such as western pond turtles (Clemmys marmorata) and common garter snakes frequently use these habitats to aestivate over winter or to escape the hot summer sun. Mammals such as beaver, mink, black-tailed deer, and bats use this habitat type for foraging, resting, and finding escape cover. Anadromous fish such as steelhead (Oncorhynchus mykiss) and Pacific lamprey (Lampetra tridentata) migrate up rivers and creeks shaded by riparian forest. In winter, juvenile salmonids may benefit from riparian forests for foraging and escape during flood events.

Restored areas have been planted with Garry oaks (Quercus garryana), ponderosa pine (Pinus ponderosa), native grasses, and other native species on several areas of the refuge. The oaks in

these areas are in the sapling stage and range from 3 to 20 feet in height; they have not reached a mature stage. In some areas the ponderosa pines have grown quickly and may be reaching 30 feet in height and almost 12 inches DBH. Only a few relic oaks over 100 years old remain on refuge lands. Mature oak savanna is characterized by large single or a very small cluster of Garry oaks, generally widely scattered throughout a grassland with few to no shrubs and abundant native wildflowers. Oak/pine woodland is characterized by more densely growing trees with a scattering of shrubs in the understory. Snags may be present in small numbers, and areas of bare ground may also be present. Native grass species may include California oatgrass (Danthonia californica), California brome (Bromus carinatus), meadow barley (Hordeum brachyantherum), Roemer's fescue (Festuca idahoensis), and blue wildrye (Elymus glaucus). Native forb species include blue-eyed grass (Sisyrinchium idahoense), tiger lily (Lilium lancifolium), tarweed (Madia sp.), and pearly everlasting (Anaphalis margaritacea). Overall grass height is usually less than 3 feet. Sites are typically dry, but may have saturated soils for a short duration during winter. This habitat type was historically maintained by frequent, low-intensity fire, which prevented most shrubs and encroaching species, especially conifers, and maintained a low density of oaks. Currently the refuge manages this habitat type by annual mowing. However, mowing does not remove accumulated thatch, which may inhibit growth of some species of wildflowers. Spot spraying of herbicides is also employed to control invasive species such as Himalayan blackberry (Rubus discolor) and Canada thistle (Cirsium arvense). Oak savanna is a rare habitat type in the Willamette Valley. Noss et al. (1995) reported a loss of 99.5 percent of this habitat type in the Willamette Valley since Euro-American settlement. Metro and other organizations are conserving and restoring this habitat type; however, few large areas with mature oaks remain in the Tualatin River Valley and distribution is fragmented. Restoration efforts may take up to 100 years before the habitat can support a full range of species. Oak savanna supports a variety of species, especially grassland bird species, oak specialists, invertebrates, and listed plant species. Grassland birds such as western meadowlark (Sturnella neglecta) and savannah sparrow (Passerculus sandwichensis) nest and forage in grassland communities. Oak specialists such as acorn woodpecker (Melanerpes formicivorus), Lewis' woodpecker (M. lewis), white-breasted nuthatch (Sitta carolinensis), and western gray squirrel (Sciurus griseus) use oaks for nesting or foraging. Invertebrates such as Fender's blue butterfly (Icaricia icarioides fenderi) rely on native savanna and prairie plants for survival. Listed plant species native to oak savanna habitats include Kincaid's lupine (Lupinus sulphureus ssp. Kincaidii), Willamette daisy, and golden paintbrush (Castilleja levisecta) (USFWS 2010), although none of these species are currently present on the refuge. Western pond turtles frequently use this habitat type for aestivating and overwintering.

3.3.3 FEDERALLY LISTED SPECIES

Nelson's checker-mallow is the only Federally listed species found on the refuge. Nelson's checker-mallow is a perennial herb that was listed as threatened, without critical habitat, on February 12, 1993 (U.S. Fish and Wildlife Service 1993). In the Willamette Valley, populations of Nelson's checker-mallow occur at low elevations (below 200 meters [650 feet]) within a mosaic of urban and agricultural areas, with concentrations around the cities of Corvallis and Salem. In the Willamette Valley, Nelson's checker-mallow begins flowering as early as mid-May, and continues through August to early September, depending upon the moisture and climatic conditions of each site. Nelson's checker-mallow inflorescences are indeterminate, and often simultaneously exhibit fruits, open flowers, and unopened buds. Seeds are deposited locally at or near the base of the parent plant and may be shed immediately or persist into winter within the dry flower parts that

remain attached to the dead stems. Above-ground portions of the plant die back in the fall, usually followed by some degree of regrowth at the base, with the emergence of small, new leaves that persist through the winter directly above the root crown. It is not uncommon for some plants to continue producing some flowers into the fall and early winter, although this is usually limited to one or two small stems per plant, consequently with little seed production (USFWS 2010). In the Willamette Valley, Nelson's checker-mallow is known from wet prairies and stream sides. Although occasionally occurring in the understory of Oregon ash woodlands or among woody shrubs, Willamette Valley Nelson's checker-mallow populations usually occupy open habitats supporting early seral plant species. Three of the refuge's sub-units, including the Riverboat Unit, support Nelson's checker-mallow. These native prairie remnants are frequently found at the margins of sloughs, ditches, and streams; roadsides; fence rows; drainage swales; and fallow fields. Nelson's checker-mallow is threatened by urban and agricultural development, ecological succession that results in shrub and tree encroachment of open prairie habitats, and competition with invasive weeds (USFWS 1993).

3.4 SOCIAL AND ECONOMIC ENVIRONMENT

3.4.1 CULTURAL RESOURCES

Cultural resources on the refuge take the form of pre-historic archaeological artifacts associated with seasonal Native American encampments and food processing sites, historic homesteads and dump sites, and examples of historic construction and agriculture techniques such as onion farming and onion barns. Several prehistoric and historic sites have been recorded; however, other sites and features may exist on the refuge that have not been recorded. Several prehistoric and historic sites and/or features have been recorded within 1 mile of the refuge.

Archaeological surveys were conducted on the portion of the River Boat Unit where hunting is proposed in 1999 at the time of land acquisition, and again in 2007 prior to habitat restoration at the site. Historic and prehistoric resources were recorded within the parcel. In addition, General Land Office (GLO) maps indicate that an early homestead (DLC 39 - Thomas Humphrey) was established in the area.

3.4.2 ADJACENT LANDS

Tualatin River NWR is an urban refuge with several land parcels situated just outside the city limits of Sherwood, Oregon, and extending into the surrounding rural countryside. The refuge is currently surrounded by both developed and agricultural lands. The Riverboat Unit is the westernmost unit of the refuge and is surrounded by agricultural land and scattered rural residences. The Tualatin River runs along the western boundary of the unit and agricultural land lies beyond the river. Agricultural lands also border the south, north and northwestern side of the unit. To the east of the Riverboat Unit are very low density rural residences. To the southwest is a parcel of land owned by Metro that has been restored to native habitat types. All of the land in close proximity to the Riverboat Unit is classified as exclusive farm use (Washington County 2014). Typical agricultural crops in the area include field crops such as wheat, corn, and grass seed; grapes and berries; tree crops such as hazelnuts, apples, and other fruit; ornamental nursery stock; and row crops such as potatoes.

3.4.3 OTHER RECREATIONAL OPPORTUNITIES

Refuge-based opportunities

Tualatin River NWR provides a variety of recreational and educational opportunities and experiences for an estimated 140,000 annual visitors. Opportunities include environmental education, natural resource interpretation, wildlife observation and wildlife photography. The protection of fish and wildlife and their habitats on the refuge provides the public with high-quality wildlife-oriented recreation, education, and interpretation opportunities. In Fiscal Year 2013, the refuge recorded: 98,782 pedestrian visits and an equal number of wildlife observation visits; 1,561 special event attendees; 24,752 visitors to the Wildlife Center/EE Shelter; 3,159 wildlife photography visits; 5,215 participants in environmental education programs; and 1,604 in interpretive programs.

The Atfálat'i Unit is open year-round during daylight hours for wildlife-dependent recreation and education. Access within this unit is limited to defined public use areas. Most of the use originates from the headquarters parking area and Wildlife Center, and is concentrated along the year-round trail and its associated features that include: a 1.1-mile year-round trail; a 0.2-mile photography blind spur trail; two foot bridges; a 3.1-mile seasonal trail, which is part of a gravel refuge road used by staff; a plaza overlook; a bioswale overlook; a wetland observation deck; a wayside overlook; a river overlook; a wildlife photography blind (open by reservation); and five environmental education study sites. From May 1 through September 30, visitors are permitted to walk on 3.1 miles of service roads. From October 1 through April 30, these service roads are closed to all public entry to provide sanctuary for wildlife.

Outdoor facilities are complemented by a state-of-the-art Wildlife Center that includes an exhibit room, environmental education field laboratory, information desk, a Friends of the Refuge nature store, an indoor viewing area, and a multipurpose room. The center is currently open Tuesday through Sunday year-round. The environmental education shelter, designed primarily to provide cover and education space for students visiting the refuge, accommodates up to 65 students.

Except as noted below, all refuge public use facilities are accessible to disabled visitors and conform to standards set forth in the Architectural Barriers Act (42 U.S. Code 4151 et seq.). The exceptions are: the 200-yard spur trail to the Ridgetop Overlook reaches a maximum grade of 20 percent, but is designed to be wheelchair-accessible in all other respects; the 3.1 miles of service roads open to seasonal public use consist of uneven gravel surfaces. All other areas of the refuge are currently closed to public use.

Other Nearby Recreational Opportunities

The refuge lies just 15 miles southwest of downtown Portland and is located within the Portland metropolitan area, which is known for its natural areas and parks. Metro boasts over 16,000 acres of protected lands, most of which are open to the public. In addition, the greater Portland area is home to thousands of acres of local/city parks, gardens, arboretums, state and local wildlife areas, state parks, nature centers, multi-use trails, and the 5,000+ acre Forest Park. Many of these areas are connected by bike, pedestrian, and boat corridors. These nearby facilities provide a wide range of recreational opportunities such as hiking, bicycling, wildlife observation, fishing, picnicking,

environmental education, interpretation, guided nature tours, outdoor photography, nature festivals, camping, canoeing/kayaking/rafting, sports, and agritourism sites (e.g., vineyards and "u-pick" produce and tree farms). Portland sits at the mouth of the Columbia River Gorge Scenic Area and is the closest major city to Mount Hood and Willamette National Forests. The highways that skirt the refuge are major corridors providing access to the Oregon coast.

Oregon Department of Fish and Wildlife provides youth education, training and hunting opportunities through a mentored youth hunting, hunter education/safety, and "first time" hunter programs. However, as compared to many other nearby outdoor recreational activities, waterfowl hunting for youth is relatively limited. For example, Sauvie Island State Wildlife Area offers just 5 youth hunting days throughout the waterfowl hunting season in addition to the two youth hunting days prior to the opening of the general season.

3.4.4 ECONOMIC

Tualatin River NWR is located in northwestern Oregon. The area population increased by 13 percent from 2001 to 2011, compared with a 12 percent increase for Oregon, and a 9 percent increase for the U.S. as a whole. Area employment increased by 8 percent from 2001 to 2011, with Oregon showing a 6 percent increase respectively, and the U.S. a 6 percent increase. Area per capita income decreased by 1 percent over the 2001-2011 period, while Oregon and the U.S. increased by 1 and 5 percent respectively.

The economic area for the refuge is the Portland Metropolitan Area including Clackamas, Marion, Multnomah, Washington, and Yamhill Counties in Oregon. It is assumed that visitor expenditures occur primarily within these counties. Total expenditures were $1.2 million with non-residents accounting for $632,300 or 53 percent of total expenditures (Carver and Caudill 2013).

In 2013 the USFWS produced a report, *Banking on Nature*, which focused on select refuges and assessed how recreational visitors impact local income and employment. Travel to participate in non-consumptive uses of the natural environment has been called "ecotourism." It has been promoted as a way to derive economic benefits from the preservation of wildlife and habitat. Many refuges were established to protect wildlife resources; ecotourism broadens the scope of this mandate. *Banking on Nature* derived net economic values for hunting, fishing, and non-consumptive recreation use (on a per-day basis) by estimated refuge visitor days for that activity.

The figure for economic value is derived by multiplying net economic values for hunting, fishing, and non-consumptive recreation use (on a per-day basis) by estimated refuge visitor days for that activity. This figure is combined with the estimate of total expenditures and divided by the refuge budget for 2011. At Tualatin River NWR, with the current non-consumptive education and recreation uses, $3.87 of total economic effects are associated with every $1 of refuge budget expenditures. This ratio is provided only for the purpose of broadly comparing the magnitude of economic effects resulting from refuge visitation to budget expenditures and should not be interpreted as a benefit-cost ratio (Carver and Caudill 2013).

The economic impact of an individual hunting program is hard to assess. Hunting as a whole has an economic benefit to the economy. A study conducted by Oregon Department of Fish and

Wildlife in 2008 showed that nearly 2.8 million Oregon residents and nonresidents participated in hunting (282,000), fishing (631,000), shellfish harvesting (175,000), and wildlife viewing (1.7 million). Residents and nonresidents made three distinct types of fish and wildlife recreation expenditures, including: travel-generated; local recreation; and equipment purchases. When all three categories are combined, fish and wildlife based recreation generated $2.5 billion in expenditures in 2008 alone (Oregon Department of Fish and Wildlife and Travel Oregon 2009).

4.1 ENVIRONMENTAL CONSEQUENCES

4.2 INTRODUCTION

This chapter analyzes and compares the effects anticipated under each alternative. Effects are considered in four main topic areas: species and habitats, social, economic, and cultural.

4.3 EFFECTS OF ALTERNATIVES

4.3.1 BIOLOGICAL ENVIRONMENT

4.3.1.1 WATERFOWL

Effects from Youth Waterfowl Hunt

Under Alternative A, a youth waterfowl hunt would not take place and waterfowl would continue to use the Riverboat Unit with low levels of disturbance. Waterfowl would continue to use the unit for foraging and roosting. Waterfowl would also continue to use off-refuge public and private lands for foraging as well. Waterfowl would continue to be hunted on private lands surrounding the refuge in accordance with State and Federal regulations. Off-refuge waterfowl harvest would remain consistent with previous year's averages.

Alternative B would allow youth hunters to harvest waterfowl in accordance with State, Federal, and refuge-specific regulations. Impacts to waterfowl will result from direct mortality due to hunting and may result from disturbance because of hunting activities. Waterfowl would be disturbed on hunt days and would seek foraging and roosting opportunities on other areas of the refuge, and on other public and private lands. Estimates of waterfowl harvest for Oregon during 2012 and 2013 were 389,200 and 276,500, respectively (Raftovich et al 2014). Based on the number of hunting blinds, hunt days, and expected harvest rates the maximum number of birds expected to be harvested would be 1,176 per year with an average expected harvest of 214 birds per year on the Riverboat Unit. This level of harvest represents less than one tenth of one percent of the annual harvest of waterfowl in Oregon, and would be easily supported by populations of waterfowl present on the refuge on an annual basis. In addition, an unknown increase in waterfowl harvest might take place on nearby private lands as a result of birds being disturbed at the Riverboat Unit.

Disturbance to waterfowl will also occur on days open to waterfowl hunting. Disturbance can be energetically expensive to waterfowl and may cause a reduction in the use of the hunting area even on non-hunt days. Waterfowl disturbance may cause birds to disperse to nearby private lands and cause depredation to agricultural crops. There are protected wetland areas owned by Metro and

refuge lands within two miles of the Riverboat Unit that can provide alternative sanctuary and foraging opportunities for waterfowl that have been disturbed from the hunt site.

Dusky Canada geese (Branta canadensis occidentalis), a subspecies that has experienced relatively low population numbers over the past few decades (PFC 2008) is known to use the Riverboat Unit. The youth waterfowl hunt will be open to goose hunting in accordance with regulations and the incidental take of dusky Canada geese (allowed under current regulations) is possible during this hunt. One of the Pacific Flyway Council's recommendations to reduce crop damage by Canada geese is to increase harvest (PFC 1998). It is anticipated that the total number of geese taken by youth hunters at the Riverboat Unit will be minimal and the number of dusky geese taken will be insignificant to the population.

Under Alternative B, the refuge would allow youth waterfowl hunting a maximum of one weekend day per week and a maximum of 4 week days during the regular State waterfowl hunting season. The nearby State owned Sauvie Island Wildlife Area Allows waterfowl hunting every other day, and had an average harvest of 1.7 birds per hunter (ODFW 2014a). Under the proposed youth waterfowl hunting program the average number of birds harvested might be expected to be somewhat higher due to a longer "rest" period between hunt days on the Riverboat Unit. This should provide a quality hunting experience for youth hunters by providing a greater opportunity to harvest waterfowl.

Disturbance to waterfowl under Alternative B would likely result in a decline in the number of waterfowl using the Riverboat Unit during the waterfowl hunting season. Even though there will be a number of "rest" days between open hunting days waterfowl will likely be somewhat habituated to using other areas on the refuge or other public and private lands where disturbance is at a minimum. Many waterfowl will continue to use the Riverboat Unit on non-hunting days and at night for foraging and roosting. Disturbance to waterfowl may cause depredation to crops on nearby private lands. Crop damage by Canada geese is an issue in the Willamette Valley (PFC 1998) and crop damage could increase to a very small degree on private lands as a result of the youth waterfowl hunt on the Riverboat Unit.

Because the Migratory Bird Treaty Act stipulates that all hunting seasons for migratory game birds are closed unless specifically opened by the Secretary of the Interior, the Service annually promulgates regulations (50 CFR Part 20) establishing the Migratory Bird Hunting Frameworks. The frameworks are essentially permissive in that hunting of migratory birds would not be permitted without them. Thus, in effect, Federal annual regulations both allow and limit the hunting of migratory birds.

The Migratory Bird Hunting Frameworks provide season dates, bag limits, and other options for the States to select that should result in the level of harvest determined to be appropriate based upon Service-prepared annual biological assessments detailing the status of migratory game bird populations. In North America, the process for establishing waterfowl hunting regulations is conducted annually. In the United States, the process involves a number of scheduled meetings (Flyway Study Committees, Flyway Councils, Service Regulations Committee, etc.) in which information regarding the status of waterfowl populations and their habitats is presented to individuals within the agencies responsible for setting hunting regulations. In addition, public

hearings are held and the proposed regulations are published in the Federal Register to allow public comment.

For waterfowl, annual assessments used in establishing the Frameworks include the Breeding Population and Habitat Survey, which is conducted throughout portions of the United States and Canada. This survey is used to establish a Waterfowl Population Status Report annually. In addition, the number of waterfowl hunters and resulting harvest are closely monitored through both the Harvest Information Program (HIP) and Parts Survey (Wing Bee). Since 1995, such information has been used to support the adaptive harvest management (AHM) process for setting waterfowl-hunting regulations. Under AHM, a number of decision-making protocols render the choice (package) of pre-determined regulations (appropriate levels of harvest) which comprise the framework offered to the States that year. Each State's wildlife commission then selects season dates, bag limits, shooting hours and other options from the Pacific Flyway package. Their selections can be more restrictive, but cannot be more liberal than AHM allows. Thus, the level of hunting opportunity afforded each State is determined each year in accordance with the annual status of waterfowl populations. Season dates and bag limits for national wildlife refuges open to hunting are never longer or larger than the State regulations.

Under Alternative B there will be direct mortality to waterfowl as a result of hunting. There may be unknown indirect impacts to waterfowl such as reduced fitness because of disturbance, or susceptibility to predators or hunters off-refuge as a result of being flushed off the refuge. None of these factors is expected to have a significant impact on waterfowl populations at the local, flyway, or continental scale. Waterfowl would continue to use the refuge and would be abundant throughout the region. Overall it is expected that impacts to both local and continental populations of waterfowl will be insignificant as a result of the youth waterfowl hunting program on the refuge.

4.3.1.2 HERBACEOUS WETLAND AND WET PRAIRIE HABITAT AND ASSOCIATED WILDLIFE

Effects from Youth Waterfowl Hunt to Herbaceous Wetland and Wet Prairie and Associated Wildlife

The Riverboat Unit has approximately 50 acres of herbaceous wetland and wet prairie habitat; this represents less that 4% of all land within the refuge and about 12% of all wetland/wet prairie habitats in the refuge. Under Alternative A, no youth waterfowl hunting would take place and the Riverboat Unit would continue to be closed to all public use. Wetlands and wet prairie would continue to be actively managed for a host of resident and migratory fish and wildlife species throughout the year.

Under Alternative B, a youth waterfowl hunt would be implemented on the Riverboat Unit of the refuge. About 50 acres of herbaceous wetland and wet prairie would continue to be actively managed for a variety of fish and wildlife species. Four waterfowl hunting blinds would be constructed including one accessible hunting blind. Pathways to the blinds might be mowed annually and a permanent gravel path would be constructed for the accessible blind (most of this path would be installed outside of the herbaceous wetland/wet prairie and there would be no off-site imported fill material). Permanent markers would be installed to guide hunters to their blinds.

Native vegetation from within and around the herbaceous wetland might be cut and used as blind material on an annual basis.

The primary effects of alternatives on wetland and wet prairie habitats is alteration to vegetative communities, introduction of invasive species, and any impacts associated with the unintended redistribution of wildlife. Generally, the impacts to habitats would be minimal. Installation and maintenance of hunting blinds will cause disturbance to native vegetation and may break the soil creating conditions that may allow enhanced conditions for invasive species to become established.

Some trampling of vegetation would occur as a result of hunting activities from people and dogs in the setting up and removal of decoys, and retrieval of downed birds. Much of the vegetation in these habitat types consist of annual plants that are grown to provide foraging resources for waterfowl. Most of these annuals are seed producing plants and will have senesced by the start of waterfowl season. Perennial plants would be largely dormant during the waterfowl hunting season and likewise would be less susceptible to damage from trampling. In general, herbaceous wetland and wet prairie plants have evolved to a regime of disturbance due to frequent flooding and scouring, and trampling and foraging activity by waterfowl and other native species. Hunters increase the potential of invasive species introductions with clothing and equipment serving as a transportation vector between various hunting locations.

Wildlife such as waterfowl, marsh birds, wading birds, and mammals would be disturbed by hunting activities. Raptors such as bald eagles, northern harriers (Circus cyaneus), and red-tailed hawks frequently forage on the wetland/wet prairie area. Direct disturbance and disturbance of their prey species might directly or indirectly affect their ability to forage on this area during youth waterfowl hunting activities. Mammals such as black-tailed deer, beavers, and non-native nutria would be disturbed from using the area during hunting activities. Such disturbance is expected to have very minimal short-term negative effects to these species, if any at all.

It is possible that misidentification of target species will result in a small number of non-target wildlife being killed. Education and mentoring programs should keep these events to a minimum. Disturbance to other taxa would be unlikely or negligible. Encounters with reptiles and amphibians in the early fall would be few and should not have cumulative negative effects on reptile and amphibian populations. Refuge regulations further mitigate possible disturbance by hunters to non-hunted wildlife. Vehicles would be restricted to roads and the harassment or taking of any wildlife other than the game species legal for the season would not be permitted.

The cumulative effects of disturbance to non-hunted birds and other species under the proposed action are expected to be minor. Orientation will be provided to all hunters at the start of each hunting day to reduce effects to non-target species. In addition, hunting seasons do not coincide with the nesting season, thus reproduction will not be reduced by hunting. Disturbance to the foraging or resting activities of migrating or resident birds might occur, but would be minor because of the small amount of area available for these hunts, relative to the size of the refuge, and the limited time parameters for hunting.

4.3.1.3 OTHER HABITAT TYPES AND ASSOCIATED SPECIES

Effects from Youth Waterfowl Hunt to Other Habitat Types and Associated Wildlife

In addition to herbaceous wetland and wet prairie, the Riverboat Unit contains approximately 182 acres of bottomland riparian forest, scrub shrub wetland, and oak savanna plant communities. These habitat types support a myriad of wildlife species. Potential impacts to these habitats and coexisting wildlife species should be at a minimum. Access to hunting sites would be along existing service roads and parking would only be allowed in established parking areas. Some trampling of vegetation would be expected on trails to hunting blinds. It is anticipated that an accessible gravel trail approximately 130 yards long will be constructed to an accessible hunting blind. Some potential for invasive species introductions may exist at the parking areas where hunters are concentrated in set locations and clothing and equipment are readied for hunting. These defined areas would be closely monitored for new introductions. Any new infestations would be quickly controlled.

Non-hunted wildlife would include any non-target waterfowl and any other birds; small and medium-sized mammals; reptiles, amphibians, and invertebrates. Occasionally, non-target species are illegally killed by hunters by accident or intentionally. However, the potential effect to non-hunted wildlife is largely in the realm of disturbance (see discussion above).

4.3.1.4 FEDERALLY LISTED SPECIES

Effects from Youth Waterfowl Hunt to Federally Listed Threatened Species

Federally listed species that occur on the Riverboat Unit include only Nelson's checker-mallow (*Sidalcea nelsoniana*). Nelson's checker-mallow was listed as threatened in February 1993 (USFWS 1993) and is a native perennial forb species that thrives in the margins of wetlands, wet prairies, ditches, the sides of levees, and other moist places. It is a hardy plant and will survive short periods of flooding, and the long dry summers typical of the northern Willamette Valley. It typically flowers in June and July, then senesces as summer progresses. It will typically remain dormant until spring, but may produce a few new leaves with the first fall rains (USFWS 2010). Nelson's checker-mallow became threatened by urban and agricultural development, ecological succession that resulted in shrub and tree encroachment of open prairie habitats, and competition with invasive weeds (USFWS 1993). There is no known Nelson's checker-mallow in the hunt area; therefore there would be no affect to this species.

4.4 EFFECTS OF ALTERNATIVES

4.4.1 SOCIAL AND ECONOMIC ENVIRONMENT

4.4.1.1 CULTURAL RESOURCES

Effects from Youth Waterfowl Hunt to Prehistoric and Historic Resources

Alternative B will require construction that has the potential to effect cultural resources. Archaeological surveys conducted for previous undertakings within the proposed hunt area revealed the presence of prehistoric and historic sites. However these sites are well removed proposed construction locations and will not be affected.

It is possible that additional archaeological sites will be exposed by human actions or natural causes in the future. If so, actions associated with implementing a hunt may adversely affect these resources unless mitigated. Additionally, human activities could occur which destroy artifacts or relocate their relative position, thereby, destroying information on their historic context.

Cultural resource protection procedures, which are required by National Historic Preservation Act for each project at the site specific level, are designed to reduce impacts from human activities. . Any development of public use facilities associated with the youth hunt will be reviewed for compliance

Vandalism or surface collection is always a threat to cultural resources especially in areas open to the public. The risk of vandalism of cultural sites would increase proportionate to an expected increase in use of the refuge. Under Alternatives B there would be a slight increase in risk related to vandalism to cultural resources because of a slight increase in overall refuge visitation and hunters accessing newly opened areas of the refuge.

4.4.1.2 ADJACENT LANDS

Effects from Waterfowl Hunt

Under Alternative B, there would be minor effects to adjacent lands. The greatest effect may be from shotgun noise for adjacent private landowners. Due the rural nature of the area, hunting is already present on private lands. Several private waterfowl hunting clubs exist within a two-mile radius of the proposed refuge hunting area and incidental waterfowl hunting occurs on private lands. Hunting on the refuge might cause disturbance to neighboring hunters and reduce their enjoyment of the sport. Hunting on the refuge might also cause birds that normally reside there to disperse to private land hunters and increase their hunting opportunities. Prior to Service acquisition waterfowl hunting was a regular activity on this site. Since acquisition in 1999 there has been no hunting activity on this refuge. Hunting will take place within sight of some residences and this may be disturbing to some people. Additional traffic on adjacent rural roads, that also serve landowners, will increase slightly. An average of 6 vehicles (one per hunt group and a refuge staff vehicle) would be expected on any given hunt day. This volume is no more than the occasional tour, volunteer work party, refuge staff visit, and/or contracting work that has routinely accessed these refuge parcels since they were acquired in 1999 & 2000. This would occur on one to two mornings per week for up to three and one half months. The number of waterfowl potentially harvested will not appreciably have any impact on the number of waterfowl available for other hunters. Waterfowl and other wildlife species may be dispersed to nearby private lands thereby creating a nuisance or crop depredation. Waterfowl depredation on adjacent lands is an issue throughout the Willamette Valley and hunting activity on a portion of the refuge currently closed to public access could cause waterfowl to disperse to private farm lands. On the other hand hunting could reduce depredation on lands near the refuge. These wildlife species currently exist on both the refuge and adjacent private lands and freely cross among parcels. Therefore, it is expected to have a negligible impact to adjacent lands.

4.4.1.3 OTHER RECREATIONAL OPPORTUNITIES

Effects from Waterfowl Hunt to Other Recreational Opportunities

Hunting, Alternative B, has very little potential to disturb and/or have a direct impact on other refuge visitors engaged in public use on the refuge. The proposed youth hunt will occur on the northern portion of the Riverboat Unit of the refuge where no other recreational uses are offered or allowed. Other quality recreational and educational uses are available on the Atfálat'i Unit of the refuge; these include: environmental education, natural resource interpretation, wildlife observation, and wildlife photography. The Atfálat'i Unit is 3 air miles from the Riverboat Unit, therefore eliminating disturbance from impacts such as gunshot noise and/or the viewing of harvested birds.

There is a potential for minor indirect impacts to non-hunting user groups. Because the proposed hunt area is otherwise off-limits to all other members of the public, allowing hunting access may cause a perception of favoritism for one user group over another. This impact can be minimized by continuing to provide high quality opportunities for other public uses on the Atfálat'i Unit.

The youth hunt has the potential to draw new youth (and their families/guardians) to the refuge. This provides an opportunity for the refuge to engage these visitors in environmental education through hunter education, as well as other education programs offered.

4.4.1.4 ECONOMIC

Economic Effects of Youth Waterfowl Hunt

Under Alternative A (no hunt) there would be neutral economic impact and for Alternative B, economic impact may be reasonably be assumed to be relatively minor compared to adult hunts.

According to the U.S. Fish and Wildlife Service's 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation for Oregon (USDOI 2011), hunting in Oregon generated $238.7 million in hunting related expenditures through the purchase of equipment and the costs of travel. On average, individual hunters spend $1,168 during the year. However, the data reflects hunters 16 years of age and older. A less rigorous screening for youth ages 6-15 was also conducted to determine participation in hunting in 2010. The data was not reported as reliable due to a small sample size. Therefore, economic impact and demographic data is not available for this age group.

An average maximum of 168 youth may participate in the youth waterfowl hunt during the season. An additional 168 supervising adults may also attend. Based on a strong interest by the waterfowl hunting public to provide local hunting experiences for youth, we are assuming that the majority of the participants will be residents of the State of Oregon. Youth hunters must obtain a hunting license, and depending on age, associated state waterfowl stamp and a federal duck stamp. Based on current (2014) fees, depending on age, can range from $0 up to $41 per youth. This could generate up to $5,000 annually to state and federal wildlife license programs. Additional expenditures can be assumed to be equipment and clothing, transportation and fuel, and local restaurants.

4.5 CUMULATIVE IMPACTS ANALYSIS

4.5.1 WATERFOWL

The overarching document for managing waterfowl populations is the North American Waterfowl Management Plan (NAWMP 2012). This document outlines desired waterfowl population levels across the continent and outlines goals for waterfowl conservation. As noted in section 3.3.1 above, waterfowl populations fluctuate based on a variety of factors. Current continental breeding populations of most waterfowl are at an all-time high (Zimpfer et al 2014). Also as mentioned above, waterfowl harvest regulations frameworks are set using Adaptive Harvest Management (AHM) (USFWS 2014b) strategies encompassing a variety of tools to determine acceptable levels of waterfowl harvest in a given year. Therefore, the Service examines cumulative effects of waterfowl harvest on an annual basis. Estimates of waterfowl harvest for Oregon during 2012 and 2013 were 389,200 and 276,500, respectively (Raftovich et al 2014). The maximum harvest of waterfowl under the youth waterfowl hunting program is 1,176 birds although estimates indicate a much lower harvest would be expected. This level of harvest represents less than one tenth of one percent of the annual harvest of waterfowl in Oregon, and would be easily supported by populations of waterfowl present on the refuge on an annual basis.

Conclusion

The refuge has coordinated closely with the ODFW in developing a youth waterfowl hunt that falls within the frameworks of State and Federal regulations. With mid-winter waterfowl surveys indicating an average of over 379,000 waterfowl in western Oregon over the past 10 years (USFWS 2014a) the harvest level from the youth waterfowl hunt on the Riverboat Unit would be inconsequential.

The refuge hunt program would be designed to provide a quality hunt, a safe experience, and a reasonable opportunity to harvest game species. By implementing the youth waterfowl hunt program, no habitat degradation would be anticipated; disturbance to birds and other wildlife, if any, would be temporary and localized; and ample amounts of additional quality habitat for these wildlife species exists on the refuge.

Thus, it is anticipated that wildlife populations would find sufficient food resources and resting places such that their abundance and use of the refuge and local area would not be measurably lessened due to hunting activities. The number of individuals expected to be removed from waterfowl populations due to hunting would not impair the physiological condition and production of waterfowl populations and their behavior and normal activity patterns would not be altered dramatically.

A controlled youth waterfowl hunt offering a limited number of permits on the Riverboat Unit would have minimal impacts on the refuge environment, overall population of waterfowl, non-target species, other wildlife-dependent recreational uses, and nearby residents. Some disturbance to the refuge environment is anticipated but impacts would be minor due to the nature of the activity entailing a limited number of participants over the duration of the hunting season. State and Federal regulations and refuge-specific special conditions would help reduce or eliminate any

unwanted impacts of the use to non-target species. The proposed hunt is not anticipated to have any impact on threatened or endangered species.

In summary, the youth waterfowl hunt on the refuge would not have any significant impacts to hunted species, to regional populations of these species, to the refuge environment, to adjacent lands, or to nearly residents.

5.1 COORDINATION, CONSULTATION, AND COMPLIANCE

5.1.1 NATIONAL ENVIRONMENTAL POLICY ACT (1969)

As a Federal agency, the Service must comply with provisions of the National Environmental Policy Act (NEPA). An environmental assessment is required under NEPA to evaluate reasonable alternatives that would meet stated objectives and to assess the possible impacts to the human environment. The environmental assessment serves as the basis for determining whether implementation of the proposed action would constitute a major Federal action significantly affecting the quality of the human environment.

5.1.2 NATIONAL HISTORIC PRESERVATION ACT

The implementation of this plan should not affect known cultural resources. The Service will comply with the National Historic Preservation Act if any management actions have the potential to affect any historic properties which may be present.

5.1.3 EXECUTIVE ORDER 13175. CONSULTATION and COORDINATION WITH INDIAN TRIBAL GOVERNMENTS

As required under Secretary of the Interior Order 3206 American Indian Tribal Rights, Federal Tribal Responsibilities, and the Endangered Species Act, the Service consulted and coordinated with The Confederated Tribes of Grand Ronde regarding the proposed action.

5.1.4 EXECUTIVE ORDER 12898. FEDERAL ACTIONS to ADDRESS ENVIRONMENTAL JUSTIC IN MINORITY AND LOW-INCOME POPULATIONS.

All Federal actions must address and identify, as appropriate, disproportionally high and adverse human health or environmental effects of its programs, policies, and activities on minority populations, low income populations, and Indian Tribes in the United States. This plan was evaluated and no adverse human health or environmental effects were identified for minority or low-income population, Indian Tribes, or anyone else.

5.1.5 NATIONAL WILDLIFE ADMINISTATION ACT OF 1966, as amended by THE NATIONAL WILDLIFE REFUGE SYSTEM IMPROVEMENT ACT OF 1997 (16 U.S.C. 668dd-668ee).

A Compatibility Determination has been prepared for waterfowl hunting on Tualatin River National Wildlife Refuge and concluded that hunting was a compatible use.

5.1.6 ENDANGERED SPECIES ACT

Implementation of this plan is not expected to impact listed species. A Biological Assessment (Section 7) for the proposed hunt program is under development and review.

5.2 COORDINATION

5.2.1 STATE AGENCIES

ODFW staff met with met with refuge staff on 7/24/14 and 8/8/14 to discuss the Tualatin River NWR youth waterfowl hunting program.

5.2.2 INTERAGENCY COORDINATION

The draft plan and environmental assessment was posted on the Tualatin River National Wildlife refuge website (http://www.fws.gov/tualatinriver/) on September 1, 2014. News Releases were sent to local media outlets on August 10, 2014 directing interest to the refuge website and announcing the 30-day public comment period from September 1 -30, 2014. On August 28th, 2014 letters were sent to federal legislators (Senator Ron Wyden, Senator Jeff Merkley, and Congresswoman Suzanne Bonameci) informing their staff of the hunt plan and environmental assessment, and the public comment period A letter was also sent to the Washington County Commissioner, Andy Duyck, informing him of the draft hunt plan and environmental assessment, and the public comment period. On August 28th, 2014, a letter was sent to ODFW and the Confederated Tribes of the Grand Ronde reminding them of the public comment period for the draft youth waterfowl hunt plan and environmental assessment.

5.2.3 TRIBES

A letter was sent to Tribal contacts from The Confederated Tribes of Grand Ronde by the Service informing them of the hunt plan and public comment period.

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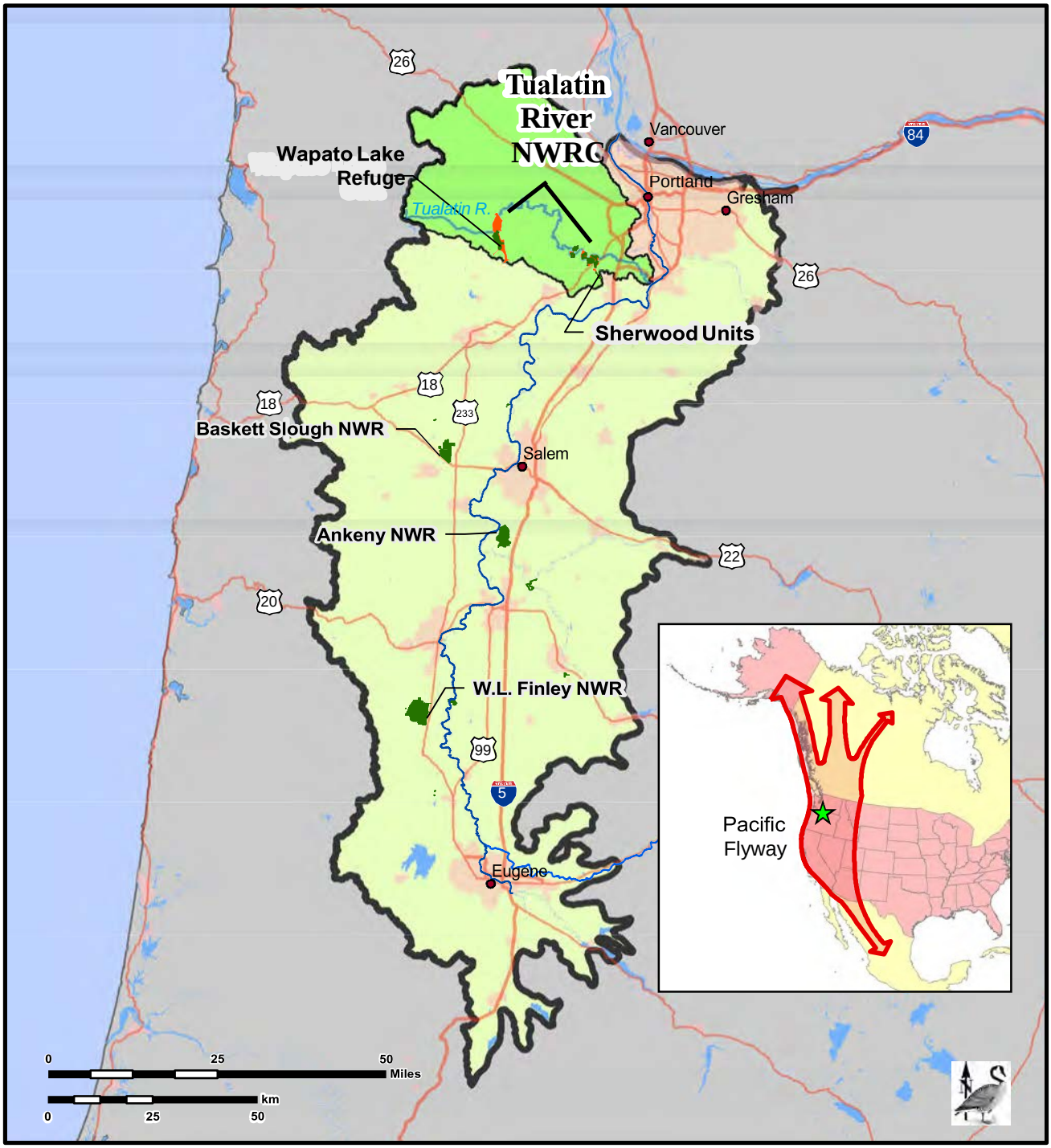
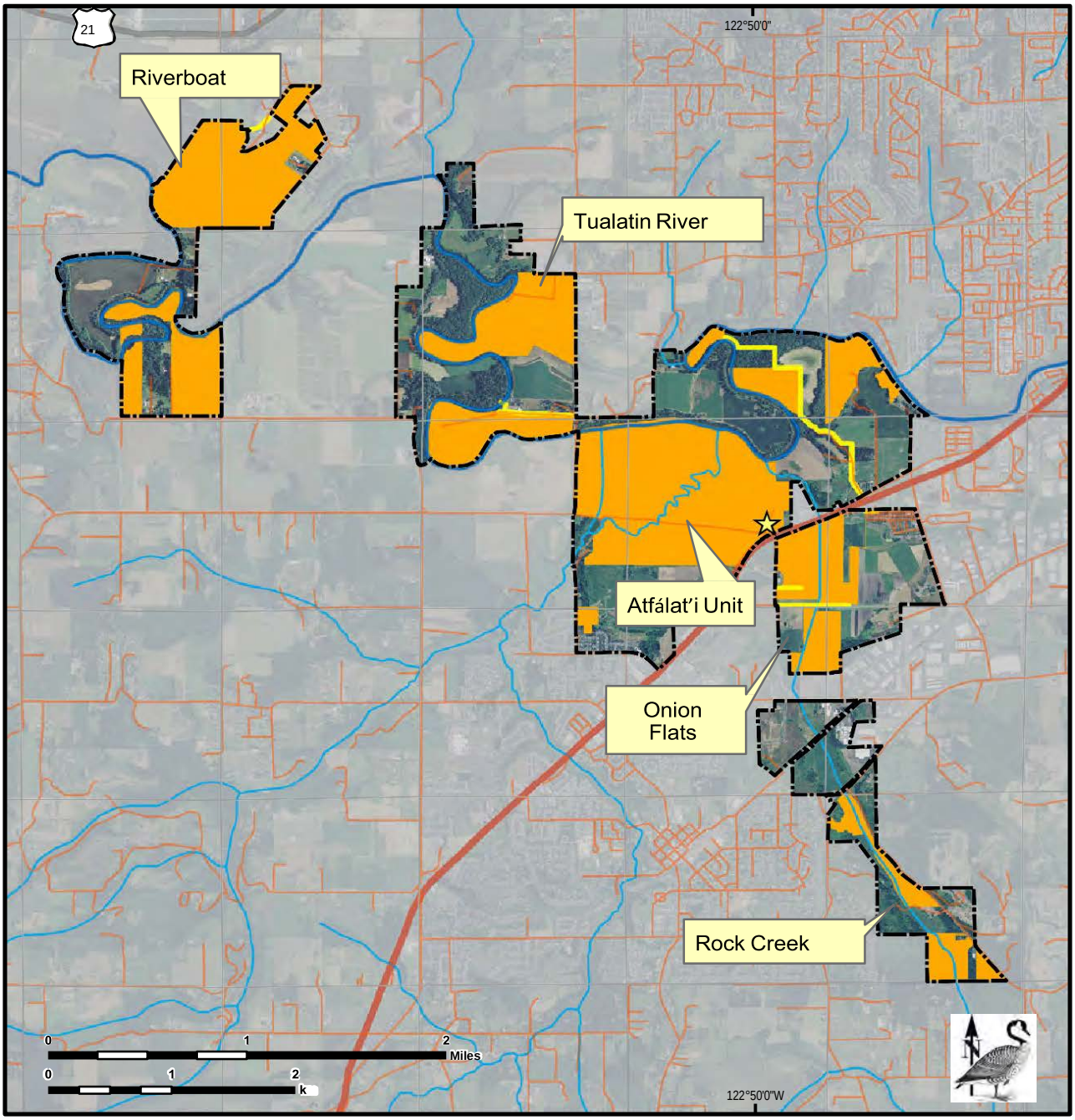
Appendix A. Maps

Map 1: Willamette Valley Ecoregion, Regional Context
Map 2: TRNWR units, Land Status
Map 3: Riverboat Unit hunt area

Map 1 *Willamette Valley Ecoregion, Regional Context*



Map 2 ***TRNWR units, Land Status***



Map 3 ***Riverboat Youth waterfowl hunting area***