

Wapato Lake National Wildlife Refuge Draft Public Access Plan

October 2021

U.S. Fish and Wildlife Service

Tualatin River National Wildlife Refuge Complex
19255 SW Pacific Highway
Sherwood, Oregon 97140

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WAPATO LAKE NATIONAL WILDLIFE REFUGE

DRAFT PUBLIC ACCESS PLAN

I. Purpose and Scope

Wapato Lake National Wildlife Refuge (NWR; Refuge) was established in 2013 and is managed by the U.S. Fish and Wildlife Service's (USFWS; Service) Tualatin River National Wildlife Refuge Complex. In 2020 the Wapato Lake NWR developed a Hunt Plan and opened the Refuge to public use (waterfowl hunting) for the first time. This Public Access Plan represents the second phase of opening the Refuge to the public. Here, we explore opening the refuge to additional public uses that are compatible with the conservation mission of the USFWS and refuge: wildlife observation, wildlife photography, interpretation, and environmental education. However, the Refuge's visitor services program is still in an early stage of development. During the third phase, a comprehensive Visitor Services Plan will be developed for this Urban Refuge. We invite partners and the community to partner with us to shape the refuge into a home for wildlife and a safe and welcoming place to visit.

Wapato Lake NWR is located adjacent to the small town of Gaston, Oregon (population 510), in Washington and Yamhill Counties. Other nearby towns include Banks (1,812), Forest Grove (24,000), Yamhill (1,346), and McMinnville (34,000) and the Confederated Tribes of the Grand Ronde (2019 data; Headwater Economics). Although the Refuge lies within a rural area it is approximately 20 miles west of Portland, Oregon's largest city (estimated at over 2.4 million in the metropolitan statistical area). Wapato Lake NWR is considered an urban refuge because it is within 25 miles of a population of 250,000 or more. In addition, the local area contains large communities of color and Hispanic communities compared to Oregon as a whole: 34 percent for Washington County and 23 percent in Yamhill County (Headwaters Economics, Economic Profile System, <https://headwaterseconomics.org/apps/economic-profile-system/>).

In 2015, the Service embarked on an Urban Refuge Program initiative to enhance the relevance of the National Wildlife Refuge System (System) and the Service to a rapidly changing America (<https://www.fws.gov/urban/index.php>). The Service has engaged the Portland-Vancouver Metro Area through its four local National Wildlife Refuges: Tualatin River, Ridgefield, Steigerwald Lake, and Wapato Lake. The initiative is guided by eight standards that serve as a framework for collaboration among the Service and urban communities:

1. Know and Relate to the Community
2. Connect Urban People with Nature via Stepping Stones of Engagement
3. Build Partnerships
4. Be a Community Asset
5. Ensure Adequate Long-Term Resources
6. Provide Equitable Access
7. Ensure Visitors Feel Safe and Welcome
8. Model Sustainability

II. Relevant Mission, Goals, and Establishing Purposes

Why open the refuge to public access? It's part of our mission and vision.

While the Service's Urban Refuge initiative is newer, National Wildlife Refuges have been around since 1903, and are guided by the mission and goals of the National Wildlife Refuge System (NWRS), the purposes of an individual refuge, Service policy, and laws and international treaties. It is a priority of the Service to provide for wildlife-dependent recreation opportunities when those opportunities are compatible with the purposes for which the refuge was established and the mission of the National Wildlife Refuge System.

Relevant guidance includes the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations and Fish and Wildlife Service Manual.

The mission of the NWRS, as outlined by the National Wildlife Refuge System Administration Act (NWRSA), as amended by the National Wildlife Refuge System Improvement Act (16 U.S.C. 668dd et seq.), is to:

"... 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"

The NWRSA mandates the Secretary of the Interior in administering the National Wildlife Refuge System to (16 U.S.C. 668dd(a)(4)) (emphases added):

- Provide for the conservation of fish, wildlife, and plants, and their habitats within the NWRS;
- Ensure that the biological integrity, diversity, and environmental health of the NWRS are maintained for the benefit of present and future generations of Americans;
- Ensure that the mission of the NWRS described at 16 U.S.C. 668dd(a)(2) and the purposes of each refuge are carried out;
- Ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges and the fish and wildlife agency of the States in which the units of the NWRS are located;
- **Recognize compatible wildlife-dependent recreational uses as the priority general public uses of the NWRS through which the American public can develop an appreciation for fish and wildlife;**
- **Ensure that opportunities are provided within the NWRS for compatible wildlife-dependent recreational uses;** and
- Monitor the status and trends of fish, wildlife, and plants in each refuge.

Wapato Lake National Wildlife Refuge was established pursuant to the Fish and Wildlife Act of 1956 and the Emergency Wetlands Resources Act of 1986. The primary purposes of the refuge are for:

- “... the development, advancement, management, conservation, and protection of fish and wildlife resources ...” 16 U.S. Code (U.S.C.) § 742f(a)(4) (Fish and Wildlife Act of 1956).
- “... 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).
- “... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ...” 16 U.S.C. § 3901(b) (Emergency Wetlands Resources Act of 1986).

The Tualatin River National Wildlife Refuge Complex completed a Comprehensive Conservation Plan (CCP) in 2013 (USFWS 2013). The CCP outlines the goals, objectives, and implementation strategies for all refuge activities. Wapato Lake NWR was a unit of the Tualatin River NWR at the time. However, management of this unit remained conceptual in the CCP since further analysis of the area was required before making specific management decisions.

In 2019, the Wapato Lake NWR Environmental Assessment (USFWS 2019) was completed, providing detailed information regarding the habitat restoration that would take place on the Refuge. The timing and location of habitat restoration activities are a factor considered in the development of this plan.

The CCP identified three broad goals for the Visitor Services Program at Wapato Lake NWR that further direct this Public Access Plan:

- Provide the public with a quality opportunity to experience wildlife on previously closed Refuge lands;
- Provide wildlife-dependent public recreation as mandated by and according to Service law and policy;
- Minimize conflicts with refuge management and operations and between user groups.

III. Current Conditions

The lakebed has been intensively manipulated for agricultural purposes for nearly a century and is largely void of native flora. The Service is actively working on the re-establishment of native herbaceous and woody plant communities. The Wapato Lake NWR Environmental Assessment (USFWS 2019) provides habitat restoration information that helps inform how the refuge will plan and implement visitor services.

A. Visitor Facilities

The primary visitor access point is located near the northwest corner of Wapato Lake just off

Hwy 47 adjacent to the City of Gaston (see Appendix A). A parking lot and restroom facilities are located at the designated access point at the north end of Wapato Lake. The parking lot has approximately 20 passenger car spaces and two ABA-accessible spaces. The ABA restroom facility consists of a single vault toilet with no running water. From this parking lot, visitors can access the Refuge's 3.25-mile gravel levee hiking trail via a connecting paved trail and bridge (see Appendix A).

There are six semi-permanent hunt blinds located along the northern shoreline of the lakebed. These may be modified for use as photography or dual-purpose (hunting, photography, wildlife observation) blinds post-hunting season.

B. Visitor Use - Hunting

The Refuge is currently open only for waterfowl hunting in accordance with state, federal, and Refuge-specific regulation. Bag limits and hunting seasons on the Refuge coincide with Oregon Department of Fish and Wildlife (ODFW) waterfowl hunting regulations, unless otherwise noted.

Hunting is currently allowed three days per week: Tuesdays, Thursdays, and Saturdays, during the State waterfowl season. On these days, access for selected hunters is allowed two hours before and after legal shooting hours. During the first two years of the hunt (2020/2021 and 2021/2022) water availability will be limited so hunting will not begin until mid-December. Following the first two years, as lakebed restoration proceeds, waterfowl hunting will potentially run from mid-October through January. In addition, private landowners, adjacent to the Refuge, participate in hunting activities during the State season (Appendix A). Currently, there are approximately eight private hunt blinds on these exterior private properties.

From mid-October thru January, a portion of the trail could be open for public access on Mondays, Wednesdays, Fridays, and Sundays, see public access map in Appendix A. The trail provides access to hunt areas during waterfowl season and will be closed to other uses on hunt days. The active hunting program, on the Refuge and the neighboring private properties, will require safeguards to minimize conflicts to include posted signs and marked closed areas. February to mid-October, public access could occur seven days per week. The Refuge will be open during daylight hours only (30 minutes before sunrise and 30 minutes after sunset), except for the hunting program.

C. Context of Refuge Compared to Other Nearby Sites

Several nearby conservation areas are open to the public. Hagg Lake, owned by the U.S. Bureau of Reclamation and maintained and operated by Washington County, offers a variety of recreation activities including fishing, biking, hiking, and boating. Jackson Bottom Wetland Preserve, managed by the City of Hillsboro Park and Recreation Department, offers environmental education, hiking, and bird watching. Chehalem Ridge Nature Park, managed by Metro, a regional governance, will offer multi-use recreational opportunities including horseback riding. LL Stub Stewart State Park offers a variety of recreational opportunities including hiking, biking, horseback riding, and camping. Refuge staff and various partners have had meetings to discuss opportunities for linking several of these local areas and the Refuge together through

programming, information, and trails. In addition, Tualatin River NWR offers hiking, environmental education, and interpretive programs. Linkages and cooperative programs between the Refuge and other local conservation areas will be considered in more detail in the Visitor Services Plan.

D. Areas to be Opened to Public Access

The areas to be opened to public access include the hiking trail on top of the levee system surrounding Wapato Lake, the access point, northern high ground, and the hunting and photo blinds. Currently, the only public access point is the main parking lot which is connected to the paved entrance trail that leads to the pedestrian bridge and trail.

The hiking trail is located on the levee surrounding most of the lakebed. In Phase II, from February to September, the trail portion open to the public would consist of 3.35 miles of levee on the north and west sides of the lake. From mid-October through January, only approximately 1.65 miles of the 3.35-mile trail would be open on Mondays, Wednesdays, Fridays, and Sundays to balance proposed public access activities with active hunting on and off the Refuge. Approximately 2 miles of this trail have already been created with improved surface (6' wide crushed gravel). In Phase III, an additional mile of trail are planned.

On the northern end of the lakebed, there is an approximately 30-acre high ground area. A proposed trail would traverse through this area to provide additional wildlife observation and an outdoor classroom (Appendix A). The vision of this high ground area is a forested scrub/shrub marsh component of the restored lakebed.

Potentially one to six photo blinds may be placed in various locations adjacent to the trail. As stated above, the photo blinds may include modified hunt blinds, or single purpose photo blinds in addition to the current hunt blinds.

E. Refuge-Specific Regulations

Listed below are Refuge-specific regulations that pertain to public access on Wapato Lake NWR as of the date of this plan. These regulations may be modified as conditions change or if Refuge expansion continues/occurs.

- Designated areas of the Refuge will be open year-round with restrictions during the waterfowl hunting season, which occurs from mid-October thru January. During this period, access will be limited to only selected hunters and their parties on Tuesdays, Thursdays, and Saturdays and open for other uses the remainder of the week.
- The Refuge will be open during daylight hours only (30 minutes before sunrise and 30 minutes after sunset), except for the hunting program.
- Littering, abandoning, discarding, or otherwise leaving personal property unattended is prohibited.
- Removal of any plants, animals, or artifacts, or parts thereof, including, shells and feathers, from the Refuge is prohibited.
- Pets are not allowed, with the only exception that dogs are allowed for retrieving waterfowl in association with the hunting program.

- Open areas are limited to the hiking trail on the top of the levees, designated parking area, northern high ground, and specific blinds and their access.
- Vehicles are restricted to designated parking areas.
- Camping, overnight use, and fires are prohibited.
- Motorized and non-motorized vehicles, such as ATVs, UTVs, bicycles, skateboards, and other off-road vehicles are prohibited.
- Use of drones is prohibited.
- Use of boats and flotation devices is prohibited, except for use of nonmotorized boats by waterfowl hunters possessing a Refuge hunt permit during the State season. Boats may be used only for setting decoys and retrieving game from designated hunt blinds.

F. Law Enforcement

Law Enforcement on National Wildlife Refuges, including Wapato Lake NWR, is the responsibility of commissioned Federal Wildlife Officers.

The following methods are used to control and enforce regulations:

- Refuge open areas and boundaries will be clearly posted.
- The Refuge will develop and provide informational materials that show temporal open and closed areas and dates, as well as allowed and prohibited activities on the Refuge.
- Service law enforcement staff will randomly patrol the Refuge for compliance with federal and Refuge-specific regulations and coordinate with applicable law enforcement agencies.

IV. Proposed Operating Budget and Staffing Requirements

Developing and administering the uses within this plan will require Refuge staff time and funding to meet and coordinate with partners and neighbors, produce publications and signage, minimize conflicts among users; conduct law enforcement; maintain infrastructure; monitor potential impacts to wildlife and habitats, and ensure public safety. The Refuge staff has sought input from the City of Gaston, neighbors, area schools, Clean Water Services, Metro, Access Recreation, Jackson Bottom Wetland Preserve, and Confederated Tribes of Grand Ronde, among others.

The estimated cost to facilitate the proposed public access at the Refuge is approximately \$150,000 in one-time costs and \$88,500 in annual costs, including salaries and maintenance expenses (see Table below). Initial one-time costs consist of developing safety and informational materials including brochures, signage, and kiosks. Additionally, annual funds are required to maintain posts and signs around the Refuge perimeter and designating open/closed areas. Law enforcement and other staff will be needed during the year to facilitate a safe visitor experience and monitor compliance with rules and regulations. Other funding sources will be sought through strengthened partnerships, grants, and additional Refuge operations funding.

Table 1. Costs to Administer and Manage the Public Use Program on Wapato Lake NWR.

Category and Itemization for Public Use Program	First Year Expenses (\$)	Recurring Annual Expenses (\$/year)
Develop Public Access opening package	10,000	
Construct up to 3 photo blinds (or modify hunt blinds) and associated trails	40,000	500
Develop safety, informational, and regulatory signage and brochures	100,000	4,500
Host special events		5,000
Maintain parking lots, trails, blinds, signs and other infrastructure		20,000
Conduct annual volunteer training		2,000
Law Enforcement staff time		4,500
Visitor Services staff time		37,000
Administration and Management		15,000
Total first year expenses for public use program	\$150,000	
Total recurring annual expenses for public access program		\$88,500

V. Goals, Objectives and Strategies

Wapato Lake NWR was a unit of Tualatin River NWR during the development of the CCP. Relevant goals, objectives, and strategies from the Tualatin River NWR CCP and the Urban Refuge Standards inform this Plan. As noted above, this Plan represents the second phase of opening the Refuge to the public. We will provide opportunities for wildlife-dependent public access while engaging with the community and partners to gather information that will help us develop a comprehensive Visitor Services Plan (Phase III).

Goal 1: Refuge staff will know and relate to the community

Objective 1:1: Gather public feedback and insights to better inform refuge staff of needs and how the land and refuge programming can positively impact the surrounding communities and visiting public.

Strategies:

- By the end of summer 2022, create a comprehensive strategic engagement plan that will serve to guide the development of the formal Visitor Services Plan.
 - In 2022, continue to develop and implement plans to obtain feedback from visitors by: placing a suggestion box at the trail head, at public meetings, and/or at special events; and through the website, encourage public to email or call with any comments or suggestions for improvement.
 - At the Wapato Lake Grand Opening event, host a listening session for visitors to garner feedback and as much information as possible to assist Refuge staff in the development of a Visitor Service Plan for the Complex.

- Service staff meet with community leaders from diverse groups to gather knowledge about the attitudes, needs, and beliefs of audiences within local communities.

Goal 2: The Refuge will be a safe and welcoming place for visitors, community members, partners, and volunteers.

Objective 2:1: Clearly identify hours of operation and separate conflicting uses for a safe and enjoyable experience for all users.

Strategies:

- Develop a site plan and visitation schedule that clearly separates potentially conflicting users spatially and temporally (for example hunters and wildlife watchers). The site plan may include wayfinding and safety signage, identify any potential access points, and assess needed improvements for accessibility and safety.
 - Design a logical flow of traffic, install signs that orient visitors to their surroundings, and make sure the entrance(s) to facilities are clearly marked
 - Install physical barriers, such as locked gates, at access points and close them during the waterfowl hunting season
 - Use clear signage to inform visitors of hunting activities on- and off-refuge and closure days, and to educate visitors about safety precautions
- Develop a communication plan to clearly communicate hours of operation and expected visitor experiences. This may include fact sheets, press releases, and social media posts.

Objective 2:2: Ensure that visitor facilities provide physical comfort.

Strategies:

- In 2022, install 2-4 benches at optimal points along the trail.
- In 2022, investigate solutions to the seasonal flooding issue that inundates the paved entrance trail leading to the pedestrian bridge.
- In 2022, evaluate the possibility of the hunt blinds being used as photography and wildlife observation blinds during the non-hunt season. Otherwise develop and incorporate separate photography and wildlife observation blinds.
- In 2022, provide information on seasonal sightings of various refuge wildlife and wildlife photography tips.
- In 2023, evaluate the addition of, and funding sources, for an accessible observation platform near the pedestrian bridge to improve wildlife observation of wetlands that meets Service safety standards.

Objective 2:2: Identify Wapato Lake as a national wildlife refuge that welcomes visitors.

Strategies:

- In 2021, designed and installed a temporary kiosk at the main entrance to provide information for the public.
- In 2022, install Refuge entrance signs.

Goal 3: Build new and nurture existing partnerships.

Objective 3:1: Within two years, identify Refuge user groups and community representatives. Provide opportunities for the Friends Group and other community partners to tour the Refuge.

Strategies:

- Beginning in 2021, learn about potential user groups in the community and their unique needs by meeting with community leaders/groups and exploring partnerships for continued engagement and build trust and understanding.
- Continue to support a positive partnership with the Friends Group by providing a liaison to the Friends Board to facilitate communication and having staff presentations at Friends Board meetings and participate in regional Friends Organization meetings.
- Continue participating at the Wapato Showdown.
- Provide at least two opportunities annually for the Friends Group to tour the Refuge.

Goal 4: Be a Community Asset.

Objective 4:1: Within two years, collaborate with local schools and partners to develop a framework for delivering environmental education to the local community.

Strategies:

- In 2022, identify local teachers interested in using the refuge as a classroom to provide input and guidance for developing the refuge's EE program.
- Beginning in 2021, work with other conservation organizations/agencies, nonprofits, teachers, school districts, etc. to determine the need for environmental education in the area and to partner, coordinate and collaborate on programming.
- Annually seek grants to fund EE programs including intern support and materials.
- Seek out and train volunteers to provide ongoing support.

Objective 4.2 Provide high quality programs and materials that meet the needs of a variety of audiences

Strategies:

- Beginning in 2022, educational, interpretive and outreach programs should be based on the results of demographic analyses and meetings with community leaders, cultural groups and individuals representing the intended audience.

- Develop a suite of interpretive programs, for both on and off refuge lands, with outlines and train volunteers on how to deliver them. Focus some programming on bringing non-traditional audiences onto the refuge. Ensure programming meets the needs of urban community members as described in the analysis of current demographic characteristics and outcomes of meetings with community leaders.
- By the calendar end of 2022, develop and provide outreach materials and displays that target non-hunters to describe the benefits and positive aspects of hunting.
- Develop programming that will build “nature confidence” for urban visitors. Programs may take place in the surrounding community
- Every five years, review interpretive materials and modify, as needed, to ensure that they complement and accurately interpret resource issues and management actions (i.e. interpretive signs, panels).

VI. Compatibility Determination

Wildlife Observation, Wildlife Photography, Interpretation, Environmental Education, and all associated program activities proposed in this plan are compatible with the purposes of the Refuge. See attached Appendix C, Compatibility Determinations

VII. References

Headwaters Economics. Economic Profile System [online]. Available at: <https://headwaterseconomics.org/apps/economic-profile-system/> [Accessed June 25, 2012].

U.S. Fish and Wildlife Service. 2019. Wapato Lake National Wildlife Refuge Environmental Assessment. Sherwood, OR: Tualatin River National Wildlife Refuge.

U.S. Fish and Wildlife Service. 2020. Wapato Lake National Wildlife Refuge Environmental Assessment for Waterfowl Hunting Plan. Sherwood, OR: Tualatin River National Wildlife Refuge Complex.

U.S. Fish and Wildlife Service. 2020b. Compatibility Determination for Waterfowl Hunting at Wapato Lake National Wildlife Refuge. Sherwood, OR: Tualatin River National Wildlife Refuge Complex.

U.S. Fish and Wildlife Service. 2013. Tualatin River National Wildlife Refuge, Comprehensive Conservation Plan and Environmental Assessment. Sherwood, OR: Tualatin River National Wildlife Refuge.

Appendix A. Wapato Lake National Wildlife Refuge

Figure 1. Wapato Lake National Wildlife Refuge acquisition boundary and current acquired lands.

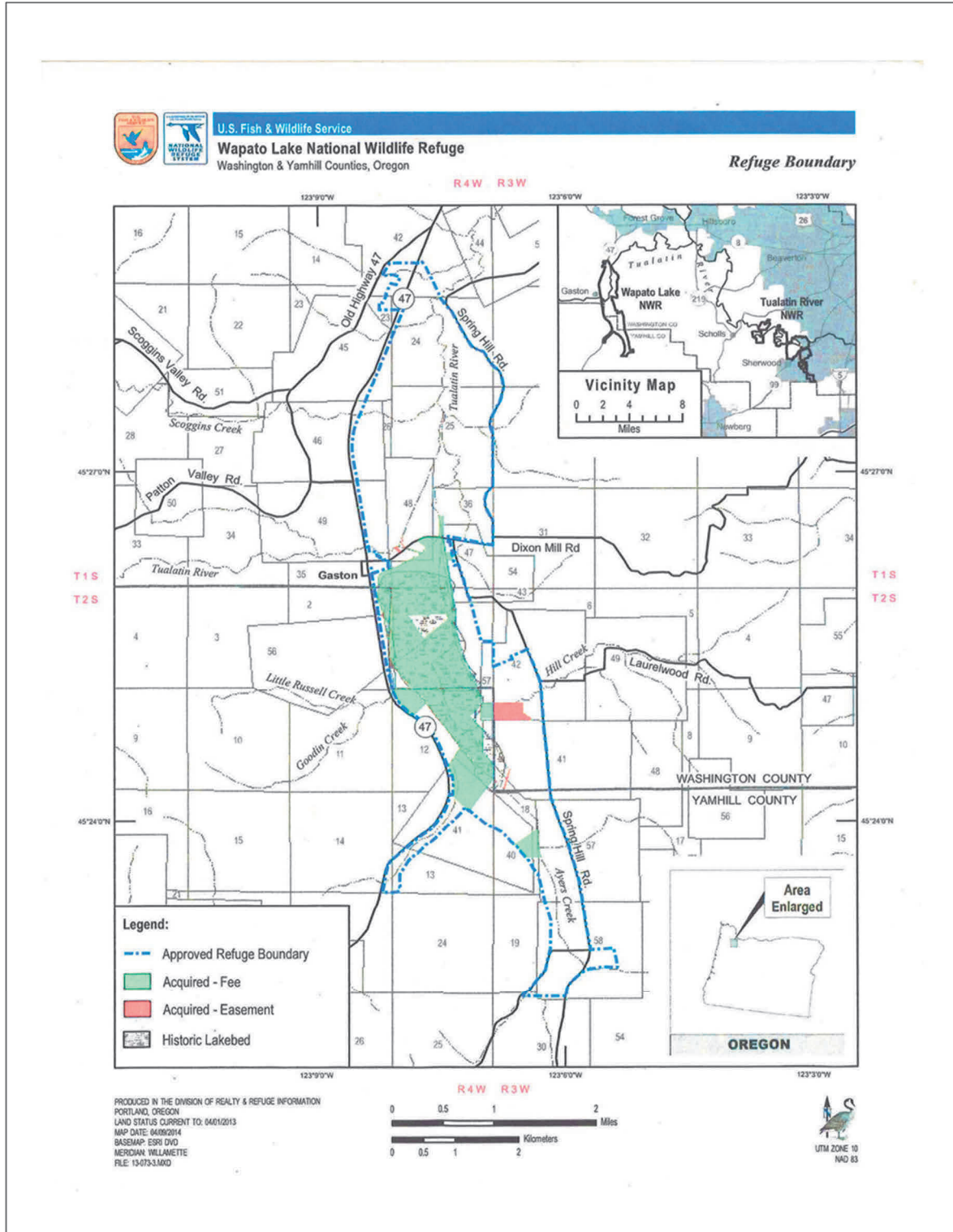
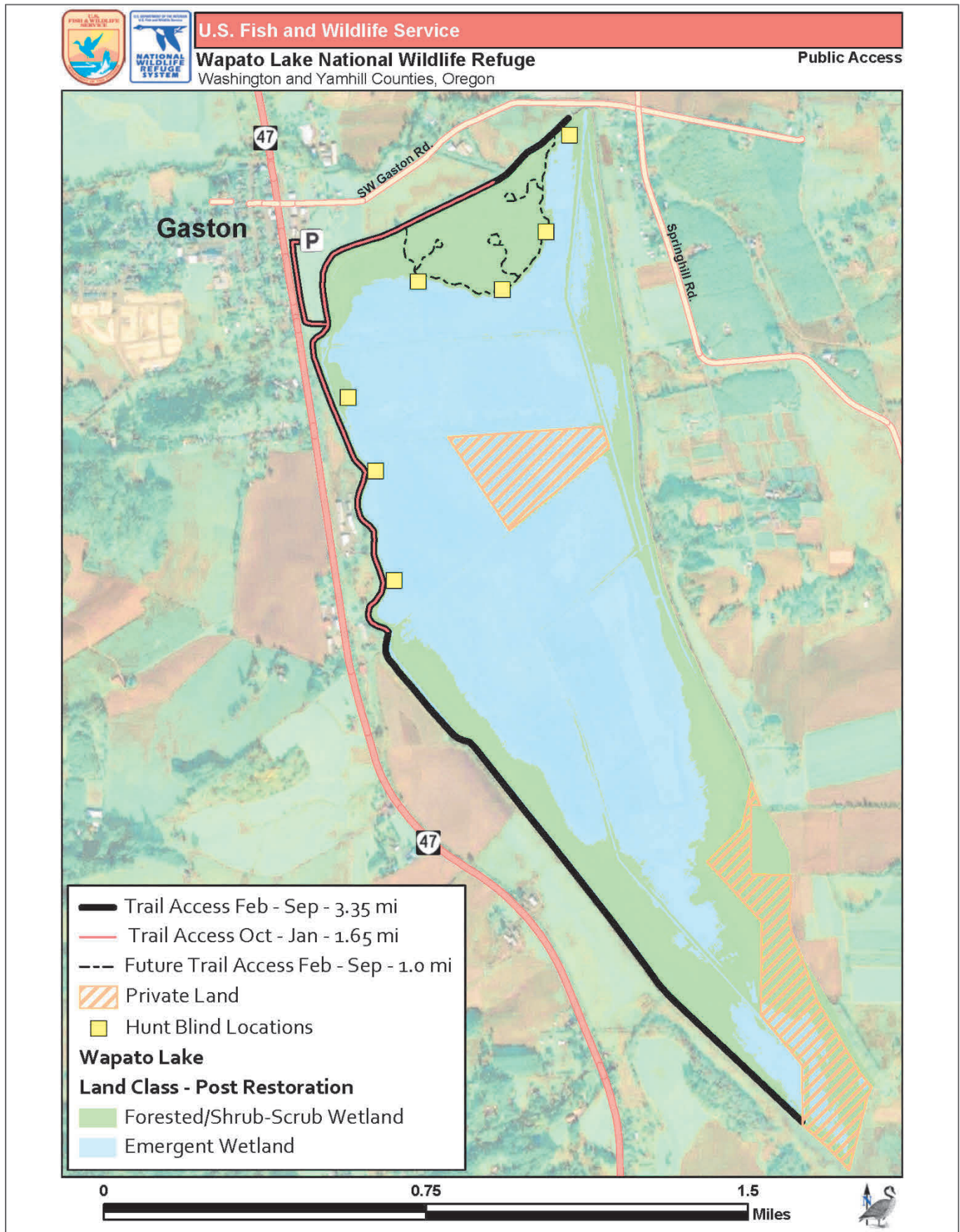


Figure 2. Wapato Lake National Wildlife Refuge current and proposed public access facilities



Appendix B. Wapato Lake National Wildlife Refuge

Environmental Assessment for the Public Access Plan

**Wapato Lake National Wildlife Refuge
Washington and Yamhill Counties, Oregon**

Environmental Assessment

for the

**Draft
Public Access Plan**

Prepared by:

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Tualatin River National Wildlife Refuge Complex
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October 2021

Introduction:

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

Proposed Action:

The U.S. Fish and Wildlife Service (Service) is proposing to open Wapato Lake National Wildlife Refuge (NWR/Refuge) to wildlife observation, wildlife photography, environmental education, and interpretation in accordance with the Refuge's Draft Public Access Plan. The Public Access Plan is a step-down plan from the Tualatin River National Wildlife Refuge Proposed Wapato Lake Unit, Land Conservation Plan and Environmental Assessment (USFWS 2007) and Tualatin River National Wildlife Refuge Comprehensive Conservation Plan (USFWS 2013). The public access area being considered includes the top of the approximately five miles of levees that surround the 800-acre wetland basin known as Wapato Lake. In addition, areas adjacent to the levees on the lakebed, a higher ground portion on the northern end of the lakebed, and the access trail to the Refuge are also included.

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

Background:

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

The Refuge was established pursuant to the Fish and Wildlife Act of 1956 and the Emergency Wetlands Resources Act of 1986. The primary purposes of the refuge are for:

- “ ... the development, advancement, management, conservation, and protection of fish and wildlife resources ... ” 16 U.S. Code (U.S.C.) § 742f(a)(4) (Fish and Wildlife Act of 1956).
- “ ... 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).

- “ ... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ... ” 16 U.S.C. § 3901(b) (Emergency Wetlands Resources Act of 1986).

The mission of the NWRS, as outlined by the National Wildlife Refuge System Administration Act (NWRSA), as amended by the National Wildlife Refuge System Improvement Act (16 U.S.C. 668dd et seq.), is to:

“... 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”

Wapato Lake NWR is currently only open for waterfowl hunting. The Refuge prepared a separate EA and Hunt Plan to open for waterfowl hunting. In this EA, the Refuge evaluates other potential wildlife-dependent recreational opportunities such as, fishing, wildlife observation, photography, environmental education, and interpretation where compatible and safe, while assessing potential conflicts between uses.

Purpose and Need for the Proposed Action:

The purpose of this proposed action is to provide safe access to all users for wildlife-dependent recreation opportunities, specifically wildlife observation, photography, environmental education, and interpretation, on Wapato Lake NWR.

The NWRSA mandates the Secretary of the Interior in administering the National Wildlife Refuge System to (16 U.S.C. 668dd(a)(4)):

- Ensure that the mission of the NWRS described at 16 U.S.C. 668dd(a)(2) and the purposes of each refuge are carried out;
- Ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges and the fish and wildlife agency of the States in which the units of the NWRS are located;
- Assist in the maintenance of adequate water quantity and water quality to fulfill the mission of the NWRS and the purposes of each refuge;
- **Recognize compatible wildlife-dependent recreational uses as the priority general public uses of the NWRS through which the American public can develop an appreciation for fish and wildlife;**
- **Ensure that opportunities are provided within the NWRS for compatible wildlife-dependent recreational uses;** and
- Monitor the status and trends of fish, wildlife, and plants

The need of the proposed action is to meet the Service’s priorities and mandates as outlined by the NWRSA to “recognize compatible wildlife-dependent recreational uses as the priority general uses of the NWR” and “ensure that opportunities are provided within the NWR for compatible wildlife-dependent recreational uses” 16 U.S.C. 668dd(a)(4)). The proposed action would provide additional opportunities for the Refuge to engage the surrounding urban community in wildlife conservation.

Alternatives Considered

Alternative A – Opening Wapato Lake NWR to Year-Round Non-Hunting Public Access [Proposed Action Alternative]:

The Refuge has prepared a Draft Public Access Plan (Plan) for Wapato Lake NWR (USFWS 2021), which is incorporated herein by reference and attached to this document to provide more details regarding the Proposed Action Alternative. Additionally, a Wapato Lake NWR Environmental Assessment (USFWS 2019) provides habitat restoration information that informs potential public uses within the wetland basin. The Refuge would continue to implement restoration of Wapato Lake as outlined in the Environmental Assessment.

Under the Proposed Action Alternative, Wapato Lake NWR would be opened to public access for wildlife observation, wildlife photography, environmental education, and interpretation year-round, including during the waterfowl hunting season. These activities would be restricted to the approximately five miles of pedestrian trails on top of the levee system surrounding Wapato Lake, as well as designated areas adjacent to the levee trail in the lakebed to include an upland higher-ground section in the northern part of the lakebed. Access to the trail would occur via a paved pedestrian pathway and bridge constructed in the northwest corner of the Refuge adjacent to the City of Gaston’s parking area. Visitors would be subject to Service and any additional Refuge-specific public use regulations.

The Refuge is currently open to waterfowl hunting, that coincides with the Oregon Department of Fish and Wildlife (ODFW) waterfowl hunting regulations. The Oregon waterfowl hunting season runs from Mid-October through the end of January. Consequently, the Refuge would implement measures to separate hunting from other uses during the hunting season. Measures to ensure safe access for all users may include physical barriers, signage and extensive outreach, as well as collaboration with community partners and local groups.

Informational signage will be placed at the refuge entrance, on the refuge side of the pedestrian bridge, near the staff entrance off Gaston Bridge Rd, and off the staff access bridge that is one mile south of the new pedestrian bridge. Signage will include refuge contact information and will explain how and why access by the non-hunting public is limited to Mondays, Wednesdays, Fridays and Sundays throughout the hunting season. Exact dates for the start and end of the limited access season will be listed on these signs. Signage will also include recommended precautions for users during the waterfowl hunting season, such as wearing bright orange, because there may be hunting on adjacent private property on all days

of the week. No adjacent landowners have hunting blinds directed towards refuge lands and they may not hunt towards the refuge; however, visitors will be informed that they may hear gunfire in close proximity to the trail.

Additionally, staff will utilize the Wapato Lake NWR website and social media outlets to provide updated information to the public regarding safety and limited access schedules. An informational FAQ will be developed and published on the website at all times of the year.

From February to September, the public may walk/hike on the levee trail seven days per week, during daylight hours only (30 minutes before sunrise to 30 minutes after sunset). During the hunting season, which typically runs mid-October through January, 1.65 miles of the levee trail would be open to public use. The remainder of the trail would be closed to all public use from mid-October through January to reduce disturbance to waterfowl using the sanctuary (non-hunted) portion of the lakebed. Access to the 1.65-mile northern portion of the trail would be limited to only selected hunters and their parties on hunt days (Tuesdays, Thursdays, and Saturdays) (Figure 1). On non-hunt days (Mondays, Wednesdays, Fridays, and Sundays) the 1.65-mile portion of the trail may be used for walking and hiking (See Figure 1). The specific days of the week for each activity may be changed to reduce confusion and facilitate compliance; but hunting and other public use would always occur on different days of the week.

The estimated cost to operate a public access program is approximately \$88,500 annually, with initial cost totaling \$150,000. Refuge staff and trained volunteers would administer the public access program.

This alternative offers new opportunities for public access and fulfills the Service's mandate under the National Wildlife Refuge System Improvement Act of 1997, to provide opportunities for wildlife observation, wildlife photography, environmental education, and interpretation, when compatible.

Alternative B – Opening Wapato Lake NWR to Seasonal Non-Hunting Public Access:

Under this alternative, public access and locations would be the same as under the proposed action alternative; however, the days of the week and season of year that these activities are offered would be different. From February to mid-October, the public may walk/hike on the levee trail seven days per week, during daylight hours only (30 minutes before sunrise to 30 minutes after sunset). Designated areas of the Refuge would be open seasonally with restrictions during the waterfowl hunting season. During this period, access to the 1.65-mile northern portion of the trail would be limited to only selected hunters and their parties on Tuesdays, Thursdays, and Saturdays. The entire trail would be closed to all other public access from Mid-October to January, including the 1.65-mile northern portion mentioned above.

Alternative B attempts to minimize potential user group conflicts and safety concerns that could result from allowing hunters and non-hunting visitors to use the trail on alternate days of

the week. Confusion as to the day of the week could result in non-hunting trail users accessing the trail on a designated hunting day. This could pose a safety risk to non-hunting users, and would also disrupt waterfowl hunting. Alternative B also addresses the safety concern presented by the presence of daily waterfowl hunting on privately owned lands immediately adjacent to the public trail throughout the hunting season. This alternative would minimize disturbance to wildlife, decrease conflicts between user groups, and provide safe access for all users throughout the year.

As with Alternative A, this alternative offers new opportunities for public access and fulfills the Service's mandate under the National Wildlife Refuge System Improvement Act of 1997.

Alternative C – Maintain Status Quo - No Non-Hunting Public Use [No Action Alternative]:

Wapato Lake NWR is currently not open to public use except for waterfowl hunting on Tuesdays, Thursdays, and Saturdays during the State season (mid-October-January). The Refuge would remain closed to all public use from February through September. The Refuge would continue to implement restoration of Wapato Lake as outlined in the Environmental Assessment (USFWS 2019). Additional public uses, specifically, wildlife observation, wildlife photography, environmental education and interpretation, would not be permitted under this alternative.

Table 1 below demonstrates the alternatives evaluated in this document.

Table 1: WAPATO LAKE NATIONAL WILDLIFE REFUGE PUBLIC ACCESS ALTERNATIVES.

Wapato Lake National Wildlife Refuge Public Access Alternatives		
Alternative A	Alternative B	Alternative C
<p>From February – Mid-October 3.5 miles of trail open for Public Access. No hunting during this time.</p> <p>From Mid-October – January only 1.65 miles of trail open to Public Access and hunting, during this time. Public can ONLY access on Mondays, Wednesdays, Fridays, Sundays. ONLY selected waterfowl hunting access is allowed on Tuesdays, Thursdays, Saturdays</p>	<p>From February – Mid-October 3.5 miles of trail open for Public Access. No hunting during this time.</p> <p>From Mid-October – January ONLY 1.65 miles of trail open to SELECTED HUNTERS ONLY and CLOSED to all other public uses.</p>	<p>From February – Mid-October Refuge remains CLOSED to all Public Access.</p> <p>From Mid-October – January only 1.65 miles of trail open to SELECTED HUNTERS ONLY and CLOSED to all other public uses.</p>
<p>Definitions: <u>Public Access</u>: Wildlife Observation, Wildlife Photography, Environmental Education and Interpretation, Walking/Hiking</p>		

Alternative: These are the Refuge operational options deemed appropriate based on specifics related to compatibility and existing infrastructure and programs.

Alternative(s) Considered But Dismissed From Further Consideration

Fishing was considered but determined to be infeasible in the lakebed. This is because the Wapato Lake restoration will result in a shallow wetland with dense vegetative cover that is not suitable for fishing. While the creeks surrounding Wapato Lake may provide a more suitable fishing opportunity, more analysis would need to be done to determine where designated fishing locations could be established along the levee system. The Refuge may reevaluate this use in the future.

Recreational boating (motorized and non-motorized) was not found to be an appropriate use of the Refuge, given the current and projected future habitat conditions in the lakebed. Desired habitat conditions under the Restoration Plan (shallow water and dense vegetation during spring and summer) would limit navigation. Use of boats on the lakebed would disturb wildlife using the site for breeding and would negatively impact the restoration efforts of the site. While higher water levels during fall and winter may be more favorable to recreational boating, this time period also corresponds with large numbers of migrating and wintering waterfowl utilizing Wapato Lake. Unfettered boating access between November and February would result in significant disturbance to and displacement of these birds.



U.S. Fish and Wildlife Service

Wapato Lake National Wildlife Refuge

Washington and Yamhill Counties, Oregon

Public Access

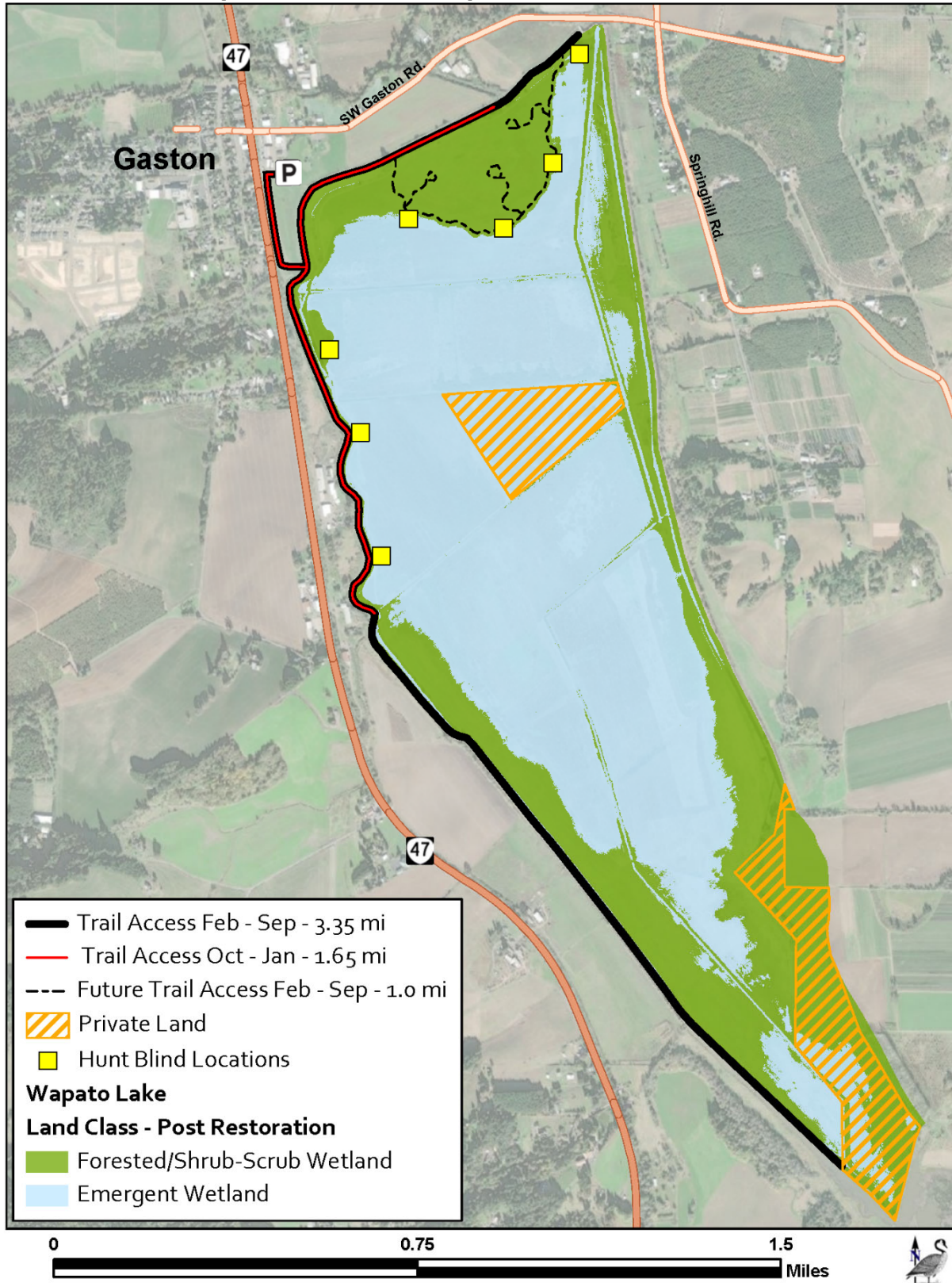


Figure 1. Wapato Lake National Wildlife Refuge public access features under Alternative A.

Affected Environment and Environmental Consequences

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

The Refuge is located adjacent to Gaston, Oregon and seven miles south of Forest Grove, Oregon in both Washington and Yamhill Counties. The Refuge currently consists of 958 acres of fee-simple and conservation easement lands and has an acquisition boundary consisting of 4,370 acres (Figure 2). The acquisition boundary is primarily bounded by State Highway 47 to the west, Spring Hill Road to the east and north, and Flett Road to the south.

Lands within Wapato Lake NWR’s acquisition boundary include agricultural and altered, but not farmed lands dominated by non-native vegetation, approximately three miles of the Tualatin River, numerous tributary streams, remnant fragments of forest, scrub shrub and emergent wetlands, and an approximately 800 acre degraded wetland basin known as Wapato Lake. Since 2013, the Refuge has been working to manage and restore 748 acres of palustrine wetlands within the lakebed and approximately 210 acres of palustrine wetlands and associated uplands on non-lakebed lands.

The proposed action is located on or adjacent to the five miles of levee surrounding Wapato Lake. See map of the general area in Figure 2. The land cover for the proposed public access areas consists of a constructed and natural surfaced dike trail, ruderal habitat (previously or formerly disturbed ground) and agricultural lands, and palustrine and emergent wetlands.

For more information regarding the affected environment, please refer to Wapato Lake NWR Environmental Assessment (USFWS 2019, <https://ecos.fws.gov/ServCat/Reference/Profile/120168>), and Tualatin River National Wildlife Refuge Comprehensive Conservation Plan (USFWS 2013, <https://ecos.fws.gov/ServCat/Reference/Profile/43348>).

Table 2 below shows resources that (1) do not exist within the project area; (2) would either not be affected or only negligibly affected by the proposed action; and (3) do exist in the project area and where there are potentially more than negligible impacts to the resource as a result of the proposed action. Impacts to resources that do not exist in the project area will not be considered further in this EA. Generally, we will not consider resources that would not be affected or only negligibly affected by the proposed action in this EA, but in some cases we will describe negligible impacts to resources of special interest or significance, e.g. to populations of threatened and endangered species and cultural resources.

TABLE 2. POTENTIAL FOR ADVERSE IMPACTS FROM PROPOSED ACTION AND ALTERNATIVES

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

Tables 3-7 provide, for each resource of the refuge:

1. A brief description of the relevant general features of the affected environment;
2. A description of relevant environmental trends and planned actions;
3. A brief description of the affected resources in the proposed action area;

4. Impacts of the proposed action and any alternatives on those resources, including direct and indirect effects.

Table 3. Affected Natural Resources and Anticipated Impacts of the Proposed Action, Alternative B, and No Action Alternatives

NATURAL RESOURCES
Wildlife and Aquatic Species
<p>For years, systematic wintering waterfowl surveys have occurred at Wapato Lake NWR. However, surveys of other wildlife and aquatic species have only recently begun and are not quantified to date. Habitat availability at Wapato Lake for other wildlife and aquatic species is currently fairly limited due to the historic agricultural land use of the site. Ongoing ecological restoration actions will dramatically improve palustrine emergent, shrub-scrub and forested plant communities, providing improved habitat for a broad diversity of wildlife and aquatic species.</p> <p>Birds: 191 species of birds from 45 families have been documented using the Wapato Lake area.</p> <p>The most abundant birds currently observed at Wapato Lake are waterfowl. Waterfowl numbers (both geese and ducks) peak between mid-November to mid-December, when weekly counts document an average of 21,000 birds utilizing the lakebed (USFWS unpublished data). Notable waterfowl surveys where pintail numbers far exceeded the mid-winter average counts include December 2006 where an estimated 66,000 and November 2016 where 40,000 were observed on the lakebed (USFWS unpublished data). In addition, during January 2017, over 8,000 ring-necked ducks and 400 canvasbacks were observed at Wapato Lake (USFWS unpublished data). Furthermore, green-winged teal, northern shoveler, American wigeon, mallards, ruddy ducks, bufflehead, American coot and cackling geese also use Wapato Lake during the wintering period. While not abundant, dusky Canada geese, and tundra and trumpeter swans use Wapato Lake and the surrounding landscape during fall and winter. Most notably, during January 2018, more than three hundred tundra swans were observed on the lakebed. In addition, small breeding populations of mallards, wood ducks, cinnamon teal and gadwall are also present at Wapato Lake in spring and summer.</p> <p>To date, secretive marsh bird use of Wapato Lake has been low. American bittern and sora have been observed during the breeding season where emergent wetland conditions persist. These species are expected to increase in abundance as restoration of Wapato Lake continues, along with other species such as Virginia rail and pied-billed grebe.</p> <p>Great blue heron and great egrets are observed year-round in low numbers, but like secretive marsh birds, are expected to become more abundant post-restoration of Wapato Lake.</p> <p>Although scrub-shrub and forested wetland cover is sparse, Wapato Lake does support a number of breeding neotropical migrants. Olive-sided flycatcher, willow flycatcher, rufous</p>

hummingbird and yellow-breasted chat have all been observed in remnant forest patches along the perimeter of the lakebed. Common perching birds that are present year-round include the song sparrow and white-crowned sparrow. Restoration actions are expected to improve habitat conditions for these species.

Raptors such as red-tailed hawk, northern harrier, and red-shouldered hawk are commonly observed in and around Wapato Lake. One known active bald eagle nest is located just outside the southern end of the lakebed in an Oregon ash dominated forest, and one active osprey nest exists on a human-made platform that sits atop a power pole in the northwestern portion of the lakebed. Bald eagles are observed utilizing Wapato Lake during the winter as well.

Shorebird use of Wapato Lake is generally low and expected to remain low post-restoration. Species such as greater yellowlegs, western and least sandpipers, black-bellied plover, long-billed dowitcher, semipalmated plover, and black-necked stilt, have been observed in small numbers during fall and spring migrations. Species such as killdeer and spotted sandpiper are present year-round and nest along the outer edge of the lakebed in small numbers.

Mammals: While observed infrequently, it is not uncommon to see small herds of black-tailed deer and the occasional coyote. Periodically, a herd of approximately 80 Roosevelt elk uses Wapato Lake. Various bat species and small rodents, such as western pocket gopher, vagrant shrew, and Pacific jumping mouse, have also been observed. Aquatic mammals observed at Wapato Lake include the North American beaver, North American river otter, and the non-native nutria.

Reptiles and Amphibians: Fourteen species of reptiles and amphibians have been documented in the Wapato Lake area (USFWS unpublished data); however, little is known regarding species abundance. They include Pacific chorus frog, northwestern salamander, rough-skinned newt, northwestern garter snake, common garter snake, two Oregon state sensitive species (northern red-legged frog and western pond turtle), and the invasive, non-native bullfrog.

Non-listed Fish and Other Aquatic Fauna: Fourteen species of fish have been observed in the watershed, however, due to the presence of the levee system, most of these species do not occupy Wapato Lake. Many native non-salmonid species are present in streams within the watershed surrounding Wapato Lake, including sculpin, lamprey, dace, largescale sucker, and redbreast shiner. Introduced, non-native species include bluegill, common carp, smallmouth and largemouth bass, yellow perch, and bullhead catfish. Carp and bullhead catfish have been observed in Wapato Lake. During summer 2015, Refuge staff and staff from the Pacific Northwest Native Freshwater Mussel Working Group documented the presence of native western floater mussels and non-native Asian clams in the canal system that surrounds the lakebed and in Wapato Creek just north of the lakebed.

Environmental Trends and Planned Actions Description

The Tualatin River watershed drains 712 square miles and ranges from densely populated areas of southwest Portland, Hillsboro, Tigard, and Beaverton to agricultural areas near

Scholls, Gaston, Banks, Mountindale, and North Plains to the forests of Oregon's Coast Range, Tualatin Mountains, and Chehalem Mountains. Set within a growing and thriving metropolitan area and a large temperate rain forest, the Tualatin River watershed is at the center of a dynamically changing region of the country. Its lowlands, historically and still prevalently agricultural, are giving way to increased residential and industrial development. As the population and economic base of the region has grown, stresses on the Tualatin River watershed have increased (Tualatin River Watershed Council 1999). Most of the fast-growing urban population—more than 560,000 residents—resides in 15 percent of the watershed's area. Agricultural uses make up 35 percent, and 50 percent of the watershed is forest (Clean Water Services).

The watershed has been used and modified by humans for some 6,000 years (Cass 1993). Indigenous people inhabiting the watershed harvested plant and animal resources for subsistence and modified the landscape to enhance their ability to exploit these resources (e.g., using fire to create open savannas) (Cass 1993). Significant alterations to the watershed began post- European settlement circa 1850, driven by increased timber harvest activity, clearing and draining of floodplain wetlands for agricultural development, and modifications to the Tualatin River channel for navigation purposes. With increased economic opportunity came improvements to transportation and urbanization. In fact, since 1920, the rate of population growth in most of the Tualatin River watershed (primarily Washington County) has exceeded that of Oregon's as a whole during every census (Cass 1993).

By 2050, an additional 1.7 million people are expected to live in the Willamette River Basin, bringing the total population to around four million (Willamette Basin Explorer 2009), equivalent to adding three more cities the size of Portland or 13 cities the size of Eugene. Population Research Center forecasted that Washington County will experience a growth rate of 1.1 to 1.2 percent in the next 50 years, increasing the population from approximately 608,000 to 1,078,500 (Population Research Center 2020). The same study showed Gaston's population increasing at a slower pace (between 0.6 and 0.8 percent) in the next 50 years, with a population change from 628 to 900.

Although a number of natural areas have been designated and are maintained in the area by regional partners such as Clean Water Services, Metro, the City of Hillsboro, and others, and the Service is in the process of restoring 800 acres of wetlands at Wapato Lake (USFWS 2019), the modification and loss of functional ecological systems continue at a regional scale. A clear trend of regionally increasing population growth is bringing increased development and associated ecological degradation, particularly in the greater Portland metropolitan area. Invasive species and altered ecosystem processes are widespread within the area. Within this context, region-wide biological integrity may be at risk. National

Wildlife Refuges and regional natural areas will therefore become even more important as repositories of biodiversity.

Climate Change

The climate of Oregon and the Willamette Valley has changed from historic conditions and is predicted to continue to change. The Fifth Oregon Climate Assessment (Dalton and Fleishman 2021) compiled by the Oregon Climate Change Research Institute discusses that Oregon's annual temperature has increased by 2.2°F since 1895 and it is projected that Oregon's temperature will continue to increase on average by 5°F by the 2050s and 8.2°F by the 2080s, with the highest increases in the summer. Precipitation events throughout the state are predicted to increase in the winter and decrease in the summer with an increased proportion of precipitation falling as rain instead of snow. The larger proportion of rainfall and increased temperature are projected to result in less snowpack (60 percent less by 2040) and increased early spring runoff throughout the region (Climate Leadership Initiative 2009).

Specifically, in the Willamette Valley the projected climate changes will affect water temperature, river flows, flooding, and drought frequency. Stream temperatures in the Willamette Valley are projected to increase by 1.8-7.2°F by 2080s (Dalton and Fleishman 2021). This increase in water temperature could negatively impact cooler water species such as Chinook salmon, steelhead, and Oregon chub (Climate Leadership Initiative 2009). The predicted changing precipitation regime of reduced summer rain and decreased snowpack is likely to result in a higher incidence of drought conditions, particularly in the summer growing season. Alternatively, an increase in winter rain and increased storm intensity is projected to increase flooding especially near streams and rivers. The 10-year annual maximum daily flow of the Willamette river is projected to increase 33-50 percent because of increased runoff and storm intensity (Dalton and Fleishman 2021).

The impacts of climate change on wildlife is difficult to predict with certainty. The combination of increasing mean temperatures and changes in precipitation patterns could alter the amount, type, and quality of available wildlife habitat on the Refuge and surrounding areas. Conditions will become less favorable for coldwater fish species. However, increased river flows may cause expansion of wetland areas, at least seasonally, which could benefit aquatic and semi-aquatic species. On the other hand, water quality and quantity may decrease in summer and early fall, with negative impacts to aquatic wildlife and breeding and fall-migrating waterfowl and waterbirds. For example, declines in water quality could potentially lead to secondary effects such as changes in frequency or severity of wildlife disease outbreaks.

Although climate change would be likely to affect both Refuge wildlife and habitats, as described above, land preservation and conservation actions occurring on the Refuge and

by partners in the Tualatin River basin could increase the Refuge's resilience to climate change, and its ability to support native fish and wildlife.

Anticipated Direct and Indirect Impacts

Alternative A (Proposed Action):

Public use would occur on a designated trail on top of the levee system surrounding Wapato Lake and the high ground in the northern part of the lakebed, thus limiting disturbance to levee side slopes adjacent to the trail. Wildlife (including birds, mammals, reptiles, and amphibians) located near the trail system may be temporarily disturbed by the presence of the public. This disturbance, especially when repeated over the course of the year, may result in some wildlife species altering foraging habits, or seeking out new breeding territories by moving to other areas on and off the Refuge. The highest potential for disturbance is associated with wildlife using the dense vegetation that will be present on levee side slopes following restoration actions. Since these public access activities are new, dispersal patterns cannot be predicted, and would also be influenced by habitat conditions on the surrounding landscape. Disturbance would most likely not exceed more than 150 to 200 yards from the designated trails.

Additionally, to support the biological needs of wintering waterfowl, the Refuge proposes to close 1.7 miles of the levee trail to all public access during the high waterfowl use period and hunt season (mid-October-January). This would provide a relatively disturbance free area for waterfowl south of the hunt area. In addition, the open portion of the levee trail (approximately 1.65 miles) would be open to non-hunting use on Mondays, Wednesdays, Fridays, and Sundays, but would be closed to non-hunting use on waterfowl hunt days. Thus, disturbance 150-200 yards from the trail would occur on all days of the week in the northern (non-sanctuary) portion of the Refuge during the fall migration and wintering period.

Numerous waterfowl, songbird species, reptiles and amphibians, and small mammals will occupy the levee side slopes and northern high-ground portions during breeding and non-breeding seasons. The presence of the public on trails could disturb breeding and nesting in dense vegetation on levee side slopes. The impacts would be minor since visitors are required to remain on designated trails. Closure of the south end of the levee trail in fall/winter would also prevent disturbance to an active bald eagle nest located at the southern end of Wapato Lake.

Alternative B: Disturbance to wildlife during the non-hunting season (February-September) would be the same as under Alternative A. Disturbance along the 1.65 hunting access trail would be the same as the No Action alternative from mid-October through January, since this portion of the trail would be closed to non-hunting activities. Disturbance to fall-migrating and wintering birds would be the same as the No Action alternative, since only existing hunting three days per week would occur.

Alternative C (No Action): The no-action alternative would not cause any additional direct or indirect impacts to wildlife and aquatic species because it would maintain the status quo

and not result in any new actions that would disturb and/or displace wildlife, or cause wildlife mortality.

Threatened and Endangered Species and Other Special Status Species

Two ESA-listed threatened or endangered species under National Marine Fisheries Service (NMFS; NMFS 2016) and U.S. Fish and Wildlife Service (USFWS; USFWS 2018a) jurisdiction may occur near the proposed action area (i.e. Wapato Creek); Threatened (Upper Willamette River ESU) Chinook salmon and Threatened (Upper Willamette River ESU) steelhead. Threatened Lower Columbia River coho salmon may be present; however, they are not ESA-listed in the Willamette Basin above Willamette Falls. Critical habitat has been designated for these species, but none occurs in the proposed action area.

According to NOAA Fisheries (personal communication Annie Birnie, September 5, 2018) Chinook are present downstream of the proposed action in the Tualatin River; however, they do not utilize any portion of the proposed action area. Adult and juvenile steelhead could be present in close proximity to the proposed action area in Wapato Creek, which is a degraded, low-gradient, soft-substrate stream channel unsuitable for spawning. Other steelhead life history stages, excluding spawning, could be supported by Wapato Creek.

Temporal use of the Tualatin River by adult and juvenile steelhead is described below (personal communication Annie Birnie NOAA Fisheries, September 5, 2018 and ODFW https://nrimp.dfw.state.or.us/FHD_FPB_Viewer/index.html):

- Upstream adult migration occurs primarily from mid-January through April.
- Adult holding occurs primarily from mid-January through April.
- Adult spawning occurs primarily from mid-February through May.
- Juvenile rearing can occur year-round.
- Juvenile downstream migration occurs primarily from March until mid-August.

Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) and the 1996 Sustainable Fisheries Act, potential adverse effects on Essential Fish Habitat (EFH) are also analyzed. Pacific salmon EFH is designated for Chinook salmon and coho salmon which are found in Wapato Creek, adjacent to Wapato Lake wetland basin.

Environmental Trends and Planned Actions Description

The same environmental trends and planned actions described on pages 11-12 pertain to threatened and endangered species.

Anticipated Direct and Indirect Impacts

Alternative A (Proposed Action): While it is possible that multiple life history stages of listed steelhead and Chinook salmon may be supported in areas adjacent to the proposed action area throughout the year, the probability of occurrence is low (personal comm. Tom

Murtagh ODFW). Steelhead and Chinook salmon would not occupy Wapato Lake due to the presence of the levee system that separates Wapato Creek from Wapato Lake. The proposed public activities are limited to the trail located on top of the existing levee system and the northern high ground; therefore, there is no potential to impact these species.

Although critical habitat has been designated for Threatened (Upper Willamette River ESU) Chinook salmon and Threatened (Upper Willamette River ESU) steelhead, no critical habitat designation occurs for Chinook salmon within the Tualatin River Basin and the closest critical habitat designation for steelhead is in the Tualatin River and Gales Creek more than 3.5 miles north of the proposed action area. The proposed action will therefore have no effect on critical habitat given the distance to the nearest critical habitat designation for listed fish.

Finally, the Wapato Creek area on the outside of the Wapato Lake levee system is designated as EFH for Chinook salmon; however, as stated above, it is located outside of the proposed public access area.

The proposed action will therefore have no effect on Threatened (Upper Willamette River ESU) Chinook salmon and Threatened (Upper Willamette River ESU) steelhead, and no effect on critical habitat or EFH.

Alternative B: Effects to threatened and endangered species would be the same as under Alternative A above.

Alternative C (No Action): The no-action alternative would have no effect on threatened and endangered species because it would maintain the status quo and not result in any actions that would adversely affect threatened and endangered species.

Vegetation (including vegetation of special management concern)

As a result of past and current land use, the lakebed and surrounding area are a patchwork of agricultural and disturbed lands and intact, remnant wetland and uplands. Prior to 2017, Wapato Lake had been drained annually and farmed for nearly a century, largely eliminating native wetland plant communities from the lakebed. Since 2017, Wapato Lake has lain fallow and currently supports a mosaic of non-native and native wetland plant species, including barnyard grass, reed canarygrass, purple loosestrife, smartweed species, willow species, rice cutgrass, water plantain, wapato, cattail, and bulrush.

Vegetation on the tops of the levees is sparse and consists primarily of non-native low stature species.

Scattered patches of native woody vegetation exist in the lakebed along levee toes. For example, a few mature black cottonwood trees exist at the northern and northwestern edge of the lakebed, while willow species, Nootka rose, and rose spirea are common along the entire levee system. Overall, the levee system is dominated by non-native reed canarygrass, Himalayan blackberry, common teasel, and poison hemlock.

The exterior slopes of the levee on the northern half of the lake support a similar plant community to the interior portions of the levee as described above. The levee slopes in the

southern half of the lake are generally more wooded with narrow bands of closed-canopy forest dominated by Oregon ash and black cottonwood and an associated slough sedge understory.

The exterior creeks are perennially inundated; however, their ecological value is generally limited. They are steep-banked, and flow is representative of a low-gradient creek. The creek bottoms are comprised of soft, mucky substrate, and woody vegetation is absent from most of the banks.

Environmental Trends and Planned Actions Description

The same environmental trends and planned actions described on pages 11-12 pertain to vegetation.

Anticipated Direct and Indirect Impacts

Alternative A (Proposed Action): Under this alternative, access to the trail system would be walk-in only from the parking lot. Trails would be located on the existing levee tops and the northern high ground. Given the nature of soils surrounding wetlands (e.g., likely exposed and wet) disturbance and compaction of soils would be expected. Therefore, we would minimize soil compaction, disturbance, and vegetation damage caused by off-trail walking by developing access trails to designated wildlife viewing and photography areas and environmental education study sites. Accessible areas outside of the trail system will be limited to designated locations. Off-trail travel would be prohibited. Fires, overnight camping, and use of boats and off-road vehicles by visitors would be prohibited. Due to the use of established trails, the footprint of disturbance to soils and vegetation is expected to be minimal.

Another concern is the possibility that visitors could unintentionally introduce non-native, invasive plants, particularly *Ludwigia peploides*, which is now considered the worst aquatic invasive plant species in the state of Oregon (Oregon Department of Agriculture). However, visitors may pose no greater risk than other potential vectors such as wildlife. The Refuge would reduce the probability of unintentional invasive plant introductions through outreach and education efforts with the visiting public community and by implementing an Early Detection Rapid Response (EDRR) prevention protocol, aimed at annual monitoring and elimination of high priority invasive plant species like *Ludwigia*. A preliminary plan has been developed to address the potential for invasive plant introductions. Overall, adverse impacts to vegetation are expected to be minor and localized but occur annually over the long-term.

Alternative B: Effects to vegetation would be similar to Alternative A above, but of lower magnitude since trail use would be lower under this alternative.

Alternative C (No Action): The no-action alternative would have no effect on vegetation because it would maintain the status quo and not result in any actions that would affect vegetation.

Table 4. Affected Visitor Use and Experience and Cultural Resources and Anticipated Impacts of the Proposed Action, Alternative B, and No Action Alternatives

VISITOR USE AND EXPERIENCE
<p>The Refuge is currently only open for waterfowl hunting. To date, an extensive, well-established trail system has not been developed in and around the Refuge.</p> <p>Under the proposed Public Access Plan (Alternative A), visitors may participate in wildlife observation, photography, environmental education, interpretation programming and a variety of special programs and events on and adjacent to the five-mile trail system. We anticipate that these uses will be popular year-round.</p>
<p>Environmental Trends and Planned Actions Description</p> <p>Wildlife-Dependent Recreation Opportunities: County, Metro and City-owned nature parks (Fernhill Wetlands, Forest Park, Jackson Bottom Wetlands Preserve, Scoggins Valley Park/Henry Hagg Lake, Tryon Creek State Natural Area, and Tualatin River NWR) currently provide opportunities for wildlife-dependent recreation in the area on the west side of Portland within 30 miles of Wapato Lake NWR. The Tualatin River supports a water trail further downstream that is popular during the summer months. Other entities, including Yamhill County and Metro, are considering developing trails that may link to the Refuge. Over the course of the next decade, it is anticipated that close to 2,000 new acres of land will be accessible to the public as a result of opening portions of Wapato Lake NWR and a large Metro-owned nature park in the Chehalem Mountains (northeast of the Refuge). A Rails to Trails Yamhelas-Westsider Trail system (17 miles of hiking/biking paths) between McMinnville and Gaston has been proposed. Collectively, these actions will likely attract increased numbers of visitors interested in wildlife-dependent recreation from in and around the Portland Metro region.</p>

Anticipated Direct and Indirect Impacts

Alternative A (Proposed Action): The proposed Public Access Plan would provide an additional public access opportunity in the greater Tualatin River watershed. The Plan would provide Refuge visitors with opportunities to enjoy wildlife observation, photography, environmental education, and interpretation; and would complement the Refuge's existing waterfowl hunting program. Conflicts can occur between hunting and the other wildlife-dependent recreation. The preferred alternative would open the Refuge to additional public access, including during the waterfowl-hunting season. The potential for conflicts between hunters and other user groups would be reduced by closing the levee trail to other public access on hunt days. The public would be notified of closures via signs, printed materials, and the Refuge Web site. However, it is possible that some non-hunting visitors may inadvertently access the area during a refuge hunt day. This could negatively impact waterfowl hunters, not only by the presence of people on trails, but by flushing birds. In addition, there are safety concerns resulting from hunting and non-hunting trail use occurring in the same area.

Waterfowl hunting occurs on private lands surrounding the Refuge during the state season. Some waterfowl blinds on private lands are within 200 yards of the Refuge, the closest one being 28 yards, and facing the Refuge trail. To ensure the safety of our visitors and minimize disturbance to hunters on private lands, the Refuge would close sections of the trails affected by these private blinds during hunting season. We would also post boundary signs to clearly convey that visitors may not access private lands from Refuge trails or vice versa. The presence of non-hunting visitors on the 1.6-mile access trail on non-hunt days could disrupt hunting on private lands adjacent to the refuge by disturbing or flushing birds. Allowing non-hunting public access on non-hunt days would provide opportunities for wildlife observation, photography, environmental education, and interpretation during the fall and winter, when the largest concentrations of birds may be observed on the Refuge.

Alternative B: Public access would occur from February through mid-October, outside of the waterfowl hunting season. The closure of the 1.65-mile access trail to non-hunting use from mid-October to January would minimize user group conflicts between hunters and non-hunters. Non-hunters would not inadvertently use the trail on Refuge hunt days and disrupt hunting on either the Refuge or on adjacent private lands. In addition, there would not be safety concerns caused by non-hunting visitors inadvertently using Refuge trails on Refuge hunt days, or any days during the waterfowl hunt season, when hunting is occurring on adjacent private lands. However, the seasonal trail closure would limit the public's opportunities for wildlife observation, photography, environmental education, and interpretation during the fall and winter, when the largest concentrations of birds may be observed on the Refuge.

Alternative C (No Action): No additional public access would occur under the no action alternative; therefore, there would be no conflicts with waterfowl hunting, and no opportunities for wildlife observation, photography, environmental education, and interpretation.

CULTURAL RESOURCES

The abundant waterfowl, rich Labish soils, accessible water, and the lake's eponymous wapato root vegetable, have been important resources for people and wildlife for thousands of years. At the time of contact with Euro-Americans, the watersheds of the Tualatin and Yamhill Rivers were home to the Atfalat'i or Tualatin Indians, sometimes referred to as the Wapato Lake Indians. During the mid-19th century, the Native Americans living around Wapato Lake were moved to a reservation to become part of The Confederated Tribes of the Grand Ronde. Abundant water and rich soils also made the area attractive to Euro-American settlement, including Joseph Gaston, who worked to bring a railroad to the area and developed Wapato Lake as an agricultural enterprise. The soils of the drained lakebed were excellent for the production of onions. Agricultural use of the lake continued over the 20th and 21st centuries. For more detailed information regarding cultural resources in the proposed area, please refer to Wapato Lake NWR Environmental Assessment (USFWS 2019).

Environmental Trends and Planned Actions Description

The same environmental trends that affect the above sections (population growth and climate change) would also affect cultural resources in the Tualatin River Basin, including Wapato Creek. The Refuge area, including Wapato Lake, is culturally significant to the Confederated Tribes of the Grand Ronde. The Complex will continue to collaborate with Tribes on habitat restoration and other planning projects, including the future Visitor Services Plan.

Anticipated Direct and Indirect Impacts

Alternative A (Proposed Action): The facilitation of public use is an undertaking according to Section 106 of the National Historic Preservation Act (NHPA) that can be considered a type of undertaking that has no potential to cause effects on historic properties under 36CFR800.3(a)(1), the implementing regulations of NHPA Section 106. Thus, the project can be considered in compliance with Section 106 with the following conditions:

Inadvertent Discovery –The presence or absence of cultural resources can never be predicted with certainty. The project proponent and all field crews should be advised that if cultural resources are discovered during implementation of the undertaking, work must cease until the FWS project coordinator and the FWS regional archaeologist are notified and an assessment is conducted.

Parking Area is omitted – This determination of effect applies only to the activities described above. The Section 106 path for the parking area will be considered separately as the planning for that facility evolves.

See Appendix 2, Section 106 review form.

Alternative B: Same as Alternative A above.

Alternative C (No Action): The no-action alternative would have no effect on cultural resources because it would maintain the status quo and not result in actions that would disturb any existing cultural resources.

Table 5. Affected Refuge Management and Operations and Anticipated Impacts of the Proposed Action, Alternative B, and No Action Alternatives

REFUGE MANAGEMENT & OPERATIONS
Administration
The Tualatin River NWRC, which includes Wapato Lake and Tualatin River NWRs, is supported by seven full -time permanent employees: a Project Leader (Refuge Manager), Deputy Project Leader, Wildlife Biologist, Administrative Support Assistant, Maintenance professional and two Park Rangers. The general Refuge annual base budget is approximately \$750,000.
Environmental Trends and Planned Actions Description The Complex staff continues to work with partners and the local community to provide an opportunity for the public to enjoy the natural and cultural resources associated with the Wapato Lake NWR. While a portion of staff time will be shifted to manage the additional public use opportunities, a number of staff members have and will continue to engage in various activities associated with the restoration of habitat, infrastructure, and regional opportunities aimed at enhancing the area.
Anticipated Direct and Indirect Impacts <p>Alternative A (Proposed Action): Estimated costs to implement the preferred alternative are \$150,000 for the first-year expenses and \$88,500 recurring annually. In addition, it will also result in Refuge employees spending 10 percent (approximately 1,430 hours) to 20 percent (approximately 2,860 hours) of their time overseeing and implementing the proposed action on the Refuge (for example, managing the environmental education and interpretive programs in conjunction with the development of a volunteer program similar to the Tualatin River NWR). Due to the small size of the staff, all positions on the Complex would be impacted. While this would impact the administration of the Refuge, it would not be significant because the Refuge would still be able to carry out its other priority actions and obligations in meeting the purposes of both Refuges and the mission of the NWRS, such as restoration and management, visitor services, etc. The proposed action would facilitate the development of a public use program at Wapato Lake NWR.</p> <p>Alternative B: The cost to administer the program would be slightly less than Alternative A above. The staff would spend less time overseeing and implementing the programs during the fall and winter season.</p> <p>Alternative B (No Action): The no-action alternative would have no effect on the administration of the Complex because it would maintain the status quo and not result in any actions that would affect the budget or employee time.</p>

Table 6. Affected Socioeconomics and Anticipated Impacts of the Proposed Action, Alternative B, and No Action Alternatives

SOCIOECONOMICS

Local and regional economies

Wapato Lake NWR is located adjacent to Gaston, Oregon, which has a population of about 700. Forest Grove, approximately 7.5 miles to the northwest, is the largest city in proximity to the Refuge, with a population of about 24,000. In addition, the Refuge is located on the edge of the Portland metropolitan area with a population of about 1.5 million.

In 2018, Washington County farm and ranch gross sales totaled nearly \$292 million, placing the county seventh in the State in total farm sales; Yamhill County sales were over \$269 million, placing ninth in the State (Oregon Agricultural Statistics Service 2012–2013). In nursery and greenhouse crops, Washington County ranked third with sales of nearly \$147 million, while Yamhill County ranked fourth at nearly \$86 million. While agriculture comprises the main economic activity around the Refuge, the growth and diversification of the non-farm economy has likely reduced the relative contribution agriculture makes to both counties' total economies.

Environmental Trends and Planned Actions Description

The greater Portland-Vancouver area is considered urban; however, large parts of the area surrounding the Wapato Lake NWR and the town of Gaston are primarily considered rural. The Refuge lies within both Washington and Yamhill Counties. The population in Washington County has been experiencing one of the most rapid growth rates in the country. Between 1950 and 2018, Washington County's population increased from 61,269 to 597,695, a rate faster than both the state and national average (USCB 2019). Yamhill County is also experiencing growth, increasing from 33,484 in 1950 to 107,002 in 2018 (USCB 2019).

In the near to mid-term it is likely that agriculture would continue to comprise the main economic activity in the Refuge area; however given population growth trends we would expect increasing residential and non-farm commercial land use over time. In conjunction with a growing population, demand for public recreation would likely increase.

Area Land Use: The area adjacent to the Refuge may experience an increase in traffic and a potential boost to the local economy.

Anticipated Direct and Indirect Impacts

Alternative A (Proposed Action): Under Alternative A, the Refuge would provide recreational opportunities for both the local community and urban residents from the greater Portland metro area, year-round. Visitation would increase markedly compared to the No Action alternative and would occur year-round. This increase in visitation would have a positive impact on the local economy of Gaston, Oregon, since visitors are likely to patronize small local businesses such as the coffee shop, market and other food services.

However, this impact would be minor as a percentage of total economic activity in the local area.

Alternative B: Under Alternative B, the Refuge would provide recreational opportunities for both the local community and urban residents from the greater Portland metro area seasonally, from February to mid-October. Visitation would increase compared to the No Action alternative, but would be lower than under Alternative A. This increase in visitation would have a positive impact on the local economy of Gaston, Oregon. However, this impact would be minor as a percentage of total economic activity in the local area.

Alternative C (No Action): Under the no action alternative, Refuge visitation would remain low (limited to waterfowl hunters during the hunt season) and impact on local and regional economies would remain the same.

ENVIRONMENTAL JUSTICE

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all Federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.

Environmental Trends and Planned Actions Description

There are no current trends that might affect the implementation of this Plan.

Anticipated Direct and Indirect Impacts

The Service has not identified any potential high or adverse environmental or human health impacts from any of the alternatives. Minority or low-income communities would not be disproportionately affected by any impacts from the proposed action alternative (Alternative A), Alternative B, or the no action alternative (Alternative C). The opening of the Refuge to wildlife observation, wildlife photography, interpretation, and environmental education under Alternatives A and B would provide an opportunity for all visitors to enjoy the Refuge regardless of their income and ethnic identity.

INDIAN TRUST RESOURCES

The Refuge lands, especially the wetland basin, represent an important area for the local Native American population, especially the Confederated Tribes of Grand Ronde.

Environmental Trends and Planned Actions Description

The Refuge staff has been working with members of the Tribe on communication reflective of the cultural and natural significance of the site, which will be incorporated in both the interpretive and environmental education programs and facilities.

Anticipated Direct and Indirect Impacts

Alternative A (Proposed Action): There are no Indian Trust Resources on this Refuge and the proposed action alternative (Alternative A), Alternative B, or the no action alternative (Alternative C) would not impact any Indian Trust Resources. However, given the historical and cultural significance of this area to local Tribes, the Refuge will continue to collaborate with the Confederated Tribes of the Grand Ronde on the development of visitor services programs, facilities, and communications, including the development of a Visitor Services Plan, in the future.

PRIVATE LANDS

Wapato Lake is bounded by private land around most of its perimeter. The private land is primarily farmland; however, smaller-lot residential areas exist on the northeastern and western edges of the lakebed.

Currently, approximately 2,890 acres within the Refuge's 4,370 acre approved acquisition boundary are privately owned, including 81 acres of private inholdings that include portions of the levee and the central and southern portions of the lakebed.

On the west side of the lakebed an access easement exists that provides ingress and egress across Refuge lands for one owner of an approximately 30-acre inholding located in the center of the lakebed.

An additional inholding is in the southern portion of the lakebed.

Environmental Trends and Planned Actions Description

We will continue working with private landowners to enhance and/or develop restoration or public use opportunities where practical. We would continue to work with willing sellers to acquire lands within the Refuge's acquisition boundary.

Anticipated Direct and Indirect Impacts

Alternative A (Proposed Action): Implementation of the preferred alternative and facilitation of public access could result in negative impacts to landowners directly adjacent to the trail system, or where private land is accessible from the trail, in the form of privacy concerns, noise, and trespassing. Adjacent landowners include private residences, businesses, and active farms. The impacts may include disturbance from visitor presence and movement. Some adjacent landowners engage in hunting on their properties which may represent a concern for Refuge visitors. Visitors may also pose a disturbance factor for hunters on adjacent private lands and inholdings. The Plan includes measures to reduce disturbance to, and conflicts with, adjacent private landowners and hunters on private lands, for example, closing portions of the levee trail during the hunt season, and use of regulatory and trail signage.

Alternative B: As under Alternative A, facilitation of public access under Alternative B could result in negative impacts to landowners directly adjacent to the trail system, or where private land is accessible from the trail, in the form of privacy concerns, noise, and trespassing. Adjacent landowners include private residences, businesses, and active farms.

The impacts may include disturbance from visitor presence and movement. However, there would be no impacts to hunting on adjacent private lands under this alternative since non-hunting public access to Refuge trails would occur outside the hunting season.

Alternative C (No Action): Under the no action alternative, level of public use would remain the same, and be limited to use of a portion of the levee trail by waterfowl hunters during the waterfowl season only. Therefore, impacts to local landowners would remain the same as present.

Mitigation Measures and Conditions

The Refuge is evaluating various ways to mitigate potential impacts to wildlife and their habitats by limiting access to various parts of the lake both spatially and temporally. The seasonal closure of 1.7 miles of the levee trail to all uses during the hunting and peak waterfowl use season would intend to provide wintering waterfowl with an area free from disturbance from hunting or other uses.

Monitoring

The Service would maintain compliance with Refuge regulations through Service law enforcement officers and in partnership with the local sheriff's officer. The Refuge would continue biological monitoring at Wapato Lake NWR in accordance with the Refuge's approved Inventory and Monitoring Plan.

Summary of Analysis:

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

Alternative A – Proposed Action Alternative

As described above, Alternative A would result in minor, long-term adverse impacts on wildlife, especially during the winter season. Wildlife would be subjected to localized disturbance and may be periodically displaced from feeding and resting areas because of visitor presence; however, this could be partially offset with limiting access to specific areas during the peak waterfowl use season.

Alternative A would also result in minor, long-term adverse impacts to native vegetation, wildlife, and aquatic species because of trail use, and visitors navigating to and from photo blinds, overlooks, and other visitor facilities, but the footprint of any permanent vegetation disturbance would represent a small percentage of the total area of Wapato Lake, and disturbance to other wildlife would be of short duration around Wapato Lake.

While Alternative A will result in increases in wildlife-dependent recreation opportunities on the Refuge and economic benefit to the local community, as summarized above, none of the impacts, even when accumulated, would be significant on the human environment.

Under Alternative A, there are potential user group conflicts and safety concerns presented by allowing non-hunting visitors to access the Refuge on alternate days during the hunt season.

Allowing hunting and non-hunting use on alternate days may be confusing for some users, and result in non-hunting visitors accessing the Refuge on hunt days. However, Alternative A is the Service's proposed action because it offers the most opportunities for wildlife observation, wildlife photography, interpretation, and environmental education, while resulting in minimal impacts to physical and biological resources. It is important to note that a number of safety mitigation measures will be implemented, to allow safe access for all users on a maximum number of days. Opening the Refuge to these activities as proposed under this alternative would meet the need of the Refuge under the NWRSA to provide for compatible, wildlife-dependent recreational opportunities.

Based on the above analyses, the Service has determined that Alternative A, the Service's proposed action alternative, would not have any significant impact on the human environment.

Alternative B:

Under Alternative B, the public would be able to access the Refuge for wildlife observation, wildlife photography, interpretation, and environmental education seasonally only, from February to Mid-October. The Refuge would remain closed to these uses during the three and a half months of the waterfowl hunting season, limiting access for certain users. This alternative addresses the potential user group conflicts and safety concerns that may be present if visitors inadvertently access the Refuge on days when active waterfowl hunting is taking place. In addition, this alternative addresses safety concerns during the waterfowl season as a whole, since private landowners may engage in waterfowl hunting seven days a week per ODFW regulations. Alternative B would also result in lower wildlife disturbance than Alternative A, since disturbance would be limited to hunt days during the waterfowl hunt season.

Alternative C – No Action Alternative

As described above, under Alternative B, the Refuge would remain open to waterfowl hunting but closed to all other uses. Impacts to wildlife, habitat, and socioeconomics would remain unchanged.

List of Sources, Agencies and Persons Consulted:

City of Gaston:

David Meeker, Mayor
Andrew Sewell, City Council Member
Rick Mapes, Public Works Director

Confederated Tribes of Grand Ronde:

Greg Archuleta, Confederated Tribes of Grand Ronde

Friends of the Tualatin River NWR:

Bonnie Anderson, Board Member and Administrative Officer
Alan Christenson, Past-President

U.S. Fish and Wildlife Service, DOI Columbia-Pacific NW Region:

Larry Klimek, Project Leader, Tualatin River NWR Complex

Eva Kristofik, Deputy Project Leader, Tualatin River NWR Complex

Richard Curt Mykut, Wildlife Biologist, Tualatin River NWR Complex

Todd McKinney, Administrative Support Specialist, Tualatin River NWR Complex

Ken Morris, Conservation Planner, DOI Columbia-Pacific NW Region

Nick Valentine, Cultural Resources, DOI Columbia-Pacific NW Pacific Region (retired)

References:

Cass, P.L. 1993. The Historical Tualatin River Basin. Oregon Water Resources Research Institute, Oregon State University. Tualatin River Watershed Council. 1999. Tualatin River Watershed Action Plan.

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ER -

Population Research Center, Portland State University. 2020. Coordinated Population Forecast 2020 through 2070, Washington County Urban Growth Boundaries (UGB) and Area Outside UGBs, Oregon

Tualatin River Watershed Council. 1999. Tualatin River Watershed Action Plan.

U.S. Fish and Wildlife Service. 2019. Wapato Lake National Wildlife Refuge Environmental Assessment. Sherwood, OR: Tualatin River National Wildlife Refuge.

U.S. Fish and Wildlife Service. 2020. Wapato Lake National Wildlife Refuge Environmental Assessment for Waterfowl Hunting Plan. Sherwood, OR: Tualatin River National Wildlife Refuge Complex.

U.S. Fish and Wildlife Service. 2013. Tualatin River National Wildlife Refuge, Comprehensive Conservation Plan and Environmental Assessment. Sherwood, OR: Tualatin River National Wildlife Refuge.

List of Preparers:

Eva Kristofik, Deputy Project Leader, Tualatin River NWR Complex

Larry Klimek, Project Leader, Tualatin River NWR Complex (Retired)

Richard Curt Mykut, Wildlife Biologist, Tualatin River NWR Complex

Todd McKinney, Park Ranger, Tualatin River NWR Complex

Coordination with State, County, and Local Government Agencies:

Discussions with ODFW staff over potentially opening a hunt program and other wildlife dependent recreation activities at Wapato Lake NWR have been ongoing for many years. More recent discussions were focused on Refuge staff soliciting advice from ODFW on what they saw as viable options for hunting in addition to potential conflicts with other recreational activities at Wapato Lake NWR. ODFW responded by providing recommendations regarding waterfowl hunting and some suggestions on mitigating conflicting uses. Those recommendations were used in developing the waterfowl hunt plan along with supporting documents and the proposed public use activities in this EA.

The Refuge staff has been coordinating with the city of Gaston to provide public facilities i.e. parking and restroom facilities. In addition, ongoing discussions with local partners include Metro, Clean Water Services, and the environmental education staff at Jackson Bottom Wetland Preserve.

Tribal Consultation:

Tribal interests are an integral part of the restoration of Wapato Lake wetland basin and recreational opportunities on the Refuge. The Refuge staff will continue to coordinate and collaborate with the local Tribes.

Discussions with members of the Confederated Tribes of Grand Ronde (CTOGR) regarding opening Wapato Lake NWR to public access activities, hunting, and ongoing restoration have been ongoing. On December 17th, 2019, Refuge staff met on site with Tribal Chairwoman Cheryle A. Kennedy, Council Member Denise Harvey, and Cultural Policy Analyst Greg Archuleta. Also, on October 18th, 2019, Project Leader Larry Klimek met with Mr. Archuleta. In addition, on February 19th, 2020, Refuge staff met with Greg Archuleta and Michael Karnosh to discuss public use, including hunting, plantings, and future gathering opportunities. More recently, Refuge Park Rangers Todd McKinney and Natalie Balkam have met and coordinated with Greg Archuleta and other members of the CTOGR staff in relation to interpretive programs at Wapato Lake. The Tribe participated in the development of the Tualatin River NWR Comprehensive Conservation Plan (2013) which addresses the future potential for public use at Wapato Lake NWR. The Tribe will be provided a copy of this Draft EA and Public Access Plan and invited to provide comments, prior to issuance of the Draft EA and Public Access Plan for public comment.

Public Outreach:

This Draft EA and Public Access Plan will be posted on the Refuge website and public comments will be solicited. The Refuge will be sending a notice to local residence inside of their utility bills. Copies will also be available at City Hall, 116 Front Street, Gaston, OR 97119.

Comments or requests for additional information may be submitted through any of the following methods:

Email: tualatinriver@fws.gov. Include "Wapato Lake Public Access" in the subject line of the message.

Fax: Attn: Wapato Lake NWR Public Access (503) 625-5944.

Mail: U.S. Fish and Wildlife Service, Attn: Eva Kristofik, Deputy Project Leader, 19255 SW Pacific Highway, Sherwood, OR 97140

All comments received from individuals become part of the official public record. We will handle all requests for such comments in accordance with the Freedom of Information Act and the CEQ's NEPA regulations in 40 CFR 1506.6(f). The Service's practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours. Individual respondents may request that we withhold their home address from the record, which we will honor to the extent allowable by law. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comments.

Determination:

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

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

Preparer Signature: _____ Date: _____

Name/Title/Organization: _____

Reviewer Signature: _____ Date: _____

Name/Title: _____

APPENDIX 1

OTHER APPLICABLE STATUTES, EXECUTIVE ORDERS & REGULATIONS

STATUTES, EXECUTIVE ORDERS, AND REGULATIONS	
<p>Cultural Resources</p> <p>American Indian Religious Freedom Act, as amended, 42 U.S.C. 1996 – 1996a; 43 CFR Part 7</p> <p>Antiquities Act of 1906, 16 U.S.C. 431-433; 43 CFR Part 3</p> <p>Archaeological Resources Protection Act of 1979, 16 U.S.C. 470aa – 470mm; 18 CFR Part 1312; 32 CFR Part 229; 36 CFR Part 296; 43 CFR Part 7</p> <p>National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470-470x-6; 36 CFR Parts 60, 63, 78, 79, 800, 801, and 810</p> <p>Paleontological Resources Protection Act, 16 U.S.C. 470aaa – 470aaa-11</p> <p>Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001-3013; 43 CFR Part 10</p> <p>Executive Order 11593 – Protection and Enhancement of the Cultural Environment, 36 Fed. Reg. 8921 (1971)</p> <p>Executive Order 13007 – Indian Sacred Sites, 61 Fed. Reg. 26771 (1996)</p>	<p>A Section 106 review (Appendix 2) concluded that the facilitation of public use is an undertaking according to Section 106 of the National Historic Preservation Act (NHPA) that can be considered a type of undertaking that has no potential to cause effects on historic properties under 36CFR800.3(a)(1), the implementing regulations of NHPA Section 106. Thus, the project can be considered in compliance with Section 106 with the following conditions:</p> <p>Inadvertent Discovery –The presence or absence of cultural resources can never be predicted with certainty. The project proponent and all field crews should be advised that if cultural resources are discovered during implementation of the undertaking, work must cease until the FWS project coordinator and the FWS regional archaeologist are notified and an assessment is conducted.</p> <p>Parking Area is omitted – This determination of effect applies only to the activities described above. The Section 106 path for the parking area will be considered separately as the planning for that facility evolves.</p>
<p>Fish & Wildlife</p> <p>Bald and Golden Eagle Protection Act, as amended, 16 U.S.C. 668-668c, 50 CFR 22</p> <p>Endangered Species Act of 1973, as amended, 16 U.S.C. 1531-1544; 36 CFR Part 13; 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, and 450</p> <p>Fish and Wildlife Act of 1956, 16 U.S.C. 742 a-m</p>	<p>The proposed action would have no effect on Threatened (Upper Willamette River ESU) Chinook salmon and Threatened (Upper Willamette River ESU) steelhead, and no effect on critical habitat or essential fish habitat..</p> <p>The proposed action is consistent with the Bald and Golden Eagle Protection Act, Fish and Wildlife Act of 1956, the Lacey Act, the Migratory Bird Treaty Act, and Executive Order 13186 because the Public Access Plan, and stipulations in Compatibility Determinations and permits would be designed to minimize impacts to eagles and migratory birds.</p>

<p>Lacey Act, as amended, 16 U.S.C. 3371 et seq.; 15 CFR Parts 10, 11, 12, 14, 300, and 904</p> <p>Migratory Bird Treaty Act, as amended, 16 U.S.C. 703-712; 50 CFR Parts 10, 12, 20, and 21</p> <p>Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001)</p>	
<p>Natural Resources</p> <p>Clean Air Act, as amended, 42 U.S.C. 7401-7671q; 40 CFR Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR Part 23</p> <p>Wilderness Act, 16 U.S.C. 1131 et seq.</p> <p>Wild and Scenic Rivers Act, 16 U.S.C. 1271 et seq.</p> <p>Executive Order 13112 – Invasive Species, 64 Fed. Reg. 6183 (1999)</p>	<p>The Service has evaluated the suitability of Wapato Lake NWR for wilderness designation and concluded that the Refuge does not meet the basic criteria for inclusion into the National Wilderness Preservation System.</p> <p>The Service has evaluated the eligibility of streams on Wapato Lake Refuge for wild and scenic river designation and concluded no streams meet the basic criteria for inclusion into the National Wild and Scenic Rivers System</p> <p>The proposed action would have negligible effects to air quality.</p> <p>The proposed action is consistent with Executive Order 13112 because the Public Access Plan, and stipulations in Compatibility Determinations permits would be designed to prevent the introduction of invasive species.</p>
<p>Water Resources</p> <p>Coastal Zone Management Act of 1972, 16 U.S.C. 1451 et seq.; 15 CFR Parts 923, 930, 933</p> <p>Federal Water Pollution Control Act of 1972 (commonly referred to as Clean Water Act), 33 U.S.C. 1251 et seq.; 33 CFR Parts 320-330; 40 CFR Parts 110, 112, 116, 117, 230-232, 323, and 328</p> <p>Rivers and Harbors Act of 1899, as amended, 33 U.S.C. 401 et seq.; 33 CFR Parts 114, 115, 116, 321, 322, and 333</p> <p>Safe Drinking Water Act of 1974, 42 U.S.C. 300f et seq.; 40 CFR Parts 141-148</p> <p>Executive Order 11988 – Floodplain Management, 42 Fed. Reg. 26951 (1977)</p>	<p>The Refuge does not lie in a coastal zone, and contains no rivers, harbors, or navigable waters.</p> <p>There would be negligible impacts of the proposed action on water quality or water resources.</p> <p>The Refuge contains no drinking water sources and does not supply drinking water to any community.</p> <p>The proposed action is consistent with Executive Order 11990 because implementation of the Public Access Plan would protect existing wetlands.</p> <p>The proposed action is consistent with Executive Order 11988, because implementation of the Public Access Plan would not result in the modification or destruction of floodplains.</p>

Executive Order 11990 – Protection of Wetlands, 42 Fed. Reg. 26961 (1977)	
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APPENDIX 2. SECTION 106 REVIEW



United States Department of the Interior

FISH AND WILDLIFE SERVICE

20555 SW Gerda Lane

Sherwood, Oregon 97140

Phone: 503-625-4377, fax: 503-625-4887



In Reply Refer to: FWS/IR09/IR12

20 March 2020

To: Larry Klimek
Program: Refuges
Funding: Refuges

From: Anan Raymond, Regional Archaeologist

RE: Section 106 Compliance: **Wapato Lake NWR - Public Use** – Washington County, Oregon

Thank you for requesting our assistance meeting the responsibilities of the U.S. Fish and Wildlife (FWS) in complying with Section 106 of the National Historic Preservation Act (NHPA) for a public use proposal at Wapato Lake NWR in Washington County, Oregon (T1S, R4W, S35, 26 and T2S, R4W, S1, 2, 11, 12, Laurelwood, Gaston 7.5' USGS quad) (Figure 1 and 2).

Undertaking and APE: According to the information provided to our office, the refuge proposes to allow public use on the Wapato Lake NWR, which will consist of the following five priority uses: hunting, interpretation, environmental education, wildlife observation and photography. Use will be year-round during daylight hours with the exception of waterfowl hunting which will allow access 1 ½ to 2 hours before sunrise. Public use will be facilitated by:

- 1) construction of a trail on the top of the levees.
- 2) construction of a parking lot

Both features will be installed using the same methods. Six inches of topsoil will be removed and replaced with 6 inches of crushed rock over a geotextile fabric. In addition, the parking lot will have car blocks installed to differentiate parking spaces and a restroom with a pit vault. A trail will be built to connect the parking lot with the existing access point. The parking lot is still in the planning stages.

Use will be limited to the levees around Wapato Lake, access to waterfowl hunt blinds adjacent to the levees, a parking lot on City of Gaston land outside the lakebed and the access road/trail from the parking lot to the pedestrian bridge.

The APE consists of the physical footprint where project activities will occur on top of the levees and in the location of the parking lot, a total of .5 acres.

Background and Land Use History: The project occurs on the Wapato Lake NWR in Gaston, Oregon. Because of its abundant waterfowl, rich Labish soils, accessible water, and the lake's eponymous wapato root vegetable, Wapato Lake has been providing resources for people and wildlife for thousands of years. The

INTERIOR REGION 8
LOWER COLORADO BASIN

INTERIOR REGION 9
COLUMBIA-PACIFIC
NORTHWEST

INTERIOR REGION 10
CALIFORNIA-GREAT BASIN

INTERIOR REGION 12
PACIFIC ISLANDS

CALIFORNIA*
*PARTIAL

IDAHO, MONTANA*,
OREGON*, WASHINGTON
*PARTIAL

CALIFORNIA, NEVADA

AMERICAN SAMOA, GUAM,
HAWAII, NORTHERN
MARIANA ISLANDS

watersheds of the Tualatin and Yamhill Rivers were home to the Atfalat'i or Tualatin Kalapuyans, sometimes referred to as the Wapato Lake Indians. The lake shore was known to be a seasonal gathering place for the bands of Kalapuyans. The environment also made the area attractive to Euro-American settlement, including Joseph Gaston, who worked to bring a railroad to the area and developed Wapato Lake as an agricultural enterprise in the 1870s. The soils of the drained lake bed have proven excellent for the production of onions throughout the 20th century. Wapato Lake NWR was established in 2007 and the FWS has been acquiring acreage within the approved boundaries. Currently, FWS owns and manages 958 acres within the 4370-acre acquisition boundary.

The FWS previously contracted with Willamette Cultural Resource Associates, Ltd. (WCRA) to undertake a comprehensive cultural resources study of the Refuge lands to help inform and guide management planning and implementation (Paraso et al 2018 and 2019). The study provided a context for better understanding and evaluating the cultural resources that occur or are likely to occur on the Refuge. It included review of reports, records, and other historic documents, and pedestrian survey and subsurface probing in areas identified as high probability.

The background research suggested that there is a high probability for precontact archaeological resources outside the APE in uplands adjacent to historic Wapato Lake bed and along natural drainages, while evidence of resource gathering on the various low water shorelines and interior of the lake may have been disturbed or destroyed by subsequent agricultural activity (Paraso et al 2019:35). The authors also note that the potential for evidence of homesteading is likely low, given the perpetually wet setting and long history of agriculture in the APE. The Wapato Lake Drainage System constitutes the primary representation of the farming history.

Field Identification Effort: The levees were surveyed as part of the 2019 field identification effort by WCRA. No cultural resources were observed, and the potential for intact cultural resources within the proposed disturbance area is low.

Because planning for the parking area is still in the planning stages and is not currently owned by the refuge, no field identification effort has been conducted in that area associated with this or other refuge projects. As a result, we recommend that the parking lot be considered separately from the rest of the public use infrastructure for the purposes of Section 106. Thus, it is not part of the following determination of effect.

Determination of Effect: The construction of a trail on top of the levees has previously been considered under Section 106 and facilitation of public use is an undertaking according to Section 106 of the National Historic Preservation Act (NHPA) that can be considered a type of undertaking that has *no potential to cause effects on historic properties* under 36CFR800.3(a)(1), the implementing regulations of NHPA Section 106. Thus, the project can be considered in compliance with Section 106 with the following conditions:

Inadvertent Discovery –The presence or absence of cultural resources can never be predicted with certainty. The project proponent and all field crews should be advised that if cultural resources are discovered during implementation of the undertaking, work must cease until the FWS project coordinator and the FWS regional archaeologist are notified and an assessment is conducted.

Parking Area is omitted – This determination of effect applies only to the activities described above. The Section 106 path for the parking area will be considered separately as the planning for that facility evolves.

SHPO Consultation: Because the FWS undertaking to construct a trail on top of the levees has been previously considered and allowing public use on the refuge has been determined to be an activity of a type that has no potential to cause effect, no SHPO consultation was conducted by the FWS.

Tribal Consultation: It is our understanding that you and your staff are working in partnership with the Confederated Tribes of Grand Ronde (CTGR) regarding public use and interpretation at Wapato Lake NWR. No project-specific tribal consultation was conducted by the Cultural Resources Team for this project.

If project activities or locations change, the regional archaeologist should be notified in order to determine whether additional fieldwork is warranted.

Thank you for considering cultural resources.

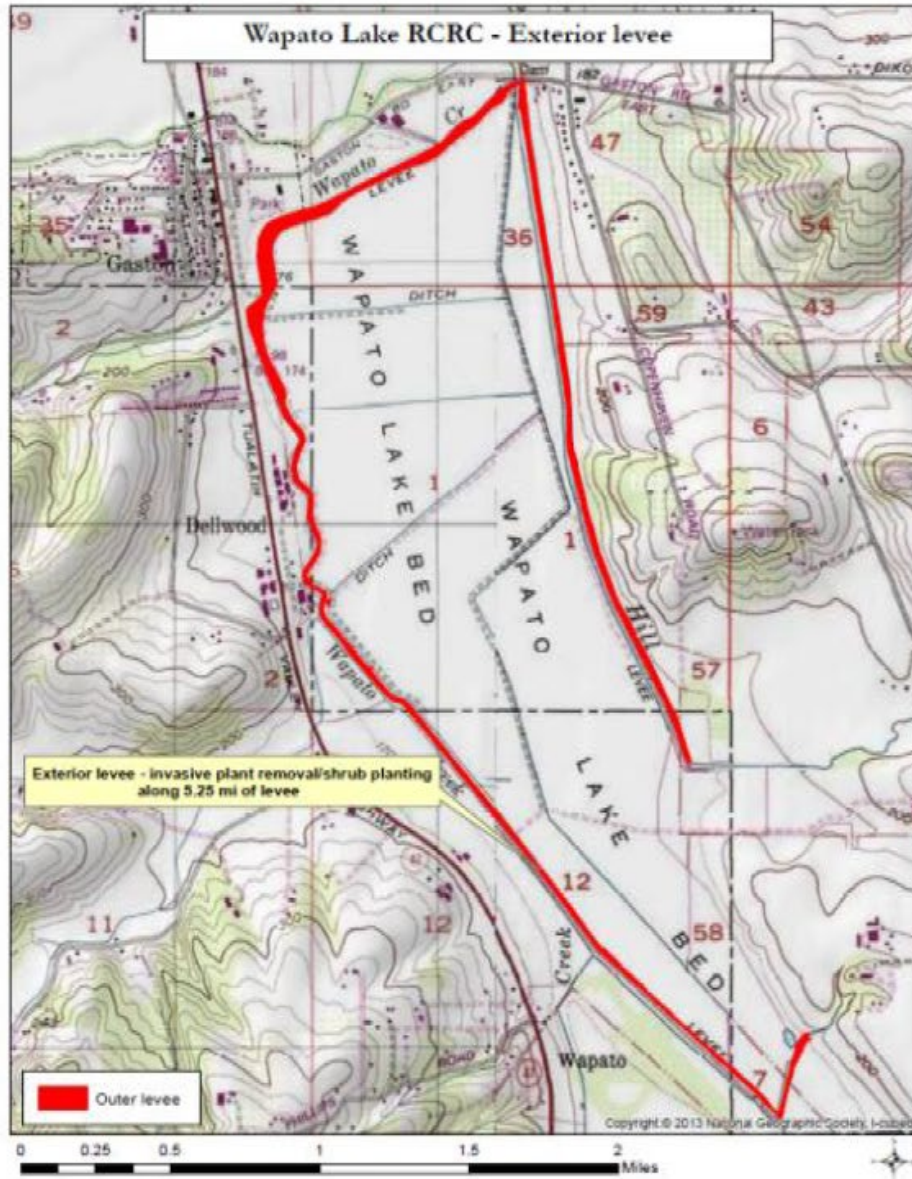
A handwritten signature in blue ink that reads "Anan Raymond". The signature is fluid and cursive, with the first name "Anan" and last name "Raymond" clearly legible.

Anan Raymond, Regional Archaeologist



PROJECT NAME: Wapato Lake NWR - Public Use

LOCATION INFORMATION:		FWS Unit	Wapato Lake NWR	Township	Range	Section	PROJECT ACRES
County	Washington	USGS Topo		1S	4W	35, 36	Total
State	Oregon			2S	4W	1, 2, 11, 12	1000
Program	Refuges	Field Contact					APE
Funding	Refuges	Klimek, L					0.5



Note: Section 106 compliance assistance is being provided solely for the activities as defined in the request for cultural resource compliance submitted to the CRT for the project. Changes to the planned activities and any future projects in this area may be subject to additional Section 106 compliance efforts.

Figure 1. Project location on Laurelwood, Gaston 7.5' USGS quads.



U.S. Fish and Wildlife Service

Wapato Lake National Wildlife Refuge

Washington and Yamhill Counties, Oregon

Proposed Waterfowl Hunting - Open and Closed Areas

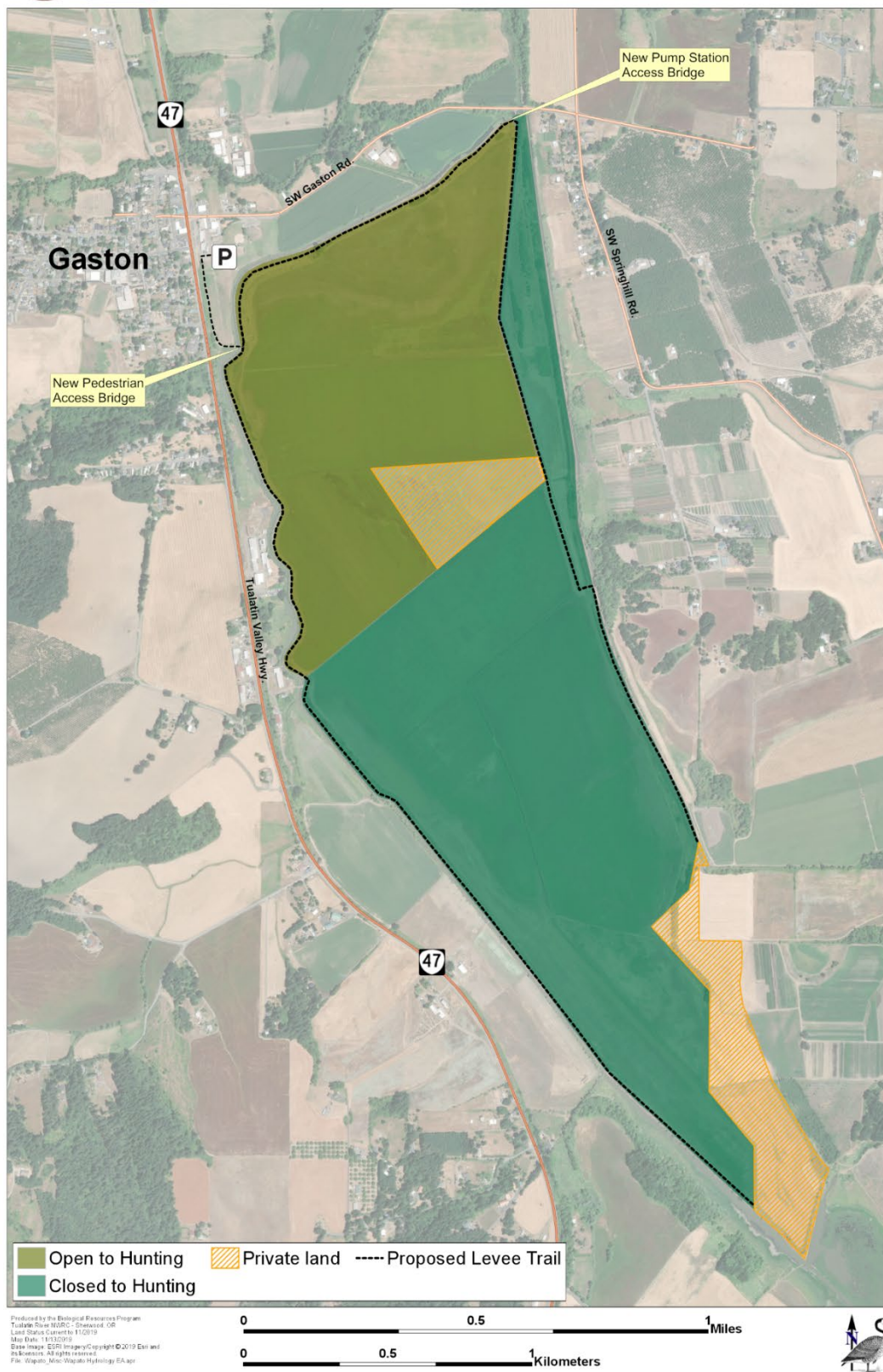


Figure 2. Project activities illustrated on aerial photograph.

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**Appendix C. Wapato Lake National Wildlife Refuge
Compatibility Determinations for Wildlife Observation, Wildlife Photography,
Interpretation, and Environmental Education**

Draft Compatibility Determination

Title

Draft Compatibility Determination for Wildlife Observation and Photography, Wapato Lake National Wildlife Refuge

Refuge Use Category

Wildlife Observation and Photography

Refuge Use Type(s)

Photography

Photography, video, filming, or audio recording (news and educational)

Wildlife observation

Refuge

Wapato Lake National Wildlife Refuge

Refuge Purpose(s) and Establishing and Acquisition Authority(ies)

“... for the development, advancement, management, conservation, and protection of fish and wildlife resources ...” 16 U.S.C. § 742f(a)(4), Fish and Wildlife Act of 1956

“... 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)

“... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ...” 16 U.S.C. § 3901(b), Emergency Wetlands Resources Act of 1986

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System, otherwise known as 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 (Pub. L. 105-57; 111 Stat. 1252).

Description of Use

Is this an existing use?

No.

What is the use?

Photography. Refuge visitation for the purpose of photographing refuge natural or cultural resources (including fish, wildlife, plants, and their habitats) or public uses of those resources (not for commercial, news, or educational purposes).

Photography, video, filming, or audio recording (news and educational). Activity involving photography, videography, filming, or other recording of sight or sound for news, public information, or educational purposes.

Wildlife observation. Viewing of fish, wildlife, plants, or their habitats by refuge visitors.

Is the use a priority public use?

Yes

Where would the use be conducted?

Wildlife observation and photography would be limited to developed facilities and trails: the entrance parking lot area, the levee trail system, future photography blinds, and potentially in other developed trails on the Refuge once lakebed restoration is complete. Other areas of the refuge would remain closed to these uses. Refuge-approved guided activities (tours, workshops, and demonstrations) and activities associated with special events would be limited to these developed facilities and trails, with the exception of special event activities approved by the refuge manager. Activities occurring outside of developed facilities and trails would generally be conducted under a special use permit (SUP). While approved special event activities may occur off-trail in open areas of the Refuge, no special access to closed areas will be granted.

The areas to be opened to wildlife observation and wildlife photography include a 3.35-mile hiking trail located on the levee along the north and west sides of Wapato Lake; the public access point at the main parking lot, which is connected to the paved entrance trail that leads to the pedestrian bridge and trail; an approximately 30-acre area of high ground on the northern end of the lakebed; and the hunting and photo blinds. See Environmental Assessment for the Public Access Plan (EA), Figure 1 (USFWS 2021b).

Approximately two miles of the levee trail have already been created with improved surface (six-foot wide crushed gravel). The remaining portion of the trail is currently native surface. A proposed trail would traverse through the 30-acre high ground area

to provide additional wildlife observation and an outdoor classroom (see EA, Figure 1). This high ground area provides views of a forested scrub/shrub marsh component of the restored lakebed.

Potentially one to six photo blinds may be placed in various locations adjacent to the trail. The photo blinds may include modified hunt blinds, or single-purpose photo blinds in addition to the current hunt blinds.

Vegetation on the tops of the levees is sparse and consists primarily of non-native low stature species such as reed canarygrass and Himalayan blackberry. Scattered patches of native woody vegetation exist in the lakebed along levee toes. For example, a few mature black cottonwood trees exist at the northern and northwestern edge of the lakebed, while willow species, Nootka rose, and rose spirea are common along the entire levee system.

Trails provide elevated views of wetlands within the lakebed. Since 2013, the Refuge has been working to manage and restore 748 acres of palustrine wetlands within the lakebed and approximately 210 acres of palustrine wetlands and associated uplands on non-lakebed lands. Wapato Lake had been drained annually and farmed for nearly a century, largely eliminating native wetland plant communities from the lakebed. Since 2017, Wapato Lake has lain fallow and currently supports a mosaic of non-native and native wetland plant species. Notably, the lake contains stands of the Wapato plant, which is culturally significant to the local Tribes. Over time, lakebed restoration will result in shallow water with emergent native vegetation. The Wapato Lake NWR Environmental Assessment (USFWS 2019) provides details on habitat restoration within the wetland basin.

A large numbers of waterfowl utilize the lake during the winter months including geese and ducks, and on occasion tundra and trumpeter swans. Additionally, Wapato Lake is home year-round to great blue herons, great egrets, osprey, northern harriers, North American beaver, North American river otter, fourteen species of reptiles and amphibians, and fourteen species of fish.

When would the use be conducted?

From February to September, the public may access the 3.35-mile levee trail, the 30-acre high ground, and photography blinds for wildlife observation and photography. From mid-October through January, only the northern 1.65 miles of the levee trail would be open to public use. Non-hunting public use, including wildlife observation and photography, would be allowed on this trail section on Mondays, Wednesdays, Fridays, and Sundays only, to balance non-hunting activities with active hunting on and off the Refuge. The southern 1.7 miles of trail would be closed from mid-October through January to provide wintering waterfowl with a disturbance-free area. Trails would be open during daylight hours only (30 minutes before sunrise and 30 minutes after sunset). Refuge-approved guided activities may occasionally occur after dark when the Refuge is normally closed to the public.

How would the use be conducted?

This compatibility determination (CD) examines wildlife observation and wildlife photography as described under the management direction of the Tualatin River National Wildlife Refuge Complex Comprehensive Conservation Plan (CCP, USFWS 2013) for Wapato Lake National Wildlife Refuge (Refuge) and the Draft Public Access Plan (USFWS 2021a).

Wildlife observation and photography would be primarily self-guided through the use of trails and photography blinds. Trails would be open to pedestrian use only. Bicycling, dog walking, and jogging would be prohibited. Maps, brochures, kiosks, and directional and regulatory signs will describe activities that are encouraged and those that are prohibited. In addition to self-guided wildlife observation and photography, we would offer tours, workshops, and demonstrations to diversify the visitor experience and opportunities for these uses. These Refuge-approved guided activities would be led by Refuge staff, volunteers, or partners, and may include the use of public use facilities and trails. Guided activities may occasionally occur after dark when the Refuge is normally closed to the public. The Friends of the Refuge may also conduct similar activities in support of wildlife observation and wildlife photography. These programs would require pre-approval by the Refuge manager and with the exception of guided after-hours or off-trail access, would be subject to all refuge regulations (i.e., no special access to closed areas will be granted) and stipulations of this CD.

When allowing any public use to occur on the Refuge we must ensure that impacts to wildlife and habitats are maintained within acceptable limits and potential conflicts between user groups are minimized. If monitoring of the uses shows unacceptable impacts to Refuge wildlife, habitat, infrastructure, management activities, or user groups, we would implement closures or use restrictions.

A number of special events, hosted by the Refuge or in partnership with the Friends of the Refuge, could occur on the Refuge in support of wildlife-dependent recreation. Examples include, but are not limited to, National Wildlife Refuge Week, Spring Break Exploration Days, and one-time celebratory events such as dedications, groundbreakings, and grand openings. Special events typically last anywhere from 4 hours to all day, and may include multiple back-to-back days. These events could attract more than 1,000 participants a day. Due to limited space available on Refuge property, we would partner with the City of Gaston, the local school system, or other organizations to accommodate the high short-term visitation associated with these events. Activities would be limited to the areas of the refuge open to the public. Any special event activity occurring outside the public use areas will be subject to case-by-case refuge manager approval and, if necessary, a special use permit (SUP).

At this point, projections of the numbers of visitors are difficult to predict for the Refuge. However, rapid growth in the surrounding counties has the potential to drive large numbers of visitors to the Refuge. A population forecast developed by The

Metro Research Center in 2016 predicts that the seven county Portland-Vancouver-Hillsboro Metropolitan Statistical Area will reach 3.5 million people by 2060, up from an estimated 2.4 million in 2015. This large population, with its desire to seek green spaces, will likely result in significant visitation to the Refuge in the future.

Based on what is observed at Tualatin River's public use areas, the highest visitor use would generally occur spring through fall, though regular use would occur during the winter as well. Group size will typically be small (families, individuals, and couples constitute the majority of groups) but occasionally larger groups may use the refuge. Local nonprofit groups (e.g., Audubon Society, walking clubs, parent groups) would visit the Refuge. As is currently the case at Tualatin River NWR, groups of 15 people or more must: make advance reservations; be limited to no more than 50 people; break up into subgroups of 15 people or less when on trails; strive to carpool or provide group transportation; follow all refuge regulations; and not charge any fee to their participants. Commercial refuge tours, where a company or organization charges a fee to participants, would be considered in a separate CD. Fundraising activities (including providing guided tours and hosting special events and meetings) conducted by Friends of the Tualatin River National Wildlife Refuge Complex (Friends of the Refuge) are not considered commercial tours, but are subject to Refuge approval, per the memorandum of understanding (MOU) between the Service and the Friends of the Refuge.

The CCP describes opportunities for developing wildlife observation and wildlife photography programs and structured visitor experiences with enhanced facilities and improved access. Actions in the CCP's management direction are summarized below.

Up to six wildlife photography blinds may be constructed adjacent to the levee trail of the refuge. Access trails to the blind(s) will be developed with minimal footprint and be constructed out of gravel or other low-impact and low-maintenance material. Use of the blind(s) will be managed on a reservation basis for up to two people at a time. Blinds will be available up to three days a week, during daylight hours (30 minutes before sunrise and 30 minutes after sunset). For both wildlife photography and observation areas, the refuge may maintain viewing lanes by selectively trimming branches, mowing tall grass, and/or occasionally removing vegetation. In addition, areas around these facilities may be enhanced to maximize wildlife use of the area. Examples of enhancements include planting vegetation for additional habitat; providing habitat structure such as basking logs; increasing vegetation cover to serve as a natural blind; and adding trees and/or shrubs to minimize urban noise from off-refuge sources (i.e., roads, industrial activities).

The refuge will recruit volunteers and interns to assist with its wildlife observation and wildlife photography programs. The Refuge may provide housing by utilizing its bunkhouse or recreational vehicle (RV) pads in addition to long-term housing located at Tualatin River NWR.

The refuge supports wildlife observation and wildlife photography opportunities regionally, by linking to regional trail systems. Planned regional trail systems, including the Yamhill County Rails to Trails project to the west of the Refuge and Metro's Chehalem Ridge Nature Park to the northeast of the Refuge, have the potential of connecting to the Refuge's trail system. This CD would be updated to include additional trails and facilities as needed.

Why is this use being proposed or reevaluated?

Wildlife observation and wildlife photography are priority public uses as defined by the Refuge System Administration Act of 1966, as amended by the Refuge System Improvement Act of 1997. If compatible, these priority public uses are to receive enhanced consideration over other general public uses on national wildlife refuges.

Wildlife observation and wildlife photography are being proposed because they provide compatible opportunities for visitors to enjoy the refuge's resources, by directly observing and learning about wildlife and habitats at their own pace in an unstructured environment. This will foster an appreciation for the importance of wildlife and habitats, and increase their understanding of fish and wildlife biology, wildlands ecology, the relationships of plant and animal populations within the ecosystem, and wildlife management. These uses will enhance the public's understanding of natural resource management programs and ecological concepts, the problems facing natural resources, human impacts to wildlife resources, the Service's role in conservation, and the science upon which Service management programs are based. Furthermore, those who visit the Refuge to enjoy outdoor recreation in a scenic setting may be enticed to participate in educational or volunteer programs. Over time, we anticipate that participation in these uses will result in a more informed public, with an enhanced stewardship ethic and greater support for wildlife conservation.

These Refuge uses would also support and complement regional nature-based recreational opportunities at Tualatin River NWR and several nearby conservation areas: Hagg Lake, owned by the U.S. Bureau of Reclamation and maintained and operated by Washington County; Jackson Bottom Wetland Preserve, managed by the City of Hillsboro Park and Recreation Department; Chehalem Ridge Nature Park, managed by Metro, a regional governance; and L.L. Stub Stewart State Park. Refuge staff and regional partners have discussed opportunities for linking the Refuge to these local recreation areas through programming, information, and trails. Linkages and cooperative programs between the Refuge and other local conservation areas will be considered in more detail in the future Visitor Services Plan.

Availability of Resources

The analysis of cost for administering and managing these uses includes only the

incremental increase above general operational costs that we can show as being directly caused by the proposed use. Wildlife observation and wildlife photography are generally funded from annual appropriated funds. Special project funding, partnering with the Friends of the TRNWRC, and grant opportunities will provide additional funding and volunteers to enhance public use opportunities.

Generally, annual costs to maintain and oversee facilities and implement public access programs are about \$68,000. This is largely funding for staff time, who are responsible for (but are not limited to): on-site evaluations to resolve visitor use issues; monitoring and evaluating impacts of public uses; maintaining boundaries and signs; meeting with interested public; recruiting volunteers; maintaining existing trails and viewing areas; revising brochures and developing new information materials, installing and updating kiosks; developing signage; organizing and conducting refuge events; conducting regularly scheduled programs for the public; displaying off-site exhibits at local events; developing relationships with media; providing law enforcement and security; and responding to public inquiries. About \$4,500 annually would be needed to make repairs and purchase signs, update brochures, and purchase equipment to support the programs. See Table 1 below for a breakdown of costs to administer and manage public access on the Refuge. With the exception of the costs associated with the visitor services staff time and those specific to wildlife observation and wildlife photography, all other costs would be shared with other public uses.

The Refuge currently has the financial and staff resources necessary to provide and administer these uses at the proposed levels. While we expect that these staffing and funding levels will continue in the future, declines could impact our ability to manage the uses.

Table 1. Costs to Administer and Manage Wildlife Observation and Wildlife Photography Programs on Wapato Lake NWR

* indicates costs shared with other public use programs

Category and Itemization	First Year Expenses (\$)	Recurring Annual Expenses (\$/year)
Develop Public Access Plan, EA and CDs*	10,000	
Construct up to 3 photo blinds (or modify hunt blinds) and associated trails	40,000	500
Develop safety, informational, and regulatory signage and brochures*	100,000	4,500
Host special events*		5,000
Maintain parking lots, trails, blinds, signs and other infrastructure*		20,000

Conduct annual volunteer training*		2,000
Law Enforcement staff time*		4,500
Visitor Services staff time		16,500
Administration and Management*		15,000
Total first year expenses	150,000	
Total recurring annual expenses		68,000

Anticipated Impacts of the Use

The following are descriptions of potential adverse and beneficial impacts on resources as a result of wildlife observation and wildlife photography. The effects and impacts of the proposed uses to refuge resources are those that are reasonably foreseeable and have a reasonably close causal relationship to the proposed use.

A variety of projects are proposed to facilitate the two uses: installation of interpretive, directional or informational signs and orientation maps; installation of a photo blind(s) along the levee trail; creation and marking of a northern high-ground trail; placing a kiosk at the entrance to the trail; installing benches and shade spots along the trail; and improving the accessible ABA-compliant trail. The impacts of construction and maintenance of this infrastructure is considered along with the impacts of wildlife observation and photography.

This CD includes analyses of the environmental effects to a resource only when the impacts on that resource could be more than negligible and therefore considered an “affected resource.” Air quality, water quality, and floodplains would not be more than negligibly impacted by the action and therefore have been dismissed from further analyses. Two ESA-listed threatened species may occur near the proposed action area (i.e. Wapato Creek): (Upper Willamette River ESU) Chinook salmon and Threatened (Upper Willamette River ESU) steelhead. The Environmental Assessment (USFWS 2021b) concluded that the proposed action would have no effect to these species, critical habitat, or EFH. Therefore, effects to listed species will not be considered here.

Potential impacts of a proposed use on the refuge's purpose(s) and the Refuge System mission

The Refuge’s purposes, including the “management, conservation, and protection of fish and wildlife resources” and “the conservation of the wetlands ... in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions.” The levee that contains the Refuge trail system is an important and integral part of Refuge infrastructure that will provide high quality wetland habitat to a myriad of migratory birds, therefore contributing to the achievement of refuge purposes.

Disturbance to wildlife by activities associated with recreational trails has long been documented (Beale and Monaghan 2004; Burger 1981; Gill et al. 1996; Knight and Cole 1991) and can be extrapolated to other visitor areas (roads, parking lots, etc.). Depending upon species and life history phase, wildlife may respond through avoidance, habituation, or attraction. Disturbances can result in wildlife moving away from the trail, shifting habitat use, or abandoning a site. Over time, this may result in reduced fitness and reproductive success. A general assessment of impacts to wildlife resulting from wildlife observation, wildlife photography, and associated uses has been compiled from the literature and is summarized in Short-Term and Long-Term Impacts, below. In most cases, wildlife observation and wildlife photography, with stipulations described below, will result in minor, short-term disturbance to wildlife. On the other hand, participation in wildlife observation and wildlife photography programs on the Refuge would foster an appreciation for the importance of wildlife and habitats, and result in a more informed public, with an enhanced stewardship ethic and greater support for wildlife conservation. Therefore, the use would contribute to Refuge purposes and the mission of the National Wildlife Refuge System.

Short-term impacts

Effects to Wildlife and Aquatic Species:

Disturbance intensity (frequency, distance, etc.): Disturbance responses can depend upon the activity type, recreationists' behavior, and the distance, duration, frequency, predictability, timing, and visibility of the use (Beider et al. 2009, Frid and Dill 2002, Hennings 2017, Knight and Cole 1995, Miller et al. 2020, Stankowich and Blumstein 2005). Wildlife responses vary by species and life history stage, and may include avoidance, habituation, or attraction. Flushing, especially repetitive flushing, is energetically expensive and can strongly impact foraging, resting, and nesting behavior of many bird species. Migratory birds have been observed to be more sensitive than resident species to disturbance (Klein 1989).

Nest predation for songbirds (Miller et al. 1998), raptors (Glinski 1976), colonial nesting species (Buckley and Buckley 1976), and waterfowl (Boyle and Samson 1985) tends to increase in areas more frequently visited by people where disturbance flushes birds away from their nests and creates vulnerabilities during nesting seasons. Frequency is a major factor, and songbirds have been found to alter behavior after repeated human disturbance, particularly red-winged blackbirds, goldfinches, and American robins, which became much more aggressive toward humans who repeatedly visited their nests (Knight and Temple 1986a, 1986b, 1986c).

Set-back distances for public use facilities have been found to be important in limiting human disturbance to wildlife. In Florida, 15 species of colonial waterbirds nesting at 17 colonies were exposed to three different human disturbance mechanisms to determine recommended set-back distances for protecting mixed-species nesting assemblages (Rodgers and Smith 1995). In general, a recommended

set-back distance of about 100 meters (m) for wading bird colonies and 180 m for mixed tern/skimmer colonies was found to be adequate to effectively buffer sites from human disturbance caused by approach of pedestrians and motor boats (Rodgers and Smith 1995). In Nebraska, roosting sandhill cranes avoided sites near human disturbance features at 500 m from nearest paved road, 400 m from nearest gravel road, and 400 m from a single dwelling structure (Norling et al. 1992). Klein (1989) studied the effect of visitation on migrant and resident waterbirds at Ding Darling National Wildlife Refuge, finding that resident birds were less sensitive to human disturbance than migrants. Migrant ducks were particularly sensitive when they first arrived on-site in the fall. They usually remained at a distance of more than 80 m [from a visitor footpath on a dike], even at very low visitor levels. Herons, egrets, brown pelicans, and anhingas were most likely to habituate to humans, thus exposing them to direct disturbance as they fed on or near the dike.

Shorebirds showed intermediate sensitivity. Strauss (1990) observed piping plover chicks spent less time feeding (50% versus 91%) and more time running (33% versus 2%), fighting with other chicks (4% versus 0.1%), and standing alert (9% versus 0.1%) when pedestrians or moving vehicles were closer than 100 m than when they were undisturbed. In addition, plover chicks spent less time out on the feeding flats (8% versus 97%) and more time up in the grass (66% versus 0.1%) during periods of human disturbance.

Conversely, wildlife tends to habituate best to disturbance that is predictable, as indicated by sandhill cranes in Florida and in Nebraska that nested within 400 m of highways, railroads, mines, and power lines, which provided a predictable background disturbance (Dwyer and Tanner 1992; Norling et al. 1992). Taylor and Knight (2003) found that for mule deer, the area of influence around off-trail areas was much greater than for on-trail areas, suggesting habituation to trails. However, the time it takes for wildlife to habituate, and what wildlife use is like compared to pre-disturbance uses, remains a question. Additionally, studies have shown that larger ungulate species, especially those with offspring, showed a higher level of alertness and flight response to human disturbance (Childress and Lung 2003, Papouchis et al. 2001, Stankowich 2008).

Group size. Disturbance impact to wildlife in relation to visitor group size is not a well-documented research area; however, a few studies have analyzed these impacts. Most animals flee from humans, and large groups of people may represent greater perceived risk of predation (Geist et al. 2005).

Remacha et al. (2011) analyzed visitor group size influences on the number and variety of birds observed during guided educational tours in a forested area in central Spain, with group sizes ranging from 7 to 20 people. The study showed that increasing visitor group sizes had an impact on wildlife, as large groups were associated with decreased bird numbers; additionally, the study found that birds may demonstrate reduced tolerance when faced with large groups of visitors, not only reducing their frequency of occurrence but also reducing the number of individuals. The study

concluded that reducing the group size of visitors helps minimize the negative impacts on wildlife and also allows visitors to watch more wildlife (Remacha et al. 2011).

Another study by Beale and Monaghan (2004) on human disturbance effects to seabird colonies at St. Abbs Head National Nature Reserve in Scotland examined the variation in nesting success for two birds, kittiwakes and guillemots, as a function of different disturbance regimes, including varying the average number of people per hour and people load, which takes into consideration the number of visitors and their distance from the nest. Human disturbance was found to have a significant negative effect on nesting success in both species of birds. Increasing visitor numbers by 8.5 percent resulted in a 22 percent increase in the failure rate of kittiwakes and a 13 percent increase in the failure rate for guillemots. Beale and Monaghan concluded that perhaps the most likely explanation is that nesting birds perceive people to be a potential predator and show appropriate anti-predator physiological responses, which interferes with energy resources available for nesting. The results showed that safe distances, or buffer zones, depend on the numbers of people visiting an area and that both numbers and distance matter in determining disturbance effects.

Noise. In addition to group size, loudness has also been found as an important variable in whether birds altered their behavior. A study was conducted at the Arthur B. Marshall Loxahatchee National Wildlife Refuge in Florida between 1992 and 1994 to observe foraging behavior of birds at the refuge and understand how people affect foraging birds (Burger and Gochfeld 1991). Variation in feeding behavior was largely explained by whether people were present, the number of people present, and the amount of noise made by the people (Burger and Gochfeld 1991). For all species, time devoted to feeding and number of strikes or pecks decreased while people were present and as the noise made by people increased; interestingly, loudness was found to be more important than the number of people present (Burger and Gochfeld 1991). Noise level is not necessarily correlated with number of people present, but larger groups might be more prone to producing noise than small groups or individuals.

Literature suggests that organizing visitors in small numbers is recommended for groups, but also spreading out visits and locations of visits is recommended to mitigate disturbance across the landscape.

Pedestrian (hiking) versus vehicular access. It is widely accepted that wildlife are frequently more sensitive to disturbance from people on foot than in vehicles (Grubb and King 1991; MacArthur et al. 1982; Pease et al. 2005; Skagen 1980). Numerous studies have confirmed that people on foot can cause a variety of disturbance reactions in wildlife, including flushing or displacement (Erwin 1989; Fraser et al. 1985; Freddy 1986; Pease et al. 2005), heart rate increases (MacArthur et al. 1982), altered foraging patterns (Burger and Gochfeld 1991), and even, in some cases, diminished reproductive success (Boyle and Samson 1985).

A study on seven species of dabbling ducks at the Back Bay National Wildlife Refuge in

Virginia found a significant difference between vehicular (diesel truck and electric passenger tram) and nonvehicular (pedestrian and bicyclist) treatments in the number of ducks that were flushed. In this study, 90 percent of the birds showed an observable response to nonvehicular treatments, of which 43 percent flew; the proportion of ducks that flew was greatest when they were located less than 100 m from the disturbance (Pease et al. 2005). In a review of several studies of the reaction of waterfowl and other wetland birds to people on foot, it was found that distances greater than 100 m in general did not result in a behavioral response (DeLong 2002). Mule deer in sagebrush-grassland habitat in Utah showed a 96 percent probability of flushing at 100 m from the line of movement of off-trail recreationists, with the probability not dropping to 70 percent until the perpendicular distance increased to 390 m (Taylor and Knight 2003).

These studies and others have shown that the severity of the effects depends upon the wildlife's distance from the disturbance and its duration, frequency, predictability, and visibility to wildlife (Knight and Cole 1995). In a logistic regression analyzing mule deer, pronghorn antelope, and bison response to mountain biking and hiking on- and off-trail, Taylor and Knight (2003) found that the variables best explaining wildlife response included wildlife species, perpendicular distance of animals to trail (closest distance of animal to trail, regardless of recreationist position), trail position (on-trail or off-trail), and degree of vegetation cover.

Wildlife photography. Wildlife photography in particular can be a more disturbing activity because photographers are more likely to leave vehicles and wander off-trail, approach wildlife, and remain close for an extended period of time to capture a detailed photograph, as observed at Ding Darling National Wildlife Refuge and other places (Dobb 1998; Klein 1993; Morton 1995). This may also apply to the experience of the user, as avid wildlife viewers tend to intentionally seek out rare or spectacular species and/or are more eager to see the most viewing opportunities in the limited amount of time (e.g., bird listing), and thus potentially pose a larger negative impact to wildlife (Knight and Cole 1995). People engaged in wildlife observation and photography react to the presence of birds and thus are generally more unpredictable on foot depending on excitement level, curiosity, and desire to observe closely.

Construction Impacts. Overall, physical improvements to the refuge's public use sites will result in minor, short-term disturbance to wildlife, through noise and human activity. This will include temporary disturbance when signs and kiosks are installed, and roads and trails are refurbished. Projects that would occur over a few weeks could cause longer-term disturbance to wildlife that would likely be displaced during construction (i.e., trail maintenance, overlook, and/or pedestrian crossing construction projects). In all cases, abundant habitat is available adjacent to construction sites for wildlife. It is expected that once construction is complete, wildlife would return to original areas. Removal of vegetation during the bird nesting season (April 1 through July 30) would be minimized whenever possible.

Effects to Habitat, Vegetation, and Soils:

Construction Impacts. Overall, physical improvements to the refuge's public use sites will have minor, short-term negative impacts, including soil disturbance. This will include temporary disturbance when signs and kiosks are installed, and roads and trails are refurbished. Construction activities would be minor to negligible and short term as best management practices during construction would be used to minimize or avoid impacts.

The refuge is comprised of over 700 acres of wetlands and approximately 200 acres of upland habitat. Most of the public use, as proposed here, would not impact water resources, hydrology or wetlands in the refuge. Most activities would be limited to existing facilities/areas and would not occur in wetland areas. For example, installation of interpretive, directional, and other signage would have no impact since they will not be installed in wetland areas and would be installed in a manner that does not create impacts. Construction and installation of wildlife photography blinds in the vicinity of the levee would only occur at the base of the levee or edge of the wetland areas. At a few locations, short-term minor impacts to wetlands and water resources would occur during construction. All appropriate permits would be acquired before construction takes place and would include stipulations to protect wetlands and water resources.

Impacts from Public Use. People can be vectors for invasive plants by moving seeds or other propagules from one area to another. Once established, invasive plants can out-compete native plants, thereby altering habitats and indirectly impacting wildlife. The threat of invasive plant establishment will always be an issue requiring annual monitoring and treatment when necessary. To mitigate these impacts, interpretive signage and materials about invasive species will be available as part of regular programming on and off site. Refuge staff and volunteers will work at eradicating invasive plants. Other impacts may include the deposition of litter and erosion caused by the damage to vegetation from trampling.

Effects to Visitor Use and Experience:

Projections of the numbers of visitors and the proportion of visitors engaged in different uses (wildlife observation, wildlife photography, environmental education, and interpretation) are difficult to predict at this time. Therefore, potential conflicts between user groups are difficult to predict. The following analysis is based on conflicts observed at Tualatin River NWR. Since public use primarily occurs on a six-foot-wide levee trail, this could lead to recreational trail walkers or larger groups disturbing visitors engaged in wildlife observation or photography. There could be conflicts between users engaging in viewing or photography of rare birds, and competition for use of wildlife photography blinds at peak use times. Special events could result in negative interactions between visitor groups due to the potential influx of visitors. The refuge would implement measures to reduce these conflicts, as needed. Signage and informational materials on wildlife watching etiquette would

help reduce these conflicts.

The potential for conflicts between hunting and non-hunting visitors has been addressed by allowing non-hunting access on non-hunt days only during the migratory bird hunting season. Signs and other information would be installed and available to inform the public that non-hunting access is not allowed on hunt days, and ensure safety. Portions of trails would be closed on non-hunt days to minimize disturbance to hunters on adjacent private lands and improve safety. This seasonal closure would also minimize conflicts between user groups and hunting on private lands surrounding the Refuge.

Long-term impacts

Effects to Wildlife and Aquatic Species:

As noted above, disturbance to wildlife by activities associated with recreational trails has long been documented and can result in wildlife moving away from the trail, shifting habitat use, or abandoning a site (Beale and Monaghan 2004; Burger 1981; Gill et al. 1996; Knight and Cole 1991). For example, birds nest farther away from trails (Miller et al. 1998) and reproductive success diminishes with increased disturbance on the trail (Schulz and Stock 1993). Human presence and disturbance can alter the ability of wildlife to use or access resources (food supplies, roosting sites, or prey species) (Gill J.A. 2007). Wintering waterfowl are known to experience higher levels of disturbance by pedestrians than vehicles in an impoundment system (Pease et al. 2005). However, joggers can be more disruptive than walkers on trails (Lethlean 2017). Noise impacts on wildlife are also well documented (Shannon et al. 2016), which can interfere with wildlife communication, behavior, and abundance. If disturbance is repeated, prolonged or of high intensity during critical life history stages, this may result in long-term changes to wildlife use patterns and populations.

Several studies have identified management actions to minimize wildlife impacts including seasonal closures, designated parking areas, etc. (Pease et al. 2005, Borgmann 2010). Refuge staff will seek to minimize impacts from these two uses by limiting public access to trails and sites that are designed to support these uses (off-trail travel and recreational boating on the lakebed would be prohibited); and by closing the southern portion of the levee trail from mid-October through January to reduce impacts to migrating birds.

Effects to Habitat, Vegetation, and Soils:

Most of the public access to support the two uses would occur on hard-surface trails and dikes. Increased damage to ecosystems is known to occur when informal trails are created and used by the public (Barros and Pickering 2017). No off-trail activity is permitted; therefore, impacts to vegetation and soil should be minimal. Habitat will not be impacted if the public stays on trails and in designated visitor areas.

People can be vectors for invasive plants when seeds or other propagules are moved from one area to another. The threat of invasive plant establishment will always be an

issue requiring annual monitoring, and when necessary, treatment. Staff will work to educate the visiting public to reduce introductions and also monitor and control invasive species. This threat is considered to be minimal.

Vegetation would be permanently cleared from trails, parking areas, and wildlife photography blinds. However, the total area impacted would be a small percentage of the total Refuge area, representing a minor loss of upland vegetation on levees and levee toes.

Effects to Cultural Resources and Indian Trust Resources:

Public use, including new facilities, as proposed here, will not likely impact cultural and Indian Trust resources. All activities with the potential to impact historic properties or areas of importance to local Tribes will comply with Section 106 of the National Historic Preservation Act (NHPA) prior to implementation and are noted above. The regional Section 106 review form is provided in Appendix 2 of the EA for the Public Access Plan (USFWS 2021b).

Effects to Socioeconomics and Environmental Justice:

Socioeconomics. Wildlife observation and wildlife photography are popular activities in the Portland metro area. Visitation would increase markedly compared to current levels, and would occur year-round. This increase in visitation would have a positive impact on the local economy of Gaston, Oregon, since visitors are likely to patronize small local businesses such as the coffee shop, market and other food services. The Banking on Nature 2017 report (Caudill and Carver 2019) estimates that non-consumptive use at Tualatin River NWR results in over \$2.2 million in recreation expenditures. However, due to Wapato Lake NWR's location and less developed facilities, visitation and therefore recreation expenditures are likely to remain significantly lower than at Tualatin River NWR. Construction of, and repair to facilities would also generate a small amount of local economic activity. Therefore, this impact, while positive and long-term, would be minor as a percentage of total economic activity in the local area.

Environmental Justice. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all Federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high or adverse human health or environmental impacts of their programs and policies on minorities and low-income populations and communities. The Service has not identified any potential high and adverse environmental or human health, negative impacts from the actions proposed in this CD. Current and future programming, in association with the proposed improvements, seek to attract people from groups that have traditionally not engaged in these types of activities and to expand into underrepresented communities, resulting in increased engagement by and with these communities, with positive impacts on environmental justice.

Public Review and Comment

The draft compatibility determination will be available for public review and comment for 30 days, coinciding with the comment period for the Draft Public Access Plan and Environmental Assessment. The public will be made aware of this comment opportunity through: newspapers, postings at local libraries, letters to potentially interested people such as adjacent landowners and tribes, notices in utility bills, public meetings, or other places/media outlets. A hard copy of this document will be available at the Refuge Headquarters or Visitor Center 19255 SW Pacific Hwy, Sherwood, Oregon. Copies will also be available at City Hall, 116 Front Street, Gaston, OR 97119. It will be made available electronically on the refuge website (https://www.fws.gov/refuge/wapato_lake/). Please let us know if you need the documents in an alternative format. Concerns expressed during the public comment period will be addressed in the final.

Determination: Is the use compatible, with stipulations?

Yes

Stipulations Necessary to Ensure Compatibility

1. Designated areas of the Refuge will be open with restrictions during the waterfowl hunting season, which occurs from mid-October thru January. During this period access will be limited to Sundays, Mondays, Wednesdays, and Fridays.
2. The Refuge will be open during daylight hours only (30 minutes before sunrise and 30 minutes after sunset), except for the hunting program.
3. Wintertime sanctuary closures will be maintained.
4. Littering, abandoning, discarding, or otherwise leaving personal property unattended is prohibited.
5. Removal of any plants, animals, or artifacts, or parts thereof, from the Refuge is prohibited.
6. Pets are not allowed, except for registered service animals.
7. Open areas are limited to the hiking trail on the top of the levees, designated parking area, northern high ground, and specific blinds and their access.
8. Motorized and non-motorized vehicles, such as ATVs, UTVs, bicycles, skateboards, and other off-road vehicles are prohibited.
9. Electric wheelchairs shall be allowed on trails for persons with disabilities.
10. Camping, overnight use, and fires are prohibited.
11. Use of drones is prohibited.
12. Use of boats and flotation devices is prohibited.
13. Registration will be required for organized groups of 15 people or more.
14. During special events, tours must avoid sensitive sites occupied by rare species.
15. Activities outside of posted use times have to be approved by the refuge manager on a case-by-case basis.
16. Signs, pamphlets, and verbal instructions (when available) and other public education from Refuge staff and volunteers will promote appropriate use of facilities to minimize wildlife and habitat disturbance. Examples include promoting ethical wildlife observation/photography behavior by sharing regulations including the prohibition of audio bird calling devices or off-trail use.
17. Periodic monitoring and evaluation of sites and programs will be conducted to assess if objectives are being met and ensure that the resource is not being unacceptably degraded. If disturbance to wildlife or damage to habitat reaches unacceptable levels, the refuge will avoid or limit activities in areas where unacceptable impacts occur.

Justification

The stipulations outlined above would help ensure that the uses are compatible at Wapato Lake NWR. Wildlife observation and wildlife photography, as outlined in this compatibility determination, would not conflict with the national policy to maintain the biological diversity, integrity, and environmental health of the refuge. Based on available science and best professional judgement, the Service has determined that wildlife observation and wildlife photography at Wapato Lake NWR, in accordance with the stipulations provided here, would not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purpose of the Wapato Lake NWR. Rather, appropriate and compatible wildlife observation and wildlife photography would be the use of the Wapato Lake NWR through which the public can develop an appreciation for wildlife and wild lands.

Given the location of wintertime sanctuary closed areas and the locations of wildlife viewing and wildlife photography facilities, these uses are expected to have minor direct impact on Refuge resources. The associated disturbance to wildlife from these activities, though larger than at present, is also expected to be minor. It is anticipated that wildlife populations will find sufficient food resources and resting places such that their abundance and use of the refuge will not be measurably lessened from allowing these activities to occur. The relatively limited number of individual animals and plants expected to be adversely affected will not cause populations to materially decline, the physiological condition and production of refuge species will not be impaired, their behavior and normal activity patterns will not be altered dramatically, and their overall welfare will not be negatively impacted.

Wildlife observation and wildlife photography support refuge purposes, and any resource impacts from these uses can be minimized or avoided. Various minimization or avoidance measures will be implemented and include but are not limited to: encouraging visitors to stay on designated trails and in existing visitor areas, closing areas temporarily or permanently to protect wildlife and habitats, overseeing large group visits, implementing best management practices during construction activities, limiting the mode of travel to pedestrian travel only, and numerous other measures. Allowing wildlife photography and observation to occur, with the stipulations described above, will not materially detract from or interfere with the purposes for which the refuge was established or the refuge mission. Wildlife observation and wildlife photography provide visitors with the joy of experiencing wildlife on their public lands, and as such, help fulfill the mission of the National Wildlife Refuge System.

Signature of Determination

Refuge Manager Signature and Date

Signature of Concurrence

Assistant Regional Director Signature and Date

Mandatory Reevaluation Date

2036

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Draft Compatibility Determination

Title

Draft Compatibility Determination for Environmental Education and Interpretation,
Wapato Lake National Wildlife Refuge

Refuge Use Category

Environmental Education and Interpretation

Refuge Use Type(s)

Environmental education (not conducted by NWRS staff or authorized agents)

Environmental education (NWRS staff and authorized agents)

Interpretation (NWRS staff and authorized agents)

Interpretation (not conducted by NWRS staff or authorized agents)

Refuge

Wapato Lake National Wildlife Refuge

Refuge Purpose(s) and Establishing and Acquisition Authority(ies)

“... for the development, advancement, management, conservation, and protection of fish and wildlife resources ...” 16 U.S.C. § 742f(a)(4), Fish and Wildlife Act of 1956

“... 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)

“... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ...” 16 U.S.C. § 3901(b), Emergency Wetlands Resources Act of 1986

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System, otherwise known as 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 (Pub. L. 105-57; 111 Stat. 1252).

Description of Use

Is this an existing use?

No.

What is the use?

Environmental education (not conducted by NWRS staff or authorized agents). On-refuge activities not conducted by NWRS staff or authorized agents that use a planned process to foster awareness, knowledge, understanding, and appreciation in students, teachers, or group leaders about fish, wildlife, plants, ecology, natural sciences (such as astronomy) and refuge management.

Environmental education (NWRS staff and authorized agents). On-refuge activities conducted by NWRS staff or authorized agents that use a planned process to foster awareness, knowledge, understanding, and appreciation in students about fish, wildlife, plants, ecology, natural sciences (such as astronomy) and refuge management.

Interpretation (NWRS staff and authorized agents). On-refuge activities for refuge visitors conducted by NWRS staff or authorized agents that are designed to foster an understanding and appreciation for natural and cultural resources, and associated management.

Interpretation (not conducted by NWRS staff or authorized agents). On-refuge activities for refuge visitors not conducted by NWRS staff or authorized agents that are designed to foster an understanding and appreciation for natural and cultural resources, and associated management.

Is the use a priority public use?

Yes

Where would the use be conducted?

Visitors will engage in environmental education and interpretation at the entrance parking lot area, on the levee trail system, and potentially on other developed trails on the Refuge once lakebed restoration is complete. Currently, the only public access point is the main parking lot which is connected to the paved entrance trail that leads to the pedestrian bridge and trail.

Additional off-trail use may include occasional refuge-led field trips to areas generally closed to the public that would provide educational or interpretive value not available in the designated public use areas. Examples include activities such as, but not limited to, access for secondary or collegiate-level students studying hydric soils along wetland edges, students accompanying refuge staff on biological monitoring activities such as bird banding, and habitat surveys such as conducting vegetation transects.

The hiking trail is located on the levee surrounding most of the lakebed. The trail portion open to the public would consist of 3.35 miles of levee on the north and west sides of Wapato Lake; the public access point at the main parking lot, which is connected to the paved entrance trail that leads to the pedestrian bridge and trail; and an approximately 30-acre area of high ground on the northern end of the lakebed. See Environmental Assessment for the Public Access Plan (EA), Figure 1 (USFWS 2021b).

Approximately two miles of the levee trail have already been created with improved surface (six-foot wide crushed gravel). The remaining 1.35 miles of the trail is currently native surface. A proposed trail would traverse through the 30-acre high ground area to provide additional wildlife observation and an outdoor classroom (see EA, Figure 1). This high ground area provides views of a forested scrub/shrub marsh component of the restored lakebed.

Vegetation on the tops of the levees is sparse and consists primarily of non-native low stature species such as reed canarygrass and Himalayan blackberry. Scattered patches of native woody vegetation exist in the lakebed along levee toes. For example, a few mature black cottonwood trees exist at the northern and northwestern edge of the lakebed, while willow species, Nootka rose, and rose spirea are common along the entire levee system.

Trails provide elevated views of wetlands within the lakebed. Since 2013, the Refuge has been working to manage and restore 748 acres of palustrine wetlands within the lakebed and approximately 210 acres of palustrine wetlands and associated uplands on non-lakebed lands. Wapato Lake had been drained annually and farmed for nearly a century, largely eliminating native wetland plant communities from the lakebed. Since 2017, Wapato Lake has lain fallow and currently supports a mosaic of non-native and native wetland plant species. Notably, the lake contains stands of the Wapato plant, which is culturally significant to the local Tribes. Over time, lakebed restoration will result in shallow water with emergent native vegetation. The Wapato Lake NWR Environmental Assessment (USFWS 2019) provides details on habitat restoration within the wetland basin.

A large numbers of waterfowl utilize the lake during the winter months including geese and ducks, and on occasion tundra and trumpeter swans. Additionally, Wapato Lake is home year-round to great blue herons, great egrets, osprey, northern harriers, North American beaver, North American river otter, fourteen species of reptiles and amphibians, and fourteen species of fish.

When would the use be conducted?

Environmental education could occur in any season at the refuge. In practice, most environmental education would occur between September and June, during the school year. From February to September, the public access areas are open seven days per week. From mid-October through January, only the northern 1.65 miles of

the levee trail would be open to public use. Non-hunting public use, including environmental education and interpretation, would be allowed on this trail section on Mondays, Wednesdays, Fridays, and Sundays only, to balance non-hunting activities with active hunting on and off the Refuge. The southern 1.7 miles of trail would be closed from mid-October through January to provide wintering waterfowl with a disturbance-free area. Public access is permitted during daylight hours only (30 minutes before sunrise and 30 minutes after sunset).

How would the use be conducted?

This compatibility determination (CD) examines environmental education and interpretation as described under the management direction of the Tualatin River National Wildlife Refuge Complex Comprehensive Conservation Plan (CCP, USFWS 2013). There is substantial overlap between activities associated with environmental education and interpretation where participants are engaged in formal, curriculum-based education opportunities primarily for students and organizations and guided or self-directed learning about the natural and cultural resources on the Refuge, and as such these uses are evaluated together in this CD. These uses will foster an aware and involved citizenry that will take an active role in conservation.

Environmental education programs and interpretation may be conducted by way of personal presentations and guided tours by staff, volunteers, teachers, and other youth group leaders, and at special events and displays both on and off the refuge.

The environmental education program at the refuge would be administered as described in Goal 13 of the Tualatin River National Wildlife Refuge (NWR) CCP. The environmental education program at Wapato Lake NWR will emulate that of the program provided at Tualatin River NWR. At this time, there is no environmental education programming offered at Wapato Lake NWR. However, based on participation at Tualatin River NWR, the environmental education program could potentially reach as many as 5,000 participants annually, utilizing self-guided programs as well as a partnership program focused on working with area schools. The program would rely on volunteers for full implementation.

Students and educators of all ages and grade levels would participate in curriculum-based education on the refuge. In addition to formal classroom participants, the environmental education program would serve home-school groups/families, pre-school groups, youth groups such as scouts, after-school clubs, and other organized groups such as summer youth programs. Generally, no more than 50 students (plus teachers and chaperones) would be allowed to visit the same area of the refuge at the same time. Advance reservations would be required. The six-foot width of the trail will limit the ability for larger groups to gather. Therefore, participants would be divided into smaller groups of no more than 15 to lessen disturbance to other visitors, as well as provide a better learning opportunity. Educators wishing to bring K-8 students would have access to self-guided field trip materials or, potentially, have trained volunteers and/or refuge staff accompanying the group.

Refuge staff would coordinate all field trip activities with educators or coordinators ahead of their planned visits. This will provide efficiency and assist staff in keeping accurate records of those visiting throughout the year, as well as manage the site for overcrowding and limit potential impacts to habitat and wildlife. Participants would follow the same regulations and guidelines that are expected of all other visitors (refer to Compatibility Determination for wildlife observation and wildlife photography). Additional activities may occur as part of refuge-approved lesson plans and when conducted by a trained volunteer or Refuge staff. These may include, but are not limited to, capture, study, and release of small animals such as macroinvertebrates, frogs, snakes, insects, worms, etc; studying items such as leaves, scat, and feathers; and collection of water, seeds, and soil for further study and analysis.

Examples of educational and interpretive information may include provided signage, kiosks, printed information, exhibits, audiovisual presentations, websites, social media, lecture programs, and other methods to reach targeted audiences.

The refuge supports nature-based recreational opportunities regionally, by linking to regional trail systems. Planned regional trail systems, including the Yamhill County Rails to Trails project to the west of the Refuge and Metro's Chehalem Ridge Nature Park to the northeast of the Refuge, have the potential of connecting to the Refuge's trail system. This CD would be updated to include additional trails and facilities as needed.

Why is this use being proposed or reevaluated?

Environmental education and interpretation are priority public uses as defined by the Refuge System Administration Act of 1966, as amended by the Refuge System Improvement Act of 1997. If compatible, these priority public uses are to receive enhanced consideration over other general public uses on national wildlife refuges.

Environmental education and interpretation are two of the six appropriate, wildlife-dependent, priority public uses defined by law. These uses provide opportunities for visitors to enjoy the refuge's resources and increase their understanding of and appreciation for fish, wildlife, wildland ecology, the relationships of plant and animal populations within the ecosystem, and wildlife habitat management. These uses enhance the public's knowledge of natural resource management programs and ecological concepts, allowing for a better understanding of the problems facing wildlife and other natural resources. Additionally, the public can learn about the Service's role in conservation. The public can become more aware of the science upon which Service management programs are based, consequently fostering an appreciation for the importance of wildlife and habitats. It is anticipated that participation in these uses will result in a more informed public, with an enhanced stewardship ethic and greater support for wildlife conservation.

By allowing these activities, we are providing opportunities and facilitating refuge programs in a manner and at locations on the refuge that offer safe, high quality, wildlife-dependent recreation, while maintaining natural resource values. Furthermore, those who visit the Refuge to enjoy outdoor recreation in a scenic setting may be enticed to participate in educational or volunteer programs. Over time, we anticipate that participation in these uses will result in a more informed public, with an enhanced stewardship ethic and greater support for wildlife conservation.

These Refuge uses would also support and complement regional nature-based recreational opportunities at Tualatin River NWR and several nearby conservation areas: Hagg Lake, owned by the U.S. Bureau of Reclamation and maintained and operated by Washington County; Jackson Bottom Wetland Preserve, managed by the City of Hillsboro Park and Recreation Department; Chehalem Ridge Nature Park, managed by Metro, a regional governance; and L.L. Stub Stewart State Park. Refuge staff and regional partners have discussed opportunities for linking the Refuge to these local recreation areas through programming, information, and trails. Linkages and cooperative programs between the Refuge and other local conservation areas will be considered in more detail in the future Visitor Services Plan.

Availability of Resources

The analysis of cost for administering and managing these uses includes only the incremental increase above general operational costs that we can show as being directly caused by the proposed use. Environmental education and interpretation are generally funded from annual appropriated funds. Special project funding, partnering with the Friends of the TRNWRC, and grant opportunities will provide additional funding and volunteers to enhance public use opportunities.

Generally, annual costs to maintain and oversee facilities and implement public access programs are about \$66,500. This is largely funding for staff time, who are responsible for (but are not limited to): conducting regularly scheduled programs for the public; on-site evaluations to assess resources; monitoring and evaluating impacts of public uses; meeting with interested public; recruiting volunteers; developing new information materials, installing and/or updating kiosks; developing signage; organizing and conducting refuge events; displaying off-site exhibits at local events; developing relationships with media; providing law enforcement and security; and responding to public inquiries. About \$4,500 annually would be needed to make repairs and purchase signs, update brochures, and purchase equipment to support education and interpretation programs (e.g. binoculars, craft materials, books). See Table 1 below for a breakdown of costs to administer and manage public access on the Refuge. With the exception of the costs associated with the visitor services staff time and those specific to environmental education and interpretation, all other costs would be shared with other public uses.

The Refuge currently has the financial and staff resources necessary to provide and administer these uses at the proposed levels. While we expect that these staffing and funding levels will continue in the future, declines could impact our ability to manage the uses.

Table 1. Costs to Administer and Manage Environmental Education and Interpretation Programs on Wapato Lake NWR

* indicates costs shared with other public use programs

Category and Itemization	First Year Expenses (\$)	Recurring Annual Expenses (\$/year)
Develop Public Access Plan, EA and CDs*	10,000	
Develop safety, informational, and regulatory signage and brochures*	100,000	4,500
Maintain parking lots, trails, blinds, signs and other infrastructure*		20,000
Conduct annual volunteer training*		2,000
Law Enforcement staff time*		4,500
Visitor Services staff time		20,500
Administration and Management*		15,000
Total first year expenses	110,000	
Total recurring annual expenses		66,500

Anticipated Impacts of the Use

The following are descriptions of potential adverse and beneficial impacts on resources as a result of environmental education and interpretation. The effects and impacts of the proposed uses to refuge resources are those that are reasonably foreseeable and have a reasonably close causal relationship to the proposed use.

A variety of projects are proposed to facilitate the two uses: installation of interpretive, directional or informational signs and orientation maps; creation and marking of a northern high-ground trail; placing a kiosk at the entrance to the trail; installing benches and shade spots along the trail; and improving the accessible ABA-compliant trail. The impacts of construction and maintenance of this infrastructure is considered along with the impacts of environmental education and interpretation.

This CD includes analyses of the environmental effects to a resource only when the impacts on that resource could be more than negligible and therefore considered an “affected resource.” Air quality, water quality, and floodplains would not be more than negligibly impacted by the action and therefore have been dismissed from further

analyses. Two ESA-listed threatened species may occur near the proposed action area (i.e. Wapato Creek): (Upper Willamette River ESU) Chinook salmon and Threatened (Upper Willamette River ESU) steelhead. The Environmental Assessment (USFWS 2021b) concluded that the proposed action would have no effect to these species, critical habitat, or EFH. Therefore, effects to listed species will not be considered here.

Potential impacts of a proposed use on the refuge's purpose(s) and the Refuge System mission

The Refuge's purposes, including the "management, conservation, and protection of fish and wildlife resources" and "the conservation of the wetlands ... in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions." The levee that contains the Refuge trail system is an important and integral part of Refuge infrastructure that will provide high quality wetland habitat to a myriad of migratory birds, therefore contributing to the achievement of refuge purposes.

In general, impacts that could occur from environmental education and interpretive programs would be similar to those expected from wildlife observation and photography activities. Such impacts would be expected to include temporary damage to vegetation resulting from trampling, disturbance to nesting, feeding and/or resting birds or other wildlife in the vicinity. Disturbance responses can depend upon the activity type, recreationists' behavior, and the distance, duration, frequency, predictability, timing, and visibility of the use (Beider et al. 2009, Frid and Dill 2002, Hennings 2017, Knight and Cole 1995, Miller et al. 2020, Stankowich and Blumstein 2005). Depending upon species and life history phase, wildlife may respond through avoidance, habituation, or attraction. Disturbances can result in wildlife moving away from the trail, shifting habitat use, or abandoning a site. Over time, this may result in reduced fitness and reproductive success.

Environmental education and interpretive programs generally accommodate groups of participants, and studies have shown that increasing group size has an impact on wildlife (Beale and Monaghan 2004; Remacha et al. 2011). In addition to group size, loudness has also been found as an important variable to disturbance of wildlife, and loudness of people present can be more important than the number of people present (Burger and Gochfeld 1991). Studies showed that reducing group size, allowing safe distances, and reducing noise levels helps minimize negative impacts on wildlife (Beale and Monaghan 2004; Burger and Gochfeld 1991; Remacha et al. 2011).

A general assessment of impacts to wildlife resulting from environmental education, interpretation, and associated uses has been compiled from the literature and is summarized in Short-Term and Long-Term Impacts, below. In most cases, environmental education and interpretation, with stipulations described below, will result in minor, short-term disturbance to wildlife.

On the other hand, participation in environmental education and interpretation programs on the Refuge would foster an appreciation for the importance of wildlife and habitats, and result in a more informed public, with an enhanced stewardship ethic and greater support for wildlife conservation. Therefore, the use would contribute to Refuge purposes and the mission of the National Wildlife Refuge System.

Short-term impacts

Effects to Wildlife and Aquatic Species:

Disturbance intensity (frequency, distance, etc.). Disturbance responses can depend upon the activity type, recreationists' behavior, and the distance, duration, frequency, predictability, timing, and visibility of the use (Beider et al. 2009, Frid and Dill 2002, Hennings 2017, Knight and Cole 1995, Miller et al. 2020, Stankowich and Blumstein 2005). Wildlife responses vary by species and life history stage, and may include avoidance, habituation, or attraction. Flushing, especially repetitive flushing, is energetically expensive and can strongly impact foraging, resting, and nesting behavior of many bird species. Migratory birds have been observed to be more sensitive than resident species to disturbance (Klein 1989).

Nest predation for songbirds (Miller et al. 1998), raptors (Glinski 1976), colonial nesting species (Buckley and Buckley 1976), and waterfowl (Boyle and Samson 1985) tends to increase in areas more frequently visited by people where disturbance flushes birds away from their nests and creates vulnerabilities during nesting seasons. Frequency is a major factor, and songbirds have been found to alter behavior after repeated human disturbance, particularly red-winged blackbirds, goldfinches, and American robins, which became much more aggressive toward humans who repeatedly visited their nests (Knight and Temple 1986a, 1986b, 1986c).

Set-back distances for public use facilities have been found to be important in limiting human disturbance to wildlife. In Florida, 15 species of colonial waterbirds nesting at 17 colonies were exposed to three different human disturbance mechanisms to determine recommended set-back distances for protecting mixed-species nesting assemblages (Rodgers and Smith 1995). In general, a recommended set-back distance of about 100 meters (m) for wading bird colonies and 180 m for mixed tern/skimmer colonies was found to be adequate to effectively buffer sites from human disturbance caused by approach of pedestrians and motor boats (Rodgers and Smith 1995). In Nebraska, roosting sandhill cranes avoided sites near human disturbance features at 500 m from nearest paved road, 400 m from nearest gravel road, and 400 m from a single dwelling structure (Norling et al. 1992). Klein (1989) studied the effect of visitation on migrant and resident waterbirds at Ding Darling National Wildlife Refuge, finding that resident birds were less sensitive to human disturbance than migrants. Migrant ducks were particularly sensitive when they first arrived on-site in the fall. They usually remained at a distance of more than 80 m [from a visitor footpath on a dike], even at very low visitor levels. Herons, egrets,

brown pelicans, and anhingas were most likely to habituate to humans, thus exposing them to direct disturbance as they fed on or near the dike.

Shorebirds showed intermediate sensitivity. Strauss (1990) observed piping plover chicks spent less time feeding (50% versus 91%) and more time running (33% versus 2%), fighting with other chicks (4% versus 0.1%), and standing alert (9% versus 0.1%) when pedestrians or moving vehicles were closer than 100 m than when they were undisturbed. In addition, plover chicks spent less time out on the feeding flats (8% versus 97%) and more time up in the grass (66% versus 0.1%) during periods of human disturbance.

Conversely, wildlife tends to habituate best to disturbance that is predictable, as indicated by sandhill cranes in Florida and in Nebraska that nested within 400 m of highways, railroads, mines, and power lines, which provided a predictable background disturbance (Dwyer and Tanner 1992; Norling et al. 1992). Taylor and Knight (2003) found that for mule deer, the area of influence around off-trail areas was much greater than for on-trail areas, suggesting habituation to trails. However, the time it takes for wildlife to habituate, and what wildlife use is like compared to pre-disturbance uses, remains a question. Additionally, studies have shown that larger ungulate species, especially those with offspring, showed a higher level of alertness and flight response to human disturbance (Childress and Lung 2003, Papouchis et al. 2001, Stankowich 2008).

Group size. Disturbance impact to wildlife in relation to visitor group size is not a well-documented research area; however, a few studies have analyzed these impacts. Most animals flee from humans, and large groups of people may represent greater perceived risk of predation (Geist et al. 2005).

Remacha et al. (2011) analyzed visitor group size influences on the number and variety of birds observed during guided educational tours in a forested area in central Spain, with group sizes ranging from 7 to 20 people. The study showed that increasing visitor group sizes had an impact on wildlife, as large groups were associated with decreased bird numbers; additionally, the study found that birds may demonstrate reduced tolerance when faced with large groups of visitors, not only reducing their frequency of occurrence but also reducing the number of individuals. The study concluded that reducing the group size of visitors helps minimize the negative impacts on wildlife and also allows visitors to watch more wildlife (Remacha et al. 2011).

Another study by Beale and Monaghan (2004) on human disturbance effects to seabird colonies at St. Abbs Head National Nature Reserve in Scotland examined the variation in nesting success for two birds, kittiwakes and guillemots, as a function of different disturbance regimes, including varying the average number of people per hour and people load, which takes into consideration the number of visitors and their distance from the nest. Human disturbance was found to have a significant negative effect on nesting success in both species of birds. Increasing visitor numbers by 8.5

percent resulted in a 22 percent increase in the failure rate of kittiwakes and a 13 percent increase in the failure rate for guillemots. Beale and Monaghan concluded that perhaps the most likely explanation is that nesting birds perceive people to be a potential predator and show appropriate anti-predator physiological responses, which interferes with energy resources available for nesting. The results showed that safe distances, or buffer zones, depend on the numbers of people visiting an area and that both numbers and distance matter in determining disturbance effects.

Noise. In addition to group size, loudness has also been found as an important variable in whether birds altered their behavior. A study was conducted at the Arthur B. Marshall Loxahatchee National Wildlife Refuge in Florida between 1992 and 1994 to observe foraging behavior of birds at the refuge and understand how people affect foraging birds (Burger and Gochfeld 1991). Variation in feeding behavior was largely explained by whether people were present, the number of people present, and the amount of noise made by the people (Burger and Gochfeld 1991). For all species, time devoted to feeding and number of strikes or pecks decreased while people were present and as the noise made by people increased; interestingly, loudness was found to be more important than the number of people present (Burger and Gochfeld 1991). Noise level is not necessarily correlated with number of people present, but larger groups might be more prone to producing noise than small groups or individuals.

Literature suggests that organizing visitors in small numbers is recommended for groups, but also spreading out visits and locations of visits is recommended to mitigate disturbance across the landscape.

Pedestrian (hiking) versus vehicular access. It is widely accepted that wildlife are frequently more sensitive to disturbance from people on foot than in vehicles (Grubb and King 1991; MacArthur et al. 1982; Pease et al. 2005; Skagen 1980). Numerous studies have confirmed that people on foot can cause a variety of disturbance reactions in wildlife, including flushing or displacement (Erwin 1989; Fraser et al. 1985; Freddy 1986; Pease et al. 2005), heart rate increases (MacArthur et al. 1982), altered foraging patterns (Burger and Gochfeld 1991), and even, in some cases, diminished reproductive success (Boyle and Samson 1985).

A study on seven species of dabbling ducks at the Back Bay National Wildlife Refuge in Virginia found a significant difference between vehicular (diesel truck and electric passenger tram) and nonvehicular (pedestrian and bicyclist) treatments in the number of ducks that were flushed. In this study, 90 percent of the birds showed an observable response to nonvehicular treatments, of which 43 percent flew; the proportion of ducks that flew was greatest when they were located less than 100 m from the disturbance (Pease et al. 2005). In a review of several studies of the reaction of waterfowl and other wetland birds to people on foot, it was found that distances greater than 100 m in general did not result in a behavioral response (DeLong 2002). Mule deer in sagebrush-grassland habitat in Utah showed a 96 percent probability of flushing at 100 m from the line of movement of off-trail recreationists, with the probability not dropping to 70 percent until the perpendicular distance increased to

390 m (Taylor and Knight 2003).

These studies and others have shown that the severity of the effects depends upon the wildlife's distance from the disturbance and its duration, frequency, predictability, and visibility to wildlife (Knight and Cole 1995). In a logistic regression analyzing mule deer, pronghorn antelope, and bison response to mountain biking and hiking on- and off-trail, Taylor and Knight (2003) found that the variables best explaining wildlife response included wildlife species, perpendicular distance of animals to trail (closest distance of animal to trail, regardless of recreationist position), trail position (on-trail or off-trail), and degree of vegetation cover.

Environmental education. An unpublished study examined the effect of environmental education site activities at Blackhorse Lake on the Turnbull National Wildlife Refuge (Jose 1997). The study was designed to compare waterfowl presence and behavior patterns between the times when environmental education activities were occurring and when environmental education classes were not on-site. The study results indicated that fewer waterfowl were present in the study area when environmental education classes were on-site as compared to control times. The study also found more short flights undertaken by birds when classes were on-site. Redheads displayed the highest number of flight responses, followed by mallards. Ruddy ducks almost never flew but had the highest increase in directional swimming away from classes. The study recommended that sites heavily used by smaller bodied birds, such as ruddy ducks, buffleheads, and teal, not be used as environmental education sites.

Construction Impacts. Overall, physical improvements to the refuge's public use sites will result in minor, short-term disturbance to wildlife, through noise and human activity. This will include temporary disturbance when signs and kiosks are installed, and roads and trails are refurbished. Projects that would occur over a few weeks could cause longer-term disturbance to wildlife that would likely be displaced during construction (i.e., trail maintenance, overlook, and/or pedestrian crossing construction projects). In all cases, abundant habitat is available adjacent to construction sites for wildlife. It is expected that once construction is complete, wildlife would return to original areas. Removal of vegetation during the bird nesting season (April 1 through July 30) would be minimized whenever possible.

Effects to Habitat, Vegetation, and Soils:

Construction Impacts. Overall, physical improvements to the refuge's public use sites will have minor, short-term negative impacts, including soil disturbance. This will include temporary disturbance when signs and kiosks are installed, and roads and trails are refurbished. Construction activities would be minor to negligible and short term as best management practices during construction would be used to minimize or avoid impacts.

The refuge is comprised of over 700 acres of wetlands and approximately 200 acres of upland habitat. Most of the public use, as proposed here, would not impact water

resources, hydrology or wetlands in the refuge. Most activities would be limited to existing facilities/areas and would not occur in wetland areas. For example, installation of interpretive, directional, and other signage would have no impact since they would not be installed in wetland areas and would be installed in a manner that does not create impacts. At a few locations, short-term minor impacts to wetlands and water resources would occur during construction. All appropriate permits would be acquired before construction takes place and would include stipulations to protect wetlands and water resources.

Impacts from Public Use. People can be vectors for invasive plants by moving seeds or other propagules from one area to another. Once established, invasive plants can out-compete native plants, thereby altering habitats and indirectly impacting wildlife. The threat of invasive plant establishment will always be an issue requiring annual monitoring and treatment when necessary. To mitigate these impacts, interpretive signage and materials about invasive species will be available as part of regular programming on and off site. Refuge staff and volunteers will work at eradicating invasive plants. Other impacts may include the deposition of litter and erosion caused by the damage to vegetation from trampling.

Effects to Visitor Use and Experience:

Projections of the numbers of visitors and the proportion of visitors engaged in different uses (wildlife observation, wildlife photography, environmental education, and interpretation) are difficult to predict at this time. Therefore, potential conflicts between user groups are difficult to predict. The following analysis is based on conflicts observed at Tualatin River NWR. Since public use primarily occurs on a six-foot-wide levee trail, this could lead to recreational trail walkers or larger groups associated with environmental education disturbing visitors engaged in wildlife observation or photography, or viewing or photography of rare birds. Special events could result in negative interactions between visitor groups due to the potential influx of visitors. The refuge would implement measures to reduce these conflicts, as needed. Signage and informational materials on wildlife watching etiquette, as well as limitations on education group size and supervision of these groups, would help reduce these conflicts.

The potential for conflicts between hunting and non-hunting visitors has been addressed by allowing non-hunting access on non-hunt days only during the migratory bird hunting season. Signs and other information would be installed and available to inform the public that non-hunting access is not allowed on hunt days, and ensure safety. Portions of trails would be closed on non-hunt days to minimize disturbance to hunters on adjacent private lands and improve safety. This seasonal closure would also minimize conflicts between user groups and hunting on private lands surrounding the Refuge.

Environmental education and interpretation provide indirect beneficial impacts for visitors engaged in programs and activities. One study found that animal-oriented

activities have an impact on the knowledge and attitudes of students involved in environmental education. Direct instruction methods in which children examined the anatomical and behavioral characteristics of live spiders and snakes promoted a positive attitude toward these animals (Kellert and Westervelt 1983; Kress 1975). Eighth graders engaged in wildlife-oriented activities were found to be more likely to recognize the importance of lower forms of animal life and preserving endangered species and to have greater tolerance for predators (LaHart 1974). Another study concluded, “if one were to try to change attitudes, education without an experiential component might not be very effective” (Baird and Tolman 1982:12).

Long-term impacts

Effects to Wildlife and Aquatic Species:

As noted above, disturbance to wildlife by activities associated with recreational trails has long been documented can result in wildlife moving away from the trail, shifting habitat use, or abandoning a site (Beale and Monaghan 2004; Burger 1981; Gill et al. 1996; Knight and Cole 1991). For example, birds nest farther away from trails (Miller et al. 1998) and reproductive success diminishes with increased disturbance on the trail (Schulz and Stock 1993). Human presence and disturbance can alter the ability of wildlife to use or access resources (food supplies, roosting sites, or prey species) (Gill J.A. 2007). Wintering waterfowl are known to experience higher levels of disturbance by pedestrians than vehicles in an impoundment system (Pease et al. 2005). However, joggers can be more disruptive than walkers on trails (Lethlean 2017). Noise impacts on wildlife are also well documented (Shannon et al. 2016), which can interfere with wildlife communication, behavior, and abundance. If disturbance is repeated, prolonged or of high intensity during critical life history stages, this may result in long-term changes to wildlife use patterns and populations.

Several studies have identified management actions to minimize wildlife impacts including seasonal closures, designated parking areas, etc. (Pease et al. 2005, Borgmann 2010). Refuge staff will seek to minimize impacts from these two uses by limiting public access to trails and sites that are designed to support these uses (off-trail travel and recreational boating on the lakebed would be prohibited); and by closing the southern portion of the levee trail from mid-October through January to reduce impacts to migrating birds.

Effects to Habitat, Vegetation, and Soils:

Most of the public access to support the two uses would occur on hard-surface trails and dikes. Increased damage to ecosystems is known to occur when informal trails are created and used by the public (Barros and Pickering 2017). No informal off-trail activity is permitted, and environmental education groups that conduct activities off-trail would be supervised and limited in size. Therefore, impacts to vegetation and soil should be minimal.

People can be vectors for invasive plants when seeds or other propagules are moved

from one area to another. The threat of invasive plant establishment will always be an issue requiring annual monitoring, and when necessary, treatment. Staff will work to educate the visiting public to reduce introductions and also monitor and control invasive species. This threat is considered to be minimal.

Vegetation would be permanently cleared from trails, parking areas, and potentially, outdoor classroom areas. However, the total area impacted would be a small percentage of the total Refuge area, representing a minor loss of upland vegetation on levees and levee toes.

Effects to Cultural Resources and Indian Trust Resources:

Public use, including new facilities, as proposed here, will not likely impact cultural and Indian Trust resources. All activities with the potential to impact historic properties or areas of importance to local Tribes will comply with Section 106 of the National Historic Preservation Act (NHPA) prior to implementation and are noted above. The regional Section 106 review form is provided in Appendix 2 of the EA for the Public Access Plan (USFWS 2021b).

Effects to Socioeconomics and Environmental Justice:

Socioeconomics. Visitation would increase markedly compared to current levels, and would occur year-round. This increase in visitation would have a positive impact on the local economy of Gaston, Oregon, since visitors are likely to patronize small local businesses such as the coffee shop, market and other food services. The Banking on Nature 2017 report (Caudill and Carver 2019) estimates that non-consumptive use at Tualatin River NWR results in over \$2.2 million in recreation expenditures. However, due to Wapato Lake NWR's location and less developed facilities, visitation and therefore recreation expenditures are likely to remain significantly lower than at Tualatin River NWR. Construction of, and repair to facilities would also generate a small amount of local economic activity. Therefore, this impact, while positive and long-term, would be minor as a percentage of total economic activity in the local area.

Environmental Justice. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all Federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high or adverse human health or environmental impacts of their programs and policies on minorities and low-income populations and communities. The Service has not identified any potential high and adverse environmental or human health, negative impacts from the actions proposed in this CD. Current and future programming, in association with the proposed improvements, seek to attract people from groups that have traditionally not engaged in these types of activities and to expand into underrepresented communities, resulting in increased engagement by and with these communities, with positive impacts on environmental justice.

Public Review and Comment

The draft compatibility determination will be available for public review and comment for 30 days, coinciding with the comment period for the Draft Public Access Plan and Environmental Assessment. The public will be made aware of this comment opportunity through: newspapers, postings at local libraries, letters to potentially interested people such as adjacent landowners, notices in utility bills, and tribes, public meetings, or other places/media outlets. A hard copy of this document will be available at the Refuge Headquarters or Visitor Center 19255 SW Pacific Hwy, Sherwood, Oregon. Copies will also be available at City Hall, 116 Front Street, Gaston, OR 97119. It will be made available electronically on the refuge website (https://www.fws.gov/refuge/wapato_lake/). Please let us know if you need the documents in an alternative format. Concerns expressed during the public comment period will be addressed in the final.

Determination: Is the use compatible, with stipulations?

Yes

Stipulations Necessary to Ensure Compatibility

1. Environmental education facilities and activity areas shall be designated and/or constructed in locations that consider the site's potential for contributing to a diverse and rich curriculum and minimizing impacts to sensitive resources, including listed species and wintering waterfowl.
2. Advance reservations would be required for all groups participating in environmental education activities.
3. Adult supervision would be required for organized activities involving participants up to twelfth grade.
4. All groups will be provided instructional material in trail and off-trail etiquette and ways to reduce wildlife and habitat disturbance as part of their self-guided packet, or in person welcome when available.
5. Generally, no more than 50 students (plus teachers and chaperones) would be allowed on any given section of the refuge at any given time. Classes would be required to break up into smaller groups of no more than 15 students.
6. Designated areas of the Refuge will be open with restrictions during the waterfowl hunting season, which occurs from mid-October thru January. During this period access will be limited to Sundays, Mondays, Wednesdays, and Fridays.
7. The Refuge will be open during daylight hours only (30 minutes before sunrise to 30 minutes after sunset), except for the hunting program.
8. Wintertime sanctuary closures will be maintained.
9. Littering, abandoning, discarding, or otherwise leaving personal property unattended is prohibited.
10. Removal of any plants, animals, artifacts, or parts thereof, from the Refuge is prohibited.
11. Pets are not allowed, except for registered service animals.
12. Open areas are limited to the hiking trail on the top of the levees, designated parking area, northern high ground, and specific blinds and their access.
13. Motorized and non-motorized vehicles, such as ATVs, UTVs, bicycles, skateboards, and other off-road vehicles are prohibited.
14. Electric wheelchairs shall be allowed on trails for persons with disabilities.
15. Camping, overnight use, and fires are prohibited.
16. Use of drones is prohibited.
17. Use of boats and flotation devices is prohibited.
18. Registration will be required for organized groups of 15 people or more.

19. During special events, tours must avoid sensitive sites occupied by rare species.
20. Activities outside of posted use times have to be approved by the refuge manager on a case-by-case basis.
21. Periodic monitoring and evaluation of sites and programs will be conducted to assess if objectives are being met and ensure that the resource is not being unacceptably degraded. If disturbance to wildlife or damage to habitat reaches unacceptable levels, the refuge will avoid or limit activities in those areas.

Justification

Given the location of wintertime sanctuary closed areas and the locations of these uses they are expected to have only a minor direct impact on Refuge resources. It is anticipated that wildlife populations will find sufficient food resources and resting places such that their abundance and use of the refuge will not be measurably lessened from allowing these activities to occur. The relatively limited number of individual animals and plants expected to be adversely affected will not cause populations to materially decline, the physiological condition and production of refuge species will not be impaired, their behavior and normal activity patterns will not be altered dramatically, and their overall welfare will not be negatively impacted. Environmental education and interpretation support refuge purposes and any resource impacts from these uses can be minimized or avoided. Various minimization or avoidance measures will be conducted and include but are not limited to: encouraging visitors to stay on trails and in existing visitor areas, closing areas temporarily or permanently to protect wildlife and habitats, overseeing large group visits, implementing best management practices during construction, limiting the mode of travel such as pedestrian travel only, and numerous other measures. Allowing environmental education and interpretation to occur under the stipulations described above will not materially detract from or interfere with the purposes for which the refuge was established or the refuge mission. Environmental education and interpretation provide visitors with the joy of experiencing wildlife on their public lands, and as such, help fulfill the mission of the National Wildlife Refuge System.

Signature of Determination

Refuge Manager Signature and Date

Signature of Concurrence

Assistant Regional Director Signature and Date

Mandatory Reevaluation Date

2036

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