Attachment 5

FINAL DRAFT

SAUVIE ISLAND WILDLIFE AREA MANAGEMENT PLAN

September 2010

Oregon Department of Fish and Wildlife
3406 Cherry Avenue NE
Salem, Oregon 97303

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Executive Summary

Sauvie Island Wildlife Area is one of several wetland-focused wildlife areas managed by the Oregon Department of Fish and Wildlife (department). The wildlife area is located in Columbia and Multnomah Counties, south of the confluence of the Columbia River and Multnomah Channel, approximately 12 miles from downtown Portland. The wildlife area presently encompasses 11,564 acres.

Purpose of the Plan
This 2010 Sauvie Island Wildlife Area (SIWA) Management Plan will:

1. Outline the purpose and describe the most important management challenges currently facing SIWA;

2. List, prioritize, and justify the main management goals and objectives at SIWA;

3. Summarize the current status of habitats on SIWA and the changes in habitat composition SIWA staff will strive to achieve during the next 10 years;

4. Outline specific strategies SIWA staff will use to achieve the objectives outlined in the plan;

5. Ensure that management programs on SIWA are consistent with the original mandate and purpose of the area when it was first established and are consistent with Federal, State, and local natural resource plans;

6. Address conservation priorities and recommendations described in the 2006 Oregon Conservation Strategy;

7. Communicate the department's management priorities for SIWA to its neighbors, adjacent landowners, visitors, and to the public, and;

8. Provide a basis for budget requests to support SIWA needs for staffing, operations, maintenance, and capital improvements.

SIWA was established in 1947 with primary objectives of protecting and improving waterfowl habitat and providing a public hunting area. Managing waterfowl habitat and providing public hunting programs continue to be the main management priorities of SIWA staff. However, there are several major challenges facing the wildlife area today, including a dramatic increase in public use, an ever increasing wintering population of geese, developing new wetlands, and restoring other habitat types.

Public use on the wildlife area was 989,361 visitor days in 2009. Due to its close proximity to the Portland Metropolitan Area SIWA staff expects public use to continue to climb. In particular, the beaches of SIWA receive 55% of the total annual public use.

When the wildlife area was created, approximately 6,000 geese were counted on SIWA during the winter; today survey counts have totaled over 100,000. During spring and fall

migrations, peak numbers of geese can approach 300,000; consequently, SIWA staff are being asked to manage habitats to support more geese to help reduce crop depredation on private lands and meet Oregon's obligations for continental management of Pacific Flyway geese.

In addition to managing the wildlife area for waterfowl and public use, SIWA staff are also striving to protect and manage important habitats for many different fish and wildlife species, including those of conservation concern. The Oregon Conservation Strategy (OCS) (ODFW, 2006) recommends specific conservation actions to protect priority habitats and species. Nine distinct habitat types occur on SIWA, several of which are designated as 'Strategy Habitats' (oak woodlands, riparian wetlands and wet prairie) as defined by the OCS. Habitat types present on the wildlife area include wetlands of various types, freshwater aquatic (open water), riparian / bottomland hardwood forest, beach, pasture/grassland, agriculture and oak woodland/savannah. Wetland restoration is one of many efforts being implemented on the wildlife area to achieve wildlife habitat management goals. The wildlife area will continue to put a high priority on wetland restoration work while investigating ways to increase the carrying capacity of habitat used by wintering geese.

Another of the wildlife area's management priorities is Sturgeon Lake, a 3,000-acre open water/wetland area. Due to levee construction which has altered natural hydrology, the lake is silting in and subsequently the wetlands are becoming non-functional. The large levee (Sauvie Island Drainage District Levee) surrounding the south end of Sauvie Island has over the years reduced flushing action from the Gilbert River thus reducing lake depth. Sturgeon Lake and many of SIWA's shorelines are tidally influenced and these areas are important for foraging shore birds and refugia for juvenile salmonids. There is an ongoing effort by SIWA staff and the Sturgeon Lake Restoration Planning Group to restore the hydrology of the lake. These restoration efforts are described in further detail in this plan's Habitat Management Unit section.

Planning Approach

This plan revises the original long range management plan for SIWA, initially adopted by the Oregon Fish and Wildlife Commission (Commission) in 1993. The 1993 plan focused on public use, habitat goals and strategies directed towards meeting specific wildlife abundance objectives.

The goals, objectives and strategies (implementation actions) described in this 2010 revised plan were derived from many of the conservation recommendations described in the OCS. This plan takes a strong habitat-based management approach recognizing that a landscape of well managed habitats is the best way to meet the needs of fish and wildlife species. Habitat goals, objectives and associated strategies were developed in an attempt to balance key habitat enhancement and maintenance with public use opportunities associated with those habitats.

This plan describes current issues and provides actions for addressing them. These actions will be implemented during the life of this plan, but are subject to availability of funding and personnel. The management plan will be reviewed in 2015 to gauge the progress of implementation and revised in 2020.

Management Vision
The vision for Sauvie Island Wildlife Area is as follows:

> *Wetlands, and associated upland habitats, in the Columbia River bottomlands are being preserved and enhanced through sound management measures to support a diverse array of fish, wildlife and plant species, for use and enjoyment by present and future generation*s.

Plan Goals
The goals for SIWA are:

Goal 1: To protect, enhance and manage wetland habitats to benefit fish and wildlife species.

Goal 2: To protect, enhance and manage upland habitats to benefit a wide variety of wildlife species.

Goal 3: To maintain waterfowl hunting programs and provide a variety of other fish and wildlife oriented recreational and educational opportunities to the public that are compatible with Goals 1 and 2.

Goal 4: To control other public uses to minimize impacts on fish and wildlife, their habitats, and fish and wildlife related recreation and to maintain the security of the wildlife area and reduce disturbance to neighboring private lands.

Implementation Approach
Habitats on SIWA are both actively and passively managed. Active management within wetlands includes water level control (drawdowns and flooding) and vegetation manipulation (disking, mowing, farming and grazing). In areas without water level control infrastructure, wetlands are passively managed through seasonal closures or restrictions on the type of public uses.

The primary action for benefiting wildlife is managing or preserving the range of habitat types that historically occurred on Sauvie Island. These habitats were created and maintained by a suite of ecological processes, most importantly hydrology. The natural ecosystems on Sauvie Island have been irreversibly altered since initiation of Euro-American settlement in the early 1800s. The most noticeable changes have been a disruption of hydrology, due to dams on the Columbia and Willamette river systems, and the proliferation of invasive plant and animal species. Recently, suspected climate changes seem to have added other disturbances to an already significantly altered system.

Due to the wide variety of habitat use among different fish and wildlife species, benefits will be varied. Not all species or guilds of species will see benefits at all times. In addition, recreational opportunities based on public demand will be balanced with habitat capabilities and resource needs; therefore public uses will not be maximized in all cases. The department's current direction is to manage specific habitat types or features in an attempt to meet the life-history needs of specific wildlife species or guilds.

Purpose and Need of Sauvie Island Wildlife Area

The Oregon Game Commission (now the Oregon Fish and Wildlife Commission) initiated the purchase of SIWA because of the historically high levels of wintering waterfowl use on Sturgeon Lake and associated wetlands. SIWA was purchased to protect and restore these critical wetland habitats. While SIWA was not formally established until 1947, an initial purchase of five acres occurred in 1940. Additional purchases of land occurred mostly during the mid-1940s and 1950s, with the final purchase occurring in 1987. The Federal Aid to Wildlife Restoration Act of 1937 (Pittman-Robertson Act or PR) was the major funding source used to acquire Sauvie Island parcels from willing private landowners. This funding supported the initial development of SIWA's infrastructure and continues as the major funding source for habitat management activities today. The department acquired properties from landowners because the parcels, consisting mostly of dairy operations, were located outside the protection of the Sauvie Island Drainage District levee. The dairies struggled since they were flooded almost every year. However, these properties were recognized as having excellent wildlife habitat value, especially for waterfowl (See Appendix A for detailed acquisition history).

The initial purchase of five acres in 1940 and subsequent purchases through 1987 has brought the wildlife area to its present size of 11,543 acres, of which 8,053 acres are under fee title to the department and 3,490 acres are managed through a cooperative agreement with the Oregon Department of State Lands (DSL). Sturgeon Lake (approximately 3,000 acres) is included in the DSL agreement. The wildlife area also incorporates all submersible lands adjacent to the department's deeded property of SIWA, as part of a cooperative management agreement with DSL.

Over time the management challenges of SIWA have become more complex as the department balances waterfowl habitat needs and waterfowl hunting with an increase in wintering geese, increased demands for public use, fish and wildlife habitat needs and the need to integrate SIWA with the OCS. SIWA staff has identified four primary management foci:

1. Providing wetland habitat for waterfowl and other waterbirds;
2. Providing forage habitat for wintering Canada geese;
3. Meeting Oregon Conservation Strategy objectives for species and habitats, and;
4. Providing recreation and stewardship opportunities for hunters, anglers, wildlife viewers and other wildlife-oriented recreational users.

A brief explanation for each is provided below.

1. Providing wetland habitat for waterfowl and other waterbirds

The Willamette Valley Ecoregion is an important habitat area for migrating, wintering and breeding waterfowl in the Pacific Flyway. The SIWA, although a small component of this ecoregion, provides significant, high quality habitat, especially for wintering birds. The Pacific Coast Joint Venture guides cooperative management of these habitats

within the Lower Columbia River and Willamette Valley. Within this broader Joint Venture framework, SIWA staff focus on managing wetland habitats consistent with the regional and national waterfowl management objectives and the objectives for the area established by the department. The wildlife area's habitat management activities also support shorebirds, wading birds, and other notable species such as sandhill cranes. SIWA staff manages mudflats specifically for migrating shorebirds. Sandhill cranes utilize both the wetlands and the agricultural food crop areas for foraging as well as Sturgeon Lake for roosting. Wetlands also provide habitat for other species such as songbirds, amphibians, and mammals.

2. Providing forage habitat for wintering Canada geese

As mentioned before, one of the primary purposes of the wildlife area will be to continue managing upland pastures/grasslands to provide foraging habitat for geese and minimize their dispersal to, and grazing impacts on, neighboring private agricultural areas.

SIWA also plays an important role in meeting Pacific Flyway Council management objectives for wintering geese within the broader complex of federal refuges and state wildlife areas. Specifically, objectives and strategies in this plan were designed to be consistent with the Dusky Goose and Cackling Goose Management Plans and Northwest Oregon / Southwest Washington Canada Goose Agricultural Depredation Control Plan (Pacific Flyway Council, http://pacificflyway.gov/Management.asp).

3. Meeting Oregon Conservation Strategy objectives

Currently, SIWA supports a biologically diverse association of wildlife which includes at least 275 species of birds, 37 species of mammals, 12 species of reptiles and amphibians, and numerous species of fish and plants. The OCS (http://www.dfw.state.or.us/conservationstrategy), approved by the U.S. Fish and Wildlife Service (USFWS) and adopted by the Oregon Fish and Wildlife Commission in 2006, is the State's overarching strategy for conserving fish and wildlife species and habitats of concern. Strategy habitats occurring on SIWA include oak woodlands, riparian zones, and wetlands. Many management activities already occurring on SIWA to fulfill other state and/or federal management goals also address the conservation needs identified in the OCS. Examples of current management activities include restoring wetlands and controlling invasive plants. In addition, SIWA staff would like to enhance oak woodlands and grasslands by conducting large scale prescribed burns but have not done so because of air quality concerns raised by the cities of Portland and St. Helens. To address these concerns, SIWA staff will partner with city, county, state and federal agencies and non-governmental organizations with expertise conducting prescribed burns, to show the benefits of such activities. SIWA staff will continue to seek partnerships with numerous entities to work on additional habitat projects in the future.

4. Providing recreation and stewardship opportunities for hunters, anglers, wildlife viewers and other wildlife-oriented recreational users.

Providing wildlife-oriented recreational and stewardship opportunities is an important goal for SIWA. One key purpose of this plan will be to describe how public use will be managed to protect fish and wildlife and their habitats, protect SIWA infrastructure, and maintain the security and peaceful environment of the wildlife area and neighboring private lands.

Background

Sauvie Island Wildlife Area (SIWA) is one of several wetland-focused wildlife areas managed by the Oregon Department of Fish and Wildlife (department). The wildlife area is located in Columbia and Multnomah Counties, south of the confluence of the Columbia River and Multnomah Channel, approximately 12 miles from downtown Portland. The wildlife area presently encompasses 11,564 acres.

SIWA is one of Oregon's outstanding natural treasures, supporting diverse species and habitats. SIWA is an important part of the Pacific Flyway for migrating and wintering waterfowl, attracting peak concentrations of more than 150,000 ducks and geese in the winter. Because of habitat protection on SIWA many other fish and wildlife species also benefit such as salmonids, songbirds and turtles. It is a keystone of the Portland/Vancouver regional natural resource complex and a Conservation Opportunity Area within the Oregon Conservation Strategy.

SIWA provides the largest number of public recreational use days for any department wildlife area. Sauvie Island has become one of the most visited locations in Oregon, even surpassing Crater Lake National Park almost two fold (counts in 2008 - 415,686 visitors at Crater Lake and nearly 800,000 at SIWA). SIWA has unique management challenges due its diverse habitats, an increasing population of wintering geese, varied public uses and large numbers of visitors who recreate on the wildlife area. This plan outlines how SIWA staff will address these management challenges during the next 10 years.

SIWA was established in 1947 with the primary purpose of protecting and improving waterfowl habitat and providing a public hunting area. Managing habitat and providing public hunting programs continue to be the main management priorities of SIWA staff. However, over time, the public's expectations of what the wildlife area should provide, in terms of habitats and recreational uses, have changed and often differ with one another. For example, the conservation community expects management activities which will restore remnant native habitats by converting pastures to grasslands which would protect sensitive species such as nesting birds and turtles. However, the agricultural community expects management activities to address goose depredation by increasing the amount of pastures to attract and hold more geese. SIWA staff must balance the main priority of habitat management to support fish and wildlife while attempting to address the broad range of public expectations. Below are some of the major management challenges facing the department and SIWA staff.

Habitat Management

One of the wildlife area's top habitat management priorities is to maintain or restore wetland habitats to support a wide variety of fish and wildlife. For example, the off-channel features of Sturgeon Lake provide important habitat for migrating and rearing juvenile salmonids, wintering waterfowl, sandhill cranes, shorebirds, songbirds and turtles. Most of the salmonids are on both federal and state threatened and endangered species lists. Historic wetlands were drained for agricultural crop production. Sturgeon Lake is another major wetland management concern. The historic hydrologic characteristics of the lake and its associated wetlands have been severely altered by the construction of the Sauvie Island Levee in the early 1940s. This levee stopped the natural flushing action of the lake system resulting in siltation. SIWA staff, under the guidance of the Sturgeon Lake Restoration Planning Group, has secured an Oregon Watershed Enhancement Board (OWEB) technical assistance grant to restore the lake's hydrology, if possible.

The department faces differing opinions and expectations regarding the amount of goose forage habitat that should be provided on SIWA. These expectations are influenced by international treaties and decisions regarding population goals for these migratory species. Within recent history, the cackling Canada goose population has shifted its winter distribution from California primarily to the Willamette Valley of Oregon and birds can be found using the wildlife area extensively. Long-term agreements between Pacific Flyway partners and Alaska natives call for a management goal of 250,000 for the cackler population. The current population is approximately 175,000. This has created a need for state wildlife areas and federal refuges in the Willamette Valley to be managed to provide for a higher carrying capacity to maintain these additional birds and assist in Flyway management plan achievement. Goose use on SIWA has increased dramatically over the last three decades as a result of changes in distribution of wintering geese. When the wildlife area was created, approximately 6,000 geese were counted on SIWA during the winter; today survey counts have totaled over 100,000. Agricultural interests are concerned that the increased numbers of geese will increase the damage problems farmers are experiencing. The agricultural community is requesting that public lands be managed for higher levels of goose forage to prevent these birds from using neighboring crop lands. At the same time, groups and individuals interested in the conservation of other species are concerned that conversion of additional lands into goose forage pastures will reduce the amount of habitat for these other species. These groups are asking that additional acreage be converted from pasture to native habitats such as oak woodlands or grasslands. These desires for different emphases on wildlife habitat types create a significant management challenge for the department at all of its wildlife areas, but in particular at SIWA.

On occasion public interests create tension with each other or the wildlife area's habitat management objectives. For example, creating new parking areas to handle ever increasing numbers of beach visitors would eliminate wildlife habitat. Another example raised by divergent user groups involves the protection of ground nesting birds in parts of SIWA where dog training and organized dog trials are permitted. There is a concern that these activities may be negatively affecting ground nesting birds due to disturbance associated with allowing dogs access to areas where these nests may be present. The challenge for SIWA staff is to attempt to manage both numbers of visitors and potential controversy between user groups.

From a statewide perspective, the department is committed to addressing six key conservation issues which are described in the OCS. These key conservation issues are: land use changes, invasive species, disruption of disturbance regimes, barriers to fish and wildlife movement, water quality and quantity and institutional barriers to voluntary conservation. SIWA will address key conservation issues when and where possible. One of the most important issues threatening the wildlife area is invasive species. For example reed canarygrass has invaded all of the wildlife area wetlands and control measures such as flooding have been implemented with some success. At the local level, SIWA staff will implement the OCS' recommended conservation actions for the Columbia River Bottomlands (WV-01) Conservation Opportunity Area (COA) of which the wildlife area is a part. These conservation actions include: improve water delivery system on SIWA to enhance effectiveness of wetlands management, maintain or restore riparian habitat and ecological function and restore or enhance seasonal wetlands. Some of these actions have already been implemented such as wetland restoration, and other actions will be implemented in conjunction with the wildlife area's continuing primary objectives of providing habitat for waterfowl and public hunting opportunities.

Invasive species on SIWA are an important habitat management concern because of their ability to out-compete native and desired plants and animals. Invasive plants can significantly reduce plant diversity which impacts available forage for wildlife. The landscape may be altered as some invasive plants can form a monoculture. Examples of the primary invasive plant species that are controlled on SIWA include Himalayan blackberry, tansy ragwort, Canadian thistle and reed canarygrass. SIWA staff use many methods to control invasive plants such as mowing, disking, water level management and herbicides. Invasive wildlife species (e.g. nutria, bullfrogs and carp) are partially controlled by various means such as trapping and angling. Control of invasive species is a constant battle as infestations, arriving via various means of transport, can occur anywhere on the wildlife area.

The department recognizes that climate change is an important issue that could impact fish and wildlife populations in the future. Changes in habitats in Oregon that could result from climate change include increased coastal and river flooding, snow pack declines and lower summer river flows. These changes would affect water resources, altering the timing and regional patterns of precipitation, increasing runoff, flood and drought frequencies, increases in water temperature and other landscape scale impacts on SIWA. Climate change could make some plant species vulnerable to disease, insect outbreaks or competition by invasive species. In response to these changes plant and animal species composition and distribution may be altered. Efforts to evaluate and understand the regional impacts of climate change on habitats are an essential component to managing and monitoring habitats (ODFW, 2006). Therefore SIWA management activities such as habitat enhancement, water management and infrastructure modification, will be revised according to latest scientifically based information, to address these changes.

Public Recreation

SIWA is a very popular recreational destination in the Portland Metro area. The wildlife area currently accommodates a wide range of interests and activities. Public uses include hunting, angling, wildlife viewing, boating (especially kayaking and canoeing), dog training, hiking, photography, trap shooting and beach use. In 2009, 989,361 visitor days were recorded, and of this visitor use, 55% occurred on the beach areas along the Columbia River. Unfortunately, high levels of public use can impact fish and wildlife species through disturbance at critical times in their life cycle or physical alteration of their habitats. Public use can also occasionally exceed the physical capacity of facilities needed to accommodate these uses (e.g. parking areas). Depending on the level of impacts, it is likely that some public uses may need to be restricted in the future. The department will determine when and how to restrict uses, and provide the physical means (e.g. signage, kiosks) to implement such restrictions.

Beach use constitutes the largest public use and a separate beach use plan was developed in 1993 specifically to manage this use. The SIWA Beach Use plan is adjudicated through the Columbia County Circuit Court and any action the department takes that significantly deviates from this plan must be consistent with this court's decisions. During peak summer months existing facilities at SIWA can often be overwhelmed by great numbers of beach users and the department struggles to meet their needs. The department is also limited in its ability to accept requests for additional beach opportunities, all while still adhering to the Beach Use plan.

The recreational constituency at SIWA is very diverse and each has strong ownership in the activities they desire to pursue at this wildlife area. Many of these groups are requesting increases in their ability to use the area (i.e. more recreation days, access to other areas, increased time open, etc.). In many cases increasing the opportunity for one user group can result in decreased opportunities for other user groups. In addition, the ability to provide increased opportunity can be limited by the primary need of the department to protect wildlife species and habitats. An example is providing fishing access in a few areas used by native turtles during key thermoregulatory and nesting periods. The increasing demand for recreational opportunity creates a significant challenge for the department.

According to a national survey conducted by the USFWS, wildlife viewing is becoming the nation's fastest growing outdoor recreational activity (USFWS, 2006). In order to accommodate this growth, the department is enhancing and/or increasing viewing opportunities on all of its wildlife areas. SIWA staff in particular will increase viewing opportunities by allowing specific limited access (similar to the hunting public's regulated number of hunt days), developing an auto tour route and providing additional educational events similar to the SIWA Raptor Road Trip, a popular annual birding activity sponsored by Audubon Society of Portland, Metro and Hawkwatch International.

Public use of the wildlife area must be carefully controlled to deter criminal activity, and to maintain a secure and peaceful environment for both the users of the area and residents of Sauvie Island. The department maintains specific area and hourly closures, and works cooperatively with several law enforcement agencies to enforce these closures. The department provides funding to the Columbia County Sheriff's Office to support dedicated law enforcement patrols on the wildlife area. These

necessary law enforcement services can be impacted by reductions in funding at both the county or state level. Securing adequate funding of these services will remain a challenge into the future.

Wildlife Area Goals and Objectives

Wildlife area goals are broad, open-ended statements of desired future conditions that convey a purpose but do not define measurable units. In contrast, objectives are more concise statements of what and how much the department wants to achieve. Objectives derive from goals and provide the basis for determining activities or strategies, monitoring wildlife area accomplishments, and evaluating the success of strategies. Strategies are actions that will be used to meet objectives. Strategies describe when and where work will occur and who will be responsible for the work, if known.

The goals and objectives for Sauvie Island Wildlife Area are:

Goal 1: To protect, enhance and manage wetland habitats to benefit fish and wildlife species.

Wetland habitats are critical to supporting wintering waterfowl populations. Also, wetlands benefit a wide array of other wildlife and provide recreational hunting and viewing opportunities. There are 4,563 acres of wetlands on SIWA all of which are considered key habitats in the OCS. Of that total, 286 acres are located inside two levees that provide protection against flooding from the nearby Columbia and Willamette river systems. The remainder, including the 3,000 acre Sturgeon Lake, is located outside those levees. Wetlands in areas protected behind levees provide staff a higher degree of water level control and therefore greater flexibility to create and manage for specific habitat types. Those wetlands located outside protective levees are greatly influenced by the adjacent Columbia and Willamette Rivers and by tidal influences on a daily basis; consequently, management options on these lands are much more limited. Because of this important distinction, SIWA staff have drafted objectives separately for wetlands located inside versus outside the levees.

Sturgeon Lake

Objective 1.1: Conduct research on methods and then implement these methods to improve the biological and hydrological function of the 3,000 acre Sturgeon Lake system.

Inside the levees

Objective 1.2: Protect, enhance and manage approximately 286 acres of palustrine seasonally flooded wetlands and convert approximately 200 acres of existing poorly drained agricultural land into a total of 486 acres of this wetland type to benefit a wide variety of fish and wildlife species.

Outside the levees

Objective 1.3: Protect and enhance approximately 2,922 acres of lacustrine seasonally flooded wetlands to benefit a wide variety of fish and wildlife.

Objective 1.4: Protect and manage 285 acres of lacustrine permanently flooded wetlands to benefit a wide variety of fish and wildlife species.

Objective 1.5: Protect, enhance and manage approximately 795 acres of palustrine permanently flooded wetlands to benefit a wide variety of fish and wildlife species.

Objective 1.6: Enhance and manage 62 acres of palustrine semi-permanently flooded and 52 acres of palustrine seasonally flooded wetland habitats to benefit a wide variety of fish and wildlife species.

Objective 1.7: Protect and enhance approximately 161 acres of riverine wetlands to benefit a wide variety of fish and wildlife species.

Objective 1.8: Maintain and improve critical physical and functional infrastructure affecting wetland and water management activities within and outside the levees.

Goal 2: To protect, enhance and manage upland habitats to benefit a wide variety of wildlife species.

The department's upland management priority is to provide habitat, specifically pastures/grasslands, to hold wintering geese and minimize depredation on private lands. In addition, SIWA upland habitats contain oak woodlands and riparian areas, both which are Strategy Habitats in the OCS. Most of the upland habitats are located outside of the two levees and therefore subject to the hydrologic processes of the two river systems. As with the wetland habitats, SIWA staff has limited water control capabilities outside the levees especially after spring freshets. Depending on the duration and extent of inundation, upland habitats can experience changes in plant composition. Staff must address these potential vegetative changes, particularly in pastures and agricultural areas, to promote goose use.

Objective 2.1: Enhance habitat carrying capacity for wintering Canada geese by reviewing and modifying current habitat management practices on 2,230 acres of upland pastures/grasslands and 1,316 acres of agricultural cropland.

Objective 2.2: Maintain and improve the quality of 193 acres of existing Willamette Valley oak woodlands.

Objective 2.3: Maintain 2,857 acres of riparian/bottomland hardwood forest and improve the quality of these habitats.

Objective 2.4: Protect, enhance and manage approximately 2,230 acres of pasture/grassland habitats to benefit wildlife species, with emphasis on ground nesting songbirds.

Objective 2.5: Maintain and enhance SIWA facilities, structures, and equipment used to conduct habitat management, public use projects and other administrative functions.

Goal 3: To maintain waterfowl hunting programs and to provide a variety of other fish and wildlife oriented recreational and educational opportunities to the public that are compatible with Goals 1 and 2.

Public hunting is one of the primary reasons for the purchase and creation of SIWA and waterfowl hunting will remain a high priority public use on SIWA. Additional wildlife-oriented recreational opportunities (e.g. wildlife viewing, wildlife photography, hiking and dog training) will be allowed when such activities do not conflict with the main mission of managing waterfowl habitat. Wildlife viewing (primarily birding) is a major activity on the wildlife area and is expected to increase in popularity. Wildlife area staff will continue to seek ways to improve the wildlife viewing experience on SIWA. Sport fishing is also an important recreational pursuit on SIWA, and staff will continue to oversee four boat ramps, two ADA fishing piers, and several other popular access points to the Columbia and Gilbert rivers, the Multnomah Channel and several of the wildlife area's lakes.

For reference the word "compatible" in this document is used as defined in the 2007-08 Oregon Wildlife and Commercial Fishing Codes Title 41 ORS Chapter 496 General Provision 496.004 which states in "Article (3): "Compatible" means capable of existing in harmony so as to minimize conflict."

Objective 3.1: Provide approximately 165,000 hunting, trapping, and angling use days annually.

Objective 3.2: Provide opportunities for individual dog training and dog field trials which will not conflict with wildlife habitat management objectives or Objective 3.1.

Objective 3.3: Provide 100,000 wildlife viewing, wildlife-oriented education and interpretation use days annually, compatible with Objective 3.1 and habitat management objectives.

Goal 4: To control other public uses to minimize impacts on fish and wildlife, their habitats, and fish and wildlife related recreation and to maintain the security of the wildlife area and reduce disturbance to neighboring private lands.

Non-wildlife oriented public uses are increasing each year as the population of the Portland Metropolitan Area grows. These other uses include beach use, windsurfing, horseback riding and bicycling among others. Along with rising numbers of visitors, SIWA staff has observed significant increases in littering and vandalism. Innovative approaches to control visitor numbers will need to be implemented when public use jeopardizes the primary mission of SIWA.

Objective 4.1: Manage non-wildlife oriented public use to minimize disturbance to wildlife species on SIWA.

Objective 4.2: Review the SIWA Parking Permit program to determine its effectiveness in providing appropriate levels of funding for maintenance, law enforcement and administration.

Objective 4.3: Continue implementation of the 1993 SIWA Beach Use Plan.

The objectives and strategies to implement each goal, as well as detailed rationale, are provided in this plan on pages 47 to 70.

Current Status of Habitats, Environment, and Infrastructure on SIWA

Physical Resources

Location

Sauvie Island Wildlife Area is located on the north end of the 24,000 acre Sauvie Island (see Figures 1.1, 1.2 and 1.3). The island is located at the confluence of the Willamette and Columbia Rivers. The island is bordered by the Willamette River on the south, Columbia River on the east and Multnomah Channel on the west. The wildlife area is 12 miles from downtown Portland. SIWA is a part of a complex of natural areas throughout the Portland Metro region. These natural areas are particularly important as the landscape becomes increasingly urbanized.

The wildlife area's headquarters is located at 18330 NW Sauvie Island Road, Portland, Oregon, 97231. Figures 1.1, 1.2 and 1.3 show the location and key features of Sauvie Island Wildlife Area.

Climate

SIWA is located at the northern end of the Willamette Valley, in a temperate climate in which summers are warm and dry, while winters are mild and wet. Temperatures range from average summer highs in the 80ºs (F) to average winter lows in the 30ºs (F). During the summer months, the daytime temperatures are moderated by cooler evening temperatures. Annual precipitation for Sauvie Island is about 40 inches, with about 70 percent falling between October and February. Less than three percent falls during July and August. Runoff follows a similar pattern, with high winter flows and low summer flows. Snow and freezing temperatures are generally absent in the winter or are present for short durations.

Figure 1.1 - Sauvie Island Wildlife Area Features and Ownership - Headquarters Unit

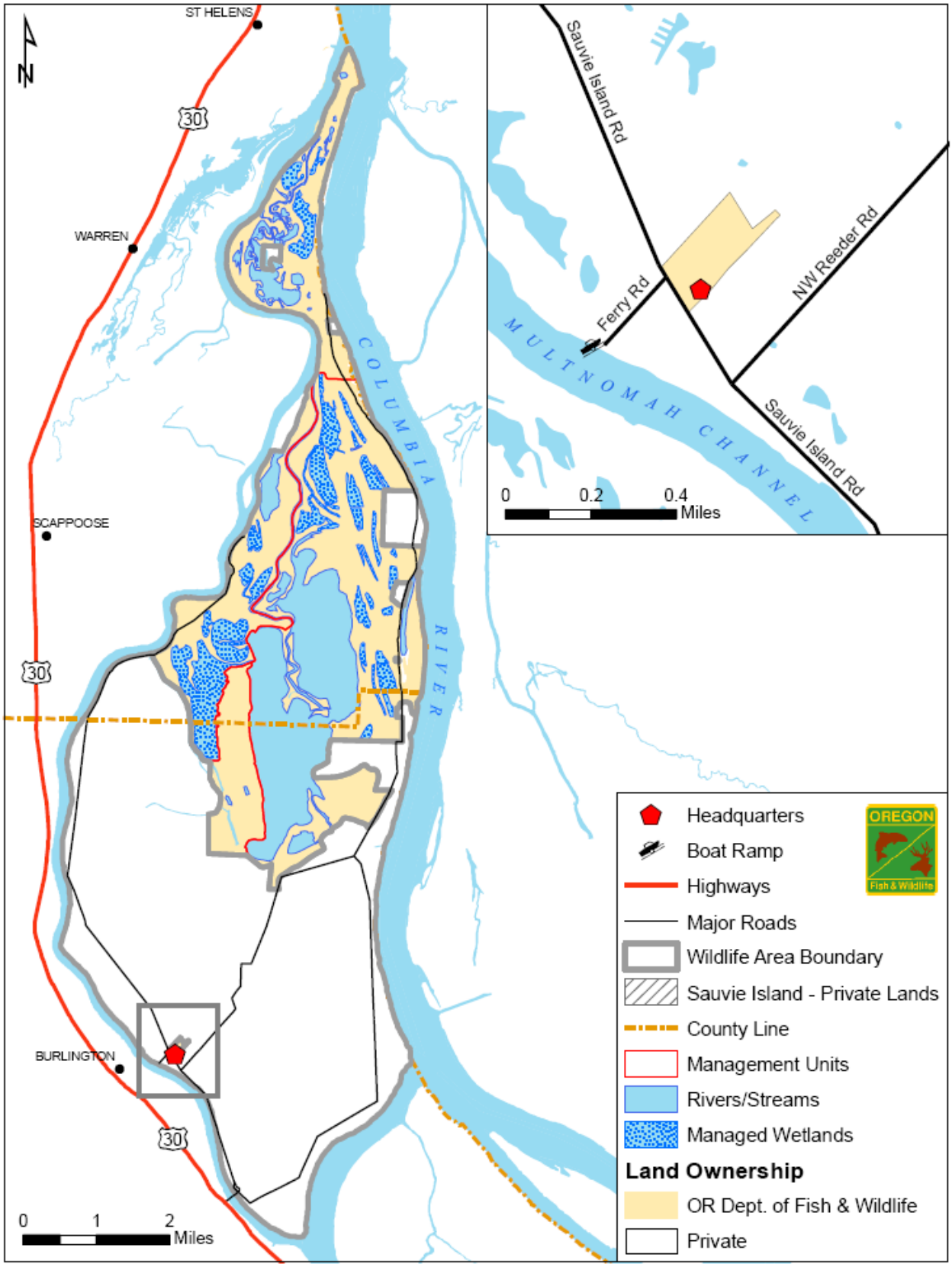


Figure 1.2 - Sauvie Island Wildlife Area Features and Ownership - North Unit

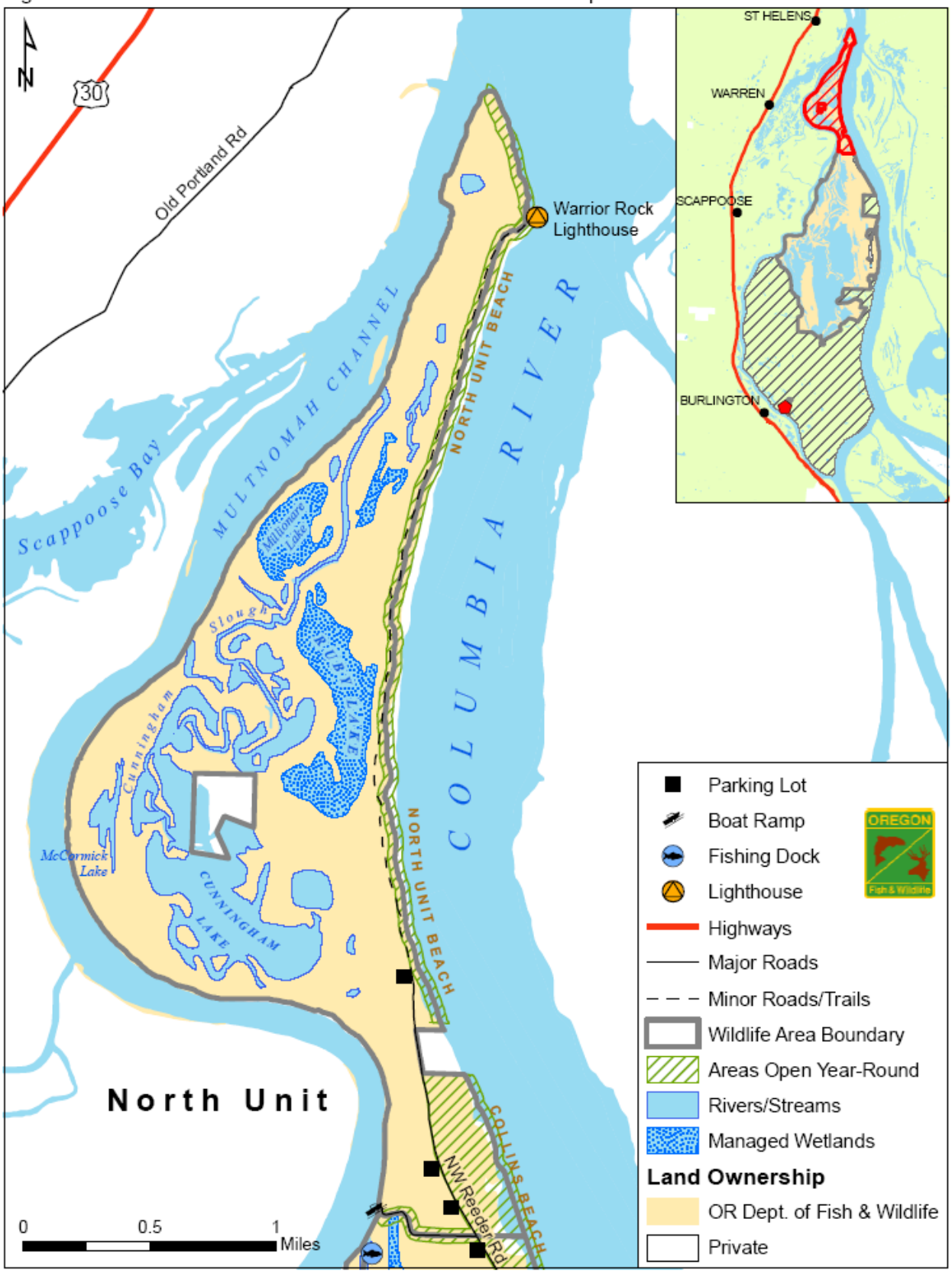
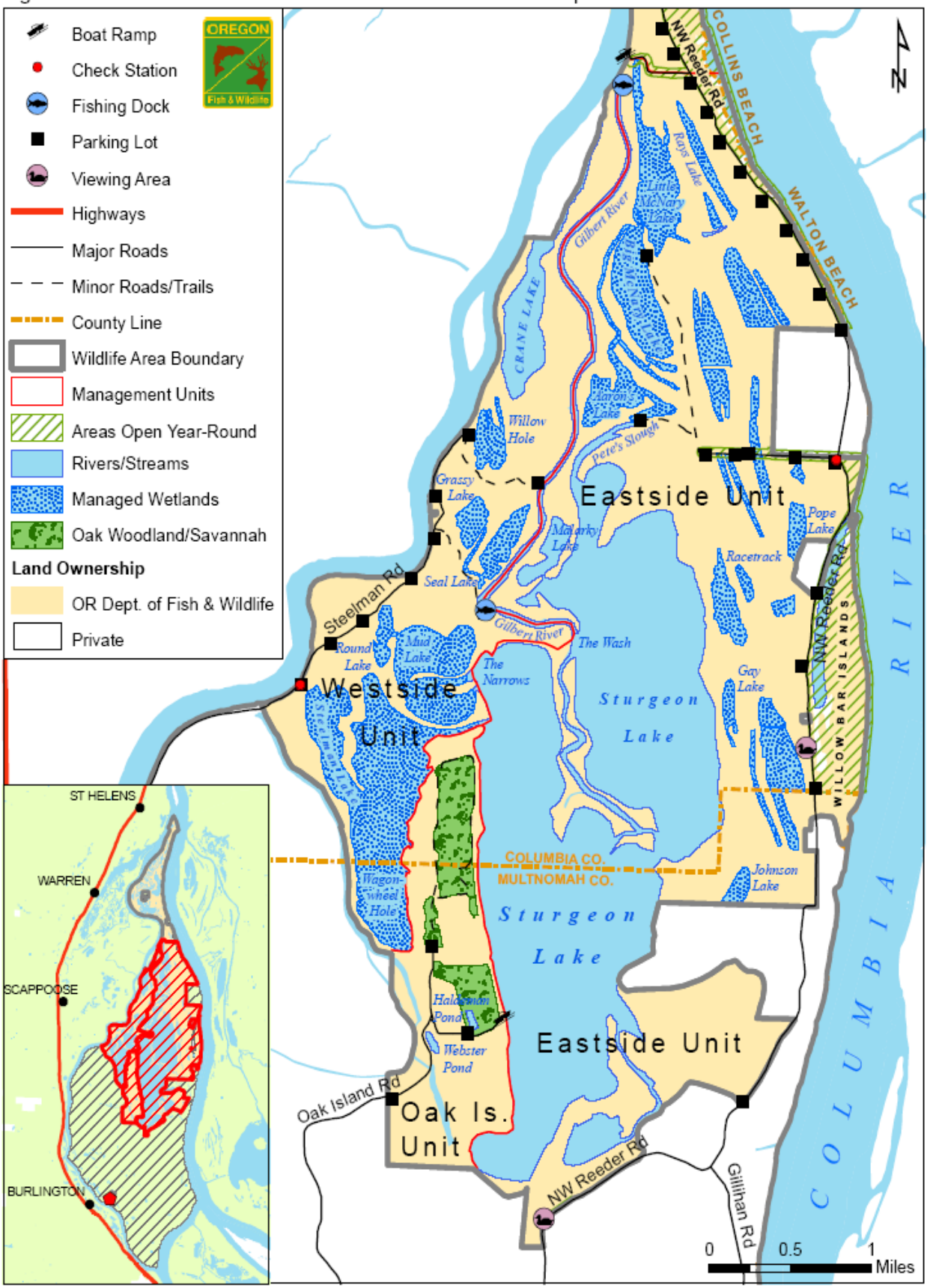


Figure 1.3 - Sauvie Island Wildlife Area Features and Ownership - Southern Units



Topography and Soils
Sauvie Island was formed by the Missoula Floods approximately 14,000 year ago. Sauvie Island is 14 miles long, oriented from north to south and 4.5 miles at its widest point east to west. The average elevation throughout the wildlife area is 100 feet above mean sea level.

The soils on SIWA are comprised primarily of alluvial deposits from the Lower Columbia and Willamette Rivers. Sauvie-Rafton silt loams are the predominant soil types on SIWA. The soil types are generally very good for agricultural crop production, but have limited water holding capacity. The water table is highly dependent on the river levels adjacent to the wildlife area which vary significantly on a seasonal basis and from daily tidal changes, as well. Specific information about soils and topography is also contained in the individual habitat management unit descriptions in Appendix G.

SIWA contains two levees (Figure 2) which are important topographical features affecting habitat management. One large levee, surrounding the south end of Sauvie Island, is 22 miles long and 32 feet high. This levee is maintained by the Sauvie Island Drainage Improvement District. The second smaller levee is 12 miles long and 27 feet high and is located in SIWA's Eastside Unit. This second levee is mostly owned and completely maintained by the department, in cooperation with the Columbia County Drainage District #1.

Habitat Types
Habitats historically found on the island were the result of the natural meandering of the lower Columbia and Willamette River drainages and the low elevation topography typically found in the floodplains of large river systems. Due to management actions and other primarily human-induced influences, SIWA habitats are in a continual state of change, causing acreage of specific habitat types to vary over time.

There are nine habitat types found within the borders of the SIWA (Figure 2): wetlands (palustrine, lacustrine, and riverine), riparian/bottomland hardwood forest, pasture/grassland, oak woodland/savannah, agricultural uplands, freshwater aquatic and beach (historic dredge spoils). The department has developed objectives and strategies to actively manage most of these habitat types. As mentioned previously an adjudicated Beach Use Plan guides the department's management of the beaches while the freshwater aquatic habitat (outside the levees) is passively managed. These habitat types and the amount of acres of each type are listed in detail in Table 1.

Of these habitats, oak woodland, riparian forest, wetlands and grasslands are priority 'Strategy Habitats' in the Willamette Valley Ecoregion (specifically: WV-01 Columbia River Bottomlands). As previously stated**,** the OCS recommends specific conservation actions on SIWA to protect and enhance these strategy habitats such as improving water delivery systems to enhance effectiveness of wetlands management; maintaining or restoring riparian habitat and ecological function; ensuring sufficient habitat complexity for wildlife; removal of vegetation encroaching on oak woodlands; and restoring or enhancing seasonal wetlands. Appendix B contains a list of trees, shrubs, forbs and grasses found on SIWA.

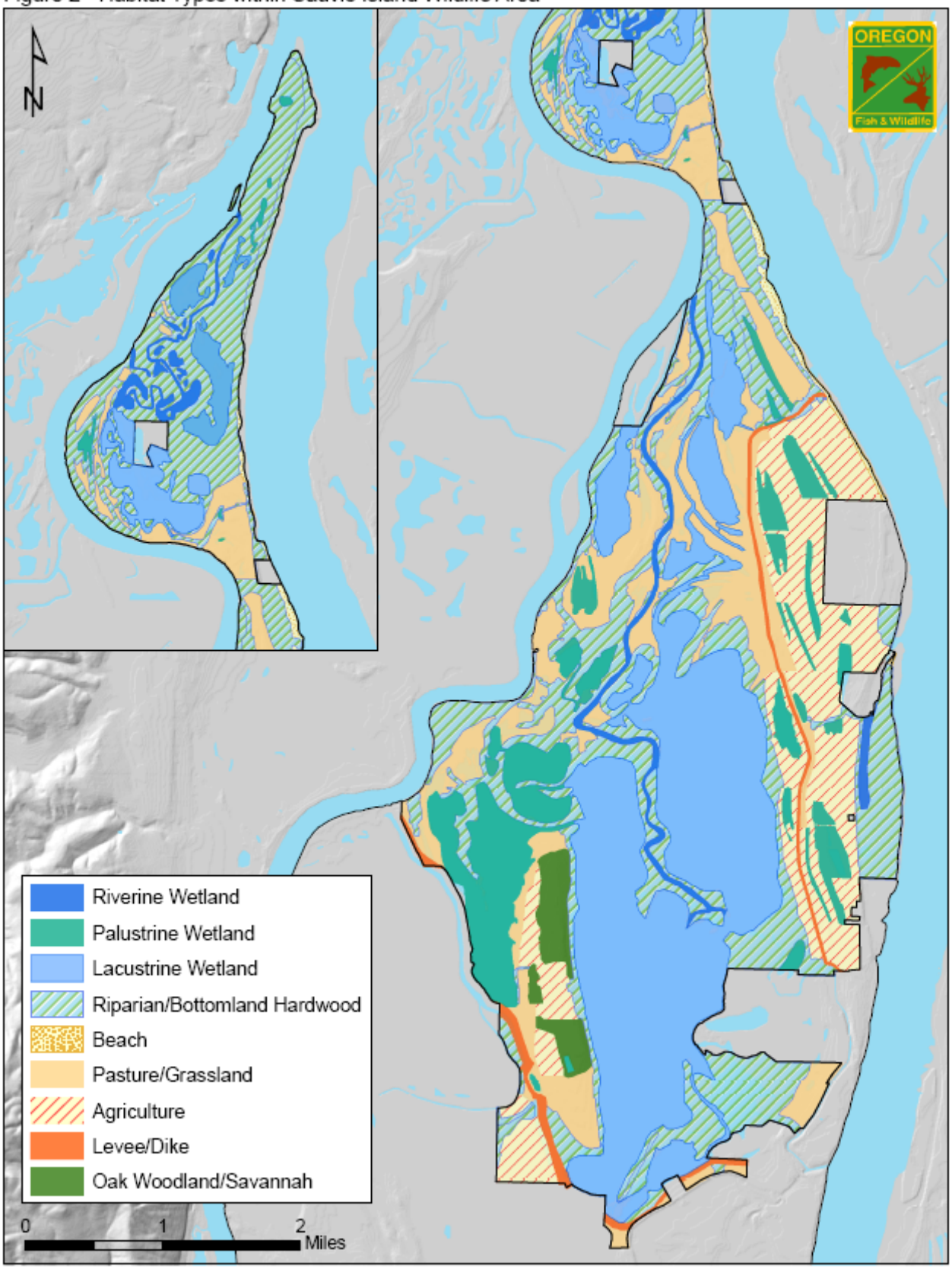
Table 1. Habitat composition on the Sauvie Island Wildlife Area.

Habitat Type	Approximate Acres
Palustrine Wetland	
Permanently flooded	795
Semi-permanently flooded	62
Seasonally flooded	338
Lacustrine Wetland	
Permanently flooded wetlands	285
Seasonally flooded wetlands	2,922
Riverine Wetland	161
Riparian/Bottomland Hardwood Forest	2,857
Pasture/Grassland	2,230
Oak Woodland/Savannah	193
Agricultural Upland	1,316
Freshwater Aquatic	293
Beach	112
Total	**11,564**

Wetlands

The SIWA contains a large percentage of the total inland wetlands of Columbia and Multnomah Counties and, as such, is extremely important for wildlife. The gradual slopes of the wetlands provide extensive areas of shallow fresh water wetlands that are well suited to support a wide variety of wetland dependent wildlife and fish species. Over the last decade numerous wetland restoration projects have been accomplished in previously farmed areas of SIWA. Prior to these restoration projects low elevation areas typically contained bare soil during the crucial nesting season and a fast growing crop such as buckwheat was planted in late June for wintering waterfowl. Now these restored wetlands provide for a wide variety of wildlife habitat needs to benefit waterbirds, songbirds and other wetland-associated wildlife.

Figure 2 - Habitat Types within Sauvie Island Wildlife Area



The description of wetland habitat types follows the classification scheme of Cowardin et al. (1979), described in further detail below. The majority of SIWA wetlands are freshwater lacustrine (permanently flooded) and palustrine seasonal wetlands (seasonally flooded). Frequently, emergent and aquatic bed plant communities create a mosaic of wetland plant types within each management unit. Within each major wetland type, variation in hydrology and topography creates important differences in plant communities and seasonal differences in wetland availability that in turn influences bird use. While these habitat associations are described below as discrete, they represent a continuum from dry to wet and when considering the topographical variation of the area, each may occur in close juxtaposition to the other in a single habitat management unit.

As previously mentioned, the majority of the wetlands on SIWA are dependent on existing Columbia and Willamette River levels and, as a result, staff has limited water level management capability. These wetlands are located outside of the two levees which protect portions of Sauvie Island from flooding and are affected tidally on a daily basis as well. The intensively managed wetlands where water levels can be controlled by SIWA staff are located primarily in the Eastside, Westside and North habitat management units (HMUs). These HMUs are divided into physically discrete sub-units which have independent water level management capabilities. Eastside Unit consists of twenty sub-units; Westside has seven, and the North Unit has three sub-units.

Sturgeon Lake consists of approximately 3,000 acres of open water and wetland habitats. The lake is situated between the Eastside and Westside Units and is administratively managed as a separate entity, under agreement with DSL. The lake comprises the largest wetland on SIWA and is usually inundated October through July. It is important to note that the lake is openly connected to the Multnomah Channel by the Gilbert River which is tidally influenced and allows fish ingress and egress. Over the years, the lake level has been dramatically reduced due to the lack of tidal flushing action outside the large levee, which was constructed surrounding the south end of Sauvie Island. The natural water flow processes of Sturgeon Lake were eliminated. There has been an ongoing effort to restore the tidal and riverine influenced flushing action and SIWA staff will continue to be active partners with the Sturgeon Lake Restoration Planning Group. These restoration efforts are described in further detail in the Habitat Management Unit section.

Palustrine wetlands

1. Permanently flooded: Permanently flooded wetlands hold water all year and are dominated by vascular plants such as water plantain (*Planfago* spp), smartweed (*Polygonum hydropiperoides*) and wapato (*Sagittaria latifolia*). This habitat is typically interspersed with robust tall emergents such as soft-stem bulrush (*Scirpus tabernaemontani*). Water depths range from 2 to 6 feet deep. Examples of this wetland type include Steelman and Pope Lakes. Fish (primarily non-native carp (*Cyprinus carpio)*) are usually abundant in this habitat. The stable water levels and inundation support submergent aquatic plants, and some species of aquatic invertebrates and fish. Many species of wildlife also capitalize on stable water levels and develop traditional use areas.

2. Semi-permanently flooded: Surface water is controlled so it persists throughout the growing season. These wetlands are dominated by emergent plants such as wapato, smartweed, plantain, and various sedges (*Carex* spp). All the semi-permanently flooded wetlands on the wildlife area have varying amounts of non-native reed canarygrass (*Phalaris arundinacea*) invasion. Water depths range from 2-3 inches up to 2-3 feet. Fish are sometimes abundant, particularly non-native invasive carp, if the wetland does not dry out completely in a given year. These sites vary in productivity, capability and wildlife use depending on depth and permanency of water levels. Many of the wetlands outside the levees are subject to tidal influences on a daily basis and this is important habitat for salmonids.

This habitat type provides foraging sites for an array of wetland dependent and wetland obligate fish and wildlife species, both migrants and residents. A large number of species will use these wetlands during breeding, brood rearing and molting life stages.

Tall emergent vegetation within this community has expanded in recent years, taking advantage of low and receding water levels that allow for seedling development on exposed mudflats or rhizome growth of individual clonal-type plants. Associated open water areas and use by some species of wildlife have been reduced as a consequence of this expansion. This is especially true with Racetrack Lake.

3. Seasonally flooded: Surface water is present for extended periods, fall through winter, and especially early in the growing season. As summer progresses these wetlands will dry out as a result of increases in evapo-transpiration and reduced water deliveries due to reduced river flows. Plantain, smartweed and barnyard grass (*Echinochloa crus-galli*), as well as a wide variety of other grasses, sedges, rushes and forbs are common. Reed canarygrass is a major concern in the wetland areas throughout the wildlife area. This grass forms large monotypic stands, provides little food value for wildlife, and out-competes native plant species. Where native species do occur, these sites vary in productivity, capability and wildlife use depending on depth, timing and rate of receding water levels as well as amounts of vegetation present. This habitat supports abundant invertebrate populations, providing food to a wide variety of wildlife species.

<u>Lacustrine wetlands (open water)</u>

1. Permanently flooded: These wetlands are scattered throughout SIWA. The largest of these wetlands are the McNary and Aaron Lake systems. The unconsolidated mud bottoms support emergent and submergent aquatic plants but are subject to intense pressure from grazing carp. Open water is shallow, usually less than five feet. Turbidity caused by both carp and wind reduces algae and phytoplankton productivity by blocking sunlight and disrupting photosynthesis. This in turn affects the productivity of macroinvertebrates. Submergent aquatic and some emergent plants, some species of aquatic invertebrates and fish rely on stable water levels and inundation in order to remain productive. Many species of wildlife also capitalize on stable levels and develop traditional use areas.

2. Seasonally flooded: Typically these wetlands are dry from late spring into early fall. They are flooded when water deliveries to other managed wetlands begin in early fall, as evaporation rates decrease, and late growing season/winter precipitation increases. The largest wetland on the wildlife area, Sturgeon Lake, is classified as this wetland type. SIWA staff has no ability to control water levels on Sturgeon Lake. Depending on the size and duration of local flood events (primarily spring freshets), Sturgeon Lake can cover an extensive part of the wildlife area. Sturgeon Lake is subject to daily tidal influences from the Gilbert River as long as the river level is above two feet. Waterfowl make extensive use of this wetland type in the winter, while fall use is variable depending on river levels and wet weather patterns.

Riverine wetlands

These wetlands are extensive throughout the unmanaged water level portion of SIWA. The riverine wetlands occur along the Columbia and Gilbert Rivers, Multnomah Channel, Cunningham Slough and Dairy Creek. The habitat consists predominately of an overstory of black cottonwood (*Populus trichocarpa*), Oregon ash (*Fraxinus latifolia*), and Pacific willow (*Salix speciosa*), with a variety of native and non-native plants in the understory. During the 1996 flood, virtually all of the wildlife area was a riverine wetland. The Columbia River reached a level of 27 feet in 1996 and 23 feet in 1997. These tidal and flood prone areas remain important for a variety of foraging shore birds and multiple fish species.

Uplands

Riparian/Bottomland Hardwood Forest

As defined by the OCS, riparian habitats are those adjacent to rivers and streams or occurring on nearby floodplains and terraces, shaped by seasonal flooding, scour and soil deposition. This habitat type is the most extensive habitat found on SIWA, consisting of 2,857 acres. The associated bottomland hardwood forest type is found throughout the wildlife area, particularly in the unmanaged water level portions of SIWA. Riparian forests occur along the Columbia and Gilbert Rivers, Multnomah Channel, Cunningham Slough and Dairy Creek. The habitat consists of mainly black cottonwood, Oregon ash and Pacific willow, with a variety of native and non-native plants in the understory. Invasive plant species dominate the understory, mostly Himalayan blackberry (*Rubus armeniacus*) and reed canarygrass.

Oak Woodland/Savannah

Most of the remaining oak woodland habitat occurs on Oak Island while the remaining oak savannah occurs in isolated areas south of Sturgeon Lake and in the Eastside Unit. These habitat types are considered a Strategy Habitat as defined in the 2006 Oregon Conservation Strategy. There are few conifers on the wildlife area and these are mostly found within the oak woodlands. Primary hardwood tree species include Oregon white oak (*Quercus garryana*), Oregon ash, big-leaf maple (*Acer macrophyllum*), black cottonwood and eight different willow (*Salix*) species. The predominant conifer species present is Douglas fir (*Pseudotsuga menziesii*). The oak woodland understory is thick with snowberry

(*Symphorocarpus albus*), native blackberry, forbs and grasses. Himalayan blackberry and reed canarygrass create thickets that occupy many open areas as the woodlands transition into oak savannah. SIWA staff are developing integrated weed management plans to control these non-native invasive plant species. As previously mentioned, SIWA staff would like to conduct large scale prescribed burns but have not done so because of the air quality concerns raised by Portland and St. Helens. When prescribed burns are allowed as an acceptable habitat management practice, the department will partner with the Sauvie Island Volunteer Fire Department to provide training opportunities for the firefighters.

Pasture/Grassland

Pastures comprise approximately 2,230 acres of SIWA, with remnant grasslands interspersed within this acreage. Most of this habitat is situated within the floodplain and receive periodic flooding which may alter the plant composition for a given season. Pasture/grassland habitat is managed to provide quality forage for large numbers of wintering geese and nesting habitat for songbirds. Most of the pastures are grazed by livestock, from March through September, under grazing agreements with permittees. These pastures are grazed at a rate which is half of the recommended rate that Natural Resource Conservation Service (NRCS) has suggested for Western Oregon. With this less intensive grazing regime a diversity of vegetation structure will remain to benefit ground nesting birds such as western meadowlark (*Sturnella neglecta*), streaked horned lark (*Eremophila alpestris strigata*) and Oregon vesper sparrow (*Pooecetes gramineus)*. After nesting season ends in August, the pastures are mowed by SIWA staff or permittees to provide high nutritional value and suitable plant height for geese. These areas are grazed by wintering geese from October through April. A small number of acres is not grazed by livestock (due to difficulty of fencing or other administrative reasons) but these acres are mowed to provide grazing for geese.

Native grasslands are considered a Strategy Habitat as defined in the OCS. Very little native grassland currently exists on SIWA due to historic agricultural practices and invasive reed canarygrass. The opportunity to restore native grasslands is limited; however SIWA staff intends to manage existing pasture/grassland areas to provide vegetative structure and diversity that will benefit native grassland-obligate birds.

Agriculture

Agricultural crops (1,316 acres) are a major component of the habitat program at SIWA, both from the standpoint of providing a wintering waterfowl food source, but also to improve waterfowl hunting quality through discrete spacing of hunters.

Approximately 1,200 acres a year are planted with corn, millet and buckwheat. Other food crops may be planted to test crop success and utilization by wildlife. Corn is the most expensive crop to plant and is the most familiar to the public. The wildlife area staff annually plant between 150-250 acres of corn. The other food crops vary from year to year, in both composition and amount of acreage planted. While all food crops are planted to meet the needs of wintering waterfowl, numerous other species of wildlife (e.g. song birds, sandhill cranes, black-tailed

deer) also benefit from these food crops. Crop irrigation is presently not used but will be considered in the future.

Alfalfa and hay fields are maintained by sharecroppers for the primary purpose of green forage for geese. Sharecropper agreements vary in terms of the amount of crops retained by the farmers versus the amount retained for wildlife use.

Freshwater Aquatic

The Columbia and Gilbert Rivers, Multnomah Channel, Cunningham Slough and Dairy Creek water bodies constitute 293 acres of freshwater aquatic habitat. Several federally listed salmonid species, white sturgeon and lamprey are found in these important aquatic tidal habitats. This habitat serves a major role in the life history of salmonids. During high river flows salmonids, especially juveniles, use this habitat as a refuge, then return to the rivers as water levels recede. Many other species of wildlife such as otter, belted kingfisher and wood ducks also use this habitat.

Beach

There are four beach areas located along the Columbia River. These beaches total 112 acres and are currently managed by the department. The beaches exist primarily due to the placement of dredge materials when the Columbia River was dredged numerous times since the 1960s. This habitat type is important for its association with the riparian zone which borders the beaches. In small areas, the beaches support vegetation communities mainly consisting of sedges and shrubs. Horned larks, dark-eyed junco and numerous sparrow species utilize the beaches and associated vegetation during the winter. The 1993 SIWA Beach Use Plan guides the department's management of public recreation on these beaches.

Description of Habitat Management Units

SIWA is divided into four separate HMUs (refer to Figures 1.1, 1.2 and 1.3). These include: Eastside, Westside, Oak Island and North Unit. Although Sturgeon Lake is not as intensively managed by the department as the four HMUs, because of its large size and its importance to fish and wildlife, it is included in this discussion of management units.

The boundaries of the management units are based on physical, administrative, and operational characteristics. Appendix G describes the department's management strategies for each unit in greater detail.

The HMUs receive water from a variety of sources including: pumping from the Gilbert River, ground water, winter rainfall, and flows from incoming waterways, primarily the Columbia River and Multnomah Channel. The important limiting factor that affects water management is the seasonally fluctuating in-flows of these two rivers.

In some areas, wetland cells within a HMU are located in a series so that one cell must be filled before water will move into another. In these cases, management actions in the upper cells affect adjacent or "downstream" cells. This "downstream" system is especially important for water level control within the Eastside Unit. In other cases, cells

have independent in- and out-flow capability and may be managed with complete independence from adjacent cells within the same HMU.

Proper functioning of Sturgeon Lake as habitat for fish and wildlife is a major concern of the department as well as its wildlife refuge value. Sturgeon Lake and associated lakes and wetlands were designated as a legislative refuge by the Oregon Legislature in 1937.

Sturgeon Lake has been silting in since the early 1940s when the main Sauvie Island levee was constructed. During the 1980s and early 1990s a project was initiated to clear Dairy Creek and to dig a shortened channel to restore water flow to Sturgeon Lake. This project involved numerous federal and state entities such as: West Multnomah Soil and Water Conservation District (WMSWCD), Oregon Department of Environmental Quality (DEQ), USDA Soil Conservation Service and The Coalition for Sturgeon Lake Restoration. Unfortunately the flood in February of 1996 created blockages in Dairy Creek, greatly limiting its effectiveness in providing water flow to Sturgeon Lake. The department, U.S. Army Corp of Engineers (USACE), and WMSWCD are currently considering options to restore the water flow to Sturgeon Lake. A Sturgeon Lake Restoration Planning Group (SLRPG) will supervise the continuing progress of all the activities pertaining to the Sturgeon Lake restoration. The membership of the SLRPG includes: WMSWCD, the department, Oregon DEQ, Ducks Unlimited, Multnomah County, with the following agencies participating as non-voting members: USACE, National Resource Conservation Service, Northwest Oregon Resource Conservation and Development Council, NOAA Fisheries, USFWS, Confederated Tribes of Grand Ronde and adjacent private landowners.

Managed impoundments, croplands, moist soil units

In total, thirty sub-units or impoundments have been developed on SIWA, in the Eastside, Westside and North Units. Typically the impoundments consist of natural swales with levees and water control structures and have an average depth no greater than four feet.

The impoundments are managed to provide habitat and sanctuary for wildlife, with an emphasis on attracting and holding wintering waterfowl. This has been accomplished by using a combination of moist soil management techniques, maintenance of semi-permanent wetlands, control of invasive plant species, and draining selected impoundments in the spring and summer. Drained impoundments are either left fallow or planted with cereal grains for wildlife benefit.

Moist soil management techniques utilized on the wildlife area employ a combination of water level control, periodic soil disturbance, and timed drawdown and inundation to foster growth of native wetland plant species or to return habitats to an early successional vegetative state.

The target management prescription for SIWA is to maintain a balance of planted food crops and moist soil management within the managed impoundments on the Eastside Unit. Moist soil management is used to a limited degree on the Westside and North Units due to river level fluctuations. This scenario provides forage over a longer period

of time than either practice used alone and as a result provides benefits to a wider array of wildlife species. Wetlands utilizing moist soil management produce a diversity of native wetland plant species as recommended in the OCS.

Biological Resources

Wetland dependent or wetland obligate wildlife, primarily birds, is the major wildlife resource found on SIWA. Over 275 bird species have been recorded on SIWA, and over 70 of these species are confirmed breeders. Comprehensive inventory data for mammal, amphibian and reptile (herptile) species on SIWA is lacking, but it is estimated that at least 37 mammals and 13 herptiles are likely present. Many species of resident and migratory fish are found seasonally and annually in SIWA habitats. The plant species list (Appendix A) included in this plan is partial, as a comprehensive survey has not been conducted. Invertebrate occurrence and abundance has not been inventoried and is unknown. To fill these data needs, SIWA staff will work with educational institutions to develop and conduct surveys to increase information about plant and animal species presence and distribution. See Appendix B for a list of wildlife species known to occur or potentially present on SIWA.

Birds

Birds are the most important and dominant component at SIWA in terms of abundance and species diversity. Waterbirds are the primary species utilizing SIWA, especially for overwintering. Use of the wildlife area during waterbird breeding season has expanded over the past 12 years, in response to the department's wetland habitat management activities. Food is thought to be to the factor most limiting to waterfowl survival and condition during winter. As a result, wintering area Habitat Joint Ventures, organized under the North American Waterfowl Management Plan, have developed conservation programs that operate under the basic premise that, if food abundance is increased, demographic performance (e.g. survival) or the physiological condition (e.g. body fat) of wintering waterfowl will improve. SIWA also plays an important role in meeting the life-cycle needs of a wide variety of other bird species that are lacking on the surrounding developed lands in the Portland Metropolitan Area. A number of bird species identified in the OCS occur on the wildlife area (see Table 3) and these particular bird species are considered when habitat modifications are planned. SIWA's designation as an Important Bird Area (IBA) by the National Audubon Society demonstrates its value as significant bird habitat. Many of the management activities and habitat improvement projects designed for waterfowl have provided auxiliary benefits for shorebirds, cranes, rails, gulls, herons, pelicans, eagles, osprey, song birds and purple martins.

Wildlife use of Sturgeon Lake is very dynamic during the fall, winter and spring seasons. Over 120,000 waterfowl have been recorded on the lake during a single winter bird count. During their migration, thousands of shorebirds use the lake as well as the wildlife area's other wetlands to forage. Up to 3,400 sandhill cranes utilize Sturgeon Lake throughout the fall, winter and spring as a roosting location and then fly to feeding areas on both private and public lands adjacent to SIWA.

Forested tracts provide habitat for many species and contribute substantially to the overall wildlife value of the area. Raptors are quite common. Their abundance is a direct response to the diversity of habitats, concentrations of prey species, and lower

disturbance on wildlife area lands relative to the surrounding developed areas. Upland gamebirds are present in limited numbers. SIWA plays an important role in meeting life-cycle needs for a wide variety of species that cannot be met on surrounding developed lands in the Portland Metropolitan Area.

Waterfowl

The SIWA wetlands provide extensive wintering habitat for ducks, geese, and swans. Duck species wintering on the area include large numbers of mallard (*Anas platyrhynchos*), green-winged teal (*Anas crecca*), northern shoveler (*Anas clypeata*), American wigeon (*Anas americana*), northern pintail (*Anas acuta*), and lesser numbers of gadwall (*Anas strepera*), greater scaup (*Aythya marila*), ring-necked duck (*Aythya collaris*), bufflehead (*Bucephala albeola*), wood duck (*Aix sponsa*), canvasback (*Aythya valisineria*) and redhead (*Aythya americana*). Eight species of waterfowl breed on the wildlife area.

Seven subspecies of Canada geese utilize SIWA including resident western Canada geese (*Branta canadensis moffitti*) which nest on the wildlife area. Winter migratory residents include the increasingly abundant cackling Canada goose (*Branta canadensis minima*), Taverner's Canada goose (*Branta canadensis taverneri*), lesser Canada goose (*Branta canadensis parvipes*), and dusky Canada goose (*Branta canadensis occidentalis*). Two other subspecies that have been documented on the wildlife area include the Aleutian Canada goose (*Branta canadensis leucopareia*) and Vancouver Canada goose (*Branta canadensis fulva*). Snow goose (*Chen caerilescens*) use has increased over the last decade and greater white-fronted goose (*Anser albifrons*) use has been sporadic.

An overall increase in wintering geese in the Willamette Valley has resulted in a corresponding increase of geese wintering on and in the vicinity of SIWA. During the past few years, between November and April, a night roost population has established on Sturgeon Lake, frequently exceeding 50,000 geese. At daybreak the majority of the birds depart to forage on the wildlife area, on surrounding private fields or move between federal wildlife refuges and/or state wildlife areas in Washington.

A large management concern is how to maintain the quality and quantity of goose green forage habitat on the SIWA, to assist in reducing private land agricultural goose depredation. Goose monitoring will become even more important as goose populations increase.

In addition to Canada geese, several thousand tundra swans (*Cygnus columbianus*) spend part of the winter roosting on wildlife area lakes and forage in surrounding agricultural fields and wetlands.

Shorebirds/Waterbirds

SIWA provides essential habitat throughout the year for many species of shorebirds and other waterbirds such as sandhill cranes, white pelicans and rails. The freshwater habitat is important for several species that typically do not occur in large flocks, such as solitary sandpiper (*Tringa solitaria*) and spotted sandpiper (*Actitis macularia*), and for smaller flocks such as western sandpiper (*Calidris mauri*). At times, thousands of

shorebirds can be found at SIWA, including wintering dunlin (*Calidris alpine*) flocks numbering up to 12,000 birds. Along with the IBA designation acknowledging essential shorebird habitat occurring on the wildlife area, SIWA is referenced in the USFWS's United States Shorebird Conservation Plan. Shorebird habitat is also a concern described in the OCS. Sandhill cranes utilize the wildlife area in large numbers (approximately 3,400) during spring and fall migration and approximately 1,400 cranes winter on the wildlife area and adjacent lands.

Ten species of shorebirds are found in abundant numbers at SIWA at various times of the year. These include semipalmated plover (*Charadrius semipalmatus*), black-bellied plover (*Pluvialis squatarola*), killdeer (*Charadrius vociferous*), greater yellowlegs (*Tringa melanoleuca*), spotted sandpiper, Western sandpiper (*Calidris mauri*), least sandpiper (*Calidris minutilla*), dunlin, long-billed dowitcher (*Limnodromus scolopaceus*) and Wilson's snipe (*Gallinago gallinago*).

Waterbirds which use the wildlife area for breeding include great blue heron, pied-billed grebe and two species of rail. The wetlands and associated riparian areas are important habitats meeting most of the life history needs of many of the waterbird species.

Daily tidal influences and receding river levels in late July through October provide new habitat as fresh mudflats. This occurs primarily in Sturgeon and Cunningham Lakes. These mudflats are vital for roosting sandhill cranes during their spring and fall migrations. During the fall, Sturgeon Lake's mudflats provide habitat for several bird species including killdeer, long-billed dowitcher, least sandpiper, and tens of thousands of dunlin. Smaller numbers of greater yellowlegs, least sandpiper, dunlin and western sandpiper are present through the winter months. As fall migration tapers off in October, shorebird diversity diminishes and the wintering species return.

Upland Birds

Upland birds at SIWA primarily include ring-necked pheasant (*Phasianus colchicus*) and California quail (*Callipepla californica*). Approximately 700 rooster pheasants are released annually on the wildlife area as part of the Western Oregon Fee Pheasant Hunt Program. Prior to this program, occasional releases of hens and roosters, to bolster resident populations, were largely unsuccessful due to low over-winter survival rates. It is believed that high winter rainfall and frequent flooding limit the amount of area suitable for pheasant populations to thrive. California quail nest and reside year-round on the wildlife area in the upland habitats.

Raptors

SIWA is important for many raptor species, such as red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), peregrine falcon (*Falco peregrinus*), bald eagle (*Haliaeetus lrucocephalus*), barn owl (*Tyto alba*) and great horned owl (*Bubo virginianus*). The wildlife area is heavily used by raptors during the winter when large populations of waterfowl are present and serve as a readily available prey base. Winter counts of bald eagles have been as high as 38 individual birds. Due to the high concentrations of wintering raptors present on the island, as previously mentioned, the department, in cooperation with Audubon, Metro and Hawkwatch, coordinates a Raptor

Road Trip event each February. This event usually draws about 700 participants but as many as 1,600 avid birders have participated.

Red-tailed hawks, osprey (*Pandion haliaetus*), bald eagles, barn owls and great horned owls commonly nest on SIWA during the breeding season. Up to eight active bald eagle nests have been observed on the wildlife area. In September and October, peregrine falcons (*Falco peregrinus*) and merlin (*Falco columbarius*) take advantage of the shorebird migration and are frequently seen hunting on the mudflats.

Songbirds and Miscellaneous Birds

Over one hundred passerines and other bird species have been observed on SIWA (Appendix C). The wildlife area plays a vital role in all aspects of bird life history. The riparian forests provide excellent habitat for nesting species such as mourning dove (*Zenaida macroura*), willow flycatcher (*Empidonax traillii*), black-headed grosbeak (*Pheucticus melanocephalus*), rufous hummingbird (*Selasphorus rufus*) and Bullock's oriole (*Icterus bullockii*). The open pastures/grasslands provide wintering areas for western meadowlark, water pipit (*Anthus rubescens*), and horned lark (*Eremophila alpestris*). The oak woodlands on Oak Island harbor a distinct variety of birds which include white-breasted nuthatch (*Sitta carolinensis*) and house wren (*Troglodytes aedon*). Many other species of birds also utilize the oak woodlands such as Vaux's swift (*Chaetura vauxi*), western wood pewee (*Contopus sordidulus*), and black-capped chickadee (*Poecile atricapilla*). Birders find the diversity of songbirds and the occurrence of rare birds on SIWA a unique viewing opportunity.

Mammals

A variety of mammals inhabit the riparian/bottomland hardwood forests, woodlands, grasslands, and wetland habitats of the wildlife area (Appendix B).

Furbearers present include red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), mink (*Mustela vison*), muskrat (*Ondatra zibethicus*), American beaver (*Castor canadensis*), river otter (*Lutra canadensis)* and raccoon (*Procyon lotor*). Other mammals include brush rabbits (*Sylvilagus bachmani*), western gray squirrel (*Sciurus griseus*), coyote (*Canis latrans*), striped skunk (*Memphitis memphitis*), western spotted skunk (*Spilogale gracilis*), and various shrews, voles, moles, gophers, chipmunks, and ground squirrels. SIWA also provides foraging and roosting habitat for eleven of Oregon's thirteen bat species, including OCS species such as California myotis and Townsend's big-eared bat.

Black-tailed deer (*Odocoileus hemionus*) are the principal resident big game species, with occasional sightings of elk (*Cervus elaphus*). Bear (*Ursus americanus*) and cougar (*Felis concolor*) are rarely observed.

Non-native nutria (*Myocastor coypus*) are present on the wildlife area and are considered to be a nuisance species because their burrowing activity damages dikes and levees. Trapping, by permit only, is used to control nutria. A number of other non-native mammal species also occur on SIWA including Virginia opossum and eastern gray and eastern fox squirrels.

Amphibians and Reptiles
Amphibian and reptile species present include northwestern salamander (*Ambystoma macrodactylum*), long-toed salamander (*Ambystoma macrodactylum*), Pacific treefrog (*Hyla regilla*), non-native bullfrog (*Rana catesbeiana*), roughskin newt (*Taricha granulosa*), western fence lizard (*Sceloporus occidentalis*), western skink (*Eumeces skiltonianus*), rubber boa (*Charina bottae*), racer (*Coluber constrictor*), gopher snake (*Pituophis melanoleucus*) and garter snakes (*Thamnophis* spp.). Reptiles and amphibians play an important role on SIWA as environmental health and, potentially, climate change indicators.

By removing invasive plant species and replanting native vegetation, SIWA staff will improve reptile and amphibian habitat. To address turtle habitat needs, the department intends to develop specific sites in newly restored wetlands to enhance turtle nesting and place wood to serve as turtle basking structures.

The wildlife area supports significant populations of three federal Species of Concern: and OCS Sensitive Species. The species include: northwestern pond turtle (*Clemmys marmorata marmorata*), western painted turtle (*Chrysemys picta bellii*) and northern red-legged frog (*Rana aurora aurora*) (Appendix B).

Plants
The department uses moist soil management techniques to promote native wetland plant successional growth conditions. As is typical of newly developed wetland impoundments, the soil disturbance associated with creating dikes, reshaping basins or removing previously established vegetation creates germination conditions that favor early successional, seed-producing annual plants that are favored by waterfowl and numerous other wildlife species. Desirable wetland plant species include wapato, plantain, beggars-tick and smartweed. Soil disturbance also provides substrate for invertebrate production. Plant and waterfowl response is often considerable when these managed wetlands are flooded properly. In the absence of active management or under multiple years of the same management regime, this productive community of annuals changes as plant community succession proceeds towards perennial species or undesirable non-natives (e.g., reed canarygrass). One common approach is to rotate a single impoundment through a series of wetland types over a period of years.

A threatened plant species, Howellia (*Howellia aquatilis*), was collected in the area's wetlands in 1869, but no recent records occur although staff and local botanists continue to search for specimens.

SIWA has approximately 200 acres of oak woodland and oak savannah which mainly occur on Oak Island. This OCS habitat has become increasingly rare in the Willamette Valley and is extremely valuable to many species. Restoration measures such as invasive species removal, oak sapling plantings and controlled burns will be used to enhance oak habitats.

Staff has observed a large number of non-native plant species on SIWA but, without comprehensive surveys, the exact distribution of species is not known. The origin of

most plants is unknown. But some non-native species have been cultivated by SIWA staff in pastures, agricultural and other upland areas because they are utilized by wildlife.

A list of plant species on SIWA is found in Appendix B.

Fish

Located at the confluence of the Willamette and Columbia rivers, Sauvie Island is situated among some of the most dynamic and economically important fish runs in the Pacific Northwest. Both wild and hatchery origin salmon and steelhead runs move past the island daily, all year, either on their way to the ocean as smolts, or as adults moving upstream to hatcheries or natal streams to spawn.

Given the importance of the diverse and significant aquatic habitats on SIWA for native ESA listed salmonids, planning objectives and actions described in the 2009 Draft Recovery Plan for Federally Listed Salmon in the Lower Columbia River, and The Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead may guide management action in some areas where appropriate to help restore these runs. Listed salmonids are an important management concern that the department takes into account when conducting projects on the wildlife area.

The shallow, warm waters of the interior of SIWA provide an environment suitable to warm water tolerant fish. However, elevated water temperatures in the summer cause low dissolved oxygen and high turbidity, and along with large water level fluctuations, combine to reduce water quality, limiting cold-water salmonid smolt productivity.

The waters of SIWA currently support naturally reproducing populations of introduced warm water species such as bluegill (*Lepomis macrochirus*), black crappie (*Pomoxis nigro-annularis*), white crappie (*Pomoxis annularis*), brown bullhead (*Ictalurus nebulosus*), channel catfish (*Ictalurus punctatus*), blue catfish (*Ictalurus furcatus*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieui),* and pumpkinseed (*Lepomis gibbosus*). Though these species are classified as invasive non-native fish in the OCS, they are considered gamefish by the department and provide a popular and economically important angling benefit.

Species of Conservation Concern

A variety of federally endangered, threatened, and candidate species and species of concern and/or state listed endangered, threatened and sensitive species are known or suspected to occur on SIWA (Table 3). In addition, the OCS identifies many plants and animals as ‘species of special concern’ or ‘strategy species’.

Definitions, from the USFWS, for each federal listing category are as follows:

- Endangered Species: An animal or plant species in danger of extinction throughout all or a significant portion of its range;
- Threatened Species: An animal or plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range;
- Species of Concern: An informal term referring to a species that might be in need of conservation action. This may range from a need for periodic monitoring of

- Proposed Species: A species of animal or plant that is proposed in the Federal Register to be listed under Section 4 of the Endangered Species Act;
- Candidate Species (candidate): A plant or animal species for which USFWS or NOAA Fisheries has on file sufficient information on biological vulnerability and threats to support a proposal to list as endangered or threatened.

Although there is suitable habitat on SIWA, the federally endangered Columbian white-tailed deer (*Odocoileus virginanus leucurus*) has not occurred on the SIWA since the early 1900s. There have been recent discussions between the USFWS and the department on the possibility of re-introducing this subspecies to the wildlife area.

Howellia (*Howellia aquatilis*) is listed as federally threatened. In the past, Howellia has been collected on SIWA, but none of the management practices have changed in the locations where this species has occurred. All project activities have been occurring on historically farmed or grazed lands.

Thirteen listed salmonid runs or Evolutionary Significant Units (ESUs) are known to or may possibly occur on the wildlife area including chum, coho, Chinook, and sockeye salmon and steelhead trout. White sturgeon and Pacific lamprey also use aquatic habitats on SIWA. Salmon, steelhead and trout occur in waters outside the levees on the wildlife area. Two pumps on the Gilbert River (Multnomah Channel tributary) are screened and all other pumps are secondary to these. In locations where salmonids may occur, water is pumped in the systems to allow escapement of juvenile fish after spring high waters.

Federal candidate species known to or that may occur on the wildlife area include yellow-billed cuckoo and streaked horned lark. There were historical records of yellow billed cuckoo on SIWA but the breeding population has likely been extirpated from Oregon. Streaked horned lark overwinter on SIWA.

Federal Species of Concern include purple martin (*Progne subis*), yellow-breasted chat (*Icteria virens*), acorn woodpecker (*Melanerpes formicivorus*), Lewis woodpecker (*Melanepres lewis*), Oregon vesper sparrow (*Pooecetes gyramineus*), band-tailed pigeon (*Columba fasciata*), olive-sided flycatcher (*Contopus borealis*), long-legged myotis (*Myotis volans*), Yuma myotis (*Myotis yumanensis*), fringed myotis (*M. thysanodes*), northwestern pond turtle, western painted turtle, northern red-legged frog and Willamette daisy (*Erigeron decumbens*).

Although bald eagles were removed from the federal ESA in August 2007, they are still classified as Threatened under the State ESA and provided protection under federal and state law. Regular monitoring of nest occupancy and nest productivity occurs to ensure that bald eagle recovery continues through time. On SIWA, bald eagles are also monitored during aerial waterfowl counts and counted as part of SIWA's education and

wildlife viewing activities. They are present year round and all activities occur with minimal disturbance on historically managed lands. Bald eagles use SIWA year-round, foraging primarily on fish and waterfowl. Breeding eagle pairs have historically nested on Sauvie Island and there are four active nests at present. Eagles roost and forage on the wildlife area, generally in proportion to food availability. In 2007, a record 38 bald eagles were documented on Sauvie Island.

Sensitive species as defined by OAR 635-100-040, includes the following species which presently occur or have occurred on SIWA: chum and Chinook salmon, steelhead, Pacific lamprey, Northern red-legged frog, Western painted turtle, northwestern pond turtle, yellow-billed cuckoo, common nighthawk, streaked horned lark, purple martin, Oregon vesper sparrow, Western meadowlark, American peregrine falcon, pileated woodpecker, olive-sided flycatcher, little willow flycatcher, white-breasted nuthatch, Western bluebird, several bat species, western gray squirrel, and Columbian white-tailed deer. The purpose of this rule is to provide administrative authority to the department for certain wildlife species, subspecies, or populations that are facing one or more threats to their populations, habitat quantity or habitat quality or that are subject to a decline in number of sufficient magnitude such that they may become eligible for listing on the state Threatened and Endangered Species List.

As previously mentioned, many of the plant and animal species described in this section have also been defined in the OCS as either Species of Special Concern or Strategy Species. Species of Special Concern which occur on SIWA include: bald eagle, peregrine falcon, shorebirds, waterfowl, Coho salmon, fall Chinook salmon, winter steelhead, Northwestern pond turtle and western painted turtle. Strategy Species (identified in Table 3) are associated with particular habitat types. The OCS describes many conservation activities which when implemented will contribute to the overall conservation of these species. SIWA's diverse habitat management actions and protective measures will affect OCS species within the Willamette Valley Ecoregion.

Table 3. Federal or State-listed Endangered, Threatened, Candidate and Species of Concern plants and animals potentially present on the Sauvie Island Wildlife Area.
(Federal Status: C–Candidate; LT–Threatened; LE–Endangered; SOC–Species of Concern
State Status: LT – Threatened; LE – Endangered; SC – Sensitive Critical SV – Sensitive Vulnerable
OCS Species of Special Concern: X; Strategy Species: x)

Common Name	Scientific Name	Federal Status	State Status	OCS Status
Howellia	*Howellia aquatilisi*	LT	S	x
Salmonid ESU				
1. Chinook salmon	*Oncorhynchus tshawytscha*			X
a. Lower Columbia River		LT	SC	x
b. Upper Columbia River		LE		
c. Snake River fall run		LT	LT	
d. Snake River spring / summer run		LT	LT	
e. Upper Willamette River		LT	SC	
2. Chum salmon	*Oncorhynchus keta*			
a. Columbia River		LT	SC	

3. Coho salmon a. Lower Columbia River	*Oncorhynchus kisutch* *Oncorhynchus nerka*	 LT		X
4. Sockeye salmon a. Snake River	*Oncorhynchus mykiss*	LE		
5. Steelhead trout a. Snake River Basin b. Upper Columbia River c. Middle Columbia River d. Lower Columbia River e. Upper Willamette River		LT LE LT LT LT	SC SC SC SC	X
Pacific lamprey	*Lampetra tridentata*		SV	x
Green sturgeon	*Acipenser medirostris*	LT		X
American peregrine falcon	*Falco pereginus anatum*		SC	
Western meadowlark	*Sturnella neglecta*		SC	X
Streaked horned lark	*Eremophila alpestris strigata*	C	SC	x
Band-tailed pigeon	*Columba fasciata*	SOC	-	
Common nighthawk	*Chordeiles minor*		SC	x
Little willow flycatcher	*Empidonax trailii brewsteri*		SV	x
Olive-sided flycatcher	*Contopus borealis*	SOC	SV	
Yellow-breasted chat	*Icteria virens*	SOC	SC	x
Acorn woodpecker	*Melanerpes formicivorus*	SOC	SV	x
Lewis's woodpecker	*Melanerpes lewis*	SOC	SC	
Slender-billed nuthatch	*Sitta carolinensis aculeate*		SV	x
Western bluebird	*Sialia Mexicana*		SV	x
Oregon vesper sparrow	*Pooecetes gyramineus*	SOC	SC	x
Purple martin	*Progne subis*	SOC	SC	x
Hoary bat	*Lasiurus cinereus*		SV	
Silver-haired bat	*Lasionycteris noctivagans*		SV	
Long-eared myotis	*Myotis evotis*	SOC	-	
Fringed myotis	*Myotis thysanodes*	SOC	SV	
Long-legged myotis	*Myotis volans*	SOC	SV	
Yuma myotis	*Myotis yumanensis*	SOC	SV	
California myotis	*Myotis californicus*			X
Western painted turtle	*Chrysemys picta belli*		SC	X
Northwestern pond turtle	*Actinemys marmorata*	SOC	SC	X
Northern red-legged frog	*Rana aurora aurora*	SOC	SV	X
Foothill yellow-legged frog	*Rana boylei*		SC	X

Non-Native Species

Non-native wildlife on the SIWA includes nutria, Virginia opossum, European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*) and bullfrog (*Rana catesbeiana*). Occasional sightings of both eastern fox and eastern gray squirrels are documented. Ring necked pheasant and California quail, technically classified as non-native species are also resident on the wildlife area in relatively low numbers. Feral cats (*Felis domesticus*) and the common house mouse (*Mus musculus*) are also present. Red-eared slider turtles (*Trachemys [Chrysemys] scripta elegans*) and several introduced fish species are present in wildlife area wetlands and waterways. Many of these non-native species have caused declines in native species, such as starlings displacing native cavity nesting birds and mammals. Numerous non-native fish occur on

the wildlife area such as bass and pan fish. These non-native fish species have a negative impact on a number of native species such as salmonids, painted turtles and red-legged frogs.

The most prolific non-native and invasive plant present on SIWA is reed canarygrass. Thick sod mats are created by reed canarygrass which choke out native vegetation. The build-up of roots and stem mass eventually fills in open water areas of wetlands. Research and control measures have been ongoing at SIWA during the past several years to develop effective control techniques using heavy equipment, flooding, controlled burns, herbicides, shading, and other techniques based on timing and frequency of application. Recent success has been demonstrated on tracts of old growth reed canarygrass using mowing, repeated heavy disking, followed by water flooding. Late summer mowing followed by fall herbicide (glyphosate) application has also proven to be an effective control technique.

Several other non-native plant species have been documented on SIWA. Purple loosestrife (*Lythrum salicaria*) has been found on the wildlife area and control measures were immediately undertaken to eliminate plants and to monitor for further establishment. Scotch broom (*Cytisus scoparius*) is found on a more frequent basis on upland areas around the wildlife area boundary as colonization of surrounding private lands is increasing. Himalayan blackberry and evergreen blackberry (*Rubus laciniatus*) are present as invasives in many areas around the wildlife area. Tansy ragwort (*Senecio jacobaea*) and Canada thistle (*Cirsium arvense*) is also present as a persistent invasive that is interspersed in grasslands and along earthen levees.

Some non-native (introduced) plant species appear to be beneficial as forage or cover as evidenced by wildlife use and do not appear to have serious deleterious effects on overall landscape scale habitat quality. While many of these plant species serve as functional wildlife habitat, their presence is often at the expense of displacing native plant species. Blackberries and reed canarygrass are the significant examples found on SIWA. Generally, invasive plant species are opportunistic and present a challenge to effectively eradicate. The science of understanding the composition and dynamics of Sauvie Island grasslands and wetland habitats is complex relating to control efforts, wildlife population trends, reproductive biology, and interactions with other species. Best management practices, in line with recommendations of the OCS, will continue to be used to balance acceptable levels of invasive species in limited areas, by aggressively controlling, preventing establishment and limiting expansion of invasive species where feasible.

Cultural Resources

Sauvie Island has a long history of human use. Historically, the Native Americans who ceded this area are documented under the treaty by the Confederated Bands of the Willamette Valley signed on January 22, 1855. The peoples who inhabited the Lower Columbia and Willamette Rivers at the time of Euro-American settlement are collectively known as the Multnomah. Their descendants are included in the modern Confederated Tribes of the Grand Ronde Community of Oregon. Many other tribes utilized SIWA's favorable climate and abundant natural resources for food procurement during the winter months. Many species of vegetation provided food and shelter, with wapato

being the staple food for many of these tribes. Waterbirds, fish and mammals were very abundant on SIWA during the entire year but especially during the months of winter. Campsites, as evidenced by housepits and tool manufacturing sites, are located throughout SIWA and in uplands surrounding Sturgeon Lake, confirming significant use of SIWA's wetlands. The Multnomah Band occupied all of Sauvie Island, however, during treaty negotiations, the Multnomah banded with the Oregon City Tribes with whom they had familial and linguistic ties and were moved to the Grand Ronde Reservation.

Journal entries from the Lewis and Clark expedition also suggest that historically, large populations of waterfowl existed on the island; the noise of the birds even prevented the expedition from staying overnight on the island. The travel route used by early explorers for the fur trade in the Northwest and Pacific Ocean used Sauvie Island as a way stop as did many settlers. Settlers homesteaded along the travel route, and eventually the area was converted to agriculture.

In the late 1800s, Euro-American settlement began with the homesteading of the area and development of the dairy industry. Livestock grazed in the drier upland areas while native marsh and meadow vegetation was cut for hay. In the early 1940s, major developments were undertaken to construct levees to protect areas from flooding and reduce livestock loss. This caused major changes to the natural hydrology and lakes ecosystem.

A number of cultural resource surveys and archeological excavations have been conducted on Sauvie Island. SIWA lands are afforded protection according to federal regulations. All of the sites within wildlife area lands could be considered potentially eligible for the National Register of Historic Places.

In the mid-1990s, habitat management on SIWA shifted away from low topographical area food crop production to moist soil management and waterfowl production. These same techniques are currently utilized, but emphasis is now directed towards all wetland dependent wildlife.

Social Environment

Demographics

SIWA is located near the largest metropolitan area in the state which includes Portland, Beaverton, Hillsboro, Gresham, and Oregon City. The base metro population is approximately 1.5 million people. The population of Sauvie Island is approximately 1,000. The Island is unincorporated and considered part of Portland. As the Portland metro area continues to grow, visitors to the wildlife area will increase commensurately. Public uses vary widely on SIWA and include hunting, angling, birding, wildlife viewing, boating (especially kayaking/canoeing), dog training, hiking, photography, trap shooting and beach use. In 2009, 989,361 visitor days were recorded, and of this visitor use, 55% occurred on the beach areas along the Columbia River.

Land Use
The Sauvie Island Wildlife Area is surrounded by predominantly agricultural and rural residential land uses. Figure 3 shows the land uses which border the wildlife area.

SIWA is adjacent to many private enterprises which currently include: kennels, private hunting clubs, nurseries and commercial and hobby farms. Presently the primary land use on Sauvie Island is associated with agricultural dominated by grass seed, wheat and nursery stock. Historically dairies and row crop agriculture were the most common enterprises.

Monitoring

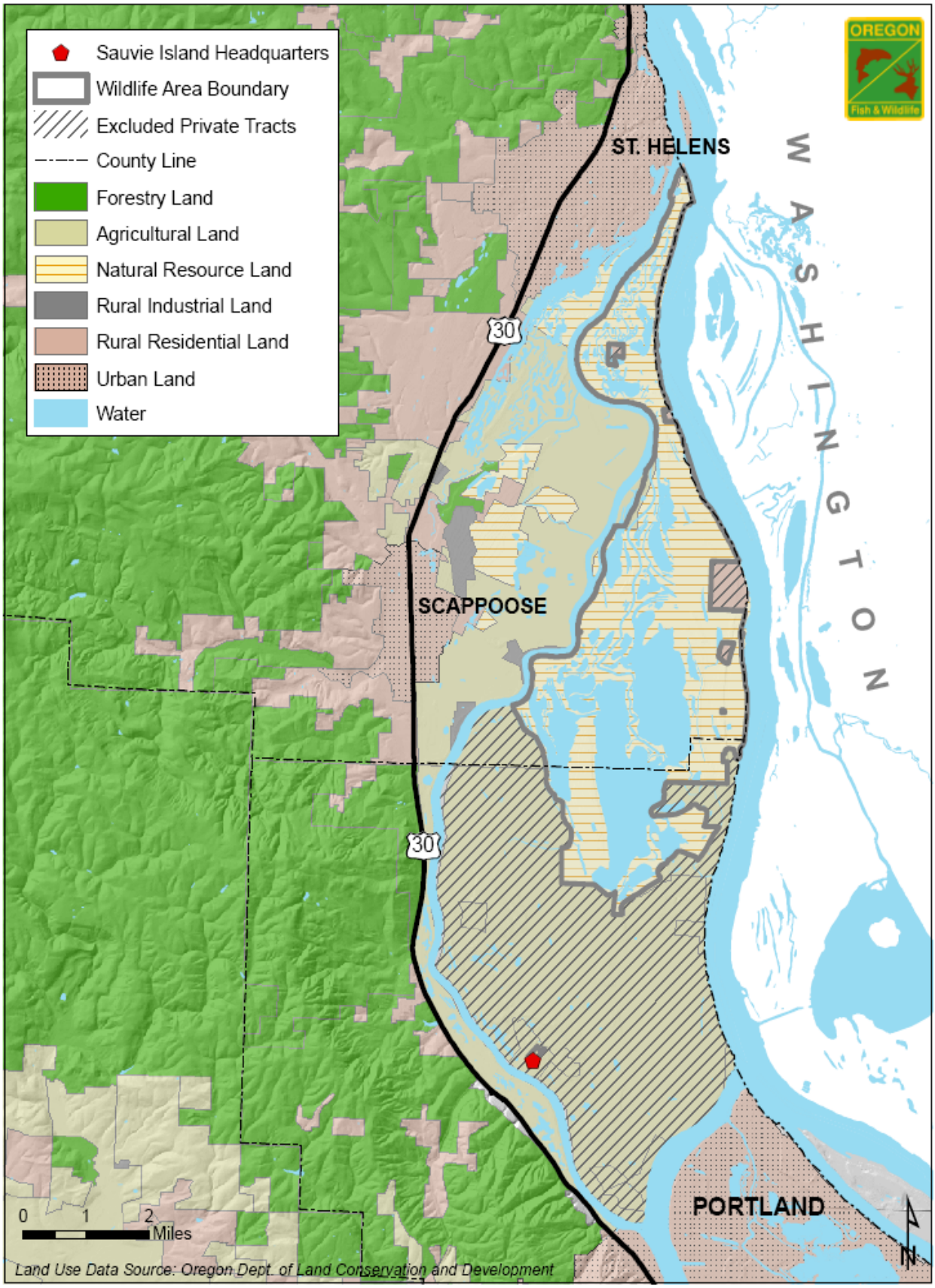
Monitoring of all management activities will be conducted by wildlife area staff in coordination with department regional and headquarters staff. USFWS staff periodically monitors winter goose use on SIWA to document the component of wintering goose populations in the Lower Columbia River and Northern Willamette Valley. Other monitoring occurs periodically on the area such as bird banding and swab testing for Avian Influenza and aquatic organism sampling by United States Geological Survey (USGS) and NOAA Fisheries.

Monitoring to address impacts due to climate change is a relatively new concept that the department is exploring. Physical and biological changes which may occur due to changing climate conditions include water availability, water temperature, species and habitat composition and changes in flood regimes. Determining baseline conditions and subsequent monitoring, especially of key OCS plants and wildlife, may guide future management actions.

Wildlife
Wildlife population monitoring of various species consists of routine aerial census for waterfowl, inter-agency mid-winter waterfowl surveys, bald eagle surveys, deer surveys and cooperative secretive marsh bird and neo-tropical bird surveys. A new monitoring program for SIWA is under development with assistance from the Klamath Bird Observatory, to inventory aquatic bird populations. Currently there is a point count monitoring program on Oak Island conducted by volunteers as part of the nationwide Audubon Important Bird Area project. These point counts follow the methods described by Huff, et al (2000). Point counts along established line transects will also be conducted before and after grassland habitat projects to determine grassland species response. The great blue heron rookeries that are active on SIWA are monitored each year, from February through June, by Audubon Society of Portland volunteers. Also Audubon is conducting road surveys of raptors throughout Sauvie Island.

Waterfowl banding at SIWA is conducted on an intermittent annual basis as part of a coordinated Pacific Flyway banding project. In recent years, waterfowl captured at SIWA for leg banding are also included in the monthly avian influenza sampling protocol and population estimations. Banding data is used by the USFWS for Flyway duck harvest, survival analysis and for hunting season regulation recommendations.

Figure 3 - Sauvie Island Wildlife Area Land Use



The department has been actively monitoring goose use on SIWA for the past two years using survey methods based on USFWS Willamette Valley Refuges protocols. These surveys will assist department staff in determining high priority goose grazing areas and the potential for increasing the quality of forage in these areas. The monitoring results will also be used by the department to extend closures, if needed, into the month of May in high goose use areas, to reduce disturbance.

Amphibian egg mass surveys and turtle monitoring projects were recently conducted by turtle biologists and volunteers through an OCS grant. During the 2010 field season, volunteers including local college students will investigate turtle movement and dispersal to determine habitat use and connectivity among habitats. Future projects have been proposed to use volunteers to monitor habitat utilization and population demographics. Amphibian egg mass surveys are ongoing and survey results will determine species presence, population estimates and habitat utilization.

As interest and resources become available, the department will pursue more student/volunteer monitoring activities to fill data gaps. For example, there is a need for additional avian, small mammal, reptile and amphibian presence/absence surveys. Once these surveys have been completed, census work will be needed to monitor population levels and impacts of habitat restoration activities.

Fish

Fish populations are monitored on occasion through angler creel checks and stream surveys by Oregon State Police (OSP) and the department's North Willamette Watershed District (NWWD) Fisheries staff. Monitoring will be conducted opportunistically and/or as scheduled by District fisheries personnel. District fisheries staff will conduct presence/absence surveys before and after Sturgeon Lake restoration work.

Wildlife Diseases

West Nile Virus

West Nile virus is a disease found in birds and is transmitted to other birds and mammals, including humans, via certain species of mosquito. The department coordinates with the Multnomah and Columbia County Vector Control Districts who are responsible for mosquito control within their respective counties both of which include SIWA. The Vector Control Districts provide an annual action plan to SIWA and NWWD Wildlife staff for review and necessary revisions, especially if the Districts are requesting to use adult mosquito control methods.

The mosquito-borne virus first reached the United States in 1999 and began moving westward, reaching Oregon in 2004. Multnomah and Columbia Counties began testing mosquitoes for the virus in 2004. The Oregon Department of Human Services reported 16 human cases of West Nile Virus in Oregon in 2008, down from 27 cases in 2007. Multnomah County has had confirmed West Nile Virus in mosquitoes and horses. Now that the virus has been confirmed locally, County Vector Control District officials will continue surveillance efforts and begin taking steps toward prevention.

Avian Influenza

Since 2007, the department has been swab-testing waterfowl for the Avian Influenza Virus in conjunction the statewide waterfowl banding program. Samples are acquired from live birds during the months of July, August and September. U.S. Department of Agriculture (USDA) personnel sample hunter harvested birds during the fall and winter. The testing that occurs on SIWA follows recently developed statewide and national virus testing protocols.

Ongoing morbidity and mortality surveys of waterbirds are conducted by department staff, bird banders and USGS to monitor potential die-off events. Protocols are in place to coordinate with the department's wildlife veterinary staff for status determination and subsequent disease testing of sick or deceased wildlife as necessary. There have been no positive tests for Avian Influenza to date.

Deer Loss Hair Syndrome

Big game spot light surveys are periodically conducted on SIWA by NWWD Wildlife staff to determine the occurrence of deer hair loss syndrome.

Habitat

Habitat monitoring will be conducted by department staff, contractors and volunteers in association with habitat management projects, to determine plant response. When possible, monitoring will occur both pre- and post-treatment. Potential habitat monitoring includes photo points, experimental control plots, line transects, structure (vegetation height and vertical density) and composition (relative abundance and density of vegetation). Currently, noxious weeds are inventoried by SIWA staff and the locations of infestations are provided to the WMSWCD staff to map the occurrences.

Soil testing is conducted periodically by a consultant to determine if soil nutrients are sufficient to produce the desired quality of habitats for fish and wildlife. As part of the Sturgeon Lake restoration project, siltation levels will be monitored to determine the effectiveness of the restoration methodology. Vegetation, fish and wildlife species response will also be monitored.

As part of the ongoing amphibian and turtle monitoring activities mentioned before, vegetation data is collected to determine habitat preferences and response to moist soil management.

Water Use

Water use for moist soil management and flooding hunt areas is monitored and documented according to water use reports submitted annually to both the department's Engineering Section and Oregon Water Resources Department (OWRD).

Water Quality

Water quantity and quality at SIWA are monitored via flow meters and contaminate testing. The primary water quality concern is the water discharged into the Columbia River, from lands in the Eastside Units within the levee. Other water quality tests have been conducted on SIWA water bodies, primarily Sturgeon Lake. In 1994 there was concern regarding the water quality of Sturgeon Lake. Water sampling results yielded high fecal *Coliform* counts, but surprisingly the source of the *Coliform* was from the

large number of waterfowl which use Sturgeon Lake. The high population of common carp, an introduced bottom-feeding fish, also contributes to high lake turbidity.

Public Use

Public use is currently estimated using car counters at four strategic locations to determine the number of visitors. The department collects car counter data on a monthly basis throughout the year. Littering and vandalism is a major problem on SIWA's beaches and at fishing locations. Additional management, such as increased enforcement and litter removal, occur to address these behavioral issues. Public use will need to be monitored to assess any specific impacts of visitors on wildlife and their habitats on the wildlife area. This monitoring could be conducted using graduate students and/or volunteers.

Infrastructure

Developments/Facilities

Major facilities development occurs primarily at SIWA's Headquarters and Eastside Shop complexes (Table 4). The Headquarters Complex consist of the Safety Action Team, SIWA and NWWD Wildlife District Staff offices, wood shop, two vehicle/storage garages, three Fish and Wildlife Volunteer Host sites and three storage sheds. The Eastside Shop Complex consists of one large shop building, one vehicles garage, Wildlife Viewing Platform, three Fish and Wildlife Volunteer Host sites and one seasonal residence. The area maintains seven staff residences, 11 barns and numerous outbuildings. All of the residences have wells for domestic water and septic systems. Other notable facilities include the Eastside Check Station, four boat ramps, fish screens, fencing, water delivery systems and a large number of water level management structures.

Table 4. Facilities and Developments on the Sauvie Island Wildlife Area.

Development Type	Location / Hunt Unit Name(s)
Viewing Area (3)	Coon Point, Eastside Viewing Platform, Rentenaar Road
Public Restroom (~45)	Eastside ADA, Gilbert River Boat Ramp permanent, up to 40 portable toilets (contract)
Access Area (7)	Westside, Oak Island, Rentenaar Road, Walton Beach, Collins Beach, Gilbert River Boat Ramp, North Unit
Parking Lot (29)	In Columbia County (22), In Multnomah County (7)
Maintenance Shop (2)	Headquarters, Eastside
Headquarters Office (1)	SIWA Headquarters
Equipment Shed (3)	Hunt, Browning, Headquarters
Storage Building (6)	Graf, Richardson, Pole Building, Hunt, Lyons, Headquarters
Barn (10)	Richardson, Hunt, Graf, Farrell, Horse Barn, Oak Island
Residence (7)	Headquarters (2), Eastside (5)
Host Site (3)	Headquarters (1), Eastside (2)
Fences (10)	Westside, Headquarters, Eastside, Coon Point, North Unit
Bridges (1)	McNary
Dike (3)	Sauvie Island, Columbia County, Collins (decommissioned)
Boat Ramp (4)	Oak Island, Gilbert River, Round Lake, Steelman Lake
Pumphouse (6)	Richardson, Lyons, McNary, Gilbert Westside,

	Headquarters, Johnson
Pump Structure (3)	McNary, Aaron, Westside
Fishing Dock (2)	Gilbert River, Big Eddy
Check Station (2)	Eastside, Westside
Cattle Guard (2)	Eastside, Westside

Water Rights

The department holds numerous Oregon Water Resources Department water right certificates and permits for a majority of SIWA's wetlands. These are critical to meeting SIWA goals and objectives, as well as complying with the agency mission. The two major pumping stations (Aaron and Westside) provide the bulk of the water to meet the water rights. Both of these pumps are located in the Gilbert River which is a tributary of the Multnomah Channel. Annual spring freshet waters for both the Columbia River and Multnomah Channel are also held as part of the water rights. Appendix D shows State water rights which are currently held on the Sauvie Island Wildlife Area.

Easements/Access Agreements

Rights-of-way on SIWA include four powerlines (all for Portland General Electric) and one sewer line (buried pipe from City of St. Helens). Generally, the rights-of-way are providing service to the Sauvie Island Wildlife Area facilities (Headquarters and Eastside Shop Complexes and pumps) or are situated along the exterior boundary of the wildlife area. The other easements include a road into the Elledge property in the North Unit and a bridge and a walk-in easement on Oak Island.

Approximately 3,400 acres of DSL lands are managed under a 99-year cooperative agreement with the department. This allows SIWA staff to manage these lands for the benefit of wildlife and their habitats.

Annual grazing and sharecropper permit agreements, for eight permittees, are in effect on the wildlife area. The grazing permittees are allowed approximately 3,400 Animal Unit Months (AUMs) and the sharecrop permittees plant and harvest approximately 400 acres.

Appendix E lists the easements and access agreements occurring on SIWA.

Land Acquisition and Adjustment

It is the policy of the department to only acquire land or interests in lands, including easements and leases, from willing sellers, consistent with statutory authority and the department's mission. Acquisitions and adjustments must be for the conservation of fish and wildlife and their habitats and to provide fish- and wildlife-oriented public use for educational and recreational purposes. Land adjustments would allow for the sale, trade or exchange of land with willing landowners to enable the department to consolidate wildlife area boundaries.

There are three categories of lands that may be considered for acquisition. These include: 1) significant or unique habitats, especially those beneficial to threatened,

endangered, or sensitive species; 2) sites, or access to sites that provide wildlife-related recreational opportunities; and, 3) properties to facilitate the performance of the Department's mandated duties (e.g., storage and warehouse, feeding barns, etc.). If adjacent lands become available for acquisition, the department will explore the option of developing conservation easements or purchase from willing sellers.

At present, neighboring private lands provide significant wintering habitat for a variety of waterbirds. However the quality of this habitat is seasonally variable due to the timing and intensity of activities such as crop rotation, haying, livestock grazing, and private duck club hunting.

Public Use

Public Access

Because of its proximity to Portland, SIWA experiences the largest number of public use days of any of the department's wildlife areas. This large number of use days has increased challenges to the management of SIWA. Public use will be managed to protect fish and wildlife and their habitats, protect SIWA infrastructure, and maintain the security and peaceful environment of the wildlife area and neighboring private lands. For example, off road vehicle use is prohibited on SIWA and horseback riding and bicycle use is limited to roads open to public vehicle traffic.

The number of visits by the public varies widely depending on weather conditions, with the heaviest use occurring in the summer. For example, over the entire year of 2009, 989,361 visitor use days were recorded at SIWA, with the 55% of all uses occurring on the beaches. During the summer of 2009, records show that, among all uses, 85% of visitors recreated on the beaches.

Currently, seasonal entry restrictions are in place from October 1 through April 30. In recent years, biologists have recorded delayed spring migration of cackling Canada geese, therefore this closure period has been temporarily adjusted to a later date (May 1) and will be re-assessed with the intent of maintaining this date in the future.

A number of locations are open to the public throughout the year, to provide high quality birding and wildlife viewing opportunities. These locations include Rentenaar Road, Columbia River beaches, the Coon Point Viewing Area and the Eastside Wildlife Viewing Platform. A time restriction of 10:00 PM to 4:00 AM has been set throughout the wildlife area to improve security and protect the livability of adjacent private properties.

Hunting access occurs on approximately 72% of the wildlife area during the fall and winter hunting seasons. Hunting use is quantified through the requirement of daily hunting permits obtained at a staffed hunter check station or self-serve hunter check station. Non-hunting visitor use is monitored by car counters placed at specific locations such as the beach areas. However, it is difficult to determine the specific uses (birding, beach use, hiking, etc.) the car counters are reflecting. General visitor use is also monitored by the sale of daily or annual SIWA parking permits.

Hunting, Trapping, and Angling

Hunting and angling are very popular recreational activities enjoyed on the SIWA (Table 5). Providing public hunting opportunity was a major objective for the acquisition of SIWA, and revenues derived from hunting-related expenditures were the sole funding source for SIWA operations until 1990 when the SIWA parking permit system was initiated. Hunter use has remained rather steady with an average of 15,000 hunter visits over the past 40 years. In addition to the many hunting opportunities available at SIWA, dog training and trap shooting are also popular in the designated locations set aside for these purposes.

Table 5. Estimated Annual Hunting, Angling and Trapping Use Days on Sauvie Island Wildlife Area.

Activity	Estimated Annual Use Days
Hunting	15,000
Angling	150,000
Trapping	70
Dog Training and Field Trials	10,000
Trap Shooting	2,000
Total	**177,070**

SIWA provides a hunting experience which, once one is familiar with the system, can be extremely satisfactory. The SIWA has a wide variety of hunting opportunities. Waterfowl (especially ducks), upland game birds and deer are the primary species hunted. Waterfowl hunting options include a controlled hunt draw, first come-first serve opportunity, random numbered chip draw or an area which is open everyday during game bird seasons. Black-tailed deer hunting is archery only, during the Western Oregon general buck deer bow season. The wildlife area is closed to the hunting of furbearers, predators, unprotected and protected wildlife (except black-tailed deer and game birds). Access for disabled waterfowl hunters is provided with three disabled hunter blinds and areas which are relatively easy to access from the numerous parking areas.

- About 72% of SIWA's 11,543 acres are open to hunting. Other key areas are maintained, as refuge where access is generally not allowed during the hunting season. Refuges are necessary to meet wintering needs for many species. Should refuge areas be eliminated, birds would probably migrate out of the region to wintering areas or locations with reduced disturbance.

- Management of the hunt program is a major activity during hunting season. On average, about 15,000 hunter days are recorded annually with 15,700 waterfowl, coots, snipe, and upland game harvested. Collection of data on hunting activity, success, and species composition of game harvested is conducted by SIWA staff. The bulk of the data collected is obtained at the department's Eastside and Westside Check Stations.

- Hunters have access to 22 parking areas, three boat launches, up to 15 portable toilets, roads, trails, and one footbridge.

- Signing of boundaries and displays at SIWA Headquarters Complex, Eastside and Westside Check Stations and major access areas provide information to hunters.

- Considerable information is disseminated to the hunting public via telephone and personal contact, especially at the two waterfowl check stations.

- Fishing is a popular activity throughout SIWA's waterbodies and the adjacent Columbia River and Multnomah Channel. A warmwater fishery has developed because of the large areas of warm water habitat. Two disabled angler piers were installed to accommodate warmwater fishing and salmon, steelhead and sturgeon fishing. Salmon, steelhead and sturgeon fishing occurs on the wildlife area's shorelines along the Columbia River and Multnomah Channel. Haldeman Pond is stocked with legal trout during the spring to support a popular trout fishery in spring and early summer. Fishing use days on the wildlife area is estimated at 150,000 annually.

- Fisheries related work on SIWA is conducted by both SIWA staff and NWWD Fisheries staff. Consistent with USFWS Pittman-Robertson (PR) Federal Assistance requirements, if SIWA staff time is utilized the costs associated must be derived from a non-Federal Assistance PR funding source. Opportunities to increase angler use will be explored if the impacts are consistent with wildlife management objectives.

- Trapping is allowed, on a closely controlled permit basis, to achieve population controls for selected species, particularly nutria. Currently only one permitted trapper is allowed after waterfowl season to the close of trapping season which is typically March 31. Restrictions on trapping seasons at SIWA have been enacted to reduce potential conflicts between user groups, prevent undue harassment to wintering wildlife and to prevent impacts to nesting waterbirds.

- SIWA has been a popular dog training area since wildlife area establishment. Dog training is an important component of many types of hunting since trained dogs retrieve game which minimizes waste. The Fish and Wildlife Commission approved two separate dog training plans in 1993 to address field trials and individual training activities. The department is presently working on a statewide dog training plan which, when approved, will be incorporated into wildlife area operations.

- A trap shooting area was established on the Westside Unit in the mid-1990s and is mainly used just prior to fall hunting season. The trap shooting area is closed from October 1 – April 15.

Wildlife Viewing and Other Compatible Uses

For the purposes of this plan 'other compatible uses' include those predominantly wildlife-oriented activities such as wildlife viewing (primarily bird watching), stewardship, photography, and hiking.

Birding and other wildlife viewing are rising in popularity across the nation. SIWA is experiencing this rising interest and the department is exploring ways to increase both opportunities and facilities to accommodate these uses.

The SIWA is open to public access based on a season closure schedule with a number of areas open year around, such as the beaches. For this planning process, Table 6 uses an average visitor use estimate over the past ten years.

Table 6. Estimated Annual Other Compatible Public Use Days on the Sauvie Island Wildlife Area.

Activity	Estimated Annual Use Days
Birding and Wildlife Viewing	80,000
Hiking	8,000
Other Uses (e.g. picnicking, biking)	10,000
Photography	2,000
Total	**100,000**

Birding and Wildlife Viewing

Wildlife viewing use has increased dramatically during the past ten years on SIWA and is estimated to approach 80,000 visitor use days annually. Viewers and other public users utilize the same infrastructure that serves the hunting public. During the summer virtually the entire wildlife area is open and available for non-hunting uses. SIWA staff are exploring the development of additional viewing facilities and opportunities such as viewing areas, observation decks, photography blinds, establishing an auto tour route and potentially allowing limited access to closed areas. These additional facilities and activities will be compatible with fish and wildlife management objectives as determined by the department.

- Birding and wildlife viewing is largely unregulated except by season closures. There is a wide array of opportunities available on the wildlife area. A number of the existing viewing areas are open year around to provide viewing opportunities during the usual winter closure period.

- The full time office facility and staffed hunter check stations serve as informational outlets. Field staff frequently provides informational to the public as well. Fish and Wildlife Volunteer Hosts and other Northwest Region volunteers have been utilized to provide additional assistance to visitors.

- The Audubon Christmas Bird Count, waterfowl banding, and numerous special tours and slide programs are conducted annually.

- A limited number of special events, such as the annual Raptor Road Trip, occur on SIWA. During the February 2010 Road Trip a record number of participants (over 1,600) joined SIWA staff and event sponsors. As new events are suggested in the future, the potential impacts to the wildlife area and island residents (in terms of visitor numbers) will need to be considered when planning such activities.

- Field trips are sponsored by local organizations.

- Restoration and monitoring activities are also conducted by local organizations.

Educational/Interpretive
The SIWA is used by a variety of educational groups including local and distant school districts, colleges, universities, various Scouting and other groups. Educational groups can use the area on their own or arrange for guided tours by department staff. Informational talks and slide shows are presented to many groups upon request and in conjunction with special projects.

Other Uses

Beach Use
As previously mentioned, the majority of the wildlife area's recorded visitor use is from beach users. The current estimate of beach visitors is over 600,000 use days annually with as much as 85% of all summertime use dominated by beach users. Although beach users park on SIWA lands, they recreate on the beaches which are owned by DSL, managed by SIWA staff by agreement. The SIWA Parking Permit Program provides the funding for law enforcement, portable toilets, litter patrols, and facilities maintenance on the adjacent SIWA property. A Beach Use Plan, developed in 1993, and was adjudicated in 2001 by the Columbia County Circuit Court. For the purposes of this 2010 SIWA management plan, the department's beach-related management activities will remain unchanged.

Objectives and Strategies

Objectives and Strategies

As stated previously, objectives are concise statements of what the department wants to achieve, how much the department wants to achieve, when and where to achieve it and who will be responsible for the work. Objectives derive from goals and provide the basis for determining strategies. Strategies describe the specific actions, tools, techniques or a combination of these elements used to achieve an objective.

The goals, objectives and strategies in the plan were derived from following an ecosystem based management philosophy. The primary action for benefiting wildlife is managing or preserving the range of habitat types that naturally occurred on Sauvie Island. These habitats were created and maintained by a suite of ecological processes, most importantly hydrology. Management activities such as water level management (drawdowns and flooding) and vegetation manipulations (disking, farming, grazing, mowing, controlled burning) are tools that SIWA staff use to mimic ecological processes to create and maintain desired habitat composition. Due to the wide variety of habitat use among the different species utilizing SIWA, benefits will be varied. In addition, recreational opportunities based on public demand and habitat capabilities, balanced with resource needs, will be quite variable and specific uses will not be maximized in all

cases.

Wetland habitats on SIWA occur in both unmanaged and managed units. The unmanaged wetlands occupy the largest percentage of SIWA wetland types. The managed wetlands usually occur within natural depressions and are controlled with the use of existing pumps and potentially new solar pumps, piping, levees and water control structures. Wildlife use of SIWA wetlands depends on both natural, and several man-made semi-natural habitats. Hydrologic changes have had a profound effect on vegetative components of wetland habitats on SIWA that in turn influences wildlife and recreation use.

When analyzing the effectiveness of the department's efforts to manage habitat to benefit a particular species or guild, it is important to keep in perspective the myriad other factors out of our control that regulate wildlife populations, especially migratory waterbirds. The condition of waterfowl wintering and breeding grounds influences populations to a much greater extent than migration staging areas. SIWA provides habitat for all three life history stages, but is primarily a wintering ground for waterfowl. Waterbird habitats have undergone significant change and continue to be altered and/or enhanced. Throughout the Pacific Flyway, weather patterns affect distribution of waterbird populations, by influencing migration pattern and timing, as well as habitat use on SIWA.

Objectives and strategies emphasize maintenance and more intensive management of existing developments. Considerable emphasis is placed on new development and work continues annually to either create new wetlands or better manage historic wetlands. The intent of the wetland restoration program on SIWA is to mimic historic hydrologic regimes of the Columbia River prior to the construction and operation of upstream dams.

The following objectives and strategies are based on the three goals described earlier. They identify the management activities and priorities of the 2010 Sauvie Island Wildlife Area Management Plan.

Goal 1: To protect, enhance and manage wetland habitats to benefit fish and wildlife species.

The Willamette Valley Ecoregion is an important habitat area for migrating and wintering waterfowl in the Pacific Flyway. Food is thought to be to the factor most limiting to waterfowl survival and condition during winter. As a result, Habitat Joint Ventures, organized under the North American Waterfowl Management Plan, have developed programs that operate under the basic premise that, if food abundance is increased, demographic performance (e.g., survival) or the physiological condition (e.g. body fat) of wintering waterfowl will improve. The SIWA is an important area for wintering birds in the Lower Columbia River and Willamette Valley, both of which occur within the boundary of the Pacific Coast Joint Venture. Therefore, focusing on producing foods in managed wetland impoundments at SIWA is consistent with regional and national waterfowl management objectives and objectives for the area established by the department.

Waterfowl undergo a series of life history events during fall and winter (migration, molt, pair formation, pre-migration fat storage) and no single habitat type can meet the needs of each species during every life-history stage. Consequently, it is important to provide a complex of wetlands that includes a mix of habitat types. Over the last decade, the department and numerous partners have completed numerous wetland restoration projects. These projects have benefited over 20 species, not only waterfowl, but a wide range of species such as tree frogs, bald eagles, sandhill cranes, great blue herons, rails, songbirds and small mammals. Prior to these wetland restoration projects, during the critical waterfowl nesting period, low elevation areas typically consisted of mostly bare soil left over from the previous farming season. In late June, this bare soil was planted with a fast growing winter food source such as buckwheat. Now habitat projects at SIWA emphasize wetland restoration, pasture and wetland management, and planting a range of agricultural crops (e.g. corn, sudangrass, buckwheat, millet and wild rice). Agricultural grains provide the most energy per acre to benefit wildlife because grains are easily digestible and high in carbohydrates. However, grains are nutritionally imbalanced and research has shown that ducks cannot survive on a diet of strictly agricultural grains. Other than a few duck, goose and crane species, comparatively few wetland dependent species use agricultural foods. Agricultural crops are important to meet some of the energy demands of wintering wildlife so farming operations will continue, but in higher elevation upland areas. On the other hand, the vegetation found in seasonal wetlands can produce large amounts of natural foods in the form of seeds, tubers and invertebrates that provide a diverse diet for waterfowl and other species of wetland birds. Seasonal wetlands, when flooded, also play an important role in controlling invasive plants such as reed canarygrass by reducing germination of such species. Semi-permanent wetlands provide similar types of foods, but not to the same degree because they are not as productive as seasonal wetlands. Canada geese and 11 species of ducks breed on SIWA and use semi-permanent wetlands for brood rearing.

Shorebirds, such as least sandpipers, dunlin and dowitchers, can concentrate in large numbers over brief time periods on SIWA, as they migrate between breeding areas in the Arctic and wintering areas in California and Central and South America. The diversity of food resources found in wetland habitats play an important role for shorebird species by replenishing or building energy reserves depleted during migration. In some cases, energy is being stored in preparation for the physiological demands of breeding. Strategies used to manage seasonal and semi-permanent wetlands can provide quality shorebird habitat and SIWA staff will consider this when developing yearly work plans. For example, in Racetrack Lake, SIWA staff disk and then flood the impoundment, specifically to enhance shorebird foraging.

Sturgeon Lake and associated lakes and wetlands were statutorily designated in 1937 as a wildlife refuge by the Oregon Legislature; the department will continue to manage this habitat to maintain this important value. Another concern of the department is to improve the function of Sturgeon Lake as habitat for both wildlife and fish (particularly Pacific lamprey and listed runs of salmonids. Sturgeon Lake has been silting in since the early 1940s when the main Sauvie Island levee was constructed. During the 1980s and early 1990s a project was conducted to clear Dairy Creek and to dig a shortened

channel to restore water flow to Sturgeon Lake. As previously discussed this project involved numerous federal and state entities. Unfortunately the major flood event in February of 1996 created blockages in Dairy Creek which greatly decreased water flows to Sturgeon Lake. The department, West Multnomah Soil and Water Conservation District and USACE will develop a feasibility study to evaluate restoration options which will be submitted by professional engineers. The WMSWCD was recently awarded a technical assistance grant from Oregon Watershed Enhancement Board (OWEB) that will be used to fund this study. The Sturgeon Lake Restoration Planning Group will supervise the development of the feasibility study, will seek additional funding to implement restoration activities and will oversee the completion of the project.

Sturgeon Lake

Objective 1.1: Conduct research on methods and then implement these methods to improve the biological and hydrological function of the 3,000 acre Sturgeon Lake system.

Rationale: Sturgeon Lake comprises approximately 3,000 acres of open water and wetlands. This significant habitat is recognized by the Recovery Planning process for ESA listed salmonids and is key to the restoration of certain populations of salmon and steelhead originating from many upstream subbasins. One of SIWA's highest management priorities is to restore the biological and hydrological functions of Sturgeon Lake to benefit waterfowl, listed anadromous fish and sensitive Pacific lamprey populations. The lake is situated between Eastside and Westside Units and is administratively managed as a separate entity by SIWA, under agreement with DSL. The lake comprises the largest contiguous wetland on SIWA with many acres of shallow, tidally influenced habitat and is usually inundated October through July.

Strategy 1. With Sturgeon Lake Restoration Planning Group oversight, coordinate requests for proposals and select a consultant who will conduct a feasibility study that will evaluate the hydrology and biological conditions of Sturgeon Lake and recommend restoration activities.

Strategy 2. Using the results of the feasibility study, seek funding and partnerships to implement suggested restoration methods.

Strategy 3. Coordinate requests for proposals, select a contractor and conduct the restoration project.

Strategy 4. Supervise the maintenance of the Sturgeon Lake Project after restoration is completed.

Inside the levees

Objective 1.2: Protect, enhance and manage approximately 286 acres of palustrine seasonally flooded wetlands and convert approximately 200 acres of existing poorly drained agricultural land into a total of 486 acres of this wetland type to benefit a wide variety of fish and wildlife species.

Rationale: This habitat type usually occurs at higher elevations within larger units managed as semi-permanent wetlands. Water levels recede naturally as evapotranspiration occurs or as manipulated through active management action (drawdowns).

The shallow water habitat provided by seasonal wetlands provides foraging conditions for many species of wetland bird including rails, bitterns, songbirds and dabbling ducks. Timing of drawdown in spring months will increase the availability of invertebrates as a food source for migrating and breeding waterbirds.

Early summer drawdown creates excellent germination conditions for many species of wetland plants such as smartweed, plantain and beggartick. Reflooding these areas in late summer and early fall provide abundant food for fall migrating waterbirds. Depending on the drawdown date seasonally flooded wetlands may be less valuable as brood rearing areas for many early nesting species but are high quality brood rearing habitat for late nesting species.

Many of the low elevation areas inside the levees are not practical to plant food crops because of poor drainage. Many of these areas are currently covered by a monoculture of reed canarygrass. SIWA staff is continuing to convert these low areas of approximately 200 acres into seasonally flooded wetlands.

Strategy 1. Use moist soil management techniques to improve habitat diversity, maintain desirable emergent plant growth and encourage wetland plant seed production. Work will entail regulating water levels by flooding, drawdown and drying, on an annual or longer term interval, coupled with vegetation and soil disturbance via mowing, plowing, disking and applying herbicides if needed.

Strategy 2. Utilize integrated pest management to control invasive plant species, focusing on invasive plants within and adjacent to wetland areas. Work will entail monitoring, searching for and treating infestations utilizing best management practices and techniques, while balancing the needs of waterfowl and other wildlife.

Strategy 3. In cooperation with partners, over the life of this plan, SIWA staff will convert up to 200 acres of reed canarygrass swales within the poorly drained agricultural lands into seasonally flooded wetlands. This will be completed by removing existing reed canarygrass sod, conducting earth moving activities and installing any needed water control infrastructure.

<u>Outside the levees</u>

Objective 1.3: Protect and enhance approximately 2,922 acres of lacustrine seasonally flooded wetlands to benefit a wide variety of fish and wildlife.

Rationale: The physical demands of wildlife during migration and daily movements within wintering areas require that they have access to suitable locations for food and rest. This habitat type provides food, water, and sanctuary from disturbance during migration and overwintering. This is particularly important for wildlife, both "residents" and migrating populations, during hunting season. Wildlife that do not have access to sanctuary areas during critical time periods are subject to a variety of disturbances, such as vehicles, that increase energetic costs, change distribution, prevent use of important habitats and force migration to wintering areas earlier than is desired or necessary. Areas important to wildlife, especially for loafing and roosting sandhill cranes, are particularly susceptible to disturbance. Three of the largest wetlands and open water (Sturgeon, Crane and Cunningham Lakes) present on the wildlife area are representative of this habitat type.

Strategy 1. Use habitat management techniques to improve habitat quality, such as fall spraying and disking to set back reed canarygrass. These techniques will be utilized on approximately 20-60 acres annually, depending on the water year (annual flood and drought events).

Strategy 2. Post the boundary of designated sanctuary areas with department signage and revise hunting and fishing regulations through the department's formal regulatory process. Continue seasonal access restrictions as necessary to protect wintering wildlife. Work will entail providing public information at key entry sites on an annual basis as well as restricting motor vehicle or foot travel from early fall through early spring. to prevent damage to these habitats and limit disturbance to wildlife. Sturgeon Lake, a legislative refuge, will be maintained for this purpose.

Strategy 3. Utilize integrated pest management to control invasive plant species, focusing on invasive plants within and adjacent to wetland areas. Work will entail monitoring, searching for, and treating infestations using best management practices and techniques. Reseeding with desirable vegetation may occur in some areas.

Strategy 4. Identify enhancement opportunities in portions of these lacustrine wetlands to benefit shorebirds, sandhill cranes and other wildlife.

Objective 1.4: Protect and manage 285 acres of lacustrine permanently flooded wetlands to benefit a wide variety of fish and wildlife species.

Rationale: Permanently flooded wetlands on SIWA are maintained primarily through the flows of the Columbia and Willamette rivers. Water depths in these wetlands remain relatively stable throughout the year. This habitat type is important for wintering waterfowl and brood rearing. Large populations of invertebrates are found in this wetland type and provide food for an array of wildlife species. Many of the permanently flooded wetlands are also augmented by pumps which SIWA staff use during the dry periods, from summer through fall. There is evidence from Ducks Unlimited-sponsored studies that permanently flooded wetlands provide over-wintering habitat for fish such as listed steelhead and Chinook salmon. These wetlands are also popular for angling

and boating activities. Several lakes on SIWA are included in this habitat type (Aaron, Big and Little McNary, and Mud Lakes).

Strategy 1. Determine, via surveys, if current water level management practices are benefiting fish and wildlife, such as rails and red-legged frogs, and explore other options such as periodic drying.

Strategy 2. Utilize integrated pest management to control invasive plant species, focusing on invasive plants within and adjacent to wetland areas. Work will entail monitoring, searching for, and treating infestations utilizing best management practices and techniques. Plantings and/or reseeding may occur in some areas to increase habitat diversity.

Strategy 3. Explore habitat and water level management techniques to improve habitat quality such as fall flooding, spraying and disking to set back reed canarygrass. These techniques could be utilized on approximately 30 acres annually depending on the water year.

Strategy 4. Maintain water levels, by use of pumps and water control structures, to provide wildlife habitat for such species as waterfowl, American white pelicans and grebes. These areas are also used by anglers and boaters.

Objective 1.5: Protect, enhance and manage approximately 795 acres of palustrine permanently flooded wetlands to benefit a wide variety of fish and wildlife species.

Rationale: This habitat type is important to waterfowl and a variety of waterbirds during migration and for brood rearing for waterfowl throughout the breeding season. Submerged aquatic plants generally fill the entire water column and harbor large populations of invertebrates. Stable water levels are important for the maintenance of fish and some invertebrate species. However, productivity of submerged aquatic plants diminishes over time, mainly due to introduced carp which overgraze submerged plants. Plant communities are also greatly affected by natural events such as flooding and drying. As needed, SIWA staff maintains habitat quantity and quality via water drawdowns or pumping. Infrastructure limitations and the influences of the two river systems present challenges to the effectiveness of the department's habitat management activities at these sites. Two large lakes on SIWA are included in this habitat type (Pope and Steelman Lakes).

Strategy 1. Water levels will be monitored and adjusted year-round to provide stable to slowly receding levels to improve food availability, maintain submergent plant growth, and support desired fish and invertebrate populations.

Strategy 2. Periodic complete drawdowns of selected permanent wetlands, on a time interval or cycle of approximately once every 8-10 years, will consolidate soils through oxidation and will accelerate decomposition of organic matter thereby enhancing site productivity. Dewatering of these wetlands may also be

used to control carp and invasive plant species. On an annual basis, depending on the water year, this activity could take place on approximately 15-45 acres.

Objective 1.6: Enhance and manage 62 acres of palustrine semi-permanently flooded and 52 acres of palustrine seasonally flooded wetland habitats to benefit a wide variety of fish and wildlife species.

Rationale: These habitat types are important for many species of breeding waterbirds including ducks, geese, wading birds, secretive marsh birds, and wetland-dependent songbirds. Robust emergent vegetation provides nesting substrate for many species as well as cover for broods and molting waterfowl. Open water with submerged aquatic vegetation provide important foraging areas for waterbirds, especially broods. Small fish, aquatic and emergent insects and other invertebrates provide additional food for a wide variety of wildlife.

The timing of drawdowns can have significant effects on vegetation diversity, germination and productivity. To determine the most efficient strategy to meet vegetation density, diversity and interspersion objectives, SIWA staff will use a variety of drawdown scenarios. For example, early summer drawdown is known to create optimal germination conditions for many wetland plants such as smartweed, plantain and beggarstick. Reflooding these areas in late summer and early fall result in abundant food sources for fall migrating waterbirds.

Ground- and vegetation-disturbing activities such as disking, herbicide use, mowing and prescribed fire can result in an intricate mosaic of habitat features and increased habitat diversity. These activities will require dry conditions in order to operate heavy equipment. Those conditions may be met only through multiple year drawdowns, without seasonal flooding, especially in the McNary Lake system. Extended periods of dry conditions will mimic drought cycles which occurred naturally in the past. Dry conditions, combined with subsequent ground and vegetation disturbing activities, increase the stress to and reduce the vigor of dense tall emergent vegetation. The effectiveness of these management actions will be evaluated to determine the benefits to fish and wildlife. Due to these short term management activities, wildlife area visitors may experience short-term loss of opportunities in accustomed or traditional site-specific locations. However, in the long term, access for hunting, birding and wildlife viewing will be enhanced.

Along with permanently flooded wetlands, semi-permanently and seasonally flooded wetlands are commonly referred to as freshwater marsh. A wide variety of migrant and winter bird species take advantage of the diversity of food resources in these wetlands. Diving ducks and swans utilized open water areas to forage on submergent aquatic plants. Arctic nesting geese make extensive use of wetland plants both during migration and wintering and swans utilize wapato tubers throughout the winter. Seeds from both annual and perennial plants provide an abundant source of food to a wide variety of migrants, as well as breeding species.

Strategy 1. Utilize moist soil and marsh management methods to enhance habitat diversity, improve open water to vegetation ratios and interspersion,

thereby increasing waterfowl and other waterbirds foraging opportunities. This will be conducted by regulating water levels to provide timely flooding and receding levels to improve food availability, maintain or enhance emergent and submergent plant growth, invertebrate populations and improve habitat. This will occur on 10-25 acres annually and will result in the set-back of dense tall emergent vegetation and reed canarygrass. This set-back activity will foster the availability and growth of desired native wetland plant species. Work will entail drawdown and drying, on an annual or longer term interval, coupled with vegetation and soil disturbance using herbicides, disking, mowing and plowing.

Strategy 2. Utilize integrated pest management to control invasive plant species, focusing on invasive plants within and adjacent to wetland areas. Work will entail searching for and treating infestations utilizing best management practices and techniques. Reseeding may occur in some areas.

Strategy 3. Use livestock grazing to enhance habitat diversity, food availability and foraging opportunities for wildlife. Work will entail monitoring timing and duration of grazing, as well as maintenance of temporary and/or permanent fences to control livestock in target areas. Vegetation monitoring will also be conducted annually in areas which are grazed.

Objective 1.7: Protect and enhance approximately 161 acres of riverine wetlands to benefit a wide variety of fish and wildlife species.

Rationale: Riverine wetlands occur along the Columbia, Willamette and Gilbert Rivers, Multnomah Channel, and Dairy Creek. Riverine habitats support a variety of invertebrates and fish species. During high flow events, these waterways provide access to interior wetlands that offer critical refugia for listed anadromous fish. These habitats are recognized by the Recovery Planning process for listed Columbia River salmonids as key to the restoration of many of these populations of fish. These wetlands also play a vital role in supplying water to SIWA's water delivery system which is used to manage other wetland habitat types.

Strategy 1. Continue visual monitoring of riverine wetlands to prevent impacts due to human-caused disturbance (i.e. vegetation removal, trail-building, littering) and address such impacts via signage and enforcement.

Strategy 2. Improve adjacent riparian vegetation and reduce erosion through plantings of woody vegetation along the wetland edge in those areas not managed for goose forage. This activity may be conducted by volunteer groups that have expressed interest in habitat restoration.

Strategy 3. Utilize integrated pest management to control invasive plant species. Work will entail searching for and treating infestations utilizing best management practices and techniques.

Strategy 4. Explore and implement any opportunities to increase off-channel, flooded refugia to benefit listed fish species, through creating or restoring hydrologic connections to historic flood channels.

Objective 1.8: Maintain and improve critical physical and functional infrastructure affecting wetland and water management activities within and outside the levees.

Rationale: Physical infrastructure is essential for water level management and subsequent habitat management across all wetland habitats. Such physical infrastructure includes pumps, piping, dikes and levees, culverts, flashboard risers, other water control structures and rock spillways.

Functional infrastructure (canals, channels and ditches) is necessary to control water delivery to inundate (flood) or dewater (drawdown) wetlands. Most wetland habitat objectives and strategies rely on effective, efficient and timely water level manipulations. This capability is necessary to implement nearly all habitat enhancement and management actions. Improving SIWA's water use and delivery system is an important conservation action recommendation specifically described on page 244 in the OCS.

Vegetation response and subsequent desired wildlife use are tied to water levels, more specifically to the timing of drawdowns and flooding. Infrastructure maintenance and improvement will ultimately enhance and improve wetland condition and function. These actions will assist in meeting direction and goals of Pacific Coast Joint Venture, Pacific Flyway Species Population management, and other state, local or federal agency implementation plans involving wetland management and protection. Coordination with appropriate agencies and organizations will occur.

The water use and delivery system infrastructure is also critical for providing many fish and wildlife-related recreational opportunities. The maintenance and improvement of these systems is required to maintain or expand these recreational activities.

Strategy 1. Maintain and improve physical infrastructure through annual maintenance. Work will include using heavy equipment to stabilize and repair erosion damage, repair burrowing rodent damage on dikes and levees, replace and repair flashboard riser structures, grade dike tops and mow vegetation. Pumps, piping, culverts, flashboard risers and other water control structures will be repaired, replaced and improved as necessary.

Strategy 2. Maintain and improve functional infrastructure through annual maintenance of canals, channels, ditches and water control structures. Work will include using heavy equipment to remove accumulated silt and invasive vegetation, monitoring water flows/distribution and removing debris and obstructions in canals, channels, ditches and at water control structures.

Strategy 3. Redesign flashboard riser and culvert locations in areas as appropriate to improve drainage and flooding of wetland units. Work will include using heavy equipment to install additional or relocate existing structures.

Strategy 4. Improve energy efficiency and develop additional water use and delivery infrastructure to improve the ability to manage wetland habitats. Work will include investigating opportunities such converting to solar pumps.

Goal 2: To protect, enhance and manage upland habitats to benefit a wide variety of wildlife species.

The upland habitat management priority is to provide habitat, specifically pastures, to hold wintering geese to minimize depredation on private lands. In addition, SIWA upland habitats contain grasslands, oak woodland/savannah and riparian/bottomland hardwood forests and agriculture. Oak habitats, wetland and wet prairie and riparian forest habitats are Key Habitats as defined by the OCS. Objectives 2.1 and 2.4 address two management objectives for the same 2,230 acres: managing these uplands to enhance goose carrying capacity in the winter and managing to benefit grassland nesting birds in spring and summer.

Objective 2.1: Enhance habitat carrying capacity for wintering Canada geese by reviewing and modifying current habitat management practices on 2,230 acres of upland pastures/grasslands and 1,316 acres of agricultural cropland.

Rationale: Significant amounts of the natural grasslands on SIWA were altered or converted to croplands and pastures by early homesteaders, to support agricultural or livestock grazing operations. These agricultural activities continued up to the department's first acquisition of SIWA lands in 1947 and still continue on portions of the wildlife area.

Pastures/grasslands and agricultural crops are critical for the management of wintering waterfowl, especially geese. The pastures are maintained to provide green forage for wintering geese, to keep geese on the wildlife area, and to reduce depredation on private agricultural lands. Current management also benefits other wildlife species such as sandhill cranes which forage on the seeds, vegetation and invertebrates found in this upland habitat. Many wetlands are adjacent to these pastures and agricultural areas. Ground nesting waterbirds and other birds such as songbirds typically use the edges of the pastures and crop areas for nesting cover because the vegetation provides structure and protection from predation and disturbance. Importantly, newly hatched broods have reduced exposure to predation as they travel from upland nests to wetlands. Large trees are important to wildlife (e.g. bald eagles and great blue herons) for nesting locations. Any large trees found in this habitat are only removed by SIWA staff if required by law, are safety concerns or to meet agency-directed policy.

SIWA staff plant crops to ameliorate limited habitat features which would occur in these upland areas, and increase the carrying capacity of these sites to benefit wildlife. Small cereal grains and forbs plantings provide abundant food for many wildlife species. Other soil properties can be modified to further increase carrying capacity and expand distribution and habitat use. For example, alfalfa is used to improve soil condition and produce quality feed for wintering geese.

SIWA contains pastures and crop areas which are within the department's water management control, as well as pastures which are impacted by periodic flooding. Areas subject to periodic flooding are a greater management challenge because of the encroachment of invasive plants (e.g. reed canarygrass, thistle and tansy ragwort) after such a flood event. In an effort to increase goose carrying capacity, SIWA staff will continue to manage those pastures/grasslands observed to be preferred by geese as well as enhance marginal pastures which may be overrun by invasive species (i.e. blackberries, tansy ragwort and reed canarygrass).

Strategy 1. Continue managing those pastures most frequently used by geese. Monitor goose use via ground surveys to determine habitat characteristics preferred by foraging geese. Verify areas which have the proper soil characteristics, topography and hydrology for optimum forage growing conditions. Modify existing pastures/grasslands if necessary using techniques based on recent OSU research to optimize goose forage.

Strategy 2. Increase goose carrying capacity by identifying those pastures/grasslands with limited goose use and modifying field characteristics. Use goose preference information (from Strategy 1) to enhance these habitat types to increase green forage areas.

Strategy 3. Seed desirable grasses such as western fescue where restoration/rejuvenation activities would succeed. Work will include the use of herbicide application, grazing and mowing to restore vigor of existing plantings. This will be followed by broadcast seeding or farming with tractors and implements to establish desirable vegetation for goose forage.

Strategy 4. Utilize livestock grazing on approximately 3,200 acres to enhance and restore plant vigor and reduce mowing time on pasture lands used primarily by wintering geese. This work will primarily be conducted by sharecrop and grazing permitees who are also required to control noxious weeds.

Strategy 5. Control invasive plant species on approximately 200 acres annually. Control will focus primarily on Himalayan blackberry, reed canarygrass, thistle and tansy ragwort. Work will entail monitoring, searching for and treating infestations utilizing best management practices and techniques.

Strategy 6. Annually plant and maintain up to 1,200 acres of food plots (corn, sudangrass, millet, sunflowers, wild rice, buckwheat and other small grains) for wildlife use.

Strategy 7. Alfalfa and hay crops will be planted primarily to provide quality green forage for geese. Work will include soil preparation, planting, and cultivation of food crops. This work will primarily be conducted by sharecrop and grazing permittees.

Strategy 8. Continue to follow agricultural Best Management Practices and Integrated Pest Management for all agricultural operations. The agricultural techniques and crops used as part of the SIWA farming program will be periodically reviewed to determine which are most beneficial to wildlife. Crop irrigation will be considered as part of the agricultural program.

Strategy 9. Water discharged from agricultural areas will be periodically monitored to assure compliance with water quality standards administered by the Oregon Department of Environmental Quality.

Objective 2.2: Maintain and improve the quality of 193 acres of existing Willamette Valley oak woodlands.

Rationale: Oak woodlands are defined as a Strategy Habitat in the OCS and as such are considered to be of high conservation priority, especially in light of the pressure in the Willamette Valley to develop oak woodlands. Recommended conservation actions include conserving and/or restoring oak woodland habitats to improve ecological values. Oak habitats provide important habitat for more than 100 breeding migratory bird species such as white-breasted nuthatches and house wrens. Oak woodlands occur in various locations across Sauvie Island. There is one oak woodland complex on the wildlife area itself. This complex consists of similarly aged trees, with little recruitment of young trees occurring. Because this habitat type is unique and limited on the island, SIWA staff will enhance oak woodlands where possible.

Strategy 1. Manage oak woodlands to promote oak regeneration and succession using methods such as planting oak saplings, removal or thinning of conifers, mechanical soil cultivation and periodic burns to release acorns and control vegetation. SIWA staff will conduct the above mentioned activities on approximately 20-30 acres and identify areas where oak woodlands could be expanded. SIWA staff would like to conduct large scale prescribed burns but have not done so because air quality concerns have been raised by the Cities of Portland and St. Helens. One option which will be explored is the use of the Sauvie Island Volunteer Fire Department to assist in burning activities as training exercises for the firefighters.

Strategy 2. Control invasive plant species and woody vegetation impacting oak woodlands. Control will focus primarily on Himalayan blackberry. Work will entail monitoring, searching for and treating infestations utilizing best management practices and techniques.

Strategy 3. Establish and expand partnerships with other resource protection entities to ensure long term sound stewardship of sensitive and unique habitats. Potential partners for exchange of technical expertise and resources include USFWS, Oregon State University, The Nature Conservancy, Audubon Society of Portland, WMSWCD and private landowners. Important field activities such as invasive plant removal, habitat monitoring and wildlife censuses will continue and expand because of these partners.

Objective 2.3: Maintain 2,857 acres of riparian/bottomland hardwood forest and improve the quality of these habitats.

Rationale: These habitat types comprise the largest amount of acreage on the wildlife area. The predominate plant species are black cottonwood, Oregon ash and willow. Some of the Oregon ash trees are over two hundred years old and have survived many natural and human-caused alterations. The remnant hardwoods found on SIWA are representative of the original species complexes found in this ecoregion. These provide important habitats for breeding, migrating and wintering and nesting birds such as waterfowl, songbirds, raptors, waterbirds and bats. Additionally, when these bottomland habitats are inundated during winter and spring, they offer substantial habitat for a variety of important fish species. The OCS recommends several conservation actions which the department is already pursuing, such as improving water delivery system on Sauvie Island Wildlife Area to enhance the effectiveness of wetlands management, maintain or restore riparian habitat and ecological function; ensure sufficient habitat complexity for wildlife and restore or enhance riparian wetlands.

> **Strategy 1.** Continue management techniques to maintain and improve riparian/bottomland hardwood forest habitats on 20-40 acres annually using methods including silviculture techniques, grazing, mowing, manual removal of invasive species, planting native species and herbicide application. All of these techniques are primarily used to control non-native invasive vegetation, especially Himalayan blackberry and reed canarygrass
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> **Strategy 2.** Monitor trees which may be a safety hazard and remove only if necessary. If trees are removed, they may be used on the wildlife area for wildlife habitat needs such as turtle basking structures, downed wood and snags. Trees may also be removed when required for administrative reasons; for example, to maintain the structural integrity of USACE regulated levees.
>
> **Strategy 3.** Create snags by topping or girdling select trees where possible. Maintain and construct wood duck and bat roost boxes to supplement areas which lack necessary nesting and roosting cavities.

Objective 2.4: Protect, enhance and manage approximately 2,230 acres of pasture/grassland habitat to benefit wildlife species, with emphasis on ground nesting songbirds.

Rationale: As previously mentioned, significant amounts of the native grasslands on SIWA were altered or converted to croplands or pastures by early homesteaders, to support agricultural or livestock grazing operations. Remnant grassland plant species still exist, primarily on Oak Island and in the North Unit, and are interspersed within upland pastures and agricultural areas. Native grasslands are considered a Strategy Habitat as defined in the OCS on page 270. In consultation with grassland restoration biologists, the department intends to manage the existing pasture/grassland habitat to mimic historic native grasslands and provide the vegetative structure and diversity required by at risk native birds such as the western meadowlark and Oregon vesper sparrow and other ground-nesting species. Within the pastures, the department will

attempt to provide optimal grassland-type characteristics such as habitat size and shape, vegetation structure, plant composition (forbs and grasses rather than shrubs and trees), woody vegetation removal and assess proximity to other habitat types. Pasture/grassland management will entail removal of invasive plants, replanting with native grassland species, determining establishment of native plants and continual treatment of invasive plant infestations. Other potential management options that would benefit nesting birds include rotational grazing, modifying the timing of herbicide broadcast spraying, minimizing disturbance and removing barriers (e.g. blackberry fencerows). These same 2,230 acres of pastures/grasslands are mowed in late summer, after nesting season, specifically to provide green forage for geese, thus enhancing goose carrying capacity.

Strategy 1. Manage pasture/grassland habitat to mimic historic native grasslands and provide vegetative structure and diversity, using mechanical removal, herbicide application and controlled burning (if approved) to reduce invasive species (primarily reed canarygrass and Himalayan blackberry).

Strategy 2. Based on existing soil types and hydrology, plant a mix of native grassland species (e.g. tufted hairgrass, western fescue, common camas and lupine) and forage species preferred by geese (e.g. annual rye, vetch and clover). Work will include ground preparation, seeding and plant care until establishment.

Strategy 3. Monitor plantings pre- and post-treatment, to determine the success of plant establishment. Adjustments will be made to subsequent planting operations as needed.

Strategy 4. Monitor wildlife species to determine presence/absence, density and habitat use before and after habitat manipulation.

Strategy 5. Enhance adjacent pastures by eliminating barriers (fencerows and hedgerows) to decrease edge effects and provide larger, contiguous habitat preferred by grassland nesting birds. Providing contiguous habitat will also benefit wintering geese.

Strategy 6. Explore manipulation of livestock grazing regimes (timing, duration and stocking rate) to reduce impacts to ground nesting birds.

Objective 2.5: Maintain and enhance SIWA facilities, structures, and equipment used to conduct habitat management, public use projects and other administrative functions.

Rationale: Facilities, structures and equipment are integral to the overall operation of SIWA. Infrastructure and equipment must be maintained and kept in good working order to implement habitat and wildlife management projects and to provide public use opportunities. Infrastructure includes the Headquarters and Eastside Unit shop complexes, associated residences and outbuildings. Equipment includes heavy equipment, dump truck, tractors, backhoe, road grader, bulldozer, agricultural implements, vehicles, ATVs, trailers, boats and shop tools.

Strategy 1. Maintain current Headquarters and Eastside Shop Complexes including outbuildings, 7 residences, 3 Volunteer Host sites and associated utility infrastructure. Work will include carpentry and repair, improvement of storage, landscape maintenance, and general facility structural maintenance and improvement. Identify the potential for additional office and storage areas at the Headquarters Complex and construct as funding becomes available.

Strategy 2. Improve and enhance existing public use facilities and add new facilities, such as observation decks, blinds, trails, road improvements and boat ramps as funding and interested partners become available.

Strategy 3. Conduct annual property inventories and maintain operational integrity of facilities, structures, equipment and vehicles. Work will include conducting and reporting inventories, completing scheduled maintenance of all equipment/vehicles and completing repair and upgrades as necessary.

Strategy 4. Continue water management practices to meet wildlife area habitat goals and objectives. Work includes exercising water rights, and completing monthly measurement or estimates and annual reporting of authorized water rights use on SIWA to the Oregon Water Resources Department. Operate and maintain fish screens on the Gilbert River water diversions. Monitoring of fish passage devices will be used to inform future water management decisions.

Strategy 5. Continue proactive project administration actions and activities to address easement, property boundary encroachment and other issues affecting or impacting wildlife area operations. Work will include identifying issues, preparing briefing documents and soliciting outside and internal assistance where appropriate**.**

Goal 3: To maintain waterfowl hunting programs and to provide a variety of other fish and wildlife-oriented recreational and educational opportunities to the public that are compatible with Goals 1 and 2.

SIWA was established in 1947 with the primary objectives of protecting and improving waterfowl habitat and providing a public hunting area. Managing habitat and providing public hunting programs continue to be the main management priorities of SIWA staff. Other wildlife-oriented recreational opportunities (trapping, angling, birding, wildlife viewing, wildlife photography, hiking and dog training) will be provided when such activities do not conflict with the main mission (waterfowl habitat) of the wildlife area.

Objective 3.1: Provide approximately 165,000 hunting, trapping, and angling use days annually.

Rationale: SIWA, because of its close proximity to the growing Portland Metropolitan Area, is a popular destination for hunters, anglers and trappers. As the amount of wildlife habitat decreases throughout the Willamette Valley Ecoregion and public access

becomes more limited, SIWA will become an increasingly important natural resource. The department intends to manage SIWA's habitats and programs to accommodate current levels of hunting, angling and trapping (165,000 use days annually). Since one of the department's top priorities is to preserve the hunting legacy for future generations, SIWA staff will continue to provide and promote various hunting opportunities.

The SIWA is funded by the Federal Aid to Wildlife Restoration Act (Pittman-Robertson, 60%) through funds generated by the sale of hunting-related equipment, Oregon hunting license revenues (20%) and SIWA Parking Permit revenue (20%).

Hunting is a major public activity at SIWA during fall through winter months. Appropriate hunter behavior and shooting effectiveness are critical to the successful hunting experience and equitable use and enjoyment of resources by all area hunters. Users have voiced concerns regarding poor hunter behavior and a decline in effectiveness. Observational data collected by SIWA and OSP staff confirm the need for behavioral improvement. Educational approaches will be actively pursued by SIWA and regulatory enforcement will be applied when applicable.

Hunting has occurred in traditional areas with very little sanctuary or refuge boundary modification since the wildlife area's inception. Habitat management objectives may necessitate the need to move or rotate sanctuary areas and open new hunting areas when large-sized HMUs are taken out of production for moist soil management habitat enhancement activities.

Trapping of furbearers and predatory mammals is a traditional recreational activity, at SIWA and is used to reduce burrowing damage to dikes and water control structures and manage populations of predatory mammals on the area. Trapping is by permit only and permits are issued from the wildlife area headquarters staff.

Angling is an important recreational activity on the wildlife area. The department's NWWD fisheries biologists work with SIWA staff to manage fish populations, maintain existing angler access facilities, explore additional access and promote additional angler opportunities.

Strategy 1. Continue the daily hunt programs that include black-tailed deer, mourning dove, Wilson's snipe, coot, pheasants, quail, and waterfowl hunting (youth waterfowl and general duck and goose hunting seasons).

Strategy 2. Maintain the closure for hunting of furbearers, predators, unprotected and protected wildlife (except black-tailed deer and game birds). Work will include annually providing recommendations for seasons and improving SIWA's hunt area operation procedures.

Strategy 3. Propose a new hunting opportunity, for rabbit hunting, in the North Unit from September 1 through January 31.

Strategy 4. Continue the hunter permit system for tracking hunter use and success on the wildlife area. This includes the Eastside and Westside staffed check stations for waterfowl hunting and the existing hunter self-check systems in other areas. Review these programs over time to identify improvements acceptable to both the agency and the hunting public. Annually monitor hunting use of the area to review and possibly revise wildlife area hunting regulations to enhance the quality and safety of the hunting program.

Strategy 5. Maintain parking areas, informational kiosks, hunter check stations, fencing and boat access sites necessary to facilitate the hunting program.

Strategy 6. Conduct waterfowl counts and monitor wildlife population levels, distribution, and use patterns. Maintain a database for comparative analysis. Report results to staff and provide information to SIWA users. Work includes aerial counts, data analysis and recording, and reporting hunt results via telephone recording, web-site and posted documents.

Strategy 7. Continue and expand hunter education programs to improve hunter behavior and effectiveness. Work includes providing information regarding shooting skills and distance estimation verbally through hunter contacts, on kiosks and in the waterfowl check stations. Distance estimation silhouettes will be placed at two waterfowl check stations.

Strategy 8. Continue to provide area information to the public through web page postings, brochures, maps, signage and hunting and fishing regulation booklets.

Strategy 9. Continue implementing the travel management program for SIWA to lessen impacts of motor vehicle and off-highway motor vehicle (OHV) use. Work includes clearly posting a core network of public access roads as well as administrative access-only roads. Other non-essential roads and trails will be physically (with equipment) or administratively (through signing) closed to all motor vehicle use.

Strategy 10. Maintain the trap shooting area on the Westside Unit during the open public use period.

Strategy 11. Identify and evaluate opportunities to improve SIWA's disabled hunter access program.

Strategy 12. Develop and continue relationships with hunting constituent groups/organizations to assist with wildlife area management.

Strategy 13. Conduct furbearer and predatory mammal trapping by permit for administrative (damage control), biological (population management) and recreational purposes.

Strategy 14. Continue to designate sanctuaries and impose access restrictions to protect the biological needs of waterfowl, to accommodate habitat enhancement actions and to permit orderly and equitable utilization during the hunting season.

Strategy 15. Periodically translocate desirable game species (e.g. ring-necked pheasant and California quail) to SIWA to augment existing populations.

Strategy 16. Provide access for anglers, compatible with seasonal waterfowl sanctuary closures, by maintaining trails, footbridges and boat launch sites. The Gilbert River dock and disabled angler access fishing pier and the Columbia River beaches will remain open year around for angling. To enhance the fishing program, explore opportunities to improve angling access (especially for ADA anglers) and maintain parking areas, informational kiosks and livestock fencing.

Strategy 17. Continue to partner with Columbia County Sherriff's Department and Oregon State Police to provide regulatory enforcement.

Objective 3.2: Provide opportunities for individual dog training and dog field trials which will not conflict with wildlife habitat management objectives or Objective 3.1.

Rationale: Dog training has been an established use since the inception of SIWA in 1947. Two dog training plans (Individual Dog Training Plan and Dog Trial Plan) currently regulate activities on SIWA. As stated in both dog plans, it is the department's policy to permit "field trials and individual dog training on designated units of SIWA provided the activities are compatible with state regulations and wildlife area objectives." Such activities require a department-issued permit which stipulates when and where training or trials can occur. The department recognizes that individual dog training and field trials encourage practices and techniques that enhance the tradition and quality of hunting and reduce the incidence of un-retrieved game. The department also recognizes that dog training/trials during the period of April through July may impact ground nesting birds. As part of the implementation of the OCS, the department will be managing these pastures/grasslands, compatible with other management objectives and uses.

These dog training plans and the current amount of permitted uses were developed during the 1993 SIWA long range management planning process, by a working group of members representing the dog training community and department staff. There have been adjustments to the plans over time and further review will occur only as specific management and wildlife conflicts arise. The department intends to maintain the current maximum number of individual dog training permits (300) and number of days of dog field trials (50). Approximately 1,252 acres (which includes open water) located in the Westside Units is available for individual dog training. Field trials can occur on either the Westside or Eastside Units, and the department has provided approximately 1,466 acres in total for this use.

Strategy 1. Continue the individual dog training and field trial annual permit process and adjust timing and location as conditions warrant (i.e. high water or

administrative actions). Provide information about rules and post signs designating allowed training areas.

Strategy 2. Assess potential impacts to wildlife by dog training activities and take necessary actions to reduce conflicts by adjusting the timing and location of these activities.

Strategy 3. Continue to convene an annual meeting of dog trial sponsors at SIWA, to cooperatively schedule dog trial events.

Objective 3.3: Provide 100,000 wildlife viewing, wildlife oriented education and interpretation use days annually, compatible with Objective 3.1 and habitat management objectives.

Rationale: Wildlife viewing, birding in particular, is a popular recreational activity on the wildlife area, with approximately 80,000 annual use days recorded. The department provides public wildlife viewing areas at Coon Point, Eastside viewing platform, Rentenaar Road which are open year around. Wildlife-oriented education and interpretation are critical to inform and educate the public about the wildlife area's natural resources and management actions. SIWA staff will seek to expand opportunities for interpretation and environmental education that will foster visitors' appreciation, understanding, and stewardship of the wildlife area's fish and wildlife species and their associated habitats. The department supports 'citizen science' monitoring activities to fill data gaps. To that end, staff will seek interested volunteers and researchers to assist in conducting monitoring projects. Examples of such projects might include small mammal presence/absence surveys or determining turtle response to wetland restoration. Staff tries to balance the public's desire for increased access while protecting wildlife resources. The department will work with partners to develop travel management routes that enhance viewing opportunities but reduce unintended disturbance.

SIWA staff is faced with the challenge of providing ever increasing levels of access, infrastructure and information requested by the public, with limited sources of funding. Currently, monies to administer SIWA programs come from Federal Aid grants and the sales of hunting licenses, tags and SIWA parking permits.

Strategy 1. Maintain and enhance public facilities to provide opportunities for wildlife-oriented users. Work includes posting signs and maintaining viewing blinds, overlooks, nature trails, kiosks and parking areas.

Strategy 2. Develop additional viewing facilities and opportunities such as viewing areas, observation decks, photo blinds, developing an auto tour route and potentially allowing limited access to closed areas, all of which need to be compatible with fish and wildlife management objectives. These improvements would likely occur on the Oak Island and Eastside Units of the wildlife area, especially along Reeder and Rentenaar Road.

Strategy 3. Continue to provide wildlife area information to the public through web page postings, weekly recreational reports, other media publications, bird checklists, brochures, maps, regulations, and species backgrounders and develop additional materials as new communication technology arises.

Strategy 4. Provide guidance and support to educational institutions, civic groups, conservation entities and state/federal agencies. Support includes providing facilities, tours, habitat restoration projects, fish and wildlife monitoring and presentations for outdoor educational and training purposes.

Strategy 5. Continue to hold special events such as the annual Raptor Road Trip and the Audubon Christmas Bird Count. As new events are considered, their impacts to the wildlife area and island residents will need to be evaluated.

Strategy 6. Develop and/or expand internship programs with colleges and universities to support education, management, inventory and monitoring needs.

Strategy 7. Develop and/or expand volunteer opportunities to assist with monitoring projects such as avian point counts, water quality sampling and botanical surveys.

Strategy 8. Continue to allow camping, by permit only, on Oak Island from May-September. Only youth educational groups are authorized to camp at SIWA and these groups are required to perform a beneficial public service project (i.e. litter pick-up, invasive plant removal, trail maintenance) on the wildlife area. No open fires will be permitted.

Goal 4: To control other public uses to minimize impacts on fish and wildlife, their habitats, and fish and wildlife related recreation and to maintain the security of the wildlife area and reduce disturbance to neighboring private lands.

Non-wildlife oriented public uses are increasing each year as the population of the Portland Metropolitan Area grows. These other uses include beach use, windsurfing, horseback riding and bicycling among others. Beach use constitutes by far the largest public use of the area. Along with rising numbers of visitors, SIWA staff has observed significant increases in traffic, parking congestion, noise, littering and vandalism and other illegal activities. Innovative approaches to control visitor numbers will need to be implemented when public use jeopardizes the primary mission of SIWA.

Objective 4.1: Manage non-wildlife oriented public use to minimize disturbance to wildlife species on SIWA.

Rationale: Beach use and non-wildlife oriented recreation (e.g. power boating, wind-surfing and parasailing) are highly desirable to the public. As the human population in the Portland Metro increases, the demand for these opportunities increases commensurately. Over the next ten years these activities will potentially impact SIWA's

core mission of protecting fish and wildlife and their habitats. These public uses must be managed and increased educational and informational efforts will be necessary to enhance enjoyment while affording protection for natural resources. SIWA will seek to expand opportunities for interpretation and environmental education that will foster visitors' appreciation, understanding, and stewardship of the wildlife area. Public educational material will focus on supporting the wildlife area's primary goals and objectives and addressing the protection of key OCS and state sensitive species and their habitats.

As previously mentioned SIWA is maintained by funds generated from SIWA Parking Permit fees (20%) and from hunters, through the Federal Aid for Wildlife Restoration program (60%) and Oregon hunting license and tag purchases (20%). All visitors who drive to the wildlife area are required to purchase a parking permit which the department uses to fund local law enforcement, portable toilets, inmate litter patrols, parking lot maintenance and related administration. In order to meet increasing needs for maintenance and facilities to support non-hunting public uses, it will be necessary to explore additional funding or support resources. Public use associated with beach recreation is funded completely by the parking permit fee program since Federal Aid funds can only be spent on wildlife and/or habitat management activities.

Strategy 1. Manage public uses so they are compatible with the biological needs of wildlife and the wildlife area's wildlife -oriented program via seasonal closures, restricting vehicle access, posting signs and other administrative means.

Strategy 2. Continue using car counters to tabulate the number of visitors to the wildlife area. Use this data to develop a monitoring program which will assess the impacts of visitors on wildlife and their habitats. This monitoring could be conducted using graduate students and/or volunteers.

Strategy 3. Maintain and enhance public facilities to provide safe, enjoyable and healthy recreational opportunities for visitors and address increasing demands. Work will include posting signs, maintaining portable toilets, kiosks and parking areas and providing additional facilities as funding becomes available.

Strategy 4. Provide wildlife area information to the public through web page postings, weekly recreational reports, other media publications, bird checklists, brochures, maps, regulations, species backgrounders and potentially public service radio broadcasts.

Strategy 5. Continue to participate in the Fish and Wildlife Host and Northwest Region Volunteer Program to promote the use of volunteers to enhance public uses and address other wildlife area needs.

Strategy 6. To accommodate increasing boating use (e.g. power boats, canoes and kayaks), SIWA staff will maintain existing boat ramps at Oak Island, Steelman Lake, Round Lake and Gilbert River and seek to develop additional facilities.

Strategy 7. Maintain a travel management program for SIWA, to lessen impacts of motor vehicle and off-highway motor vehicle (OHV) use on habitats.

Strategy 8. Restrict the use of horses and bicycles to areas which are open to public vehicle traffic, to minimize impacts to habitats.

Strategy 9. Maintain seasonal closure periods from October 1 through May 1 to protect wintering waterfowl. Wintering waterfowl use will be monitored and closure periods could be adjusted accordingly (note that current data indicates a closure may need to be extended through May 15 in certain areas to protect wintering cackler geese).

Strategy 10. Daily closure periods will be maintained on SIWA from the hours of 10:00 PM to 4:00 AM to maintain security of the wildlife area and limit disturbance associated with public use to neighboring private landowners.

Strategy 11. Maintain temporary portable restrooms to serve user needs, and explore options to fund permanent, self-decomposing restroom facilities.

Strategy 12. Continue to partner with Columbia County Sherriff's Department and Oregon State Police to provide law enforcement.

Strategy 13. Maintain membership in the Sauvie Island Safety Action Team.

Objective 4.2: Review the SIWA Parking Permit program to determine its effectiveness in providing appropriate levels of funding for maintenance, law enforcement and administration.

Rationale: The SIWA Parking Permit program has been in place since 1990. Parking permit fees pay for facilities and personnel, to provide safe, healthy and enjoyable recreational opportunities for the public. The revenue from parking permits supports services such as a full time law enforcement officer, portable toilets, inmate litter patrols, parking lot maintenance, signage and program administration. A portion of the increased parking permit revenue will be used to develop a public use program to address impacts of ever increasing visitor numbers. The purpose of this objective is to determine how to manage the number of visitors coming to the wildlife area and to identify the additional facilities and staff needed to accommodate them.

Strategy 1. Maintain the current SIWA Parking Permit Program to continue providing services to the public.

Strategy 2. Use the additional revenue from the SIWA Permit Parking fee increase to expand facilities and services (i.e. additional viewing areas, permanent restrooms, law enforcement) to accommodate increased visitor use.

Strategy 3. Develop a public use control system to address ever increasing beach visitors; for example, provide an information reader board at the Sauvie Island bridge and a staffed booth along Reeder Road, at the entrance to the beach area, to regulate the number of visitors based on daily parking lot capacity.

Objective 4.3: Continue implementation of the 1993 SIWA Beach Use plan.

Rationale: The 1993 Beach Use plan describes beach boundaries, buffers, and beach access paths. The plan lists the allowable activities which can occur on the beaches, and where (e.g. clothing and clothing optional areas). It describes existing facilities such as parking areas, restrooms and emergency/administrative vehicle access. Under the guidance of this plan, SIWA staff and volunteers conduct litter patrols, place informational signs and administer restroom maintenance contracts. A full time Columbia County sheriff provides law enforcement.

The current Beach Use plan is adjudicated through the Columbia County Circuit Court. Therefore any action the department takes that significantly deviates from the 1993 Beach Use plan must be reviewed by this court. The department may need to explore ways to limit the number of beach users since existing facilities can often be overwhelmed by visitors.

Strategy 1. Implement the current Beach Use Plan as directed by the Columbia County Circuit Court. Options may be explored to limit the number of visitors to the beaches as use increases.

Strategy 2. Assess and monitor potential impacts to wildlife and habitat by beach use activities and take corrective actions as needed.

Strategy 3. To address congestion and overflow of beach visitors, SIWA staff will explore the feasibility (costs, staff requirements, etc.) of various public information options such as a reader board located at the Sauvie Island bridge which states the parking lots are full, beach kiosks and providing a staffed information booth (similar to those at the entrance of state parks).

Plan Implementation

Funding

Over the past five years, funding for the operation and maintenance of the SIWA has averaged approximately $750,000 annually, which comes from three sources: USFWS Federal Assistance grants, hunting license and tag sales and revenue from the SIWA parking permits. To implement many of the proposed actions and achieve the objectives and goals of this plan, the department will need additional funding and staff to undertake several types of projects including: upgrades of existing facilities, habitat improvement, construction of new facilities or amenities (educational/orientation kiosks and interpretive signs), and species and habitat monitoring.

The Sauvie Island Wildlife Area Parking Permit Program was initiated in 1990. The revenue from these permits has been used by SIWA staff to fund full time law enforcement, portable restrooms, inmate litter patrols, maintenance of parking areas and administrative costs. The annual budget from parking permits is $150,000.

Since its inception in 1947, funding for the operation and maintenance of the SIWA has been accomplished through an annual federal grant under the Federal Assistance to Wildlife Restoration Program. This program was created with the passage of the Pittman- Robertson (PR) Act in 1937. The PR Act authorizes the U.S. Fish and Wildlife Service to cooperate with the states, through their respective state fish and wildlife departments, to fund wildlife restoration projects. Eligible types of projects include restoration, conservation, management, and enhancement of wild birds, wild mammals and their habitats, and providing for public use and benefit from these resources. Federal Aid funding is derived from a federal excise tax on the sale of firearms, ammunition, and archery equipment.

To be eligible, states must have assented to the provisions of the PR Act and passed laws for the conservation of wildlife that include a prohibition against the diversion of license fees paid by hunters for any other purpose than the administration of the State fish and wildlife department. Another major requirement is that states have to contribute up to 25% of the total grant cost using non-federal funds, since federal participation is limited to 75% of eligible costs incurred under a grant. The department provides its 25% cost share from annual license and tag revenues. An additional source of funding for SIWA habitat related projects and equipment comes from state Game Bird Stamp revenues.

Staffing / Organization

The Oregon Department of Fish and Wildlife manages sixteen major wildlife areas throughout the state. The wildlife areas encompass approximately 200,000 acres and are found in all four of the department's administrative regions. The Sauvie Island Wildlife Area is located in the Northwest Region, in the North Willamette Watershed District. One full-time Manager 2**,** one full-time Fish and Wildlife Supervisor, two full-time Fish and Wildlife Senior Technicians, two full-time Fish and Wildlife Technicians, one full-time Office Coordinator and one seasonal (six month) Fish and Wildlife Technician currently staff the area. Volunteers provide over 5,000 hours of additional habitat restoration and monitoring work.

Compliance Requirements

The 2010 Sauvie Island Wildlife Area Management Plan was developed to comply with all Federal and State laws, Oregon Revised Statutes (ORSs), Oregon Administrative Rules (OARs), and will follow department policies, priorities and recommendations from the OCS. Full implementation of all components of this plan will require compliance with laws, regulations, rules, and policies listed in Appendix F.

Partnerships

A number of other state, federal, and local agencies and interest groups assist with management activities on SIWA, listed below. These partners play an important role in helping the department achieve its mission and reach SIWA goals. The department will

continue to rely on these and other partners in the future to help implement this plan and provide input for future updates. This plan identifies projects opportunities for existing or new partners. There is great potential for more public participation and assistance in the management of the wildlife area, given its proximity to the Portland Metropolitan Area. The department welcomes and encourages public participation in the administration of the wildlife area, especially with monitoring, research and implementation activities.

U.S. Fish and Wildlife Service
U.S. Army Corp of Engineers
NOAA Fisheries
Natural Resource Conservation Service
Confederated Tribes of the Grand Ronde Community of Oregon
Northwest Oregon Resource Conservation and Development Council
Oregon Department of State Lands
Oregon Department of Environmental Quality
Oregon Watershed Enhancement Board
Washington Department of Fish and Wildlife
West Multnomah Soil and Water Conservation District
Sturgeon Lake Restoration Planning Group
Oregon State University
Portland State University
University of Portland
Portland Metro
Columbia County
Multnomah County
Sauvie Island Conservancy
Sauvie Island Boosters
Sauvie Island Grange
Oregon Duck Hunters Association
Ducks Unlimited
Oregon Hunters Association
Oregon Bass and Panfish
Audubon Society of Portland
The Nature Conservancy
Klamath Bird Observatory
Oregon Equestrian Trails
Lower Columbia River Estuary Partnership
Paddling Clubs
Dog Clubs
Clothing Optional Beach User clubs

Adaptive Management

This plan provides for adaptive management of the wildlife area. Adaptive management is a flexible approach to long-term management of resources that is directed by the results of ongoing monitoring activities and latest data. Management techniques and strategies are regularly evaluated in light of monitoring results, new scientific understanding, and other new information. These periodic evaluations are used over time to adjust both management techniques and strategies to better achieve the area goals.

Monitoring is an essential component of adaptive management in general, and of this plan in particular. Specific monitoring strategies have been integrated into the goals and objectives described in this plan whenever possible. Where possible, habitat management activities will be assessed to determine if the desired effects on wildlife and habitat components have been achieved and adjust as necessary.

Plan Amendment and Revision

Wildlife area management plans are meant to evolve with each individual wildlife area, and as such each plan will be internally reviewed after five years and updated through a formal public process every ten years. In the meantime, however, the department will be reviewing and updating this plan periodically (at least as often as every five years) based on the progress of implementing strategies outlined in this plan. This plan will also be informally reviewed by area staff while preparing annual work plans. It may also be reviewed during routine inspections or programmatic evaluations. Results of any or all of these reviews may indicate a need to modify the plan. The goals and objectives described in this plan will not change until they are re-evaluated as part of the formal plan revision process. However, the strategies may be revised to better address changing circumstances or as a result of improved knowledge of the resources on the area. If changes are required, the level of public involvement and associated compliance requirements will be determined by the department.

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Appendix A. Land Acquisitions and Adjustments Involving the Sauvie Island Wildlife Area

Date	Acres	Action	Cooperator
02/16/40	5.14	Acquired from	Feldman
03/16/48	489.09	Acquired from	Rentenaar, Milo
05/05/48	904.58	Acquired from	Lyons, Max
10/18/48	200.42	Acquired from	Domeyer, George
11/12/48	18.78	Acquired from	Dietz, J
12/15/48	174.00	Acquired from	Sauvie Island Duck Club
01/11/49	5.65	Acquired from	Grea, John
04/05/49	146.00	Acquired from	Oregon Iron & Steel Co
05/00/49	67.59	Acquired from	Cooper, Kenneth L
05/23/49	283.43	Acquired from	Col Co Lumber Co
05/00/49	164.34	Acquired from	Johnston, David A
06/23/49	31.38	Acquired from	Jensen, Irving
06/00/49	23.90	Acquired from	Bollenbeck, Clarence
06/27/49	5.76	Acquired from	Hall, Albert S
08/09/49	48.20	Acquired from	Giselman & Carlson
10/17/49	669.52	Acquired from	Pope & Talbot Inc
11/22/49	125.29	Acquired from	Minoggie, E & Hadley
03/22/50	109.10	Acquired from	Harder, J M
06/02/50	59.00	Acquired from	Brennan, Robert
06/30/50	135.14	Acquired from	Stonebrink, Melvin
10/31/50		Quitclaim	Minoggie & Hadley
10/31/50		Quitclaim	Smith, Ruth
12/29/50	392.00	Acquired from	Stutzer, Klem
01/31/51	19.60	Acquired from	Watson, Ella
06/29/51	411.02	Acquired from	Smith, John Estate
04/29/52	266.50	Acquired from	Browning, Charles
07/23/52	4.40	Acquired from	Columbia County
10/31/52	898.72	Acquired from	Ferrell, Jessie & Et Al
01/31/53	5.80	Acquired from	Dillon, L & Fisher
04/24/53	940.00	Acquired from	Autzen & Woerner
04/27/53	145.48	Acquired from	Malarkey/US BK Comrie Est
04/27/53	150.00	Acquired from	Collins, John
05/19/53	80.00	Acquired from	Aaron, James Et Al
06/09/53	12.98	Acquired from	Watters, Henry
04/15/54	363.97	Gift from	John Blodgett Jr
03/15/54		Quitclaim Gift	Blodgett Jr, John
02/21/56	5.14	Acquired from	Schoop, E Henrici EST
09/24/56		Quitclaim	Hunt, H & Hammon J
10/05/56	48.58	Acquired from	Rodgers Const Co Inc
10/08/56	28.35	Acquired from	Sauvie Island Duck Club
01/23/57	6.19	Acquired from	Rosenstreter, Rod

11/27/59	0.31	Acquired from	Wallace
11/28/59	0.21	Acquired from	Munsen
04/29/60	11.55	Acquired from	Bissio, J – McIntire J
09/22/61		Quitclaim	Rogers Const Co Inc
09/25/61	100.00	Acquired from	Hunt, Jep
08/16/62	57.00	Acquired from	Reeder, Paul
02/28/64	-5.14	Sold to	Dondo, Constante
06/04/64	49.00	Acquired from	Grae, Walter
04/16/70	157.83	Acquired from	Kampfer, Johnson EST
04/26/70	166.99	Acquired from	Eade, Grant
07/02/75	115.00	Acquired from	Richardsen, M & A
07/02/75		Correction	Richardsen, M & A
01/31/77	0.73	Acquired from	Minoggie & Gross
09/01/78	-363.97	Sold to	OR Dept of Transportation
09/11/79	66.50	Acquired from	Jayvee Brands V
09/15/83	3.79	Acquired from	Reeder, F J
09/17/86	1.13	Land Trade from	Cereghino, Michael
09/15/86	-3.36	Trade Away to	Cereghino, Michael
09/18/87	86.90	Acquired from	Hancock, Mary
03/24/98	-0.04	Sold to	Multnomah County

Appendix B. Plant Species Known to Occur on the Sauvie Island Wildlife Area

ACERACEAE
Big leaf maple *(Acer macrophyllum)*

ALISMATACEAE
Water plantain *(Alisma plantago aquatica)*
Narrowleaf / Lanceleaf water plantain *(Alisma lanceolatum)*
Northern waterplantain *(Alisma triviale)*
Wapato, Arrowhead *(Sagitaria latifolia)*

ANACARDIACEAE
Poison oak *(Toxicodendron diversiloba)*

APIACEAE
Wild carrot *(Daucus carota)*
Cow parsnip *(Heracleum lanatum)*
Water parsley *(Oenanthe sarmentosa)*

APOCYNACEAE
Common dogbane *(Apocynum cannibinum)*

AQUIFOLIACEAE
Holly *(Llex aquifolium)*

ARALIACEAE
Ivy *(Hedera helix)*

ASTERACEAE
Big devils beggars-tick *(Bidens cernua)*
False dandelion *(Hypochaeris radicata)*
Leafy beggars-tick *(Bidens frondosa)*
Lowland cudweed *(Gnaphalium palustre)*
Nodding beggars-tick *(Bidens cernua)*
Oxe-eye daisy *(Leucanthemum vulgare)*
Pearly everlasting *(Anaphalis margaritaceae)*
Purple cudweed *(Gnaphalium purpureum)*
Canada thistle *(Cirsium arvonso)*
Bullthistle *(Cirslum vulgare)*
Prickly lettuce *(Lactuca serriola)*
Common dandelion *(Taraxacum officinale)*
Smooth hawksbeard *(Crepis capillaris)*
Tarweed *(Madia sativa)*
Tansy ragwort *(Senecio jacobaea)*

BERBERIDACEAE
Oregon-grape *(Berberis aquifolium)*

BETULACEAE
Beaked hazelnut *(Corylus cornuta)*
Common filbert *(Corylus avellena)*
Red alder *(Alnus rubra)*

BRASSICACEAE
Wintercress *(Barbarea orthoceras)*
Wild radish *(Raphanus sativus)*

CARYOPHYLLACEAE
Chickweed *(Cerastium glomeratum)*
Chickweed *(Stellaria media)*
Coontail *(Ceratophyllum demersum)*

CAPRIFOLIACEAE
Snowberry *(Symphoricarpos albus)*

CYPERACEAE
Dense sedge *(Carex densa)*
Green-sheath sedge *(Carex feta)*
Slough sedge *(Carex obnupta)*
Ross' sedge *(Carex rossii)*
Pointed broom sedge *(Carex scoparia)*
One-sided sedge *(Carex unilateralis)*
Red-rooted flatsedge *(Cyperus erythrorhizos)*
Common spike-rush *(Eleocharis obtuse)*

DIPSACACEAE
Teasel *(Dipsacus fullonum)*

ERICACEAE
Pacific madrone *(Arbutus menziesii)*

EQUISETACEAE
Field horsetail *(Equisetum arvense)*

FABACEAE
White clover *(Trifolium repens)*
Red clover *(Trifolium pretense)*
Hairy vetch *(Vicia hirsuta)*
Birds-foot trefoil *(Lotus cornculatus)*

FAGACEAE
Oregon white oak *(Quercus garryana)*

GROSSULARIACEAE
Gooseberry *(Ribes divaricatum)*

HALORAGIDACEAE
Variable leaf milfoil *(Myriophyllum aquaticum)*
Eurasian water milfoil *(Myriophyllum spicatum)*
Whorled water milfoil *(Myriophyllum verticulatum)*

IRIDACEAE
Flag Iris (*Iris pseudocorus*)

JUNCAGINACEAE
Sharp fruited rush (J*uncus acuminatus*)
Bolander's rush (*Juncus bolanderi*)
Toad rush (*Juncus bufonius*)
Soft rush (*Juncus effusus*)
Daggerleaf rush (*Juncus ensifolius*)
Grass-leaf rush (*Juncus marginatus*)
Nevada rush (*Juncus nevadensis*)
Pointed rush (*Juncus oxymeris*)
Spreading rush (*Juncus patens*)
Slender rush (*Juncus tenuis*)

LAMIACEAE
Pennyroyal (M*entha pulegium*)
Self-heal *(Prunella vulgaris)*

LEMNACEAE
Common duckweed *(Lemna minor)*

LILIACEAE
Common camas (C*amassia quamash*)

LYTHRACEAE
Purple loosestrife *(Lythrum salicaria)*

OLEACEAE
Oregon ash *(Fraxinus latifolia)*

ONAGRACEAE
Hairy willow-herb (*Epilobium cilatum*)
False loose-strife (*Ludwigia palustris*)
Autumn willow-herb (*Epilobium brachycarpum*)
Fireweed *(Epilobium anguatifolium)*

PAPAVERACEAE
California poppy (*Eschscholzia californica*)

POACEAE
European sliver hairgrass *(Aira caryophylla)*
Sweet vernal grass *(Anthoxanthum odoratum)*
Western mannagrass *(Glyceria occidentalis)*
Velvet grass *(Holcus lanatus)*
Meadow barley *(Hordeum brachyantherum)*
Knot grass *(Paspalum distichum)*
Reed canarygrass *(Phalaris arundinacea)*
Barnyard grass *(Echinochloa crus-galli)*
Tufted hairgrass *(Deschampsia cespitosa)*
Tall fescue *(Festuca arundinacea)*

POLEMONIACEAE
Needle-leaf navarretia *(Nararretia intertexa)*

POLYGONACEAE
Water knotweed (P*olygonum amphibium*)
Oval-leaf knotweed (P*olygonum arenastrum*)
Knotweed (P*olygonum coccineum*)
Black bindweed (P*olygonum convolvulus)*
Japanese knotweed (P*olygonum cuspidatum)*
Douglas' knotweed (P*olygonum douglasii)*
Marshpepper smartweed (P*olygonum hydropiperoides)*
Curlytop knotweed (P*olygonum lapathifolium)*
Heartweed (P*olygonum persicaria)*
Sheep sorrel *(Rumex acetosella)*

POLYPODIACEAE
Lady fern *(Athyrium felix-femina*
Licorice fern *(Polypodium glycirriza)*
Sword fern *(Polystichum munitum)*

POTAMOGETONACEAE
Curly pondweed *(Potamageton crispus)*
Ribon-leaf pondweed *(Potamageton epihydrus)*
Sage pondweed *(Potamageton pectinatus)*

RANUNCULACEAE
Western buttercup *(Ranunculus occidentalis)*

RHAMNACEAE
Cascara *(Rhamnus purshiana)*

ROSACEAE
AngloAmerican hawthorn *(Crataegus monogyna x susdorfii)*
Bird cherry *(Prunus avium)*

English hawthorn *(Crataegus monogyna)*
Evergreen blackberry *(Rubus laciniatus)*
European mountain ash *(Sorbus aucuparia)*
Himalayan blackberry *(Rubus armeniacus)*
Multiflora rose *(Rosa multiflora)*
Nootka rose *(Rosa nutkana)*
Oregon avens (*Geum macrophyllum*)
Osoberry *(Oemleria cerasiformis)*
Suksdorf's hawthorn *(Crataegus suksdorfii)*
Spiraea, hard hack *(Spiraea douglasii)*
Serviceberry *(Amelanchier alnifolia)*
Thimbleberry *(Rubus parviflorus)*
Western crabapple *(Malus fusca)*
Wild strawberry *(Fragaria vesca)*

RUBIACEAE
Catchweed bedstraw (*Galium aparine*)

SALICACEAE
Columbia rivier willow *(Salix fluviatilis)*
Cottonwood *(Populus trichocarpa)*
Scouler's willow *(Salix scouleriana)*
Northwest willow *(Salix sessifolia)*
Sitka willow *(Salix sitchensis)*
Pacific willow *(Salix lucida)*

SAXIFRAGACEAE
Fringecup *(Tellima grandiflora)*

SOLANACEAE
Climbing nightshade *(Solanum dulcamara)*

SPARGANIACEAE
Bur reed *(Sparganium decurrens)*

TAXACEAE
Western red-cedar *(Thuja plicata)*

TYPHACEAE
Narrow-leaf cattail *(Typha angustifolia)*
Cattail (*Typha latifolia)*

URTICACEAE
Stinging nettle *(Urtica dioica)*

Appendix C. Wildlife Species Known to Occur on Sauvie Island Wildlife Area.

Birds

Symbols

S -	March – May	C - Common
S -	June – August	R – Rare
F -	September – November	U – Uncommon
W -	December - February	A - Accidental
# -	Threatened or Endangered Species	O - Occasional
*	Breeds locally	

	SEASON			
Loons and Grebes	**S**	**S**	**F**	**W**
Red-throated Loon	R		R	O
Pacific Loon	R		R	O
Common Loon	R		R	O
Pied-billed Grebe*	C	C	C	C
Horned Grebe	O		O	R
Red-necked Grebe				A
Eared Grebe	O		O	O
Western Grebe	O	O	O	O
Clark's Grebe	O	O	O	O

Pelicans and Cormorants	**S**	**S**	**F**	**W**
American White Pelican	R	R	R	R
Brown Pelican	A	A	A	
Double-crested Cormorant	C	O	C	C

Bitterns, Herons and Ibis	**S**	**S**	**F**	**W**
American Bittern	C	U	U	O
Black-crowned Night Heron	R	R	R	R
Green Heron*	U	U	U	R
Cattle Egret			R	R
Snowy Egret			R	
Great Egret	U	U	U	U
Great Blue Heron*	C	C	C	C
White-faced Ibis				A

Waterfowl	**S**	**S**	**F**	**W**
Tundra Swan	U	R	U	C
Trumpeter Swan	R	R	R	R
Greater White-fronted Goose	U	R	U	O
Snow Goose	O		O	U
Ross's Goose				R
Emperor Goose			R	R
Canada Goose	C	U	C	C
Cackling Goose	C		C	C
Brant	O	O	O	

Wood Duck*	C	C	U	U
Mallard*	C	C	C	C
American Black Duck				A
Gadwall*	U	O	U	U
Green-winged Teal	C	U	C	C
American Wigeon	C	U	C	C
Eurasian Wigeon	O		O	O
Northern Pintail*	C	U	C	C
Baikal Teal				A
Northern Shoveler*	C	O	C	C
Blue-winged Teal*	R	R	R	R
Cinnamon Teal*	U	C	U	O
Canvasback	O		O	O
Redhead				O
Ring-necked Duck	C		U	C
Greater Scaup	O		O	O
Lesser Scaup	C	R	U	C
Black Scoter				A
White-winged Scoter			A	A
Surf Scoter				A
Harlequin Duck	R	R		
Long-tailed Duck				A
Barrow's Goldeneye				R
Common Goldeneye				U
Common Merganser	U		O	U
Red-breasted Merganser	R	R		R
Hooded Merganser*	U	O	O	O
Ruddy Duck	U	O	U	U
Bufflehead	U		U	U

Raptors	**S**	**S**	**F**	**W**
Turkey Vulture*	U	U	O	R
Osprey*	U	U	U	R
White-tailed Kite	R		R	
Northern Harrier*	C	U	C	C
Golden Eagle	R	R		R
Bald Eagle*	U	O	C	U
Sharp-shinned Hawk	U	U	U	U
Cooper's Hawk*	O	O	O	O
Northern Goshawk	R			R
Red-shouldered Hawk				A
Red-tailed Hawk*	C	C	C	C
Swainson's Hawk	A		A	
Rough-legged Hawk	O		O	U
Ferruginous Hawk	A			A
American Kestrel*	C	C	C	C
Merlin	O	O	O	O
Prairie Falcon	R	R	R	R
Peregrine Falcon		O	O	O
Gyrfalcon				A

Gallinaceous Birds	**S**	**S**	**F**	**W**
Ring-necked Pheasant*	U	O	U	U
Ruffed Grouse	O	O	O	O
Bobwhite	O	O	O	O
California Quail*	R	R	R	R
Chukar	O	O	O	O

Rails, Coots and Cranes	**S**	**S**	**F**	**W**
Virginia Rail*	U	U	O	O
Sora*	U	U	R	R
Common Moorhen	A			
American Coot*	C	C	C	C
Sandhill Crane	C	R	C	O

Shorebirds	**S**	**S**	**F**	**W**
Black-bellied Plover			R	R
Pacific Golden Plover			A	
Semipalmated Plover		O	O	O
Killdeer*	C	C	C	C
American Avocet		A	A	
Black-necked Stilt	A			
Greater Yellowlegs	O	O	U	O
Lesser Yellowlegs	U	O	U	
Solitary Sandpiper	R	R	R	
Spotted Sandpiper	O	O	O	
Whimbrel		O		
Long-billed Curlew		A		
Marbled Godwit		A	A	
Sanderling		A	A	
Durlin	C		C	
Semipalmated Sandpiper			A	
Western Sandpiper	U	U	U	
Least Sandpiper	U	U	U	O
Baird's Sandpiper	R		R	
Pectoral Sandpiper			O	
Willet	O		O	
Sharp-tailed Sandpiper				A
Dunlin	U		U	U
Stilt Sandpiper				A
Buff-breasted Sandpiper				A
Ruff				A
Short-billed Dowitcher				U
Long-billed Dowitcher	U	U	U	O
Wilson's Snipe*	U	O	U	C
Wilson's Phalarope	O	R	O	
Red-necked Phalarope	A	A	A	
Red Phalarope	R		R	

Gulls and Terns	**S**	**S**	**F**	**W**
Parasitic Jaeger			A	
Franklin's Gull	A	A	A	A

Bonaparte's Gull	O	R	O	R
Ring-billed Gull	C	U	U	C
Mew Gull	U	O	O	C
California Gull	C	O	U	C
Herring Gull	U		O	U
Glaucous Gull	R			O
Thayer's Gull	O		O	U
Western Gull	O	O	U	U
Glaucous-winged Gull	C	O	U	C
Slaty-backed Gull				A
Sabine's Gull			A	A
Black-legged Kittiwake			A	
Caspian Gull	O	O	O	
Forster's Tern			A	
Common Tern	A		A	
Arctic Tern	A		A	
Black Tern	A			

Doves and Cuckoos	**S**	**S**	**F**	**W**
Band-tailed Pigeon	O	O	O	O
Eurasian-collared Dove*	O	O	O	O
Rock Dove*	C	C	C	C
Mourning Dove*	U	C	U	O
Yellow-billed Cuckoo			A	

Owls	**S**	**S**	**F**	**W**
Barn Owl*	O	O	O	O
Short-eared Owl	O		O	O
Long-eared Owl	R	R	R	R
Great Horned Owl*	U	U	U	U
Snowy Owl			R	R
Western Screech-Owl*	U	U	U	O
Northern Pygmy-Owl	O	O	O	O
Northern Saw-whet Owl	A	A	A	A
Northern Hawk-Owl				A
Burrowing Owl	A	A	A	
Barred Owl			A	

Nighthawks and Swifts	**S**	**S**	**F**	**W**
Common Nighthawk			O	O
Vaux's Swift*	U	U	O	

Hummingbirds	**S**	**S**	**F**	**W**
Anna's Hummingbird	R	R	R	R
Rufous Hummingbird*	C	C	U	

Kingfishers	**S**	**S**	**F**	**W**
Belted Kingfisher*	U	C	U	U

Woodpeckers	**S**	**S**	**F**	**W**
Acorn Woodpecker	A	A	A	A

Lewis's Woodpecker	O		R	R
Northern Flicker*	C	C	C	C
Red-breasted Sapsucker*	O	O	O	O
Downy Woodpecker*	C	C	C	C
Hairy Woodpecker	O	O	O	O
Pileated Woodpecker*	O	O	O	O

Flycatchers	**S**	**S**	**F**	**W**
Olive-sided Flycatcher		O	O	
Western Wood-Peewee*	R	C	O	
Willow Flycatcher*	U	U		
Least Flycatcher	R	R		
Hammond's Flycatcher	O	O	R	
Dusty Flycatcher	A			
Pacific-slope Flycatcher*	U	C	R	
Say's Phoebe	R			
Ash-throated Flycatcher				A
Western Kingbird	R	R		
Tropical Kingbird		A		
Eastern Kingbird	R			

Shrikes	**S**	**S**	**F**	**W**
Loggerhead Shrike	R			
Northern Shrike	O		O	O

Vireos	**S**	**S**	**F**	**W**
Hutton's Vireo	R	R	R	R
Cassin's Vireo	U	O		
Red-eyed Vireo	R	R		
Warbling Vireo*	O	U	O	

Jays and Crows	**S**	**S**	**F**	**W**
Blue Jay			A	
Steller's Jay	C	U	U	C
Gray Jay	R			R
Western Scrub Jay*	C	C	C	C
Black-billed Magpie	A		A	
American Crow*	C	C	C	C
Common Raven	A	A	A	A

Larks and Swallows	**S**	**S**	**F**	**W**
Horned Lark	U		U	U
Tree Swallow*	C	C	R	R
Violet-green Swallow*	U	C	O	R
Purple Martin*	O	U	O	
Bank Swallow	R	R		
Cliff Swallow*	U	U	R	
No. Rough-winged Swallow*	O	U	O	
Barn Swallow*	U	C	C	R

Chickadees and Bushtits	**S**	**S**	**F**	**W**

Black-capped Chickadee*	C	C	C	C
Mountain Chickadee				A
Chestnut-backed Chickadee*	R	R	R	R
Bushtit*	C	C	C	C

Nuthatches and Creepers	**S**	**S**	**F**	**W**
Brown Creeper*	O	O	O	O
White-breasted Nuthatch*	C	C	C	C
Red-breasted Nuthatch*	O	O	O	O

Wrens	**S**	**S**	**F**	**W**
House Wren*	U	C	O	R
Winter Wren	R	R	R	R
Bewick's Wren*	C	C	C	C
Marsh Wren*	C	C	U	U

Kinglets	**S**	**S**	**F**	**W**
Golden-crowned Kinglet	U	O	U	O
Ruby-crowned Kinglet	U	O	U	O

Thrushes	**S**	**S**	**F**	**W**
Western Bluebird	R		R	R
Veery	A			
Swainson's Thrush*	U	U		
Hermit Thrush	R		O	R
Varied Thrush	U		U	C
American Robin*	C	C	C	C
Townsend's Solitaire	A		A	A

Mockingbirds and Starlings	**S**	**S**	**F**	**W**
North Mockingbird	A			
Cedar Waxwing	U	U	U	U
European Starling*	C	C	C	C
American Pipit	U	U	U	U

Warblers	**S**	**S**	**F**	**W**
Orange-crowned Warbler*	C	U	O	O
Nashville Warbler	O	O		
Northern Parula			A	
Yellow-rumped Warbler*	C	O	U	U
Black-throated Gray Warbler*	U	R	U	
Townsend's Warbler	O		O	O
Blackpoll Warbler			A	
Palm Warbler	A			
Yellow Warbler*	U	U	O	
MacGillivray's Warbler	U	U	R	
Wilson's Warbler	U	O	O	
Common Yellowthroat*	C	C	O	O
Yellow-breasted Chat	R	R		

Tanagers	**S**	**S**	**F**	**W**

Western Tanager	U	U	O	

Sparrows	**S**	**S**	**F**	**W**
Spotted Towhee*	C	C	C	C
American Tree Sparrow	A			
Chipping Sparrow	O	O	O	R
Clay-colored Sparrow				A
Brewer's Sparrow				A
Lark Sparrow	A		A	
Fox Sparrow	O		O	U
Savannah Sparrow*	C	C	U	U
Lincoln's sparrow	O	O	O	O
Song Sparrow*	C	C	C	C
Vesper Sparrow	R	R	R	
Swamp Sparrow			R	R
White-throated Sparrow				R
Harris's Sparrow				R
White-crowned Sparrow	U	U	U	U
Golden-crowned Sparrow	C		C	C
Dark-eyed Junco	C	R	C	C
Lapland Longspur				A
Snow Bunting				A
Black-headed Grosbeak*		U		
Lazuli Bunting		U		

Blackbirds	**S**	**S**	**F**	**W**
Western Meadowlark*	U	O	U	O
Yellow-headed Blackbird*	O	O		
Red-winged Blackbird*	C	C	O	C
Tricolored Blackbird		A		
Rusty Blackbird	A			A
Brewer's Blackbird*	C	C	C	C
Brown-headed Cowbird*	C	C	U	O
Bullock's Oriole*	U	U	O	

Finches and Grosbeaks	**S**	**S**	**F**	**W**
Purple Finch*	U	U	U	U
House Finch*	C	C	U	C
Red Crossbill	O	R	R	R
Pine Siskin*	O	O	O	O
American Goldfinch*	C	C	U	U
Lesser Goldfinch	A	A	A	A
Common Redpoll	A			A
Evening Grosbeak	O			

Weaver Finches	**S**	**S**	**F**	**W**
House Sparrow*	U	U	U	U

Mammals

(* denotes non-native species)

Virginia Opossum*	*Didelphis virginiana*	Douglas' Squirrel	*Tamiasciurus douglasii*
Vagrant Shrew	*Sorex vagrans*	Camas Pocket Gopher	*Thomomys bulbivorus*
Pacific Shrew	*Sorex pacificus*	American Beaver	*Castor canadensis*
Pacific Water Shrew	*Sorex bendirii*	Deer Mouse	*Peromyscus maniculatus*
Trowbridge's Shrew	*Sorex trowbridgii*	Dusky-Footed Woodrat	*Neotoma fuscipes*
Shrew Mole	*Neurotrichus gibbsii*	Bushy-Tailed Woodrat	*Neotoma cinerea*
Townsend's Mole	*Scapanus townsendii*	Gray-Tailed Vole	*Microtus canicaudus*
Little Brown Myotis	*Myotis lucifugus*	Townsend's Vole	*Microtus townsendii*
Yuma Myotis	*Myotis yumanensis*	Creeping Vole	*Microtus oregoni*
Long Eared Myotis	*Myotis evotis*	Muskrat	*Ondatra zibethicus*
Fringed Myotis	*Myotis thysanodes*		
Long Legged Myotis	*Myotis volans*	Porcupine	*Erethizon dorsatum*
California Myotis	*Myotis californicus*	Nutria*	*Myocastor coypus*
Silver Haired Bat	*Lasionycteris noctivagans*	Coyote	*Canis latrans*
Big Brown Bat	*Eptesicus fuscus*	Red Fox	*Vulpes vulpes*
Hoary Bat	*Lasiurus cinereus*	Gray Fox	*Urocyon cinereoargenteus*
Townsend's Big-Eared Bat	*Plecotus townsendii*	Raccoon	*Procyon lotor*
Pallid Bat	*Antrozous pallidus*	Long-tailed Weasel	*Mustela frenata*
Brush Rabbit	*Sylvilagus bachmani*	Mink	*Mustela vison*
Black-tailed Jack Rabbit	*Lepus californicus*	Short-tailed Weasel	*Mustella erminea*
Townsend's Chipmunk	*Tamias townsendii*	Western Spotted Skunk	*Spilogale gracilis*
California Ground Squirrel	*Spermophilus beecheyi*	Striped Skunk	*Memphitis memphitis*
Eastern Fox Squirrel* Eastern Gray Squirrel	*Sciurus niger* *Sciurus carolinensis*	River Otter	*Lutra canadensis*
Western Gray Squirrel	*Sciurus griseus*	Elk	*Cervus elaphus*
Pacific Jumping Mouse	*Zapus trinotatus*	Black-tailed Deer	*Odocoileus hemionus*

Amphibians and Reptiles

Northwestern Salamander	*Ambystoma macrodactylum*	Northwestern Pond Turtle	*Clemmys marmorata*
Long-toed Salamander	*Ambystoma macrodactylum*	Northern Alligator Lizard	*Elgaria coerulea*
Ensatina	*Ensatina eschscholtzi*	Southern Alligator Lizard	*Elgaria multicarinata*
Dunn's Salamander	*Plethodon dunni*	Western Fence Lizard	*Sceloporus occidentalis*
Western Red-backed Salamander	*Plethodon vehiculum*	Western Skink	*Eumeces skiltonianus*
Roughskin Newt	*Taricha granulosa*	Rubber Boa	*Charina bottae*
Western Toad	*Bufo boreas*	Racer	*Coluber constrictor*
Pacific Treefrog	*Hyla regilla*	Sharptail Snake	*Contia tenuis*
Red-legged Frog	*Rana aurora*	Ringneck Snake	*Diadophis punctatus*
Foothill Yellow-Legged Frog	*Rana boylei*	Gopher Snake	*Pituophis melanoleucus*
Bullfrog*	*Rana catesbeiana*	W. Terrestrial Garter Snake	*Thamnophis elegans*
Spotted Frog	*Rana pretiosa*	Northwestern Garter Snake	*Thamnophis ordinoides*
Western Painted Turtle	*Chrysemys picta*	Common Garter Snake	*Thamnophis sirtalis*

Fish

Pacific Lamprey	*Lampetra tridentata*	Dace	*Rhinichthys* spp.
Coho Salmon	*Oncorhynchus kisutch*	Bridgelip Sucker	*Catostomus columbianus*
Chinook Salmon	*Oncorhynchus tshawytscha*	Longnose Sucker	*Catostomus catostomus*
Sockeye Salmon	*Onchorhynchus nerka*	Largescale Sucker	*Catostomus macrosheilus*
Chum Salmon	*Onchorhynchus keta*	Oriental Weatherfish*	*Misgurnus anguillicandatus*
Steelhead	*Onchorhynchus gairdneri*	American Shad*	*Alosa sapidissima*
Cutthroat trout	*Onchorhynchus clarkii*	Mosquitofish*	*Gambusia affinis*
Black Crappie*	*Pomoxis nigro-annularis*	Redside Shiner	*Richardsonius balteatus*
White Crappie*	*Pomoxis annularis*	Sculpin	*Cottus* spp.
Bluegill*	*Lepomis macrochirus*	Northern Pikeminnow	*Ptychocheilus oregonensis*
Largemouth Bass*	*Micropterus salmoides*	Common Carp*	*Cyprinus carpio*
Warmmouth Bass*	*Lepomis gulosus*	Yellow Bullhead*	*Ictalurus natalis*
Pumpkinseed*	*Lepomis gibbosus*	Brown Bullhead*	*Ictalurus nebulosus*

Appendix D. State Water Rights on Sauvie Island Wildlife Area

Tract	Permit Number	Acres/Feet	Rate
Crane Lake, Willow Hole	R51620		4.0 cfs
Crane Lake	R11551	23.8	
Gilbert River, The Narrows	R51614		22.3 cfs
Cunningham Slough, Deep Lake	R12903	102.0	
Cunningham Slough, Ruby Lake	R12904	240.0	
Cunningham Slough, Millionaire Lake	R12905	120.0	.
Gilbert River	R51633		10.0 cfs
Pete's Slough	R7341	1,040.0	
Pete's Slough	S43072		1.0 cfs
McNary Lake	S31789		13.0 cfs

Appendix E. Easements and Agreements on Sauvie Island Wildlife Area

Easements

Principles	Purpose	Date	Acres
Portland General Electric	Power line	04/12/61	-1.00
Portland General Electric	Power line	05/24/69	-1.00
City of St Helens	Sewer line	03/18/71	-1.00
Portland General Electric	Power line	06/25/71	-1.00
Richardsen, M & A		07/02/75	1.00
Richardsen, M & A	Correction	07/02/75	-1.00
Portland General Electric	Power Line	01/24/83	-1.00
Portland General Electric	Power Line	08/10/92	-1.00

Agreements

Principles	Purpose	Date	Acres
Dept. of State Lands	Wildlife Use	04/05/50	3476.00
Western Union Telegraph	Repeater Station	01/02/63	
Columbia County Court	Road Vacated	09/11/68	
Dept. of State Lands	Amendment	12/19/68	
Burns, A B	Land Use	06/09/82	
Oregon State Land Board	Land Use	01/27/83	
Oregon Dept. of Forestry	Fire Protection	06/21/82	
Oregon Highway Division	Fish Access	07/23/68	
U.S. Coast Guard	Navigating Light	11/29/67	
Dept. of State Lands	Wildlife Use	09/01/81	3.60

Appendix F. Legal and Other Obligations Influencing Management of the Sauvie Island Wildlife Area

Federal Laws

Federal Aid in Wildlife Restoration Act
Pittman- Robertson Act of 1937
The Endangered Species Act of 1973, as amended
National Historic Preservation Act
National Environmental Policy Act
Americans with Disabilities Act
Archaeological Resource Protection Act

Oregon Revised Statutes

ORS 496.012 Oregon's Wildlife Policy
ORS 496.138 General Duties and Powers; Rulemaking Authority
ORS 496.146 Additional Powers of the Commission
ORS 496.162 Establishing seasons, amounts and manner of taking wildlife; rules
ORS 496.992 Penalties

Oregon Department of Fish and Wildlife Mission and Authority

The mission of the department is to protect and enhance Oregon's fish and wildlife and their habitats for use and enjoyment by present and future generations. Oregon Department of Fish and Wildlife is the only state agency charged exclusively with protecting Oregon's fish and wildlife resources. The state Wildlife Policy (ORS 496.012) and Food Fish Management Policy (ORS 506.109) are the primary statutes that govern management of fish and wildlife resources.

Oregon Administrative Rules

Division 008 - Department of Fish and Wildlife Lands

635-008-0015 Agreements to Restrict Motor-propelled Vehicles
635-008-0040 Forage Removal from State Lands
635-008-0050 Fish and Wildlife Commission to Post and Enforce Rules
635-008-0146 Sauvie Island Wildlife Area Management Plan
635-008-0147 Rules Regarding Public Use for Sauvie Island Wildlife Area
635-008-0148 Purpose Parking Permit System for Sauvie Island Wildlife Area
635-008-0149 Definition Parking Permit System for Sauvie Island Wildlife Area
635-008-0151 Procedures for Issuance and Enforcement of Parking Permits for Sauvie Island Wildlife Area

Division 011 - Statewide Angling Regulations

635-011-0050 Procedure of Promulgation of Angling Regulations
635-011-0100 General Rule

Division 044 - Holding, Propagating, Protected Wildlife

Division 051 - General Game Bird Regulations
635-051-0000 Purpose and General Information
635-051-0065 State Wildlife Area Regulations

Division 065 - Game Mammal General Seasons and Regulations
635-065-0001 Purpose and General Information
635-065-0625 Regulations on State Wildlife Areas, Refuges and Special Areas

Division 100 - Wildlife Diversity Plan

Other Obligations

Sauvie Island Wildlife Area 1993 Beach Use Plan
Sauvie Island Wildlife Area 1993 Individual Dog Training and Dog Trial plans

Oregon Conservation Strategy (2006)

Pacific Flyway and Species Plans

- The North American Waterfowl Management Plan
- Pacific Flyway Management Plans
- Pacific Population of Western Canada Geese
- Pacific Population of Trumpeter Swans
- Western Population of Tundra Swans
- Pacific White-fronted Goose Plan
- Dusky Canada Goose Plan
- Lesser and Taverner's Canada Goose Plan
- Northwest Oregon / Southwest Washington Canada Goose Agricultural Depredation Control Plan
- The Western Waterfowl Initiative
- The Western United States and Canada Cooperative Duck Banding Program
- The Pacific Flyway Fall and Winter Goose Surveys
- Oregon Statewide Waterfowl Plan (draft)
- United States Shorebird Conservation Plan

Fish Species Plans

25 Year Recreational Angling Enhancement Plan (ODFW)
2009 Draft Recovery Plan for Federally Listed Salmon in the Lower Columbia River
Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead
Native Fish Conservation Policy
ODFW Fish Passage Criteria (ORS 509.580)

Appendix G: Description of Management Units

Introduction

SIWA is divided into four separate management units. The boundaries of these units are based on physical, administrative and operational characteristics.

Sturgeon Lake, approximately 3,000 acres in size, is not considered one of SIWA's management units because it falls under the jurisdiction of DSL. It is however managed by the department through a cooperative agreement with DSL.

Soils on SIWA are primarily Sauvie-Rafton Series Loams. The soils show medium clay content with characteristically high percolation. These soils are associated with a high water table, are well suited for agricultural operations, but are challenging for wetland habitat management. The moist soil impoundments present on SIWA are managed to provide a combination of semi-permanent and seasonal wetlands. SIWA staff balance the timing and duration of summer drawdown, with the intent of providing suitable conditions for seed germination and fostering a green zone of desirable vegetation as the impoundments' water levels recede.

Table 6. Sauvie Island Wildlife Area Habitat Types by Management Unit.

Unit Name	Acres
Eastside	6,685
Westside	1,981
Oak Island	870
North Unit	1,791
Sturgeon Lake*	2,466
River Channels	216
Total	**11,543**

* Sturgeon Lake is included in the Eastside Total

See Figures 1.1, 1.2 and 1.3.

Eastside Unit

Background

The Eastside Unit encompasses approximately 6,685 acres and is located west of the Columbia River and east of the Gilbert River and Sturgeon Lake. Reeder and Rentenaar roads allow access to the bulk of the Eastside unit. Numerous parking lots are located throughout the unit, but the majority of these lots are along Reeder Road. The unit consists of low and flat floodplains topography from historic Columbia River flows. Approximately 1,200 acres of the Eastside Unit is protected by a 27-foot high levee constructed in the late 1930s. The remainder of the unit is outside of this levee and SIWA staff has no control of water levels arising from the river systems. Sturgeon Lake is included in the Eastside Unit for habitat management purposes.

Management Strategies
This unit, managed mainly to benefit waterfowl, is the most intensively managed unit on the wildlife area. SIWA staff follows a moist soil management approach using a series of more than twenty impoundments, water control structures, pumps, and pipelines.

The majority of the wildlife-related food crops are planted within this unit. In a typical year, 1,200 to 1,400 acres are planted in millet (*Panicum miliaceum*), corn (*Zea mays* ssp.), buckwheat (*Fagopyrum esculentum*), sudangrass (*Sorghum bicolor*), sunflowers (*Helianthus annus*), and/or wild rice (*Zizania aquatica*). Other crops have been used experimentally but have not proved successful. Crop locations are selected annually on a rotational basis. All field preparation, planting, and tending is conducted by department staff but most harvesting is done by wildlife.

There are four sharecroppers and four livestock grazing permittees which provide benefit to the wildlife area.

The Eastside Unit is divided into twelve hunt units, to enable the department to allow the most number of hunters yet still maintain a quality hunt program for them. The public use in this unit is restricted during October 1 to April 30, unless the use is permitted bird hunting. The Eastside Viewing Platform and Rentenaar Road are both accessible throughout the year.

The area outside the levee is within the river floodplain, and thus highly susceptible to periodic inundation. For example, when the Columbia River at Vancouver reaches 14 feet high, a large portion of this area is flooded.

Westside Unit

Background
The Westside Unit encompasses 1,981 acres and is located at the north end of Sauvie Island Road and is bordered by the Multnomah Channel on the east and the Gilbert River on the west. Private land (Flight's End Duck Club) borders the unit on the north.

The habitats within this unit consist primarily of riparian forest, pastures/grassland, and actively and passively managed wetlands. All of the wetlands in this unit are subject to regular flooding from the Gilbert River and Multnomah Channel.

Management Strategies
Just prior to waterfowl hunting season, SIWA staff can use two water pumps to recharge the wetlands and six water control structures to control water levels as needed.

The Westside Unit is divided into six hunt units to better able us to allow the maximum number of hunters while still maintaining a quality hunt program.

Oak Island Unit

Background

The Oak Island Unit encompasses 870 acres and is located near the southeast corner of Sturgeon Lake. Steelman Lake is the west boundary and Sturgeon Lake is the north, south and east, except for a few small parcels along the western edge of Oak Island. Oak Island Road enters the unit and proceeds north to a split, with one fork continuing to the north and the other to the east, past Webster and Haldeman Ponds, to Sturgeon Lake. There is one boat ramp at Sturgeon Lake and a three mile Nature Trail which loops around the north end of the island.

This unit consists primarily of oak woodland/savannah, riparian/bottomland hardwood forest, pasture/grassland, agriculture, and passively managed wetlands.

Management Strategies

Agricultural practices on Oak Island consist of row crop planting in the bottomlands inside the Sauvie Island levee, and grass seed fields outside the levee.

There are two ponds within this unit. Webster Pond is a natural pond with warmwater fish and Haldeman Pond is an abandoned gravel pit which is used by the department to provide a trout fishery. Public use in this unit is restricted during the period of October 1-May 1.

North Unit

Background

The North Unit encompasses 1,791 acres and is located at the north end of Sauvie Island between the Columbia River on the east and the Multnomah Channel on the west. The south boundary is the Gilbert River Boat Ramp Road. There are two pieces of private property in the North Unit, one of which is landlocked with a road easement. This area is typical of the Columbia River bottomlands flood plain. This unit is primarily riparian/bottomland hardwood forest, pasture/grassland, and passively managed wetlands.

Management Strategies

There are three natural wetlands which have water control structures that were installed to conduct moist soil management in and numerous other wetlands which are passively managed. The largest passively managed wetland is Cunningham Lake at 174 acres.

The public use in this unit is restricted during the period of October 1-May 1, except the Columbia River beaches and the trail to Warrior Rock Lighthouse.

SAUVIE ISLAND WILDLIFE AREA LAKES & PONDS

LOCATION (UNIT)	LAKE OR POND
SIWA	STURGEON LAKE
EASTSIDE	MALARKY LAKE
EASTSIDE	AARON LAKE
EASTSIDE	BIG MCNARY LAKE
EASTSIDE	LITTLE MCNARY LAKE
EASTSIDE	STANSLAKE
EASTSIDE	RAYS LAKE
EASTSIDE	MUDHEN LAKE
EASTSIDE	RENTENAAR LAKE
EASTSIDE	QUICK LAKE
EASTSIDE	NUMBER 2 LAKE
EASTSIDE	DEADWILLOW LAKE
EASTSIDE	FOOTBRIDGE LAKE
EASTSIDE	NORTH LAKE
EASTSIDE	CATFISH SLOUGH
EASTSIDE	BROWNING LAKE
EASTSIDE	POPE LAKE
EASTSIDE	SPUD LAKE
EASTSIDE	LOST PRAIRIE
EASTSIDE	RACETRACK LAKE
EASTSIDE	STUTZER LAKE
EASTSIDE	GAY LAKE
EASTSIDE	HUNT BOTTOM
EASTSIDE	JOHNSON LAKE
WESTSIDE	STEELMAN LAKE
WESTSIDE	MUD LAKE
WESTSIDE	ROUND LAKE
WESTSIDE	LITTLE MARTIN LAKE
WESTSIDE	BIG MARTIN LAKE
WESTSIDE	GRASS LAKE
WESTSIDE	SEAL LAKE
WESTSIDE	WILLOW HOLE
WESTSIDE	CRANE LAKE
WESTSIDE	DOMEYER LAKE
NORTH	THREE-FINGER JACK LAKE
NORTH	CUNNINGHAM LAKE
NORTH	RUBY LAKE
NORTH	MILLIONAIRE LAKE
NORTH	H & R POND
NORTH	WIGEON LAKE
NORTH	DEEP LAKE
NORTH	LILLY POND
NORTH	LOG POND LAKE
OAK ISLAND	HALDEMAN POND
OAK ISLAND	WEBSTER POND