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**FERN RIDGE WILDLIFE AREA
MANAGEMENT PLAN**

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



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Executive Summary

The Fern Ridge Wildlife Area (FRWA) is located within boundaries of the U.S. Army Corps of Engineers (USACE) Fern Ridge Lake Project. The Fern Ridge Lake Project contains 12,780 acres either owned in fee by the federal government or for which flowage or other easement rights have been acquired. The lake is a USACE flood control reservoir with a summer full pool and a winter drawdown to a minimum pool level for flood control. The FRWA was created by a licensing agreement signed in 1957 and modified in 1982, between the USACE and the Oregon Game Commission. This agreement authorized the state to “develop, conserve, and manage all wildlife resources on 5,010 acres of land and water within the Fern Ridge Project.” The twenty-five year license agreement is due for renewal on September 30, 2007. All provisions of this wildlife area management plan are subject to conditions of renewal of the license agreement.

Fern Ridge Lake is located in the southern Willamette Valley and is a significant water body well suited to support indigenous fish and wildlife species and migratory waterfowl. The shallow lake and surrounding wetlands provide habitat for a diverse array of wildlife species and include some remnants of wet low prairie vegetation representative of the Willamette Valley before European settlement. The habitat types found at Fern Ridge Lake are of limited quantity in western Oregon but are of significant quality on a landscape scale to support wildlife resources in this portion of the state.

Because of its proximity to the Eugene-Springfield metropolitan area, the FRWA is a popular destination for water-based recreation, angling, hunting, trapping, bird watching, and environmental education.

In 1993 the first long range management plan for the Fern Ridge Wildlife Area was created.

The 2007 Fern Ridge Wildlife Area Management Plan offers a comprehensive vision and action plan for the next ten years. This plan describes issues and provides actions for addressing them. These actions will be implemented during the life of this plan, but are subject to conditions of a license renewal agreement, funding and personnel availability. The management plan will be reviewed in 2012 to gauge implementation progress and make necessary changes and then revised in its entirety in 2017.

Introduction

Purpose of the Plan

This document is a long range plan designed to guide the management of the FRWA for the next 10 years. The Oregon Department of Fish and Wildlife’s (Department) management planning process for wildlife areas involves the development of broad goals for the areas, and formulation of specific objectives and management strategies to achieve those goals. The purposes of this plan are:

- To provide clear direction for the management of the FRWA over the next 10 years;
- To provide long-term continuity in wildlife area management;
- To communicate the Department's management priorities for the FRWA to its neighbors, visitors, and to the public;
- To ensure that management programs on the FRWA are consistent with the original mandate and purpose of the area when it was first established;
- To ensure that management of FRWA is consistent with Federal, State, and local plans, and;
- To provide justification for staffing, operations, maintenance, and capital improvement needs on the FRWA.

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. The Department 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 the management of fish and wildlife resources.

Purpose and Need of the Fern Ridge Wildlife Area

FRWA is one of twelve staffed wildlife areas managed by the Department. The wildlife area is located in the Department's Northwest Region as a component of the South Willamette Watershed District Habitat Program. Project coordination is provided by the Wildlife Division to integrate wildlife area management activities with larger scale landscape planning including intergovernmental agreements, flyway plans, and individual species plans.

All management activities at FRWA are authorized within parameters of the USACE 1988 Upper Willamette Valley Projects Fern Ridge Lake Master Plan for Resource Use. In addition, Federal Title 36 regulations for Parks, Forests, and Public Property apply as guidance to public use programs and developments of USACE water resource projects.

This management plan is the guiding document that will ensure natural resources on the FRWA will be managed in such a manner as to protect, maintain, enhance, and restore fish and wildlife habitat to support optimum population levels of many species for the enjoyment of present and future citizens. To protect these natural resources, management programs and strategies utilized on the FRWA will meet or exceed habitat protection policies and standards set by the Department.

Fern Ridge Wildlife Area Vision Statement

The vision for the Fern Ridge Wildlife Area is as follows:

Wetlands, grasslands, and oak woodlands are being preserved and enhanced in the southern Willamette Valley through sound stewardship measures to support waterfowl

and a diverse array of plant and animal species, for use and enjoyment by present and future generations.

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 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, monitoring wildlife area accomplishments, and evaluating the success of strategies.

The goals and objectives for the Fern Ridge Wildlife Area are:

Goal 1: Manage habitats to attract and support waterfowl in the southern Willamette Valley.

Objective 1.1: Manage habitats and infrastructure capable of supporting 2.25 million waterfowl use days annually.

Goal 2: Protect, enhance, and restore habitat diversity for other wildlife present on the area, compatible with Goal 1.

Objective 2.1: Maintain or enhance all wildlife area habitats (5,010 acres) for state and federally listed threatened, endangered, and sensitive species.

Objective 2.2: Provide protection for historic critical remnant Willamette Valley habitats including wetlands, uplands, wet low prairie, shrub/scrub, oak savannah, riparian, and forest.

Objective 2.3: Maintain and enhance 900 acres of managed impoundments and 1,863 acres of wetland habitats that consist of seasonal marsh, emergent and submergent lakeshore vegetation, and adjoining open water lake areas.

Objective 2.4 Maintain 865 acres of upland and 369 acres of lowland grasses annually emphasizing protection and enhancement of native prairie grasslands.

Objective 2.5: Maintain 813 acres of woodland and shrub/scrub habitat annually for benefit of indigenous and migratory wildlife species.

Objective 2.6: Maintain and enhance wildlife area facilities, structures, and equipment used to conduct habitat management and public use projects on the wildlife area.

Goal 3: Provide a variety of quality recreational and educational opportunities to the public which are compatible with Goals 1 and 2.

Objective 3.1. Manage habitats and facilities capable of providing 6,000 hunter visitor use days annually in a manner compatible with resource protection objectives.

Objective 3.2: Manage habitats and facilities capable of providing 6,000 education/interpretation visitor use days annually in a manner compatible with resource protection objectives.

Wildlife Area Establishment

The FRWA was created by a licensing agreement signed in 1957 and modified in 1982, between the USACE and the Oregon Game Commission which authorized the state to “develop, conserve, and manage all wildlife resources on 5,010 acres of land and water within the Fern Ridge Project.” The 25 year license agreement is up for renewal on September 30, 2007. The license was again amended in 1995 following completion of a cooperative wetland enhancement project in the Fisher Butte unit. A parcel of 115 acres within three impoundments was removed from the original license agreement and placed under a supplemental license agreement for a 50 year period from September 2, 1994 to September 1, 2044.

The USACE’s Fern Ridge Project is divided into 19 separate management units, including 18 land units and one unit covering the lake area itself. The boundaries of these units are based on physical, administrative and operational characteristics. Within this larger project area, the Department license covers 5,010 acres which overlap several management units around the lake.

Description and Environment

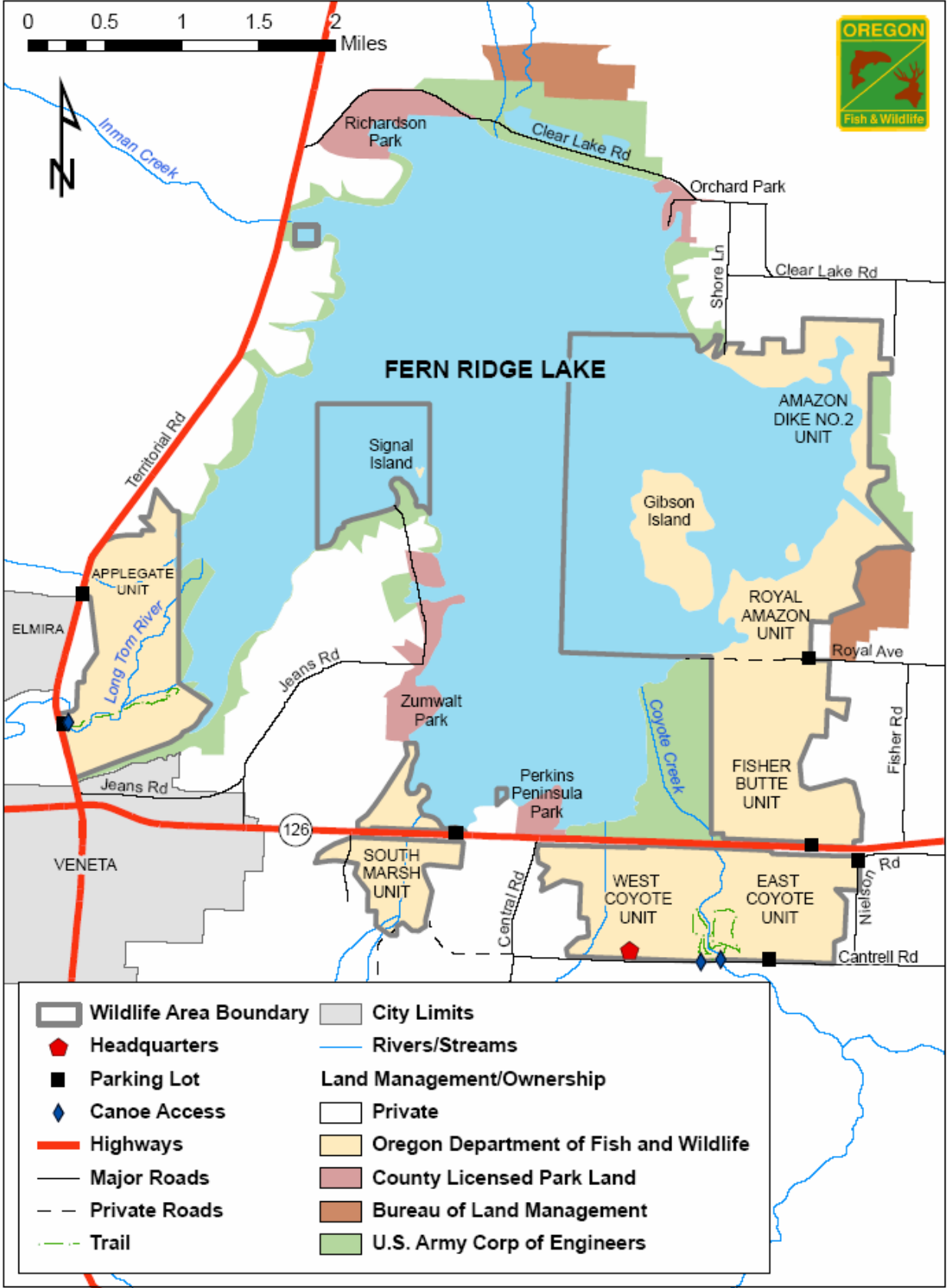
Physical Resources

Location

Fern Ridge Lake was constructed in 1941 as one of 13 multi-purpose USACE reservoirs in the Willamette River basin. Current primary purposes for Fern Ridge Lake are flood control and irrigation, with secondary purposes for recreation, fish and wildlife and water quality. The USACE administers 12,780 acres at the Fern Ridge project comprised of lake surface and surrounding low elevation terrain. The lake is drawn down in the winter to a minimum conservation pool level for flood control purposes. The lake transforms from approximately 9,000 surface acres of open water in the summer months to an average winter pool of 1,500 surface acres.

The Fern Ridge Wildlife Area is located approximately 10 miles west of the Eugene-Springfield metropolitan area, in Lane County. State Highway 126 transverses the area on the south. The wildlife area headquarters is located on the south border of the West Coyote Unit, at 26969 Cantrell Road. **Figure 1** shows the location of the Fern Ridge Wildlife Area and its key features.

Figure 1 - Fern Ridge Wildlife Area Features and Ownership



Wildlife area management units are located around the perimeter of Fern Ridge Lake with access available via county roads. Under the current license framework, the Department has complete administrative responsibility for four units (East Coyote, West Coyote, South Marsh and Royal-Amazon) and partial responsibility for several other units (Amazon Dike #2, Fisher Butte, Applegate and portions of the lake unit). An additional 37 acres adjacent to the Amazon Dike #2 unit is owned by the Department and managed for wildlife conservation.

Climate

The south end of the Willamette Valley is in a temperate zone in which summers are warm and dry, while winters are mild and wet. Temperatures range from average summer highs in the 90^os (F) to lows in the 20^os. Annual precipitation for Fern Ridge Lake is about 55 inches, with about 70 percent falling between October and February. Less than 3 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 present for short durations. Conversely, hot days during summer months are moderated by cooler evening temperatures.

Topography and Soils

The floor of the Willamette Valley in the vicinity of the wildlife area is composed primarily of alluvial deposits. Topography of the Fern Ridge basin is very flat with gradual elevation rise to the west and south into the Coast Range foothills. Elevations range from 350' to 400' feet above sea level.

Primary soil types on the southeast portion of the wildlife area where most field management activity occurs include Natroy, Veneta, Noti, Linslaw, Dayton, Pengra, and Salkum loam and silty clay loams (USACE, 1988). These soils are generally poorly drained with a clay substratum and are subject to high water tables and inundation during winter months. The high clay content and capability to hold water provides a tenacious medium for agricultural operations. However this substrate is a generally favorable feature for wetland management. More specific information about soils and topography is contained in the wildlife area tract section of this plan.

Habitat Types

There are six habitat types found within the borders of the FRWA. These habitat types and the amount of acres of each type are listed in **Table 1**. Emergent aquatic vegetation is the dominant plant form present at Fern Ridge Lake and covers approximately 2,500 acres of lake bed and shoreline. This vegetation is most abundant along the southern and eastern shorelines near the inflows of the Long Tom River and Coyote Creek. Although dominated by reed canarygrass (*Phalaris arundinaceae*), the lake's emergent marsh includes hundreds of acres of hardstem bulrush (*Scirpus acutus*) and cattail (*Typha latifolia*). Wapato (*Sagittaria latifolia*), smartweed (*Polygonum lapathifolium*), and other native wetland plant species also occur within these areas. Under normal filling and operation of the reservoir, these marshlands are flooded in early April and remain flooded typically through mid-September.

The emergent marsh transitions from the lake into low grasslands and forest and scrub/shrub wetlands. Riparian corridors along Coyote Creek and the Long Tom River contain mature forest canopy. Wet low prairie grasslands merge into upland sites.

Table 1. Habitat Types and Approximate Acreages on the Fern Ridge Wildlife Area.

Habitat Type	Acres
Open water	1,863
Managed impoundments	900
Mixed deciduous and conifer woodland	884
Upland grasses	865
Lowland grasses	369
Scrub/shrub	129
Total	5,010

Figure 2 shows the habitat types around Fern Ridge Lake.

Open Water

Fern Ridge Lake is a wide, shallow, multi-purpose reservoir. The shoreline is irregularly shaped with shallow sloped banks ranging from 0 to 7%. A large peninsula divides the lake on the south shoreline between its two major tributaries, the Long Tom River and Coyote Creek. At maximum summer conservation pool (elevation 373.5 feet), the lake is about 5.5 miles long, 5 miles wide, has a shoreline length of about 32 miles and a surface area of about 8,600 acres. At this elevation, the lake is about 25 feet deep at its deepest point, with an average depth of about 7 feet. At maximum pool elevation of 375.1 feet (maximum flood storage), the lake has about 9,000 surface acres. At minimum winter pool (elevation 353 feet), the lake has about 1,500 surface acres.

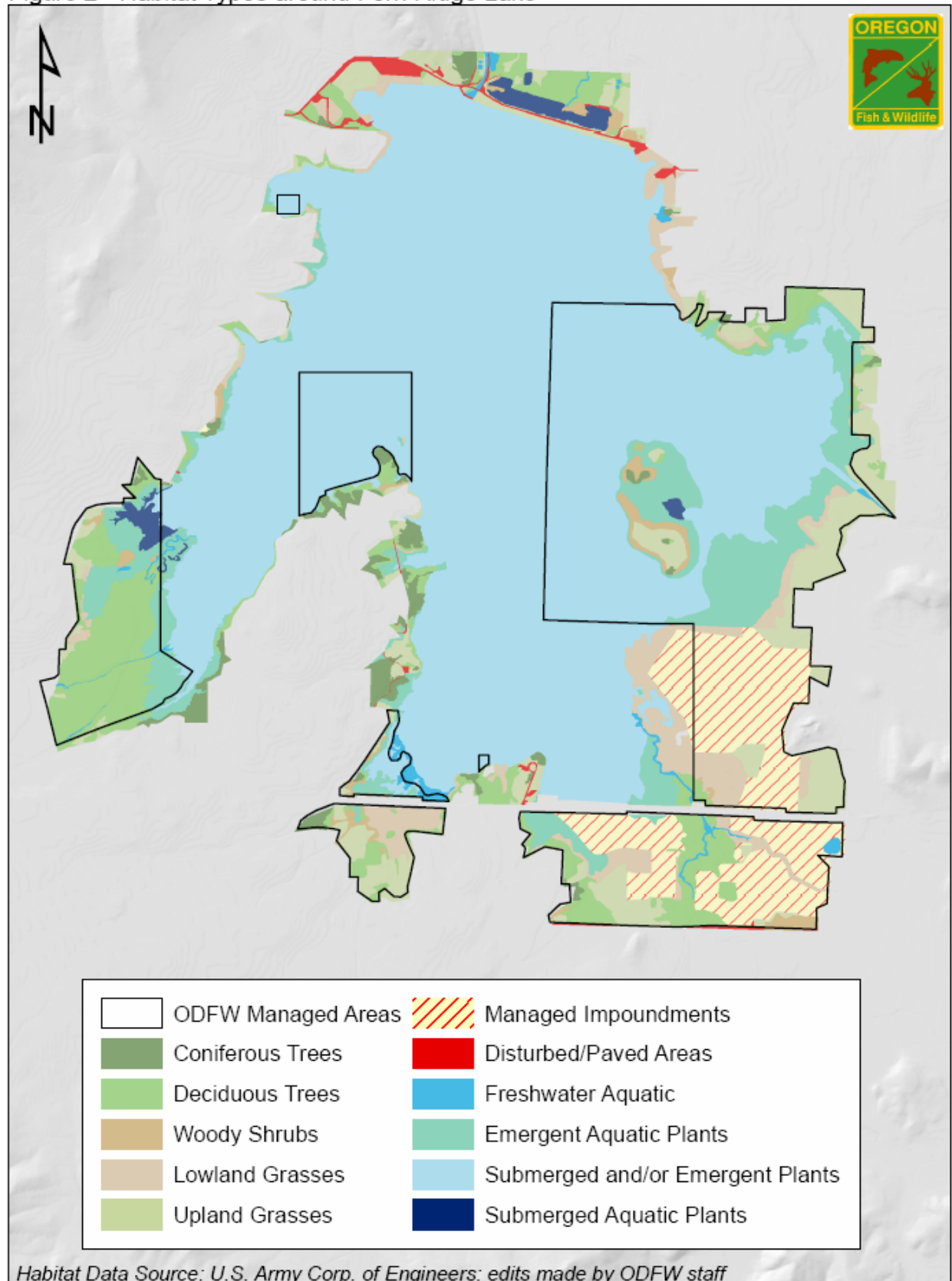
The lake impounds the Long Tom River and its major tributary, Coyote Creek, which together drain over 300 square miles of the eastern Coast Range mountains. The lake also receives flows from Amazon Creek and several minor streams.

Managed Impoundments

The gradual slopes of the Fern Ridge Lake shoreline provide extensive areas of shallow fresh water marsh. This area is subject to an annual cycle of de-watering or inundation due to USACE water level management. Until recent years, large expanses of reed canarygrass marshland covered over 2,000 acres of shallow waters of the lake, particularly along the east shoreline and in the inlets created by the Long Tom River, Coyote Creek, Amazon Creek, and other smaller drainages. Recent construction of additional impoundments has provided equipment access and water level management to reclaim over 500 acres for restoration of native wetlands. Fern Ridge Lake contains a large percentage of the total inland marshes of Lane County and, as such, is extremely important for wildlife.

Patches of cattail marsh are located at the edges of the reed canarygrass. Bulrushes dominate deeper water emergent zones as large patches and circular clones extending out into lake open water. The other prominent species in these marshes are spikerush (*Eleocharis* spp.), sedges (*Carex* spp.), tapered rush (*Juncus acuminatus*), birdsfoot

Figure 2 - Habitat Types around Fern Ridge Lake



trefoil (*Lotus corniculatus*), alkali grass (*Puccinellia* spp.), speedwell (*Veronica scutellata*), self-heal (*Prunella vulgaris*), woodreed, and field mint (*Mentha arvensis*).

Project operation for flood control purposes provides hydrologic environment that reverses natural cycles (e.g., summer flooding and winter drawdown). This hydrologic cycle favors reed canarygrass establishment rather than native marsh plant communities. Over the past 20 years, substantial efforts have gone into constructing and managing 900 acres of impoundments to mimic a more natural hydrologic regime. With this infrastructure in place, water level management can be used in combination with other habitat management techniques to achieve canarygrass control over large areas.

The impoundments have been managed to provide habitat and sanctuary for wildlife, with an emphasis on attracting and holding wintering waterfowl. In past years, this was accomplished by managing a portion of the impoundments as semi-permanent marsh and draining selected impoundments in the spring and planting cereal grains. Impoundments are now managed with a greater emphasis on providing year-round wetland habitat through moist soil management. Moist soil management techniques employ a combination of water level control, periodic soil disturbance, and timed drawdown and inundation to foster growth of native wetland species. The target management prescription for FRWA is to maintain a balance of planted foodcrops and moist soil management within the 900 acres of managed impoundments. 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. Descriptions of impoundment management are included in the individual management unit descriptions below.

Mixed Deciduous and Coniferous Woodlands

Areas around Fern Ridge Lake contain both deciduous and coniferous forest habitat types. Primary hardwood tree species include big-leaf maple (*Acer macrophyllum*), Oregon white oak (*Quercus garryana*), Oregon ash (*Fraxinus latifolia*), and red alder (*Alnus rubra*) and black cottonwood (*Populus trichocarpa*). The understory is thick with berries, forbs, shrubs, and grasses. Conifer trees present include ponderosa pine (*Pinus ponderosa*), Douglas fir (*Pseudotsuga menziesii*), and grand fir (*Abies grandis*). The understory is thick with berries, forbs, shrubs and grasses.

Grasslands

Extensive upland and lowland grassland habitats are located near the eastern shore of the lake, north of Kirk Pond, and on Gibson Island. Upland and wetland grasses in these areas include fescue (*Festuca* spp.), bentgrass (*Agrostis exarata*), brome (*Bromus* spp.), reed canarygrass, reed grass (*Phragmites australis*) and a few alkali grasses.

Once a common habitat type, few areas of native grassland remain in the Willamette Valley. Remnants of those native grasslands exist at Fern Ridge Lake. The dominant

species include numerous brome, fescue, hairgrass (*Deschampsia cespitosa*), bentgrass, ryegrass (*Elymus* spp.), and other prairie species. Associated with the grasses are many forb species, some of which are presently listed as threatened or endangered in Oregon. The few tracts of grassland or meadows surrounding Fern Ridge Lake may represent the last remaining portions of this habitat and do contain some uncommon forbs. This is especially true of native lowland wet prairie habitat. These native wet prairies are considered a Strategy Habitat as defined in the Department's 2006 Oregon Conservation Strategy.

Scrub/Shrub Habitat

Diverse shrub swamps and forested swamps characterize the Long Tom Channel and Coyote Creek, between the marshland and upland forests. Snags are prominent at the mouth of the river and in several other places around the lake.

Blackberry (*Rubus armeniacus*), rose (*Rosa* spp.), and hawthorn (*Crataegus douglasii*) thickets occupy many open meadow areas as the woodlands transition into prairie. Blackberries are vigorous and invasive in many areas, however, the acreage is limited and generally linear and the thick vegetation does provide a dense barrier protecting bird life, small mammals, and other species from predators and human impacts. Young fir and hardwood trees are often found in these areas forming a structurally diverse and ecologically dynamic habitat.

Appendix A contains a list of trees, shrubs, forbs and grasses found on the FRWA.

Research Natural Areas

Research Natural Areas (RNA) were established in several grassland parcels to protect these unique valley prairie communities in support of the interagency Pacific Northwest RNA Program. The RNAs are maintained for their historical perspective of the native Willamette Valley grasslands and for conducting research about the biology of unique grassland species.

The Nature Conservancy completed threatened and endangered plant surveys for the USACE Master Plan in 1987. Several candidate plants species were documented and since that time two of these candidate species have been federally listed as threatened or endangered: Bradshaw's lomatium (*Lomatium bradshawii*, endangered) and Willamette daisy (*Erigerons decumbens*, endangered). These plant species are considered Strategy Species as defined in the Oregon Conservation Strategy.

Description of Management Units

The FRWA is divided into seven separate management units that correspond all or in part with USACE named project units. The boundaries of the management units are based on physical, administrative, and operational characteristics.

East Coyote Unit

The East Coyote Unit encompasses approximately 390 acres and is located at the southeast corner of Fern Ridge Lake. Highway 126 forms the north boundary. Direct

access is provided via parking lots on the east off Nielson Road and on the south off Cantrell Road. A nature trail head is located on the SW corner of the unit adjacent to Coyote Creek. The unit consists of low and flat floodplains and streamcut terraces along Coyote Creek, which creates its western boundary. This unit is one of three intensively managed units on the wildlife area. In 1979 a series of diked impoundments were constructed with associated water control structures, pumps, and pipelines that would allow for flooding and irrigation.

The majority of the East Coyote Unit is under a moist soil management regime. When the wildlife area management program was intensified in 1980, approximately 400 acres of wildlife food crops were planted, with a significant portion planted in the East Coyote Unit. Cropland acres were converted to moist soil management in recent years with 30 to 50 acres of wildlife foodcrops planted each year in all units combined. Crop locations are selected annually on a rotational basis, consisting of sudangrass (*Sorghum bicolor*), millet (*Panicum miliaceum*), corn (*Zea mays* ssp. *mays*), sunflowers (*Helianthus annuus*), and/or wild rice (*Zizania aquatica*). All field preparation, planting, irrigation, and tending is done by Department staff and all harvest is done by wildlife, with no sharecrop or commercial farming. Irrigation is required to produce a successful corn crop in this soil type and climate. "Big-gun" high pressure irrigation machines are used during the summer to irrigate crops as dictated by weather conditions and rainfall. Sudangrass and millet fields are planted as separate stands or as a 50/50 seed mix. Wild rice is managed on a several-year rotation basis relying on water management, natural seed production and self-regeneration.

The East Coyote Unit is located in the very aggressive Coyote Creek floodplain. Each winter, one to seven high water events can be expected during which the entire unit is flooded to diketop level or higher. During these brief flood periods, adjacent county roads are under water for approximately three miles as well as flooding of several hundred acres of adjacent private farmland. The flood events are generally triggered by periods of sustained rainfall and take from three days to three weeks for water levels to moderate to normal. The high water flows and periods of 100% inundation of the unit have a detrimental impact on subsequent late season food availability for waterfowl.

Soils in this unit are primarily Natroy silty clay loam with small areas of Noti, Veneta, and Linslaw loam and silty clay loam. The soils show high clay content with characteristic slow percolation. These soils are associated with a high water table, well suited for wetland habitat management and challenging for agricultural operations. The moist soil impoundments are managed to provide a combination of semi-permanent and seasonal wetlands. A combination of early and late summer drawdown prescriptions are used with the intent of fostering a green zone of desirable vegetation as the field water levels recede.

Expected plant species response under this drawdown scenario vary based on interval of periodic soil disturbance by disking or plowing. Desirable and dominant plant species colonizing the fields under this hydrologic regime include barnyard grass (*Echinochloa crus-galli*) also known as wild millet, smartweed (*Polygonum* sp.), American slough

grass (*Beckmannia syzigachne*), beggarticks (*Bidens* sp.), water foxtail (*Alopecurus geniculatus*), and water plantain (*Alisma plantago-aquatica*).

Dike areas and field borders contain native wet low prairie plant species including tufted hairgrass (*Deschampsia caespitosa*) that support upland game birds and ground-nesting birds. The mature oak and ash woodland along Coyote creek provides a seasonally wet woodland component to buffer the unit on the west.

West Coyote Unit

The West Coyote Unit encompasses 469 acres and is located at the south end of the lake. Hwy 126 forms the unit's north boundary. Cantrell Road borders on the south, private land on the west, and Coyote Creek on the east. As with the East Coyote Unit, a portion of this area is managed intensively for waterfowl via a series of impoundments and associated water control structures, pumps, and pipelines.

This unit contains a balance of habitat types evenly split between woodlands, prairie grasslands, and managed wetland impoundments. Dense riparian vegetation consisting of deciduous trees and woody shrubs grow along Coyote Creek on the east and a gradual inclined woodland to the west. Lowland and upland grasses fringe the forested sections including some areas of native wet lowland prairie. Near the center of the unit lie three impoundments that were constructed in 1979 to facilitate waterfowl management. A fourth 107 acre impoundment bordering the northern portion of the unit was completed in 2005.

This unit is managed in concert with the East Coyote Unit using the same general water management techniques outlined above for moist soil management, seasonal marsh, and annual foodcrop planting. A combination of marsh conditions are maintained in the impoundments with a variable season drawdown scenario employed to maintain a 50/50 vegetation and open water hemi-marsh condition. Wild rice has been established in periodic rotation with cropland plantings that are managed with on a rotational basis generally planted 50% to corn, sudangrass, and/or millet, with a productive understory of moist soil plants serving as a secondary crop.

Although adjacent to Coyote Creek, this unit is not subject to the frequent and intense floods that occur in the East Coyote Unit. Soil types are the same as listed for the East Coyote Unit and contain high clay content well suited for wetland management.

Fisher Butte Unit

The Fisher Butte Unit encompasses 1,128 acres and is located near the southeast corner of Fern Ridge Lake. Highway 126 forms the south boundary and provides direct vehicle access via a 25 space parking area. Royal Avenue borders the unit on the north and provides access by a parking area at the wildlife area boundary. Private property borders the unit to the east and Fern Ridge Lake forms the western boundary. The unit consists of flat floodplain along Coyote Creek sloping gently upward to the east.

This unit is one of three intensively managed units on the wildlife area. Beginning in

1979, construction of a series of diked impoundments was initiated. The first phase of construction involved building a 40-acre impoundment and installation of approximately 8,000 feet of underground pipeline with a pumpstation and electric service. In 1982 three additional impoundments were constructed with spillways and flashboard riser water control structures. These four impoundments allowed water management capability on 155 acres of wetland habitat.

Completed in 2000, the most recent additions (Impoundments 5 and 6) added 320 acres of wetland habitat to the area. These last two impoundments were constructed within the lake inundation zone in an extensive reed canarygrass marsh. Current management efforts in these impoundments focus on disking, water level control, and other treatments to reduce canarygrass and promote native wetland vegetation.

During the 1980s wildlife food crops were planted on a rotational basis in portions of impoundments 1 through 4. Conversion of cropland to moist soil management was initiated in the early 1990s and cropland was reduced to portions of the 40-acre field (#1) in the south end of the unit. Currently all impoundments are managed for moist soil plant species in conjunction with control of reed canarygrass. During the drought of 1987, Fern Ridge Lake did not fill to full pool and upper portions of the Fisher Butte Unit were dry. This provided opportunity for access by heavy equipment to construct more than 40 ponds and potholes with shallow interconnecting waterways. This project provided openings in the expansive canarygrass flats for nesting and brood habitat, wintering waterfowl, and hunter access.

Soils in the Fisher Butte Unit, above full pool elevation, consist of Natroy, Dayton, Pengra, and Linslaw loam and silty clay loams, all of which have favorable properties for wetland management. The higher slopes adjacent to Fisher Butte include Hazelaire silty clay loam, Ritner cobbly silty clay loam, and Witzel very cobbly loam.

The western portion of the unit contains low marshlands and woodlands along the Coyote Creek channel. The marshlands consist of submergent or emergent vegetation interspersed with small potholes. Above the lake pool, the unit is vegetated by upland and lowland grasses. A 60-acre parcel on the southeast portion of the unit is wet low prairie designated as RNA. The site contains populations of endangered Willamette daisy and threatened Bradshaw's desert parsley. Tufted hairgrass (*Deschampsia caespitosa*) is also present at the site.

Royal-Amazon Unit

The Royal-Amazon Unit encompasses 901 acres and is located along the east shoreline of the lake. Access to the shoreline is available at Amazon Channel (private) at the north end of the unit, and at Royal Avenue at the south end. A parking area is located at the western end of Royal Avenue at the wildlife area boundary. Gibson Island is accessible only by boat or by foot during drawdown periods.

The wetlands are vegetated with emergent grasses; hence water-related recreation is limited to fishing, wildlife viewing, hunting, trapping, or slow-speed boating activities.

The difficult access and expansive nature of this marsh unit contribute favorably to the wildlife habitat values.

The unit consists primarily of large areas of emergent aquatic plants along the shoreline and surrounding Gibson Island. Within the emergent plant zone are numerous small potholes of open water. Upland areas consist of upland grasses fringed by lowland wet prairie grasses. Gibson Island consists of upland grasses, fringed by woody shrubs and small groves of coniferous and deciduous trees. Non-native invasive blackberries have created a perimeter barrier along many sections of the island.

The eastern portion of the Royal Amazon Unit has been designated as an RNA. The RNA contains excellent examples of native tufted hairgrass bottomland prairie with mounds dominated by native forbs and introduced grasses. This prairie area is extremely unusual in that it appears to have some mounded prairie or mima mounds, a habitat type known from the gravel outwash plains of the Puget Trough in Washington, from the Central Valleys of California and southern Oregon, and from eastern Oregon, but not formerly known from the Willamette Valley. This habitat has some very unusual plants and lichens growing including a blueberry species (*Vaccinium myrtillus*) which usually occurs in subalpine and montane areas, early blue violet (*Viola adunca*), common at the coast, and the reindeer lichen (*Clydina*) which is common on coastal dunes.

A low water winter marsh was developed in 2001, in the unit on the south side of Gibson Island. During summer months at lake full pool, the dike impoundment is under approximately five feet of water. In the winter, when the lake is drawn down to low pool level, a restored historic roadbed serves as a dike to impound over 80 acres of shallow water ideal for waterfowl, wading birds, shorebirds, and furbearers. The roadbed serves as an access route to Gibson Island for hunters, trappers, hikers, and birdwatchers. A second similar low water winter marsh impoundment to the east of Gibson Island was completed in 2005.

Soils of the unit are diverse. Below full pool elevation, the unit is covered primarily by Natroy, Noti, Veneta, and Linslaw loam and silty clay loam soil. The eastern part of the unit above full pool contains Dayton, Pengra, and Salkum soils. Dayton silt loam occupies level stream terraces and drainageways. The soils range from heavy clay with ponding tendencies to deep well drained soils on alluvial terraces.

Amazon Dike #2 Unit

The Amazon Dike #2 unit is located at the northeast corner of the lake. The principal feature is Dike #2, which prevents the lake from flowing onto low lying lands to the northeast. Amazon Channel forms the south boundary of the unit and Shore Lane forms the north boundary. In addition to Shore Lane, public access can be obtained via a short public access easement off of Green Oaks Lane. Direct access to the remainder of the unit is only available via lake access or by crossing private roads or lands.

The unit is designated for wildlife management use by the USACE Master Plan with activities focused on maintenance of existing habitat for upland game and waterfowl. The unit consists of 445 acres, with 207 acres under license to the Department for wildlife management. License area portions of the unit consist of water area vegetated with emergent marsh plants. Soils in the unit consist of Noti, Nekoma, Natroy, Salkum, Dayton, and Linslaw loams and silty clay loams. Adjacent water areas to the west of the unit are also under license to the Department and are managed to support waterfowl. The unit supports low-density, dispersed recreation including hunting, fishing and wildlife viewing.

In addition to the USACE property, a 37 acre parcel of grassland on the east side of Amazon Dike #2 is owned by the Department. The property consists of approximately 37 acres that was conveyed to the Oregon Game Commission by quitclaim deed in 1952 under Public Law 537 for the public benefit of wildlife conservation. The parcel has habitat consisting primarily of native grasses including prairie-type plants and native rose hedges along the perimeter which provide food and cover for wildlife. A compliance inspection is conducted on the property in five year intervals by the General Services Administration to verify use in accordance with the conveyance documents. The most recent compliance inspection was conducted on May 18, 2006 with conclusions that the site is being utilized in accordance with the Department's application and deed.

Applegate Unit

The Applegate Unit encompasses 807 acres and is located along the lake's southwest shoreline where the Long Tom River channels enter Fern Ridge Lake. The unit is a low-lying, mostly forested terraced flood plain. Primary access to the unit is afforded by a parking lot on Territorial Road between Veneta and Elmira. The parking area also provides canoe access to the Long Tom River and the Long Tom Nature Trail. A small parking lot is located on Territorial Road at the north edge of Elmira that provides access to the northern section of the unit. A secondary remote access is also provided on the west side of the unit off of Moyer Lane.

The thick jungle-like habitat of the woodlands along the old and new channels of the Long Tom River are nearly impenetrable and serve well as wildlife habitat and sanctuary. Several clearings and grasslands are maintained as prairie to prevent encroachment by shrubs and woody vegetation. The lands around the unit are characterized by relatively rapid urban development with much of the unit bordered by rural residences and Elmira Middle School.

Oak, ash, conifer, and black cottonwood woodlands border the Long Tom River. The original "old channel" of the Long Tom River snakes through a thick woodland with many deep pools and oxbows filled with woody debris favoring species such as western pond turtles. Large areas of submerged and/or emergent aquatic vegetation grow on the lakeside edge. Soil types include Noti, Linslaw, Veneta, Salkum, McBee, Wapato, and Dayton. Wetland characteristics of the soils favor ponding and support of wetland plant communities.

South Marsh Unit

The South Marsh Unit encompasses 325 acres, is located on the south end of Fern Ridge Lake and is bisected by Highway 126. The unit encompasses inundated and upland areas along the unnamed Coyote Creek tributary to the west of Perkins Peninsula. The unit is bordered by private land on all sides with the exception of the NE quarter that transitions into the lake. There is a wildlife viewing area parking lot pull-off along Highway 126, however there is no safe public access into the southern portion of the unit from the highway.

Wetlands and adjacent upland areas are primarily passively managed to preserve valuable wetland, grassland, and woodland habitat. Southern borders of the unit have been fenced to prevent grazing encroachments.

Soils above the full pool elevation include Veneta, Noti, and Linslaw loam and silty clay loam. Vegetation consists primarily of submerged and/or emergent aquatic plants at the south end of Fern Ridge Lake on either side of Highway 126. The fringes of those wetlands are surrounded by a combination of upland grasses, lowland grasses, deciduous trees, coniferous trees, and woody shrubs. Management emphasis on the terrestrial southern portion of the unit has centered on control of invasive non-native Scotch broom and maintaining open meadow areas by mowing and brush removal. An access road and creek crossing were established in 2005 that provided equipment access for a western pond turtle habitat enhancement project. The road and crossing will facilitate equipment access for future habitat improvements.

Biological Resources

Currently 344 species of wildlife have been documented on the FRWA, including 252 species of birds, 49 species of mammals, 18 species of fish, and 25 species of amphibians and reptiles. **Appendix B** provides wildlife species lists for birds, mammals, reptiles, amphibians and fish.

Birds

Birds are the most dominant wildlife component at Fern Ridge in terms of both number of species and individuals. Waterfowl compose one of the major species complexes and populations have increased significantly over the past 25 years in direct response to wetland habitat management activities. Many of the management activities and habitat improvement projects designed for waterfowl have provided auxiliary benefit for shorebirds, rails, gulls, herons, pelicans, eagles, osprey, and purple martins. Forested tracts provide habitat for many nongame species and contribute substantially to the overall wildlife value of the area. Raptors are quite common on the wildlife area in direct response to the diversity of habitats, concentrations of prey species, and lower disturbance on wildlife area lands relative to surrounding developed areas. Upland gamebirds are present on the wildlife area in limited numbers commensurate with the availability of suitable nesting habitat and access to larger scale blocks of associated unfragmented grassland habitats. The presence of rather unique species to interior western Oregon are well represented at Fern Ridge (e.g. yellow-headed blackbirds, white tailed kites, bald eagle, black terns, black necked stilts, red-shouldered hawks).

Waterfowl

Fern Ridge Lake provides 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*), ringnecked duck (*Aythya collaris*), bufflehead (*Bucephala albeola*), wood duck (*Aix sponsa*), canvasback (*Aythya valisineria*) and redhead (*Aythya americana*). Also present on the area in representative numbers are common merganser (*Mergus merganser*).

Seven subspecies of Canada geese are found on the FRWA 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 documented on the area include the Aleutian Canada goose (*Branta canadensis leucopareia*) and Vancouver Canada goose (*Branta canadensis fulva*).

An overall increase in wintering geese in the Willamette Valley has resulted in a corresponding increase of geese wintering in the vicinity of Fern Ridge Lake. During the past few years, between November and April, a night roost population has established on the lake frequently exceeding 25,000 geese. The majority of the birds depart at daybreak to forage on surrounding fields or exchange with federal wildlife refuges further north in the valley.

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

Although primarily important as wintering habitat, the near-shore uplands, lakebed, and impoundment marshes also provide breeding habitat for Canada goose, wood duck, mallard, cinnamon teal (*Anas cyanoptera*), and occasionally for ruddy duck (*Oxyura jamaicensis*) and bluewinged teal (*Anas discors*). Breeding redhead ducks have become more common in recent years.

Marsh Breeding Birds

Marsh bird species breeding at Fern Ridge Wildlife Area include pied-billed grebe (*Podilymbus podiceps*), western grebe (*Aechmophorus occidentalis*), Clarks grebe (*Aechmophorus clarkii*), American bittern (*Botaurus lentiginosus*), Virginia rail (*Rallus limicola*), sora (*Porzana carolina*), American coot (*Fulica americana*), black tern (*Chlidonias niger*) and more recently, the black-necked stilt (*Himantopus mexicanus*), Wilson's snipe (*Gallinago gallinago*), and Wilson's phalarope (*Phalaropus tricolor*).

An estimated 25 pair of black terns breed at Fern Ridge Lake and are often observed

in the East Coyote Unit and along the southeastern part of the Fisher Butte Unit. The terns arrive in early May, and nest in loose colonies on floating platforms of hardstem bulrush, cattail, sedge, and rush species present in the marsh.

During recent years a flock of up to 40 American white pelicans (*Pelecanus erythrorhynchos*) have established summer residence at Fern Ridge. The birds utilize the lake and flooded impoundments to forage and rest. Although this is not yet a documented breeding colony, historic records indicate pelicans once nested at Fern Ridge Lake.

Shorebirds

Fern Ridge Lake provides essential habitat for many species of shorebirds throughout the year. 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 numbers of species such as western sandpiper (*Calidris mauri*). During certain times of year, thousands of shorebirds can be found at Fern Ridge, including wintering dunlin (*Calidris alpina*) flocks numbering up to 20,000 birds. Fern Ridge was designated an Important Bird Area by the National Audubon Society partly because of the shorebird habitat it provides.

Eleven species of shorebirds are found in good numbers at Fern Ridge Lake at various times of the year. These include black-bellied plover (*Pluvialis squatarola*), semipalmated plover (*Charadrius semipalmatus*), killdeer (*Charadrius vociferous*), greater yellowlegs (*Tringa melanoleuca*), spotted sandpiper (*Actitis macularia*), Western sandpiper, least sandpiper (*Calidris minutilla*), dunlin, long-billed dowitcher (*Limnodromus scolopaceus*) and Wilson's snipe. Six more regularly occurring species found in low numbers include black-necked stilt, solitary sandpiper, Baird's sandpiper (*Calidris bairdii*), pectoral sandpiper (*Calidris melanotos*), Wilson's phalarope, and red necked phalarope (*Phalaropus lobatus*). An additional 14 species of rare or accidental shorebirds have been documented and include American golden-plover (*Pluvialis dominica*), western snowy plover (*Charadrius alexandrinus nivosus*), American avocet (*Recurvirostra americana*), willet (*Catoptrophorus semipalmatus*), whimbrel (*Numenius phaeopus*), long-billed curlew (*Numenius americanus*), marbled godwit (*Limosa fedoa*), sanderling (*Calidris alba*), semipalmated sandpiper (*Calidris pusilla*), sharp-tailed sandpiper (*Calidris acuminata*), stilt sandpiper (*Calidris himantopus*), ruff (*Philomachus pugnax*), short-billed dowitcher (*Limnodromus griseus*), and red phalarope (*Phalaropus fulicarius*).

During winter, the extensive mudflats created at low pool provide habitat for several species, including killdeer, long-billed dowitcher, least sandpiper, and tens of thousands of dunlin. Smaller numbers of greater yellowlegs, black-bellied plover, and western sandpiper are present through the winter months.

Beginning in late March and continuing until early June, spring migrants congregate around the edges of the lake and marshy areas in the Fisher Butte, and East and West

Coyote units. Several species remain to breed, including killdeer, black-necked stilt, Wilson's snipe, and Wilson's phalarope.

Receding water levels in late July, August, September, and early October provide constant fresh habitat as new mudflats surface, mostly around the southern and eastern edges of the lake. Usually the water level does not start dropping quickly until September, so shorebird habitat is somewhat limited until then. The shoreline near Gibson Island, the area adjacent to Highway 126 east of Perkins Peninsula, and managed impoundments have the highest shorebird use during fall. As fall migration tapers off in October, shorebird diversity subsides and the wintering species return. Peregrine falcons (*Falco peregrinus*) and merlin (*Falco columbarius*) take advantage of the shorebird migration and are frequently seen hunting the mudflats in September and October.

Upland Birds

Upland birds at the FRWA primarily include ring-necked pheasant (*Phasianus colchicus*) and California quail (*Callipepla californica*) while mountain quail (*Oreortyx pictus*), ruffed grouse (*Bonasa umbellus*), and blue grouse (*Dendragapus obscurus*) have been infrequently documented in upland habitats.

A small resident breeding population of pheasants occurs on the area and since 1990, approximately 1,000 rooster pheasants have been released annually on the wildlife area for the Western Oregon Fee Pheasant Hunt Program. Prior to this time, occasional releases of hens and roosters to bolster native 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 on the wildlife area and around project lands in upland and shrub/scrub habitats.

Mammals

A variety of mammals inhabit the woodlands, grasslands, and marsh habitats of the wildlife area, including black-tailed deer, rabbits, squirrels, coyote, fox, porcupine, skunk, woodrats, weasel, shrews, voles, beaver, otter, and mink. Black-tailed deer are the principal resident big game species, with occasional sightings of bear, elk and cougar.

Small rodents are found in the drier, grassy areas of the project while larger mammals, such as raccoons (*Procyon lotor*) and opossums (*Didelphis virginianus*) inhabit the upland and transition zones between the upland and wetland habitats. Non-native nutria (*Myocastor coypus*) is present on the area and is considered to be a nuisance species because of its tendency to damage dikes and levees by burrowing. Trapping has been successfully used to control nutria and populations are at minimal levels compared to the past. The Fern Ridge project also provides foraging and roosting habitat for several bat species.

Amphibians and Reptiles

Amphibian and reptile species present include northwestern salamander (*Ambystoma macrodactylum*), Pacific treefrog (*Hyla regilla*), non-native bullfrog (*Rana pretiosa*), roughskin newt (*Taricha granulosa*), western fence lizard (*Sceloporus occidentalis*), western skink (*Eumeces skiltonianus*), rubber boa (*Charina bottae*), racer (*Coluber constrictor*), gopher snake (*Pituophis melanoleucus*), ring-necked snake (*Diadophis punctatus*), and garter snakes (*Thamnophis* spp.). The wildlife area supports large populations of two federal species of concern, northwestern pond turtles (*Clemmys marmorata marmorata*), and the northern red-legged frog (*Rana aurora*).

Fish

The shallow, warm water of Fern Ridge Lake provides an environment suitable to warm water fish. Fish access to the full lake habitat and emergent vegetation zone is limited to the summer months when the lake is maintained at full pool. During winter months, the 9,000 acre reservoir is reduced to an approximately 1500 acre winter pool devoid of significant fish habitat structure. Elevated summer water temperatures with low dissolved oxygen, high turbidity, and large water level fluctuations combine to reduce water quality thus limiting potential for salmonids. Cutthroat trout (*Oncorhynchus clarki*) native to the Long Tom River system appear to be an exception. Following construction of the dam, a unique adfluvial cutthroat trout population developed in the upper Long Tom River. The population was historically fluvial prior to dam construction, but now makes spawning runs upstream and out of the reservoir during late summer each year. These migrants are often greater than 12 inches in length and retain a silver coloration similar to searun cutthroat trout. In addition to cutthroat trout other native fish include largescale sucker (*Catostomus macroscheilus*), sculpin (*Cottus* spp.), northern pikeminnow (*Ptychocheilus oregonensis*), and redbay shiner (*Richardsonius balteatus*).

Fern Ridge Lake supports 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*), yellow bullhead (*Ictalurus natalis*), common carp (*Cyprinus carpio*), largemouth bass (*Micropterus salmoides*), warmmouth bass (*Lepomis gulosus*), western mosquitofish (*Gambusia affinis*), pumpkinseed (*Lepomis gibbosus*) and goldfish (*Carassius auratus*).

Species of Conservation Concern

Federally-listed species that occur at FRWA or in close proximity include Bradshaw's lomatium (*Lomatium bradshawii*), Willamette Valley daisy (*Erigeron decumbens*), Fender's blue butterfly (*Icaricia icarioides fenderi*), bald eagle (*Haliaeetus leucocephalus*) and Kincaid's lupine (*Lupinus sulphureus kincaidii*).

Fender's blue butterfly and Kincaid's lupine are present on uplands adjacent to the lake. Two small populations of Fenders blue butterfly occupy stands of Kincaid's lupine in the Shore Lane Management Unit, on both the east and west side of Shore Lane Road. Bradshaw's lomatium and Willamette Valley daisy are present on managed wet prairie sites adjacent to the lake.

Bald eagles use Fern Ridge Lake year-round, foraging primarily on fish and waterfowl. Breeding eagle pairs have historically nested on the Fern Ridge project with the last documented successful bald eagle nest occurring in the mid-1980s. Nesting attempts have been initiated during recent years, however there are currently no active successful nests on the area. Eagles roost and forage on the wildlife area and lake generally in proportion to food availability. In 2004, a record 67 bald eagles were documented around the lake for several weeks during a large die-off of goldfish due to a cold-water related disease outbreak.

There also are several federal species of concern, including black tern (*Chlidonias niger*), purple martin (*Progne subis*), yellow-breasted chat (*Icteria virens*), acorn woodpecker (*Melanerpes formicivorus*), Lewis woodpecker (*Melanerpes lewis*), Oregon vesper sparrow (*Pooecetes gyramineus*), long-eared bat (*Myotis evotis*), Yuma myotis (*Myotis yumanensis*), fringed myotis (*M. thysanodes*), northwestern pond turtle (*Emys marmorata marmorata*), and northern red-legged frog (*Rana aurora aurora*).

Table 2 lists all of the endangered, threatened, and candidate species associated with Fern Ridge Wildlife Area and the lake project.

In response to the documented presence of listed plant species, Research Natural Areas were established by USACE in several grassland parcels to protect these unique valley prairie communities and to conduct botanical research and observation.

Native wet lowland prairie habitats remaining around Fern Ridge Lake support a number of forbs that are candidates for State or Federal designation. Of significant note are Bradshaw's lomatium (endangered), Willamette daisy (endangered) and Kincaid's lupine (threatened) which are regional endemics. Once common to the Willamette Valley prairie, these plants now exist only at a few known sites in the southern Willamette Valley. One federal Candidate plant species, timwort (*Microcala quadrangularis*) and several Federal Species of Concern occur in the same lowland prairie habitats, including white-topped aster (*Aster curtis*), Hitchcock's blue-eyed grass (*Sisyrinchium hitchcockii*) and thin-leaved peavine (*Lathyrus holochlorus*).

Diverse native plant communities are established at Fern Ridge Lake with many occurrences of unique habitats just in or out of the jurisdictional overlap of wildlife area license boundary. For example on the face of Fern Ridge dam species typical of the local wet prairie thrive. These include masses of camas (*Camassia quamash*) and abundant Oregon saxifrage (*Saxifraga oregano*), dwarf checkermallow (*Sidalcea virgata*), and meadow checkermallow (*Sidalcea campestris*). Other native species such as bigleaf lupine (*Lupinus polyphyllus*) contribute to the ecological diversity and importance of these sites. While none of these species are listed as threatened, endangered, or sensitive by agencies or conservation groups, they are all characteristic of the endangered Willamette Valley wet prairie. Several of the species are important nectar sources for the endangered Fender's blue butterfly. The presence of specific habitat blocks that support these species are important as well as surrounding habitats that, while not presently containing these species, provide buffer and potential for

expansion of the populations.

The plant and animal species described in this section have also been defined as Strategy Species in the Oregon Conservation Strategy. This strategy describes many conservation activities which can be implemented to contribute to the overall conservation of these species. Many of the habitat management actions which already take place on the FRWA benefit these Strategy species.

Table 2. Federal or State-listed Endangered, Threatened, Candidate and Species of Concern animals and plants potentially present on the Fern Ridge Wildlife Area.

(Federal Status: C–Candidate; E–Endangered; SC–Species of Concern; T–Threatened
State Status: C – Critical; E – Endangered; T – Threatened; S – Sensitive V – Vulnerable)

Common Name	Scientific Name	Federal Status	State Status
Bald eagle	<i>Haliaeetus leucocephalus</i>	T	T
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	T	T
Streaked horned lark	<i>Eremophila alpestris strigata</i>	C	C
Northern goshawk	<i>Accipiter gentilis</i>	SC	C
Black tern	<i>Chlidonias niger</i>	SC	-
Band-tailed pigeon	<i>Columba fasciata</i>	SC	-
Olive-sided flycatcher	<i>Contopus borealis</i>	SC	V
Yellow-breasted chat	<i>Icteria virens</i>	SC	C
Acorn woodpecker	<i>Melanerpes formicivorus</i>	SC	-
Lewis' woodpecker	<i>Melanerpes lewis</i>	SC	C
Oregon vesper sparrow	<i>Poocetes gyramineus</i>	SC	C
Purple martin	<i>Progne subis</i>	SC	C
Camas pocket gopher	<i>Thomomys bulbivorus</i>	SC	-
Long-eared myotis	<i>Myotis evotis</i>	SC	-
Fringed myotis	<i>Myotis thysanodes</i>	SC	V
Long-legged myotis	<i>Myotis volans</i>	SC	V
Yuma myotis	<i>Myotis yumanensis</i>	SC	V
Northwestern pond turtle	<i>Emys marmorata marmorata</i>	SC	C
Northern red-legged frog	<i>Rana aurora aurora</i>	SC	V
Fender's blue butterfly	<i>Icaricia icarioides fenderi</i>	E	-
Bradshaw's lomatium	<i>Lomatium bradshawii</i>	E	E
Willamette Valley daisy	<i>Erigeron decumbens</i>	E	E
Kincaid's lupine	<i>Lupinus sulphureus kincaidii</i>	T	T
Timwort	<i>Microcala quadrangularis</i>	C	-
White top aster	<i>Aster curtis</i>	SC	T
Shaggy horkelia	<i>Horkelia congesta</i>	SC	-
Thin-leaved peavine	<i>Lathyrus holochlorus</i>	SC	-
Hitchcock's blue-eyed grass	<i>Sisyrinchium hitchcockii</i>	SC	-

Non-Native Species

Non-native wildlife on the FRWA include nutria (*Myocastor coypus*), Virginia opossum (*Didelphis virginianus*), European starling (*Sturnus vulgaris*), house sparrow (*Passer*

domesticus) and bullfrog (*Rana catesbeiana*). An occasional wild turkey (*Meleagris gallopavo*) is sighted on the wildlife area, however populations are more prevalent on surrounding private lands. Ring necked pheasant and California quail are also resident on the wildlife area in relatively low numbers.

The most prolific non-native and invasive plant present in abundance at Fern Ridge is reed canarygrass. The thick sod mat created by the grass chokes out native vegetation and the build up of roots and stem mass eventually filling in open water areas of the wetlands. Research has been ongoing at Fern Ridge 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 large tracts of old growth reed canarygrass using mowing, repeated heavy disking, followed by deep water flooding.

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. Eurasian watermilfoil (*Myriophyllum spicatum*) has been observed in Fern Ridge Lake, Kirk Pond, and in the Long Tom River and Coyote Creek. This plant is a nuisance aquatic macrophyte which effectively out-competes other desirable plant species.

Monitoring

Monitoring of all management activities will be conducted by wildlife area staff in coordination with Department regional and headquarters staff and the USACE.

Wildlife

Wildlife population monitoring of various species consists of aerial census for waterfowl, inter-agency mid-winter waterfowl surveys, bald eagle surveys and cooperative marsh bird and neo-tropical species surveys. Monitoring of vegetation is also conducted to determine response to management techniques.

Fish

Fish populations will be monitored through creel checks and stream surveys by Oregon State Police (OSP) and Department staff. Monitoring will be conducted opportunistically and/or as scheduled by regional district fisheries personnel.

Wildlife Diseases

The Department coordinates with Lane County Department of Health with the testing of West Nile Virus on wildlife area lands.

The Department is currently testing waterfowl on the FRWA for Avian Influenza. This testing follows recently developed statewide and national testing protocols.

Although no wildlife disease outbreaks have recently occurred on the wildlife area, any wildlife which appear to be sick are sent to the Department's wildlife veterinarian for status determination and subsequent disease testing as necessary.

Water Use

Water use for irrigation, moist soil management, and flooding is monitored and documented according to water use reports submitted annually to the Department's Engineering Division and the Oregon Water Resources Department.

Water Quality

Water quality and quantity in Fern Ridge Lake and wildlife area impoundments varies between summer and winter. Water in the project area is strongly influenced by reservoir operation, which keeps water (pool) levels high in the summer with little fluctuation, and water levels low with large fluctuations in the winter. Turbidity increases in summer as recreational activities in the lake disturb clay sediments and as algae growth increases. Backwater portions of the Amazon channel and Coyote Creek have yielded high fecal *Coliform* counts due to urban and agricultural runoff. The high population of common carp, an introduced bottom-feeding fish, also contributes to high lake turbidity. High phosphorus and moderate nitrogen loads are contributed to the lake from the watershed via tributaries. Rooted wetland plants utilize some of these nutrients, helping to keep them out of the lake. Water quality declines in the winter, reflecting winter storm runoff. Suspended sediments, bacteria, and nutrients are substantially higher in the winter (Corps 1988). Inflow from the Long Tom River and tributaries on the west side of the lake are of higher water quality in comparison to more turbid inflow from Coyote Creek on the south and Amazon Creek on the east that flows through the city of Eugene.

Public Use

Public use is monitored by the Department via hunt permits.

In-house administrative monitoring activities include the following:

- Budget and fiscal monitoring by Department fiscal tracking and on-site real-time budget tracking program
- Project accomplishment monitoring and fiscal accountability via annual Federal Aid Plan and Reporting System.
- Wildlife area activity and accomplishment monitoring by completion and distribution of monthly reports.
- Monitoring of volunteer activity by tracking time and projects.
- Monitoring of equipment use and scheduled maintenance.

Cultural Resources

The Fern Ridge Lake area has a long history of human use. The peoples who inhabited the Upper Willamette Valley at the time of European settlement are collectively known as the Kalapuya. It is generally assumed that these Native Americans were descendants of the prehistoric people of the Upper Willamette Valley. The Chemala or Long Tom Band occupied an area west of Eugene including the drainage of the Long

Tom River. 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. Their descendants are included in the modern Confederated Tribes of the Grand Ronde. The travel route used by early explorers to access furs in the Umpqua Valley and northern California passed through now-inundated portions of the reservoir. Settlers homesteaded along the travel route, and eventually the area was converted to agriculture.

A number of cultural resource surveys and archeological excavations have been conducted within Fern Ridge project including wildlife area licensed lands. The project area was visited by members of the River Basin Surveys prior to 1930 (Strong et al. 1930). Field crews from the University of Oregon surveyed the eastern shoreline (Minor, 1978) and the rest of the project was surveyed in the early 1980s (Cheatham, 1984, 1988). During these surveys the lake level appears to have been between elevation 353 and 360 feet. Over 119 archeological sites were recorded within the Fern Ridge project boundaries. Over 80 known prehistoric sites spanning 8,000 years of prehistory and a dozen sites with historic components are located within the pool. There has been at least one find of a Clovis point within the fluctuation of the operating pool that may date back 10,000 years. The 1980s archeological work included archeological excavations at Kirk Park, Perkins Peninsula, and Hannavan Creek to determine site areas and evaluate site significance. Additional surveys were conducted along the Long Tom drainage (Toepel, 1985) and the lower reaches of Amazon Creek (Oetting, 1995).

The USACE is the lead agency responsible for monitoring and protecting project lands as well as known sites of archeological significance. Licensed wildlife area lands are afforded protection according to federal regulations. All of the sites within the project boundaries including wildlife area lands could be considered potentially eligible for the National Register of Historic Places.

Social Environment

Demographics

The FRWA is located west of the Eugene/Springfield metropolitan area, in Lane County, approximately 50 miles from the Oregon Coast.

The Eugene/Springfield metropolitan area is growing rapidly. Urban development is spreading outward at a steady pace from the city into outlying rural areas. Eugene's population is approximately 148,595 residents, with a gain of 2,435 residents in the past year. Springfield added 1,200 people during the last year to its current size of 57,055 while Veneta grew by 285 citizens. Lane County's population grew by 1.1% during 2006 with the overall state growth calculated at 1.6%.

Land Use

Agriculture and grazing remain the prominent uses of the area surrounding Fern Ridge Lake, although rural residential uses are steadily displacing agrarian uses. Small

acreage farms and urban commuter ranches are increasingly being developed towards the wildlife area boundary. Eugene Airport is located within five miles and the towns of Veneta and Elmira border the wildlife area on the south. Bureau of Land Management and City of Eugene in association with The Nature Conservancy have attained jurisdictional purview of several hundred acres of predominantly wetland habitat collectively referred to as the West Eugene Wetlands. Property within the USACE Fern Ridge Project boundary that is not within the Department's license provides an adjacent resource buffer for wildlife, habitat and open space protection.

Figure 3 shows the land uses surrounding the Fern Ridge Wildlife Area.

Infrastructure

Developments/Facilities

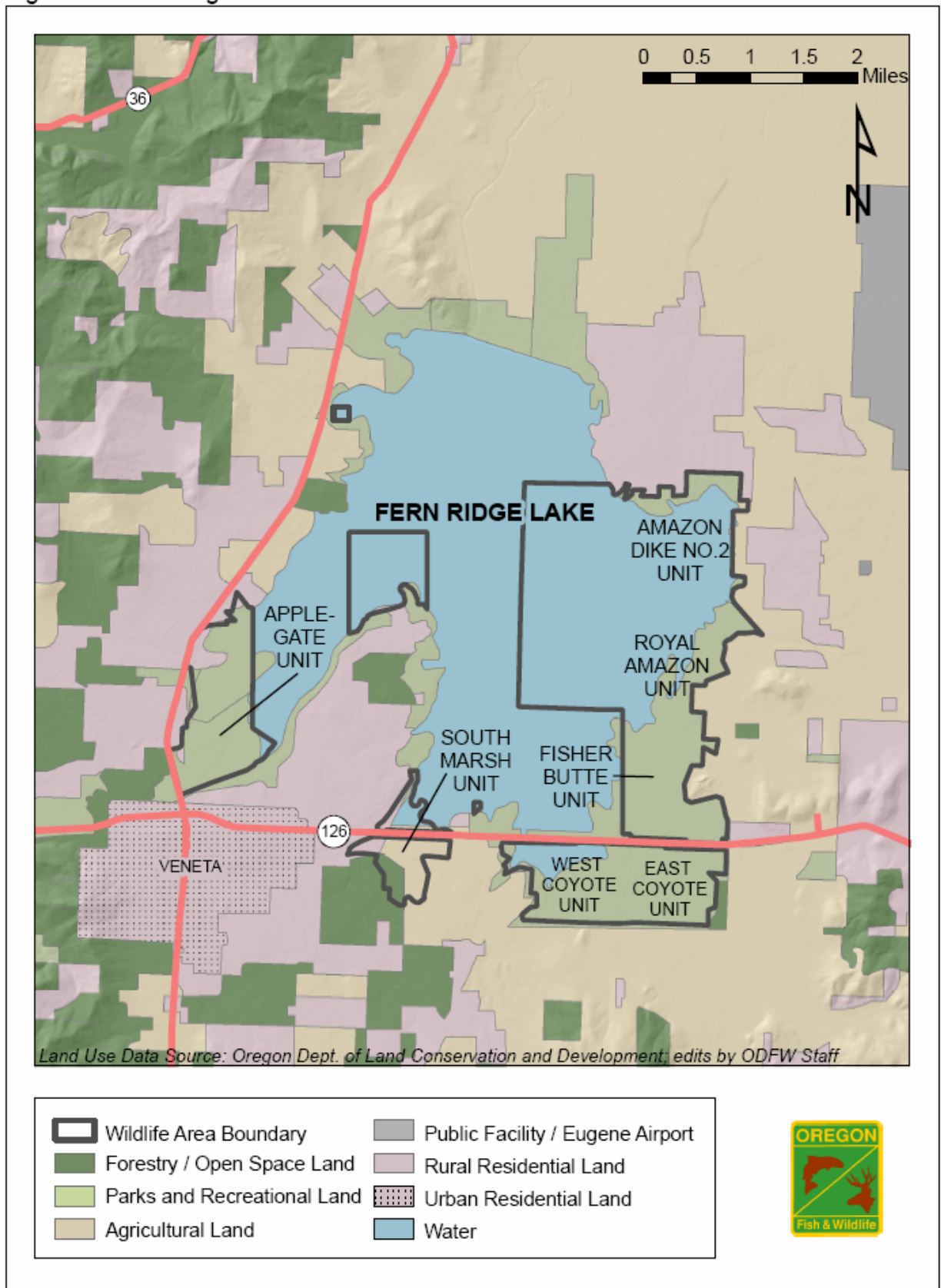
Beginning in 1979, the Department launched a four phase development program at Fern Ridge with the goal of improving waterfowl distribution in the southern Willamette Valley. A series of impoundments were constructed over several years that would provide infrastructure needed to intensively manage wetlands. Pumps and pipelines were installed and provisions were made to plant foodcrops for wildlife and to manage wetland habitats within the water control impoundments. Combined with initially restrictive regulations, waterfowl numbers increased in direct response to the provision of food, water, and sanctuary. Continuing management efforts have provided stable wintering and year-round populations of waterfowl as well as providing habitat benefits for a variety of wildlife species.

The wildlife area headquarters site development was initiated in 1983. Prior to this time, wildlife area habitat management activities were completed as part of the Department's Northwest Region Habitat Program using a crew based out of the Department's Corvallis office. A headquarters building, a manager's residence, and storage buildings were constructed along with associated roadways, landscaping, and utility infrastructure. The wildlife area headquarters is located at 26969 Cantrell Road on the south border of the wildlife area. Public access to the wildlife area is readily available by adjacent access from state Highway 126 along with a series of secondary county roadways that provide access around the perimeter of the lake. Twelve parking areas have been developed at various locations around the wildlife area. Nature trails are available for foot traffic in the East Coyote, West Coyote, Fisher Butte, and Applegate units as well as wildlife viewing areas in the South Marsh and Fisher Butte units. Canoe access sites are available for Coyote Creek, the Long Tom River and Fern Ridge Lake. Numerous other access points are available around the Fern Ridge Project via county roads, parks, picnic areas, and lake boating access sites.

Water Rights

Water rights for the FRWA are administered through the U.S. Department of Interior, Bureau of Reclamation under a Willamette Basin Project Water Service Contract (#1-07-10-W0414). This contract was executed October 1, 1981 between the

Figure 3 - Fern Ridge Wildlife Area Land Use



Department and the Federal government to provide up to 559 acre-feet of Project water for the irrigation of 260 acres. The contract was amended on February 25, 1982 to reflect a correction and addition to the legal description of lands to receive water and an additional point of diversion.

A second amendment was executed on April 27, 1983 to reflect a correction to the legal description and the amounts of lands to be irrigated. A third amendment was executed on June 11, 1984 to include additional lands to receive irrigation water service. As a result, 487.8 acres are eligible to receive, not to exceed, 1,048.77 acre-feet of stored water annually under the contract. Water use is monitored by wildlife area staff and reported annually to Department Engineering Division and Oregon Department of Water Resources.

Easements/Access Agreements

There are no outstanding easements or leases binding on wildlife area lands or operations.

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 or endangered 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.).

At the current time no land acquisitions are planned. However lands adjacent to or within current wildlife area boundaries that may become available and would enhance FRWA operations or management capabilities will be considered on an individual basis.

Public Use

Public Access

The majority (85%) of FRWA remains open to all public access year-round. Seasonal access restrictions are in place on four units to protect wintering waterfowl. Visitor use of the wildlife area is difficult to accurately quantify because of the large number of public access sites available around the wildlife area and lake project. The USACE estimates over 800,000 visitor use days at Fern Ridge Lake annually. Boaters, hikers, birdwatchers, anglers, trappers and hunters often cross wildlife area license lands in the

course of general project visitation. A self-service hunter permit program is in effect in four units to document hunting activity on the most heavily used portion of the wildlife area. This provides baseline data for monitoring hunter participation and harvest. However it does not capture the full spectrum of recreational use of the wildlife area.

Hunting, Trapping and Angling

All lands owned or controlled by the Department and USACE in and around Fern Ridge Lake are open to hunting during all authorized game bird and game mammal seasons according to the restrictions described below for specific units. The area is closed to all goose hunting after the September Canada goose season.

Daily hunt permits are required for hunting the East Coyote, West Coyote, Fisher Butte, and Royal-Amazon units (23% of lake project area). Permits are free and are available at five self-service check stations located at designated access points. It is estimated that approximately 6,000 visitor use days annually are attributed to the various hunting opportunities provided on the area.

Hunt programs occurring on the wildlife area include the following:

- Western Oregon Deer Season (Shotgun and Archery)
- Mourning Dove Season
- September Canada Goose season (Fern Ridge area closed to goose hunting during other Western Oregon goose seasons)
- September Youth Upland Game Bird Hunt Program
- Western Oregon Fee Pheasant Hunt Program
- Western Oregon General Pheasant Season
- Duck Season
- Reservation Waterfowl Hunt – East & West Coyote units
- Youth Waterfowl Hunt Days

The entire FRWA and reservoir are open to hunting during all authorized seasons between March 15 and the week prior to the start of duck season.

Hunting regulations for FRWA were modified beginning with the 2006-07 season to provide increased periods of sanctuary during duck season at which time seasonal access restrictions apply to four units. The majority of the area including Fern Ridge Lake remains open seven days per week for hunting during all authorized seasons.

Four units (East and West Coyote, Fisher Butte, and Royal-Amazon) are closed to public access for approximately a week between the end of the Western Oregon Fee Pheasant Hunt Program and the start of duck season to provide sanctuary for waterfowl.

Concurrent with duck season, the Fisher Butte and Royal-Amazon units are open to hunting seven days per week until 1pm for hunting with a 2pm closure for public access. The exception is Royal Avenue and the trail to the Fisher Butte Unit viewing platform which remains open daily and is not subject to the 2pm closure.

Concurrent with duck season the East and West Coyote units are only open on Mon-Wed-Sat. until 1pm for the Reservation Waterfowl Hunt Program.

Concurrent with duck season the Kirk Park and Fern Ridge Dam unit are open seven days per week for public access with hunting allowed on Sat-Sun-Wed. and holidays.

From the end of duck season until March 14 the East and West Coyote, Fisher Butte, and Royal-Amazon units remain closed except for Saturdays, when birdwatching and non-firearm recreation is allowed.

Wildlife Viewing

The USACE estimates 800,000 visitor days annually to Fern Ridge Lake. A sizeable percentage of these visitors benefits from direct access or proximity to the wildlife area.

Wildlife viewing on the area is estimated based on random counts of individuals at popular viewing sites, at checkstations, and informal interviews of users and is estimated to be approximately 6,000 visitor use days annually.

Educational/Interpretive

Local schools use the wildlife area for various classroom activities and field trips. Department personnel participate to the extent possible and provide accommodation and access as compatible with wildlife protection and other ongoing public use activities on the wildlife area. Student intern and cooperative education programs are administered by FRWA staff involving students and institutions ranging from elementary school through the university level. Internship programs have been implemented through Lane Community College, University of Oregon, and Oregon State University to provide resource based field experience for college level students. Real-life work experiences have been provided in conjunction with academic coursework to better orient students to careers in wildlife management.

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 meet an objective.

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

Objective 1.1: Manage habitats and infrastructure capable of supporting 2.25 million waterfowl use days annually.

Rationale

Fern Ridge Wildlife Area and associated lake habitats represent the largest attractant for waterfowl in the southern Willamette Valley. The area is well suited to support resident and migratory waterfowl and has developed into a significant supportive component of the Pacific Flyway in western Oregon. The area is primarily managed to support wintering waterfowl with a secondary emphasis of managing for breeding waterfowl. Moist soil management techniques will be used to develop seasonal and semi-permanent wetland habitats capable of supporting waterfowl on a year-round basis.

Strategy 1. Maintain infrastructure including 16 miles of earthen levees, 29 overflow/drain culverts and flashboard risers, 12 rock spillways, and five miles of water channels on 900 acres of wetland habitat within 22 separate impoundments. Work will include using heavy equipment to stabilize erosion damage, replace rusted and leaking culverts, replace and repair flashboard riser structures, grade dike tops, mow vegetation, and grade eroded quarry at rock overflow spillways.

Strategy 2. Maintain infrastructure necessary for water delivery for flood and irrigation purposes including three pump houses, two pump sites, five screened pump intakes, and 3.5 miles of underground PVC flood and irrigation pipelines. Work will include mechanical maintenance of pumps and associated electric service, underground pipeline repair, and maintenance of outlet structures.

Strategy 3. Plant and maintain up to 180 acres of traditional food plots (corn, sudangrass, millet, sunflowers, wild rice, and other small grains) annually as a food crop for waterfowl use. Work will include soil preparation, planting, and irrigation of food crops.

Strategy 4. Utilize moist soil management in all impoundment areas to foster growth of native wetland plant species. Work will entail periodic soil disturbance on an annual or longer term interval using disking, plowing, or in combination with agricultural practices on a rotational basis as a vegetation setback mechanism.

Strategy 5. Manage water levels and vegetation necessary to attract and support waterfowl and to provide accessibility to food source, cover, and resting areas.

Strategy 6. Monitor and maintain water channels, lake area, and marsh shoreline areas for optimum watershed function, brood habitat, passage access, drainage, and flow accessibility to pumps and intakes. Grade drop-cut erosion on creek banks to stabilize erosion and reduce sediment runoff.

Strategy 7. Utilize mowing, disking, flooding, herbicides, or controlled burning to control reed canary grass.

Objective 2.1: Maintain or enhance all wildlife area habitats (5,010 acres) for state and federally listed threatened, endangered, and sensitive species.

Rationale

FRWA diverse habitats and large size provide ample opportunity for a variety of wildlife use in the southern Willamette valley. The location and relationship to other important habitats such as Finley, Basket Slough and Ankeny National Wildlife Refuges make it a critical link in ensuring the protection and longevity of a wide variety of wildlife species. Many of the strategies listed below also benefit Strategy species as defined in the 2006 Oregon Conservation Strategy.

Strategy 1. Provide protective measures that prevent degradation or exploitation of wildlife area habitats. Work will include maintaining boundary fencing, limiting vehicle access, and preventing resource extraction.

Strategy 2. Provide sanctuary for wildlife species by maintaining and enhancing suitable habitats capable of supporting indigenous and migratory wildlife species. Work will include disking, agricultural planting and water level management to foster establishment of high quality vegetation and implementing seasonal access restrictions to protect wildlife resources.

Strategy 3. Coordinate all wildlife area habitat management activities to ensure regulatory compliance and prevent adverse impacts to threatened, endangered, and sensitive plant and animal species. This scope of work will be accomplished by considering needs of all affected species while planning and implementing field management processes and public use programs.

Objective 2.2: Provide protection for historic critical remnant Willamette Valley habitats including wetlands, uplands, wet low prairie, shrub/scrub, oak savannah, riparian, and forest.

Rationale

Wildlife habitat in the Willamette Valley has been significantly impacted since the advent of modern agriculture and urbanization. Few remnant parcels of native habitat remain valley wide, yet a significant portion of these irreplaceable habitats are present around Fern Ridge Lake. Protective measures and sound stewardship processes are imperative for continued presence and health of these habitat types and the wildlife species they support. As previously mentioned, these native habitat types are defined as Strategy Habitats in the Oregon Conservation Strategy and as such are considered to be of highest priority for implementation of conservation activities.

Strategy 1. In cooperation with USACE, manage designated Research Natural Area wet low prairie sites by maintaining fences, vegetation monitoring and control (tree, shrub and reed canarygrass removal), maintenance of firebreaks, use of controlled burns and by natural drainage protection and/or enhancement.

Strategy 2: Control invasive plant and animal species utilizing agricultural management techniques that enhance and restore native habitats including disking, planting, mowing, and nuisance trapping of exotic species (nutria).

Strategy 3. Monitor and control noxious weeds on wildlife area lands according to state and federal guidelines. Work will include pesticide applications and mechanical control.

Strategy 4. Establish partnerships with other resource protection entities to ensure long term sound stewardship of sensitive and unique species and habitats as described in the Oregon Conservation Strategy and federal species recovery plans. Potential partners for exchange of technical expertise and resources include Oregon State University, The Nature Conservancy, USFWS, Ducks Unlimited, USACE, and Bureau of Land Management.

Strategy 5. Seek partnerships and cooperative funding from USACE and other agencies to benefit threatened, endangered and sensitive plant and animal species.

Objective 2.3: Maintain and enhance 900 acres of managed impoundments and 1,863 acres of wetland habitats that consist of seasonal marsh, emergent and submergent lakeshore vegetation, and adjoining open water lake areas.

Rationale

Management of the wildlife area emphasizes waterfowl however the habitat development and enhancement processes provide collateral benefits for a wide variety of other wildlife. Bird life is particularly rich on the wildlife area with over 250 species of birds using the area at some point in their lifecycle. Shorebirds, wading birds, and raptors in addition to furbearers, reptiles, amphibians, and big game benefit from and are dependent upon maintained wetland habitats.

Strategy 1. Integrate impoundment management planning into overall operations to provide habitats for all indigenous and migratory wildlife species. Planning efforts will factor in potential bird movement patterns and habitat interconnectivity to maximize management effectiveness.

Strategy 2. Monitor and maintain water channels, lake area, and marsh shoreline areas for breeding and nesting habitat, access, drainage, and flow accessibility to pumps and intakes. Work will include vegetation removal, mechanical maintenance of drainageways and streambanks, planting, and photo monitoring.

Strategy 3. Stabilize stream bank vegetation and slope to prevent erosion and reduce sediment runoff. Work will include mechanically grading erosion areas to restore gradual slopes followed by planting to maintain stability.

Strategy 4: Maintain wildlife protection in lake and surrounding marsh habitats by recommending enforcement measures for resource protection including power boat restrictions, watercraft speed limits, area regulation posting, and education outreach. Work will include ongoing enforcement coordination with USACE, Oregon State Police and Lane County Sheriffs office personnel.

Objective 2.4: Maintain 865 acres of upland and 369 acres of lowland grasses annually emphasizing protection and enhancement of native prairie grasslands.

Rationale

The protection and enhancement of native grasslands in the Willamette Valley is particularly important because of the scarcity of this historic low wet prairie. Realizing that FRWA still has remnant native parcels of these habitat types in addition to other upland and wet prairie sites makes their protection and enhancement critical as future management options are considered.

Strategy 1. Mow dikes and field areas for access, maintenance, reed canarygrass control, and native grassland restoration.

Strategy 2. Implement grassland restoration techniques including controlled burning and planting to enhance habitat vigor and plant species diversity.

Strategy 3. Maintain fences and regulate livestock access to sensitive grassland habitats.

Objective 2.5: Maintain 813 acres of woodland and shrub/scrub habitat annually for benefit of indigenous and migratory wildlife species.

Rationale

Protection and enhancement of riparian corridors, woodland and shrub habitats is essential for providing cover, food and breeding sites for a variety of terrestrial and aquatic species commonly frequenting the area. Recognizing the values of these critical habitat types is important in prioritizing management practices to enhance conditions for these wildlife species.

Strategy 1. Provide protection on woodland habitats by maintaining 15 miles of fence to exclude livestock.

Strategy 2. Maintain interconnected blocks of woodland and shrub habitats to reduce habitat fragmentation and maintain integrity of riparian vegetation corridors. This will be achieved by maintaining woodland habitats at existing levels and preventing exploitive removal of resources.

Strategy 3. Plant and establish trees and shrubs for increased habitat value, bank stabilization and erosion control along Coyote Creek and Long Tom River.

Strategy 4. Maintain habitat quality and diversity by controlling invasive plant species and encouraging establishment of native species. Work will include mowing, herbicide application, and overseeding to restore native grasslands.

Objective 2.6: Maintain and enhance wildlife area facilities, structures, and equipment used to conduct habitat management and public use projects on the wildlife area.

Rationale

Facilities, structures, and equipment are integral to the overall operation of the FRWA. The infrastructure and equipment must be maintained and kept in good working condition to accomplish habitat and wildlife management projects and to provide public use opportunities.

Strategy 1. Maintain headquarters facilities including six buildings, one residence and associated utility infrastructure. Work will include carpentry and repair work, improvement of storage in headquarters shop building, landscape maintenance, and general facility structural maintenance and improvement.

Strategy 2, Conduct annual inventories and maintain operational integrity of facilities, structures, equipment and vehicles. Work will include scheduled maintenance of all equipment and vehicles and completing repair and upgrades as needed.

Strategy 3. Operate and maintain fish screens on irrigation ditches annually by maintaining screen structures at pump intakes.

Strategy 4. Continue irrigation and water management practices within authorization of FRWA water rights and according to annual water usage reporting requirements.

Strategy 5. Maintain structures for wildlife including osprey nest poles/platforms, waterfowl nest structures, songbird houses, bat houses, and establishment of purple martin nest colonies. Work will include construction and installation of species specific structures and maintenance by annual inspection and replacement as needed.

Objective 3.1. Manage habitats and facilities capable of providing 6,000 hunter visitor use days annually in a manner compatible with resource protection objectives.

Rationale

The close proximity to the growing Eugene and Springfield metropolitan area increases the importance of protecting and managing this area for wildlife use while providing a destination for hunters. As the amount of public access and wildlife habitat decreases in the southern Willamette Valley, the wildlife area continues to provide hunting opportunities and aesthetic benefits that are very important for preserving the hunting legacy for future generations of the citizens of this state

Strategy 1. Administer hunt programs that include archery/shotgun deer, mourning dove, snipe, pheasant, quail, grouse, youth upland bird hunting, Western Oregon Fee Pheasant hunt and waterfowl hunting (September Canada goose, general duck season, youth waterfowl hunt, and reservation waterfowl hunt program).

Strategy 2. Maintain two miles of roads, 12 parking areas, signs, three information kiosks, five hunter checkstations, five miles of nature trails, 15 miles of fence, two wildlife viewing areas, three canoe access sites, and other public access sites.

Strategy 3. Conduct waterfowl census and monitor wildlife population levels, distribution, and use patterns. Maintain database for comparative analysis. Conduct periodic wildlife surveys including mid-winter waterfowl survey, annual bald eagle survey, dusky Canada goose surveys, and other Department/USFWS coordinated inventories.

Strategy 4. Expand internship programs with colleges and universities to support education, management, inventory, and monitoring needs.

Strategy 5. Collaborate with Department staff to balance hunting opportunities and public use with wildlife needs on wildlife area lands.

Strategy 6. Continue to provide access and area information to the public through brochures, maps, signage and hunting regulation booklets.

Strategy 7. Evaluate the potential for improving disabled hunting access.

Strategy 8. Continue hunter permit system for tracking hunter use and success on the wildlife area.

Objective 3.2: Manage habitats and facilities capable of providing 6,000 education/interpretation visitor use days annually in a manner compatible with resource protection objectives.

Rationale

The mission of the Department calls for Oregon's wildlife to be "managed to prevent serious depletion of any indigenous species and to provide the optimum recreational and aesthetic benefits for present and future generations of the citizens of this state."

Recreational activities such as wildlife viewing and natural resource educational opportunities are highly sought out by the general public. To meet this demand management actions on the FRWA are designed to provide public use opportunities and provide a “living classroom” for teachers, students, civic groups and others when such activities are compatible with the primary goal of the wildlife area. A permit system is currently in place to monitor hunter use on the wildlife area and the USACE currently monitors public use of the entire Fern Ridge Lake project (approximately 800,000 visitor use days annually). Non-consumptive use by the public specifically on the FRWA has been difficult to determine; therefore area staff will develop methods to estimate visitor use days.

Strategy 1. Evaluate possibilities for expanding internship programs with colleges and universities to support education, recreation, inventory, and monitoring needs. Place particular emphasis on documenting existing and potential habitats for threatened, endangered, and sensitive wildlife.

Strategy 2. Maintain web page with wildlife area information, maps, bird checklist, viewing opportunities, regulations, and species backgrounders.

Strategy 3. Maintain interpretive kiosks and post wildlife area identification boundary and regulatory signs.

Strategy 4. Provide access, guidance, and support for educational institutions including schools, civic groups, conservation entities and state/federal agencies.

Strategy 5. Collaborate with local community educational organizations and the USACE to develop interpretive displays, information kiosks, and signing highlighting wildlife management principles and unique features of the wildlife area.

Strategy 6. Seek alternative funding to establish short-range radio transmitter to provide the public with current wildlife area information.

Strategy 7: Develop process to monitor wildlife area public use. Methodology will be developed for the wildlife area portion of Fern Ridge Lake to more accurately document public use including angling, boating, hiking, birdwatching, hiking, and other outdoor pursuits.

Plan Implementation

Funding

Since its inception in 1959, funding for the operation and maintenance of the FRWA has been accomplished through an annual federal grant under the Federal Aid to Wildlife Restoration (WR) 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. Funding for WR is derived from a federal excise tax on the sale of firearms, ammunition, and archery equipment. Funding is then apportioned to states based on a mathematical formula of area of the state in square miles (50%) and total number of hunting licenses sold annually (50%). Under the program no state may receive more than 5%, nor less than 0.5% of the total money available.

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 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.

Over the past five years, funding for the operation and maintenance of the FRWA has averaged approximately \$200,000 annually. To implement many of the management actions and achieve the objectives and goals of this management plan, the Department will need additional funding and staff to undertake the following types of projects: upgrades of existing facilities, construction of new facilities or amenities (orientation kiosks and interpretive signs), and species and habitat monitoring.

Staffing/Organization

In total, the Department manages 15 major wildlife areas statewide. The wildlife areas encompass approximately 200,000 acres and are found in all four Department administrative regions; the Fern Ridge Wildlife Area is located in the Northwestern Region.

The wildlife area is staffed by two full time employees and one five-month seasonal Fish and Wildlife Technician 1. A dedicated and reliable volunteer crew has been contributing to wildlife area operations for over 10 years. On an average year, over 4,000 hours of additional labor and support are provided by this capable team of sportsmen and wildlife supporters.

Compliance Requirements

This management plan was developed to comply with all Federal and State laws, Oregon Revised Statutes (ORSs), Oregon Administrative Rules (OARs), and Department policies. Full implementation of all components of this plan will require compliance with the laws, regulations, rules, and policies listed in **Appendix C**.

Partnerships

A number of other state, federal, and local agencies and interest groups assist with management activities on the FRWA. These partners play an important role helping the Department achieve its mission and the FRWA 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 that provide new opportunities for existing or new partners. There is a great potential for more public participation and assistance in the management of the wildlife area given its proximity to the Eugene/Springfield metropolitan area. The Department welcomes and encourages more public participation in the administration of the wildlife area.

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 adapt 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 monitored to assess whether the desired effects on wildlife and habitat components have been achieved.

Plan Amendment and Revision

Wildlife area management plans are meant to evolve with each individual area, and as such each plan will be formally revisited after five years and updated 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 results of the adaptive management program. 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 due to increased 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.

Appendices

**Appendix A. Plant Species Known
to Occur on the Fern Ridge Wildlife Area.**

Conifer Trees

Ponderosa pine (*Pinus ponderosa*) grand fir (*Abies grandis*)
Douglas fir (*Pseudotsuga menziesii*)

Deciduous Trees

big-leaf maple (*Acer macrophyllum*) Oregon ash (*Fraxinus latifolia*)
black cottonwood (*Populus trichocarpa*) red alder (*Alnus rubra*)
Oregon white oak (*Quercus garryana*)

Shrubs

blackberry (*Rubus armeniacus*)
rose (*Rosa* spp.)
hawthorn (*Crataegus douglasii*)

Forbs

bulrush (*Scirpus acutus*) beggarticks (*Bidens* sp.)
cattail (*Typha latifolia*) water foxtail (*Alopecurus geniculatus*)
spikerush (*Eleocharis* spp.) water plantain (*Alisma plantago-*
aquatica)
sedges (*Carex* spp.) timwort (*Microcala quadrangularis*)
tapered rush (*Juncus acuminatus*) white-topped aster (*Aster curtis*)
Wapato (*Sagittaria latifolia*) thin-leaved peavine (*Lathyrus*
holochlorus)
smartweed (*Polygonum lapathifolium*) camas (*Camassia quamash*)
birdsfoot trefoil (*Lotus corniculatus*) Oregon saxifrage (*Saxifraga oregano*)
speedwell (*Veronica scutellata*) dwarf checkermallow (*Sidalcea virgata*)
self-heal (*Prunella vulgaris*) meadow checkermallow (*Sidalcea*
campestris)
field mint (*Mentha arvensis*) bigleaf lupine (*Lupinus polyphyllus*)
barnyard grass or wild millet
(*Echinochloa crus-galli*)
smartweed (*Polygonum* sp.)

Grasses

alkali grass (*Puccinellia* spp.),
American slough grass (*Beckmannia*
syzigachne) reed canarygrass (*Phalaris*
arundinaceae)
bentgrass (*Agrostis exarata*) ryegrass (*Elymus* spp.)
brome (*Bromus* spp.) tufted hairgrass (*Deschampsia*
caespitosa)
fescue (*Festuca* spp.) Hitchcock's blue-eyed grass (*Sisyrinchium*
hitchcockii)
hairgrass (*Deschampsia caespitosa*)
reed grass (*Phragmites australis*)

**Appendix B. Wildlife Species Known to Occur
on the Fern Ridge Wildlife Area.**

Birds

Key to monthly abundance	
H =	Common to abundant
M =	Uncommon to common
L =	Rare to uncommon
O =	Occasional, not found every year
I =	individual records of short duration
I* =	Individual records of long duration
*	Indicates species known to breed on the Fern Ridge Wildlife Area
(*)	Indicates species suspected of breeding on the Fern Ridge Wildlife Area

Birds	MONTH											
	J	F	M	A	M	J	J	A	S	O	N	D
Red-throated loon	O	O								O	O	
Pacific loon												I
Common loon	O	O	O	O	O		I			O	O	O
Pied-billed grebe*	H	H	H	H	H	H	H	H	H	H	H	H
Horned grebe	L	L	L	L						L	L	L
Red-necked grebe	I	I										I
Eared grebe				O	O					O	O	
Western grebe	H	H	H	H	L	O	O	O	L	H	H	H
Leach's storm-petrel												I
American white pelican					I				I	I	I	I
Double-crested cormorant	H	H	M	L	L	L	L	L	L	M	H	H
American bittern*	H	H	H	H	H	H	H	H	H	H	H	H
Least bittern						I						
Great blue heron (*)	H	H	M	M	M	M	M	M	M	H	H	H
Great egret	M	M	L	O	O	O	O	L	M	M	H	M
Green-backed heron (*)	O	O	O	O	L	L	L	L	L	L	O	O
Black-crowned night-heron						I		I		I		
Tundra swan	M	M	L							L	M	M
Greater white-fronted goose	O	O	O	M	L			L	M	M	L	O
Snow goose		I		I					I	I	I	I
Canada goose*	M	M	H	H	M	L	L	L	L	M	M	M
Wood duck*	L	L	M	H	H	H	H	H	H	M	L	L
Green-winged teal	H	H	H	H	M			L	M	H	H	H
Mallard*	H	H	H	H	M	M	M	M	M	H	H	H
Northern pintail	H	H	H	M	L	I		L	M	H	H	H
Blue-winged teal (*)				O	M	L	O	O	O	O	O	O
Cinnamon teal*	O	O	M	H	H	M	L	L	M	L	L	O
Northern shoveler	H	H	H	H	M		L	L	M	H	H	H
Gadwall	M	M	M	M	L					M	M	M
Eurasian wigeon	O	O	O							O	O	O
American wigeon	H	H	H	M	L			O	L	H	H	H

Birds	J	F	M	A	M	J	J	A	S	O	N	D
Canvasback	L	L	L	L		I				L	L	L
Redhead	O	O	O	O						O	O	O
Ring-necked duck	M	M	M	L						L	M	M
Greater scaup	M	M	M	L						L	M	M
Lesser scaup	M	M	M	L						L	M	M
Surf Scoter												I
White-winged scoter											I	
Common goldeneye	O	O	O	I							O	O
Bufflehead	M	M	M	L						L	M	M
Hooded merganser	L	L	L							L	L	L
Common merganser	M	M	L							L	M	M
Red-breasted merganser	O	O	O	I						O	O	O
Ruddy duck	M	M	M	L						L	M	M
Turkey vulture		L	H	H	H	H	H	H	H	M	L	O
Osprey*			L	M	M	M	M	M	M	L		
Black-shouldered kite	M	L	L	O		I		O	O	L	M	M
Bald eagle*	L	L	L	L	L	L	L	L	L	L	L	L
Northern harrier*	H	H	H	H	H	M	M	M	H	H	H	H
Sharp-shinned hawk (*)	M	M	M	M	L	L	L	L	L	M	M	M
Cooper's hawk (*)	L	L	L	L	L	O	O	O	O	L	L	L
Northern goshawk	O	O	O	O						O	O	O
Red-shouldered hawk	L	L	L				O	O	O	O	L	L
Swainson's hawk				I								
Red-tailed hawk*	H	H	H	M	M	M	M	M	H	H	H	H
Rough-legged hawk	L	L	L							L	L	L
American kestrel*	H	H	H	M	L	L	L	L	M	H	H	H
Merlin	L	L	L	L						L	L	L
Peregrine falcon	O	O	O	O						O	O	O
Gyr Falcon	O											O
Prairie falcon	O	O	O							O	O	O
Ring-necked pheasant*	M	M	M	M	M	M	M	M	M	M	M	M
Blue grouse				I								
Ruffed grouse (*)	L	L	L	L	L	L	L	L	L	L	L	L
California Quail*	M	M	M	M	M	M	M	M	M	M	M	M
Mountain Quail (*)	L	L	L	L	L	L	L	L	L	L	L	L
Virginia rail*	M	M	M	H	H	H	H	H	H	M	M	M
Sora*				M	M	M	M	M	M	M		
American coot*	H	H	H	M	M	M	M	M	M	H	H	H
Sandhill crane		O	O	O						O	O	I
Black-bellied plover	L	O	O	O	O					L	M	L
Lesser golden-plover										O	O	O
Snowy plover				L	L			L	L	L		
Semipalmated plover												
Killdeer*	H	H	H	M	M	M	M	M	M	H	H	H
Black-necked stilt				O								
American avocet				I						I		
Greater yellowlegs	L	L	M	H	M	O	O	L	M	M	M	L

Birds	MONTH											
	J	F	M	A	M	J	J	A	S	O	N	D
Lesser yellowlegs				O	O			L	L			
Solitary sandpiper				O	O			O	O			
Spotted sandpiper (*)	O	O	O	O	M	L	O	L	M	L	O	O
Whimbrel					I	I		I	I			
Long-billed curlew				I		I			I*			
Marbled godwit											I	
Sanderling				I	I			O	O		I	
Semipalmated sandpiper								I	I			
Western sandpiper	O	O	O	M	L		L	M	M	M	O	O
Least sandpiper	M	M	M	M	L		L	M	M	M	M	M
Baird's sandpiper								L	L			
Pectoral Sandpiper								O	O	L		
Sharp-tailed sandpiper										I		
Dunlin	H	H	H	H	L				L	M	H	H
Stilt sandpiper									I			
Short-billed dowitcher					I			L	L			
Long-billed dowitcher	M	M	M	M	O		L	M	M	M	M	M
Common snipe*	H	H	H	H	H	M	L	L	M	H	H	H
Wilson's phalarope					O	O						
Red-necked phalarope				O	O			O	O	O		
Red phalarope										O	O	
Pomarine jaeger											I	
Parasitic jaeger									I*	I	I	
Long-tailed jaeger									I*	I	I	
Franklin's gull							O	O	O	O	O	
Bonaparte's gull		I			O	O	I		I	M	H	O
Heermann's gull										I	I	
Mew gull	M	M	L							L	M	M
Ring-billed gull	H	H	H	M	L	L	M	M	M	M	M	M
California gull	M	M	M	M	L	L	M	M	M	H	H	M
Herring gull	M	M	L							M	M	M
Thayer's gull	L	L	L							L	L	L
Western gull	O	O									O	O
Glaucous-winged gull	M	M	L	O	O	O	O	O	O	M	M	M
Glaucous gull												I
Black-legged kittiwake										I	I	I
Sabine's gull									I	I	I	
Caspian tern					L	L	L	L	L			
Common tern									O	O	I	
Forster's tern					O	O	O	O	O			
Black tern					O	O						
Rock dove*	M	M	M	M	M	M	M	M	M	M	M	M
Band-tailed pigeon*	O	O	O	M	M	M	M	M	M	L	O	O
Mourning dove*	M	M	H	H	H	H	H	H	H	H	M	M
Common barn-owl*	H	H	H	M	M	M	M	M	M	H	H	H
Western screech-owl*	H	H	H	H	H	H	H	H	H	H	H	H
Great horned owl*	H	H	H	H	H	H	H	H	H	H	H	H

Birds	MONTH											
	J	F	M	A	M	J	J	A	S	O	N	D
Snowy owl												I
Northern pygmy-owl	O	O	O							O	O	O
Burrowing owl			I									I
Long-eared owl	O	O	O							O	O	O
Short-eared owl*	L	L	L	O	O	O	O	O	O	L	L	L
Northern saw-whet owl*	H	H	H	L	L	L	L	L	L	H	H	H
Common nighthawk (*)					O	O	O	O	O			
Black swift					O				I			
Vaux's swift (*)				L	H	L	L	L	H	M		
Anna's hummingbird (*)	L	L	L	L	L	L	L	L	L	L	L	L
Rufous hummingbird *		O	L	H	H	M	M	M	L			
Belted kingfisher*	M	M	M	M	M	M	M	M	M	M	M	M
Lewis' woodpecker	O	O	O	O	O				O	O	O	O
Acorn woodpecker*	M	M	M	M	M	M	M	M	M	M	M	M
Red-breasted sapsucker*	M	M	M	M	L	L	L	L	L	M	M	M
Downy woodpecker*	H	H	H	H	H	H	H	H	H	H	H	H
Hairy woodpecker*	L	L	L	L	L	L	L	L	L	L	L	L
Northern flicker*	H	H	H	H	L	L	L	L	H	H	H	H
Pileated woodpecker*	L	L	L	L	L	L	L	L	L	L	L	L
Olive-sided flycatcher*				L	M	M	M	M	L			
Western wood-pewee*				L	M	H	H	M	L			
Willow flycatcher*				L	M	H	H	M	L			
Hammond's flycatcher				M	H	O	O	O	O			
Dusky flycatcher				I	I							
Western flycatcher*				M	H	H	H	M	L			
Ash-throated flycatcher					I				I			
Western kingbird*				L	M	L	L	L	L			
Eastern kingbird						O						
Horned lark (*)	O	O	O	O	O	O	O	O	O	O	O	O
Purple martin*				L	M	M	M	M	L			
Tree swallow*	L	M	H	H	H	H	H	H	M	L	L	L
Violet-green swallow*		O	M	H	H	H	H	H	M	L		
Northern rough-winged swallow*				L	M	M	L	L	L	L		
Bank swallow									I			
Cliff swallow*				L	M	H	H	H	M	L	O	
Barn swallow*				L	M	H	H	H	H	M		
Steller's jay*	M	M	M	L	L	L	L	L	L	M	M	M
Blue jay	I*	I*										
Scrub jay*	H	H	H	H	H	H	H	H	H	H	H	H
American crow*	H	H	H	H	H	H	H	H	H	H	H	H
Common raven	M	M	M	M	L	L	L	L	M	M	M	M
Black-capped chickadee*	H	H	H	H	H	H	H	H	H	H	H	H
Mountain chickadee	I											
Chestnut-backed chickadee*	M	M	M	M	M	M	M	M	M	M	M	M
Bushtit*	M	M	M	M	M	M	M	M	M	M	M	M
Red-breasted nuthatch*	M	M	M	M	M	M	M	M	M	M	M	M
White-breasted nuthatch*	M	M	M	M	M	M	M	M	M	M	M	M

Birds	MONTH											
	J	F	M	A	M	J	J	A	S	O	N	D
Brown creeper*	M	M	M	M	M	M	M	M	M	M	M	M
Rock wren				I								
Bewick's wren	H	H	H	H	H	H	H	H	H	H	H	H
House wren*				M	H	H	H	H	M			
Winter wren*	H	H	H	H	M	L	L	L	M	H	H	H
Marsh wren*	H	H	H	H	H	H	H	H	H	H	H	H
Golden-crowned kinglet*	H	H	H	H	M	M	M	M	M	H	H	H
Ruby-crowned kinglet	H	H	H	H	M				M	H	H	H
Western bluebird	O	O	O							O	O	O
Mountain bluebird				I								
Townsend's solitaire			O	O	O					O	O	O
Swainson's thrush*				L	H	H	H	H	H	L		
Hermit thrush	M	M	M	L	L					L	M	M
American robin*	H	H	H	H	H	H	H	H	H	H	H	H
Varied thrush	H	H	H	H					H	H	H	H
Wrentit*	M	M	M	M	M	M	M	M	M	M	M	M
Northern mockingbird	I				I							I
Sage thrasher				I		I						
Water pipit	M	M	M	H	L	O			M	H	H	M
Cedar waxwing*	I	I	I	I	H	H	H	H	H	M	I	I
Northern shrike	L	L	L		I					L	L	L
Loggerhead shrike		I	I									I
European starling*	H	H	H	H	H	H	H	H	H	H	H	H
Solitary vireo*				L	H	M	M	M	M			
Hutton's vireo*	M	M	M	M	M	M	M	M	M	M	M	M
Warbling vireo*				L	M	M	M	M	M			
Red-eyed vireo*						L	L					
Orange-crowned warbler*	O	O	O	H	H	H	H	H	M	L	O	O
Nashville warbler*				M	M	L	L	L	L			
Yellow warbler*				L	H	H	H	H	H	L		
Yellow-rumped warbler	M	M	M	H	M	O	O	O	M	H	M	M
Black-throated gray warbler*				M	H	H	H	H	M	L		
Townsend's warbler	L	L	L	M	M				L	L	L	L
Hermit warbler				O	O		I					
MacGillivray's warbler*				M	M	M	M	M	M			
Common yellowthroat	O		L	H	H	H	H	H	H	M	L	O
Wilson's warbler*				M	H	M	M	H	H	L		
Yellow-breasted chat*					L	M	M	M	L			
Western tanager*				L	H	M	M	M	M	L		
Black-headed grosbeak*				L	H	H	H	H	L			
Lazuli bunting				L	M	M	M	M	L			
Rufous-sided towhee*	H	H	H	H	H	H	H	H	H	H	H	H
American tree sparrow	I*	I*	I*								I*	I*
Chipping sparrow*	O	O	L	M	M	M	M	M	M	M	O	O
Brewer's sparrow					I		I*	I*	I*			
Vesper sparrow*				M	M	M	M	M	M	L	O	
Black-throated sparrow				I								

Birds	MONTH											
	J	F	M	A	M	J	J	A	S	O	N	D
Sage sparrow				I								
Lark bunting				I								
Savannah sparrow*	L	L	L	H	H	H	H	H	H	H	M	L
Grasshopper sparrow*						O	O	O				
Fox sparrow	H	H	M	L					L	M	H	H
Song sparrow*	H	H	H	H	H	H	H	H	H	H	H	H
Lincoln's sparrow	M	M	M	L	O				L	M	M	M
Swamp sparrow	O	O	O	O						O	O	O
White-throated sparrow	O	O	O	O	O					O	O	O
Golden-crowned sparrow	H	H	H	M	L				L	H	H	H
White-crowned sparrow*	H	H	H	H	H	M	M	M	M	H	H	H
Harris's sparrow	O	O	O	O	O						O	O
Dark-eyed junco*	H	H	H	H	M	M	M	M	M	H	H	H
Lapland longspur												I
Chestnut-collared longspur				I								
Snow bunting											I	
Bobolink					I				I			
Red-winged blackbird*	H	H	H	H	H	H	H	H	H	H	H	H
Western meadowlark*	M	M	M	M	M	M	M	M	M	M	M	M
Yellow-headed blackbird*				L	H	H	H	H	L			
Brewer's blackbird*	H	H	H	H	H	H	H	H	H	H	H	H
Brown-headed cowbird*	L	L	L	M	H	H	H	H	M	L	L	L
Northern oriole*				L	M	M	L	L	L			
Purple finch*	H	H	H	H	H	H	H	H	H	H	H	H
Cassin's finch	I											
House finch*	H	H	H	H	H	H	H	H	H	H	H	H
Red crossbill	O	O	O	O	O	O	O	O	O	O	O	O
Pine siskin*	M	M	M	H	H	M	M	M	M	M	M	M
Lesser goldfinch*	L	L	L	M	M	M	M	M	M	L	L	L
American goldfinch*	M	M	M	H	H	H	H	H	H	M	M	M
Evening grosbeak	O	O	O	H	H				O	O	O	O
House Sparrow	M	M	M	M	M	M	M	M	M	M	M	M

Mammals

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

Amphibians and Reptiles

Northwestern Salamander	<i>Ambystoma macrodactylum</i>	Northern Alligator Lizard	<i>Elgaria coerulea</i>
Ensatina	<i>Ensatina eschscholtzi</i>	Southern Alligator Lizard	<i>Elgaria multicarinata</i>
Dunn's Salamander	<i>Plethodon dunni</i>	Western Fence Lizard	<i>Sceloporus occidentalis</i>

West. Redback Salamander	<i>Plethodon vehiculum</i>	Western Skink	<i>Eumeces skiltonianus</i>
Roughskin Newt	<i>Taricha granulosa</i>	Rubber Boa	<i>Charina bottae</i>
Western Toad	<i>Bufo boreas</i>	Racer	<i>Coluber constrictor</i>
Pacific Treefrog	<i>Hyla regilla</i>	Sharptail Snake	<i>Contia tenuis</i>
Red-Legged Frog	<i>Rana aurora</i>	Ringneck Snake	<i>Diadophis punctatus</i>
Foothill Yellow-Legged Frog	<i>Rana boylei</i>	Gopher Snake	<i>Pituophis melanoleucus</i>
Bullfrog	<i>Rana catesbeiana</i>	W. Terrestrial Garter Snake	<i>Thamnophis elegans</i>
Spotted Frog	<i>Rana pretiosa</i>	Northwestern Garter Snake	<i>Thamnophis ordinoides</i>
Painted Turtle	<i>Chrysemys picta</i>	Common Garter Snake	<i>Thamnophis sirtalis</i>
Western Pond Turtle	<i>Clemmys marmorata</i>		

Fish

Cutthroat Trout	<i>Oncorhynchus clarki clarki</i>	Common Carp	<i>Cyprinus carpio</i>
Black Crappie	<i>Pomoxis nigro-annularis</i>	Dace	<i>Rhinichthys spp.</i>
White Crappie	<i>Pomoxis annularis</i>	Largescale Sucker	<i>Catostomus macrosheilus</i>
Bluegill	<i>Lepomis macrochirus</i>	Mosquitofish	<i>Gambusia affinis</i>
Largemouth Bass	<i>Micropterus salmoides</i>	Redside Shiner	<i>Richardsonius balteatus</i>
Warmmouth Bass	<i>Lepomis gulosus</i>	Sculpin	<i>Cottus spp.</i>
Pumpkinseed	<i>Lepomis gibbosus</i>	Northern Pikeminnow	<i>Ptychocheilus oregonensis</i>
Brown Bullhead	<i>Ictalurus nebulosus</i>	Goldfish	<i>Carassius auratus</i>
Yellow Bullhead	<i>Ictalurus natalis</i>		

Appendix C. Legal Obligations Influencing Management of the Fern Ridge 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

Army Corps of Engineers Regulation and Authorization

As the underlying landowner, the U.S. Army Corps of Engineers has adopted rules and regulations (CFR Title 36) that apply to all Fern Ridge project land and water areas. Federal Title 36 regulations for Parks, Forests, and Public Property apply as guidance to public use programs and developments of Corps water resource projects.

All activities undertaken by the Department on the Fern Ridge Wildlife Area must be compatible with the overall objectives listed in the Army Corps of Engineers' Master Plan and Title 36 regulations. The Master Plan provides many of the planning sideboards and constraints for goals, objectives, and implementation strategies listed in this plan.

Below are the sixteen lake-wide objectives from the USACE Master Plan:

1. Continue to safely and efficiently operate and maintain Fern Ridge Lake to provide the levels of flood control and downstream flow regulation for irrigation and navigation authorized by Congress.
2. Manage Fern Ridge Lake and develop and maintain access and support facilities to help fill existing and future needs for a diversity of boating and related water-dependent activities including power-boating, water skiing, sail-boating, sail-boarding, and boat fishing.
3. Develop and maintain project lands and facilities to help meet current and projected study area needs for day-use recreation activities including picnicking, swimming, fishing, sightseeing, hunting, and other activities.
4. Designate trail corridors and develop trails and support facilities to help meet future study area desires for walking and bicycling opportunities.
5. Provide opportunities and support facilities for low density dispersed recreation activities including hunting, fishing, birdwatching, canoeing, and other activities.
6. Maintain and manage Fern Ridge Lake's scenic resources in support of state and

county open space and visual resource management goals.

7. Maintain standards of water quality that protect water-contact recreation and warmwater fisheries.
8. Maintain and protect populations of candidate threatened or endangered plant species and establish Research Natural Areas to maintain viable unique valley prairie communities.
9. Maintain and manage supporting populations of unique, threatened, and/or endangered fish and wildlife species.
10. Manage Fern Ridge Lake habitat to maintain and sustain a population of waterfowl at a level of 2.25 million waterfowl use days.
11. Maintain and manage Fern Ridge Lake habitat to support black-tailed deer.
12. Maintain and manage wildlife habitat to ensure retention of species richness and diversity.
13. Maintain and manage habitat to promote self-sustaining populations of upland game birds including ring-necked pheasants, California quail, and mourning dove.
14. Maintain and manage fisheries habitat to support identified target species.
15. Protect and interpret cultural resources sites and materials.
16. Develop a lake-wide interpretive program to promote public understanding of Fern Ridge Lake's natural environment and its relationship to USACE role in development of Willamette Basin water resources.

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 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

635-008-0095 Fern Ridge Wildlife Area

Division 011 - Statewide Angling Regulations

635-011-0050 Procedure of Promulgation of Angling Regulations

635-011-0100 General Rule

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

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
- The Western Waterfowl Initiative
- The Western United States and Canada Cooperative Duck Banding Program
- The Pacific Flyway Fall and Winter Goose Surveys
- The Oregon Conservation Strategy
- Oregon Statewide Waterfowl Plan (Draft)

