

Medford Irrigation District Joint System Canal Modernization Project
Terrestrial Ecology, Wetlands, and Riparian Areas Technical Report

Prepared for

U.S. Department of Agriculture Natural Resources Conservation Service, Lead Federal Agency, in cooperation with the Medford Irrigation District

April 2025

Parametrix fca

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Acronyms and Abbreviations

BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
CFR	Code of Federal Regulations
CWA	Clean Water Act
DEQ	Oregon Department of Environmental Quality
DSL	Oregon Department of State Lands
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
IPaC	Information, Planning, and Consultation
JPA	joint permit application
JSC	Joint System Canal
JSWCD	Jackson Soil and Water Conservation District
MBTA	Migratory Bird Treaty Act
MID	Medford Irrigation District
NEPA	National Environmental Policy Act of 1969
NMFS	National Marine Fisheries Service
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
NWP	nationwide permit
OAR	Oregon Administrative Rule
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
ORBIC	Oregon Biodiversity Information Center
ORS	Oregon Revised Statute
Project	Joint System Canal Infrastructure Modernization Project
RRVID	Rogue River Valley Irrigation District
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

Executive Summary

The construction and operation of irrigation infrastructure, including the modernization of existing irrigation canal and lateral systems, can have effects on terrestrial ecology (vegetation and wildlife), wetlands, and riparian areas. This technical report identifies, describes, and evaluates the potential long-term, short-term (i.e., temporary, construction-phase), and indirect effects related to these resources from the Joint System Canal Infrastructure Modernization Project (Project).

The Modernization Alternative is anticipated to result in moderate temporary impacts to vegetation, wildlife, wetlands, and riparian areas along the Joint System Canal alignment during the construction phase. Upon completion of construction, the Project would have no effect or negligible effects on vegetation; minor long-term effects on the wildlife species and their habitats; and moderate long-term effects on the distribution, extent, or functions of wetlands and riparian areas.

The Project may have minor adverse effect to federally and state-listed and sensitive plant, bird, and wildlife species and their habitats. Conversely, general wildlife and bird species are expected to benefit from enhanced habitat conditions and increased connectivity across the landscape.

Cumulatively, in the long term the Project may result in minor beneficial effects on the quality of natural habitat, wetlands, streams, and riparian corridors in the Little Butte Creek Watershed. General wildlife and bird species are likely to benefit from overall improved habitat conditions.

1. Introduction

This technical report has been prepared as a part of the preparation of the Watershed Plan–Environmental Impact Statement (Plan-EIS) for the Joint System Canal Infrastructure Modernization Project (Project). The following sections identify terrestrial ecology, wetlands, and riparian areas within the 190-acre Project Area. Terrestrial ecology includes vegetation and wildlife resources. This report evaluates conditions and the potential effects of the project alternatives on terrestrial ecology, wetlands, and riparian areas.

2. Definitions

The following terminology is used when discussing geographic areas in this technical report.

Project Area. The area within which improvements associated with the project alternatives would occur and the area needed to construct these improvements. The Project Area consists of the current JSC alignment; the footprint of all modernization improvements proposed under the alternatives, including proposed siphons; and areas needed for construction, staging, storage, and temporary construction access. The Project Area is limited to 100-foot wide JSC right-of-way plus a 100-foot-wide proposed siphon corridors, encompassing approximately 190 acres.

Study Area. This is the general geographic area within which physical impacts to the environment could occur with the project alternatives. The Study Area is resource-specific and differs depending on the environmental topic being addressed. For all resource topics, the Study Area encompasses the Project Area, and for some topics (such as soil resources), the geographic extent of the Study Area is the same as that for the Project Area. For other topics (such as fish, wildlife, and aquatic species) the Study Area is substantially larger to account for impacts that could occur outside of the Project Area. The Study Areas for terrestrial ecology (vegetation and wildlife), wetlands, and riparian areas are defined in Section 4.1.

Project vicinity. The broader landscape environments surrounding the Project Area. The project vicinity does not have a distinct geographic boundary but is used in general discussion to denote the larger area.

Wetlands are defined as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” (33 Code of Federal Regulations [CFR] 328.3, Oregon Administrative Rule [OAR] 141-085-0510 (110)).

Riparian areas are defined as “vegetated ecosystems along a waterbody through which energy, materials, and water pass. Riparian areas characteristically have a high water table and are subject to periodic flooding and influence from the adjacent waterbody. These systems encompass wetlands, uplands, or some combination of those two landforms.” They will sometimes, but not in all cases, have all the characteristics necessary for them to be also classified as wetlands (EPA 2005).

3. Legal Regulations and Standards

Sensitive biological resources including vegetation, wildlife, wetlands, and associated habitats in the Project Area are regulated by several federal, state, and local laws, plans, and policies.

3.1 Laws, Plans, Policies, and Regulations

3.1.1 Federal

3.1.1.1 Endangered Species Act of 1973

The Endangered Species Act (ESA) provides a framework to conserve and protect endangered and threatened species and designated critical habitats from direct habitat impacts from construction and project design and effects such as those related to stormwater (e.g., water quality and hydromodification). Section 7 of the ESA requires lead federal agencies to ensure that actions they authorize, fund, or carry out do not jeopardize the existence of species listed under the ESA or destroy or adversely modify designated critical habitat of any listed species. The lead federal agency for this Project is Natural Resources Conservation Service (NRCS).

The ESA is administered by the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS). This technical report focuses on plant and terrestrial wildlife species listed by USFWS, except for a semiaquatic freshwater northwestern pond turtle (*Actinemys marmorata*), which is addressed in in the Fish and Aquatic Species Technical Report. The Fish and Aquatic Species Technical Report has been prepared for this Project to address aquatic species and designated critical habitat protected under the ESA by USFWS and NMFS.

3.1.1.2 Migratory Bird Treaty Act of 1918

The Migratory Bird Treaty Act (MBTA) is administered by USFWS and protects migratory birds by making it illegal to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid federal permit.

3.1.1.3 Bald and Golden Eagle Protection Act of 1940

The Bald and Golden Eagle Protection Act (BGEPA) is administered by USFWS and protects two species of eagle through the prohibition of “take,” including parts (including feathers), nests, or eggs of bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*).

3.1.1.4 Fish and Wildlife Coordination Act of 1934

The Fish and Wildlife Coordination Act protects fish and wildlife when federal actions result in the control or modification of a natural stream or body of water. The Fish and Wildlife Coordination Act aims to prevent adverse impacts on fish and wildlife resources resulting from water resource development activities such as dam construction, channelization, and water diversions.

3.1.1.5 Public Law Number 83-566 Section 12

Under Section 12 of Pub. L. No. 83-566 Section 12, NRCS is required to inform and consult with USFWS for its recommendations regarding listed and nonlisted fish and wildlife resources.

3.1.1.6 National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires that environmental impact statements (EISs) are completed for projects using federal funds and that significantly affect the quality of the human environment. When a proposed project is not likely to result in significant impacts requiring an EIS, but the activity has not been categorically excluded from NEPA, an agency can prepare an environmental assessment to assist them in determining whether there is a need for an EIS (See 40 CFR 1501.4, 1508.9; 7 CFR 650.8.). For purposes of NEPA compliance, the intent of the Plan-EIS is to determine if the Project, as proposed, significantly affects the quality of the human environment.

3.1.1.7 Executive Order 13751

The U.S. Department of Interior Executive Order 13751 safeguards the nation from impacts of invasive species. This order does so by both preventing their introduction and facilitating their control, aiming to reduce the economic, ecological, and human health consequences associated with these invasive species.

3.1.1.8 Clean Water Act, 1977 as Amended, 33 U.S.C. 1251–1376

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The permitting processes within the purview of CWA are summarized below.

Section 401 Water Quality Certification

Section 401 of the CWA requires states to set water quality standards for all contaminants in surface waters based on the “beneficial” or “designated” uses for the waterbody and makes it unlawful for a person to discharge a pollutant from a point source into navigable waters unless a permit was obtained under its provisions. It also recognizes the need to address the problems posed by nonpoint source pollution. Section 401 requires an applicant for a federal license, or a Section 404 permit applicant planning to conduct an activity that may result in a discharge to waters of the state or United States, to obtain a certification that the activity complies with state water quality requirements and standards. Regulatory authority is given to states and tribes directly through Section 401 of the CWA. The regulatory authority in Oregon is the Department of Environmental Quality (DEQ). Because these permits are administered by a state regulatory agency, their applicability is discussed under state regulations in Section 3.1.2.

Oregon Revised Statutes (ORS) 468 and 468B contain the codified body of statutory law that pertains to environmental quality and water quality for DEQ.

If an individual permit is required by the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA, applicants are required to submit a prefiling meeting request to DEQ at least 1 month prior to submitting the Section 404 application to DEQ. A request for certification form is required to be submitted to DEQ with all permit applications. After the Section 404 application is submitted, DEQ certifies whether a project meets state water quality standards and does not endanger waters of the state or United States or wetlands and forwards the application to the U.S. Environmental Protection Agency (EPA) for review. Comments on the Section 404 application are addressed by the applicant. Upon completing EPA review, the Section 401 certification is issued by DEQ.

Section 402 National Pollutant Discharge Elimination System

EPA requires National Pollutant Discharge Elimination System permits for industrial sites and construction activities, as well as for certain sizes of municipalities that discharge stormwater into waterways. In Oregon, these permits are administered through DEQ. Because these permits are administered by a state regulatory agency, their applicability is discussed under state regulations in Section 3.1.2. Construction stormwater management would likely require a 1200-CA Stormwater General Discharge Permit for projects that disturb more than 1 acre.

Section 404 for Permitting Discharges or Dredge or Fill Material

Section 404 requires a permit authorization from USACE for activities involving the discharge of dredge or fill material into waters of the United States, including wetlands. This permit would be required for work associated with project activities that would occur within a jurisdictional wetland or below the ordinary high water mark of jurisdictional waterbodies.

3.1.2 State of Oregon

3.1.2.1 OAR Division 635, Oregon Endangered Species Act and Sensitive Species Rule

The Oregon Endangered Species Act (OAR 635-100-0100 to 0130) goal is to manage state-listed threatened and endangered species and their habitats so that the condition of these species improves to a point where delisting is warranted. For species not covered under the ESA but listed as threatened or endangered by ODFW, an incidental take permit from ODFW may be required for projects that impact these species (OAR 635-100-0170). The Oregon Sensitive Species Rule (OAR 635-100-0040) focuses fish and wildlife conservation, management, and research on species that need conservation attention to prevent these species from becoming listed as threatened or endangered.

3.1.2.2 OAR 660-015-0000, Oregon Statewide Planning Goals and Guidelines

In Oregon, Goal 5 instructs local governments to consider protection of natural resources, scenic and historic areas, and open spaces when developing comprehensive plans. Goal 5 specifically calls on cities and counties to inventory and designate for protection of terrestrial ecology (vegetation and wildlife), wetlands, and riparian areas.

3.1.2.3 Oregon Removal-Fill Law

Oregon's Removal-Fill Law (ORS 196.795-990, OAR 141-085) requires individuals or entities that plan to remove or fill material in wetlands or waterways of the state to obtain a removal-fill permit from the Oregon Department of State Lands (DSL). The Removal-Fill Law applies to all landowners, whether private individuals or public agencies. The purpose of the law is to ensure protection and the best use of Oregon’s water resources for home, commercial, wildlife habitat, public navigation, fishing, and recreational uses. A permit is required if an activity involves removing or filling 50 cubic yards or more of material in a wetland or waterway of the state. For activities in state-designated Essential Salmonid Habitat, State Scenic Waterways, and compensatory mitigation sites, a permit is required for any amount of removal or fill.

3.1.3 Jackson County

3.1.3.1 Comprehensive Plan

The Jackson County Comprehensive Plan (Jackson County 2006) includes goals and policies for natural areas, scenic resources, wildlife, rivers and trails, water resource areas, and historic areas. Ecologically and scientifically significant natural areas within the Project Area include wetland areas and nongame wildlife habitat. Inventory of these areas shall be completed and verified by Jackson County. Jackson County shall continue to coordinate the development of sensitive habitat inventories with ODFW and continue to coordinate with DSL regarding development on properties that have wetlands within its boundaries.

3.1.3.2 Land Development Ordinance

The land use policies set forth in the Jackson County Comprehensive Plan are implemented through the Jackson County Land Development Ordinance (Jackson County 2023a). The Jackson County Land Development Ordinance 2004-2 establishes the base zones, zoning overlays, and associated regulations that govern development and use of land within unincorporated Jackson County. Special regulations and development standards pertinent to the Modernization Alternative address the following habitats and landscapes:

- Deer and elk habitat.
- Bald and golden eagle, osprey, and great blue heron nesting areas.
- Ecologically or scientifically significant natural areas.
- Riparian areas and riparian vegetation.

4. Affected Environment

4.1 Project Area and Study Areas

The Project Area includes the existing JSC, the potential new siphon alignments, and the footprint of all modernization improvements proposed under the alternatives including areas needed for construction, staging, storage, and temporary construction access. The Project Area is limited to 100-foot wide JSC right-of-way plus a 100-foot wide proposed siphon corridors (see Figure 4-1).

The following Study Areas were used to analyze the potential effects on terrestrial ecology (vegetation and wildlife), wetlands, and riparian areas:

- A **200-foot-wide Study Area** was used for vegetation, wildlife species and habitat, wetlands, and riparian areas. The Study Area includes areas within 200 feet of the Project Area boundaries and adjacent to North Fork Little Butte Creek, Fourmile Lake, and Fish Lake, which may also be influenced by the Modernization Alternative.
- A **660-foot-wide Study Area** was used to analyze potential visual impacts to bald and golden eagles as recommended by USFWS (2007). This Study Area extends 660 feet from the outermost limits of the Project Area.
- A **0.5-mile-wide Study Area** for bald and golden eagles was designated separately due to potential disturbances from blasting and loud noises, which can affect active eagle nests (USFWS 2007). This Study Area extends 0.5 miles from the outermost boundaries of the Project Area. Fourmile Lake and Fish Lake are excluded from this Study Area, as no blasting or construction is planned near these waterbodies.

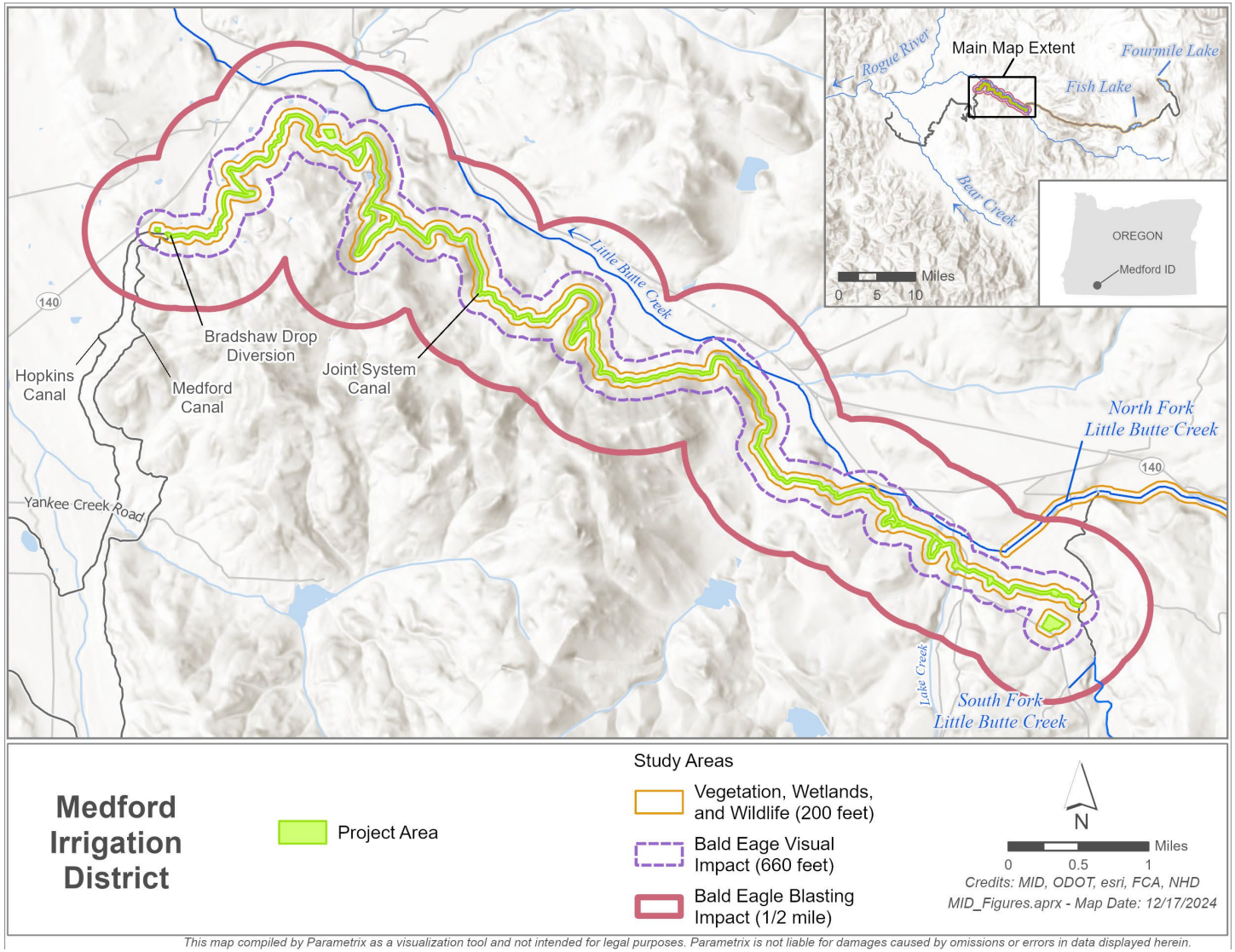


Figure 4-1. Study Areas and Project Area

4.2 Resource Identification and Evaluation Methods

The following data sources were used to review existing conditions and provide the required information for analysis of the No Action Alternative (Future without Federal Investment) and the Modernization Alternative (Future with Federal Investment).

4.2.1 Sources and Databases

Sources used to conduct this vegetation, wildlife, wetland, and riparian area review include the following:

- Consortium of Pacific Northwest Herbaria Database (CPNH 2024)
- Lidar remote sensing data (DOGAMI 2011)
- Google Earth historical and recent aerial images (1985–2024)
- Jackson Soil and Water Conservation District Resources (JSWCD 2024)
- Jackson County Interactive Mapping (2024)
- National Wetlands Inventory (NWI) Wetlands Mapper (USFWS 2024b)
- National Hydrography Dataset (NHD) (USGS 2024)
- Oregon Biodiversity Information Center (ORBIC 2023)
- Oregon Department of Agriculture Noxious Weeds (ODA 2022)
- Oregon Explorer Statewide Habitat Map Layers (Oregon State University Libraries & Press and Institute for Natural Resources 2018)
- Oregon Explorer Wildlife Viewer (Oregon State University Libraries & Press and Institute for Natural Resources 2024)
- ODA Oregon Listed Plants by County (2024b)
- ODA Oregon Listed and Candidate Plants (2024a)
- ODA WeedMapper (2024c)
- ODFW Threatened, Endangered, and Candidate Fish and Wildlife Species List (2024b)
- Oregon Flora Project (2024)
- U.S. Department of Agriculture (USDA) NRCS Web Soil Survey (NRCS USDA 2024)
- USFWS Critical Habitat Mapper (2024a)
- USFWS Official Species List for the Project (2025)

4.2.2 Field Surveys

Field surveys of the Project Area were conducted by Parametrix scientists in April and June 2024 to complete wetland and waters delineation, assess vegetation and wildlife habitat characteristics, and document signs of wildlife use and the presence of riparian areas.

Wetland and waters presence or absence, their boundaries, and classification types were determined using methods specified in the following documents and guidelines:

- Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987).
- Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0 (Regional Supplement) (USACE 2010).
- Field indicators of an ordinary high water mark as defined by USACE in 33 CFR § 328.3(e) and by DSL in OAR 141-085-0515(3).
- Wetlands Below Ordinary High Water (WBO) Guidance (DSL 2024).
- USFWS Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979).
- Guidebook for Hydrogeomorphic (HGM)-Based Assessment of Oregon Wetlands and Riparian Sites (Adamus 2001).

4.3 Existing Conditions

Baseline conditions of the terrestrial ecology (vegetation and wildlife), wetlands, and riparian areas determined to be present or having the potential to occur within the Project Area and Study Area are described below.

The survey confirmed that land adjacent to the canal is almost entirely pasture. Occasional residential uses, which are associated with existing agricultural operations, were also identified in the vicinity of the JSC. Active rock quarrying operations were observed on adjacent lands near the western and northwestern limits of the Project Area. Personal communication with adjacent landowners and MID personnel confirmed the occasional presence of gray wolves in the Project Area. A large raptor nest was observed at the eastern end of the JSC, approximately 300 feet from the canal.

4.3.1 Vegetation

4.3.1.1 General Vegetation

The Study Area landscape supports a variety of vegetation communities including oak woodland, mixed conifer forest, riparian areas, madrone stands, poison oak thicket, and native grassland (Oregon State University Libraries & Press and Institute for Natural Resources 2018). The most common trees are Oregon white oak (*Quercus garryana*), California black oak (*Q. kelloggii*), bigleaf maple (*Acer macrophyllum*), and Douglas fir (*Pseudotsuga menziesii*) (Table 4-1; CPNH 2024; Oregon Flora 2024). Table 4-1 lists common species along the JSC. A comprehensive list of plant species observed during the field survey is provided in Appendix A.

A fringe of hydrophytic plants occurs along the margins of the top of the canal banks in some areas and is represented predominantly by species such as reed canary grass (*Phalaris arundinacea*), sedges (*Carex* sp.), rushes (*Juncus* sp.), and willow (*Salix* sp.). Where present, this vegetation ranges from narrow stretches to 5 feet wide or wider. During the warmer months of July and August, submerged aquatic plants (species of aquatic moss and algae) thrive in shallow waters of the slower-flowing segments of the JSC and are mechanically removed by MID (2024).

MID manages vegetation along the JSC using various methods to ensure efficient water flow, prevent erosion, and maintain the structural integrity of the canal. Mechanical clearing is performed annually to remove aquatic moss and algae, as the use of aquatic herbicides in open canals is not currently permitted (MID 2024). Regular grass mowing and shrub removal are conducted along the canal banks and access roads to prevent overgrowth and reduce the presence of invasive species. In the

non-irrigation season, MID reshapes the canal to remove silt, which helps reduce the growth of aquatic moss. This process often involves excavation or regrading, which can impact riparian and upland vegetation by disrupting its root systems, altering soil conditions, and/or exposing it to erosion or sedimentation.

Table 4-1. Common Tree and Shrub Species in the Project Area

Life Form	Vegetation Species	Scientific Name
Tree	Black cottonwood	*Populus trichocarpa*
Tree	Bigleaf maple	*Acer macrophyllum*
Tree	California black oak	*Quercus kelloggii*
Tree	Douglas fir	*Pseudotsuga menziesii*
Tree	Oregon ash	*Fraxinus latifolia*
Tree	Oregon white oak	*Quercus garryana*
Tree	Red alder	*Alnus rubra*
Tree	White alder	*Alnus rhombifolia*
Shrub	Feltleaf	*Ceanothus arboreus*
Shrub	Pacific poison oak	*Toxicodendron diversilobum*
Grass	Blue wild rye	*Elymus glaucus*
Grass	California brome	*Bromus carinatus*
Grass	Bulbous blue grass	*Poa bulbosa*
Grass	Tall false rye grass	*Schedonorus arundinaceus*
Grass	Orchard grass	*Dactylis glomerata*
Grass	Field meadow-foxtail	*Alopecurus pratensis*
Forb	Common yarrow	*Achillea millefolium*
Forb	Common dandelion	*Taraxacum officinale*
Forb	Garden bird's-foot-trefoil	*Lotus corniculatus*
Forb	Curly dock	*Rumex crispus*

4.3.1.2 Federally and State-Listed Species

There are several records of federally and state-listed plant species occurrence within the Study Area (USFWS 2025; ORBIC 2023; ODA 2024b). Table 4-2 presents a summary of listed plant species that are recorded in and the vicinity of the Project Area. The occurrence potential was determined based on species habitat requirements, known habitat presence, and field observations. Parametrix determined that four evaluated listed species may occur in the Study Area.

While a formal rare plant botanical survey was not conducted in the Study Area, Parametrix biologists detected habitats suitable to support populations of Genter's fritillary, Southern Oregon buttercup, wayside aster, and white fairy poppy. Suitable habitat and native species associated with the presence of these species were observed. None of the listed species were observed during the site reconnaissance. A USFWS botanist from the Roseburg office, Sam Friedman, accompanied the Parametrix biologist during one field day to observe representative plant habitats and to provide expertise.

Table 4-2. Listed Species with Occurrence Potential in the Project Area

Common Name (Scientific Name)	Federal Listing	State Listing	Occurrence Potential [a]
Bellinger's meadowfoam (*Limnanthes floccosa* ssp. *bellingeriana*)	–	Candidate	Absent
Large-flowered woolly meadowfoam (*Limnanthes pumila* ssp. *grandiflora*)	Endangered	Endangered	Absent
Cook's lomatium (*Lomatium cookii*)	Endangered	Endangered	Absent
Dwarf meadowfoam (*Limnanthes pumilla* ssp. *pumila*)	-	Threatened	Absent
Gentner's fritillary (*Fritillaria gentneri*)	Endangered	Endangered	May Occur
Southern Oregon buttercup (*Ranunculus austro-oreganus*)	–	Candidate	May Occur
Umpqua mariposa lily (*Calochortus umpquaensis*)	–	Endangered	Absent
Wayside aster (*Eucephalus vialis*)	–	Threatened	May Occur
White fairy poppy (*Meconella oregana*)	–	Threatened	May Occur
Columbia yellowcress (*Rorippa columbiae*)	–	Endangered	Absent
Whitebark pine (*Pinus albicaulis*)	Threatened	Threatened	Absent

Source: ORBIC 2023, ODA 2024b, USFWS 2025.
a May Occur = Species is expected to occur and habitat meets special requirements;
Absent = Habitat does not meet species requirements as currently understood in the scientific community.

Plants endemic to vernal pool habitats include Bellinger's meadowfoam (*Limnanthes floccosa* ssp. *bellingeriana*), big-flowered woolly meadowfoam (*Limnanthes pumila* ssp. *grandiflora*), Cook's desert parsley (*Lomatium cookii*), and dwarf meadowfoam (*Limnanthes pumilla* ssp. *pumila*) (ODA 2024a; Center for Plant Conservation 2020; Institute for Applied Ecology 2024). According to ORBIC data, Bellinger's meadowfoam was most recently observed within a vernal pool near the eastern end of the Study Area, approximately 0.60 miles northeast of the JSC in 1984. Big-flowered woolly meadowfoam was most recently observed approximately 2 miles southwest of the Study Area within mapped vernal pools in 1965. Vernal pools are not known to occur in the Project Area or Study Area (Jackson County 2024). Lack of vernal pools in the Project Area was confirmed during the field survey. Therefore, these special status plants were determined to be absent from the Study Area.

Gentner's fritillary (*Fritillaria gentneri*) occurs in a variety of habitats from shaded riparian areas to open grasslands and chaparral, but it generally prefers the ecological gradients between meadow and oak woodland at elevations between 1,000 and 5,000 feet. This species appears to benefit from association with a wide variety of trees or shrubs, which may provide shade and protection from herbivory (ODA 2024b; USFWS 2016; BLM 2013). The largest number of populations occur near Jacksonville in Jackson County (ODA 2024b). According to ORBIC data, this species was most recently observed 1.20 miles east of the Project Area. Oak woodlands are present within the Study Area; however, the area is primarily characterized by farmlands and livestock grazing pastures, resulting in fragmented potential habitat. Parametrix and USFWS botanist Sam Friedman surveyed a portion of the Project Area on April 24, 2024 to determine habitat suitability for the species within

areas where ground disturbance would occur. No individuals were observed, and the majority of the area was not suitable habitat for the species. However, a 0.6 acre area located within 0.5 miles from the eastern most extent of the Project Area contained checker lily (*Fritillaria affinis*) and had similar habitat requirements as Genter's fritillary. During the survey, Geneter's fritillary was not observed and was determined to be absent from this location. Thus, it was determined that the species does not occur where ground disturbance would occur.

Southern Oregon buttercup (*Ranunculus austro-oreganus*) occurs in a variety of habitats including open oak savannas, grasslands, and the margins of rocky vernal pools. It is typically found at low elevations on valley floors and edges (NatureServe Explorer 2024). According to ORBIC data, Southern Oregon buttercup was most recently observed approximately 0.17 miles west-southwest of the Study Area. Oak woodlands and grasslands are present within the Study Area. Based on ORBIC data and on-site observations of suitable habitats, Southern Oregon buttercup may occur within the Study Area.

Umpqua mariposa lily (*Calochortus umpquaensis*) is largely restricted to serpentine-derived soils in the Umpqua River drainage in Douglas County. Two populations south of the Douglas County grouping are located in northern Jackson and Josephine Counties (ODA 2024a). Populations generally occur in the ecotone between open grassy hillsides and Jeffrey pine woodlands, although some populations are located within forested areas. This species is often associated with Idaho fescue (*Festuca idahoensis*), California incense-cedar (*Calocedrus decurrens*), and California oatgrass (*Danthonia californica*). Based on the USFWS IPaC database, ORBIC observation data, distance from existing populations, and landscapes this species typically inhabits, Umpqua mariposa lily was determined to be absent from the Study Area.

Wayside aster (*Eucephalus vialis*) occurs in a variety of habitats including relatively open areas in the understory of mixed coniferous and hardwood forests, along roadsides, and on open slopes and prairie balds (ODA 2024a). It can be found in the Klamath Mountains, West Cascades, and Willamette Valley ecoregions. This species is often associated with Douglas fir, Oregon white oak, California black oak, and poison oak (*Toxicodendron diversilobum*), all of which occur throughout the Study Area. Based on ORBIC records, this species has not been documented in the Study Area or project vicinity. However, considering the existing populations in Jackson County, the presence of associated species, and the typical habitats of this species, it was determined that wayside aster may occur within the Study Area.

White fairy poppy (*Meconella oregana*) is usually found in open and sunny grassy areas with minimal woody cover and shallow gravelly loam soils. Populations require seasonally moist soils, primarily provided by seeps that dry out in the summer. In southern Oregon, white fairy poppy is found in both meadow openings and rocky outcrops at higher elevations (1,300 to 2,600 feet). It is also found near small streams or on bare soil under large shrubs (ODA 2024b). Oak woodlands and streams are present within the Study Area. Although the habitat is degraded and is primarily characterized by livestock grazing pastures, white fairy poppy species may occur within the Study Area.

Whitebark pine (*Pinus albicaulis*) occurs in upper subalpine plant communities, often co-dominating with subalpine fir at elevations between 7,600 and 8,500 feet (USDA 2024). Based on the USFWS IPaC database, ORBIC observation data, and the elevation and plant communities this species generally inhabits, whitebark pine was determined to be absent within the Study Area.

4.3.1.3 Common and Noxious Weeds

The Jackson Soil and Water Conservation District (JSWCD) determines a weed to be noxious if it is "harmful to animals, water, or humans" (JSWCD 2016). Furthermore, it is recognized that certain noxious weeds are so pervasive that they have been classified as a menace to public welfare (ODA

2022; ORS 569.350). Table 4-3 lists the designated noxious weeds occurring in the Study Area (JSWCD 2016; JSWCD 2019).

Table 4-3. Noxious Weeds Present or Potentially Occurring in the Study Area

Vegetation Species	Scientific Name
Canada thistle	*Cirsium arvense*
English ivy	*Hedera helix*
Garlic mustard	*Alliaria petiolata*
Himalayan blackberry	*Rubus armeniacus*
Japanese knotweed	*Polygonum cuspidatum*
Puncturevine	*Tribulus terrestris*
Purple loosestrife	*Lythrum salicaria*
Scotch broom	*Cytisus scoparius*
Spotted knapweed	*Centaurea maculosa*
Yellow flag iris	*Iris pseudacorus*
Yellow star-thistle	*Centaurea solstitialis*

The Oregon Noxious Weed Policy and Classification System (ODA 2022) categorizes weeds into two main classes: A and B. A-listed weeds are those of known economic importance that are either not yet present in Oregon or are present in small enough infestations that eradication or containment is possible. A B-listed weed is economically significant and regionally prevalent, though its distribution may be limited in certain counties and it may require intensive control measures. All noxious weeds occurring in the Study Area are from the B list. Control measures for these weeds involve targeted, intensive management at state, county, or regional levels as determined individually.

4.3.2 Wildlife

4.3.2.1 General Wildlife and Associated Habitats

There are several major habitat types within the Study Area: riparian, aquatic, chaparral, rural, and agricultural pastures. Generally, wildlife present within the Study Area consists of habitat generalists or edge species with the ability to adapt to or exploit the agricultural environment. Common species that are tolerant to disturbance include black-tailed deer (*Odocoileus hemionus*), coyote (*Canis latrans*), western gray squirrel (*Sciurus griseus*), raccoon (*Procyon lotor*), and turkey vulture (*Cathartes aura*) (Oregon State University Libraries & Press and Institute for Natural Resources 2024).

Wildlife within the Study Area may use the canal as a water source, shelter, and dispersal corridor. Where not cleared, vegetation along the canal can provide food, cover, and breeding sites for many wildlife species throughout the year. In portions of the Study Area located within a more developed setting, habitat connectivity has been modified by agricultural uses, residential development, and mining operations. Development reduces vegetation and food sources and fragments habitats and movement corridors, thereby decreasing wildlife occurrence. However, more common species still use farmland and grazing pastures. Table 4-4 lists wildlife species that are likely to occur in the Study Area (Oregon State University Libraries & Press and Institute for Natural Resources 2024).

Table 4-4. Common Wildlife Species that are Likely to Occur in the Study Area

Wildlife Species Common Name	Scientific Name
Black-tailed deer	*Odocoileus hemionus*
Black-tailed jackrabbit	*Lepus californicus*
Coyote	*Canis latrans*
Elk/Wapiti	*Cervus canadensis*
Mule deer	*Odocoileus hemionus*
Osprey	*Pandion haliaetus*
Raccoon	*Procyon lotor*
Turkey vulture	*Cathartes aura*
Western fence lizard	*Sceloporus occidentalis*
Western gray squirrel	*Sciurus griseus*
Wild turkey	*Meleagris gallopavo*

Source: Oregon State University Libraries & Press and Institute for Natural Resources, 2024, Wildlife Viewer: Lists by Place.
Notes: This is a partial list of wildlife species only.

4.3.2.2 Federally and State-Listed Species

An official species list was requested from the USFWS IPaC website (USFWS 2025). There is a total of 12 threatened, endangered, or candidate species on this species list. Two listed species have their critical habitats designated. There is proposed critical habitat for one species. One critical habitat is wholly or partially within the Project Area.

ODFW maintains a list of native wildlife species in Oregon determined to be either threatened or endangered according to criteria set forth by OAR 635-100-0105, and a sensitive species list (ODFW 2024b; ODFW 2021). According to ORBIC data, state-listed threatened, sensitive, or sensitive-critical-listed species have a potential range in the Study Area.

This section of the report focuses on terrestrial wildlife and bird species only. Parametrix evaluated the potential for occurrence of each species from the list by reviewing records of occurrence, assessing the habitat requirements, and determining the presence of suitable habitats within the Study Area (see Table 4-5).

Table 4-5. Federally and State-Listed Species with Occurrence Potential in the Study Area

Common Name (Scientific Name)	Federal Listing	State Listing	Critical Habitat Designated	Occurrence Potential [a]
Gray wolf (*Canis lupus*)	Endangered	–	Yes	Present
North American wolverine (*Gulo gulo luscus*)	Threatened	Threatened	–	May Occur
Northern spotted owl (*Strix occidentalis caurina*)	Threatened	Threatened	Yes	May Occur
California condor (*Gymnogyps californianus*)	Experimental Population, Non-Essential	–	–	Absent

Common Name (Scientific Name)	Federal Listing	State Listing	Critical Habitat Designated	Occurrence Potential [a]
Tricolored blackbird (*Agelaius tricolor*)	Species of Concern	–	–	May Occur
California mountain kingsnake (*Lampropeltis zonata*)	Species of Concern	Sensitive	–	May Occur
Franklin's bumble bee (*Bombus franklini*)	Endangered	-	–	Not Likely to Occur
Siskiyou short-horned grasshopper (*Chloealtis aspasma*)	Species of Concern	-	–	May Occur
Monarch butterfly (*Danaus plexippus*)	Proposed Threatened	-	Proposed	May Occur
Suckley's cuckoo bumble bee (*Bombus suckleyi*)	Proposed Endangered	-	–	Not Likely to Occur
Townsend big-eared bat (*Corynorhinus townsendii*)	-	Sensitive Critical	–	May Occur

Source. USFWS 2025, ORBIC 2023, ODFW 2021.
a Present = known recent records. Species observed during recent survey.
May Occur = Species is expected to occur and habitat meets special requirements;
Not Likely to Occur = Habitat is only marginally suitable or is suitable but not within species geographic range.
Absent = Habitat does not meet species requirements as currently understood in the scientific community.

Gray wolf (*Canis lupus*) is documented by USFWS (2024b) to potentially occur within the Study Area. In Oregon, gray wolf is federally listed as endangered west of Oregon Highways 95, 78, and 395. Gray wolf was removed from the Oregon state endangered species list in 2015. However, it is still managed under the ODFW Oregon Wolf Conservation and Management Plan, which aims to ensure the population remains stable and continues to grow (ODFW 2019). The Project Area is on the periphery of the range of the Rogue wolf pack (ODFW 2023). The Rogue pack consists of seven individuals and contains a breeding pair. While the JSC is not mapped within an area of depredating wolf activity (ODFW 2023), the Rogue territory overlaps approximately 1.30 miles of canal at the eastern end of the Study Area. During site reconnaissance, MID personnel and adjacent farm landowners confirmed sightings of gray wolf in or near the Study Area. There is no available information on potential den locations in the Study Area. Based on reported sightings and overlap of known territory, gray wolf is determined to be present within the Study Area.

North American wolverine *(Gulo gulo luscus*) inhabits large territories in relatively inaccessible landscapes within high elevation terrains (5,906 to 11,483 feet; USFWS 2018). The species is found in naturally low densities throughout the west-northwestern United States and much of Canada and Alaska. Wolverine uses a variety of habitat types but generally uses habitats in locations away from human development (ODFW 2025; USFWS 2018). The Project Area is not preferred habitat for wolverine as it is at a lower elevation (<1,800 feet) than typically used by the species and predominantly occurs in an agriculturally developed area fragmented by roads and human settlement. The species may occur within the Project Area during migrations or dispersal to more suitable habitats (USFWS 2025).

Northern spotted owl (*Strix occidentalis caurina*) requires forest with moderate to high canopy closure from a multilayered, multispecies canopy dominated by large old trees with numerous large cavities, broken tops, and snags. Considerable open space is also needed. Northern spotted owls generally use forests at least 150 to 200 years old (USFWS 2024c; Oregon Forest Resources

Institute 2024). Suitable old growth forested habitat for the species does not occur within or adjacent to where ground-disturbing activities would occur within the Project Area. Northern spotted owl is absent from the Project Area. However, old growth forests and designated critical habitat for the species are adjacent to the upstream portion of North Fork Little Butte Creek, Fish Lake, Fourmile Lake, and Cascade Canal within the Study Area (USFWS 2024a). Northern spotted owl may occur in the upstream portion of the Study Area.

A non-essential experimental population of California condor (*Gymnogyps californianus*) is also listed (USFWS 2025). Non-essential experimental populations are not necessary for the continued existence of a species and are treated as a proposed species on private and state lands. The species is likely absent from the Study Area due to low populations and the distance from the Study Area to reintroduction sites (USFWS 2021), therefore, this species is not considered further in this report.

The Project Area is within the mapped distribution range of tricolored blackbird (eBird 2024). The historical observations indicate the presence of tricolored blackbird *(Agelaius tricolor*) approximately 2 miles northwest of the Project Area, with the last recorded sighting dating back to 1977 (ORBIC 2023). Tricolored blackbird breeds most consistently in Klamath and Jackson Counties. Small colonies remain in the Rogue Valley basin during winter. Breeding colonies occur in hardstem bulrush (*Schoenoplectus* sp.), cattail (*Typha* sp.), nettles (*Urtica* sp.), willows (*Salix* sp.), and Himalayan blackberry (ODFW 2024c). Suitable feeding and breeding habitat is present in the Study Area; therefore, it was determined that tricolored blackbird may occur.

California mountain kingsnake (*Lampropeltis zonata*) has a single historical record from 1936, located near Lake Creek within the Study Area. This species is found in pine forests, oak woodlands, and in chaparral of southwestern Oregon valleys. It is usually found in, under, or near rotting logs in open wooded areas near streams (ODFW 2024c). California mountain kingsnake preys upon snakes, lizards, birds and their eggs, and some small mammals. The Study Area encompasses suitable habitat and an abundance of appropriate prey species and therefore, California mountain kingsnake may occur in Study Area.

The Franklin's bumble bee (*Bombus franklini*) historical distribution range includes the Study Area. Repeated systematic surveys conducted in Jackson County revealed a rapid decline in sightings of Franklin's bumble bee in the early 2000s, with the last individual observed in 2003 and none found in 2008 (Xerces Society 2024). This species requires habitats with a sufficient supply of floral resources and has been observed feeding on lupine (*Lupinus* spp.), California poppy (*Eschscholzia* spp.), horsemint (*Agastache* spp.), and mountain penny-royal (*Monardella* spp.). For nesting, it relies on abandoned rodent burrows or clusters of undisturbed grasses near water sources (Xerces Society 2024). Continuous blooming throughout the season is essential for this species. Continuous blooming may not be available in the Study Area due to the dominance of grasses and early spring-blooming forbs, shrubs, and trees. Although the Study Area falls within the known distribution range, the habitat suitability is likely low and it was determined that Franklin's bumble bee is not likely to occur in the Study Area.

Siskiyou short-horned grasshopper (*Chloealtis aspasma*) is endemic to two areas in Oregon; it is relatively common in suitable habitats within Jackson and Josephine Counties. This species is typically found in forest meadows and balds, often along edges of forests near wetlands. The need for further research is recognized to understand the foraging needs of Siskiyou short-horned grasshopper. However, current observations indicate a correlation between its presence and the abundance of elderberry (*Sambucus* sp.). The nearest recorded observation was 1.4 miles southeast of the Project Area in 2008. Given the limited knowledge about its specific habitat and forage requirements, and considering the variety of microhabitats present in the Study Area, it was determined that this species may occur within the Study Area.

Monarch butterfly (*Danaus plexippus*) distribution range falls within the Study Area. This species can be found in many regions and habitats throughout the continental United States. Monarch butterfly lays its eggs on host plants, primarily on milkweed (*Asclepias* spp.), which is the sole food for larvae of this species. It exhibits long-distance migration, and adults overwinter at forested locations south of and outside of Oregon where they are protected from the elements. During the site visit, no species of milkweed were observed, indicating that the site is unsuitable for monarch butterfly larval feeding. However, the blooming nectar of forbs or shrubs may provide adult monarch butterflies with adequate food sources while they transit through the area. It was determined that this species may occur in the Study Area.

Suckley's cuckoo bumble bee (*Bombus suckleyi*) overwinters in duff, leaf litter, and rotting logs, and emerges in late spring to feed on nectar and pollen before invading the nest of a suitable host colony (USFWS 2024d). The species is an obligate social parasite that usurps the queen of other social bumble bees (*Bombus* species) and uses the nest's workers to collect pollen for reproduction. Host bumble bee nests are generally located in abandoned underground holes in a variety of habitats with sufficient nectar and pollen resources (USFWS 2024d). The species' offspring emerge in late summer and mate through fall before overwintering. Suckely's cuckoo bumble bee is not likely to occur within the Project Area due to lack of high quality nectar and pollen resources. Furthermore, observations of Suckley's cuckoo bumble bee have recently been exceedingly rare in Oregon. Only two observations of the species have been recorded in Oregon since 2000, and no individuals have been observed since 2018 (USFWS 2024d).

Townsend big-eared bat (*Corynorhinus townsendii*) is listed as a state sensitive critical species in several ecoregions, including Klamath Mountain, where the Project Area is located. This species inhabits coniferous and mixed moist forests, deserts, native prairies, riparian areas, and agricultural lands. Its distribution is linked to the availability of caves and cave-like roosting sites (NPS 2020; ODFW 2024a). It uses caves, mines, isolated buildings, hollow trees and bridges for roosting, maternity sites, and hibernation. It typically forages in meadows, shrub-steppe, and along riparian corridors and water sources (ODFW 2024a). The ORBIC report indicates this species was last observed approximately 1.73 miles north of the Project Area in 1980. The Northwest Bat Hub Data Viewer (OSU-Cascades 2024) maps several bat species (including Townsend big-eared bat) occurrence in the upstream portion of the Study Area, particularly around Fish Lake. The Project Area and Study Area may include roosting and foraging habitat for this species, and therefore, Townsend big-eared bat may occur.

4.3.2.3 MBTA/BGEPA Species

Migratory birds including those protected under the MBTA and golden and bald eagles protected under the BGEPA inhabit the Study Area. Migratory birds are known to feed, nest, and travel through the Study Area and its surroundings, using a variety of habitats including those within the Project Area that are periodically disturbed by farming and regular MID maintenance activities. The birds listed in Table 4-6 are of particular concern, because they are either designated as USFWS Birds of Conservation Concern (USFWS 2025) or are protected by BGEPA.

Bald eagle is known to nest in proximity to the JSC. According to ORBIC (2023), a bald eagle nest is located approximately 600 feet (0.1 miles) south of the JSC alignment and 2 miles northwest of Lake Creek. The last recorded observation of two fledglings at this nest was in 2006. This nest is located within a tall stand of conifer trees. A second bald eagle nest was detected by Parametrix scientists during the site survey. This nest was observed on a tall mature cottonwood tree near South Fork Little Butte Creek at the eastern end of the JSC, approximately 300 feet from the JSC alignment. This nest is located within a direct line of sight of a project activities with an open treeless pasture between the nest and JSC.

During the field survey, waterfowl species were observed using the canal water. Fledgling birds and nests were found on the ground in vegetation adjacent to the JSC. A colony of unidentified swifts were observed nesting beneath the bridge over the JSC, located east of the siphon under Lake Creek.

Table 4-6. Migratory Birds of Conservation Concern that May Occur in the Study Area

Common Name	Scientific Name	Birds of Conservation Concern	Bald and Golden Eagle Protection Act	Breeding Period
Bald eagle	*Haliaeetus leucocephalus*	No	Yes	January 1–September 30
California gull	*Larus californicus*	Yes	No	March 1–July 31
Cassin's finch	*Carpodacus cassinii*	Yes	No	May 15–July 15
Clark's Grebe	*Aechmophorus clarkii*	Yes	No	June 1–August 31
Evening grosbeak	*Coccothraustes vespertinus*	Yes	No	May 15–August 10
Golden eagle	*Aquila chrysaetos*	No	Yes	January 1–August 31
Lesser Yellowlegs	*Tringa flavipes*	Yes	No	Breeds elsewhere
Oak titmouse	*Baeolophus inornatus*	Yes	No	March 15–July 15
Olive-sided flycatcher	*Contopus cooperi*	Yes	No	May 20–August 31
Rufous hummingbird	*Selasphorus rufus*	Yes	No	April 15–July 15
Western grebe	*Aechmophorus occidentalis*	Yes	No	June 1–August 31
Wrentit	*Chamaea fasciata*	Yes	No	March 15–August 10

Source: Adapted from USFWS 2025, Information, Planning, and Consultation (IPaC) System.

4.3.2.4 Areas of Special Concern

Within Jackson County, *areas of special concern* are sections of land containing protected wildlife and vegetation or designated historic resources. According to Jackson County, much of the Study Area is located within a protected deer and elk winter range of Lake Creek Unit which is classified as a Very Sensitive type of habitat (Jackson County 2024). Winter seasonal concentration areas include lands identified and mapped as providing essential and limited functions and values such as security from predation and escape from disturbance.

Jackson County maintains a nongame species inventory, which identifies significant nesting areas for bald and golden eagles and other birds of concern. According to this inventory, no bald or golden eagle, osprey, great blue heron, pileated woodpecker, pine marten, or other nongame species of concern are nesting in the Study Area. However, bald eagles were observed in the Project Area and it is likely that other species listed above are present as well.

No vernal pools are mapped within the Study Area, and none were observed during site visits.

4.3.3 Wetlands

A desktop data review of the Study Area identified the presence of freshwater forested wetlands, scrub-shrub wetlands, and herbaceous wetlands. These hydrological and ecological features are located mostly within or adjacent to the JSC and along the natural streams upslope and downslope from the JSC. According to NWI, freshwater emergent seasonally flooded (PEMC) wetlands are the most common type in the Study Area. The freshwater scrub-shrub seasonally flooded (PSSC)

wetlands and freshwater forested seasonally flooded (PFOC) wetlands are mapped in very limited areas.

The on-site wetland delineation was limited to the Project Area only. Identified wetlands were delineated, characterized, and grouped based on the Cowardin classification (Cowardin et al. 1979). Table 4-7 provides a summary of wetlands in the Project Area. Similar types of wetlands occur within Study Area outside the Project Area. Photograph 4-1 through Photograph 4-6 show representative conditions of the wetland types. Additional details are provided in the Wetlands and Waters of the United States and State Delineation Report.

Table 4-7. Summary of Wetlands within the Project Area

Wetland Type	Cowardin Class [a]	Hydrogeomorphic Class	Number of Wetlands [b]	Total Size (acres) [b]
Emergent	PEMC	Slope, Riverine	56	4.0
Scrub-Shrub	PSSC	Slope, Riverine	7	0.6
Forested	PFOC	Slope, Riverine	12	2.2
-	-	**Total**	**75**	**6.8**

PFOC = palustrine forested seasonally flooded, PSSC = palustrine scrub-shrub seasonally flooded, PEMC = palustrine emergent seasonally flooded.
a Cowardin et al., 1979, Classification of Wetlands and Deepwater Habitats of the United States.
b DSL concurred with the wetland and other waters boundaries, with revisions, on July 15, 2026. Federal jurisdiction under the Clean Water Act remains subject to review and approved jurisdictional determination by USACE.

4.3.3.1 Forested Wetlands (PFOC)

Freshwater palustrine forested seasonally flooded (PFOC) wetlands in the slope or riverine hydrogeomorphic classes were situated at the base of gulches along the streams. They were primarily sustained by natural hydrology such as streamflow and elevated groundwater levels. The canal seepage also contributes as a secondary hydrological source (see Photograph 4-1). Parametrix also identified several narrow forested wetlands located along the JSC that are fed entirely by canal seepage. The vegetation in these wetlands predominantly consisted of trees and shrubs including Oregon ash, black cottonwood, red alder, Sitka willow (*Salix sitchensis*), Himalayan blackberry, swamp red currant (*Ribes triste*), Nootka rose (*Rosa nutkana*), and other woody species. Sandy clay loam or clay loam soils are commonly found overlaying a river rock horizon composed of gravel or cobbles.

Areas of forested wetlands delineated in the Project Area range between 0.03 and 0.5 acres in size. Forested wetlands associated with natural streams were observed in the base of Wyant Gulch, Osborne Creek, Owens Gulch, Eagle Gulch, and Unnamed Streams 1, 2, 3, 5, 6, 7, 8, and 10 (see Figure 4-1).

4.3.3.2 Scrub-Shrub Wetlands (PSSC)

Limited areas of freshwater palustrine scrub-shrub seasonally flooded (PSSC) wetlands in slope or riverine hydrogeomorphic classes were formed around the edges of fields and along roads and streams; areas that are not subject to regular maintenance. These wetlands are historically formed on upland soils and are now supported directly by canal water, or by incidental seepage, natural stream flow, or by a combination of sources. Dominant woody vegetation included Sitka willow, Himalayan blackberry, Nootka rose, and swamp red currant with an understory formed by common rush (*Juncus effusus*), reed canary grass, curly dock (*Rumex crispus*), and Fuller's teasel (*Dipsacus*

fullonum) (see Photograph 4-2). Most scrub-shrub wetlands were formed over silty loam or silty clay loam soils.

Scrub-shrub wetlands are not a common type, but they occur throughout the project corridor. Areas of scrub-shrub wetlands delineated in the Project Area range between 0.002 and 0.4 acres.



Photograph 4-1. Forested wetland at the base of Eagle Gulch (extends beyond Project Area).



Photograph 4-2. Scrub-shrub wetland dominated by Sitka willow (extends beyond Project Area).

4.3.3.3 Emergent Wetlands (PEMC)

According to NWI mapping, freshwater palustrine emergent seasonally flooded (PEMC) wetland is the most common type of wetland in the Study Area. These wetlands were dominated by herbaceous hydrophytic vegetation. However, there were differences in the species composition, wetland location in the landscape, land use, and specific hydrologic regime. Based on distinct characteristics, emergent wetlands could be grouped into different types: wetland fringe, pasture wetland, vegetated ditch, and wetland bench features.

Fringe Wetlands

Fringe wetlands are primarily composed of stands of reed canary grass and broad-leaf cattail (*Typha latifolia*), with a limited presence of other semiaquatic plant species (see Photograph 4-3). These wetlands were observed throughout the entire length of the Project Area, within and adjacent to the JSC, in areas where canal water overflowed the bank, and at sharp turns in the canal where water flow decelerated causing backflow and bank erosion. These wetlands rely entirely on canal water during the irrigation season and on residual water at the lowest elevations during the non-irrigation season. These wetland features usually develop on accumulated silt, loam, and slow-decomposing organic material associated with the canal.



Photograph 4-3. Fringe wetlands in and adjacent to the JSC.



Photograph 4-4. Wetland pasture supported by seepage (extends beyond Project Area).

Pasture Wetlands

Pasture wetlands were identified on the downslope side of the JSC throughout the entire length of the Project Area (see Photograph 4-4). In these locations, wetlands formed on historically upland soils due to water seepage from the canal. These pasture wetlands would revert to dry land if the irrigation water supply was terminated. The seepage water flows through the wetlands, descending downslope to pastures or to where seepage-fed wetlands may merge with natural wetland or water features in the bottoms of gulches. Wetland pasture vegetation is primarily composed of tall false rye grass, field meadow-foxtail, reed canary grass, red-tinge bulrush (*Scirpus microcarpus*), and common rush. Soils are predominantly silt loam, silt clay, or silty clay loam characterized by shallow depth with bedrock near the surface. Many of these wetlands extend beyond the Project Area downslope into extensive wet grazing fields. Most of the pasture wetlands within the Project Area range between 0.01 and 0.3 acres; however, since many pasture wetlands extend outside the Project Area into adjacent land, the total wetland acreage in the Study Areas is greater.

Vegetated Ditches

A few narrow linear excavated wetland features were observed running parallel to and downslope of the canal (see Photograph 4-5). These features appeared to convey water from diversion points into the pasture or to capture and redirect seepage water. These are humanmade ditches that exhibit wetland characteristics such as hydrophytic vegetation, hydric soils, and wetland hydrology. They were typically 3 to 5 feet wide and were mostly observed in the eastern half of the Project Area. Standing water or signs of recent flow were often observed during the field survey. These linear features were fully or partially vegetated with broad-leaf cattail, reed canary grass, true forget-me-not (*Myosotis scorpioides*), American-brooklime (*Veronica americana*), and common duckweed (*Lemna minor*). Sandy loam or silt loam were commonly recorded soil textures in ditches.



Photograph 4-5. Vegetated ditch.



Photograph 4-6. Wetland bench.

Wetland Benches

A group of small, isolated wetlands with distinctive vegetation was identified on benches situated upslope (south) of the JSC near Lake Creek (see Photograph 4-6). These wetlands are frequently bordered by rock outcrops and are situated on shallow bedrock, which was encountered within 9 inches of the soil surface. The bench wetlands are sustained by surface runoff originating from adjacent uphill pastures. The runoff likely slows down reaching the bench, accumulating before eventually draining into the canal. The herbaceous vegetation comprised a mix of native and exotic grasses and forbs including Kentucky bluegrass (*Poa pratensis*), creeping buttercup (*Ranunculus repens*), curly dock, and few other species. These features were located in the southeast quarter of the Project Area. Wetland benches were small in size ranging from 0.01 to 0.1 acres.

4.3.4 Riparian Areas

Aerial photographs indicate that most streams in the Study Area have narrow and discontinuous woody riparian corridors. However, Lake Creek and Osborne Creek have well-developed, wide uninterrupted riparian corridors.

In the field, riparian areas were observed along South Fork Little Butte Creek, Lake Creek, and the creek that runs at the base of Grasshopper Gulch. Well-developed woody vegetation was formed by bigleaf maple, Oregon ash, Oregon white oak, white alder, black cottonwood, choke cherry (*Prunus virginiana*), service-berry (*Amelanchier alnifolia*), Nootka rose, and Himalayan blackberry (see Photograph 4-7 and Photograph 4-8). This upland vegetation was formed on a well-drained loam or silt loam over river gravel or cobble.



Photograph 4-7. Upland riparian forest at the base of Grasshopper Gulch.



Photograph 4-8. Lake Creek and upland riparian forest.

In the gulches where siphons are proposed, riparian corridors are in good condition, ranging in width from 100 to 300 feet. In contrast, smaller streams bordered by pastures have riparian corridors less than 100 feet wide, sometimes as narrow as 40 feet. Well-developed woody vegetation provides shade, helping with stream thermoregulation. Some upland riparian areas are intermixed with wetlands, enhancing biodiversity. The vegetation is predominantly native, although Himalayan blackberry is prevalent in the shrub layer. Areas with livestock access exhibited signs of degradation, including bank erosion, soil compaction, bare soil patches, and increased turbidity in waters.

5. Impact Assessment Methodology

5.1 Long-Term Impact Assessment Methods

Vegetation, wildlife, wetlands, and riparian areas within the Project Area were evaluated for potential long-term impacts. Project design and engineering were evaluated to determine potential physical impacts for each resource type. The analysis of direct long-term vegetation, wildlife, wetland, and riparian habitat impacts considered the following:

- Removal of seasonal open water sources for wildlife and the resulting effects on wildlife distribution patterns.
- Construction of siphon crossings via both the cut and cover trench method and horizontal directional boring method.
- Modification of vegetation, wetlands, and wildlife use of the decommissioned canal loops.
- Effects on wetlands that are currently supported by artificial hydrology from seepage of canal water, specifically, fringe wetlands, vegetated ditches, and wetland pastures.
- Modification of stream connectivity and the resulting effects on wetlands, riparian areas, and terrestrial wildlife that depend on these habitats.

5.2 Short-Term Impact Assessment Methods

Short-term impacts are primarily related to the temporary effects of construction during the Project. The analysis of direct short-term species impacts considered the following:

- Construction impacts to water quality and the effects on vegetation and wildlife, including from increased levels of noise, dust, and light.
- Human presence and its effects on wildlife.
- Direct ground disturbance effects to vegetation and wildlife within the project footprint.
- Impacts from construction of the siphon crossings—including both the cut and cover trench and horizontal directional boring methods—to soils, vegetation, and hydrology.
- Eagle nest disturbance locations, distance, and line-of-sight configuration.

5.3 Indirect Impact Assessment Methods

Indirect impacts are those that arise from the Project but occur later or outside the Project Area and are reasonably foreseeable. The assessment of potential indirect impacts on vegetation, wildlife, wetlands, and riparian areas considered how piping the existing canal, changes in water volume, and reconnecting flow in natural streams could affect terrestrial ecology (vegetation and wildlife), wetlands, and riparian resources in the Study Area. Additionally, the analysis examined how piping the JSC might impact species that depend on the canal for water within the Project Area. The analysis of indirect species habitat impacts included the following considerations:

- Effects on wetlands currently sustained by the incidental seepage from the existing leaky JSC.

- Modification of stream connectivity and the resulting effects on wetlands, riparian areas, and terrestrial wildlife that depend on these habitats.

5.4 Cumulative Impact Assessment Methods

Known past, ongoing, and reasonably foreseeable future actions with potential to affect vegetation, wildlife, wetlands and riparian areas in the Study Area were identified through desktop research and review of recent and pending irrigation modernization projects in the Upper Rogue River Basin and Little Butte Creek Watershed. Cumulative actions in the Study Area include previous development and other ongoing, authorized, or proposed modernization projects by MID and other irrigation districts. Based on the analysis of potential long-term impacts of the No Action and Modernization Alternatives, it was determined whether the alternatives have the potential to result in additive impacts on terrestrial ecology (vegetation and wildlife), wetlands, and riparian areas that are also impacted by other past, present, and future projects.

6. Environmental Consequences

6.1 Long-Term Impacts

6.1.1 No Action (Future without Federal Investment)

Under the No Action Alternative, the JSC would not be piped. As a result, there would be minimal to no overall impacts to vegetation, wildlife, wetlands, or riparian habitats beyond those resulting from the ongoing regular water management under current conditions.

However, long-term consequences include continued water loss due to seepage and deterioration of canal berms leading to reduced irrigation efficiency and increased risk of breaching of the canal. This could result in an impact to downstream terrestrial ecology (vegetation and wildlife), wetlands, and riparian areas due to flooding and sedimentation.

6.1.2 Modernization Alternative (Future with Federal Investment)

The Modernization Alternative would install a pressurized underground pipe along the JSC; the pipe would replace the open canal. There would also be new and updated siphon crossings. Under this alternative, the most permanent long-term impacts would be within the existing canal alignment and new siphons' alignments.

6.1.2.1 Piping

Piping would remove the influence of the existing open water in the JSC on vegetation, wildlife, wetlands, and riparian areas within the Study Area.

Vegetation

General Vegetation

Piping the JSC would eliminate a source of water for the existing hydrophytic vegetation within and adjacent to the canal, leading to the cessation of wetland vegetation in and adjacent to the canal. Upon completion of the pipe installation, the ground over and near the pipe would be regraded to match the surrounding elevations, recontoured with topsoil, and planted with a mix of native herbaceous species or pasture grasses. This change would lead to a net increase in herbaceous vegetation in the JSC alignment.

Pasture wetlands that currently rely on seepage would gradually dry out and would change to upland habitats with hydrophytic vegetation being replaced by upland species.

In the long term, the Project would result in a minor long-term negative effect to vegetation communities in the Study Area.

Federally and State-Listed Species

In the long term, the Project would alter the surface and subsurface hydrologic regime in the Study Area, affecting the presence and quality of upland habitats and riparian areas downslope from the JSC. Habitats suitable for populations of Genter's fritillary, southern Oregon buttercup, wayside aster, and white fairy poppy that may occur in the Study Area would be indirectly impacted by the Project,

though the effect on populations of listed species would be below detection. Overall, the Project would have no measurable long-term impact on special status species and their habitats.

Noxious Weeds

Over the long term, piping the JSC would remove habitat for aquatic noxious species and reduce the spread of weeds through the canal. However, retired sections of canal that would remain open in total would provide up to 1.95 miles of unvegetated soil that could be susceptible to weed invasion. Since noxious weeds are present in the Study Area and the Modernization Alternative does not propose changes in land use, intensity of activities, and human presence, the Project overall would have a negligible long-term impact on the presence, extent, and composition of noxious weeds in the Study Area.

Wildlife

General Wildlife

The Modernization Alternative would have minor long-term benefits on terrestrial wildlife. The removal of an open water source could result in changes in the distribution patterns of wildlife in the landscape as they might congregate at water sources elsewhere. However, wildlife would be expected to have sufficient time and mobility to locate alternate nearby water sources. The advantage is the abundance of open water canals, ponds, and irrigation ditches in the project vicinity.

The existing open canal can pose a barrier to terrestrial wildlife movement, and piping the JSC would make it easier for wildlife to move across the landscape as they would be able to cross over piped and backfilled areas without risk of injury or drowning (Beier et al. 2008). Seeding with native vegetation would create additional foraging habitat for wildlife species.

Federally and State-Listed Species

Mobile species such as gray wolf, North American wolverine, California mountain kingsnake, Franklin's bumble bee, Siskiyou short-horned grasshopper, monarch butterfly, and Suckley's cuckoo bumble bee do not rely directly on surface water in the JSC for breeding and feeding. These species would have no to minor long-term negative effects resulting from the long-term changes to upland vegetation, potential wetland area reduction, and altered surface water regimes.

Northern spotted owl, which may occur in higher elevations of the Study Area—particularly around waterbodies associated with MID operations—is expected to experience no effects. This is because potential changes would be limited to water level alteration with no anticipated changes to the old growth forest habitat or food sources for this species.

Tricolored blackbird (federal species of concern) might experience negligible to minor effects due to the elimination of wetlands associated with the JSC, particularly those formed by hardstem persistent rushes and cattails, which are primary nesting habitats for this species. However, the area of hardstem wetlands in the Study Area is small, and similar or higher quality habitats are available in the project vicinity. The Modernization Alternative would eliminate the open water canal, a potential foraging site for Townsend's big-eared bat (state sensitive critical listing). Any Townsend big-eared bat populations in the Study Area would relocate to alternative foraging sites, as the project vicinity offers ample opportunities with open ponds, streams, and irrigation ditches.

MBTA/BGEPA Species

There would be no long-term effect on bald and golden eagle nesting or foraging sites. The primary nesting and foraging site in the area, the Little Butte Creek and its riparian corridor with large cottonwood trees, would remain unchanged at the completion of the Project.

Migratory bird species, including bird species of conservation concern, could experience a negligible to minor long-term negative effect due to the elimination of nesting habitat (trees, shrubs, bridges, wetlands, open water). Additionally, those species feeding on insects over open water (such as swifts) could be affected due to loss of open canal. Migratory birds in the Study Area would relocate to find alternative nesting and foraging sites, as the project vicinity offers variety of habitats with woody vegetation and open water sources.

Areas of Special Concern

The Project is not expected to have long-term negative effects on the Lake Creek Unit winter range for deer and elk. Minor beneficial effects due to habitat improvements compared to preconstruction conditions following the piping are anticipated since the impacted lands would be regraded to match the surrounding elevation, covered with topsoil, and seeded with native species, resulting in improved habitat conditions.

Wetlands

The Modernization Alternative would benefit natural wetlands by restoring natural stream hydrologic patterns within the Study Area. Currently, the JSC intercepts the flow from 13 natural streams (Grasshopper, Owens, and Eagle Gulches, and Unnamed Streams 1 to 10; see Figure 4-1), altering flows in downstream stream reaches. The project would pipe and bury the canal and reconnect the upstream and downstream reaches of natural streams, leading to beneficial effects on natural wetlands located along the streams. The restoration of natural flow patterns in waterbodies would enhance natural wetland and riparian areas. The proposed action would restore natural seasonal hydrologic patterns within the streams, characterized by hot, dry summers and cooler, wetter winters. Overall, the Project would have a minor long-term beneficial effect to naturally occurring wetlands by restoring natural hydrologic conditions within the watershed.

The Modernization Alternative would result in the conversion of artificial wetlands to uplands due to the loss of seepage from the JSC. Artificial wetlands located in and adjacent to the JSC that are only supported by seepage from the JSC would revert to upland vegetation communities that were formerly present on the landscape prior to the construction of the JSC. Approximately 3.3 acres of artificially supported emergent wetlands, specifically the fringe and pasture wetlands, would revert to uplands within the Project Area. Additionally, an estimated 20 acres of pasture wetlands in the Study Area could be negatively affected by the loss of canal seepage and revert to upland grassland. Overall, piping the canal would have moderate negative impacts on artificially created wetlands in the Study Area.

Riparian Areas

In the long term, the Modernization Alternative would restore natural hydrologic patterns, benefiting riparian areas. It would improve stream flow, habitat connectivity, and wildlife travel corridors. Reconnecting Owens Gulch and Unnamed Streams 1 to 6, 8, and 9 would create over 150 linear feet of riparian corridor at each waterbody-canal crossing. Increased flow and water storage in Little Butte Creek, South Fork Little Butte Creek, North Fork Little Butte Creek, Fish Lake, and Fourmile Lake would enhance the hydrologic regime, providing minor long-term benefits to riparian and

wetland areas. The Project would restore natural seasonal hydrologic patterns within streams, resulting in minor long-term benefits to wetland and riparian areas within the Study Area.

6.1.2.2 Existing Siphon Updates and Canal Loop Improvements

Under the Modernization Alternative, six siphons were evaluated that would shorten the overall length of the canal; three existing siphons would be upgraded and three are potential new siphons under canal loop improvements. All of the siphons would be underground and over the long term, existing sensitive natural resources—such as wetlands, riparian areas, and wildlife habitat—would remain intact. MID may apply use restrictions such as prohibitions on tree growth, and limits on heavy equipment and vehicle use within easements surrounding the siphons.

In the three canal loop segments, decommissioning the unnecessary canal loop would involve abandoning the existing canal in its current condition, reconnecting streams that intersect the canal, restoring the natural hydrologic regime, and planting streamside woody vegetation. In the long term, these activities would have minor beneficial effects on vegetation, wildlife, wetlands, and riparian areas by supporting a natural seasonal hydrologic regime in the Study Area, which is important for maintaining habitat quality downstream of the JSC.

Vegetation

After the completion of siphon updates or new siphon construction, long-term impacts may result from maintenance activities such as maintaining short-rooted vegetation and discouraging tree establishment. In the long term, the narrow crossing corridor might be converted from a forested to a shrub vegetation community.

At locations where new siphons are proposed, the unnecessary canal loops would be retired and left open. Limited planting and seeding would occur where decommissioned canal sections intersect with natural streams. It is expected that riparian trees and shrubs, in combination with herbaceous plants, would form riparian vegetation in areas disturbed by construction activities at these locations.

Overall, impacts to vegetation at siphon crossings would range from minor to moderate.

Wildlife

After the completion of construction at the siphon crossings, wildlife might be negatively impacted by MID maintenance activities.

In areas where new siphons are proposed, the no-longer-necessary canal loops would be decommissioned and left open. Minimizing project activities within these loops would be advantageous, as additional earthwork could disrupt wildlife, disturb existing vegetation, and increase the risk of soil erosion. Decommissioned and left-open canals would have a negligible impact on terrestrial wildlife migration, as these areas would not contain water and would have egress points at the ends of these sections within 1,000 feet. In addition, vegetation growth within these decommissioned canals would, in the long term, provide additional foraging habitat for wildlife species. In appropriate cases and under consultation with ODFW, MID would consider constructing a gentle sloping dirt ramp to prevent wildlife from becoming trapped at the bottom of the empty canal segments.

Wetlands

At siphon crossings, once the crossing is constructed, long-term changes in hydrology could occur. Many artificial wetlands on the slopes of gulches are currently sustained by incidental canal

seepage. Piping would eliminate the seepage, potentially reverting these wetlands over time to uplands that were formerly present on the landscape prior to the construction of the JSC, as described above. Consequently, there could be moderate long-term negative impacts on these artificial wetlands. These impacts would be measurable and apparent and relatively localized.

The no-longer-necessary canal loops would be decommissioned and left open. Discontinued water supply would negatively affect artificial wetlands receiving canal seepage located in or adjacent to the canal.

Natural wetlands located at the base of the gulches and supported by stream water would have minor beneficial long-term effects resulted from restoring the hydrological regime of the stream.

Riparian Areas

By the end of siphon construction, disturbed soils and vegetation within the construction corridor would be restored. Post restoration, the long-term impacts would be limited to maintenance activities aimed at preventing tree and shrub growth over the siphon pipe. Given the narrow siphon corridor and the presence of mature trees outside this corridor, the long-term impacts on riparian areas would be minor.

6.2 Construction (Short-Term) Impacts

6.2.1 Impacts from Construction

6.2.1.1 Joint System Canal

Potential short-term impacts of piping the JSC (canal only, does not include the siphons discussed below) would result from construction activities and would be expected to decrease following completion of construction.

Vegetation

General Vegetation

Under the Modernization Alternative, short-term direct impacts to vegetation would occur from construction activities such as vegetation clearing, access road construction, equipment mobilization and staging, excavation, existing concrete structures' removal, blasting, and backfilling the pipe. Upon completion of construction activities, the area above the pipe would be backfilled, recontoured with topsoil, and vegetated with a seed mix of NRCS-approved grasses and forbs. This would result in a net increase in herbaceous vegetation where the pipe is placed within the existing JSC alignment.

Vegetation removal would be minimized by accessing the site via established MID or farm roads where feasible. Tree removal would be avoided to the extent practicable; however, site conditions and the area required for construction could require the removal of mature trees. Tree protection measures would be implemented during construction to assist crews in avoiding impacts to existing mature trees to the greatest extent feasible.

Moderate short-term impacts to vegetation would be limited to the Project Area.

Federally and State-Listed Species

The Project Area where construction would occur contains habitats suitable for federally and state-listed plant species. Access roads and staging areas would be confined to previously disturbed

locations including unpaved roads, areas used for aggregate removal, and farmlands and pastures. BMPs would be implemented during construction to mitigate risks of impact to undisturbed adjacent areas. With implementation of BMPs, the Project would result in minor short-term impacts to federally and state-listed plant species.

Noxious Weeds

There is potential to spread noxious weeds through the movement of construction vehicles, which could transport weeds to new locations. BMPs would be implemented during construction to mitigate this risk. During construction, exposed soils would be susceptible to weed invasion. The contractor would avoid unnecessary ground disturbances, minimize ground disturbance, regularly check and clean equipment and vehicles to prevent the spread of weed seeds, and ensure that erosion control measures such as straw wattles are free of weeds and weed seeds. Any disturbed areas would be reseeded with an erosion control seed mix consisting of an appropriate mix of native plants, pasture grasses, and sterile wheat. With the use of BMPs during construction, the Modernization Alternative would have a negligible short-term effect on spreading noxious weeds.

Wildlife

General Wildlife

Construction impacts to wildlife would include short-term loss of habitat from vegetation clearing and noise impacts from construction activities, equipment, and human presence. Terrestrial wildlife may be disturbed by noise from the operation of heavy machinery or by habitat disruption resulting from ground disturbance, tree removal, or vegetation clearance

Blasting is particularly known to be disruptive to wildlife. Blasting noise could cause terrestrial wildlife to leave areas of active blasting and the surrounding vicinity, resulting in minor to moderate adverse effects. It is expected that wildlife could relocate to other areas of suitable habitat which is readily available near the JSC. Following completion of construction activities, it is expected that wildlife species would return to the Project Area and would use newly created habitats over and near the buried pipe. If blasting is required, it would be confined to short sections of the Project Area where it is necessary due to rocky soils, specifically in the western end of the Project Area. In this portion of the project alignment, two rock quarries are situated and wildlife have become accustomed to such noise levels; these disturbances are anticipated to be minimal, familiar, and of short duration during the construction period.

Direct and short-term impacts from piping the JSC would include loss of open water and reduction of vegetation near the water. The removal of this water source could alter the distribution patterns of wildlife within the Project Area. However, the Modernization Alternative would be implemented in phases over time, allowing ungulates and other terrestrial wildlife ample time to adjust to the conditions and find new water, foraging, and shelter sources. Overall, construction activities would cause minor short-term effects on wildlife due to temporary loss of habitat availability during construction and as revegetation activities progress.

Federally Listed and State-Listed Species

Gray wolf would experience minimal impact from construction activities. It is expected that animals would vacate the construction zone during the initial phases of site preparation, subsequently relocating to other suitable habitats in the vicinity. No dens are known within the Project Area. Furthermore, vegetation clearance and blasting operations would be scheduled for times outside the denning season (wolf pups are typically born between late April and early June). Consequently, the Project would have no effect on gray wolf. Critical habitat for gray wolves is not designated in Oregon.

North American wolverine may be present on transient occurrence as it moves through or to suitable habitat. It is expected that animals would vacate the construction zone during the initial phases of site preparation, and project activities would have no effect on North American wolverine.

Northern spotted owl would experience no effects from the Project, since no construction activities are proposed within the portion of the Study Area where this species may occur.

Tricolored blackbird would experience direct short-term impacts due to removal of suitable nesting and foraging habitat. However, with scheduling the initial stages of construction outside the nesting period and implementation of BMPs, construction impacts to tricolored blackbird would be minor.

Townsend's big-eared bat would experience direct short-term impacts due to potential removal of a roosting and/or feeding site. However, with scheduling construction activities outside of critical periods such as breeding, roosting, and hibernation seasons, and implementation BMPs, the short-term construction impacts on Townsend's big-eared bat would be minor.

Construction may cause minor short-term effects to monarch larvae on these species due to ground-disturbing activities and shrub and tree removal. Construction is not anticipated to effect California mountain kingsnake, Franklin's bumble bee, Siskiyou short-horned grasshopper, and Suckley's cuckoo bumble bee.

The NEPA impact characterizations described above reflect the anticipated magnitude and duration of effects on species and habitat and are distinct from the ESA Section 7 effect determinations documented in the Biological Assessment and summarized in Section 6.5 Conclusion of this report.

MBTA/BGEPA Species

There is no expected effect on breeding migratory songbirds or waterbirds, as construction activities would be scheduled outside of the nesting season. If construction, including clearing and grubbing of vegetation, begins during the nesting season, clearance surveys would be completed prior to vegetation clearing and grubbing for construction to ensure that construction of the Project would not disturb the nests of native avian species. Short-term impacts to migratory birds would be minor as a result of temporary disturbance to vegetation and construction activities.

To ensure minimal disturbance to known bald eagles nesting near the Project Area, construction activities would adhere to USFWS National Bald Eagle Management Guidelines (2007). Prior to construction, nest occupancy surveys would be conducted. If nests are found to be occupied, vegetation clearing and other activities that could visually disturb birds within 660 feet of the nests would be scheduled outside the critical nesting period (January 1 through August 31).

It is well documented that construction disturbance, particularly blasting, during the eagle nesting season can result in adverse effects to eagles and other raptors. Shockwaves and vibrations from blasting activities could cause physical damage to nearby nests, potentially dislodging them from trees or structures. Additionally, the disturbance caused by blasting could lead to abandonment of nests, leaving eggs or chicks vulnerable to predation or exposure. To avoid and minimize impacts to nesting eagles, blasting and other activities that produce extremely loud noises within 0.5 miles of active nests would be avoided as recommended by USFWS (2027). If an active nest is found at 0.5 miles or closer to the construction area, necessary blasting would be scheduled outside the critical nesting period (January 1 through August 31).

Additionally, project activities would not affect bald eagle feeding opportunities, as the Project would not directly impact the nearest fish-bearing waterbody, Little Butte Creek. With these measures in place, impacts to bald eagle species are anticipated to be negligible to minor.

Areas of Species Concern

The Lake Creek Unit deer and elk winter range would be minimally affected by construction disturbance because piping the JSC would occur in stages, not all at once. This would localize the area of disturbance and leave large portions of the winter range undisturbed throughout the duration of construction. Following piping, impacted lands would be matched up with surrounding elevation, regraded with topsoil, and seeded with native species leaving habitat conditions improved compared to existing conditions.

Wetlands

Pipe construction activities may result in a short-term impact to adjacent artificial and natural wetlands due to the potential for soil erosion and the mobilization of sediments in stormwater. With proper BMPs, there would be no impacts or minor short-term impacts to adjacent wetlands.

Riparian Areas

Riparian areas along streams intersecting the JSC would potentially be impacted by clearing for construction access, excavating and filling, recontouring, and constructing the bed and banks of the canal. Riparian vegetation would be planted along the newly constructed stream channels.

Following construction, the new pipelines would be buried. All disturbed areas would be recontoured and planted with a seed mix of native grasses and forbs in consultation with NRCS, thus mitigating the potential for soil erosion and the mobilization of sediments in stormwater. Herbaceous riparian vegetation would be established along the banks of reconnected channels that convey streams across the piped JSC.

Overall, the Project would have moderate short-term effects to riparian areas due to vegetation clearing and excavation of these habitats during construction, as well as from subsequent vegetation reestablishment.

6.2.1.2 Existing Siphons Updates and Canal Loop Improvments

Under the Modernization Alternative, six siphons were evaluated; three existing siphons would be reconstructed in place and three new siphons would bypass sections of the existing JSC. All of the siphons would be underground. If the Preferred Alternative does not involve constructing new siphons, then the Grasshopper, Owens, and Eagle Gulches' siphons would not be built. Consequently, the impacts on vegetation, wildlife, wetlands, and riparian areas would be similar to those detailed in Section 6.2.1.1. which discusses the impacts from pipe construction. For all siphon construction, the specific effects within the siphon corridors would depend on the construction method employed. The appropriate siphon construction method would be determined for each siphon prior to construction and may include a condition assessment of the existing siphons.

Existing siphons at Lake Creek, Wyant Gulch, and Osborne Creek would be upgraded by one of three methods: sliplining the current siphon, replacing the existing siphon with a new one at the same location, or decommissioning the current siphon and constructing a new one adjacent to the existing structure. Decommissioning the existing siphon would involve backfilling the siphon with controlled low-strength material to prevent future surface collapse and to eliminate the risk of entrapment potential for humans, livestock, and wildlife.

Siphons can be installed using a cut and cover trench method, horizontal directional boring method, or a combination of the two. Replacing the existing siphon or constructing an adjacent siphon would involve access road construction, vegetation clearing, equipment mobilization and staging, trenching or boring, backfilling open trenches after pipe installation, recontouring the ground, and

revegetating. Construction-phase erosion, sediment, and pollution control and spill prevention BMPs would be employed to minimize stormwater runoff to areas outside of the construction zone.

Trenching

If a trenching method is selected, construction would occur during the ODFW preferred work period for Rogue River tributaries above Marial, Oregon (June 15 to September 15). The work area within a waterbody would be isolated by cofferdams, and temporary water management would maintain flows downstream and out of the work area. Trenching approximately 4 to 8 feet below the bottom of the active streambed would occur to facilitate the placement of the siphon. The siphon would be backfilled, preexisting contours restored, and native vegetation and streambed established.

Vegetation

Trenching would involve vegetation removal within the alignment and construction corridor and, potentially, tree removal for equipment access. Exposed soil could increase sediment runoff into adjacent vegetation communities. Implementation of BMPs such as silt fencing would be used to minimize these effects. If trenching is selected as the method, there would be a moderate direct short-term impact to vegetation.

Wildlife

Vegetation removal would lead to temporary loss of habitats for various species of birds and wildlife. Following the construction, replanting and seeding would restore lost habitats. Additionally, indirect minor short-term effects to wildlife species would be expected from human presence and noise from operating equipment. Generally, the short-term effects would be similar to those caused by piping the canal, which are described in Section 6.2.1.1

Wetlands

During siphons construction, there would be a moderate direct short-term impact to natural and artificial wetlands located at the bases and sides of gulches. Impacts would include removal of wetland vegetation and excavating hydric soils. Exposed soil could increase sediment runoff into adjacent vegetation communities, wetlands, and riparian areas. Implementation of BMPs such as silt fencing would be used to minimize these effects. Additionally, to minimize impacts from construction, excavated material would be sidecast with topsoil stored separately. During the backfill, topsoil would be used as topsoil material for replanting.

Riparian Areas

Removal of riparian trees and shrubs would result in temporary loss of riparian functions, such as loss of wildlife shelter and travel corridor, and water thermoregulation. These temporary impacts would be partially mitigated by promptly replanting disturbed areas with shrubs and herbaceous species. However, the loss of mature trees and their associated habitat functions would have long-term effects, as detailed in the long-term impacts section.

Exposed soil could increase sediment runoff into adjacent streams, wetlands, and riparian areas. Implementation of BMPs such as silt fencing would be used to minimize these effects. During construction, there would be a moderate direct short-term impact on riparian areas.

Boring

Jack and bore, also referred to as horizontal directional boring, would involve establishing launching and receiving pits on either side of sensitive natural resources such as streams, wetlands, or a riparian corridor. The two pits would be used to install the siphon approximately 4 to 8 feet below the

bottom of the active streambed and soil surface, ensuring that plants, soils, roots, and aboveground habitat remain undisturbed. Sediment and erosion control measures would be in place to minimize sediment loading into adjacent vegetated areas.

Vegetation

Vegetation removal would be limited to small areas required for launching and receiving pits. Vegetation would be reestablished at the completion of siphon construction. The impact on upland vegetation would be negligible to minor and short-term.

Wildlife

Wildlife is likely to experience only minor impacts, as it can migrate out of the construction zone and use adjacent undisturbed habitats.

Wetlands

Since the boring pits would be in uplands, the impact on wetlands is expected to be negligible and short-term.

Riparian Areas

The primary advantage of using boring methods, compared to trenching, is that disturbance would occur outside of riparian areas; therefore, the Project would have no to negligible effects on riparian areas.

Decommissioning Canal Loops

Canal loops that are no longer needed would be abandoned in their present conditions except for five specific areas where decommissioned canal sections intersect with natural streams: one location at each for Wyant Gulch, Owens Gulch, and Eagle Gulch, and two locations at Grasshopper Gulch. At these intersections, the upstream and downstream reaches of the streams would be reconnected. This process could involve construction access and staging, vegetation removal, filling in the canal and/or adjacent wetlands, excavating and removing existing concrete structures from the site, recontouring streambeds and stream banks, and installing streambed substrate.

In the remaining sections of the canal, beyond the stream crossings, minimal or no activities would occur other than the potential use of the canal alignment for access. The canal structures including concrete lining, concrete wingwalls, and concrete flumes would remain in place in their existing conditions.

Vegetation

Vegetation along the canal banks and immediately adjacent to the retired canal loops would be directly affected by no water flowing through the canal after project completion, leading to stress and a potential die-off of species that are sensitive to a shortage of water. Consequently, the overall effect on vegetation would be minor to moderate and localized.

Wildlife

The overall effect on wildlife would be similar to that caused by piping (see Section 6.2.1.1), except no blasting would be required. Overall, construction activities would cause minor short-term effects on wildlife due to a temporary loss of habitat availability.

Wetlands

Decommissioning of canal loops would have no short-term effect to adjacent artificial or natural wetlands.

Riparian Areas

The impact of reconnecting the streams would be minor, as it would occur at only four locations within the Project Area. Native trees and shrubs would be planted on newly constructed stream banks to replicate riparian corridor up- and downslope of the crossing. Consequently, the overall effect on riparian areas would be beneficial minor, direct, small, and localized.

6.2.2 Potential Staging and Access Areas

The construction contractor could potentially select one or more staging areas to store or assemble materials that would then be transported by truck to the construction site. Potential staging areas have been identified, and their locations are specified in the Land Use Technical Report for this Project. Areas that have been previously disturbed and are accessible via existing access routes would be prioritized.

Construction access has not been identified. The contractors would prioritize using existing disturbed ground such as the JSC access road, farm roads, aggregate mine roads, and pastures to access the site. In some locations, specifically at new siphons, construction access would need to be created before delivering pipe or equipment into construction areas.

6.2.2.1 Vegetation

Potential staging areas currently lack trees and shrubs and contain only pasture grasses and common weeds. No ground-disturbing activities are planned for these staging areas. However, if incidental ground disturbance occurs, the affected areas would be restored and reseeded. At new and possibly at existing siphon crossings, however, access roads would need to be constructed, and thus, the removal of shrubs and trees could be necessary, along with the potential placement of fill or access mats. All created access roads would be removed after completion of construction, and vegetation would be restored. Overall, the creation and use of the staging and construction areas would result in moderate short-term localized impacts to vegetation.

6.2.2.2 Wildlife

Wildlife in the surrounding area would be impacted by construction noise generated by equipment at the staging and stockpiling areas and along material haul routes. Since potential off-site staging areas would be confined to previously disturbed locations such as unpaved roads, areas used for aggregate removal, and pastures, impacts to sensitive birds and wildlife species are not anticipated at staging areas. BMPs would be implemented during construction to mitigate the risk of impacts to undisturbed adjacent areas. Minor impacts would occur from activities on staging and access areas.

6.2.2.3 Wetlands

One natural wetland was identified within a potential staging area located in the east end of the Project Area. To avoid and minimize impacts, boundaries of this wetland would be identified and flagged prior to bringing equipment to this staging area.

Wetlands were delineated within the siphon crossing corridors. Access roads for siphon construction would be selected outside of mapped wetlands to minimize impacts. All access roads would be in

place temporarily. All created access roads would be obliterated, and wetlands would be restored. Overall, the creation and use of the staging and construction areas would result in minor to moderate short-term localized impacts to wetlands.

6.2.2.4 Riparian Areas

No staging would occur in riparian areas or in the project vicinity. To the extent possible, access roads for siphon construction would be planned outside of the riparian areas. If construction activities in riparian areas are necessary, activities would include vegetation clearing, soil disturbance, and placement and removal of access road materials. BMPs and appropriately sized construction equipment would be used to minimize direct disturbance and mobilization of soils, sediments, and contaminants in stormwater runoff into surrounding riparian areas. At the completion of construction, all created access roads would be returned to a natural setting and riparian vegetation restored. The Project would result in minor to moderate short-term impacts to riparian areas.

6.3 Cumulative Effects

There are several ongoing or reasonably foreseeable projects within the vicinity of the Study Area that could result in potential cumulative effects on vegetation, wildlife, wetlands and riparian areas. It is particularly important to evaluate the cumulative effects of other actions that propose canal piping, water preservation, and dam removal.

The combined, incremental effects of past, present, and reasonably foreseeable actions are referred to as cumulative effects. While they may be insignificant by themselves, cumulative effects accumulate over time from one or more sources and can result in the degradation of important resources. The MID Infrastructure Modernization Project could potentially contribute to cumulative effects on vegetation, wildlife, wetlands and riparian areas when considered in combination with other agricultural development and conservation projects in the Little Butte Creek Watershed.

6.3.1 No Action Alternative

Under the No Action Alternative, no federal funding would be forthcoming to support the Project and modernization of the JSC system would not take place. No direct effects on vegetation, wildlife, or wetlands and riparian areas would result from the Project, and existing conditions would remain unchanged. The Project would, therefore, not contribute to cumulative impacts to vegetation, wildlife, or wetlands and riparian areas.

6.3.2 Modernization Alternative

6.3.2.1 Vegetation

Agricultural activities, livestock grazing, vegetation control along roads, and urban and suburban development are responsible for most of the past and ongoing effects on vegetation in the Study Area and in the region. Livestock grazing can introduce and spread weed species, degrade native vegetation communities, and trample riparian and wetland areas. In addition, vegetation control activities generally include herbicide applications to control vegetation and noxious weeds, and the mechanical cutting of vegetation. The amount of vegetation that would be affected by the proposed action is small compared to the area affected by past and ongoing agricultural activities, livestock grazing, and vegetation control along roads and other utility corridors in the area. In addition, these

past actions are not expected to change measurably from current conditions, resulting in minor cumulative effects.

6.3.2.2 Wildlife

Agricultural, urban, and suburban development have affected wildlife and wildlife habitat in the Study Area and project vicinity since the late 1800s. Agricultural activities have substantially altered the habitat in in some parts of the project vicinity and the surrounding region by removing native vegetation communities and diverting streamflow. Livestock grazing occurs in much of the region around the Project Area and continuously results in the introduction and spread of weed species, the degradation of native habitat, trampling of riparian and wetland areas, and erosion of streambanks. Some native habitats have been replaced with disturbance-tolerant or introduced species assemblages that may support different wildlife than previously existed. These ongoing activities would continue to affect wildlife and wildlife habitat in the Project Area.

Raptor and eagle nesting sites occur within the watershed. Implementation of the proposed action may overlap with the primary nesting season for raptors and eagles. With implementation of avoidance and minimization measures, the cumulative effects on raptors and eagles from implementation of the proposed action would range from negligible to minor.

Wildlife currently use the JSC and other irrigation canals as water sources. Implementation of the proposed action would cause wildlife to find other water sources as it did prior to installation of the canal, but the proposed action would also create connected habitat corridors through which wildlife could travel. Since effects of the proposed action on wildlife would happen incrementally over the several years needed to complete the Project, animals would be able to adapt. Restoring the landscape to its pre-canal conditions would mimic the native conditions characterized by dominant native oak woodlands, mixed conifer forests, and riparian corridors. Furthermore, because other past, present, and reasonably foreseeable future actions affect wildlife across a broad geographic area in the Deschutes Basin, the cumulative effects on wildlife from implementation of the proposed action would be minor.

In addition, vegetation control activities including herbicide applications to control noxious weeds and the mechanical cutting of vegetation are ongoing actions that contribute to wildlife habitat changes. In conjunction with past and ongoing agricultural activities, livestock grazing, vegetation control, and urban and suburban development in the area, the proposed action would have a negligible cumulative effect on wildlife habitat available.

6.3.2.3 Wetlands and Riparian Areas

Past actions that may have affected wetlands, riparian areas, and floodplains consist of the original construction of the irrigation canals as well as agricultural activities, livestock grazing, vegetation control, and rural development. Seepage from the JSC has contributed to the creation of wetland pastures within or adjacent to the Project Area. The proposed project would eliminate canal seepage water available to vegetation and these wetland features during the irrigation season. It is anticipated that natural hydrology would not sustain these wetlands. Reasonably foreseeable future actions in the Project Area that could affect wetland vegetation along irrigation canals include agricultural activities, livestock grazing, vegetation control along roads and utility corridors, and urban and suburban development.

Future irrigation canal piping projects may increase streamflow benefiting riverine wetlands and riparian areas and result in the loss of artificial wetlands that are supported by canal seepage. MID and RRVID secured an EPA Community Grant for Phase 1 of the Joint System Canal Pipeline Project

for Fiscal Year 2022. This project includes piping the North Fork Canal and South Fork Canal that will eliminate water losses from the current open unlined canal. RRVID also proposes to modernize irrigation infrastructure by piping or lining opens canals and laterals. The RRVID project would reduce conveyance and operational losses over the irrigation season and improve RRVID's ability to efficiently provide water to its patrons. The project is sponsored by RRVID, with planning funding and technical support from NRCS Oregon. The Phase 1 piping project and RRVID irrigation modernization project may result in increased water volumes in Fish Lake and Fourmile Lake and may involve reduced diversion from diversion points on North Fork Little Butte Creek and South Fork Little Butte Creek, thereby increasing flow in these waterbodies in addition to Little Butte Creek. The cumulative effect of the Project and other past, present, and reasonably foreseeable future projects on wetlands and opportunistic hydrophytic vegetation is expected to moderately impact the extent of artificial wetlands and minorly benefit naturally occurring riverine wetlands and riparian areas.

6.4 Compliance with Laws, Regulations, and Standards

The Project would comply with all federal, state, and local laws and regulations that would be triggered by the Project's construction activities. Permits would be applied for and acquired before Project construction begins.

6.4.1 Federal

6.4.1.1 Endangered Species Act of 1973

Separate from the NEPA impact characterizations described above, NRCS made effect determinations pursuant to Section 7 of the ESA. NRCS drafted a Biological Assessment and determined that the Project would have no effect on Gentner's fritillary or ESA-listed or proposed wildlife species, including gray wolf, North American wolverine, California condor, northern spotted owl, Franklin's bumble bee, and Suckley's cuckoo bumble bee, or their designated critical habitat. For monarch butterfly, in the event that the species is listed prior to completion of the Project, NRCS made a provisional effect determination of "may affect, but is not likely to adversely affect." USFWS reviewed the Biological Assessment and had no comments. On August 27, 2026, USFWS indicated that it was prepared to complete a conference report for the monarch that would transition to informal consultation if the species were listed during project implementation.

6.4.1.2 Migratory Bird Treaty Act of 1918

MID would attempt to complete initial project stages including vegetation clearing, tree removal, grubbing, and soil grading outside of the nesting season. Migratory birds traversing the area are expected to be highly mobile and capable of avoiding localized construction zones. In the event of potential take of these species, compliance with the MBTA under the jurisdiction of USFWS would be required.

6.4.1.3 Bald and Golden Eagle Protection Act of 1940

The take of bald or golden eagles is not anticipated by the Project since no nests would be disturbed and construction would primarily occur outside of the nesting season. Should the potential for take of these species or disturbance to nesting occur, compliance with BGEPA under the jurisdiction USFWS would be required.

MID would follow USFWS National Bald Eagle Management Guidelines (2007) to ensure minimal disturbance to bald or golden eagles nesting near the Project Area. More specifically, the following standards would apply:

- Keep a distance between any activity and the nest; this is known as a distance buffer.
- Maintain (preferably) forested or natural areas between the activity and around nest trees; these are landscape buffers.
- Avoid certain activities during the breeding season.

If the activity is visible from the nest and there is no similar activity within a mile, a distance buffer of 660 feet is recommended, along with landscape buffers. If the activity is not visible from the nest, a 330-foot buffer would be sufficient. Any clearing, external construction, and landscaping between 330 and 660 feet would be conducted outside the breeding season. Activities involving loud intermittent noises, such as blasting, would be avoided within a half mile of active nests.

6.4.1.4 Fish and Wildlife Coordination Act of 1934

The Project would ultimately increase flow in streams and other waterbodies and would improve conditions for wildlife resources. Early coordination and guidance provided by USFWS on the Project to minimize impacts on wildlife resources in accordance with the Fish and Wildlife Coordination Act would be incorporated into project implementation. Details are provided in the Fish and Aquatic Species Technical Report.

6.4.1.5 Public Law Number 83-566 Section 12

The NRCS State Technical Committee would contact USFWS for its recommendations regarding fish and wildlife resources in relation to the Modernization Alternative prior to project implementation.

6.4.1.6 Clean Water Act, 1977 as Amended, 33 U.S.C. 1251-1376

Section 401 Water Quality Certification

The proposed action would comply with state water quality requirements and standards. The construction-phase BMPs outlined in Section 7 would align with the water pollution control requirements to ensure water quality requirements are met. The joint permit application (JPA) submitted to USACE would be forwarded to DEQ to ensure the proposed action does not endanger waters of the United States. Project water quality certification would be obtained from DEQ.

Projects involving fill or removal activities without a 401 certification (i.e., without a USACE 404 permit and impacts to waters of the US) may still be liable under Oregon Revised Statutes 468B.025 for causing pollution, placing wastes, (including soils or excavated materials in waters of the state) in a location where they likely to escape or be carried into waters of the state, or violating Oregon's water quality standards as set out in OAR Chapter 340, Division 41. This provides directives to protect water quality standards, including for toxic substances and biocriteria, that may affect vegetation, wildlife, wetlands, and riparian areas.

Section 404 for Permitting Discharge of Dredged or Fill Material

Jurisdictional Determination/Waters of the United States

Parametrix determined the anticipated jurisdictional status of the wetlands using the USACE/EPA Final Rule: Revised Definition of “Waters of the United States; Conforming” published in the Federal

Register and that became effective on September 8, 2023. USACE will review the delineated boundaries and determine jurisdictional status prior to permitting.

Waters of the United States in the 200-foot Study Area likely include wetlands adjacent to the 13 natural streams currently crossing the JSC and wetlands located in the siphon construction corridors. Thus, forested and scrub-shrub wetlands are likely to be considered jurisdictional as they are adjacent to jurisdictional waters and are likely sustained by natural hydrology.

The following are likely not waters of the United States:

- Artificially irrigated areas that would revert to dry land if the canal was piped and irrigation ceased as result. Many emergent wetlands, including fringe wetlands and pasture wetlands, are sustained by canal water and thus meet the definition of artificially irrigated areas.
- Ditches excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water. Vegetated wetland ditches delineated in the Project Area fall into this non-jurisdictional feature category.
- Wetland benches delineated in the Project Area are sustained by natural hydrology, but they do not have a continuous surface connection with any jurisdictional waters. Wetland benches do not meet the definition of adjacency.

The jurisdictional status of wetlands is directly connected to the jurisdictional status of waters. For an explanation of the anticipated jurisdictional status of waters, please refer to the Wetlands and Waters of the United States and State Delineation Report.

Permitting

The USACE and EPA identified types of activities not requiring permits. Impacts to jurisdictional wetlands associated with the Project may fit the description of activities that are not prohibited by or otherwise subject to regulation under 40 CFR 232.3(c)(3): “Construction or maintenance of farm or stock ponds or irrigation ditches…. Discharge associated with siphons, pumps, headgates, wingwalls, weirs, diversion structures, and such other facilities as are appurtenant and functionally related to irrigation ditches are included in this exemption.”

If USACE determines that project activities are not considered exempt from Section 404 regulation, and if USACE determines that the Project would have only minimal adverse effects, the Project could be permitted under a Nationwide Permit (NWP). The General Permit process eliminates individual review and allows certain activities to proceed quickly, with minimal delay, if the general or specific conditions for the NWP are met. To qualify for a NWP, the Project shall not result in the loss of greater than one-half acre of waters of the United States, including wetlands for the single and complete Project. The project activities would likely fit the description of the NWP 58 Utility Line Activities for Water and Other Substances and/or NWP 27 Aquatic Habitat Restoration, Establishment, and Enhancement Activities.

Wetland compensatory mitigation would be required if the Project results in cumulative loss of wetlands greater than one-tenth of an acre.

If USACE determines that the Project has the potential for significant impact on a water of the United States, including wetlands, an individual Section 404 permit would be required. Individual permit applications are evaluated by USACE under a public interest review and against the environmental criteria set forth in CWA Section 404(b)(1) guidelines as promulgated by EPA.

As part of the Section 404 review, consultation with USFWS and NMFS under Section 7 of the ESA and coordination with DEQ on the Section 401 water quality certification would be conducted to

confirm that the Project meets other federal regulatory requirements. During construction, contractors would be required to follow permit terms and conditions to ensure that impacts to wetlands are avoided and minimized.

Section 404 of CWA permitting would require preparation and submission of a JPA to USACE, DEQ, and DSL.

6.4.2 State

6.4.2.1 OAR Division 635, Oregon Endangered Species Act and Sensitive Species Rule

ODFW would review and comment on the JPA submitted to DSL to ensure the Project is compliant with the Oregon Endangered Species Act for potential impacts to those species with a status of threatened or endangered in Oregon. The JPA would specifically outline conservation measures and construction BMPs designed to mitigate impacts on state-listed species including northern spotted owl, California mountain kingsnake, and Townsend's big-eared bat.

6.4.2.2 OAR Division 660, Oregon's Statewide Planning Goals and Guidelines

The Project would comply with the provisions of Oregon Statewide Planning Goal 5, Natural Resources, Scenic and Historic Areas, and Open Spaces, through compliance with state and federal rules and would require a land use permit to meet this goal. See the Land Use Technical Report for details on the land use permitting process.

6.4.2.3 ORS 196.795-990, Oregon Removal-Fill Law

Jurisdictional Determination/Waters of the State

A wetland and waters delineation was completed for the Project and submitted to DSL for review on December 12, 2025. On July 15, 2026, DSL concurred with the wetland and other waters boundaries, with revisions, for purposes of the state Removal-Fill Law. DSL's concurrence applies only to the state Removal-Fill Law. Federal jurisdiction under the Clean Water Act remains subject to review and approved jurisdictional determination by USACE.

Permitting and Mitigation

During coordination on April 24, 2025, DSL acknowledged that the Project would provide benefits to the Little Butte Creek Watershed and its ecosystem, and discussed the potential to evaluate the Project as a habitat improvement effort. Although habitat improvement projects are not specifically defined under current state Removal-Fill regulations, the agency indicated that demonstrating a clear net benefit to aquatic and riparian resources during the permitting process may help support the permitting pathway that would not require compensatory mitigation. Under this approach, impacts will be minimized to the extent practicable, and unavoidable wetlands impacts would be recognized and evaluated within the overall long-term ecosystem modification.

6.4.3 Local

The Modernization Alternative is consistent with the goals of the Jackson County Comprehensive Plan, which aims for the coordinated development of natural areas, wildlife habitats, wetlands, and water resources. During the project development phase, MID facilitated field surveys to inventory wetlands, waters, riparian zones, and wildlife habitats in the Project Area. MID would collaborate with

the Jackson County Planning Division to ensure the conservation of critical wildlife areas, sensitive bird and mammal habitats, wetlands, waters, and riparian zones. If resources identified by the County are at risk of being impacted by the Modernization Alternative, the applicable county regulations and development standards would be followed; compliance would be verified by the County.

6.5 Conclusion

During construction, the Modernization Alternative is anticipated to result in moderate short-term impacts to vegetation, wetlands, and riparian areas along the JSC alignment.

Upon completion of construction, the Project would have none to negligible effects to vegetation, and moderate effects on the distribution, extent, and functions of wetlands and riparian areas. Conversely, the Project could result in minor beneficial effects on the quality of natural wetlands, streams, and riparian corridors located in and downslope from the Project Area. General wildlife and bird species are likely to benefit from overall improved habitat conditions.

NRCS drafted a Biological Assessment and determined that the project would have no effect on Gentner's fritillary or ESA-listed or proposed wildlife species, including gray wolf, North American wolverine, California condor, northern spotted owl, Franklin's bumble bee, and Suckley's cuckoo bumble bee, or their designated critical habitat. For the monarch butterfly, in the event that the species is listed prior to completion of the Project, NRCS made a provisional effect determination of "may affect, but is not likely to adversely affect." USFWS reviewed the Biological Assessment and had no comments. On August 27, 2026, USFWS indicated that it was prepared to complete a conference report for the monarch that would transition to informal consultation if the species is listed during project implementation.

7. Mitigation Measures

Project design features and BMPs would be applied during construction of the Modernization Alternative to avoid and minimize the Project's short-term and long-term effects on vegetation, wildlife, wetlands, and riparian areas. The general construction practices and BMPs may include but would not be limited to the following:

- Construction would occur during the non-irrigation season when there is no water in the canal, except for water incidentally retained in isolated low areas.
- Construction limits would be clearly flagged on-site to avoid unnecessary habitat or ground disturbance.
- Silt fencing and other temporary erosion and sediment control measures would be used to minimize effects to on-site or adjacent wetlands.
- Temporary travel routes and construction staging areas would be selected to minimize effects on vegetation and avoid mature trees to the extent practicable.
- After construction, the Project Area would be recontoured and planted with either a seed mix of native grasses and forbs or pasture grasses.

7.1 Vegetation

- Vegetation clearing, weed management, and seeding after construction would be completed according to current MID vegetation management practices and the NRCS Oregon and Washington Guide for Conservation Seedings and Plantings (NRCS USDA 2000). During construction, vegetation clearing would be minimized to the extent practicable and locations for vehicle and equipment access, staging, and storage would be selected to avoid trees and other slow-growing vegetation.
- Trees would only be removed if there was no other alternative to access the construction site or if they posed a safety threat to construction crews. Tree removal, where unavoidable, would be mitigated through on-site and in-kind replacement to the greatest extent feasible.
- The contractor would regularly check and clean equipment and vehicles to prevent the spread of noxious weed seeds. The contractor would avoid unnecessary ground disturbances, minimize ground disturbance, and ensure that erosion control measures such as straw wattles are free of weeds and weed seeds. Any disturbed areas would be reseeded with an erosion control seed mix consisting of an appropriate mix of native plants, pasture grasses, and sterile wheat to prevent weeds from invading disturbed ground. Post project completion, vegetation within the right-of-way and easements would be maintained according to the MID vegetation management program and NRCS guidance for conservation restoration areas.

7.2 Wildlife

- MID would construct the Project outside the primary nesting period for migratory birds of concern (April 15 through July 31) and bald and golden eagles and other raptors (January 1 through September 30). For rare occasions where project construction would occur during a primary nesting period, construction work would operate outside of the recommended buffer

distance of known nests. Should an active nest be found, construction would be paused and a consultation with a local USFWS biologist would occur to determine the next steps.

- If bat species are found to be present, existing roosting sites, such as old trees, caves, and old buildings, would be preserved to the extent practicable. If removal is unavoidable, alternative roosting structures would be provided. Light and noise pollution would be minimized.
- In appropriate cases and under consultation with ODFW, ramps would be placed in open pipeline trenches during construction to avoid the potential for wildlife to become trapped overnight.

7.3 Wetlands

- Disturbance to wetlands and other waters would be avoided and minimized to the extent practicable.
- If trenching is employed, the top layer of soil would be separated from the rest of the excavated material and put back on top when the trench or pit is backfilled.
- For siphons constructed underneath wetlands, anti-seep collars would be used around the pipe to prevent the wetlands from draining.
- Construction-phase erosion, sediment, pollution control and spill prevention BMPs would minimize the potential for stormwater runoff to mobilize sediment and pollutants into wetlands and prevent the introduction of contaminants into these areas. BMPs such as the installation of silt fencing and meticulous equipment management would be employed to mitigate these effects.
- During coordination on April 24, 2025, DSL indicated that because the Project would provide benefits to the Little Butte Creek Watershed and its ecosystem, the agency would consider the permitting pathway that would not require compensatory mitigation. Under this approach, unavoidable wetlands impacts would be recognized, quantified, and evaluated within the overall long-term ecosystem modification.

8. Contacts and Coordination

To discuss the Project and potential impacts to wetlands, the following individuals and organizations were contacted during the preparation of this technical report:

- Brian Gillooly and Matt Unitis, DSL, October 8, 2024.
- Sam Friedman, Botanist, USFWS, Roseburg Field Office, April 24, 2024.
- Bill Ryan, Brian Gillooly, Charles Redon, Dana Hicks, Mattew Unitis, and Daniel Evans, DSL, March 8, 2025.
- Brian Gillooly, DSL, April 24, 2025.
- Daniel Evans, DSL, July 15, 2026.

9. Preparers

Name	Professional Affiliation	Education	Years of Experience
Irina Lapina, PWS	Parametrix	MS Biology	16
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Appendix A

Plant Species List

The following species were observed during site visits on April 22–26 and June 3–7, 2024. Visits were conducted by Irina Lapina, PWS, Colton Kyro, and Chloe Kott.

Plant Species Observed On-Site – Trees

Scientific Name	Common Name	Wetland Indicator Status	Nativity
Acer macrophyllum	bigleaf maple	FACU	Native
Alnus rhombifolia	white alder	FACW	Native
Arbutus menziesii	Pacific madrone	UPL	Native
Fraxinus latifolia	Oregon ash	FACW	Native
Populus balsamifera	balsam poplar	FAC	Native
Quercus garryana	Oregon white oak	FACU	Native
Quercus kelloggii	California black oak	NOL	Native
Salix exigua	narrow-leaf willow	FACW	Native
Salix scouleriana	Scouler's willow	FAC	Native
Salix sitchensis	Sitka willow	FACW	Native

Plant Species Observed On-Site – Shrubs

Scientific Name	Common Name	Wetland Indicator Status	Nativity
Amelanchier alnifolia	Saskatoon service-berry	FACU	Native
Ceanothus arboreus	feltleaf	UPL	Native
Cornus glabrata	smooth-leaf dogwood	FACW	Native
Lonicera implexa	evergreen honeysuckle	NOL	Non-native
Prunus virginiana	choke cherry	FACU	Native
Ribes hudsonianum	northern black currant	FACW	Native
Ribes triste	swamp red currant	FAC	Native
Rosa nutkana	Nootka rose	FAC	Native
Rubus armeniacus	Himalayan blackberry	FAC	Noxious
Symphoricarpos albus	Common Snowberry	FACU	Native
Toxicodendron diversilobum	Pacific poison oak	FAC	Native

Plant Species Observed On-Site – Herbaceous Plants

Scientific Name	Common Name	Wetland Indicator Status	Nativity
Agrostis capillaris	colonial bent	FAC	Non-native
Alopecurus geniculatus	marsh meadow-foxtail	OBL	Native
Alopecurus pratensis	field meadow-foxtail	FAC	Non-native
Anaphalis margaritacea	pearly everlasting	FACU	Native
Anisocarpus madioides	tarweed	NOL	Native

Scientific Name	Common Name	Wetland Indicator Status	Nativity
Anthriscus caucalis	bur chervil	NOL	Non-native
Brassica rapa	rape	FACU	Non-native
Bromus carinatus	California brome	NOL	Native
Bromus hordeaceus	soft brome	FACU	Non-native
Bromus tectorum	downy cheat grass	NOL	Non-native
Carex densa	dense sedge	OBL	Native
Carex echinata	star sedge	OBL	Native
Centaurea solstitialis	yellow star-thistle	NOL	Noxious
Cerastium glomeratum	sticky mouse-ear chickweed	FACU	Non-native
Conium maculatum	poison-hemlock	FAC	Noxious
Cynosurus echinatus	hedgehog dogtail	NOL	Non-native
Dactylis glomerata	orchard grass	FACU	Non-native
Daucus carota	Queen Anne's-lace	FACU	Non-native
Dichelostemma capitatum	bluedicks	FACU	Native
Dipsacus fullonum	Fuller's teasel	FAC	Non-native
Elymus trachycaulus	slender wild rye	FAC	Native
Equisetum arvense	field horsetail	FAC	Native
Erodium botrys	long-beak stork's-bill	FACU	Non-native
Glyceria borealis	small floating manna grass	OBL	Native
Holcus lanatus	common velvet grass	FAC	Non-native
Hordeum jubatum	foxtail barley	FAC	Native
Hordeum murinum	wall barley	FAC	Non-native
Juncus brevicaudatus	narrow-panicle rush	OBL	Native
Juncus bufonius	toad rush	FACW	Native
Juncus effusus	common rush	FACW	Native
Juncus patens	spreading rush	FACW	Native
Lactuca serriola	prickly lettuce	FACU	Non-native
Lamium purpureum	red dead-nettle	NOL	Non-native
Lotus corniculatus	garden bird's-foot-trefoil	FAC	Non-native
Madia glomerata	mountain tarplant	FACU	Native
Matricaria discoidea	pineapple-weed	FACU	Non-native
Mentha arvensis	American wild mint	FACW	Native
Mimulus guttatus	seep monkey-flower	OBL	Native
Myosotis arvensis	rough forget-me-not	FACU	Non-native
Myosotis scorpioides	forget-me-not	FAC	Non-native
Persicaria maculosa	lady's-thumb	FACW	Non-native
Phalaris arundinacea	reed canary grass	FACW	Noxious
Plagiobothrys scouleri	meadow popcorn-flower	FACW	Native
Plagiobothrys nothofulvus	rusty popcorn-flower	FAC	Native
Plantago lanceolata	English plantain	FACU	Non-native

Scientific Name	Common Name	Wetland Indicator Status	Nativity
Poa bulbosa	bulbous blue grass	FACU	Non-native
Poa infirma	weak bluegrass	NOL	Non-native
Poa pratensis	Kentucky blue grass	FAC	Non-native
Potentilla gracilis	graceful cinquefoil	FAC	Native
Ranunculus repens	creeping buttercup	FAC	Non-native
Ranunculus uncinatus	woodland buttercup	FAC	Native
Rumex crispus	curly dock	FAC	Non-native
Sanicula crassicaulis	Pacific blacksnakeroot	NOL	Native
Schedonorus arundinaceus	tall false rye grass	FAC	Non-native
Scirpus microcarpus	red-tinge bulrush	OBL	Native
Stachys palustris	marsh hedgenettle	NOL	Non-native
Stellaria sp.	chickweed	FAC	-
Taeniatherum caput-medusae	medusahead rye	NOL	Noxious
Taraxacum officinale	common dandelion	FACU	Non-native
Trifolium bifidum	notchleaf clover	NOL	Native
Trifolium cyathiferum	bowl clover	FAC	Native
Trifolium pratense	red clover	FACU	Non-native
Trifolium repens	white clover	FAC	Non-native
Valerianella locusta	common cornsalad	NOL	Non-native
Verbascum blattaria	white moth mullein	UPL	Non-native
Verbascum thapsus	great mullein	FACU	Non-native
Veronica americana	American-brooklime	OBL	Native
Vicia americana	American purple vetch	FAC	Native
Vulpia bromoides	brome six-weeks grass	FAC	Non-native

Appendix B

USFWS Official List of Threatened and Endangered Species

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Oregon Fish And Wildlife Office
2600 Southeast 98th Avenue, Suite 100
Portland, OR 97266-1398
Phone: (503) 231-6179 Fax: (503) 231-6195

In Reply Refer To: 10/02/2026 17:29:54 UTC
Project Code: 2024-0135676

Project Name: Medford Irrigation District Infrastructure Modernization Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This is not a consultation.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended

contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Oregon Fish And Wildlife Office
2600 Southeast 98th Avenue, Suite 100
Portland, OR 97266-1398
(503) 231-6179

PROJECT SUMMARY

Project Code: 2024-0135676
Project Name: Medford Irrigation District Infrastructure Modernization Project
Project Type: Water Supply Pipeline - New Constr - Below Ground
Project Description: Project proposes to pipe 13+ miles of unlined canals and upgrade and install new siphons.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.429388450000005,-122.64427555855283,14z



Counties: Jackson County, Oregon

ENDANGERED SPECIES ACT SPECIES

There is a total of 11 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Gray wolf *Canis lupus* Population: 44 States and Mexico There is **final** critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/4488	Endangered
North American wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: ▪ Species may be present based on transient occurrence as it moves through or too suitable habitat. Effects should be considered to species and projects should consult with the Service, however, depending on the project, consultation may not be necessary. Species profile: https://ecos.fws.gov/ecp/species/5123	Threatened

BIRDS

NAME	STATUS
Northern spotted owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened

REPTILES

NAME	STATUS
Northwestern Pond Turtle *Actinemys marmorata*	No critical habitat has been

designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1111

Proposed Threatened

INSECTS

NAME	STATUS
Franklin's bumble bee *Bombus franklini* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7022	Endangered
Monarch butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened
Suckley's cuckoo bumble bee *Bombus suckleyi* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10885	Proposed Endangered

CRUSTACEANS

NAME	STATUS
Vernal pool fairy shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened

FLOWERING PLANTS

NAME	STATUS
Cook's lomatium *Lomatium cookii* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1583	Endangered
Gentner's fritillary *Fritillaria gentneri* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8120	Endangered
Large-flowered woolly meadowfoam *Limnanthes pumila ssp. grandiflora* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1090	Endangered

CRITICAL HABITATS

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Northern spotted owl *Strix occidentalis caurina* https://ecos.fws.gov/ecp/species/1123#crithab	Final

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

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1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts

For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/ activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete

If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information

on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Mar 1 to Aug 31

NAME	BREEDING SEASON
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Mar 1 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

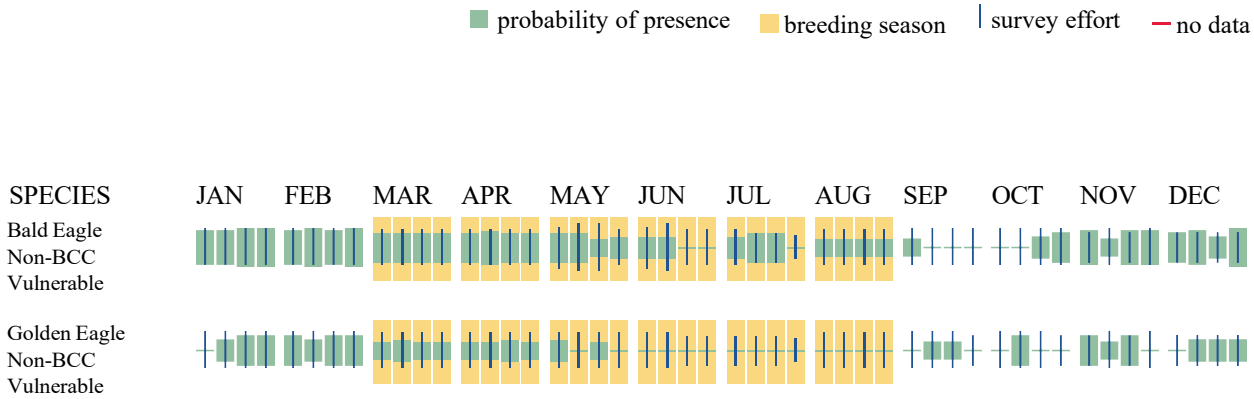
Probability of Presence (▪)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (▪)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management

- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Mar 1 to Aug 31
Black Swift *Cypseloides niger* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10
California Gull *Larus californicus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10955	Breeds Mar 1 to Jul 31
Cassin's Finch *Haemorhous cassinii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15

NAME	BREEDING SEASON
Chestnut-backed Chickadee *Poecile rufescens rufescens* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/11913	Breeds Mar 1 to Jul 31
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10575	Breeds Jun 1 to Aug 31
Evening Grosbeak *Coccothraustes vespertinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9465	Breeds May 15 to Aug 10
Flammulated Owl *Psiloscops flammeolus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/7728	Breeds May 10 to Aug 15
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Mar 1 to Aug 31
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Marbled Godwit *Limosa fedoa* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Oak Titmouse *Baeolophus inornatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9656	Breeds Mar 15 to Jul 15
Olive-sided Flycatcher *Contopus cooperi* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Oregon Vesper Sparrow *Pooecetes gramineus affinis* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/5141	Breeds Apr 21 to Aug 31

NAME	BREEDING SEASON
Rufous Hummingbird *Selasphorus rufus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds Apr 15 to Jul 15
Short-billed Dowitcher *Limnodromus griseus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds Jun 1 to Aug 10
Western Grebe *Aechmophorus occidentalis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6743	Breeds Jun 1 to Aug 31
Western Screech-Owl *Megascops kennicottii cardonensis* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/11923	Breeds Mar 1 to Jun 30
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10669	Breeds elsewhere
Wrentit *Chamaea fasciata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10668	Breeds Mar 15 to Aug 10

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence ( )

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season ( )

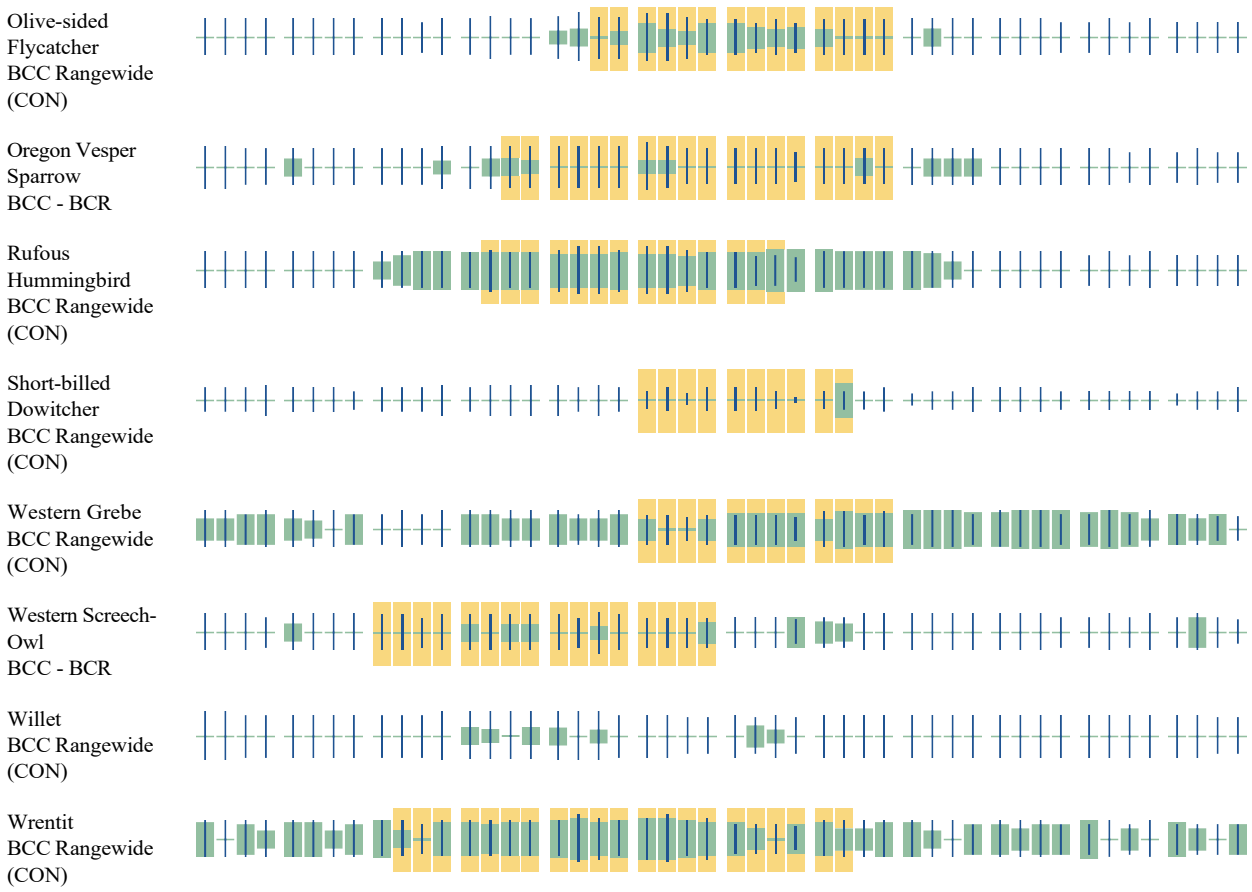
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort ( )

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (_)
A week is marked as having no data if there were no survey events for that week.





Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1C
- PSS1A
- PFO4B
- PSS1Cx
- PFO1A
- PSS1C
- PFOC
- PSSCx
- PSSC
- PFOA

FRESHWATER POND

- PUBHh
- PABFh
- PUSCh
- PABHh
- PABFx
- PUBF
- PABHx
- PUBFh
- PUBHx
- PABKx
- PUBFx

FRESHWATER EMERGENT WETLAND

- PEM1A
- PEM1Fh
- PEM1C
- PEM1Ch
- PEM1Cx

RIVERINE

- R3UBFx
- R3UBF
- R3USA

- R4SBC
- R5UBH
- R3UBHx
- R5UBFx
- R3UBH
- R4SBCx
- R3USC

LAKE

- L1UBH

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LEAD AGENCY CONTACT INFORMATION

Lead Agency: Natural Resources Conservation Service