Medford Irrigation District Joint System Canal Modernization Project Biological Assessment

Prepared for

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1. Introduction

The purpose of this biological assessment (BA) is to evaluate the potential effects of the Medford Irrigation District's (MID or District) Joint System Canal (JSC) Modernization Project (Project) Proposed Action on federally listed and proposed species and designated critical habitat in accordance with the provisions of Section 7 of the Endangered Species Act of 1973, as amended (ESA; 16 U.S.C. §§1531-1543). The District is proposing to update and install irrigation infrastructure, including piping up to 11.5 miles of the JSC, upgrade and construct 6 siphon crossings, and modernize 24 irrigation turnouts. The purpose of the Project is to alleviate damages to irrigated agriculture and agricultural communities served by the JSC by making the delivery of irrigation water more reliable and efficient.

The District has requested financial and technical assistance for the Project from the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). The Project is further described in the Medford Irrigation District Watershed Draft Plan-Environmental Impact Statement (herein referred to as the Plan-EIS, [USDA, NRCS 2026]), prepared by the Farmers Conservation Alliance (FCA) on behalf of the District for NRCS. The Plan-EIS was prepared under the authority of NRCS via the Watershed Protection and Flood Prevention Act of 1954 (Public Law Number [Pub. L. No.] 83-566). NRCS serves as the lead federal agency on the Project and is responsible for ensuring the Project's compliance with the National Environmental Policy Act (NEPA).

Section 7(a)(2) of the ESA (16 USC 1531-1544) specifies that each federal agency shall, in consultation with the National Oceanic and Atmospheric Administration's (NOAA), National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS), ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. Accordingly, this BA addresses potential effects of the Proposed Action on the following listed and proposed to be listed species:

- Monarch butterfly (monarch; *Danaus plexippus*) – proposed for listing under the authority of USFWS.

This BA also documents NRCS' determination that the project will have no effect on ten ESA-listed, proposed, or experimental populations of species and their associated critical habitat. Furthermore, this BA documents programmatic consultation coverage of the project for the threatened Southern Oregon/Northern California Coast (SONCC) coho salmon (*Oncorhynchus kisutch*) under the authority of NMFS in addition to coho and Chinook (*Oncorhynchus tshawytscha*) salmon essential fish habitat under the provisions of the Magnuson-Stevens Fishery Conservation and Management Act (MSA).

Based on the findings of this BA, NRCS is requesting informal conferencing for potential impacts to monarch.

1.1 Consultation History

1.1.1 Agency Roles

NRCS is authorized under Pub. L. No. 83-566 to help local organizations and units of government, including irrigation districts, plan and implement watershed projects. These watershed projects are locally led to solve human and natural resource problems in watersheds up to 250,000 acres (less than 400 square miles). This program provides for cooperation between the Federal government, the states, and local sponsors to prevent erosion; to prevent floodwater and sediment damage; to further the conservation development, use, and disposal of water; and to further the conservation and proper use of land in authorized watersheds. Local project sponsors can use financial assistance for land treatment solutions or structural solutions that require construction activities. An approved Watershed Plan and associated Environmental Assessment or EIS must be in place for NEPA compliance associated with funding from NRCS prior to initiation of any corrective land treatment or structural solutions.

As the lead federal agency for the Plan-EIS, NRCS is responsible for issuing a decision in accordance with NEPA and providing technical and financial assistance to MID. NRCS is responsible for providing technical direction during the preparation of the Plan-EIS and related documents, which include documentation of the Project's compliance with the ESA.

1.1.2 Consultation Coordination

This draft BA was prepared for NRCS by Parametrix through contract with FCA. Throughout the planning process, the following meetings were held:

- January 11, 2024: NRCS, District, FCA, and Parametrix met with NMFS personnel (K. Wells and A. Garcia) to coordinate early and discuss species presence, preliminary affects, and best management practices.
- April 24, 2024: Parametrix met with USFWS personnel (S. Friedman) in the field to conduct a reconnaissance site visit to determine habitat suitability for Genter's fritillary (*Fritillaria gentneri*) in the Project Area.
- January 21, 2026: NRCS, District, FCA, and Parametrix met with NMFS personnel (L. Kruzic) to continue early coordination and discuss species presence, preliminary affects, and best management practices.
- January 29, 2026: NRCS, District, FCA, and Parametrix met with USFWS personnel (M. Asch, T. Harvey, and S. Friedman) to coordinate early and discuss species presence, preliminary affects, and best management practices.
- September 8, 2026: NRCS, FCA, and Parametrix met with NMFS personnel (B. Anderson) to discuss if the project is suitable for programmatic ESA and MSA coverage under the Oregon and Washington *Natural Resources Conservation Service Aquatic Habitat Conservation Programmatic Biological Opinion* (ORWAC; NMFS 2018).

In addition, the Project team has met with Oregon Department of Fish and Wildlife (ODFW) and Oregon Department of State Lands (DSL) to discuss habitat and wetland presence in addition to avoidance and minimization measures, best management practices, and mitigation.

2. Project Description

2.1 Project Location

The District is located in the Upper Rogue River Basin on the west side of the Cascade Mountain Range, in Jackson County, Oregon (Figure 1). The Project Area and the waterbodies affected by District operations are within the Little Butte Creek watershed (Hydrologic Unit Code [HUC] 10 #1710030708). Sub-watersheds within the Project Area include Kanutchan Creek-Little Butte Creek (HUC # 171003070812), Lower Antelope Creek (HUC # 171003070811), Lick Creek-Little Butte Creek (HUC # 171003070809), Lake Creek-Little Butte Creek (HUC #171003070809), and Lower South Fork Little Butte Creek (HUC #171003070807). The Proposed Action will be implemented in the Project Area, which is a small portion of the District's total system and consists of the District infrastructure to be modernized, areas where new infrastructure would be built, and associated Right of Ways (ROW) and/or easements where construction would take place (Figure 1).

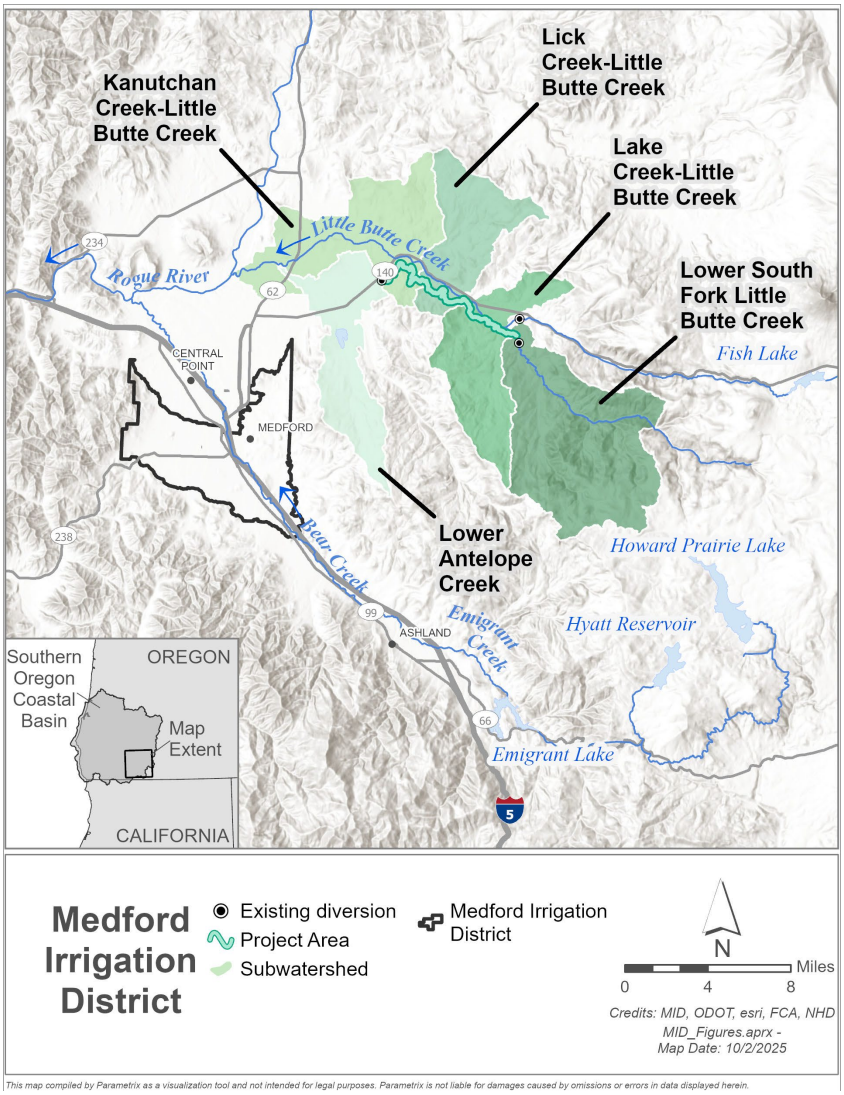


Figure 1. Project Location and Project Area

2.2 Joint System Canal Current Infrastructure and Operations

The JSC, originally constructed in 1902, directly conveys water to 783 acres of irrigated land within the Little Butte Creek Watershed and transports water to an additional nearly 18,000 acres in MID and Rogue River Valley Irrigation District (RRVID). At the Bradshaw Drop, the conveyed water is split between MID and RRVID. According to their water rights and existing agreement, two-thirds of the water goes to MID, and one-third goes to RRVID. Below the Bradshaw Drop, the Medford Canal supplies water to up to 8,303 acres of irrigated land within MID and the Hopkins Canal conveys water to over 9,500 acres of irrigated land in RRVID.

MID and RRVID divert live flow from South Fork Little Butte Creek (river mile [RM] 1.1) and North Fork Little Butte Creek (RM 0.9), where water is transported into the South Fork Canal and North Fork Canal, respectively. At the convergence of the North and South Fork canals, a concrete junction diverts water into the JSC. Total diversion from the North and South Forks of Little Butte Creek shall not exceed 140 cubic feet per second (cfs), of which 90 cfs is for MID and 50 cfs is for RRVID. Total diversion from North Fork Little Butte Creek and South Fork Little Butte Creek will not exceed 125 cfs and 100 cfs at any point, respectively. Furthermore, thirteen intermittent drainages—including Unnamed Drainages 1 to 10 and Grasshopper, Owens, and Eagle gulches—flow into the JSC and provide supplemental water.

The irrigation season for MID and RRVID occurs from April 15 to October 1, and diversion rates are highest from mid-May to the beginning of August. Diversions generally end by mid-October. Diversions periodically occur during the nonirrigation season to fill the RRVID Agate Reservoir and to serve frost protection water rights. The JSC is dry when diversions are not occurring except during high precipitation events that result in water incidentally being retained. Headgates along the JSC drain the canal during these precipitation events.

At the beginning of the JSC at the junction of North and South Fork Canals, a headgate releases 7 cfs back into South Fork Little Butte Creek at RM 0.6 during dry years as part of the RRVID Bradshaw Drop Piping project and to meet instream flow requirements in Little Butte Creek associated with the biological opinion for the Rogue River Basin Project (NMFS 2012). Five other headgates are located along the JSC that release water to downslope streams, including Grasshopper and Eagle gulches. These headgates do not divert water to District patrons but are used to regulate flows within the JSC to ensure flow capacity in the canal is not exceeded above design capacity and to prevent water accumulation during the nonirrigation season by acting as a drain. Headgates are 5- to 6-foot-wide structures that use headboards to regulate flow. Headboards are manually removed during the nonirrigation season to prevent pooling of water within the JSC.

MID and RRVID store water in Fourmile Lake and Fish Lake. Fourmile Lake is in the Klamath River Basin but is connected to the Little Butte Creek Watershed via the Cascade Canal which transports water from the lake into the Little Butte Creek Watershed near Fish Lake. Cascade Canal does not reach Fish Lake but terminates approximately 2.1 miles upgradient of the lake. The transferred water from Cascade Canal infiltrates into the highly permeable volcanic material in the area where it is believed to contribute to groundwater that discharges into Fish Lake (DEQ 2008). Fourmile Lake and Fish Lake act as a unit to store water for use by MID and RRVID patrons. Fish Lake releases water into the beginning of North Fork Little Butte Creek (RM 16). North Fork Little Butte Creek is used as a water conveyance feature to deliver stored water in Fourmile Lake and Fish Lake into the JSC's diversion point on the creek (RM 0.9).

The JSC likely acts as a point and nonpoint source of pollution to nearby waterbodies, including Little Butte Creek which has a total maximum daily loading established for temperature and *Escherichia coli (E. coli*, DEQ 2008). Preliminary water quality data collected by Jackson Soil and Water Conservation District show that *E. coli* concentrations in the JSC are elevated and that turbidity levels increase within the JSC, which is likely due to canal erosion and runoff from upslope areas. Furthermore, irrigation canals generally have elevated temperatures due to thermal loading from a lack of riparian cover. Impaired water within the JSC is able to enter nearby waterbodies through canal seepage and incidental headgate release, degrading water quality in the receiving streams. Incidental headgate release into tributaries of Little Butte Creek (Grasshopper Gulch, Eagle Gulch, Unnamed Drainages 7 and 10) during the irrigation season likely elevates temperatures and turbidity levels within these waterbodies which may have an associated effect on downstream waterbodies. Similarly, canal seepage may also be influencing water quality to streams whose groundwater discharge is augmented by this artificial source. Canal seepage water may also be further impaired along its groundwater flow path to receiving streams. Canal seepage downslope of the JSC was observed in several locations to result in a slow moving sheet flow that may further impair water quality by elevating temperature, *E. coli* concentrations, and turbidity levels, as is observed for flood irrigation tailwater in the area. Thus, it is likely that canal seepage may act as a nonpoint pollution source to tributaries of Little Butte Creek that are adjacent to the JSC such as Lake Creek, Wyant Gulch, Grasshopper Gulch, Owens Gulch, Eagle Gulch, and Unnamed Drainages 1 to 10.

2.3 Purpose and Need

The purpose of Proposed Action is to make the conveyance of irrigation water through the JSC more efficient and reliable. The Project is needed to alleviate agricultural damages to irrigated agriculture and agricultural communities served by the JSC due to unreliable access to and inefficient delivery of irrigation water.

In recent years, MID patrons have experienced severe droughts which have negatively impacted agricultural producers and crop yields. Due to persistent drought, MID did not have a full reservoir storage allotment from 2014-2024 and in some years was unable to deliver irrigation water for the full length of the irrigation season (April 15 – October 1). During 2020-2022, the District did not begin water deliveries until June or July and the irrigation season ended in August. During these years, irrigators had water for only a quarter of their normal 24-week irrigation season. Crop yields in the District have been negatively impacted by the unreliable and limited water related to drought conditions.

Additionally, due to anticipated rising temperatures and decreasing snowpacks, water supply shortages are expected to worsen in the coming decades. Drought severity in the Jackson County area has increased in the past three decades as compared to previous decades, and drought is expected to increase in frequency, severity, and duration in the future (OWEB 2023). With these projected changes, it is essential that MID delivers water efficiently to conserve water supply and alleviate agricultural damages for irrigators. Irrigation water shortages are also exacerbated due to the aging and inefficient condition of the JSC.

Drought conditions in recent years have compounded the issues posed by JSC inefficiencies and have further limited water for irrigators. The aging JSC is primarily earthen and unlined and loses 5,057 acre-feet per year, or 25 percent, of the water it conveys to seepage, incidental headgate release, and evaporation. Conveyance efficiency in the JSC is further decreased by aquatic moss, which grows rapidly in the open canal, particularly in late summer, and reduces the volume of water that can be conveyed in the canal.

The JSC is also susceptible to failure due to malfunctioning siphons (an underground piped section), rodents burrowing into canal walls, falling trees, and erosion from livestock crossing the canal. A canal failure requires water deliveries to be stopped while the canal is fixed, which can leave irrigators without their primary water source for days to weeks, depending on the size of failure. If a large failure occurred during the peak irrigation months of June-August, it could have major detrimental effects on crop yield, crop quality, farm income, and the regional economy.

These inefficiencies on the JSC reduce the District's ability to deliver irrigation water at the full rate and duty associated with each water right. It also requires the District to divert more 'carry water' which is needed to overcome the losses and inefficacies of the canal. As a result, streamflows in the Little Butte Creek watershed are also negatively impacted.

2.4 Description of the Proposed Action

2.4.1 Irrigation Infrastructure Improvements

The Proposed Actions includes (Figure 2):

- Pipe up to 11.5 miles of the JSC from the junction of North Fork Canal and South Fork Canal to where the canal bifurcates with RRVID at Bradshaw Drop.
  - 10.8 miles of the JSC will be piped.
  - 6 siphon crossings (0.7 miles) will be upgraded or installed through valley bottoms and across streams.
    - 1.6 miles of the JSC would be abandoned as a result of new siphon crossings.
- Reconnect and restore 13 streams that flow into the JSC.
- Modernizing 24 irrigation turnouts.

Construction of the Project would occur over the course of 4 years. Construction would primarily occur during the nonirrigation season (October to April), with construction beginning as early as the 2027–2028 nonirrigation season.

Vegetation clearing before construction, vegetation management during construction, and reseeding after construction would be completed according to MID's current vegetation management practices and NRCS Oregon and Washington Guide for Conservation Seedings and Plantings (NRCS 2000). During construction, vegetation clearing will be minimized to the extent practicable, and locations for vehicle and equipment access, staging, and storage will be selected to occur in previously disturbed areas and to avoid trees. Trees will only be removed if there were no other alternative to access the construction site or if they posed a safety threat to construction crews. When possible, the Project Area will be accessed from existing maintenance roads or public roads. Existing maintenance roads and overland access routes commonly used for O&M may require some improvements for use during construction.

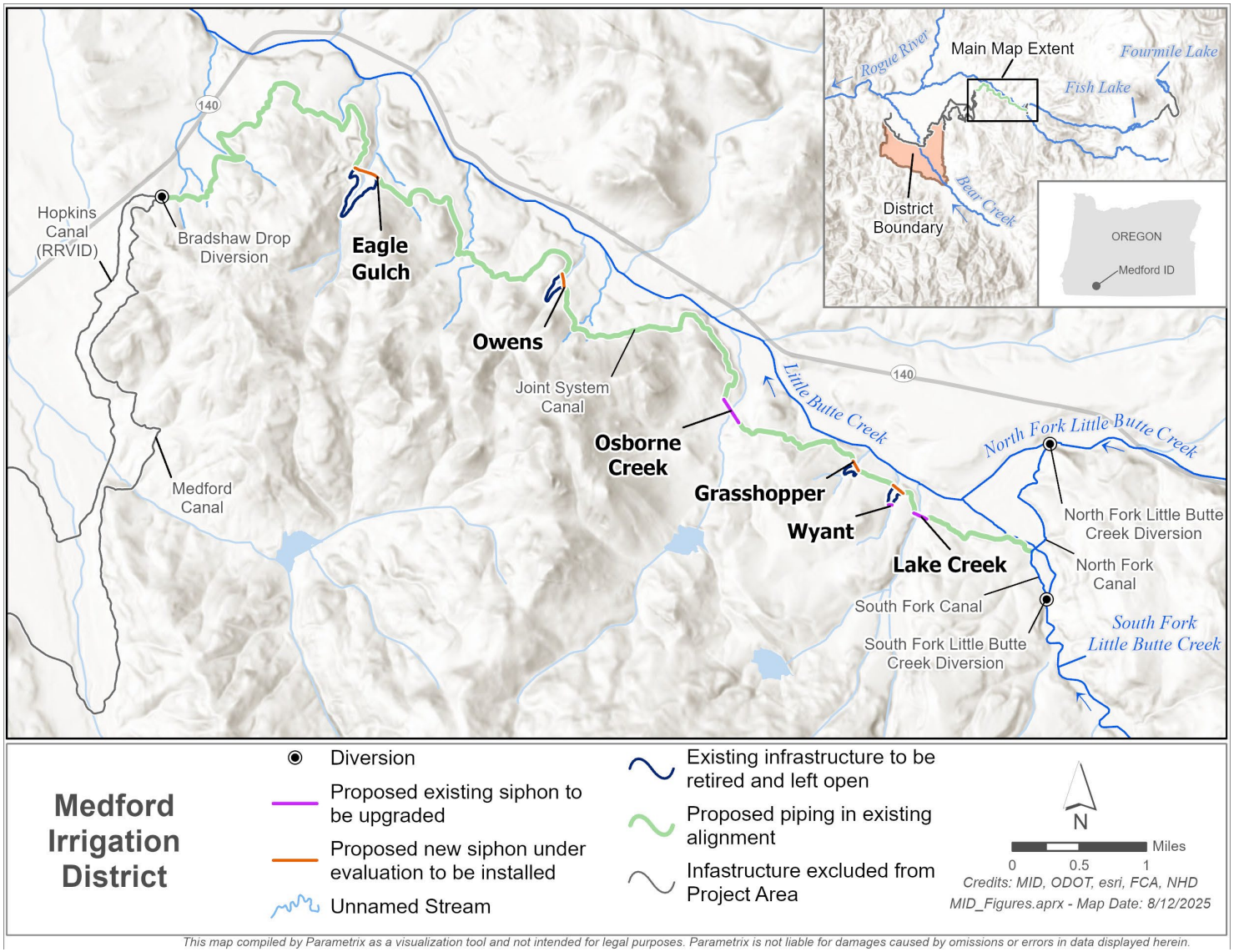


Figure 2. Proposed Action

2.4.1.1 Piping

The District will install a 72-inch inner-diameter pipeline within 10.8 miles of open canal in the existing 20-foot-wide JSC. Piping of open canals would include mobilization and staging of construction equipment, delivery of pipe to construction areas, excavation of trenches when necessary, fusing of pipelines, placement of pipe and backfill, and seeding. The existing canal would be trenched for subgrade preparation prior to pipe installation using excavators, with excavated material being side-cast adjacent to the canal. To install the pipeline through rocky terrain, controlled blasting may be required to create a trench of sufficient depth and width. A geotextile liner would be installed in the trench, followed by pipe bedding and the pipe. The side-cast excavated material would then be returned to the trench as pipe cover. Soils on top of the canal would be planted with a mix of native grasses and forbs. Trench design would follow NRCS Conservation Practice Standard for Irrigation Pipeline (Code 430-CPS-1). Pipeline installation within new alignments, such as at the new siphons, would incorporate similar approaches. Excess material that could not be reused as backfill would be disposed of in an approved upland location. The estimated disturbance footprint is 30 feet, which includes the JSC and the adjacent access road.

2.4.1.2 Siphon Crossings

Three existing siphons will be upgraded to accommodate the JSC pipe diameter (72-inches) and ensure their long-term structural integrity (Figure 2). Furthermore, three other siphons would be constructed to shorten the overall length of the JSC (Figure 2). Siphons are used to cross a barrier such as a stream or drainage feature by burying the irrigation pipeline underground such that the stream's functionality as a watercourse is maintained. This is an alternative to using elevated channels—such as a viaduct or flume—to pass irrigation water over a natural drainage feature.

Existing siphons are depicted on Figure 2 and include Lake Creek siphon (563 feet in length; 54-inch diameter), Wyant siphon (145 feet; 60-inch diameter), and Osborne Creek siphon (1,094 feet; 60-inch diameter). The existing Lake Creek and Osborne Creek siphons would be abandoned in place and backfilled with controlled low-strength material. The new Lake Creek siphon (563 feet) and Osborne Creek Siphon (1,093 feet) would be constructed adjacent to the existing siphons. The existing Wyant siphon would be removed and replaced within its existing alignment with an updated siphon. The three other siphons that will be constructed include the Grasshopper siphon (438 feet), Owens siphon (574 feet), and Eagle Gulch siphon (1,004 feet) which would avoid 1.6 miles (8,584 feet) of in-canal piping. The remaining 1.6 miles of the JSC will be retired in place. There is currently no NRCS standard or guideline for retiring irrigation canals. All retired canals would remain open and dewatered except for where they intercept drainages (See Section 2.4.1.3 below).

The appropriate construction method for siphon crossing would be determined prior to construction. Construction methodologies that limit ground disturbance and in-water work such as slip-lining or jack and boring will be assessed and employed if feasible. However, existing conditions of infrastructure, proposed diameter of the pipeline, geologic substrate, and costs may probit these construction methodologies. The construction methodology described in this draft BA outlines the maximum impact to protected species listed under the ESA. If the Project construction methodology changes in a way that may affect listed species or critical habitat more than considered in this consultation, the District will coordinate with USFWS and NMFS to determine if reinitiation of consultation is necessary.

Siphon construction would involve mobilization and staging of construction equipment, delivery of pipe to construction areas, excavation of trenches, fusing of pipelines, placement of pipe, backfill, and revegetation. Siphons will be constructed to the extent feasible following guidelines in *Natural*

Resources Conservation Service Conservation Programmatic for Oregon and Washington for Irrigation Water Siphons (ORWAC; NMFS 2018). Construction would occur when streams are at their lowest flows, siphon crossings will be perpendicular to the watercourse, stream widths will be maintained at bankfull width or greater, and any large wood that is momentarily displaced will be returned to its original position.

Trench impact area width would be approximately 30 feet to account for the pipe, sidewall support, and space for construction activities. The trench would be approximately 15 feet wide by 14 feet deep, and 4 to 8 feet of fill material would be placed on top of the placed siphon. Additional space would be required on either side of the trench for staging materials, sidecast spoil, and access routes. Construction for the six siphons would involve trenching across Lake Creek, Wyant Gulch, Grasshopper Gulch, Owens Gulch, and Eagle Gulch. The work area would be restored to initial conditions including restoring streambeds and riparian vegetation in addition to reestablishing preexisting contours of the site.

If water is present within the waterbodies during construction, fish would be excluded from the work area by exclusionary netting prior to in-water work. A block net would be installed upstream from the trenching work area. One or two seining crews will proceed from the upstream block net to the downstream extent of the trenching work area. Seining crews will not capture fish but maneuver individuals downstream and outside the work area. A downstream block net would be installed after the seining crews have cleared the work area. Following exclusionary netting, the work area would be isolated by cofferdams. A gravity-fed bypass pipe will divert stream flow from the upstream cofferdam and transport it downstream of the work area and provide for downstream fish passage. The isolated work area would be dewatered using a pump equipped with an appropriately sized fish screen per NMFS requirements (NMFS 1996). If individual fish are still present, they will be salvaged and relocated downstream of the isolated work area in accordance with NMFS guidelines (NMFS 2000). Fish salvage work would be performed according to the best practices outlined in ORWAC. In-water work is anticipated to take no longer than one month.

Anti-seep collars would be installed along the siphon when it crosses underneath wetlands and waters to prevent unintended drainages. To eliminate the need for cleanouts, the siphons would be designed so settling does not occur at the siphon's low point.

2.4.1.3 Drainage Restoration

Thirteen intermittent streams (Eagle Gulch, Owens Gulch, Grasshopper Gulch, and 10 unnamed drainages) flow into the JSC. In some locations, headgates allow a mixture of irrigation water and drainage water to continue flowing into the drainage's channel downslope of the JSC. Where headgates are not present, a channel forms downslope of the JSC due to groundwater discharge which is augmented by canal seepage.

Three streams (Eagle, Owens, and Grasshopper gulches) flow into the JSC in locations where the canal will be abandoned for new siphon crossings. At these locations, irrigation infrastructure will be removed and the area will be recontoured and restored to initial conditions to reconnect the hydrology and functioning of these creeks.

Unnamed drainages 1-10 flow into the JSC in locations where the canal will be piped. At these locations, the drainages would be recontoured and replanted with riparian vegetation after pipeline construction to reconnect the upslope and downslope portions of the drainages, maintain hydraulic connection to Little Butte Creek, and prevent scouring over the underlying pipeline. The drainage channels would likely be composed of natural streambed materials underlain by erosion resistant material to ensure integrity of the streambed and pipeline.

ODFW conducted a native migratory fish determination for these waterbodies during the winter of 2025 (M. Barr, ODFW Statewide Fish Passage Coordinator, personal communication, March 13, 2025). ODFW determined that these streams lacked suitable native migratory fish habitat within the vicinity of the JSC and that fish passage would not be required for drainage restoration. Restoration of these 13 streams will not provide for fish passage as fish species would not be expected to use these habitats when flow occurs. Due to lack of suitable migratory fish habitat, fish exclusion or salvage is not anticipated during drainage restoration construction. Temporary water management, including installation of cofferdams and gravity-fed bypass pipe, will be employed if water is present during construction.

2.4.1.4 Irrigation Turnouts and Deliveries

There are 24 turnouts on the JSC. The turnouts are gravity fed and would be converted to pressurized delivery systems as part of the Project. Each converted turnout would be 10 inches in diameter with a valve, locking valve box, flow meter, and pipe stub out. Currently, there are no flow meters on the existing turnouts. Some of these turnouts could also be designed to accommodate fittings for use as a water supply for wildland fire fighting.

2.4.2 Avoidance and Minimization Measures

2.4.2.1 Construction Timing

All in-water work within streams will occur at siphon locations during the permitted in-water work window (IWWW) to minimize adverse effects to fish and to avoid fish spawning, sensitive life stages, and periods of high streamflow. Other activities associated with the Proposed Action that occur in the JSC will occur during the nonirrigation season when water is absent within the canal. The JSC is dewatered during the nonirrigation season except during high precipitation events when upslope drainages discharge into the canal. Water absence will minimize the potential for eroded soil to enter waterbodies during construction. No in-water work is proposed in South Fork Little Butte Creek or North Fork Little Butte Creek.

2.4.2.2 Erosion Control

Silt fencing, straw wattles, geotextile filters, straw bales, or other erosion control measures will be used to minimize soil erosion and prevent eroded soil from entering waterbodies during construction. Erosion control measures will be free of weeds and weed seeds. To minimize impacts during construction, vehicles will park on existing watermaster or other access roads. After construction, disturbed soils will be recontoured or regraded and replanted with a mix of native grasses and forbs to reduce the risk of post-construction erosion and spread of noxious weeds. Work area isolation during construction of siphon crossing underneath waterbodies will prevent runoff into the adjoining waters. The District or its construction contractor would be required to provide an erosion and sediment control plan as part of its 1200-CA construction stormwater permit and 401 Water Quality Certification from Oregon Department of Environmental Quality (DEQ). The plan would detail the erosion and sediment control measures to be implemented and approaches for maintaining them during construction.

2.4.2.3 Spill Prevention, Control, and Countermeasures

Fuel storage areas and fueling locations will be located 150 feet from any waterbody, or in an isolated hard zone such as a paved parking lot. Spill kits will be located at fuel storage areas, and construction crews will have adequate absorbent materials and containment booms on hand to

enable rapid cleanup of spills. Machinery will be inspected daily for leaks and prior to operation. Immediately upon learning of any spills of fuel, oil, or hazardous material, or upon learning of conditions that could lead to an imminent spill, the person discovering the situation will initiate actions to contain the fluid or eliminate the source of the spill and notify the spill coordinator or crew foreman immediately. If it is determined that a spill is beyond the scope of on-site equipment and personnel, an environmental emergency response contractor will be contacted immediately to contain or clean up the spill.

2.4.2.4 Water Resources

Concurrence on jurisdictional determinations for wetlands and waters will be obtained from U.S. Army Corps of Engineers (USACE) and DSL prior to construction. Before implementing site-specific actions with the potential to affect wetlands or other waters of the United States or the state of Oregon, MID will coordinate with agencies that have regulatory authority (USACE, DSL, ODFW, and DEQ) to identify applicable regulatory requirements. MID will obtain permits required by those agencies.

All work will be performed in compliance with BMPs and applicable terms and conditions of permits issued by local, state, and federal agencies with permitting authority.

2.4.2.5 In-Water Work

All in-water work will occur during the permitted IWWW (June 15 to September 15) or during an approved IWWW variance to avoid fish spawning, sensitive life stages, and periods of high streamflow. All federal, state, and local permits will be secured prior to any in-water work. Water quality protection measures will be implemented, including erosion control, sediment control, and pollution control for all in-water work and all dewatering and re-watering efforts.

Equipment will be inspected and power washed prior to entering the water. Equipment will remain in the water for the shortest time possible and not remain in the water while not working.

2.4.2.6 Vegetation Clearing and Ground Disturbance

The initial clearing of vegetation (shrubs and trees) would occur between September 1 and February 28 to avoid impacts to nesting migratory birds. During the monarch breeding season for the region (April 1 to October 31 [Xerces Society 2018]), all activities that may impact intact vegetation (trees, shrubs, and ground cover vegetation) will occur during the middle of the day to minimize impacts to this species. Monarchs are typically most active during the warmer periods of the day and are thus better suited to vacating the area in peak daytime heat (Xerces Society 2018). If adult monarchs are observed in the Project Area prior to vegetation disturbing activities, the contractor will pace the extent of the area to be cleared to cause monarchs that may be present to vacate the area.

2.4.3 Water Summary

The Proposed Action has the potential to impact the hydrology and water quality of waterbodies associated with District operations and infrastructure (Figure 3 and 4). These waterbodies include irrigation source waterbodies (South Fork Little Butte Creek and North Fork Little Butte Creek), District managed reservoirs (Fish Lake and Fourmile Lake), downstream receiving waterbodies (Little Butte Creek and the Rogue River), and streams that are impacted by the physical infrastructure of the JSC or are influenced by canal seepage and incidental headgate release of canal water (Lake

Creek, Osborne Creek, Eagle Gulch, Grasshopper Gulch, Owens Gulch, Wyant Gulch, and Unnamed Drainages 1-10).

Anticipated streamflow and water storage trends as a result of the Project were determined by a hydrologic model of the Little Butte Creek Watershed using the hydrologic period from 2005 to 2024 (GSI Water Solutions 2025). Model outputs for the 20th percentile (dry conditions), 50th percentile (normal conditions), and 80th percentile (wet conditions), as well as the average of monthly streamflow, diversion, and reservoir storage were used to quantify pre and post Project effect on surface water hydrology in Fish and Fourmile Lakes, North Fork Little Butte Creek, South Fork Little Butte Creek, and Little Butte Creek (RM 10.2 – 17.2). Month-by-month modeled changes in surface water hydrology in these waterbodies on an average basis and for wet, normal, and dry conditions can be found in Appendix A.

Piping of the JSC would result in a water savings of approximately 5,057 acre feet per year (AF/year). Of this total, 3,793 AF/year (75 percent) would be used to fulfill existing water rights of MID and RRVID patrons, and 1,264 AF/year (25 percent) would be restored in South Fork Little Butte Creek in August and September. During these months, MID will commit 1,264 AF/year to an instream water right in South Fork Little Butte Creek, which is equivalent to 10.45 cfs. The 10.45 cfs instream water right will consist of existing voluntary bypasses (4.36 cfs on average) plus an additional 6.09 cfs (on average) bypass. These instream flows will be additive to the existing senior instream water right (1.67 cfs) to ensure flows in South Fork Little Butte Creek below RM 1.1 do not go below 12.12 cfs. This would increase flows in South Fork Little Butte Creek below RM 1.1 in addition to portions of Little Butte Creek (RM 10.2 to 17.2). Flow gains are not expected to be realized in the lower portions of Little Butte Creek (RM 0 to 10.2) and Upper Rogue River due to the Project's elimination of canal seepage and incidental headgate release of canal water, which in part support flow in these waterbodies.

The 3,793 AF/year (75 percent) of saved water retained would augment water management within Fish Lake, Fourmile Lake, and North Fork Little Butte Creek from the outlet of Fish Lake (RM 16) to the JSC North Fork Little Butte Creek diversion (RM 0.9). The saved water would be retained within Fish Lake and Fourmile Lake for use during dry years. This would increase water volumes in these lakes and would generally result in decreased flows during the irrigation season in North Fork Little Butte Creek from RM 0.9 to 16. During dry years, the saved stored water resulting from the Project would be released from the lakes to extend the irrigation season, resulting in increased flows in September in North Fork Little Butte Creek from RM 0.9 to 16.

Piping the JSC and eliminating canal seepage and incidental headgate release would allow MID to divert less water and still meet patron demands. As a result, streamflow would increase in North Fork Little Butte Creek below the diversion point (RM 0.9) and the upper portions of Little Butte Creek (RM 10.2 to 17.2) in spring when MID relies on natural flow only and not stored water (May and June).

Piping and burying the JSC would prevent the canal from intercepting and capturing flow from 13 streams (Grasshopper, Owens, and Eagle gulches, and Unnamed Drainages 1 to 10). These streams would be reconnected to their downslope stream channels by bioengineered stream channels that would convey streamflow over the piped JSC. Reconnecting these streams would better facilitate runoff during precipitation events and would likely result in higher flows in these streams and Little Butte Creek during the nonirrigation season.

Piping the JSC would eliminate canal seepage. Canal seepage augments groundwater discharge into waterbodies adjacent to the JSC, and the loss of this water source could result in decreases in artificial hydrology to Lake Creek, Osborne Creek, Wyant Gulch, Grasshopper Gulch, Owens Gulch, Eagle Gulch, and Unnamed Drainages 1 to 10. Furthermore, piping the JSC would eliminate

incidental headgate release which augments flow in Grasshopper Gulch, Eagle Gulch, and Unnamed Drainages 7 and 10. This loss of artificial hydrology could reduce flows in these systems during the irrigation season and could minorly influence flows in Little Butte Creek. However, eliminating canal seepage and incidental headgate releases would remove these point and nonpoint sources of thermal and contaminant pollution which could result in improved water quality to waterbodies that currently receive these artificial sources of hydrology.

Table 1 provides a summary of hydrologic and water quality impacts of piping the JSC. Sections below provide further detail on these impacts and their relative magnitudes of effect. For the purposes of this analysis, "dry," "normal," and "wet" conditions are represented by the 20th, 50th, and 80th percentile flows for any given flow, diversion, or storage volume. However, from 2005-2024, MID diversions were terminated before the end of September in 12 out of 20 years, an indication that overall conditions during this period of record were relatively dry compared to historical district operations. Month-by-month modeled changes in surface water hydrology in these waterbodies for wet, normal, and dry conditions, as well as average monthly changes, can be found in Appendix A.

Table 1. Impacts of the Project on Waterbodies Associated with MID Operations and Infrastructure

Name	*Irrigation Season* Hydrology	*Irrigation Season* Water Quality	*Nonirrigation Season* Hydrology	*Nonirrigation Season* Water Quality
South Fork Little Butte Creek (RM 0–1.1)	On average, streamflow would increase by approximately 6.37 cfs (106 percent) in August and September. Minimum flows in August and September would be 12.12 cfs.	Increased flows in August and September would moderately reduce stream temperatures and increase dissolved oxygen concentrations.	No change.	No change.
North Fork Little Butte Creek (RM 0–0.9)	On average, flow would increase by approximately 4.6 cfs (13 percent) during May and June.	Increased flows in May and June would minorly reduce stream temperatures and increase dissolved oxygen concentrations.	Insignificant increase in flows.	No change.
North Fork Little Butte Creek (RM 0.9–16)	On average, flow would decrease by approximately 1.4 cfs (-2 percent) during the majority of irrigation seasons. During dry years, streamflow would increase by approximately 26.5 cfs (79 percent) during the month of September.	Decreased flows during the irrigation season would minorly increase stream temperature and decrease dissolved oxygen concentrations. Increased flow during September of dry years would significantly decrease stream temperatures and increase dissolved oxygen concentrations.	Insignificant increase in flows.	No change.
Lake Creek (RM 0-0.25)	No change.	No change.	No change.	No change.
Osborne Creek (RM 0-0.7) and Wyant Gulch (RM 0-0.27)	Minor decrease in flows from reduced groundwater discharge from loss of canal seepage.	Elimination of nonpoint source pollution from piping the JSC would minorly improve water quality.	No change.	No change.

Name	*Irrigation Season* Hydrology	*Irrigation Season* Water Quality	*Nonirrigation Season* Hydrology	*Nonirrigation Season* Water Quality
Grasshopper Gulch (RM 0-0.28), Eagle Gulch (RM 0-1.05), Unnamed Drainages 7 and 10 (RM 0-0.48/1.45)	Moderate decrease in flows due to loss of incidental headgate release and reduced groundwater discharge from loss of canal seepage.	Elimination of point and nonpoint source pollution from piping the JSC moderately would improve water quality.	Minor increase in flows.	Minor reduction in stream temperature and minor increase in dissolved oxygen concentration.
Owens Gulch (RM 0-0.58) and Unnamed Drainages 1–6, 8, and 9 (RM 0-0.05 up to 0.72)	Minor decrease in flows from reduced groundwater discharge from loss of canal seepage.	Elimination of nonpoint source pollution from piping the JSC would minorly improve water quality.	Minor increase in flows.	Minor reduction in stream temperature and minor increase in dissolved oxygen concentration.
Little Butte Creek	On average, flow in Little Butte Creek from RM 10.2 to 17.2 would increase by approximately 3.5 cfs (4 percent) during the irrigation season.	Water quality would be moderately improved. Elimination of point and nonpoint source pollution from piping the JSC would improve water quality through the entirety of the creek. In addition, increased flow from RM 10.2 to 17.2 would also improve water quality by decreasing stream temperatures and increasing dissolved oxygen concentrations.	Minor increase in flows.	Minor reduction in stream temperature and minor increase in dissolved oxygen concentration.
Rogue River (RM 126 to 132)	No change.	Insignificant improvement in water quality.	Insignificant increase in flows.	Insignificant improvement in water quality.
Fish Lake and Fourmile Lake	Reduced drawdown of the lakes would increase water stored in the lakes by 16 percent on average during the irrigation season.	Increased water volume in the lakes would decrease water temperature and increase dissolved oxygen concentration.	Reduced drawdown of the lakes would increase water stored in the lakes by 20 percent on average during the non-irrigation season.	Increased water volume in the lakes would decrease water temperature and increase dissolved oxygen concentration.

JSC = Joint System Canal; RM = river mile

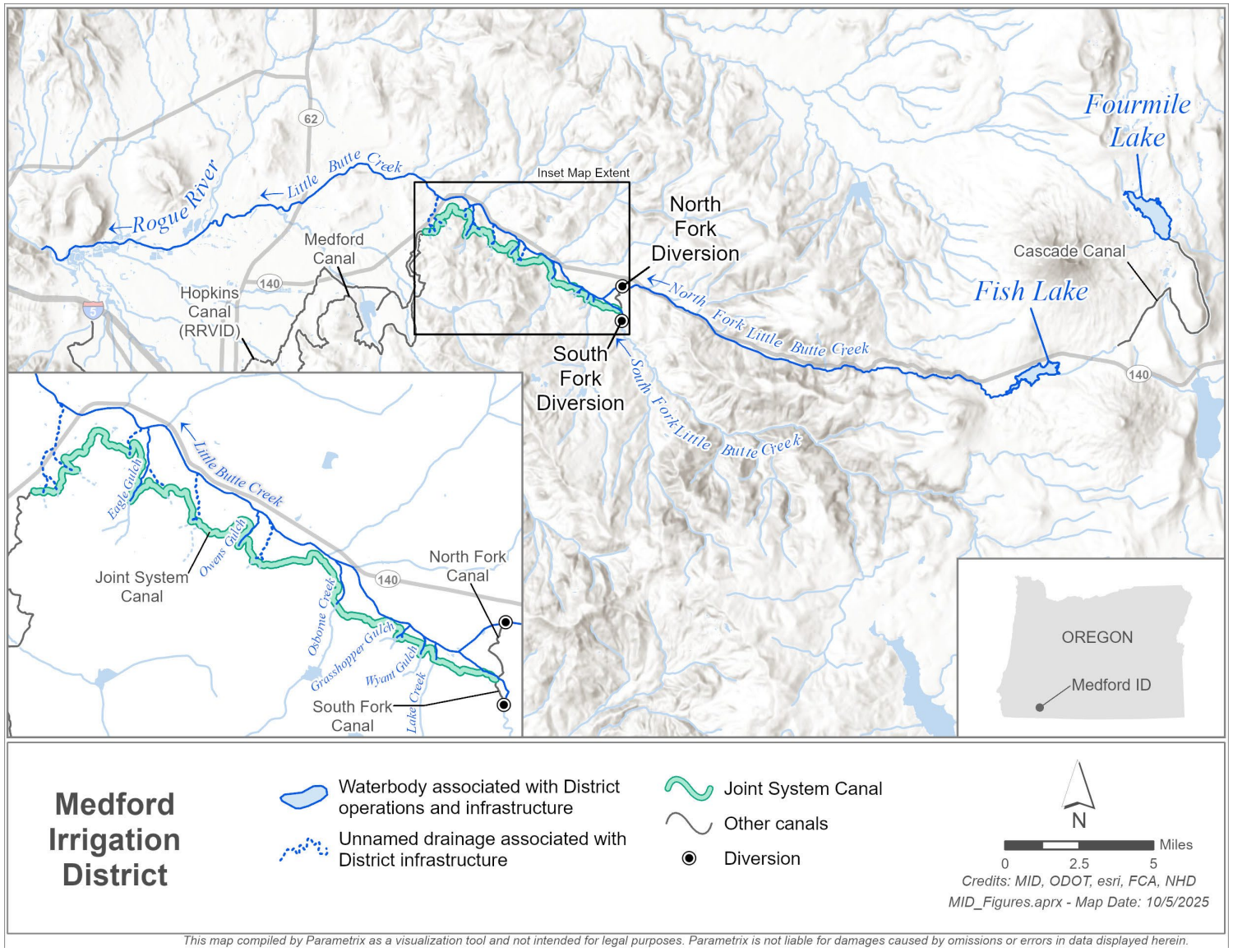


Figure 3. Waterbodies Associated with MID Operations and Infrastructure

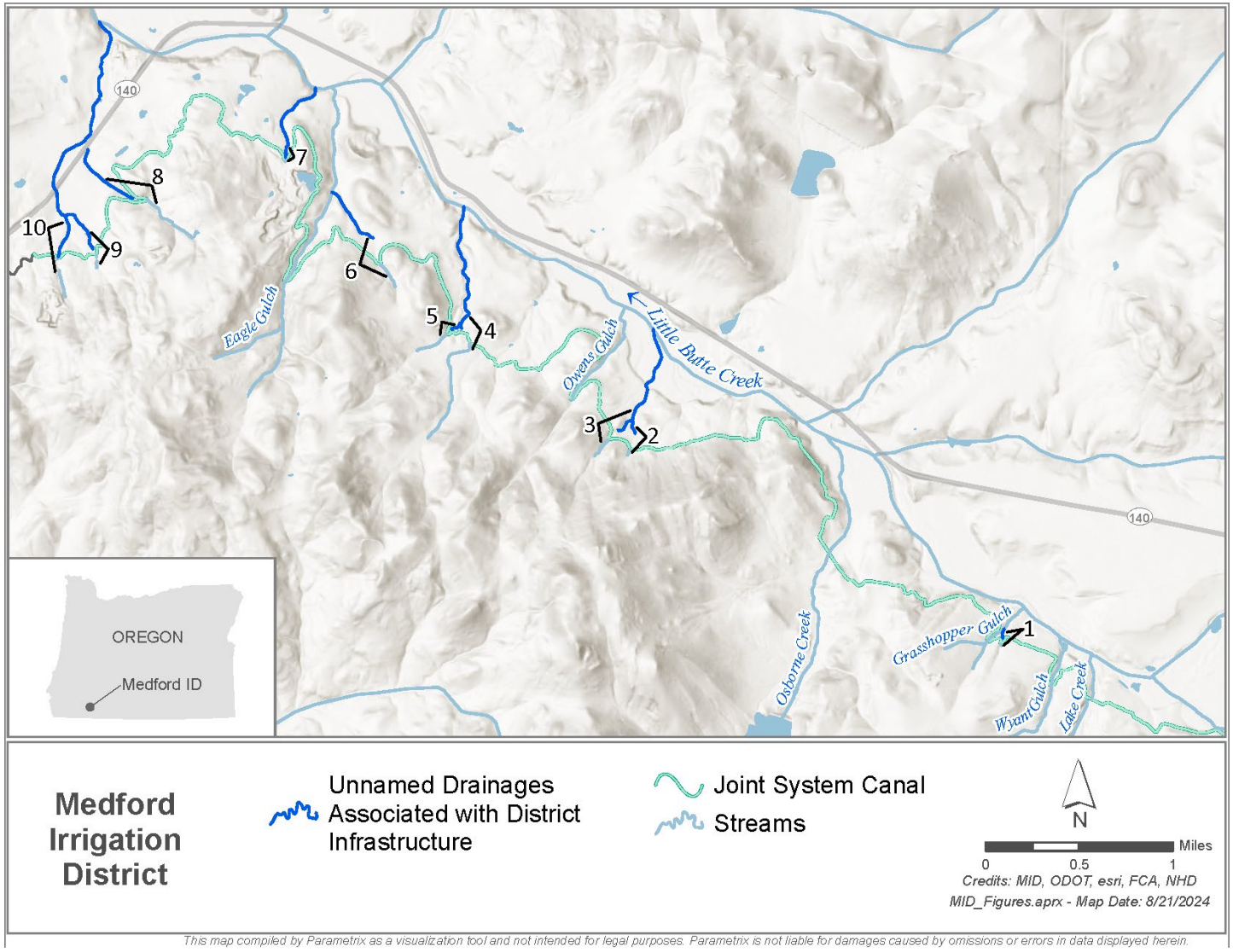


Figure 4. Unnamed Drainages Associated with MID Operations and Infrastructure

2.4.3.1 South Fork Little Butte Creek (RM 0 to 1.1)

Hydrology

The 25 percent of saved water as a result of piping the JSC (1,264 AF/year) would be protected within South Fork Little Butte Creek from RM 0 to 1.1 during August and September. This stream reach and timing was prioritized by state and federal agencies for restoring water instream owing to the extremely low flows downstream of the South Fork Little Butte Creek diversion (RM 1.1) which creates a migratory barrier for local fish populations. Currently, MID is required to bypass 1.67 cfs from its South Fork Little Butte Creek diversion point owing to a senior instream water right. However, in practice MID voluntarily bypasses an additional 4.36 cfs, on average, during August and September.

The Project will commit MID's existing voluntary bypass of 4.36 cfs (on average) and an additional 6.09 cfs, for a total of 10.45 cfs instream in South Fork Little Butte Creek (RM 0 to 1.1) from August 1 to September 30. Additional bypass water was modeled to vary from 2.72 cfs during wet conditions to 9.22 cfs during dry conditions, with an average of 6.37 cfs. The 6.37 cfs in additional bypass water will increase flows by 106 percent on average. In tandem with the existing 1.67 cfs senior water right, this will guarantee that flows in this waterbody do not go below 12.12 cfs during August and September. The Project would have no impact on this waterbody during the nonirrigation season.

Although not included within this analysis, two new senior instream water rights were issued in 2025 upon completion of a conserved water project, which will increase the combined rate of senior instream water rights for South Fork Little Butte Creek to 12.28 cfs, 0.16 cfs greater than assumed. There will be no impact to MID operations of increasing flows from 12.12 cfs to 12.28 cfs below the diversion.

Water Quality

Significantly higher flows during August and September would have a large, beneficial impact on water quality as flows could result in a decrease in stream temperatures and an increase in dissolved oxygen concentrations. The Project would have no impact on the water quality of this waterbody during the nonirrigation season.

2.4.3.2 North Fork Little Butte Creek (RM 0 to 0.9)

Hydrology

Currently, MID diverts water at the diversion points to account for irrigation needs, canal losses from seepage, and incidental headgate release. As a result of piping, canal losses would be eliminated. . Thus, when MID is only relying on natural flow (May and June), an additional 4.6 cfs on average could be bypassed at the North Fork Little Butte Creek Diversion because that water is not needed at that time. The 4.6 cfs of bypassed water could increase flows in this waterbody by 13 percent, on average, during the months of May and June.

During the non-irrigation season, increases in water storage may lead to increased water releases from Fish Lake to North Fork Little Butte Creek if the reservoir exceeds its storage capacity. However, during the modeled time period (2005-2024) there was no significant impact to flows in North Fork Little Butte Creek as Fish Lake storage is typically below levels that would require reservoir releases. Thus, the Project will overall have an indiscernible long-term effect on flows in North Fork Little Butte

Creek during the non-irrigation season as potential increases in Fish Lake releases in response to increased water storage are anticipated to be rare and isolated.

Water Quality

Higher flows in May and June would have a beneficial effect on water quality resulting from an increase in stream temperature and a decrease in dissolved oxygen concentrations.

2.4.3.3 North Fork Little Butte Creek (RM 0.9 to 16)

Hydrology

Releases of water from Fish Lake into North Fork Little Butte Creek during the irrigation season are predominantly dictated by MID's North Fork Little Butte Creek Diversion. Thus, the reduced need for diversion after piping could decrease releases from Fish Lake and thereby reduce flow in North Fork Little Butte Creek during the irrigation season. In effect, water saved as a result of piping that is retained by MID (3,793 AF/year) could be stored in Fish Lake and Fourmile Lake for use during dry years to extend the irrigation season. Currently during dry years, MID and RRVID are not able to meet patron water demands in September due to insufficient water storage. As a result of piping the JSC, retained water savings stored in Fish Lake and Fourmile Lake could be used to meet MID and RRVID patron water demands in September of dry years, thereby extending the irrigation season.

The altered water management of Fish Lake and Fourmile Lake could increase or decrease flow in North Fork Little Creek from RM 0.9 to 16 depending on the water year and time of year. During the majority of irrigation seasons, flow would decrease in this reach of the creek by 1.4 cfs on average due to reduced diversions after piping, which is a 2 percent decline in streamflow. Conversely, during September of dry years, flow in this reach of the creek could increase by 26.5 cfs, which is a 79 percent increase in streamflow.

As described above, flows in North Fork Little Butte Creek could increase during the non-irrigation season during years that Fish Lake reaches its storage capacity as a result of the Project. However, these events are anticipated to be rare and isolated and would have an insignificant impact on flows in this reach during the non-irrigation season.

Water Quality

Lower flows during the majority of irrigation seasons would have minor effects on water quality as they could result in an increase in stream temperature and decrease in dissolved oxygen concentration.

Higher flows during Septembers of dry years would have a large beneficial effect on water quality resulting from a decrease in stream temperature and an increase in dissolved oxygen concentration during that timeframe.

2.4.3.4 Lake Creek

Hydrology

Lake Creek could be affected by piping of the JSC through the loss of canal seepage that may augment groundwater discharge into the waterbody. However, the magnitude of the impact of the loss of canal seepage on groundwater inflow to Lake Creek downslope of the JSC would depend on the size of the waterbody and the contributing catchment that receives canal seepage. Lake Creek is a relatively large waterbody that has a small contributing catchment that receives canal seepage.

Thus, although loss of canal seepage would result in reduced groundwater inflow into Lake Creek, this loss is not anticipated to have a detectable change as canal-seepage-augmented groundwater inflow represents a small percentage of inflow compared among other sources. Thus, hydrology in Lake Creek is not anticipated to be affected by piping the JSC.

Water Quality

Hydrology within Lake Creek is not anticipated to be impacted by piping the JSC, and canal seepage is likely not a significant contributor of nonpoint source pollution to the waterbody. Thus, piping the JSC would have no effect on water quality within Lake Creek.

2.4.3.5 Osborne Creek and Wyant Gulch

Hydrology

During the irrigation season, Osborne Creek and Wyant Gulch could be affected by piping the JSC through the loss of canal seepage that may augment groundwater discharge into the waterbodies. In contrast to Lake Creek, these waterbodies are smaller and have larger contributing catchments that receive canal seepage. Thus, the loss of canal seepage would be expected to have a minor decrease in streamflow in these systems downslope of the JSC during the irrigation season. There is no information on hydrology within these waterbodies nor on the degree of canal seepage that enters in these waterbodies, so the exact degree of impact is unknown. The Project would have no effect on the hydrology of these waterbodies during the nonirrigation season.

Water Quality

Canal seepage from the JSC likely acts as a nonpoint pollution source to these waterbodies. Elimination of this nonpoint pollution source could decrease water temperature, turbidity levels, and concentrations of *E. coli* within these waterbodies. Thus, piping the JSC would have a minor beneficial impact on water quality within these waterbodies during the irrigation season. The Project would have no impact on the water quality of these waterbodies during the nonirrigation season.

2.4.3.6 Grasshopper Gulch, Eagle Gulch, and Unnamed Drainages 7 and 10

These waterbodies would be affected by piping the JSC through reconnection of these systems over the JSC and the loss of incidental headgate water releases and canal seepage.

Hydrology

As a result of piping the JSC, these streams would be reconnected to the downslope stream channel by a bioengineered stream channel that would convey streamflow over the piped JSC. Thus, these streams would no longer contribute water to the JSC, and their downslope portions would no longer receive canal seepage and incidental headgate release of irrigation water. Reconnecting these streams would better facilitate runoff during precipitation events and would likely result in a minor increase to flow during the nonirrigation season.

During the irrigation season, piping the JSC would eliminate artificial sources of water through the loss of incidental headgate releases of irrigation water and loss of canal seepage. This is anticipated to result in a moderate long-term decline in hydrology within these streams. Overall, piping the JSC would restore the natural hydrology of these streams by better facilitating runoff and streamflow during the nonirrigation season and eliminating artificial water sources during the irrigation season.

Water Quality

Higher flow during the nonirrigation season would have a minor beneficial impact on water quality, as it could decrease stream temperature and increase dissolved oxygen concentration.

During the irrigation season, incidental headgate releases of irrigation water and canal seepage likely act as point and nonpoint pollution sources, respectively. Eliminating these sources of pollution would have moderate beneficial impacts on water quality as it could decrease water temperature, turbidity levels, and *E. coli* concentrations within these waterbodies.

2.4.3.7 Owens Gulch and Unnamed Drainages 1 to 6, 8, and 9

These waterbodies would be affected by piping the JSC through reconnection of these systems over the JSC and the loss of canal seepage.

Hydrology

As a result of piping the JSC, these streams would be reconnected with their downslope counterparts by a bioengineered stream channel that would convey streamflow over the piped JSC. Reconnecting these streams would better facilitate runoff during precipitation events and would likely result in higher flows during the nonirrigation season.

During the irrigation season, piping the JSC would eliminate artificial sources of water through the loss of canal seepage. This is anticipated to have a minor long-term decline in hydrology within these streams. Overall, piping the JSC would restore the natural hydrology of these streams better by facilitating runoff and streamflow during the non-irrigation season and eliminating artificial sources of hydrology during the irrigation season.

Water Quality

Higher flow during the nonirrigation season would have a minor beneficial impact on water quality as it could decrease stream temperature and increase dissolved oxygen concentration.

During the irrigation season canal seepage likely act as nonpoint pollution sources for these waterbodies. Eliminating these sources of pollution would have a minor beneficial impact on water quality as it could decrease water temperature, turbidity levels, and *E. coli* concentrations within these waterbodies.

2.4.3.8 Little Butte Creek

Hydrology

Impacts on Little Butte Creek hydrology as a result of piping the JSC would be influenced by (1) reduced diversion rates from North Fork Little Butte Creek during May and June, (2) saved water restored instream in South Fork Little Butte Creek during August and September, (3) alterations to flow patterns in 15 small tributaries as discussed above for Wyant, Grasshopper, Owens, and Eagle Gulches; Osborne Creek; and Unnamed Drainages 1 to 10 and; (4) elimination of JSC seepage.

During the irrigation season, flows in Little Butte Creek would likely increase in its most upstream portion (RM 10.2 to 17.2) by 3.5 cfs on average, or 4 percent. The increased flows in this portion of Little Butte Creek would result from decreased diversions on North Fork Little Butte Creek during May and June and allocation of saved water instream in South Fork Little Butte Creek during August and September. Increased flow in Little Butte Creek is not anticipated to occur below RM 10.2 due to decreased tributary input from the 15 smaller tributaries and decreased groundwater discharge due

to the elimination of incidental headgate release and canal seepage. The contribution of incidental headgate release and canal seepage to Little Butte Creek flows is unknown. There is little data available on Little Butte Creek's aquifer and the groundwater-surface water dynamics in this heavily altered watershed. Little Butte Creek is a gaining reach whose streamflow is increased by tributary input, flood irrigation tailwater discharge, and groundwater discharge. Groundwater discharge into Little Butte Creek is governed by aquifer storage, inputs (precipitation, irrigation, and canal seepage), and flow path lengths. Given the complexity of the system, the relative contribution of JSC water losses to Little Butte Creek flows cannot be determined with the data that is available. It is likely the majority of water lost by the JSC via incidental headgate release and canal seepage does not enter Little Butte Creek and is lost to evapotranspiration, reclaimed by private irrigators in stock ponds and irrigation canals, or enters into aquifer storage. It is conservatively estimated that decreased tributary input from the 15 smaller tributaries and decreased groundwater discharge into Little Butte Creek is likely to be commensurate with increased tributary input from North Fork Little Butte Creek and South Fork Little Butte Creek. Thus, in the most upstream portion of Little Butte Creek (RM 10.2 to 17.2), piping the JSC would increase flows within Little Butte Creek whereas the hydrology below RM 10.2 is not anticipated to be impacted by piping the JSC.

During the nonirrigation season, increased flows in 13 small tributaries that are currently intercepted by the JSC would minorly increase flows in Little Butte Creek.

Water Quality

Higher flows during the nonirrigation season would have a minor beneficial impact on water quality as they could result in a decrease in stream temperature and increase dissolved oxygen concentration.

During the irrigation season, incidental headgate release of irrigation water and canal seepage likely act as point and nonpoint pollution sources, respectively, to Little Butte Creek tributaries. Elimination of these sources of pollution would decrease water temperature, turbidity levels, and *E. coli* concentration within these tributaries; the same water quality parameters within Little Butte Creek could also be influenced. Furthermore, higher flows in the upper reaches of this waterbody could result in a decrease in stream temperature and increased dissolved oxygen concentration.

2.4.3.9 Rogue River

Hydrology

Little Butte Creek contributes, on average, approximately 7 percent to flows within the Rogue River from RM 126 to 132. As such, Little Butte Creek's influence on the Rogue River is minor compared to the influence of other sources of hydrology. Thus, flow alterations to Little Butte Creek as a result of the Project as discussed in the section above are anticipated to have no significant change on hydrology in the Rogue River. The Project would have no detectable effect on hydrology within the Rogue River.

Water Quality

Minor improvements to water quality parameters in Little Butte Creek such as *E. coli*, temperature, turbidity, nutrients, and dissolved oxygen may also benefit these parameters in the Rogue River. However, Little Butte Creek is a relatively small contributor to the Rogue River and therefore these minor improvements to Little Butte Creek water quality are unlikely to have a detectable effect on water quality in the Rogue River. Thus, the Project is not anticipated to have a detectable beneficial effect on water quality within the Rogue River.

2.4.3.10 Fish Lake and Fourmile Lake

Hydrology

As discussed for North Fork Little Butte Creek (RM 0.9 to 16) above, 3,793 AF/year of water conserved as a result of piping the JSC would be stored in Fish Lake and Fourmile Lake to extend the irrigation season during dry years and thereby meet patron demands for water in September. The release of water from Fish Lake into North Fork Little Butte Creek would decrease during the irrigation season due to reduced diversion following piping. Fish Lake and Fourmile Lake act as a unit to store water for release into North Fork Little Butte Creek for downstream water users. Thus, as a result of piping the JSC, water storage drawdown within these lakes would be slower over the course of the irrigation season and would result in an overall increase in water storage. Water storage is estimated to increase on average by 16 percent during the irrigation season and 20 percent during the non-irrigation season.

Water Quality

Increased water volumes within Fish Lake and Fourmile Lake would decrease water temperatures and increase dissolved oxygen concentrations.

3. Action Area

The Action Area is defined as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR 402.02). The Action Area represents the full extent of potential direct effects or delayed consequences from Project-related physical, biological, and chemical impacts to the species addressed in this analysis from the Proposed Action.

The Action Area of the Proposed Action includes:

- The **Project Area** consists of District infrastructure that would be upgraded or improved, District-operated Rights-of-Way (ROW), and/or easements where new or modernization construction would take place and/or be staged (Figure 5).
- The **Terrestrial Noise Impact Area** consists of the area surrounding construction activities that may be affected by terrestrial noise. The Terrestrial Noise Impact Area is assumed to extend up to 1 mile from the edge of the Project Area (Figure 5).
- **Waterbodies Impacted by the Proposed Action** consist of waterbodies that would be directly or indirectly affected by the Proposed Action (Table 1, Figure 5). These waterbodies would have altered streamflow and water quality because of the Proposed Action.

The District's diversions on waterbodies that support fish are outfitted with ODFW-compliant fish screens that prevent fish from entering the District's irrigation conveyance system. Thus, the JSC does not support ESA-listed fish species.

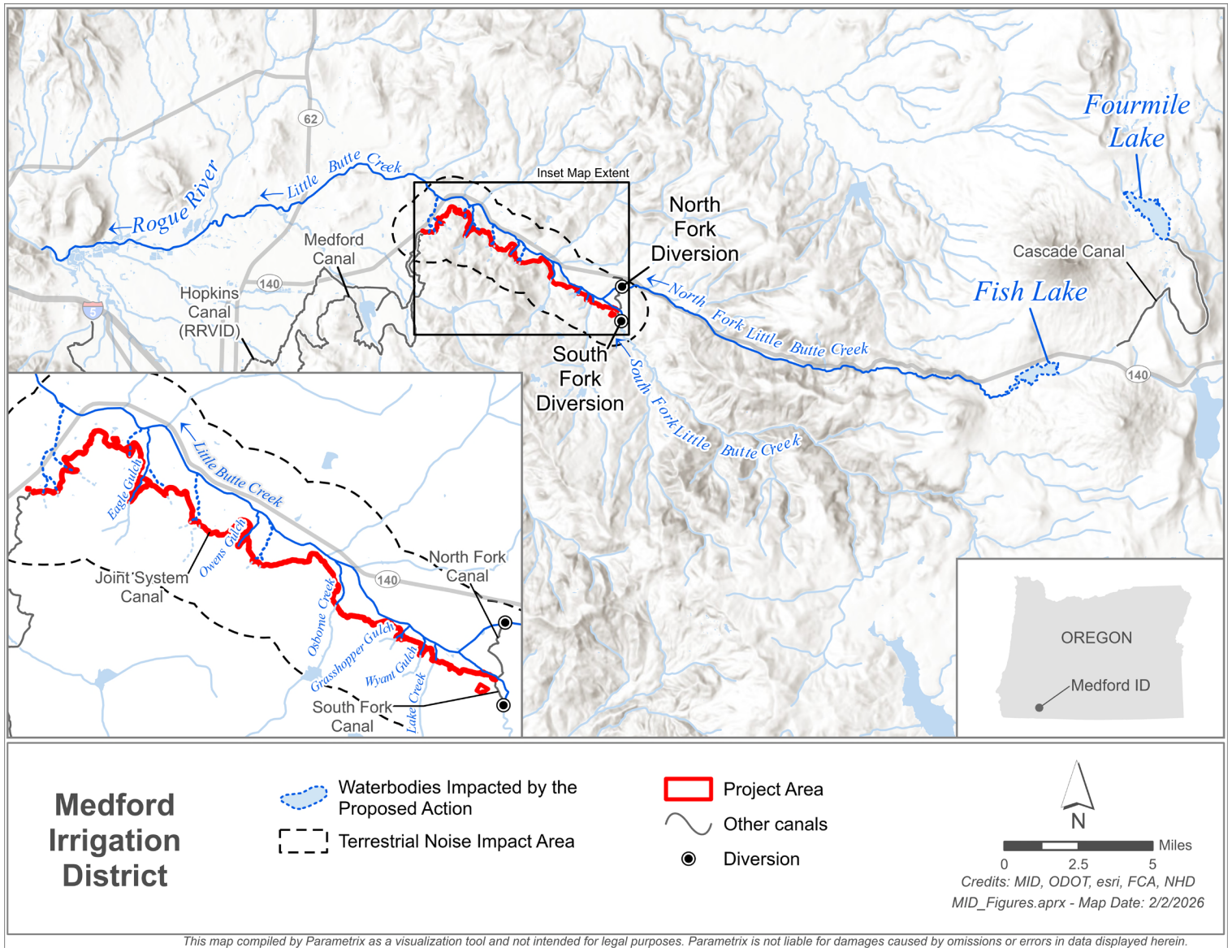


Figure 5. Unnamed Drainages Associated with MID Operations and Infrastructure

4. Species and Critical Habitat Considered

An Official Species List for USFWS protected species that may occur within the Action Area was obtained from USFWS Information for Planning and Consultation (IPaC) system (USFWS 2026; Appendix C). Endangered and threatened species and Essential Fish Habitat covered by NMFS that may occur within the Action Area were identified through the NMFS Species and Habitat App (NMFS 2026; Appendix C). Coordination with USFWS and NMFS further informed species considerations. Table 2 and Table 3 list species and critical habitat under USFWS and NMFS jurisdiction that were reviewed and whether they were considered within this BA. Further information on species that were not part of this BA is provided below.

Table 2. Species and Critical Habitat that are Included in this Consulation

Scientific	Common	Federal Status	Potential Species/Habitat Present within Action Area (Yes/No)	Critical Habitat Present
Danaus plexippus	Monarch butterfly	Proposed threatened – USFWS	Yes	No

Table 3. Species and Critical Habitat that are Not Included in this Consultation

Scientific	Common	Federal Status	Potential Species/Habitat Present within Action Area (Yes/No)	Critical Habitat Present
Oncorhynchus kisutch	Southern Oregon/Northern California Coast Coho Salmon Evolutionarily Significant Unit [ESU])	Threatened – NMFS	Yes	Yes
Canis lupus	Gray wolf	Endangered – USFWS	No	No
Gulo gulo luscus	North American wolverine	Threatened – USFWS	Yes	No
Gymnogyps californianus	California condor	Non-essential experimental population – Proposed threatened on private land – USFWS	Yes	No
Strix occidentalis caurina	Northern spotted owl	Threatened – USFWS	No	No
Bombus franklini	Franklin's bumble bee	Endangered – USFWS	No	No
Bombus suckleyi	Suckley's cuckoo bumble bee	Proposed Endangered – USFWS	No	No
Actinemys marmorata	Northwestern pond turtle	Proposed Threatened – USFWS	Yes	N/A

Scientific	Common	Federal Status	Potential Species/Habitat Present within Action Area (Yes/No)	Critical Habitat Present
Branchinecta lynchi	Vernal pool fairy shrimp	Threatened – USFWS	No	No
Lomatium cookii	Cook's Lomatium (Agate desertparsley)	Endangered – USFWS	No	No
Fritillaria gentneri	Genter's fritillary	Endangered – USFWS	No	No
Limnanthes pumila ssp. grandiflora	Large-flowered wooly meadowfoam	Endangered – USFWS	No	No

4.1 Species and Habitat Not Affected or Included in Consultation

No effects to ESA-listed or proposed species including gray wolf, North American wolverine, California condor, northern spotted owl, Franklin's bumble bee, Suckely's cuckoo bumble bee, vernal pool shrimp fair, Cook's lomatium, Genter's fritillary, and large-flowered wooly meadowfoam or their designated critical habitat are expected from the Project. SONCC coho salmon and Pacific salmon EFH may be affected by the Proposed Action, but potential effects to the species and habitat have already been addressed in the ORWAC programmatic consultation. Additional information pertaining to the determination of no effects is provided below.

4.1.1 SONCC Coho Salmon and Pacific Salmon EFH

The SONCC coho salmon Evolutionarily Significant Unit was listed as threatened under the ESA in 1997 (62 Federal Register [FR] 24588). Within the interior Rogue River Watershed, SONCC coho salmon is broken into three subpopulations that are functionally independent. The Upper Rogue River subpopulation constitutes SONCC coho salmon within the Action Area (NMFS 2016). The Upper Rogue River subpopulation is a core population with a moderate risk of extinction (NMFS 2016) and is limited by agriculture and development (NMFS 2014). Within the Action Area, SONCC coho salmon spawn, rear, and migrate. The Rogue River within the Action Area is primarily used for rearing and migration, whereas the Little Butte Creek watershed is primarily used for spawning and rearing (ODFW 2025b). The Little Butte Creek Watershed is highly productive and is estimated to spawn and rear approximately 10 percent of the Rogue River Basin SONCC coho population (BLM and USFS 1997).

Critical habitat for SONCC coho salmon includes all accessible waterways, substrates, and adjacent riparian zones between the Elk River in Oregon and the Mattole River in California (64 FR 24049). Fish Lake Dam is identified as a dam that blocks access to historically occupied SONCC coho salmon habitat, and upstream habitat was excluded from critical habitat designation (64 FR 24049). SONCC coho salmon within the Action Area are recorded to occur in the Rogue River, Little Butte Creek, North Fork Little Butte Creek, South Fork Little Butte Creek, and Lake Creek (ODFW 2025b). SONCC coho salmon are also assumed to be present in Osborne Creek. These waterbodies would be considered critical habitat for SONCC coho salmon.

Pacific salmon species that may be affected by the Project include adult and juvenile Chinook and coho salmon and their eggs. EFH for these species is present throughout natural waterbodies within

the Action Area. Chinook and coho salmon are known or assumed to occur within North Fork Little Butte Creek, South Fork Little Butte Creek, Lake Creek, Osborne Creek, Little Butte Creek, and the Rogue River within the Action Area but are not present in the District's water conveyance system due to the presence of fish screens.

In coordination with NMFS Biologist Lance Kruzic and Brooke Anderson, it was determined the Proposed Action fit under the ORWAC Programmatic Consultation (NMFS 2018, NRCS 2024) for potential effects to SONCC coho salmon and Pacific salmon EFH. The specific activities outlined in the ORWAC Programmatic Consultation that cover the Proposed Action are: Water Conveyance Improvement and Irrigation Water Siphons. Applicable conservation measures would be employed for design and construction to ensure NRCS obligations for ESA Section 7 and MSA obligations would be met for potential effects to SONCC coho salmon and Pacific salmon EFH. A project notification form would be submitted to the state lead for ORWAC prior to project implementation. NRCS will continue to coordinate with NMFS on the Project to ensure Project design and implementation are in compliance with the ORWAC Programmatic Consultation to achieve ESA Section 7 and MSA compliance.

4.1.2 Gray Wolf

Gray wolves are habitat generalists and establish territories wherever sufficient food resources are present. Young individuals disperse on average 40 to 60 miles to establish new territories. The Project Area is adjacent to the range of the Grouse Ridge gray wolf pack (ODFW 2024). The Grouse Ridge pack consists of seven individuals and contains a breeding pair. Given the large home range of wolf packs, gray wolves could potentially occur within the District. However, because the Project Area is not near potential den locations, construction would occur primarily outside of the denning season (April 1-July 15) in a developed area, and construction would be confined to associated right of ways and easements where a moderate level of disturbance already is present, the Project would have **no effect** on gray wolves. Critical habitat for gray wolves is not designated in Oregon.

4.1.3 North American Wolverine

On November 30, 2023, USFWS listed the distinct population segment (DPS) of North American wolverine in the contiguous United States as threatened under the ESA (88 FR 83726- 83772). Wolverine has 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 western/northwestern United States and much of Canada and Alaska. Wolverine uses a variety of habitat types, but it generally uses habitats in locations away from human development (USFWS 2018). Wolverine occurs within mountainous regions in Oregon including the Cascade range (USFWS 2018; ODFW 2025a).

The Project Area is not preferred habitat for North American wolverine as it is at a lower elevation (below 1,700 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 2026). Construction of the Proposed Action occurs within the vicinity of preexisting development, and the Project will not impede migration of the species between more suitable habitats. The Proposed Action is anticipated to have **no effect** on North American wolverine.

4.1.4 California Condor

The closest California condor breeding population occurs in Northern California, approximately 100 miles southwest of the Project Area. This population of California condors is a non-essential experimental population. The Northern California Condor Restoration Program has reintroduced 18 condors to Yurok Ancestral Territory with the aim of restoring the species to the Pacific Northwest. The species can travel up to 250 miles over mountainous terrain during foraging forays. Reintroduced California condors in northern California have traveled up to 95 miles so far (BBC 2024). Thus, the species may be present in the Project Area during foraging forays. However, the Project will have no long-term impact on foraging habitat in the Project Area and construction activities are not anticipated to disturb the species that may be foraging in the area. Thus, the Project would have no effect on this species.

4.1.5 Northern Spotted Owl

Northern spotted owls require mature, conifer-dominated forest with moderate to high canopy closure and a multilayered, multispecies canopy dominated by large overstory trees with numerous large cavities, broken tops, and snags. Considerable open space is also needed. Suitable old-growth forest habitat for the species does not occur within or adjacent to where ground disturbance activities would occur within the Project Area. Thus, the Project would have no effect on this species.

Designated critical habitat is adjacent to waterbodies that will be impacted by the Project, but is more than 5 miles from areas of Project-related ground disturbance. Waterflow alterations will not affect critical habitat and construction activities in the Project Area will not impact critical habitat. Critical habitat for the species is more than 5 miles from where ground disturbance would occur. Thus, the Project would have no effect on critical habitat for this species.

4.1.6 Franklin's Bumble Bee

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 2006 (86 FR 47221) and none found in 2008 (Xerces Society 2026a). 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 2026a). Continuous blooming throughout the season is essential for this species. The Project Area consists mainly of continually maintained and disturbed canals, farmlands, and livestock grazing pastures, where potential habitat is fragmented, and populations of diverse flowering plants are absent. Thus, habitat suitability in the Project Area is low. Although the Project Area is located in High Priority Zone for the species, due to the species being exceedingly rare and poor habitat suitability, it is unlikely the species is present in the Project Area, and thus the Project would have no effect on Franklin's bumble bee.

4.1.7 Suckely's Cuckoo Bumble Bee

Suckely's cuckoo bumble bee overwinter from fall through spring in areas with loose substrate such as duff, leaf litter, and rotting logs. The species emerges in late spring to feed on nectar and pollen before invading the nest of a suitable host colony (USFWS 2024a). 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 2024a). The species' offspring emerge in late summer and mate through fall before overwintering.

Suckely's cuckoo bumble bee is not anticipated to occur within the Project Area. The Project Area does not have high quality nectar and pollen resources, and it is unlikely that host bumble bee nests will be impacted. Potentially suitable overwintering habitat is present in riparian forests within the Project Area for siphon upgrading and installation. However, these areas will not be impacted during the winter and thus will not have a direct impact on the species. Short-term minor loss of suitable overwintering habitat will not have a discernible effect on habitat availability for the species. Furthermore, observations of Suckely'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 2024a). Therefore, the Project would have **no effect** on Suckely's cuckoo bumble bee.

4.1.8 Northwestern Pond Turtle

USFWS proposed to list the northwestern pond turtle as threatened under the ESA on October 3, 2023 (88 FR 68370). Northwestern pond turtles are semi-aquatic, using terrestrial and aquatic habitats for various life history phases. Terrestrial environments are needed for nesting and aestivation (summer or dry season dormancy), and aquatic environments are used for breeding and feeding (USFWS 2023). Aquatic environments used by the species include intermittent streams, canals, ponds, lakes, and reservoirs. The species prefer aquatic environments that have standing or slow-moving water and that contain abundant basking sites and underwater shelter sites (USFWS 2023).

Within the Action Area, northwestern pond turtle is known to occur in Little Butte Creek and may occur within the Rogue River and Little Butte Creek tributaries (ORBIC 2023; USFWS 2023). It is assumed the species may be present in North Fork Little Butte Creek, South Fork Little Butte Creek, Lake Creek, Osborne Creek, Fish Lake, and Fourmile Lake as these waterbodies are sufficiently large to provide suitable foraging and hiding habitat for the species. Within the Project Area, northwestern pond turtle was observed basking along the bank of the JSC during the Parametrix field investigations in April and June 2024.

During early coordination meetings with USFWS on January 29, 2026, it was determined NRCS would not conference on the species at this time. If the species is listed prior to construction of the Project, NRCS would consult with USFWS concerning potential impacts of the Project on the species.

4.1.9 Vernal Pool Fairy Shrimp

Vernal pool fairy shrimps are restricted to vernal pools in Jackson County Oregon and 32 counties in California. Critical habitat for the species is more than 2 miles from where ground disturbance would occur. The Project Area does not contain vernal pools and water volume alterations to streams will not impact the species' critical habitat or influence vernal pools. Thus, the Project would have **no effect** on vernal pool shrimp fairy and their critical habitat.

4.1.10 Vernal Pool Plants

Cook's lomatium and large-flowered wooly meadowfoam are endemic to southern Oregon and occur on the edges of vernal pools. Critical habitat for these species is more than 2 miles from where ground disturbance would occur. The Project Area does not contain vernal pools and water volume

alterations to streams will not impact these species critical habitats or influence vernal pools. Thus, the Project would have **no effect** on Cook's lomatium and large-flowered wooly meadowfoam.

4.1.11 Genter's Fritillary

Genter's fritillary occurs in a variety of habitats, from shaded riparian areas to open grasslands and chaparral, but generally prefers the ecotone between meadow and oak woodland. 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. Ground disturbance within the area having suitable habitat will be limited to current maintenance roads and no vegetation clearing grubbing would occur within this area. Thus, the Project would have **no effect** on Genter's fritillary.

4.2 Species and Critical Habitat Included in Consultation

4.2.1 Monarch Butterfly

USFWS proposed to list the monarch as threatened under the ESA on December 12, 2024 (89 FR 100662).

Monarch overwinters off the coasts of California and Mexico and migrates out during the spring to breed on milkweed plants (*Asclepias* spp.) on which it lays its eggs. Monarch in the west continually breeds and lays eggs from spring to fall before migrating back to its overwintering grounds (USFWS 2021). During the breeding and migration seasons, adult monarchs require blooming nectarous plants for nourishment along their migration routes and breeding areas (USFWS 2021). The timing of monarch breeding and migrating within the Project Area extends from approximately April 1 to October 31 (Xerces Society 2018).

Proposed critical habitat for monarch is outside of the Action Area and is not considered in this BA.

4.3 Status of the Species in the Action Area

4.3.1 Monarch Butterfly

Populations of monarch have generally been declining since 1997 (USFWS 2021). Population estimates of western monarchs have decreased from over 1,200,000 in 1997 to a little over 200,000 in 2022 (89 FR 100662). Declines in the monarch population have been attributed to loss and degradation of habitat, insecticides, and climate change (USFWS 2021).

Populations of monarch within the Action Area are unknown. Within Jackson County, there have been approximately 184 recorded sightings of monarchs from 2020 to 2024 (iNaturalist 2025; Xerces Society 2026b). In the Action Area, there have been no recorded sightings of monarchs or milkweed plants, and these species were not observed during Parametrix field investigations in April and June 2024. Owing to low recorded observations of monarchs and milkweed and poor habitat suitability within terrestrial habitats that may be affected by the Project, the species is likely to occur at low numbers within the Action Area.

5. Environmental Baseline

5.1 Aquatic Habitats

Habitat quality in stream systems within the Acton Area is limited by land use impacts such as agriculture, grazing, irrigation diversion and impoundments, forestry, and road and residential development (NMFS 2012). Agricultural encroachment on the floodplain has resulted in a narrowed riparian area with few side channels. A narrow riparian area has likely resulted in reduced recruitment of large wood in these streams and has, overall, caused a decline in structural complexity. Loss of riparian vegetation has also resulted in an over 50 percent reduction in shading of rivers in the Upper Rogue River Watershed which has elevated stream temperatures (DEQ 2008). Numerous diversion dams within the Little Butte Watershed have altered channel geomorphology and substrate composition that pose partial barriers to fish movement. Numerous stream crossings in the watershed further limit stream geomorphology and riparian areas.

Water quality and quantity are impacted by water diversion and flood irrigation. Water diversions limit habitat availability within streams and result in elevated temperature and lower dissolved oxygen. Flood irrigation can result in tailwater runoff into waterbodies which harms water quality parameters such as turbidity, temperature, and nitrogen and phosphorus concentrations. As a result of water management and flood irrigation, in addition to land use impacts in the watershed, all waterbodies within the study area are included on the Oregon Section 303(d) impaired list for water quality parameters such as temperature, dissolved oxygen, sedimentation, and phosphorus (DEQ 2022). Water quality impairments and habitat loss due to reduced water quantity further limit habitat quality for anadromous and resident fish and aquatic fish species.

Poor water quality within the JSC likely acts as a point and nonpoint source of pollution to nearby waterbodies. Contaminants such as *E. coli*, phosphorus, turbidity, temperature, and nitrate enter into the JSC via tailwater and in stormwater runoff from upslope land practices. Incidental headgate release into tributaries of Little Butte Creek (Grasshopper Gulch, Eagle Gulch, and Unnamed Drainages 7 and 10) during the irrigation season likely elevate temperatures and contaminant concentrations within these waterbodies; this may have an associated effect on downstream waterbodies. Similarly, canal seepage may also influence water quality to streams whose groundwater discharge is augmented by this artificial source. Hydrogeologic conditions adjacent to the JSC are characterized by shallow bedrock. Shallow bedrock results in short groundwater flow paths for canal seepage, resulting in hillslope seeps and sheet flow. These shorter groundwater flow paths limit the time for biogeochemical processing of contaminants and nutrients in addition to cooling canal seepage water before it enters these waterbodies. Thus, it is likely that canal seepage may act as a nonpoint pollution source to tributaries of Little Butte Creek that are adjacent to the JSC such as Lake Creek, Wyant Gulch, Grasshopper Gulch, Owens Gulch, Eagle Gulch, and Unnamed Drainages 1 to 10.

The JSC is a 20-foot wide canal with a thalweg depth of approximately 5 feet. The JSC substrate is composed of cobbles and gravel with some segments consisting of concrete lining. No aquatic vegetation is present within the canal and riparian vegetation consists predominantly of non-native herbaceous vegetation (Appendix B). In the summer, aquatic moss accumulates in the JSC and can impair operations of the canal. Isolated pockets of woody vegetation are present along the JSC. The JSC is dewatered during the non-irrigation season. Sections of the JSC will momentarily contain water during precipitation events in the non-irrigation season. Vertical plate fish screens compliant with ODFW and NMFS standards were installed on the North Fork and South Fork diversions in the early 2000s to prevent entrainment of fish and aquatic species. The diversion structures on each creek

are partial barriers to fish passage and are listed on the ODFW Fish Passage Priority List (ODFW 2025b). These partial barriers are impediments to fish movement within the Little Butte Creek Watershed.

5.2 Terrestrial Habitats

Terrestrial habitats within the Action Area include areas adjacent to the JSC including the access road, staging areas, and the alignment of the six siphon crossings. Terrestrial habitat conditions within the Project Area were documented by Parametrix Biologists during field visits conducted in April and June 2024. No milkweed plants were observed during the field visits. Representative photos of the Project Area can be found in Appendix B.

Terrestrial habitats along the JSC and its adjacent access road consist of compacted sediments derived from fill material and contain vegetation such as Himalayan blackberry (*Rubus armeniacus)*, reed canary grass (*Phalaris arundinacea*), tall fescue (*Schedonorus arundinaceus*), broadleaf cattail (*Typha latifolia*), and perennial ryegrass (*Lolium perenne*). Vegetation along the JSC and its adjacent access road are regularly disturbed by vegetation clearing and the operations and maintenance of the canal.

Staging areas would be located in previously disturbed areas or in upland pasture grasslands that are dominated by non-native species including perennial ryegrass, meadow foxtail (*Alopecurus pratensis*), common velvet grass (*Holcus lanatus*), and wall barley (*Hordeum murinum*).

Terrestrial habitats within the alignment of the six siphon crossings consist of pasture grasslands and forested areas. Sloping wetlands, supported by seepage from the JSC, occur intermittently through these pasture grasslands along siphon alignments and consist predominantly of meadow foxtail, dense sedge (*Carex densa)*, and common rush (*Juncus effusus*). Forested areas contain an overstory of Oregon white oak (*Quercus garryana*), ponderosa pine (*Pinus ponderosa*), and black cottonwood (*Populus balsamifera*) with an understory of shrubs such as poison oak (*Toxicodendron diversilobum),* Himalayan blackberry, and herbaceous species.

6. Effect Analysis

6.1 Species and Critical Habitat Effects

6.1.1 Short Term

Monarch may be present within or adjacent to the Project Area and may be impacted during the construction of the Proposed Action. Potential short-term effects of the Proposed Action are discussed below.

6.1.1.1 Vegetation Clearing and Ground Disturbance

Vegetation clearing and ground disturbance/grubbing, which will impact 15.7 acres of terrestrial habitats and 26.19 acres of the JSC, is required for piping the JSC and for the 6 siphon crossings. Initial clearing of vegetation (shrubs and trees) would occur between September 1 and February 28 to avoid impacts to nesting migratory birds. Vegetation clearing would only occur in terrestrial habitat areas as the JSC is not vegetated. Ground disturbing activities would occur in the canal and terrestrial habitats. Ground disturbance for piping the JSC must occur during the non-irrigation season (October 1 to April 15) to avoid disruptions to irrigation water conveyance. Ground

disturbance for siphon crossings would occur generally between June 1 and October 1 to align with the IWWW (June 15 to September 15) for associated in-water activities. Table 4 provides a summary of approximate acreage of vegetation clearing and ground disturbance associated with the Proposed Action and the timing of disturbance.

Table 4. Vegetation Clearing and Ground Disturbance Impact Area and Timing

Project Activity	Canal Impact (acres)	Terrestrial Habitat Impact Area (acres)	Timing of Vegetation Clearing	Timing of Ground Disturbance
Piping the JSC	26.19*	13.10	September 1 to February 28	October 1 to April 15
Siphon Crossing	N/A	2.6	September 1 to February 28	June 1 to October 1
Total	26.19	15.70		

*Only ground disturbance would occur in the canal area.

Monarch may be present in the Project Area during vegetation clearing and ground disturbing activities. The potential effects of vegetation clearing and ground disturbance on these species are discussed below.

Short Term Effect to Species

Monarchs may occur within the Action Area for breeding and migrating from April 1 to October 31. As discussed in Section 4.3.2, no milkweed plants were observed within the Project Area and vegetation generally consists of non-nectar producing plants. Due to the lack of milkweed plants, no larval monarchs are expected to be impacted during vegetation clearing or ground disturbing activities. Furthermore, due to poor habitat quality, few adult monarchs are expected to be present in the Project Area. However, adult monarchs may still be present within the Project Area foraging or migrating and have the potential to be impacted by vegetation clearing and ground disturbance that impacts intact ground cover vegetation.

Activities that will impact vegetation during the monarch breeding season for the region include vegetation clearing and ground disturbance (Table 4). Vegetation clearing and ground disturbance during the monarch breeding season would follow the BMPs discussed in Section 2.4.2.6, which include initiating vegetation clearing during the middle of the day when monarchs are most active and pacing the extent of the area to be cleared to flush monarchs from the area if present. Thus, the activities may have a short-term indirect impact on monarch by causing individuals to vacate the work area and by temporarily reducing habitat availability until replanted native vegetation is established.

6.1.2 Long Term

Project elements such as conversion of open canal to pipeline and alteration to water quality and quantity within waterbodies will have long-term effects on monarch. Potential long-term effects of the Proposed Action are discussed below.

6.1.2.1 Habitat Conversion (Canal to Terrestrial Habitat)

Piping 10.8 miles of the JSC and abandoning 1.6 miles of the JSC would result in the conversion of artificial aquatic canal habitats to terrestrial vegetated habitats. Topsoil would be placed on top of the buried pipeline and seeded with native forbs and grasses. No replanting actions would occur for the abandoned portions of the JSC. However, over the long-term the abandoned portions of the JSC would be expected to become vegetated as plants colonize the unvegetated soils. Table 5 provides a summary of the approximate acreage of canal to terrestrial habitat conversion associated with piping the JSC and abandoning portions of the JSC.

Table 5. Permanent Habitat Impacts

Project Activity	Conversion Canal to Terrestrial Habitat (acres)
Piping the JSC	26.19
JSC abandonment	3.94
Total	30.13

Monarch use artificial canal habitats and terrestrial habitats in the Project Area, and the potential effects of the Project's permanent impact on these habitats to these species are discussed below.

Long Term Effect to Species

The increase in 30.13 acres of vegetated terrestrial habitat will improve monarch's habitat availability within the Little Butte Creek watershed. Planted forbs on top of the pipeline and colonizing plants into the abandoned pipeline will increase the availability of foraging and breeding habitat for monarchs in the region. However, given the availability of terrestrial habitat present in the Little Butte Creek watershed, it is likely the increase in monarch habitat will have an indiscernible benefit to monarchs in the region.

6.2 Cumulative Effects

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

Ongoing agricultural activities and land use activities in the Project Area are not expected to change from current conditions. Further measures in MID that are likely to occur following the Proposed Action include improvement of water use efficiency through installation of more efficient irrigation systems and improved irrigation water management. These actions together with the Proposed Action will beneficially affect irrigation water supply in the MID service area by being better able to use water efficiently and reduce tailwater discharge into receiving waterbodies.

Guidance documents further promote activities that will improve water quality and habitat quality for fish and aquatic species within the Little Butte Creek Watershed. The Inland Rogue Agricultural Water Quality Management Area Plan (ODA 2022) addresses water pollution coming from private agricultural land. The plan identifies educational programs, suggested land treatments, management activities, and monitoring to reduce water pollution from agricultural lands. Actions are voluntary, but noncompliance with Agricultural Water Quality Management Area Rules is subject to enforcement by

the Oregon Department of Agriculture (Oregon Administrative Rules 603-090-0080 through 603-090-0120). Prohibited conditions outlined in the plan will prevent the further degradation of waterbodies by minimizing sediment inputs and riparian vegetation destruction and preventing exceedance of water quality standards from irrigation return flows. The Water Quality Improvement Plan for Little Butte Creek Watershed (RRWC 2018) outlines numerous realistic projects and initiatives to achieve compliance with water quality standards for Section 303(d)-listed streams. These projects focus on attaining more instream water rights, decreasing temperature by increasing shading by riparian vegetation, and reducing bacteria loading into waterbodies within the Little Butte Creek Watershed.

The Proposed Action and other reasonably foreseeable future actions are anticipated to have a beneficial cumulative effect on water resources, as irrigation modernization projects would eliminate water loss and increase the amount of water that is conserved or allocated instream.

7. Conclusion and Effect Determinations

Based on the Project description and the analysis provided in this document, Table 6 lists the effects determinations for ESA-listed species and their critical habitat. A summary description of how these effect determinations were reached for each species and critical habitat follows the table.

Table 6. Effect Determination Summary

Common Name	Scientific Name	Federal Status	Species Effects Determination*	Critical Habitat Effects Determination*
Monarch butterfly	*Danaus plexippus*	Proposed threatened	NLAA	N/A

*N/A = Not Applicable; NE = No Effect; NLAA = May Effect, Not Likely to Adversely Affect; LTAA = May Affect and Likely to Adversely Affect

7.1 Monarch Butterfly

The Project **will not jeopardize the continued existence** of monarch for the following reasons:

- The Project will not result in significant impacts to habitat for monarch.
  - Project will result in permanent gain of 30.13 acres of terrestrial habitat.
  - Project will result in temporary impacts to up to 15.70 acres of low quality terrestrial habitat, which is less than 0.001 percent of available terrestrial habitat in the Little Butte Creek watershed.
- Construction of the Project is not anticipated to harm monarch.

However, in the event that monarch is listed prior to completion of the Project, a provisional effect determination is provided.

The Project **may affect but is not likely to adversely affect** monarch. This determination is based on the rationale below.

The Project **may affect** monarch for the following reasons:

- Monarch and milkweed plants are known to be present in Jackson County.

- Terrestrial habitats to be disturbed may contain monarch.
- The volume and timing of flows in aquatic environments may impact riparian plant species that monarch uses.

The Project **is not likely to adversely affect** monarch for the following reasons:

- Project will result in a net gain of 30.13 acres of terrestrial habitat, which will have an indiscernible benefit to habitat availability to monarchs in the region.
- The region likely has a low density of migrating monarchs and they do not roost or overwinter in the Action Area.
- Ground disturbance occurs in areas that generally lack nectar-producing plants and milkweeds and are unlikely to contain monarchs if monarchs are present in the region when construction begins.
  - The majority of ground disturbance will occur after October 31 during the non-irrigation season when monarchs are not expected to be present in the region.
  - Monarchs may be present during vegetation clearing and ground disturbance in vegetated areas from April 1 to October 31. Commencing these activities during the middle of the day and pacing the work area prior to impacting vegetation will likely cause adult monarchs that may be present to vacate the area.

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Appendix A

Modeled Pre- and Post- Project Surface Water Hydrology Conditions

Table 1. Average Modeled Pre- and Post- Project Surface Water Hydrology Conditions

	South Fork Little Butte Creek (RM 0.6) Mean Daily Flow (cfs)		North Fork Little Butte Creek (RM 5) Mean Daily Flow (cfs)		Little Butte Creek (RM 16.8) Mean Daily Flow (cfs)		Fish Lake and Fourmile Lake Water Storage (AF)	
Month	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
January	106.77	106.77	54.73	54.73	198.12	198.12	9,483.56	**11,228.67**
February	106.28	106.28	54.10	54.10	184.12	184.12	10,367.18	**12,110.51**
March	147.45	147.45	62.54	62.54	236.08	236.08	11,212.56	**12,957.67**
April	186.85	186.85	70.87	70.87	274.43	**274.91**	12,504.45	**14,249.55**
May	109.87	109.87	69.84	**69.77**	164.66	**169.94**	14,416.80	**16,083.67**
June	28.22	28.22	73.92	**69.61**	50.16	**54.13**	15,575.95	**17,025.40**
July	6.60	6.60	93.00	**81.98**	27.32	27.32	12,518.91	**14,417.18**
August	5.33	**12.13**	90.02	**90.14**	26.05	**32.86**	8,637.95	**10,958.96**
September	6.75	**12.67**	64.74	**71.98**	27.97	**32.38**	6,391.60	**85,10.00**
October	16.77	**17.51**	37.20	**37.15**	48.04	**48.78**	6,264.52	**80,55.92**
November	31.10	31.10	35.79	35.79	69.41	69.41	7,197.85	**8,989.72**
December	89.67	89.67	46.25	46.25	150.22	150.22	8,325.64	**10,117.51**

RM = River mile, cfs = cubic feet per second, AF = acre feet

Green numbers show increases in flow and red numbers show decreases in flow, as compared to flows pre project.

Table 2. Modeled Pre- and Post- Project Surface Water Hydrology During Dry Conditions (20th percentile)

	South Fork Little Butte Creek (RM 0.6) Mean Daily Flow (cfs)		North Fork Little Butte Creek (RM 5) Mean Daily Flow (cfs)		Little Butte Creek (RM 16.8) Mean Daily Flow (cfs)		Fish Lake and Fourmile Lake Water Storage (AF)	
Month	Pre	Post	Pre	Post	Pre	Post	Pre	Post
January	34	34	35	35	78	78	5,897.03	7,264.55
February	30	30	39.18	39.18	61.7	61.7	6,782.6	7,575.93
March	48.6	48.6	43	43	77	77	7,346.36	8,585.96
April	65	65	50.42	50.42	99	99.92	8,217.48	10,292.61
May	18	18	53.1	53.1	34.76	39.6	10,731	12,649.14
June	4.7	4.7	59	57	23.38	26.49	10,604.2	12,434.68
July	3.8	3.8	84	72.6	22.04	22.04	6,818	9,026.04
August	2.9	12.12	81.42	79.71	20.44	26.6	3,366.65	5,923.29
September	3.2	12.12	33.6	60.09	22.4	25	2,451.18	3,872.51
October	8.94	12.12	25	25	34.92	36	2,827.24	3,667.23
November	16.3	16.3	22.82	22.82	40.98	40.98	3,574.6	4,555.98
December	19.1	19.1	25.92	25.92	54.72	54.72	4625	6,058.07

RM = River mile, cfs = cubic feet per second, AF = acre feet

Green numbers show increases in flow and red numbers show decreases in flow, as compared to flows pre project.

Table 3. Modeled Pre- and Post- Project Surface Water Hydrology during Normal Conditions (50th percentile)

	South Fork Little Butte Creek (RM 0.6) Mean Daily Flow (cfs)		North Fork Little Butte Creek (RM 5) Mean Daily Flow (cfs)		Little Butte Creek (RM 16.8) Mean Daily Flow (cfs)		Fish Lake and Fourmile Lake Water Storage (AF)	
Month	Pre	Post	Pre	Post	Pre	Post	Pre	Post
January	67	67	47	47	131.5	131.5	7,655.76	9,861.48
February	71	71	53	53	138	138	9,051.84	11,161.14
March	126	126	58	58	198	198	9,849.34	11,815.14
April	131	131	70.35	70.35	210	210	11,882.04	13,382.18
May	51.65	51.65	65	64.1	79	83.09	13,957.5	15,363.27
June	9.23	9.23	74	67.96	30.1	33.79	14,316.5	15,723.1
July	6.19	6.19	92.25	80.96	28	28	10,767.1	12,534.16
August	5.28	12.12	92.45	91.06	26.95	34.42	6,396.69	9,232.23
September	5.72	12.12	72.7	72.14	28	32.67	4,167.57	7,112.4
October	15.6	15.6	32.75	32.75	46	46	4,429.25	7,040.65
November	23	23	35.65	35.65	58.15	58.15	5,237.85	8,005.14
December	32.7	32.7	43	43	81.1	81.1	6,388.18	8,792.1

RM = River mile, cfs = cubic feet per second, AF = acre feet

Green numbers show increases in flow and red numbers show decreases in flow, as compared to flows pre project.

Table 4. Modeled Pre- and Post- Project Surface Water Hydrology during Wet Conditions (80th percentile)

	South Fork Little Butte Creek (RM 0.6) Mean Daily Flow (cfs)		North Fork Little Butte Creek (RM 5) Mean Daily Flow (cfs)		Little Butte Creek (RM 16.8) Mean Daily Flow (cfs)		Fish Lake and Fourmile Lake Water Storage (AF)	
Month	Pre	Post	Pre	Post	Pre	Post	Pre	Post
January	159.8	159.8	70	70	285	285	13,455.634	15,802.76
February	156.8	156.8	66	66	259	259	14,729.984	16,570.6
March	218	218	79.8	79.8	351	351	14,872.314	16,997.34
April	273	273	84	84	417	417	16,022.772	18,234.98
May	203.6	203.6	85.2	85.2	296.8	300	17,304.546	20,174.32
June	18	18	89	80.74	44	50.8	22,254.012	23,311.33
July	8.7	8.7	103	91.25	31	31	19,442.104	20,904.22
August	7.6	12.12	105	99.23	31	38.22	14,753.674	16,786.98
September	9.4	12.12	85	83.11	32	38.12	11,655.772	13,550.32
October	22	22	49	49	61	61	10,674.644	13,115.84
November	37	37	48	48	80	80	11,690.48	14,074.68
December	122.6	122.6	56	56	195.6	195.6	12,541.976	14,710.94

RM = River mile, cfs = cubic feet per second, AF = acre feet

Green numbers show increases in flow and red numbers show decreases in flow, as compared to flows pre project.

Appendix B

Representative Photos

Representative Photos



Photo No. 1. Joint System Canal on its eastern half (June 2024).



Photo No. 2. Joint System Canal on its western half (June 2024).



Photo No. 3. Grasshopper Gulch at the interception of the Joint System Canal and headgate (April 2024).



Photo No. 4. Unnamed Drainage 6 at the interception of the Joint System Canal. No headgate is present. (June 2024)



Photo No. 5. Lake Creek at the existing siphon crossing (June 2024)



Photo No. 6. Osborne Creek at the existing siphon crossing (June 2024)



Photo No. 7. Grasshopper Gulch at the proposed siphon crossing (June 2024).



Photo No. 8. South Fork Little Butte Creek and the Joint System Canal 30 feet upslope of the waterbody (June 2024).



Photo No. 9. Grassland pastures at the location of the Osborne Creek Siphon.



Photo No. 10. Grassland pastures and riparian forest at the location of the proposed Eagle Gulch Siphon.



Photo No. 11. Forested area at the location of Owens Gulch Siphon.



Photo No. 12. Transition between forested and grassland pastured at the location of Grasshopper Gulch Siphon



Photo No. 13. Representative photo of a staging area in a pasture grassland.



Photo No. 14. Representative photo of a staging area in a pasture grassland.

Appendix C

USFWS Official Species List and NMFS Spatial Query Report

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.

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.

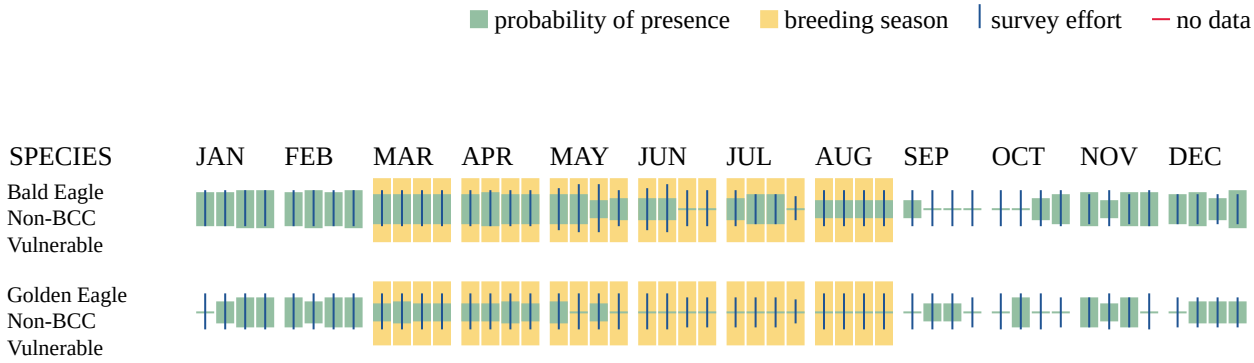
Probability of Presence (■)

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 (■)

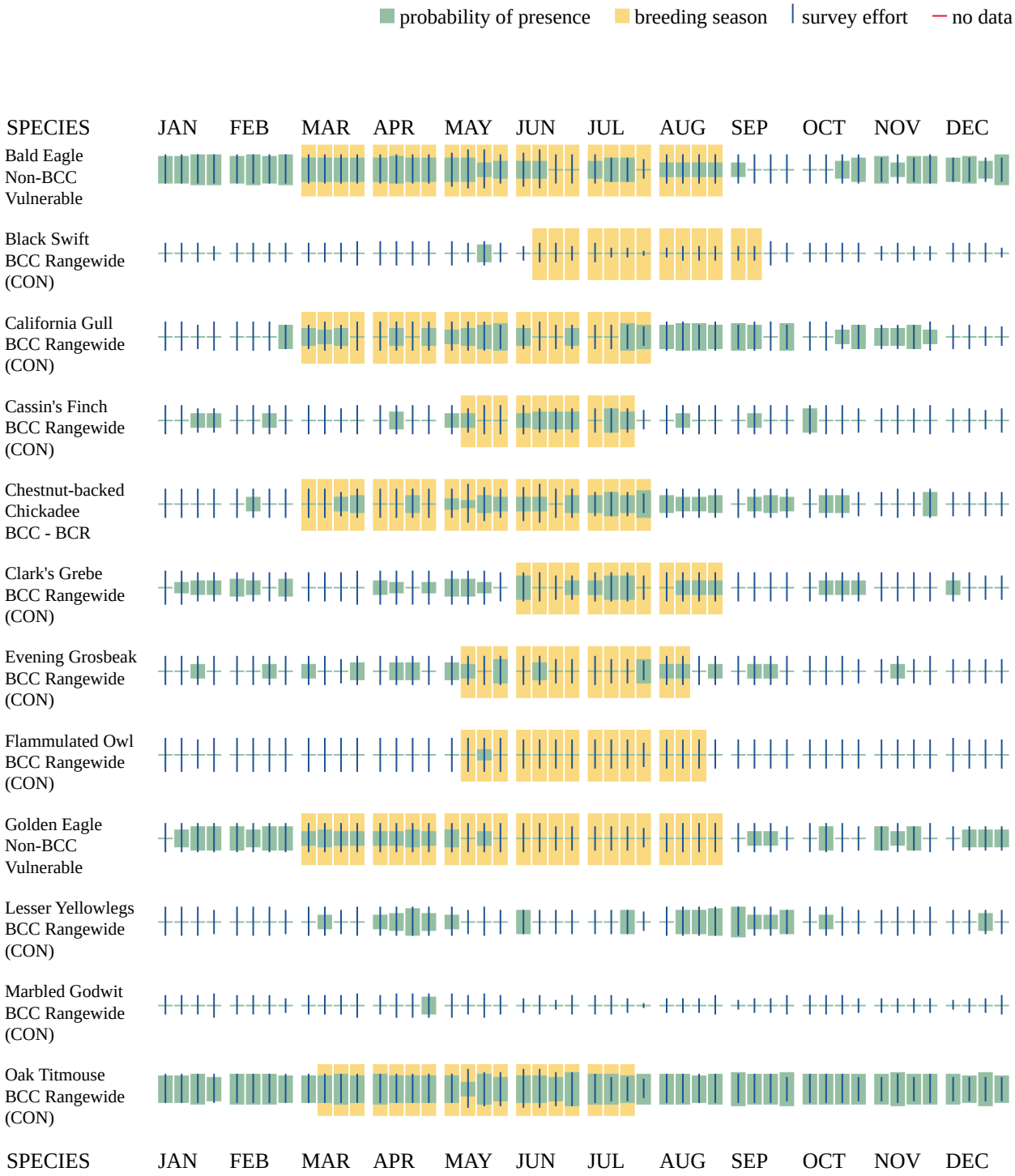
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

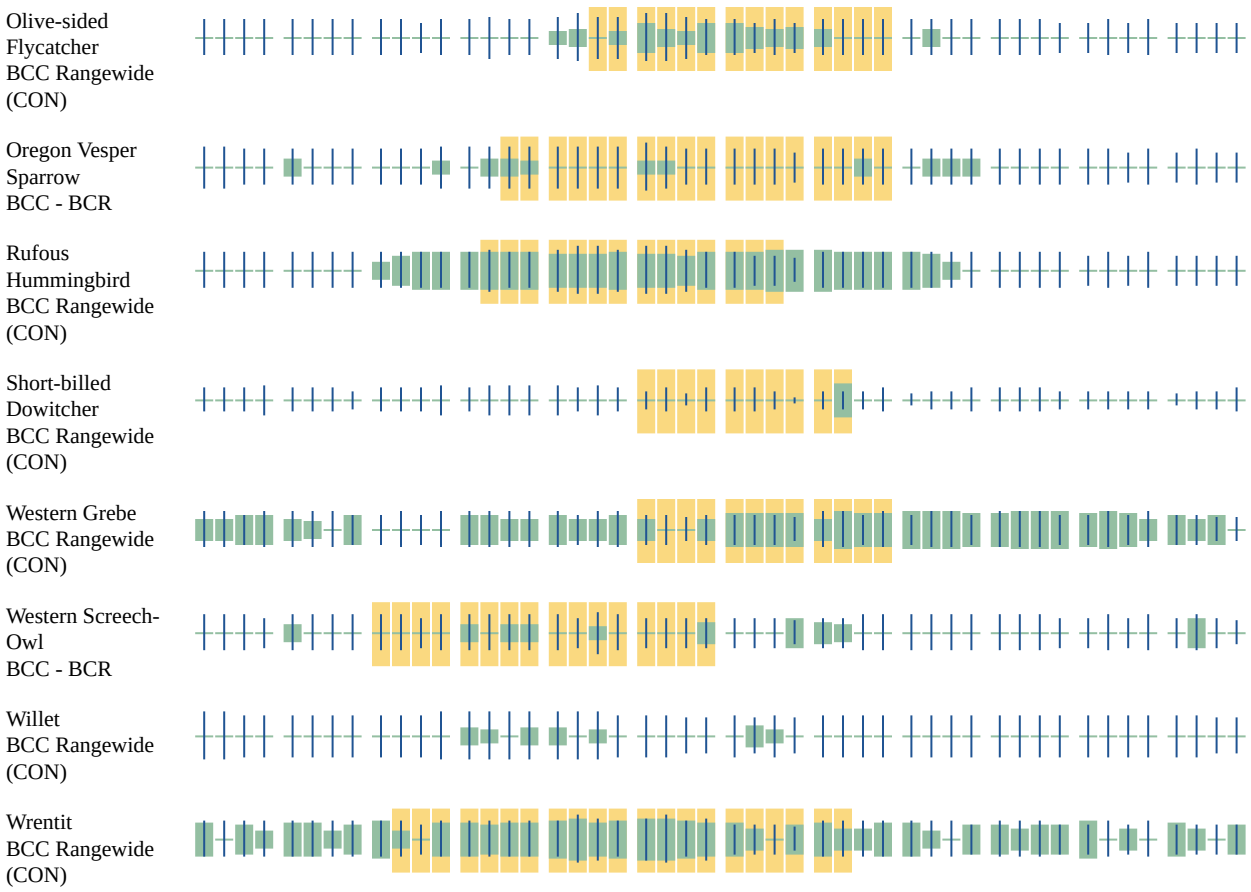
Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

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

IPAC USER CONTACT INFORMATION

Agency: Parametrix
Name: Colton Kyro
Address: 5 SE Martin Luther King Jr Blvd Suite 400
City: Portland
State: OR
Zip: 97214
Email ckyro@parametrix.com
Phone: 5033887475

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Natural Resources Conservation Service

Spatial Query Report: ESA and MSA

Area of Interest (AOI) Information

Area : 78.92 km²

Jan 15 2026 14:33:03 Pacific Standard Time



Medford Irrigation District Infrastructure Modernization Project Biological Assessment

Summary

Name	Count	Area(km²)	Length(km)
ESA Species Ranges (WA, OR, ID)	0	0	not applicable
ESA Species Ranges (CA, OR)	14	78.96	not applicable
ESA Critical Habitat - polygon	0	0	not applicable
ESA Critical Habitat - line	0	not applicable	0
MSA Habitat Areas of Particular Concern	0	0	not applicable
MSA Essential Fish Habitat - Areas Protected from Fishing	0	0	not applicable
MSA Essential Fish Habitat - HMS, CPS, Groundfish	0	0	not applicable
MSA Essential Fish Habitat - Salmon	2	78.92	not applicable

ESA Species Ranges (CA, OR)

#	Listed Entity	Listed Entity ID	Area(km²)
1	Salmon, coho (Southern Oregon/Northern California Coast ESU)	COSNC	78.96

MSA Essential Fish Habitat - Salmon

#	HUC_8_Name	HUC_8	ChinookEFH	Coho_EFH	Pink_EFH	Area(km²)
1	Middle Rogue	17100308	Yes	Yes	*no data*	0.32
2	Upper Rogue	17100307	Yes	Yes	*no data*	78.60

The West Coast Region (WCR) Species and Habitat App displays spatial data for marine and anadromous species listed under the Endangered Species Act (ESA) and habitat areas protected under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The core datasets, managed by the WCR, are ESA-listed species ranges, critical habitat designations, and essential fish habitat (EFH). These datasets are intended to assist the public and our partners with visually interpreting federal regulations. However, these data do not constitute legal definitions. Please refer to NOAA Fisheries' Federal Register rules and the Code of Federal Regulations for legal definitions of threatened or endangered species, critical habitat designations, or essential fish habitat. Detailed information for EFH on the West Coast, including text descriptions, which are ultimately determinative of the limits of EFH, is contained in fishery management plans available on the Pacific Fishery Management Council website (pcouncil.org).

Not all ESA-listed species ranges, critical habitat designations, and essential fish habitat under the jurisdiction of NOAA Fisheries are displayed in this app. Only those within the West Coast Region that have available data are displayed. NOAA Fisheries' West Coast Region includes Idaho, Oregon, Washington, California, and U.S. marine waters adjacent to those states.

This tool ran the AOI query on spatial features that were diced to increase performance. The diced features should not be used for any purpose beyond the production of this summary report. Additionally, the tool utilized the Web Mercator (WKID 3857) projection to produce area and distance estimates for this report. The Web Mercator projection causes area and distance distortions at high latitudes. For equal area calculations or additional analysis needs, please download the source GIS data:
ESA Critical Habitat https://www.fisheries.noaa.gov/resource/map/critical-habitat-maps-and-gis-data-west-coast-region
ESA Ranges https://www.fisheries.noaa.gov/resource/map/species-ranges-salmon-and-steelhead-west-coast-region
MSA Essential Fish Habitat, EFH Areas Protected from Fishing, Habitat Areas of Particular Concern https://www.habitat.noaa.gov/application/efhinventory/index.html

IMPORTANT DATA CAVEAT The following ESA-listed species, within the West Coast Region, were not analyzed (i.e., they do not have range spatial data available): Abalone, black; Abalone, white; Sturgeon, green (Southern DPS); Eulachon (Southern DPS); Bocaccio (Puget Sound/Georgia Basin DPS); Rockfish, yelloweye (Puget Sound/Georgia Basin DPS); Salmon, Chinook (California Coastal ESU); Salmon, Chinook (Central Valley spring-run ESU); Salmon, Chinook (Sacramento River winter-run ESU); Salmon, coho (Southern Oregon/Northern California Coast ESU); Salmon, coho (Central California Coast ESU); Steelhead (Northern California DPS); Steelhead (Central California Coast DPS); Steelhead (California Central Valley DPS); Steelhead (South-Central California DPS); Steelhead (Southern California DPS); Sea turtle, green (East Pacific DPS); Sea turtle, loggerhead (North Pacific Ocean DPS); Sea turtle, leatherback; Sea turtle, olive ridley; Seal, Guadalupe fur; Whale, humpback (Central America DPS); Whale, humpback (Mexico DPS); Whale, killer (Southern Resident DPS); Whale, sei; Whale, sperm; Whale, blue; Whale, fin; Shark, oceanic whitetip.

IMPORTANT DATA CAVEAT The following ESA critical habitat designation, within the West Coast Region, was not analyzed (i.e., the designation does not have spatial data available): Salmon, coho (Southern Oregon/Northern California Coast ESU).

For more information on consultations visit:
ESA https://www.fisheries.noaa.gov/west-coast/consultations/esa-section-7-consultations-west-coast
MSA https://www.fisheries.noaa.gov/west-coast/habitat-conservation/essential-fish-habitat-west-coast
GIS point of contact: shanna.dunn@noaa.gov