Proposed Irrigation Improvements and Habitat Restoration

Flathead Reservation, Lake County, MT

Project: Lower Jocko J Diversion Area Improvements

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

FINAL ENVIRONMENTAL ASSESSMENT

August 2024

Lower Jocko J Diversion Area Improvements

Final Environmental Assessment

Prepared For:

U.S. Department of the Interior
Bureau of Indian Affairs

and

Confederated Salish and Kootenai Tribes
of the Flathead Reservation

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STATEMENT OF NO CONFLICT

The Bureau of Indian Affairs is the lead federal agency for this project. The project applicant is the Confederated Salish and Kootenai Tribes of the Flathead Reservation. This document was prepared by a consultant (DOWL) under contract with the Confederated Salish and Kootenai Tribes. DOWL declares no financial or other interest in the outcome of the proposed project pursuant to the requirements of 40 Code of Federal Regulations (CFR) 1506.5(c). Prior to public review, the document was reviewed and evaluated by Bureau of Indian Affairs staff. As required by the National Environmental Policy Act, this Environmental Assessment reflects independent judgment and analysis of the Bureau of Indian Affairs. A list of organizations and persons consulted in support of the National Environmental Policy Act process, and the personnel involved in the preparation of this document is provided in Sections 6 and 7 of this document.

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ACRONYMS AND ABBREVIATIONS

APE	Area of Potential Effect
BIA	Bureau of Indian Affairs
BMP	Best Management Practices
BNSF	Burlington Northern Santa Fe
BPA	Bonneville Power Association
BTV	Background Threshold Values
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CSKT	Confederated Salish and Kootenai Tribes
CFR	Code of Federal Regulations
CO_2	Carbon Dioxide
CWA	Clean Water Act
DOI	Department of Interior
EA	Environmental Assessment
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIIP	Flathead Indian Irrigation Project
FPPA	Farmland Protection Policy Act
GEUM	Geum Environmental Consulting
ITA	Indian Trust Asset
MBTA	Migratory Bird Treaty Act
MDEQ	Montana Department of Environmental Quality
MDT	Montana Department of Transportation
Mg/L	Milligrams per Liter
MPN/L	Most Probable Number per Liter
MSL	Mean Sea Level
MRL	Montana Rail Link
MT-200	Montana State Highway 200
MTNHP	Montana Natural Heritage Program
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PIT	Passive Integrated Transponder
RCRA	Resource Conservation and Recovery Act
ROW	Right-of-Way
SHPO	State Historic Preservation Office
TPD	Tribal (Historic) Preservation Department
SWPPP	Storm Water Pollution Prevention Plan
US-93	United States Highway 93
USACE	United States Army Corps of Engineers
USCB	United States Census Bureau
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service

1.0 INTRODUCTION

1.1 BACKGROUND

The Confederated Salish and Kootenai Tribes (CSKT) of the Flathead Reservation, in cooperation with the Bureau of Indian Affairs (BIA), is proposing to replace the Lower Jocko J Diversion, implement other irrigation improvements at the Lower Jocko J Canal, and address degraded habitat in the area through restoration and enhancement strategies.

The Lower Jocko J Diversion is part of the Flathead Indian Irrigation Project (FIIP), which is owned and operated by the BIA. FIIP was originally authorized in 1904 as part of the Flathead Allotment Act and began operation in 1910. The portion of the existing Lower Jocko J Canal and headworks within the project area were constructed by FIIP in the 1920s. The existing Lower Jocko J Diversion was constructed in the 1950s. A fish screen was installed at the canal headworks in the late 1980s and is owned and operated by the CSKT. The canal and headworks are over 100 years old, with the diversion in place for over 60 years. Under the current system, the length and configuration of the forebay upstream of the headworks result in fisheries concerns, debris accumulation near the head of the forebay, and sediment deposition upstream of the diversion and in the forebay. The diversion does not pass all species and life stages of fish. FIIP and CSKT report multiple operational problems with the fish screen, including vegetation or debris fouling, occasional backflow problems with the fish return pipe, and sluggish flow through the screens under high canal flow conditions.

Rather than rehabilitating the Lower Jocko J Diversion and related irrigation infrastructure to the original condition, the CSKT desire to improve the diversion and irrigation infrastructure through reconstruction in a manner that incorporates and accommodates habitat restoration and enhancement in areas at and adjacent to the diversion. In 2021, the CSKT hired DOWL to develop a Conceptual Alternatives Analysis intended to identify and address deficiencies associated with the existing diversion and related infrastructure. The August 2021 *Conceptual Alternatives Analysis Summary Report* produced four project alternatives (DOWL, 2021). After seeking input from the CSKT, the January 2022 *Final Alternatives Analysis Summary* carried forward three sub-alternatives under Alternative 1 – Replace in Kind. In 2022, the CSKT hired Geum Environmental Consulting (Geum) to assist in identifying habitat restoration and enhancement opportunities in the diversion area to address U.S. Army Corps of Engineers (USACE) and CSKT Tribal Shoreline Protection Office (under Aquatic Lands Conservation Ordinance 87A) compensatory mitigation requirements for impacts to the bed and banks of the Jocko River and associated wetlands resulting from the irrigation project, and to address broader CSKT goals for natural resource restoration and enhancement throughout the Flathead Reservation. The proposed improvements described in this Environmental Assessment (EA) would implement irrigation improvements based on the CSKT preferred alternative from the *Final Alternatives Analysis Summary* (DOWL, 2022) and habitat improvements developed collaboratively by the CSKT Natural Resources Department and Geum.

Funding for water resource development and rehabilitation of FIIP was authorized by the U.S. Congress in 2021 through the CSKT Water Compact, which is Subtitle DD of the Consolidated Appropriations Act of 2021 (Pub. L. 116-260). The Compact established funding and mechanisms for rehabilitation and betterment of FIIP and for aquatic and terrestrial habitat enhancement.

1.2 STATUTORY AND REGULATORY AUTHORITY

The BIA owns, operates, and maintains the diversion structure, headworks, and canal and is the lead federal agency for the project. The CSKT owns, operates, and maintains the fish screen structure. The CSKT

also owns and manages the majority of land within the project area. Project funding is through the CSKT Water Compact. Multiple federal regulatory actions and authorizations would be required for the project.

The disbursement of federal funds and regulatory permitting constitute federal actions under implementing regulations for compliance with Section 102 of the National Environmental Policy Act (NEPA) of 1969, as amended, and under regulations of the Council on Environmental Quality (CEQ) at 40 CFR 1508.18(a).

This document is an EA generated under regulations of the CEQ at 40 CFR 1500.3 and the implementing procedures adopted by the BIA in accordance with the guidelines contained in the U.S. Department of the Interior (DOI), BIA NEPA Guidebook 59 IAM 3-H (BIA, 2012). This guidebook provides agency guidelines for complying with NEPA and its implementing regulations (40 CFR, Parts 1500-1508). The purpose of this EA is to evaluate the likely environmental consequences resulting from the proposed irrigation and habitat improvements in the Lower Jocko J Diversion area. An EA is conducted to decide whether to prepare a Finding of No Significant Impact or to undertake the preparation of an Environmental Impact Statement.

1.3 PUBLIC AND AGENCY INVOLVEMENT AND ISSUE DEVELOPMENT

Relevant issues were solicited from the CSKT Natural Resources Department, Tribal Historic Preservation Department (TPD), and CSKT Tribal Shoreline Protection Office. BIA Flathead Agency staff, USACE, and U.S. Fish and Wildlife Service (USFWS) were also provided an opportunity to review the project and provide comments.

In April 2022, during the preparation of the EA, a public notice was posted on the CSKT website and the CSKT Natural Resources Department website. Notifications were published via two advertisements in the Lake County Leader and two advertisements in the Char-Koosta News on March 31, 2022, and April 7, 2022. The public notice was also placed at the CSKT Tribal Headquarters; United States Post Office locations in Pablo, Ronan, Dixon, Arlee, and St. Ignatius; community centers in Ronan, Arlee, and St. Ignatius; the FIIP office in St. Ignatius; and the Cenex station in Ronan. The purpose of the notice was to explain the proposed Lower Jocko J Diversion area improvements project and solicit public comments, views, and suggestions to be addressed in the EA. Members of the public were offered the opportunity to provide written or electronic comments to Taryn Bushey, CSKT, for a total of 30 days, ending April 29, 2022. Ms. Bushey received no relevant comments during the public input effort. Public and agency involvement materials are included in Appendix A.

2.0 PURPOSE AND NEED

2.1 LOCATION AND GENERAL DESCRIPTION OF THE AFFECTED AREA

The project area is located on the Flathead Reservation, just west of U.S. Highway 93 (US-93), north of Montana State Highway 200 (MT-200), and approximately 0.5 miles west of the community of Ravalli, Lake County, Montana (Figure 1). The Lower Jocko J Diversion, canal, Jocko River, and proposed restoration areas are found in Section 31 of Township 18 North, Range 20 West on the Ravalli, Montana, U.S. Geological Survey (USGS) 7.5-minute topographic series map. The topography within the project area is primarily flat terrain, with elevations from approximately 2,670 feet above mean sea level (MSL) west of the canal (north of Montana Rail Link [MRL] / Burlington Northern Santa Fe [BNSF] railroad tracks) to 2,685 feet above MSL at the roadbed of MT-200 and near the Lower Jocko J Diversion structure. Most of the land within and adjacent to the project area is under the jurisdiction of the CSKT. Rights of way exist for MT-200 (Montana Department of Transportation [MDT]) and the railroad (MRL/BNSF). Grassland, wetlands, and prior cropland leading up to the National Bison Range adjoin the project area to the north.

The Jocko River and associated riparian corridor leading up to the town of Ravalli adjoin the project area to the east. The MRL/BNSF railroad tracks and MT-200 leading up to mixed conifer forest and wetlands adjoin the site to the south. The MRL/BNSF railroad and a mix of valley grassland, forested riparian, wetlands, and mixed conifer forest adjoin the project area to the west (Figure 2).

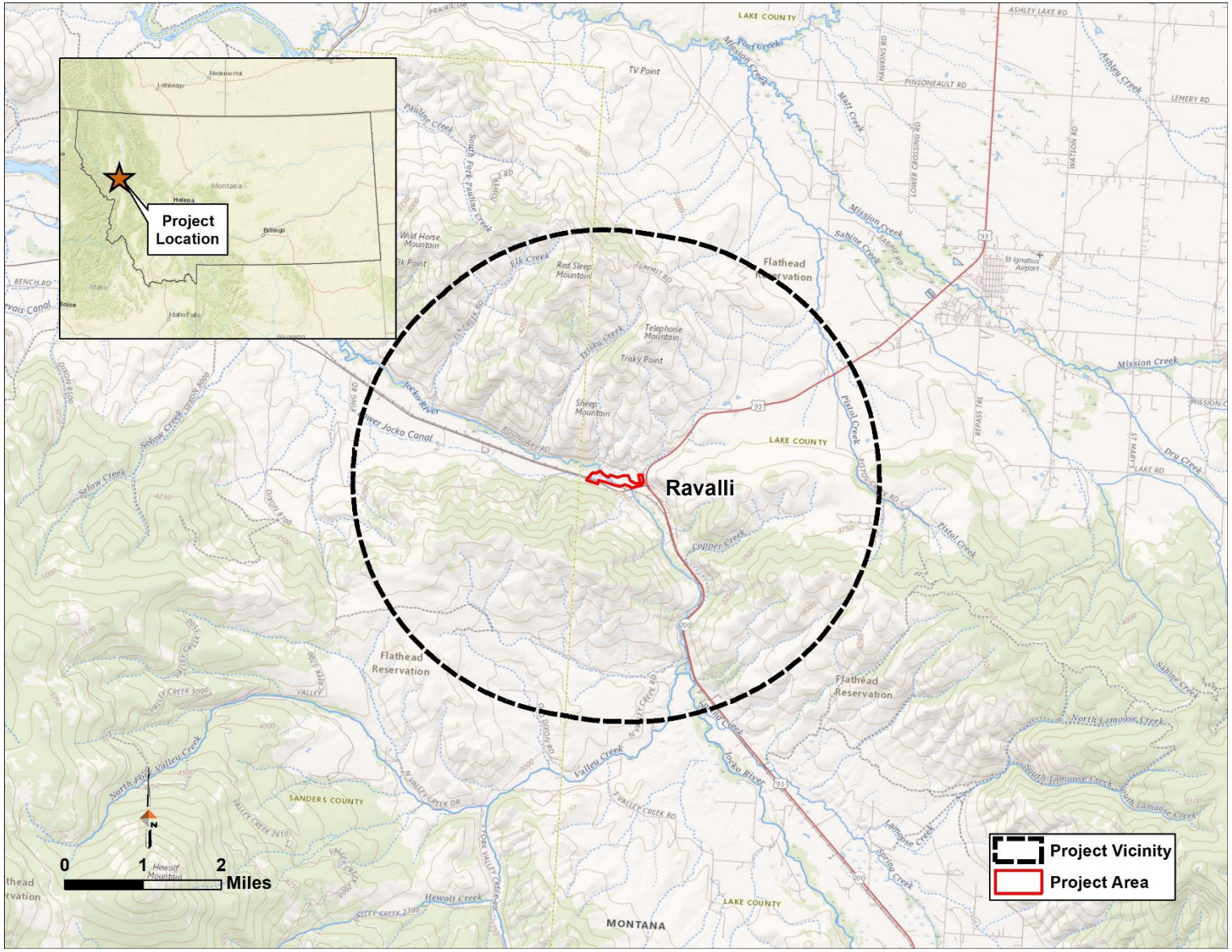

Figure 1. Project Location and Vicinity

Figure 2. Project Area

The northern portion of the project area (north of the Jocko River) was historically flood irrigated for hay production with water diverted from the Jocko River via the Duncan McDonald Ditch System. The CSKT acquired the land and designated it a Tribal fisheries mitigation area and are working to convert the water rights associated with this flood irrigation to a mitigation/restoration water right. Additionally, the segment of Jocko River within the project area is known as the "Ravalli Property" and was purchased in 2015 using funding from the Bonneville Power Administration (BPA) to serve as partial mitigation for the construction and operation of the Hungry Horse hydroelectric facility on the South Fork of the Flathead River. BPA holds a conservation easement for the property to ensure that habitat values are protected in perpetuity.

2.2 PURPOSE AND NEED OF PROJECT

2.2.1 Purpose

The project addresses dual objectives of the CSKT Water Compact, providing both irrigation improvements and habitat restoration and enhancement. The primary purposes of the project are to reconstruct the Lower Jocko J Diversion and related irrigation infrastructure, in order to reduce capacity constraints and hydraulic inefficiencies, improve passage for a wide variety of fish species and life stages in the Jocko River, resolve the operational deficiencies of the fish screen, improve debris and sediment transport in the Jocko River, and to accommodate other aquatic and terrestrial habitat restoration and enhancements in the diversion area.

2.2.2 Need

The current Lower Jocko J Diversion structure is a low head diversion of rail and timber construction, creating a log crest across the river. The crest controls the river water surface elevation, causing water to flow into a long forebay approach channel upstream of the headworks. FIIP releases water into the Lower Jocko J Canal at the headworks by opening the headgate. The existing configuration results in fisheries concerns, debris accumulation near the head of the forebay, and sediment deposition upstream of the diversion and in the forebay. The Lower Jocko J Canal in the project area also has capacity constraints and is hydraulically inefficient. Additionally, previous land management practices (e.g., farming, grazing, and mining activities) have resulted in substantial changes to habitat communities within the area, deposition of mine waste within the floodplain, changes in topography, and are contributing to Jocko River bank erosion.

Fish Passage and Screening

The Lower Jocko J Diversion is located in an important area for fisheries in the Jocko River drainage. However, the existing diversion does not pass all fish species or life stages. The fish screen, which consists of a vertical fixed plate screen with a paddlewheel-driven brush cleaning mechanism and a fish bypass pipe to the river, has operational problems, including vegetation/debris fouling due to constrictions downstream resulting in sluggish flow, occasional backflow problems with the fish return pipe, and screen dimensions that are incompatible with existing canal tailwater levels. There is not adequate velocity to effectively operate the paddlewheel-driven cleaning system under certain flow conditions. In addition, the long forebay may encourage holding and make fish more vulnerable to predation and unauthorized fishing.

Sediment and Debris

The configuration and location of the existing Lower Jocko J Diversion and headworks result in sediment deposition upstream of the diversion and in the canal forebay. Woody debris from the Jocko River accumulates at the diversion and within the forebay, requiring active management. Debris management

results in the removal of this woody debris and associated reduction in the ecological benefit the wood provides within the river system.

Operational Limitations

The Lower Jocko J Canal within the project area has capacity constraints and is hydraulically inefficient. The desired design flow in the Lower Jocko J Canal is 40 cubic feet per second. A major capacity limitation in the existing system is the MRL/BNSF railroad crossing culvert, which is much smaller in diameter than the MT-200 culvert crossing immediately downstream, with a turbulent pool between the two pipes. This is a hydraulically inefficient configuration that results in higher upstream water surface elevations and excess energy loss, contributing to the overall capacity limitation.

Habitat Impairments

Construction of the Lower Jocko J Canal has substantially changed the topography and habitat communities and limits floodplain connectivity in the area south of the Jocko River and downstream of the diversion. A small field in the south floodplain (i.e., between the canal and river) and a more extensive field in the north floodplain have been leveled and were historically managed for hay production and grazing, further changing the topography, habitat communities, and floodplain connectivity. Although these land management practices have since been discontinued, the riparian community and floodplain have been altered. Waste rock from nearby mine excavations were previously deposited in the floodplain north of the river. The waste rock sites are not designated Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA) sites (EPA, 2023). During sampling and delineation of the waste rock in 2023, approximately 600 cubic yards of this waste rock was identified as containing heavy metals with higher concentrations above background threshold values (BTVs) of copper, cadmium, and silver (NewFields, 2023). These heavy metals may be subject to erosion and entrainment into the Jocko River under high flows. Past grazing and changes in the habitat communities downstream of the diversion are contributing to bank instability. Although gabion barbs were previously installed along the north riverbank, protruding into the Jocko River, in an attempt to stabilize the bank and reduce erosion, erosion and bank instability persist. Along with the gabions, the river within the project area has riprap on the north and south banks. These hardened features change localized hydraulics and reduce instream habitat complexity. These changes result in impaired aquatic and terrestrial habitat communities within the project area.

3.0 ANALYSIS OF ALTERNATIVES

The CEQ regulations for implementing NEPA direct federal agencies to explore and objectively evaluate all reasonable alternatives to a proposed action and to briefly discuss the rationale for eliminating alternatives that were not considered in detail.

To meet the purpose and need of the project, improvements are needed to address habitat impairments, fisheries concerns, debris accumulation, sediment deposition, and other operational limitations in the canal.

Preliminary alternatives analysis resulted in the development of a wide range of potential actions, culminating in the identification of the Proposed Action Alternative. Improvement alternatives were screened based on their ability to meet the purpose and need of the project versus impacts to the human environment and costs. This section provides a discussion of alternatives carried forward for detailed

study (i.e., No Action and Proposed Action Alternatives) and those considered through the alternatives investigations but excluded from further analysis in this document.

3.1 ALTERNATIVES CARRIED FORWARD FOR DETAILED STUDY

3.1.1 No Action Alternative

Under the No Action Alternative, proposed improvements would not occur; the program and funding provided by Congress for FIIP rehabilitation would not be spent in the Lower Jocko J Diversion area; utility licensing agreements with MRL/BNSF for irrigation, power, and road crossing would not be obtained; an MDT encroachment permit for construction within MDT right-of-way (ROW) would not be obtained; wetland mitigation, floodplain restoration, and other aquatic and terrestrial habitat enhancements would not be constructed; and Clean Water Act (CWA) Section 404/401 permitting and certification would not be authorized by USACE or the CSKT. Routine operation and maintenance of the existing system would still occur.

Under the No Action Alternative, fisheries concerns, habitat impairments, debris accumulation, sediment deposition, and other operational limitations in the Lower Jocko J Canal and Lower Jocko J Diversion area would persist.

Impacts to the Jocko River and associated wetlands would not be required under the No Action Alternative, and compensatory wetland mitigation would not be needed.

3.1.2 Proposed Action Alternative

The Proposed Action Alternative includes replacing the existing Lower Jocko J Diversion with a new rock ramp diversion; constructing a new headworks structure; replacing the existing fish screen with hemi screens in the river; placing the existing Lower Jocko J Canal within a pipeline on a new alignment, which involves plugging the existing MRL/BNSF railroad and MT-200 highway culverts and replacing at a new location; floodplain re-naturalization and reconnection; bank stabilization; and other aquatic and terrestrial habitat restoration and enhancement efforts. Descriptions of each of these project elements are provided in the following paragraphs. Refer to Appendix B for design plan sheets and mitigation/restoration concepts.

Lower Jocko J Diversion Structure

The existing Lower Jocko J Diversion would be removed and replaced with a grouted rock ramp within the Jocko River channel. The new ramp would be placed slightly downstream of the existing diversion to improve debris management and allow the use of the existing canal forebay in construction sequencing to maintain fish passage during project installation. The new diversion structure would span the entire width of the channel, be approximately 120 feet in length, with a grade of 2.5%. While the grade of the ramp would be slightly steeper than the slope of the river (0.3% to 0.4%), much of the ramp would be backwatered and submerged under normal river conditions. Target flow conditions (i.e., minimum depths and maximum velocities) were developed for the rock ramp design that would provide varying channel elevations and incorporate larger boulders within the rock ramp to increase roughness. This would allow for passage of a wider variety of fish species and life stages by providing more diverse hydrologic conditions.

Lower Jocko J Headworks

The Lower Jocko J headworks, which are currently located between the existing canal forebay and the Lower Jocko J Canal, would be removed. A new concrete headworks structure, including in-river fish

screens, would be constructed along the southwest bank of the Jocko River, adjacent the new rock ramp. The headworks structure would include a sluiceway with an opening near the upstream end of the rock ramp. A gate would be installed within the sluiceway to control the water level in the sluiceway and to divert flows through a fish screen and pipe manifold connected to the new Lower Jocko J irrigation pipeline.

Fish Screen

The existing in-canal fish screen would be replaced with a new in-river screen to help eliminate short-term fish entrainment. The new screen would include a hemi screen that is built into the new headworks structure. The hemi screen is a passive, half-cylindrical intake screen array that includes an airburst system for algae buildup and debris management, with the ability to be flushed or dewatered for cleaning. The hemi screen mesh would be designed and sized using the most stringent National Oceanic and Atmospheric Administration parameters for fish screening to prevent fish and other debris from entering the irrigation system. Jocko River water would be diverted through the new headworks sluiceway and into the hemi fish screen. The screened water would exit the screens and be discharged into the pipe manifold to the Lower Jocko J irrigation pipeline. Excess water would be passed through the screen bay to maintain sweeping velocities adjacent the screens and to return fish from the screen bay to the Jocko River.

Canal Piping

The Lower Jocko J Canal, from the existing headworks structure through the railroad/highway crossing would be placed in a new 48-inch diameter pipe on a new alignment. The new pipeline alignment would begin at the manifold connected to the new headworks structure and parallel the railroad and MT-200 before crossing under the railroad and highway using a 36-inch diameter carrier pipe installed within a 54-inch diameter jack-and-bore casing at the new railroad/highway crossing location. The new irrigation pipe would be fitted with a control valve manifold and flow measurement sensor, allowing automation and diversion of a constant flow rate into the pipeline. South of MT-200, the new pipeline would daylight into the existing Lower Jocko J Canal. The proposed realignment of the canal piping would largely relocate the conveyance infrastructure to the edge of the floodplain and riparian corridor, accommodating riparian habitat enhancement. A segment (approximately 960 linear feet) of the existing Lower Jocko J Canal, replaced with the pipeline, would then be regraded to simulate a natural side channel, and reconnected to the main river channel (refer to heading “Floodplain and Aquatic Resource Restoration and Enhancement Opportunities” below). The existing canal pipe under the MRL/BNSF railroad would be plugged and the canal filled directly north of the railroad tracks. By nature of being replaced by the new pipeline, the existing canal forebay (i.e., the excavated ditch upstream of the existing headworks structure) would no longer be needed. The forebay would be closed off from the Jocko River, filled, and regraded.

The new irrigation pipe would require new utility licensing agreements with MRL/BNSF and an encroachment permit from MDT.

Control System and Arrays

A new electrical building, with three-phase power service, would be constructed near the proposed headworks. The building would connect to an existing electrical line south of the railroad tracks through a short power service extension. The control building would house the equipment used to provide power to new electric gate actuators within the headworks, new electric valve actuators at the valve manifold used for flow control in the pipeline, the compressor/control system for the airburst fish screen cleaning mechanism, and other miscellaneous equipment. The control building would also power two passive integrated transponder (PIT) tag sensor arrays for monitoring fish in the Jocko River near the new rock

ramp structure. The sensor arrays for the PIT tag monitoring system would be placed upstream and downstream of the ramp, with associated conduit installed from the control building to each array.

A new utility license agreement with MRL/BNSF would be required where the power service extension crosses the railroad ROW.

A portable backup power generator would be also acquired. The generator would be stored off-site but could be brought to the site in the event of power failure to ensure continued operation.

Bank Stabilization and Enhancement

A hardened riprap revetment would be placed along the southern bank of the Jocko River. The revetment would extend upstream from the new rock ramp diversion and tie into existing riprap along the railroad embankment. Localized, hardened riprap revetments would be placed along the outer extents of the new rock ramp and headworks that would tie the new ramp/headworks facility into the existing banks of the Jocko River.

Removal of existing gabion structures along the north bank and replacement with brush bank treatments is proposed. These living streambank treatments would be installed to improve bank stabilization and habitat complexity along the north streambank in sections downstream and upstream of the rock ramp diversion and new headworks structure. Native vegetative instream habitat structures and brush bank treatments (e.g., large woody debris structures) are also proposed to replace existing riprap along the south riverbank, located between the inlet and outlet of the new side-channel. These actions would enhance instream habitat complexity and floodplain connectivity.

Floodplain and Aquatic Resource Restoration and Enhancement Opportunities

The CSKT have identified strategic improvement/mitigation opportunities within the project area to address USACE compensatory mitigation requirements for impacts to the bed and banks of the Jocko River and associated wetlands resulting from the Lower Jocko J Canal Diversion project, and to address broader CSKT goals for aquatic and terrestrial habitat restoration and enhancement within the project area. These measures include natural, instream habitat structures and brush bank treatments as discussed in the previous section, as well as development of stream side channels, new and enhanced wetland areas, and floodplain connectivity. These mitigation and restoration opportunities include the following.

- Reconfigure approximately 960 linear feet of the abandoned canal to provide a low-gradient side-channel with floodplain benches to improve floodplain connectivity. Habitat structures would be placed within the channel to help distribute and dissipate flows onto these floodplain areas. A new inlet connecting the main Jocko River channel to the side channel would be constructed downstream of the rock ramp and headworks. Where the canal would have turned south to flow under the railroad tracks and MT-200, the new side-channel would be reconfigured to flow northwest into an existing swale that outlets back to the Jocko River. The side-channel would be designed for connectivity at roughly the 2-year flood event.
- Plug the existing culvert crossing at the railroad tracks and develop a backwater area adjacent the side-channel by leaving an approximately 345-linear foot section of the open canal in place. The backwater area would support existing and proposed constructed wetlands.
- Excavate high ground to construct new wetland areas east and west of the newly developed section of backwater channel. The wetlands would be supported via hydrologic input from the reconstructed canal (floodplain connectivity at the 2-year flood event) and backwater feature and from shallow groundwater.

- Improve floodplain connectivity on the north side of Jocko River through grading. Re-establishing floodplain connectivity and hydrology may promote additional storage in the shallow alluvial aquifer during larger flow events and would enhance existing wetlands and support woody vegetation establishment (e.g., cottonwoods and willows). Floodplain connectivity north of the river would include:
  - Apply grading to depress topography and allow flows at the 2-year event to reach historic floodways, with excess surface flows returning to the Jocko River through these historic channels and swales.
  - Remove approximately 300 feet of berm associated with the Duncan McDonald ditch to allow irrigation return flows from the ditch system to free flow to existing wetland swales/historic floodways. The ditches are upstream of the diversion structure along the north riverbank.
- Implement native brush bank treatments on the Jocko River at locations downstream and upstream of the new rock ramp.
- Remove approximately 600 cubic yards of mine waste rock containing heavy metals (copper, cadmium, and silver) from the existing floodplain north of the river and extended to the riverbank. The waste rock would be transported to a permanent upland location within the project area, that is well outside of what has been mapped as the 100-year floodplain. The proposed repository would be constructed by stripping 6 to 12 inches of topsoil over an approximately 100 square foot area. Mine waste rock would be loaded and hauled over a temporary access road and spread no more than 2 feet deep at the repository site. The site would be capped with topsoil and reseeded to prevent erosion. The transport/handling of waste rock material and grading into the slope would be conducted in accordance with all applicable rules and regulations. A Health and Safety Plan would be developed and located on site for worker reference of required protocols and procedures.

Construction Phasing

Construction sequencing for the Lower Jocko J Diversion Area Improvements would likely be phased over several years. In-channel work would occur between approximately September 30th and March 15th when the existing Lower Jocko J Canal headgate is closed. The following provides a general overview of sequencing and workflow. Specific means and methods, within the confines of required environmental compliance, would be developed by the awarded contractor.

Heavy Metals Removal and Initial Bank Treatments

- Identified mine waste rock would be slated for removal in early spring, and in advance of the overall Proposed Action Alternative, to avoid potentially mobilizing mine waste rock into the river. The extent of mine waste rock removal would extend to the northern riverbank. This would require removal of existing gabions and reconstruction along the bank using the native brush bank treatments described above. Bank work would occur after waste rock removal but before spring runoff to protect the exposed bank during runoff and to allow dormant willow cuttings to establish during higher spring flows.
- During the same timeframe, bank restoration work, using native brush bank treatments, would also occur at south riverbank locations downstream of the new rock ramp during this early spring period.

Site Preparation

- Following the mine waste rock removal, procurement and site preparation activities would begin in advance of the Lower Jocko J Diversion and Canal reconstruction.
- Vegetation clearing would take place prior to April 15th. Any additional clearing identified after April 15th would require a survey for nesting birds or occur in late August and after the bird nesting season.
- Staging and stockpiling area limits would be delineated, materials delivered, and erosion and sediment controls installed.
- The electrical service extension would be constructed during site preparation. The jack-and-bore casing at the new railroad/highway crossing location may also be installed at this time.

In-Channel Work

Phase I

- In-channel work would begin on or about September 30th, when the existing canal headgate is closed.
- A cofferdam would be installed across the canal forebay, eliminating inflow to the forebay.
- After the cofferdam is installed, fish collection and relocation efforts would be completed by CSKT Fisheries staff. Following these efforts, any remaining water in the forebay would be drained by temporarily opening the canal headgate and/or pumping any remaining water back to the Jocko River.
- Once the cofferdam is installed across the canal forebay and the area drained, a connection between the forebay and the Jocko River would be established through excavation. A series of temporary rock weir steps would be installed, and minor grading would occur in the approach channel to provide fish passage in the form of a bypass channel during the later construction of the rock ramp diversion.

Phase II

- The cofferdam in the forebay would be breached in a controlled manner to re-establish flow and provide fish passage through the newly constructed bypass channel.
- A cofferdam would then be installed upstream of the existing diversion structure in the Jocko River to divert flow into the bypass channel.
- A cofferdam would also be installed downstream of the proposed rock ramp diversion in the Jocko River.
- Fish salvage would transfer any entrained fish in the work area back to the Jocko River. In the scour hole at the base of the diversion, CSKT Fisheries staff, would implement appropriate fish collection technique(s) to salvage and relocate fish to the Jocko River.
- The work area would then be dewatered by pumping and maintained until construction within the river channel is complete.
- During this phase, the new headworks structure, fish screen, sluice channel, and rock ramp diversion would be constructed.

Phase III

- Upon completion of the headworks, fish screen, sluice channel, and rock ramp diversion, the downstream cofferdam in the Jocko River would be removed. The upstream cofferdam would then be breached in a controlled manner to slowly re-establish flow within the Jocko River.
- The cofferdam would then be moved to cross the forebay again to close the bypass channel.
- After the bypass channel is closed off, fish collection and relocation efforts would occur through CSKT Fisheries staff. Pumps and sumps would then be used to dewater the bypass channel.
- The new bank alignment upstream of the new rock ramp diversion, on the southern bank of the Jocko River, would be constructed, including the placement of revetments. This new bank alignment would permanently close off the forebay area.
- The canal would be plugged at the railroad crossing, both south and north sides. The temporary bypass channel and the decommissioned forebay portion of the Lower Jocko J Canal would then be filled and reclaimed.

Upland / In the Dry Work – Irrigation Piping and Canal Reconstruction

- With the decommissioned forebay filled and reclaimed, trenching and installation of the new irrigation pipeline and installation of associated manifold connections would then be completed.
- Once separated from the Jocko River and plugged, the remaining section of the existing canal would be regraded and modified to establish a low-gradient side channel to the Jocko River with inlet and outlet established to the main river channel.
- The section of canal between the north side of the railroad and the reshaped side channel would be excavated with a slight downslope towards the new side channel and become a shallow backwater area. This would be completed in the dry with the construction period occurring during baseflow, so no backwater would be present.
- The excavation for the two wetland areas east and west of the backwater channel would then be completed and final seeding would occur.

Mitigation and Restoration Work

All other proposed mitigation/restoration work (grading to provide floodplain connectivity north of the river) would occur as it fits within the Lower Jocko J reconstruction schedule or at a future date after the diversion reconstruction is complete.

Operation and Maintenance

The proposed Lower Jocko J design is intended to improve debris and sediment transport. Future operations and maintenance of the system would primarily be associated with the airburst, actuation, and automation components as opposed to sediment and debris removal, which presently occurs with the existing configuration.

3.2 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

3.2.1 Phase 1 Screening

A Phase 1 conceptual alternatives analysis was conducted in August 2021. The purposes of the alternatives analysis and pre-screening activities conducted during Phase 1 were to 1) develop alternative design concepts for the project, 2) evaluate the feasibility of these alternatives, 3) screen-out alternatives which

do not effectively meet project objectives, and 4) select the concept(s) to be carried forward into preliminary design. The CSKT and DOWL developed the following four generalized concept alternatives during project scoping. Many of these alternatives include several design variations or sub-alternatives, as detailed in Table 1. Additional information can be found in the October 2021 Lower Jocko J Reconstruction Conceptual Alternatives Analysis Summary Report prepared by DOWL for the CSKT. Table 1 documents the results of the Phase 1 screening; each sub-alternative was either advanced to Phase 2 screening or dismissed from further consideration based on how well it addressed the purpose and need of the project.

Alternative 1 – Gravity Diversion included several design alternatives that focused on the replacement of the existing diversion in generally the same location with a gravity diversion of various possible configurations, replacement or rehabilitation of the fish screen, and rehabilitation of the canal (either as an open ditch or pipeline) from the diversion through the culvert crossings at the railroad and MT-200.

Alternative 2 – River Realignment would include realigning the Jocko River upstream and downstream of the existing diversion, with the same diversion and conveyance options as Alternative 1.

Alternative 3 – Pumped Diversion included several design alternatives that would replace the existing diversion using a pump station and piped flow to the outlet of the MT-200 pipeline crossing, replacing the existing pipeline crossings in the process.

Alternative 4 – Pressure Distribution Pipe included several design alternatives that would involve a pressurized pipe along the entire Jocko J Canal delivery area, with an intake either at the existing diversion or a location between the existing diversion and the downstream Revais Pump.

Table 1: Lower Jocko J Diversion Alternatives and Phase I Screening Actions

Action[1]	Alternative	Reason for Elimination
Alternative 1 – Gravity Diversion		
A	Alt. 1A – Rock Ramp Diversion	The diversion would be reconstructed as a rock ramp and the canal conveyance would include either an open canal or a pipeline.
D	Alt. 1B – Rock Ramp with Fishway	Fishway would provide minimal additional benefit when combined with a rock ramp.
D	Alt. 1C - Rock Weir Stepped Channel	Does not meet fish passage objectives due to the jumping/leaping ability required to pass rock weirs.
D	Alt. 1D – Side Channel Coanda	Insufficient hydraulic head to accommodate this alternative.
D	Alt. 1E – River Coanda	Insufficient hydraulic head to accommodate this alternative. An in-river fish screen presents additional challenges for access and maintenance.
Alternative 2 – River Realignment		
D	River Realignment	Increased impacts to the channel with marginal benefits. Possibly counterproductive to site re-naturalization. Introduces complexity regarding constructability issues not present in other gravity diversion alternatives.
Alternative 3 – Pumped Diversion		
D	Alt. 3A - Rock Ramp with Hemi Screen Intake and Pump Station to Open Canal Conveyance	Pumping would be less cost-effective considering initial capital costs and long-term maintenance costs. Introduces complexity regarding constructability issues not present in other gravity diversion alternatives.
D	Alt. 3B – Rock Ramp with Infiltration Gallery and Pump Station	Potential for fouling of the infiltration gallery and provides no identifiable benefits over the otherwise similar 3A.
Alternative 4 – Pressure Distribution Pipe		
D	Alt. 4A – New Downstream Point of Diversion and Pressure Distribution System	Pumping would be less cost-effective considering initial capital costs and long-term maintenance costs. Significant constructability challenges are associated with moving the point of diversion.
D	Alt. 4B – Existing Point of Diversion and Gravity Pressure	Cost-effectiveness is low, and constructability challenges are anticipated. Annual and long-term maintenance would be more significant.

[1] A = Advanced to the Phase 2 screening step; D = Dismissed from further consideration during Phase 1 Screening

3.2.2 Phase 2 Screening

Alternative 1A - Rock Ramp Diversion was carried forward from the Phase 1 screening to Phase 2, where several sub alternatives variations were developed that work in conjunction with the rock ramp, which is the primary feature of Alternative 1. Variations included fish screening using hemi screens or Farmer's Conservation Alliance screens and various conveyance options. Phase 2 resulted in identification of the Proposed Action Alternative (i.e., hemi screens and piped canal realignment) and development of the following three alternatives, which were considered but ultimately dismissed.

Rock Ramp Diversion and Maintain Existing Open Canal Alignment Construction of a new rock ramp diversion, new fish screen, and replacing the railroad and highway culverts while maintaining the existing open canal alignment was considered. While improvements under this alternative resulted in the lowest

cost and provided the simplest implementation, the potential for flooding into the canal would still exist and limit habitat enhancement potential for the project area.

Rock Ramp Diversion with Open Canal Realignment
A new rock ramp diversion, new fish screen, replacing the railroad and highway culverts, and placing an open canal on a new alignment was also considered. While this improvement would have moved the canal away from the river, it would also have the greatest wetland and riparian impacts without reducing the potential for flooding into the canal.

Farmer's Fish Screen with Piped Canal Realignment
A new rock ramp diversion, replacing the railroad and highway culverts, and a farmer's fish screen with a piped canal realignment was also considered. While this alternative eliminates the potential for flooding into the canal and implements established fish screen technology, it would require raising the dam crest, incur additional cost and constructability issues, and may still encounter fish screen issues.

4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

This Chapter describes the existing natural, cultural, and built environment (i.e., the affected environment) and the potential effects that the No Action Alternative and the Proposed Action Alternative would have on these resources. NEPA requires that environmental documents disclose impacts of a proposed federal action, reasonable alternatives to that action, and any adverse environmental effects that cannot be avoided should the proposed action be implemented.

Section 4.1 below addresses the resource topics dismissed from detailed analysis (i.e., the resource is not present within the project area/vicinity or has no potential to be impacted). Sections 4.2 through 4.9 address the resource topics evaluated in detail in this EA. The detailed analysis includes likely beneficial and adverse effects on the human environment, including short-term and long-term effects, direct and indirect effects, and cumulative effects. Interpretation of impacts in terms of their duration, intensity, and scale are provided, where possible.

Terms referring to impact intensity, context, and duration are used in the effects analyses. Unless otherwise stated, the standard definitions for these terms are as follows:

Intensity

- **Negligible**: The impact would be at the lower level of detection, and there would be a small change.
- **Minor**: The impact would be slight but detectable, and there would be a small change.
- **Moderate**: The impact would be apparent, and there would be a permanent measurable change.
- **Major**: The impact would be highly noticeable, and there would be a permanent measurable change.

Context

- **Localized impact**: The impact occurs in a specific site or area. When comparing changes to existing conditions, the impacts would be detectable only in the localized area.

Duration

- **Short-term or Temporary Effect**: The effect would occur only during or immediately after implementation of the alternative.
- **Long-term or Permanent Effect**: The effect could occur for an extended period after implementation of the alternative. The effect could last several years or more and could be beneficial or adverse.

The effects described in this EA for federally listed species followed the effects determination described in the USFWS Endangered Species Act Handbook for Section 7 consultation (USFWS, 1998) The three effects categories are:

- ***Likely to Adversely Affect***: The project is likely to adversely affect a species if: 1) the species is known to occur in the AOA; and 2) project activities would disturb area or habitat elements known to be used by the species or would directly affect an individual.
- ***Not Likely to Adversely Affect***: The project is not likely to adversely affect a species if: 1) The species may occur, but its presence has not been documented; and 2) project activities would not result in disturbance to areas or habitat elements known to be used by the species.
- ***No effect***: The project will have no effect on a species if: 1) the species is considered unlikely to occur (e.g., range, vegetation are inappropriate); and 2) the species or its sign was not observed during surveys of the project area.

For the purposes of this document, "project area" refers to the limits of potential improvements; whereas "project vicinity" refers to a much broader area, which includes the project area and surrounding lands.

4.1 RESOURCE TOPICS DISMISSED FROM DETAILED ANALYSIS

Several resource topics typically addressed in a NEPA document are not present within the project area/vicinity or have no potential to be impacted by the No Action or Proposed Action Alternatives. The resource topics listed below are not analyzed in detail in this EA.

4.1.1 Geologic, Minerals, and Paleontological Resources

Neither alternative would involve mining or deep materials excavation. As such, there would be no impact on the geologic setting, mineral resources, or paleontological resources that would be measurably different from existing conditions. These resource topics have been eliminated from detailed analysis in this EA.

4.1.2 Demographic Trends

Activities associated with the No Action Alternative and the Proposed Action Alternative are not anticipated to affect demographic trends. The decision whether to improve or not improve the Lower Jocko J Diversion area would not affect demographic statistics such as age, gender, marital status, religion, etc. No displacement of residents or businesses would occur under either alternative. Therefore, this topic has been eliminated from detailed analysis in this EA.

4.1.3 Environmental Justice

Title VI of the Civil Rights Act of 1964 and Executive Order 12898 give guidance on identifying sensitive populations to ensure that individuals are not excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity based on race, color, national origin, age, sex, and disability. Executive Order 12898 directs federal agencies to identify and address disproportionately high and adverse human health and environmental impacts on minority and low-income populations.

Approximately 25.3% (±1.5%) of the Flathead Reservation self-identify as American Indian alone (U.S. Census Bureau [USCB], 2021a). Approximately 20.2% (±2.3%) of individuals on the Flathead Reservation were below poverty levels in 2021 (USCB, 2021b). The project is located in Census Tract 9406, which indicates 21.1% (±4.9%) of individuals were below the poverty level in 2021. Approximately 29.5% (±5.8%) of the Census Tract population self-identify as American Indian alone (USCB, 2021). The entire Flathead Reservation and Census Tract 9406 are considered minority or low-income populations when compared to the state of Montana (12.5% for low income and 6.07% for American Indian alone) and the United States (12.6% for low income and 0.83% for American Indian alone) (USCB, 2021).

Both the Flathead Reservation and Census Tract 9406 encompass large physical areas, and a determination on whether relative concentrations of minorities or residents below the poverty line exist within the project vicinity cannot be made. Additionally, there are relatively few residences in the area, which is predominantly farm or undeveloped land. Given the proposed location, scope of the project, and this being a Tribal action on the Reservation, minority or low-income populations would not be disproportionately affected by the implementation of the alternatives as defined in the EPA Environmental Justice Guidelines. Therefore, this issue was dismissed from further analysis.

4.1.4 Lifestyle and Cultural Values

The Flathead Reservation consists of the Bitterroot Salish, Upper Pend d'Oreille, and the Kootenai Tribes. The Hellgate Treaty of 1855 established the Flathead Reservation (CSKT, 2022a). The Tribal headquarters are located in Pablo. Historically, the Salish and Kootenai functioned through subsistence-based hunting, fishing, plant harvest, and trade, moving seasonally throughout a large territory. Over time, education and health services, Tribal enterprises, and public administration became the dominant industries (CSKT, 2021). Agriculture remains important, including those that rely on the FIIP.

Lifestyle and Cultural values would not be negatively affected by either the No Action Alternative or the Proposed Action Alternative, as these values would persist regardless of the action taken. The proposed Improvements may benefit cultural values related to subsistence-based hunting, fishing, plant harvest, and agriculture. These benefits are discussed further under the Hunting, Fishing, Gathering and the Agricultural resource sections of the EA. Additionally, downstream users of the Lower Jocko J Canal may benefit from proposed improvements, but the effect would be negligible to the Tribes as a whole. Therefore, this topic has been eliminated from detailed analysis in this EA.

4.1.5 Timber Harvesting

The project area is located within a Tribal fisheries mitigation area and is managed in perpetuity for fish and wildlife habitat protection and restoration. No timber harvesting occurs within the project area; therefore, implementation of the alternatives has no potential to impact timber harvesting. This resource-use pattern has been eliminated from detailed analysis in this EA.

4.1.6 Mining

There is no active mining activity within the vicinity of the project area (Montana Department of Environmental Quality [MDEQ], 2022). Two, small, abandoned mines were identified north of the project area. These mines are the source of the waste rock located north of the Jocko River. Removal of the waste rock is analyzed further under Waste and Hazardous Materials. With no active mines in the area, this resource-use pattern has been eliminated from detailed analysis in this EA.

4.1.7 Wilderness

There are no federally recognized wilderness areas within or immediately adjacent to the project area. The closest wilderness area is the Mission Mountains Wilderness, located about 15 miles east of the project area. Neither alternative would impact this resource; therefore, this topic has been eliminated from detailed analysis in this EA.

4.1.8 Noise

The project area is located in a rural, agricultural portion of the Flathead Reservation where little development exists. The primary source of ambient noise is traffic on MT-200, US-93, MRL/BNSF railroad, and the Jocko River. Other dispersed, low, and intermittent sources include agricultural equipment.

Noise-sensitive receptors can include residences, schools, churches, hotels, and libraries. There are no noise receptors within the project area; however, several sensitive receptors are dispersed throughout the project vicinity. A small cluster of sensitive receptors, primarily residences, are found south of MT-200 and in the community of Ravalli, 0.5 mile east of the project area.

Neither the No Action Alternative nor the Proposed Action Alternative would permanently increase noise levels, traffic noise, or alter the rural characteristics of the area. Under the Proposed Action Alternative, some short-term, minor, localized noise impacts associated with the proposed improvements would be anticipated. Construction noise impacts would likely occur during any earthwork phase. These noise impacts would be intermittent and cease once construction was completed. Therefore, this issue was dismissed from detailed analysis in this EA.

4.1.9 Light

Permanent safety lighting may be added to the proposed control building. One sensitive light receptor, a residential building, is located approximately 550 feet south of the proposed location of the control building. However, vegetation obstructs the viewshed between the proposed control building and the residential building. No substantial night work is anticipated for implementation of the project, with work associated with the Proposed Action primarily occurring during daylight hours. Therefore, this topic has been eliminated from detailed analysis in this EA.

4.1.10 Public Health and Safety

The CSKT Tribal Police Department and BIA Law Enforcement have responsibilities for law enforcement activities in the project area on the Flathead Reservation; however, mutual aid agreements with neighboring agencies provide for additional services when needed (BIA, 2012). The project area is centrally located between the Dixon, St. Ignatius, and Arlee Fire Departments. CSKT Tribal Health provides health care through various health centers located on the Reservation (CSKT, 2022a).

An increase in heavy equipment entering MT-200 would occur during construction, which could result in traffic incidents. This increase in traffic would be short term and cease once construction is complete. Additionally, removing heavy metals adjacent to the Jocko River under the Proposed Action Alternative may provide an indirect public health benefit; however, this benefit was not fully analyzed and water quality samples were not collected and analyzed to determine whether metals are leaching into the river. The primary objective of the mine waste rock removal is to provide aquatic and terrestrial habitat restoration in the diversion area, which includes the floodplain. This objective provides a secondary benefit of reducing the risk of river contamination should a large flood event move through the area. No other direct or indirect impacts on public health and safety are expected to occur under the No Action

Alternative or the Proposed Action Alternative. Therefore, this topic has been eliminated from detailed analysis in this EA.

4.2 LAND RESOURCES – DETAILED ANALYSIS

4.2.1 Topography

The Flathead Reservation is located in northwest Montana within the Flathead Hills and Mountains region. The topography within the region consists of deep valleys bordered by mountains trending north to south. In the valleys, broad floodplains are bordered by sloping terraces and alluvial fans modified by glaciation (Natural Resources Conservation Service [NRCS], 2006). Within the project vicinity, treeless hills and low mountains are typical. The project area is located within a river valley bottom along the Jocko River, which flows from east to west through the project area. The topography in the immediate vicinity of the project area generally slopes toward the Jocko River from the north and south. Variations from the natural topography of the project area exist primarily due to the diversion, canal, railroad, and roads. Elevation within the project area ranges from approximately 2,670 feet above MSL to the west of the existing canal (north of MRL/BNSF railroad tracks) to 2,685 feet above MSL at the roadbed of MT-200 and near the existing Lower Jocko J Diversion structure.

Impacts to Topography

No Action Alternative

Other than operation and maintenance activities that currently occur within the Lower Jocko J Canal, the No Action Alternative would not require the movement or importation of fill material or grading of existing material. The No Action Alternative would not change the existing ground elevations within the project area, and no direct or indirect impacts are anticipated.

Proposed Action Alternative

The Proposed Action Alternative would require 2.802 acres of excavation and fill material placement that would affect topography. The construction of the new headworks, diversion, and filling of the forebay would result in 0.878 acre of permanent changes to the topography within the area directly adjacent to the Jocko River. Reconstruction of the side channel, to include floodplain benches and excavated channel inlet and outlet points along the Jocko River bank, and wetland creation south of the Jocko River would result in 1.614 acres of permanent change to topography. Roughly 0.310 acre of slight permanent topographic change would occur within the Jocko River to construct the new rock ramp. Overall moderate, permanent, direct impacts to the general topography of the area are anticipated, with changes expected to have a beneficial impact over the long term by addressing irrigation inefficiencies, habitat impairments, and increasing floodplain connectivity. No indirect impacts to topography are anticipated.

4.2.2 Soils

The NRCS Web Soil Survey for the project area shows a range of soil types (Table 2). The soil types within the project area are generally very deep and formed in glacial outwash or alluvium (NRCS, 2022).

Table 2. Soil Types within Project Area

Soil Name	Acres within Project Area	Landform	Farmland Classification
Bohny silt loam, 0 to 2 percent slopes	0.2 (0.5%)	Floodplains	Not prime farmland
Jocko gravelly loam, 0 to 4 percent slopes	6.3 (14.8%)	Outwash plains	Farmland of Local Importance
Lamoose loam, 0 to 2 percent slopes	11.6 (27.4%)	Floodplains	Not prime farmland
Gravel pits	1.0 (2.3%)	--	Not prime farmland

Xerofluvents, 0 to 2 percent slopes	23.4 (55.1%)	Floodplains	Not prime farmland

Impacts to Soils

No Action Alternative

Other than operation and maintenance procedures that currently occur, the No Action Alternative would not require ground disturbance. Bank instability, erosion, and sediment deposition into the river, however, would continue. Therefore, the No Action Alternative would have no direct or indirect impacts on soils.

Proposed Action Alternative

Under the Proposed Action Alternative, approximately 15.66 acres of ground disturbance would occur due to the removal and replacement of the existing diversion and headworks, constructing a new side channel and wetland south of the Jocko River, riverbank improvements, floodplain restoration, and mine waste rock removal and relocation north of the Jocko River. These improvements would remove heavy metals from the floodplain and reduce bank instability that is resulting in soil erosion into the Jocko River. Improved floodplain connectivity and grading/vegetation treatments would result in sediment deposition in these flood prone areas, replenishing soils and nutrients. Therefore, the Proposed Action Alternative would have a moderate, direct, long-term beneficial impact on soils.

Potential indirect impacts on soils resulting from construction of the Proposed Action Alternative would be related to soil disturbance and potential soil compaction from construction activities after construction has been completed. Although erosion-control measures would be implemented according to standard practice, some erosion may still occur during rain and wind events until these disturbed areas have stabilized. The impact would be noticeable in the short term after construction but would diminish over time. Areas where heavy equipment maneuvering would occur (e.g., temporary access routes and staging areas) may compact soils leading to poor infiltration, reduction in soil nutrients, and reduced ability for vegetation to reestablish. Following construction, disturbed areas would be roughened before seeding occurs to encourage infiltration and plant growth. Therefore, the Proposed Action Alternative would have negligible, adverse indirect impacts on soils that are more localized.

4.3 WATER RESOURCES – DETAILED ANALYSIS

4.3.1 Surface Waters and Wetlands – Clean Water Act 404 Permitting

A formal aquatic resources delineation was conducted at the Lower Jocko J project area in October 2021 and September 2022. Approximately 3.87 acres of waterway were delineated, including 3.19 acres of the Jocko River (including the existing forebay up to the headworks) and 0.68 acres of the Lower Jocko J Canal.

The Jocko River is a large, perennial, fifth-order river that enters the project area from the east and exits to the northwest. Through the project area, the river width varies from 40 feet, where it parallels the MRL/BNSF railroad, to 75 feet wide at the downstream limits of the project area. The river is bordered by emergent and shrub-scrub wetlands, transitioning to a riparian shrub and woodland community. From the project limits, the river flows west approximately seven miles to its confluence with the Flathead River. The Flathead River, in turn, flows into the Clark Fork River, which eventually conveys flow to the Columbia River. Water from the Jocko River is diverted into the Lower Jocko J Canal within the project area and flows into a series of laterals and sub-laterals west of the project area, where it is delivered to individual farm and ranch tracts.

Approximately 2.86 acres of wetlands were delineated within the project area. This includes approximately 1.88 acre of palustrine emergent wetland, 0.20 acre of palustrine forested wetland, and 0.78 acre of palustrine shrub-scrub wetland. Wetlands were identified along the Jocko River; as a fringe along the Lower Jocko J Canal; within depressional areas; and within the Duncan McDonald Ditch System, which includes two low volume ditches with points of diversion off the Jocko River just upstream of the MT-200 bridge. The system was historically used to flood irrigate fields north of the Jocko River for hay production. Figure 3 presents delineated wetlands and surface waters within the project area.

The Jocko River, Lower Jocko J Canal, and all but two isolated wetlands would likely fall under the jurisdiction of the USACE and CWA Section 404. The CSKT oversee CWA Section 401 certification. In addition, the CSKT Shoreline Protection Program regulates all aquatic resources within the Flathead Reservation. As outlined in Shoreline Protection Ordinance 64 and Aquatic Lands Conservation Ordinance 87, all naturally occurring bodies of water within the project area would be regulated by the CSKT.

Impacts to Surface Waters and Wetlands

No Action Alternative

The No Action Alternative would not require modifications to, or placement of fill within, surface waters and wetlands, as no construction would occur. No wetland mitigation or floodplain restoration would occur. Under the No Action Alternative, operational limitations would persist and irrigation operations would continue to remove woody debris from the Jocko River system. The No Action Alternative would, over time, have a long-term, direct adverse effect on the operation and distribution of irrigation surface water and would not improve overall functions and values within the Jocko River system.

Proposed Action Alternative

Under the Proposed Action Alternative, work would involve replacing the existing Lower Jocko J Diversion with a new rock ramp diversion, constructing a new headworks structure, replacing the existing fish screen with a hemi screen, placing the existing Lower Jocko J Canal within a pipeline on a new alignment, floodplain re-naturalization, and bank stabilization. Unnatural river scouring conditions associated with the existing diversion would also be eliminated and more natural, pool forming scouring conditions re-established through brush bank treatments. To complete the diversion improvements and restoration/enhancement efforts, approximately 0.329 acre of wetlands and 0.654 acre (1,664 linear feet) of waterways would be permanently impacted due to placement of fill material. Approximately 0.111 acre of wetlands and 0.059 acre (38 linear feet) of waterways would be temporarily impacted.

While placement of fill within wetlands and waterways can be considered a negative impact, these impacts are needed to help reduce capacity constraints and hydraulic inefficiencies associated with the Lower Jocko J Canal. These impacts are also needed to help restore and enhance natural functions and processes of the river and wetland systems by improving debris and sediment transport in the Jocko River; establishing, restoring, and enhancing wetlands; re-establishing bank vegetation; providing improved fish passage; and improving floodplain connectivity.

The bank stabilization and floodplain and aquatic resource restoration and enhancement activities outlined in the Proposed Action Alternative would be used as USACE and CSKT compensatory mitigation to offset wetland and waterway impacts associated with the irrigation diversion infrastructure. Mitigation requirements, using wetland functional credits and stream crediting, are documented in a Wetland Mitigation Plan as part of permitting. All mitigation treatments would be monitored annually for five years to determine if wetland areas are establishing or if additional adaptive management is needed. Overall,

the Proposed Action Alternative would have both direct and indirect long-term beneficial impacts on surface waters and wetlands in the area.

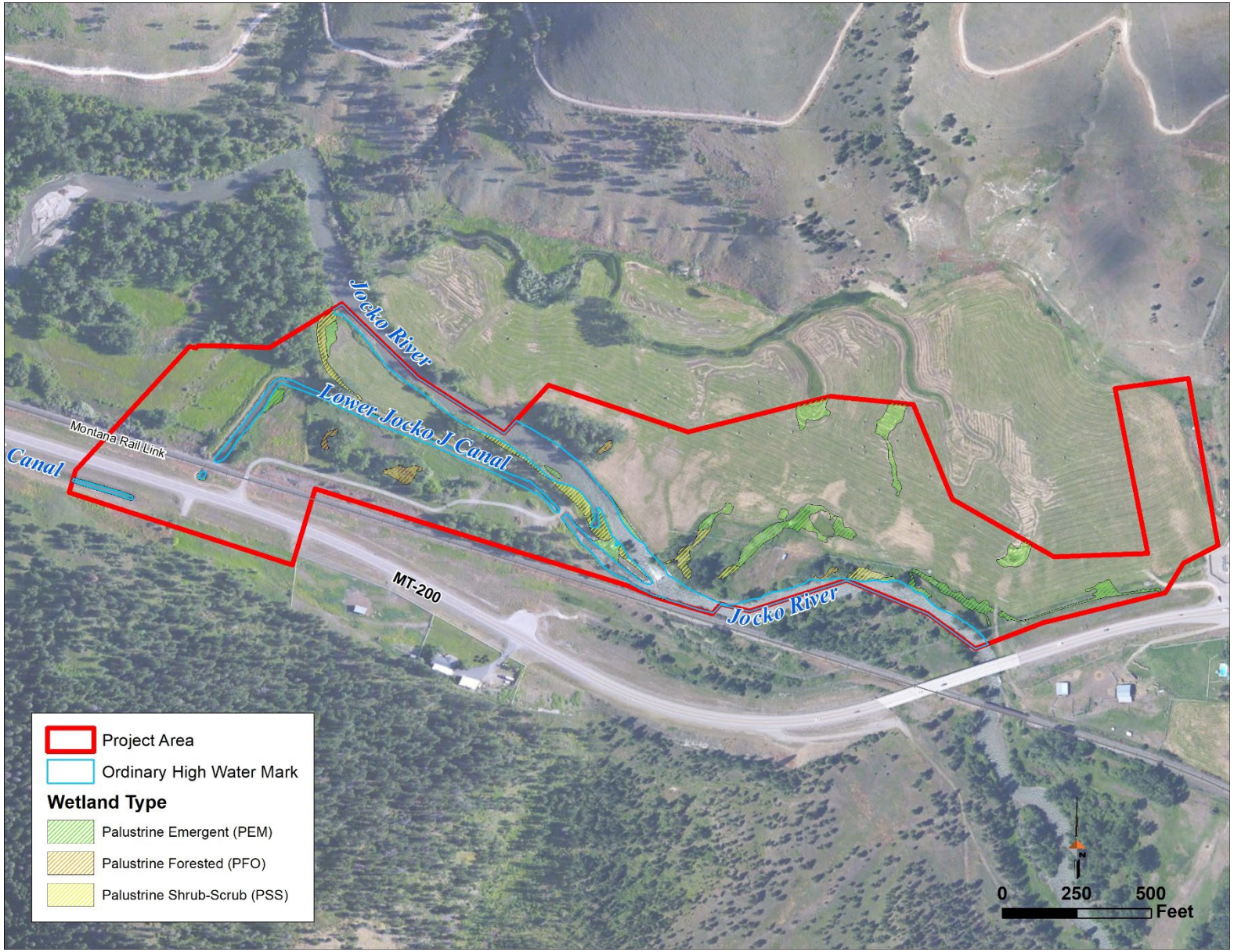

Figure 3. Delineated Wetlands and Waterways

4.3.2 Surface Water Quality

The segment of the Jocko River within the project area is categorized as "B-1" under the October 2018 CSKT Surface Water Quality Standards and Antidegradation Policy, which also sets water quality standards for select characteristics by water quality category (CSKT, 2018). The CSKT collected water quality data for the Jocko River (EPA Monitoring Site ID JCK-JNM0090) from 2001 through August 2022. The most recent water quality data includes bacterial, nutrient, and physical data (EPA, 2022a). The river segment has not been assessed as a Section 303(d) water. The median Escherichia coli concentration between 2001 and 2022 was 28.0 most probable number (MPN)/liter (L), which is below the screening level of 50 MPN/L. The median dissolved oxygen concentration between 2001 and 2022 was 11.72 milligrams (mg/L), which exceeds the minimum Freshwater Aquatic Life Standards. The median pH between 2001 and 2022 was 8.295, which is within the range of 6.5 to 8.5. Between 2001 and 2022, water temperature ranged from 36.2 degrees Fahrenheit (°F) to 66.2 °F, with a median temperature of 63.8°F (EPA, 2022a).

Approximately 600 cubic yards of mine waste rock containing heavy metals (copper, cadmium, and silver) is currently located on the Jocko River floodplain and used as bank stabilization material. The 2023 mine waste rock evaluation detected no heavy metals in the alluvium layer under the waste rock and the waste rock is likely not actively leaching into the groundwater or river (NewFields, 2023).

Impacts to Surface Water Quality

No Action Alternative

Under the No Action Alternative, long-term, minor, adverse impacts on water quality would occur. The current configuration of the irrigation infrastructure results in debris accumulation near the head of the canal forebay, sediment deposition upstream of the diversion, sediment deposition in the canal forebay, and bank erosion along the north bank downstream of the diversion. The ability of the Jocko River to transport sediment near the riverbed is currently inhibited, and bank erosion is accelerated. Bank erosion occurs in close proximity to areas known to contain heavy-metals-laden mine waste rock that could be transferred into the river during flood events. These sedimentation issues would be perpetuated if the configuration of the existing diversion is not addressed, and would have direct and indirect, long-term adverse effects on water quality.

Proposed Action Alternative

The Proposed Action Alternative includes replacing the existing Lower Jocko J Diversion with a new rock ramp diversion, constructing a new sluiceway and headworks structure, replacing the existing fish screen with a hemi screen, placing the existing Lower Jocko J Canal within a pipeline on a new alignment, floodplain re-naturalization, and bank stabilization. Improvements to the Lower Jocko J Diversion would not permanently produce or increase potential water quality impairments within the Jocko River.

The new rock ramp would eliminate the conditions contributing to the existing scour hole and tail-out bar downstream of the existing Lower Jocko J Diversion, further reducing downstream sediment transport resulting from erosion within the Jocko River. Identified mine waste rock containing heavy metals along the north side of the Jocko River would be removed to prevent potential leaching and/or mobilization into the river, and the bank would be reconstructed using native brush bank treatments to reduce erosion. Additionally, enhancing existing wetlands and establishing new wetlands would improve nutrient capture and filtering of contaminants before reaching the Jocko River.

Minor temporary impacts to water quality may occur during construction. However, the use of best management practices (BMPs) would help to reduce these impacts. To minimize turbid water within the

Jocko River during construction, in-channel work would be accomplished by constructing a bypass channel around the work area using a series of cofferdams and rock weir steps. The cofferdams would be breached upon completion of in-channel work and flows within the Jocko River would resume.

Overall, the Proposed Action Alternative would have a moderate, long-term, beneficial impact on water quality by reducing erosion and downstream sediment transport, preventing leaching and/or mobilization of heavy metals, improving nutrient capture and filtering of contaminants before reaching the Jocko River, and a potential reduction in water temperatures in the immediate vicinity of the project.

4.3.3 Groundwater

The project area is located within the Lower Jocko Valley hydrologic unit. Groundwater in this unit consists of a confined aquifer along the valley axis, with depth to groundwater ranging between 5 and 15 feet below ground surface (CSKT, 2020a). Depth to groundwater likely increases proportionally with the distance from the Jocko River, especially beyond the floodplain of the Jocko River.

Impacts to Groundwater

No Action Alternative

No direct or indirect impacts to groundwater would be anticipated under the No Action Alternative as improvements would not occur, and current groundwater recharge and water quality would be perpetuated.

Proposed Action Alternative

The Proposed Action Alternative includes replacing the existing Lower Jocko J Diversion with a new rock ramp diversion; constructing a new headworks structure; placing the existing Lower Jocko J Canal within a pipeline on a new alignment; floodplain re-naturalization; and bank stabilization. Operational improvements to the Lower Jocko J Diversion would allow for more effective irrigation within the Lower Jocko J delivery area. While placing a portion of the existing Lower Jocko J Canal within a pipeline would reduce seepage, with possible localized changes to groundwater, the proposed restoration and enhancement efforts would offset this impact by improving groundwater recharge within the project vicinity through enhanced floodplain connectivity, floodplain benches to capture high flow, and new wetland areas. The Proposed Action Alternative is not anticipated to produce and/or increase contaminants that may enter and impair groundwater wells and aquifers. Overall, the Proposed Action Alternative would have minor, direct and indirect, long-term beneficial impacts on groundwater.

4.3.4 National Pollutant Discharge Elimination System

Section 402 of the CWA pertains, in part, to the maintenance of water quality by managing storm water runoff from projects affecting one or more acres. On the Flathead Reservation, the EPA administers this section of the CWA under the National Pollutant Discharge Elimination System (NPDES). Permitting requires that project proponents, with projects that result in one or more acres of ground disturbance, complete a Storm Water Pollution Prevention Plan (SWPPP) for project construction and that the overall project design provide for the protection of waters.

Impacts to Storm Water Pollution

No Action Alternative

Other than current operation and maintenance activities, no construction would occur under the No Action Alternative; therefore, no ground disturbance would occur, and direct or indirect storm water pollution impacts during construction would not occur.

Proposed Action Alternative

The Proposed Action Alternative would result in roughly 15.66 acres of ground disturbance, and an NPDES Construction Storm Water General Permit would be required for the proposed work. As part of the NPDES permit, A SWPPP would be prepared and implemented. The purpose of the SWPPP is to identify temporary erosion and sediment control measures to be installed during construction to prevent sediment-laden storm water from exiting the construction site. By strictly adhering to the SWPPP and proposed BMPs for erosion and sediment control, direct storm water pollution impacts would be minor and temporary. No indirect impacts would be anticipated.

4.3.5 Water Rights

The Lower Jocko J project area lies within Basin 76L of the State of Montana Water Rights Adjudication Bureau. Like most administrative basins in Montana, a final decree for water rights administration has not been issued for Basin 76L. Therefore, the irrigators' rights to FIIP water are not currently settled under law. The CSKT Water Rights Settlement Compact was introduced in the 2015 Montana legislative session and signed into law by Governor Bullock on April 24, 2015. The U.S. Congress ratified the Compact on December 21, 2020, and the CSKT did the same on December 29, 2020. The Compact became effective on September 17, 2021, when it was signed by the Secretary of the Interior. The CSKT Water Rights Settlement Compact quantifies the FIIP right as part of the Tribal Water Right, with an 1855 priority date, and protects the irrigators' ability to continue to use their water. The Compact entitles an irrigator to an equitable share of water delivered through the project. The Lower Jocko J site is one of the points of diversion where water is diverted into the FIIP irrigation system, allowing FIIP to convey and deliver the water to the irrigators within the Lower Jocko J Canal service area at their individual farm turnouts.

Impacts to Water Rights

No Action Alternative

The No Action Alternative would have no direct or indirect impacts on water rights, as uninterrupted irrigation flows would be maintained; however current capacity limitation in the existing system would be perpetuated.

Proposed Action Alternative

The Proposed Action Alternative would eliminate the existing capacity limitations, add flow measurement capabilities, and provide improved flow controls, allowing FIIP to better serve the irrigators within the Lower Jocko J Canal service area.

During construction, in-channel work would occur between September 30th and March 15th when the existing Lower Jocko J Canal headgate is closed. Therefore, no direct or indirect impacts to irrigation water users are anticipated. Stock water would not be perpetuated during construction, and any service disruptions to stock water users would be coordinated by FIIP. Stock water use would resume upon completion of the project, with the new, screened intake accommodating the spring and fall stock water season. Therefore, the Proposed Action Alternative would have minor, direct, temporary impacts to stock water users associated with the Lower Jocko J Canal.

4.3.6 Floodplains

Federal Emergency Management Agency Flood Insurance Rate Maps indicate that most of the project area, including the existing Lower Jocko J Diversion, is mapped as Zone A, areas determined to be in the 100-year floodplain. However, this mapping occurred when the project area was fee-land and regulated

under the National Flood Insurance Program. The project area is now CSKT non-fee Tribal trust land and no longer enrolled in the National Flood Insurance Program.

Floodplains for the project area consist of functional floodplains, or "flood-prone areas," which help spread water over larger areas, provide ecological benefit and habitat value, and experience flooding more frequently than regulatory floodplains. These functional floodplains have been confined through man-made infrastructure (e.g., the railroad embankment) and have been altered by land management practices. Land use changes within the functional floodplains have resulted in changes to the wetland and riparian vegetative communities. The existing functional floodplains provide less value in their current condition than they would in a more natural condition.

Impacts to Floodplains

No Action Alternative

The No Action Alternative would have no direct or indirect impacts on existing regulatory floodplains and would not require floodplain permitting, as encroachment within the existing floodplains would not occur. The impaired floodplain functions of the existing condition would be perpetuated.

Proposed Action Alternative

The project area is now CSKT non-fee Tribal trust land and no longer enrolled in the National Flood Insurance Program. So, while over 3,450 cubic yards of fill material and riprap will be placed within and adjacent to the Jocko River, a floodplain development permit is not required.

Regarding the functional floodplain, the Proposed Action Alternative would improve floodplain connectivity by reconnecting historic flood-prone areas on the north and south sides of the Jocko River. Re-establishing floodplain hydrology would enhance existing wetlands and support woody vegetation establishment. Floodplain connectivity north of the river would include grading to allow flood waters to reach historic floodplains and potentially reactivate over 3,000 linear feet of disconnected flood channels, with excess surface flows returning to the Jocko River through these existing channels and swales. Approximately 300 feet of berm associated with the Duncan McDonald ditch would also be removed to allow irrigation return flows from the ditch system to free-flow to existing wetland swales/historic floodplains. Floodplain connectivity improvements south of the river include placing diverted irrigation water in a pipe and converting the abandoned segment of Lower Jocko J Canal into a 1,200 linear feet side channel with floodplain benches that is activated at higher flows. Overall, the Proposed Action Alternative would have a direct, long-term beneficial impact to floodplains and floodplain functions.

4.4 AIR QUALITY – DETAILED ANALYSIS

National Ambient Air Quality Standards (NAAQS) have been established for six criteria pollutants: carbon monoxide, nitrogen dioxide, ozone, particulate matter, sulfur dioxide, and lead. Vehicle emissions are major sources of many of these pollutants. Sources of particulate matter include the suspension of dust through ground-disturbing activities, road dust from vehicles, and emissions from internal combustion engines.

The project area is located in an area designated as having attained the desired levels for NAAQS criteria pollutions (EPA, 2022b). Therefore, conformity procedures under NAAQS do not apply. Air quality in this general area is normally good. Air pollutants produced in the immediate vicinity of the project areas are limited to dust from unpaved roads and vehicular emissions.

Impacts to Air Quality

No Action Alternative

Under the No Action Alternative, temporary or long-term impacts on air quality would not occur, as construction activities would not be implemented. The No Action Alternative would not result in any meaningful increase in traffic volumes, vehicle mix, or any other factor that would cause an increase in emissions impacts. Therefore, the No Action Alternative would have no direct or indirect impacts on air quality.

Proposed Action Alternative

Under the Proposed Action Alternative, a negligible, short-term deterioration of air quality may be experienced due to vehicle emissions from the operation of construction equipment, demolition of concrete irrigation structures, dust generated by trenching and excavation, and dust generated from equipment operation on unpaved roads. This deterioration would be a localized condition that would not persist after completing the improvements. Water may be sprayed on disturbed roadway surfaces within the project area to suppress any dust generated. Overall, the amount of dust generated would not exceed what is currently generated in the project vicinity. No potential indirect impacts on air quality resulting from the construction of the Proposed Action Alternative would be anticipated.

4.5 LIVING RESOURCES – DETAILED ANALYSIS

4.5.1 Ecosystems and Biological Communities

The Lower Jocko J project area occurs within the Flathead Hills and Mountains ecoregions of the Northern Rockies. This ecoregion is dominated by logging, grazing, and wildlife habitat. The area is underlain by Quaternary colluvium, ash, and some glacial drift in the rain shadow of the Salish Mountains, supporting a forest ecosystem with a subalpine fir, Douglas-fir, grand fir, and ponderosa pine vegetative community. Mean annual precipitation ranges from 16-26 inches per year, with an average of 50 to 70 frost-free days per year (Woods et al., 2002). While many areas within the region are mountainous and generally not favorable for agriculture, irrigated agriculture and rangeland occur along the valley bottoms, such as along the Jocko River.

The topography within the project area is primarily flat terrain, with elevations from approximately 2,675 feet above MSL to the west of the canal (north of MRL/BNSF railroad tracks) to 2,685 feet above MSL at the roadbed of MT-200 and near the Lower Jocko J Diversion structure. Grassland, wetlands, and formerly irrigated pasture leading up to the National Bison Range adjoin the project area to the north. The Jocko River and associated riparian corridor leading up to the town of Ravalli adjoin the project area to the east. The MRL/BNSF railroad tracks and MT-200 leading up to mixed conifer forest adjoin the project area to the south. The MRL/BNSF railroad and a mix of valley grassland, forested riparian, and mixed conifer forest adjoin the project area to the west.

Impacts to Ecosystems and Biological Communities

No Action Alternative

An impaired aquatic ecosystem would be perpetuated under the No Action Alternative. Large woody debris, which provides important refuge and hydraulic complexity for fish, would continue to be removed from the Jocko River system as part of irrigation maintenance. Unnatural scour conditions below the existing diversion would also continue. The forebay and existing fish screen would remain, greatly impairing fish passage. Continued bank erosion and the potential for mine waste rock to mobilize into the

river would also remain. Perpetuating these impairments would result in moderate, long-term negative impacts to ecosystems and biological communities in the project area.

Proposed Action Alternative

Under the Proposed Action Alternative, the existing diversion structure, headworks, and fish screen would be replaced and provide improved passage for fish species at all life stages and allow for woody debris to move through the system and remain in the river. Strategic aquatic and terrestrial restoration and enhancement of degraded habitats are also proposed and include natural stabilization of eroding banks, enhancement and expansion of wetland areas, removal of toxic metals from the floodplain, and improvements to floodplain connectivity. Therefore, implementation of the Proposed Action Alternative would provide long-term beneficial impacts on biological communities and ecosystem functions in the area, as further specified below in the biological resources sections. Indirect impacts would not be anticipated.

4.5.2 Wildlife

4.5.2.1 General Terrestrial and Aquatic Species

Rocky Mountain lower montane, foothill, and valley grasslands; Rocky Mountain montane-foothill deciduous shrublands; and northern Rocky Mountain lower montane riparian woodland and shrubland are the dominant habitat types within the project area and general vicinity (Montana Natural Heritage Program [MTNHP], 2022). While previous land management, including agriculture and grazing, has altered the project area and reduced overall habitat suitability, the mosaic of habitats found in the area does have the potential to support various mammals, amphibians, reptiles, and birds. The riparian corridor along the Jocko River, in particular, is important for nesting birds and bats resting and foraging in the area. This riparian corridor also provides cover, food, and water for a variety of mammals.

Small mammals such as meadow voles (*Microtus pennsylvanicus*), montane voles (*Microtus montanus*), bushy-tailed woodrat (*Neotoma cinerea*), American beaver (*Castor canadensis*), and American mink (*Neogale vison*) have been documented in the area. Townsend's big-eared bat (*Corynorhinus townsendii*), silver-haired bat (*Lasionycteris noctivagans*), and several myotis bat species (*Myotis sp.*) have been observed, with existing mine passageways near the project area home to a maternity colony of Townsend's big-eared bats (only five known maternity colonies in the state of Montana). Larger mammals, including grizzly bear (*Ursus arctos horribilis*), black bear (*Ursus americanus*), and white-tailed deer (*Odocoileus virginianus*), also occur. Columbia spotted frog (*Rana luteiventris*), gartersnake (*Thamnophis sp.*), rattlesnake (*Crotalus viridis*), and bullsnake (*Pituophis catenifer*) are associated with the area (MTNHP, 2022).

The CSKT documented twelve fish species within this reach of the Jocko River, including bull trout (*Salvelinus confluentus*) and Westslope cutthroat trout (*Oncorhynchus clarkii lewisi*) (New Wave, 2021). The existing Lower Jocko J fish screen consists of a vertical fixed plate screen with a paddlewheel-driven cleaning mechanism and a fish bypass pipe to the Jocko River. This setup results in issues with the return pipe and predation of fish within the long forebay channel. The existing diversion also acts as a barrier to some fish species and life stages.

Impacts to Terrestrial and Aquatic Species

No Action Alternative

The No Action Alternative would result in moderate, long-term impacts to terrestrial and aquatic species, as current conditions, including aquatic impairments and degraded habitat due to past land management within the project area, would be perpetuated. Issues related to fish passage would continue to persist.

Proposed Action Alternative

Under the Proposed Action Alternative, approximately 5 acres of terrestrial and aquatic habitat may be temporarily or permanently impacted. This would include impacts to wetland habitat, upland habitat, and aquatic (river) habitat. Construction-related impacts to terrestrial wildlife would primarily include the temporary or permanent loss of these habitats and the displacement of resident wildlife from the construction area; possible injury or death to smaller, less mobile animals, including small burrowing mammals, snakes, and frogs; and noise disturbance.

The Proposed Action includes replacing the existing Lower Jocko J Diversion with a new rock ramp diversion, constructing a new headworks structure, replacing the existing gabions with brush bank treatments, replacing the existing fish screen with a hemi screen, and removing the existing forebay. These improvements would allow for improved year-round fish passage of a wide variety of fish species and life stages by providing more diverse hydraulic conditions via a staged diversion structure designed to provide passages with varying depths and velocities. Removing the forebay and installing a new fish screen would help reduce or eliminate short-term fish entrainment. Overall, the Proposed Action Alternative would result in direct, long-term benefits to aquatic species. A PIT tag array would be installed above and below the proposed diversion, as part of the Proposed Action, which would provide data for Tribal fisheries management on how well fish are moving through the system once construction is complete.

In addition to the fish passage improvements, the abandoned segment of Jocko J Canal would be converted to a 1,200 linear feet side channel that connects to the Jocko River, the existing canal culvert at the railroad would be plugged to develop a 330 linear feet backwater area within the canal, new wetlands would be constructed east (approximately 0.84 acre) and west (approximately 0.24 acre) of the newly developed section of backwater channel, and 600 cubic yards of mine waste rock would be removed from the north bank. Improvements to floodplain connectivity on the north side of the Jocko River are also proposed through grading and removal of a berm on the Duncan McDonald ditch, which would allow flows to be routed onto the floodplain north of the river and potentially reactivate over 3,000 linear feet of disconnected flood channels. Overall, the Proposed Action Alternative would have long-term, moderate benefits for terrestrial wildlife species through floodplain restoration and re-naturalization efforts, wetland enhancement and wetland functional lift, and improved riparian habitat along the Jocko River (approximately 544 linear feet of new brush bank).

To minimize potential construction-related impacts to wildlife habitat, work would be confined to the defined construction limits to the extent practicable, with designated vegetation preservation and salvage areas noted on design plan sheets. Temporarily disturbed areas, except those areas intended to re-establish through floodplain hydrology, would be seeded following construction. Vegetation is anticipated to return after completion of the project through this seeding effort or through seed recruitment during flood flows, establishing more natural habitat communities. BMPs, as outlined in Chapter 5, would also be installed during construction to limit erosion and reduce sediment from entering surface waters, and a fish bypass channel with salvage operations would be established to avoid short-term loss of aquatic species during construction. No indirect impacts to wildlife would be anticipated under the Proposed Action Alternative.

4.5.2.2 Avian Species

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the United States and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under the MBTA, pursuing, hunting, taking, capturing, killing, selling, or possessing any migratory bird, part, nest, or product is unlawful (16 USC 703-712). "Taking" of species protected by the MBTA includes the removal of vegetation containing active nests of protected species. Birds protected under the MBTA include all common songbirds, waterfowl, shorebirds, hawks, owls, eagles, ravens, crows, native doves and pigeons, swifts, martins, and swallows; feathers, plumes, nests, and eggs are also protected. A complete list of protected species is found in CFR Title 50, Part 10.13. At least 146 bird species from 13 different species orders have been documented in the general area (MTNHP, 2022).

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act of 1940 and receive special state status. According to CSKT data, no bald or golden eagle nests are documented near the project area. The nearest bald eagle nest is approximately 3.0 air miles away and well outside any construction activity buffers (Kaylie Durglo CSKT Biologist, 2023 communication). During project field visits, no bald or golden eagle nests or individual birds were observed within or adjacent to the project limits; however, given the location of the project, both eagles could forage in the area.

Impacts to Avian Species

No Action Alternative

The No Action Alternative would have minor, long-term impacts on migratory birds, as impaired wetland and riparian habitat would be perpetuated, potentially limiting use by nesting and foraging birds.

Proposed Action Alternative

The Proposed Action Alternative would include replacing the existing gabions with brush bank treatments, creating a new side channel with floodplain inset benches in place of the existing Jocko J Canal, re-establishing floodplain connectivity, establishing new wetlands, and enhancing existing wetlands. These aquatic and terrestrial rehabilitation efforts would improve or create suitable avian habitat within the project area and result in minor, long-term benefits to migratory birds.

Active nests likely occur within the project limits, and construction has the potential to impact nesting birds protected under the MBTA if tree and shrub removal, ground-clearing activities, and equipment maneuvering occur during the bird-breeding season (between April 15 to August 16). Under the Proposed Action Alternative, power would be extended within the project area and vegetation clearing would be necessary for the power service extension. Work would occur outside of the breeding season or, should work need to occur during the breeding season, areas to be disturbed would be monitored for nesting migratory species by a qualified biologist prior to vegetation clearing. As part of the Proposed Action Alternative, compliance with MBTA guidance would be required, and disruption to nesting birds and disturbance of active nests avoided. Conservation measures to protect any nesting migratory birds, their eggs, hatchlings, or fledglings would be implemented to avoid impact during construction. This may include removing any suitable nesting habitats (i.e., trees and shrubs) existing within the construction limits, which would be affected by construction, outside of the nesting season (between August 16 to April 15). If an active nest, including before or after the local nesting window, is discovered, the nest would be left in place and protected until the young hatch and depart.

No bald or golden eagle nests are documented within the project vicinity. The closest known nest is 3.0 air miles from the project. Therefore, seasonal construction noise restrictions would not be anticipated.

Foraging eagles would likely avoid the project area during construction, with suitable foraging habitat found both upstream and downstream of the Jocko River.

4.5.3 Threatened and Endangered Species

The USFWS Information for Planning and Consultation database was reviewed to identify threatened and endangered species that may occur within the project area and/or vicinity. Additional information from CSKT Biologist, Kari Kingery, was also received (Kingery, 2023). Six threatened and one candidate species were identified as potentially occurring within the project area (USFWS, 2023). Bull trout (*Salvelinus confluentus*), bull trout critical habitat, North American wolverine (*Gulo gulo luscus*), and grizzly bear (*Ursus arctos horribilis*) are ***known to occur*** within the project area. The yellow-billed cuckoo (*Coccyzus americanus*) and monarch butterfly (*Danaus plexippus*) ***may occur*** within the project area. Spalding's catchfly (*Silene spaldingii*) and Canada lynx (*Lynx canadensis*) are ***unlikely to occur*** within the project area. A full description of the threatened and endangered species analysis is found in the Biological Assessment report in Appendix C. Section 7 Consultation under the Endangered Species Act is complete. The December 27, 2023, Biological Opinion from USFWS and the February 22, 2024, reinitiated USFWS concurrence on North American wolverine are found in Appendix C.

Impacts to Threatened and Endangered Species

No Action Alternative

Under the No Action Alternative, no project improvements would occur, and current conditions would be perpetuated. While the No Action, would not result in any additional direct or indirect negative impacts on threatened or endangered species, it would perpetuate the current issues related to fish passage and short-term entrainment and would not provide a positive outcome for bull trout or bull trout critical habitat.

Proposed Action Alternative

The May 2023 Biological Assessment determined that the Proposed Action Alternative would have ***no effect*** on Canada lynx and Spalding's catchfly, as they are unlikely to occur within the project area, and ***is not likely to jeopardize the continued existence of*** North American wolverine. Transient wolverines could be temporarily displaced if dispersal / migration movements occur; however, the disturbance to the project area is minimal, limiting and reducing the effects to wolverine. Following review of the Biological Assessment, and issuance of the December 27, 2023, Biological Opinion, by USFWS, the North American wolverine was listed as threatened on January 2, 2024. While the proposed project impacts to wolverine have not changed (i.e., the impacts of the Proposed Action Alternative would be minor and temporary), the determination of effect has been updated to ***may affect, but is unlikely to adversely affect.***

It was determined the Proposed Action Alternative may have minor, short-term impacts to yellow-billed cuckoo and grizzly bear; therefore, this alternative ***may affect, but is unlikely to adversely affect*** both of the aforementioned species. Yellow-billed cuckoos have been documented on the Flathead Reservation and transient individuals may use the project area as a stopover between suitable foraging and nesting habitats, including other more densely wooded deciduous riparian areas found elsewhere along the Jocko River. Grizzly bears have been documented within the project vicinity and may move through the project area. The primary effects to yellow-billed cuckoo, if moving through the area, would be temporary noise related impacts during construction. Primary effects to grizzly bears would be temporary noise, human activities, and equipment related to construction, which may cause grizzlies to avoid moving through the action area in the short-term. Garbage and food left behind by construction workers could entice bears into the area, increasing the likelihood of human-bear conflicts. While long-term, permanent impacts to

grizzly bears are not anticipated (as it relates to the replacement of the existing diversion and the piping of the canal) re-establishing and enhancing riverbanks, wetlands, and floodplain connectivity may improve suitable habitat for grizzly bear within the area.

The Biological Assessment determined the Proposed Action Alternative would have moderate adverse and beneficial impacts to bull trout and designated critical habitat for bull trout; therefore, the Proposed Action Alternative ***may affect, likely to adversely affect*** bull trout, and ***may affect, likely to adversely affect*** designated critical habitat for bull trout. There is potential for bull trout to be present, albeit it in low numbers in the project area during construction. The Proposed Action Alternative would permanently impact the channel substrate and configuration to support the design of the new rock ramp diversion, headworks, and fish screen. While construction activities may result in temporary adverse impacts, the long-term benefits would improve habitat connectivity for bull trout at variable flows, minimize entrainment and fish loss, provide the addition of off-channel habitat, and improve bank stabilization, riparian corridor, and habitat complexity.

Monarch butterfly is a candidate species and was not reviewed in the Biological Assessment provided to USFWS. Suitable habitat exists within the project area. Short-term effects to monarchs would likely include minor, adverse temporary effects from construction, including equipment maneuvering and temporary vegetation disturbance. Long-term permanent impacts are not anticipated as a result of the Proposed Action Alternative, and improvements would not impede movements or increase barriers for migrating butterflies. Therefore, the Proposed Action Alternative ***is not likely to jeopardize the continued existence of*** the monarch butterfly.

The USFWS, in their December 2023 Biological Opinion, concurred with the effect determinations for grizzly bear, yellow-billed cuckoo, North American wolverine, Canada lynx, and Spalding's catchfly. The monarch butterfly was not evaluated. The USFWS Biological Opinion also concluded that the Proposed Action Alternative is ***not likely to jeopardize the continued existence*** of bull trout, ***nor result in the destruction or adverse modification of designed bull trout critical habitat*** (refer to Biological Opinion in Appendix C). Specific mitigation measures to avoid incidental take of bull trout were also outlined in the 2023 Biological Opinion. These measures have been included in Chapter 5. Recommended Mitigation Measures. With the North American wolverine listed as threatened in January 2024, reinitiated USFWS concurrence that the proposed project ***may affect, but is unlikely to adversely affect*** the wolverine was received on February 22, 2024.

4.5.4 Vegetation

Vegetation types within the project area consist of upland, riparian, and wetland communities. Distinct upland vegetation is found at higher elevations within the project area, away from any hydrologic source. Smooth brome (*Bromus inermis*), snowberry (*Symphoricarpos albus*), Woods' rose (*Rosa woodsii*), Rocky Mountain juniper (*Juniperus scopulorum*), and spotted knapweed (*Centaurea stoebe*) dominate upland areas. Black cottonwood (*Populus balsamifera*), sandbar willow (*Salix exigua*), water birch (*Betula occidentalis*), and speckled alder (*Alnus incana*) are found within the transitional riparian zone that separates wetlands from the more distinct upland areas. Dominant herbaceous wetland vegetation includes broadleaf cattail (*Typha latifolia*), reed canary grass (*Phalaris arundinacea*), common beaked sedge (*Carex utriculate*), and Canada thistle (*Cirsium arvense*). Other shrub-scrub wetland vegetation includes Geyer's willow (*Salix geyerana*).

The CSKT Fisheries Program has conducted weed control efforts within the project area since 2016 using BPA fisheries mitigation funding. Since 2016, the majority of weed control efforts have been focused on

the former irrigated hay field to the north of the Lower Jocko J irrigation diversion, and along the access road that leads to the irrigation diversion infrastructure from the west. Large infestations of Canada thistle, whitetop (*Lepidium draba*), teasel (*Dipsacus fullonum*), houndstongue (*Cynoglossum officinale*), and poison hemlock (*Conium maculatum*) have been identified in the project area. Following several years of widespread herbicide treatments within the project area, the last two years of weed control work have focused on spot treatments of herbicides (nine acres in 2023 and 11 acres in 2024) targeting rhizomatous and persistent weed species such as Canada thistle and whitetop.

Impacts to General Vegetation

No Action Alternative

The No Action Alternative would not result in ground disturbance and removal of vegetation within the project area, as no improvements would take place. However, some vegetation may continue to be maintained within the Lower Jocko J Canal as part of existing operations and maintenance. Invasive weeds may persist within the project area as well. Therefore, the No Action Alternative would have negligible direct and indirect impacts on vegetation.

Proposed Action Alternative

Under the Proposed Action Alternative, approximately 5 acres of existing vegetation may be temporarily or permanently impacted to implement diversion and restoration improvements. Restoration and enhancement improvements would include converting the segment of canal that is abandoned to a side channel with graded floodway benches, plugging the existing culvert at the railroad to develop a backwater area, constructing new wetlands east and west of the existing canal berm and newly developed section of backwater channel, and other grading techniques to reconnect the floodplain north of the Jocko River. While some wetland and riparian vegetation would be lost as a result of the Proposed Action Alternative, the intent of the improvements is to provide functional lift of existing wetlands; expand the size of existing wetlands or provide new wetland areas; provide floodplain connectivity that supports natural floodplain processes, including sediment deposition and natural recruitment of vegetation; and install woody bank treatments to restore bank vegetation lost to previous land use changes.

To limit the extent of potential impacts to vegetation, work would be confined to the defined construction limits to the extent practicable, with designated vegetation preservation and salvage areas indicated on plan sheets. Temporarily disturbed areas, except those areas where re-established floodplain hydrology would provide natural colonization, would be seeded following construction using a desirable seed mix. Vegetation is anticipated to return after completion of the project, and the project area would continue to be monitored for 12 months following the completion of the Proposed Action Alternative to ensure vegetation is reestablishing.

Weed control efforts during the active construction period and during post-construction of the Proposed Action Alternative would continue to rely on spot treatments of herbicides, especially in areas disturbed by construction activities. Mechanical methods such as mowing and hand-pulling would be employed in some revegetation areas where the risk from chemical applications to desirable plant species is too great. Prescribed burning would also be used within the former hayfield north of the Jocko River to promote the establishment and spread of native riparian species. Post-construction weed control efforts would focus primarily on supporting the establishment of native species within revegetation treatments, such that the need for chemical and labor-intensive methods diminishes over time.

Overall, the Proposed Action Alternative would have moderate, long-term beneficial impacts on vegetation in the area by increasing species diversity, addressing habitat degradation related to previous land uses, and restoring a more diverse vegetative structure along the Jocko River.

4.6 CULTURAL RESOURCES – DETAILED ANALYSIS

Cultural resources are structures, properties, sites, or objects that reflect the heritage of local communities, tribes, states, and nations. These sites can be historic (over 50 years old) or prehistoric (dating from before European contact with indigenous American cultures), and they are considered important according to criteria established by the National Historic Preservation Act (NHPA) of 1966, as amended and subsequent regulations. Section 106 of the NHPA requires federal agencies to consider the potential effects of their undertakings on cultural resources included in, or eligible for inclusion in, the National Register of Historic Places.

To determine if cultural resources may be present within the identified project area of potential effect (APE), a Class III archaeological resource survey was conducted by the CSKT TPD on September 28, 2022. As part of the assessment, qualified archaeologists accessed previous archaeological investigations and site records through the CSKT Cultural Resources Database and a file request from the Montana State Historic Preservation Office (SHPO). The SHPO database provided historical information, and both databases provided information regarding archaeological and cultural sites within the identified area of potential effect. The archaeological survey did not identify any cultural resources; however, several cultural plants were identified (CSKT, 2022b). During a subsequent cultural survey conducted in late 2022 for a separate stilling well replacement project along the Jocko River, one cultural resource was identified. The site is located within the project area.

Impacts to Cultural Resources

No Action Alternative

The No Action Alternative would not impact cultural resources as no proposed improvements would occur.

Proposed Action Alternative

The Proposed Action Alternative would require vegetation clearing, grading, and excavation to implement the proposed improvements. To avoid impacts to the one identified cultural resource, the CSKT TPD has requested that a 30-foot buffer be shown on design plan sheets indicating work restrictions near the cultural site. In addition, identified cultural plants would be preserved, where possible, by establishing vegetative preservation boundaries on the design plan sheets to be avoided during construction. The CSKT TPD has also requested that a TPD staff member be present during all ground-disturbing activities. With these mitigation measures in place, no historic properties and/or cultural properties would be affected under the Proposed Action Alternative (TPD Concurrence found in Appendix D). If any elements of the project deviate, and new actions need to be reviewed, additional coordination with TPD would be required.

4.7 SOCIOECONOMIC CONDITIONS – DETAILED ANALYSIS

The Flathead Reservation is located north of Interstate 90 between Missoula and Kalispell and comprises over 1.2 million acres. The Reservation is located within the Northern Rockies of northwest Montana. The Jocko River valley extends through the southern portion of the Reservation. Agriculture is a locally important source of Tribal income but makes up less than 10% of the economy of the Flathead Reservation (Governor's Office of Indian Affairs, 2020).

4.7.1 Employment and Income

According to the USCB, the Flathead Reservation population in 2019 was approximately 29,926 (± 410). Approximately 26.7 percent of the population identified themselves as American Indian alone (USCB, 2019a).

The civilian-employed population over 16 years of age was estimated at 12,185, with the unemployment rate at 4.2 percent. More people were employed by educational services, health care, and social assistance (27.3 percent) and retail trade (12.4%) than any other industry sector. The 2019 per capita income was $23,412 (± $927) and the 2019 median household income was $44,262 (± $2,486) (USCB, 2019c). Approximately 20.9% (±2.1%) of the population on the Reservation were below poverty levels in 2019 (USCB, 2019b).

Impacts to Employment and Income

No Action Alternative

The No Action Alternative would not provide temporary jobs or income for the CSKT Tribal community. The No Action Alternative would also not improve the operation or distribution of irrigation water, which would perpetuate the inability to adequately provide irrigation water to some tracts within FIIP. Therefore, the No Action Alternative would have potential minor, short-term and long-term direct and indirect impacts on employment and income on the Reservation.

Proposed Action Alternative

The Proposed Action Alternative would have minor, short-term and long-term, beneficial effects on the local economy and income. This alternative would result in a small number of temporary job opportunities for local residents as part of the labor force necessary to complete the proposed improvements, particularly if the CSKT self-perform any project tasks. However, if non-local contractors complete construction, the potential creation of local jobs may be negligible. Non-local employees of the construction contractor(s) would likely spend money in the communities of Ravalli, Polson, St Ignatius, or Arlee for items such as lodging, meals, and light construction supplies and materials, contributing to the local economic base over the short-term. Temporary employment opportunities for Tribal members would be prescribed and coordinated through the Tribal Employment Rights Ordinance office.

In the long term, replacing the Lower Jocko J Diversion and piping the canal to address capacity constraints and hydraulic inefficiencies would allow for more reliable operation and distribution of irrigation water for downstream users.

4.7.2 Community Infrastructure (Utilities and Public Infrastructure)

Major utilities are available on the Flathead Reservation, including electricity, gas, and communication lines. Existing utility networks within the project area include fiber-optic (T-Mobile), overhead electric (Mission Valley Power), and agricultural water delivery (Lower Jocko J Canal). The only major roadway within the project area is MT-200, with its associated ROW. An unpaved road used to access the Lower Jocko J Diversion is also located within the project area. The MRL/BNSF railroad, and associated ROW, also cross the project area. Directly east of the project area is the US-93 roadway corridor.

Impacts to Utilities

No Action Alternative

The No Action Alternative would have no direct or indirect impacts on utilities, as construction would not take place.

Proposed Action Alternative

Under the Proposed Action Alternative, a new overhead power line would be installed at the Lower Jocko J Diversion to power the proposed control system. A utility license agreement with MRL/BNSF would be required for the new overhead power line. To tie into the existing electrical grid, potential brief interruptions to electrical service for local residents may occur. Any notification of service interruptions would be the responsibility of the appropriate utility owners. Therefore, the Proposed Action Alternative would have a negligible, short-term, direct impact on utilities.

In addition, the Proposed Action Alternative would have a beneficial, permanent direct impact on irrigation water delivery by providing structural modifications that improve the operation and water distribution of the system. No indirect impacts would be anticipated.

Impacts to Transportation Network

No Action Alternative

No direct or indirect impacts would occur to the transportation network under the No Action Alternative.

Proposed Action Alternative

The Proposed Action Alternative may affect local transportation. Depending on where materials and construction equipment are coming from, traffic on MT-200 and/or US-93 may be temporarily slowed down as materials and heavy equipment are transported to the project area. The existing gravel access road would be extended to allow direct access for maintenance of the diversion infrastructure. An encroachment permit from MDT and a utility license agreement from MRL/BNSF would be required. These impacts are anticipated to be short-term and minor. No indirect impacts are anticipated.

4.8 RESOURCE USE PATTERNS – DETAILED ANALYSIS

4.8.1 Hunting, Fishing, and Gathering

The project area is comprised of the Lower Jocko J Diversion, the Lower Jocko J Canal, the Jocko River, and a Tribal fisheries mitigation area. While hunting is not likely so close to the highway, fishing and gathering may occur in the project area where suitable habitat/vegetation is available. Fishing primarily occurs along the Jocko River; however, unauthorized fishing takes place at the existing forebay. Gathering may include foraging for native edible plants and traditional uses.

Impacts to Hunting, Fishing, and Gathering

No Action Alternative

Under the No Action Alternative, there would not be any impacts to hunting, fishing, and gathering, as no construction would occur, and existing conditions would be perpetuated.

Proposed Action Alternative

Under the Proposed Action Alternative, approximately 5 acres of land may be permanently or temporarily impacted during improvements to the Lower Jocko J Diversion. This would include impacts to upland, wetland, and open water habitat on the Jocko River.

Replacing the existing diversion with a rock ramp and replacing the existing fish screen with a hemi screen would improve fish passage within the Jocko River and eliminate predation and unauthorized fishing in the Lower Jocko J Canal forebay, which would be removed. Floodplain and wetland enhancements may

also improve habitat suitable for a wide variety of plant and wildlife species that are important to the CSKT for hunting and gathering.

Overall, the Proposed Action Alternative is expected to have a minor, permanent beneficial impact on hunting, fishing, and gathering.

4.8.2 Agriculture

The Farmland Protection Policy Act (FPPA) of 1981 was passed by Congress to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. For the purposes of assessing projects under the FPPA, farmland includes prime farmland, unique farmland, and farmland of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for agriculture. It can be forest land, pastureland, cropland, or other land. However, projects that occur on farmland already in urban development, or committed to urban development, or used for water storage are not subject to FPPA (NRCS 2023a). A review of the NRCS Web Soil Survey for Lake County indicates approximately 6.3 acres are designated as farmland of local importance within the project area, primarily in the vicinity of the existing diversion access road and the MT-200 corridor (NRCS, 2023b). Although historical land uses within the project area included hay production and ranching, recent changes have established a Tribal fisheries mitigation area for land within the project area, and farming and grazing are no longer implemented.

Land use west of the project area, however, does include agricultural production and livestock grazing, which is supported by the Lower Jocko J Diversion and Canal.

Impacts to Agriculture

No Action Alternative

Under the No Action Alternative, there would not be any physical impacts to agricultural land, as no disturbance would occur. However, operational limitations associated with the Lower Jocko J Canal would persist. Therefore, the No Action Alternative would have minor, long-term impacts to agricultural production.

Proposed Action Alternative

Moderate, long-term, beneficial impacts to agricultural lands and operations in the project vicinity are anticipated under the Proposed Action Alternative. While no agricultural land would be impacted within the project area, improvements to the Lower Jocko J Diversion would eliminate existing capacity limitations and provide flow measurement for more effective operation and control of irrigation water throughout the FIIP. Improved operation and control have the potential to increase agricultural productivity in the area.

4.8.3 Recreation

While some fishing, bird watching, and hiking opportunities may be present near the Lower Jocko J Diversion, the project area is primarily used to divert irrigation flows from the Jocko River into the Lower Jocko J Canal. Visitors who choose to recreate in the area use a public access point and parking area located on the eastern edge of the project area near a power substation. An additional entry point from the south, which provides maintenance access to the existing headworks structure, fish screen, and canal, is often used by the public to access the river; however, this is not a public approach for recreation use. No community parks, sporting facilities, or other designated recreational amenities are within or adjacent to the project area.

No Action Alternative

Recreation would not be directly or indirectly affected by the No Action Alternative, as no improvements would take place and existing conditions would be perpetuated. Tribal members and visitors to the site would continue to use the area, in its current state, for recreation such as fishing and bird watching.

Proposed Action Alternative

Opportunities for hiking, bird watching, and a small amount of recreational fishing would be temporarily disrupted during construction. These opportunities can be found elsewhere along the Jocko River and within the project vicinity and would be available during the construction period.

Under the Proposed Action Alternative, the existing diversion would be replaced with a new rock ramp diversion and the existing fish screen would be replaced with a new in-riverbank hemi screen. These improvements would allow for improved fish passage of a wide variety of fish species and life stages and reduce or eliminate short-term fish entrainment, potentially providing improved opportunities for recreational fishing. Enhancing wetlands, riparian vegetation, and the overall floodplain could attract various bird species and other wildlife species to the area, potentially improving the experience for those hiking or bird watching within the project area. The southern access to the site, however, may be eliminated, as the approach would be permitted as an MRL/BNSF private approach for irrigation purposes, and CSKT and/or FIIP may enforce this controlled access point. Access to the site would still be provided east of the project area near the power substation. Overall, the Proposed Action Alternative would have a long-term, minor, beneficial impact on recreation.

4.8.4 Land Use Plans

The CSKT currently has several resource management plans including a Comprehensive Resources Plan (CSKT, 1996), a Forest Management Plan (CSKT, 1995), and a Wetland Program Plan (CSKT, 2020b). Land Ordinance 45C also provides a vehicle for reviewing, approving, formalizing, and documenting land acquisition, disposal, exchange, leasing, permitting, subdivision, or changes in land use of Tribally-owned lands on the Flathead Reservation (CSKT, 2022c). As previously noted, the segment of Jocko River within the project area is known as the "Ravalli Property" and was purchased in 2015 using funding from the BPA to serve as partial mitigation for the construction and operation of the Hungry Horse hydroelectric facility on the South Fork of the Flathead River. BPA holds a conservation easement for the property to ensure that habitat values are protected in perpetuity. The CSKT has designate the project area as a Tribal fisheries mitigation area.

Impacts to Land Use Plans

No Action Alternative

The No Action Alternative would have no direct or indirect impact on land use plans, as existing conditions would be perpetuated.

Proposed Action Alternative

As part of the Proposed Action Alternative, irrigation diversion improvements and restoration activities would occur, including vegetated bank stabilization measures, development of stream side channels, new and enhanced wetland areas, and enhanced floodplain connectivity. These improvements would help the CSKT meet the various long-term objectives found in identified management plans by providing more effective distribution of irrigation water within FIIP and enhancing and establishing aquatic and terrestrial

habitat, as dictated by the CSKT Water Compact Therefore, the Proposed Action Alternative would have minor, long-term, beneficial impacts on land use.

4.9 OTHER VALUES – DETAILED ANALYSIS

4.9.1 Visual Resources

The existing visual character of the project area primarily includes the narrow valley of the Jocko River. Dominant visual features within the project area include gradually sloping hillsides to the north, including grasses and some coniferous trees; the riparian corridor along the Jocko River and MT-200 that bisect the valley; and the more densely forested, gradually sloping hillsides to the south.

Impacts to Visual Resources

No Action Alternative

The No Action Alternative would have no direct or direct impacts on visual resources, as no improvements would take place and existing conditions would be perpetuated.

Proposed Action Alternative

The visual character of the project area would be altered by replacing the existing Lower Jocko J Diversion with a new rock ramp diversion; constructing a new headworks structure along the river; replacing the existing fish screen with a hemi screen; filling in the existing forebay; and providing floodplain re-naturalization and re-connectivity, vegetated bank stabilization, and other aquatic resource restoration efforts, which would convert the project area to a more natural state. The Proposed Action Alternative would have both long-term, minor adverse and beneficial impacts in the immediate area, as these improvements would be visually evident to individuals that visit the area. However, individuals familiar with the area would recognize these improvements as normal within the context of the FIIP, with improved natural habitat enhancing the visual character of the site.

4.9.2 Climate Change (Greenhouse Gases)

Climate Change refers to a significant change in long-term (decades to millennia) weather patterns as a result of changes in the concentrations of greenhouse gases within the Earth's atmosphere. This may include major changes in temperature, wind patterns, or precipitation. Greenhouse gases (water vapor, carbon dioxide, ozone, etc.) are gases in the atmosphere that absorb and emit infrared radiation, contributing to the greenhouse effect and global warming. Most greenhouse gases occur naturally in the atmosphere; however, human activities have increased greenhouse gas concentrations.

No Action Alternative

Long-term direct impacts on climate change from the No Action Alternative would not be anticipated, as no improvements would occur. However, through climate change, flooding may occur in more acute events as higher temperatures melt elevated snowpack faster, or weather patterns change increasing rain events in the area. This would result in higher flood events than historically observed. Climate change may also decrease snowpack during the winter months and increase drought conditions in the area. Operation of the Lower Jocko J Diversion would continue to be inefficient. More acute events may only exacerbate these issues further.

Proposed Action Alternative

Long-term direct impacts on climate change from the Proposed Action Alternative would not be anticipated. As previously mentioned, through climate change, weather patterns may change or become

more unpredictable leading to higher flood events or increased drought conditions. Proposed improvements would allow for more reliable operation and distribution of irrigation water within the Lower Jocko J Canal delivery area and provide more resiliency to flood events through installation of a new rock ramp diversion, bank stabilization, creation of new wetlands to help capture flood flows, and floodplain re-connectivity.

Negligible, short-term impacts to climate change would occur during the construction period. Carbon Dioxide (CO_2) emissions during construction would primarily be from equipment exhaust (from graders, backhoes, water trucks, etc.) and workers' vehicles. The resulting greenhouse gas concentrations generated from construction activities at the site would be beneath the EPA's mandatory reporting threshold of 25,000 metric tons of CO_2 equivalent greenhouse gas emissions per year. The increase in emissions would be temporary and cease once construction is complete.

Overall, impacts to climate change and greenhouse gas emissions would be short-term, adverse, and negligible. No indirect impacts would be anticipated.

4.9.3 Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in assets held in trust by the U.S. Government for Indian tribes or individuals. Assets can be real property, physical assets, or intangible property rights. ITAs cannot be sold, leased, or otherwise encumbered without the approval of the U.S. Government. A trust relationship is established through a congressional act or Executive Order, as well as by provisions identified in historic treaties. As trustee, the DOI is legally required to fulfill treaty and statutory obligations and to manage, protect, and conserve Indian trust resources and lands.

Lands associated with a reservation, ranch, or public domain allotment are examples of an ITA. Resources located within reservations, including timber, minerals, and oil and gas, are also considered trust assets. Treaty rights and water rights, as well as hunting and fishing rights, may also be ITAs. Additional assets consist of financial assets in trust accounts. The project area is designated as non-fee Tribal trust land. The Lower Jocko J Diversion, headworks, canal, and associated infrastructure; the Duncan McDonald Ditch; and the resources within the project area are considered ITAs.

Impacts to Indian Trusts

No Action Alternative

Under the No Action Alternative, improvements at the Lower Jocko J Diversion, headworks, and canal, which are considered ITAs, would not be made. The BIA, through the FIIP, would still be entitled to divert flows from the Jocko River via the diversion; however, agricultural production and stock water at downstream parcels could be reduced if water delivery is disrupted. Overall, the No Action Alternative could have long-term adverse effects on ITAs associated with FIIP, and existing limitations and inefficiencies would be perpetuated.

Proposed Action Alternative

The Proposed Action Alternative includes replacing the existing Lower Jocko J Diversion with a new rock ramp diversion, constructing a new headworks structure, placing the existing Lower Jocko J Canal within a pipeline on a new alignment, and restoration activities. These improvements would have a moderate, long-term beneficial impact on ITAs and the Tribal trust land by eliminating existing flow constrictions, improving safety features, incorporating flow measurements, and enhancing the land through habitat restoration.

4.9.4 Waste and Hazardous Materials Management

The MDEQ database shows no hazardous materials sites within the project area. The closest site identified in regulatory records is a gas station located approximately 0.5 mile east-southeast of the project area (MDEQ, 2022). Previous landowner information led to the discovery of a former mine waste rock disposal site on the north side of the Jocko River within the project area. During sampling and delineation of the waste rock in 2023, approximately 600 cubic yards of this waste rock was identified as containing heavy metals with higher concentrations above BTVs of copper, cadmium, and silver (NewFields, 2023). These heavy metals may be subject to erosion and entrainment into the Jocko River under high flows.

Impacts to Waste and Hazardous Materials Management

No Action Alternative

The No Action Alternative would perpetuate existing conditions, resulting in minor, long-term direct impacts on waste and hazardous materials management. The identified mine waste rock on the north bank of the Jocko River is subject to erosion. This erosion would continue, with potential contamination of the Jocko River and nearby groundwater.

Proposed Action Alternative

Under the Proposed Action Alternative, the mine waste rock would be removed from the floodplain and disposed of in an appropriate, upland location in accordance with applicable regulations. During construction, some hazardous materials, such as oil and gas, would be used by construction equipment near wetlands and waterways. These would be limited quantities and managed according to standard best practices. Such practices typically include checking equipment for leaks, proper disposal of hazardous materials, and prompt cleanup of any spills.

Overall, the Proposed Action Alternative would have long-term, moderate benefits for waste and hazardous materials management.

4.10 CUMULATIVE EFFECTS

Cumulative effects are the direct and indirect effects of a proposed project alternative's incremental impacts when they are added to other past, present, and reasonably foreseeable actions, regardless of who carries out the action (40 CFR Part 1508.7). The cumulative effects of an action may be undetectable when viewed in the individual context of direct and indirect actions but could add to a measurable environmental change. Guidance for implementing NEPA requires that federal agencies identify the temporal and geographic boundaries within which they will evaluate potential cumulative effects of an action and the specific past, present, and reasonably foreseeable projects that will be analyzed. The spatial limits of the cumulative analysis are typically broader than the analysis of the proposed action because the cumulative analysis must consider all activities that affect identified environmental components, even outside the area affected by the proposed action. The temporal boundaries of the cumulative analysis often extend beyond the period of time considered in the analysis of the proposed action alone. This is because the cumulative analysis must also take into account activities that occurred before the proposed action is initiated as well as after the proposed action is completed, if those activities affect (or could affect) one or more of the same resources affected by the proposed action.

Unless otherwise stated, the temporal boundary of analysis is from approximately the construction date of the Lower Jocko J Diversion and Lower Jocko J Canal (early to mid-1900s) to the year 2030. This temporal boundary encompasses a range within which data are reasonably available, and forecasts can be reasonably made. The geographic boundaries of analyses vary depending on the resource and potential

effects, but are generally considered to be the project vicinity shown for the Lower Jocko J Diversion Area Improvements project and locations upstream and downstream on the Jocko River where implemented projects may influence conditions within the project area. The at-risk resources identified in the project area are wetlands, surface waters, aquatic species, threatened and endangered species, vegetation, and hazardous materials.

Table 3 lists the past, present, or reasonably foreseeable actions considered for analysis of cumulative impacts for identified resources. The actions or projects were selected because they are within the project vicinity or could influence conditions within the project area.

Table 3. Cumulative Impacts Analysis – Projects Considered

Action	General Description	Status
FIIP Lower Jocko J Diversion and Canal	The portion of the existing Lower Jocko J Canal and headworks within the project area were constructed by the FIIP in the 1920s. The existing Lower Jocko J Diversion was constructed in the 1950s. A fish screen was installed at the canal headworks in the late 1980s and is owned and operated by the CSKT	Past Completed over 60 years ago
Farming and mining	Previous land management practices including farming, grazing, and mining activities have resulted in substantial changes to habitat communities within the area, deposition of mine waste within the floodplain, changes in topography, and are contributing to Jocko River bank erosion.	Past Parcel transferred to CSKT in 2015 and designated as a Tribal fisheries mitigation area
CSKT Tribal Broadband Infrastructure Project	The CSKT was awarded a grant under the Tribal Broadband Connectivity Program from the U.S. Department of Commerce, National Telecommunications and Information Administration for a project to expand access to broadband service on Tribal land. The proposed project consists of the installation of a fiber optic ring, physically circling the floor of the Mission Valley and adjoining valleys, as well as lateral fiber spurs directly connecting all tribal anchor institutions, many businesses, and communities. The project includes 200+ miles of fiber optic construction, a network operations center, and a 180-foot cell tower. Fiber optic installation will occur along MT-200 and US-93 within the project vicinity.	Current Construction to be completed by December 2026
Jocko River – Bison Range Reach Restoration	The Bison Range Reach of the Jocko River plays an important ecological role in the Jocko watershed. However, the reach has been impaired by a suite of human caused disturbances that have diminished its capacity to provide the range of quality habitats it once did. The proposed project will generally restore the river to pre-disturbance conditions, increase connectivity between the river and floodplain surface and groundwater, help reduce surface water temperatures, and improve the existing condition and future potential for instream, floodplain, and adjacent riparian habitats. The project will enhance floodplain plant community diversity, benefitting both ecological and cultural resources.	Current Construction to be completed by December 2025

Action	General Description	Status
Jocko K Diversion and Fish Screen Replacement	The CSKT are in the process of reconstructing the Jocko K Canal Headworks and the associated fish screen, located along the Jocko River approximately 5 miles due east of Arlee, Montana. The project is approximately 15 river miles upstream of the Jocko J Diversion. The project will increase the efficiency of the facility to allow FIIP operators to better match irrigation demand and provide greater water conservation to the area while maintaining fish management and protection capabilities.	Current Construction to be completed by December 2024
NF Bridge replacement	The irrigation access bridge crossing the North Fork Jocko River upstream of the diversion dam is undersized and near the end of its service life. The project will replace the bridge with a new, wider bridge that provides a larger opening to improve not only hydraulic efficiency, but also sediment transport under the road.	Current Construction to be completed by December 2024
Jocko K North Conversion	The Jocko North Service Area of the FIIP has been identified as a high-priority target for rehabilitation and modernization, as it relates to water delivery efficiencies. The Jocko K Canal irrigation service area will be rehabilitated with a delivery network of pressurized, buried pipe. The conceptual design is split into six phases over three years that will involve 17.7 miles of pipeline. Upon completion, this project will result in substantial water conservation in the Jocko River.	Proposed Construction to begin in fall 2024
Tabor Feeder Canal Diversion	The Tabor Feeder Canal Diversion will be refurbished or replaced to provide a structurally sound diversion facility with a long service life, upstream and downstream fish passage and screening, and improved operations to better manage sediment. A new diversion could be located upstream, downstream, or at the existing location and may include automation, provided that power is generated on site and is not brought in through extended transmission lines.	Proposed Construction date to be determined
Upper Jocko S Canal Diversion Fishway	With the installation of the Jocko K Canal Headworks Project, which includes a fish barrier and a new ladder and trap box to facilitate fish passage management, a fish trap is no longer necessary on the Upper S Canal Diversion ladder on the mainstem of the Jocko River. The project will include conversion or replacement of the S Canal ladder to a fully volitional ladder to pass migrants upstream. If reasonable, CSKT would like to retain the existing functionality of fish trapping at the site, while providing fish passage above the S Canal Diversion, for operational flexibility.	Proposed Construction date to be determined

Direct and indirect impacts associated with replacing the existing Lower Jocko J Diversion and headworks, placing the existing Lower Jocko J Canal within a pipeline, mine waste rock removal, floodplain restoration, bank stabilization, and other aquatic restoration efforts would contribute to past effects on wetlands, surface waters, aquatic species, threatened and endangered species, vegetation, and hazardous materials within the project area. This impact contribution would potentially undo the negative impacts created from previous projects and land management (i.e., current FIIP infrastructure and past hay production, grazing, and mining activities) through removal of fish barriers, floodplain and habitat enhancement/restoration, and removal of hazardous waste rock near the river.

Other past, present, and reasonably foreseeable future projects that have or would likely have adverse or beneficial cumulative impacts on wetlands, surface waters, aquatic species, threatened and endangered species, vegetation, and hazardous materials at and in the vicinity of the project are listed in Table 3. Many of these projects have resulted in or would potentially result in some net losses of vegetation, wetlands, and wildlife habitat; however, it is likely that such losses on current or proposed projects would be mitigated to some degree by federal and Tribal requirements. Other projects and actions listed in Table 3 would have beneficial impacts by restoring degraded habitats from past actions, improving floodplain connectivity, and addressing fish passage concerns. Such beneficial impacts to the larger ecosystem may be enough to offset potential negative impacts from other projects.

When considering the larger ecosystem, the Proposed Action Alternative would likely result in minor, beneficial cumulative impacts on wetlands, surface waters, aquatic resources, threatened and endangered species, vegetation, and hazardous materials management when considered along with other past, present, and reasonably foreseeable future actions.

5.0 MITIGATION MEASURES

The following mitigation measures are required to avoid and/or reduce adverse impacts under the Proposed Action Alternative, if it is selected.

Aquatic/Fish/Bull Trout Mitigation Measures

- Completing the project during low flow periods when erosion potential is the lowest.
- Continue noxious weed management until disturbed areas are revegetated and stabilized.
- Designate staging areas at a minimum of 150-feet from any stream channel.
- Dewatering activities must deposit sediment laden water in an upland location or location with adequate vegetative buffer to prevent sediments from reaching a waterway.
- All equipment or personal gear (e.g., waders, boots) used in or near water will be inspected and decontaminated prior to arrival on the work site to prevent introducing terrestrial or aquatic invasive species.
- Implement a fish collection and relocation program for the old canal forebay (also temporary bypass channel) and the main river channel when dewatered, anticipated to occur once during each of the three construction phases. Coordinate installation and movement of temporary cofferdams with CSKT fisheries biologist and fish collection and relocation efforts.
- Upon locating dead, injured, or sick bull trout, the contractor shall immediately notify the CSKT fisheries biologist. The biologist must provide notification within 24 hours to USFWS at (406) 758-6878. Information relative to the date, time, and location of dead or injured bull trout when found, and possible cause of injury or death should be recorded, if available.
- In-channel work (below ordinary high-water mark) would be completed to the maximum extent practicable in dry conditions, except for installation, movement, and removal of the temporary cofferdams at the project site.
- Install appropriate BMPs to minimize transport of sediment and sediment-laden runoff to a waterway during pre-construction activities, construction activities, and post construction activities. All BMPs shall be monitored and maintained for effectiveness to ensure they minimize sediment delivery to waterways.

- Monitor for turbidity during the duration of active in-water work. This includes turbidity collection upstream of the cofferdams to establish a baseline and collection downstream of the active work area to identify any change in turbidity levels. Should the change exceed thresholds defined in the permits, notify CSKT and implement corrective actions to address potential sediment sources or ineffective BMPs.
- Remove all temporary BMPs post-construction once the site is stable and/or rehabilitated/revegetated.
- Leaving, when feasible, any woody debris within the ordinary high-water mark to keep it within the system.
- Limit heavy equipment access to river channel, reduce impacts to the extent possible to riverbank during construction.
- Keep heavy equipment and machinery used on site and near waterway clean and well-maintained. Any repair work would be completed 150 feet away from a waterbody or aquatic feature with measures in place to prevent contaminates from reaching a waterway or wetland.
- Perform visual checks daily on vehicles, equipment, and heavy machinery to minimize the chances of introduction of petroleum products to waterways. External grease and oil shall be removed off vehicles, equipment, and machinery offsite prior to operating in project area.
- Fueling and maintenance of equipment shall be performed off-site.
- Maintain an oil spill kit in the staging area and have a protocol to address a spill (e.g., notification process, spill containment process) in place in the event of a spill.
- Include habitat complexity (e.g., roughened channel, boulders, etc.) in channel with the rock-ramp fishway and downstream riverbank vegetative matrix treatment stabilization measures.
- Limit tree cutting in riparian corridor.
- Minimize stream crossings by motorized vehicles to that which is necessary to complete the work. This would minimize potential increase in sediment mobilization in stream channel and minimize potential for short-term increases in turbidity. Designate area for vehicle/equipment crossing, if necessary, that minimizes impact to aquatic habitat.
- Monitor and redirect river recreationists to avoid site during construction.
- Provide fish passage during construction.
- Remove all excavated non-native material off-site and dispose of in appropriate upland location and/or approved landfill.
- Start restoration activities as soon as practical and include the planting of native grass forbs, shrubs, and trees on disturbed areas, which includes areas temporarily disturbed as a result of vehicle access, heavy machinery movements, or other construction activities.
- Retain trees and vegetation in riparian areas near the ordinary-high-water mark, where feasible.
- Construction activities implemented in-channel, or access by vehicles or equipment to the river channel, will be seasonally restricted to occur between September 30 through March 15 to minimize potential impacts to bull trout.
- If super sacks are used as temporary cofferdams, fill materials for the super sacks require a clean gravel source. All super sacks or other associated fill material used as temporary cofferdams

would be removed from the river channel and below the OHWM upon completion of construction activities.

- Use clean rock material for riprap construction.
- Wash equipment prior to mobilizing to work site to minimize the chances for new weed introduction or sediment into the waterway. Establish a cement truck clean out station to properly contain wet concrete and wash water.
- CSKT fisheries biologist will complete a fish survey in the Duncan McDonald ditch system to determine potential fish entrainment and assess the need for fish screen(s) on the ditch diversion points prior to any restoration activities using this diverted water. Results of the study would be provided to USFWS.

Wildlife Mitigation Measures

- Promptly clean up any project-related spills, litter, garbage, debris, etc. All workers will be equipped with and carry bear spray.
- Store all food, food-related items, petroleum products, antifreeze, garbage, and personal hygiene items inside a closed, hard-sided vehicle or commercially manufactured bear-resistant container.
- Remove garbage from the project site daily and dispose of it in accordance with all applicable regulations.
- Notify the CSKT Wildlife Management Program of any animal carcasses found in the area; CSKT Wildlife Management or CSKT Fish and Game will remove the carcass to remove attractant within the work site.
- Notify the CSKT Wildlife Management Program of any Grizzly Bears, Wolverine or Canada Lynx observed in the vicinity of the project.
- To reduce potential impacts to wildlife and vegetation, work shall be confined to the proposed construction limits to the extent practicable. This would ensure that ground-disturbing activities are limited, which would reduce the amount of potential dust created, as well as lower potential for noxious weeds or other undesirable plants to establish.
- The contactor shall not cause injury or death to migratory birds, including eggs and nestlings. If trees or shrubs must be removed, tree and shrub removal shall occur before or after the migratory bird breeding season (remove before April 15 or after August 16 of any calendar year). If tree/shrub removal must take place during the breeding season, the contractor shall hire a qualified biologist to survey trees/shrubs for active nests before vegetation removal takes place. If an active nest is discovered, the nest shall be left in place and protected until young hatch and depart.

Ground Disturbance Mitigation Measures

- The contractor shall prepare and submit the NPDES Permit Notice of Intent, SWPPP, and Notice of Termination to the EPA.
- BMPs to control erosion from the construction site shall be implemented to prevent sediment from leaving the construction site.
- The contractor shall adhere to all applicable tribal, state, and federal regulations when obtaining construction water.

- Disturbed upland soils would be seeded using species specific to the project vicinity. This seeding would exclude those areas intended to re-establish through floodplain hydrology/seed recruitment during flood flows. The area would be monitored by CSKT until final stabilization has been met (approximately 12 months).
- In compliance with Executive Order 13112 regarding noxious weeds, the contractor shall inspect all earth-moving and hauling equipment at the contractor's equipment storage facility, and all equipment shall be washed prior to entering the construction site to prevent the introduction of noxious weed seed.
- In compliance with Executive Order 13112 regarding invasive and noxious weeds, the contractor shall inspect all construction equipment and remove all attached plant/vegetation and soil/mud debris prior to leaving the construction site.
- Weed treatments within the footprint of the project would occur as needed and follow the existing CSKT Pest Management Plan.
- In compliance with the June 2024 Compensatory Wetland Mitigation Plan, the project area would be monitored following construction of the project to ensure that wetlands and floodplains are re-establishing. Monitoring would be completed annually for five years, as outlined in the Compensatory Wetland Mitigation Plan for the project.

Cultural Mitigation Measures

- A CSKT TPD monitor will be present during all ground disturbance activities to inspect for unexpected archaeological resources that may be uncovered. The contractor shall contact the CSKT TPD two weeks prior to any ground disturbing activities to arrange for TPD staff to be present during this phase of construction.
- Any archaeological or historical artifacts discovered during construction shall be left intact and undisturbed, all work in the area shall cease immediately, and the CSKT TPD (406.675.2700 ext. 1082) shall be notified immediately pursuant to 36 CFR 800.13. Commencement of operations shall be allowed upon notification by the CSKT Tribal Preservation Department.
- If during construction operations, any human remains, funerary objects, sacred objects, or objects of cultural patrimony, as defined in the Native American Graves Protection and Repatriation Act (P.L. 101-601; Stat. 3048; 25 U.S.C. 3001), are discovered, the contractor shall cease operations in the immediate area of discovery, protect the remains and objects, and shall immediately notify the CSKT TPD (406.675.2700 ext. 1082) of the discovery by telephone with written confirmation. The contractor shall continue to protect the immediate area of the discovery until notified by the CSKT Tribal Preservation Department that operations may continue.

5.1 ADAPTIVE MANAGEMENT

The DOI has recently adopted an operational definition of adaptive management for the purposes of managing operational systems in the context of ecosystem management. Adaptive management is a decision process that promotes flexible decision-making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. As further noted below, careful monitoring of these outcomes both advances scientific understanding and helps adjust policies and operations as part of an iterative learning process. Adaptive management recognizes the importance of natural variability and emphasizes the idea of learning while doing. It provides resource managers with an active strategy for dealing with the uncertainties that characterize management of large natural ecosystems.

Article IV.G of the CSKT Water Compact establishes a Compact Implementation Technical Team for planning for and implementation of operational improvements, rehabilitation and betterment, and adaptive management regarding the FIIP. The project-specific actions related to the proposed Lower Jocko J Diversion Area Improvements are consistent with the adaptive management strategies included in Appendix 3.5 of the CSKT Water Compact.

Adaptive management would be a collaboration between the CSKT (general monitoring and managing the fisheries objectives) and BIA FIIP (generally monitoring and managing the irrigation objectives of the site). For example, CSKT would evaluate data from the long-term PIT tag monitoring system and use these data to evaluate the effectiveness of the rock ramp for passing fish of various species and life stages. In this example, the overshot gate operations could be adjusted through adaptive management to help optimize the hydraulic characteristics of the ramp to influence the passage effectiveness. Likewise, FIIP, as part of their long-term operations and maintenance at the site, may identify operational changes that improve the effectiveness of the irrigation facilities, such as changing the operations of the sluicing features to better manage sediment or adjusting the frequency of the air burst system to improve debris handling.

6.0 CONSULTATION AND COORDINATION

6.1 CONSULTATION

The following agencies were consulted with during the preparation of this EA.

- The CSKT TPD were consulted during the preparation of this EA, in accordance with Section 106 of the National Historic Preservation Act of 1966. A concurrence letter from TPD was provided on November 9, 2022.
- Consultation with the USFWS under Section 7 of the Endangered Species Act is complete. The USFWS issued a Biological Opinion on December 27, 2023, and reinitiated concurrence on North American wolverine on February 22, 2024.
- Coordination with USACE and Tribal Shoreline Protection Office occurred on June 26, 2023, regarding project permitting. CWA 404 and 401 authorization was received on August 2, 2024.

7.0 LIST OF PREPARERS

The following individuals contributed to the interdisciplinary analysis and/or review of the EA.

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Appendix A: Public and Agency Involvement

Appendix B: Project Plan Sheets

Appendix C: U.S. Fish and Wildlife Service Biological Opinion

Appendix D: Cultural Concurrence Letter