

### 3.8 Water Supply/Water Rights

This section describes the potential effects of the Proposed Project on surface water supply availability for existing water rights.

The potential for water supply impacts is an important concern for local residents in the area of the reservoirs and downstream in the Mid and Lower Klamath basins. Multiple comments were received during the NOP public scoping process relating to water supply and water rights (Appendix A). These comments were primarily concerned with the potential effects of dam and reservoir removal on water supply for water right holders. Specific concerns included: (1) reductions in water supplies for Klamath River diverters; (2) indirect impacts to water users on Klamath River tributaries, through potential higher bypass requirements to meet environmental needs; and (3) adverse impacts to water diversion infrastructure, including wells, downstream diversion facilities, and the City of Yreka's municipal water supply pipeline. See Appendix A for further summary of the water supply and water rights comments received during the NOP public scoping process, as well as the individual comments themselves. Potential impacts to private groundwater wells are addressed in Section 3.7 *Groundwater*.

#### 3.8.1 Area of Analysis

The Area of Analysis for water supply/water rights includes portions of the Upper, Middle, and Lower Klamath River from the California-Oregon border downstream to the river's mouth (Figure 3.8-1). The portion of the Upper Klamath River included in the Area of Analysis is along the Hydroelectric Reach and extends from the California-Oregon border to Iron Gate Dam. The Middle Klamath River extends from Iron Gate Dam downstream to the Trinity River confluence and the Lower Klamath River extends from the Trinity River downstream to the Klamath River's mouth. The Area of Analysis also includes portions of the Upper Klamath Basin located within California that receive water deliveries from the Klamath Irrigation Project (e.g., Tule Lake and Lower Klamath Lake).

Fall Creek is included in the Area of Analysis because the Proposed Project involves restarting hatchery operations there, and has the potential to impact the City of Yreka's Fall Creek diversions for municipal water supply. However, except for Fall Creek, the Area of Analysis does not include water rights on tributary rivers because water supply availability in these rivers is not affected by ceasing the non-consumptive hydroelectric power use under the Proposed Project, or by the Proposed Project's discharges.

Residents in the Scott and Shasta river basins raised concerns that removal of the hydroelectric facilities would reduce the water supply available for environmental purposes in the Klamath River mainstem, and that as a result, water diverters in tributaries to the Klamath will be curtailed to increase mainstem surface water flows. Please see Potential Impact 3.8-2 for a discussion of the limited use of hydroelectric project water to assist the USBR in meeting environmental flow obligations. Because the USBR maintains its biological opinion obligations regardless of the existence of the Lower Klamath Project, dam removal would not alter the amount of water available for environmental purposes, or the source of that water. Thus, there would be no water availability impact to tributaries to the mainstem Klamath River from implementation of the Proposed Project.

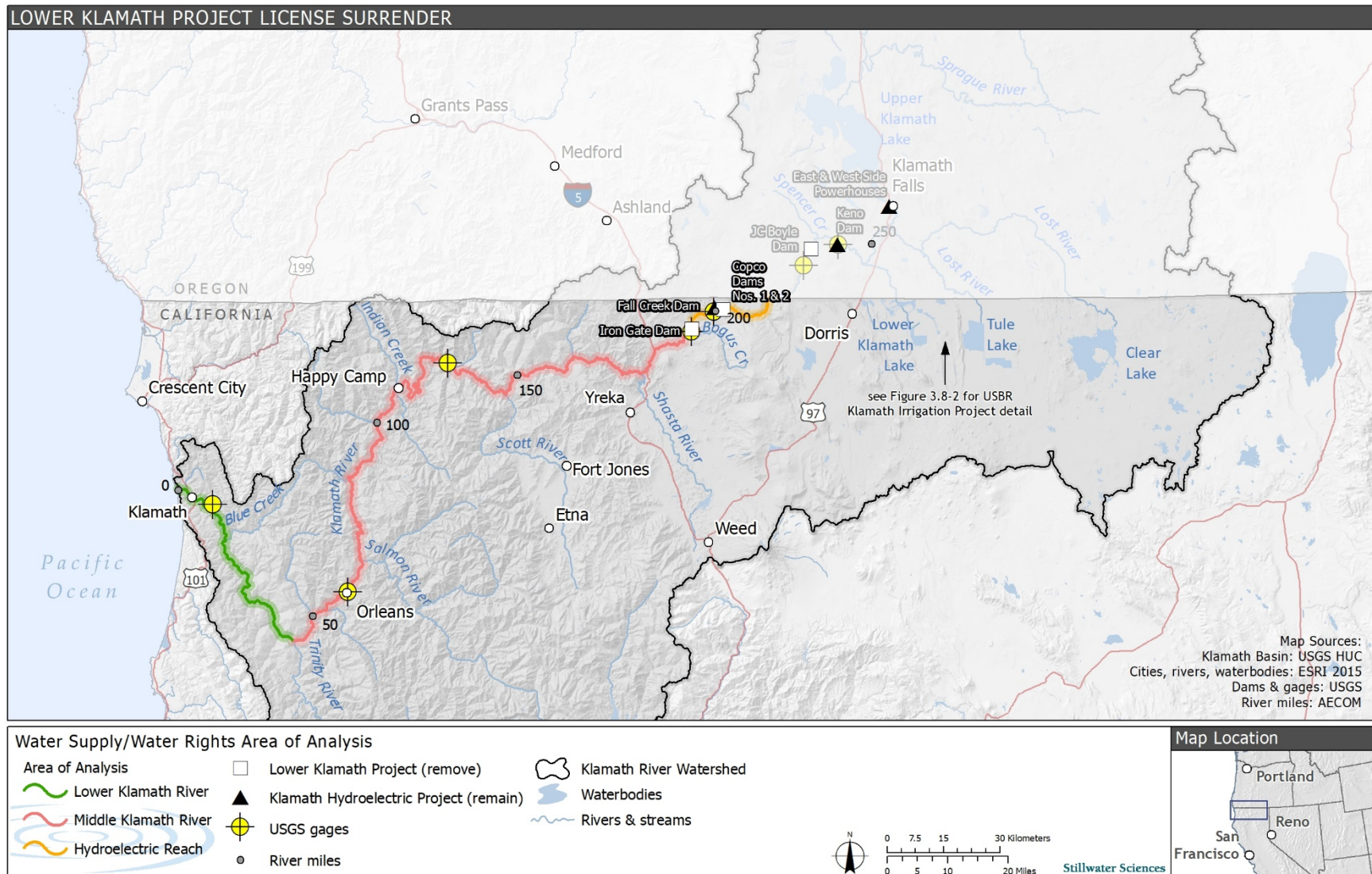


Figure 3.8-1. Water Supply/Water Rights Area of Analysis.

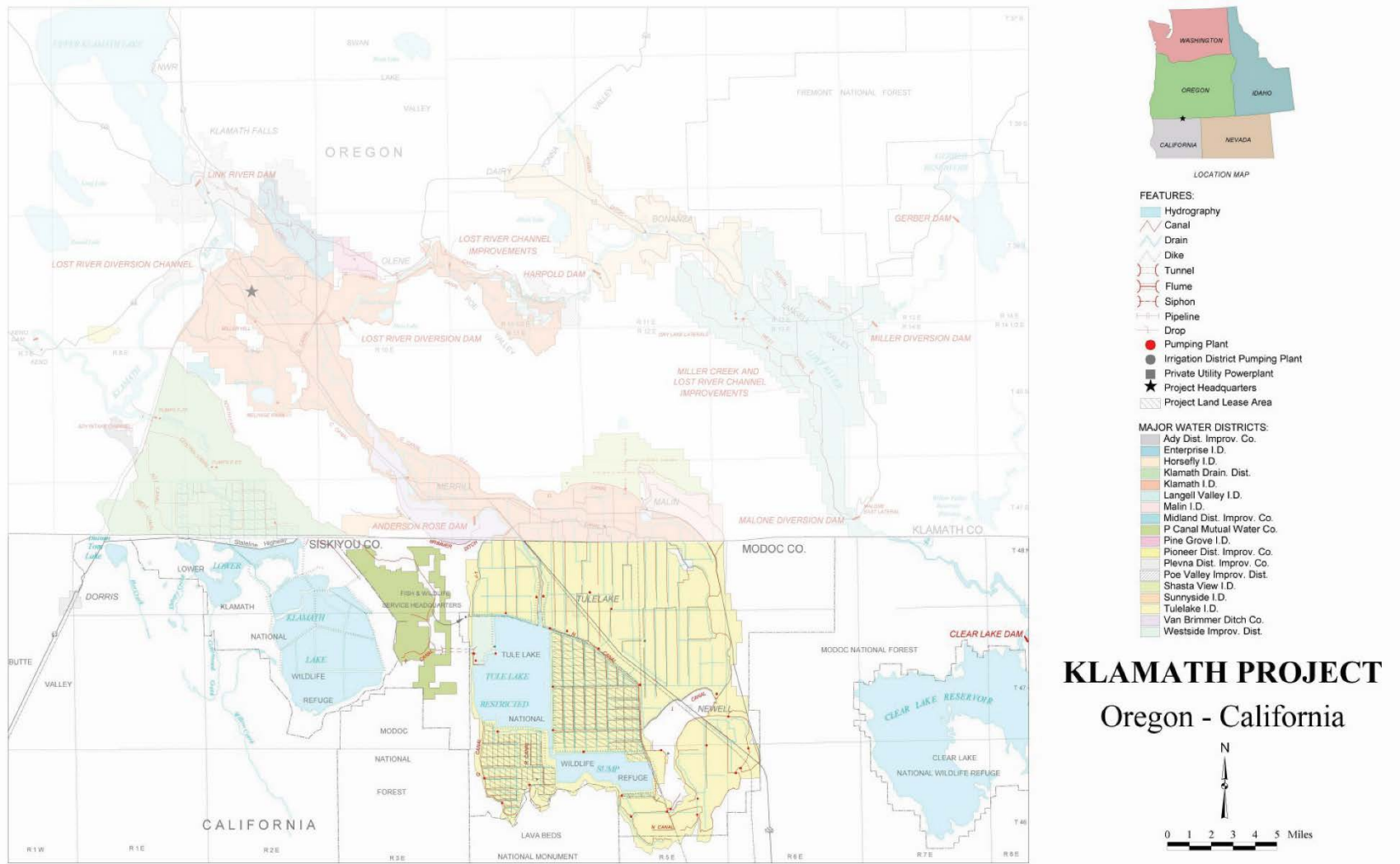


Figure 3.8-2. Water Supply/Water Rights Area of Analysis includes portions of the Klamath Irrigation Project within California. Source: USBR.

### 3.8.2 Environmental Setting

This section describes information related to existing water supply and water rights in the Area of Analysis. It also includes a brief introduction to the Upper Klamath Basin and the Klamath Irrigation Project, which delivers water from Oregon diversions to portions of California in the Upper Klamath Basin (e.g., Tule Lake and Lower Klamath Lake). This section includes a description of reservoir capacities, Biological Opinion (BiOp)-related water storage and release criteria, municipal water supply for the City of Yreka, and other water right holders along the Klamath River in the Area of Analysis.

#### 3.8.2.1 Upper Klamath Basin

The Corrected Findings of Fact and Order of Determination in the Klamath River Basin General Stream Adjudication (Oregon Department of Water Resources 2014), sets forth the water rights in the Upper Klamath Basin diverted in Oregon. The highest priority water rights in the adjudication are those of the Klamath Tribes', who maintain water rights with a time-immemorial priority to support hunting, gathering, and fishing on their reservation. The USBR's Klamath Irrigation Project stores and delivers a significant amount of water in a water supply project that includes Upper Klamath Lake, Lake Ewauna, Keno Dam, and a host of irrigation canals that connect the Upper Klamath River with the Lost River systems. Average annual Project supply as reported in 2000, prior to BiOp-related storage and flow release criteria, was approximately 350,000 acre-feet (USBR 2000). Project supply is now controlled by BiOp criteria and varies on a yearly basis. In 2017 Project supply was 340,000 acre-feet, and 310,000 acre-feet in 2018 (USBR 2018b). The Klamath Irrigation Project provides irrigation water to approximately 230,000 acres of agricultural land in southern Oregon and northern California, and also supplies water to the Lower Klamath and Tule Lake National Wildlife refuges in California and Oregon (Figure 3.8-2) (USBR 2018b). The USFWS "walking wetlands" program is currently in use in the Lower Klamath National Wildlife Refuge and involves rotating areas of agricultural production with areas of marsh or treatment wetlands on refuge lands to maintain both higher crop yields with lower inputs of fertilizers and pesticides and high-quality wetlands for wildlife (Stillwater Sciences et al. 2013).

The 2013 Joint Biological Opinion (2013 BiOp) for operation of USBR's Klamath Irrigation Project sets minimum lake and river hydrologic conditions to avoid jeopardizing the continued existence of ESA-listed species and adverse modification of designated critical habitat, while providing for delivery of water for irrigation purposes consistent with historical operations, subject to water availability. The 2013 BiOp includes two distinct operational approaches for water management for the fall/winter (October through February) and spring/summer (March through September) time periods (see sections 3.1.6 *Summary of Available Hydrology Information for the Proposed Project* and 3.6.2.2 *Basin Hydrology* for further details).

#### Lower Klamath Project

In addition to natural flows, flows through the Lower Klamath Project depend on water releases from Upper Klamath Lake by USBR, flows diverted to and returned from USBR's Klamath Irrigation Project's operations, the relatively small storage capacities of the Lower Klamath Project developments, and releases from Iron Gate Dam (FERC 2007). Approximately 98 percent of the available active surface water storage along the Klamath River is provided by Upper Klamath Lake behind Link River Dam. Keno, J.C.

Boyle, Copco No. 1, Copco No. 2, and Iron Gate reservoirs combined provide approximately two percent of the available active storage on the river. The State of Oregon has issued non-consumptive, hydropower water rights for J.C. Boyle reservoir. California has issued a water right license for diversion at Iron Gate Dam for power generation (1,800 cfs), hatchery operations (50 cfs), and refill of regulatory storage (3,300 cfs). PacifiCorp has filed statements of water diversion and use for pre-1914 direct diversion hydropower water rights for operation of the Copco No. 1 and Copco No. 2 facilities. Thus, none of the Lower Klamath Project facilities' water rights are for seasonal water storage or irrigation purposes. Appendix M contains more details and maps that display the water right locations.

### Fall Creek Water Rights

Four water rights are located on Fall Creek: two non-consumptive rights for hydropower generation at PacifiCorp's Fall Creek powerhouse, which is not part of the Proposed Project, one for the City of Yreka's municipal water supply, and one for fish propagation at the Fall Creek Hatchery (see Appendix M).

#### *City of Yreka*

The City of Yreka receives its municipal water supply from Fall Creek, a tributary to the Klamath River in the Upper Klamath Basin that is approximately 23 miles northeast of the city (see also Section 2.7.7 *City of Yreka Water Supply Pipeline Relocation*). California Water Rights Permit 15379 allocates to Yreka up to 15 cfs, not to exceed 6,300 acre-feet per year from Fall Creek, year round. During the diversion period, the City of Yreka must ensure a minimum flow of 15 cfs, or the natural flow of Fall Creek whenever it is less than 15 cfs, measured by a gage approximately 1,000 feet upstream of Daggett Road. The priority of this water right dates from August 12, 1966. Yreka's Fall Creek diversion was completed in 1969 and the municipal water systems facilities include: 1) two impoundments; 2) an intake structure with fish screens, a pump, and pre-treatment facility; 3) a cathodic protection field at the Fall Creek Campground and Day Use Boat Ramp; and 4) a 24-inch pipeline that crosses on the eastern upstream end of Iron Gate Reservoir.

#### *Fall Creek Hatchery*

The California Oregon Power Company (COPCO; now PacifiCorp) built Fall Creek Hatchery (FCH) in 1919 as compensation for lost spawning grounds due to construction of Copco No. 1 Dam. Six of the original rearing ponds remain and they were last used from 1979 through 2003. California State Water Board License 11681 authorizes CDFW to divert up to 10 cfs for non-consumptive, fish propagation use at Fall Creek Hatchery between March 15 and December 15 each year, not to exceed 5,465 acre-feet per year. The hatchery diverted 2 cfs during March through December from 2012 to 2017. The priority of this water right dates from January 5, 1979.

### 3.8.2.2 Mid and Lower Klamath Basins

The Area of Analysis in the Middle and Lower Klamath rivers includes only the mainstem of the Klamath River through these reaches (see Figure 3.8-1).

Generally, tributary discharge to the Klamath River increases substantially with distance downstream within the Mid and Lower Klamath basins, as described in Section 3.6.2.2 *Basin Hydrology*. The long-term average annual flow rate at Iron Gate Dam is approximately 1,970 cfs and is approximately 17,020 cfs at the mouth of the Klamath



River (USGS 2017). Like most rain and snow-pack-influenced basins in the western United State, the months of July through October generally have much lower flow than the winter and spring runoff months. Historical stream flows for the Klamath River are discussed in Section 3.6.2.2 *Basin Hydrology*.

### Klamath River Water Rights

In California, water diverters are required to file annual reports or statements of diversion and use with the State Water Board, which are accessible, *inter alia*, through the Electronic Water Rights Information Management System (eWRIMS). In addition to the hydropower water rights discussed above, a query of eWRIMS provided 44 water right records that list the Klamath River or a California Lower Klamath Project reservoir (i.e., Iron Gate, Copco No. 1, and Copco No. 2 reservoirs) as their water source. 41 water right listings are located downstream of Iron Gate Dam and three are located upstream of Iron Gate Dam (Table 3.8-1). Appendix M contains the query results and maps that display the documented locations.

Table 3.8-1. Summary of Water Right Listings from California's Electronic Water Rights Information Management System (eWRIMS) that list the Klamath River or One of the California Lower Klamath Project Reservoirs as the Water Source.

Type of Water Right Listings <sup>1</sup>	Number of Claims
<b>Statements of Diversion and Use</b>	
Active Claims (Claimed)	23
Inactive	9
<b>Post-1914 Appropriative</b>	
Licensed	3
Permitted	1
Small Domestic Registrations	2
State Filing Applications (Unassigned)	10

Source: California Electronic Water rights information Management System (eWRIMS) (State Water Board 2017)

Notes:

<sup>1</sup> Status Definitions:

**Active Claims (Claimed):** Riparian and pre-1914 appropriative rights predate the Water Commission Act that established the water rights permitting system, and the precursor to the State Water Board. Riparian rights exist due to ownership of parcels abutting a watercourse. Entities that hold either of these rights are not required to obtain a permit from the State Water Board.

**Inactive:** Claimed riparian or pre-1914 right that are currently unexercised.

**Licensed:** A license indicates that the conditions of development of the project is complete and diversion and use has occurred, as contemplated under the permit.

**Permitted:** A permit is an authorization that allows for the development of a project to divert and use water with due diligence, under permitted conditions.

**Registered:** Entities can register to divert and use a small amount of water from a stream for domestic purposes or the use of a small amount of water for livestock. In such cases, the use is registered with the State Water Board and must follow conditions set by the CDFW to protect fish and wildlife.

**State filing applications:** State filing applications are made by the State Water Board in trust for the people of California, in order to preserve water for future use and development consistent with a coordinated plan such as the State's Water Plan or a County General Plan. If "assignment" of the state filing application is requested and approved, an applicant to develop a water right may use the water right priority of the state filing, allowing the new project to be senior to certain existing diverters.

A total of 32 Statements of Diversion and Use, including the hydropower rights for Copco No. 1 and No. 2, of water were filed with the State Water Board; nine of which are currently inactive. Of these 32 rights, 18 belong to individuals, 13 to corporations, and one with an incomplete record. Statements of Diversion and Use include claims to riparian water rights as well as claimed pre-1914 appropriative water rights. The requirements for filing Statements of Diversion and Use apply to federal agencies, but do not apply to rights that do not involve a diversion, such as federal reserved rights for instream flow.

There are three licensed appropriative water rights in the Area of Analysis: one for PacifiCorp at Iron Gate Dam (1957); one for the Klamath River Country Estates Owners Association Inc. (1960); and one for an individual. The Klamath Community Services District holds one permitted appropriative water right from 1968, and there is one private Small Domestic Registration water right from 2006.

It is expected that each of the active water rights listings discussed above would, and some of the inactive listings could, have associated intake facilities to draw water from the Klamath River; however, the specific type, location, and layout of each of these intake facilities is unknown.

There are ten state filed applications on the mainstem Klamath River, four in Humboldt County and six in Siskiyou County. Such state filings are to preserve water for future use and development consistent with a coordinated plan such as the State's Water Plan or a County General Plan. State filings hold water in reserve for future needs, and have a priority based on the date of filing. The state filings on the Klamath River all have priority dates of 1956. The ten state filing applications have not been "assigned" yet, meaning that no one has proposed developing water under the rights and received permission to use the 1956 date of priority.

Two of the state filings in Siskiyou County are for storage and later application to beneficial use of 60,000 acre-feet per year at the current location of Iron Gate Dam. One is for power production, while the other is for irrigation, industrial, domestic, municipal, recreational, and fish and wildlife use in the Shasta Valley. No diversion infrastructure exists, or is planned for construction, involving these state-filed applications.

There is also a transient non-community public water system at the Randolph E. Collier rest area on Interstate 5, near the town of Hornbrook. This water system is regulated by the State Division of Drinking Water.

The Proposed Project would not affect the water supplies for these state filings or non-community public water system.

### **Federal Reserved Rights for Native American Tribes**

#### *Hoopa Valley Tribe and Yurok Tribe*

The Klamath River Reservation, consisting of a strip of land beginning at the Pacific Ocean and extending one mile in width on each side of the Klamath River for a distance of approximately 20 miles, was established by Executive Order in 1855. The Klamath River Reservation was established on Yurok ancestral lands. In 1876, a second executive order established the Hoopa Valley Indian Reservation, a 12-mile square area

southeast of the Klamath River Reservation, beginning at the confluence of the Klamath and Trinity Rivers, and bisected by the Trinity River. A third executive order in 1891 created an extended Hoopa Valley Reservation, which encompassed the original Hoopa Valley Indian Reservation, the Klamath River Reservation, and a strip down the Klamath River from the Klamath-Trinity confluence connecting the two original reservations. In 1988, Congress passed the Hoopa-Yurok Settlement Act, 25 U.S.C. 1300i et seq., which partitioned the extended reservation between the Hoopa Valley Tribe and Yurok Tribe, with the Yurok Reservation comprising the original Klamath River Reservation and the connecting strip, and the Hoopa Reservation comprising the original 12-mile square area. The federal courts have confirmed that the United States reserved fishing rights for the Hoopa Valley and Yurok tribes when it set aside reservations along the Klamath and Trinity Rivers. The Department of the Interior has found that the original orders setting aside the Hoopa Valley and Yurok reservations also reserved rights for instream flows sufficient to sustain fish within the reservations. Although there has been no formal adjudication to quantify and determine the priority of the Yurok and Hoopa Valley tribes' fishing-related water rights, the recognition of such rights is consistent with the federal precedent set in *United States v. Adair*.

### 3.8.3 Significance Criteria

Impacts to water supply and/or water rights would be considered significant if they result in the following:

- Causing unreasonable injury to existing water rights<sup>137</sup>.
- Decreasing water supplies beyond what is needed for public health and safety (human consumption, cooking, and sanitation) for the current population.

In determining the criteria for significance, the lead agency looked to applications of the No Injury Rule and the reasonableness standard in California water law, to the California Constitution Article X, section 2, and to human right to water (Water Code, section 106.3). The assessment of the Proposed Project's effects on Safe Drinking Water Act requirements is presented in Section 3.2 *Water Quality*. The assessment of the effects of the Proposed Project on fire suppression is presented in Section 3.17 *Public Services* and Section 3.21 *Hazards and Hazardous Materials*.

### 3.8.4 Impacts Analysis Approach

The impacts analysis of water supply and water rights discusses the potential impacts of the Proposed Project to river flows and water diversions throughout the Area of Analysis, and whether these impacts could affect existing water rights or water supplies. The analysis is based on flow rates and water supply delivery data from the hydraulic modeling completed by USBR (2012), along with the methods and assumptions that were utilized in the model. USBR applied a one-dimensional HEC-RAS model using historical flow data as input to the model. The modeling compared river flow rates, assuming KBRA flows, for the Proposed Project and the No Project Alternative. The model's average daily instream flow data help describe how the flows would change under each alternative. USBR used these data to assess whether changes to instream flows as a result of the Proposed Project would be adequate to meet water rights and

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<sup>137</sup> An existing water right is one that was in existence at the time of the Notice of Preparation.



water supply requirements. USBR (2012) also compared water supply diversions to baseline conditions and water rights to determine impact significance.

The 2013 BiOp changed the flow regime under which dam removal would occur (i.e., KBRA flows are no longer anticipated). However, the differences in hydrology between KBRA and 2013 BiOp flows are minor (see Section 3.1.6 *Summary of Available Hydrology Information for the Proposed Project*, for further details regarding KBRA and 2013 BiOp flows) and thus do not affect the analysis of future water supply or water rights under the Proposed Project.

Evaporation from the surface of the Lower Klamath Project reservoirs under existing conditions is approximately 11,000 acre-feet/year, and after dam removal evapotranspiration in the same reaches is expected to be approximately 4,800 acre-feet/year, resulting in a gain in flow to the Klamath River of approximately 6,200 acre-feet/year (USBR 2012). The increase in flow is equal to approximately 8.5 cfs on average over a year or approximately 0.4 percent of the average annual Klamath River flow measured downstream of Iron Gate Dam (USGS Gage No. 11516530) between 1961 and 2017. At this point it is speculative where this additional water will be available in the basin. If no change were to be made to the 2013 BiOp for the Klamath Irrigation Project, the additional water would become available to Klamath Irrigation Project operations, and not impact downstream flows. However, the 2013 BiOp is currently under review, and is scheduled for additional review upon implementation of the Proposed Project. It is unclear whether ongoing or planned revisions to the BiOp will change streamflow requirements in light of this additional water availability, and where the measured points of compliance for river flow will be absent Iron Gate Dam (making it unclear whether the additional water will accrue to the system above or below such compliance points). Therefore, while noting the anticipated increase in available water, this EIR does not apply the additional water being made available to any particular use or reach.

The following sources were assessed to determine the scope of existing local plans and policies relevant to the Proposed Project:

- Del Norte County General Plan (Mintier & Associates et al. 2003):
  - Section 1 Natural Resources/Conservation
    - Water Resources Policies: 1.B.5,
  - Section 7 Public Facilities and Services
    - Water Supply and Delivery Policies: 7.B.1, 7.B.3, 7.B.4, 7.B.5, 7.B.8
- Humboldt County General Plan for Areas Outside of the Coastal Zone (Humboldt County 2017):
  - Chapter 11 Water Resources Element
    - Water Resources and Land Use Policies: WR-P1, WR-P2, WR-P3, WR-P4, WR-P5, WR-P6, WR-P7, WR-P8, WR-P9, WR-P10, WR-P11, WR-P12, WR-P14, WR-P18, WR-P21
    - Watershed Planning Policies: WR-P22, WR-P23, WR-P24, WR-P25
    - Public Water Supply Policies: WR-P26, WR-P27
    - Water Exports Policies: WR-P29, WR-P32, WR-P33, WR-P34
    - Water Resources and Land Use Standards: WR-S1, WR-S2, WR-S3, WR-S5

- Water Exports Standards: WR-S12
- Siskiyou County General Plan (Siskiyou County 1980)
  - Chapter 3 Land Use Policies
    - Wildfire Hazard Policies: 30

Most of the aforementioned policies and standards are stated in generalized terms, consistent with their overall intent to protect water supply resources and water rights. By focusing on the potential for impacts to specific water supply and water rights issues within the water supply/water rights Area of Analysis, consideration of the more general local policies listed above is inherently addressed by the specific, individual analyses presented in Section 3.8.5 *Potential Impact and Mitigation*; and the more general local policies are not discussed further.

### 3.8.5 Potential Impacts and Mitigation

**Potential Impact 3.8-1 Dam removal could change the amount of surface water flow available for diversion under existing water rights in the mainstem Klamath River within the Hydroelectric Reach and downstream from Iron Gate Dam.**

#### *Hydroelectric Reach*

PacifiCorp has three water rights on the Klamath mainstem upstream of Copco No. 1 Reservoir for irrigation and stock watering.

As noted above, there are five water rights associated with the Lower Klamath Project. Three PacifiCorp Statements of Water Diversion and Use are associated with hydropower and associated reservoirs at Copco No. 1 and Copco No. 2 facilities. PacifiCorp has a water right license at Iron Gate Dam for diversions from the Klamath River that include 1,800 cfs for power generation, 50 cfs for fish propagation facilities, and 3,300 cfs to refill regulatory storage space in Iron Gate Reservoir. Additionally, PacifiCorp has a Statement of Diversion and Use at Iron Gate Dam of 48 cfs for fish culture. Under the Proposed Project, power generation and associated water storage at Copco No. 1, Copco No. 2, and Iron Gate reservoirs would cease, such that the prior water supply requirements for these activities would no longer be needed. Because hydropower water rights are non-consumptive, ceasing to use the water for power production purposes would not have a water supply availability impact for downstream users.

As part of the Proposed Project, the Reservoir Area Management Plan includes restoration actions that would utilize Klamath River water for short-term (i.e., during dam removal year 2 and 1–5 years following dam removal) irrigation of riparian revegetation areas in the Lower Klamath Project reservoir footprints (Appendix B: *Definite Plan-Appendix H* and Section 2.7.4 *Restoration Within the Reservoir Footprint*). The water supply to meet irrigation needs would be the short-term exercise of riparian rights available to the KRRC as the owner of the property at the time of the diversion. Evapotranspiration (ET) of the planted riparian species represents the consumptive water loss associated with revegetation irrigation. Evapotranspiration data from a regional USBR AgriMet station (USBR 2018a), correlated to the Iron Gate and Copco No. 1 reservoirs area using a local weather station, provide a range of reasonable ET rates (i.e., 0.075 to 0.142 ft/day) for riparian species proposed for planting. Based on this calculation, an equivalent of up to approximately 2-4 cfs would be lost due to ET in the irrigated riparian revegetation areas at Iron Gate and Copco No. 1 reservoirs during

the April through October irrigation season. This loss due to ET represents a 0.22 to 0.44 percent reduction in water supply available to water right holders downstream of Iron Gate Dam, and therefore would not be a significant impact.

Water supply for fish propagation and fish culture would continue to be required for eight years following dam removal, but would require changes in diversions due to the removal of Iron Gate Reservoir. Currently 50 cfs is diverted from Iron Gate Reservoir for use at the Iron Gate Hatchery. Under the Proposed Project, up to 8.75 cfs of water would be diverted from Bogus Creek to operate Iron Gate Hatchery at reduced production levels. Up to 9.25 cfs of water would be diverted from Fall Creek (downstream of the City of Yreka's intake) to reopen and operate Fall Creek Hatchery (Section 2.7.6 *Hatchery Operations*). The diverted water would be returned to Fall Creek either at a proposed new settling pond location or at the fish ladder on the downstream side of the hatchery. Water diverted from Bogus Creek would be under riparian rights (Appendix B: *Definite Plan*). The Fall Creek Hatchery diversion would be under CDFW's existing appropriative water right for 10 cfs and riparian rights. The water diverted for hatchery use is non-consumptive, and therefore would not change the amount of water available for diversion downstream of the point of return for the waters. For either hatchery diversion, there are no other water users between the point of diversion and the point of return.

#### *Middle and Lower Klamath River*

Using historical flow data to create a set of flows under future operational prescriptions, USBR (2012) compared modeled surface water flow rates at Iron Gate Dam under the Proposed Project to a dams-in scenario. Modeling results indicate that under the Proposed Project, average monthly flows in the Klamath River just downstream of Iron Gate Dam would only slightly increase or decrease (typically less than approximately 15 percent) depending on month and water year type, compared to existing conditions. The anticipated small relative changes in Klamath Rivers flows are due to the fact that the Lower Klamath Project reservoirs were not designed, nor are they operated, as seasonal storage reservoirs for maintaining downstream flows for irrigation or drinking water diversions. As a whole, the Lower Klamath Project is primarily operated as a run-of-the-river operation, with inflows essentially matching outflows below Iron Gate Dam. Thus, the Lower Klamath Project has only a small effect on daily, monthly, seasonal, or annual flow conditions downstream of Iron Gate Dam. USBR (2012) modeling results indicate that at Seiad Valley, approximately 62 river miles downstream of Iron Gate Dam, surface water flow rates under the Proposed Project would be nearly identical to those under existing conditions.

Under existing conditions, flow rates just downstream from Iron Gate Dam are the lowest within the Middle and Lower Klamath River and therefore provide a conservative estimate of available water supply when comparing to downstream diversion amounts. The monthly diversion flow rate associated with all of the active and inactive water rights in the Middle and Lower Klamath River, aside from the reserved (but unassigned) state filings and PacifiCorp's Iron Gate power diversion water rights, is approximately 69 cfs (based on water right information in Appendix M). The vast majority of water is diverted in the reach between Iron Gate Dam and Seiad Valley, where during summer months

(i.e., July–August), usage typically doubles<sup>138</sup>, resulting in an estimated peak short-term diversion of approximately 138 cfs if all users doubled their water diversion rate during the same period. This estimate of peak flow diversion would likely be lower during wetter water years, since not all users would be likely to divert the maximum amount during summer months. Comparing the peak potential diversion flow (138 cfs) to the low-flow condition of a dry water year type immediately downstream of Iron Gate Dam (900 cfs, or a 90 percent exceedance flow per the 2013 BiOp), the diversions would represent approximately 15 percent of Klamath River flows in the upstream portion of this reach under the Proposed Project. Because the amount of flow diverted for water rights users between Iron Gate Dam and Seiad Valley would be relatively small (i.e., approximately 15 percent of the flow in the Klamath River in the upstream portions of this reach during dry years with low-flow conditions), water right users are not likely to be injured. Additionally, there would be no lack of water availability for public health purposes due to limited flow diversion capacity resulting from flow changes as part of the Proposed Project.

Note that the USBR (2012) modeling effort assumed KBRA flows, rather than the 2013 BiOp flows under which the upstream Klamath Irrigation Project (and hence the Lower Klamath Project) currently operates. Compared to KBRA flows, the 2013 BiOp slightly increases the annual average water supply by about 9,000 acre feet. During summer months (July and August) in dry years, the 2013 BiOp requires a higher minimum flow of 900 cfs at Iron Gate Dam, compared to 824 cfs under KBRA (see also Section 3.1.6 *Summary of Available Hydrology Information for the Proposed Project*). Overall, the hydrologic differences between KBRA flows and those implemented under the 2013 BiOp are small, decrease the relative effect of other diversion in the river in summer, and do not change the assessment of Proposed Project impacts on surface water flows available for diversion under existing water rights in the Klamath River downstream of the Oregon-California border. Furthermore, under the No Project alternative, flow releases would still be controlled by the 2013 BiOp, and therefore, the same quantity of Klamath River flow would be available for downstream water rights.

During the extreme drought of 2014–2016, PacifiCorp coordinated late-2014 releases from Iron Gate and Copco No. 1 dams (see also Potential Impact 3.8-2), which provided a small degree of flexibility for managing irrigation water in the Upper Klamath Basin by allowing USBR to postpone releasing water for environmental purposes at Keno Dam (USBR 2018c). This had the effect of making approximately 15,400 acre-feet of additional irrigation water available for water users in the Klamath Irrigation Project, including users in California (although the diversions themselves occur in Oregon). A comparable water borrowing arrangement between PacifiCorp and USBR for approximately 20,000 acre-feet also occurred in 2018. It is unclear if comparable water borrowing would occur in the future due to multiple constraints detailed by USBR (2018c), and further discussed below in Potential Impact 3.8-2. However, and as previously stated in Section 3.8.1 *Area of Analysis*, removal of the Lower Klamath Project dams would not affect USBR's central role in providing BiOp flows to the Klamath River and would not place flow obligations on small agricultural diverters in tributaries to the Klamath River.

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<sup>138</sup> The increase during July and August is an average based on permitted diversion amounts and reported values on Statement Diversion and Use forms available on eWRIMS for the Klamath River.

### Significance

#### *No significant impact*

**Potential Impact 3.8-2 Dam removal could change the amount of surface water flow available for diversion from Upper Klamath Lake and/or Keno Reservoir to California water users in the USBR Klamath Irrigation Project.**

As described in Potential Impact 3.8-1 and Section 3.8.2 *Environmental Setting*, PacifiCorp has claimed pre-1914 water rights for hydropower production at Copco No. 1 and Copco No. 2 dams, and a water right license for diversion at Iron Gate Dam for hydropower, fish propagation, fish culture, and refilling regulatory storage space. Neither the Statements of Diversion and Use nor the Iron Gate Dam license include seasonal storage or irrigation use. However, two times in recent years, PacifiCorp has agreed to operate its hydropower projects in a manner that supports increased irrigation deliveries to the Klamath Irrigation Project.

In the fall of 2014, PacifiCorp agreed to release approximately 15,400 acre-feet of water from Iron Gate and Copco No. 1 reservoirs to assist USBR in meeting requirements of the 2013 BiOp (USBR 2014). This water was then repaid from storage in Upper Klamath Lake in February and November of 2015. Release of the 15,400 acre-feet from Iron Gate and Copco No. 1 reservoirs extended irrigation water supply to Klamath Irrigation Project water users during severe drought conditions (USBR 2014).

In April 2018, USBR coordinated with NMFS, USFWS, PacifiCorp, Klamath Basin Tribes, water users, and other stakeholders regarding the temporary release of approximately 10,000 acre-feet from the Lower Klamath Project reservoirs, in order to enable charging of Klamath Irrigation Project irrigation canals in late April and May without violating 2013 BiOp requirements for Upper Klamath Lake elevation or Klamath River flow below Iron Gate Dam. An additional 10,000 acre-feet was released from the Lower Klamath Project reservoirs in late-May to allow for continued Klamath Irrigation Project deliveries without violating 2013 BiOp requirements (USBR 2018c).

The aforementioned releases did not result in a change to Klamath River flows or water supply downstream of Iron Gate Dam since USBR is obligated under the 2013 BiOp to release the water into the Klamath River. If PacifiCorp had not released the flows from Iron Gate and Copco No. 1 reservoirs in the fall of 2014 and spring of 2018, then USBR would have released the flows at Keno Dam and the water would have traveled downstream through the Lower Klamath Project reservoirs to be discharged at Iron Gate Dam, regardless.

Ultimately, precipitation, irrigation needs, and the 2013 BiOp flow requirements determine the amount of surface water flow available for diversion from Upper Klamath Lake and/or Keno Reservoir to the USBR Klamath Irrigation Project. During extreme dry years, any reduction in available water for existing water rights would result in additional water being drawn from Upper Klamath Lake until lake levels drop to 4,137.72 feet (1,261.5 meters), at which point USBR would adjust water deliveries to the Klamath Irrigation Project to prevent the lake elevation from dropping below that value (NMFS and USFWS 2013). Decreased water supply caused by such an adjustment would potentially result in reduced deliveries to Klamath Irrigation Project water users (irrigators and wildlife refuges in Oregon and California).

The Lower Klamath Project has no obligation to apply the water stored in its reservoirs to meeting USBR's 2013 BiOp requirements, and PacifiCorp has indicated that any future borrowing of water from Lower Klamath Project reservoirs would be predicated upon a definitive, rapid refill schedule, and compensation to PacifiCorp for the value of lost power generation due to reduced Lower Klamath Project reservoir capacity, both of which limit the benefit to USBR of borrowing water from the Lower Klamath Project. This places uncertainty as to whether the water-borrowing operation that has occurred in two years since implementation of the 2013 BiOp will continue. Additional uncertainty comes from potential necessary changes to water rights to accommodate more than sporadic emergency use of the reservoirs for other than hydroelectric purposes. Despite the stated limitations of borrowing water from the Lower Klamath Project reservoirs, and the uncertainty of what, if any, permissions would be necessary to affect regular implementation of the operations, dam removal under the Proposed Project would preclude the potential option of utilizing the Lower Klamath Project reservoir water supply to help meet 2013 BiOp flow requirements and thereby extend the available water supply to the USBR Klamath Irrigation Project.

Most Klamath Irrigation Project deliveries are to users in Oregon; however, some users, including agricultural users, wildlife refuges, and a combination of these two users in the "walking wetlands" program, are in California. There could be times in which users in California—agricultural users, wildlife refuges, or both—are next in line for the water in a year that Lower Klamath Project operators could make it available under a comparable water borrowing operation as described above. Additionally, users in California benefit from runoff from Klamath Irrigation Project deliveries in Oregon portions of the Lost River Sub-Basin. Water users in California often turn to groundwater pumping in times of surface water shortages. The Tulelake Basin is designated a medium priority basin under the Sustainable Groundwater Management Act (SGMA), in part because of declining groundwater levels and high volume groundwater extractions (DWR 2014). Under SGMA, the basin must be managed under a groundwater sustainability plan by January 31, 2022 (Wat. Code, § 10720.7, subd. (a)(2)). Thus, groundwater may become limited as an alternative source in the future, as the basin adjusts to sustainable pumping levels. Additionally, dry year groundwater pumping may be financially infeasible for wildlife refuges and some farms. Therefore, for some California users in some years in which Lower Klamath Project owners could have chosen to coordinate supplies, there may be less water available with dam removal than otherwise. Despite this minor chance of a reduction, there would be no legal injury to the Klamath Irrigation Project users because the Lower Klamath Project operators are not required to temporarily supplement water deliveries, per the 2013 BiOp flow requirements. Additionally, there is no indication that water would not be available for public health purposes, absent supplementation of Klamath Irrigation Project available water.

### Significance

*No significant impact*

#### **Potential Impact 3.8-3 Release of stored sediment during reservoir drawdown could change Klamath River geomorphology and affect water intake pumps downstream from Iron Gate Dam.**

Reservoir drawdown would release the sediment stored behind the Lower Klamath Project dams into downstream reaches of the Klamath River. Reservoir drawdown activities would begin on January 1 of the drawdown year at J.C. Boyle, Copco No. 2, and Iron Gate dams and on November 1 of the year prior at Copco No. 1 Dam (see



Section 2.7.2 *Reservoir Drawdown*). During this period, individual downstream intake facilities could be affected by fine sediment deposits, causing operational problems. USBR (2012) conducted modeling of the reservoir drawdown and erosion of reservoir sediment. The released sediment would likely exceed the carrying capacity of the river during some water year types, and would result in sedimentation and particle settling in slow-moving downstream areas. However, the fine fraction of the released sediment (silt and clay) would not be expected to deposit in substantial amounts in the river channel. The majority of this material would be transported to the ocean and would not interact substantially with the river bed (see also Section 3.11.5 [*Soils, Geology, and Mineral Resources*] *Potential Impacts and Mitigation*)

If drawdown occurred in a dry year, deposition of sands and coarser sediment would be expected in the reach from Iron Gate Dam to as much as eight miles downstream from the dam, near the confluence with Cottonwood Creek (see also Potential Impact 3.11-5). The amount of sediment deposition would decrease with distance from Iron Gate Dam. Little to no sediment deposition is expected in the reach between J.C. Boyle Dam and Copco No.1 Reservoir (USBR 2012). There are 15 water rights registered on the reach from Iron Gate Dam to Cottonwood Creek: five are listed as inactive, two are state filings with the State Water Board, and two are associated with PacifiCorp's Iron Gate Dam facility and fish hatchery. There are no facilities for the state filings, and the Iron Gate Dam diversions would cease under the Proposed Project. The remaining six water rights are associated with domestic, irrigation, and/or fire protection use. There is the potential for intake facilities for the active and inactive water right diversions to be affected by sediment deposition, although there is insufficient information on exact intake facility configuration and too much uncertainty in the modeling to determine whether any particular diversion will be affected.

The analysis of potential sediment impacts to water intake pumps considered the results of detailed hydraulic, hydrologic, and sediment transport modeling (USBR 2012); however, even small deviations in localized sediment deposition at a site could affect the ability to use diversion facilities, which could result in injury to an existing water right or decrease water supplies beyond what is needed for public health and safety. This would be a significant impact. Implementation of Mitigation Measure WSWR-1 would reduce the potential for this impact to occur because it requires identification of impacts reported by water rights holders following dam removal and replacement of affected water supplies.

#### **Mitigation Measure WSWR-1 – Water Supply Monitoring and Management**

The KRRC shall identify all points of diversion on the Klamath River listed in the Electronic Water Rights Information Management System (eWRIMS). The KRRC shall contact all water rights holders with points of diversion on the Klamath River prior to drawdown of the reservoirs to determine whether the water right holder is interested in working with the KRRC to evaluate potential Proposed Project impacts to the water right holder. If potential impacts are identified, the KRRC shall provide temporary accommodations (e.g., replacement water, settling basins, etc.) to address them. During and following dam removal, the KRRC shall investigate any impacts reported by a water right holder. If the investigation confirms an adverse impact has occurred as a result of dam removal, the KRRC shall immediately provide any necessary replacement of water for health and safety for domestic or municipal diversions, and promptly implement measures to reduce impacts and allow the water right holder to divert water in the same manner (e.g., amounts, suitable quality, and timing) as before dam removal.

Prior to and annually for the first two years following drawdown, the KRRC shall submit a report to the State Water Board on implementation of the activities described above.

### Significance

*No significant impact with mitigation*

#### **Potential Impact 3.8-4 Relocation of the City of Yreka water supply pipeline after drawdown of Iron Gate Reservoir could affect water supply.**

The existing water supply pipeline for the City of Yreka passes under the Iron Gate Reservoir and would have to be relocated prior to the decommissioning of the reservoir to prevent damage from deconstruction activities or increased water velocities once the reservoir has been drawn down. Three alternatives have been developed for proposed modifications to the pipeline (see Section 2.7.7 *City of Yreka Water Supply Pipeline Relocation*). The alternatives all include a new pipeline that would be tunneled under the river bed, suspended along an existing road bridge, or suspended along a new utility bridge. The KRRC would determine the preferred alternative in consultation with the City of Yreka (Appendix B: *Definite Plan*). Based on the Detailed Plan for Dam Removal (USBR 2012a), the existing flat panel fish screens for the water supply intakes at Dams A and B on Fall Creek may not meet current regulatory agency screen criteria for anadromous fish. While the fish screens have recently been updated, their compliance to NMFS, USFWS, and CDFW screen criteria for anadromous fish still needs to be confirmed. These fish screens would require updates, if found to be non-compliant (Appendix B: *Definite Plan*). Regardless, the water quantity and quality diverted from Fall Creek would not change. During connection of the new pipeline, the KRRC anticipates that the existing pipeline would be disconnected for less than 12 hours during the winter season. The available water in storage is able to supply the City of Yreka for up to 60 hours during the winter (see also Appendix B: *Definite Plan*). However, because the exact plans for pipeline re-routing are incomplete, it is not possible to determine the reasonableness of the assumed timeframe for pipeline disconnection. If the disconnection were to cause a supply interruption, this would constitute a significant impact. Implementation of Mitigation Measure WSWR-2 would reduce this potential impact to less than significant.

#### **Mitigation Measure WSWR-2 – City of Yreka Water Supply.**

Prior to initiating drawdown of the Lower Klamath Project reservoirs, the KRRC shall construct a new, fully operational replacement pipe for the City of Yreka's current water supply pipeline for the section of pipe that crosses Iron Gate Reservoir. The new replacement pipeline section shall be connected to the existing City of Yreka water supply pipeline and installed in a location that prevents river flows during and after drawdown from affecting the City of Yreka's water supply.

Any work the KRRC undertakes to ensure that the City of Yreka water supply intakes' screens comply with fish screen criteria shall be completed within the water delivery outage period specified above.

Except as provided in this Mitigation Measure, the KRRC shall ensure uninterrupted water supply during replacement of the pipeline section, any required intake screen modifications, and throughout Project implementation. A short water delivery outage is necessary to make the final connections following construction of the new pipeline. The KRRC shall limit the water delivery outage to a maximum of 12 hours, unless the KRRC

receives prior approval for a longer outage from the State Water Board, based on detailed information that the outage proposed will not interfere with City of Yreka's ability to supply water. The KRRC shall coordinate the water delivery outage period with the City of Yreka to ensure the City of Yreka has an adequate supply of water stored to cover the maximum water delivery outage period, with adequate buffer.

#### Significance

*No significant impact with mitigation*

**Potential Impact 3.8-5 Removal and potential replacement of recreational facilities currently located on the banks of the existing reservoirs could affect water supply and/or water rights.**

The existing recreational facilities provide camping, fishing, and boating access for recreational users of the reservoirs and currently do not use surface water supplies. Once the reservoirs are drawn down, these facilities would be removed. The Proposed Project (Appendix B: *Definite Plan – Section 7.6.5*) includes the potential for new whitewater boating put-in/take-out sites and fishing access sites. Since these uses are similar to the sites being removed, they are likely also not to require surface water supplies. To the extent that there was water provided for public use at the recreational sites, such use would likely be *de minimus*.

#### Significance

*No significant impact*

### 3.8.6 References

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