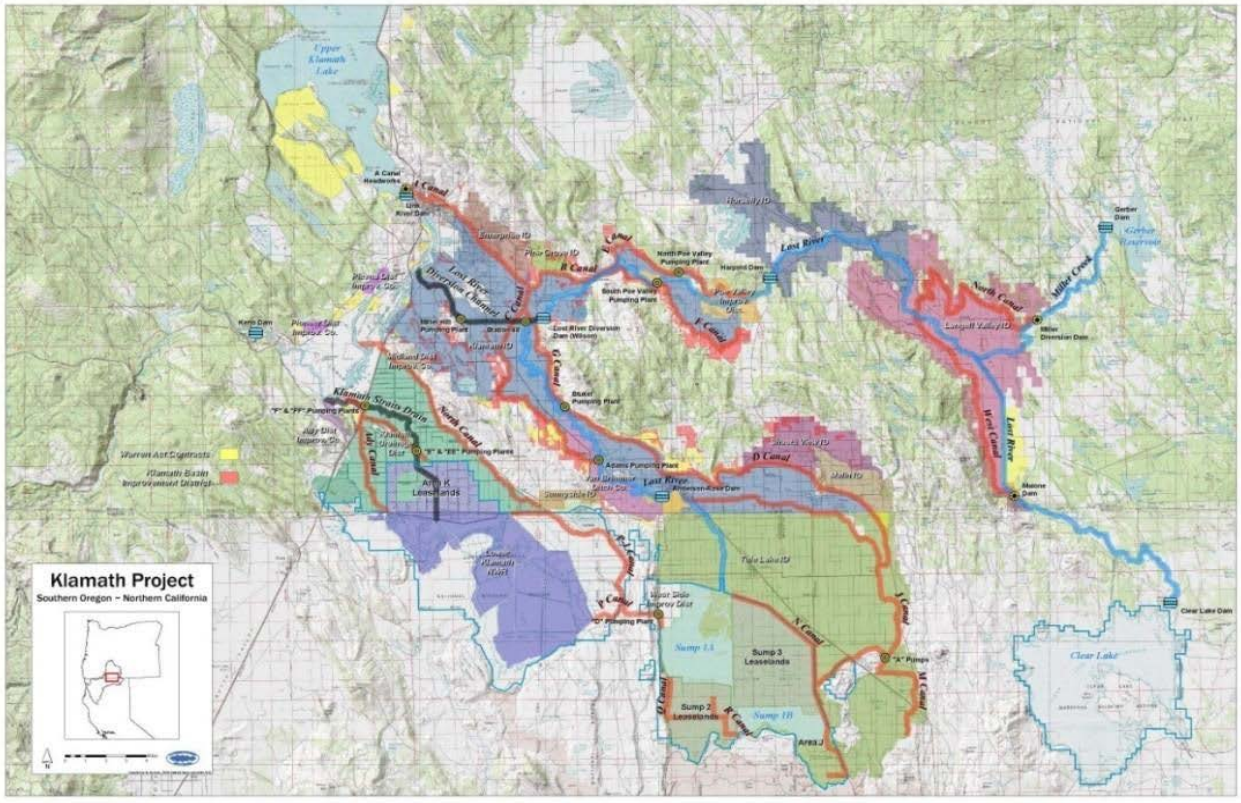
RECLAMATION

Managing Water in the West

Final Environmental Assessment

Contracts for Conveyance of Non-Project Water through Klamath Project Facilities

Oregon and California
2018-EA-005



U.S. Department of the Interior
Bureau of Reclamation
Mid-Pacific Region
Klamath Basin Area Office

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Mission Statements

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water related resources in an environmentally and economically sound manner in the interest of the American public.

List of Acronyms Abbreviations

CFR	Code of Federal Regulations
CWA	Clean Water Act
EA	Environmental Assessment
ESA	Endangered Species Act
GHG	Greenhouse Gases
ITAs	Indian Trust Assets
KBAO	Klamath Basin Area Office
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NWRs	National Wildlife Refuges
OWRD	Oregon Water Resources Department
Project	Klamath Project
QAPP	Quality Assurance Project Plan
Reclamation	Bureau of Reclamation
USFWS	United States Fish and Wildlife Service

Contents

Chapter 1 Introduction and Background

1.1 Introduction

The Bureau of Reclamation (Reclamation), Klamath Basin Area Office (KBAO) is proposing to enter into contracts with districts and/or individual water users within the existing Klamath Project (Project) service area to convey non-Project water (groundwater) through Project facilities (see map in Appendix A). Groundwater produced and used for irrigation purposes within the Project is termed "non-Project water" because it constitutes water that has not been reserved, withdrawn, appropriated or acquired by, or apportioned to, the United States, nor decreed, permitted, certified, licensed, or otherwise granted to the United States, for use in connection with the Project. The use of Project facilities to convey non-Project water will allow Project water users to utilize Project facilities to transport privately owned and state regulated groundwater water supplies. In issuance of these contracts, Reclamation is in no way authorizing or advocating groundwater pumping. Excess capacity contracts merely give contractors a method to utilize Reclamation facilities to transport non-Project water that is regulated by their respective state for private use.

The amount of conveyance capacity available under such contracts would be limited to: (1) the amount of non-Project water a given contractor has legal right to, as determined by the applicable state; and (2) the extent excess capacity is actually available in Project facilities for conveyance purposes. The proposed contracts would be for a term of between one and five years, expiring no later than 2022.

The proposed contracts have specific terms and conditions consistent with Federal and state law, and Reclamation policies and directives. The proposed contracts require and include a process where the use of non-Project water must be verified to be compliant with state law and restrictions. The proposed contracts also make the use of Project facilities to convey non-Project water subject to certain conditions intended to protect the environment such as water quality testing and monitoring, and to ensure that the authorized conveyance is consistent with state law as it pertains to third-party impacts.

This Environmental Assessment (EA) evaluates the potential effects of the proposed contracting and monitoring activities. This analysis describes the existing environmental resources in the area where the contracts and monitoring would be implemented, evaluates the potential effects of the No Action and the Proposed Action Alternatives on these resources, and proposes measures to avoid, minimize, or mitigate adverse effects, if any, for the Proposed Action Alternative.

The EA has been prepared in accordance with the National Environmental Policy Act (NEPA) (42 U.S.C. §4321 et seq.), the Council on Environmental Quality Regulations for implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations (CFR) Parts 1500-1508), and the Department of the Interior regulations for the Implementation of the NEPA (43 CFR Part 46). If there are no significant environmental impacts identified as a result of the analyses, a

Finding of No Significant Impact can be developed and signed to complete the NEPA compliance process.

1.2 Background

Authorized by the Secretary of the Interior on May 15, 1905, pursuant to the Reclamation Act of 1902 (32 Stat. 388), the Project provides surface water for irrigation and related purposes to approximately 230,000 acres in southern Oregon and northern California. Project deliveries are made in accordance with approximately 160 contracts between Reclamation and districts or individuals, executed between 1918 and 1972, which provide for the perpetual right to receive water from the Project. The water supply for the Project comes from three principal storage reservoirs – Upper Klamath Lake, Gerber Lake, and Clear Lake – in addition to direct diversions from both the Lost and Klamath Rivers.

The main irrigation season for the Project occurs in the spring-summer period (March 1 to November 15); although, limited irrigation occurs during the fall-winter period. Crops typically grown or raised on the Project include cattle, alfalfa, pasture grass, small grains, potatoes and onions. According to Reclamation's annual crop reporting, the annual crop production on the Project is in excess of $160-200 million.

In addition to surface water supplies available from the Project (i.e., Project water), districts and individuals have, on their own initiative, developed groundwater wells in accordance with Oregon and California law. Groundwater wells within the Project provide a supplemental water supply for when surface water supplies from the Project are insufficient or otherwise unavailable.

The ownership, depth, capacity, point of discharge, and designated place of use of these groundwater wells varies on a case-by-case basis. The laws of the States of Oregon and California govern the construction and use of groundwater wells for irrigation purposes in the respective states. Both states have existing groundwater monitoring programs in place within the Klamath Project service area.

1.3 Purpose and Need for the Proposal

Surface water supplies available from the Project reservoirs for irrigation demands of existing Project contractors are constrained at times due to hydrologic conditions (e.g., drought). To offset limited Project water availability, existing Project contractors developed supplemental groundwater supplies in accordance with state law. In some cases, Project facilities are the only practically feasible means of conveying supplemental groundwater to its intended place of use. The proposed contracts are needed to allow groundwater well owners to use Project facilities to convey private, state authorized non-Project water.

1.4 Authority

The Warren Act (Act of February 21, 1911, ch. 141, 36 Stat. 925, 43 U.S.C. §§523-525) authorizes Reclamation to contract with individuals and entities for the use of excess storage and/or conveyance in Federal Reclamation facilities for irrigation purposes. This type of contract is commonly called an "excess capacity contract."

Chapter 2 Alternatives

This EA considers two possible actions including the No Action Alternative and the Proposed Action Alternative. The No Action Alternative reflects conditions without the Proposed Action Alternative and serves as a basis of comparison for determining potential effects to the human environment as a result of implementing the Proposed Action Alternative.

2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not execute and issue the proposed contracts for the conveyance of non-Project water through Project facilities. Project facilities would not be available to districts and individuals for the conveyance of non-Project groundwater.

2.2 Proposed Action Alternative

Under the Proposed Action Alternative, Reclamation would enter into excess capacity contracts for a period of not to exceed five years, ending no later than 2022. The non-Project water conveyed under the proposed contracts would be used for irrigation purposes on lands within the Project's existing service area. No additional lands would become irrigated through operation of such contracts. Conveyance would be limited to use of existing Project facilities, and no new construction would occur to provide for additional or augmented conveyance capacity.

Under the Proposed Action Alternative, water quality testing and monitoring would occur as deemed appropriate for each source of non-Project water as outlined in the Quality Assurance Project Plan - Water Quality Standards and Testing included in Appendix E. This is to ensure that non-Project water introduced into Project facilities does not impact quality of Project water or associated water bodies beyond acceptable limits or standards.

Under the terms of the proposed contracts, the use of Project facilities may also be curtailed if the conveyance in question impacts third parties, for example due to the localized drawdown of groundwater levels. The States of Oregon and California manage groundwater resources within the Project's service area. As such, Reclamation intends to coordinate with the States of Oregon and California and rely upon their technical expertise in making impact determinations with respect to potential third-party impacts and any other groundwater impacts within the Project

service area. Additionally, coordination and technical and financial assistance to the States of Oregon and California for additional groundwater monitoring may be implemented as deemed appropriate and if funds are available. Such assistance may involve installation of equipment and devices to monitor and report groundwater levels and use but will not involve drilling of new or supplemental wells nor any other ground disturbing activity.

Chapter 3 Affected Environment & Environmental Consequences

This EA analyzes two alternatives including the No Action Alternative and the Proposed Action Alternative. The No Action Alternative reflects conditions without the Proposed Action Alternative and serves as a basis of comparison for determining potential effects to the human environment as a result of implementing the Proposed Action Alternative.

Cumulative impacts are described for each resource analyzed in detail. Cumulative impacts result from the incremental impact of the action, when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

3.1 Resources Not Analyzed in Detail

Effects on several environmental resources were examined and found to be minor. For the reasons noted below, the following resources were eliminated from further review in this EA.

3.1.1 Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in property or rights held in trust by the United States for Indian Tribes or individuals. As indicated in Appendix B, the proposed project activity is located within the Klamath Tribal Designated Statistical Area. On April 17, 2018, Reclamation's KBAO ITAs Coordinator, Kristen Hiatt, stated, however, that because the Proposed Action Alternative includes execution of contracts to allow groundwater well owners to use Project facilities to convey private, state authorized non-Project water, it is not expected to impact Indian hunting or fishing resources or water rights. Due to this fact and given that the Proposed Action Alternative is largely administrative in nature, it is reasonable to assume that the Proposed Action will not have an impact on ITAs.

3.1.2 Indian Sacred Sites

Sacred sites are defined in Executive Order 13007 (May 24, 1996) as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." The Proposed Action Alternative would not affect and/or prohibit access to and ceremonial use of Indian sacred sites.

3.1.3 Environmental Justice

Executive Order 12898 requires each Federal agency to identify and address disproportionately high and adverse human health or environmental effects, including social and economic effects of its program, policies, and activities on minority populations and low-income populations. Reclamation has not identified adverse human health or environmental effects (e.g., dislocations, changes in employment, increased potential for flood, drought, or disease) or disproportionate impacts on economically disadvantaged or minority populations as a result of implementing the Proposed Action Alternative; therefore, it carries no Environmental Justice implications.

3.1.4 Cultural Resources

Cultural Resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The NHPA is the primary Federal legislation that outlines the Federal Government's responsibilities related to cultural resources. The effects of an agency's proposed actions on significant cultural resources (i.e., historic properties) are determined by following the Section 106 process as described at 36 CFR Part 800. Following this process, Reclamation reviewed the Proposed Action Alternative and determined it has no potential to cause effects on historic properties, pursuant to 36 CFR §800.3(a)(1) (see Appendix C). As such, Reclamation has no further obligations under Section 106 of the NHPA. The Proposed Action Alternative is limited to the use of existing facilities to convey water and does not involve new ground disturbing activities. As such, conditions under the Proposed Action Alternative would remain the same as existing condition, resulting in no impacts to cultural resources.

3.1.5 Global Climate Change and Greenhouse Gases

Climate change refers to significant change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes can contribute to climate change (e.g., changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels). Climate change implies a significant change having important economic, environmental, and social effects in a climatic condition such as temperature or precipitation. Climate change is generally attributed directly or indirectly to human activity that alters the composition of the global atmosphere, additive to natural climate variability observed over comparable time periods.

Impacts to climate change or greenhouse gases (GHG) from the implementation of the Proposed Action Alternative are difficult to quantify. No new construction or facilities are proposed; however, pumping, from equipment of various sizes at various locations, would be required to transport non-Project water. Emissions as a result of pumping would be within the typical range for the equipment involved and are part of baseline conditions, and is not anticipated to substantially fluctuate beyond what has historically occurred since 2001. Pumping is not anticipated to cause any unexpected or unusual increase in emissions in excess of what has historically occurred within the Klamath Project since 2001. Overall impacts to climate change and GHG emissions are expected to be insignificant due to the size and scope of the pumping equipment, small changes from current conditions, duration of use that is limited to the irrigation season, and compliance with pollution related regulations established by local and state agencies.

3.2 Resources Analyzed in Detail

3.2.1 Water Resources

3.2.1.1 Affected Environment

The water resources potentially affected would be groundwater and Project surface water resources. The scale and extent of such impacts would vary but are generally localized to the Klamath Project and its immediate vicinity. Note that this analysis of impacts considers only that increment of groundwater extraction that may occur in association with contracts with Reclamation for the conveyance of such water through Project facilities; groundwater extraction that occurs without the use of Project facilities (e.g., by direct application to the place of use) is outside the scope of the Proposed Action Alternative.

Surface water may be affected when groundwater is discharged into Project facilities and mixes with Project water supplies already in those facilities. The introduction of groundwater may therefore affect water quality in Project facilities and associated water bodies. The extent to which the introduction of groundwater may impact water quality in Project facilities and associated water bodies will generally depend on the volume, rate, and quality of groundwater being introduced into Project facilities and the volume, rate, and quality of Project water already in those facilities.

3.2.1.2 Environmental Consequences

No Action Alternative:

Under the No Action Alternative, Reclamation would not enter into the proposed contracts, and Project facilities would, therefore, not be used to convey non-Project water to its intended place of use. Under the No Action Alternative, surface or groundwater resources would not be impacted as a result of groundwater conveyance through Project facilities. Agricultural lands within the Project's service area may, however, lack access to or lack the ability to effectively use existing groundwater resources, potentially resulting in reduced crop yields, farm income, and associated economic and social benefits to the local communities

Proposed Action Alternative:

Groundwater: Groundwater resources could potentially be affected when groundwater is extracted from local aquifers and conveyed through Project facilities under the proposed contracts. To the extent that groundwater extraction would not occur but for Project facilities being available to convey the water to the intended place of use, the Proposed Action Alternative could increase groundwater use within the Project's service area compared to what might occur under the No Action Alternative. Groundwater use is governed, authorized, and regulated by the groundwater management agencies of the respective states. Reclamation is not authorizing or advocating for groundwater pumping, and does not have authority or discretion over private, state-authorized groundwater pumping/extraction.

The potential environmental impact from this additional groundwater use that may occur as a result of the Proposed Action Alternative is the lowering of local aquifer levels beyond what would otherwise occur absent this Action. The exact depth and period of time that local aquifer levels may be lowered as a result of the Proposed Action Alternative will generally depend on the amount of additional extraction that occurs, the size and geology of the aquifer in question,

and the other groundwater extraction independent of the Proposed Action Alternative that has, is, or will occur contemporaneously. The location, extent, and depth of lowered aquifer levels that may result from the Proposed Action Alternative are uncertain and difficult to estimate in advance.

The localized lowering of aquifer levels may impair or prevent other well owners from utilizing groundwater resources. However, Reclamation intends to coordinate with the States of Oregon and California and rely upon their technical expertise in making impact determinations with respect to potential third-party impacts and any other groundwater impacts within the Project service area which would include curtailment of conveyance within Project facilities.

Within the Project's service area groundwater is primarily used for domestic and irrigation purposes. Accordingly, localized lowering of aquifer levels as a result of the Proposed Action Alternative may cause impacts to groundwater wells used for these two purposes. Impacts to wells used for irrigation purposes may result in localized restrictions on the availability of supplemental water for irrigation purposes, resulting in reduced crop production and farm income. Impacts to wells used for domestic and municipal purposes may require individuals and communities to either modify their wells or to obtain water elsewhere. The need to modify wells or obtain water from other sources for domestic purposes may impose additional costs on affected individuals and communities.

In Oregon, the extent of impacts to groundwater (e.g., drawdown) is monitored and regulated by the Oregon Water Resources Department (OWRD), which has the responsibility to determine and enforce acceptable levels of impact to groundwater resources. Oregon has in the past exercised this regulation and enforced these limits in order to reduce or eliminate impacts to third parties and/or the groundwater resources in accordance with Oregon water law.

In California, groundwater use is governed by the 2014 Sustainable Groundwater Management Act, which calls for the establishment of Groundwater Sustainability Agencies and Groundwater Sustainability Plans by 2022, with a goal, for the medium priority Tule Lake Basin, of sustainability by 2042. For the purposes of the Proposed Action Alternative and EA, only 2022 falls within the scope of the anticipated excess capacity contracts in California.

Due to Reclamation's obligation to operate in compliance with state water law, all districts and individuals utilizing excess capacity contracts in Oregon and in 2022, California, will be required to provide information to Reclamation demonstrating that the proposed use of groundwater is consistent with state law and limitations. Reclamation would also regularly coordinate with, and potentially provide support to, the states to ensure state limitations related to groundwater extraction are enforced.

While the Proposed Action Alternative would allow non-Project water to enter into Project facilities, management of those facilities by Reclamation and its Transferred Works contractors dictates that overall water quantities would remain within historical bounds, merely replacing some proportion of Project water with groundwater. The quantity of groundwater introduced would be limited to the excess capacity of the canals not occupied by Project water, compliance with local groundwater management plans and consistent with state water law. Non-Project

water conveyed through Project facilities would only be used for irrigation purposes on established agricultural lands. Conveyance of non-Project water into Project facilities would occur through existing wells, meters, pipes, water diversion, and field delivery facilities.

Surface Water: Surface water quality within Project canals could be impacted when groundwater is introduced and mixes with Project water, thereby changing its composition and potentially impacting downstream users. To reduce the potential for non-Project water degrading or contributing to poor water quality entering and being conveyed through Project facilities, minimum water quality standards and assurances, as outlined in the Discharge of Non-Klamath Project Water into Klamath Project Facilities: Water Quality Monitoring - Quality Assurance Project Plan (QAPP; see Appendix E) would be evaluated and monitored by Reclamation. The standards listed in the QAPP would be adhered to by contractors in coordination with Reclamation. Water quality testing data would be reviewed by Reclamation's technical staff and water quality testing may be required. Water quality evaluation will be performed in the following manner: (1) Reclamation will perform the water quality required testing, (2) the contractor will perform the water quality testing; or (3) past water quality testing results. Water sources not meeting minimum standards may not be allowed to convey non-Project water until Reclamation determines that the non-Project water source will not negatively contribute to the overall water quality.

Compliance with the standards listed in Appendix E and as defined in the contracts would ensure that water transported through the canals does not impair existing uses, including downstream users, or negatively impact existing Project water quality conditions. Water quality data and testing associated with non-Project water introduced into Project facilities would be at the direction of Reclamation's Contracting Officer and evaluated by Reclamation technical staff.

3.2.1.3 Cumulative Impacts

Historic hydrological conditions and other factors within the Project result in fluctuating water supplies that drive requests for water service actions. Annually, Reclamation reviews and approves a myriad of actions related to these water service actions. In some cases, multi-year projects are approved following proper environmental review. Reclamation has determined that the Proposed Action Alternative and its attendant environmental water quality and monitoring commitments would not result in any adverse cumulative impacts to the water resources within Project facilities or water contractors they serve. Furthermore, as a result of the monitoring by both OWRD and Reclamation, the Proposed Action Alternative would have no significant cumulative impacts on either surface water or groundwater resources.

3.2.2 Biological Resources

3.2.2.1 Affected Environment

Federally listed, proposed, and candidate species that may occur within or near lands served by Project canals are shown in the figures in Appendix D. The following species lists were obtained January 31, 2018, by accessing the USFWS database for species that may occur within Klamath County, Oregon and both Modoc and Siskiyou Counties, California: http://www.fws.gov/klamathfallsfwo/es/es.html; (USFWS 2018).

3.2.2.2 Environmental Consequences

No Action Alternative:

Under the No Action Alternative, Project facilities would only be used for storage and conveyance of Project water supplies. Project water users could still utilize non-Project water sources but would have to do so without the use of Project facilities to convey the water from site to site. The status quo of historic Project water supply deliveries would continue and would neither hinder nor enhance populations of Federally-listed species or their critical habitat.

Proposed Action Alternative:

The potential impacts to all species and their habitats included in Appendix D as a result of the Proposed Action Alternative have been considered, and it has been determined that the Proposed Action Alternative would have no effect on these species or their habitats. There would be no change in land use patterns of cultivated or fallowed fields that have some value to listed species or to birds protected under the MBTA. Groundwater transported through Project facilities would use existing facilities with no need for any new construction in or near Project waterways. Water quality assurance as defined in the QAPP in Appendix E and pursuant to the terms of the proposed excess capacity contracts would ensure that inputs of non-Project water do not degrade existing Project water quality. These conditions would ensure that there would be no direct or indirect impact to Federally-listed species or their critical habitat or other biological resources as a result of implementing the Proposed Action Alternative. Additionally, since water quality testing and monitoring is being implemented as part of the Proposed Action and is expected to maintain high water quality as a condition of conveyance, any water conveyed as part of this action into natural waterways within the range of protected species, there would be no potential effect to listed fish species.

3.2.2.3 Cumulative Impacts

As the Proposed Action Alternative is not expected to result in any direct or indirect impacts to biological resources, there would be no cumulative impacts to biological resources.

3.2.3 Socioeconomics

3.2.3.1 Affected Environment

The agricultural industry significantly contributes to the overall economic stability of the Klamath Basin. Water supplies, including Project water and non-Project water resources, allow irrigators to accurately plan for the types of crops they can grow and secure loans to purchase agricultural supplies. The economic variance may include fluctuating agricultural prices, insect infestation, changing hydrologic conditions, increased fuel, and power costs.

3.2.3.2 Environmental Consequences

No Action Alternative:

Under the No Action Alternative, the local and regional agricultural economy would remain similar to existing conditions, which fluctuates with market and hydrologic conditions. In years of drought, with limited Project water supplies, farmers would not be able to use Project facilities to convey non-Project water, and in some cases may not be able to access or utilize supplemental groundwater supplies. Farmers without a supplemental water supply may need to temporarily fallow irrigable land. The loss of irrigable land, even temporarily, would likely impact local agricultural production and employment, but those changes would likely reflect those that occur

under the existing conditions. These actions under the No Action Alternative could have an adverse effect to local and regional economics.

Proposed Action Alternative:
Under the Proposed Action Alternative, there would be a reduced potential for involuntary irrigation curtailments due to limited surface water supplies. Non-Project water conveyed under the Proposed Action Alternative could provide water users with flexibility to optimize privately owned and state authorized existing water supplies and independently respond to drought. As a result, the Proposed Action Alternative could result in a reduction in the number of temporarily idled agricultural lands, thereby helping to stabilize and possibly increase land yields and agricultural revenues, especially in years of limited Project water supplies. Non-Project water conveyed through Federal facilities under the Proposed Action Alternative could increase the overall water available for Project water users while potentially reducing the need for and level of resource intensive drought mitigation measures or more expensive water supply alternatives.

3.2.2.3 Cumulative Impacts
As the Proposed Action is expected to assist in reducing potential adverse cumulative effects to socio economics by resulting in a reduction in the number of temporarily idled agricultural lands which is expected to stabilize and possibly increase land yields and agricultural revenues. However, the long-term socio-economic implications are dependent on the sustainability of the groundwater resource as it relates to future use.

3.3 Environmental Commitments

Reclamation would include the following (or similar) stipulations in the proposed contracts to ensure environmental consequences are reduced under the Proposed Action Alternative.

- Contractors would be required to confirm with Reclamation that the proposed use of groundwater is consistent with state law.
- Non-Project water stored and/or conveyed through Project facilities would only be used for irrigation purposes on established agricultural lands within the Project.
- There would be no new construction or excavation occurring as part of the Proposed Action Alternative. Conveyance of non-Project water would occur through existing wells, meters, pipes, water diversion, and field delivery facilities.
- Contractors would comply with all applicable Federal, state, and local laws and regulations.
- Contractors would comply with the standards and information included in the QAPP (Appendix E)
- Contractors would comply with their respective States groundwater laws, policies, and directives, as well as, any impact determinations made by the State with respect to potential third-party impacts and any other groundwater impacts within the Project service area.

Chapter 4 Consultation and Coordination

This section presents the agencies and parties that were coordinated or consulted with during development of the EA and addresses public comments that were submitted during the review period.

4.1 Persons or Agencies Consulted During EA Development

- Klamath Irrigation District
- Tulelake Irrigation District
- Langell Valley Irrigation District
- Shasta View Irrigation District
- Oregon Department of Environmental Quality
- Oregon Water Resources Department
- North Coast Regional Water Quality Control Board
- California Department of Water Resources
- Klamath Water Users Association

4.2 Federal Migratory Bird Treaty Act of 1918 (MBTA), as amended (16 U.S.C. §§703-712)

The MBTA prohibits the take, harm, or trade of any migratory bird species and requires that an agency must have a policy in place to prevent harm to such species as a result of that agency's actions. The United States Fish and Wildlife Service (USFWS) is the agency charged with administering and enforcing the MBTA. A 1972 amendment to the act included owls, hawks, and other birds of prey.

Because there are no ground-disturbing activities that could impact habitat or impacts to water resources that could impact migratory birds, there would be no effect to migratory birds. As a result, Reclamation determined coordination with USFWS is unnecessary.

4.3 Endangered Species Act (ESA), as amended (16 U.S.C. §1531 et seq.)

The ESA requires Federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any listed species (according to the lists maintained by USFWS and the National Marine Fisheries Service (NMFS)) or result in the destruction or adverse modification of habitat critical to such species' survival. To ensure against jeopardy, each Federal agency must consult with the USFWS and/or NMFS for undertakings that have a potential to threaten ESA species and associated habitat.

Because there are no ground-disturbing activities that could impact critical habitat or impacts to

water resources that could impact special status species, there would be no effect to ESA-listed species. As a consequence, Reclamation has determined consultation is unnecessary.

4.4 Public Review Period

Reclamation provided a public review and comment period for the draft EA from February 9, 2018 through February 23, 2018. Several comments were received and are addressed in the following section. Electronic versions of this EA and the prior draft EA are available online at https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=21661. Physical copies can also be located at the following address.

Bureau of Reclamation, Klamath Basin Area Office
6600 Washburn Way,
Klamath Falls, Oregon 97603

4.5 Responses to Public Comments Received

Reclamation received several comments on the draft EA regarding various issues. Some comments acknowledged the same, or very similar, issues; because of this occurrence, comments, along with Reclamation's respective consideration, have been grouped in the following categories.

Biological Resources and National Wildlife Refuges (NWRs)
Several comments concerning potential impacts of the Proposed Action Alternative to Tule Lake and Lower Klamath NWRs ecosystems and the species that are dependent on the Refuges were received. Under the Proposed Action Alternative, no land use changes would occur to habitat, no habitat conversion is involved, and no new facilities would be constructed. Additionally, the United States Geological Survey Scientific Investigations Report 2012-5062 (Gannett et. al., 2012) suggests that additional pumping within the project area could be managed to minimize impact on the groundwater discharge that supports wildlife habitat in the upper Klamath Basin.

Because the Proposed Action Alternative does not involve ground disturbing activities that could impact NWR species or critical habitat and if a pumping model consistent with that tested in the Gannett et. al. report were implemented, no effects to NWR species or habitat is anticipated. Because the Proposed Action Alternative involves no activities that would impact habitat water resources that would be expected to impact migratory birds, Reclamation has determined that there would be no effect to migratory birds as defined by the MBTA.

One comment suggested that the Proposed Action Alternative be expanded to also allow the NWRs to enter into contracts for conveyed non-Project to serve wetland habitats. This specific recommendation is outside of the scope of the Proposed Action Alternative. The current proposal includes the pumping of groundwater from private wells of individuals or irrigation districts to be conveyed through Klamath Project facilities. If a NWR has wells in which groundwater may be pumped, Reclamation would consider executing a contract with the NWR in the manner suggested. NWR habitats could potentially be served through the current proposal if entities with

contracts entered into agreements with a NWR for the suggested purpose.

ITAs
Several comments expressing concern of the Proposed Action Alternative's potential impacts on ITAs and Reclamation's apparent lack of agency consultation for the resource were submitted. Reclamation's proposal is to allow conveyance of privately pumped groundwater (i.e., a private action occurring at private wells) within Klamath Project facilities.

Given the nature of the Proposed Action Alternative, it was determined that there would be no potential to affect ITAs. Therefore, Reclamation did not consult with the Tribes regarding ITAs. Reclamation determined that the Proposed Action would have no effect on ESA-listed species or their critical habitat and, as such, did not consult with either the NMFS or the USFWS.

Climate Change and GHGs
Some comments addressed Reclamation's omission of a climate change and GHG analysis. A brief section regarding this issue has been added in the EA. No new construction or new facilities are included in the Proposed Action Alternative. Some emissions from pumping would be occur, however, to convey water power usage would be within the typical range for the facilities involved and are a part of the baseline conditions. No greenhouse gas emissions are anticipated outside normal operational fluctuations. As such, Reclamation anticipates that there would be no additional unexpected impacts to global climate change.

Water Sampling
Involved irrigation districts submitted comments as to whether or not there are approaches or circumstances that would not require the cost or burden of special contracts to use water in the systems maintained by the districts for use in the Klamath Project. Reclamation coordinated with various districts and/or individuals and believes that the QAPP meets the outcomes of those discussions and the intended purpose of maintaining high water quality standards as outlined in the EA.

One comment alleged that the annual sampling requirements, including collection and lab testing prior to conveyance as described in the QAPP, is excessive and unnecessary. Reclamation will consider existing water quality testing results as part of this requirement if available. Should past water testing results indicate that a proposed discharging source will not detrimentally affect water quality in Reclamation facilities, this requirement may be waived. Additionally, Reclamation has modified the language of the QAPP, from the version attached in the draft EA, such that additional follow-up testing may or may not be required over the period of the discharge conveyance agreement should the initial analysis be adequate.

Another comment declared that the water quality standards and reporting limits listed in Tables 1a and 1b of the QAPP of the draft EA should be eliminated or narrowed as the requirement is unduly burdensome and the costs would exceed any potential benefit to water quality. The requirement called for sampling of 37 constituents prior to acceptance of groundwater into Project canals. Based on a review of historical groundwater monitoring, the QAPP has been revised to include 15 constituents which are those of concern. However, additional monitoring may be required as determined from the initial sample analyses.

One comment contended that the large quantity of required sampling constituents creates a

timing challenge that may foreclose the opportunity for any Project water user to enter a contract. Water quality monitoring will be a requirement. Should a delay occur with Reclamation's process of establishing contracts, which subsequently would not allow enough time to complete testing and analysis, monitoring prior to approval may be waived. However, it is incumbent upon the groundwater discharger to notify Reclamation immediately of intent to discharge prior to actual discharge so that monitoring can be conducted.

Increased Agriculture and Resultant Return Flow

One comment stated a failure of the draft EA in analyzing increased agricultural activity; that is, the implication that the Proposed Action Alternative, versus the No Action Alternative, would lead to increased irrigation in times of low water supply. The intent of the Proposed Action Alternative is to utilize groundwater to augment the limited surface water supply in order for irrigators to continue to farm their respective fields during drought years. No additional agricultural activity, beyond that of normal water years and outside of historic operations, is expected as a result of implementing the Proposed Action Alternative.

Another comment stated a concern that the Proposed Action Alternative, compared to the No Action Alternative, would result in higher return flows to the Klamath River which would lead to diminished water quality conditions. As the Proposed Action Alternative includes the use of groundwater during drought conditions as a supplement for shortages in the surface water supply, Reclamation anticipates that drain flows to the Klamath River would be no higher than historical average year returns. Additionally, all irrigators who contract with Reclamation for the use of Project facilities for the conveyance of non-Project water will be directed to comply with the QAPP testing standards. As such, Reclamation has determined that the Proposed Action Alternative would yield no detrimental surface water quality.

Groundwater Extraction Impacts on Surrounding Communities

Several comments stated a concern of impacts to nearby communities and third parties as a result of implementation of the Proposed Action Alternative and recommended consultation with state regulating authorities to address this concern. Reclamation has recognized and corrected this deficiency by consulting with the Oregon Water Resources Department and the California Department of Water Resources. Additionally, the Proposed Action Alternative currently involves coordination with, and technical and financial assistance to, the applicable state agencies for additional groundwater monitoring that may be implemented as deemed appropriate and if funds are available. Such assistance may involve installation of equipment and devices to monitor and report groundwater levels and use but will not involve drilling of new or supplemental wells or other ground disturbing activities. Section 3.2.1 of this EA, which regards water resources, has further details on this matter. Reclamation also intends to coordinate with the States of Oregon and California and rely upon their technical expertise in making impact determinations with respect to potential third-party impacts and any other groundwater impacts within the Project service area.

Depletion of Groundwater Resources

Reclamation anticipates that the state water management agencies, who have jurisdiction over groundwater, will continue to fulfill their role in authorizing and regulating groundwater use and resultant impacts on third parties and any other groundwater impacts within the Project service

area.

Cumulative Impacts

A comment claimed a failure of the draft EA to adequately analyze cumulative impacts to water resources. The Proposed Action Alternative is intended for use during drought conditions to augment a limited surface water supply; Project facilities would be made available for conveyance of non-Project water (i.e., groundwater). In addition, the Proposed Action Alternative includes a monitoring component based on state requirements. Due to these factors, Reclamation anticipates that the Proposed Action Alternative would result in no significant acute or cumulative impact to water quality beyond that of the historical operations of the Klamath Project.

Groundwater Purchase by Reclamation

One comment concerned Reclamation's non-disclosure of its intention to purchase groundwater for irrigation use. Reclamation has determined because it has no intention to purchase groundwater for irrigation use, this comment is outside of the scope of the Proposed Action Alternative. Should Reclamation intend to purchase groundwater, that action would be reviewed under a separate compliance process. The proposal covered under this EA includes execution of excess capacity contracts with individuals or irrigation districts for the conveyance of non-Project water through Klamath Irrigation Project facilities. The non-Project water would be used for irrigation purposes on lands that have a current contract or agreement to receive Project water; it would not be used to irrigate lands that do not have a current Project water delivery contract in place. In no way is Reclamation authorizing or advocating groundwater pumping, nor does it have the discretion to do so in this case. Authorization and approval of groundwater extraction is a function of the State of Oregon or California and the private well owner.

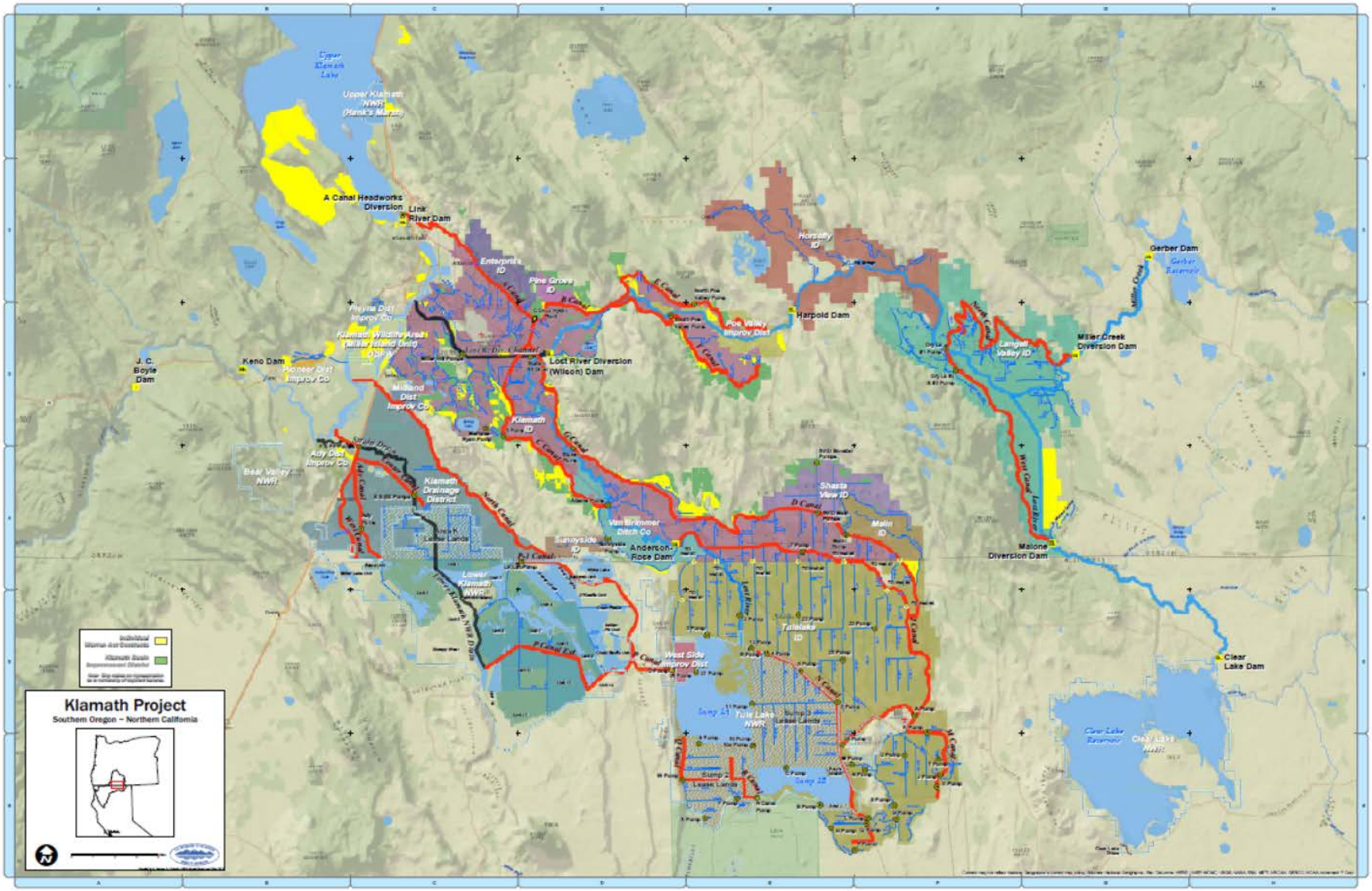
Chapter 5 References

Gannett, M.W., Wagner, B.J., and Lite, K.E., Jr., 2012, Groundwater simulation and management models for the upper Klamath Basin, Oregon and California: U.S. Geological Survey Scientific Investigations Report 2012–5062, 92 p.

United States Fish and Wildlife Service, 2018. Information Resources: Listed, proposed, and Candidate Species Lists (Klamath County, Oregon, Modoc and Siskiyou counties, California). Website: http://www.fws.gov/klamathfallsfwo/es/es.html

Appendices

Appendix A: Map - Klamath Project Irrigation Districts for Conveyance Contracts



Appendix B: Indian Trust Asset Coordination and Consultation

Indian Trust Assets
Request Form (MP Region)

Submit your request to your office's ITA designee or to MP-400, attention Deputy Regional Resources Manager.

Date: 4/17/2018

Requested by (office/program)	Kirk Young, Natural Resource Specialist, KBAO
Fund	18XR0680A1
WBS	RX.C0124955.0000000
Fund Cost Center	25320000
Region # (if other than MP)	
Project Name	Contracts for Conveyance and/or Exchange of Non-Project Water through Klamath Project Facilities
CEC or EA Number	KBAO-EA-2018-005
Project Description (attach additional sheets if needed and include photos if appropriate)	Under the Proposed Action Alternative, Reclamation would enter into excess capacity contracts for a period of not to exceed five years, ending no later than 2022. The non-Project water conveyed under the proposed contracts would be used for irrigation purposes on lands within the Project's existing service area. The amount of conveyance capacity available under such contracts would be limited to: (1) the amount of non-Project water a given contractor has legal right to, as determined by the applicable state; and (2) the extent excess capacity is actually available in Project facilities for conveyance purposes. No additional lands would become irrigated through operation of such contracts. Conveyance would be limited to use of existing Project facilities, and no new construction would occur to provide for additional or augmented conveyance capacity. Under the Proposed Action Alternative, water quality testing and monitoring would occur as deemed appropriate for each source of non-Project water as outlined in the Quality Assurance Project Plan. This is to ensure that non-Project water introduced into Project facilities does not impact quality of Project water or associated water bodies beyond acceptable limits or standards. Under the terms of the proposed contracts, the use of Project facilities may also be curtailed if the conveyance in question impacts third parties, for example due to the localized drawdown of groundwater levels. The States of Oregon and California manage groundwater resources within the Project's service area. As such, Reclamation intends to coordinate with the States of Oregon and California and rely upon their technical expertise in making impact determinations with respect to potential third-party impacts and any other groundwater impacts within the Project service area. Additionally, coordination and technical and financial assistance to the States of Oregon and California for additional groundwater monitoring may be implemented as deemed appropriate and if funds are available. Such assistance may involve installation of equipment and devices to monitor and report groundwater levels and use but will not involve drilling of new or supplemental wells nor any other ground

Project Description continued (attach additional sheets if needed and include photos if appropriate)	disturbing activity. The Warren Act (Act of February 21, 1911, ch. 141, 36 Stat. 925, 43 U.S.C. §§523-525) authorizes Reclamation to contract with individuals and entities for the use of excess storage and/or conveyance in Federal Reclamation facilities for irrigation purposes. This type of contract is commonly called an "excess capacity contract."
***Project Location (Township, Range, Section, e.g., T12 R5E S10, or Lat/Long cords, DD-MM-SS or decimal degrees). Include map(s)**	**GENERAL:** The Klamath Project and the Districts associated with the proposed action are located in Klamath County, Oregon and in both Modoc and Siskiyou County in California. Multiple townships are included in the proposed action area (see map in Exhibit B).

Kirk Young — Signature | KIRK YOUNG — Printed name of preparer | 4-17-18 — Date

ITA Determination:

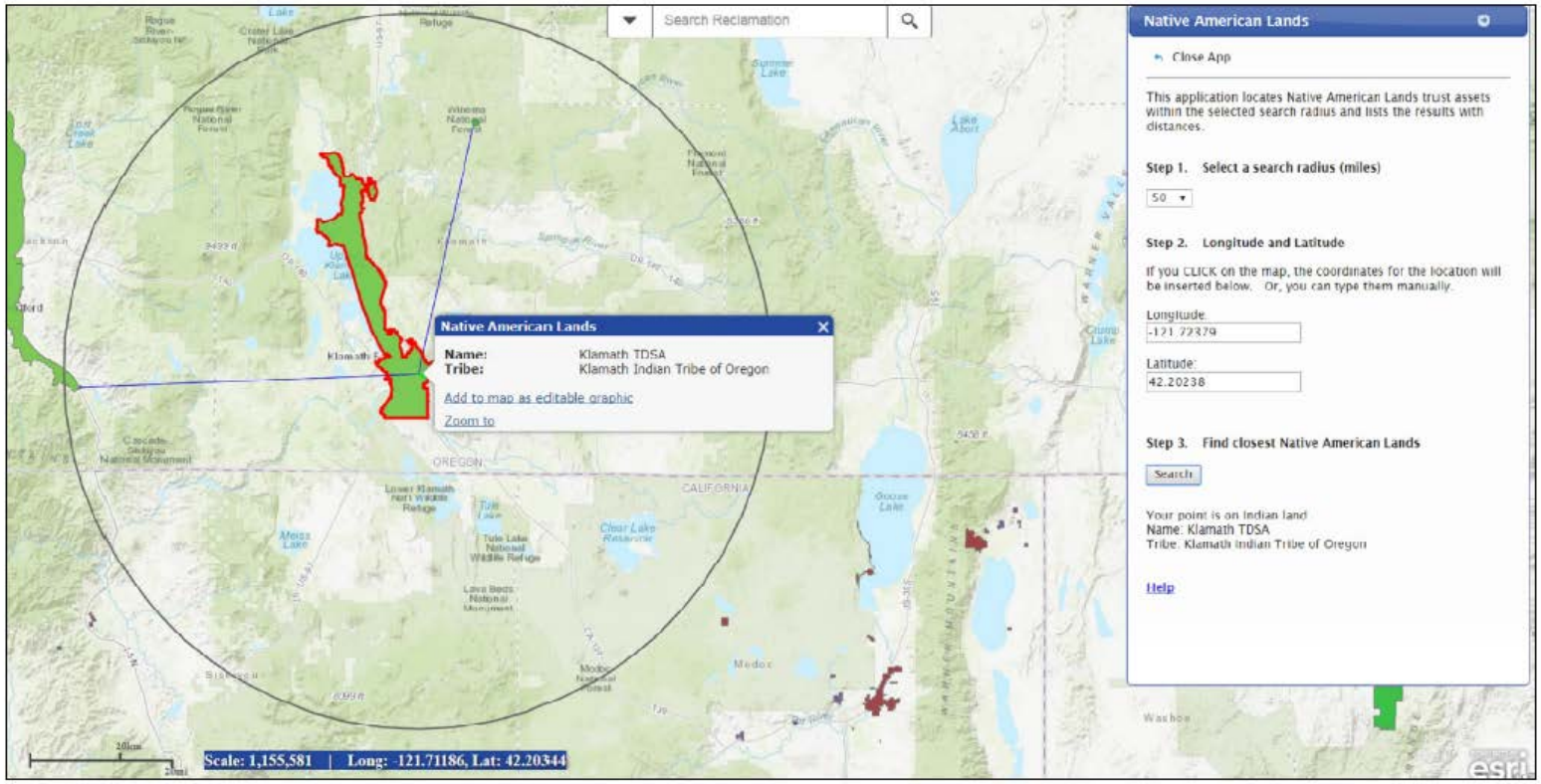
The proposed **Contracts for Conveyance of Non-Project Water through Klamath Project Facilities** activity is located within the **Klamath Tribal Designated Statistical Area (TDSA)** as a portion of Reclamation's Klamath Project, and thus the activity area, extends into the TDSA (see attached image in Exhibit A).

Although the proposed activity is within the Klamath TDSA, the nature of the action includes issuance of contracts for conveyance of non-Project water through existing Klamath Project facilities, and no impacts to Indian hunting or fishing resources or water rights is anticipated. It is reasonable to assume that the proposed action **will not** have any impacts on ITAs.

for Kristen Hiatt

Tara Jane Campbell Miranda — Signature | Tara Jane Campbell Miranda — Printed name of approver | 4/17/18 — Date

Exhibit A: Map of Nearest ITA to Proposed Project.



Appendix C: Cultural Resources Coordination and Compliance

MID-PACIFIC REGION
CULTURAL RESOURCES COMPLIANCE REQUEST

To: Cultural Resources Branch MP-153
Email to: **BOR MPR Cultural Resources Section**

ADMINISTRATIVE NEEDS
Request Date: 2/7/2018
Requesting Office: KBAO
Project Name: Contracts for Conveyance and/or Exchange of Non-Project Water through Klamath Project Facilities
NEPA or Project Number: KBAO-EA-2017-004
Reclamation Point of Contact: Kirk Young byoung@usbr.gov 541-880-2589
NEPA Point of Contact: Kirk Young byoung@usbr.gov 541-880-2589
Target Date for Completion: 2/8/2018
Funding: 18XR0680A1 RX.00124955.0000000
Work Requested: Cultural Resources Assessment and Compliance.
PROJECT INFORMATION NEEDS
Reclamation's Action: *(Define Reclamation's action: permit, license, approval, funding, planning, letter of consent, etc.)* The Bureau of Reclamation, Klamath Basin Area Office (KBAO) is proposing to enter into contracts with district and/or individual water users within the existing Klamath Project (Project) service area to convey and/or exchange non-Project water through the Project facilities.
Reclamation's Role: Sole Agency
Other Agencies Involved: *(Identify and define other Federal agency roles: cooperating; lead for NEPA, NHPA, other; partners; etc.)(Identify other agencies such as state or irrigation districts and their roles: managing partners, CEQA lead, applicant, etc.)* Potentially all Klamath Project irrigation districts and/or individuals therein

1

Project Description:

Under the Proposed Action, Reclamation would enter into excess capacity and/or exchange contracts for a period of not to exceed five years, ending no later than 2022. The conveyance and/or exchange capacity would be dependent upon the excess capacity and/or available Project water being available to facilitate the conveyance and/or exchange.

The non-Project water conveyed and/or exchanged under the proposed contracts would be used for irrigation purposes on lands with a contract or agreement to receive water from the Project. Pumping and conveyance would be limited to use of existing wells, meters, pipes, water diversion, and field delivery facilities, and no new construction would occur.

The Warren Act (Act of February 21, 1911, ch. 141, 36 Stat. 925, 43 U.S.C. §§523-525) authorizes Reclamation to contract with individuals and entities for the use of excess storage and/or conveyance in Federal Reclamation facilities for irrigation purposes. This type of contract is commonly called an "excess capacity contract."

Section 14 of the Reclamation Project Act of 1939 (Act of August 4, 1939, ch. 418, 53 Stat. 1187, 1197; 43 U.S.C. §389) authorizes Reclamation to contract for the exchange or replacement of water as necessary and in the interests of the United States and the project.

Project Location and Land Ownership: *(Specify location, County and State, and entire project area. Include map on USGS Topo or Satellite image. Include legal description; GIS shape file; UTM coordinates.)(Identify Reclamation land status, other federal land, and other land status.)*

GENERAL: The Klamath Project and the Districts associated with the proposed action are located in Klamath County, Oregon and in both Modoc and Siskiyou County in California. Multiple townships are included in the proposed action area (see map in Attachment A).

NEPA and/or Studies/Plans: *(Identify level of NEPA: CEC, EA, EIS; joint document. Other studies: Feasibility Study, Resources Management Plan, etc. Identify previously associated NEPA and/or studies/plans.)* EA

Supplemental Information: *(Photographs; plans and specifications; cultural resources report; CEQA report; grant application; other related reports, documents, and information; etc.)* Site map in Attachment A.

PROCESS:

- MP153 logs project into Tracking Database and assigns Cultural Resource (CR) Contact
- CR Contact assesses and coordinates cultural resources compliance needs
  - Applicable federal laws; level of consultations
  - Survey needs-use of existing studies, in-field surveys, consultants, etc.
  - Levels of cultural resources documentation required
  - Contracting needs
  - Cost estimates, scheduling
  - Review of reports and NEPA document language to meet regulatory requirements

2

CULTURAL RESOURCES COMPLIANCE
Division of Environmental Affairs
Cultural Resources Branch (MP-153)

MP-153 Tracking Number: 18-KBAO-061

Project Name: Contracts for Conveyance of Non-Project Water through Klamath Project Facilities

NEPA Document: 2018-EA-005

NEPA Contact: Kirk Young, Natural Resources Specialist

MP 153 Cultural Resources Reviewer: Joanne Goodsell, Archaeologist

Date: April 18, 2018 JOANNE GOODSELL Digitally signed by JOANNE GOODSELL Date: 2018.04.18 14:30:41 -07'00'

Reclamation proposes to enter into excess capacity contracts for a period not to exceed five years, ending no later than 2022. The non-Project water conveyed under the proposed contracts would be used for irrigation purposes on lands within the Project's existing service area. No additional lands would become irrigated through operation of such contracts. Conveyance would be limited to use of existing Project facilities, and no new construction would occur to provide for additional or augmented conveyance capacity. Under the Proposed Action Alternative, water quality testing and monitoring would occur as deemed appropriate for each source of non-Project water. Reclamation may also coordinate with and provide financial assistance to the States of Oregon and California to assist with additional groundwater monitoring. Such assistance may involve installation of equipment and devices to monitor and report groundwater levels and use but will not involve drilling of new or supplemental wells nor any other ground disturbing activity.

Reclamation determined the Proposed Action Alternative constitutes a Federal undertaking, as defined at 36 CFR § 800.16(y), that has no potential to cause effects to historic properties pursuant to 36 CFR § 800.3(a)(1). As such, Reclamation has no further obligations under Title 54 U.S.C. 306108, commonly known as Section 106 of the National Historic Preservation Act (NHPA). The proposed action would result in no impacts to cultural resources. Conditions under the Proposed Action Alternative would remain the same as existing conditions, resulting in no impacts to cultural resources under NEPA.

This document conveys the completion of the NHPA Section 106 process and NEPA cultural resources review for this undertaking. Please retain a copy in the administrative record for this action. Should changes be made to this project, additional NHPA Section 106 review, possibly including consultation with the California and Oregon State Historic Preservation Officers, may be necessary.

1

Appendix D: Figures of Listed, Proposed, and Candidate Species that may occur in the Proposed Action Alternative Area

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Klamath Falls Fish and Wildlife Office
1936 California Avenue, Klamath Falls, Oregon 97601
(541) 885-8481 FAX (541)885-7837
kfalls@fws.gov

LISTED, PROPOSED, AND CANDIDATE SPECIES THAT MAY OCCUR IN KLAMATH COUNTY, OREGON

Status: **Endangered**

Phylum	Common Name	Scientific Name	Critical Habitat
Fish	Lost River sucker	*Deltistes luxatus*	Designated
Fish	Shortnose sucker	*Chasmistes brevirostris*	Designated
Mammal	Gray wolf	*Canis lupus*	
Plant	Applegate's milk-vetch	*Astragalus applegatei*	
Plant	Greene's tuctoria	*Tuctoria greenei*	Designated

Status: **Threatened**

Phylum	Common Name	Scientific Name	Critical Habitat
Bird	Northern spotted owl	*Strix occidentalis caurina*	Designated
Bird	Yellow-billed cuckoo (Western DPS)	*Coccyzus americanus occidentalis*	Proposed
Fish	Bull trout	*Salvelinus confluentus*	Designated
Amphibian	Oregon spotted frog	*Rana pretiosa*	Designated
Plant	Slender Orcutt grass	*Orcuttia tenuis*	Designated

Status: **Proposed**

Phylum	Common Name	Scientific Name	Critical Habitat
Mammal	Wolverine	*Gulo gulo luscus*	

Status: **Candidate**

Phylum	Common Name	Scientific Name
Plant	Whitebark Pine	*Pinus albicaulis*

Updated December 14, 2017

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Klamath Falls Fish and Wildlife Office
1936 California Avenue, Klamath Falls, Oregon 97601
(541) 885-8481 FAX (541)885-7837
kfalls@fws.gov

LISTED, PROPOSED, AND CANDIDATE SPECIES THAT MAY OCCUR IN SISKIYOU COUNTY, CALIFORNIA

Status: **Endangered**

Phylum	Common Name	Scientific Name	Critical Habitat
Fish	Lost River sucker	*Deltistes luxatus*	Designated
Fish	Shortnose sucker	*Chasmistes brevirostris*	Designated
Mammal	Gray wolf	*Canis lupus*	
Invertebrate	Shasta crayfish	*Pacifistacus fortis*	
Plant	Yreka phlox	*Phlox hirsute*	
Plant	Greene's tuctoria	*Tuctoria greenei*	Designated
Plant	Gentner's fritillary	*Fritillaria gentneri*	Designated

Status: **Threatened**

Phylum	Common Name	Scientific Name	Critical Habitat
Bird	Northern spotted owl	*Strix occidentalis caurina*	Designated
Bird	Yellow-billed cuckoo (Western DPS)	*Coccyzus americanus occidentalis*	Proposed
Amphibian	California red-legged frog	*Rana aurora draytonii*	Designated
Amphibian	Oregon spotted frog	*Rana pretiosa*	
Plant	Slender Orcutt grass	*Orcuttia tenuis*	Designated

Status: **Proposed**

Phylum	Common Name	Scientific Name	Critical Habitat
Mammal	Wolverine	*Gulo gulo luscus*	

Status: **Candidate**

Phylum	Common Name	Scientific Name
Plant	Whitebark Pine	*Pinus albicaulis*

Updated December 14, 2017

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Klamath Falls Fish and Wildlife Office
1936 California Avenue, Klamath Falls, Oregon 97601
(541) 885-8481 FAX (541)885-7837
kfalls@fws.gov

LISTED, PROPOSED, AND CANDIDATE SPECIES THAT MAY OCCUR IN MODOC COUNTY, CALIFORNIA

Status: **Endangered**

Phylum	Common Name	Scientific Name	Critical Habitat
Fish	Lost River sucker	*Deltistes luxatus*	Designated
Fish	Shortnose sucker	*Chasmistes brevirostris*	Designated
Plant	Greene's tuctoria	*Tuctoria greenei*	Designated

Status: **Threatened**

Phylum	Common Name	Scientific Name	Critical Habitat
Bird	Northern spotted owl	*Strix occidentalis caurina*	Designated
Bird	Yellow-billed cuckoo (Western DPS)	*Coccyzus americanus occidentalis*	Proposed
Amphibian	Oregon spotted frog	*Rana pretiosa*	
Plant	Slender Orcutt grass	*Orcuttia tenuis*	Designated

Status: **Proposed**

Phylum	Common Name	Scientific Name	Critical Habitat
Mammal	Wolverine	*Gulo gulo luscus*	

Status: **Candidate**

Phylum	Common Name	Scientific Name
Plant	Whitebark Pine	*Pinus albicaulis*

Note:
The gray wolf (*Canis lupus*) is listed as endangered in portions of Washington (west of State Route 97 from the Canadian border to Highway 17, west of Highway 17 to State Route 395, and west of State Route 395 to the Oregon border), Oregon (west of the of the center line of Highway 395 and Highway 78 north of Burns Junction and that portion of Oregon west of the center line of Highway 95 south of Burns Junction), and all of California [see 73 FR 10514]. Radio-collared wolves (OR-7 and OR-25) have dispersed from northeastern Oregon through portions of many counties including Klamath and Jackson County in southern Oregon, and through portions of Siskiyou, Modoc, Shasta, Lassen, Plumas, and Tehama Counties in California. Resident wolves are not known to occur in Modoc County at this time. Please contact the U.S. Fish and Wildlife Service office issuing this list (see letterhead for contact information) with questions about the potential for gray wolf presence in proposed project areas.

Updated December 14, 2017

Appendix E: QAPP: Water Quality Standards and Testing

RECLAMATION

Managing Water in the West

Discharge of Non-Klamath Project Water into Klamath Project Facilities

Water Quality Monitoring - Quality Assurance Project Plan

U.S. Department of the Interior
Bureau of Reclamation Mid-Pacific Region
Klamath Basin Area Office

April 2018

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Discharge of Non-Klamath Project Water into Klamath Project Facilities

Quality Assurance Project Plan

Klamath Basin Area Office Representative	Date
Responsible Monitoring Entity	Date

Contents

Water Quality Management

I. Introduction

The monitoring of non-Klamath Project water discharges into Klamath Project facilities along with this quality assurance project plan (QAPP) is designed to prevent degradation of Klamath Project waters. Reclamation's Klamath Basin Area Office (KBAO) and/or other responsible entities will conduct water quality monitoring as tasked within this QAPP. KBAO will maintain and review the QAPP, review submitted water quality documentation, perform assessment and oversight, and update the plan as needed.

Entities or persons contracting with KBAO to discharge and transport non-Klamath Project water will be subject to water quality requirements under this QAPP. The QAPP details quality assurance procedures for collecting water and quality control samples, measuring physical water quality parameters, submitting water quality samples to approved laboratories, evaluating legitimacy of sample analysis results, ensuring adequate data management of analysis results, and reporting. Additionally, this QAPP provides established water quality standards for the acceptance or denial of non-Klamath Project water into Klamath Project conveyance facilities.

II. Problem Definition/Background

The Klamath Project is a Bureau of Reclamation project that provides irrigation and drainage services to approximately 230,000 acres of farmland in southern Oregon (62 percent) and northern California (38 percent), including two national wildlife refuges. The main sources of water for the Klamath Project include Upper Klamath Lake, Klamath River, Clear Lake Reservoir, Gerber Reservoir, and the Lost River. The Lost River, including Clear Lake and Gerber Reservoirs, is located in a closed basin.

Reclamation, in accordance with the Warren Act of 1911 (43 U.S.C. §§523-525), is negotiating "excess capacity contracts" with local water users for the use of excess capacity in Klamath Project facilities for the conveyance of non-Klamath Project water to lands within the project. "Non-Klamath Project water" includes surface or ground water that is either:

1. Pumped, diverted, and/or stored based upon the exercise of water rights not belonging to the United States, or;
2. Not appropriated by or allocated to a Reclamation project.

Non-Klamath Project water entering Klamath Project facilities under the proposed contracts must meet minimum water quality standards to ensure that it does not adversely impact Klamath Project supplies or stream flows. Standards for water quality are intended to protect the beneficial uses of state regulated waterways receiving water discharged from the Klamath Project, as well as Reclamation's agricultural exemption from the requirements of the Clean Water Act.

III. Task Description

The overall goal of this effort is to measure and analyze the quality of non-Klamath Project water before it enters Klamath Project facilities, and at appropriate intervals thereafter. General tasks for this program are listed below:

1. Collect water samples from non-Klamath Project water sources before it enters Klamath Project facilities.
2. Measure and record physical water quality parameters at the time of sample collection.
3. Perform analysis of chemical constituents of water samples via approved water quality testing laboratories that are state accredited or Reclamation approved (Exhibit A).
4. Compare the results of the analysis to the water quality standards identified in this QAPP.
5. Measure and record water flow and quantity data as specified in the contractual agreement.
6. If applicable, manage data and transmit results to KBAO in a timely manner.
7. Coordinate with KBAO regarding additional testing and possible actions to be taken based on test results.

IV. Approval/Disapproval Process

Reclamation must provide approval of each non-Klamath Project water source before it will be allowed to enter Klamath Project facilities. Water quality testing and/or an evaluation of existing data must be completed prior to such approval. Reimbursement to Reclamation for performing testing will be required if the discharging entity elects to have Reclamation perform testing. The evaluation of water quality data will be one factor in determining whether or not to approve a non-Klamath Project water source. Approval of a non-Klamath Project water source may be rescinded by Reclamation at any time.

Sample collection and analysis or an evaluation of any previous data analysis must be performed the first year for each non-Klamath Project water source using Klamath Project facilities. Analysis for constituents listed in Table 1 using reporting limits (RLs) and analytical methods listed in Table 2 are required as part of first year testing, if testing is required. Validation of samples to meet the quality assurance acceptance criteria in Table 3 is required for all first year testing. On-site instantaneous testing of physical parameters listed in Table 4 must be measured during sample collection. Additional on-site instantaneous testing of parameters listed in Table 4 may also be required monthly during continuous non-Klamath Project water introduction into Klamath Project facilities, if applicable. KBAO will work with the responsible discharging entities to develop standard operating procedures (SOPs) for sampling if Reclamation chooses not to conduct the monitoring work internally. If applicable, the responsible discharging entity will provide the appropriate documentation for each sample, as described in the following sections, to Reclamation.

Reclamation may, at any time, require additional water quality testing on a non-Klamath Project water source in order to determine compliance with water quality standards listed in Exhibit B. Reclamation may also elect not to require testing on a non-Klamath Project water source, if conditions so warrant.

Based on the first-year water quality testing or evaluation of previously collected data, and any required supplemental testing, KBAO will either approve or disapprove each non-Klamath Project water source. KBAO may disapprove a non-Klamath Project water source if test results indicate that it may adversely impact the water quality of Klamath Project supplies or stream

flows. The decision to approve or disapprove a non-Klamath Project water source will be communicated to the irrigation districts and/or individual contractors in writing.

V. Quality Objectives and Criteria

Table 1. Water Quality Constituents Requiring Initial Testing

Constituent	Limit
Aluminum	See applicable limit by State (Exhibit B)
Ammonia as N	See applicable limit by State (Exhibit B)
Arsenic	See applicable limit by State (Exhibit B)
Boron	See applicable limit by State (Exhibit B)
Chloride	See applicable limit by State (Exhibit B)
Iron	See applicable limit by State (Exhibit B)
Magnesium	See applicable limit by State (Exhibit B)
Manganese	See applicable limit by State (Exhibit B)
Mercury	See applicable limit by State (Exhibit B)
Molybdenum	See applicable limit by State (Exhibit B)
Nitrate + Nitrate as N	See applicable limit by State (Exhibit B)
Orthophosphate	See applicable limit by State (Exhibit B)
Sodium	See applicable limit by State (Exhibit B)
Sulfate	See applicable limit by State (Exhibit B)
Total Phosphorus	See applicable limit by State (Exhibit B)

Table 2. Data Quality Objectives (Analytical Laboratory)

Required Reporting Limits and Analytical Methods

Constituent	Reporting Limit (µg/L)	Analytical Method	Constituent	Reporting Limit (µg/L)	Analytical Method
Aluminum	5	EPA 200.7	Manganese	1	EPA 200.7
Ammonia as N	0.05	EPA 350.1	Mercury	1	EPA 245.1
Arsenic	2	EPA 200.8	Molybdenum	1	EPA 200.7
Boron	50	EPA 200.7	Nitrate + Nitrate as N	10	EPA 300.1
Chloride	500	EPA 300.1	Orthophosphate	10	EPA 365.1
Iron	50	EPA 200.7	Sodium	500	EPA 200.7
Magnesium	100	EPA 200.7	Sulfate	1000	EPA 300.1
			Total Phosphorus	10	EPA 300.1

Table 3. Quality Assurance Acceptance Criteria

Result	Precision	Contamination
≥ 5 x RL	≤ 20% RPD	≤ 2 x RL, or ≤ 10% of the lowest production sample result
< 5 x RL	± 1 x RL	

Table 4. Physical Water Quality Parameters and Data Quality Objectives

Parameter	Method/range	Units	Detection Limit	Sensitivity	Precision	Accuracy
pH	pH meter	pH units	2.0	0.1 unit	± 0.2 units	± 0.2 units
Dissolved Oxygen (DO)	DO meter	mg/L	0.5	0.1 mg/L	± 10%	± 10%
Conductivity	Conductivity meter	µS/cm	10	10 µS/cm	± 10%	± 10%
Temperature	Temperature Probe	Celsius degrees	0.1	0.1 Celsius degrees	± 10%	± 10%

VI. Special Training/Certifications

If KBAO does not conduct the water quality monitoring aspects of this QAPP, the responsible monitoring entity will be required to adhere to KBAO approved SOPs for collecting samples and water quality field parameter data.

Water quality samples collected for analysis must be sent to laboratories with state accreditation or from the list of Reclamation approved laboratories (Exhibit A) for each analyte to be tested.

VII. Documentation and Records

Field Logbook

Field logbooks are to be used when samples are collected. Logbook entries should include the following information:

- Project name
- Site name
- Sample collection date and time
- Weather/sampling conditions
- Samples collected (i.e., regular, replicates, blanks)
- Sample identification number
- Sampling methods
- Decontamination procedures
- Parameters and constituents to be tested
- Source (Ground Water or Surface Water)
- Field measurements
- Water clarity
- Unusual conditions that might affect the samples

After entering the required information, logbook entries are signed by all field personnel. The logbook is then securely stored in the monitoring entity place of business.

Instrument Calibration Sheet

The monitoring entity is required to perform testing of physical water quality parameters, identified in Table 4 when each sample is collected. Measuring these parameters will require appropriate instruments, and these instruments must be calibrated prior to and after sampling.

Instrument calibration sheets document the information from an initial calibration, performed prior to instrument use, and information from a verification check, performed after all sampling for that day is completed. Calibration sheets should include:

- Project name(s)
- Date
- Time(s)
- Field sampler's name
- Instrument type
- Instrument number
- Standard value
- Initial value
- Adjusted value
- Post value

The calibration sheets are to be filed with the monitoring entity and copies are to be provided to KBAO (if applicable) within one week of sampling for review and records retention.

Field Sheet

Field sheets document initial sampling information, including:

- Project name
- Sampler name
- Sample identification number
- Sample collection date and time
- Samples collected (i.e., regular, replicates, blanks)
- Site name
- Parameters and constituents to be tested
- Source (Ground Water or Surface Water)
- Measurements of physical water quality parameters
- Additional relevant information (e.g., weather conditions, collection difficulties, etc.)

Field sheets are to be completed when each sample is collected and will be filed with the monitoring entity with copies provided to KBAO if performed by another party.

A copy of each field sheet, along with the corresponding chain of custody form and analytical report, is to be provided to the assigned KBAO representative within one week of receipt of the analytical report from the approved water quality laboratory, as further described below. The KBAO representative will review submitted field sheets and accompanying documentation and retain copies for records.

Chain of Custody

Chain of Custody (COC) forms document the custody of samples from the time samples are collected to the time they are delivered to the laboratory. Monitoring entity personnel are to initiate COC documentation while in the field. Information recorded on the COC form includes:

- Project name
- KBAO representative
- Title and signature of sample collector
- Name of the designated analytical laboratory
- List of sample identification numbers
- Date and time samples were collected
- Sample type (surface water or ground water)
- Number of containers per sample identification number
- Analysis requested
- Point of contact and phone number of sample collection entity
- Date, time, and signatures of all parties responsible for receiving and relinquishing the samples from the time of collection to the time of delivery to the laboratory

Signed COC forms accompany all samples to the laboratory. A copy of the COC form is returned to the monitoring entity by the laboratory and then filed with the corresponding field sheet and analytical report for each sample. The monitoring entity (if other than KBAO) are to provide copies to the KBAO representative within one week of receipt for review and records retention.

Analytical Report

The water quality laboratory generates an analytical report for each water sample. The water quality constituents to be analyzed are listed in Table 1. The analytical report lists the results for each parameter, as well as the case narrative, reporting limits, analysis methods, sampling and analysis dates, and the laboratory's quality control results.

Following review by the monitoring entity, copies of the analytical reports are stored with the field sheets and COC forms. Copies of all documentation (i.e., field sheet, COC form, and analytical report) for each sample are to be provided to the KBAO representative within one week of receipt of the analytical report from the laboratory, for review and records retention (see section XVI – Reports to Reclamation).

Data Management

The monitoring entity will establish and maintain a data management procedure for test results. This process is described in detail with section XIV – Data Management of this QAPP. KBAO may request a copy of the data at any time.

Data Generation and Acquisition

The following subsections provide a general description of the data generation and acquisition process. Reclamation staff will work with the irrigation districts and/or individual contractors to develop detailed SOPs pertinent to each data generation and acquisition subsections, if applicable.

VIII. Sampling Methods

Should KBAO opt to not conduct the monitoring work internally, KBAO staff will provide training and onsite oversight prior to the responsible monitoring entity initiating sampling. The following is a general description of sampling protocols:

- Prior to sampling, instrument calibration is performed, with the results recorded on an instrument calibration sheet, as described in section XII.
- At each non-project water source, samples are collected from the point of discharge or diversion, and the appropriate information is entered into the corresponding field logbook and field sheet.
- In the case of groundwater wells, prior to collecting a sample, the well is to be turned on and allowed to run until three well casing volumes are discharged. Onsite physical parameters will be measured during the sampling process. The sample is then collected directly into pre-cleaned sample bottles.
- In the case of surface water, grab samples will be collected directly into the sample bottles from the central portion of surface flow. Under certain circumstances, width or depth integrated samples may be required if grab samples are thought not to be representative of the overall water quality.
- For external quality assurance (QA) sites, a sequential replicate sample is collected immediately after collection of the original sample.
- Blank samples also are collected in the field using deionized water.
- All QA samples are given identification numbers not know to the laboratory (blind).

IX. Sample Handling and Custody

Immediately after collection and while in transit, samples are to be placed on blue ice and stored in coolers or refrigerators at 39°F (4°C). From the sampling site, samples are to be transported for shipping to the contract laboratory. Following collection and through transportation, custody of the sample is documented via a COC form.

As described further in section XI, the monitoring entity will incorporate blind QA samples into sampling batches. Following QA sample incorporation, the monitoring entity will ship the samples to the laboratory. The samples are to be packed in coolers on blue ice, and shipped to the laboratory with the corresponding COC form. Upon receipt, the laboratory will document receiving the samples on the COC form with the date of receipt and the identification of the receiving laboratory representative.

Samples are collected using appropriate bottles (see section X), and shipped to the contract laboratory in a timely manner to ensure the required holding times are met. Water quality laboratories must receive a sample in time to prepare and analyze the samples before they potentially deteriorate as indicated in section X.

X. Required Bottle Sizes and Sample Holding Times

The monitoring entity is to adhere to the bottle size and holding time requirements identified by the water quality laboratory completing the analytical report, given the water quality parameters to be tested.

XI. Quality Control

Quality control procedures and protocols are fully outlined in the Reclamation Mid-Pacific Region Environmental Monitoring Branch's document titled "Standard Operating Procedures for Quality Assurance" (QASOP), dated 2014. The following is a brief summary of the quality control procedures that apply to samples collected for this QAPP.

Quality Assurance (QA) Samples

QA samples are to be incorporated into sample batches that are submitted to the laboratory for water quality analysis in order to assess the laboratory's ability to prepare and analyze samples with an acceptable level of precision and accuracy without introducing contamination. If any of the QA samples do not meet the criteria stated in Table 3, all samples submitted to the laboratory are to be reanalyzed. If the laboratory is unable to confirm the original result upon reanalysis, a bracket of samples or the entire batch of samples are submitted for reanalysis. Due to the nature of the samples, microbiological samples cannot be reanalyzed. The two types of QA samples to be used for this project are described below.

Sequential Replicate QA Samples

Sequential replicate samples of non-Klamath Project water being analyzed are incorporated to assess the contracted laboratory's precision. They are incorporated at a rate of ten percent of the production samples. If less than ten production samples are collected, at least one duplicate sample is incorporated. Precision is assessed using relative percent difference (RPD):

$$RPD = \frac{|R - D|}{\left(\frac{(R + D)}{2}\right)}(100)$$

RPD	=	Relative Percent Difference
R	=	Regular Sample Result
D	=	Duplicate Sample Result

Contamination QA Samples

Deionized water blank samples are incorporated into sample batches to be analyzed by a contracted laboratory in order to assess potential sample contamination. Contamination QA samples are to be incorporated at a rate of five percent of the production samples. If less than 20 production samples are collected, at least one blank sample is incorporated.

Laboratory Quality Control Samples

The laboratory is responsible for incorporating quality control (QC) samples at the frequencies specified for the analytical method being used and their laboratory SOPs. The results of the QC samples are assessed based on the acceptance criteria for the analytical method and the laboratory

SOP. If any laboratory QC samples do not meet the established acceptance criteria, the laboratory follows the corrective action protocols detailed for the analytical method or by the laboratory SOP.

Holding Times

The date of the sample analysis and preservation used is compared to the date the sample was collected to ensure the sample was prepared and analyzed within the appropriate holding time for a given parameter. If the required holding time is exceeded, the monitoring entity (if other than KBAO) will consult with KBAO to determine if re-sampling is required. If re-sampling is not required, the monitoring entity will qualify the data as necessary.

XII. Instrument/Equipment Testing, Calibration, Inspection, and Maintenance

Field

Portable (hand held) instruments are calibrated according to manufacturer's protocol. For each sampling episode (whether taking place in one day, or over a number of days), instruments are calibrated every day and within four hours of taking the first measurement. Calibrations are verified with calibration standards within four hours of recording the last measurement of the day. All calibration information is recorded on a calibration sheet.

Laboratory

Maintenance procedures for instruments used by the contract laboratories for this project are detailed in the contract laboratory's QA manual. All instrument maintenance is documented in logbooks. Instrument calibration procedures are specified in the analytical methods for each parameter.

XIII. Inspection/Acceptance for Supplies and Consumables

Pre-preserved, certified clean bottles, certified calibration standards, and certified reference materials are to be procured from qualified vendors. All bottles and reagents are inspected prior to use. If any damage or contamination is suspected, packages are not to be accepted.

XIV. Data Management

The field sample identification number assigned for this project is KPNP- (Unique Location Identifier) [*number*]. Numbers are assigned sequentially, beginning with 001.

The monitoring entity is to enter the data from field measurements of physical water quality parameters and analytical results from laboratories into a Microsoft Excel spreadsheet database. The monitoring entity (if other than KBAO) is responsible for verifying the correctness of the data in the project database prior to submission to KBAO.

Within one week following receipt of analytical reports from contracted laboratories, the monitoring entity (if other than KBAO) must submit copies of the project database, field sheets, COC forms, and analytical reports for all samples collected. If there is any delay in submitting the required material, the irrigation districts and/or individual contractors will notify and obtain approval from KBAO.

Following submission of the above documentation to KBAO, the monitoring entity (if other than KBAO) must file copies of the material in water quality specific project binders. Binders must include all completed calibration sheets, field logbooks, field sheets, COC forms, analytical reports, and a printed copy of the project database. Binders are to be secured in a locked file cabinet that must be signed out when removed.

Assessment and Oversight

XV. Assessments and Response Actions

KBAO will periodically assemble a Quality Assurance Team (QAT) to perform laboratory, field, and documentation audits, as further described below.

Laboratory Audits

The three-tier audit consists of reviewing an approved laboratory's QA Manual, reviewing the laboratory's performance evaluation (PE) sample results, and conducting an intensive, on-site audit of the laboratory. During an on-site audit, the QAT will evaluate the laboratory's expertise in conducting analyses, capability of generating valid data, ability to effectively support the data, and integrity of their QA/QC practices. Laboratory audits are conducted every three years. The audit reports are issued to the laboratory. The laboratory then issues a response with corrective actions to the audit. At that time, the QAT will determine whether or not to approve the laboratory for water quality testing under the subject excess capacity contracts.

Field Audits

The field audit consists of reviewing sampling and testing protocols, submitting PE samples, reviewing the results, and accompanying the field sampler during the sample collection process. The QAT assesses the field sampler's expertise in collecting representative samples. Field audits are conducted every two years. The field audit reports are sent to the field sampler and to the field sampler's Supervisor. The Supervisor is responsible for issuing corrective actions.

Documentation Audits

The yearly documentation audits are performed on a percentage of field logbook entries along with the corresponding field sheets and field instrument calibration sheets. The QAT assesses if documentation is adequate, if all entries have been recorded, and whether or not the work was performed in accordance with Reclamation's documentation protocol.

XVI. Reports to Reclamation

Within one week following receipt of analytical reports from contracted laboratories, the monitoring entity must submit copies of the project database, field sheets, COC forms, and analytical reports for all samples collected. If there is any delay in submitting the required material, the monitoring entity will notify and obtain approval from the lead KBAO representative.

KBAO will provide its approval or disapproval of a given non-Klamath Project source within 30 days of receipt of all required water quality documentation.

Data Validation and Usability

XVII. Data Review, Verification, and Validation

If all QA samples meet the acceptance criteria identified in Table 3 and all samples are analyzed within the appropriate holding time, all data is accepted as valid. If a result is confirmed after reanalysis, the result is accepted as valid. Data may be qualified if results demonstrate unacceptable QA, if the laboratory QC sample results are unacceptable, or if the holding times were exceeded. Based on the qualification, KBAO will determine the usability of the data.

XVIII. Verification and Validation Methods

KBAO validates the data by following the guidelines in Reclamation's QASOP. Validation consists of reviewing the results of QA samples, holding times, and calibration sheets.

If any of the QA samples do not meet the acceptance criteria stated in Table 3 the samples are submitted for reanalysis. If the laboratory confirms the original result, the original data is accepted based on the laboratory demonstrating that sample preparation and instrumentation was run properly on the initial analysis. If the original result cannot be confirmed, the laboratory must then analyze a bracket of samples or the entire batch of samples an additional time for the parameter. The bracket of samples or the entire batch of samples that has been analyzed an additional time is then evaluated for the parameter to see if the results meet the acceptance criteria in Table 3 Professional judgment is used to decide which set of data to accept and whether or not the data should be qualified if both sets of data demonstrate unacceptable QA sample results.

XIX. Reconciliation with User Requirements

Any qualified results will be identified by the monitoring entity prior to submission of water quality data to the lead KBAO representative for this effort. Additionally, if results are qualified, the result will be marked with a footnote on the data table submitted to KBAO, with appropriate detail on the qualification.

Exhibit A

Reclamation Mid-Pacific Region Approved Laboratories

Approved Laboratory List for the Reclamation Mid-Pacific Region

Alpha Analytical Laboratories, Inc.	**Address**	208 Mason Street, Ukiah, CA 95482
	Contact	Adam Angulo
	P/F	916-686-5190
	Email	adam@alpha-labs.com
	Methods	*Inorganics in Water, Organics in Water*

APPL Laboratory	**Address**	908 North Temperance Avenue, Clovis, CA 93611
	Contact	Renee Patterson, Project Manager
	P/F	(559) 275-2175 / (559) 275-4422
	Email	rpatterson@applinc.com, danderson@applinc.com
	Methods	*Inorganics in Water/Soil, Organics in Water/Soil*

Basic Laboratory	**Address**	2218 Railroad Avenue Redding, CA 96001
	Contact	Josh Kirkpatrick, Nathan Hawley, Melissa Hawley
	P/F	(530) 243-7234 / (530) 243-7494
	Email	jkirkpatrick@basiclab.com (QAO and PM), nhawley@basiclab.com, mhawley@basiclab.com (invoices), poilar@basiclab.com (sample custody), khawley@basiclab.com (sample custody)
	Methods	*Inorganics in Water/Soil, Organics in Soil, Hazardous Waste in Water/Soil*

Brooks Applied Labs	**Address**	18804 North Creek Parkway, Bothell, WA 98011
	Contact	Jeremy Maute
	P/F	206-632-6206 / 206-63-6016
	Email	jeremy@brooksapplied.com
	Methods	*Selenium Speciation*

Calscience Environmental Laboratories (under Eurofins ownership)	**Address**	7440 Lincoln Way, Garden Grove, CA 92841
	Contact	Don Burley
	P/F	714-895-5494 (ext. 203)/714-894-7501
	Email	DBurley@calscience.com
	Methods	*Organics in Water*

Eurofins Eaton Analytical, Inc. (formerly MWH Laboratories)	**Address**	750 Royal Oaks Drive Ste. 100, Monrovia, CA 91016 180 Blue Ravine Rd., Folsom, CA 95630
	Contact	Linda Geddes
	P/F	(626) 386-1100, Linda - (626) 386-1163, Rita cell (916) 996-5929, Rick - (626) 386-1157
	Email	LindaGeddes@eurofinsus.com
	Methods	*Organics in Water*

Fruit Growers Laboratory	**Address**	853 Corporation Street, Santa Paula, CA 93060
	Contact	David Terz, QA Director
	P/F	(805) 392-2024 / (805) 525-4172
	Email	davidt@fglinc.com
	Methods	*Inorganics in Water(Gross Alpha)*

Oilfield Environmental & Compliance	**Address**	307 Roemer Way Ste 300, Santa Maria, CA 93454
	Contact	Will update when assigned a PM
	P/F	805-922-4772
	Email	info@oecusa.com
	Methods	*(Approval Pending) Hazardous Waste in Water/Soil*

Pacific EcoRisk	**Address**	2250 Codelia Road, Fairfield, CA 94534

	Contact	Stephen L. Clark
	P/F	(707) 207-7760 / (707) 207-7916
	Email	slclark@pacificecorisk.com
	Methods	*Toxicity in Water/Sediments*

Physis	Address	1904 East Wright Circle, Anaheim, CA 92806
	Contact	Will update when assigned a PM
	P/F	1-714-602-5320 ext 204
	Email	markbaker@physislabs.com
	Methods	*(Approval Pending) Inorganics in Soil*

South Dakota Agricultural Laboratories	Address	Brookings Biospace, 1006 32nd Avenue, Suites 103,105, Brookings, SD 57006-4728
	Contact	Regina Wixon, Annie Mouw (sample custodian)
	P/F	(605) 692-7325/(605) 692-7326
	Email	regina.wixon@sdaglabs.com, annie.mouw@sdaglabs.com
	Methods	*Selenium in Water/Soil/Sediments/Tissue (Plant/Animal)*

Western Environmental Testing Laboratories	Address	475 East Greg Street # 119 Sparks, NV 89431
	Contact	Logan Greenwood (PM), Andy Smith (QA Manager)
	P/F	(775) 355-0202 / (775) 355-0817
	Email	logang@wetlaboratory.com, andy@wetlaboratory.com
	Methods	*Inorganics in Water*

California Laboratory Services	Address	3249 Fitzgerald Road, Rancho Cordova, CA 95742

	Contact	Scott Furnas
	P/F	(916) 638-7301 / (916) 638-4510
	Email	janetm@californialab.com (QA), scottf@californialab.com (PM)
	Methods	*Organics/Inorganics in water, Biological*

Moore Twining Associates, Inc.	**Address**	2527 Fresno St., Fresno, CA 93721 USA
	Contact	Juli Adams (Lab Director), Maria Manuel (QA Manager)
	P/F	(559) 268-7021
	Email	julia@mooretwining.com, mariam@mooretwining.com
	Methods	*BOD*

Exhibit B

State Water Quality Standards

Exhibit B1. Water Quality Standards for Oregon and Reporting Limits.

Constituent	Units	Maximum Concentration	Desired Limit for Reporting	CAS Registry Number	Analytical Method
Alkalinity	µg/L	20,000 (1)	500		SM 2320 A
Aluminum	µg/L	750 (2)	50	7429-90-5	EPA 200.7
Ammonia as N	mg TAN/L	1.0 to 7.3 (2) dependent upon temp. and pH	0.05	7664-41-7	EPA 350.1
Antimony	µg/L	5.1 (1)	6	7440-36-0	EPA 200.8
Arsenic	µg/L	10 (2)	2	7440-38-2	EPA 200.8
Barium	µg/L	1000 (1)	100	7440-39-3	EPA 200.7
Beryllium	µg/L	5.3 (1)	1	7440-41-7	EPA 200.7
Bicarbonate	µg/L	61,000 (4)	500	71-52-3	SM 2320 B
Boron	µg/L	700 (3)	50	7440-42-8	EPA 200.7
Cadmium	µg/L	5 (2)	1	7440-43-9	EPA 200.7
Chloride	µg/L	40,000 (4)	500	16887-00-6	EPA 300.1
Chromium, total	µg/L	100 (2)	10	7440-47-3	EPA 200.7
Cobalt	µg/L	50 (3)	10	7440-48-4	EPA 200.8
Copper	µg/L	1300 (1)	50	7440-50-8	EPA 200.7
Dissolved Oxygen	mg/L	Min conc. 4 (7)	0.05		
Hardness	mg/L	Metal toxicity calculation (1)			SM 2340 B
Iron	µg/L	1000 (1)	5	7439-89-6	EPA 200.7
Lead	µg/L	15 (2)	1	7439-92-1	EPA 200.8
Magnesium	µg/L	16,000 (4)	100	7439-96-4	EPA 200.7
Manganese	µg/L	50 (2)	1	7439-96-5	EPA 200.7
Mercury	µg/L	2 (2)	1	7439-97-6	EPA 245.1
Molybdenum	µg/L	10 (3)	10	7439-98-7	EPA 200.7
Nickel	µg/L	140(1)	10	7440-02-0	EPA 200.7
Nitrate + Nitrite as N	µg/L	10,000 (2)	10	7727-37-9	EPA 300.1
Orthophosphate	µg/L	50 (2)	10	14265-44-2	EPA 365.1
pH	units	6.5 to 9	0.1		EPA 150.1
Selenium	µg/L	4.6 (1)	3	7782-49-2	EPA 200.8
Silver	µg/L	100 (2)	10	7440-22-4	EPA 200.7
Sodium	µg/L	69,000 (3)	500	7440-23-5	EPA 200.7
Specific Conductance	µS/cm	1000 (2)	2		SM 2510B
Sulfate	µg/L	500,000 (2)	1000	14808-79-8	EPA 300.1
Total Phosphorus	µg/L	110 (6)	10	14265-44-2	EPA 365.3
Total Dissolved Solids	µg/L	450,000 (3)	10,000		
Temperature	°C	No measurable increase	0.05		
Thallium	µg/L	2 (2)	1	7440-28-0	EPA 200.8
Vanadium	µg/L	100 (3)	10	7440-62-2	EPA 200.8
Zinc	µg/L	2100(1)	100	7440-66-6	EPA 200.7

(1) Oregon Department of Environmental Quality Division 41, Water Quality Standards: Beneficial Uses, Policies, and Criteria
(2) National Maximum Contaminant Level or National Recommended Quality Criteria, EPA
(3) Ayers, R. S. and D. W. Westcot, 1985. *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome.
(4) Spectrum Analytic, Inc. Guide to Interpreting Irrigation Water Analysis. Washington C.H., Ohio*http://www.spectrumanalytic.com/support/library/ftIA Guide to Interpreting Irrigation_Water_Analysis.htm*
(5) Moyl Moyle, P. B. 2002. Inland fishes of California. Revised and expanded edition.
(6) Oregon Department of Environmental Quality, Upper Klamath Lake Total Maximum Daily Load, 2002.
(7) Oregon Department of Environmental Quality, Upper Klamath and Lost River Subbasins Total Maximum Daily Load and Water Quality Management Plan, 2010.

Exhibit B2. Water Quality Standards for California and Reporting Limits.

Constituent	Units	Maximum Concentration	Detection Limit for Reporting	CAS Registry Number	Analytical Method
Alkalinity	µg/L	20,000 (1)	500		SM 2320 A
Aluminum	µg/L	1000 (1)	50	7429-90-5	EPA 200.7
Ammonia as N	mg TAN/L	7.3 to 1.0 (5) dependent upon temp. and pH	0.05	7664-41-7	EPA 350.1
Antimony	µg/L	6 (1)	6	7440-36-0	EPA 200.8
Arsenic	µg/L	10 (1)	2	7440-38-2	EPA 200.8
Barium	µg/L	1000 (1)	100	7440-39-3	EPA 200.7
Beryllium	µg/L	4 (1)	1	7440-41-7	EPA 200.7
Bicarbonate	µg/L	61,000 (4)	500	71-52-3	SM 2320 A
Boron	µg/L	500 (2)	50	7440-42-8	EPA 200.7
Cadmium	µg/L	5 (1)	1	7440-43-9	EPA 200.7
Chloride	µg/L	40,000 (4)	500	16887-00-6	EPA 300.1
Chromium, total	µg/L	50 (1)	10	7440-47-3	EPA 200.7
Cobalt	µg/L	50 (3)	10	7440-48-4	EPA 200.8
Copper	µg/L	1000 (2)	50	7440-50-8	EPA 200.7
Dissolved Oxygen	mg/L	5 (2)	0.05		
Hardness	µg/L	400,000 (2)			SM 2340 B
Iron	µg/L	300 (1)	5	7439-89-6	EPA 200.7
Lead	µg/L	15 (1)	1	7439-92-1	EPA 200.8
Magnesium	µg/L	16,000 (5)	100	7439-96-4	EPA 200.5
Manganese	µg/L	50 (1)	1	7439-96-5	EPA 200.7
Mercury	µg/L	2 (1)	1	7439-97-6	EPA 245.1
Molybdenum	µg/L	10 (3)	10	7439-98-7	EPA 200.7
Nickel	µg/L	100(1)	10	7440-02-0	EPA 200.7
Nitrate + Nitrite as N	µg/L	10,000 (1)	10	7727-37-9	EPA 300.1
Orthophosphate	µg/L	50 (5)	10	14265-44-2	EPA 365.1
pH	units	7 to 9 (2)	0.1		EPA 150.1
Selenium	µg/L	5 (1)	3	7782-49-2	EPA 200.8
Silver	µg/L	100 (1)	10	7440-22-4	EPA 200.7
Sodium	µg/L	69,000 (3)	500	7440-23-5	EPA 200.7
Specific Conductance	µS/cm	1000 (2)			SM 2510B
Sulfate	µg/L	250,000 (1)	1000	14808-79-8	EPA 300.1
Total Phosphorus	µg/L	100 (5)	10	14265-44-2	EPA 365.3
Total Dissolved Solids	µg/L	450,000 (3)	10,000		
Temperature	°Fahrenheit	< 5°F above natural receiving water temp.	0.05		
Thallium	µg/L	2 (1)	1	7440-28-0	EPA 200.8
Vanadium	µg/L	100 (3)	10	7440-62-2	EPA 200.8
Zinc	µg/L	5000 (1)	100	7440-66-6	EPA 200.7

(1) Title 22. The Domestic Water Quality and Monitoring Regulations specified by the State of California Health and Safety Code (Sections 4010-4037), and Administrative Code (Sections 64401 et seq.), as amended.
(2) California Regional Water Quality Control Board, North Coast Region, Water Quality Control Plan for the North Coast Region.
(3) Ayers, R. S. and D. W. Westcot, *Water Quality for Agriculture* , Food and Agriculture Organization of the United Nations - Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985).
(4) Spectrum Analytic, Inc. Guide to Interpreting Irrigation Water Analysis. Washington C.H., Ohio*http://www.spectrumanalytic.com/support/library/ff/A_Guide_to_Interpreting_Irrigation_Water_Analysis.htm*
(5) National Recommended Quality Criteria , EPA