

GRENADA IRRIGATION DISTRICT PIPELINE PROJECT

Initial Study/Notice of Intent to Adopt a Mitigated Negative
Declaration

Prepared for
Grenada Irrigation District

February 2021



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Prepared for
Grenada Irrigation District
506 3rd Street
Yreka, CA 96097

February 2021

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CHAPTER 1

Introduction

The Grenada Irrigation District (GID) is a special district that owns and operates four parcels, including a point of diversion, a lift station. GID provides water to over 60 users who irrigate up to 1,477 acres within the 4,144-acre district boundary. The GID service area boundary is approximately two to three miles west of the Shasta River. GID has considered numerous strategies to reduce the volume of water diverted from the Shasta River based on enhancing flow conditions during life stage needs for coho salmon while still meeting the irrigation demands of its district users. Investigations show delivery inefficiency in GID's main canal is significant when diverting. During wet years, GID is typically not curtailed during the latter part of the summer and would continue to be allowed to divert.

Currently, due to GID's low priority water right, diversion volume is often curtailed or turned off by mid-August during normal and drier years to meet irrigation demand for higher priority and riparian water rights downstream. Approximately 70 cfs must be by-passed to higher priority or riparian rights downstream or GID is curtailed. GID and one other small diversion located approximately 10 river miles downstream are typically the only diversions curtailed on the Shasta River below Big Springs during normal water years. Curtailment is during the low flow period of the summer, after June 15. curtailment is overseen by the Scott-Shasta Watermaster Service who has authority to implement the Shasta River decree as directed by Siskiyou County Superior Court. In order to meet the enhancement of flows for Coho Salmon in Shasta River, GID is proposing to reduce the loss of water, and thus increase the efficiency of delivering water diverted, in its irrigation conveyance system by constructing a pipeline from the diversion point at the Shasta River pumphouse to connect directly with the pumphouse at Old Highway (Hwy) 99 and Pumphouse Road (proposed project).

As lead agency under the California Environmental Quality Act (CEQA), GID has prepared this Draft Initial Study (IS) and Notice of Intent (NOI) to adopt a Mitigated Negative Declaration (MND) to address the environmental consequences of the construction and operation of the proposed project. This document includes the:

- IS with completed Environmental Checklist (consistent with Appendix G of the CEQA Guidelines); and,
- Proposed Notice of Intent (NOI) to adopt a MND to satisfy CEQA requirements.

This document will be available for public comment from February 24, 2021 to March 26, 2021 at the Siskiyou County Library 719 Fourth Street, Yreka, CA 96097 Monday through Friday from 9 a.m. to 5 p.m. Following completion of the required public comment period, and before

approving the proposed project, GID will consider the MND together with any comments provided during the public comment period and will adopt the MND if, based on the whole of the record: (1) there is no substantial evidence that the proposed project will have a significant effect on the environment; and (2) that it represents GID's independent judgement and analysis.

CHAPTER 2

Project Description

2.1 Introduction

The Grenada Irrigation District (GID) is a special district that owns and operates four parcels, including a point of diversion, a lift station. GID provides water to over 60 users who irrigate up to 1,477 acres within the 4,144-acre district boundary. The GID service area boundary is approximately two to three miles west of the Shasta River. Demand for water from GID users varies significantly based on agricultural production economic value of crop(s) in comparison to irrigation fees. Certainty based on water year types (e.g., wet, dry, etc.) also factors into water users' decisions on purchasing water. GID has a large water right allowing the irrigation district to divert up to 40 cubic feet per second (cfs) from the Shasta River. GID maintains 9.9 miles of an open irrigation ditch that conveys water to users.

The total length of canal from GID's pumping station at the Shasta River to the pump station near Old Highway 99 on Pumphouse Rd is 5.3 miles. GID's conveyance efficiency is more variable on GID's main canal than other canals and ditches in the Shasta Valley. GID conveyance efficiency is more dependent on the percentage of water diverted and quality of irrigation ditch maintenance as GID's main irrigation ditch contours along the toe of rocky hill slopes in unconsolidated volcanic soils and rock formations for approximately 3.5 miles. A considerable amount of water transmission loss occurs along GID's irrigation ditch. The greater the volume of water diverted, the more the conveyance loss increases. In addition to higher water diversions, excessive aquatic vegetation in the irrigation ditch results in increased transmission losses where up to 38% of the water diverted from the Shasta River is lost during transmission when 35 to 40 cfs is being diverted (Davids Engineering, 2006). The proposed GID pipeline project (proposed project) presented in this Initial Study would decrease the losses of water by installing a pipeline from the point of diversion on the Shasta River to the on-district pump station on Pumphouse Road.

2.2 Project Location

GID is located in central Siskiyou County, with facilities located to the west and east of Interstate 5 (I-5). The proposed project area includes two of GID's parcels located near the Shasta River that include existing intake and pumping infrastructure. The two GID parcels are surrounded by property owned by Outpost North Annex, LLC, and operated by Belcampo Farms which is generally used as livestock rangeland and pasture production. GID's open irrigation ditch currently travels the contour of foothills flowing south/southwest of the diversion pump station on the Shasta River and then east, crossing under I-5, then traverses north again to irrigation district west of I-5. The proposed project area includes the GID service area, parcels, pump stations, existing open irrigation ditch, and proposed project pipeline alignment as shown on **Figure 1**.



SOURCE: Esri, 2015; ESA, 2019

Grenada Irrigation District Pipeline Project

Figure 1
Regional Location

2.3 Project Objectives

The objectives of the proposed project are to: (1) decrease losses of water in GID's irrigation; (2) decrease the diversion amounts during the year to benefit coho salmon; (3) increase the amount of water flow in the Shasta River for salmonids; and, (4) obtain coverage for future operations and maintenance of GID's facilities under the Safe Harbor Agreement for the Shasta Watershed Conservation Group.

2.4 Project Description

The proposed project would construct a buried pipeline from GID's existing diversion pump station from the Shasta River to GID's on-district pump station near Pumphouse Rd west of Old Hwy 99. The pipeline would mostly be installed on property owned by Outpost North Annex, LLC from the GID pumping station at the Shasta River to the discharge site west of Old Highway 99. The pipeline alignment and associated staging areas and width of construction on either side of the pipeline alignment described in the following section comprise the proposed project site. The buried pipeline would be a 36-inch PVC pipe with a minimum burial target depth of 30-inches below ground surface. East of I-5 the pipeline would either generally follow the access road to the GID pump station or the existing electrical transmission line going to the GID pump station. The pipeline grade and depth would follow the elevation of the terrain with efforts to maintain constant grade to reduce the number of air vents and drains. The pipeline would be designed to carry a maximum water flow of 24 cfs to the existing pump station near Old Highway 99.

Based on pump curve capability, up to 24 cfs can be delivered to GID Upper Ditch or divided between the Upper and Lower Ditches (Lower Ditch is the continued extension of the GID's Main Canal), dependent upon irrigation demand and rotation frequency. The Upper and Lower ditches are approximately 700 feet apart from the existing pump station on Pumphouse Road. The proposed 36-inch pipeline would continue to the Upper Ditch where a divider box would allow operators to split the water and deliver the to meet irrigation demands. Approximately 700 feet of 18-inch pipe would be placed next to the 36-inch pipe between the upper and lower ditches, allowing flow to return to the lower ditch. The proposed project is a water conservation project that is expected to conserve approximately 1,100 acre feet annually. The conserved water would remain in the Shasta River to benefit in stream conditions, mostly during the spring and early summer. GID has worked with the National Oceanic and Atmospheric Administration (NOAA) – National Marine Fisheries Service (NMFS) and the California Department of Fish and Wildlife (CDFW) to develop a diversion schedule that is beneficial to threatened coho salmon and steelhead as well as chinook salmon compared to current diversion operations.

2.5 Construction Activities

Construction of the proposed project would install roughly 17,500 feet of 36-inch diameter PVC pipeline to be used to deliver water to GID service area in lieu of the existing earthen ditch. The proposed alignment was chosen to avoid impact to pastures and/or wetlands. The proposed pipeline would primarily be installed using excavators to trench and backfill the pipeline, except

at the I-5 crossing and at Old Hwy 99 crossing where the pipeline would require jack and bore techniques. The construction chronology assumes approval to seek funding from Outpost North Annex, LLC has been granted and terms of a construction and maintenance agreement and easement have been agreed upon. Construction methods are described in more detail below.

Staking

Prior to construction the proposed pipeline would be staked to verify the pipeline alignment per design. Staking is temporary and line stakes are often disturbed by livestock. Staking would take place commensurate with construction pace to allow ranching operations not immediately adjacent to construction to continue. Generally, construction staking would not occur more than 2,000 feet ahead of the location of construction activities.

Staging

Construction staging areas would be required for storage of pipe, PVC angle joints, vents and related components used to construct the proposed project. GID proposes to have staging areas along the pipeline route at the following pipeline footage locations starting at the diversion pump station parcel near the Shasta River at the zero-foot location and proceeding west as shown on **Figure 2**. No development is proposed for these staging areas.

Access

GID would generally maintain the existing access road to the pump station near the Shasta River that was improved when the GID fish passage and screening project occurred in 2012-2013. GID would seek to also use several lateral roads on Outpost North Annex, LLC currently used by GID to access the existing irrigation ditch for maintenance. The lateral roads would be improved by shaping and adding road base to ensure access during winter or wet conditions at locations where the proposed pipeline would cross lateral roads. In this case, lateral roads would be improved both for construction access and for maintenance access. Rather than developing roads where the pipeline transects rangeland (and no access exists), the proposed pipeline would be installed using overland drops from a telescoping handler and avoiding heavy travel along the pipeline route. After construction, overland vehicles such as pickup trucks or all-terrain vehicles would access the full length of the pipeline for maintenance to observe for leaks and other issues, as needed, during construction and post-construction pressure testing.

Construction Methodology

Construction of the proposed project would require the following equipment: two excavators, a dozer, rock screen, pipe trailer(s), a skip loader, and a telescoping handler. One excavator would excavate and install pipe while the second excavator would backfill the pipe using a rock screen that is placed over the installed pipe in the trench to improve backfill material (also called shading or shade). All equipment would be verified as cleaned and washed according to United State Forest Service equipment weed washing standards prior to arrival. The excavated trench for the pipeline would be five feet wide at the base and up to 10 feet wide at ground surface. Excavated soil would be placed within two to three feet from the edge of the trench and used for backfilling the trench. Top soil would be placed outside (separately) from the remainder of the material. The



SOURCE: Esri, 2015; ESA, 2020

Grenada Irrigation District Pipeline Project

Figure 2
Proposed Project Pipeline and
Potential Staging Area Locations

width of the excavated soil pile would be approximately 12 – 14 feet wide. The resulting width of construction would be approximately 15 – 25 feet wide. Vehicle access and placement of pipe with tele-handler would expand the width of the construction activities along the pipeline alignment to approximately 40 – 50 feet.

Survey equipment would be used to maintain design grade, alignment, and backfill depth. Soil excavated from trenches during construction would be deposited on the side of the excavated trench. Pipe lengths would be installed as soon as the trench is excavated to a point the pipe length could be added.

The second excavator would backfill the installed pipe with the stored excavated soil. When the soil does not meet backfill specifications, the backfill soil would be passed through the rock screen allowing finer soils to sufficiently shade the pipe while oversized material and rock would be added to the trench after sufficient cover with screened material. Lastly, top soil would be placed back at the surface layer to maintain and promote vegetation. Per the design, the western most 700 feet would also include an 18-inch diameter pipe that can deliver water back to the lower ditch, if needed during operation. It is anticipated that the 18-inch pipeline that connects GID's upper and lower ditches would be installed separately and not placed in the same trench as the 36-inch delivery pipe because they would be about 12 to 14 feet apart.

Depending upon topography and grade, air vents may be necessary. Air vents can be placed below soil surface elevation if desired by the landowner. A fabricated box and the vent covers can keep the air vent below ground but maintainable and accessible for observation. Above ground air-vents could also be constructed where designate to best serve maintenance needs. Above ground air-vents would be protected from livestock and wildlife by using a protective cover. Once backfilled, the site would be re-graded and smoothed using a skip loader to match the existing topography. The disturbed area would be reseeded with a selected seed mix to match existing groundcover and mulched.

Construction methods used to install pipeline under I-5 and Old Hwy 99 would use jack and bore equipment. The 36-inch pipe material would switch from PVC to butt-fusion high-density polyethylene resin (HDPE) pipe. The 36-inch inch HDPE pipe would be encased within a 48-inch steel well casing pipe while under the crossings. Related to implementation methods, a pit would be installed to the installation depth of 15 feet below ground surface on both sides of the boring sites. Once excavated, a solid floor would be constructed out of base rock and/or concrete. A large thrust block would be constructed on the back wall where the jack and bore machine would be placed. Once the jack and bore machine is installed, drilling would commence with the excess drilled soil removed to adjacent staging areas and likely used as pipe shading backfill where needed. The pipeline trench would be excavated from the installation pit back approximately 120 to 160 feet to guide the HDPE pipe into the 48-inch metal well casing pipe.

As soil is removed and taken to staging areas, sections of the 48-inch well casing would be installed and pushed into the excavated bore and welded together. When the boring is completed with the exterior casing pipe, the interior HDPE pipe would slide through the well casing where it would be connected to PVC pipe using a compression conversion coupler on either end. Caps would be

added to either end and pressurized grout would be injected into the interstitial space that exists between the two pipes. Materials and equipment would be removed and the excavated pits would be refilled and topsoil would be added at the end of the process to match the existing condition.

Construction Schedule

Construction of the proposed project would last approximately 10 months, with a majority of the work occurring over a three- to four-month period during the late summer and fall. The intention of the project schedule is to start with boring and jacking sites since those applications are most difficult. Open trenching would occur after boring.

Depending on the start date, there may be a period of no work during irrigation season and/or delays to avoid conflict with ranching operations. During the irrigation season, the water table can be elevated to within 5 to 6 feet from the below ground surface, especially west of I-5. Construction timing can vary based on region or section of construction for this project. Construction west of I-5 would occur during non-irrigation season to not interrupt irrigation season and when the water table is lower (i.e., the non-irrigation season). Construction west of I-5 would occur during late fall. Construction east of I-5 would generally occur throughout the year except for tying into the existing pump station and potential interference with Belcampo Farms operation. Construction is estimated to occur from 2020 to 2021.

2.6 Operation and Maintenance

Operation

Operation of the proposed project would reduce the volume of water diverted from the Shasta River to a maximum flow capacity within the proposed pipeline at 24 cfs. Currently there are no limitations that prevent GID from diverting up to 40 cfs during the spring through mid-summer, so the proposed flow schedule would reduce the volume of water diverted to be 16 cfs less than allowed and roughly 5 cfs less than current operations. The proposed project would result in changes to diversion schedules based on salmonid life stages and water year types, as shown in **Tables 2-1 and 2-2**. The proposed project pump station operational diversion schedules would be initiated once the proposed pipeline is in operation as shown below.

TABLE 2-1
DIVERSION VOLUME SCHEDULE – NORMAL AND DRIER YEARS

Date	Salmonid Life Stage	Current Diversion	Proposed Diversion	Conserved Water Volume (acre-feet [AF])
4/01-4/9 (9 days)	Juvenile	30 cfs	0 cfs	535 AF
4/10-5/20 (39 days)	Juvenile	30 cfs	24 cfs	464 AF
5/21-8/15 (86 days)	Over-summering	24 cfs	24 cfs*	00 AF
8/16-9/6 (22 days)	Over-summering	0-15 cfs	0-15*	00 AF
9/7-9/30 (23 days)	Over-summering	21 cfs	18 cfs*	137 AF
Average Annual Volume Conserved				1,136 AF

NOTE:

* Schedule does not consider limitations of diversion caused by decree, priority and water master service.

**TABLE 2-2
DIVERSION VOLUME SCHEDULE – WET YEARS**

Date	Salmonid Life Stage	Current Diversion	Proposed Diversion	Conserved Water Volume (acre-feet [AF])
4/01-4/9 (9 days)	Juvenile	30 cfs	0 cfs	535 AF
4/10-5/20 (39 days)	Juvenile	30 cfs	24 cfs	464 AF
5/21-8/15 (86 days)	Over-summering	24 cfs	24 cfs*	00 AF
8/16-9/6 (22 days)	Over-summering	24 cfs	24 cfs*	00 AF
9/7-9/30 (23 days)	Over-summering	24 cfs	18 cfs	274 AF
Average Annual Volume Conserved				1,273 AF
NOTE:				
* Schedule does not consider limitations of diversion caused by decree, priority and water master service.				

Maintenance

Post-construction maintenance and repair activities would be on a routine inspection schedule on an as-needed basis. Access for maintenance would be needed to conduct routine observation of the pipeline and components as well as conduct routine maintenance and repair. Access for maintenance would include using existing roads and lateral roads to access the pipeline alignment area to be inspected and maintained. Maintenance activities would include routine observation of the pipeline including checking function of air vents and using monitoring equipment (pressure gages). While the proposed project would be designed to operate during inclement weather and protected from livestock uses, continued observation would be required for preventative maintenance or repair prior to significant damage. The following access and maintenance activities would be implemented:

Routine observation and maintenance:

- Travel pipeline at least monthly to observe and look for potential issues to address
- Access pipeline to operate drain valves before and after irrigation season

Preventative Maintenance/Repair:

- Weed abatement: In coordination with Outpost North Annex, LLC, GID would implement a weed control program to limit growth of weeds equal to pre-construction conditions. GID commits to a long term effort to control noxious weeds along the access road and pipeline as a result of the proposed project.
- Repair of pipeline or damaged components of the pipeline that could require excavation and use of heavy equipment.

CHAPTER 3

Initial Study

1. **Project Title:** Pipeline Project
2. **Lead Agency Name and Address:** Grenada Irrigation District
3. **Contact Person and Phone Number:** Gary Black
(530) 598-5800
4. **Project Location:** Community of Grenada, Unincorporated
Siskiyou County
5. **Project Sponsor's Name and Address:** Grenada Irrigation District
506 3rd Street
Yreka, CA 96097
6. **General Plan Designation(s):** Non-Prime Agricultural District
7. **Zoning:** AG-2

8. Description of Project:

Construction and installation of a 36" pipeline from GID's existing diversion pump station at the Shasta River to GID's pump station near Pumphouse Rd west of Old Highway 99

9. Surrounding Land Uses and Setting.

GID is located in central Siskiyou County, California. The project area is agricultural lands and rural residential

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)

U.S. Army Corps of Engineers Section 404 permit

North Coast Regional Water Quality Control Board Section 401 Water Quality Certification and National Pollutant Discharge and Elimination System Construction General Permits

California Department of Fish and Wildlife Section 1600 Streambed Alteration Agreement Permit

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?

GID has not received request by local tribes to be formally consulted of projects pursuant to PRC Section 21080.3.1(b).

3.1 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a “Potentially Significant Impact” as indicated by the checklist on the following pages.

- | | | |
|---|--|---|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture and Forestry Resources | <input checked="" type="checkbox"/> Air Quality |
| <input checked="" type="checkbox"/> Biological Resources | <input checked="" type="checkbox"/> Cultural Resources | <input type="checkbox"/> Energy |
| <input type="checkbox"/> Geology/Soils | <input checked="" type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> Hazards & Hazardous Materials |
| <input checked="" type="checkbox"/> Hydrology/Water Quality | <input type="checkbox"/> Land Use/Planning | <input type="checkbox"/> Mineral Resources |
| <input type="checkbox"/> Noise | <input type="checkbox"/> Population/Housing | <input type="checkbox"/> Public Services |
| <input type="checkbox"/> Recreation | <input type="checkbox"/> Transportation | <input checked="" type="checkbox"/> Tribal Cultural Resources |
| <input type="checkbox"/> Utilities/Service Systems | <input type="checkbox"/> Wildfire | <input type="checkbox"/> Mandatory Findings of Significance |

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial study:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

 _____ Signature	 _____ Date
---	---

3.2 Environmental Checklist

Aesthetics

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
1. AESTHETICS — Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

- a, c) The project is located in Shasta Valley approximately 3 miles south of the town of Grenada in Siskiyou County. The project area is at an elevation of 2500-2600 feet above sea level, and is located on pasturelands within a landscape dominated by California annual grasslands. Most of the land is grazed and managed for pasture production. The proposed project is not within a designated scenic vista. However, the areas around the project site consists of rolling hills with some long views across the valley and distant views of the Cascade Mountains.

Construction of the approximately 17,500-foot pipeline would occur over approximately 10 months, with a majority of the work occurring over 3 to 4 months. Construction activities would be visible intermittently during daytime hours for viewers driving along I-5 and for the six residences west of I-5, along Pumphouse Road and Old Highway 99. Because the pipeline would not be constructed all at one time, visible construction activities would be short-term and visible to a limited number of people.

The proposed pipeline would be placed underground along the alignment indicated in Figure 2. There would be ground disturbance during installation of the water transmission pipeline. However, the aboveground conditions would be returned to pre-construction conditions and ground disturbance would be temporary. Therefore, the pipeline would not be visible and would not affect a scenic vista or degrade the existing visual character or quality in its surroundings.

Because views of construction activities would be temporary and the pipeline would not be visible after construction, the proposed project would have a **less-than-significant**

- impact on scenic vistas and would not degrade the existing visual character or quality of the site and its surroundings.
- b) There are no eligible or officially-listed State Scenic Highways in the vicinity of the project area. The nearest segment of an eligible State Scenic Highway is approximately 13 miles north of the project area, along I-5 from State Route 3 near Yreka to the California/Oregon state line. No trees or rock outcroppings would be removed or disturbed as part of the proposed project. Therefore, **no impact** would occur.
- d) Nighttime construction activities are not anticipated. The proposed project is an underground pipeline and would not include new permanent sources of light or glare. Therefore, **no impact** would occur.

References

California Department of Transportation (Caltrans), 2019. Scenic Highway System Lists. Available: <https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways>. Accessed November 14, 2019.

Agricultural and Forest Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
2. AGRICULTURE AND FORESTRY RESOURCES —				
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

- a, b) Farmlands are mapped by the State of California Department of Conservation (DOC) under the Farmland Mapping and Monitoring Program (FMMP). The FMMP was created by the State of California to provide data on farmland quality for use by decision makers in considering possible conversion of agricultural lands. Under the FMMP, land is delineated into the following eight categories: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban or Built-Up Land, other Land, and Water.

The proposed pipeline alignment would not be located on any lands designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance by the FMMP; the pipeline would be constructed through lands classified as Other Land and Farm Land of Local Importance (DOC 2019a). There are no Williamson Act-contracted lands in the vicinity of the proposed project. The proposed project would not conflict with the existing Non-Prime Agricultural District (AG-2) zoning because public utility pipelines are permitted in any zoning district and use of irrigation pipelines conform with existing agricultural practices. West of I-5, the pipeline would be installed on private land used for grazing; west of I-5, the pipeline would either generally follow the access road to GID

- pumps or the existing irrigation ditch. Therefore, the proposed project would not convert farmland to a nonagricultural use. There would be **no impact** on farmland, Williamson Act contracts, or zoning.
- c, d) Forestland is defined as land that can support 10 percent native tree cover and woodland vegetation of any species—including hardwoods—under natural conditions, and that allows for management of one or more forest resource—including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation—and other public benefits (PRC 12220[g]). The proposed project area does not support any forestland. No portion of the proposed project site is zoned as forest land, timberland, or timberland zoned Timberland Production. The proposed project area does not contain native tree cover that would be classified as forestland under PRC Section 12220(g). Implementation of the proposed project would not result in conversion forest resources. **No impact** to forestry resources would occur.
- e) As discussed in criteria (a) through (d) above, the proposed project would not result in the direct conversion of farmland or forest land to non-agricultural or non-forest use. As described in the Project Description, the primary intent of the project is to install a pipeline to improve water conservation. The proposed project would not induce any growth that could result in development that converts farmland to non-agricultural use or conversion of forest land to non-forest use. **No impact** would occur.

References

California Department of Conservation (DOC), 2019a. California Important Farmland Finder. Available <https://maps.conservation.ca.gov/DLRP/CIFF/>. Accessed November 14, 2019.

Air Quality

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
3. AIR QUALITY —				
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

- a) The proposed GID pipeline alignment is located in central Siskiyou County, which is under the jurisdiction of the Siskiyou County Air Pollution Control District (APCD). The APCD is responsible for the maintenance of air quality conditions in Siskiyou County through the implementation of applicable state and federal regulations. Siskiyou County is currently designated as either attainment or unclassified for all criteria air pollutants, as determined by the national ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS) (Table AQ-1).

TABLE AQ-1
SISKIYOU COUNTY CRITERIA POLLUTANT ATTAINMENT STATUS

Pollutant and Averaging Time	Designation	
	State Standards	Federal Standards
Ozone (1-hour)	Attainment	No Federal Standard
Ozone (8-hour)	Attainment	Unclassified/Attainment
Carbon Monoxide	Unclassified	Unclassified/Attainment
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified/Attainment
Respirable Particulate Matter (PM ₁₀)	Attainment	Unclassified
Fine Particulate Matter (PM _{2.5})	Attainment	Unclassified/Attainment
Lead	Attainment	Unclassified/Attainment
Visibility Reducing Particles	Unclassified	No Federal Standard
Sulfates	Attainment	No Federal Standard
Hydrogen Sulfide	Unclassified	No Federal Standard
CARB makes area designations for ten criteria pollutants (O ₃ , CO, NO ₂ , SO ₂ , PM ₁₀ , PM _{2.5} , lead, visibility reducing particles, sulfates, and hydrogen sulfide).		
SOURCES: CARB 2018		

Because Siskiyou County is in attainment or unclassified for all state and federal ambient air quality standards, the APCD is currently in compliance with the California State Implementation Plan (SIP) and has not been compelled to develop a regional air quality plan to meet attainment goals. A project of this size, with minimal construction and operational activity, would result in low levels of emissions (see analysis in criterion b) and, thus, would not impact the region's ambient air quality or the APCD's ability to maintain their attainment status. Therefore, the proposed project would have a less-than-significant impact on the APCD's ability to remain in compliance with the SIP.

- b) The proposed project would result in both construction-related and operational emissions, which were modeled for this analysis using the California Emissions Estimator Model (CalEEMod), version 2016.3.2. Project-specific information was used for modeling where available. Where project-specific data was unavailable, CalEEMod defaults were used, which capture assumed values consistent with standard practice. To calculate estimated mobile operational emissions, on-road vehicle emission factors from EMFAC 2017 were used. Model assumptions and detailed output can be found in **Appendix A**.

The majority of construction activity required for the proposed project would consist of trenching, pipe placement, and backfill; however, jack and bore activity would also be required where the proposed pipeline alignment meets Interstate 5 (I-5) and Old Highway 99. Construction is anticipated to begin in 2020 and last approximately ten months; however, work may start and stop as necessary to avoid peak irrigation season and to avoid conflict with local ranching operations. The majority of work would be completed over a period of three to four months during the driest time of the year. Construction-related emissions estimates are based on the assumption that the proposed project would be completed within four consecutive months in the same calendar year in order to represent the most conservative scenario, as the compressed timeframe would yield higher average emission volumes. The majority of operational emissions from the proposed project would come from long-term management and repair activities associated with the pipeline, which would be minimal.

Because the APCD has not developed CEQA guidance, this analysis utilizes the guidelines of the neighboring district, Shasta County Air Quality Management District (SCAQMD), to ensure consistency with the closest established thresholds. As shown in **Table AQ-2** and **Table AQ-3**, both construction and operational emission estimates fall below the SCAQMD thresholds (SCAQMD 2003).

As discussed in criterion a, the APCD is either in attainment or unclassified for all criteria air pollutant ambient air quality standards. Additionally, it is estimated that the proposed project would generate emissions below the thresholds of the neighboring district. Therefore, the project would not result in a cumulatively considerable net increase in any criteria air pollutant. The impact would be **less than significant**.

TABLE AQ-2
PROPOSED PROJECT ESTIMATED CONSTRUCTION EMISSIONS IN POUNDS PER DAY

Construction Year	ROG (ppd)	NO _x (ppd)	PM ₁₀ (ppd)
2020	1.5	15.0	5.2
SCAQMD Thresholds	25	25	80
Exceeds Threshold?	No	No	No

Project construction emissions estimates were made using CalEEMod version 2016.3.2. See Appendix A for model outputs and more detailed assumptions.

SOURCE: ESA, 2019.

TABLE AQ-3
PROPOSED PROJECT ESTIMATED OPERATIONAL EMISSIONS IN POUNDS PER DAY

Source Category	ROG (ppd)	NO _x (ppd)	PM ₁₀ (ppd)
Mobile & Off-road	0.04	0.39	0.02
SCAQMD Thresholds	25	25	80
Exceeds Threshold?	No	No	No

Project construction emissions estimates were made using CalEEMod version 2016.3.2. See Appendix A for model outputs and more detailed assumptions. All operational emissions are from mobile and off-road sources.

SOURCE: ESA, 2019.

- c) Construction emissions associated with the proposed project are short-term, temporary, and are well below the SCAQMD significance thresholds, while operational emissions are negligible. The area surrounding the proposed pipeline alignment is quite rural with very few residences. There are five known residences within 1,000 feet of the west end of the proposed alignment, off of Pumphouse Road and Old Highway 99. However, the Office of Environmental Health Hazard Assessment (OEHHA) guidance for conducting health risk assessments (HRA) does not recommend an assessment for projects whose maximally exposed individual resident is not exposed to emissions for longer than two months (OEHHA 2015). Because of the linear nature of pipeline installation projects, emissions typically do not occur in the same location for extended periods of time, thus a receptor at any given location would not be exposed to emissions for an extended duration. The temporary nature of construction emissions, the linear nature of pipeline projects, and the low emission estimates as compared to SCAQMD thresholds indicate that the proposed project would have a **less-than-significant** impact with regard to exposing sensitive receptors to substantial pollutant concentrations.
- d) Diesel-powered construction equipment can generate short-term, non-persistent odors due to engine exhaust which could impact nearby residents. As discussed in criterion c, the project site is located in a rural area with low population density. Additionally, the nature of the project would avoid the use of diesel-powered heavy machinery in any one place for an extended period of time, as construction activity would move along the

alignment as the pipeline is completed. Given the temporary nature of construction activity, the limited duration of construction at any specific point in the alignment, and the rural project location, the project would have a **less-than-significant** impact with respect to creation of odors affecting a substantial number of people.

References

California Air Resources Board (CARB), 2018. Area Designation Maps/State and National. Available: <https://ww3.arb.ca.gov/desig/adm/adm.htm>. Accessed November 19, 2019.

Office of Environmental Health Hazard Assessment (OEHHA), 2015. Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments. Available: <https://oehha.ca.gov/media/downloads/crn/2015/guidancemanual.pdf>. Accessed November 20, 2019.

Shasta County Air Quality Management District (SCAQMD), 2003. Protocol for Review – Land Use Permitting Activities: Procedures for Implementing the California Environmental Quality Act. Available: <https://www.co.shasta.ca.us/docs/libraries/resource-management-docs/aq-docs/scaqmd-ceqa-land-use-protocol.pdf>. Accessed November 18, 2019.

Biological Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
4. BIOLOGICAL RESOURCES — Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Affected Environment

Introduction

This section identifies the existing biological resources at the project site and describes project impacts on those biological resources as well as mitigation measures to reduce project-related potentially significant impacts. The information and analysis presented in this section is focused on special-status species,¹ wildlife habitats, vegetation communities, and jurisdictional waters of the United States (U.S.) and of the state that occur or have the potential to occur on the project site. The results of the assessment presented in this section are based upon literature review and queries of the U.S. Fish and Wildlife Service (USFWS) list of federal endangered and threatened species, the National Marine Fisheries Service (NMFS) list of federal endangered and threatened species, the California Department of Fish and Wildlife's (CDFW) Natural Diversity Database (CNDDB), and the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants, as well as surveys conducted at the project site. Biological resources within the project site were identified

¹ Species that are protected pursuant to federal or state endangered species laws, or have been designated as Species of Special Concern by the CDFW, or species that are not included on any agency listing but meet the definition of rare, endangered or threatened species of the CEQA Guidelines section 15380(b), are collectively referred to as "special-status species".

through habitat assessments and special-status plant species surveys conducted in July 2018 and June 2019, and an aquatic resources delineation conducted in June and November 2019.

The sources of reference data reviewed for this evaluation included the following:

- Gazelle and Lake Shastina U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles;
- Google Earth aerial photographs of the project site (Google Earth, 2019);
- USFWS list of federal endangered and threatened species that may occur in the proposed project location, and/or may be affected by the proposed project (USFWS, 2019a) (see **Appendix B**);
- NMFS list of list of federal endangered and threatened species that may occur in the proposed project location (NMFS, 2019) (see Appendix B);
- CNDDDB list of special-status species occurrences within the Gazelle, Lake Shastina, and ten surrounding USGS 7.5-minute topographic quadrangles (Yreka, Montague, Little Shasta, Solomons Temple, Juniper Flat, Hotlum, Weed, China Mountain, Gazelle Mountain, and Duzel Rock) (CDFW, 2019a) (see Appendix B);
- CNPS Inventory of Rare and Endangered Plants (v8-03 0.39) known to occur within the Gazelle, Lake Shastina, and ten surrounding surrounding USGS 7.5-minute topographic quadrangles (CNPS, 2019) (see Appendix B);
- USFWS Critical Habitat for Threatened and Endangered Species (online mapping program) (USFWS, 2019b);
- National Wetlands Inventory (USFWS, 2019c);
- CDFW Special Vascular Plants, Bryophytes, and Lichens List (CDFW, 2019b);
- CDFW Special Animals List (CDFW, 2019c);
- Grenada Enclosed Lateral Pipeline Project Wetland Delineation (Kyle Wear, 2019); and
- Grenada Irrigation District: Grenada Enclosed Lateral Pipeline Project Sensitive Plant Survey Report (William Rich and Associates, 2019).

Prior to the field surveys, special-status species characteristics and habitat requirements were reviewed to aid in field recognition of suitable habitats. During the biological surveys, existing habitat types, plants, and wildlife species within and adjacent to the project site were recorded. Vegetation communities and wildlife habitats were identified and mapped using aerial photo interpretation and field reconnaissance. Habitats were evaluated for their potential to support regionally occurring special-status species and the presence of any other biologically sensitive resources such as wetlands, riparian habitat, or drainages. A formal aquatic resource delineation was also conducted. Potentially jurisdictional wetlands and other waters of the U.S. were delineated according to methods outlined in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE, 2008). Plant nomenclature follows *The Jepson Manual: Vascular Plants of California (Second Edition)*

(Baldwin et al., 2012) as revised by the Jepson eFlora (Jepson Flora Project, 2019). Common names of plant species are derived from the Jepson Manual or Calflora (2019).

Project Area

Within the project area plant communities include seasonal wetland, seep, ephemeral drainage, annual grasslands and freshwater emergent wetlands, with western juniper woodlands found adjacent to the proposed pipeline route. Land use immediately surrounding the project site is characterized mainly by agricultural uses, along with open space and scattered rural residences. Land use immediately surrounding the project area is characterized by open space, rural residences, and recreation facilities. Elevation in the project site ranges from approximately 2,500 to 2,600 feet above sea level.

Vegetation Communities and Wildlife Habitats

Wildlife habitats are generally described in terms of vegetation types along with landform, disturbance regime, and other unique environmental characteristics. Vegetation communities are assemblages of plant species that occur together in the same area, are repeated across landscapes, and are defined by species composition and relative abundance. Wildlife habitats generally correspond to vegetation communities. The wildlife habitat types described in this document were classified using the CDFW's *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, 1988), a habitat classification scheme that was developed to support the CDFW's California Wildlife Habitat Relationship (CWHR) System. The CWHR System is a wildlife information system and predictive model for California's regularly-occurring wildlife species. The vegetation types described in this section were classified according to *A Manual of California Vegetation, 2nd Edition* (Sawyer et al., 2009). Within CDFW's current vegetation classification system, vegetation alliances are the scientifically derived hierarchical class that corresponds best with plant communities and are designed to be the unit for conservation of rare or threatened plant communities. Vegetation alliances typically represent a much finer scale of vegetation description than wildlife habitats, but correspond approximately with one or several wildlife habitat types. CDFW provides crosswalks to help correlate vegetation alliances with wildlife habitats and the descriptions below make use of the crosswalk. A description of each wildlife habitat type is presented below. Related vegetation alliances are listed following the wildlife habitat description and are based on the alliance descriptions presented by Sawyer et al. (2009). Vegetation alliances considered a Sensitive Natural Community by CDFW are marked below by an asterisk (*) and should therefore be considered a sensitive natural community under CEQA regulations.

Freshwater Emergent Wetland

Freshwater emergent wetland typically occurs in low-lying sites with soils that are semi-permanently flooded or saturated with fresh water. This aquatic community characteristically forms a dense vegetative cover dominated by perennial, emergent monocots 1 to 15 feet high that reproduce by underground rhizomes. Freshwater emergent wetlands in the project site are classified as palustrine emergent wetlands (intermittently flooded) using the *Classification of Wetlands and Deepwater Habitats of the United States* (Federal Geographic Data Committee, 2013). Within the project site freshwater emergent wetlands are dominated by short beaked sedge (*Carex simulata*), common

rush (*Juncus effusus*), tule (*Schoenoplectus acutus* var. *occidentalis*), and a variety of non-native grasses and agricultural weedy species.

Vegetation Alliances

- *Carex simulata* (short-beaked sedge meadows) *
- *Juncus effusus* (soft rush marshes)
- *Schoenoplectus acutus* (hardstem bulrush marshes) *

Annual Grassland

Annual grassland is dominated mostly by nonnative Mediterranean annual grasses such as bromes (*Bromus* spp.), and barleys (*Hordeum* spp.), and blue grass (*Poa* sp.) as well as native annual grasses including witch grass (*Panicum capillare*). Native and non-native perennial grasses are also common throughout this plant community including colonial bent grass (*Agrostis capillaris*), crested wheat grass (*Elymus lanceolatus*), and scratch grass (*Muhlenbergia asperifolia*). This vegetation community includes native and nonnative forbs as well. Examples noted in the project site include yarrow (*Achillea millefolium*), fiddleneck (*Amsinckia* sp.), red stem filaree (*Erodium cicutarium*), yellow starthistle (*Centaurea solstitialis*), and white sweetclover (*Melilotus albus*). The annual grasslands in the project site are used as pasturelands for cattle.

Vegetation Alliances

- *Bromus* spp. (annual brome grasslands)
- *Centaurea solstitialis* (yellow star-thistle fields)

Western Juniper Woodland

Western juniper (*Juniperus occidentalis*) forms sparse woodlands adjacent to the project site, in particular in the eastern portion of the site. Western juniper is the only tree species found in these woodlands, and grows principally with big sagebrush (*Artemisia tridentata*), rubber rabbitbrush (*Ericameria nauseosa*), greasewood (*Sarcobatus vermiculatus*), and crested wheatgrass (*Elymus lanceolatus*). Less frequent associated species include shrubs such as birchleaf mountain-mahogany (*Cercocarpus betuloides*), desert mountain-mahogany (*C. ledifolius*), low sagebrush (*A. arbuscula*), rabbitbrush (*Chrysothamnus viscidiflorus*), and antelope bitterbrush (*Purshia tridentata*). The scarce herbaceous layer supports scattered forbs and bunchgrasses.

Vegetation Alliances

- *Juniperus occidentalis* (western juniper woodland)

Disturbed/Developed

Disturbed/developed habitat within the project site includes irrigation canals and ditches and paved roadways (including Interstate 5). The disturbed/developed areas are largely unvegetated.

Vegetation Alliances

- *None*

Stream

Two stream courses bisect the project site; Willow Creek and McCloud Slough. Willow Creek flows north through the project site, eventually draining to the Shasta River northeast of the town of Grenada. Within the project site, Willow Creek has been channelized into a drainage ditch located immediately east of and running parallel to I-5. Within the project site, Willow Creek does not support riparian vegetation and provides limited habitat value for wildlife species. McCloud Slough is an overflow channel for Willow Creek that originates west of I-5 and drains to the Shasta river north of the project site. Within the project site, McCloud Slough does not have a defined channel and is more accurately described as a depression or swale dominated by wetland vegetation.

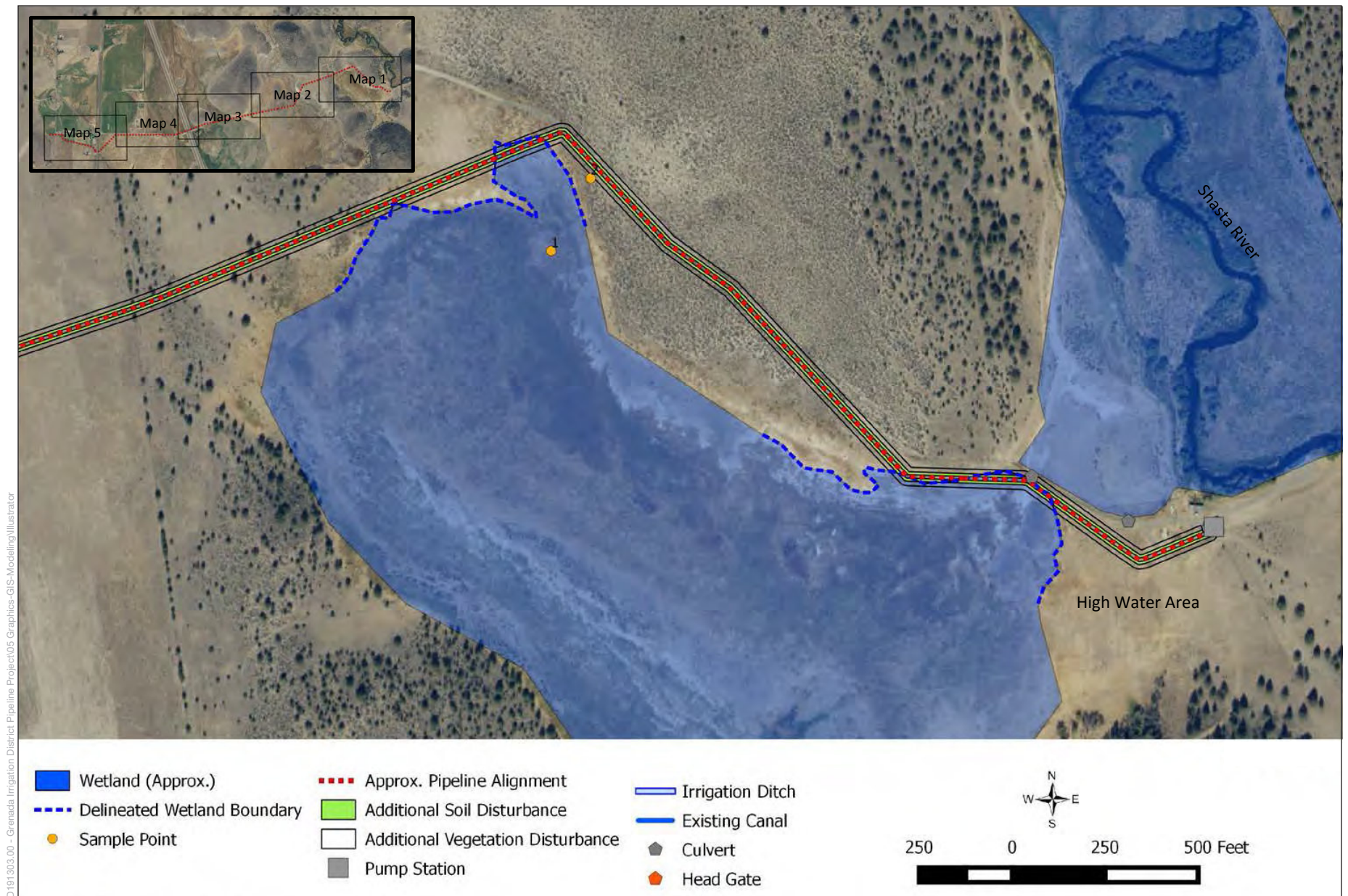
Vegetation Alliances

- None

State and Federal Protected Wetlands and Waters

Wetlands are ecologically complex habitats that support a variety of both plant and animal life. In a jurisdictional sense, the federal government defines wetlands in Section 404 of the Clean Water Act (CWA) as “areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3[b] and 40 CFR 230.3). Under normal circumstances, the federal definition of wetlands requires three wetland identification parameters be present: wetland hydrology, hydric soils, and hydrophytic vegetation. Examples of wetlands include freshwater marsh, seasonal wetlands, and vernal pool complexes that have a hydrologic link to other waters of the U.S. “Other waters of the U.S.” refers to those aquatic features that are regulated by the CWA but are not wetlands (33 CFR 328.4). To be considered jurisdictional under the CWA, these features must exhibit a defined bed and bank and an ordinary high-water mark. Examples of other waters of the U.S. include rivers, creeks, intermittent and ephemeral channels, ponds, and lakes. The U.S. Army Corps of Engineers (USACE) is the responsible agency for regulating wetlands and other waters of the U.S. under Section 404 of the CWA, while the U.S Environmental Protection Agency (EPA) has overall responsibility for the CWA. Wetlands and other aquatic features may also be protected under state regulations, including the Porter-Cologne Act and California Fish and Game code.

An aquatic resources delineation was conducted for the project site in June and November 2019 (Kyle Wear, 2019). The aquatic resources delineation identified 4.922 acres of potentially jurisdictional wetlands and other waters of the U.S., including two stream courses (Willow Creek and McCloud Slough), within the project site that are expected to be subject to regulation under Section 404 of the CWA (see **Figures 3 through 7**). Aquatic resources within the project site consist of freshwater emergent wetlands and streams (see description above). The aquatic resources delineation has not yet been verified by the USACE and should be considered preliminary until verification in writing is received from the USACE. Much of the area is mapped as palustrine emergent wetlands in the *National Wetlands Inventory* (USFWS, 2019c).

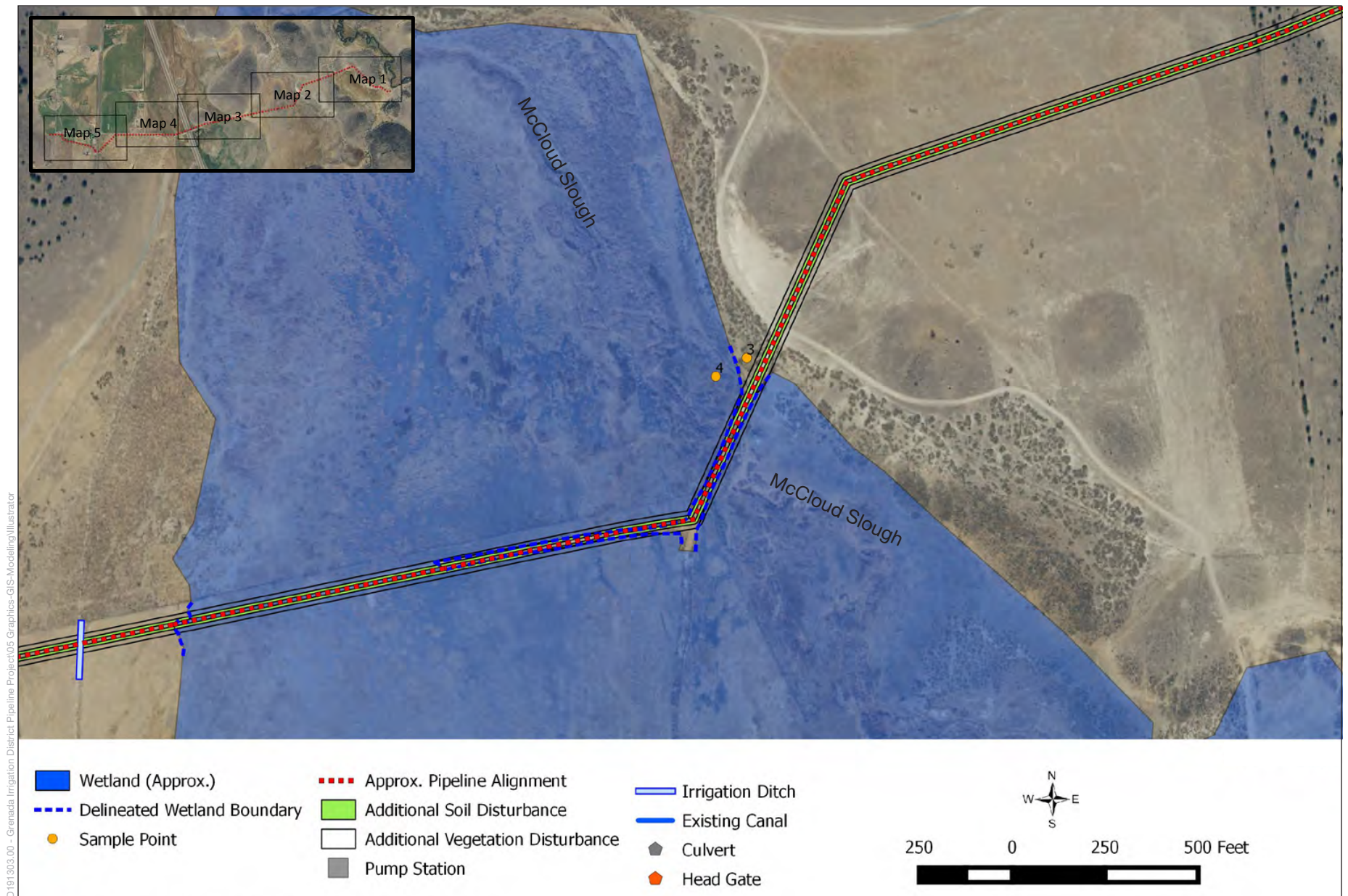


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SOURCE: Grenada Irrigation District, 2019

Grenada Irrigation District Pipeline Project

Figure 3
Aquatic Resources

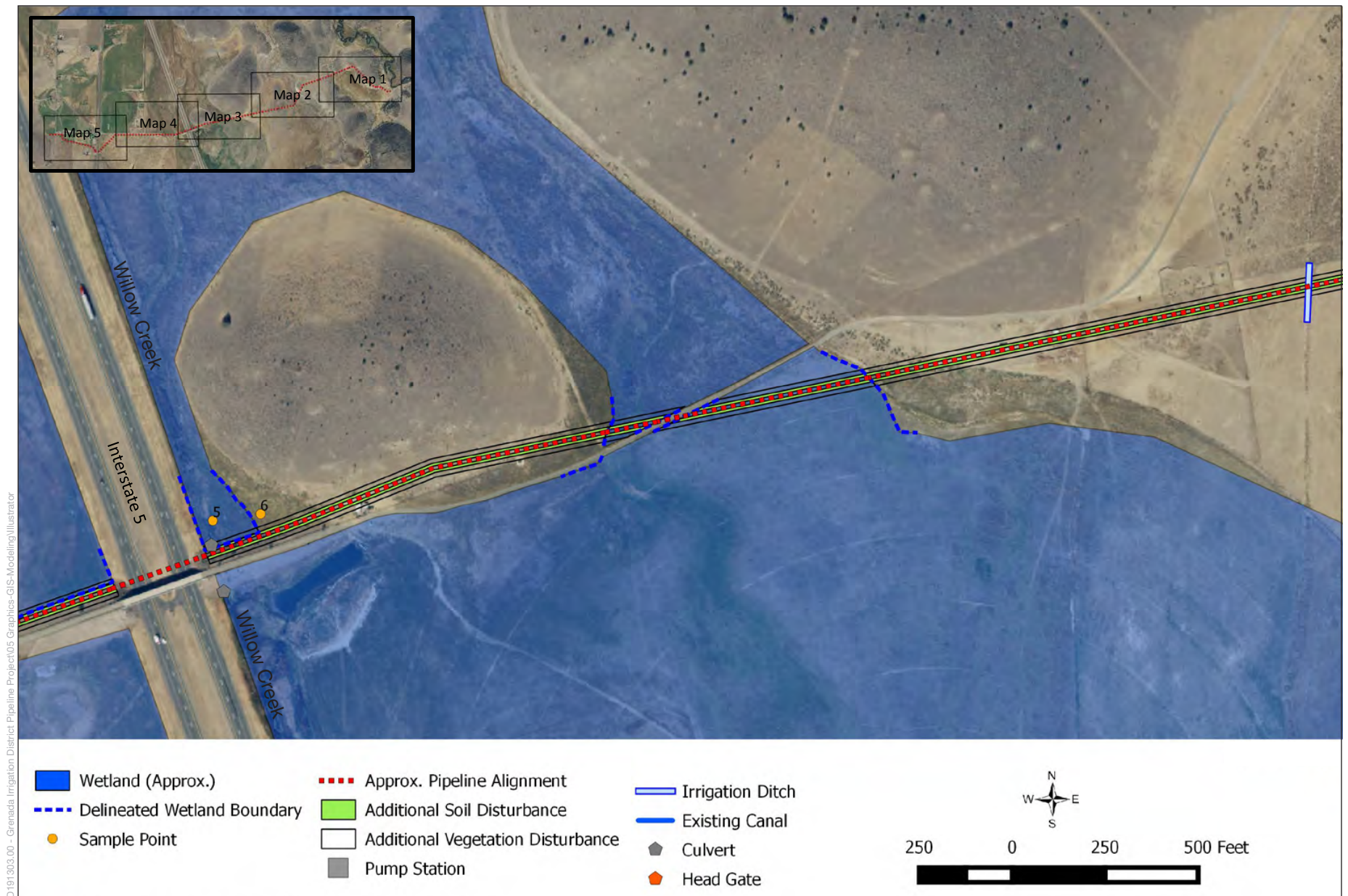


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SOURCE: Grenada Irrigation District, 2019

Grenada Irrigation District Pipeline Project

Figure 4
Aquatic Resources

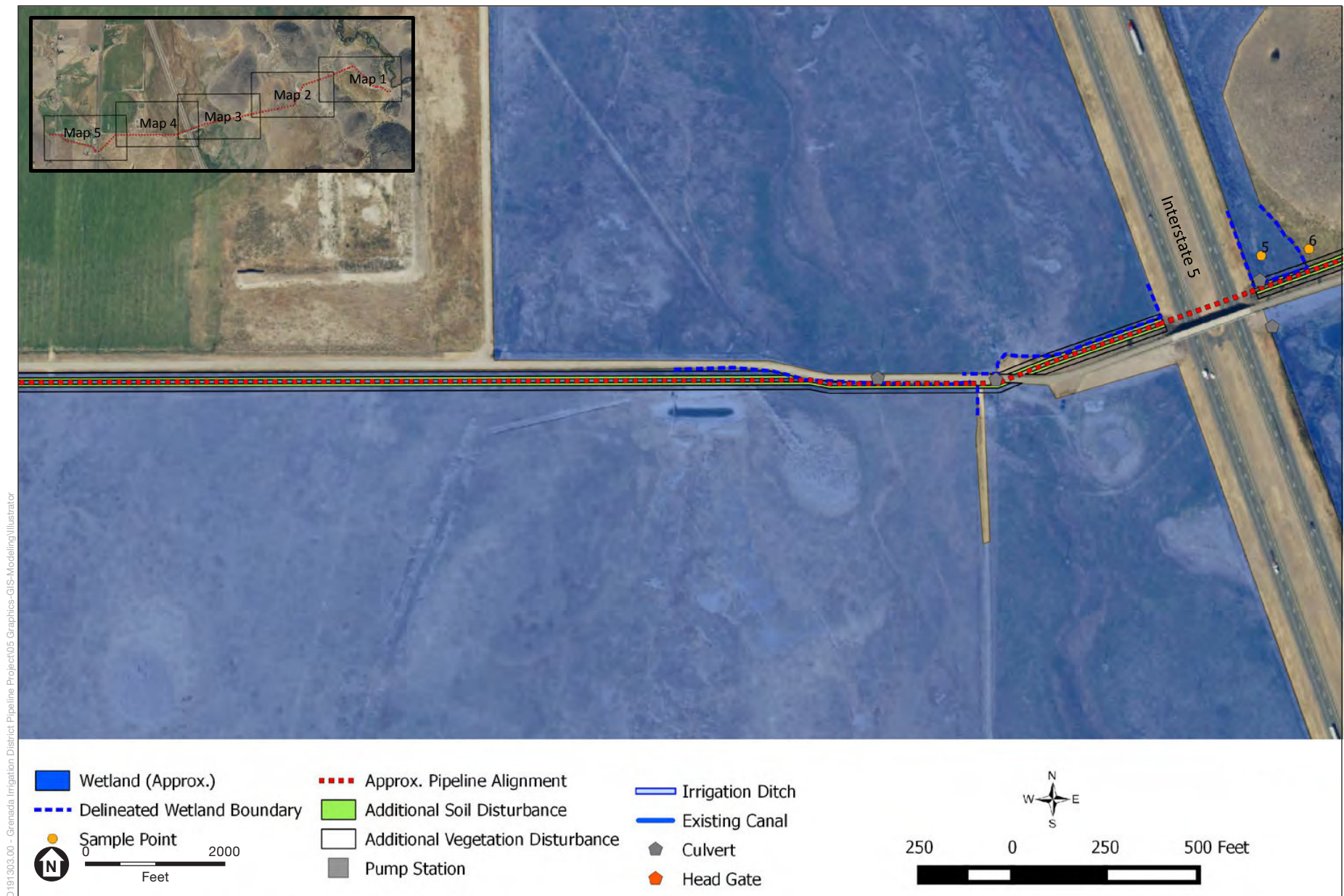


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SOURCE: Grenada Irrigation District, 2019

Grenada Irrigation District Pipeline Project

Figure 5
Aquatic Resources

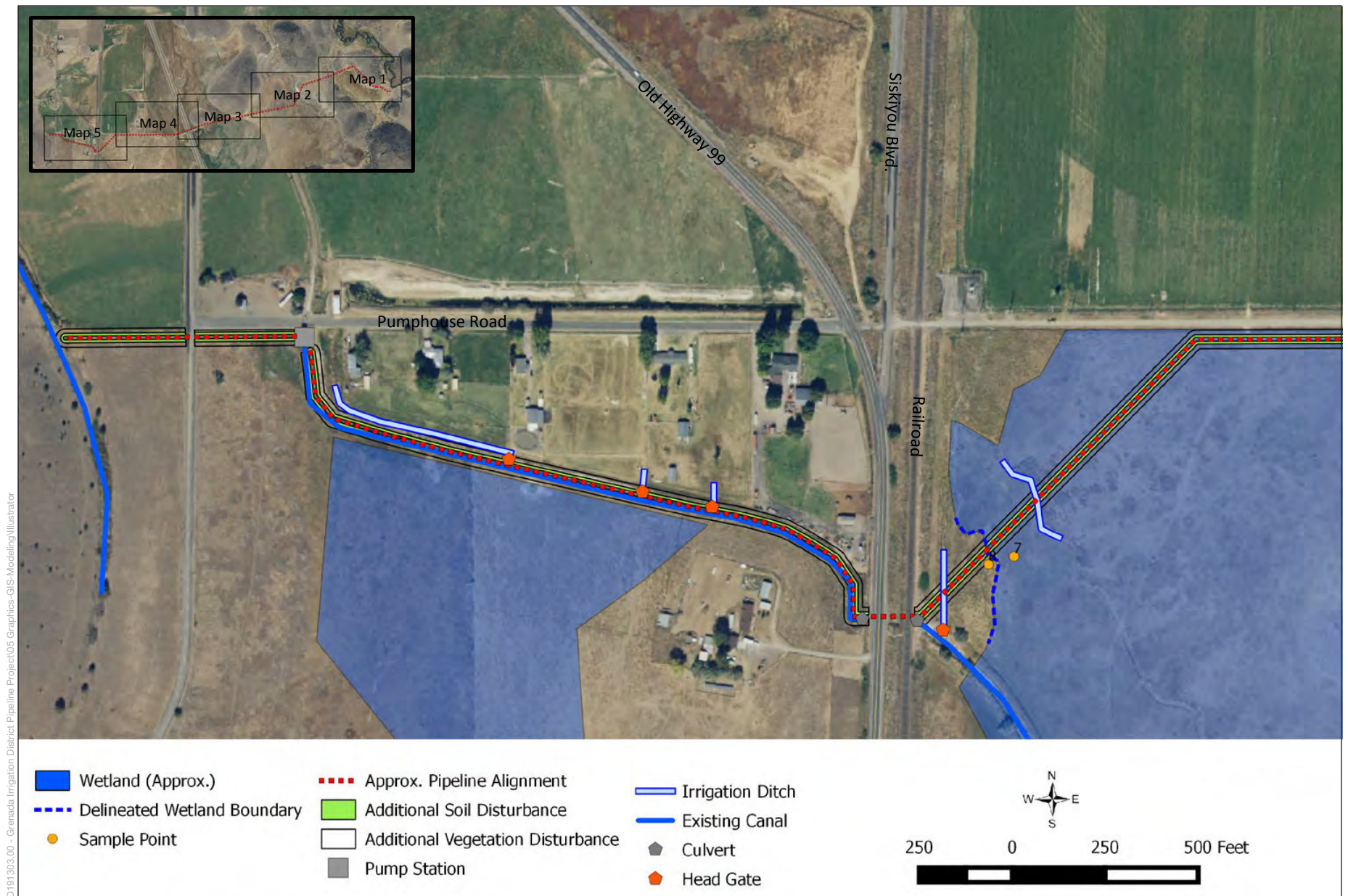


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SOURCE: Grenada Irrigation District, 2019

Grenada Irrigation District Pipeline Project

Figure 6
Aquatic Resources



SOURCE: Grenada Irrigation District, 2019

Grenada Irrigation District Pipeline Project

Figure 7
Aquatic Resources

Sensitive Natural Community

A sensitive natural community is a biological community that is regionally rare, provides important habitat opportunities for wildlife, is structurally complex, or is in other ways of special concern to local, state, or federal agencies. Most sensitive natural communities are given special consideration because they perform important ecological functions, such as maintaining water quality and providing essential habitat for plants and wildlife. Some plant communities support a unique or diverse assemblage of plant species and therefore are considered sensitive from a botanical standpoint. CEQA may identify the elimination of such communities as a significant impact.

Sensitive natural communities include: (a) areas of special concern to federal, state, or local resource agencies; (b) areas regulated under Section 404 of the CWA; (c) areas protected under Section 402 of the CWA; and (d) areas protected under state and local regulations and policies. Habitat types on the project site that would be considered sensitive by regulatory agencies include wetlands and ephemeral drainages, which are regulated under Section 404 of the CWA.

The CDFW's *California Natural Community List* (CDFW, 2019d) ranks vegetation alliances in California according to their degree of rarity imperilment (as measured by rarity, trends, and threats). All alliances are listed with a G (global) and S (state) rank. Alliances with state ranks of S1-S3 are considered of special concern by the CDFW, and all associations within them are also considered to be highly imperiled. CDFW guidance recommends all alliances with state ranks of S1-S3 be considered and analyzed under CEQA.

The following vegetation alliances are considered of special concern by CDFW and should therefore be considered a sensitive natural community under CEQA regulations:

- *Carex simulata* (45.190.01) (short-beaked sedge meadows) (state rank S3)
- *Schoenoplectus acutus* (52.122.01) (hardstem bulrush marshes) (state rank S3)

Wildlife Movement Corridors

Wildlife movement corridors are considered an important ecological resource by various agencies (CDFW and USFWS) and under CEQA. Movement corridors may provide favorable locations for wildlife to travel between different habitat areas such as foraging sites, breeding sites, cover areas, and preferred summer and winter range locations. They may also function as dispersal corridors allowing animals to move between various locations within their range. Topography and other natural factors, in combination with urbanization, can fragment or separate large open-space areas. Areas of human disturbance or urban development can fragment wildlife habitats and impede wildlife movement between areas of suitable habitat. This fragmentation creates isolated "islands" of vegetation that may not provide sufficient area to accommodate sustainable populations, and can adversely affect genetic and species diversity. Movement corridors mitigate the effects of this fragmentation by allowing animals to move between remaining habitats, which in turn allows depleted populations to be replenished and promotes genetic exchange between separate populations.

The project area could potentially be used by a variety of wildlife species for dispersal and seasonal migration.

Special-Status Species

Special-status species are legally protected under the state and federal Endangered Species Acts or other regulations or are species that are considered sufficiently rare by the scientific community to qualify for such listing. These species are classified under the following categories:

1. Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (50 Code of Federal regulations [CFR] 17.12 [listed plants], 17.11 [listed animals] and various notices in the Federal Register [FR] [proposed species]);
2. Species that are candidates for possible future listing as threatened or endangered under the federal Endangered Species Act (61 FR 40, February 28, 1996);
3. Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 California Code of Regulations [CCR] 670.5);
4. Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);
5. Animal species of special concern to CDFW;
6. Animals fully protected under Fish and Game Code (California Fish and Game Code, Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]);
7. Species that meet the definitions of rare and endangered under CEQA. CEQA Section 15380 provides that a plant or animal species may be treated as “rare or endangered” even if not on one of the official lists (State CEQA Guidelines, Section 15380); and
8. Plants considered under the CNPS and CDFW to be “rare, threatened or endangered in California” (California Rare Plant Rank [CRPR] 1A, 1B, and 2 in CNPS, 2019).

A list of special-status species that have the potential to occur within the vicinity of the project site was compiled based on data contained in the CNDDB (CDFW, 2019a), the USFWS list of federal endangered and threatened species that occur in or may be affected by the proposed project (USFWS, 2019a), the NMFS list of federal endangered and threatened species that may occur in the proposed project location and the CNPS Inventory of Rare and Endangered Plants (CNPS, 2019). The results of these database searches can be found in Appendix B. A list of special-status species, their general habitat requirements, and an assessment of their potential to occur within and adjacent to the project site is provided in **Appendix C**.

Critical Habitat

Critical habitat is defined in Section 3(5)A of the Federal Endangered Species Act as the specific portions of the geographic area occupied by the species in which physical or biological features essential to the conservation of the species are found and that may require special management considerations or protection. Specific areas outside of the geographic area occupied by the species may also be included in critical habitat designations upon a determination that such areas are essential for the conservation of the species.

There is no critical habitat designated within or adjacent to the project site.

Discussion

- a) Special-status species and their habitats that may be affected either directly or indirectly through implementation of the proposed project include western pond turtle, nesting raptors and migratory birds, and special-status plant species. Each of these potentially affected species is described below.

Western Pond Turtle

Western pond turtle would be impacted by the project during vegetation clearing and initial grading, if they are present in the freshwater emergent wetlands or in the grasslands within the project site. This would be considered a **potentially significant** impact. Implementation of **Mitigation Measure BIO-1** would mitigate the impact to **less than significant with mitigation incorporated**.

Nesting Raptors and Migratory Birds

Under the Migratory Bird Treaty Act (MBTA), migratory bird species and their nests and eggs are protected from injury or death. California Fish and Game Code Subsections 3503, 3503.5, and 3800 prohibit the possession, incidental take, or needless destruction of birds, their nests, and eggs.

The project site and the immediate vicinity have the potential to support nesting raptors, including Swainson's hawk and golden eagle, as well as migratory birds on suitable nest trees and shrubs. Construction of the proposed project would result in the removal of shrubs and other vegetation which may serve as perching or nesting sites for special-status species and migratory birds, including raptors. Direct impacts on nesting raptors or migratory birds or their habitat such as removal of nesting sites could result in substantial lowered reproductive success or habitat loss, thereby potentially adversely affecting local population levels. Additionally, human disturbances and noise from construction activities have the potential to cause nest abandonment and death of young or loss of reproductive success at active nests located near project activities. The raptor or bird species could be adversely affected if active nesting, roosting, or foraging sites are either removed or exposed to a substantial increase in noise or human presence during project activities. Nesting birds and raptors are protected under California Fish and Game Code Section 2080 (i.e., killing of a listed species), Sections 3503, 3503.5, and 3800 (i.e., take, possession, or destruction of birds, their nests or eggs), and Section 3513 of the MBTA (16 USC, Section 703 Supp. I 1989).

The impact would be less than significant if construction activities occur during the non-breeding season (i.e., from September 1 through January 31). During the non-breeding season, it is anticipated that any migratory birds or raptors using mature trees as perching sites for foraging would vacate the site upon the initiation of construction activities. However, construction activities conducted during the breeding season between February 1st and August 31st could affect the species adversely and result in a potentially significant impact. Disturbance of active nest sites which results in nest abandonment, loss of young, or reduced health and vigor of eggs and/or nestlings (resulting in reduced

survival rates), or the direct removal of vegetation that supports nesting birds which result in killing of nestlings or fledgling bird species, or the loss of rookeries, would be considered a **potentially significant** impact. Implementation of **Mitigation Measure BIO-2** would mitigate the impact to **less than significant with mitigation incorporated**.

Special-Status Plants

Protocol-level botanical surveys were conducted in the project site in July 2018 and June 2019. One sensitive plant species, *Hymenoxys lemmonii*, was encountered during the botanical surveys. *Hymenoxys lemmonii*, commonly known as alkali hymenoxys, is listed as a California Rare Plant Rank 2B.2 which means it is rare or endangered in California but more secure in other parts of the plants range. In 2019 the plants were along a portion of the project alignment. Most of the plants are south towards the wetland boundary. However, portions of the mapped polygons overlay on a small portion of the trench route and adjacent area of potential impact. No other special-status plant species were recorded during the surveys. Implementation of the proposed project could potentially result in direct or indirect impacts to the population of *Hymenoxys lemmonii* if they are located on the pipeline alignment. This would be considered a **potentially significant** impact.

Mitigation Measure BIO-3 would reduce potential impacts to special-status plants to **less than significant with mitigation incorporated**.

- b, c) An aquatic resources delineation was conducted for the project site in June and November 2019 (Kyle Wear, 2019). The aquatic resources delineation identified 4.922 acres of potentially jurisdictional wetlands and other waters of the U.S. (streams) within the project site that are expected to be subject to regulation under Section 404 of the CWA. Section 404 of the CWA requires that a permit be obtained from the USACE prior to the discharge of dredged or fill materials into any “waters of the United States,” which includes wetlands. Section 404 permits generally require mitigation to offset losses of these habitat types, in accordance with Executive Order 11990, which is intended to result in no net loss of wetland values or acres. Waters of the State are defined as any surface or subsurface water and are protected by the Porter-Cologne Act.

The construction contractor would be required to obtain a National Pollutant Discharge and Elimination System (NPDES) Construction General Permit from the Regional Board prior to beginning soil disturbing activities. Among other things, the conditions of the Permit would include mandatory implementation of best management practices (BMPs) applicable to erosion control and preparation of a stormwater pollution prevention plan (SWPPP) to prevent sediment and construction-related compounds (e.g., fuel, oil, etc.) from entering stormwater runoff. When installation of the project’s pipeline is completed, the site would be graded, returned to pre-project slopes. The project’s area of disturbance would be seeded with native plant species to revegetate the area and minimize erosion. Project design features and compliance with the NPDES Construction General Permit, including the implementation of BMPs described in the SWPPP, would ensure that the potential impact of soil erosion or the loss of topsoil during construction would be avoided and/or minimized. A component of the SWPPP is a dewatering plan for in-channel activities.

Dewatering operations are practices that manage the discharge of water and sediment when stream flow and subsurface flow must be removed from a work location so that construction tasks may be accomplished. Stream flow diversion and dewatering is undertaken in order to protect creek resources (i.e., reduce turbidity and nuisance sediment transport) and to protect aquatic organisms. Excavation and construction would occur while flows in Willow Creek are at their lowest. However, water is expected to be present in Willow Creek during construction. In order to protect creek resources and protect aquatic organisms, construction of the pipeline may require limited dewatering of Willow Creek. Although water is not expected to be present in McCloud Slough during construction, dewatering may be required in McCloud Slough as well. Channel dewatering is not anticipated to be continuous over the entire construction area; it is anticipated that the contractor would dewater select portions of the channel during initial excavation. Any remnant flows in Willow Creek and/or McCloud Slough would be rerouted around the active construction site with temporary pipes and a pump. Temporary cofferdams would be used, if necessary, to keep the construction site dry. Depending on conditions encountered during construction, the nominal limit of excavation would either be marked (e.g., with construction stakes or construction fencing) or protected by a portable barrier/cofferdam. If a portable barrier/cofferdam is deemed necessary, the proposed barrier would likely be a water-filled-tube barrier.

Impacts to wetlands and other waters of the U.S. and state protected waters/wetlands from implementation of the proposed project would be temporary in nature and would include removal of soil and vegetation from within wetland areas. It is assumed that all 4.922 acres of potentially jurisdictional wetlands within the project site would be temporarily impacted during construction of the pipeline. The project does not involve the permanent fill of wetlands and other waters of the U.S. or any other permanent impacts. However, the temporary loss of wetlands and other waters of the U.S. and state protected waters/wetlands is a **potentially significant** impact. **Mitigation Measure BIO-4** would reduce potential impacts to special-status plants to **less than significant with mitigation incorporated**.

- d) The project site is located in central Shasta Valley, which is an important wildlife migration corridor for a variety of common and special-status species. Project site habitats may potentially function as a migration corridor for a variety of terrestrial species. While some local disturbance would occur in the project site as a result of project construction, these activities would be limited to a small area and would be temporary in nature. They are not expected to interfere with any movement corridors or the movement of any wildlife or native resident or migratory fish species through the area. In addition, similar habitat types are abundant in the local area. Therefore, impacts would be **less than significant**.
- e) Siskiyou County does not have a tree preservation policy or ordinance; in addition, no trees are anticipated to be removed during construction of the proposed project. The project would not conflict with any local policies or ordinances protection biological resources. Therefore, there would be **no impact**.

- f) The proposed project is not located within an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, there would be **no impact**.

Mitigation Measures

Mitigation Measure BIO-1: Perform Pre-Construction Surveys for Western Pond Turtle.

- (a) A qualified biologist shall conduct a pre-construction survey within five days prior to commencement of materials staging or ground disturbing activities. If the pre-construction survey shows that there is no evidence of western pond turtle, then a letter report shall be submitted to the project applicant - for their records within 14 days of the survey and no additional measures are required. If construction does not commence within five days of the pre-construction survey, or halts for more than five days, an additional pre-construction survey is required.
- (b) If western pond turtles are observed, the biologist shall relocate the species offsite to similar habitat on public lands within ten miles of the project site. In addition, the biologist shall monitor all staging and initial grading activities. The relocation work and monitoring shall be documented in a letter report to the project applicant for their records within 14 days of the final monitoring work.

Mitigation Measure BIO-2: Perform Pre-Construction Surveys for Nesting Special-Status and Common Migratory Birds.

Vegetation clearing operations, including initial grading, shall occur outside of the nesting season that encompasses all birds (September 16 through January 31), to the extent feasible. If vegetation removal begins during the nesting season (February 1 to September 15), a qualified biologist shall conduct a pre-construction survey for active nests in suitable nesting habitat within 500 feet of the construction area for nesting raptors and migratory birds ($\frac{1}{4}$ mile for Swainson's hawk and golden eagle). Areas that are inaccessible due to private property restrictions shall be surveyed using binoculars from the nearest vantage point. The survey shall be conducted by a qualified biologist no more than seven days prior to the onset of construction. If no active nests are identified during the pre-construction survey, no further mitigation is necessary. If construction activities begin prior to February 1, it is assumed that no birds would nest in the project site during active construction activities and no pre-construction surveys are required. If at any time during the nesting season construction stops for a period of two weeks or longer, additional pre-construction surveys shall be conducted prior to construction resuming.

If active nests are found during the survey, the project proponent shall implement mitigation measures to ensure that the species would not be adversely affected, which would include establishing a no-work buffer zone as, approved by CDFW, around the active nest.

Measures may include, but would not be limited to:

1. For trees with active nests, the project proponent shall conduct any tree removal activities required for project construction outside of the migratory bird breeding season (February 1 through August 31).

2. If active nests are found on or within 500 feet of the project site (¼ mile for Swainson's hawk and golden eagle), then the project proponent shall establish no disturbance buffers for active nests of 250 feet for migratory bird species, 500 feet for non-listed raptor species, and ¼-mile for Swainson's hawk and golden eagle, until the breeding season has ended, or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. Depending on the conditions specific to each nest, and the relative location and rate of construction activities, it may be feasible for construction to occur as planned within the buffer without impacting the breeding effort. Nests that are inaccessible due to private property restrictions shall be monitored using binoculars from the nearest vantage point. Construction activities may be halted at any time if, in the professional opinion of the biologist, construction activities are affecting the breeding effort.
3. Depending on conditions specific to each nest, and the relative location and rate of construction activities, it may be feasible for construction to occur as planned within the buffer without impacting the breeding effort. In this case (to be determined on a case-by-case basis), the nest(s) shall be monitored by a qualified biologist during construction within the buffer. If, in the professional opinion of the monitor, the project would impact the nest, the biologist shall immediately inform the construction manager and the project proponent shall notify CDFW. The construction manager shall stop construction activities within the buffer until the nest is no longer active. Completion of the nesting cycle shall be determined by a qualified biologist. If construction begins outside of the migratory bird breeding season (February 1 through August 31), then the project proponent is permitted to continue construction activities throughout the breeding season.

Mitigation Measure BIO-3: Perform Pre-Construction Surveys for *Hymenoxys lemmonii*.

A qualified plant biologist (as approved by CDFW) shall conduct a pre-construction survey in the appropriate season(s) for *Hymenoxys lemmonii* in the areas where populations of this species were found in 2019. Any plants near on or within 50 feet of the alignment should be counted and flagged so that they can be avoided. If the plants cannot be avoided, the project proponent shall prepare a Transplantation and Monitoring Plan in consultation with CDFW. This plan would describe the intent and anticipated success of transplanting, and specify success criteria for transplanted plants and related long-term protection and management of transplanted plants.

Mitigation Measure BIO-4: Mitigate for Impacts to Waters of the U.S. and/or State Protected Waters/Wetlands.

- (a) Prior to any work in the freshwater emergent wetlands on the project site, GID shall acquire all applicable wetland permits. These permits may include, but would not be limited to, a CWA Section 404 permit from the USACE, a CWA Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB), and/or a Section 1600 Lake and Streambed Alteration Agreement from CDFW.
- (b) Clearing shall be confined to the minimal area necessary within wetland areas to facilitate construction activities. To ensure that construction equipment and personnel do not affect wetland habitat outside of the project area, exclusionary fencing shall be erected to clearly delineate the habitat to be avoided.

- (c) To the extent feasible, construction activities in the vicinity of wetlands shall be limited to the dry season, as determined by permitting agencies, to avoid potential impacts to the wetlands as a result of hydrologic disruption or runoff of harmful substances to the wetlands.
- (d) Standard construction BMPs shall be implemented throughout construction, in order to avoid and minimize adverse effects to the water quality within the project impact area. Appropriate erosion control measures shall be used (e.g., straw wattles, filter fences, vegetative buffer strips, or other accepted equivalents) to reduce siltation and contaminated runoff from project sites. The specific BMPs to be implemented shall be described in full in the project's SWPPP. A component of the SWPPP is a dewatering plan for in-channel activities.
- (e) Emergent (rising out of water) and submergent (covered by water) vegetation shall be retained where feasible. Rapidly sprouting plants, such as willows (*Salix* spp.), should be cut off at ground level and root systems left intact, when removal is necessary.
- (f) Upon completion of construction work in wetlands, temporarily disturbed areas shall be re-contoured to pre-project conditions. These areas shall be revegetated with regionally appropriate native species typical of similar habitats in the region.
- (g) To ensure the conservation of the soil seed bank, the top six inches of soil shall be separated from the remainder of any excavated material and shall be placed back on the surface after excavation is complete and the trench is backfilled. Following backfilling of the trench and placement of the top soil, the area should be thoroughly irrigated.

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Cultural Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
5. CULTURAL RESOURCES — Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

This section relies on the information and findings presented in *A Cultural Resources Survey for the Grenada Irrigation District Enclosed Lateral Project* (Rich 2019). For the purposes of the impact discussion, “historical resource” is used to describe the built-environment historic-period resources. Archaeological resources (both prehistoric and historic), which may qualify as “historical resources” pursuant to CEQA, are analyzed separately from built-environment historical resources.

- a) A records search was conducted for the project site and a one-half mile radius by the staff at the Northeast Information Center (NEIC) on July 19, 2018 (NEIC File No. 18-131). The records search revealed six cultural resources surveys bisected portions of the eastern and western ends of the project site. Only one historic-age archaeological site had been recorded within the proposed project site: a segment of a rock wall (P-47-003506/CASIS-3506H). No built-environment historic-period resources had been previously recorded.

A pedestrian survey of the project site was conducted on July 23, 2018 and June 19, 2019; during this investigation, an 1800-foot-long section of the lower irrigation ditch and the upper pump station, which are components of GID’s current irrigation system, were identified and documented on Department of Parks and Recreation 523 Record forms. Evaluation for eligibility for listing on the National Register of Historic Places (NRHP) or the California Register of Historic Resources (CRHR) was beyond the scope of this project; however, these features are assumed (due to limited survey) to be contributors to an as yet undefined potential rural historic agricultural landscape/district composed of the working ranches in this part of the Shasta Valley.

The western portion of the proposed project is within the northern berm of the lower irrigation ditch; this berm is continually used for spoiling of ditch cleanout (i.e. sediment). Placement of the proposed pipeline within this berm would not compromise the ability of the lower irrigation ditch to convey its association with a larger irrigation system, if and when that larger, rural historic agricultural landscape is evaluated for NRHP and CRHR eligibility. Therefore, impacts to historical resources would be **less than significant**.

- b) As discussed above, the records search revealed one previously recorded historic-age archaeological feature. An archaeological pedestrian survey was conducted by Registered Professional Archaeologist, William Rich, M.A. on July 23, 2018 and June 19, 2019. No evidence of a rock wall, or of any stacked rock features, was identified within the survey area. It appears that the segment of late 19th century “rock wall” (P-47-003506/CASIS-3506H) previously identified, actually consists of a modern barbed wire fence. No archaeological sites or features were identified during the pedestrian survey.

Background research, historical literature search, and historical air photo analysis indicated low-to-moderate potential for archaeological sites associated with ethnographic Shasta villages to be present. Locations near freshwater sources are considered to be more favorable locations. The proposed project area was more likely an area of generalized use for traveling, hunting, and gathering, and may contain some small scale evidence of this in the form of discarded tools and or features. The likelihood of discovery of archaeological materials below the ground surface is also considered to be extremely low in this project setting because of relatively limited vertical ground disturbance outside of the irrigation ditch channel. Regardless, ground disturbance during proposed project construction could encounter previously undiscovered or unrecorded historic-age or prehistoric archaeological sites and materials. These activities could damage or destroy previously undiscovered archaeological resources. Such potentially significant impacts would be reduced to a **less than significant with mitigation incorporated** by implementing **Mitigation Measure CUL-1**.

Mitigation Measure CUL-1: Stop Work for Accidental Discoveries

If pre-contact or historic-era archaeological resources are encountered by construction personnel during project construction, all construction activities within 100 feet shall halt until a qualified archaeologist, defined as one meeting the Secretary of the Interior’s Standards for Archeology, can assess the significance of the find. Pre-contact archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (midden) containing fire-affected rock, artifacts, or shellfish remains; and groundstone artifacts (e.g., mortars, pestles, handstones); battered stone tools, such as hammer stones and pitted stones. Historic-era materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse.

If it is determined that the proposed project could damage a unique archaeological resource, construction shall cease in an area determined by the archaeologist until a mitigation plan has been prepared and implemented to the satisfaction of the qualified archaeologist, GID, and, if the resource is indigenous, relevant Native American representatives. The mitigation plan shall recommend preservation in place, or, if preservation in place is not feasible, data recovery through excavation.

If preservation in place is not feasible, a qualified archaeologist shall prepare and implement a detailed treatment plan to recover the scientifically consequential information from the resource prior to any excavation at the resource site. The treatment plan shall be prepared in consultation with GID and, if the resource is indigenous, relevant Native American representatives. Treatment for most resources would consist of (but would not necessarily be limited to) sample excavation, artifact collection, site

documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by the Proposed Project. The treatment plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals.

- c) Based on documentary research, no evidence suggests that any prehistoric or historic-era marked or un-marked human interments are present within or in the immediate vicinity of the project site. However, the location of grave sites and Native American remains can occur outside of identified cemeteries or burial sites. Therefore, there is a possibility that unmarked, previously unknown Native American or other graves could be present within the project site and could be uncovered by project-related construction activities.

California law recognizes the need to protect Native American human burials, skeletal remains, and items associated with Native American burials from vandalism and inadvertent destruction. The procedures for the treatment of Native American human remains are contained in California Health and Safety Code Sections 7050.5 and 7052 and PRC Section 5097.

These statutes require that, if human remains are discovered during any construction activities, potentially damaging ground-disturbing activities in the area of the remains shall be halted immediately, and the Siskiyou County coroner and the NAHC shall be notified immediately, in accordance with to PRC Section 5097.98 and Section 7050.5 of California's Health and Safety Code. If the remains are determined by NAHC to be Native American, the guidelines of the NAHC shall be adhered to in the treatment and disposition of the remains. Following the coroner's findings, the NAHC-designated Most Likely Descendant, and the landowner shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities for acting upon notification of a discovery of Native American human remains are identified in PRC Section 5097.94.

Compliance with California Health and Safety Code Sections 7050.5 and 7052 and PRC Section 5097 would provide an opportunity to avoid or minimize the disturbance of human remains, and to appropriately treat any remains that are discovered. Therefore, this impact would be **less than significant**.

References

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Energy

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
6. ENERGY — Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

- a) This impact analysis evaluates the potential for the proposed project to result in a substantial increase in energy demand and/or wasteful use of energy during project construction, operation, and maintenance. The potential impacts are analyzed based on an evaluation of whether construction and operational energy use estimates for the proposed project would be considered excessive, wasteful, or inefficient. The proposed project construction and operation would not involve the use of natural gas or use of electricity; therefore, the analysis focuses on transportation-related fuel consumption.

The analysis in this section utilizes the California Emissions Estimator Model (CalEEMod) input assumptions (found in Appendix A) used to complete the analyses in the Air Quality and Greenhouse Gas Emissions sections. Because CalEEMod does not quantify in the output file the fuel volume or type for construction-related sources, additional calculations were completed and are summarized here. Construction of the proposed project would result in the consumption of a total of approximately 14,945 gallons of diesel fuel from required construction equipment activities and vendor trips and approximately 744 gallons of gasoline from construction worker vehicle trips over the course of the proposed project (see **Appendix D** for fuel consumption assumptions and calculations). For reference, approximately 35 million gallons of diesel and 28 million gallons of gasoline were sold in Siskiyou County in 2018 (CEC 2019).

Construction activities and corresponding fuel energy consumption would be temporary and localized, as the use of diesel fuel for heavy-duty equipment would not be a typical condition of the project during operation.

The proposed project would decrease water diversion (in the amount of approximately 1,100 acre-feet of surface water per average water year) that would result in a net reduction in energy use by the pump at the Shasta River diversion pump house. Although the project would result in a temporary and limited increase in fuel for construction, under operations there would be a net reduction in energy use. Therefore, there would be no long-term energy impact. Impacts associated with the wasteful, inefficient, or unnecessary consumption of energy resources related to fuel use during construction would be temporary and **less than significant**.

- b) The Federal Energy Policy and Conservation Act of 1975 was established in response to the oil crisis of 1973, which increased oil prices due to a shortage of reserves. The Act required that all vehicles sold in the U.S. meet certain fuel economy goals. Since 1990, the fuel economy standard for new passenger cars has been 27.5 miles per gallon. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 miles per gallon. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds in gross vehicle weight) are not subject to fuel economy standards. The proposed project would be consistent with the Act because all passenger cars and light trucks that would be used directly or indirectly associated with the proposed project would be required to comply with the applicable fuel economy standards.

In 2002, the California Legislature passed Senate Bill 1389, which required the California Energy Commission (CEC) to develop an integrated energy plan every two years for electricity, natural gas, and transportation fuels, for the California Energy Policy Report. The plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. The proposed project would be constructed and operated in a manner consistent with California's efficiency objectives.

As discussed under question a), above, operations of the proposed project would conserve energy resources compared to existing conditions. The proposed project would also increase efficiency for maintenance as the irrigation pipeline would be approximately three miles shorter in length compared to the existing conveyance alignment of the irrigation ditch (5.9 miles). The existing irrigation ditch would still be used by various landowners for their own irrigation purposes, but GID would no longer maintain the ditch. Therefore, there would be a net reduction in fuel use associated with regular inspection and maintenance of the irrigation system. The proposed project would use pickup trucks or ATVs for regular inspection and maintenance of the proposed pipeline and for weed management. The proposed project may require heavy-duty vehicles or large equipment (using diesel fuel) for infrequent repairs. Because the proposed project would result in a decrease in energy use during operation, energy use would be consistent with the state energy policies. Overall, the project would not conflict with or obstruct an energy efficiency or renewable energy plan. There would be **no impact** pertaining to this criterion.

References

California Energy Commission, 2019. 2010-2018 CEC-A15 Results and Analysis (xlsx File). https://ww2.energy.ca.gov/almanac/transportation_data/gasoline/. Accessed November 21, 2019.

Geology, Soils, and Seismicity

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
7. GEOLOGY and Soils — Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

- a.i) There are no Earthquake Fault Zones in the project area, as delineated on Alquist-Priolo Earthquake Fault Zoning Maps. Construction and installation of the proposed project not would increase the risk of exposure of people to loss, injury, or death involving rupture of a known fault. There would be **no impact** under this criterion.
- a.ii) There are no active² or potentially active³ faults within 20 miles of the project site; the closest fault is the potentially active Yellow Butte Fault, approximately 20 miles to the west. The Cascadia subduction zone, located approximately 50 miles off the Northern California coast, is an active fault zone with the potential to generate a large earthquake. According to the United States Geological Survey's (USGS) ShakeMap earthquake

² An active fault is defined by the California Geologic Survey (CGS) as a fault that has moved during the past 11,700 years; also referred to as *Holocene-active faults* (CGS, 2018).

³ A potentially active fault, in a regulatory context, is any fault that has not moved in the past 11,700 years; also referred to as a *Pre-Holocene fault* (CGS, 2018).

planning scenario, if a M_w 9.0 event were to occur within the Cascadia subduction zone, it is estimated that the project area would experience moderate to strong ground shaking with very light to light damage expected (USGS, 2016). While it is over 100 miles to the west of the proposed project area, a large earthquake within the Cascadia subduction zone could cause moderate to strong ground shaking at the project site. However, none of the proposed project components would be used for human occupancy, nor would any components exacerbate the existing risk of seismic shaking or associated damage. Given that there are no active faults in proximity to the proposed project area and the closest active fault is over 100 miles to the west, it is unlikely the proposed project would experience strong seismic ground shaking, and the impacts associated with strong seismic ground shaking would be **less than significant**.

- a.iii) Liquefaction is a phenomenon in which unconsolidated, water saturated sediments become unstable due to the effects of strong seismic shaking. During an earthquake, these sediments can behave like a liquid, potentially causing severe damage to overlying structures. In general, a relatively high potential for liquefaction exists in loose, sandy and saturated soils that are within 50 feet of the ground surface.

As discussed above, in Criterion a.iii, there are no active faults in proximity to the project area and the risk of seismic-related ground failures is negligible. According to geologic mapping by Wagner and Saucedo (1987) the geologic unit underlying the project area is identified as pyroclastic deposits of the Volcanic rocks of Shasta Valley; pyroclastic deposits are not generally considered to have a high liquefaction potential. According to the Groundwater Ambient Monitoring and Assessment Program (GAMA) Groundwater Information System, the groundwater levels around the project area are on average below 50 feet (GAMA, 2019). Additionally, the project area is not identified as an area of liquefaction potential by the USGS or California Geological Survey.

The proposed project would not include the construction of any habitable structures and would not exacerbate any liquefaction hazards currently present. The proposed project design would adhere to American Water Works Association (AWWA) and American Society for Testing and Materials (ASTM) standards (RH2, 2019), which are industry standards for installing water works, pipelines and appurtenances. Therefore, based on the project design, no exacerbation of liquefaction hazards and incorporation of AWWA and ASTM standards would limit the potential damage to **less-than-significant** levels.

- a.iv) Landslides generally are any type of ground movement that occurs primarily due to gravity acting on relatively weak soils and bedrock on an over-steepened slope. Slope instability is often initiated or accelerated from soil saturation and groundwater pressure, though may also be aggravated by grading activity, such as removal of toe support by excavation or addition of new loads, such as fill placement. Areas that are more prone to landslides include old landslides, the bases or tops of steep or filled slopes, and drainage hollows.

Due to the relatively flat topography at each of the project area, impacts related to landslides are not expected to affect the proposed project, nor would the proposed project directly or indirectly cause substantial impacts related to landslides—seismically-induced or otherwise. Therefore, the potential impact from landslides is **less than significant**.

- b) The proposed project would include ground-disturbing construction activities, including trenching, grading, and excavation, which could increase the risk of topsoil loss, erosion or sediment transport.

Because the overall footprint of construction and ground-disturbing activities would exceed one acre, the proposed project would be required to comply with the State Water Board National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP). This State requirement was developed to ensure that stormwater is managed and erosion is controlled on active construction sites. The NPDES CGP requires preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that which requires applications of Best Management Practices (BMPs) to control run-on and runoff from construction sites. The BMPs may include physical barriers to prevent erosion and sedimentation, construction of sedimentation basins, limitations on work periods, especially during storm events, use of infiltration swales, protection of stockpiled materials, and numerous other measures that would prevent or substantially reduce erosion from occurring during construction activities in the project area. Compliance with the BMPs in the SWPPP would reduce the proposed project's potential impacts associated with soil erosion and loss of topsoil during construction to **less than significant**.

- c) Because the proposed project area is not located on hillsides, or on unstable geologic units, the proposed project would not result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse. Additionally, as discussed in the proposed project design plans, construction would adopt AWWA and ASTM standards (RH2, 2019). The design plans also state that any unsuitable or unstable soils would be removed and backfilled with engineered fill to minimize any potential impacts associated with unstable soils. Therefore, adherence to the proposed project design plans, AWWA, and ASTM standards, potential impacts associated with unstable soils would be **less than significant**.
- d) According to the Natural Resources Conservation Service's (NRCS) Web Soil Survey data, a majority of the project area has a low expansion potential (NRCS, 2019b); there is moderate expansion potential in the eastern portion of the pipeline alignment (NRCS, 2019b) near the Shasta River. The proposed project would not include the construction of any habitable structures and, as discussed and depicted in the proposed project design plans, construction would adopt AWWA and ASTM standards (RH2, 2019). Therefore, based on the project design and incorporation of AWWA and ASTM standards, the proposed project would have a **less-than-significant** impacts related to expansive soils.
- e) The proposed project would not include the use of septic tanks or any alternative wastewater disposal systems. For this reasons, the proposed project would not introduce

an environmental or public health hazard by building septic tanks or other wastewater disposal systems in soils that are incapable of adequately supporting such systems. Therefore, **no impact** would occur.

- f) As mentioned above, the project area is underlain by Pleistocene-age pyroclastic deposits, which is suitable to preserve paleontological resources. However, a search of the University of California Museum of Paleontology (UCMP) online fossil locality database indicates that there have been no fossils recovered from Pleistocene pyroclastic deposits in Siskiyou County. Due to the lack of paleontological resources recovered from the project area, the likelihood that any excavation associated with the project alignment would uncover any paleontological resources. There would be a **less-than-significant** impact associated with disturbance of any paleontological resources.

References

Groundwater Ambient Monitoring and Assessment Program (GAMA), 2019. GAMA Groundwater Information System.

Natural Resources Conservation Service (NRCS), 2019a. Web Soil Survey – Depth to Groundwater.

———, 2019b. Web Soil Survey - Linear Extensibility.

RH2, 2019. Grenada Enclosed Lateral Project. Grenada Irrigation District.

State Water Resources Control Board (SWRCB), 2019.

United States Geological Survey (USGS), 2016. ShakeMap – Cascadia Subduction Zone.

University of California Museum of Paleontology (UCMP), 2019.

Greenhouse Gas Emissions

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
8. GREENHOUSE GAS EMISSIONS — Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

- a) The proposed project is located within the jurisdiction of the APCD; however, the APCD has not adopted a greenhouse gas (GHG) threshold relative to CEQA. Consequently, this analysis applies the GHG significance threshold of the Sacramento Metropolitan Air Quality Management District (SMAQMD), one of the few air districts to have adopted a quantitative GHG threshold in Northern California. SMAQMD has a threshold of 1,100 metric tons of carbon dioxide equivalent (MTCO₂e) per year for both construction and operational emissions (SMAQMD 2015).

Construction and operation of the proposed project would generate GHG emissions from the use of off-road construction equipment and on-road worker vehicles. For this analysis, emissions were estimated using the most recent version of CalEEMod. To calculate estimated mobile operational emissions, on-road vehicle emission factors from EMFAC 2017 were used. Total GHG emissions associated with construction and operational phases of the proposed project were estimated to be approximately 114 MTCO₂e and 8 MTCO₂e, respectively, both well below the SMAQMD significance threshold. Therefore, the proposed project's impact with respect to GHG emission generation would be **less than significant**.

- b) In 2006, the California legislature passed Assembly Bill 32 (AB 32; California Health and Safety Code Division 25.5, Sections 38500, et seq.), also known as the Global Warming Solutions Act. AB 32 requires the California Air Resources Board (CARB) to design and implement feasible and cost-effective emissions limits, regulations, and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25-percent reduction in emissions). Pursuant to AB 32, the CARB adopted a *Climate Change Scoping Plan* (Scoping Plan) in December 2008 outlining measures to meet the 2020 GHG reduction goals. The Scoping Plan was most recently updated in 2017.

Siskiyou County has adopted a climate adaptation plan to address the region's climate resiliency; however, they have not drafted or adopted a climate action plan (CAP) or other formal document that addresses local GHG emission rates or reduction targets.

As discussed in criterion a, the proposed project is estimated to generate a level of GHG emissions far below the threshold developed by the SMAQMD. Because SMAQMD GHG emission thresholds were developed to ensure consistency with the requirements of AB 32 and the Scoping Plan, the proposed project's conformity with SMAQMD's significance thresholds demonstrates its consistency with the Scoping Plan. The proposed project would not conflict with the applicable plan adopted for the purpose of reducing the emissions of greenhouse gases; therefore, this impact would be **less than significant**.

References

- California Air Resources Board, 2019. EMFAC2017 Web Database, Version 1.0.2. Available: <https://www.arb.ca.gov/emfac/2017/>. Accessed November 20, 2019.
- Sacramento Metropolitan Air Quality Management District (SMAQMD), 2015. SMAQMD Thresholds of Significance Table. Available: <http://www.airquality.org/LandUseTransportation/Documents/CH2ThresholdsTable5-2015.pdf>. Accessed November 19, 2019.
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Hazards and Hazardous Materials

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
9. HAZARDS AND HAZARDOUS MATERIALS — Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

- a, b) Equipment and materials used during construction activities would include fuels, oils and lubricants. The routine use or an accidental spill of hazardous materials used in construction could result in inadvertent releases, which could adversely affect construction workers, the public, and the environment.

Construction activities would be required to comply with numerous hazardous materials regulations designed to ensure that hazardous materials are transported, used, stored, and disposed of in a safe manner to protect worker safety, and to reduce the potential for a release of construction-related fuels or other hazardous materials into the environment, including stormwater and downstream receiving water bodies. Construction contractors would be required to acquire coverage under the NPDES CGP, which requires the preparation and implementation of a SWPPP for construction activities. The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; describe spill prevention measures, equipment inspections, equipment and fuel storage; describe protocols for responding immediately to spills; and describe BMPs

for controlling construction site run-on and runoff. Details regarding examples of BMPs designed to minimize erosion are discussed in Hydrology and Water Quality.

The required compliance with applicable laws and regulations that govern the transportation, use, handling, and disposal of hazardous materials would limit the potential for creation of hazardous conditions due to the use or accidental release of hazardous materials, and this impact would be **less than significant**.

- c) There are no existing or proposed schools within one-quarter mile of the project area. The nearest school to the Project site is the Grenada Community Day School, approximately 2.8 miles north. There would be **no impact** related to hazardous emissions or hazardous materials being released near a school.
- d) The project area including the proposed staging areas are not included on any of the environmental databases maintained by the State Water Resources Control Board (SWRCB) (2019) or the Department of Toxic Substance Control (DTSC) (Cortese List) (2019). Therefore, the proposed project would not cause a significant hazard to the public or the environment related to being located on a known hazardous materials site, and there would be **no impact**.
- e) The project area and proposed staging areas are not located within an airport land use plan or within two miles of an airport or within the vicinity of an active private air strip. The nearest airports are the Siskiyou County Airport approximately 10.6 miles north of the Project site and Butte Valley Airport-A32 approximately 10.7 miles northwest. There would be **no impact** with regard to air traffic hazards.
- f) The Siskiyou County Office of Emergency Services (OES) does not have an emergency response or evacuation plan in place currently. The Siskiyou County OES published a Draft Hazard Mitigation Plan in August 2018 (Siskiyou County, 2018); there are no evacuation routes designated for the area. A portion of the proposed pipeline would be installed beneath Interstate 5, which is a major arterial roadway. As described in the General Construction Notes for the proposed project (RH2, 2019) interruption of traffic flow must comply with a project-specific Traffic Control Plan approved by the County of Siskiyou. In addition, no interruption of traffic flow would be allowed on state routes; all state route crossings shall be jacked and bored, unless otherwise noted (RH2, 2019). Therefore, adherence to the Traffic Control Plan for the proposed project would minimize potential impacts to evacuation routes to **less than significant**.
- g) According to the California Department of Forestry and Fire Protection's (CAL FIRE) Fire Hazard Severity Zone map, the Project site and staging areas are not within an area designated as very high or high fire hazard zones (CAL FIRE, 2007; 2008). The proposed project would not expose people to structures to loss, injury, or death involving wildland fires; there would be **no impact** resulting from implementation of the proposed project.

References

California Department of Forestry and Fire Protection (CAL FIRE), 2007. Fire Hazard Severity Zones in SRA. Map. Scale 1:175,000.

Department of Toxic Substances Control (DTSC), 2019. EnviroStor database.

RH2, 2019. Grenada Enclosed Lateral Project. General Construction Notes. Grenada Irrigation District.

Siskiyou County, 2018. Hazard Mitigation Plan.

State Water Resources Control Board (SWRCB), 2019.

Hydrology and Water Quality

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
10. HYDROLOGY AND WATER QUALITY — Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
i) result in substantial erosion or siltation on- or off-site;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

- a, e) The project would be located in Siskiyou County predominantly on agricultural lands in the Shasta River watershed. Average rainfall in the Shasta basin ranges from 13- to 25-inches annually, increasing in the southern portion of the basin (DWR, 2004). The project would replace an existing irrigation ditch system with a 3.2-mile irrigation pipeline, resulting in decreased diversion of approximately 1,100 acre-feet of Shasta River surface water per year. Streams in the vicinity of the project are depicted on Figure 2.

Surface Water Quality

The study area is within the north western basin of Mount Shasta, located in the Klamath River Hydrologic Unit, Shasta River Hydrologic Area under the water quality management of Region 1 (the North Coast Region) of the Regional Water Quality Control Board (Regional Board). Water quality in this hydrologic unit is impaired for

Aluminum, sources unknown. A TMDL⁴ is required to address this impairment. Other impairments for the hydrologic unit including water temperature, oxygen enrichment/low dissolved oxygen are attributed to land use practices in the region including agriculture, flow alteration, and habitat modification, among other sources. These impairments are being addressed by a USEPA approved TMDL.

Groundwater

The Shasta Valley groundwater basin is managed in part by the Siskiyou County Flood Control and Water Conservation District (SCFCWCD), which submitted notification to the Department of Water Resources to serve as groundwater sustainability agency under the Sustainable Groundwater Management Act (SCFCWCD, 2017). Groundwater quality in the basin is characterized as bicarbonate and calcium bicarbonate type water, which may be high in mineral content depending on the locale substrate. The Shasta Valley Groundwater Basin is not an adjudicated basin, nor is the basin listed as one in critical overdraft.

Construction

Construction of the project would involve trench excavation which would alter the conditions of the site topography, potentially resulting in impacts to water resources. According to a recent wetland technical report prepared for the project, the pipeline excavation and other project site disturbance could result in approximately 4.9 acres of soil disturbance (GID, 2019).⁵ Although the project is designed to avoid or minimize wetland disturbance, trenching activity would involve some temporary disruption of wetlands and vegetation, which contributes to or increases water quality impacts. Soil disturbance alters the way that precipitation is received by the landscape and can lead to conditions of erosion, runoff, or siltation on- and off-site.

The project includes design measures to control erosion. Such measures include stabilized construction entrances to minimize track out of mud and soils off site; silt fences would be installed adjacent (or perpendicular) to drainages to limit siltation of waterways; slope stabilization measures include installation of geotextile fabric and straw wattles to protect contours, as applicable. By design, the pipeline would be installed within relatively flat terrain for functionality and to minimize erosive conditions.

The construction contractor would be required to obtain a National Pollutant Discharge and Elimination System (NPDES) Construction General Permit from the Regional Board prior to beginning soil disturbing activities. Among other things, the conditions of the Permit would include mandatory implementation of best management practices (BMPs) applicable to erosion control and preparation of a stormwater pollution prevention plan (SWPPP) to prevent sediment and construction-related compounds (e.g., fuel, oil, etc.)

⁴ Section 303(d) of the Clean Water Act authorizes the EPA to assist states in listing impaired waters and developing Total Maximum Daily Load (TMDLs) as a means of establishing maximum allowances of pollutant concentrations in a waterbody and serves as a basis and planning tool for restoring water quality.

⁵ Segments of trenchless construction passing under Old Highway 99 and Interstate 5 are excluded from the calculations.

from entering stormwater runoff. When installation of the project's pipeline is completed, the site would be graded, returned to pre-project slopes. The project's area of disturbance would be seeded with native plant species to revegetate the area and minimize erosion. Project design features and compliance with the NPDES Construction General Permit, including the implementation of BMPs described in the SWPPP, would ensure that the potential impact of soil erosion or the loss of topsoil during construction would be avoided and/or minimized. Mitigation Measure **BIO-4** is included in the checklist item for Biological Resources to restore and revegetate disturbed areas following construction.

The project would not be likely to encounter groundwater during construction, which is anticipated to take place mainly during in the dry season. Construction of the project would involve trench excavation to install a subsurface irrigation pipeline. Based on review of recent groundwater levels in two wells within two miles of the project's pipeline alignment, depth to groundwater in the project's vicinity ranges from 10 to 19-feet below ground surface (DWR, 2018). Should groundwater be encountered during construction, the pipe zone bedding and backfill would be replaced with gravel or control density fill at the engineer's direction. As the proposed project would implement BMPs to minimize erosion, the proposed project would be constructed in a manner consistent with water quality requirements. There would be no conflict with water quality regulations in the basin plan or interfere with sustainable groundwater management.

Operation and Maintenance

The project's pipeline is proposed in a location with relatively flat terrain which would limit erosive conditions, by design. Operation of the project would decrease the amount of water diverted from the Shasta River. Maintenance of the project may include excavation to assess or repair the pipeline and subsurface air vents, which could have similar impacts to those described under construction. Therefore, impacts associated with construction and operation of the project would be **less than significant**.

- b, c) As the proposed project would not use groundwater, place new impervious surfaces on the ground, or include paving, the project would not lower groundwater levels or change the groundwater recharge capability for the basin. No impedance to sustainable groundwater management would occur with implementation of the proposed project.

The proposed project would not involve placement of new impervious surfaces, nor would it be constructed in an area subject to flooding. Construction activity would involve excavation and soil disturbing activities that could contribute to surface runoff. However, as described under question a), the proposed project would be required to implement erosion control measures and BMPs to reduce following construction, the site would be restored and revegetated.

Due to the project type and its location upon relatively flat agricultural lands, the proposed project would not have an impact on stormwater capacity. There are no known stormwater facilities in the vicinity of the proposed project. The proposed project is a

subsurface irrigation pipeline and would not include placement of structures that could impede or redirect flood flows. There would be **no impact**.

- d) The proposed project is a subsurface irrigation pipeline that would not be subject to inundation by, tsunamis, seiche, or flooding. There are few residences in the vicinity of the proposed project, north of the existing canal at the western-most portion of the proposed project alignment. As the proposed alignment for the pipeline would be within the canal zone at this segment, no change would occur with respect to flooding, compared to existing conditions.

A small portion of the project's 3.2-mile pipeline would be located in a 100-year flood zone (Zone A) to connect to the pump house adjacent to the Shasta River. However, the proposed project would not include above-ground structures, increase impervious surface area, or otherwise contribute to flooding. There would be **no impact** pertaining to this criterion.

References

- California Department of Water Resources (DWR), 2018. California Data Exchange Center. <http://cdec.water.ca.gov/reportapp/javareports?name=8STATIONHIST>. Accessed November 18, 2019.
- , 2004. California's Groundwater Bulletin 118.
- Wear, Kyle, 2019. Wetland Delineation Grenada Enclosed Lateral Pipeline Project, prepared for Grenada Irrigation District, Table 1, p. 5.
- Mack, Seymour. 1959. Geology and Groundwater Features of Shasta Valley, Siskiyou County California. California Water Library Available: <https://cawaterlibrary.net/document/geology-and-ground-water-features-of-shasta-valley-siskiyou-county-california/>.

Land Use and Planning

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
11. LAND USE AND PLANNING — Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

- a) Construction of the proposed pipeline would be temporary and would not impede access within the residential area to the west of I-5. The proposed pipeline would be installed in agricultural land and in GID parcels and would not divide an established community. There would be **no impact**.
- b) The proposed project is an underground public utility project, which is a permitted use in any zoning district. The construction of this pipeline would not require a zone change or a discretionary permit and would not conflict with the General Plan or current Non-Prime Agricultural District (AG-2) zoning. Therefore, the project would not conflict with applicable land use plans, policies, or regulations. **No impact** would occur.

Mineral Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
12. MINERAL RESOURCES — Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

a, b) The California Geological Survey (CGS) and the State Mining and Geology Board (SMGB) are the State agencies responsible for the classification and designation of areas containing, or potentially containing, significant mineral resources. Areas known as Mineral Resource Zones (MRZs) are classified on the basis of geologic factors, without regard to existing land use and land ownership. The areas are categorized into four general classifications (MRZ-1 through MRZ-4):

- MRZ-1—Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- MRZ-2—Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood for their presence exists.
- MRZ-3—Areas containing mineral deposits, the significance of which cannot be evaluated from available data.
- MRZ-4—Areas where available information is inadequate for assignment into any other MRZ.

The location of the proposed pipeline is in an area that has not been mapped by CGS or SMGB and therefore has no mineral classification. The project area is not actively being mined; east of I-5, the pipeline would be installed on private land currently used for grazing; west of I-5, the pipeline would either generally follow the access road to GID pumps or the existing irrigation ditch. In addition, after construction, the site would be restored similar existing conditions, and therefore has a low likelihood of resulting in the loss of known mineral resources and would have **no impact** on mineral resources.

References

California Department of Conservation (DOC), 2019b. DOC Maps: Mines and Mineral Resources. Available: <https://maps.conservation.ca.gov/mineralresources/>. Accessed November 14, 2019.

Noise

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
13. NOISE — Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

a) Construction

Project construction is anticipated to occur over a 10-month period, with the majority of the work occurring over a three-to-four-month period during the late summer and fall period. Construction of the underground pipeline would require a variety of equipment (i.e., excavators, dozers, rock screen, pipe trailer (s), and a skip loader). During the construction period, noise levels generated by project construction would vary depending on the particular type, number, and duration of use of various pieces of construction equipment. Approximately five residences would be located adjacent to the proposed pipeline construction activities on the western side of Old Highway 99. The closest residence would be approximately 120 feet from the proposed project. All of the residents are aware of the proposed project and are members of GID.

According to the Siskiyou County General Plan, residences are the most sensitive land use. It sets a land use compatibility noise limit for residential land uses of 60 dBA.⁶ For new development within a residential land use area, noise limits range from 60 to 65 dBA with noise abatement features included. Siskiyou County does not identify any policies or ordinances that limit construction noise. However, for the purposes of due diligence, resultant noise levels from construction equipment at the nearest residence were estimated, consistent with the general assessment methodology of the Federal Transit Administration (FTA). Assuming simultaneous operation of a dozer and haul truck at the same location would result in a noise level of 78 dBA at a distance of 120 feet (ESA,

⁶ The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 hertz (Hz) and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). All noise levels reported herein reflect A-weighted decibels unless otherwise stated.

2019). While there is no County standard noise level threshold for construction activities, the general assessment criteria of the FTA establishes 1-hour Leq⁷ criteria for residential land uses of 90 dBA during daytime hours and 80 dBA during nighttime hours as noise levels where adverse community reaction could occur at residential land uses. This analysis uses these criteria to determine if construction noise levels that would be associated with the project would result in a substantial temporary increase in ambient noise levels in the vicinity of the proposed project. Project construction noise would be below the FTA criteria at the nearest residential receptor; therefore, and the impact would be **less than significant**.

Operation

The pipeline itself would not be a noise-generating source. No new pumps, fans, piping, or other infrastructure would be required at GID's existing diversion structure or the GID's pump station to operate the new pipeline, and thus no appreciable difference in operational noise would result from the proposed project. Maintenance activities would be similar to those already occurring for the existing irrigation ditch. Therefore, the proposed project would not generate noise levels in excess of applicable standards during the operational phase. There would be **no impact**.

b) Construction

Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. Construction-related ground vibration is normally associated with impact equipment such as pile drivers, jackhammers, and the operation of some heavy-duty construction equipment, such as dozers and trucks. The source of the highest level of vibration during project construction would be from large dozers. According to the FTA, vibration levels associated with large dozers are 0.089 in/sec PPV⁸ and 87 VdB⁹ at 25 feet. Vibration levels associated with jackhammers are 0.035 in/sec PPV and 79 VdB at 25 feet.

The California Department of Transportation (Caltrans) Transportation and Construction Vibration Guidance (Caltrans 2013a) includes a variety of vibration thresholds related to structural damage. For residential structures, Caltrans provides the Dowding Building Structure Vibration Criteria of 0.5 PPV (in/sec) to avoid risk of architectural damage (Dowding, 1996, as cited in Caltrans, 2013). Based on FTA's recommended procedure for applying a propagation adjustment to these reference levels, vibration levels from large dozers could exceed the Caltrans recommended level of 0.5 in/sec PPV with respect to architectural damage to newer residential structures within 8 feet of project activities.

⁷ The equivalent sound level is used to describe noise over a specified period of time, in terms of a single numerical value. The Leq is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

⁸ The peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak of the vibration signal. PPV is often used in monitoring or blasting vibration since it is related to the stresses that are experienced by buildings.

⁹ Vibration decibels or VdB are often used to reduce the potential for confusion with sound decibels.

However, the nearest residential structure would be roughly 120 feet away from project activities, thus, structural damage would not occur.

To address the human response to groundborne vibration, the Federal Transit Administration (FTA) set forth guidelines for maximum-acceptable vibration criteria for different types of land uses. For residential uses and buildings where people normally sleep, the maximum-acceptable vibration limit is 80 VdB (FTA 2018). Based on FTA's recommended procedure for applying a propagation adjustment to these reference levels, vibration levels from loaded haul trucks could exceed FTA's maximum acceptable level of 80 VdB with respect to human response within 40 feet of project activities (see Appendix D). None of the residences would be within 40 feet of project activities and thus, would not experience vibration levels in excess of 80 VdB during construction. Due to the minimal and intermittent nature of dozers and haul trucks, and the short duration of the construction period, the proposed project would not expose persons to excessive groundborne vibration levels. Impacts would be **less than significant**.

Operation

The proposed project would not result in the long-term operation of a source of ground vibration (i.e., train or highway). Maintenance activities would be similar to those already conducted for the existing pipeline. There would be **no impact**.

- c) The proposed project site is not located within the vicinity of a private airstrip or an airport land use plan; the Montague-Yreka Airport is located 8 miles north of the proposed project area and the Weed Airport-O46 is 9 miles south. Thus, the proposed project would not result in the exposure of people residing or working in the project area to excessive airport or airstrip noise levels. **No impact** would occur.

References

- California Department of Transportation (Caltrans), 2013 (September). Technical Noise Supplement. Division of Environmental Analysis. Sacramento, CA. Prepared by ICF International.
- Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment Manual.
- Environmental Science Associates, 2019. Roadway Construction Noise Model. November 20, 2019.
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Population and Housing

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
14. POPULATION AND HOUSING — Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

- a) The proposed project is located in unincorporated Siskiyou County, 3 miles south of the town of Grenada. The U.S. Census Bureau provides population estimates and according to the November 2019 estimates, Siskiyou County had a population of 43,724 (U.S. Census Bureau 2019) and according to the 2010 Census, Granada had a population of 367 (CensusViewer 2019).

A maximum of 10 construction crew members would be temporarily on site during the 10-month maximum construction period. Construction of the project would not occur for long enough to spur worker relocation to the area. Operation of the proposed project would not require new employees. Lastly, the project consists of burying a pipeline to improve water conservation and therefore would not indirectly lead to population growth by expanding infrastructure. Therefore, **no impact** would occur.

- b) The proposed project would not result in displacement of people nor require displacement of existing homes because it would be located in areas without houses. The construction of replacement housing would not be required; therefore, **no impact** would occur.

References

CensusViewer, 2019. Grenada, California Population. Available:
<http://censusviewer.com/city/CA/Grenada>. Accessed November 14, 2019.

U.S. Census Bureau. 2019. Quickfacts, Siskiyou County, California. Available:
<https://www.census.gov/quickfacts/fact/table/siskiyoucountycalifornia/INC110217>.
 Accessed November 14, 2019.

Public Services

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
15. PUBLIC SERVICES —				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:				
i) Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
v) Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

- a) Construction of the proposed project may temporarily increase the potential need for police and fire protection services due to general hazards associated with construction (e.g., fire ignition, materials theft, injury). However, a maximum of up to 10 people would be on site at any given time during a maximum 10-month construction period. The increased potential need for these services would not require construction of new or physically altered government facilities. The proposed project would install a water conveyance pipeline to improve water conservation and therefore would not indirectly lead to population growth by expanding infrastructure. No new employees would be needed for operation of the proposed project. Therefore, operation would not increase demand for police protection, fire protection, educational services, parks, or other facilities. No new or physically altered facilities would be needed. **No impact** would occur.

Recreation

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
16. RECREATION —				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

- a) The project area consists of private agricultural land and existing GID facilities south of the town of Grenada. There are no recreational resources or opportunities within the project area. The nearest park, Hoy Park in the city of Weed, is approximately nine miles southeast of the project area.

Construction and operation of the proposed project would not increase the population in the project vicinity. Construction workers would not relocate to the project area, and operation would not require new employees. Therefore, the proposed project would not introduce new recreational users in the project vicinity, and the project would not increase use of existing parks or recreational facilities. There would be **no impact**.

- b) The proposed project would not include or require the construction of new recreational facilities. There would be **no impact**.

Transportation

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
17. TRANSPORTATION — Would the project:				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

- a, b) Construction activities would temporarily increase vehicle trips on area roadways, including I-5 and Old Highway 99. The number of workers would vary during the construction period; however, there could be up to 10 workers commuting daily to the project site during the construction period, resulting in up to 10 daily worker commute roundtrips for up to 10 months. Haul truck trips would be associated with equipment delivery prior to and during construction, and demobilization at the end of construction. It is estimated that approximately 15 haul truck roundtrips would be needed to deliver and remove materials, including pipeline and heavy equipment, over the entirety of the construction period. During construction, GID would generally use the existing access road to the pump station near Shasta River and would seek to also use several lateral roads on Belcampo Farms currently infrequently used by GID to access the existing ditch for maintenance. Maintenance trips during operation could number up to 148 yearly.

According to the Siskiyou County Regional Transportation Plan (2016), the average annual daily traffic for I-5 at the town of Grenada was 15,150 in 2013; the average annual daily traffic for I-5 near the town of Edgewood, approximately 10 miles south of the project site, was 14,450. Traffic counts were not available for Old Highway 99, however, the addition 10 daily worker commute roundtrips, 15 total haul truck roundtrips, and 148 yearly maintenance roundtrips, would be minimal on either roadway over the course of the 10-month construction period and annual maintenance period.

Siskiyou Transit and General Express (STAGE) is the County's public transit service provider. Busses run Monday through Friday from 6 a.m. to 9 p.m., except on County holidays. STAGE offers 6 different routes that serve the entire County; the closest stop to the project site is located in Grenada, just west of the Grenada Gardens Senior Living facility at 424 County Highway A12. There are no bicycle or pedestrian facilities in the project area (Siskiyou County 2016).

- The proposed project would not result in alterations to existing public roadways and the circulation network would not be affected. Project operation would not result in any change in land uses, and therefore would not alter the compatibility of uses served by the public roadway network. Therefore, the proposed project would not conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities and there would be **less than significant**.
- c) The proposed project would not design or construction any new roadways. During construction, GID would generally use the existing access road to the pump station near Shasta River and would seek to also stabilize and use several lateral roads on Belcampo Farms. There would be no sharp curves or dangerous intersections along local roadways used for the project that would increase traffic safety hazards. Therefore, **no impact** would occur.
- d) As described in the Project Description and above under Item a), construction-related traffic would be spread over the duration of the construction schedule and therefore, would be minimal on a daily basis. Temporary construction staging (see Figure 2) would not block or interfere with emergency response vehicles. Construction of the proposed project would not result in short-term or long-term impacts to emergency access.

Operation of the new pipeline would not result in the reconfiguration of existing roads or the construction of new roads. All existing emergency access ingress and egress points would remain unchanged, and adequate emergency access would be maintained subsequent to the completion of project construction. Therefore, the proposed project would have **no impact** on emergency access.

References

Siskiyou County. 2016. *2016 Regional Transportation Plan for Siskiyou County*. Prepared by Green DOT Transportation Solutions.

Tribal Cultural Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
18. Tribal Cultural Resources —				
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discussion

a.i, a.ii) A request was made of the Native American Heritage Commission (NAHC) for a search of the Sacred Lands Inventory File and a current list of Native Americans who might have knowledge of cultural resources in the project area. The NAHC responded on August 2, 2018 with negative results of the Sacred Lands Inventory File search and a suggested list of Native American individuals to contact. The Quartz Valley Indian Community, the Shasta Nation, the Shasta Indian Nation, the Winnemem Wintu Tribe, and the Klamath Tribe were contacted on August 3, 2019. No responses had been received by November 2019. No Native American archaeological, ethnographic, or other tribal artifacts were identified during the cultural resources field survey (Rich 2019). No tribal cultural resources, as defined in PRC Section 21074, have been identified in the project area. Therefore, the proposed project is not anticipated to impact any tribal cultural resources.

However, because the proposed project would involve ground-disturbing activities that may extend into undisturbed soil, it is possible that such actions could unearth, expose, or disturb subsurface archaeological resources not previously discovered or recorded. If previously unrecorded archaeological deposits are present in the project area, and if they are found to qualify as tribal cultural resources, pursuant to PRC Section 21074, any impacts to the resource resulting from the proposed project would be potentially significant. Such potentially significant impacts would be reduced to a **less than significant with mitigation incorporated** by implementing **Mitigation Measure CUL-1**.

References

Rich, William C., 2019. *A Cultural Resources Survey for the Grenada Irrigation District Enclosed Lateral Project*. Prepared for Grenada Irrigation District. November.

Utilities and Service Systems

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
19. UTILITIES AND SERVICE SYSTEMS — Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

- a) No electric, natural gas, telecommunications, or wastewater facilities are proposed. The proposed project is a water conservation undertaking that would reconfigure an existing water conveyance system (an irrigation ditch) into a 3.2-mile pipeline. The proposed project is expected to reduce water losses and increase efficiency of water use, while decreasing the amount of surface water from the Shasta River. The proposed project would not result in increased water conveyance capacity or use for GID. Direct impacts from the project's construction (associated with trenching) to install the proposed pipeline are described in Air Quality, Noise, Hazards, and Biological Resources sections.

Prior to final design, the proposed project would be required to register an underground service alert to notify utilities of potential corridor conflicts, consistent with California regulations (DigAlert, 2018). The contractor assigned to construction would be required to verify site locations for existing buried utilities such as private irrigation pipelines, water, sewer, power lines, telephone, or fiber optic cables. Potential use conflicts would be resolved through minor design modifications prior to construction. As no expanded systems or capacity increases are proposed as part of the project, impacts would be temporary, limited to the construction phase. Operation of the proposed project would result in decreased use of surface water, which is a beneficial impact. Overall, impacts would be **less than significant**.

- b) The proposed project would result in increased efficiency as existing conveyance leakage and losses would be corrected by the project's implementation. The proposed project would not require any increase in allocations for water resources or otherwise increase demand for water service. As described in the Project Description, operation of the proposed project would result in a decrease in annual diversion of water from the Shasta River conserving approximately 1,100 acre-feet annually. There would be **no impact**.
- c, d, e) The proposed project would not include or require any wastewater treatment facilities. No increases in demand for wastewater treatment would occur with the proposed project's implementation. The proposed project is not anticipated to result in the generation of any solid waste, as excavated soils would be backfilled and regraded on site. Thus, the proposed project would comply with the state of California's goals related to the diversion and reduction of solid waste. There would be **no impact**.

References

Dig Alert, 2018 California State Law. Contact 811 Before You Dig.
<https://www.digalert.org/calaw-full-2017>.

Wildfire

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
20. WILDFIRE — If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

- a) The Project would be located within the Shasta Valley Planning Region, as stated within the Siskiyou County Community Wildfire Protection Plan (CWPP). The main purpose of the CWPP is to provide guidance that enhances protection of human life and to help the County of Siskiyou become more adaptable to wildfire, while reducing the wildfire threat to community values such as structures, critical infrastructure, businesses, and natural and historic resources. The central portion of the Shasta Valley Planning Region is predominantly covered by either grass/shrub land or agricultural landscape. Elevation ranges from 1,950 feet along the Klamath River to 14,177 at the top of Mount Shasta (Siskiyou County, 2019). Although the Shasta Valley planning region contains a range of elevations, however, the majority of the region, including the Project, would be predominantly flat agricultural land, ranging from 2,000 feet to 3,000 feet. The majority of residents are located within the cities of Yreka, Weed, and Montague (Siskiyou County, 2019).

As designated by the California Department of Forestry and Fire (CAL FIRE), approximately 1.5 miles of the Project would be located within a State Responsibility Area¹⁰ (SRA) and are designated as a Moderate Fire Hazard Severity Zone (FHSZ) (CAL FIRE, 2007).

According to the CWPP, the Siskiyou County's Sheriff Department is the responsible party to authorize implementation of an evacuation order, if a fire were to occur. During a wildfire emergency, the Sheriff Department's decision to evacuate an area would be

¹⁰ SRAs are recognized by the Board of Forestry and Fire Protection as areas where CAL FIRE is the primary emergency response agency responsible for fire suppression and prevention.

conducted in coordination with the appropriate local, state, and federal fire protection agencies and Incident Commander. The County of Siskiyou also contains designated locations marked as “evacuation shelter sites” (i.e. public facilities, fairgrounds, schools, and/or parks) which are made available to communities affected during the emergency evacuation (Siskiyou County, 2019). The Project would not interfere with any public evacuation shelter sites and would have no impact on police or fire services further from existing (see *Public Services* section, above).

However, Project construction would be conducted across Highway I-5 and Old Highway 99, which would be one of the two main evacuation routes if a fire were to occur. Project construction that would occur across I-5 would be temporary and would be constructed using a jack and bore, or trenchless crossing. Traffic would be temporary and minimal, therefore, the impact would be less than significant.

- b) As stated above, approximately 1.5 miles of the proposed project would be constructed in a SRA as a moderate FHSZ. In addition to the fire frequency of Siskiyou County, seasonal high winds, and grass/shrub vegetation surrounding the proposed pipeline alignment, the potential for a fire to occur in an area surrounding the proposed project is fairly likely. If a fire were to occur during construction, the impact could be significant. In order to ensure that wildland fire impacts during construction are reduced to less than significant, implementation of **Mitigation Measure FIRE-1** would be required. Mitigation Measure FIRE-1 would include standard construction fire safety protocol, including reduction of potential sources of ignition and emergency suppression equipment.

Mitigation Measure FIRE-1: Fire Safety. GID and/or its contractors shall abide by all fire safety measures discussed below during construction, operation, and maintenance.

- All construction vehicles shall have fire suppression equipment
- Construction personnel shall park vehicles within roads, road shoulders, graveled areas, and/ or cleared areas (i.e., away from dry vegetation) wherever such surfaces are present at the construction site.
- Construction workers shall receive training on the proper use of fire-fighting equipment and procedures to be followed in the event of a fire.
- No smoking shall be permitted at the construction site and/or near construction vehicles.
- Before use of construction equipment that has the potential to produce a spark (e.g., welding), GID and/or its contractors would water the surrounding area prior to work.

Operation and maintenance of the proposed project would not expose residences and occupants to increased risks associated with wildfire. Following construction, the proposed project would be located underground and would not directly exacerbate wildfire risk. However, routine maintenance would result in vehicle use, which could have the potential to produce a spark. Mitigation Measure FIRE-1 would be implemented during maintenance

- to ensure fire safety. Implementation of MM FIRE-1 would ensure impacts would be **less than significant with mitigation incorporated** regarding wildfire risk.
- c) The proposed project would not require the installation or maintenance of any new roads, fuel breaks, emergency water sources, or power lines. As discussed in Question b, above, construction and post-construction maintenance of the underground pipeline would require the use of motorized vehicles on existing access roads surrounding the proposed project. This would provide an additional form of ignition and could result in a spark in an area with moderate fire hazard severity. However, during routine observation and maintenance, GID would coordinate with Belcampo Farms to implement a weed control program to limit growth of weeds equal to pre-construction conditions. GID would conduct a long term effort to control noxious weeds along the existing access roads and pipeline alignment, which would reduce the amount of vegetation and fuel, if a spark were to occur. Implementation of weed control in combination with Mitigation Measure FIRE-1, the impact would be reduced to **less than significant with mitigation incorporated** during installation and maintenance of the proposed project.
- d) The proposed project is primarily located on open grazing land with minimal to no structures or people within a mile buffer of the proposed pipeline. Approximately five residences are located directly west of Old Hwy 99 and surrounded by predominantly flat agricultural land with no downslope or risk of downstream flooding. Therefore, the proposed project would not significantly expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. There would be **no impact**.

References

- California Department of Forestry and Fire (CAL FIRE), 2007. Fire Hazard Severity Zones in SRA. Adopted by CAL FIRE on November 7, 2007. Available: osfm.fire.ca.gov/divisions/wildfire-prevention-planning-engineering/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/. Accessed November 18, 2019.
- Siskiyou County, 2019. Community Wildfire Protection Plan Siskiyou County. May 21, 2019. Available: firesafesiskiyou.com/wp-content/uploads/2019/05/CWPP_SiskiyouCounty-ApprovedFINAL_05.21.2019.pdf. Accessed November 18, 2019.
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Mandatory Findings of Significance

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
19. MANDATORY FINDINGS OF SIGNIFICANCE —				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discussion

- a) The proposed project would be temporary in nature and involve construction activities to install the proposed pipeline and associated infrastructure. The proposed project would not: substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; reduce or restrict the range of rare or endangered plants or animals; or, eliminate important examples of the major periods of California history or prehistory. As discussed in the analyses provided in this Initial Study, adherence to federal, State, and local regulations, and proposed mitigation measures AQ-1 through AQ-3, BIO-1 through BIO-4, CUL-1, and FIRE-1 would reduce all potentially significant impacts to biological, cultural, and tribal cultural resources, as well as to other issue areas analyzed, to **less-than-significant levels with mitigation incorporated**.
- b) As noted throughout this document, the potential impacts of the proposed project are largely restricted to temporary and short-term construction-related impacts and are site-specific. As noted above, all of the potential direct and indirect impacts of the proposed project were determined to be fully avoided or reduced to less than significant with incorporation of mitigation measures AQ-1 through AQ-3, BIO-1 through BIO-4, CUL-1, and FIRE-1. As a result, the potential impacts of the proposed project are not considered cumulatively considerable, and impacts would be **less than significant with mitigation incorporated**.
- c) The potential impacts of the proposed project are temporary, short-term, and site-specific. These impacts are all localized to the proposed project area and include limited adverse

effects on air quality, biological resources, cultural resources, greenhouse gas emissions, and water quality/soils. However, the proposed project would not include any activities or uses that may cause substantial adverse effects on human beings, either directly or indirectly, or on the physical environment. The proposed project has been designed to meet the engineering standards for underground pipeline projects and would incorporate adherence to local codes and regulations as conditions of project approval. Compliance with applicable local, State, and federal standards, as well as incorporation of project mitigation measures, would result in **less-than-significant impacts with mitigation incorporated**.

Appendix A

Air Quality Modeling

Grenada Irrigation District Pipeline Installation and Maintenance - Siskiyou County APCD Air District, Annual

Grenada Irrigation District Pipeline Installation and Maintenance

Siskiyou County APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Recreational	0.00	User Defined Unit	0.00	161,620.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	85
Climate Zone	14			Operational Year	2021
Utility Company	PacifiCorp				
CO2 Intensity (lb/MWhr)	1656.39	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 16,162 feet of pipeline x 10-foot surface excavation width

Construction Phase - Assuming 4 months of construction with no stoppage of schedule to be conservative.

Off-road Equipment - Based on equipment list in PD.

Off-road Equipment - Based on equipment list from PD

Trips and VMT - 4 to 5 workers for typical work; 8 to 10 workers for jack and bore. Vendor trips are from the trucks in the equipment list.

Grading - Surface area of trenching for pipeline.

Vehicle Trips -

Operational Off-Road Equipment - Assume 2 instances of repairs per year.

Grenada Irrigation District Pipeline Installation and Maintenance - Siskiyou County APCD Air District, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	87.00
tblGrading	AcresOfGrading	0.00	3.70
tblLandUse	LandUseSquareFeet	0.00	161,620.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		I-5 Jack & Bore
tblOffRoadEquipment	PhaseName		I-5 Jack & Bore
tblOffRoadEquipment	PhaseName		I-5 Jack & Bore
tblOffRoadEquipment	UsageHours	1.00	8.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	10.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	10.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	13.00	10.00
tblTripsAndVMT	WorkerTripNumber	13.00	20.00

2.0 Emissions Summary

Grenada Irrigation District Pipeline Installation and Maintenance - Siskiyou County APCD Air District, Annual

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0930	0.9128	0.7032	1.2800e-003	0.2722	0.0437	0.3159	0.1465	0.0403	0.1867	0.0000	113.3313	113.3313	0.0328	0.0000	114.1513
Maximum	0.0930	0.9128	0.7032	1.2800e-003	0.2722	0.0437	0.3159	0.1465	0.0403	0.1867	0.0000	113.3313	113.3313	0.0328	0.0000	114.1513

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0930	0.9128	0.7032	1.2800e-003	0.2722	0.0437	0.3159	0.1465	0.0403	0.1867	0.0000	113.3311	113.3311	0.0328	0.0000	114.1512
Maximum	0.0930	0.9128	0.7032	1.2800e-003	0.2722	0.0437	0.3159	0.1465	0.0403	0.1867	0.0000	113.3311	113.3311	0.0328	0.0000	114.1512

[illegible]

Grenada Irrigation District Pipeline Installation and Maintenance - Siskiyou County APCD Air District, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	8-1-2020	9-30-2020	0.4630	0.4630
		Highest	0.4630	0.4630

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8185	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Offroad	6.3800e-003	0.0656	0.0366	7.0000e-005		3.1800e-003	3.1800e-003		2.9300e-003	2.9300e-003	0.0000	6.0216	6.0216	1.9500e-003	0.0000	6.0703
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.8249	0.0656	0.0366	7.0000e-005	0.0000	3.1800e-003	3.1800e-003	0.0000	2.9300e-003	2.9300e-003	0.0000	6.0216	6.0216	1.9500e-003	0.0000	6.0703

Grenada Irrigation District Pipeline Installation and Maintenance - Siskiyou County APCD Air District, Annual

2.2 Overall Operational**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8185	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Offroad	6.3800e-003	0.0656	0.0366	7.0000e-005		3.1800e-003	3.1800e-003		2.9300e-003	2.9300e-003	0.0000	6.0216	6.0216	1.9500e-003	0.0000	6.0703
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.8249	0.0656	0.0366	7.0000e-005	0.0000	3.1800e-003	3.1800e-003	0.0000	2.9300e-003	2.9300e-003	0.0000	6.0216	6.0216	1.9500e-003	0.0000	6.0703

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

Grenada Irrigation District Pipeline Installation and Maintenance - Siskiyou County APCD Air District, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Pipeline Install	Grading	8/1/2020	12/1/2020	5	87	
2	I-5 Jack & Bore	Trenching	10/1/2020	10/15/2020	5	11	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Pipeline Install	Excavators	2	8.00	158	0.38
Pipeline Install	Forklifts	1	8.00	89	0.20
Pipeline Install	Rubber Tired Dozers	1	8.00	247	0.40
Pipeline Install	Skid Steer Loaders	1	8.00	65	0.37
I-5 Jack & Bore	Bore/Drill Rigs	1	8.00	221	0.50
I-5 Jack & Bore	Excavators	3	8.00	158	0.38
I-5 Jack & Bore	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Pipeline Install	5	10.00	6.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
I-5 Jack & Bore	5	20.00	4.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

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3.2 Pipeline Install - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2639	0.0000	0.2639	0.1442	0.0000	0.1442	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0780	0.8055	0.5758	9.8000e-004		0.0405	0.0405		0.0373	0.0373	0.0000	85.8618	85.8618	0.0278	0.0000	86.5560
Total	0.0780	0.8055	0.5758	9.8000e-004	0.2639	0.0405	0.3044	0.1442	0.0373	0.1815	0.0000	85.8618	85.8618	0.0278	0.0000	86.5560

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5900e-003	0.0322	0.0108	8.0000e-005	1.5300e-003	1.7000e-004	1.7100e-003	4.4000e-004	1.6000e-004	6.1000e-004	0.0000	7.1884	7.1884	5.7000e-004	0.0000	7.2026
Worker	4.6100e-003	3.6600e-003	0.0324	6.0000e-005	5.2800e-003	5.0000e-005	5.3300e-003	1.4000e-003	5.0000e-005	1.4500e-003	0.0000	5.2794	5.2794	3.0000e-004	0.0000	5.2869
Total	6.2000e-003	0.0358	0.0432	1.4000e-004	6.8100e-003	2.2000e-004	7.0400e-003	1.8400e-003	2.1000e-004	2.0600e-003	0.0000	12.4678	12.4678	8.7000e-004	0.0000	12.4895

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3.2 Pipeline Install - 2020**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2639	0.0000	0.2639	0.1442	0.0000	0.1442	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0780	0.8055	0.5758	9.8000e-004		0.0405	0.0405		0.0373	0.0373	0.0000	85.8617	85.8617	0.0278	0.0000	86.5559
Total	0.0780	0.8055	0.5758	9.8000e-004	0.2639	0.0405	0.3044	0.1442	0.0373	0.1815	0.0000	85.8617	85.8617	0.0278	0.0000	86.5559

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5900e-003	0.0322	0.0108	8.0000e-005	1.5300e-003	1.7000e-004	1.7100e-003	4.4000e-004	1.6000e-004	6.1000e-004	0.0000	7.1884	7.1884	5.7000e-004	0.0000	7.2026
Worker	4.6100e-003	3.6600e-003	0.0324	6.0000e-005	5.2800e-003	5.0000e-005	5.3300e-003	1.4000e-003	5.0000e-005	1.4500e-003	0.0000	5.2794	5.2794	3.0000e-004	0.0000	5.2869
Total	6.2000e-003	0.0358	0.0432	1.4000e-004	6.8100e-003	2.2000e-004	7.0400e-003	1.8400e-003	2.1000e-004	2.0600e-003	0.0000	12.4678	12.4678	8.7000e-004	0.0000	12.4895

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3.3 I-5 Jack & Bore - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.4500e-003	0.0678	0.0751	1.5000e-004		2.9600e-003	2.9600e-003		2.7700e-003	2.7700e-003	0.0000	13.0608	13.0608	4.0400e-003	0.0000	13.1618
Total	7.4500e-003	0.0678	0.0751	1.5000e-004		2.9600e-003	2.9600e-003		2.7700e-003	2.7700e-003	0.0000	13.0608	13.0608	4.0400e-003	0.0000	13.1618

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3000e-004	2.7100e-003	9.1000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.6059	0.6059	5.0000e-005	0.0000	0.6071
Worker	1.1700e-003	9.3000e-004	8.1900e-003	1.0000e-005	1.3300e-003	1.0000e-005	1.3500e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.3350	1.3350	8.0000e-005	0.0000	1.3369
Total	1.3000e-003	3.6400e-003	9.1000e-003	2.0000e-005	1.4600e-003	2.0000e-005	1.4900e-003	4.0000e-004	2.0000e-005	4.2000e-004	0.0000	1.9409	1.9409	1.3000e-004	0.0000	1.9440

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3.3 I-5 Jack & Bore - 2020**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.4500e-003	0.0678	0.0751	1.5000e-004		2.9600e-003	2.9600e-003		2.7700e-003	2.7700e-003	0.0000	13.0607	13.0607	4.0400e-003	0.0000	13.1618
Total	7.4500e-003	0.0678	0.0751	1.5000e-004		2.9600e-003	2.9600e-003		2.7700e-003	2.7700e-003	0.0000	13.0607	13.0607	4.0400e-003	0.0000	13.1618

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3000e-004	2.7100e-003	9.1000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.6059	0.6059	5.0000e-005	0.0000	0.6071
Worker	1.1700e-003	9.3000e-004	8.1900e-003	1.0000e-005	1.3300e-003	1.0000e-005	1.3500e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.3350	1.3350	8.0000e-005	0.0000	1.3369
Total	1.3000e-003	3.6400e-003	9.1000e-003	2.0000e-005	1.4600e-003	2.0000e-005	1.4900e-003	4.0000e-004	2.0000e-005	4.2000e-004	0.0000	1.9409	1.9409	1.3000e-004	0.0000	1.9440

4.0 Operational Detail - Mobile

Grenada Irrigation District Pipeline Installation and Maintenance - Siskiyou County APCD Air District, Annual

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Recreational	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Recreational	0.487361	0.038770	0.180029	0.116952	0.034202	0.006373	0.008681	0.117611	0.001222	0.001581	0.005079	0.001001	0.001137

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5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

[illegible]

Grenada Irrigation District Pipeline Installation and Maintenance - Siskiyou County APCD Air District, Annual

5.2 Energy by Land Use - NaturalGas

Unmitigated

[illegible]

Mitigated

[illegible]

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5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail**6.1 Mitigation Measures Area**

Grenada Irrigation District Pipeline Installation and Maintenance - Siskiyou County APCD Air District, Annual

[illegible]

6.2 Area by SubCategory

Unmitigated

[illegible]

Grenada Irrigation District Pipeline Installation and Maintenance - Siskiyou County APCD Air District, Annual

6.2 Area by SubCategory**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1873					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6312					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.8185	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

7.0 Water Detail**7.1 Mitigation Measures Water**

Grenada Irrigation District Pipeline Installation and Maintenance - Siskiyou County APCD Air District, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Grenada Irrigation District Pipeline Installation and Maintenance - Siskiyou County APCD Air District, Annual

7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

8.0 Waste Detail

8.1 Mitigation Measures Waste**Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

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8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

9.0 Operational Offroad

Grenada Irrigation District Pipeline Installation and Maintenance - Siskiyou County APCD Air District, Annual

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Excavators	1	8.00	10	158	0.38	Diesel
Rubber Tired Dozers	1	8.00	10	247	0.40	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Excavators	1.1500e-003	0.0108	0.0164	3.0000e-005		5.2000e-004	5.2000e-004		4.8000e-004	4.8000e-004	0.0000	2.2688	2.2688	7.3000e-004	0.0000	2.2872
Rubber Tired Dozers	5.2300e-003	0.0549	0.0202	4.0000e-005		2.6600e-003	2.6600e-003		2.4500e-003	2.4500e-003	0.0000	3.7528	3.7528	1.2100e-003	0.0000	3.7832
Total	6.3800e-003	0.0656	0.0366	7.0000e-005		3.1800e-003	3.1800e-003		2.9300e-003	2.9300e-003	0.0000	6.0216	6.0216	1.9400e-003	0.0000	6.0703

10.0 Stationary Equipment**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Grenada Irrigation District Pipeline Installation and Maintenance - Siskiyou County APCD Air District, Annual

Appendix B

Biological Resources

IPaC Information for Planning and Consultation U.S. Fish & Wildlife Service

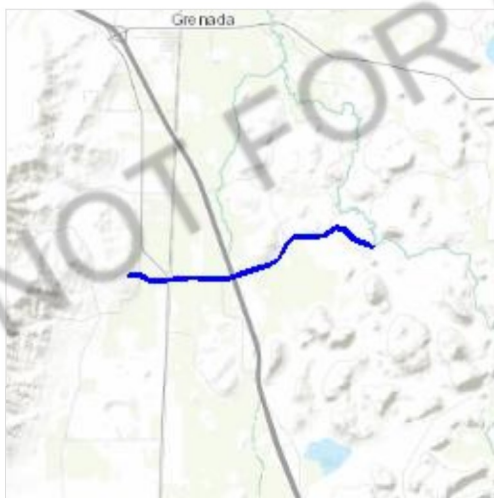
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Siskiyou County, California



Local office

Yreka Fish And Wildlife Office

☎ (530) 842-5763

📠 (530) 842-4517

1829 South Oregon Street

Yreka, CA 96097-3446

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

-
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
 2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Fisher <i>Pekania pennanti</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3651	Proposed Threatened
Gray Wolf <i>Canis lupus</i> There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/4488	Endangered
North American Wolverine <i>Gulo gulo luscus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Birds

NAME	STATUS
Northern Spotted Owl <i>Strix occidentalis caurina</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/1123	Threatened
Yellow-billed Cuckoo <i>Coccyzus americanus</i> There is proposed critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
Oregon Spotted Frog <i>Rana pretiosa</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6633	Threatened

Fishes

NAME	STATUS
------	--------

Lost River Sucker *Deltistes luxatus*

Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.

<https://ecos.fws.gov/ecp/species/5604>

Shortnose Sucker *Chasmistes brevirostris*

Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.

<https://ecos.fws.gov/ecp/species/7160>

Crustaceans

NAME

STATUS

Conservancy Fairy Shrimp *Branchinecta conservatio*

Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.

<https://ecos.fws.gov/ecp/species/8246>

Vernal Pool Fairy Shrimp *Branchinecta lynchi*

Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.

<https://ecos.fws.gov/ecp/species/498>

Vernal Pool Tadpole Shrimp *Lepidurus packardii*

Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.

<https://ecos.fws.gov/ecp/species/2246>

Flowering Plants

NAME

STATUS

Gentner's Fritillary *Fritillaria gentneri*

Endangered

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/8120>

Yreka Phlox *Phlox hirsuta*

Endangered

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/8243>

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the

endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Bald Eagle *Haliaeetus leucocephalus*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Breeds Jan 1 to Sep 30

California Thrasher *Toxostoma redivivum*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds Jan 1 to Jul 31

Golden Eagle *Aquila chrysaetos*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1680>

Breeds Jan 1 to Aug 31

Great Blue Heron *Ardea herodias fannini*

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Breeds Mar 15 to Aug 15

Rufous Hummingbird *selasphorus rufus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8002>

Breeds Apr 15 to Jul 15

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to

be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ “Proper Interpretation and Use of Your Migratory Bird Report” before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

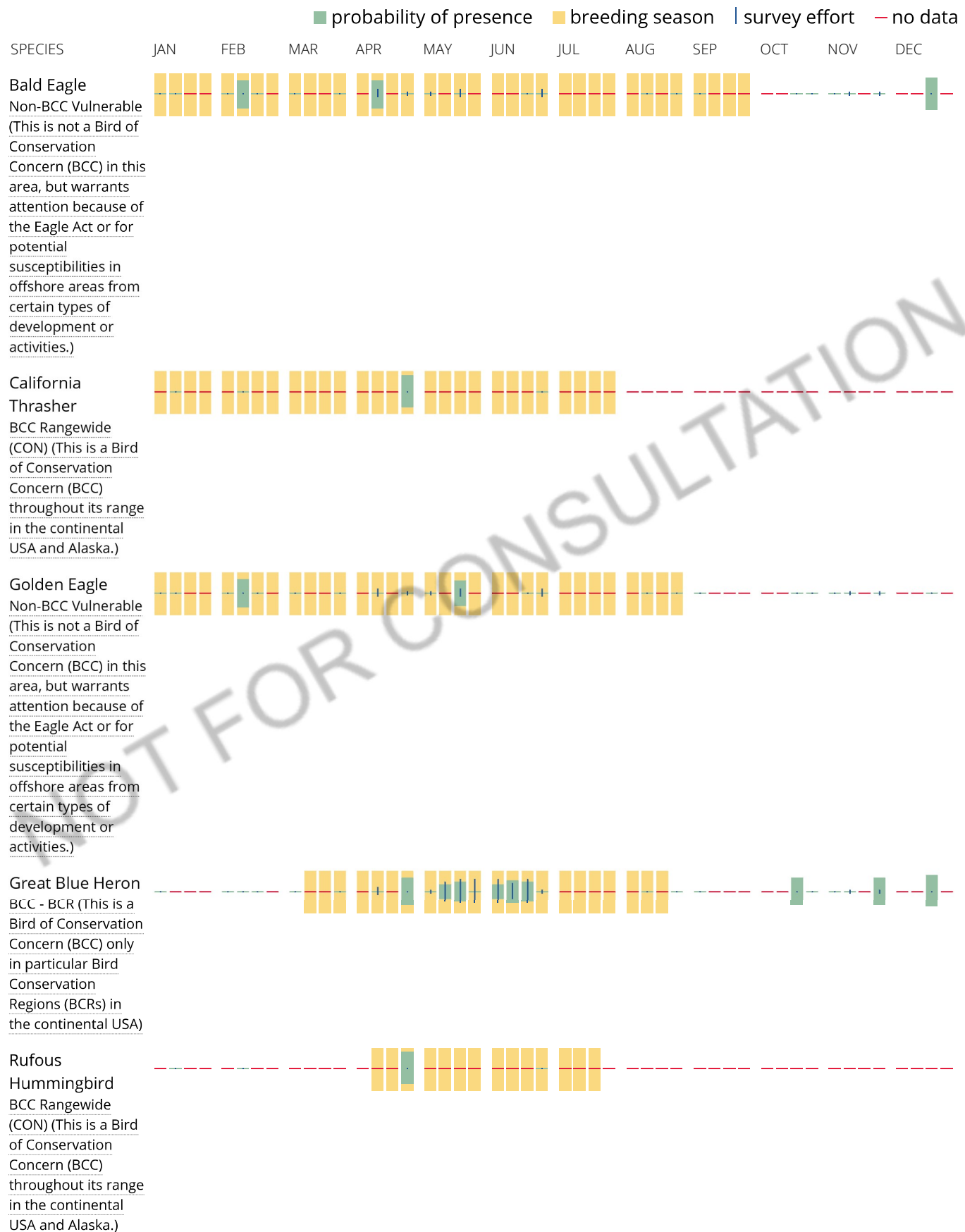
No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant

information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their

- range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
 3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

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

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

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

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

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

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

[PEM1C](#)

[PEM1A](#)

RIVERINE

[R4SBCx](#)

[R2ABFx](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad IS (Gazelle (4112255) OR Lake Shastina (4112254) OR Yreka (4112266) OR Montague (4112265) OR Little Shasta (4112264) OR Solomons Temple (4112263) OR Juniper Flat (4112253) OR Hotlum (4112243) OR Weed (4112244) OR China Mtn. (4112245) OR Gazelle Mtn. (4112246) OR Duzel Rock (4112256))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Accipiter gentilis</i> northern goshawk	ABNKC12060	None	None	G5	S3	SSC
<i>Ambystoma macrodactylum sigillatum</i> southern long-toed salamander	AAAAA01085	None	None	G5T4	S3	SSC
<i>Antigone canadensis tabida</i> greater sandhill crane	ABNMK01014	None	Threatened	G5T4	S2	FP
<i>Aquila chrysaetos</i> golden eagle	ABNKC22010	None	None	G5	S3	FP
<i>Ardea herodias</i> great blue heron	ABNGA04010	None	None	G5	S4	
<i>Balsamorhiza lanata</i> woolly balsamroot	PDAST11047	None	None	G3	S3	1B.2
<i>Balsamorhiza sericea</i> silky balsamroot	PDAST110C0	None	None	G4Q	S3	1B.3
<i>Bombus caliginosus</i> obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
<i>Bombus crotchii</i> Crotch bumble bee	IIHYM24480	None	Candidate Endangered	G3G4	S1S2	
<i>Bombus franklini</i> Franklin's bumble bee	IIHYM24010	None	Candidate Endangered	G1	S1	
<i>Bombus morrisoni</i> Morrison bumble bee	IIHYM24460	None	None	G4G5	S1S2	
<i>Bombus occidentalis</i> western bumble bee	IIHYM24250	None	Candidate Endangered	G2G3	S1	
<i>Buteo swainsoni</i> Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
<i>Calochortus greenei</i> Greene's mariposa-lily	PMLIL0D0H0	None	None	G3	S2S3	1B.2
<i>Calochortus monanthus</i> single-flowered mariposa-lily	PMLIL0D0W0	None	None	GH	SH	1A
<i>Calochortus persistens</i> Siskiyou mariposa-lily	PMLIL0D140	None	Rare	G1	S1	1B.2
<i>Carex viridula ssp. viridula</i> green yellow sedge	PMCYP03EM5	None	None	G5T5	S2	2B.3
<i>Chaenactis suffrutescens</i> Shasta chaenactis	PDAST200H0	None	None	G2G3	S2S3	1B.3



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Coccyzus americanus occidentalis</i> western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
<i>Cordylanthus tenuis ssp. pallescens</i> pallid bird's-beak	PDSCR0J0S3	None	None	G4G5T1	S1	1B.2
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
<i>Cottus klamathensis polyporus</i> Lower Klamath marbled sculpin	AFC4E02153	None	None	G4T2T4	S2S4	SSC
<i>Cuscuta jepsonii</i> Jepson's dodder	PDCUS011T0	None	None	G1	S1	1B.2
<i>Darlingtonia Seep</i> Darlingtonia Seep	CTT51120CA	None	None	G4	S3.2	
<i>Draba carnosula</i> Mt. Eddy draba	PDBRA112T0	None	None	G2	S2	1B.3
<i>Empidonax traillii</i> willow flycatcher	ABPAE33040	None	Endangered	G5	S1S2	
<i>Emys marmorata</i> western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
<i>Epilobium luteum</i> yellow willowherb	PDONA060H0	None	None	G5	S1	2B.3
<i>Erethizon dorsatum</i> North American porcupine	AMAFJ01010	None	None	G5	S3	
<i>Erigeron bloomeri var. nudatus</i> Waldo daisy	PDAST3M0M2	None	None	G5T4	S3	2B.3
<i>Erigeron nivalis</i> snow fleabane daisy	PDASTE1060	None	None	G5	S3	2B.3
<i>Eriogonum ursinum var. erubescens</i> blushing wild buckwheat	PDPGN08632	None	None	G3G4T3	S3	1B.3
<i>Erythronium revolutum</i> coast fawn lily	PMLIL0U0F0	None	None	G4G5	S3	2B.2
<i>Eurybia merita</i> subalpine aster	PDASTEB030	None	None	G5	SH	2B.3
<i>Falco mexicanus</i> prairie falcon	ABNKD06090	None	None	G5	S4	WL
<i>Frasera albicaulis var. modocensis</i> Modoc green-gentian	PDGEN05018	None	None	G5T3T4	S2S3	2B.3
<i>Galium serpenticum ssp. scotticum</i> Scott Mountain bedstraw	PDRUB0N1Y6	None	None	G4G5T2	S2	1B.2
<i>Haliaeetus leucocephalus</i> bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
<i>Hydroporus leechi</i> Leech's skyline diving beetle	IICOL55040	None	None	G1?	S1?	



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Hymenoxys lemmonii</i> alkali hymenoxys	PDAST530C0	None	None	G4	S2S3	2B.2
<i>Iliamna bakeri</i> Baker's globe mallow	PDMAL0K010	None	None	G4	S3	4.2
<i>Ivesia pickeringii</i> Pickering's ivesia	PDROS0X0D0	None	None	G2	S2	1B.2
<i>Juncus dudleyi</i> Dudley's rush	PMJUN01390	None	None	G5	S1	2B.3
<i>Klamath Spring Stream</i> Klamath Spring Stream	CARB2325CA	None	None	GNR	SNR	
<i>Larus californicus</i> California gull	ABNNM03110	None	None	G5	S4	WL
<i>Lasionycteris noctivagans</i> silver-haired bat	AMACC02010	None	None	G5	S3S4	
<i>Limnanthes floccosa ssp. floccosa</i> woolly meadowfoam	PDLIM02043	None	None	G4T4	S3	4.2
<i>Lomatium peckianum</i> Peck's lomatium	PDAP1B1G0	None	None	G4	S1	2B.2
<i>Myotis evotis</i> long-eared myotis	AMACC01070	None	None	G5	S3	
<i>Ochotona princeps schisticeps</i> gray-headed pika	AMAEA0102L	None	None	G5T2T4	S2S4	
<i>Opuntia fragilis</i> brittle prickly-pear	PDCAC0D0H0	None	None	G5	S1	2B.1
<i>Orthocarpus pachystachyus</i> Shasta orthocarpus	PDSCR1H0L0	None	None	G1	S1	1B.1
<i>Pekania pennanti</i> fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
<i>Phacelia cookei</i> Cooke's phacelia	PDHYD0C0Y0	None	None	G1	S1	1B.1
<i>Phacelia greenei</i> Scott Valley phacelia	PDHYD0C1V0	None	None	G2	S2	1B.2
<i>Phacelia sericea var. ciliosa</i> blue alpine phacelia	PDHYD0C4A1	None	None	G5T4T5	S3	2B.2
<i>Phlox hirsuta</i> Yreka phlox	PDPLM0D100	Endangered	Endangered	G1	S1	1B.2
<i>Polemonium carneum</i> Oregon polemonium	PDPLM0E050	None	None	G3G4	S2	2B.2
<i>Polemonium pulcherrimum var. shastense</i> Mt. Shasta sky pilot	PDPLM0E0J4	None	None	G5T2	S2	1B.2
<i>Rana boylei</i> foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Rana cascadae</i> Cascades frog	AAABH01060	None	Candidate Endangered	G3G4	S3	SSC
<i>Riparia riparia</i> bank swallow	ABPAU08010	None	Threatened	G5	S2	
<i>Sabulina stolonifera</i> Scott Mountain sandwort	PDCAR0G110	None	None	G2	S2	1B.3
<i>Scirpus pendulus</i> pendulous bulrush	PMCYP0Q160	None	None	G5	S1	2B.2
<i>Sedum divergens</i> Cascade stonecrop	PDCRA0A0B0	None	None	G5?	S2	2B.3
<i>Shepherdia canadensis</i> Canadian buffalo-berry	PDELG03020	None	None	G5	S1	2B.1
<i>Stachys pilosa</i> hairy marsh hedge-nettle	PDLAM1X1A0	None	None	G5	S3	2B.3
<i>Taxidea taxus</i> American badger	AMAJF04010	None	None	G5	S3	SSC
<i>Trifolium siskiyouense</i> Siskiyou clover	PDFAB402S0	None	None	GH	SH	1B.1
<i>Triteleia grandiflora</i> large-flowered triteleia	PMLIL21060	None	None	G4G5	S1	2B.1
<i>Triteleia hendersonii</i> Henderson's triteleia	PMLIL21070	None	None	G4	S1	2B.2
<i>Vaccinium scoparium</i> little-leaved huckleberry	PDERI180Y0	None	None	G5	S3	2B.2
<i>Vespericola sierranus</i> Siskiyou hesperian	IMGASA4080	None	None	G2	S1S2	
<i>Vulpes vulpes necator</i> Sierra Nevada red fox	AMAJA03012	Candidate	Threatened	G5T1T2	S1	

Record Count: 74

*The database used to provide updates to the Online Inventory is under construction. [View updates and changes made since May 2019 here.](#)

Plant List

56 matches found. [Click on scientific name for details](#)

Search Criteria

Found in Quads 4112266, 4112265, 4112264, 4112256, 4112255, 4112246, 4112245, 4112244, 4112254, 4112263 4112253 and 4112243;

[Modify Search Criteria](#) [Export to Excel](#) [Modify Columns](#) [Modify Sort](#) [Display Photos](#)

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Allium siskiyouense	Siskiyou onion	Alliaceae	perennial bulbiferous herb	(Apr)May-Jul	4.3	S4	G4
Androsace elongata ssp. acuta	California androsace	Primulaceae	annual herb	Mar-Jun	4.2	S3S4	G5? T3T4
Balsamorhiza lanata	woolly balsamroot	Asteraceae	perennial herb	Apr-Jun	1B.2	S3	G3
Balsamorhiza sericea	silky balsamroot	Asteraceae	perennial herb	Apr-May(Jun-Jul)	1B.3	S3	G4Q
Calochortus greenei	Greene's mariposa lily	Liliaceae	perennial bulbiferous herb	Jun-Aug	1B.2	S2S3	G3
Calochortus monanthus	single-flowered mariposa lily	Liliaceae	perennial bulbiferous herb	Jun	1A	SH	GH
Calochortus persistens	Siskiyou mariposa lily	Liliaceae	perennial bulbiferous herb	Jun-Jul	1B.2	S1	G1
Campanula scabrella	rough harebell	Campanulaceae	perennial rhizomatous herb	Aug-Sep	4.3	S4	G4
Carex geyeri	Geyer's sedge	Cyperaceae	perennial rhizomatous herb	May-Aug	4.2	S4	G5
Carex klamathensis	Klamath sedge	Cyperaceae	perennial rhizomatous herb		1B.2	S2	G2
Carex viridula ssp. viridula	green yellow sedge	Cyperaceae	perennial herb	(Jun)Jul-Sep(Nov)	2B.3	S2	G5T5
Chaenactis suffrutescens	Shasta chaenactis	Asteraceae	perennial herb	May-Sep	1B.3	S2S3	G2G3
Cirsium ciliolatum	Ashland thistle	Asteraceae	perennial herb	Jun-Aug	2B.1	S1	G3

<u>Collomia tracyi</u>	Tracy's collomia	Polemoniaceae	annual herb	Jun-Jul	4.3	S4	G4
<u>Cordylanthus tenuis</u> <u>ssp. pallescens</u>	pallid bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jul-Sep	1B.2	S1	G4G5T1
<u>Cypripedium californicum</u>	California lady's-slipper	Orchidaceae	perennial rhizomatous herb	Apr-Aug(Sep)	4.2	S4	G4
<u>Cypripedium fasciculatum</u>	clustered lady's-slipper	Orchidaceae	perennial rhizomatous herb	Mar-Aug	4.2	S4	G4
<u>Darlingtonia californica</u>	California pitcherplant	Sarraceniaceae	perennial rhizomatous herb (carnivorous)	Apr-Aug	4.2	S4	G4
<u>Epilobium luteum</u>	yellow willowherb	Onagraceae	perennial stoloniferous herb	Jul-Sep	2B.3	S1	G5
<u>Erigeron bloomeri</u> <u>var. nudatus</u>	Waldo daisy	Asteraceae	perennial herb	Jun-Jul	2B.3	S3	G5T4
<u>Erigeron nivalis</u>	snow fleabane daisy	Asteraceae	perennial herb	Jul-Aug	2B.3	S3	G5
<u>Eriogonum siskiyouense</u>	Siskiyou buckwheat	Polygonaceae	perennial herb	(Jun)Jul-Sep	4.3	S3	G3
<u>Eriogonum strictum</u> <u>var. greenei</u>	Greene's buckwheat	Polygonaceae	perennial herb	Jul-Sep	4.3	S4	G5T4
<u>Eriogonum ursinum</u> <u>var. erubescens</u>	blushing wild buckwheat	Polygonaceae	perennial herb	Jun-Sep	1B.3	S3	G3G4T3
<u>Erythronium revolutum</u>	coast fawn lily	Liliaceae	perennial bulbiferous herb	Mar-Jul(Aug)	2B.2	S3	G4G5
<u>Frasera albicaulis</u> <u>var. modocensis</u>	Modoc green-gentian	Gentianaceae	perennial herb	May-Jul	2B.3	S2S3	G5T3T4
<u>Galium serpenticum</u> <u>ssp. scotticum</u>	Scott Mountain bedstraw	Rubiaceae	perennial herb	May-Aug	1B.2	S2	G4G5T2
<u>Hesperocyparis bakeri</u>	Baker cypress	Cupressaceae	perennial evergreen tree		4.2	S3	G3
<u>Hymenoxys lemmonii</u>	alkali hymenoxys	Asteraceae	perennial herb	Jun-Aug(Sep)	2B.2	S2S3	G4
<u>Iliamna bakeri</u>	Baker's globe mallow	Malvaceae	perennial herb	Jun-Sep	4.2	S3	G4
<u>Ivesia pickeringii</u>	Pickering's ivesia	Rosaceae	perennial herb	Jun-Aug(Oct)	1B.2	S2	G2
<u>Juncus dudleyi</u>	Dudley's rush	Juncaceae	perennial herb	Jul-Aug	2B.3	S1	G5
<u>Lewisia cotyledon</u> <u>var. howellii</u>	Howell's lewisia	Montiaceae	perennial herb	Apr-Jul	3.2	S2	G4T4Q
<u>Limnanthes floccosa</u> <u>ssp. floccosa</u>	woolly meadowfoam	Limnanthaceae	annual herb	Mar-May(Jun)	4.2	S3	G4T4
<u>Lomatium engelmannii</u>	Engelmann's lomatium	Apiaceae	perennial herb	May-Aug	4.3	S3	G4
<u>Lomatium peckianum</u>	Peck's lomatium	Apiaceae	perennial herb	Apr-May(Jun)	2B.2	S1	G4
<u>Opuntia fragilis</u>		Cactaceae		Apr-Jul	2B.1	S1	G4G5

	brittle prickly-pear		perennial stem succulent				
<u>Orthocarpus pachystachyus</u>	Shasta orthocarpus	Orobanchaceae	annual herb	May	1B.1	S1	G1
<u>Phacelia cookei</u>	Cooke's phacelia	Hydrophyllaceae	annual herb	Jun-Jul	1B.1	S1	G1
<u>Phacelia greenei</u>	Scott Valley phacelia	Hydrophyllaceae	annual herb	Apr-Jun	1B.2	S2	G2
<u>Phacelia sericea var. ciliosa</u>	blue alpine phacelia	Hydrophyllaceae	perennial herb	Jun-Aug	2B.3	S3	G5T4T5
<u>Phlox hirsuta</u>	Yreka phlox	Polemoniaceae	perennial herb	Apr-Jun	1B.2	S1	G1
<u>Polemonium carneum</u>	Oregon polemonium	Polemoniaceae	perennial herb	Apr-Sep	2B.2	S2	G3G4
<u>Polemonium pulcherrimum var. shastense</u>	Mt. Shasta sky pilot	Polemoniaceae	perennial herb	Jun-Sep	1B.2	S2	G5T2
<u>Sabulina stolonifera</u>	Scott Mountain sandwort	Caryophyllaceae	perennial stoloniferous herb	May-Aug	1B.3	S2	G2
<u>Scirpus pendulus</u>	pendulous bulrush	Cyperaceae	perennial rhizomatous herb	Jun, Aug	2B.2	S1	G5
<u>Sedum divergens</u>	Cascade stonecrop	Crassulaceae	perennial herb	Jul-Sep	2B.3	S2	G5?
<u>Sedum laxum ssp. flavidum</u>	pale yellow stonecrop	Crassulaceae	perennial herb	May-Jul	4.3	S3	G5T3Q
<u>Shepherdia canadensis</u>	Canadian buffalo-berry	Elaeagnaceae	perennial shrub	Apr-Jul	2B.1	S1	G5
<u>Stachys pilosa</u>	hairy marsh hedge-nettle	Lamiaceae	perennial rhizomatous herb	Jun-Aug	2B.3	S3	G5
<u>Thelypodium brachycarpum</u>	short-podded thelypodium	Brassicaceae	perennial herb	May-Aug	4.2	S3	G3
<u>Trifolium siskiyouense</u>	Siskiyou clover	Fabaceae	perennial herb	Jun-Jul	1B.1	SH	GH
<u>Triteleia crocea var. crocea</u>	yellow triteleia	Themidaceae	perennial bulbiferous herb	May-Jun	4.3	S3S4	G4T4
<u>Triteleia grandiflora</u>	large-flowered triteleia	Themidaceae	perennial bulbiferous herb	Apr-Jun	2B.1	S1	G4G5
<u>Triteleia hendersonii</u>	Henderson's triteleia	Themidaceae	perennial bulbiferous herb	May-Jul	2B.2	S1	G4
<u>Vaccinium scoparium</u>	little-leaved huckleberry	Ericaceae	perennial deciduous shrub	Jun-Aug	2B.2	S3	G5

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Appendix C

Regionally Occurring Special- Status Species

APPENDIX C

Regionally Occurring Special-Status Species

Special-status species are legally protected under the state and federal Endangered Species Acts or other regulations or are species that are considered sufficiently rare by the scientific community to qualify for such listing. These species are classified under the following categories:

1. Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (50 Code of Federal regulations [CFR] 17.12 [listed plants], 17.11 [listed animals] and various notices in the Federal Register [FR] [proposed species]);
2. Species that are candidates for possible future listing as threatened or endangered under the federal Endangered Species Act (61 FR 40, February 28, 1996);
3. Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 California Code of Regulations [CCR] 670.5);
4. Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);
5. Animal species of special concern to CDFW;
6. Animals fully protected under Fish and Game Code (California Fish and Game Code, Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]);
7. Species that meet the definitions of rare and endangered under CEQA. CEQA Section 15380 provides that a plant or animal species may be treated as “rare or endangered” even if not on one of the official lists (State CEQA Guidelines, Section 15380); and
8. Plants considered under the CNPS and CDFW to be “rare, threatened or endangered in California” (California Rare Plant Rank [CRPR] 1A, 1B, and 2 in CNPS, 2019).

A list of special-status species that have the potential to occur within the vicinity of the project site was compiled based on data contained in the CNDDDB (CDFW, 2019a), the USFWS list of federal endangered and threatened species that occur in or may be affected by the proposed project (USFWS, 2019a), the NMFS list of federal endangered and threatened species that may occur in the proposed project location and the CNPS Inventory of Rare and Endangered Plants (CNPS, 2019). The results of these database searches can be found in Appendix B. A list of special-status species, their general habitat requirements, and an assessment of their potential to occur within and adjacent to the project site is provided below in **Table C-1**.

The “Potential to Occur” categories are defined as follows:

- **Unlikely:** The project site and surrounding area does not support suitable habitat for a particular species and/or the project site is outside of the species known range.
- **Low Potential:** The project site and/or adjacent area provides only limited amounts and low quality habitat for a particular species. In addition, the known range for a particular species may be outside of the immediate project vicinity. Lastly, species-specific protocol-level surveys were conducted on the project site for the species and the results were negative.
- **Medium Potential:** The project site and/or adjacent area provides suitable habitat for a particular species.
- **High Potential:** The project site and/or adjacent area provide ideal habitat conditions for a particular species and/or known populations occur in the immediate project area or within the project site and adjacent area.

Conclusions regarding habitat suitability and species occurrence are based on the analysis of existing literature and databases described previously and known habitats occurring within the project site and regionally. Only species classified as having a medium or high potential for occurrence were considered in the impact analysis.

TABLE C-1
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

<i>Scientific Name</i> Common Name	Listing Status USFWS/ CDFW/CNPS	General Habitat	Potential to Occur in the Project Area
Fish			
<i>Chasmistes brevirostris</i> shortnose sucker	FE/SE/--	Native to the Klamath and Lost River systems in California and Oregon. Spends most of year in open waters of large lakes. They feed on plankton. Spawn in tributary streams.	Unlikely. No suitable habitat within the project site. Project site outside of known range of the species.
<i>Cottus klamathensis polyporus</i> Lower Klamath marbled sculpin	--/CSC/--	Common in the Klamath River drainage from Iron Gate Dam downstream to the mouth of the Trinity River. The habitat requirements of lower Klamath marbled sculpin are not well documented but they seem to occupy a wide variety of habitats.	Unlikely. No suitable habitat within the project site. Project site outside of known range of the species.
<i>Deltistes luxatus</i> Lost River sucker	FE/SE/--	Native to the Lost River system in California and Oregon. Primarily a lake species found in fairly deep water. Adults run up tributary streams to spawn in the spring.	Unlikely. No suitable habitat within the project site. Project site outside of known range of the species.

TABLE C-1
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

Scientific Name Common Name	Listing Status USFWS/ CDFW/CNPS	General Habitat	Potential to Occur in the Project Area
Fish (cont.)			
<i>Oncorhynchus kisutch</i> SONCC coho salmon ESU	FT/ST/--	Federal listing refers to populations between Cape Blanco, Oregon and Punta Gorda, California. State listing refers to populations between the Oregon border and Punta Gorda. California Coho salmon typically inhabit small coastal streams, as well as larger rivers, such as the Klamath River system, where they are currently found as far upstream as Iron Gate Dam and the Shasta River. Coho salmon in northern California coastal streams are typically associated with low gradient reaches of tributary streams, which provide suitable spawning areas and good juvenile rearing habitat.	Unlikely. No suitable habitat within the project site. However, this species occurs in the Shasta River adjacent to the site. Implementation of the proposed project will result in beneficial impacts to this species. In order to meet the enhancement of flows for coho salmon in the Shasta River, GID is proposing to reduce the loss of water, and thus increase the efficiency of delivering water diverted, in its irrigation conveyance system through implementation of the proposed project. The proposed project would result in changes to diversion schedules based on salmonid life stages and water year types.
Invertebrates			
<i>Bombus crotchii</i> Crotch bumble bee	--/SCE/--	Crotch bumble bee is nearly endemic to California, historically ranging across southern California, from the coast and coastal ranges, through the Central Valley, and to the adjacent foothills. This species inhabits open grassland and scrub habitats. Like all bumble bees, this species requires floral resources, and undisturbed nest sites and overwintering sites.	Unlikely. No suitable habitat within the project site. Project site outside of known range of the species.
<i>Bombus franklini</i> Franklin's bumble bee	--/SCE/--	The Franklin bumble bee has the smallest range of any bumble bee in North America. It is only found in the Klamath Mountains of northwest California and southwest Oregon. The species inhabits prairies and meadows and requires floral resources, and undisturbed nest sites and overwintering sites.	Unlikely. No suitable habitat within the project site. Project site outside of known range of the species.
<i>Bombus occidentalis</i> Western bumble bee	--/SCE/--	Formerly found in much of California, the Western bumble bee is now much reduced in abundance and mostly restricted to high elevation meadows or coastal environments. Western bumble bees nest, forage, and overwinter in meadows and grasslands with abundant floral resources. Like all bumble bees, this species requires floral resources, and undisturbed nest sites and overwintering sites.	Unlikely. No suitable habitat within the project site. Project site outside of known range of the species.

TABLE C-1
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

Scientific Name Common Name	Listing Status USFWS/ CDFW/CNPS	General Habitat	Potential to Occur in the Project Area
Invertebrates (cont.)			
<i>Branchinecta conservatio</i> Conservancy fairy shrimp	FE/--/--	Endemic to the grasslands of the northern two-thirds of the Central Valley; found in large, turbid pools. Inhabit astatic pools located in swales formed by old, braided alluvium.	Unlikely. No suitable habitat within the project site. Project site outside of known range of the species.
<i>Branchinecta lynchi</i> vernal pool fairy shrimp	FT/--/--	Lifecycle restricted to vernal pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools. Endemic to the grasslands of the Central Valley, central Coast Mountains, and south coast.	Unlikely. No suitable habitat within the project site. Project site outside of known range of the species.
<i>Lepidurus packardii</i> vernal pool tadpole shrimp	FE/--/--	Lifecycle restricted to vernal pools. Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	Unlikely. No suitable habitat within the project site. Project site outside of known range of the species.
Amphibians			
<i>Ambystoma macrodactylum sigillatum</i> southern long-toed salamander	--/CSC/--	High elevation meadows and lakes in the Sierra Nevada, Cascade, and Klamath Mountains. Aquatic larvae occur in ponds and lakes. Outside of breeding season adults are terrestrial and associated with underground burrows of mammals and moist areas under logs and rocks.	Unlikely. No suitable habitat within the project site. Project site outside of elevation range of the species.
<i>Rana boylei</i> Foothill yellow-legged frog	--/SCT,CSC/--	Partly shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg-laying. Breeds in backwaters or pool tailouts in streams, creeks, and rivers with suitable cobble substrate.	Unlikely. No suitable habitat within the project site.
<i>Rana cascadae</i> Cascades frog	--/SCE,CSC/--	Montane aquatic habitats such as mountain lakes, small streams, and ponds in meadows; open coniferous forests.	Unlikely. No suitable habitat within the project site.
<i>Rana pretiosa</i> Oregon spotted frog	FT/CSC/--	Low swampy areas in mountainous woodlands and wet meadows, springs, small cold streams, lakes in northeastern California. Standing water needed for breeding.	Unlikely. No suitable habitat within the project site. Project site outside of known range of the species.
Reptiles			
<i>Emys marmorata</i> western pond turtle	--/CSC/--	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Requires basking sites and suitable upland habitat for egg-laying. Nest sites most often characterized as having gentle slopes (<15%) with little vegetation or sandy banks.	Medium. The project site provides suitable habitat for this species.

TABLE C-1
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

Scientific Name Common Name	Listing Status USFWS/ CDFW/CNPS	General Habitat	Potential to Occur in the Project Area
Birds			
<i>Accipiter gentilis</i> northern goshawk	--/CSC/--	Within, and in vicinity of, coniferous forest. Uses old nests, and maintains alternate sites. Usually nests on north slopes, near water. Red fir, lodgepole pine, Jeffrey pine, and aspens are typical nest trees.	Unlikely. No suitable habitat within the project site.
<i>Antigone canadensis tabida</i> greater sandhill crane	--/ST,CFP/--	Nests in wetland habitats in northeastern California; winters in the Central Valley. Prefers grain fields within four miles of a shallow body of water used as a communal roost site; irrigated pasture used as loafing sites.	Low. Project site provides marginal low quality habitat.
<i>Aquila chrysaetos</i> golden eagle	--/CFP/--	Nests on cliffs of all heights and in large trees near open areas. Occurs in rolling foothills, mountain terrain, sage-juniper flats, and rugged open habitats with canyons and escarpments. Preys mostly on small mammals. Breeds late January through August.	Medium. The project site provides suitable habitat for this species.
<i>Ardea herodias</i> great blue heron (nesting colony)	--/---/--	Colonial nester in tall trees, cliff sides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	Low. Project site provides marginal low quality habitat.
<i>Buteo swainsoni</i> Swainson's hawk	--/ST/--	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands or alfalfa or grain fields supporting rodent populations.	Medium. The project site provides suitable habitat for this species.
<i>Coccyzus americanus occidentalis</i> western yellow-billed cuckoo	FT/SE/--	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with understory of blackberry, nettles, or wild grape.	Unlikely. Suitable habitat is not present within the project site.
<i>Empidonax traillii</i> willow flycatcher	--/SE/--	Inhabits extensive thickets of low, dense willows (<i>Salix</i> spp.) on edge of wet meadows, ponds, or backwaters, from 2,000 to 8,000 feet. Requires dense willow thickets for nesting/roosting. Low, exposed branches are used for singing posts/ hunting perches.	Unlikely. No suitable habitat within the project site.
<i>Falco mexicanus</i> prairie falcon	--/WL/--	Inhabits dry, open terrain, either level or hilly. Breeding sites located on cliffs. Forages far afield, even to marshlands and ocean shores.	Low. No suitable nesting habitat within the project site. Could use the project site for foraging habitat.

TABLE C-1
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

Scientific Name Common Name	Listing Status USFWS/ CDFW/CNPS	General Habitat	Potential to Occur in the Project Area
Birds (cont.)			
<i>Haliaeetus leucocephalus</i> Bald eagle	BEPA/ SE,CFP/--	Found at lakes, reservoirs, river systems, and coastal wetlands. The breeding range is generally in mountainous areas near lake or river margins, where they find large trees (usually conifers) with open branches for nesting.	Unlikely. No suitable habitat within the project site.
<i>Larus californicus</i> California gull	--/WL/--	Littoral waters, sandy beaches, waters and shorelines of bays, tidal mud-flats, marshes, lakes, etc. Colonial nester on islets in large interior lakes, either fresh or strongly alkaline.	Unlikely. No suitable habitat within the project site.
<i>Riparia riparia</i> bank swallow	--/ST/--	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, and ocean to dig nesting hole.	Unlikely. No suitable habitat within the project site.
<i>Strix occidentalis caurina</i> Northern spotted owl	FT/ST/--	Old-growth forests or mixed stands of old-growth and mature trees. Occasionally in younger forests with patches of big trees. High, multistory canopy dominated by big trees, many trees with cavities or broken tops, woody debris, and space under canopy.	Unlikely. No suitable habitat within the project site.
Mammals			
<i>Canis lupus</i> gray wolf	FE/SE/--	Wolves have historically occupied diverse habitats in North America, including tundra, forests, grasslands, and deserts. As a consequence, and because they travel long distances and require large home ranges, wolves are considered habitat generalists. Primary habitat requirements are the presence of adequate ungulate prey, water, and low human contact.	Low. Project site provides marginal low quality habitat.
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	--/CSC/--	Found throughout California in a wide variety of habitats. Roost in caves, mines, tunnels with minimal disturbance but can also be found in abandoned open buildings or other human made structures. Extremely sensitive to human disturbance.	Unlikely. No suitable habitat within the project site.
<i>Gulo gulo</i> California wolverine	FPT/ST,CFP/--	Found in the north coast mountains and the Sierra Nevada. Found in a wide variety of high elevation habitats. Needs water source. Uses caves, logs, burrows for cover and den area. Hunts in more open areas. Can travel long distances.	Unlikely. No suitable habitat within the project site.

TABLE C-1
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

Scientific Name Common Name	Listing Status USFWS/ CDFW/CNPS	General Habitat	Potential to Occur in the Project Area
Mammals (cont.)			
<i>Pekania pennanti</i> fisher – West Coast DPS	--/ST,CSC/--	Intermediate to large-tree stages of coniferous forests and deciduous-riparian areas with high percent canopy closure. Uses cavities, snags, logs, and rocky areas for cover and denning. Needs large areas of mature dense forest.	Unlikely. No suitable habitat within the project site.
<i>Taxidea taxus</i> American badger	--/CSC/--	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils, and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Unlikely. No suitable habitat within the project site.
<i>Vulpes vulpes necator</i> Sierra Nevada red fox	FC/ST/--	Historically found from the Cascades down to the Sierra Nevada. Found in a variety of habitats from wet meadows to forested areas. Use dense vegetation and rocky areas for cover and den sites. Prefer forests interspersed with meadows or alpine fell-fields.	Unlikely. No suitable habitat within the project site.
Plants			
<i>Balsamorhiza lanata</i> woolly balsamroot	--/--/1B.2	Perennial herb found on rocky, volcanic soils in open cismontane woodlands and grassy slopes. Known only from the Shasta and Scott Valleys. 800-1895 meters. Blooms April to July.	Low. Suitable habitat is present within the project site. However, species not observed during focused botanical surveys conducted in 2019.
<i>Balsamorhiza sericea</i> silky balsamroot	--/--/1B.3	Perennial herb found on serpentine soils in lower montane coniferous forests. 850-2130 meters. Blooms April to July.	Unlikely. No suitable habitat within the project site.
<i>Calochortus greenei</i> Greene's mariposa-lily	--/--/1B.2	Perennial bulbiferous herb growing on volcanic outcrops and open, dry, gravelly soils in meadows, seeps, cismontane woodlands, juniper woodlands, and upper montane coniferous forests. 1035-1890 meters. Blooms June to August.	Low. Suitable habitat is present within the project site. However, species not observed during focused botanical surveys conducted in 2019.
<i>Calochortus monanthus</i> single-flowered mariposa-lily	--/--/1A	Perennial bulbiferous herb found in vernal wet meadows and seeps. Known only from the type collection (1876) along the Shasta River. Presumed extinct. 800 meters. Blooms June.	Unlikely. Although the project site supports suitable habitat, this species is presumed extinct and has not been collected since 1876.
<i>Calochortus persistens</i> Siskiyou mariposa-lily	--/SR/1B.2	Perennial bulbiferous herb growing on rocky, acidic soils in lower montane coniferous forests and North Coast coniferous forests. 1000-1060 meters. Blooms June to July.	Unlikely. No suitable habitat within the project site.

TABLE C-1
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

Scientific Name Common Name	Listing Status USFWS/ CDFW/CNPS	General Habitat	Potential to Occur in the Project Area
Plants (cont.)			
<i>Carex klamathensis</i> Klamath sedge	--/--/1B.2	Perennial rhizomatous herb found on moist to wet serpentine soils in chaparral, cismontane woodland, and meadows and seeps. 1000-1140 meters.	Low. Suitable habitat is present within the project site. However, species not observed during focused botanical surveys conducted in 2019.
<i>Carex viridula</i> subsp. <i>viridula</i> green yellow sedge	--/--/2B.3	Perennial herb found in bogs, fens, marshes, wet meadows, dune swales, and lakeshores. 0-1600 meters. Blooms June to November.	Low. Suitable habitat is present within the project site. However, species not observed during focused botanical surveys conducted in 2019.
<i>Chaenactis suffrutescens</i> Shasta chaenactis	--/--/1B.3	Perennial herb found on unstable, sandy to rocky, generally serpentine soils in scree and drainages in lower and upper montane coniferous forests. 750-2800 meters. Blooms May to September.	Unlikely. No suitable habitat within the project site.
<i>Cirsium ciliolatum</i> Ashland thistle	--/SE/2B.1	Perennial herb found in grassy areas in cismontane woodlands and grasslands. 800-1400 meters. Blooms June to August.	Low. Suitable habitat is present within the project site. However, species not observed during focused botanical surveys conducted in 2019.
<i>Cordylanthus tenuis</i> subsp. <i>pallidus</i> pallid bird's-beak	--/--/1B.2	Annual hemiparasitic herb found on gravelly, volcanic alluvium in lower montane coniferous forests. 695-1645 meters. Blooms July to September.	Unlikely. No suitable habitat within the project site.
<i>Cuscuta jepsonii</i> Jepson's dodder	--/--/1B.2	Parasitic annual vine. Host species are <i>Ceanothus diversifolius</i> and <i>C. prostratus</i> found in broadleaved upland forests and montane coniferous forests. 1200-2300 meters. Blooms June to September.	Unlikely. No suitable habitat within the project site.
<i>Draba carnosula</i> Mt. Eddy draba	--/--/1B.3	Perennial herb found on serpentine, rocky slopes in upper montane coniferous forests and subalpine coniferous forests. 1935-3000 meters. Blooms July to August.	Unlikely. No suitable habitat within the project site. Project site outside of elevation range of the species.
<i>Epilobium luteum</i> yellow willowherb	--/--/2B.3	Perennial stoloniferous herb found on moist streambanks in montane meadows and lower montane coniferous forests. 1500-2195 meters. Blooms July to September.	Unlikely. No suitable habitat within the project site. Project site outside of elevation range of the species.
<i>Erigeron bloomeri</i> var. <i>nudatus</i> Waldo daisy	--/--/2B.3	Perennial herb found on serpentine slopes and rocky ridges in montane coniferous forests. 600-2300 meters. Blooms June to July.	Unlikely. No suitable habitat within the project site.
<i>Erigeron nivalis</i> snow fleabane daisy	--/--/2B.3	Perennial herb found on volcanic, rocky soils in meadows among subalpine coniferous forests and alpine boulder and rock fields. 1735-2900 meters. Blooms July to August.	Unlikely. No suitable habitat within the project site. Project site outside of elevation range of the species.

TABLE C-1
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

Scientific Name Common Name	Listing Status USFWS/ CDFW/CNPS	General Habitat	Potential to Occur in the Project Area
Plants (cont.)			
<i>Eriogonum ursinum</i> var. <i>erubescens</i> blushing wild buckwheat	--/--/1B.3	Perennial herb found on gravel, scree, and talus in montane chaparral and coniferous forests. 750-1900 meters. Blooms June to September.	Unlikely. No suitable habitat within the project site.
<i>Erythronium revolutum</i> coast fawn lily	--/--/2B.2	Perennial bulbiferous herb found on streambanks and in wet places in woodlands and North Coast coniferous forests. 0-1600 meters. Blooms March to August.	Unlikely. No suitable habitat within the project site.
<i>Eurybia merita</i> subalpine aster	--/--/2B.3	Perennial herb found in upper montane coniferous forests. 1300-2000 meters.	Unlikely. No suitable habitat within the project site. Project site outside of elevation range of the species.
<i>Frasera albicaulis</i> var. <i>modocensis</i> Modoc green-gentian	--/--/2B.3	Perennial herb found in openings in Great Basin grasslands and dry, brushy places. 900-1750 meters. Blooms May to July.	Unlikely. No suitable habitat within the project site.
<i>Fritillaria gentneri</i> Gentner's fritillary	FE/--/1B.1	Perennial bulbiferous herb growing on serpentine soils in dry woodlands. Known from only two sites in Siskiyou County. 1005-2970 meters. Blooms April to May.	Unlikely. No suitable habitat within the project site.
<i>Galium serpticum</i> subsp. <i>scotticum</i> Scott Mountain bedstraw	--/--/1B.2	Perennial herb found on serpentine soils on steep slopes in open lower montane coniferous forests. 1000-2075 meters. Blooms May to August.	Unlikely. No suitable habitat within the project site.
<i>Hymenoxys lemmonii</i> alkali hymenoxys	--/--/2B.2	Perennial herb found in subalkaline meadows and seeps, Great Basin scrub, and lower montane coniferous forests. 240-3390 meters. Blooms June to September.	High. This species was observed in the project site during botanical surveys conducted in 2019.
<i>Ivesia pickeringii</i> Pickering's ivesia	--/--/1B.2	Perennial herb found on serpentine clay soils in wet, rocky meadows and seeps in lower montane coniferous forests. 800-1510 meters. Blooms June to August.	Unlikely. No suitable habitat within the project site.
<i>Juncus dudleyi</i> Dudley's rush	--/--/2B.3	Perennial herb found wet areas in lower montane coniferous forests. 455-2000 meters. Blooms July to August.	Unlikely. No suitable habitat within the project site.
<i>Lomatium peckianum</i> Peck's lomatium	--/--/2B.2	Perennial herb found on volcanic soils in chaparral, oak woodlands, lower montane coniferous forests, and juniper woodlands. 700-1800 meters. Blooms April to June.	Low. Suitable habitat is present within the project site. However, species not observed during focused botanical surveys conducted in 2019.
<i>Minuartia (Sabulina)</i> <i>stolonifera</i> Scott Mountain sandwort	--/--/1B.3	Perennial stoloniferous herb found on serpentine soils in lower montane coniferous forests. 1250-1400 meters. Blooms May to August.	Unlikely. No suitable habitat within the project site.

TABLE C-1
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

Scientific Name Common Name	Listing Status USFWS/ CDFW/CNPS	General Habitat	Potential to Occur in the Project Area
Plants (cont.)			
<i>Opuntia fragilis</i> brittle prickly-pear	--/--/2B.1	Perennial stem succulent found on volcanic soils in pinyon and juniper woodlands. 820-880 meters. Blooms April to July.	Low. Suitable habitat is present within the project site. However, species not observed during focused botanical surveys conducted in 2019.
<i>Orthocarpus pachystachyus</i> Shasta orthocarpus	--/--/1B.1	Annual herb found in openings in sagebrush scrub and grasslands. 840-850 meters. Blooms May.	Low. Suitable habitat is present within the project site. However, species not observed during focused botanical surveys conducted in 2019.
<i>Phacelia cookei</i> Cooke's phacelia	--/--/1B.1	Annual herb growing in open areas on sandy, volcanic soils in Great Basin scrub and lower montane coniferous forests. 1095-1700 meters. Blooms June to July.	Unlikely. No suitable habitat within the project site.
<i>Phacelia greenei</i> Scott Valley phacelia	--/--/1B.2	Annual herb growing on serpentine soils in openings in coniferous forests. 800-2440 meters. Blooms April to June.	Unlikely. No suitable habitat within the project site.
<i>Phacelia sericea</i> var. <i>ciliosa</i> blue alpine phacelia	--/--/2B.2	Perennial herb found on rocky ridges and talus slopes in Great Basin scrub and upper montane coniferous forests. 2100-2700 meters. Blooms June to August.	Unlikely. No suitable habitat within the project site. Project site outside of elevation range of the species.
<i>Phlox hirsuta</i> Yreka phlox	FE/SE/1B.2	Perennial herb found on dry serpentine talus slopes in open Jeffrey pine/incense cedar forests. 820-1500 meters. Blooms April to June.	Unlikely. No suitable habitat within the project site.
<i>Polemonium carneum</i> Oregon polemonium	--/--/2B.2	Perennial herb growing in openings in coastal prairie, coastal scrub, and lower montane coniferous forests. 0-1830 meters. Blooms April to September.	Unlikely. No suitable habitat within the project site.
<i>Polemonium pulcherrimum</i> var. <i>shastense</i> Mt. Shasta sky pilot	--/--/1B.2	Perennial herb found on volcanic talus in subalpine coniferous forests, upper montane coniferous forests, and alpine boulder and rock fields. 2175-3900 meters. Blooms June to September.	Unlikely. No suitable habitat within the project site. Project site outside of elevation range of the species.
<i>Scirpus pendulus</i> pendulous bulrush	--/--/2B.2	Perennial rhizomatous herb found in wet meadows, seeps, and marshes. 800-1000 meters. Blooms June to August.	Unlikely. No suitable habitat within the project site.
<i>Sedum divergens</i> Cascade stonecrop	--/--/2B.3	Perennial herb found on gravelly flats and slopes in alpine boulder and rock fields. 1600-2330 meters. Blooms July to September.	Unlikely. No suitable habitat within the project site. Project site outside of elevation range of the species.
<i>Shepherdia canadensis</i> Canadian buffalo-berry	--/--/2B.1	Perennial shrub found on serpentine, rocky soils along streambanks and slopes in upper montane coniferous forests. 1700 meters. Blooms April to July.	Unlikely. No suitable habitat within the project site. Project site outside of elevation range of the species.

TABLE C-1
REGIONALLY OCCURRING SPECIAL-STATUS SPECIES

Scientific Name Common Name	Listing Status USFWS/ CDFW/CNPS	General Habitat	Potential to Occur in the Project Area
Plants (cont.)			
<i>Stachys pilosa</i> hairy marsh hedge-nettle	--/--/2B.3	Perennial rhizomatous herb growing in mesic soils in Great Basin scrub and wet meadows. 1200-1700 meters. Blooms June to August.	Unlikely. No suitable habitat within the project site.
<i>Trifolium siskiyouense</i> Siskiyou clover	--/--/1B.1	Perennial herb found in wet mountain meadows and streambanks. 880-1500 meters. Blooms June to July.	Unlikely. No suitable habitat within the project site.
<i>Triteleia grandiflora</i> large-flowered triteleia	--/--/2B.1	Perennial bulbiferous herb found in grasslands, Great Basin scrub, pinyon and juniper woodlands, and coniferous forests. 700-1500 meters. Blooms April to June.	Unlikely. No suitable habitat within the project site.
<i>Triteleia hendersonii</i> Henderson's triteleia	--/--/2B.2	Perennial bulbiferous herb found on dry slopes in cismontane woodlands. 760-1200 meters. Blooms May to July.	Unlikely. No suitable habitat within the project site.
<i>Vaccinium scoparium</i> little-leaved huckleberry	--/--/2B.2	Perennial deciduous shrub found on rocky soils in subalpine coniferous forests. 1036-2200 meters. Blooms June to August.	Unlikely. No suitable habitat within the project site.

STATUS CODES:**FEDERAL (U.S. Fish and Wildlife Service):**

BEPA = Bald Eagle Protection Act
 FE = Listed as Endangered by the Federal Government
 FT = Listed as Threatened by the Federal Government
 FPT = Proposed for Listing as Threatened by the Federal Government
 FC = Candidate for Federal Listing

STATE (California Department of Fish and Wildlife):

SE = Listed as Endangered by the State of California
 ST = Listed as Threatened by the State of California
 SR = Listed as Rare by the State of California (Plants Only)
 SCE = Candidate for State Listing (Endangered)
 SCT = Candidate for State Listing (Threatened)
 CSC = California Species of Special Concern
 CFP = California Fully Protected Species
 WL = CDFW Watch List

California Native Plant Society (CNPS):

Rank 1A = Plants presumed extirpated in California and either rare or extinct elsewhere
 Rank 1B = Plants rare, threatened, or endangered in California and elsewhere
 Rank 2A = Plants presumed extirpated in California but common elsewhere
 Rank 2B = Plants rare, threatened, or endangered in California but more common elsewhere
 Rank 3 = Plants about which more information is needed
 Rank 4 = Plants of limited distribution

CNPS Code Extensions

.1 = Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
 .2 = Fairly threatened in California (20-80% occurrences threatened)
 .3 = Not very threatened in California (less than 20% of occurrences threatened or no current threats known)

SOURCE: CDFW, 2019a; CNPS, 2019; NMFS, 2019; USFWS, 2019a

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Appendix D

Fuel Consumption Calculations

Grenada Irrigation District Pipeline Installation							
Off-Road Equipment							
Equipment ≤ 100 HP							
Parameter	Value				Total Diesel Used	14,945	gal
pounds diesel fuel/hp-hr (lb/hp-hr): ¹	0.41						
diesel fuel density (lb/gal): ¹	7.11						
diesel gallons/hp-hr (gal/hp-hr):	0.06						
Total hp-hr :	30,949						
Total diesel consumption (gal):	1,776						
Equipment > 100 HP							
Parameter	Value						
pounds diesel fuel/hp-hr (lb/hp-hr): ¹	0.37						
diesel fuel density (lb/gal): ¹	7.11						
diesel gallons/hp-hr (gal/hp-hr):	0.05						
Total hp-hr:	245,099						
Total diesel gallons:	12,653						
Total diesel gallons (off-road equipment):	14,430		14,945				
1. 2017 Off-road Diesel Emission Factors, cells B30 and B31							
Also in "OFFROAD2017 Efs" tab							
Phase	Equipment	# of Equipment	Hours/ Day	HP	Load Factor	Days	Total hp-hr
Pipeline Install	Excavators	2	8	158	0.38	87	83,576
Pipeline Install	Forklifts	1	8	89	0.2	87	12,389
Pipeline Install	Rubber Tired Dozers	1	8	247	0.4	87	68,765
Pipeline Install	Skid Steer Loaders	1	8	65	0.37	87	16,739
I-5 Jack & Bore	Bore/Drill Rigs	1	8	221	0.5	87	76,908
I-5 Jack & Bore	Excavators	3	8	158	0.38	11	15,851
I-5 Jack & Bore	Welders	1	8	46	0.45	11	1,822
						Total ≤ 100	30,949
						Total >100	245,099

Grenada Irrigation District Pipeline Installation					
On-Road Vendor Trucks (HHDT/MHDT)					
Parameter		Value			
EMFAC2017 Diesel Fuel Consumption Factor (gal/mile): ¹		0.1319			
Total Vendor Truck VMT (miles):		3,736			
Total VMT diesel gallons (on-road vendor trucks):		493			
HHDT Idling Fuel Consumption Factor (gal/min): ²		0.0150			
Total Vendor Truck Idle-minutes (min):		4,245			
Total Idling diesel gallons (on-road vendor trucks):		23			
Total diesel gallons (on-road vendor trucks):		516			
1.	California Air Resources Board, EMFAC2017 (Siskiyou County; Annual; CY 2020; Aggregate MY; Aggregate Speed, HHDT/MHDT, DSL)				
2.	1. Idle Fuel Consumption for Selected Gasoline and Diesel Vehicles, US Department of Energy. Accessed February 2019. https://www.energy.gov/eere/vehicles/fact-861-february-23-2015-idle-fuel-consumption-selected-gasoline-and-diesel-vehicles				
3.	Source: California Air Resources Board (CARB), 2004. Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling, Appendix F, July 2004. https://www.arb.ca.gov/regact/idling/idling.htm , accessed November 2016.				
Phase		Days	Trips/Day	Miles/Trip	VMT
Pipeline Installation		87	6	6.6	3,445
I-5 Jack & Bore		11	4	6.6	290
Total Vendor Truck VMT:				3,736	
Total Idle-Minutes				4,245	

Grenada Irrigation District Pipeline Installation				
On-Road Workers (LDA, LDT1, LDT2)				
	Parameter	Value		
	EMFAC2017 Gasoline Fuel Consumption Factor (gal/mile): ¹	0.041		
	Total Worker VMT (miles):	18,312		
	Total VMT gasoline gallons (workers):	744		
1.	California Air Resources Board, EMFAC2017 (Siskiyou County; LDA, LDT1, LDT2; CY 2020; Aggregate MY; Aggregate Speed,GAS)			
	Phase	Days	One-Way Trips/Day	Miles/Trip
	Pipeline Installation	87	10	16.8
	I-5 Jack & Bore	11	20	16.8
				Worker VMT
				18,312

This tool provides a quick estimation of the fuel use and emissions for your equipment in a specific year. The results may slightly differ from those from the official inventory model.

Instructions:

Enter the horsepower, model year, and other details about your equipment in the Input box.

Make sure to update the **load factor** for your equipment using the lookup table.

The **Output** box gives a quick estimation of the fuel use, NOx, PM, and THC emission for your equipment.

Input	Input Engine Here
Horsepower (hp)	120
Model year	2011
Calendar year	2015
Activity (annual hours)	250
Accumulated hours on equipment (estimate using annual-hours*age if you only know the age of the equipment)	1000
Load factor (check the lookup table)	0.2

Intermediate steps

HPbin	175
NOx_EFO	2.67
NOx_DR	3.5E-05
NOx_FCF	0.950
PM_EFO	0.12
PM_DR	8.6E-06
PM_FCF	0.90
THC_EFO	0.10
THC_DR	2.5E-05
THC_FCF	0.90
NOx_EF (g/hp-hr)	2.57
PM_EF (g/hp-hr)	0.12
THC_EF (g/hp-hr)	0.11
CO2_EF (kg/gallon-diesel)*	10.21
BSFC (lb/hp-hr)	0.367
Unit conversion (lb/gallon)	7.109

*Reference: www.epa.gov/sites/production/files/2015-07/documents/emission-factors_2014.pdf

Results	
Fuel Used (gallon)	310
NOx Emissions (kg)	15.4
PM Emissions (kg)	0.7
THC Emissions (kg)	0.7
CO2 Emissions (kg)	3162.6
NOx Emission Factor (including deterioration and fuel correction factor): gram/bhp-hr	2.57
PM Emission Factor (including deterioration and fuel correction factor): gram/bhp-hr	0.12
THC Emission Factor (including deterioration and fuel correction factor): gram/ bhp-hr	0.11

Load Factor Lookup Table			
Equipment Category	Equipment Type	Details	Load Factor
Agriculture equipment	Agricultural tractors		0.48
	Combine harvesters		0.44
	Forage & silage harvesters		0.44
	Cotton pickers		0.44
	Nut harvester		0.44
	Other harvesters		0.44
	Balers (self propelled)		0.50
	Bale wagons (self propelled)		0.50
	Swathers/windrowers/hay conditioners		0.48
	Hay Squeeze/Stack retriever		0.42
	Sprayers/Spray rigs		0.42
	Construction equipment		0.40
	Other non-mobile		0.48
	Forklifts		0.40
	Atvs		0.40
	Others		0.40
	Portable equipment		0.31
	Construction equipment		0.55
	Container handling equipment		0.59
	Forklift		0.30
Cargo Handling Equipment	Other general industrial equipment		0.51
	Rtg crane		0.20
	Yard tractor		0.39
Transport Refrigeration Units (TRU)	TRU on trailers	25 HP and over, MY2012 and Older	0.46
	TRU on trailers	25 HP and over, MY2013 and Newer	0.38
	TRU on trailers	23 HP and Over, below 25 HP, All years	0.46
	TRU on trucks	Below 23 HP, All Model years	0.56
	TRU on railcars	25 HP and over, MY2012 and Older	0.33
	TRU on railcars	25 HP and over, MY2013 and Newer	0.27
	TRU on railcars	Below 25 HP, All Model years	0.33
	TRU with generators	25 HP and over, MY2012 and Older	0.46
	TRU with generators	25 HP and Over, MY2013 and Newer	0.38
	TRU with generators	23 HP and Over, below 25 HP, All Model Years	0.46
Ground Support Equipment	Passenger Stand		0.40
	A/C Tug Narrow Body		0.54
	A/C Tug Wide Body		0.54
	Baggage Tug		0.37
	Belt Loader		0.34
	Bobtail		0.37
	Cargo Loader		0.34
	Cargo Tractor		0.36
	Forklift (GSE)		0.20
	Lift (GSE)		0.34
Construction and Industrial Equipment	Other GSE		0.34
	Cranes		0.29
	Crawler Tractors		0.43
	Excavators		0.38
	Graders		0.41
	Off-Highway Tractors		0.44
	Off-Highway Trucks		0.38
	Other Construction Equipment		0.42
	Pavers		0.42
	Paving Equipment		0.36
	Rollers		0.38
	Rough Terrain Forklifts		0.40
	Rubber Tired Dozers		0.40
	Rubber Tired Loaders		0.36
	Scrapers		0.48
	Skid Steer Loaders		0.37
	Surfacing Equipment		0.30
	Tractors/Loaders/Backhoes		0.37
	Trenchers		0.50
	Aerial Lifts		0.31
	Forklifts		0.20
	Other General Industrial Equipment		0.34
	Other Material Handling Equipment		0.40

		Sweepers/Scrubbers	0.46	
	Oil and Drill Rigs	Drill Rig (Mobile)	0.50	
		Workover Rig (Mobile)	0.50	
		Bore/Drill Rigs	0.50	

Idle Consumption at Idle for Selected Gasoline and Diesel Vehicles					
Vehicle Type	Fuel Type	Engine Size (liter)	Gross Vehicle Weight (GVW) (lb)	Idling fuel use (Gal/hr with no load)	Idling fuel use (Gal/min with no load)
Tractor-Semitrailer	Diesel	-	80,000	0.64	0.0107
Bucket Truck	Diesel	-	37,000	0.90	0.0150
Combination Truck	Diesel	-	32,000	0.49	0.0082
Transit Bus	Diesel	-	30,000	0.97	0.0162
Medium Heavy Truck	Diesel	6-10	23,000-33,000	0.44	0.0073
Tow Truck	Diesel	-	26,000	0.59	0.0098
Delivery Truck	Diesel	-	19,500	0.84	0.0140
Medium Heavy Truck	Gas	5-7	19,700-26,000	0.84	0.0140
Compact Sedan	Diesel	2	-	0.17	0.0028
Large Sedan	Gas	4.6	-	0.39	0.0065
Compact Sedan	Gas	2	-	0.16	0.0027
https://www.energy.gov/eere/vehicles/fact-861-february-23-2015-idle-fuel-consumption-selected-gasoline-and-diesel-vehicles					