INITIAL STUDY
CITY OF SHASTA LAKE
WASTEWATER TREATMENT FACILITY UPGRADE PROJECT

NOVEMBER 2014

LEAD AGENCY:
City of Shasta Lake
1650 Stanton Drive
Shasta Lake, CA 96019
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SECTION 1.0
INTRODUCTION

1.1 PURPOSE OF STUDY

The City of Shasta Lake (City; Lead Agency) has prepared this Initial Study (IS) to provide the general public and interested public agencies with information about the potential environmental impacts of its Wastewater Treatment Facility (WWTF) Upgrade Project (Proposed Project). The Proposed Project would result in the production of high-quality effluent that can be discharged to Churn Creek year-round in accordance with a direct discharge National Pollutant Discharge Elimination System (NPDES) Permit with no dilution requirements.

This IS has been prepared in accordance with the California Environmental Quality Act (CEQA) of 1970 (as amended), codified in California Public Resources Code Sections 21000 et seq., and the State CEQA Guidelines in the Code of Regulations, Title 14, Division 6, Chapter 3. Pursuant to these regulations, this IS identifies potentially significant impacts and where applicable, presents mitigation measures that would reduce all identified environmental impacts to less-than-significant levels.

This IS supports a Mitigated Negative Declaration as defined under CEQA Guidelines Section 15070. Because the City intends to apply for the California Clean Water State Revolving Fund (CWSRF) Program, partially funded by the U.S. Environmental Protection Agency (USEPA), this IS has been prepared to address certain federal environmental regulations, including regulations guiding the General Conformity Rule for the Clean Air Act (CAA), the federal Endangered Species Act (FESA), and the National Historic Preservation Act (NHPA).

USEPA has allowed a modified CEQA document, called CEQA-Plus, to be the compliance base for projects applying for CWSRF monies. These additional regulatory components in compliance with CEQA-Plus requirements are addressed in Sections 4.4, Air Quality, 4.5, Biological Resources, and 4.6, Cultural Resources of this IS, respectively.

1.2 EVALUATION TERMINOLOGY

The following terminology is used to describe the levels of significance for impacts identified for each resource area discussed in Section 4.0.

A conclusion of no impact is used when it is determined the Proposed Project would not adversely impact the resource area under evaluation.

A conclusion of less-than-significant impact is used when it is determined the Proposed Project’s adverse impacts to a resource area would not exceed established thresholds of significance.
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A conclusion of less-than-significant impact with mitigation is used when it is determined that mitigation measures would be required to reduce the Proposed Project’s adverse impacts below established thresholds of significance.

1.3 ORGANIZATION OF THE INITIAL STUDY

This document is organized into the following sections:

- **Section 1.0 – Introduction**: Describes the purpose, contents, and organization of the document and provides project summary.

- **Section 2.0 – Significance Determination**: Identifies the determination of whether impacts associated with development of the Proposed Project are significant, and what, if any, additional environmental documentation may be required.

- **Section 3.0 – Project Description**: Includes a detailed description of the Proposed Project.

- **Section 4.0 – Environmental Impact Analysis**: Contains the Environmental Checklist from CEQA Guidelines Appendix G with a discussion of potential environmental effects associated with the Proposed Project. Mitigation measures, if necessary, are noted following each impact discussion.

- **Section 5.0 – List of Preparers**

- **Section 6.0 – References**

- **Appendices** – Contains information to supplement Section 3.0 and Section 4.0.

1.4 PROJECT SUMMARY

**Project Title:** City of Shasta Lake WWTF Upgrade Project

**Lead Agency Name and Address:**
City of Shasta Lake
1650 Stanton Drive
Shasta Lake, CA 96019

**Contact Person and Phone Number:**
Debbie Israel, Senior Planner, (530) 275-7469

**City’s Environmental Consultant:**
Ryan Sawyer, Analytical Environmental Services, (916) 447-3479

**Project Location:**
The WWTF is located in the southwest section of the City of Shasta Lake; Section 1, Township 32 North, Range 5 West, Mount Diablo Meridian. The study area is bounded on the north
1.0 Introduction and Project Summary

by Pine Grove Avenue, Ashby Road to the west, and Churn Creek, a perennial stream that is a direct tributary to the Sacramento River, to the east. The centroid of the study area is 40° 39’ 46.7” North, 122° 23’ 00.4” West.

Assessor’s Parcel Numbers: 064-150-070-000, 064-160-005-000, and 064-160-007-000.

General Plan Designation: Public Facilities

Zoning: Public Facilities (PF)

Description of Project: The Proposed Project consists of various upgrades to the existing WWTF that are required to treat raw wastewater to a level that is compliant with the 2014 NPDES Permit. The Proposed Project includes a new effluent discharge pipeline, cascade re-aeration structure, and replacement of the primary outfall into Churn Creek (discharge point 001). The secondary outfall into Churn Creek (discharge point 002) would be abandoned in place. Additionally, the spray fields and 400-acre-foot reclaimed water reservoir would be taken off line and abandoned in place. With the exception of the improvements to the effluent pipeline and outfall structure in the riparian area of Churn Creek, the majority of proposed improvements would take place within the existing development footprint of the WWTF. A detailed description of these modifications is provided in Section 3.4.2.

Existing and Surrounding Land Uses: The site is currently used for the existing WWTF and supporting infrastructure. Land uses adjacent to the WWTF site consist of an industrial park, residential development, and open space. Immediately adjacent to the property to the west and south is the Shasta Lake City Animal Control Facility, Knauf Fiberglass plant, Pivotal Directions training facility, and the Shasta Lake Heritage & Historical Society which is part of the Incubator Building in the Industrial Park. A mature riparian corridor located along the banks of Churn Creek creates a natural buffer between the project site and the existing residential developments located approximately north and east of the existing WWTF. The residential development to the southeast of the WWTF is located at an elevation approximately 20 feet higher than the WWTF.

Other public agencies whose approval or review is required: State Water Resources Control Board

Central Valley Regional Water Quality Control Board

U.S. Environmental Protection Agency
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U.S. Army Corps of Engineers
California Department of Fish and Wildlife
United States Fish and Wildlife Service
National Marine Fisheries Service
State Historic Preservation Office

Environmental Factors Potentially Affected:

The environmental factors checked below would be potentially affected by the Proposed Project, involving at least one impact requiring mitigation to bring it to a less-than-significant level. Impacts to these resources are evaluated using the checklist included in Section 4.0. The Proposed Project was determined to have a less-than-significant impact or no impact without mitigation on unchecked resource areas.

- Aesthetics
- Agriculture
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas
- Hazards and Hazardous Materials
- Water Resources
- Land Use and Planning
- Mineral Resources
- Noise
- Population
- Public Services
- Recreation
- Transportation/Traffic
- Utility and Service Systems

Mitigation Measures

The following mitigation measures are proposed to reduce impacts of the Proposed Project to less-than-significant levels.

AQ-1 The City shall ensure through contractual obligations that the following SCAQMD and City Standard Mitigation Measures shall be implemented during construction:

- During land moving operations water exposed areas at least two times per day. Watering can be done using either potable or tertiary treated water.
- Reduce vehicle speeds on unpaved roads to 15 miles per hour.
- Alternatives to open burning of vegetative material on the project site shall be used by the project applicant unless otherwise deemed infeasible by the SCAQMD. Among suitable alternatives are chipping, mulching, or conversion to biomass fuel.
- The applicant shall be responsible for ensuring that all adequate dust control measures are implemented in a timely and effective manner during all phases of project development and construction.
All material excavated, stockpiled, or graded should be sufficiently watered to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of an ambient air standard. Watering should occur at least twice daily with complete site coverage, preferably in the mid-morning and after work is completed each day.

All land clearing, grading, earth moving or excavation activities on a project shall be suspended when winds are expected to exceed 20 miles per hour.

All inactive portions of the development site should be seeded and watered until a suitable grass cover is established.

Approved non-toxic soil stabilizers (according to manufacturer's specifications) shall be applied to all inactive construction areas (previously graded areas which remain inactive for 96 hours).

When construction activity occurs during wet weather, install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip. Locations of wheel washers shall be identified and approved by the City Public Works Division prior to the issuance of any clearing or grading permits.

All trucks hauling dirt, sand, soil or other loose material should be covered or should maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the trailer) in accordance with the requirements of CVC Section 23114. This provision shall be enforced by local law enforcement agencies.

All material transported off-site shall be either sufficiently watered or securely covered to prevent a public nuisance.

Paved streets adjacent to the development site should be swept or washed at the end of each day to remove excessive accumulations of silt and/or mud which may have accumulated as a result of activities on the development site.

Require the use of diesel particulate matter filters on construction equipment greater than 50 horsepower.

Reestablish ground cover on the construction site through seeding and watering upon completion of construction.

**BIO-1:** The following measures shall be implemented to avoid potential short-term adverse effects to waters of the U.S., riparian habitat, and special status fish species during construction activities associated with the Proposed Project:

- Minimize clearing and grading and cut-and-fill activities within the riparian area. The disturbance or removal of vegetation shall not exceed the minimum necessary to complete construction activities. Precautions shall be taken to avoid other damage to vegetation by people or equipment, including staking the riparian area with orange fencing to avoid unnecessary disturbance. The disturbed portions of the stream channel within the normal high water mark of the stream shall be restored to as near their original
1.0 Introduction and Project Summary

conditions as possible. Re-vegetation shall be completed as soon as possible after construction activities in those areas cease.

- The City shall obtain a Section 404 CWA permit from the Corps, a Section 401 Water Quality Certification from the RWQCB, and a 1600 SAA from the CDFW for construction activities within Churn Creek. All permit conditions shall be implemented. Best Management Practices shall be implemented to ensure that no pollutants will be discharged into jurisdictional waters. Full restoration of the site would mitigate for the temporary impacts of construction.

- Consultation with NMFS for impacts to fish and essential fish habitat will be conducted in accordance with Section 7 of the FESA and Magnusson Stevenson’s Fisheries Act and any requirements resulting from that consultation will be adhered to.

- Implement Mitigation Measure HYD-1 to comply with the State’s NPDES General Permit through preparation and implementation of a site specific SWPPP.

**BIO-2:** The following measures shall be implemented to avoid or minimize adverse impacts to western pond turtle during construction activities associated with the Proposed Project:

- A qualified biologist shall conduct a preconstruction survey within 14 days prior to commencement of construction activities anticipated to occur within 100 feet from riparian vegetation surrounding Churn Creek. A report shall be submitted to the City to document the reports of the preconstruction survey.

- Prior to commencement of any groundbreaking activities, all construction personnel will receive training on identification of western pond turtle and procedures to be implemented in the event that western pond turtle is encountered during construction activities.

- Prior to commencement of daily construction activities within a 100-foot buffer of riparian vegetation surrounding Churn Creek, a qualified biologist will conduct two preconstruction surveys for WPT. The first survey shall be conducted within 14 days prior to construction, and the second survey will be conducted within 24 hours prior to construction. If WPT is present, the qualified biologist will be allowed sufficient time to move the species from the work site before work activities begin.

- Because WPT may take refuge in cavity-like and den-like structures such as pipes and may enter stored pipes and become trapped, all construction pipes, culverts, or similar structures that are stored at a construction site for one or more overnight periods will be either securely capped prior to storage or thoroughly inspected for these animals before the pipe is subsequently buried, capped, or otherwise used or moved in any way.

- In the event that WPT enters a 100 foot buffer of on-going construction activities, a qualified biologist shall be contacted and construction activities shall be placed on hold until the WPT is confirmed to have left the project area or is relocated by a qualified biologist.
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**BIO-3:** The following measures shall be implemented to avoid or minimize adverse impacts to nest sites for migratory birds and other birds of prey during construction activities associated with the Proposed Project:

- For vegetation removal and/or earth-disturbing activities occurring during the nesting season (February 1 through September 1), a qualified biologist should conduct pre-construction surveys of all potential nesting habitat for all migratory birds within 500 feet of construction activities. The qualified biologist shall document and submit the results of the preconstruction survey in a letter report to the City within 30 days following the survey. If no active nests are identified during the preconstruction survey, then no further mitigation is required provided construction commences within 14 days.

- If any active special status bird, migratory bird, or raptor nests are identified during the preconstruction survey within the study area, a no-disturbance buffer zone deemed appropriate to the species will be established around the nests to avoid disturbance or destruction of the nest.

  The distance around the no-disturbance buffer will be determined by the biologist in coordination with CDFW and will depend on the level of noise or construction activity, the level of ambient noise in the vicinity of the nest, and line-of-sight between the nest and disturbance.

  These buffers shall be no less than: 1) 500-foot no-disturbance buffer will be created around active raptor nests during the breeding season or until it is determined that all young have fledged, and 2) a 250-100-foot buffer zone will be created around the nests of other migratory or special status birds and all other birds that are protected by California Fish and Game Code 3503.

  These buffer zones are consistent with CDFW avoidance guidelines and CDFW buffers required on other similar projects; however, they may be modified in coordination with CDFW based on existing conditions at the project site. A qualified biologist will monitor nests weekly during construction to evaluate potential nesting disturbance by construction activities.

  The biologist will delineate the buffer zone with construction tape or pin flags until the young have fledged. Guidance from the CDFW will be requested if the nestlings within the active nest appear disturbed. A report shall be prepared and submitted to the City and CDFW following the fledging of the nestlings to document the results.

- If vegetation removal activities are delayed or suspended for more than two weeks after the pre-construction survey, the areas should be resurveyed.

**BIO-4:** The following mitigation measures shall be implemented to ensure preservation of the maximum number of protected trees within the study area and replacement for oak trees lost due to construction of the Proposed Project:
1.0 Introduction and Project Summary

- Final design of the Proposed Project shall avoid impacts to oak trees to the maximum extent feasible.

- Before the start of any clearing, excavation, construction, or other work on the site, the drip line of every tree designated for preservation shall be clearly delineated in the field. The delineation markers shall remain in place for the duration of all work. A plan shall be established for the removal and disposal of brush, earth, and other debris prior to construction and submitted to the City for approval in order to avoid injury to any protected tree which is to be saved.

- Where project construction will result in encroachment within the drip line of a protected tree, the following measures shall be incorporated to allow the roots to obtain oxygen, water, and nutrients.
  - To reduce the effects of trenching, excavation, and equipment use within the drip line of trees to be preserved, construction methods should avoid exposing roots during hot, dry weather, and trenches should be backfilled as soon as possible with soil and soaked with water the same day. If trenches must be left open, all roots must be kept moist by wrapping them in peat moss and burlap.
  - No roots greater than 2 inches in diameter shall be cut without the approval of an Arborist.
  - Tunneling under roots is the approved alternative. Any approved excavation, demolition, or extraction of material shall be performed with equipment that is kept outside the drip line of preserved trees. Hand digging, hydraulic, or pneumatic excavation are permitted methods for excavation within the drip line.

- No storage of materials or substances that may be harmful to trees shall occur within the drip line of any protected tree.

- Tree removal should be avoided to the maximum extent feasible; however, in the event that avoidance is infeasible, the following tree-planting standard shall be adhered to consistent with Section 12.36.070 of the City of Shasta Lake Tree Protection Ordinance:
  - A minimum of two 15-gallon trees shall be planted for every one protected tree removed.
  - In addition to the previous measure, three 15-gallon trees shall be planted for each protected tree removed that exceeds ten inches DBH.
  - The species of any tree used for replacement pursuant to the Tree Protection Ordinance shall be suited to the City’s climate zone and be chosen with consideration of any site specific limitations. The use of native shade trees is preferred by not required. The replacement tree shall be planted in a manner that is recognized as a standard accepted practice unless a specific method is prescribed by an arborist.
CR-1: In the event of any inadvertent discovery of archaeological resources, all such finds shall be subject to PRC 21083.2 and CEQA Guidelines 15064.5. Procedures for inadvertent discovery include the following:

- All work within 50 feet of the find shall be halted until a professional archaeologist, or paleontologist if the find is of a paleontological nature, can evaluate the significance of the find in accordance with NRHP and CRHR criteria.

- If any find is determined to be significant by the archaeologist, or paleontologist as appropriate, then representatives of the City shall meet with the archaeologist, or paleontologist, to determine the appropriate course of action. If necessary, the Applicant shall provide a Treatment Plan, prepared by an archeologist (or paleontologist), outlining recovery of the resource, analysis, and reporting of the find. The Treatment Plan shall be submitted to the City for review and approval prior to resuming construction.

- All significant cultural or paleontological materials recovered shall be subject to scientific analysis, professional curation, and a report prepared by the professional archaeologist, or paleontologist, according to current professional standards.

CR-2: In the event that human remains are encountered during construction activities, the City shall comply with Section 15064.5 (e) (1) of the CEQA Guidelines and PRC Section 7050.5. All project-related ground disturbance within 100 feet of the find shall be halted until the county coroner has been notified. If the coroner determines that the remains are Native American, the coroner will notify the NAHC to identify the most likely descendants of the deceased Native Americans. Project-related ground disturbance in the vicinity of the find shall not resume until the process detailed in Section 15064.5 (e) has been completed.

GEO-1: Implement Mitigation Measure HYD-1.

HAZ-1: The City shall ensure through the enforcement of contractual obligations that all contractors transport, store, and handle construction-required hazardous materials in a manner consistent with relevant regulations and guidelines, which may include, but is not limited to, transporting and storing materials in appropriate and approved containers, maintaining required clearances, and handling materials using approved protocols.

HAZ-2: An accidental spill prevention and response plan shall be developed which will include a list of all hazardous materials used and/or stored on the project site during construction activities; appropriate information about initial spill response, containment, and cleanup strategies; and a list of appropriate City contact information. The spill prevention and response plan shall be included as a component of the SWPPP described in Mitigation Measure HYD-1. The plan shall require containment equipment and sufficient supplies to combat spills of oil or hazardous substances shall be on site at all times during construction.
HAZ-3: Construction staging shall be established a minimum distance of 100 feet away from Churn Creek and its unnamed tributary. The storage of construction materials, including oils and hazardous substances will be at a distance of 100 feet from all drainage courses to prevent spills from reaching the aquatic environment. No vehicle maintenance shall occur on-site during construction.

HAZ-4: During construction, staging areas, welding areas, or areas slated for development using spark-producing equipment shall be cleared of dried vegetation or other materials that could serve as fire fuel. To the extent feasible, the contractor shall keep these areas clear of combustible materials in order to maintain a fire break.

HAZ-5: Any construction equipment that normally includes a spark arrester shall be equipped with an arrester in good working order. This includes, but is not limited to, vehicles, heavy equipment, and chainsaws.

HYD-1: The City shall comply with the SWRCB NPDES General Permit. The SWRCB requires that all construction sites have adequate control measures to reduce the discharge of sediment and other pollutants to streams to ensure compliance with Section 303 of the CWA. To comply with the NPDES permit, the City will file a Notice of Intent with the SWRCB and prepare a SWPPP prior to construction, which includes a detailed, site-specific listing of the potential sources of stormwater pollution; pollution prevention measures (erosion and sediment control measures and measures to control non-stormwater discharges and hazardous spills) including a description of the type and location of erosion and sediment control BMPs to be implemented at the project site; and a BMP monitoring and maintenance schedule to determine the amount of pollutants leaving the Proposed Project site. A copy of the SWPPP must be current and remain on the project site. Control measures are required prior to and throughout the rainy season. Water quality BMPs identified in the SWPPP could include, but are not limited to, the following:

- Areas where ground disturbance would occur shall be identified in advance of construction and limited to only approved areas.
- All vehicular construction traffic shall be confined to the designated access routes and staging areas. See Figure 4 for the location of potential staging areas.
- All equipment maintenance and cleaning shall be confined to staging areas. Staging areas utilized for equipment maintenance and cleaning shall be located a minimum of 100 feet from streams and waterways, including Churn Creek and its unnamed tributary. No vehicle maintenance shall occur on-site during construction.
- All supervisory construction personnel shall be informed of environmental concerns, permit conditions, and final project specifications. Said Personnel will be responsible for instructing all on-site work to meet the requirements of the SWPP including making sure all work is conducted outside of protected trees’ drip lines to the extent possible.
- Restore disturbed areas to pre-construction contours to the fullest extent possible.
1.0 Introduction and Project Summary

- Hay/straw bales and silt fences would be used to control erosion during stormwater runoff events.
- Salvage, store, and use the highest quality soil for native re-vegetation/seeding.
- Leave drainage gaps in topsoil and spoil piles to accommodate/reduce surface water runoff.
- Sediment control measures shall be in place prior to the onset of the rainy season and will be maintained until disturbed areas have been re-vegetated. Erosion control structures must be in place and operational at the end of each day if work activities are to occur during the rainy season.
- Fiber rolls shall be placed along the perimeter of disturbed areas to ensure sediment and other potential contaminants of concern are not transported off-site or to open trenches. Locations of fiber rolls will be field adjusted as needed and according to the advice of the certified SWPPP inspector.
- Vehicles and equipment stored in the construction staging area shall be inspected regularly for signs of leakage. Leak-prone equipment will be staged over an impervious surface or other suitable means will be provided to ensure containment of any leaks. Vehicle/equipment wash waters or solvents will not be discharged to surface waters or drainage areas.
- During the rainy season (October 1 through April 30) identified in Chapter 15.08.120 of the City of Shasta Lake Municipal Code, soil stockpiles and material stockpiles will be covered and protected from the wind and precipitation. Plastic sheeting will be used to cover the stockpiles and straw wattles will be placed at the base for perimeter control.
- All contractors shall immediately control the source of any leak and immediately contain any spill utilizing appropriate spill containment and countermeasures. All leaks and spills shall be reported to the designated representative of the lead contractor and shall be evaluated to determine if the spill or leak meets mandatory SWPPP reporting requirements. Contaminated media shall be collected and disposed of at an off-site facility approved to accept such media.

N-1 The following measures shall be implemented to reduce potential impacts to noise during construction:

- Construction activities shall be limited to between the daytime hours of 7:00 A.M. and 7:00 P.M., Monday through Friday, and 8:00 A.M. and 5:00 P.M., on Saturdays. Construction activities shall be prohibited on Sundays.
- Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers’ recommendations. Equipment engine shrouds shall be closed during equipment operation.
1.0 Introduction and Project Summary

- When not in use, motorized construction equipment shall not be left idling for more than 5 minutes.
- Stationary equipment (power generators, compressors, etc.) shall be located at the furthest practical distance from nearby noise-sensitive land uses or sufficiently shielded to reduce noise-related impacts.
SECTION 2.0
CEQA DETERMINATION

On the basis of this initial evaluation:

☐ 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.

_______________________     _____________________
Date
SECTION 3.0
PROJECT DESCRIPTION

3.1 INTRODUCTION
The City of Shasta Lake (City) Wastewater Treatment Facility (WWTF) Upgrade Project (Proposed Project) consists of the development of necessary facility upgrades that are required to comply with Waste Discharge Order No. R5-2014-0052, National Pollutant Discharge Elimination System (NPDES) Permit No. CA0079511 and Time Schedule Order R5-2014-0053 issued by the Central Valley Regional Water Quality Control Board (CVRWQCB) on March 28, 2014 (CVRWQCB, 2014a and b; Appendix A). The project location, objectives, and components are described in more detail below.

3.2 PROJECT LOCATION
The WWTF is located at 3700 Tibbitts Road within the incorporated boundaries of the City of Shasta Lake, Shasta County, California. The regional location of the project site is shown in Figure 1. The City-owned property consists of three parcels with corresponding assessor’s parcel numbers (APN) 064-150-070-000, 064-160-005-000, and 064-160-007-000. For the purpose of this Initial Study (IS), the study area only includes areas of the City’s property with the potential to be directly impacted by the Proposed Project.

The approximately 106-acre study area is shown on Figures 2 and 3. The study area is bounded on the north by Pine Grove Avenue, Ashby Road to the west, and Churn Creek, a perennial stream that is a direct tributary to the Sacramento River, to the east. Regional access to the project site is provided by Interstate 5 (I-5). Vehicular access to the project site are provided via Ashby Road and Tibbitts Road, west of the site, which intersects Ashby Road. On the east side of Churn Creek there is a transient path adjacent to the creek used by pedestrians and bicyclists.

3.3 PROJECT BACKGROUND

3.3.1 WWTF SERVICE AREA, WASTEWATER FLOWS, AND TREATMENT CAPACITY
The service area for WWTF consists of all areas within the City’s boundaries. The WWTF was initially constructed in 1977 to provide municipal wastewater treatment service to approximately 2,485 parcels and consisted of a 0.5 million gallons per day (MGD) extended aeration facility. In 1995, the facility was modified to its current condition as an advanced secondary facility with a design and permitted treatment capacity of 1.3 MGD average dry weather flow (ADWF) to accommodate anticipated future flows (City of Shasta Lake, 2004, Wastewater Master Plan). Due to current dilution requirements for disposal of treated effluent to Churn Creek, described further in Section 3.3.3 below, the effective treatment capacity of the WWTF is limited to 0.83 MGD.

Per the City, as of July 2012, there were 3,291 sewer connections, of which 134 were commercial connections and 3,157 were residential connections. The original design flows for the WWTF versus the current actual flows are presented in Table 3-1. The current ADWF to the City of Shasta Lake WWTF
Figure 1
Regional Location
Figure 2
Site and Vicinity
Figure 3
Aerial Photograph
(0.65 MGD) is approximately half of the original ADWF design flow for the WWTF (1.3 MGD) and approximately 76 percent of the effective capacity (0.83 MGD) with dilution requirements. However, the current peak flows are slightly higher than for the original design.

### TABLE 3-1

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Dry Weather Flow (ADWF)</td>
<td>1.3</td>
<td>NA</td>
<td>0.65</td>
<td>NA</td>
</tr>
<tr>
<td>Maximum Day Flow</td>
<td>3.9</td>
<td>3.0</td>
<td>4.06</td>
<td>6.2</td>
</tr>
<tr>
<td>Peak Wet Weather Flow</td>
<td>5.2</td>
<td>4.0</td>
<td>4.59</td>
<td>7.0</td>
</tr>
</tbody>
</table>

Source: Waterworks Engineers, 2013

### 3.3.2 WASTEWATER TREATMENT AND DISPOSAL OPERATIONS

The WWTF was designed to produce effluent treated to tertiary standards for reuse purposes per California Department of Health Services (CDPH) Title 22, Division 4, Chapter 3, Section 60304 requirements (effluent suitable for land disposal or pastureland irrigation) (Waterworks Engineers, 2013). The WWTF treatment process currently includes coarse screening (5/8-inch openings), flow measuring, conventional activated sludge treatment using an oxidation ditch and secondary clarification, shallow sand (traveling bridge) filtration and chlorine (gaseous) disinfection and sulfur dioxide dechlorination. Solid waste from the oxidation ditch is aerobically digested and dried on sludge dewatering beds.

Approximately 300 acre feet (af) of treated effluent per year is utilized as recycled water or is disposed of via sprayfield irrigation within approximately 40 acres of land southwest of the WWTF. Recycled water is provided to three contracted users: Knauf Fiberglass, Sierra Pacific Industries, and Caltrans. In 2013 the contracted users used 12.8, 23.95, and 8.28 million gallons, respectively (Chism, 2014b). Dried biosolids are hauled to the West Central Landfill. The WWTF discharges the balance of the treated effluent to Churn Creek at two locations (Figure 3):

**Discharge Point 001:** An outfall from the chlorine contact basin discharging into Churn Creek immediately after treatment. This is the primary outfall for the WWTF.

**Discharge Point 002:** An outfall from the reclaimed water storage reservoir discharging into an unnamed tributary of Churn Creek after an interim storage period in the 400-acre-foot reclaimed water storage reservoir. This outfall is used no more than twice per year, and was not used at all in 2012 and 2013 (Chism, 2014b).

### 3.3.3 WASTE DISCHARGE REQUIREMENTS

**March 2008 NPDES Permit and 2010 Effluent Mixing Study**

Between March 2008 and March 2014, the WWTF discharged effluent to Churn Creek under CVRWQCB Order Number R5-2008-0037, NPDES Permit No. CA0079511 adopted on March 14, 2008 (2008 NPDES Permit). Under the 2008 NPDES Permit, effluent from the WWTF could only be discharged to Churn Creek from October 16th through April 14th, as long as sufficient flow existed in the creek to provide 10:1...
3.0 Project Description

dilution of wastewater flow (receiving water to effluent flow). The CVRWQCB would allow 5:1 dilution if the State declared a drought.

The 2008 NPDES Permit applied a dilution credit\(^1\) of 5:1 for parameters with water quality-based effluent limitations (WQBELs) based on aquatic life criteria and dilution credit of 10:1 for parameters with WQBELs based on human health criteria. The dilution credits were granted based on an assumption of rapid and complete mixing due to the geometry and other aspects of the receiving stream and outfall.

To verify these assumptions, the 2008 NPDES Permit required that the City complete a mixing zone and dilution study to verify rapid and complete mixing and available dilution on Discharge Point 001. Accordingly, the City prepared and submitted the City of Shasta Lake Effluent Mixing Zone Study dated June 10, 2010.

The Effluent Mixing Zone Study determined that complete mixing was not obtained within two stream widths downstream of the discharge location as required by the State Implementation Policy. As a result, the study indicated that incomplete mixing occurred with significantly less receiving water available for dilution throughout the reach of the mixing zone than anticipated.

March 2014 NPDES Permit and Time Schedule Order

Due to the unfavorable mixing zone conditions, discussed above, the City chose not to pursue a mixing zone or dilution credits during its recent permit renewal. As a result, the Waste Discharge Order No. R5-2014-0052, NPDES Permit No. CA0079511 issued by the CVRWQCB on March 28, 2014 (2014 NPDES Permit; Appendix A) assumed that the worst-case dilution would be zero and, consequently, set forth more stringent effluent limitations that require significant upgrades to the existing WWTF treatment process. These provisions include, in part, maintaining compliance with the waste discharge requirements (WDR) specified in Table 3-2.

At the time it adopted the 2014 NPDES Permit, the CVRWQCB also adopted Time Schedule Order R5-2014-0052 (Time Schedule Order; Appendix A) which establishes a time schedule for completing the actions necessary to ensure compliance with the effluent limitations for ammonia, copper, dichlorobromomethane, nitrate, nitrite, pH, and zinc included within the 2014 NPDES Permit within five years, including the construction of the Proposed Project.

The Time Schedule Order sets forth interim effluent limitations and interim requirements for these parameters and dates for their achievement. Compliance with the Time Schedule Order exempts the City from mandatory minimum penalties for violations of the effluent limitations for these parameters set forth in the 2014 NPDES Permit until five years following adoption date of the Order. The WWTF must continue to comply with all other conditions of the 2014 NPDES Permit.

\(^1\) A “Dilution Credit” is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water (2008 NPDES Permit).
3.0 Project Description

### TABLE 3-2
2014 NPDES PERMIT WASTE DISCHARGE REQUIREMENTS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Effluent Limitations(^{1,2})</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Average Monthly</td>
</tr>
<tr>
<td><strong>Conventional Pollutants</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biochemical Oxygen Demand (5-day at 20° C)</td>
<td>mg/L</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>lbs/day</td>
<td>108</td>
</tr>
<tr>
<td>pH</td>
<td>standard units</td>
<td>--</td>
</tr>
<tr>
<td>Total Suspended Solids</td>
<td>mg/L</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>lbs/day</td>
<td>108</td>
</tr>
<tr>
<td><strong>Priority Pollutants</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper, Total Recoverable</td>
<td>µg/L</td>
<td>5.1</td>
</tr>
<tr>
<td>Dichlorobromomethane</td>
<td>µg/L</td>
<td>0.56</td>
</tr>
<tr>
<td>Zinc, Total Recoverable</td>
<td>µg/L</td>
<td>12</td>
</tr>
<tr>
<td><strong>Non-Conventional Pollutants</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ammonia Nitrogen, Total (as N)</td>
<td>mg/L</td>
<td>0.74</td>
</tr>
<tr>
<td></td>
<td>lbs/day</td>
<td>8.0</td>
</tr>
<tr>
<td>Nitrite Plus Nitrate (as N)</td>
<td>mg/L</td>
<td>10</td>
</tr>
</tbody>
</table>

Notes: 1 Effluent limitations applicable at Discharge Point 001 only.
2 Based on an average dry weather flow of 1.3 million gallons per day (MGD).
3 milligrams per liter (mg/L); pounds per day (lbs/day); microgram (one millionth of a gram) per liter (µg/L)

Source: 2014 NPDES Permit; Appendix A.

## 3.4 DESCRIPTION OF PROPOSED PROJECT

### 3.4.1 PROJECT OBJECTIVES

The Proposed Project is needed to meet the following primary objectives:

- Upgrade the quality of the plant’s treated effluent as required by the 2014 NPDES Permit No. CA0079511 within the timeframe established in the Time Schedule Order;
- Protect water quality and public health through compliance with applicable regulations for the treatment and disposal of wastewater;
- Increase the effective treatment capacity of the WWTF from 0.83 MGD to the design and permitted capacity of 1.3 MGD;
- Improve the general operability and maintainability of the City’s wastewater treatment facilities;
- Site and operate new facilities to minimize adverse environmental effects;
- Achieve the above objectives in a cost-effective manner that limits system capital costs, operations and maintenance costs, and user rates to the extent possible; and
- Avoid the significant fiscal impact of fines if the improvements are not completed within the time limits specified by the CVRWQCB.
3.4.2 PROJECT COMPONENTS

As described in detail in the Development Design Report (Waterworks Engineers, 2013) included as Appendix B, the Proposed Project consists of various upgrades to the existing WWTF that are required to treat raw wastewater to a level compliant with the 2014 NPDES Permit. The Proposed Project will result in the treatment of all flow coming into the WWTF through a new tertiary treatment plant to produce high quality effluent that can be discharged into Churn Creek under a direct discharge NPDES permit with no dilution requirements.

A site plan showing the location of the various components is presented in Figure 4 and a process flow diagram of the improved WWTF treatment process is shown on Figure 5. As shown in Figure 4, with the exception of the improvements to the effluent pipeline and outfall structure in the riparian area of Churn Creek, the majority of proposed improvements would take place within the existing development footprint of the WWTF. The modifications to the WWTF are grouped in the subsequent categories and summarized below:

- Secondary Treatment Facilities
- Tertiary Treatment and Disinfection
- Effluent Pipeline, Cascade Re-Aeration, and Outfall Replacement
- Reclaimed Reservoir
- Sludge Drying Beds
- Ancillary Support Facilities

Secondary Treatment Facilities

- **Bardenpho Activated Sludge Process** – Two new activated sludge basins will be constructed to replace the existing oxidation ditch. The two activated sludge basins would have a 3-pass channel configuration with 16-foot wide channels, 18-foot sidewall depth, and 15-foot nominal water depth. Arranged into two parallel treatment trains and 3-pass basins, an approximately 102-foot by 178-foot concrete structure will be necessary, including influent and effluent distribution boxes. The structure will be located in the existing Pond No. 1 footprint, occupying approximately two-thirds of the pond’s footprint (Item 1 on Figure 4).

- **Mixed Liquor Screw Pump** – A fourth mixed liquor pump will be installed in an existing space at the existing mixed liquor pump facility to assist in transporting raw water to the activated sludge basins after being filtered by the course screens (Item 5 on Figure 4).

- **Secondary Clarifier** – A third, 60 foot diameter secondary clarifier would be installed in order for the WWTF to be able to treat peak flows and loads with one unit out of service. With the addition of the proposed clarifier, the hydraulic and solid loading rates at Average Day Maximum Month Flow (ADMMF) are 390 gallons per day per square foot and 18.6 pounds per day per square foot, respectively. The new clarifier will be located adjacent to the two existing clarifiers (Item 7 on Figure 4).
Figure 4
Site Layout
Figure 5
Process Flow Design

Source: AES, 2014
3.0 Project Description

- **Secondary Equalization Basin and Return Pump Station** – Pond No. 2 would be graded clean and then lined with a high density polyethylene (HDPE) liner, fitted with a secondary leak detection system, and used to equalize peak secondary effluent flows prior to the new tertiary treatment processes (Item 11 of Figure 4). The newly lined pond would provide approximately 15 af (4.9 million gallons) of storage volume, which should enable peak flows to be equalized to a maximum of 3.5 MGD. A manhole pump station will be installed with two submersible pumps to return secondary effluent to the filtration process once peak flows subside.

- **Oxidization Ditch** – The 500,000 gallon oxidization ditch would be filled in and any above-ground components will be demolished (Item 6 of Figure 4).

**Tertiary Treatment and Disinfection**

- **Deep Bed Filtration Facility** – Tertiary filtration under the Proposed Project would be accomplished using a new deep bed filtration sized to treat an equalized flow of approximately 3.5 MGD. The proposed deep bed filtration facility would include a common influent channel, influent, effluent and backwash troughs; and a piping gallery. The overall footprint of the structure would be approximately 1,250 square feet (Item 9 of Figure 4).

- **Ultraviolet (UV) Disinfection System** – The Proposed Project will utilize three trains of in-vessel reactors, with any set of two trains able to provide the necessary disinfection dose at peak design flow. This will enable one train to be taken offline at any time for repair or maintenance. Per National Water Research Institute (NWRI) standards, each train will have two reactors per train.

A redundant reactor would also be provided in the system. A Power Distribution Center (PDC) would be provided for each reactor. Each lamp cover would have an automatic wiper system to keep the surface clean and prevent scale buildup. A System Control Center (SCC) would control all of the reactors. The UV disinfection system would be installed either near the filters or westerly of the headworks, behind the proposed equipment building. The exact location will depend on the size of the facility and piping constraints leaving the filters and will be determined prior to final design.

**Effluent Pipeline, Cascade Re-Aeration, and Outfall Replacement**

Title 22 reuse quality effluent is conveyed from the WWTF to the Discharge Point 001 outfall via an approximately 480-foot long effluent pipeline downstream of the final manhole at the northern edge of the WWTF. The first 50 feet of the existing effluent pipeline is 12-inch asbestos concrete pipe (ACP); while the remaining 430 feet of the effluent pipeline is 8-inch ACP.

The diameter of the effluent pipeline limits the amount of water the WWTF can discharge to Churn Creek. Due to the natural topography, there is an approximately 50-foot elevation drop between the WWTF and the outfall which causes air to be pulled in to the effluent pipeline at the top of the drop. This causes foam to develop at the outfall during portions of the year.
The current Discharge Point 001 outfall is 8 inches in diameter and is located within the bed of Churn Creek, partially buried with cobble and usually submerged in Churn Creek during the wet season. The existing outfall does not comply with current regulatory guidelines for outfalls because it partially obstructs the mainstream flow of Churn Creek.

**Effluent Discharge Pipeline**

The Proposed Project would include the installation of a 24-inch polyvinyl chloride (PVC) pipe from final manhole at the northern edge of the WWTF to the new proposed outfall. The approximate alignment of the pipeline is shown on Figure 4. This alignment may be adjusted slightly to accommodate the final location of the proposed outfall and/or to avoid tree removal. The larger proposed effluent pipeline would enable full discharge of potential peak flows year round in accordance with the NPDES permit. The existing pipeline will be abandoned in place.

**Cascading Re-Aeration**

A 15-step cascade re-aeration facility would be constructed as part of the Proposed Project which would allow any large air bubbles entrained at the WWTF to escape before discharge to the creek, while also increasing the dissolved oxygen (DO) level in the effluent. In addition, the design of the cascade re-aeration system would achieve some effluent cooling (Waterworks Engineers, 2013). A schematic of the proposed cascade re-aeration facility is provided as Figure 6. The cascading re-aeration facility would be installed just north of the final manhole at the northern edge of the WWTF in order to utilize the natural elevation drop in the topography (Item 3 of Figure 4). The pipeline would open out into this cascade at which point the re-aerated water would reenter the pipeline until it reaches the new outfall.

**Outfall Replacement**

A new 24-inch diameter outfall would be installed to replace the existing 8-inch Discharge Point 001 outfall. The existing outfall is located in the middle of Churn Creek, partially buried with cobble. City staff has had to uncover the outfall in previous years when it has become completely buried; and given its location in the middle of Churn Creek, maintenance is often difficult to perform. The proposed outfall would include a discharge near the bank of Churn Creek, with a discharge oriented tangent to the direction of the stream flow. Depending on final outfall design and location, screening to NMFS standards may be necessary. The approximate location of the proposed outfall is shown on Figure 4. The larger proposed outfall would enable full discharge of potential peak flows year round in accordance with the NPDES permit. The existing outfall will be abandoned in place.

**Reclaimed Reservoir**

Under the Proposed Project, the existing recycled water user accounts (Knauf Fiberglass, Sierra Pacific Industries, and Caltrans) would continue to be served. The existing chlorine contact basin will be used for Title 22 disinfection and as a wetwell for reclaimed water. The existing 3W/utility pumps would provide the pressure to distribute the reclaimed water. The existing 400-acre-foot reclaimed reservoir would be taken offline and abandoned in place.
SOURCE: City of Shasta Lake, Development Design Report, 12/2013; AES, 2014

Figure 6
Schematic Section of Cascade Re-Aeration Facility
3.0 Project Description

**Sludge Drying Beds**

Currently, digestive sludge is regularly removed from the existing anaerobic digester and is stored in one of two sludge storage basins. During the dry weather season, one of the sludge storage basins continues to be fed digested sludge, while the other is decanted and the sludge is allowed to dry. When one of the sludge storage basins has been filled to its capacity and been dewatered to the extent possible, sludge is moved from the basin to a single sludge drying basin for final drying, prior to hauling the sludge to Shasta County’s West Central Landfill. Because the two storage basins are hydraulically connected, the sludge cannot be dried to the City’s goal of 80-90 percent solids, making it more expensive to landfill.

Under the Proposed Project, two additional sludge drying beds would be constructed directly north of the existing drying basin to enhance the WWTF’s existing capability to dry out digested solids (Item 13 of Figure 4). The drying beds would be paved with asphaltic concrete. Four inches of asphalt would be utilized on the top layer of the drying bed, and would be sloped toward the center of the bed at a minimum slope of 1.5 percent.

The drying bed would be a continuous liner to satisfy Title 27 Liner requirements. A concrete drainage ditch would be installed in the longitudinal center of the bed, with a 4-inch perforated PVC pipe backfilled with drain rock and covered with a 4-inch layer of sand. This trench would capture water released by the sludge in the first few days after application. The sand would be periodically replaced, as it would be scraped during removal of the dried solids.

**Ancillary Support Facilities**

The improvements to the WWTF would include ancillary facility systems that include the modifications and construction of the facilities listed below:

**Chemical Storage and Feed Systems**

- **Lime Storage and Feed System** – A lime storage tank with vertical mixers and metering pump assembly will be installed. Lime would be injected in a feed box upstream of the anoxic tank, and blended with secondary influent, internal mixed liquor recycle, and return activated sludge flow stream using a vertical mixer. The lime utilized under the Proposed Project would be lime slurry with a polymer added to keep the lime in suspension.

- **External Carbon Source (Methanol) Storage and Feed System** – A 3,000-gallon methanol storage and delivery system would be installed (Item 2 of Figure 4). Methanol would be added to the secondary influent in order to reliably denitrify nitrate to the levels required by the 2014 NPDES permit.

- **Coagulant Storage and Feed System** – A 3,500-gallon coagulant storage tank would be installed (Item 8 of Figure 4). The three proposed coagulant feed pumps will be peristaltic or hydraulic diaphragm and would be provided in a two duty plus one standby arrangement. Coagulant would be added upstream of the filters to coagulate dissolved organic compounds and to form a filterable floc.

- **Sodium Hypochlorite (Chlorine) Storage and Feed System** – A single 1,500 gallon capacity sodium hypochlorite storage tank will be provided and located in a secondary
containment area near the existing Chlorine Contact Basins to disinfect reclaimed water (Item 10 of Figure 4).

**Electrical and I&C Systems:**

- **Switchgear and Motor Control Centers (MCC)** – The electrical room within the proposed equipment building would house the MCCs for the aeration blowers, mixers for the anaerobic and anoxic zones of the new activated sludge basins. The single new MCC for the mixed liquor pump will be located in the existing electrical room, where space is already reserved. The new filter backwash pumps will be located adjacent to the new filtration facility at the southeast corner of the WWTF site, in a small masonry block building. The MCCs for these pumps will be located in the building with the pumps.

- **Programmable Logic Controller (PLC) and Supervisory Control and Data Acquisition (SCADA) System** – The new activated sludge, filtration, and disinfection processes will be controlled from a new plant-wide PLC to be located in the existing control building. The PLC will incorporate input/output from distributed panels that will be located in the new blower/disinfection building and near the filter backwash/reclaimed water supply pump station. The WWTF will be controllable through a new human-machine interface located in the new control building.

**Equipment Building**

A new split-face concrete masonry equipment building would be constructed to support the WWTF improvements (Item 4 of Figure 4). The new building would include a room for new aeration blowers (blower room), a new electrical room to support the new blowers and submersible mixers for the new activated sludge process, and a room dedicated to the new disinfection equipment.

**Filter Backwash Pumping and Utility Water Expansion**

The existing Utility Water (3W) pumps will be replaced, in order to use them to also serve as the filter backwash pump station, which will be located near the new filter facility on the southeast corner of the WWTF (Item 12 of Figure 4). The existing 3W Pump Station will be double-tasked for both utility water distribution and as reclaimed water supply pumps.

**Access Road Improvements**

A new access road would be constructed around the proposed sludge drying beds which would connect with the existing asphalt concrete access road to allow hauling trucks access to the sludge dewatering beds. The new road will be a typical 6-inch asphaltic concrete, and 12 feet wide. The road work will be completed near the end of the construction schedule, as the concrete truck traffic during construction is likely to cause significant damage to the existing access roads and improvement will be necessary.

**Yard Piping**

Several new pipelines would be installed as part of the Proposed Project, including:
3.0 Project Description

- Pipe connecting the existing Headworks structure to the new Activated Sludge Inlet Box;
- Pipe connecting new Activated Sludge Effluent Box to the existing Mixed Liquor Pump Station;
- Yard Piping to connect existing Mixed Liquor Pump Station to new Secondary Clarifier;
- Secondary Effluent and Return Activated Sludge piping for the new Secondary Clarifier;
- Pipeline connecting Secondary Effluent Junction Box to the new Filtration Facility;
- Backwash Supply pipeline to connect new Filter Backwash Pumps to the new Filtration Facility;
- New pipeline connecting the new Filtration Facility to the new Disinfection Equipment;
- New pipeline connecting the new Filtration Facility to the existing Chlorine Contact Basin; and
- New Digested Solids distribution piping to Sludge Drying Beds.

3.4.3 Treatment Capacity and Effluent Quality

The Proposed Project would enable the WWTF to discharge to Churn Creek year-round and would increase the effective treatment capacity of the WWTF from its current 0.83 MGD to the design and permitted capacity of 1.3 MGD. The current flows and project design flows are summarized in Table 3-3. It is estimated that approximately half of the future increase in flows will result from connections to existing development within the City and half will come from new growth consistent with the City’s General Plan.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Current Flows (MGD)</th>
<th>Project Design Flow (MGD)</th>
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<tbody>
<tr>
<td>Average Dry Weather Flow (ADWF)</td>
<td>0.65</td>
<td>1.3</td>
</tr>
<tr>
<td>Average Annual Flow (AAF)</td>
<td>0.94</td>
<td>1.8</td>
</tr>
<tr>
<td>Average Wet Weather Flow (AWWF)</td>
<td>1.11</td>
<td>2.12</td>
</tr>
<tr>
<td>Average Day Maximum Month Flow (ADMMF)</td>
<td>1.81</td>
<td>3.3</td>
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<tr>
<td>Peak Equalization</td>
<td>N/A</td>
<td>3.5</td>
</tr>
<tr>
<td>Household Equivalents</td>
<td></td>
<td></td>
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<tr>
<td>GPD/Household at ADWF</td>
<td>202</td>
<td>202</td>
</tr>
<tr>
<td>Number of Household Equivalents(2012)</td>
<td>3,218</td>
<td>6,436</td>
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</table>

TABLE 3-3
CURRENT AND PROJECT DESIGN FLOWS

As described in Section 3.3.2, the WWTF is currently operating in compliance with the 2014 NPDES Permit (Appendix A) with the exception of the effluent limitations for ammonia, copper, dichlorobromomethane, nitrate, nitrite, pH, and zinc for which the Time Schedule Order (Appendix A) has established interim effluent limitations. The various upgrades to the City’s WWTF described above would
result in the production of high-quality effluent that would be in compliance with the more stringent effluent limitations specified in the 2014 NPDES Permit for all of these parameters (Table 3-2).

Similar to the 2008 NPDES Permit, the 2014 NPDES Permit prohibits the effluent discharged from the WWTF to increase the ambient water temperature in Churn Creek by more than five degrees Fahrenheit (°F) or 3.8 degrees Celsius (°C). This requirement is consistent with the water quality objective for temperature established in the Sacramento-San Joaquin River Basin Plan (CVRWQCB, 2011). Compliance with this requirement is determined based on the difference in temperature at monitoring locations R-001 and R-002 located upstream and downstream of the Discharge Point 001 outfall, respectively (see Figure 3). Currently, the City is only required to monitor the temperature of Churn Creek and its effluent when it is discharging; which, as described in Section 3.3.2, is limited to October 16th through April 14th, as long as sufficient flow exists in the creek to provide 10:1 dilution of wastewater flow.

The level of temperature reduction of the effluent during the summer when there is very low flow in Churn Creek is currently unknown, as the City does not currently have temperature data on Churn Creek outside of its discharge period (Waterworks Engineers, 2013). Regardless, the Proposed Project includes the installation of a cascade re-aeration facility which, in addition to achieving the DO levels required in the 2014 NPDES Permit, would provide cooling of the effluent due to evaporative cooling.

The effluent temperature is anticipated to be reducible to within that of Churn Creek, as the creek is cooled in the same manner (Waterworks Engineers, 2013). On March 24, 2014 the City began taking daily temperature readings throughout the year to ascertain the ambient temperature of Churn Creek year round and confirm the need for additional temperature reduction of the effluent. Additional cooling mechanisms will be added to the WWTF if determined necessary in order to comply with the temperature limitations of the 2014 NPDES Permit.

3.4.4 CONSTRUCTION METHODS AND TIMELINE

Project components would be designed and constructed in accordance with applicable provisions of the American Water Works Association (AWWA) Standards and California Building Code (CBC). Project-construction would utilize Best Management Practices (BMPs) as stipulated in the SWRCB NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Permit) (refer to Section 4.9, Hydrology and Water Quality). Components of the Proposed Project would require general construction activities, including:

- Earthwork – grading, excavation, backfill;
- Concrete – forming, rebar placement, concrete delivery, and placement;
- Structural steel work – assembly, welding;
- Pipeline Installation – trenching, pipeline installation, placement of backfill;
- Masonry construction;
- Electrical/instrumentation work;
- Installation of mechanical equipment and piping; and
- Structure Demolition.
Construction of the Proposed Project would only occur if sufficient funding is acquired by the City. As described in Section 1.1, the City intends to apply for the California Clean Water State Revolving Fund (CWSRF) Program, partially funded by the USEPA, to fund the Proposed Project. Should no or insufficient funding be provided through the CWSRF Program, the City would need to apply for additional funding elsewhere which could delay the initiation of construction. If funded, the Proposed Project is expected to take 18 months to construct, with construction beginning in 2017. To the extent feasible, construction activities within the ordinary high watermark (OHWM) of Churn Creek would occur when water levels are below the project footprint. Construction of the Proposed Project would require an average of 12 to 18 workers per day, with a maximum of 25 workers.

**Installation of Proposed Effluent Pipeline and Outfall**

Pipelines would be constructed using open cut trenching. Open cut trenching requires clearing of the pipeline alignment, excavation of the trench, pipeline installation, backfill operations, and surface restoration. Estimated trench width for a 24-inch-diameter pipeline would be approximately 48 inches and the trench depth would vary as needed. The potential impact area is limited to 25 feet on either side of the proposed effluent pipeline alignment, for a total construction corridor width of 25 feet at any point in the alignment. Installation of the proposed pipeline, cascade, and outfall would require staking of riparian areas and tree drip lines, grading, concrete placement, and backfill.

**Equipment and Materials**

The following equipment may be utilized during construction of the Proposed Project:

- Pavement saw
- Jack hammers
- Excavators
- Front-end loaders
- Dump trucks
- Crane
- Bulldozers
- Water truck
- Trench shields
- Air compressors
- Flat-back delivery truck
- Concrete trucks
- Sweepers
- Concrete pumper trucks
- Welding trucks
- Side boom pipe handler tractor
- Earth mover
- Boom truck
- Backhoes

**3.4.5 OPERATION AND MAINTENANCE ACTIVITIES**

Maintenance activities at the WWTF would be similar to existing conditions. Because the proposed outfall is located outside the bed of Churn Creek, the City would no longer have to excavate the outfall area when it becomes buried with cobble.

**3.5 REGULATORY REQUIREMENTS**

Permits and approvals that may be necessary for construction and operation of the Proposed Project are identified below.
3.0 Project Description

CITY OF SHASTA LAKE APPROVALS

- Approval of the Proposed Project and adoption of a Mitigated Negative Declaration for the Project under the requirements of the California Environmental Quality Act (CEQA), as amended.
- Adoption of a Mitigation Monitoring Plan for the Proposed Project that incorporates the mitigation measures identified in this Initial Study.

STATE WATER RESOURCES CONTROL BOARD

- Approval for funding under the CWSRF Program.

CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD

- Determination that the project qualifies for coverage under the Clean Water Act (CWA) NPDES General Construction Permit for the protection of surface waters from construction and other land-disturbing activity.
- Enforce the WDRs of the 2014 NPDES Permit for the discharge of effluent treated at the WWTF to Churn Creek. The City must submit various reports to the CVRWQCB to demonstrate that operation of the Proposed Project would be in compliance with the 2014 NPDES Permit.
- Approval of a new Waste Discharge Order that does not include the 10:1 dilution requirement.

U.S. ENVIRONMENTAL PROTECTION AGENCY

- Approval for funding under the CWSRF Program.

U.S. ARMY CORPS OF ENGINEERS

- Section 404 Permit under the Federal Clean Water Act for construction activities within the bed, bank and/or channel of Churn Creek related to installation of the new outfall.

CALIFORNIA DEPARTMENT FISH AND WILDLIFE

- Issuance of Section 1602 Lake or Streambed Alteration Agreement for construction activities within the bed, bank, and/or channel of Churn Creek related to installation of the new outfall.
- Consultation should the project have the potential to impact State-listed special status species.
3.0 Project Description

**U.S. FISH AND WILDLIFE SERVICE**
- Consultation pursuant to Section 7 of the Federal Endangered Species Act (FESA) should the project have the potential to impact federally-listed special status species.

**NATIONAL MARINE FISHERIES SERVICE**
- Consultation pursuant to Section 7 of the FESA and Magnusson Stevenson’s Fisheries Act regarding potential impacts to federally-listed special status fish species and essential fish habitat.

**STATE HISTORIC PRESERVATION OFFICE**
- Consultation pursuant to Section 106 of the National Historic Preservation Act (NHPA) regarding (joint consultation with Indian tribes) potential impacts to cultural resources resulting from the Proposed Project.
SECTION 4.0
ENVIRONMENTAL ANALYSIS (CHECKLIST)

4.1 EVALUATION OF ENVIRONMENTAL IMPACTS

Pursuant to California Environmental Quality Act (CEQA) Guidelines Section 15063, an Initial Study (IS) should provide the lead agency with sufficient information to determine whether to prepare an environmental impact report (EIR) or negative declaration (ND) for a proposed project. The CEQA Guidelines state that an IS may identify environmental impacts by use of a checklist, matrix, or other method, provided that conclusions are briefly explained and supported by relevant evidence.

If it is determined that a particular physical impact to the environment could occur, then the checklist must indicate whether the impact is Potentially Significant, Less Than Significant with Mitigation, or Less Than Significant. Findings of No Impact for issues that can be demonstrated not to apply to a proposed project do not require further discussion.
4.2 AESTHETICS

4.2.1 ENVIRONMENTAL CHECKLIST

<table>
<thead>
<tr>
<th>AESTHETICS</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would the project:</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>a) Have a substantial adverse effect on a scenic vista?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
<tr>
<td>b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
<tr>
<td>c) Substantially degrade the existing visual character or quality of the site and its surroundings?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>e) Increase the amount of shading on public open space (e.g. parks, plazas, and/or school yards)?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
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</table>

4.2.2 SETTING

Regulatory Context

State

California Scenic Highway Program

The California Scenic Highway Program, administered by the California Department of Transportation (Caltrans), intends to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to scenic highways. The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been so designated. Cities and counties can nominate eligible scenic highways for official designation by identifying and defining the scenic corridor of the highway. The municipality must also adopt ordinances to preserve the scenic quality of the corridor or document such regulations that already exist in various portions of local codes.
4.0 Environmental Analysis (Checklist)

Local

City of Shasta Lake General Plan
The following City of Shasta Lake (City) General Plan guiding and implementation policies associated with aesthetics are applicable to the City of Shasta Lake Wastewater Treatment Facility (WWTF) Upgrade Project (Proposed Project) (City of Shasta Lake, 1999).

Implementation Measures

C-17 As part of the development review process, include consideration of the visual aspects of a development from roadways. Aesthetic consideration shall include architectural compatibility and landscaping. Development review will include visibility requirements at intersections.

City of Shasta Lake Zoning Ordinance
Section 17.84.050, Lighting, of the City Zoning Ordinance (as amended through August 2013) contains the following aesthetic-related standard that would apply to the Proposed Project:

All lighting, exterior and interior, shall be designed and located so as to confine direct lighting to the premises. A light source shall not shine upon or illuminate directly on any surface other than the area required to be lighted. No lighting shall be of the type or in a location such that constitutes a hazard to vehicular traffic, either on private property or on abutting streets.

Project Site Setting
As described in Section 3.0, the existing City WWTF is located on an approximately 106-acre site owned by the City. The project site is bordered on the north by Pine Grove Avenue, Ashby Road to the west, and Churn Creek to the east. The topography of the project site is relatively flat to moderately sloping, with elevations ranging from 748 to 752 feet above mean sea level (amsl). An aerial of the project site is shown in Figure 3.

The visual characteristics of the northern portion of the project site consist of the existing WWTF, including various treatment structures, and holding and treatment basins. The visual characteristic of the western portion of the project site consists of a 400-acre-foot reclaimed water reservoir. The visual characteristics of the southern and southeastern portion of the project site consist of the WWTF’s sprayfields, which contains disturbed oak savanna, oak woodland, and riparian habitats. Grazing currently occurs in the sprayfield area.

The area surrounding the project site consists generally of riparian mixed woodlands to the south, rural residential development to the north, urban residential to the east, and industrial development to the west (and south of riparian mixed woodlands). A mature riparian corridor located along the banks of Churn Creek creates a permanent visual barrier between the project site and the existing residential developments located approximately 0.2 miles north and 0.4 miles east of the existing WWTF. A pedestrian trail is located within the riparian corridor along Churn Creek which can be accessed by the residential area to the east. An ornamental landscape buffer, consisting of shrubs and trees, is located...
southwest of the project site along Ashby Road and Shasta Gateway Drive. This buffer shields views of the WWTF from industrial facilities located southwest of the project site.

Scenic Resources

There is no comprehensive list of specific features that automatically qualify as scenic resources; however, certain characteristics can be identified which contribute to the determination of a scenic resource. The following is a partial list of visual qualities and conditions that if present, may indicate the presence of a scenic resource:

- A tree that displays outstanding features of form or age.
- A landmark tree or a group of distinctive trees accented in a setting as a focus of attention.
- An unusual planting that has historical value.
- A unique, massive rock formation.
- An historic building that is a rare example of its period, style, or design, or which has special architectural features and details of importance.
- A feature specifically identified in applicable planning documents as having a special scenic value.
- A unique focus or a feature integrated with its surroundings or overlapping other scenic elements to form a panorama.
- A vegetative or structural feature that has local, regional, or statewide importance.

There are no features on the project site that include the characteristics of a scenic resource described above. The project site is not located within a scenic vista or designated State scenic highway. The nearest scenic highways, portions of State Route 151 (SR-151) and Interstate 5 (I-5), are located approximately 1.4 miles north and 1.5 miles east of the project site, respectively. The visual characteristics of the project site and vicinity are limited to exiting WWTF, industrial facilities, and rural residences.

Nighttime Lighting Conditions

Current nighttime lighting conditions in the City are directly correlated with existing development. The City is primarily developed west of I-5, which generally runs north–south through the eastern half of the City. The business district, located along Shasta Dam Boulevard, approximately 1.5 miles north of the project site, generally has low ambient nighttime light levels, with residential and outlying areas of the City consisting of even lower ambient light levels.

The most notable lighting in the near vicinity of the project site is from the existing WWTF, which generates artificial lighting during the night, as operation continues 24 hours per day. Although there are few buildings on the site, there is existing lighting that illuminates processing facilities for security, safety, and task specific needs. Other forms of artificial lighting in the project area are from streetlights on the
various roads surround the project site as well as lighting from the Knauf Industries site to the southwest on Ashby Road.

4.2.3 DISCUSSION OF IMPACTS

**Question A and B**

Would the project: Have a substantial adverse effect on a scenic vista; or substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

*No Impact.* As described above, the project site is not located near a scenic vista or designated State scenic highway or other designated scenic corridor; therefore, impacts to these resources would not occur.

**Question C**

Would the project: Substantially degrade the existing visual character or quality of the site and its surroundings?

*Less than Significant.* The development of the Proposed Project would involve the addition of new structures and a change to the site, but would not change the general visual character of the project site. As shown in Figure 4, with the exception of the improvements to the cascade structure, effluent pipeline, and outfall structure in the riparian area of Churn Creek, the majority of proposed improvements would take place within the existing development footprint of the WWTF.

Views of the project site would continue to be shielded by the riparian corridor located along the banks of Churn Creek. The effluent pipeline would be installed underground and the area would be restored to consistent with existing conditions. The cascade and outfall structures would be built into the existing topography of the site and would be consistent with the existing structures at the current WWTF, including the lift station adjacent to the Pine Grove Avenue overpass. Impacts to the visual character and quality of the project site and vicinity would be considered less than significant.

**Question D**

Would the project: Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

*Less than Significant.* The project site currently contains the existing WWTF, which is illuminated for safety, security, and to support task areas. The Proposed Project may introduce new sources of light on the property for the same purposes, including site and building lighting. However, consistent with Section 17.84.050 of the City’s Municipal Code, any new exterior lighting will be designed and installed to avoid adverse glare on adjacent properties; shoebox type lighting fixtures, or equivalent, will be used and mounted such that all light is projected directly toward the ground and internal to the site with no light shining on adjacent properties. None of the surfaces proposed for the project are reflective or would produce glare. Potential impacts to day and nighttime views associated with lighting on the project site would be considered less than significant.
4.0 Environmental Analysis (Checklist)

**Question E**

*Would the project: Increase the amount of shading on public open space (e.g. parks, plazas, and/or school yards)?*

*No Impact.* The WWTF is not located near parks, plazas, or school yards, and would not create shade in public open space areas, thus, no impacts would occur. It would not create any additional shading on Churn Creek or the adjacent trail.

**Cumulative Impacts**

*Less than Significant.* Potential cumulative projects in the vicinity of the project site include growth within the City limits according to the build out projections in the City’s General Plan. The Proposed Project would not change the general visual character of the project site and new project-related light sources would not negatively affect the ambient light in the project area due to light reduction strategies that would be implemented consistent with the City’s Zoning Code. Therefore, the Proposed Project’s contribution to aesthetic impacts, including new light sources, would not be cumulatively considerable.

**4.2.4 Mitigation Measures**

None required.
## 4.3 AGRICULTURAL RESOURCES

### 4.3.1 ENVIRONMENTAL CHECKLIST

<table>
<thead>
<tr>
<th>AGRICULTURAL AND FOREST RESOURCES</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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</table>

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 Department 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, as shown on the maps prepared pursuant to the farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

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b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

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c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined in Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?  

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d) Result in the loss of forest land or conversion of forest land to non-forest use?

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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?

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4.3.2 SETTING

Regulatory Setting

Federal

Farmland Protection Policy Act

The Farmland Protection Policy Act (FPPA) is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that federal programs are administered in a matter that is compatible with state and local units of government, and private programs and policies to protect farmland (7 U.S.C. § 4201).

The Natural Resources Conservation Service (NRCS), responsible for the implementation of the FPPA, categorizes farmland in a number of ways. These categories include: prime farmland, farmland of statewide importance, and unique farmland. Prime farmland is considered to have the best possible features to sustain long-term productivity.

Farmland of statewide importance includes farmland similar to prime farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Unique farmland is characterized by inferior soils and generally needs irrigation depending on climate. The Land Evaluation and Site Assessment (LESA) is a numeric rating system used by the NRCS to evaluate the relative agricultural importance of farmlands.

State

California Farmland Mapping and Monitoring Program

The Farmland Mapping and Monitoring Program (FMMP), which monitors the conversion of the State's farmland to and from agricultural use, was established by the California Department of Conservation (DOC), under the Division of Land Resource Protection. The program maintains an inventory of state agricultural land and updates its “Important Farmland Series Maps” every two years.

The FMMP is an informational service only and does not constitute state regulation of local land use decisions. The four categories of farmland, which include Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance, are considered valuable and any conversion of land within these categories is typically considered to be an adverse impact (NRCS, 2014a).

Williamson Act

The Williamson Act is a State program that was implemented to preserve agricultural land. Under the provisions of the Williamson Act (California Land Conservation Act 1965, Section 51200), landowners contract with the county to maintain agricultural or open space use of their lands in return for reduced property tax assessments. The contract is self-renewing; however, the landowner may notify the county at any time of intent to withdraw the land from its preserve status. Withdrawal from a Williamson Act contract involves a ten-year period of tax adjustment to full market value before protected agricultural/open space land can be converted to urban uses (DOC, 2009).
4.0 Environmental Analysis (Checklist)

Environmental Setting

Regional Setting

The DOC defines Prime Farmland as “farmland with the best combination of physical and chemical features able to sustain long term production of agricultural crops.” This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. As of 2010, the total acreage of important farmland in the County was 19,716 acres, including 11,082 acres of prime farmland (56 percent of County total). According the DOC FMMP, a total of 1,207 acres of important farmland in the County was converted to other uses between the years 2008 and 2010 (DOC, 2010a). The average annual conversion of 422 acres of important farmland has occurred in the County since 1984 (DOC, 2010b).

According to the 2013 Annual Crop and Livestock Report, the total production value of agricultural and livestock production for the County was approximately $81,228,000, with agricultural production and livestock production accounting for $57,880,000 and $23,348,000, respectively. The majority of the agriculture production value was from the field crops ($38,463,000) and the cultivation of apiary products ($6,646,000). The remaining agriculture production in the County comes from nursery products as well as fruit and nut crops (Shasta County, 2013).

Project Site Setting

The City of Shasta Lake General Plan does not establish areas of prime farmland in or adjacent to the City. A map of the FMMP designations for the project site and surrounding area is provided in Figure 7. As shown in Figure 7, the sprayfield area is classified as Farmland of Statewide and Local Importance while the remainder of the project site is classified as Urban and Built-Up Land (DOC, 2012a). The sprayfield area is currently used for grazing cattle. The project site does not include any Williamson Act contract lands. The nearest Williamson Act contract lands are located approximately three miles east of the project site and outside of the City limits (DOC, 2012b).

4.3.3 Discussion of Impacts

Questions A, D, and E

Would the project: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use; Result in the loss of forest land or conversion of forest land to non-forest use; or 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?

No Impact. As shown in Figure 7, none of the components of the Proposed Project would be constructed in the areas classified as Farmland of Statewide and Local Importance. Although the practice of disposing recycled water via sprayfield irrigation would be terminated as a result of the Proposed Project, the sprayfield area could still be used for cattle grazing. Therefore, no impacts to the City or regional agricultural resources would occur as a result of the Proposed Project.
LEGEND

- Proposed Project Components
- Project Site
- Outfall
- Proposed Effluent Pipeline
- Farmland of Statewide Importance
- Farmland of Local Importance
- Other Land
- Urban and Built-Up Land

SOURCE: CA Dept. of Conservation/FMMP, 2010; Microsoft aerial photograph, 6/12/2010; AES, 2014

Figure 7
Farmland Classification
The project site does not contain forestry lands; therefore, the Proposed Project would not result in the loss of forest land to non-forest use.

Questions B and C

Would the project: Conflict with existing zoning for agricultural use, or a Williamson Act contract; or Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined in Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

No Impact. The Proposed Project is currently zoned for Public Facilities. The project site is not located adjacent to land in productive agriculture or lands zoned for agricultural uses or timberland production. Additionally, there are no parcels under a Williamson Act contract in the vicinity of the project site. Construction and operation of the Proposed Project would not conflict with existing zoning for agricultural, forest, or timberland use. Therefore, no impacts would occur.

Cumulative Impacts

No Impact. The Proposed Project would not result in the conversion of agriculture or forest land; therefore, it would not contribute to cumulative impacts to agricultural resources.

4.3.4 Mitigation Measures

None required.
### 4.4 AIR QUALITY

#### 4.4.1 ENVIRONMENTAL CHECKLIST

<table>
<thead>
<tr>
<th>AIR QUALITY</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where applicable, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Conflict with or obstruct implementation of the applicable air quality plan?</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>c) 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>d) Expose sensitive receptors to substantial pollutant concentrations?</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>e) Create objectionable odors affecting a substantial number of people?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
</tbody>
</table>

#### 4.4.2 ENVIRONMENTAL SETTING

The City of Shasta Lake is located at the northern end of the Sacramento Valley Air Basin (SVAB) and is under the jurisdiction of the Shasta County Air Quality Management District (SCAQMD). Shasta County is surrounded by the Klamath and Coastal Mountains to the northwest and the Cascade and Sierra Nevada Mountains to the north and east. Wind from the San Francisco Bay Area transport pollutants from the larger urban areas south of Shasta County. These air pollutants are intensified by temperature inversion layers that traps air at lower levels below an overlying layer of warmer air. Due to this inversion, atmospheric conditions are relatively stable and pollutants will not disperse. Therefore, Shasta County has the potential for high air pollution concentrations.
Regulatory Context

Ambient Air Quality Standards

The U.S. Environmental Protection Agency (USEPA), under the Clean Air Act (CAA) establishes maximum ambient concentrations for the six criteria air pollutants (CAPs), known as the National Ambient Air Quality Standards (NAAQSs). The six CAPs are ozone (O₃), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), carbon monoxide (CO), lead (Pb), and particulate matter 10 and 2.5 microns in size (PM₁₀ and PM₂.₅).

Concentrations above these time-averaged limits are anticipated to cause adverse health effects to sensitive receptors. The USEPA has established violation criteria for each CAP. For example, in order to constitute a violation, the NAAQS for ozone must be exceeded on more than three days in three consecutive years. On the other hand, if the NAAQS for CO is exceeded on more than one day in any given year, a violation occurred.

The California CAA establishes maximum concentrations for the six CAPs, as well as four additional air pollutants in California (visibility reducing particles, sulfates [SO₄], hydrogen sulfide [H₂S], and vinyl chloride). These maximum concentrations for the State are known as the California Ambient Air Quality Standards (CAAQSs). Concentrations above these time-averaged limits are anticipated to cause adverse health effects to sensitive receptors.

The California Air Resources Board (CARB) is part of the California EPA (CalEPA) and has jurisdiction over local air districts and has established their own standards and violation criteria for each CAP under the CAAQS. Refer to Table 4.4-1 for the standards and violation criteria for the various averaging times for criteria pollutants of concern in the SCAQMD under the NAAQS and CAAQS.

NAAQS and CAAQS Attainment Designations

Shasta County has been designated a non-attainment area for State ozone standards and State PM₁₀ standards. However, the County is designated as an attainment or unclassified area for all other federal and State ambient air quality standards.

Federal General Conformity

The General Conformity Rule of the federal CAA implements Section 176(c) of the CAA, and establishes minimum thresholds for volatile organic compounds (VOCs) and nitrous oxides (NOₓ; ozone precursors), PM₁₀, and other regulated constituents for non-attainment and maintenance areas.

Title 40 Part 93 of the Code of Federal Regulations (CFR) was promulgated in order to determine conformity of Federal actions to the State Implementation Plan (SIP). A lead agency must make a determination that a federal action conforms to the applicable SIP before the action is taken. A conformity determination is required for each pollutant where a total of direct and indirect emissions in a nonattainment or maintenance area caused by the federal action are greater than de minimis thresholds as listed in CFR Section 93.153(b).
These thresholds provide simple and direct guidance for federal agencies to ensure that they comply with an approved SIP. The general conformity rule includes a procedure for determining whether the rule is applicable to the actions of a federal agency.

TABLE 4.4-1
NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS AND VIOLATION CRITERIA

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Time</th>
<th>Standard parts per million</th>
<th>Standard microgram per cubic meter</th>
<th>Violation Criteria</th>
</tr>
</thead>
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<tr>
<td></td>
<td></td>
<td>CAAQS</td>
<td>NAAQS</td>
<td>CAAQS</td>
</tr>
<tr>
<td>Ozone</td>
<td>1 hour</td>
<td>0.09</td>
<td>N/A</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>8 hour</td>
<td>0.070</td>
<td>0.075</td>
<td>137</td>
</tr>
<tr>
<td>CO</td>
<td>8 hour</td>
<td>9</td>
<td>9</td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>1 hour</td>
<td>20</td>
<td>35</td>
<td>23,000</td>
</tr>
<tr>
<td>NO₂</td>
<td>Annual Mean</td>
<td>0.03</td>
<td>0.053</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>1 hour</td>
<td>0.18</td>
<td>0.100</td>
<td>N/A</td>
</tr>
<tr>
<td>SO₂</td>
<td>24 hour</td>
<td>0.04</td>
<td>N/A</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>1 hour</td>
<td>0.25</td>
<td>0.075</td>
<td>655</td>
</tr>
<tr>
<td>PM₁₀</td>
<td>Annual Mean</td>
<td>N/A</td>
<td>N/A</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>24 hour</td>
<td>N/A</td>
<td>N/A</td>
<td>50</td>
</tr>
<tr>
<td>PM₂·₅</td>
<td>Annual arithmetic mean</td>
<td>N/A</td>
<td>N/A</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>24 hour</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Pb</td>
<td>Calendar Quarter</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>30 Days</td>
<td>N/A</td>
<td>N/A</td>
<td>1.5</td>
</tr>
<tr>
<td>Hydrogen Sulfide</td>
<td>1 hour</td>
<td>0.03</td>
<td>N/A</td>
<td>42</td>
</tr>
<tr>
<td>Vinyl Chloride</td>
<td>24 hour</td>
<td>0.01</td>
<td>N/A</td>
<td>26</td>
</tr>
<tr>
<td>Sulfate</td>
<td>24 hour</td>
<td>N/A</td>
<td>N/A</td>
<td>25</td>
</tr>
<tr>
<td>Visibility Reducing Particles</td>
<td>8 hour</td>
<td>*</td>
<td>N/A</td>
<td>*</td>
</tr>
</tbody>
</table>

* Extinction coefficient of 0.23 per kilometer-visibility of ten miles or more (0.07-30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent.
Source: CARB, 2013.

There are two phases to assessing the general conformity of a federal action:

1) The Conformity Review process entailing a review of each analyzed alternative to assess whether a full conformity determination is necessary; and
2) The Conformity Determination process, which demonstrates how an action would conform to the applicable SIP.

The first step compares emissions estimates for the project to the appropriate general conformity de minimis threshold based on nonattainment type. If the emission estimates from step one are below the thresholds, then a general conformity determination is not necessary, step two is not required, and the proposed project is considered to conform to the appropriate SIP.

**California State Implementation Plan**

California's SIP is comprised of the State’s overall air quality attainment plans to meet the NAAQS, as well as the individual air quality attainment plans of each Air Quality Management District (AQMD) and Air Pollution Control District (APCD). The items included in the California SIP are listed in 40 CFR Chapter I, Part 52, Subpart F §52.220. The California SIP is a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), AQMD and APCD rules, State regulations, and Federal controls for each air basin and California's overall air quality.

Many of the items within the California SIP rely on the same control strategies, such as emissions standards for cars and heavy trucks, fuel regulations, and limitations on emissions from consumer products. AQMDs and APCDs, as well other agencies such as the Bureau of Automotive Repair, prepare draft California SIP elements and submit them to CARB for review and approval. The California Clean Air Act (CCAA) identifies CARB as the lead agency for compiling items for incorporation into the California SIP, and submitting the items to the USEPA for approval.

**Federal Class I Areas**

Title 1, Part C of the CAA was established, in part, to preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value. The CAA designates all international parks, national wilderness areas, and memorial parks larger than 5,000 acres and national parks larger than 6,000 acres as “Class I areas.”

Any major source of emissions within 100 kilometers (km) (62.1 miles) from a federal Class I area is required to conduct a pre-construction review of air quality impacts on the area(s). The nearest federal Class I area to the project site is located is Lassen National Park, which is greater than 62.1 miles from the project site.

**Toxic Air Contaminants**

In addition to the above-listed California CAPs, Toxic Air Contaminants (TACs) are another group of pollutants regulated under the California CAA. TACs are less pervasive in the urban atmosphere than the CAPs, but are linked to short-term (acute) or long-term (chronic or carcinogenic) adverse human health effects. There are 244 chemicals listed by the State as TACs with varying degrees of toxicity.

Sources of TACs include industrial processes, commercial operations (e.g., gasoline stations and dry cleaners), grading (asbestos), and diesel motor vehicle exhaust. Public exposure to TACs can result from
emissions from normal operations, as well as accidental releases. Health effects of TACs include cancer, birth defects, neurological damage, and death.

Ambient air quality standards have not been set for TACs. Instead, these pollutants are typically regulated through a technology-based approach for reducing TACs. This approach requires facilities to install Maximum Achievable Control Technology (MACT) on emission sources.

**Shasta County Air Quality Management District**

The SCAQMD is designated by law to adopt and enforce regulations to achieve and maintain ambient air quality standards. The SCAQMD, along with other air districts in the Northern Sacramento Valley Air Basin (NSVAB), has committed to jointly prepare the NSVAB Air Quality Attainment Plan for the purpose of achieving and maintaining healthful air quality throughout the air basin. The SCAQMD adopts and enforces controls on stationary sources of air pollutants through its permit and inspection programs, and it regulates agricultural burning. Other responsibilities include monitoring air quality, preparing clean air plans, and responding to citizen complaints concerning air quality.

All projects in Shasta County and in the City of Shasta Lake are subject to applicable SCAQMD rules and regulations in effect at the time of construction. Descriptions of specific rules applicable to future construction resulting from implementation of the Proposed Project may include, but are not limited to:

- SCAQMD Rule 3-2 Specific Air Contaminates. No person shall discharge contaminants from any single source into the atmosphere in the amounts designated in Table 1 of the Rule.
- Cutback and emulsified asphalt application shall be conducted in accordance with SCAQMD Rule 3-15, Cutback and Emulsified Asphalt.
- SCAQMD Rule 3-16, Fugitive, Indirect, or Non-Traditional Sources, controls the emission of fugitive dust during earth-moving, construction, demolition, bulk storage, and conditions resulting in wind erosion.
- Architectural coatings and solvents used at the project shall be compliant with SCAQMD Rule 3-31, Architectural Coatings.

The SCAQMD has adopted air quality thresholds for determination of impact significance for projects subject to CEQA review in its Rule 2:1 New Source Review Part 300 for emissions of Reactive Organic Gases (ROG), NOx and PM₁₀. The “Level A Thresholds” are 25 pounds per day (lb/day) of ROG and NOx, and 80 lb/day of PM₁₀, and the “Level B Thresholds” are 137 lb/day for ROG, NOx, and PM₁₀.

The SCAQMD recommends that projects apply Standard Mitigation Measures (SMM) and appropriate Best Available Mitigation Measures (BAMM) when a project exceeds Level A thresholds, and that projects apply SMM, BAMM, and special BAMM when a project exceeds Level B thresholds (Waldrop, 2014).
Sensitive Receptors

Schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people, and the infirm are more susceptible to respiratory distress and other air quality related health problems. Residential areas are considered sensitive to poor air quality, because people usually stay home for extended periods of time increasing the potential exposure to ambient air quality. Recreational uses are also considered sensitive due to the greater exposure to ambient air quality conditions because vigorous exercise associated with recreation places a high demand on the human respiratory system.

The land surrounding the project alignments is primarily residential, industrial, and commercial land uses with a recreational trail use east of Churn Creek. The nearest residences are located approximately 700 feet north and east of where construction would occur. Central Valley High School is located approximately one mile northeast of the project site. There are no hospitals in the vicinity of the Proposed Project.

4.4.3 DISCUSSION OF IMPACTS

Methodology

California Emissions Estimator Model (CalEEMod) was used to estimate emissions from all construction-related sources. The results of the CalEEMod modeling are discussed below and output files are provided in Appendix C.

CalEEMod provides default values when site-specific inputs are not available. The default values are provided in Appendix C. The following site-specific traffic inputs and assumptions were used for the purposes of air quality modeling:

- Emissions from construction were calculated based on all construction related activities, including but not limited to grading, use of construction equipment, material hauling, building, trenching, and site preparation.
- Construction would occur over a period of 18 months, starting January 2017 and ending May 2018.
- Round trip truck material distance used to determine criteria pollutant emissions is 40 miles, with 4 material haul trips per day occurring during the building phase of construction.
- Trenching would occur between June of 2017 and September of 2017 and would require the use of a trencher.
- It is conservatively estimated that 10 worker vehicle trips per day would occur during the grading and site preparation phase of construction and 89 worker vehicle trips per day would occur during the building phase of construction (this assumes all building would occur simultaneously). Three worker trips would occur during the trenching phase of construction. Worker one-way trip length used to estimate CAP emissions is 16.8 (CalEEMod default value) miles.
Resulting emission estimates are compared to applicable SCAQMD thresholds and Federal general conformity de minimis levels to evaluate the effects of construction activities on regional air quality.

**Questions A, B, and C**

*Would the project: Conflict with or obstruct implementation of the applicable air quality plan; violate any air quality standard or contribute substantially to an existing or projected air quality violation; or, 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?*

**Construction**

*Less-than-Significant with Mitigation.* Emissions generated from grading and building construction activities resulting from the Proposed Project would be short-term, intermittent, and temporary in nature. However, construction activities have the potential to represent a significant air quality impact. The grading and construction of the Proposed Project would result in the generation of ROG, NOx, and PM$_{10}$ emissions.

PM$_{10}$ is generally the direct result of site grading, excavation, road paving, and exhaust associated with construction equipment. PM$_{10}$ emissions are largely dependent on the amount of ground disturbance associated with site preparation activities. Emissions of NOx and ROG are generally associated with employee vehicle trips, delivery of materials, and construction equipment exhaust.

*Table 4.4-2* shows mitigated and unmitigated emissions from construction activities and compares these to SCAQMD thresholds to determine if the construction emissions of the proposed project would have a significant impact on regional air quality. As shown in *Table 4.4-2* the Proposed Project would exceed the “Level A Threshold” for NOx emissions, but would not exceed any of the “Level B Thresholds”, and would not exceed the conformity de minimis levels; therefore, within implementation of standard mitigation measures recommended in *Section 4.4.4, AQ-1*, construction of the Proposed Project would have a less-than-significant impact on local and regional air quality and would be in conformance with the applicable SIP.

**Operation**

*Less than Significant.* Operation of the project would result in a negligible increase in additional traffic. At full buildout, an additional one or two full-time employees may be needed to operate the proposed facilities at the WWTF. The resulting additional trips added to the roadway network would not cause an exceedance of the SCAQMD thresholds or conformity de minimis levels and would be in conformance with the SIP. The Proposed Project would increase the effective treatment capacity of the WWTF from 0.83 MGD average dry weather flow (ADWF) to current design and permitted capacity of 1.3 MGD ADWF.

Increased treatment of wastewater would not increase emissions of ROG, NOx, and PM$_{10}$, because the WWTF operates wastewater transport system on electricity and it is not anticipated that additional worker vehicle trips or stationary combustion equipment (i.e. backup generators, forklifts, or maintenance trucks)
would increase. Therefore, ROG, NOx, and PM$_{10}$ emissions would not increase over current levels, and operation of the Proposed Project would have a less than significant impact on regional air quality.

### Table 4.4-2

<table>
<thead>
<tr>
<th>Year</th>
<th>ROG (lb/day)</th>
<th>NOx (lb/day)</th>
<th>PM$_{10}$ (lb/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>5.08 (8.99)</td>
<td>31.37 (61.92)</td>
<td>9.13 (18.51)</td>
</tr>
<tr>
<td>2018</td>
<td>4.30 (7.56)</td>
<td>28.02 (51.97)</td>
<td>8.87 (17.79)</td>
</tr>
<tr>
<td>Highest Emission Year</td>
<td>5.08 (8.99)</td>
<td>31.37 (61.92)</td>
<td>9.13 (18.51)</td>
</tr>
<tr>
<td>SCAQMD Level A</td>
<td>25</td>
<td>25</td>
<td>80</td>
</tr>
<tr>
<td>SCAQMD Level B</td>
<td>137</td>
<td>137</td>
<td>137</td>
</tr>
<tr>
<td>Conformity De Minimis</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Exceed Threshold Level</td>
<td>A</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Exceed Threshold Level</td>
<td>B</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Source: CalEEMod, 2013.

**Question D**

*Would the project: Expose sensitive receptors to substantial pollutant concentrations?*

*Less-than-Significant with Mitigation.* Diesel particulate matter (DPM) is the main TAC of concern during construction of the Proposed Project. Construction would include grading, soil hauling, demolition, paving, and building activities. These activities utilize heavy equipment, which use diesel fuel and emit DPM. DPM emissions during operation would also be emitted from diesel vehicles used by patrons, employees, and delivery services.

The nearest sensitive receptors are residences located approximately 700 feet north and east of where construction activities would occur behind a mature grove of trees. DPM generally dissipates rapidly from its original concentration and is reduced by 65 to 85 percent by trees. Due to the distance of the nearest sensitive receptor, the intermittent and temporary nature of construction, and the trees between the WWTF and sensitive receptors, construction and operational activities at the WWTF would not expose sensitive receptors to substantial concentrations of DPM.

Further, as discussed above, CAP emissions would be reduced to below applicable SCAQMD thresholds with the implementation of construction Mitigation Measure AQ-1 provided in Section 4.4.4. Therefore, with mitigation, construction and operation of the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations.

**Question E**

*Would the project: Create objectionable odors affecting a substantial number of people?*
4.0 Environmental Analysis (Checklist)

**Construction**

*Less than Significant.* Construction activities have the potential to emit odors from diesel equipment, paints, solvents, fugitive dust, and adhesives. Odors from construction are intermittent and temporary, and generally would not extend beyond the project boundary. The nearest sensitive odor receptor is 700 feet from where construction activities would be carried out. Given the distance to the nearest sensitive receptor and the temporary and intermittent nature of construction odors, a less-than-significant odor impact would occur during the construction phase of the Proposed Project.

**Operation**

*Less than Significant.* Operation activities have the potential to emit odors from the WWTF process. The nearest sensitive odor receptor is 700 feet from where WWTF operations would occur. Existing operational odor emitting facilities at the WWTF include sludge basins, secondary clarifiers, oxidation ditch, influent pumping, emergency retention basin, biosolid drying beds and headworks.

To date, the SCAQMD has not received any odor complaints related to the WWTF operations (Waldrop, 2014). The Proposed Project may reduce the potential for odor through replacement of the emergency retention basin with a lined secondary equalization basin. Since secondary effluent has very little organic matter remaining in it, its potential for odor generation is negligible provided that it is removed within a reasonable period of time before vegetation and other growths can become established.

Given that the project does not include any new potential odor generating components over current WWTF operations, the distance to the nearest sensitive receptors, and the fact that there have historically been no odor complaints from sensitive receptors, the Proposed Project would not create objectionable odors affecting a substantial number of people. This impact is considered less than significant.

**Cumulative Impacts**

*Less than Significant with Mitigation.* Past, present, and future development projects contribute to a region’s air quality conditions on a cumulative basis; therefore by its very nature, air pollution is largely a cumulative impact. If a project’s individual emissions contribute toward exceedance of the NAAQS or the CAAQS, then the project’s cumulative impact on air quality would be significant. In developing attainment designations for criteria pollutants, the USEPA considers the region’s past, present, and future emission levels.

AQMDs determine suitable significance thresholds based on an area’s designated nonattainment status. These thresholds provide a tool by which the districts can achieve attainment for a particular criteria pollutant that is designated as nonattainment. Therefore, the SCAQMD’s significance thresholds consider the region’s past, present, and future emissions levels.

Implementation of the Proposed Project combined with future development within the project area could lead to cumulative impacts to air quality. Construction of the Proposed Project would result in the generation of criteria air pollutants that when combined with future growth within the project area could lead to cumulative impacts to air quality. As discussed in detail above, emissions resulting from the Proposed Project would not exceed the SCAQMD’s thresholds or the conformity de minimis levels and
construction would be in conformance with the applicable SIP developed to address cumulative emissions of criteria air pollutants in the SCVAB. Mitigation Measure AQ-1 would further reduce the Proposed Project’s contribution to cumulative effects to air quality. Therefore, the Proposed Project would have a less-than-significant cumulative impact on local and regional air quality.

4.4.4 MITIGATION MEASURES

AQ-1 The City shall ensure through contractual obligations that the following SCAQMD and City SMMs shall be implemented during construction:

- During land moving operations water exposed areas at least two times per day. Watering can be done using either potable or tertiary treated water.
- Reduce vehicle speeds on unpaved roads to 15 miles per hour.
- Alternatives to open burning of vegetative material on the project site shall be used by the project applicant unless otherwise deemed infeasible by the SCAQMD. Among suitable alternatives are chipping, mulching, or conversion to biomass fuel.
- The applicant shall be responsible for ensuring that all adequate dust control measures are implemented in a timely and effective manner during all phases of project development and construction.
- All material excavated, stockpiled, or graded should be sufficiently watered to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of an ambient air standard. Watering should occur at least twice daily with complete site coverage, preferably in the mid-morning and after work is completed each day.
- All land clearing, grading, earth moving or excavation activities on a project shall be suspended when winds are expected to exceed 20 miles per hour.
- All inactive portions of the development site should be seeded and watered until a suitable grass cover is established.
- Approved non-toxic soil stabilizers (according to manufacturer’s specifications) shall be applied to all inactive construction areas (previously graded areas which remain inactive for 96 hours).
- When construction activity occurs during wet weather, install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip. Locations of wheel washers shall be identified and approved by the City Public Works Division prior to the issuance of any clearing or grading permits.
- All trucks hauling dirt, sand, soil or other loose material should be covered or should maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the trailer) in accordance with the requirements of CVC Section 23114. This provision shall be enforced by local law enforcement agencies.
- All material transported off-site shall be either sufficiently watered or securely covered to prevent a public nuisance.
4.0 Environmental Analysis (Checklist)

- Paved streets adjacent to the development site should be swept or washed at the end of each day to remove excessive accumulations of silt and/or mud which may have accumulated as a result of activities on the development site.

- Require the use of diesel particulate matter filters on construction equipment greater than 50 horsepower.

- Reestablish ground cover on the construction site through seeding and watering upon completion of construction.
4.5 BIOLOGICAL RESOURCES

Information in this section is summarized from the following technical reports, included as appendices to this IS: Biological Resources Assessment (BRA), dated August 2014 (AES, 2014a; Appendix D); Biological Assessment and Essential Fish Habitat Assessment (BA/EFHA), dated August 2014 (AES, 2014b; Appendix E); Wetland Delineation Report, dated August 2014 (AES, 2014c; Appendix F); California Red-Legged Frog Site Assessment, dated August 2014 (AES, 2014d; Appendix G); and Arborist Report, dated August 2014 (AES, 2014e; Appendix H).

4.5.1 ENVIRONMENTAL CHECKLIST

<table>
<thead>
<tr>
<th>BIOLOGICAL RESOURCES</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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</thead>
<tbody>
<tr>
<td>Would the project:</td>
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<tr>
<td>a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?</td>
<td>☐</td>
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<tr>
<td>b) Have a substantial adverse effect on any riparian habitat or sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife USFWS?</td>
<td>☐</td>
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<tr>
<td>c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?</td>
<td>☐</td>
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<tr>
<td>d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native residents or migratory wildlife corridors or impede the use of native wildlife nursery sites?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
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<tr>
<td>e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?</td>
<td>☐</td>
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</table>
BIOLOGICAL RESOURCES

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<tr>
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<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>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?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
</tbody>
</table>

4.5.2 SETTING

Regulatory Context

Wetlands and Waters

The U.S. Army Corps of Engineers (USACE) has primary federal responsibility for administering regulations that concern waters of the U.S. (including wetlands), under Section 404 of the Clean Water Act (CWA). Section 404 of the CWA regulates the discharge of dredged or fill material into waters of the U.S. The USACE requires that a permit be obtained if a project proposes the placement of structures within, over, or under navigable waters and/or discharging dredged or fill material into waters below the ordinary high water mark (OHWM). The USACE has established a series of nationwide permits (NWP) that authorize certain activities in waters of the U.S.

A Section 401 Water Quality Certification Permit is required in order to comply with CWA Sections 301, 302, 303, 306, and 307 and has been delegated by USEPA to the Regional Water Quality Control Board (RWQCB). Anyone that proposes to conduct a project that may result in a discharge to U.S. surface waters and/or “waters of the state” including wetlands (all types) year round and seasonal streams, lakes, and all other surface waters would require a federal permit.

At a minimum, any beneficial uses lost must be replaced by a mitigation project of at least equal function, value, and area. Waste Discharge Requirements Permits also required pursuant to California Water Code Section 13260 for any persons discharging or proposing to discharge waste, including dredge/fill, that could affect the quality of the waters of the state. The RWQCB addresses both the federal and State requirements in the issuance of a discharge permit.

Federal Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) implement the federal Endangered Species Act (FESA) of 1973 (16 USC Section 1531 et seq.). Under FESA, threatened and endangered species on the federal list and their habitats (50 CFR Subsection 17.11, 17.12) are protected from “take” (i.e., activities that harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect) as well as any attempt to engage in any such conduct, unless a Section 10 Permit is granted to an individual or a Section 7 consultation and a Biological Opinion with incidental take provisions are rendered from the lead federal agency.
Pursuant to the requirements of FESA, an agency reviewing a Proposed Project within its jurisdiction must determine whether any federally listed species may be present within the project site and vicinity and determine whether the Proposed Project will have a potentially significant impact upon such species. Under FESA, habitat loss is considered to be an impact to the species. The agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under the FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC Section 1536[3], [4]). Therefore, project-related impacts to these species, or their habitats, would be considered significant and require mitigation.

Under the FESA, critical habitat may be designated by the Secretary of the Interior for any listed species. The term "critical habitat" for a threatened or endangered species refers to the following: specific areas within the geographical range of the species at the time it is listed that contain suitable habitat for the species, which may require special management considerations or protection; and specific areas outside the geographical range of the species at the time it is listed that contain suitable habitat for the species and is determined to be essential for the conservation of the species.

Under Section 7 of the FESA, all federal agencies (including the USFWS and NMFS) are required to ensure that any action they authorize, fund, or carry out will not likely jeopardize the continued existence of a listed species or modify their critical habitat.

**Migratory Bird Treaty Act**

Most bird species, (especially those that are breeding, migrating, or of limited distribution) are protected under federal and/or State regulations. Under the Migratory Bird Treaty Act of 1918 (16 USC Subsection 703-712), migratory bird species, their nests, and their eggs are protected from injury or death, and any project-related disturbances during the nesting cycle. As such, project-related disturbances must be reduced or eliminated during the nesting cycle.

**California Fish and Game Code Sections 1600-1616**

California Fish and Game Code Sections 1600-1616 regulate impacts to State waters and stream and lake beds. Section 1602 requires notification before beginning any activity that may obstruct or divert the natural flow of a river, stream, or lake; change or use any material from the bed, channel, or bank of a river, stream, or lake; or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake.

California Fish and Game Code Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the state. Notification to the California Department of Fish and Wildlife (CDFW) will be required prior to installation of the proposed outfall. The Applicant and the CDFW must enter into an agreement prior to such any action which will result in such an impact.

**California Endangered Species Act**

The California Endangered Species Act (CESA) prohibits the take of State-listed threatened and endangered species. Under CESA, state agencies are required to consult with the CDFW when preparing CEQA documents. Under CESA, the CDFW is responsible for maintaining a list of rare,
threatened, and endangered species designated under state law (California Fish and Game Code 2070-2079). Project-related impacts to species on the CESA's rare, threatened, and endangered list would be considered significant and require mitigation.

The CDFW can authorize take if an incidental take permit is issued by the Secretary of the Interior of Commerce in compliance with the FESA, or if the director of the CDFW issues a permit under Section 2080 in those cases where it is demonstrated that the impacts are minimized and mitigated.

**City of Shasta Lake General Plan (1999) and Amendments**

The City of Shasta Lake General Plan (General Plan) seeks to conserve and manage significant fish, wildlife and vegetation resources in addition to surface and groundwater resources.

The following General Plan guiding and implementation policies associated with biological resources are applicable to the Proposed Project.

**Guiding Policies**

W-a This City shall maintain standards for erosion and sediment control plans for development.

W-b Septic systems, waste disposal sites, and other sources of hazardous or polluting materials shall be designed to prevent contamination to rivers, creeks, streams, reservoirs, or the groundwater basin in accordance with standards accepted by or imposed by the City, Shasta County Environmental Health Division and the State Regional Water Quality Control Board.

FW-b Projects that may impact rare, threatened or endangered plant or animal species, as officially designated by federal and State resource agencies, shall be designed or conditioned to avoid significant adverse impacts on those species.

**City of Shasta Lake Municipal Code (Chapter 12.36: Tree Conservation)**

The following are the relevant prohibitions, exemptions, and conservation and replacement policies identified within the City of Shasta Lake Municipal Code pertaining to tree conservation.

**Section 12.36.040 Prohibition of Tree Removal**

Any tree which qualifies as a protected tree shall not be removed from a property or damaged except provided for in Section 12.36.050 (Exemptions), or as provided for in Section 12.36.060 (Tree conservation or replacement).

The City of Shasta Lake defines a “protected tree” as:

1. Any living tree, except digger pine or gray pine (*Pinus sabiniana*), having at least one trunk of ten inches or more diameter at breast height (DBH); or,
2. A tree that is required to be preserved under discretionary project approval or under a site development tree plan that is approved administratively by the director.
Section 12.36.050 Exemptions

The removal of a protected tree is allowable and exempt from the requirements of this chapter under the following circumstances:

G. Removal of trees on property owned by the federal government, the state of California, the County of Shasta, the City of Shasta Lake, or any school or special district.

Methodology

Preliminary Data Gathering and Literature Review

Prior to conducting the biological surveys, Analytical Environmental Services (AES) obtained biological information for the study area from the following sources:

- USFWS list, updated April 9, 2014, of federally listed special-status species with the potential to occur on or be affected by projects on the Shasta Dam, CA quad (Attachment 1 of Appendix D);
- California Native Plant Society (CNPS) query, dated April 9, 2014, of State and federally listed special-status species known to occur on the Shasta Dam quad and eight surrounding quads (Schell Mtn, Bohemotash Mountain, O’Brien, Whiskey Town, Project City, Igo, Redding, and Enterprise quads) (Attachment 1 of Appendix D);
- California Natural Diversity Database (CNDDB) query, dated April 9, 2014, of State and federally listed special-status species known to occur on the Shasta Dam quad and eight surrounding quads (Schell Mtn, Bohemotash Mountain, O’Brien, Whiskey Town, Project City, Igo, Redding, and Enterprise quads) (Attachment 1 of Appendix D) (CDFW, 2003);
- USFWS map (2014) of federally listed species with designated critical habitat in the vicinity of the study area; and
- National Wetlands Inventory map of wetland features in the vicinity of the study area.


Field Surveys

The biological study area for this IS includes the WWTF and associated ponds and reservoirs as well as the reach of Churn Creek which runs east of the property with specific emphases on the area around discharge point 001 and downstream reach as described in the separate BA/EFHA Report (AES, 2014b; Appendix E).

General biological surveys, botanical inventory survey, arborist inventory, essential fish habitat assessment, and a California red-legged frog (Rana draytonii) site assessment were conducted within the study area between March 27 and May 28, 2014. General biological surveys were conducted on March 27 and May 2, 2014. The botanical inventory survey, arborist survey, and wetland delineation were conducted within the study area on May 2, 2014. The essential fish habitat assessment and a California red-legged frog site assessment were conducted on March 27, and May 27-28, 2014.
The botanical surveys consisted of conducting a floristic inventory, in accordance with CDFW’s (2009) plant survey protocols. The general biological surveys consisted of evaluating biological communities and documenting potential habitat for special status species with the potential to occur within the study area.

The habitat types were classified using the Manual of California Vegetation, Second Edition (MCV; Sawyer et al, 2009) and were modified based on existing habitat conditions within the study area. Wetlands and other aquatic habitats within the study area were identified based on the wetland features mapped on the NWI map (USFWS, 2007).

Wetland features were mapped within the WWTF site using criteria defined in the 1987 Wetland Delineation Manual by the USACE and the Regional Supplement for the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (USFWS, 2008).

**Environmental Setting**

**Habitat Types Within and Adjacent to the Project Site**

The study area is currently developed with the existing City of Shasta Lake WWTF facilities and is composed of the following terrestrial land cover types including: ruderal/developed areas; riparian habitat; oak woodland habitat; and disturbed oak savanna habitat. Aquatic habitats within and adjacent to the study area consist of the treatment basins, reservoirs, and manmade ditches associated with the WWTF facilities, irrigated wetland-like features associated with the WWTF operations, and a perennial stream, Churn Creek. Terrestrial and aquatic habitat types are shown in Figure 8 and are discussed in more detail in the BRA included as Appendix D to this IS.

The majority of the study area consists of disturbed habitat and does not provide high wildlife value due to nearby traffic on surrounding roadways and the high level of human activity associated with proximity to urban areas and the ongoing activities at the WWTF. The majority of the project area lacks the quality of habitat needed to support diverse wildlife populations and their use; however, wildlife species that are tolerant of high levels of human disturbance may utilize the study area for foraging and cover.

**Special Status Species**

For the purposes of this assessment, special status has been defined to include those species that are:

- Listed as endangered or threatened under the FESA (or formally proposed for, or candidates for, listing);
- Listed as endangered or threatened under the CESA (or proposed for listing);
- Designated as endangered or rare, pursuant to California Fish and Game Code (§1901);
- Designated as fully protected, pursuant to California Fish and Game Code (§3511, §4700, or §5050);
- Designated as species of concern by the CDFW (CEQA Guidelines Section 15380); or,
- Defined as rare or endangered under CEQA.
Habitat Types

**Figure 8**

Habitat Types

**LEGEND**

<table>
<thead>
<tr>
<th>Habitat Type</th>
<th>Area</th>
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</thead>
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<tr>
<td>Disturbed Oak Savanna</td>
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<tr>
<td>Oak Woodland</td>
<td>2.22 ac</td>
</tr>
<tr>
<td>Riparian</td>
<td>3.54 ac</td>
</tr>
<tr>
<td>Ruderal/Developed</td>
<td>59.98 ac</td>
</tr>
</tbody>
</table>

**SOURCE:** Microsoft aerial photograph, 6/12/2010; AES, 2014
4.0 Environmental Analysis (Checklist)

The BRA, included as Appendix D, summarizes the regionally occurring special status species identified on the USFWS, CNPS, and the CNDDB lists and provides a rationale as to whether the species have the potential to occur within the study area. Presence of the species or their habitat was evaluated during the biological surveys. Species without the potential to occur in the vicinity of the study area are not discussed further in this section. Special status species with the potential to occur within the study area are discussed below, including distances from the study area to reported CNDDB occurrences (CDFW, 2003).

Fish

Central Valley steelhead (*Oncorhynchus mykiss irideus*) and Central Valley fall/late fall Chinook salmon (*Oncorhynchus tshawytscha*) have the potential to occur in Churn Creek in the vicinity of the study area and are discussed below. Sacramento River winter-run and Central Valley spring-run Chinook Salmon may utilize a portion of the Action Area including the Sacramento River at the mouth of Churn Creek and the lower reaches of Churn Creek as a non-natal rearing habitat (North State Resources, Inc. 2007). Specific information pertaining to each of these species and the suitability of potential habitat in Churn Creek the vicinity of the study area is presented and analyzed in the separate BA/EFHA (AES, 2014b; Appendix E).

Central Valley Steelhead (*Oncorhynchus mykiss*) Distinct Population Segment

Federal Status – Threatened
State Status – None

The Central Valley steelhead Distinct Population Segment (DPS) emerge as juveniles and return to spawn as adults in the freshwater streams where they were born. This DPS maintains a strict winter run strategy where migration from the ocean initiates due to fall and winter rainfall and the resulting significant increases in stream flows. After emergence, juveniles remain in the freshwater environment for one to two years prior to migrating to the Pacific Ocean.

When sexual maturity is reached, they migrate back to their natal streams to spawn. Steelhead do not usually die immediately after spawning, and are capable of spawning several times throughout their lifetime (Moyle, 2002). The range of this DPS includes all naturally spawned populations of steelhead in the Sacramento and San Joaquin Rivers and their tributaries. The range includes portions of Amador, Alameda, Butte, Calaveras, Contra Costa, Colusa, Glenn, Mariposa, Merced, Nevada, Placer, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tuolumne, Yolo, and Yuba counties (CDFW, 2003).

Rainbow trout and anadromous steelhead represent two morphologies exhibited by one species, and are distinguished by the parr-smolt transformation and the subsequent fresh-water transition exhibited by salt water adapted steelhead. Churn Creek provides habitat which is at least seasonally suitable for resident rainbow trout.

Steelhead trout have additional habitat needs relative to residents in that the anadromous morphology utilizes larger patches of cobble for spawning, and requires a minimum passage depth of 0.7 foot compared to a minimum passage for mature non-anadromous fresh-water resident trout of 0.4 foot (Bjorn
4.0 Environmental Analysis (Checklist)

& Riser, 1991; R2 Resource Consultants, 2008). For optimum performance by salmonids including trout, dissolved oxygen (DO) should be greater than 6.5-7 mg/L, and must exceed 5 mg/L before upstream migration will occur (Bjorn & Riser, 1991).

Based on data provided by the BIOS viewer, when assessing Churn Creek as a linear feature, steelhead have the potential to occur throughout this creek, including upstream of the WWTF. The CNDDDB documents distribution of actual occurrences of steelhead trout. Based on CNDDDB occurrences, the range known to be used by steelhead extends from the confluence of Churn Creek with the Sacramento River to just east of I-5 near the Oasis exit, a location over two miles downstream of the existing/proposed upgrade of the WWTF discharge. The CNDDDB description indicates that this record represents a population of several thousand individuals as of 2010. This species was observed as part of ongoing hatchery release monitoring based on angler surveys conducted at the since decommissioned Red-Bluff Diversion Dam. Steelhead have the potential to access Churn Creek for spawning during winter months when spawning would normally occur, but are restricted from using the creek in summer due to low stream depth and excessive temperature.

Based on desktop evaluation and the site visit, suitable, if marginal, habitat for Central Valley steelhead exists at the confluence of Churn Creek and the Sacramento River and the lower Churn Creek reaches above the Sacramento River, but below the reaches adjacent to the project site. The reach of Churn Creek adjacent to the WWTF contains marginal habitat at best, dries out in the summer months, and is characterized by high, borderline water temperatures (exceeding 20° C) for up to 6 months or more per year.

Non-anadromous rainbow trout may seasonally utilize the creek adjacent to the project site. These resident rainbow trout can thrive in shallower water due to their diminished size and habitat requirements. The more general habitat needs of resident trout would extend the amount of time that this life strategy could remain within the creek. However, due to seasonal draining, disconnected reaches of the creek, and fluctuating water temperature, survival of resident trout would be greatly diminished and continued establishment of this population where feasible likely depends highly on recruitment from the Sacramento River.

Central Valley Fall and Late Fall Chinook Salmon (Oncorhynchus tshawytscha)
Federal Status – Species of Special Concern
State Status – Species of Special Concern (Imperiled)

Central Valley fall/late fall run Chinook salmon spawn in large deep pools in tributaries with moderate velocities. Chinook spawn in patches of medium to large sized cobble primarily in riffles and pool tails. Juveniles spend five to nine months in the river and estuary before entering the ocean (Moyle, 2002). Ocean growth takes one to four years. Returning fish spawn in the fall, and guard their nests. Unlike steelhead, Chinook only have one breeding season.

Adult Chinook are documented to most frequently utilize spawning areas with a passage depth of 0.9 foot or greater. Salmon typically migrate upstream when temperatures are between 3 and 20 degrees Celsius, with diminished survival or success at higher temperatures within this range. For optimum
performance by salmonids, DO should be greater than 6.5-7 mg/L, and must exceed 5 mg/L before upstream migration will occur (Bjorn & Resier, 1991).

Churn Creek is not specifically listed within the BIOS CNDDB documented distribution of Chinook (BIOS viewer). However, Churn Creek and the Sacramento River are identified as being essential fish habitat (EFH) for Chinook salmon in the Pacific Coast Salmon Fishery Management Plan (PFMC, 1999). Additionally, Churn Creek has been reported in the past to contain suitable habitat which may potentially support fall and late fall Chinook salmon (Graham Matthews, 2008).

Based on desktop evaluation and the site visit, suitable, if marginal, habitat for these runs exists at the confluence of Churn Creek and the Sacramento River. The reach of Churn Creek adjacent to the WWTF contains marginal habitat at best, dries out in the summer months, and is characterized by high, borderline water temperatures (exceeding 20° C) for possibly 6 months a year.

**Reptiles**

**Western pond turtle (Emys marmorata; WPT)**  
Federal Status – None  
State Status – Species of Concern

Western pond turtles (WPT) require terrestrial and aquatic habitats. They are found along ponds, marshes, rivers, streams, and irrigation ditches with abundant aquatic vegetation. WPT requires aquatic habitats with suitable basking sites. Nest sites are most often characterized as having gentle slopes less than 15 percent with little vegetation or sandy banks. WPT are found from zero to 1,430 meters above sea level (Stebbins, 2003).

WPT prefers pools with rocky or muddy bottoms in woodland, forest, or grassland areas. During summer droughts, WPT aestivate in burrows in soft bottom mud (The Center for North American Herpetology, 2014). The period of identification for WPT is March through October. WPT are known throughout California west of the Sierra-Cascade crest, and are absent from desert regions except along the Mohave River and its tributaries (Stebbins, 2003).

There are five CNDDB records for western pond turtles within five miles of the study area. The nearest records are located approximately 1.3 miles northeast of the study area from March 29, 2007 (CNDDB occurrence number: 656). The record states that the occurrence is presumed extant. The study area provides moderately suitable terrestrial habitat within the riparian woodland and oak woodland habitats in the vicinity of aquatic resources in the study area. The study area provides marginally suitable habitat for the western pond turtle within the man-made aquatic resources including the cobble-reinforced outflow channel, the reservoirs, and Churn Creek.

WPT are not likely to occur in the man-made reservoirs due to the absence of significant aquatic vegetation. The reservoirs also experience regular changes in volume based on the storage needs and releases performed under standard WWTF operations, which yields the reservoirs further unsuitable for use by WPT. Churn Creek provides potential habitat for WPT due to its dense, emergent vegetation, available basking sites, and perennial flows.
WPT were not observed during the surveys conducted between March and May of 2014. Due to the ruderal developed characteristics of the aquatic resources found on the subject property, the site only provides marginally suitable habitat. Therefore, it is possible, but unlikely for WPT to occur in the vicinity of Churn Creek, including the portion of Churn Creek that runs adjacent to the study area.

**Migratory Birds and Other Birds of Prey**

California Fish and Game Code 3503.5 protects all birds in the orders Falconiformes and Strigiformes (collectively known as birds of prey). Migratory birds and other birds of prey have the potential to nest in the shrubs and trees within the disturbed, riparian, and oak woodland habitats of the study area. As discussed previously, several birds were observed within the study area during biological surveys including black phoebe (*Sayornis nigricans*), killdeer (*Charadrius vociferous*), American crow (*Corvus brachyrhynchos*), house sparrow (*Passer domesticus*), and mourning dove (*Zenaida macroura*). Although suitable habitat is present, no migratory birds or birds of prey that would be protected by California Fish and Game Code 3503.5 were observed within or in the vicinity of the study area during biological surveys conducted by AES.

### 4.5.3 DISCUSSION OF IMPACTS

**Question A**

*Would the project: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

*Less than Significant with Mitigation.* The majority of the project site is composed of ruderal/developed and disturbed areas which do not provide highly suitable habitat for federal and State listed species. Species with the potential to be impacted by the Proposed Project are discussed below.

**Plants**

A focused botanical survey was conducted within the study area during the appropriate bloom period for all special status plant species with the potential to occur in the study area. No special status plants were observed during the focused botanical surveys of the study area; therefore, special status plants do not occur in the study area and would not be impacted by construction or operation of the Proposed Project.

**Fish - Central Valley Steelhead, Chinook Salmon, and Critical Habitat**

As described in the BA/EFHA, included as Appendix E to this IS, suitable, if marginal, habitat for Central Valley steelhead and Chinook Salmon exists at the confluence of Churn Creek and the Sacramento River and the lower Churn Creek reaches above the Sacramento River, but below the reaches adjacent to the proposed Project. The Redding hydrologic unit (hu), which includes a segment of Churn Creek downstream of the WWTF, and the Sacramento River are designated as critical habitat for Central Valley Steelhead and Central Valley Spring Run Chinook (70 Federal Register 52488 – 52627; September 2, 2005).
The reach of Churn Creek adjacent to the WWTF contains marginal habitat for Central Valley Steelhead and Chinook Salmon at best, dries out in the summer months, and is characterized by high, borderline water temperatures (exceeding 20° C) for up to 6 months or more per year. The closest known occurrence of Central Valley steelhead in Churn Creek was recorded in a section of the creek over two miles south (downstream) of the project site.

Non-anadromous rainbow trout may seasonally utilize the creek adjacent to the project site. These resident rainbow trout can thrive in shallower water due to their diminished size and habitat requirements. The more general habitat needs of resident trout would extend the amount of time that this life strategy could remain within the creek. However, due to seasonal draining, disconnected reaches of the creek, and fluctuating water temperature, survival of resident trout would be greatly diminished and continued establishment of this population where feasible likely depends highly on recruitment from the Sacramento River.

**Construction**

Construction activities have the potential to impact fish habitat along Churn Creek adjacent to the WWTF site. As shown in Figure 4, with the exception of the improvements to the effluent pipeline and outfall structure in the riparian area of Churn Creek, the majority of proposed improvements would take place within the existing development footprint of the WWTF.

Construction-related earth disturbing activities associated with the Proposed Project would involve land clearing and soil disturbances, which could leave disturbed areas and stockpiled soils exposed to winter rainfall and could increase erosion and sediment discharge into surface water features. In addition, construction equipment and materials have the potential to leak, thereby discharging additional pollutants.

**Mitigation Measure BIO-1** in Section 4.5.4 requires that clearing and grading activities within the riparian area be minimized and that the City and their appointed construction contractor shall comply with the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (General Permit).

This would include preparation of a Stormwater Pollution Prevention Plan (SWPPP) to ensure that best management practices (BMPs), including, but not limited to, those listed in **Mitigation Measure HYD-1** in Section 4.10.4, are implemented and illicit discharges of sediment or other non-visible pollutants to Churn Creek are eliminated. Therefore, implementation of **Mitigation Measure BIO-1** described in Section 4.5.4 will ensure any potential effects to fish and fish habitat from temporary construction activities are reduced to less than significant.

**Operation**

As described in Section 3.0, the Proposed Project would result in the production of higher-quality effluent than historically and currently produced, which would be discharged into Churn Creek year-round under a revised direct discharge NPDES Permit with no dilution requirements.

Specifically, the upgraded WWTF would be achieving stricter limitations on ammonia, copper, dichlorobromomethane, nitrate, nitrite, pH, and zinc (see Table 4 in Appendix A), as required by the
2014 NPDES Permit (Appendix A). The limitations in the discharge permit have been developed to be protective of the beneficial uses of Churn Creek and the Sacramento River in accordance with Basin Plan objectives, which include cold freshwater habitat (COLD); migration of aquatic organisms, warm and cold (MIGR); spawning, reproduction, and/or early development, warm and cold (SPWN); and wildlife habitat (WILD) (Attachment F of Appendix A).

This higher quality effluent would replace the effluent currently being discharged to the creek. The increase in flows within Churn Creek as a result of the year-round discharge of the higher-quality effluent could potentially assist in the outmigration of entrapped fish during the summer months when natural flows in the creek are low.

As discussed in detail in the BA/EFHA, operation of the Proposed Project would not result in significant adverse effects to the water quality, stream channel morphology, or stream vegetation of Churn Creek or the Sacramento River.

Given the conditions discussed above, with the implementation of Mitigation Measure BIO-1 listed in Section 4.5.4, including the requirement to consult with NMFS, the Proposed Project would have a less-than-significant impact on fish and fish habitat, including Central Valley steelhead and Chinook Salmon runs.

**Foothill yellow-legged frog and California red-legged frog**

Foothill yellow-legged frog and California red-legged frog have a low potential to occur in the project area in the vicinity of Churn Creek. As discussed in more detail in the BRA (AES, 2014a; Appendix D) and California Red-Legged Frog Site Assessment (AES, 2014d; Appendix G), due to the artificial characteristics and disturbed nature of aquatic resources found within the study area and the marginal habitat quality of these resources, combined with the lack of documented historic population use, it is determined that the study area would not support Foothill yellow-legged frog and California red-legged frog, and no additional studies or mitigation is warranted.

**Western Pond Turtle**

Western pond turtle has the potential to occur in the project area in the vicinity of Churn Creek. Under the Proposed Project, construction activities within the vicinity of Churn Creek have the potential to adversely affect riparian habitat for the western pond turtle. Implementation of Mitigation Measure BIO-2 included in Section 4.5.4 below, which includes preconstruction surveys, environmental awareness training, and presence of a biological monitor during construction activities associated with upland and breeding habitat for western pond turtles, would reduce potential impacts to this species.

**Migratory Birds and Birds of Prey**

Construction activities in the vicinity of active nests and any trees anticipated for removal within the oak woodland and riparian vegetation could impact nesting habitat for migratory birds and other birds of prey protected under the Migratory Bird Treaty Act and California Fish and Game Code sections 3503, 3503.5, 3513, and 3511.
Removal of trees during the nesting season could result in impacts to birds if active nests are present on any of the trees anticipated for removal. In addition, potential disruption of nesting migratory birds and other birds of prey during construction could result in nest abandonment or mortality should construction occur between March 1 and September 15. Likewise, increased human activity and traffic, elevated noise levels, and operation of machinery could also impact birds if their nests are located within the vicinity of construction areas.

Implementation of Mitigation Measure BIO-3 provided in Section 4.5.4, which includes preconstruction surveys and establishment of buffer zones around active nests, would reduce potential impacts to migratory birds and other birds of prey.

**Question B**

Would the project: Have a substantial adverse effect on any riparian habitat or sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife USFWS?

Less than Significant with Mitigation. Table 4.5-1 summarizes the habitat types that would be permanently and/or temporarily affected by construction activities associated with the Proposed Project. Sensitive natural communities within the project site include Churn Creek, riparian habitat, disturbed oak savanna, and oak woodland. The majority of construction activities associated with the Proposed Project would take place within the previously disturbed footprint of the WWTF.

<table>
<thead>
<tr>
<th>TABLE 4.5-1</th>
<th>HABITAT IMPACT ACREAGES</th>
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<tr>
<td><strong>Habitat Type</strong></td>
<td><strong>Total Acreage</strong></td>
</tr>
<tr>
<td><strong>Terrestrial Habitats</strong></td>
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</tr>
<tr>
<td>Oak Woodland</td>
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</tr>
<tr>
<td>Riparian</td>
<td>3.54</td>
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<tr>
<td>Ruderal/Developed</td>
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<tr>
<td><strong>Aquatic Habitats</strong></td>
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</tr>
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</tr>
<tr>
<td>Outlet Channel</td>
<td>0.35</td>
</tr>
<tr>
<td>Man-Made Ditch</td>
<td>0.40</td>
</tr>
</tbody>
</table>

Notes:

1. Based on a 25 foot buffer on either side of the 24-inch diameter construction trench.
2. Based on a 20 foot buffer surrounding the proposed outfall. Assumes outfall structure will occupy a 10 x 10 foot footprint.

As the ruderal/developed areas within the WWTF do not provide quality habitat for native plants and wildlife that USFWS and CDFW consider sensitive, construction activities in these areas would result in no impact. While use of sprayfields would cease as a result of the Proposed Project, the irrigation infrastructure would be abandoned in place, so there would be no potential effects to the disturbed oak savanna habitat type. The elimination of irrigation activities would allow this habitat type to return to its more natural state.
Construction of the effluent pipeline and outfall would result in temporary impacts to riparian and oak woodland habitats. The installation of the effluent discharge pipeline from the final manhole at the northern edge of the WWTF, through the riparian and oak woodland habitats, to the new proposed outfall would require vegetation clearing and may require the removal of trees. The alignment of the effluent discharge pipeline may be adjusted slightly to accommodate the final location of the proposed outfall and/or avoid tree removal.

Potential effects to trees within the oak woodland habitat type are discussed further under Question E and potential effects to riparian habitat are discussed further under Question C. As stated therein, Mitigation Measure BIO-1 requires that temporary effects to riparian areas be minimized and conditions be fully restored, and Mitigation Measure BIO-4 requires that tree removal be minimized. Therefore, construction activities would be implemented in a manner which would minimize the potential for temporary impacts to oak woodland and riparian habitats. This impact is considered less than significant with mitigation.

**Question C**

*Would the project: Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*

*Less than Significant with Mitigation.* A wetland delineation was conducted for the study area and has been submitted to the USACE for verification (AES, 2014c; Appendix F). The majority of construction activities associated with the Proposed Project will take place within the previously disturbed footprint of the WWTF. While use of sprayfields would cease as a result of the Proposed Project, the irrigation infrastructure would be abandoned in place, so there would be no potential effects to the unnamed tributaries that occur in the southern portion of the study area. Similarly, the 400 af seasonal storage reservoir would be abandoned in place.

However, construction of the new effluent discharge pipeline and outfall structure will result in impacts to riparian habitat and impacts within the bed bank and channel of Churn Creek, a jurisdictional waters of the U.S. As described in Section 3.5, prior to construction, the City shall obtain a permit from the USACE in accordance with Section 404 of the CWA, a 401 Water Quality Certification from the CVRWQCB and a Section 1602 Streambed Alteration Agreement (SAA) from CDFW. All conditions of the permits shall be adhered to.

Final mitigation requirements and habitat restoration/replacement ratios will be identified as a condition of the USACE 404 Permit and SAA obtained from the CDFW. At minimum, as a requirement of permits, the City would be required to restore the riparian vegetation impacted during construction activities at a 1:1 ratio (meaning that one acre will be restored for every one acre impacted).

The City shall comply with the State’s NPDES General Permit issued by the RWQCB and prepare a SWPPP. Implementation of the SWPPP will ensure that measures are in place to prevent water quality effects in Churn Creek. Impacts to federally protected wetlands and waters of the U.S. resulting from the
Proposed Project are considered less than significant with mitigation incorporated. Applicable mitigation measures are provided in Section 4.5.4 below.

**Question D**

*Would the project: Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native residents or migratory wildlife corridors or impede the use of native wildlife nursery sites?*

*Less than Significant.* The Proposed Project would result in the production of higher-quality effluent than historically and currently produced, which would be discharged into Churn Creek year-round under a direct discharge NPDES Permit with no dilution requirements. The increase in flows within Churn Creek as a result of the year-round discharge of the higher-quality effluent could potentially assist in the outmigration of entrapped fish during the summer months when natural flows in the creek are low.

As discussed in detail in the BA/EFHA, the Proposed Project would not result in significant adverse effects to the water quality, stream channel morphology, or stream vegetation of Churn Creek or the Sacramento River. Therefore, the Proposed Project would not result in impacts to 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.

**Question E**

*Would the project: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

*Less than Significant with Mitigation.* The City of Shasta Lake General Plan has policies in place for the protection of natural resources and habitats. These policies facilitate the preservation of habitat for fish and wildlife, creek corridors, riparian areas, wetlands, migratory corridors, and open space. Shasta Lake Municipal Code Chapter 12.36 (Tree Conservation) includes policies regarding the removal and replacement of protected trees, defined as trees with a diameter at breast height of 10 inches or more.

Trees in the vicinity of Churn Creek that have the potential to be impacted by the Proposed Project have been inventoried and are discussed in further detail in the separate Arborist Report (AES, 2014e; Appendix H). It was determined that a total of 43 trees within the survey area have a DBH of 10 inches or greater, and therefore qualify as protected trees by the City of Shasta Lake Tree Ordinance definition. While the majority of construction activities will take place within the existing footprint of the WWTF, activities within the riparian area of Churn Creek associated with installation of the 24 inch effluent pipeline and outfall may require vegetation and tree removal.

The removal of a protected tree is allowable and exempt from the requirements of the City of Shasta Lake Tree Ordinance if it occurs on property owned by the federal government, the State of California, the County of Shasta, the City of Shasta Lake, or any school or special district. Therefore, removal of any protected trees on the City of Shasta Lake-owned WWTF property is allowable and would not conflict with the Tree Ordinance; however, in accordance with the City’s policies to facilitate the preservation of habitat...
for fish and wildlife, creek corridors, and riparian areas, it is the goal of the City to choose an alignment which will minimize the removal of protected trees to the extent possible. **Mitigation Measures BIO-1 through BIO-4** required in **Section 4.5.4** would minimize impacts to biological resources, including sensitive habitats, ensuring that the Proposed Project does not conflict within the City’s policies.

**Question F**

*Would the project: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local regional, or state habitat conservation plan?*

*No Impact.* No habitat conservation plans, natural community conservation plans or similar plans apply to the project site. The Proposed Project would not result in impacts to any adopted habitat conservation plans or natural community conservation plans.

**Cumulative Impacts**

*Less than Significant with Mitigation.* Cumulative projects in the vicinity of the project site, including growth resulting from build-out of the City’s General Plan, are anticipated to permanently remove plant and wildlife resources, which could affect special status species and their habitat, nesting and foraging habitat for resident and migratory birds, and/or local policies or ordinances protecting biological resources.

As development in the City continues, sensitive plant and wildlife species native to the region and their habitat, including those species listed under CESA and FESA and those individuals identified by state and Federal resources agencies as species of concern, fully protected, or sensitive will be lost through conversion of existing open space to urban development. *Although mobile species may have the ability to adapt to modifications to their environment by relocating, less mobile species may be locally extirpated.*

With continued conversion of natural habitat to human use, the availability and accessibility of remaining foraging and natural habitats in this ecosystem would dwindle and those remaining natural areas may not be able to support additional plant or animal populations above their current carrying capacities. The conversion of plant and wildlife habitat on a regional level as a result of cumulative development would potentially result in a regional significant cumulative impact on special status species and their habitats.

Construction of the Proposed Project would not contribute to a loss of regional biological resources through the incremental conversion of habitat for special status species to human use because ground disturbance would be temporary and thus would not result in permanent modification of habitat for regional wildlife.

Although the effects of the Proposed Project are temporary in nature, and the project would not contribute to a significant level of cumulative, direct, or indirect effects to sensitive or special status plant or fish and wildlife species and their habitat, migratory birds, or conflict with local plans or policies protecting biological resources, the City would implement mitigation measures specifically designed to avoid, reduce, or mitigate potential impacts to special status species and their habitat. With these measures,
the project’s contribution to cumulative regional impacts to biological resources would be less than significant. Therefore, after mitigation, impacts would be considered less than significant.

4.5.4 MITIGATION MEASURES

BIO-1: The following measures shall be implemented to avoid potential short-term adverse effects to waters of the U.S., riparian habitat, and special status fish species during construction activities associated with the Proposed Project:

- Minimize clearing and grading and cut-and-fill activities within the riparian area. The disturbance or removal of vegetation shall not exceed the minimum necessary to complete construction activities. Precautions shall be taken to avoid other damage to vegetation by people or equipment, including staking the riparian area with orange fencing to avoid unnecessary disturbance. The disturbed portions of the stream channel within the normal high water mark of the stream shall be restored to as near their original conditions as possible. Re-vegetation shall be completed as soon as possible after construction activities in those areas cease.

- The City shall obtain a Section 404 CWA permit from the Corps, a Section 401 Water Quality Certification from the RWQCB, and a 1600 SAA from the CDFW for construction activities within Churn Creek. All permit conditions shall be implemented. Best Management Practices shall be implemented to ensure that no pollutants will be discharged into jurisdictional waters. Full restoration of the site would mitigate for the temporary impacts of construction.

- Consultation with NMFS for impacts to fish and essential fish habitat will be conducted in accordance with Section 7 of the FESA and Magnusson Stevenson’s Fisheries Act and any requirements resulting from that consultation will be adhered to.

- Implement Mitigation Measure HYD-1 to comply with the State’s NPDES General Permit through preparation and implementation of a site specific SWPPP.

BIO-2: The following measures shall be implemented to avoid or minimize adverse impacts to western pond turtle during construction activities associated with the Proposed Project:

- A qualified biologist shall conduct a preconstruction survey within 14 days prior to commencement of construction activities anticipated to occur within 100 feet from riparian vegetation surrounding Churn Creek. A report shall be submitted to the City to document the reports of the preconstruction survey.

- Prior to commencement of any groundbreaking activities, all construction personnel will receive training on identification of western pond turtle and procedures to be implemented in the event that western pond turtle is encountered during construction activities.

- Prior to commencement of daily construction activities within a 100-foot buffer of riparian vegetation surrounding Churn Creek, a qualified biologist will conduct two preconstruction
surveys for WPT. The first survey shall be conducted within 14 days prior to construction, and the second survey will be conducted within 24 hours prior to construction. If WPT is present, the qualified biologist will be allowed sufficient time to move the species from the work site before work activities begin.

- Because WPT may take refuge in cavity-like and den-like structures such as pipes and may enter stored pipes and become trapped, all construction pipes, culverts, or similar structures that are stored at a construction site for one or more overnight periods will be either securely capped prior to storage or thoroughly inspected for these animals before the pipe is subsequently buried, capped, or otherwise used or moved in any way.

- In the event that WPT enters a 100 foot buffer of on-going construction activities, a qualified biologist shall be contacted and construction activities shall be placed on hold until the WPT is confirmed to have left the project area or is relocated by a qualified biologist.

BIO-3: The following measures shall be implemented to avoid or minimize adverse impacts to nest sites for migratory birds and other birds of prey during construction activities associated with the Proposed Project:

- For vegetation removal and/or earth-disturbing activities occurring during the nesting season (February 1 through September 1), a qualified biologist should conduct pre-construction surveys of all potential nesting habitat for all migratory birds within 500 feet of construction activities. The qualified biologist shall document and submit the results of the preconstruction survey in a letter report to the City within 30 days following the survey. If no active nests are identified during the preconstruction survey, then no further mitigation is required provided construction commences within 14 days.

- If any active special status bird, migratory bird, or raptor nests are identified during the preconstruction survey within the study area, a no-disturbance buffer zone deemed appropriate to the species will be established around the nests to avoid disturbance or destruction of the nest.

The distance around the no-disturbance buffer will be determined by the biologist in coordination with CDFW and will depend on the level of noise or construction activity, the level of ambient noise in the vicinity of the nest, and line-of-sight between the nest and disturbance.

These buffers shall be no less than: 1) 500-foot no-disturbance buffer will be created around active raptor nests during the breeding season or until it is determined that all young have fledged, and 2) a 250-100-foot buffer zone will be created around the nests of other migratory or special status birds and all other birds that are protected by California Fish and Game Code 3503.

These buffer zones are consistent with CDFW avoidance guidelines and CDFW buffers required on other similar projects; however, they may be modified in coordination with CDFW based on existing conditions at the project site. A qualified biologist will monitor
nests weekly during construction to evaluate potential nesting disturbance by
color activities.

The biologist will delineate the buffer zone with construction tape or pin flags until the
young have fledged. Guidance from the CDFW will be requested if the nestlings within
the active nest appear disturbed. A report shall be prepared and submitted to the City
and CDFW following the fledging of the nestlings to document the results.

- If vegetation removal activities are delayed or suspended for more than two weeks after
  the pre-construction survey, the areas should be resurveyed.

**BIO-4:** The following mitigation measures shall be implemented to ensure preservation of the maximum
number of protected trees within the study area and replacement for oak trees lost due to
construction of the Proposed Project:

- Final design of the Proposed Project shall avoid impacts to oak trees to the maximum
  extent feasible.

- Before the start of any clearing, excavation, construction, or other work on the site, the
drip line of every tree designated for preservation shall be clearly delineated in the field.
The delineation markers shall remain in place for the duration of all work. A plan shall be
established for the removal and disposal of brush, earth, and other debris prior to
construction and submitted to the City for approval in order to avoid injury to any
protected tree which is to be saved.

- Where project construction will result in encroachment within the drip line of a protected
tree, the following measures shall be incorporated to allow the roots to obtain oxygen,
water, and nutrients.
  
  - To reduce the effects of trenching, excavation, and equipment use within the drip
    line of trees to be preserved, construction methods should avoid exposing roots
during hot, dry weather, and trenches should be backfilled as soon as possible
with soil and soaked with water the same day. If trenches must be left open, all
roots must be kept moist by wrapping them in peat moss and burlap.
  
  - No roots greater than 2 inches in diameter shall be cut without the approval of an
  Arborist.
  
  - Tunneling under roots is the approved alternative. Any approved excavation,
demolition, or extraction of material shall be performed with equipment that is
kept outside the drip line of preserved trees. Hand digging, hydraulic, or
pneumatic excavation are permitted methods for excavation within the drip line.

- No storage of materials or substances that may be harmful to trees shall occur within the
drip line of any protected tree.

- Tree removal should be avoided to the maximum extent feasible; however, in the event
that avoidance is infeasible, the following tree-planting standard shall be adhered to
consistent with Section 12.36.070 of the City of Shasta Lake Tree Protection Ordinance:
4.0 Environmental Analysis (Checklist)

- A minimum of two 15-gallon trees shall be planted for every one protected tree removed.
- In addition to the previous measure, three 15-gallon trees shall be planted for each protected tree removed that exceeds ten inches DBH.
- The species of any tree used for replacement pursuant to the Tree Protection Ordinance shall be suited to the City’s climate zone and be chosen with consideration of any site specific limitations. The use of native shade trees is preferred by not required. The replacement tree shall be planted in a manner that is recognized as a standard accepted practice unless a specific method is prescribed by an arborist.
4.6 CULTURAL RESOURCES

Information in this section is summarized from Cultural Resources Study prepared for the Proposed Project (AES, 2014f). The Cultural Resources Study is being used for consultation between the USEPA and the State Historic Preservation Officer pursuant to the requirements of Section 106 of the National Historic Preservation Act (NHPA; refer to Section 1.0 of this IS for a discussion of CEQA-Plus requirements related to the California Clean Water State Revolving Fund [CWSRF] Program). The Area of Potential Effects (APE) analyzed in the Cultural Resources Study encompassed all areas of ground disturbance related to the Proposed Project, including equipment and materials staging areas. Although no ground disturbance east of Churn Creek is anticipated to occur as part of the Proposed Project, a portion of the eastern bank is included within the Survey Area/APE to be conservative.

4.6.1 ENVIRONMENTAL CHECKLIST

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<th>CULTURAL RESOURCES</th>
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<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<td>b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?</td>
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<td>c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?</td>
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<td>d) Disturb any human remains, including those interred outside of formal cemeteries?</td>
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4.6.2 SETTING AND CULTURAL CONTEXT

Early and Middle Holocene

The cultural prehistory of central California spans more than 12,000 years. The earliest evidence for occupation of the region comes from archaeological assemblages attributed to the regional expression of the Fluted Point Tradition (FPT) and Western Stemmed Tradition. Commonly referred to as the Clovis culture, the FPT is generally associated with hunting of large, now extinct, megafauna such as mammoth, mastodon, sloth, camel, etc. In the far West, however, archaeological sites with FPT components suggest that these highly nomadic people were practicing a more broad-spectrum subsistence strategy.
The *Borax Lake Pattern*, also known as the *Early Archaic Period*, lasted from 8000 BP to 5000 BP and is recognized in the archaeological record by large lanceolate, corner-notched, and wide-stemmed projectile points. These points are made from local obsidians, basalts, and cherts. Other stone tools include large bladelet flakes, and unifacial stone tools. The most common milling equipment was in the form of manos (handstones) and metates (milling slabs).

The *Middle Archaic Period* lasted from 5000 BP to 3000 BP and is known as the *Squaw Creek Pattern* in the Upper Sacramento Valley/Redding area. This cultural period continued using manos and metates, but saw the introduction of the mortar and pestle. The stone tools of this time period include contracting stem projectile points (specifically the Squaw Creek Series), unifacial flake tools (i.e., McKee Uniface), as well as awls and wedges from a number of obsidian sources. The presence of atlatl weights suggest the atlatl as the primary hunting weapon with an increased reliance on fishing as evidenced by the presence of net weights and fish hooks.

The first half of the *Late Archaic Period* is referred to as the *Whiskeytown Pattern* and lasted from 3000 BP to 1700 BP. The archaeological record indicates that the atlatl was still in use during this time period, and small to large side-notched and corner-notched dart points are the most common form of projectile point. Mortars and pestles are the more common milling tools over the mano and metate, suggesting an increased focus on acorn production.

The latter half of the Late Archaic period ends approximately 1,500 years ago and is characterized by the *Augustine Pattern*. The notable change is the arrival of the bow and arrow and the use of a hopper mortar and pestle. Projectile points have decreased in size to suit arrow tips (specifically the Gunther and Desert Side-Notched Series). Hopper mortars, suggesting intensive acorn use, are the dominant milling equipment. Granaries are developed to store salmon and acorns for food preservation. Trade networks appear, as indicated by the presence of coastal shell beads and obsidian from distant sources.

**Ethnography**

The ethnographic group that inhabited the plateau north of Redding, including the Shasta Lake and Churn Creek areas (DuBois, 1935) were the Stillwater (Dau-pom) Wintu people. These indigenous people were a sedentary, foraging group that lived in permanent villages near rivers and streams. The Wintu were politically organized into independent tribelets, with the larger villages containing approximately 250 people (DuBois, 1935). There were a variety of living structures within these settlements including conical bark houses or temporary brush shelters in the summer, domed brush sudatory and menstrual huts and a large earth covered semi-subterranean circular lodge for gatherings (LaPena, 1978). The pre-contact population of the Wintu is estimated at around 14,250 (LaPena, 1978).

The Wintu diet consisted primarily of deer, rabbits, and other small mammals; fish including salmon, steelhead, Sacramento sucker, freshwater shellfish, and lamprey; grasshoppers, salmon flies, and other insects; nuts like acorns, pine nuts, and buckeye; manzanita berries and other berries; and plant material such as clovers, miner’s lettuce, and other greens.

The Wintu ground seeds, acorns, and pigment, and softened meat using mortars and pestles as well as manos (handstone) and metates (milling slabs). They used bone to construct awls for basketry, harpoons
and hooks, and wedges for wood cutting. Sharpened hardwood was made for use as digging sticks for root retrieval, house excavation, and grave digging. The Wintu used soaproot fibers for acorn meal brushes, paintbrushes, and hair brushes. Iris fibers were made from rope and cordage (DuBois, 1935). Basket materials included hazel, skunkbrush, willow, grapevine, redbud, pine root, poison-oak, maidenhair fern, porcupine quills, and some grasses. These materials were also used for storage and fish traps (DuBois, 1935). Bows were made from yew and arrows made from reed or light wood with a hardwood tip. Arrowheads were made from obsidian or basalt. The Wintu traversed waterways using logs as bridges or lashed together as rafts. Major tributaries were crossed using “complicated bridges lashed together by grapevines” (La Pena, 1978). Adornment in the form of earrings and beads came from Olivella, abalone, and clamshell. The Wintu made blankets and clothing from deer hides and rabbit skins. Deer hide was also used to make a moccasin-like shoe usually worn in the winter or for long journeys (DuBois, 1935).

Euro-Americans first made contact with the Wintu in 1826 and 1827 when expeditions of trappers with the Hudson’s Bay Company and by Peter Skene Ogden and Jedediah Smith led traders into the region (Quint, 1960). John Work led an expedition in the spring of 1832 that passed through the eastern half of Wintu territory. He brought disease that reduced the native population by approximately 75 percent and wiped out entire villages (Cook, 1976). Later trappers noted abandoned villages littered with human bones in their journals. It is believed this epidemic (said to be cholera or influenza) was so severe and deadly that it aided the Gold Rush and subsequent white settlement.

Native American presence seems to have largely disappeared from the Stillwater area in the 1860s beyond a few indigenous people who worked in the homes and fields of the Anglo-American settlers and perhaps children captured in raids. In September 1864, a few Indians killed two white men. Militias were formed to avenge their murders, which resulted in the death of approximately 500 Native Americans in a single week, many of whom worked as farm hands (Smith, 1995). On October 8, 1864 an advertisement appeared in the Shasta Courier newspaper that is now known as the Millville Resolutions. It stated that no Indians would be allowed to remain east of the Sacramento River between the Pit River and Antelope County. This was followed a week later by the Churntown Resolutions, another newspaper advertisement, which saw the resolutions to the meeting at Millville “not only as inconsistent with humanity but directly in opposition to the best interests of the people of this portion of the county” (Shasta Courier October 15, 1864). During the 1870s and 1880s, displaced Wintu began to return to their traditional sites. Some found work locally in agricultural pursuits such as ranching and grain harvesting.

**History**

Joseph B. Chiles was one of the first known Northern California explorers in 1845. A member of this expedition, Pierson B. Reading, would end up having a significant impact on both Shasta and Trinity county history (Giles 1949). Reading obtained a 26,000 plus acre Mexican land grant in 1844 that had geologic similarities to land along the Sacramento River and Sutter’s Mill near Coloma. Reading discovered gold in the Redding area and recovered appreciable amounts of placer gold from the Upper Sacramento River as well as many tributary creeks, including Churn Creek, which is adjacent to the east of the APE. Shasta County reported $350,000 in recovered gold and $85,000 in silver in 1886 (Bancroft 1890).
Frank and Chappel (1881) document early Anglo-American settlement along Churn Creek in *The History and Business Directory of Shasta County*. As members of a company of miners, one of the editors set out from the town of Shasta to Quartz Hill during the winter of 1849 to search for placer diggings. This expedition did not produce the expected results, and the company explored Churn Creek and its tributaries. By 1850, they founded Churntown (1.5 miles northwest of APE).

By 1860, Shasta County's placer mining had reached its apex. After this point, copper and silver were pursued using new techniques. By 1903, five dredges were operating in the Redding area to search for more gold, one of which was near the mouth of Middle Creek on the Sacramento River (about 5 miles southwest of the APE) (California State Mining Bureau, 1905). As the Great Depression impacted the economy of Northern California in the 1930s, the area saw an increase in placer mining. Other historical activities in the vicinity of the APE include homesteading and agricultural pursuits.

During the early twentieth century, an increase of water diversion and irrigation projects occurred through the Central Valley Project and included the construction of the Shasta Dam about four miles northwest of the APE. The City of Shasta Lake was incorporated in 1993 and was the combination of five "boomtowns" that appeared in the late 1930s during the construction of the Shasta Dam and related industries. These communities include Toyon, Project City (also known as Midway), Pine Grove, Summit City (also known as Churntown, about 1.5 miles northwest of the APE), and Central Valley (also known as Boomtown, approximately 0.5 miles north of the APE). The dam was completed in 1945 and these boomtowns were thought to be temporary as the workers were expected to move on to other projects. However, many workers stayed in the area until the lake filled and Shasta Dam was dedicated in 1950. While some workers left the area, many others found employment in the area's growing lumber industry. The post-war building boom brought prosperity to the area and resulted in the construction of several new lumber mills. By 1949, the majority of the homes in the area were connected to the public water supply.

Tarpaper shacks were replaced by more comfortable homes; and following World War II, active real estate trading by land developers in the Central Valley area resulted in property being traded among multiple owners prior to building. Buildings erected along Shasta Dam Boulevard in the late 1940s and 1950s held businesses that offered a wide range of services. In 1948, the Shasta Dam Area Public Utility District (Shasta Dam PUD) was formed, and in 1971 it was granted land corresponding with the northern portion of the APE. More recently, urban residential and commercial infilling provide the major impetus for development in and around the APE (North State Resources, Inc., 2007).

**Record Search**

A records search was conducted at the Northeast Information Center (NEIC) of the California Historical Resources Information System by NEIC staff, on April 15, 2014. The NEIC, an affiliate of the State of California Office of Historic Preservation, is the official state repository of archaeological and historic records and reports for an 11-county area that includes Shasta County, and is housed at California State University, Chico. Additional research was conducted using the files and literature maintained at AES.

The records search revealed that, while no cultural resources are recorded within the APE, two prehistoric cultural resources and five historic-period cultural resources are recorded within a 0.5-mile radius of the APE. The prehistoric sites comprise a flaked stone scatter and an isolated basalt flake. The
historic-period sites include a house foundation, a prospect hole for mining, an isolated split rail and barbed wire fence, an isolated mine tailings pile, and a small refuse deposit. No other cultural resources are recorded within the 0.5 mile records search radius (AES, 2014f).

**Native American Heritage Consultation**

On March 26, 2014, the State of California Native American Heritage Commission (NAHC) was asked to review the Sacred Lands file for information concerning significant Native American cultural resources within the APE. On May 1, 2014, the NAHC responded stating they have no knowledge of any Native American cultural resources or sacred sites within or adjacent to the APE. However, the NAHC did provide a list of individuals and groups for further consultation. Letters to these individuals and groups were sent on May 6, 2014 and follow up phone calls were placed. To date, as a result of these consultation efforts, no additional cultural resources have been identified within the APE.

**Field Survey**

On April 18, 2014, Brian S. Marks, Ph.D., RPA, conducted a pedestrian survey of the APE. The survey used transects spaced no more than 10 meters apart and examined the entire APE, with closer transects in the proximity of Churn Creek. Where access was allowed, Dr. Marks surveyed an additional 30 meters beyond the APE. Surface visibility varied between little ground surface visibility due to pavement and WWTF facilities and dense underbrush in other areas, to complete surface visibility in areas of bare soil and low grasses.

The ground surface was examined for archaeological remains, while rodent burrow backdirt piles, cattle paths, and road cuts were examined for indicators of buried archaeological deposits. The survey found that the APE has been subject to significant historic and modern disturbances including past agricultural use in open areas, landscaping, paving, and installation of underground infrastructure, especially within the main WWTF facility. Even in the “less disturbed” area in the northeastern portion of the APE, there was moderate ground disturbance from the installation of piping for the sprinkler spray fields. No prehistoric or historic-period cultural resources were identified as a result of the field survey (AES, 2014f).

**Regulatory Context**

**Section 106 of the National Historic Preservation Act**

Section 106 of the NHPA, as amended, and its implementing regulations found at 36 CFR Part 800, require federal agencies to identify cultural resources that may be affected by actions involving federal lands, funds, or permitting actions. The City is applying for federal grant funding for the Proposed Project through the CWSRF Program, which is partially funded by the USEPA; therefore, the Proposed Project is subject to Section 106 review.

The significance of the resources must be evaluated using established criteria outlined at 36 CFR 60.4, as described below. If a resource is determined to be a [historic property](#), Section 106 of the NHPA requires that effects of the undertaking on the resource be determined. A historic property is:
Section 106 of the NHPA prescribes specific criteria for determining whether an undertaking would adversely affect an historic property, as defined in 36 CFR 800.5. An impact is significant when the following occurs to prehistoric or historic archaeological sites, structures, or objects that are National Register of Historic Places (NRHP) listed, or eligible for NRHP listing:

- physical destruction or damage to all or part of the property;
- alteration of a property;
- removal of the property from its historic location;
- change of the character of the property’s use or of physical features within the property’s setting that contribute to its historic significance;
- introduction of visual, atmospheric, or audible elements that diminish the integrity of the property’s significant historic features; and
- neglect of a property that causes its deterioration; and the transfer, lease, or sale of the property.

If it is determined that a historic property will be adversely affected by implementation of a proposed action, prudent and feasible measures to avoid or reduce adverse impacts must be taken. The State Historic Preservation Officer (SHPO) must be provided an opportunity to review and comment on these measures prior to implementation of the proposed action.

National Register of Historic Places

The eligibility of a resource for listing in the NRHP is determined by evaluating the resource using criteria defined in 36 CFR 60.4 as follows:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, association, and:

1. That are associated with events that have made a significant contribution to the broad patterns of our history;
2. That are associated with the lives of persons significant in our past;
3. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
4. That has yielded, or may be likely to yield, information important to prehistory or history.
Sites younger than 50 years, unless of exceptional importance, are not eligible for listing in the NRHP. In addition to meeting at least one of the criteria outlined above, the property must also retain enough integrity to enable it to convey its historic significance. The National Register recognizes seven aspects or qualities that, in various combinations, define integrity (NPS, 1990). These seven elements of integrity are location, design, setting, materials, workmanship, feeling, and association. To retain integrity a property will always possess several, and usually most, of these aspects.

While most historic buildings and many historic archaeological properties are significant because of their association with important events, people, or styles (Criteria A, B, and C), the significance of most prehistoric and historic-period archaeological properties is usually assessed under Criterion D. This criterion stresses the importance of the information contained in an archaeological site, rather than its intrinsic value as a surviving example of a type or its historical association with an important person or event. It places importance not on physical appearance, but rather on information potential.

**California Environmental Quality Act (CEQA)**

CEQA requires that, for projects financed by or requiring the discretionary approval of public agencies in California, the effects that a project has on historical and unique archaeological resources be considered (Public Resources Code [PRC] Section 21083.2). Historical resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance (PRC Section 50201). The CEQA Guidelines (Section 15064.5) define three cases in which a property may qualify as a historical resource for the purpose of CEQA review:

- The resource is listed in or determined eligible for listing in the California Register of Historical Resources (CRHR).
- The resource is included in a local register of historic resources, as defined in section 5020.1(k) of the PRC, or is identified as significant in a historical resources survey that meets the requirements of section 5024.1(g) of the PRC (unless the preponderance of evidence demonstrates that the resource is not historically or culturally significant).
- The lead agency determines that the resource may be a historical resource as defined in PRC section 5020.1(j), 5024.1, or significant as supported by substantial evidence in light of the whole record. Section 5024.1 defines eligibility requirements and states that a resource may be eligible for inclusion in the CRHR if it:

  1. Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
  2. Is associated with the lives of persons important in our past;
  3. Embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses high artistic values; or
  4. Has yielded, or may be likely to yield, information important in prehistory or history.
Resources must retain integrity to be eligible for listing on the CRHR. Resources that are listed in or eligible for listing in the NRHP are considered eligible for listing in the CRHR, and thus are significant historical resources for the purposes of CEQA (PRC section 5024.1(d)(1)).

PRC Section 21083.2 governs the treatment of a unique archaeological resource, which is defined as “an archaeological artifact, object, or site about which it can be clearly demonstrated” that it meets any of the following criteria:

- It contains information needed to answer important scientific research questions, and there is a demonstrable public interest in that information.
- It has a special and particular quality such as being the oldest of its type or the best example of its type.
- It is directly associated with a scientifically recognized important prehistoric or historic event or person.

### 4.6.3 DISCUSSION OF IMPACTS

**Questions A**

Would the project: Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

**No Impact.** As described above, no potentially significant cultural resources were identified within the APE. Based on the negative results of the records search, literature review, Native American consultation, and field survey, it is considered highly unlikely that there are intact cultural deposits within the APE.

**Questions B – D**

Would the project: Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5; Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or Disturb any human remains including those interred outside of formal cemeteries?

**Less than Significant with Mitigation.** There is always the possibility, however remote, that previously unknown archaeological resources and/or human remains could be encountered during subsurface construction activities. Implementation of the mitigation measures presented in Section 4.6.4 would ensure that inadvertently discovered resources that may be eligible for the NHRP and CRHR are identified and important information regarding these remains is recovered. Moreover, implementation of the mitigation measures will provide for the appropriate treatment of human remains. These actions would reduce potential impacts to previously unidentified subsurface cultural resources to a less-than-significant level.
Cumulative Impacts

*Less than Significant with Mitigation.* Potential cumulative projects in the vicinity of the project area have the potential to impact cultural resources. Archaeological and historic resources are afforded special legal protections designed to reduce the cumulative effects of development. Potential cumulative projects and the Proposed Project would be subject to the protection of cultural resources afforded by the CEQA Guidelines Section 15064.5 and related provisions of the PRC. In addition, projects with federal involvement would be subject to Section 106 of the NHPA. Given the non-renewable nature of cultural resources, any impact to protected sites could be considered cumulatively considerable. As discussed above, no known protected archaeological or historic resources were identified within the Proposed Project’s APE. **Mitigation Measures CR-1** and **CR-2** provide for the protection of unanticipated discoveries during ground disturbing activities. With the implementation of these mitigation measures, the Proposed Project’s incremental contribution to cumulative impacts to cultural resources is considered to be less than significant.

### 4.6.4 Mitigation Measures

**CR-1:** In the event of any inadvertent discovery of archaeological resources, all such finds shall be subject to PRC 21083.2 and CEQA Guidelines 15064.5. Procedures for inadvertent discovery include the following:

- All work within 50 feet of the find shall be halted until a professional archaeologist, or paleontologist if the find is of a paleontological nature, can evaluate the significance of the find in accordance with NRHP and CRHR criteria.
- If any find is determined to be significant by the archaeologist, or paleontologist as appropriate, then representatives of the City shall meet with the archaeologist, or paleontologist, to determine the appropriate course of action. If necessary, the Applicant shall provide a Treatment Plan, prepared by an archeologist (or paleontologist), outlining recovery of the resource, analysis, and reporting of the find. The Treatment Plan shall be submitted to the City for review and approval prior to resuming construction.
- All significant cultural or paleontological materials recovered shall be subject to scientific analysis, professional curation, and a report prepared by the professional archaeologist, or paleontologist, according to current professional standards.

**CR-2:** In the event that human remains are encountered during construction activities, the City shall comply with Section 15064.5 (e) (1) of the CEQA Guidelines and PRC Section 7050.5. All project-related ground disturbance within 100 feet of the find shall be halted until the county coroner has been notified. If the coroner determines that the remains are Native American, the coroner will notify the NAHC to identify the most likely descendants of the deceased Native Americans. Project-related ground disturbance in the vicinity of the find shall not resume until the process detailed in Section 15064.5 (e) has been completed.
### 4.0 Environmental Analysis (Checklist)

#### 4.7 GEOLOGY AND SOILS

#### 4.7.1 ENVIRONMENTAL CHECKLIST

<table>
<thead>
<tr>
<th>GEOLOGY &amp; SOILS</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would the project:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Expose people or structures to potential substantial adverse effects including the risk of loss, injury, or death involving 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?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>b) Expose people or structures to potential substantial adverse effects including the risk of loss, injury, or death involving strong seismic ground shaking?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>c) Expose people or structures to potential substantial adverse effects including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>d) Expose people or structures to potential substantial adverse effects including the risk of loss, injury, or death involving landslides?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>e) Result in substantial soil erosion or the loss of topsoil?</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>f) 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?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>g) Be located on expansive soil, as defined in Table 18-1-B of the uniform Building Code (1994), creating substantial risks to life or property?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>h) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
</tbody>
</table>
4.7.2 SETTING

Regulatory Context

Federal Earthquake Hazards Reduction Act

In October 1997, the U.S. Congress passed the National Earthquake Hazards Reduction (NEHR) Act to “reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards and reduction program.” To accomplish this, the act established the National Earthquake Hazards Reduction Program (NEHRP). This program was significantly amended in November 1990 by the NEHR Act, which refined the description of agency responsibilities, program goals, and objectives.

NEHRP’s mission includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improvement of building codes and land use practices; risk reduction through post earthquake investigations and education; development and improvement of design and construction techniques; improvement of mitigation capacity; and accelerated application of research results. The NEHR Act designates the Federal Emergency Management Agency (FEMA) as the lead agency of the program and assigns it several planning, coordinating, and reporting responsibilities. Other NEHR Act agencies include the National Institute of Standards and Technology, National Science Foundation, and USGS.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed by the California Legislature to mitigate the hazard of surface faulting to structures. The act’s main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The act addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. Local agencies must regulate most development in fault zones established by the State Geologist. Before a project can be permitted in a designated Alquist-Priolo Fault Study Zone, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults.

California Seismic Hazards Mapping Act

The California Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6) addresses seismic hazards other than surface rupture, such as liquefaction and induced landslides. The Seismic Hazards Mapping Act specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

National Pollutant Discharge Elimination System Permit (NPDES)

The State Water Resources Control Board (SWRCB) administers regulations and permitting for the USEPA (55 CFR 47990) for pollution generated from stormwater under the National Pollutant Discharge Elimination System (NPDES). There are nine Regional Water Quality Control Boards (RWQCBs) that implement the SWRCB’s jurisdiction and require that an operator of any construction activities with ground disturbances of 1.0 acre or more obtain a General Permit through the NPDES Stormwater Program. The project site is within the jurisdiction of the Central Valley RWQCB (CVRWQCB).
General Permit requires that the implementations of BMPs be employed to reduce sedimentation into surface waters and control erosion. The preparation of a SWPPP addresses control of water pollution that includes the effects of sediments in the water during construction activities. These elements are further explained within Section 4.9, Hydrology and Water Quality.

**California Building Standards Code**

The State of California provides minimum standards for building design through the California Building Standards Code (CBC) (California Code of Regulations [CCR], Title 24). Where no other building codes apply, Chapter 29 regulates excavation, foundations, and retaining walls. The CBC also applies to building design and construction in the state and is based on the International Building Code (IBC) used widely throughout the country (generally adopted on a state-by-state or district-by-district basis). The CBC has been modified for California conditions with numerous more detailed and/or more stringent regulations.

**Environmental Setting**

**Regional Geology**

The project site is located in the northernmost tip of the Great Valley Geomorphic Province (Province) of California, near the margin of the Klamath Mountain and Cascade Range Provinces (CGS, 2002). The Great Valley Province is underlain by an alluvial plain approximately 50 miles wide and 400 miles long, which is drained by the Sacramento River in the north and the San Joaquin River in the south. Elevations in the Great Valley area of the County range from approximately 650 to 850 feet amsl.

The bedrock in the project vicinity is mapped as Copley Greenstone, as determined by subsurface exploration conducted by CGI Technical Services, Inc. (CGI) in support of the Proposed Project and included here as Attachment 2 of Appendix B. Copley greenstone is a Devonian period basalt-andesite volcanic series approximately 416 million years old, common to the Eastern Klamath terrace (Fraticelli et al., 1987).

**Site Topography**

The project site was originally graded in 1977 during the construction of the WWTF, and additional grading was performed during the 1993 expansion. Due to the grading and maintenance of the site for the existing WWTF operations, the topography of the project site is relatively flat to moderately sloping, with elevations ranging from 748 to 752 feet amsl. The surrounding topography is characterized by similar terrain and elevation. There are no steep slopes on the project site that would be at risk for landslides, and there are no mapped landslides or landslide features on the project site (Attachment 2 of Appendix B).

**Regional Seismicity and Fault Zones**

The Alquist-Priolo Act defines active faults as those that have shown seismic activity during the Holocene period, approximately the past 11,000 years, while potentially active faults are those that have shown activity within the Quaternary period, or the past 1.8 million years (CGS, 2003). The City is located in an area of moderate seismic activity. According to the County General Plan, historical seismic activity has been low except for 1998 when several earthquakes occurred in the area. There has been no significant
damage or loss of life due to earthquakes occurring near or in the city. Some large earthquake events have shaken the Shasta Lake area, such as the 1906 San Francisco earthquake, although they occurred outside of the region. The strongest known earthquake experienced in the County region was in November of 1998 when an earthquake magnitude of 5.2 occurred three to six miles northwest of Redding (Shasta County, 2004). According to the USGS, there have been 11 earthquakes with a magnitude of at least 2.5 that have occurred within the County since January 1, 2013 (USGS, 2014).

As shown on Figure 9, the closest potentially active fault is the Battle Creek fault, located approximately 18.6 miles south of the project site. The nearest known active fault is the Hat Creek – McArthur fault system located over 44 miles east of the project site. According to the CGS Index to Earthquake Fault Zone Maps, the project site is not located in a designated Fault-Rupture Hazard Zone, as identified under the Alquist-Priolo Earthquake Fault Zoning Act (Attachment 2 of Appendix B).

To estimate the probability of future earthquake events, the U.S. Geological Survey (USGS) considered potential sources of an event on the fault systems in California. Based on a combined probability of the fault systems and background earthquakes of the region, there is a 40 percent chance of a magnitude 5.0 or larger earthquake occurring at the project site within the next 50 years (USGS, 2010).

**Seismic Shaking Intensity**

Probabilistic ground motion data show the potential hazards of earthquakes that could occur given a site’s soil, geologic, and seismic conditions. The probabilistic ground motion data is expressed in terms of the probability of exceeding a certain ground motion (how many times the acceleration of gravity). Ground motion probabilities are dependent upon site specific soil conditions, which were evaluated by CGI for project site-specific characteristics and evaluated using the USGS ground motion model.

According to the USGS model, there is a 10 percent probability that the peak horizontal acceleration experienced at the site would exceed 0.20 gravity (g) from a seismic event in 50 years (Attachment 2 of Appendix B). A common measure of earthquake intensity and effects due to ground shaking is the Modified Mercalli Intensity (MMI) Scale. The MMI values for intensity range from I to XII, with intensity descriptions ranging from an event not felt by most people (I) to nearly total damage (XII).

The peak horizontal acceleration of 0.20 g that would be experienced at the project site corresponds to VII to VIII on the MMI Scale. Level VII intensity is described as: “Damage negligible in buildings of good design and construction; slight to moderate damage in well-built ordinary structures; or considerable damage in poorly built or badly designed structures.” Level VIII intensity is described as “Damage slight in specially designed structures; considerable in ordinary substantial buildings with partial collapse; or great in poorly built structures” (Bolt, 1988).

**Soils**

Soils on the project site are shown in Figure 10 and described in Table 4.7-1:

Expansive soils are largely comprised of clays, which greatly increase in volume when water is absorbed and shrink when dried; this action is called “shrink-swell potential.” Expansive soils are of concern because building foundations may rise during the rainy season and fall during the dry season in response
Figure 9
Regional Faults
Proposed Project Components

Project Site

Soil Type Boundaries

AnB - Auburn loam, 0 to 8 percent slopes
AnD - Auburn loam, 8 to 30 percent slopes
AtE2 - Auburn very stony clay loam, 30 to 50 percent slopes, eroded
BkC - Boomer gravelly loam, 0 to 15 percent slopes
BkD - Boomer gravelly loam, 15 to 30 percent slopes
W - Water

LEGEND

Source: USDA NRCS SSURGO, Soil Survey Data for Shasta County; Microsoft aerial photograph, 6/12/2010; AES, 2014

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Figure 10
Soils Map
4.0 Environmental Analysis (Checklist)

to the clay's action; this can cause structural distortion. The soil types on the project site generally have low to moderate shrink-swell potential as determined by the NRCS, which was also confirmed by site-specific soil testing (NRCS, 2014b; Attachment 2 of Appendix B).

<table>
<thead>
<tr>
<th>Soil</th>
<th>Taxonomic Class</th>
<th>Hydrologic Soil Group (Drainage)</th>
<th>Shrink-Swell Potential</th>
<th>Erosion Potential</th>
<th>Corrosion of Concrete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auburn loam, 8 to 30 percent slopes</td>
<td>Slightly acidic loam</td>
<td>C (Well drained; slow to rapid runoff; slow permeability)</td>
<td>Low</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Auburn very stony loam, 30 to 50 percent slopes, eroded</td>
<td>Slightly acidic very stony clay loam</td>
<td>C (Well drained; slow to rapid runoff; slow permeability)</td>
<td>Moderate</td>
<td>Severe</td>
<td>Low</td>
</tr>
<tr>
<td>Boomer gravelly loam, 0 to 15 percent slopes</td>
<td>Moderately acidic gravelly loam</td>
<td>C (Well drained; slow to rapid runoff; slow permeability)</td>
<td>Moderate</td>
<td>Slight to moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>Water</td>
<td>Water</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Source: NRCS, 2014b

4.7.3 DISCUSSION OF IMPACTS

Questions A – C, F, and G

Would the project: Expose people or structures to potential substantial adverse effects including the risk of loss, injury, or death involving 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; Expose people or structures to potential substantial adverse effects including the risk of loss, injury, or death involving strong seismic ground shaking; Expose people or structures to potential substantial adverse effects including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction; 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; or Be located on expansive soil, as defined in Table 18-1-B of the uniform Building Code (1994), creating substantial risks to life or property?

Less than Significant. Although the project site is located in an area that may be subject to seismic ground shaking in the future, there are no mapped surface faults on the project site that would have the potential to rupture and it is not near any designated Alquist-Priolo earthquake faults. Although potential damage to people or structures from seismic ground shaking could be a concern, compliance with the

Liquefaction is the sudden loss of soil strength caused by seismic forces acting on water-saturated, granular soil, leading to a “quicksand” condition generating various types of ground failure. Soils comprised of sand and sandy loams that are in areas with high groundwater tables or high rainfall are subject to liquefaction. Although groundwater occurs at relatively shallow depths, the dense to very dense granular soils on the project site ensure that there is a low risk of liquefaction at the project site (Attachment 2 of Appendix B).
CBC would require the site’s seismic-design response spectrum to be established and incorporated into the design of all new structures. As recommended in the Geotechnical Study, structures and utilities would be designed to withstand seismic forces per CBC requirements. Therefore, these construction standards would minimize the seismic ground shaking effects on developed structures to a less-than-significant level.

The project site is not mapped within any liquefaction zones. The Proposed Project is not located on an unstable geologic unit or soil. The soils on the project sites all have low to moderate shrink-swell potential; no project components would be located on expansive soils. Therefore, the Proposed Project will not expose people or structures to substantial adverse affects from surface fault rupture, ground shaking, liquefaction, landslides, unstable geologic units or soils, or expansive soils.

**Question D**

*Would the project: Expose people or structures to potential substantial adverse effects including the risk of loss, injury, or death involving landslides?*

*No Impact.* The topography of the project site is relatively flat to moderately sloping, and there are no landslides or landslide features mapped on the project site. The risk of landsliding is very low. No people or structures would be exposed to adverse effects involving landslides.

**Question E**

*Would the project: Result in substantial soil erosion or the loss of topsoil?*

*Less than Significant with Mitigation.* Construction of the Proposed Project would involve grading and earth moving activities, as well as installation of project components. Construction would result in the temporary disturbance of soil and would expose disturbed areas to potential storm events, which could generate accelerated runoff, localized erosion, and sedimentation.

Construction activities could expose soil to wind erosion effects that could adversely affect both on-site and nearby soils and the re-vegetation potential of the area. Upon completion of the project, structures, roadways, and landscaping or revegetated areas would eventually cover soils exposed during construction, and no long-term erodible soils would be created as a result of the Proposed Project.

Construction of the Proposed Project would be required to comply with the California NPDES General Permit for construction activities, as discussed in Section 4.10. Implementation of Mitigation Measure GEO-1 would ensure that potential impacts would be reduced to a less-than-significant level.

**Question H**

*Would the project: Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?*
No Impact. The Proposed Project would not include the installation of septic tanks or alternative wastewater disposal systems; therefore no impact would occur.

Cumulative Impacts

Less than Significant with Mitigation. Implementation of the Proposed Project and other potential cumulative projects in the region, including growth resulting from build-out of the City and County General Plans could result in increased erosion and soil hazards and could expose additional structures and people to seismic hazards. These impacts are fully mitigable with implementation of construction-period erosion control programs and with standard seismic safety measures incorporated in design. The Proposed Projects will incorporate the standard mitigation measures below to ensure a less than significant effect; therefore no cumulative impacts would occur.

4.7.4 Mitigation Measures

GEO-1: Implement Mitigation Measure HYD-1:

The City shall comply with the SWRCB NPDES General Permit. The SWRCB requires that all construction sites have adequate control measures to reduce the discharge of sediment and other pollutants to streams to ensure compliance with Section 303 of the CWA. To comply with the NPDES permit, the City will file a Notice of Intent with the SWRCB and prepare a SWPPP prior to construction, which includes a detailed, site-specific listing of the potential sources of stormwater pollution; pollution prevention measures (erosion and sediment control measures and measures to control non-stormwater discharges and hazardous spills) including a description of the type and location of erosion and sediment control BMPs to be implemented at the project site; and a BMP monitoring and maintenance schedule to determine the amount of pollutants leaving the Proposed Project site. A copy of the SWPPP must be current and remain on the project site. Control measures are required prior to and throughout the rainy season. Water quality BMPs identified in the SWPPP could include, but are not limited to, the following:

- Areas where ground disturbance would occur shall be identified in advance of construction and limited to only approved areas.
- All vehicular construction traffic shall be confined to the designated access routes and staging areas. See Figure 4 for the location of potential staging areas.
- All equipment maintenance and cleaning shall be confined to staging areas. Staging areas utilized for equipment maintenance and cleaning shall be located a minimum of 100 feet from streams and waterways, including Churn Creek and its unnamed tributary. No vehicle maintenance shall occur on-site during construction.
- All supervisory construction personnel shall be informed of environmental concerns, permit conditions, and final project specifications. Said Personnel will be responsible for instructing all on-site work to meet the requirements of the SWPP including making sure all work is conducted outside of protected trees’ drip lines to the extent possible.
- Restore disturbed areas to pre-construction contours to the fullest extent possible.
- Hay/straw bales and silt fences would be used to control erosion during stormwater runoff events.
- Salvage, store, and use the highest quality soil for native re-vegetation/seeding.
- Leave drainage gaps in topsoil and spoil piles to accommodate/reduce surface water runoff.
- Sediment control measures shall be in place prior to the onset of the rainy season and will be maintained until disturbed areas have been re-vegetated. Erosion control structures must be in place and operational at the end of each day if work activities are to occur during the rainy season.
- Fiber rolls shall be placed along the perimeter of disturbed areas to ensure sediment and other potential contaminants of concern are not transported off-site or to open trenches. Locations of fiber rolls will be field adjusted as needed and according to the advice of the certified SWPPP inspector.
- Vehicles and equipment stored in the construction staging area shall be inspected regularly for signs of leakage. Leak-prone equipment will be staged over an impervious surface or other suitable means will be provided to ensure containment of any leaks. Vehicle/equipment wash waters or solvents will not be discharged to surface waters or drainage areas.
- During the rainy season (October 1 through April 30) identified in Chapter 15.08.120 of the City of Shasta Lake Municipal Code, soil stockpiles and material stockpiles will be covered and protected from the wind and precipitation. Plastic sheeting will be used to cover the stockpiles and straw wattles will be placed at the base for perimeter control.
- All contractors shall immediately control the source of any leak and immediately contain any spill utilizing appropriate spill containment and countermeasures. All leaks and spills shall be reported to the designated representative of the lead contractor and shall be evaluated to determine if the spill or leak meets mandatory SWPPP reporting requirements. Contaminated media shall be collected and disposed of at an off-site facility approved to accept such media.
4.0 Environmental Analysis (Checklist)

4.8 GREENHOUSE GAS EMISSIONS

4.8.1 ENVIRONMENTAL CHECKLIST

|--------------------------|-------------------------------|-------------------------------------------------|-----------------------------|-----------|

Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?  
☐ ☐ ☒ ☐

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?  
☐ ☐ ☒ ☐

4.8.2 SETTING

Global climate change is a change in the average weather of the Earth, which can be measured by wind patterns, storms, precipitation, and temperature. It is exacerbated by greenhouse gases (GHGs), which trap heat in the atmosphere (thus the “greenhouse” effect). GHGs include carbon dioxide, methane, and nitrous oxide, and are emitted by natural processes and human activities.

Scientific evidence suggests that emissions from human activities, such as electricity production and vehicle emissions, have elevated the concentration of these gases in the atmosphere, and are increasing the rate and magnitude of climate change to a degree that could present hazardous conditions. Potential adverse effects of global warming include a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels, and changes to ecosystems and the natural environment.

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Therefore, the cumulative global emissions of GHGs contributing to global climate change can be attributed to every nation, region, city, and virtually every individual on Earth. A project’s GHG emissions are at a micro-scale relative to global emissions, but could result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact.

Regulatory Setting

The following regulatory background gives context to the issues of climate change and importance to reducing GHGs in California:
Federal

In February, 2010 the Council on Environmental Quality (CEQ) released a memorandum, *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*. The memorandum provides guidance on how project-related GHG emission should be analyzed in National Environmental Policy Act (NEPA) documents. The Draft Guidance provides that a NEPA climate change analysis shall provide quantification and mitigation to reduce GHG emissions.

The guidance also provides that 25,000 metric tons of GHG emissions per year may be a helpful guideline to assist lead agencies in making informed decisions on climate change impacts resulting from a project subject to NEPA. The guidance notes that the 25,000 metric tons is not an indicator of a threshold of significant effects, but rather, it is an indicator of a minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving emissions of GHGs.

State

**Assembly Bill 32**

Signed by the California State Governor on September 27, 2006, Assembly Bill (AB) 32 codifies a key requirement of Executive Order (EO) S-3-05, specifically the requirement to reduce statewide GHG emissions to year 1990 levels by the year 2020. AB 32 tasks the CARB with monitoring state sources of GHGs and designing emission reduction measures to comply with the law’s emission reduction requirements.

In accordance with AB 32, CARB prepared the *Climate Change Scoping Plan* (Scoping Plan) for California, which was approved in 2008 and identifies all strategies necessary to fully achieve the required 2020 emissions reductions.

The Scoping Plan calls for an achievable reduction in California’s carbon footprint. CARB, per the Scoping Plan, recommends that local governments utilize a 15 percent GHG reduction below “today’s” levels by 2020 to ensure that community emissions match the State’s reduction target, where today’s levels would be considered 2010 levels or Business as Usual (BAU) levels. The Scoping Plan relies on existing technologies and improving energy efficiency to achieve the 30 percent reduction in GHG emission levels by 2020. The Scoping Plan provides the following key recommendations to reduce GHG emissions:

- Expand and strengthen existing energy efficiency programs as well as building and appliance standards;
- Achieve a statewide renewable energy mix of 33 percent;
- Develop a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establish targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
Adopt and implement measures pursuant to existing State laws and policies, including California’s clean car standards, goods movement measures, and the Low Carbon Fuel Standard.

In March 2014, CARB published the “First Update to the Climate Change Scoping Plan” (Update), which builds upon the initial Scoping Plan with new strategies and recommendations. The Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments (CARB, 2014).

**CEQA Guidelines**

Recent amendments to the CEQA Guidelines provide the following direction for consideration of climate change impacts in a CEQA document:

- The determination of significance of GHG emissions calls for a careful judgment by the lead agency;
- A model or methodology shall be used to quantify GHG emissions resulting from a CEQA project;
- Significance may rely on qualitative analysis or performance based standards;
- The CEQA document shall discuss regional and/or local GHG reduction plans;
- A CEQA document shall analyze GHG emissions if they are cumulatively considerable;
- A description of the effects of climate change on the environment shall be included in CEQA documents;
- A CEQA document shall contain mitigation measures, which feasibly reduce GHG emissions.
- GHG analysis in a CEQA document may be Tiered or Streamlined;
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State’s long term commitment to AB 32 implementation.

**Local**

Shasta County developed an updated draft Climate Action Plan in August 2012. The plan shows that the City of Shasta Lake would show a reduction in GHG emissions in the year 2020 below 2008 business as usual emissions with the implementation of state and federal reduction measures. The 2012 Climate Action Plan provides GHG reduction measures to further reduce GHG emissions beyond 2020.

**4.8.3 DISCUSSION OF IMPACTS**

Given the global nature of climate change impacts, individual project impacts are most appropriately addressed in terms of the incremental contribution to global cumulative impacts. This approach is consistent with the view articulated by the *Intergovernmental Panel on Climate* (IPCC) *Change Fifth*
Assessment Report (IPCC, 2013). Therefore, this analysis is of the cumulative impacts related to climate change.

Methodology

The Proposed Project’s short-term construction-related GHG emissions were estimated using the CalEEMod.2013.2 software. CalEEMod.2013.2 is a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify GHG emissions from land use projects. The model quantifies direct GHG emissions from construction and operation (including vehicle use), as well as indirect GHG emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use.

Operational emissions were estimated based on the anticipated population to be served, electricity use, and increase in effluent processing using CARB’s electricity emission factor, Local Council of Governments Protocol nitrification/denitrification emission factors, and a 10.33 standard cubic feet per MGD of effluent processed emission factor to determine fugitive biogas emissions. Emissions are expressed in annual metric tons of CO₂ equivalent units of measure (i.e., MTCO₂e), based on the global warming potential of the individual pollutants.

The SCAQMD has not developed quantitative GHG thresholds for project level analysis, and the draft Shasta County Climate Action Plan does not provide thresholds.

For this analysis, predicted project-related GHG emissions were compared to the Bay Area Air Quality Management District’s (BAAQMD) operational GHG threshold of 1,100 metric tons of CO₂e (BAAQMD, 2010), as well as showing the project conforms with CARB’s Scoping Plan. While these thresholds are not required for projects within the jurisdiction the SCAQMD, they are useful for comparative purposes, and the City has determined they are appropriate thresholds for analyzing impacts as a result of the Proposed Project.

Questions A and B

Would the project: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Construction

Construction of the Proposed Project would emit GHG emissions from the combustion of diesel fuel in heavy equipment. As shown in Table 4.8-1, GHG emissions associated with construction of the Proposed Project are estimated to be 855.55 MTCO₂e. Construction GHG emissions are a one-time release and are typically considered separate from operational emissions, as global climate change is inherently a cumulative effect that occurs over a long period of time and is quantified on a yearly basis. However, the Proposed Project’s construction GHG emissions have been amortized over the lifetime of the project, which is assumed for this analysis to be 30 years, and included in the annual operational GHG emissions in order to provide annual GHG emission estimates.
TABLE 4.8-1
MITIGATED (UNMITIGATED) CONSTRUCTION GHG EMISSIONS

<table>
<thead>
<tr>
<th>GHG</th>
<th>Metric Tons of CO2e</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017 (lb/day)</td>
<td>644.54 (645.18)</td>
</tr>
<tr>
<td>2018 (lb/day)</td>
<td>211.00 (211.19)</td>
</tr>
<tr>
<td>Construction-Related GHG Emission</td>
<td>855.55 (856.36)</td>
</tr>
<tr>
<td>GHG Emissions Amortized over Life of the Project</td>
<td>29</td>
</tr>
</tbody>
</table>

1 Amortization is 30 years.
Source: CalEEMod, 2013.

**Operation**

Operation of the project would emit GHG emissions from increased electricity use due to installation of a new pump and increased nitrification/denitrification and fugitive digester gas release from increased effluent processing. Table 4.8-2 shows the mitigated and unmitigated operational GHG emissions.

TABLE 4.8-2
MITIGATED OPERATIONAL GHG EMISSIONS

<table>
<thead>
<tr>
<th>Source</th>
<th>Change in Use</th>
<th>Emission Factor</th>
<th>Conversion Factor</th>
<th>GHG Emissions (MT of CO2e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity Use</td>
<td>1.18 MWh / Year</td>
<td>0.428²</td>
<td>N/A</td>
<td>0.51</td>
</tr>
<tr>
<td>Natural Gas Use</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>Diesel Fuel Use</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>Nitrification/Denitrification</td>
<td>8,276 Population</td>
<td>7</td>
<td>1.00E-06</td>
<td>18</td>
</tr>
<tr>
<td>Fugitive Digester Gas</td>
<td>4,855 scf/day⁴</td>
<td>52.07</td>
<td>0.001</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Operational GHG Emissions | 22.5 |

¹ Source: Chism, 2014a. Difference between current annual usage of 70,000 kWh and projected future annual electrical usage of 1,250,000 kWh.
² Default emission factor from the 2013 Regulations for the Mandatory Reporting of GHG Emissions.
³ Increase in population served based on increase in household equivalents and average number of person per single family household equivalent – source: Water Works Engineers, 2014.
⁴ SCF = Standard Cubic Feet, which is a measure of gas at 1 atmosphere and 60 degrees F. This change was calculated based in the effective change in treatment capacity from 0.83 MGD to 1.3 MDG.
Source: CalEEMod, 2013.

**Findings**

*Less than significant.* As shown in Tables 4.8-1 and 4.8-2, construction and operational GHG emissions would be 29 and 22.5 MT of CO2e respectively or 51.5 MT per year for the life of the project, which is substantially less than the BAAQMD GHG threshold of 1,100 MT. Further, total construction emissions are significantly below the 3,000 MT threshold for construction established by the South Coast Air Quality Management District.
The project design incorporates a number of elements that have been recognized in the Attorney General May 2008 White Paper as measures that reduce the impact of global warming. These components of the Proposed Project include the following:

- Efficient lighting and lighting control systems.
- Installation of LEDs for outdoor lighting.
- Limited hours of outdoor lighting (also an on-going practice at the WWTF)
- Existing significant landscape buffer that includes a large number of mature trees
- Water efficient landscapes and continued use reclaimed water for landscape irrigation
- Low-impact development practices that maintain existing hydrologic character and manage storm water to protect environment

Table 4.8-3 shows the projects conformance with applicable GHG emission reduction strategies provided in CARB’s 2014 Climate Change Scoping Plan Update.

<table>
<thead>
<tr>
<th>GHG Reduction Strategies</th>
<th>Project Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Climate Change Standards: AB 1493 (Pavley) required the state to develop and adopts regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by the CARB in September 2004.</td>
<td>These are CARB enforced standards; vehicles that access the proposed project would be required to comply with the standards.</td>
</tr>
<tr>
<td>Low Carbon Fuel Standard (LCFS): The goal of LCFS is to reduce the “carbon intensity” of California's vehicle fuel by at least 10 percent by 2020.</td>
<td>This would be a State mandated program; thus, reducing carbon emissions from all vehicles arriving and leaving the proposed project.</td>
</tr>
<tr>
<td>Diesel Anti-Idling: In July 2004, the CARB adopted a measure to limit diesel-fueled commercial motor vehicle idling.</td>
<td>CARB adopted standard. Vehicles that access the proposed project would be required to comply with the standards in accordance with California law.</td>
</tr>
</tbody>
</table>

Note: AB= Assembly Bill; CARB= California Air Resource Board

The proposed project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases; therefore, because the Proposed Project would not exceed numeric GHG thresholds, would be consistent with the applicable CARB Scoping Plan reduction strategies, and measures have been incorporated into the project design that are considered to reduce the impact of global warming, the project’s contribution to cumulative effects associated with climate change is considered less than significant.
Cumulative Impacts

*Less than Significant.* The Proposed Project would not create any significant new sources of GHG emissions; therefore, the project would not contribute to adverse impacts associated with cumulative GHG emissions. This impact is considered less-than-significant.

### 4.8.4 MITIGATION MEASURES

None required.
## 4.9 HAZARDS AND HAZARDOUS MATERIALS

### 4.9.1 ENVIRONMENTAL CHECKLIST

<table>
<thead>
<tr>
<th>HAZARDS &amp; HAZARDOUS MATERIALS</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would the project:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>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?</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>c) Emit hazardous emissions or handles hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
<tr>
<td>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?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>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 for people residing or working in the project area?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
<tr>
<td>f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working within the project area?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
<tr>
<td>g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
</tbody>
</table>
HAZARDS & HAZARDOUS MATERIALS

<table>
<thead>
<tr>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☒</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

4.9.2 SETTING

Regulatory Context

Definition of Hazardous Material

A material is considered hazardous if it appears on a list of hazardous materials prepared by a Federal, State, or local agency, or if it has characteristics defined as hazardous by such an agency. A hazardous material is defined in Title 22 of the CCR as:

“A substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed” (CCR, Title 22, Section 66260.10).

United States Environmental Protection Agency

The USEPA administers numerous statutes pertaining to human health and the environment. The USEPA regulates toxic air contaminants through its implementation of the CAA. Although the CAA covers a range of air pollutants, Section 112(r) specifically covers “extremely hazardous materials” which include acutely toxic, extremely flammable, and highly explosive substances. Section 112(r) (referred to as the USEPA’s Risk Management Plan) requires facilities involved in the use or storage of extremely hazardous materials to implement a Risk Management Plan (RMP). A RMP requires a detailed analysis of potential accident factors present at a facility and requires the implementation of mitigation measures designed to reduce the identified accident potential.

The USEPA also regulates the land disposal of hazardous materials through the Resource Conservation and Recovery Act (RCRA). Under RCRA, the USEPA regulates the activities of waste generators, transporters, and handlers (any individual who treats, stores, and/or disposes of a designated hazardous waste). RCRA further requires the tracking of hazardous waste from its generation to its final disposal through a process often referred to as the “cradle-to-grave” regulation. The “cradle-to-grave” regulation requires detailed documentation and record keeping for hazardous materials generators, transporters, and/or handlers in order to ensure proper accountability for violations.
**Comprehensive Environmental Response, Compensation, and Liability Act**

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides a Federal fund to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through various enforcement mechanisms, the USEPA obtains private party cleanup orders and recovers costs from financially viable individuals and companies once a response action has been completed. Uncontrolled or abandoned hazardous-waste site identification, monitoring, and response activities in states are coordinated though the state environmental protection or waste management agencies.

**Federal Occupational Safety and Health Administration (OSHA)**

The Occupational Safety and Health Act (OSHA) regulates the preparation and enforcement of occupational health and safety regulations with the goal of providing employees a safe working environment. OSHA regulations apply to the work place and cover activities ranging from confined space entry to toxic chemical exposure. OSHA regulates workplace exposure to hazardous chemicals and activities through regulations governing work place procedures and equipment.

**U.S. Department of Transportation (USDOT)**

The United States Department of Transportation (USDOT) regulates the interstate transport of hazardous materials and wastes through implementation of the Hazardous Materials Transportation Act. This act specifies driver-training requirements, load labeling procedures, and container design and safety specifications. Transporters of hazardous wastes must also meet the requirements of additional statutes such as RCRA, discussed previously.

**Department of Toxic Substances Control**

The California Department of Toxic Substances Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste under the RCRA and the State Hazardous Waste Control Law. Both laws impose “cradle-to-grave” regulatory systems for handling hazardous waste in a manner that protects human health and the environment.

**California Occupational Safety and Health Administration (Cal/OSHA)**

California Occupational Safety and Health Administration (Cal/OSHA) assumes primary responsibility for developing and enforcing state workplace safety regulations. Cal/OSHA regulations concerning the use of hazardous materials in the workplace, as detailed in Title 8 of the CCR, include requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation.

Cal/OSHA enforces hazard communication program regulations that contain training and information requirements, including procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparation of health and safety plans to protect workers and employees at hazardous waste sites. The hazard communication program requires that Material Safety Data Sheets (MSDSs) be available to employees and that employee information and training programs be documented.
Regional Water Quality Control Board

The SWRCB and RWQCBs also regulate hazardous substances, materials and wastes through a variety of state statutes including, for example, the Porter Cologne Water Quality Control Act, Cal. Water Code §13000 et seq., and the underground storage tank cleanup laws (Cal. Health and Safety Code §§25280-25299.8). RWQCBs regulate all pollutant or nuisance discharges that may affect either surface water or groundwater. Any person proposing to discharge waste within any region must file a report of waste discharge with the appropriate regional board. The Proposed Project is located within the jurisdiction of the CVRWQCB.

Hazardous Materials Emergency Response/Contingency Plan

The City has developed an emergency response/contingency response plan (known as the Hazardous Materials Business Plan Module [HMBP]) to deal with emergencies and implementation procedures at the WWTF following a fire, explosion, or release of hazardous materials that could threaten human health and/or the environment. A copy of the HMBP is available at the WWTF for use in an emergency, and inspection and approval of the document was performed by the Shasta County Environmental Health Department, the lead agency in the adequacy of the HMBP protocols and procedures.

California Accidental Release Prevention Program, Risk Management Plan

The City has implemented a California Accidental Release Prevention (CalARP) Program, RMP in compliance with the CCR Title 19, Division 2, Chapter 4.5 (California Accidental Release Prevention), and OSHA Process Safety Management (PSM) standards (Section 5189 of Title 8 of CCR, or CFR, Title 29, Section 1910.119). The RMP is required as chlorine and sulfur dioxide gas are stored at the WWTF and used in quantities above the CalARP (100 pounds), Cal/OSHA (1,500) or USEPA (2,500 pounds) thresholds.

Environmental Setting

Existing WWTF Hazardous Materials Storage and Toxicity

Operation of the existing WWTF involves the delivery, use, and storage of hazardous materials and wastes. Table 4.9-1 summarizes those hazardous materials currently in use at the WWTF, including the estimated bulk quantity, and their respective hazards/toxicity.

Additionally, the WWTF generates biosolids (the solid waste removed from the wastewater during the treatment process) as a result of the treatment process. Biosolids are considered a non-hazardous waste. Biosolids are collected and dried on-site, and then disposed of at the City of Redding West Central Landfill.
### TABLE 4.9-1
DESCRIPTIO N OF HAZARDOUS MATERIALS USAGE AMOUNTS AND TOXICITY

<table>
<thead>
<tr>
<th>Hazardous Material</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorine(^1)</td>
<td>Chlorine as a liquefied compressed gas and dangerous when exposed to eyes, skin, respiratory system. Chlorine is an acute health hazard(^3). The average daily amount stored at the WWTF is 10,000 pounds average with a maximum 12,000 pounds.</td>
</tr>
<tr>
<td>CAS(^2) No.7782-50-5</td>
<td></td>
</tr>
<tr>
<td>Aliphatic and Aromatic Hydrocarbons (Diesel fuel) CAS No. 68476-34-6</td>
<td>Diesel fuel is a federal fire hazard. An average daily amount of 200 gallons is stored at the WWTF. The maximum storage capacity of diesel fuel would be 250 pounds.</td>
</tr>
<tr>
<td>Sulfur Dioxide CAS No. 7446-09-05</td>
<td>Sulfur dioxide is a nonflammable gas and dangerous when exposed to the eyes, skin and respiratory system. Sulfur dioxide is an acute health hazard. An average daily amount of 3,000 pounds is stored at the WWTF. The maximum storage capacity of sulfur dioxide would be 4,000 pounds.</td>
</tr>
<tr>
<td>Sodium Hydroxide (25 % Solution) CAS No. 1310-73-2</td>
<td>Sodium Hydroxide is a caustic soda compound and dangerous when exposed to the eyes, skin, and respiratory system. Sodium hydroxide is an acute health hazard. The average daily maximum amount stored at the WWTF is 4,000 pounds.</td>
</tr>
<tr>
<td>JC 1679 (Polymer) CAS No. 1327-41-9</td>
<td>JC 1679 is a cationic coagulant and flocculant liquid. JC 1679 can irritate the skin. A daily average of 55 gallons would be stored at the WWTF. The maximum storage of JC 1679 would be 80 gallons. No federal hazard category apply to this liquid.</td>
</tr>
</tbody>
</table>

Notes:\(^1\)The WWTF will not use chlorine to disinfect effluent discharged into Churn Creek in the future. The 2014 NPDES permit stipulates chlorine discharge limits allowable for the WWTF until the permit expiration (April 2019).\(^2\)Chemical Abstract Registry Service numbers as assigned by the Chemical Abstracts Service to every chemical substance described in the open scientific literature in sequential order.\(^3\)As defined by the USEPA, Acute Hazards are defined as: conditions that create the potential for injury or damage to occur to humans or environmental receptors as a result of an instantaneous or short duration exposure to the effects of an accidental release. These conditions may be either chemical or physical in nature and may include toxic, flammable, reactive, explosive, or radioactive hazards. Source: Shasta County Environmental Health Hazardous Materials Management, 2004.

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**Sensitive Receptors**

Sensitive receptors are primarily those that have the potential to come in contact with hazardous material in its concentrated form. Therefore, WWTF employees that are on-site are considered the primary sensitive receptors.

In addition, the surrounding land uses and occupants are identified as potential sensitive receptors. The identified study area is located within the City of Shasta Lake. Immediately adjacent to the property to the west and south is the Shasta Lake City Animal Control Facility, Knauf Fiberglass plant, and the Shasta Lake Heritage & Historical Society which is part of the Incubator Building in the Industrial Park. Residential neighborhoods are located north and east; however, an undeveloped vegetated buffer is located between the WWTF and residential units. The nearest residential unit is located approximately 700 feet north of the WWTF, north of Pine Grove Avenue. Residential development to the southeast is located 846 feet from the WWTF. The nearest schools, Central Valley State Preschool, Central Valley High School, and the Shasta Lake School, are located approximately 0.87, 0.89, and 0.99 mile north of the WWTF, respectively.
4.0 Environmental Analysis (Checklist)

Study Area and Adjacent Property Database Reports

Database searches were conducted for records of known storage tank sites and known sites of hazardous materials generation, storage, and/or contamination within the vicinity of the study area. The following database resources were reviewed:

- List of Hazardous Waste and Substances sites from the DTSC EnviroStor database (DTSC, 2014);
- List of Leaking Underground Storage Tank (LUST) Sites by County and Fiscal Year from the SWRCB GeoTracker database (SWRCB, 2014a);
- List of solid waste disposal sites identified by the SWRCB with waste constituents above hazardous waste levels outside the waste management unit (SWRCB, 2014b);
- List of “active” Cease and Desist Orders (CDO) and Cleanup and Abatement Orders (CAO) from the SWRCB (CalEPA, 2014); and
- List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code, identified by the DTSC (CalEPA, 2014).

A discussion of any pertinent findings from the abovementioned databases is provided in Section 4.9.3 below.

4.9.3 DISCUSSION OF IMPACTS

Question A and B

Would the project: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; or 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?

Construction

Less-than-Significant with Mitigation. During grading and construction activities, it is anticipated that limited quantities of miscellaneous hazardous substances, such as gasoline, diesel fuel, hydraulic fluid, solvents, oils, paints, etc. would temporarily be brought onto the project site. Temporary storage units (bulk above-ground storage tanks, 55-gallon drums, sheds/trailers, etc.) would likely be used by various contractors for fueling and maintenance purposes. As with any liquid and solid, the handling and transfer between one container to another has the potential for an accidental release.

Construction contractors would be required to comply with applicable federal and state environmental and workplace safety laws. Additionally, construction contractors are required to implement BMPs for the storage, use, and transportation of hazardous materials. The BMPs would be outlined within a site specific SWPPP that would be required as part of the NPDES General Permit as discussed in Section 4.10, Hydrology and Water Quality, and addressed in Mitigation Measure HYD-1.
Coverage under the NPDES General Permit is anticipated to be obtained prior to construction activities. Mitigation Measure HAZ-1 through HAZ-3 are provided to further decrease the potential for impacts from accidental release of hazardous materials during construction of the Proposed Project. With mitigation, adherence to regulatory requirements, and compliance with the General Permit through implementation of a site specific SWPPP, potential impacts associated with hazardous materials during construction activities would be less than significant.

**Operation**

*Less than Significant.* Hazardous materials as outlined in Table 4.9-1 would routinely be utilized during operations at the WWTF. Hazardous chemical use associated with various project components is discussed in detail in Section 3.4.2. In addition to the chemicals described in Table 4.9-1, the WWTF upgrades and improvements would include the development of a 3,000-gallon methanol storage and delivery system for methanol that would be added to the secondary influent to reliably denitrify nitrate levels required by the 2014 NPDES permit.

A single 1,500 gallon capacity sodium hypochlorite (Chemical Abstracts Service [CAS] No. 7681-52-9) storage tank would be developed and located in a secondary containment area near the existing Chlorine Contact Basins. Sodium hypochlorite would be used to disinfect reclaimed water. Hazardous materials would continue to be delivered in bulk by licensed transporters. Deliveries of hazardous materials would continue to be routed around existing residential areas via Pine Grove Avenue from I-5.

All chemicals would be transported, stored and used according to regulatory requirements and existing procedures for the handling of hazardous materials at the WWTF. Further, all training, safety, and emergency response provisions would remain in effect and apply to all phases of the Proposed Project. The WWTF maintains a CalARP RMP for the accidental release of hazardous materials used and stored at the WWTF. Prior to operation of the Proposed Project the CalARP RMP would be modified to include safety protocols, procedures, and risk management of both methanol and sodium hypochlorite.

Neither WWTF employees, the general public, nor surrounding off-site environment are anticipated to encounter a serious risk through project implementation during operations of the Proposed Project. A less-than-significant impact would occur.

**Question C**

*Would the project: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

*No Impact.* No schools are located within one-quarter mile of the WWTF. The nearest schools are the Central Valley State Preschool, Central Valley High School, and the Shasta Lake School, all located north of the study area approximately 0.87, 0.89, and 0.99 mile, respectively. Minor amounts of hazardous materials would be used during project-related construction activities. Compliance with federal and State hazardous materials laws and regulation would minimize the risk to the public presented by these potential hazards, as such, no impacts would occur to existing schools in the vicinity of the study area.
Question D

Would the project: Be located on a site which is included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Less-than-Significant. The Cortese list is prepared in accordance with California Government Code Section 65962.5. The List of Hazardous Waste and Substances sites from DTSC EnviroStor and the SWRCB GeoTracker databases were reviewed to locate "Cortese List" sites. These databases indicated two sites on and in the vicinity of the WWTF site (SWRCB, 2014a).

The SWRCB GeoTracker database listed one LUST cleanup site within the study area (Shasta Lake, City of Pump # 4 [T0609000268]), at the junction of Tibbitts Road and the WWTF access road. On November 30, 1998 a 1,500 gallon underground storage tank was removed from the site. A water sample from the tank pit contained a low detention of diesel (TPH-d) compounds. Monitoring activities, including the preparation of soil boring between the former tank site and Churn Creek for the purpose of sampling groundwater were completed and the LUST site was closed in July 1999 due to the lack of soil staining, the low detection in the tank pit sample, and no detection of fuel compounds in the groundwater samples from the soil borings. SWRCB findings stated that the release does not appear to threaten water quality, human health, or the environment (SWRCB, 1999).

The second Cortese list site, identified on the DTSC EnviroStor database, is located approximately 0.9 miles north of the WWTF at 3872 El Cajon (previously the Valley Plating Company). The Valley Plating Company facility conducted electroplating operations from 1962 to 1989. Metal plating wastes were discharged without treatment directly onto the ground or into the surface water. No contaminants have been detected during well sampling, and the site is currently undergoing closure.

Due to the closed status of the LUST site on the WWTF, in a location outside of the Proposed Project area of impact, and the distance from the Valley Plating Company site, the Proposed Project would not create a significant hazard to the public or the environment as a result of being located on a Cortese list site. A less-than-significant impact would occur.

Question 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 for people residing or working in the project area?

No Impact. No public airports are located within two miles of the WWTF. Neither temporary construction activities nor operations of the Proposed Project would affect the safe operations of any local airport.

Question F

For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working within the project area?
No Impact. The Proposed Project would not result in a safety hazard for people residing or working in the vicinity of a private airstrip.

**Question G**

*Would the project: impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

No Impact. The WWTF project-related upgrades would occur within the existing WWTF boundaries. As discussed in Section 4.17, *Traffic and Transportation*, the project would not result in lane closures and thus would not affect emergency access or evacuation. Therefore, the Proposed Project would not interfere with an adopted emergency response plan or emergency evacuation plan.

**Question H**

*Would the project: Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?*

*Less-than-Significant with Mitigation.* Equipment used during grading and construction activities may create sparks, which could ignite dry grass on the project site. During construction, the use of power tools and acetylene torches may increase the risk of wildland fire hazard. Mitigation Measure HAZ-4 and HAZ-5 would be implemented to ameliorate wildland fire risk during construction activities associated with the Proposed Project. The implementation of these mitigation measures would reduce the wildlife risk to a less-than-significant level.

**Cumulative Impacts**

*Less than Significant with Mitigation.* Hazard related impacts are site specific (e.g., have the potential to affect only a limited area). Various existing and proposed development infrastructure, including residential, industrial, and public facilities in the vicinity of the WWTF would all involve the storage, use, disposal, and transport of hazardous materials to varying degrees during construction and operations. Hazardous materials utilized during construction and operations of the WWTF would be limited to the existing site. The transport of hazardous chemicals to the WWTF would be regulated in a similar fashion to other cumulative projects that require the transport of hazardous chemicals for site specific operations.

Construction of the Proposed Project requires implementation of mitigation measures to reduce the potential for adverse impacts associated with hazards and hazardous materials to a less-than-significant level. Reduction of on-site hazardous related impacts, as discussed above, would ensure that construction activities would not result in impacts that would be cumulatively considerable.

Operation of the Proposed Project and cumulative projects could result in a cumulative impact if these projects were to result in potential exposure of hazardous materials to sensitive individuals or the general public-at-large, or if additional projects in the vicinity were to include the use or storage of hazardous materials. The WWTF would comply with the existing WWTF HMBP and Cal/ARP RMP as discussed.
4.0 Environmental Analysis (Checklist)

above. Because hazardous materials use would be properly contained on-site, the project would not contribute to cumulatively considerable hazardous impacts.

4.9.4 MITIGATION MEASURES

HAZ-1: The City shall ensure through the enforcement of contractual obligations that all contractors transport, store, and handle construction-required hazardous materials in a manner consistent with relevant regulations and guidelines, which may include, but is not limited to, transporting and storing materials in appropriate and approved containers, maintaining required clearances, and handling materials using approved protocols.

HAZ-2: An accidental spill prevention and response plan shall be developed which will include a list of all hazardous materials used and/or stored on the project site during construction activities; appropriate information about initial spill response, containment, and cleanup strategies; and a list of appropriate City contact information. The spill prevention and response plan shall be included as a component of the SWPPP described in Mitigation Measure HYD-1. The plan shall require containment equipment and sufficient supplies to combat spills of oil or hazardous substances shall be on site at all times during construction.

HAZ-3: Construction staging shall be established a minimum distance of 100 feet away from Churn Creek and its unnamed tributary. The storage of construction materials, including oils and hazardous substances will be at a distance of 100 feet from all drainage courses to prevent spills from reaching the aquatic environment. No vehicle maintenance shall occur on-site during construction.

HAZ-4: During construction, staging areas, welding areas, or areas slated for development using spark-producing equipment shall be cleared of dried vegetation or other materials that could serve as fire fuel. To the extent feasible, the contractor shall keep these areas clear of combustible materials in order to maintain a fire break.

HAZ-5: Any construction equipment that normally includes a spark arrester shall be equipped with an arrester in good working order. This includes, but is not limited to, vehicles, heavy equipment, and chainsaws.
## 4.10 HYDROLOGY AND WATER QUALITY

### 4.10.1 ENVIRONMENTAL CHECKLIST

<table>
<thead>
<tr>
<th>HYDROLOGY &amp; WATER QUALITY</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would the project:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Violate any water quality standards or waste discharge requirements?</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?</td>
<td>☐</td>
<td>☒</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site?</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>f) Otherwise substantially degrade water quality?</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>g) Place housing within a 100-year flood hazard area as mapped on a federal Flood hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
</tbody>
</table>
4.0 Environmental Analysis (Checklist)

<table>
<thead>
<tr>
<th>HYDROLOGY &amp; WATER QUALITY</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
<tr>
<td>i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>j) Inundation by seiche, tsunami, or mudflow?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
</tbody>
</table>

4.10.2 SETTING

Regulatory Context

**Clean Water Act**

The CWA (33 USC § 1251-1376), as amended by the Water Quality Act of 1987, is the major Federal legislation governing water quality. The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” Important sections of the Act are as follows:

- Sections 303 and 304 provide for water quality standards, criteria, and guidelines. Under Section 303(d) of the CWA, the USEPA publishes a list every two years of impaired bodies of water for which water quality objectives (WQOs) are not attained. Total Maximum Daily Loads (TMDLs) are established for contaminants of concern in order to ensure contamination levels decrease over time.

- Section 401 (Water Quality Certification) requires an applicant for any Federal permit that proposes an activity, which may result in a discharge to waters of the United States to obtain certification from the state that the discharge will comply with other provisions of the Act.

- Section 402 establishes the NPDES, a permitting system for the discharge of any pollutant (except for dredged or fill material) into waters of the United States. This permit program is administered by the SWRCB and is discussed in detail below.

- Section 404 establishes a permit program for the discharge of dredged or fill material into waters of the United States. This permit program is jointly administered by USACE and the USEPA.

**Federal Anti-degradation Policy**

The federal Anti-degradation Policy is part of the CWA (Section 303(d)) and is designed to protect water quality and water resources. The policy directs states to adopt a statewide policy that includes the following primary provisions: (1) existing instream uses and the water quality necessary to protect those
uses shall be maintained and protected; (2) where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development; and (3) where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

**Safe Drinking Water Act**

Under the Safe Drinking Water Act (SDWA) (Public Law 93-523), passed in 1974, USEPA regulates contaminants of concern to domestic water supply. Contaminants of concern relevant to domestic water supply are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by USEPA primary and secondary Maximum Contaminant Levels (MCLs). MCLs and the process for setting these standards are reviewed triennially. Amendments to the SDWA enacted in 1986 established an accelerated schedule for setting drinking water MCLs.

**National Pollution Discharge Elimination System**

Under Section 402(p) of the CWA, the USEPA established the NPDES to enforce discharge standards from a variety of sources. Both point source and non-point-source pollution is covered under the NPDES. Dischargers in both categories can apply for individual discharge permits, or apply for coverage under the General Permits that cover certain qualified dischargers. Point source discharges come from “any discernible, confined, and discrete conveyance,” including municipal and industrial wastewater, stormwater runoff, combined sewer overflows, sanitary sewer overflows, and municipal separated storm sewer systems. NPDES permits impose limits on the pollutants discharged based on minimum performance standards or the quality of the receiving water, whichever type is more stringent in a given situation.

**NPDES Permit – Disposal of Treated Effluent**

As discussed in Section 3.3.3, between March 2008 and March 2014, the WWTF discharged effluent to Churn Creek under CVRWQCB Order Number R5-2008-0037, NPDES Permit No. CA0079511 adopted on March 14, 2008. Under the 2008 NPDES Permit, effluent from the WWTF could only be discharged to Churn Creek from October 16th through April 14th, as long as sufficient flow exists in the creek to provide 10:1 dilution of wastewater flow (receiving water to effluent flow). Following the completion of the City of Shasta Lake Effluent Mixing Zone Study dated June 10, 2010, it was determined that complete mixing was not obtained within two stream widths downstream of the discharge location as required by the State Implementation Policy. As a result, NPDES Permit No. CA0079511 was issued by the CVRWQCB on March 28, 2014 (2014 NPDES Permit; Appendix A) which assumed that the worst-case dilution would be zero and, consequently, set forth more stringent effluent limitations that require significant upgrades to the existing WWTF treatment process. Refer to Section 3.3.3 for further details of the City’s NPDES permit.

**NPDES Permit – Stormwater Drainage**

Stormwater drainage at the WWTF is regulated under NPDES General Permit No. CAS000004, titled *Waste Discharge Requirements for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems*. The General Permit effectively prohibits the discharge of materials other than stormwater that
are not authorized. Permittees must implement BMPs that reduce pollutants in stormwater runoff to the technology-based standard of Maximum Extent Practicable (MEP) to protect water quality.

**NPDES Program – Construction Activity**

The City must comply with the requirements of the most recent version of the NPDES permit for Discharges of Storm Water Runoff associated with Construction Activity (currently Order No. 2009-0009-DWQ). This permit regulates discharges from construction sites that disturb one acre or more of total land area. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance must comply with the provisions of this NPDES permit. The permitting process requires the development and implementation of an effective SWPPP. The project applicant must submit a Notice of Intent to the SWRCB to be covered by a NPDES permit and prepare the SWPPP prior to the beginning of construction. The SWPPP must include BMPs to reduce pollutants and any more stringent controls necessary to meet water quality standards. Dischargers must also comply with water quality objectives as defined in the Central Valley Basin Plan. If Basin Plan objectives are exceeded, corrective measures would be required.

**Porter-Cologne Water Quality Control Act**

The Porter-Cologne Water Quality Control Act (California Water Code Section 13000 et seq.) provides the basis for water quality regulation within California. The Act requires a “Report of Waste Discharge” for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state. The RWQCB implements waste discharge requirements identified in the Report.

**State Non-degradation Policy**

In 1968, as required under the Federal Anti-degradation Policy described previously, the SWRCB adopted a Non-degradation Policy aimed at maintaining high quality for waters in California. The Non-degradation Policy states that the disposal of wastes into state waters shall be regulated to achieve the highest water quality consistent with maximum benefit to the people of the state and to promote the peace, health, safety, and welfare of the people of the state. The policy provides as follows:

a. Where the existing quality of water is better than required under existing water quality control plans, such quality would be maintained until it has been demonstrated that any change would be consistent with maximum benefit to the people of the state and would not unreasonably affect present and anticipated beneficial uses of such water.

b. Any activity which produces waste or increases the volume or concentration of waste and which discharges to existing high-quality waters would be required to meet WDRs which would ensure (1) pollution or nuisance would not occur and (2) the highest water quality consistent with the maximum benefit to the people of the state would be maintained.

**Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins (Basin Plan)**

The CVRWQCB adopted a Water Quality Control Plan, Fourth Edition (Revised October 2011), for the Sacramento and San Joaquin River Basins (Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives.
for all waters addressed through the plan (CVRWQCB, 2011). As discussed in Attachment F of the 2014 NPDES Permit (Appendix A), the Basin Plan does not specifically identify the beneficial uses for Churn Creek or the unnamed tributary of Churn Creek, but it does identify present and potential uses for the Sacramento River from Shasta Dam to the Colusa Basin Drain, to which Churn Creek is tributary. Therefore, the Basin Plan identified beneficial uses for the Sacramento River are also applicable to Churn Creek, and are listed in Table 4.10-1.

TABLE 4.10-1
BENEFICIAL USES OF CHURN CREEK AND ITS TRIBUTARY

<table>
<thead>
<tr>
<th>Waterbody</th>
<th>Discharge Point</th>
<th>Existing Beneficial Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Churn Creek and Unnamed Tributary of Churn Creek</td>
<td>001/002</td>
<td>Existing: Municipal and domestic supply (MUN); agricultural supply, including irrigation and stock watering (AGR); industrial service supply (IND); hydropower generation (POW); water contact recreation, including canoeing and rafting (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); migration of aquatic organisms, warm and cold (MIGR); spawning, reproduction, and/or early development, warm and cold (SPWN); wildlife habitat (WILD), and navigation (NAV).</td>
</tr>
<tr>
<td>Groundwater</td>
<td></td>
<td>Existing: Municipal and domestic supply (MUN); agricultural supply (AGR); industrial service supply (IND); and industrial process supply (PRO).</td>
</tr>
</tbody>
</table>

Source: CVRWQCB, 2014 a and 2014b (Appendix A); CVRWQCB, 2011

The Basin Plan identifies water quality objectives that are to be achieved primarily through the adoption of WDRs in order to attain the beneficial uses listed for the Basin Plan area. Water quality objectives are established for numerous constituents, including: bacteria; chemical constituents such as trace elements, mercury, and methylmercury; pH; DO; pesticides; and salinity (CVRWQCB, 2011). The WDRs in the City’s 2014 NPDES Permit, discussed in Section 3.3.3, were established to be protective of beneficial uses for Churn Creek and its downstream receiving waters.

California Code of Regulations - Title 22, Division 4, Chapter 3 – Water Recycling Criteria

This section of the CCR, commonly referred to as Title 22, establishes the recycled water quality criteria, acceptable uses of recycled water, wastewater treatment requirements for each use, use area requirements, engineering report requirements, reporting and record keeping requirements, and design requirements for operational reliability of treatment.

The regulations establish acceptable levels of constituents in recycled water for a range of uses and prescribe means for assurance of reliability in the production of recycled water. Criteria for the production of recycled water include water quality standards, treatment process requirements, operational requirements, and treatment reliability requirements. The intent of the regulations is to ensure the protection of public health associated with the use of recycled water. Title 22 recycled water regulations for a specific reuse category are based on the expected degree of contact with the recycled water.
City of Shasta Lake Municipal Code

The purpose of the Grading, Erosion Control, and Hillside Development ordinance (Chapter 15.08 of the City of Shasta Lake Municipal Code) is to “safeguard life, health, property, the environment, and the public welfare by regulating clearing and grading on private and public property and providing standards and design criteria implementing best management practices to control stormwater and erosion during all construction activities for all development.” In accordance with the Grading Ordinance, prior to project development, the Applicant must provide a grading plan and specifications, complete a site-specific geotechnical report, and must prepare a SWPPP in compliance with the RWQCB’s NPDES permit requirements.

Regional Hydrology

Churn Creek

The nearest USGS blueline stream to the project site is Churn Creek, a perennial stream that is a direct tributary to the Sacramento River, which runs east of the property. As shown on Figure 11, the reach of Churn Creek that runs through the WWTF site is located in the Sacramento River hydrologic region (hr), the Mountain Gate hu, and the Churn Creek hydrologic area (ha). Churn Creek flows through the Redding hu, Enterprise Flat ha before joining the Sacramento River (DOC, 2014). The entirety of Churn Creek lies within USGS hydrologic unit code (HUC) 18020101 (USEPA, 2014).

The headwaters for Churn Creek originate at an elevation of 1,600 feet amsl in the foothills north of Redding before flowing south and west between residential and farm lands at an elevation of approximately 500 feet amsl. Churn Creek flows for approximately 25 miles (26.07 kilometers) before converging with the Sacramento River. The watershed drains approximately 120 square miles.

Average annual rainfall for the project site is approximately 62 inches, the majority of which occurs between December and March (WRCC, 2014). This is significantly higher than the average rainfall for the Stillwater-Churn Creek watershed as a whole, which amounts to approximately 33 inches per year (Sacramento River Watershed Program, 2014). Over 96 percent of the watershed is under private ownership, with approximately 30 percent of the watershed covered by impermeable surfaces due to existing development.

Churn Creek is a perennial, ungauged stream that is highly responsive to precipitation. As such, the majority of peak flows generally occur during the winter and spring months following significant rain or snow. In addition, urban runoff contributes to summertime flows in the system. Background flow data collected by the City in Churn Creek near the Discharge Point 001 from 2001 through 2014 indicates that peak flows occur in the months of November through February, and can exceed 200 cubic feet per second (cfs) (125 mgd) during storm events, but are more commonly observed at levels around 60 to 100 cfs (30-60 mgd) during these months. Winter temperatures commonly range from just above freezing to the mid-40’s °F (6-10 °C); summer temperatures in Churn Creek regularly exceed 22 °C (72 °F).

Water Quality

Churn Creek is not listed on the CWA Section 303(d) list of impaired waterbodies, although Sacramento River downstream of the project site is listed for unknown toxicity, mercury, pesticides, metals/metalloids,
Figure 11
Watershed Map

SOURCE: California Interagency Watershed Map of 1999; AES, 2014
toxicity, and other organics (SWRCB, 2011). TMDLs are still being established for these pollutants in the Sacramento River between the project site and the Sacramento San Joaquin Delta (SWRCB, 2011).

**Floodplain**

FEMA oversees the delineation of flood zones and the provision of federal disaster assistance. FEMA manages the National Flood Insurance Program and publishes the Flood Insurance Rate Maps (FIRMs), which show the expected frequency and severity of flooding by area, typically for the existing land use and type of drainage/flood control facilities present. The project site is located on FIRM 06089C1217G. The WWTF is located in Zone X, which is outside of the FEMA 500-year flood zone, and is an area determined to be of minimal flood risk. The effluent outfall and a portion of the proposed effluent pipeline is located within the 100-year floodplain (Zone AE) (FEMA, 2011).

**Groundwater**

Shasta County lies over the northern portion of the Sacramento Valley Groundwater Basin, a complex system of groundwater aquifers generally composed of marine sediments and stratified sand, silt, and clay layers many thousands of feet thick; only the upper layers contain usable water (DWR, 2004). The portion of the Sacramento Valley basin that lies beneath the project site is known as the Redding Groundwater Basin, Enterprise Subbasin (DWR, 2004).

The Enterprise Subbasin comprises approximately 95 square miles of the northern portion of the Redding Groundwater Basin, with an estimated capacity of approximately 5.5 million acre-feet. According to the Department of Water Resources (DWR), the Enterprise Subbasin has a magnesium-sodium bicarbonate character, with total dissolved solids (TDS) ranging from 160 to 210 milligrams per liter (DWR, 2004). The groundwater quality is generally good, with none of the wells sampled as above the MCLs for primary inorganics, radiation, nitrates, pesticides, or VOCs. Seven of the 18 wells sampled were above the MCL for secondary inorganics (DWR, 2004).

**4.10.3 DISCUSSION OF IMPACTS**

**Questions A, C, and F**

*Would the project: Violate any water quality standards or waste discharge requirements; Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site; or Otherwise substantially degrade water quality?*

**Construction**

*Less than Significant with Mitigation.* Construction of the Proposed Project may violate water quality standards or waste discharge requirements, as construction equipment and materials have the potential to leak, thereby discharging pollutants into stormwater. Construction site pollutants include particulate matter, sediment, oils and greases, concrete, and adhesives. Discharge of these pollutants could result in contamination of area drainages and Churn Creek, causing an exceedance of water quality objectives. Because grading, trenching, and earth moving activities associated with the components of the Proposed Project have the potential to result in erosion, siltation, and contamination of stormwater, this is
considered a potentially significant impact. These activities could result in temporary changes to on-site drainage patterns, potentially resulting in increased erosion or siltation associated with construction. Water quality decreases with increased turbidity and total suspended solids (TSS) that result from erosion and siltation of stockpiled soil or open excavations, influencing downstream ecology.

In compliance with the CWA, the City would obtain coverage under the NPDES General Construction Permit (No. 2009-0009-DWQ) for construction activities and implement the listed BMPs during construction to prevent impacts to water quality (see Mitigation Measure HYD-1). The General Construction Permit also includes post-construction performance standards requiring all construction sites match pre-project hydrology to ensure that the physical and biological integrity of aquatic ecosystems are sustained. Additionally, the Proposed Project is subject to Chapter 15.08 of the Shasta Lake Municipal Code: Grading, Erosion Control, and Hillside Development Ordinance; therefore, Grading Plans and Specifications will be submitted to the City of Shasta Lake Building Division for review and approval.

Because the larger-capacity effluent pipeline and outfall will be constructed within the riparian zone and bed and bank of Churn Creek, it is highly likely that groundwater or riparian underflow will be encountered during pipeline trenching and outfall construction. During construction, unauthorized or accidental release of any fuel, hydraulic fluids, lubricants, solvents, or other chemical into the excavation cavity could directly enter the groundwater aquifer. Implementation of the BMPs required in Mitigation Measure HYD-1 will minimize the potential for contamination of groundwater during construction. In addition, the Geotechnical Report prepared for the Proposed Project examined the potential for groundwater encounters during pipeline trenching and other excavation, and provided appropriate recommendations for the construction contractor to properly divert and dispose of groundwater (Attachment 2 of Appendix B).

With implementation of Mitigation Measure HYD-1, the Proposed Project will comply with the California General NPDES Permit for construction activities and impacts will be reduced to less-than-significant levels.

**Operation**

**Beneficial Impact.** As discussed in Section 3.0, the Proposed Project has been designed to increase the quality of treated effluent discharged to Churn Creek to meet the waste discharge requirements set forth in the 2014 NPDES Permit issued by the CVRWQCB (CVRWQCB, 2014a), included as Appendix A, which assumes a worst-case dilution (receiving water to effluent flow) of zero. A summary of discharge requirements set forth in the 2014 NPDES Permit is provided in Table 3-2. These requirements were established to attain and maintain applicable water quality criteria to protect the designated beneficial uses of Churn Creek, as defined in the Basin Plan (Attachment F of 2014 NPDES Permit, Appendix A). As discussed in Table 4.10-1, existing beneficial uses for Churn Creek as identified in the Basin Plan include: municipal and domestic supply, agricultural supply, recreation, warm freshwater habitat, cold freshwater habitat, and wildlife habitat. Implementation of the Proposed Project would improve water quality and would result in compliance with WDRs that are protective of these beneficial uses.

Implementation of the Proposed Project will result in higher rates of effluent discharged to Churn Creek on a year-round basis. As discussed above, Churn Creek is a perennial stream that flows year-round,
although it is highly responsive to precipitation and the majority of peak flows occur during the winter and spring months. Urban runoff contributes to summertime flows in the system, which will increase under the Proposed Project.

As discussed in the BA/EFHA, included as Appendix E, the additional summertime discharges would be beneficial to fish habitat and stream morphology. In Appendix E, the summertime discharges would help to prevent establishment of surface algae. In addition, the analysis found that natural scouring flows in the stream would still occur at similar levels. Therefore, the Proposed Project would not have a significant impact on the hydrology of Churn Creek.

**Question B**

Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

*Less than Significant.* The Proposed Project does not involve the use of groundwater resources. Development of the Proposed Project would slightly increase the amount of impervious surfaces on the project site, which would prevent infiltration of water into the soil, potentially affecting groundwater recharge. However, the loss of pervious surface is minimal compared to the overall size of the groundwater subbasin.

The Proposed Project would include the abandonment of an unlined 400-acre-foot reclaimed water storage reservoir and the abandonment of the existing sprayfields, which would diminish the artificial contribution to recharge in the area. However, the reservoir and sprayfields would remain in their current state as pervious surfaces and would continue to provide recharge capacity during precipitation events. As a result, no significant impacts to groundwater resources would occur.

**Questions D and I**

Would the project: substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site; or Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

*Less than Significant.* The WWTF currently discharges effluent at two locations, one on Churn Creek (Discharge Point 001) and one on an unnamed stream tributary to Churn Creek (Discharge Point 002), as shown on Figure 3. The Proposed Project would move all effluent discharges to the existing Discharge Point 001 on Churn Creek, and would improve the effluent pipeline and outfall in order to address some of the water transfer and water quality issues associated with the existing discharge structures. Additionally, as described in Section 3.4.4, the Proposed Project would enable the WWTF to discharge to Churn Creek year-round and would increase the effective treatment capacity of the WWTF from its
current 0.83 MGD to the design and permitted capacity of 1.3 MGD. The current flows and project design flows are summarized in Table 3-3.

A Floodplain Analysis for the Proposed Project was conducted by cbec, inc. eco engineering to analyze the effects of the additional treated effluent flows and is included as Appendix I. The analysis developed the Churn Creek watershed hydrology data using USGS Streamstats methodology and correlated it with FEMA Flood Insurance Study data and historical USGS stream gage data. Then, the Hydrologic Engineering Center River Analysis System (HEC-RAS) model was utilized to analyze the effects of the Proposed Project on the Churn Creek floodplain. Table 4.10-2 shows the maximum daily effluent discharge flows in cfs at the two points under pre- and post-project conditions.

<table>
<thead>
<tr>
<th>Discharge Point</th>
<th>Pre-Project Flows (cfs)</th>
<th>Post-Project Flows (cfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>6.22</td>
<td>12.18</td>
</tr>
<tr>
<td>002</td>
<td>10.32</td>
<td>0.0</td>
</tr>
</tbody>
</table>

The analysis found that the increased effluent discharge flows at Discharge Point 001 would cause no increase in Water Surface Elevations (WSEs) at virtually all locations along the Churn Creek with only negligible increases in a few locations of approximately 0.12 inches (Appendix I). These increases of 0.12 inches in WSE and floodplain extents would not result in flooding on- or off-site and would not cause a significant impact. In addition, the Proposed Project does not involve building any levees or dams and would not expose people or structures to a significant risk of loss, injury, or death involving flooding due to dam or levee failure.

**Question E**

*Would the project create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?*

*Less than Significant.* Stormwater at the WWTF is regulated separately from wastewater, as the City has obtained coverage under the SWRCB’s Industrial Stormwater General Order for its stormwater drainage. However, in accordance with the requirements of the 2014 NPDES Permit, all stormwater that comes into contact with biosolids at the WWTF will be retained in the biosolid storage area and be treated with wastewater (CVRWQCB, 2014a). Construction of the Proposed Project would not substantially alter the drainage pattern of the project site, and would not create or contribute runoff water that would exceed the capacity of stormwater drainage systems.

In its current configuration, precipitation events have a significant influence on influent flow rates at the WWTF; infiltration and inflow (I/I) entering the collection system creates peaks in the influent flow that the WWTF must be able to accommodate (Appendix B).
Inflow refers to the surface water runoff that is collected directly into the sewer; e.g. sheetflow that enters through leaky manhole covers. Infiltration occurs when the groundwater table is high, and it infiltrates through cracks in the collection system. As a result of the high I/I in the City’s sewage collection system, a substantial volume of stormwater is routed through the WWTF. This would not be changed under the Proposed Project. However, after development of the project components, stormwater that enters the WWTF as influent would be treated with the new treatment and disinfection facilities and would be discharged at higher quality standards in compliance with the 2014 NPDES permit.

Questions G, H, and J

Would the project: Place housing within a 100-year flood hazard area as mapped on a federal Flood hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map; place within a 100-year flood hazard area structures that would impede or redirect flood flows; or result in inundation by seiche, tsunami, or mudflow?

No Impact. The Proposed Project does not involve the development of houses, and the structures built at the WWTF would not be placed within the 100-year floodplain. The outfall is located within the bed of Churn Creek and is therefore designated as within the 100-year floodplain. However, the pipeline would be buried and would not redirect flood flows, and the outfall located in the bank of Churn Creek would not introduce a structure that would redirect flood flows. The project site is located 100 miles east of the Pacific Ocean and 5 miles south of Shasta Lake, and is not at risk for inundation by tsunami or seiche. Given the gentle topographical relief and lack of hillsides in the vicinity to create landslides, there is no risk of mudflow.

Cumulative Impacts

Less than Significant. The Proposed Project and potential cumulative projects in the vicinity of the project site would be required to comply with the SWRCB General Construction NPDES permit, which is intended to reduce the potential for cumulative impacts to water quality during construction. Cumulatively considerable projects that would discharge stormwater runoff would be required to comply with NPDES discharge permits from the CVRWQCB and would be subject to subsequent environmental review. Therefore, impacts on cumulative construction-related water quality effects would be less than significant.

Additionally, the Proposed Project would increase water quality of the treated effluent discharges to Churn Creek. When considered with other potential development in the area, the Proposed Project would not result in adverse cumulative impacts due to surface water quality, or to groundwater supplies and quality.

Each of the cumulative development projects and the Proposed Project would be subject to local, State, and federal regulations designed to minimize cumulative impacts. Mitigation measures for the Proposed Project in combination with compliance with City, State, and federal regulations, are expected to reduce cumulatively considerable impacts to a less-than-significant level.
4.10.4 MITIGATION MEASURES

HYD-1: The City shall comply with the SWRCB NPDES General Permit. The SWRCB requires that all construction sites have adequate control measures to reduce the discharge of sediment and other pollutants to streams to ensure compliance with Section 303 of the CWA. To comply with the NPDES permit, the City will file a Notice of Intent with the SWRCB and prepare a SWPPP prior to construction, which includes a detailed, site-specific listing of the potential sources of stormwater pollution; pollution prevention measures (erosion and sediment control measures and measures to control non-stormwater discharges and hazardous spills) including a description of the type and location of erosion and sediment control BMPs to be implemented at the project site; and a BMP monitoring and maintenance schedule to determine the amount of pollutants leaving the Proposed Project site. A copy of the SWPPP must be current and remain on the project site. Control measures are required prior to and throughout the rainy season. Water quality BMPs identified in the SWPPP could include, but are not limited to, the following:

- Areas where ground disturbance would occur shall be identified in advance of construction and limited to only approved areas.
- All vehicular construction traffic shall be confined to the designated access routes and staging areas. See Figure 4 for the location of potential staging areas.
- All equipment maintenance and cleaning shall be confined to staging areas. Staging areas utilized for equipment maintenance and cleaning shall be located a minimum of 100 feet from streams and waterways, including Churn Creek and its unnamed tributary. No vehicle maintenance shall occur on-site during construction.
- All supervisory construction personnel shall be informed of environmental concerns, permit conditions, and final project specifications. Said Personnel will be responsible for instructing all on-site work to meet the requirements of the SWPP including making sure all work is conducted outside of protected trees’ drip lines to the extent possible.
- Restore disturbed areas to pre-construction contours to the fullest extent possible.
- Hay/straw bales and silt fences would be used to control erosion during stormwater runoff events.
- Salvage, store, and use the highest quality soil for native re-vegetation/seeding.
- Leave drainage gaps in topsoil and spoil piles to accommodate/reduce surface water runoff.
- Sediment control measures shall be in place prior to the onset of the rainy season and will be maintained until disturbed areas have been re-vegetated. Erosion control structures must be in place and operational at the end of each day if work activities are to occur during the rainy season.
- Fiber rolls shall be placed along the perimeter of disturbed areas to ensure sediment and other potential contaminants of concern are not transported off-site or to open trenches. Locations of fiber rolls will be field adjusted as needed and according to the advice of the certified SWPPP inspector.
4.0 Environmental Analysis (Checklist)

- Vehicles and equipment stored in the construction staging area shall be inspected regularly for signs of leakage. Leak-prone equipment will be staged over an impervious surface or other suitable means will be provided to ensure containment of any leaks. Vehicle/equipment wash waters or solvents will not be discharged to surface waters or drainage areas.

- During the rainy season (October 1 through April 30) identified in Chapter 15.08.120 of the City of Shasta Lake Municipal Code, soil stockpiles and material stockpiles will be covered and protected from the wind and precipitation. Plastic sheeting will be used to cover the stockpiles and straw wattles will be placed at the base for perimeter control.

- All contractors shall immediately control the source of any leak and immediately contain any spill utilizing appropriate spill containment and countermeasures. All leaks and spills shall be reported to the designated representative of the lead contractor and shall be evaluated to determine if the spill or leak meets mandatory SWPPP reporting requirements. Contaminated media shall be collected and disposed of at an off-site facility approved to accept such media.
4.11 LAND USE & PLANNING

4.11.1 ENVIRONMENTAL CHECKLIST

<table>
<thead>
<tr>
<th>LAND USE &amp; PLANNING</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would the project:</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>a) Physically divide an established community?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
<tr>
<td>b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>c) Conflict with any applicable habitat conservation plan or natural community conservation plan?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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</tr>
</tbody>
</table>

4.11.2 SETTING

Study Area Land Uses

As described in Section 3.2, the WWTF is located within the incorporated boundaries of the City of Shasta Lake, Shasta County, California. Lands within the project site are zoned as Public Facilities. The project site encompasses the existing components of the WWTF, including, but not limited to, the 400 af reclaimed water reservoir, the approximately 40-acre sprayfield, and the Discharge Point 001 outfall (Figure 3). Existing WWTF facilities are briefly described in Section 3.3.

Surrounding Land Uses

Land uses adjacent to the WWTF site consist of an industrial park, residential development, and open space. Immediately adjacent to the property to the west and south is the Shasta Lake City Animal Control Facility, Knauf Fiberglass plant, and the Shasta Lake Heritage & Historical Society which is part of the Incubator Building in the Industrial Park. A mature riparian corridor located along the banks of Churn Creek creates a natural buffer between the project site and the existing residential developments located approximately north and east of the existing WWTF. The nearest schools, Central Valley State Preschool, Central Valley High School, and the Shasta Lake School, are located within a mile north of the project site. I-5, a major transportation connector running north-south along the west coast, is approximately two miles east of the project site.
City of Shasta Lake General Plan

Applicable City General Plan goals, policies, and objectives include:

**Water Resources and Quality:**

Policy W-b Septic systems, waste disposal sites, and other sources of hazardous or polluting materials shall be designed to prevent contamination to rivers, creeks, streams, reservoirs, or the groundwater basin in accordance with standards accepted by or imposed by the City, Shasta County Environmental Health Division and the State Regional Water Quality Control Board.

**Public Services and Facilities:**

Objective PF-4 Improve and maintain the Citywide wastewater system facilities.

Objective PF-7 Develop a comprehensive long-term plan for wastewater treatment within the City.

4.11.3 DISCUSSION OF IMPACTS

**Question A**

*Would the project: physically divide an established community?*

No Impact. Projects that have the potential to physically divide an established community typically include new freeways and highways, major arterials streets, and railroad lines. The Proposed Project would occur within the City-owned WWTF site; therefore, it would not physically divide an established community.

**Question B**

*Would the project: conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?*

Less than Significant. The Proposed Project would be constructed within the existing WWTF in an area designated for Public Facilities. Land uses adjacent to the study area consist of industrial, residential development, and open space. Construction of the Proposed Project may create temporary land use conflicts with the sensitive land uses near to the project site from dust and noise. The probability of these nuisances occurring, as well as mitigation measures to lessen their impact, is discussed further in Section 4.3, Air Quality, and Section 4.13, Noise. After mitigation, all possible nuisances associated with the construction of the Proposed Project in proximity to sensitive land uses would be reduced to less than significant.

The Proposed Project is consistent with applicable policies in the City’s General Plan; specifically Objective PF-4 as detailed above to improve and maintain the Citywide wastewater system facilities. The upgrades to the WWTF would be consistent with all water quality standards as discussed in Section 4.10,
Hydrology and Water Quality, and Policy W-b, above including Basin Plan objectives. Therefore, implementation of the WWTF upgrades would not conflict with any plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect.

**Question C**

*Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?*

*No Impact.* No habitat conservation plan, natural community conservation plans, or similar plans apply to the project site; therefore, no impact would occur.

**Cumulative Impacts**

*Less than Significant.* Potential cumulative projects in the vicinity of the project site, including population growth resulting from build-out of the City’s General Plan, would be developed in accordance with local and regional planning documents. Thus, cumulative impacts associated with land use compatibility are expected be less than significant. Additionally, as discussed above, the Proposed Project is consistent with the General Plan land use designations, goals, and policies, and thus would not contribute to the potential for adverse cumulative land use effects.

**4.11.4 Mitigation Measures**

None required.
4.12 MINERAL RESOURCES

4.12.1 ENVIRONMENTAL CHECKLIST

<table>
<thead>
<tr>
<th>Mineral Resources</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would the project:</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>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?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
<tr>
<td>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?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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</tr>
</tbody>
</table>

4.12.2 SETTING

Shasta County has historically included an extensive production of several different mineral resources including gold, copper and iron. Currently, there are six mineral resources in production, including alluvial and sand and gravel, crushed stone, volcanic cinders, limestone, diatomite, and gold (Shasta County, 2004).

Pursuant to the mandate of the Surface Mining and Reclamation Act of 1975 (SMARA), the State Mining and Geology Board designates mineral deposits that have regional, multi-community, or statewide economic significance. The project site does not contain known mineral deposits which are either of statewide significance or the significance of which requires further evaluation (DOC, 2013).

4.12.3 DISCUSSION OF IMPACTS

Question A and B

Would the project: 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; 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?

No impact. There are no known mineral resources at the project site. Therefore, the Proposed Action would not result in the loss of availability of any mineral resources that could be of value to the region. There are no locally important mineral resource recovery sites in the area (USGS, 2013).

4.12.4 MITIGATION MEASURES

None required.
4.13 NOISE

4.13.1 ENVIRONMENTAL CHECKLIST

<table>
<thead>
<tr>
<th>NOISE</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would the project result in:</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>b) Exposure of persons to or generation of excessive groundborne vibration noise levels?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>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 expose people residing or working in the project area to excessive noise levels?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
<tr>
<td>f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
</tbody>
</table>

4.13.2 SETTING

Noise Descriptors

The ambient noise level is defined as the existing range of noise levels from all sources near and far. A similar term is background noise level, which usually refers to the ambient noise level that is present when any intermittent noise sources are absent. Community Noise Equivalent Level (CNEL) or Day-Night...
Average Sound Level (DNL) contours are frequently utilized to graphically portray community noise exposure. The CNEL is calculated from hourly Noise Equivalence Level (Leq) values, after adding a "penalty" to the noise levels measured during the evening (7 p.m. to 10 p.m.) and nighttime (10 p.m. to 7 a.m.) periods. The penalty for evening hours is a factor of 3, which is equivalent to 4.77 decibels (dB). The penalty for nighttime hours is a factor of 10, which is equivalent to 10 dB. To calculate the DNL, day-night average sound level (Ldn), the evening penalty is omitted. The Leq is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value.

Effects of Noise

The effects of noise on people fall into three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Human reaction to a new noise can be estimated through comparison of the new noise to the existing ambient noise level within a given environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will likely be judged by the recipients. With regard to increases in A-weighted noise levels, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 A-weighted decibels (dBA) cannot be perceived
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference
- A change in level of at least 5-dBA is required before any noticeable change in human response would be expected
- A 10-dBA change is subjectively heard as approximately a doubling in loudness and can cause adverse response

Generally, most noise is generated by transportation systems, principally motor vehicle noise, but also including aircraft noise and rail noise. The level of traffic noise depends on three things: 1) the volume of the traffic, 2) the speed of the traffic, and 3) the number of trucks in the flow of the traffic. Because noise is measured on a logarithmic scale, 70 dBA plus 70 dBA does not equal 140 dBA. Instead, two sources of equal noise added together have been found to result in an increase of 3 dBA. That is, if a certain volume of traffic results in a noise level of 70 dBA the addition of the same volume of traffic, or doubling, would result in a noise level of 73 dBA (Caltrans, 2009). Stationary point sources of noise, including
stationary mobile sources, such as idling vehicles or heavy construction equipment, attenuate (lessen) at a rate of six to nine dBA, Leq per doubling of distance from the source, depending on environmental conditions (i.e., atmospheric conditions and noise barriers, either vegetative or manufactured, etc.).

**Sensitive Receptors**

Some land uses are considered more sensitive to noise than others due to the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, and parks and other outdoor recreation areas generally are more sensitive to noise than are commercial and industrial land uses. A sensitive receptor is defined as any living entity or aggregate of entities whose comfort, health, or well being could be impaired or endangered by the existence of noise.

The land surrounding the project site is primarily open space, residential, and industrial. The nearest residences are located approximately 700 feet north and east of where construction would occur at the WWTF. Central Valley School is located approximately one mile northeast of the project site. There are no hospitals in the vicinity of the WWTF.

**Existing Project Noise**

The ambient noise level at the WWTF and surrounding vicinity was measured on May 2, 2014. The noise measurement equipment used consisted of a Quest Sound Pro SE/DL sound level meters. An acoustical calibrator was used to calibrate the sound level meter before and after measurement was conducted. All instrumentation satisfies the Type II (precision) requirements. Four 15-minute noise measurements were conducted, and the results are shown in Table 4.13-1, the noise meter output files are included as Appendix J.

<table>
<thead>
<tr>
<th>Noise Monitoring Sites</th>
<th>Community Noise Level Equivalent (CNEL)CNEL/Ldn/Leq</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 1 – Pine Grove Ave.</td>
<td>67.2 dB</td>
</tr>
<tr>
<td>Site 2 – second closest sensitive receptor</td>
<td>50.4 dB</td>
</tr>
<tr>
<td>Site 3 – closest sensitive receptor</td>
<td>58.1 dB</td>
</tr>
<tr>
<td>Site 4 – closest commercial land use</td>
<td>53.5 dB</td>
</tr>
</tbody>
</table>

CNEL – Community Noise Equivalency Level; Ldn = Day/Night Noise Level; Leq = Equivalent Noise Level.

Source: Appendix J

The noise measurement conducted at Site 1 (refer to Figure 12) was located adjacent to Pine Grove Avenue near the Churn Creek bridge northeast of the project site. This measurement was conducted to assess project-related traffic noise on Pine Grove Avenue. Noise monitoring Sites 2 and 3, located approximately 1,500 feet east and 650 feet northeast of the project site, respectively, were conducted to evaluate project-related noise on nearby sensitive receptors. Site 4 is located at the southeast corner of the recycled water pond near a pump station and was conducted to evaluate noise at the nearest commercial land use.
Figure 12
Noise Monitoring Sites
4.0 Environmental Analysis (Checklist)

Regulatory Context

City of Shasta Lake General Plan (1999) and Amendments

The General Plan seeks to protect noise sensitive areas and regulate new noise-generating development. The following General Plan guiding and implementation policies associated with noise are applicable to the Proposed Project.

Implementation Measures

N-a New development shall use appropriate site planning and building design to reduce undesirable noise impacts. The noise sensitivity of land uses as established in Table N-1 (Table 4.13-2) shall be used in the location of new development, preparation of general plan amendments and specific plans. The noise exposure level shall be established by reference to the Noise Contour Map (on file with the City) or project-specific measurements or calculations.

The interpretive guidelines in Figure N-1 shall not be applied mechanically, but with the degree of flexibility required in each case to achieve a sound and feasible land use decision. However, in no case shall a residential land use be located where the existing noise environment, combined with the measured or calculated noise reduction of the type of structure under consideration, makes it impossible to maintain an interior noise environment at or below 45 dBA CNEL.

<table>
<thead>
<tr>
<th>New Land Use</th>
<th>Outdoor Activity Area (Ldn)</th>
<th>Interior Activity Area (Leq)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Residential</td>
<td>60 – 65</td>
<td>45</td>
</tr>
<tr>
<td>Transient Lodging</td>
<td>65</td>
<td>45</td>
</tr>
<tr>
<td>Hospitals and Nursing Homes</td>
<td>60</td>
<td>45</td>
</tr>
<tr>
<td>Theaters and Auditoriums</td>
<td>-</td>
<td>35</td>
</tr>
<tr>
<td>Churches, Meeting Halls, Schools, Libraries, etc.</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>Office Buildings</td>
<td>65</td>
<td>50</td>
</tr>
<tr>
<td>Commercial Buildings</td>
<td>65</td>
<td>45</td>
</tr>
<tr>
<td>Playgrounds, Parks, etc.</td>
<td>70</td>
<td>-</td>
</tr>
<tr>
<td>Industrial Facilities</td>
<td>65</td>
<td>50</td>
</tr>
</tbody>
</table>

Source: City of Shasta Lake, 1999

Implementation Measures

N-5 Control noise at the source through use of insulation, berms, building design and orientation, buffer yards, staggered operating hours, and other techniques; where necessary, use noise barriers to attenuate noise to acceptable levels; require that barriers are landscaped to reduce negative visual impacts on the community.
4.13.3 DISCUSSION OF IMPACTS

Questions A, C, and D

Would the project result in: Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Construction

Less than Significant. Construction of the Proposed Project would generate noise and may temporarily increase noise levels at nearby sensitive land uses. Noise impacts resulting from construction would depend on: 1) the noise generated by various pieces of construction equipment; 2) the timing and duration of noise generating activities; 3) the distance between construction noise sources and noise sensitive receptors; and 4) existing ambient noise levels.

Table 4.13-3 shows the approximate noise level of common construction equipment that may be used during construction of the Proposed Project at 50 feet and 700 feet, which is the distance of the nearest sensitive receptor. The General Plan considers 60 to 65 dBA, Ldn to be the maximum noise level for residential outdoor activity areas; therefore, for this analysis a 60 dBA, Ldn was chosen as a conservative threshold. As shown in Table 4.13-3, no construction equipment would exceed the 60 dBA, Ldn threshold at 700 feet. Therefore, this is a less-than-significant impact. Although this impact is less than significant, Mitigation Measure N-1 is provided below to further reduce potential impacts associated with construction noise.

Operation

Less than Significant. Operation of the WWTF, pipelines, and effluent outfall will not emit noise levels above what occurs from those sources today. Noise measurements were taken to measure the baseline condition of the noise produced by existing operations of the WWTF. As shown in Table 4.13-1, none of the noise measurements taken at the sensitive receptors in the vicinity were above the City of Shasta Lake noise sensitivity standards discussed above.

Continued operation of the WWTF after implementation of the Proposed Project would not change the noise characteristics of the surrounding area, and would not increase the CNEL at the sensitive receptors. The only noise measurement location that had a CNEL greater than 65 dBA was Site 1 located on Pine Grove Avenue; however, operation of the Proposed Project would not increase traffic on this roadway and would not increase noise at that location. Periodic maintenance of the various project components may result in temporary sources of noise, but it will be the same as what occurs at the project site today. Therefore, this is a less-than-significant impact.
## TABLE 4.13-3
APPROXIMATE NOISE LEVEL OF COMMON CONSTRUCTION EQUIPMENT

<table>
<thead>
<tr>
<th>Equipment</th>
<th>dBA, Lmax (at 50 feet)</th>
<th>Usage Factor (Fraction of Use)</th>
<th>dBA Ldn (at 700 feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pavement saw</td>
<td>90</td>
<td>0.20</td>
<td>60</td>
</tr>
<tr>
<td>Jack hammer</td>
<td>85</td>
<td>0.20</td>
<td>55</td>
</tr>
<tr>
<td>Excavator</td>
<td>85</td>
<td>0.40</td>
<td>58</td>
</tr>
<tr>
<td>Front-end loader</td>
<td>80</td>
<td>0.40</td>
<td>53</td>
</tr>
<tr>
<td>Dump truck</td>
<td>84</td>
<td>0.40</td>
<td>57</td>
</tr>
<tr>
<td>Crane</td>
<td>85</td>
<td>0.16</td>
<td>54</td>
</tr>
<tr>
<td>Bulldozer</td>
<td>85</td>
<td>0.50</td>
<td>59</td>
</tr>
<tr>
<td>Water truck</td>
<td>85</td>
<td>0.50</td>
<td>59</td>
</tr>
<tr>
<td>Air compressor</td>
<td>80</td>
<td>0.40</td>
<td>53</td>
</tr>
<tr>
<td>Flat-bed delivery truck</td>
<td>84</td>
<td>0.40</td>
<td>57</td>
</tr>
<tr>
<td>Concrete truck</td>
<td>85</td>
<td>0.40</td>
<td>58</td>
</tr>
<tr>
<td>Sweepers</td>
<td>80</td>
<td>0.10</td>
<td>47</td>
</tr>
<tr>
<td>Concrete pumper trucks</td>
<td>82</td>
<td>0.20</td>
<td>52</td>
</tr>
<tr>
<td>Welding trucks</td>
<td>73</td>
<td>0.40</td>
<td>46</td>
</tr>
<tr>
<td>Side boom pipe handler tractor</td>
<td>85</td>
<td>0.50</td>
<td>59</td>
</tr>
<tr>
<td>Earth mover</td>
<td>85</td>
<td>0.50</td>
<td>59</td>
</tr>
<tr>
<td>Boom Truck</td>
<td>85</td>
<td>0.50</td>
<td>59</td>
</tr>
<tr>
<td>Backhoes</td>
<td>80</td>
<td>0.40</td>
<td>53</td>
</tr>
</tbody>
</table>

Calculated via Caltrans equation:
\[ \text{Leq}(h), \text{dBA} = \text{Lmax at 50 feet} - 20\log(D / 50) + 10\log(UF) \]

Source: Caltrans, 2013

---

**Question B**

*Would the project result in: Exposure of persons to or generation of excessive groundborne vibration noise levels?*

*Less than Significant.* Excessive vibration during construction only occurs when high vibration levels (i.e., compactors, large dozers, or pile drivers) are operated. Vibration annoyance and structural damage may occur if the Peak Particle Velocity (PPV) levels are above 0.1 PPV at 100 feet or 0.5 PPV at 25 feet, respectively (FTA, 2006). The Proposed Project may require limited use of equipment with high vibration levels, however, given the infrequent use of these types of equipment and the distance to the nearest sensitive receptors (700 feet north and east of where construction would occur), exposure to groundborne vibration from construction activities would not occur at the nearest sensitive receptor or structure. Operation of the Proposed Project would not create groundborne vibration. The Proposed Project would not expose persons to excessive groundborne vibration levels during construction or operation; therefore, this is considered a less-than-significant impact.
Questions E and F

*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 expose people residing or working in the project area to excessive noise levels? For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?*

*No Impact.* The nearest airfield is approximately 2.2 miles northeast of the project site. The Proposed Project is not located within an airport land use plan or in the vicinity of a private airstrip.

Cumulative Impacts

*Less than Significant.* As stated above, operation of the Proposed Project would require maintenance activities; however, these activities would be periodic and would not expose sensitive receptors to noise levels above the existing ambient noise level, cause substantial temporary or periodic increases in noise levels, nor permanently increase the ambient noise. Therefore the project would not result in cumulatively considerable impacts. This impact is considered less than significant.

4.13.4 Mitigation Measures

**N-1** The following measures shall be implemented to reduce potential impacts to noise during construction:

- Construction activities shall be limited to between the daytime hours of 7:00 A.M. and 7:00 P.M., Monday through Friday, and 8:00 A.M. and 5:00 P.M., on Saturdays. Construction activities shall be prohibited on Sundays.

- Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers’ recommendations. Equipment engine shrouds shall be closed during equipment operation.

- When not in use, motorized construction equipment shall not be left idling for more than 5 minutes.

- Stationary equipment (power generators, compressors, etc.) shall be located at the furthest practical distance from nearby noise-sensitive land uses or sufficiently shielded to reduce noise-related impacts.
4.14 POPULATION AND HOUSING

4.14.1 ENVIRONMENTAL CHECKLIST

<table>
<thead>
<tr>
<th>POPULATION</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would the project:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through the extension of roads or other infrastructure)?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
<tr>
<td>c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
</tbody>
</table>

4.14.2 SETTING

The construction of Shasta Dam began in 1938 and at its peak of construction, the dam project employed between 2,000 to 3,000 workers. During this time, the boomtowns of Central Valley, Pine Grove, Toyon, Project City, and Summit City began to develop. Many of the workers remained after completion of the Dam, expanding the population of the remaining four communities. The City of Shasta Lake incorporated in 1993, absorbing the four communities into its boundaries. As of January 1, 2014, the population for the City of Shasta Lake is estimated at 10,128 people (DOF, 2014), the majority of which are served by the WWTF. The remaining population use septic tanks for wastewater treatment.

4.14.3 DISCUSSION OF IMPACTS

Question A

Would the project: induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through the extension of roads or other infrastructure?"

Less than Significant. The Proposed Project does not involve the development of any homes or businesses and thus would not directly induce population growth. As described in Section 4.10, the Proposed Project would increase the effective treatment capacity of the WWTF from the current 0.83 MGD capacity to the current design and permitted capacity of 1.3 MGD. The proposed improvements are consistent with the City of Shasta Lake 2005 Wastewater System Master Plan and would allow the City to
accommodate anticipated population growth in accordance with its General Plan and applicable policies. The current ADWF at the WWTF is 0.65 MGD, which is generated by 134 commercial connections and 3,157 residential connections (or 3,218 household equivalents).

The proposed upgrades would allow the City to achieve the WWTF’s design and permitted capacity of 1.3 MGD, which is estimated to accommodate wastewater service for 6,436 household equivalents. The City predicts that approximately half of the future increase in flows will result from connections to existing development within the City and the remaining half will come from new growth consistent with the City’s General Plan (Waterworks Engineers, 2013). Based on Department of Finance estimates, in 2011, there were 2.572 persons per household within the City (Waterworks Engineers, 2013). Therefore the expansion in effective capacity at the WWTF could accommodate the growth of approximately 1,609 household equivalents within the City and a population increase of 4,138 persons.

While the Proposed Project may be perceived to indirectly induce growth, as it would remove a physical constraint to future development by increasing treatment capacity to service an additional 1,609 household equivalents, this growth was studied within the General Plan and associated EIR prepared in accordance with CEQA (City of Shasta Lake, 1999). This General Plan EIR was circulated for public review and certified by the City.

According to Table LU-1 of the General Plan, build out of land within the City in accordance with the General Plan would accommodate a population increase of approximately 16,081, and would accommodate a total population of 25,616 (City of Shasta Lake, 1999). The estimated population of the City in 2014 was 10,128 persons (DOF, 2014). The 4,138 increase in population that could be accommodated by the expansion in treatment capacity is well under the growth levels predicted and analyzed in the General Plan EIR. Therefore, the Proposed Project would not directly or indirectly lead to disorderly growth outside of that previously disclosed and anticipated in the General Plan and associated EIR. This impact is considered less than significant.

Questions B and C

Would the Project: displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No Impact. The Proposed Project would not displace existing housing or people that would necessitate the construction of replacement housing.

Cumulative Impacts

No Impact. Cumulative growth in the region has been addressed in the General Plan in the project area. The Proposed Project is not expected to increase growth beyond that projected in those plans; therefore, no cumulative impacts would occur.
4.14.4 MITIGATION MEASURES

None required.
4.15 PUBLIC SERVICES

4.15.1 ENVIRONMENTAL CHECKLIST

<table>
<thead>
<tr>
<th>PUBLIC SERVICES</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>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 time or other performance objectives for any of the public services:</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>a) Fire protection?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>b) Police Protection?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>c) Schools?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>d) Parks?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>e) Other public facilities?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
</tbody>
</table>

4.15.2 SETTING

**Fire Protection/Emergency Medical Service**

Fire Protection within the City of Shasta Lake is provided by the Shasta Lake Fire District (SLFD). SLFD has three stations, located at Ashby Court, Summit City on Lake Boulevard, and on Akrich Road. The latter two stations are currently unstaffed and used primarily for training and storage of fire protection apparatus. A total of ten people are staffed by the SLFD (SLFD, 2014).

Any medical emergencies that could occur at the WWTF would necessitate medical transport to facilities in Redding, located south of the study area, which provides a comprehensive range of inpatient and outpatient medical services. Mercy Medical Center and Shasta Regional Medical Center are the main hospitals in the area, providing 24-hour air transport services, in addition to emergency ambulance transportation, that would serve the study area (Mercy Medical Center, 2014; Shasta Regional Medical Center, 2014).
Law Enforcement
The City contracts with the Shasta County Sheriff’s Office for law enforcement services. The Shasta Lake Station includes one Captain, two Sergeants, ten Deputies, two Cadets, and one Senior Service Officer (Shasta County Sheriff’s Office, 2014).

Schools
The Gateway Unified School District services the City and includes the Grand Oaks Elementary School (Grades K-6); Shasta Lake School (Grades K-8), Central Valley High School (Grades 9-12), Mountain Lakes High School (Grades 10 -12) and other educational institutions including three charter schools, and an art school, which are not located within the City limits (GUSD, 2014).

Parks
There are several parks located within the City managed by the City’s Public Works Department (CSLPWD). These parks serve a wide range of recreational opportunities. Parks located within the City include the Clair Engle Park, Margaret Polf Park & Boomtown BMX, Bizz Johnson Ball Park, Wynne Price Park and Baseball Field, Akard Park, Shasta Park, and Blue Canyon Park (CSLPWD, 2014).

4.15.3 Discussion of Impacts
Questions A and B
Would the project: result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response time or other performance objectives for any of the public services: fire protection?; police protection?

Less than Significant. Construction-related activities associated with the Proposed Project and subsequent operations of the WWTF would not result in an adverse impact to fire protection services. As discussed in the Development Design Report (Appendix A), the Proposed Project would be designed in accordance with the National Fire Protection Association (NFPA) published code (NFPA 8-20 and 30), which specifies safety features that must be included when storing and handling a flammable or combustible carbon source.

Mitigation Measures HAZ-4 and HAZ-5 would minimize potential wildfire risks from construction activities. Therefore, the Proposed Project would not significantly increase fire risk over existing conditions, or demand for fire protection services.

The WWTF is closed to the general public except for arranged tours. Construction and operation of the Proposed Project would not increase demand for law enforcement services.

Questions C – E
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 time or other performance objectives for any of the public services: schools?; parks?; other public facilities?

*No Impact.* Construction, operation, and maintenance activities associated with the Proposed Project would not create impacts to area schools and parks, or increase demand for other public facilities. No impact to these public services would occur.

**Cumulative Impacts**

*No Impact.* As described above, the Proposed Project would not increase the potential demand for public services; therefore, no cumulatively considerable impacts would occur.

### 4.15.4 Mitigation Measures

None required.
4.16 RECREATION

4.16.1 ENVIRONMENTAL CHECKLIST

<table>
<thead>
<tr>
<th>RECREATION</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>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?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
</tbody>
</table>

4.16.2 SETTING

The City of Shasta Lake Public Works Department is responsible for management of parks in the Shasta Lake area. The Churn Creek Natural Area is located directly adjacent to the wastewater treatment facility, on the north and west sides. There are seven parks located within the City of Shasta Lake (CSLPWD, 2014). All seven (Clair Engle, Margaret Polf, Bizz Johnson, Wynne Price, Akard, Shasta, and Blue Canyon) are located at least one mile from the project site.

4.16.3 DISCUSSION OF IMPACTS

Questions A and B

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?; Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

No impact. The Proposed Project would not result in population growth that would increase the use of regional parks and other recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. Construction activities would be limited to a short-term duration and would not impede the use of existing access points to the Churn Creek Natural Area.

Cumulative Impacts

No Impact. The Proposed Project would not impact any existing recreational facilities. Therefore, it would not contribute towards cumulative impacts to recreational facilities.
4.16.4 **MITIGATION MEASURES**

None required.
4.17 TRANSPORTATION/CIRCULATION

4.17.1 ENVIRONMENTAL CHECKLIST

<table>
<thead>
<tr>
<th>TRANSPORTATION/TRAFFIC</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would the project:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>b) Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>e) Result in inadequate emergency access?</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?</td>
<td>☑</td>
<td>☑</td>
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</tr>
</tbody>
</table>

4.17.2 TRANSPORTATION NETWORK SETTING

The project site can be accessed via the following regional City roadways that provide access to the WWTF facility:
4.0 Environmental Analysis (Checklist)

- **Pine Grove Avenue** is a two lane east/west oriented roadway in the vicinity of the project site. The Pine Grove Avenue / Ashby Road intersection is located approximately 1.75 miles west of I-5.

- **Ashby Road** is a two lane north/south oriented roadway that serves as the western boundary of the wastewater treatment facility. Ashby Road, which terminates approximately 0.6 mile south of the intersection of Pine Grove Avenue, provides access to the WWTF and a small number of commercial/industrial developments.

- **Tibbitts Road** is a two lane east/west oriented roadway that provides direct access to the wastewater treatment facility. It intersects Ashby Road east of the WWTF. No other developments are accessed via Tibbitts Road. The School District maintains a small agricultural operation off Tibbitts Road.

**Bikeways, Pedestrian Facilities, Public Transportation System**

Bicycle pathways/routes in the immediate vicinity of the project site include bike routes on Pine Grove Avenue and Ashby Road. There are no pedestrian facilities within the vicinity of the project site, with the exception of a sidewalk along Ashby Road adjacent to the Knauf Fiberglass facility. There is no public transportation which services the project site. RABA has a transit stop on Ashby Road.

### 4.17.3 DISCUSSION OF IMPACTS

**Question A**

*Would the project: conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?*

**No impact.** Upgrades to the WWTF associated with the Proposed Project would not significantly impact traffic or conflict with an applicable plan, ordinance, or policy.

**Question B**

*Would the project: Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways*

**Less than Significant.** The Proposed Project is not considered a trip generating project. However, construction would result in a short term increase in traffic levels on project area roadways. Construction vehicles and equipment expected to be used include, but are not limited to, legally loaded trucks, delivery and service trucks, and construction worker vehicles. At estimated peak day levels, up to approximately 89 one-way construction worker vehicle trips could occur. Construction worker trips would be dispersed throughout the roadway system. Additionally, during the work day it is estimated that approximately four material delivery trips per day would occur. Truck deliveries from I-5 would take Ashby Road to Pine.
Grove Avenue. The temporary increase in construction related traffic along these roadways would not result in an increase to the locally established level of service (LOS) threshold (LOS C) as the existing traffic volumes along Pine Grove Avenue are currently operating at LOS A (City of Shasta Lake, 2014). This impact is considered to be less than significant.

Operation of Proposed Project would result in a negligible increase in additional traffic. At full buildout, an additional one or two full-time employees may be needed to operate the proposed facilities at the WWTF. The resulting additional trips added to the roadway network would not cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system, or result in deterioration in LOS below accepted standards (LOS C); therefore, this impact is considered to be less than significant.

**Question C**

*Would the project: Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?*

*No impact.* There are no airports within the vicinity of the project site. The nearest public airport, Benton Airpark, is located approximately 5.75 miles south in the City of Redding. The construction and operation of the Proposed Project would not alter air traffic patterns, or increase traffic levels or a change in location that results in substantial safety risks; therefore, no impact would occur.

**Question D**

*Would the project: Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

*No impact.* The Proposed Project would not change the design or uses of existing roads; therefore, no impact would occur.

**Question E**

*Would the project: Result in inadequate emergency access?*

*No impact.* Construction would occur periodically over a period of up to eighteen months at the project site. During construction, full lane closures on local roadways would not occur; therefore, construction activities would not impede emergency vehicles.

**Question F**

*Would the project: conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?*

*No impact.* The Proposed Project is a wastewater facility upgrade project and would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. Therefore, no impact would occur.
Cumulative Impacts

*No impact.* Traffic impacts from the Proposed Project would be limited to short-term construction effects on roadways providing access to the project site. No concurrent construction activities near the roadway network are anticipated; therefore, no cumulative impacts would occur.

**4.17.4 Mitigation Measures**

None required.
# 4.18 UTILITIES AND SERVICE SYSTEMS

## 4.18.1 ENVIRONMENTAL CHECKLIST

<table>
<thead>
<tr>
<th>UTILITIES &amp; SERVICE SYSTEMS</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would the project:</td>
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</tr>
<tr>
<td>a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?</td>
<td>☐</td>
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<td>☐</td>
</tr>
<tr>
<td>b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
</tr>
<tr>
<td>e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider’s existing commitments?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☐</td>
</tr>
<tr>
<td>g) Comply with federal, state, and local statutes and regulations related to solid waste.</td>
<td>☐</td>
<td>☐</td>
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</tbody>
</table>
4.18.2 SETTING

Water Suppliers and Supply

Water is primarily provided to the City from the Shasta Lake reservoir as stipulated in an interim U.S. Bureau of Reclamation Water Supply contract. The most recent City water master plan includes a total of 4,400 af under the contract. Additionally, the City has purchased supplemental water from various suppliers under short-term contracts, including: Centerville Community Services District, Anderson-Cottonwood Irrigation District (ACID), McConnell Foundation, MCM Properties, Inc., City of Redding for Summit City Pressure Zone, Siddiqui Family Partnership, Bella Vista Water District, and City of Redding. These are prior year contracts which varied over the last 15 years depending on supply, availability of Central Valley Project water, and drought conditions (Isreal, 2014).

Solid Waste Collection and Disposal

Solid waste collection in the City is provided by Waste Management, Inc. and disposed at the West Central Landfill that is owned and operated by the City of Redding Solid Waste Utility (Shasta County, 2014). The West Central Landfill has a design capacity of 6,605,722 cubic yards and is expected to reach its permitted capacity in 2025 (Shasta County, 2003).

4.18.3 DISCUSSION OF IMPACTS

Questions A, B, and E

Would the project: Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board; Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; Result in a determination by the wastewater treatment provider that serves or may serve the project that is has inadequate capacity to serve the project’s projected demand in addition to provider’s existing commitments?

Less than Significant. The Proposed Project involves upgrading the existing WWTF facility for the treatment and release of effluent discharge under the 2014 NPDES permit. Effluent limitations have been established in the NPDES permit for ammonia, copper, dichlorobromomethane, nitrate, nitrite, pH, and zinc. Upgrades to the WWTF would increase the effective treatment capacity from 0.83 MGD to the design and permitted capacity of 1.3 MGD, as stipulated in the 2014 NDPES permit. A less-than-significant impact would occur.

Question C

Would the project: require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less than Significant. See discussion in Section 4.10.3. The existing stormwater collection system within the WWTF would be modified as necessary to accommodate changes to drainage patterns and stormwater run-off rates as a result of the Proposed Project. Implementation of the Proposed Project would not result in an increase in stormwater runoff that could result in flooding or exceed the capacity of existing stormwater facilities.
Question D

Would the project: have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

No Impact. The Proposed Project would not increase demand for water supply and therefore would not impact water supply facilities. Existing recycled water use accounts would continue to be served. Therefore, no impact would occur.

Questions F and G

Would the project: Be served by a landfill with sufficient permitted capacity to accommodate the project’s solid waste disposal needs; or Comply with federal, state, and local statutes and regulations related to solid waste?

Less than Significant. The impact to local landfills would be minimal during construction activities as the Proposed Project would generate only a minor amount of waste from construction-related activities. This waste would be sorted at a local transfer station and disposed of at the West Central landfill. This landfill has sufficient permitted capacity to accommodate construction related waste generated by the Proposed Project. Construction contractors would be required to comply with federal, State, and local statutes and regulations relating to solid waste. Operation and maintenance of the project would not increase waste generation above existing levels at the WWTF.

Cumulative Impacts

No Impact. Utility and service systems in the area, such as solid waste collection and disposal, would not experience a change in demand for services from existing conditions. Therefore, the Proposed Project would not contribute to cumulative impacts of utility and service systems.

4.18.4 Mitigation Measures

None required.
4.19 MANDATORY FINDING OF SIGNIFICANCE

<table>
<thead>
<tr>
<th>MANDATORY FINDINGS OF SIGNIFICANCE</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant With Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Does the project have the potential to 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 the number or restrict the range of a rare or endangered plan or animal or eliminate important examples of the major periods of California history or prehistory?</td>
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<tr>
<td>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 probably future projects)?</td>
<td>☐</td>
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<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>c) Does the project have environment effects, which will cause substantial adverse effects on human beings, either directly or indirectly?</td>
<td>☐</td>
<td>☒</td>
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</table>

Question A – Environmental Effects

*Does the project have the potential to 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 the number or restrict the range of a rare or endangered plan or animal or eliminate important examples of the major periods of California history or prehistory?*

*Less-than-Significant with Mitigation.* As discussed in the previous sections, the Proposed Project could potentially have significant environmental effects with respect to Air Quality, Biological Resources, Cultural Resources, Green House Gas Emissions, Hazards and Hazardous Materials, and Hydrology and Water Quality. With mitigation discussed in each section (as appropriate), however, the impacts of the Proposed Project would be reduced to a less than significant level.

Question B – Cumulative Effects

*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 probably future projects)?

Less-than-Significant with Mitigation. Cumulative impacts for each resource area have been considered within the analysis of each resource area. When appropriate, mitigation measures have been provided to reduce all potential impacts to a less-than-significant level.

**Question C – Indirect Effects**

*Does the project have environment effects, which will cause substantial adverse effects on human beings, either directly or indirectly?*

Less than Significant with Mitigation. The potential direct environmental effects of the Proposed Project have been considered within the discussion of each environmental resource area in the previous sections. When appropriate, mitigation measures have been provided to reduce all potential impacts to a less-than-significant level.

The Proposed Project could be perceived to result in indirect effects associated with growth inducement. The Proposed Project would increase capacity of the WWTF from its current effective capacity of 0.83 MGD to the originally designed and permitted capacity of 1.3 MGD. The potential for growth inducement as a result of the Proposed Project is discussed in detail in Section 4.14.3, Question A. As discussed therein, it is estimated that approximately half of the future increase in flows will result from connections to existing development within the City and half will come from new growth consistent with the City’s General Plan.

This growth was studied within the General Plan which was circulated for public review and certified by the City (City of Shasta Lake, 1999). The increase in population that could be accommodated by the expansion in treatment capacity is well under the growth levels predicted and analyzed in the General Plan EIR. The Proposed Project would be consistent with the long-term goals of the City General Plan to increase the capacity of the WWTF to meet a growing population at City buildout. Therefore, potential indirect effects associated with growth inducement would not cause substantial adverse effects on human beings.
5.0 LIST OF PREPARERS

CITY OF SHASTA LAKE – LEAD AGENCY

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Debbie Israel, Senior Planner
Carla Thompson, Development Services Director
Tom Chism, Wastewater Treatment Superintendent

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Project Director: Ryan Sawyer
Project Manager: Bibiana Alvarez
Technical Staff: Nick Mitrovich
Alison Middlekauff
Annalee Sanborn
David Sawyer
Erin Quinn
Pete Bontadelli
Jacqueline McCrory
Shay Richardson
Anna Noah
Brian Marks
Dana Hirschberg
Glenn Mayfield

WATERWORKS ENGINEERS – PROJECT ENGINEERS

Scott Buecker, P.E.
6.0 REFERENCES


AES, 2014b. Biological Assessment and Essential Fish Habitat Assessment: City of Shasta Lake Wastewater Treatment Facility Upgrade. November 2014 (Appendix E).


AES, 2014f. Cultural Resources Study: City of Shasta Lake Wastewater Treatment Facility Upgrade. November 2014 Confidential Material held at City of Shasta Lake Development Services Department).


Analytical Environmental Services
6-2
City of Shasta Lake WWTF Upgrade Project
214516
Initial Study

California Department of Fish and Wildlife (CDFW). 2014. List of California Terrestrial Natural Communities Recognized by the Natural Diversity Database. Natural Heritage Division, CNDDDB, Sacramento, California.


Chism, 2014a. Email Communication from Tom Chism, Wastewater Treatment Superintendent, City of Shasta Lake. Email dated August 5, 2014.

Chism, 2014b. Email Communication from Tom Chism, Wastewater Treatment Superintendent, City of Shasta Lake. Email dated November 13, 2014.


Isreal, Debbie, 2014. Email Communication from Debbie Isreal, Senior Planner, Development Services Department, City of Shasta Lake. Email dated November 18, 2014.


Pacific Fishery Management Council (PFMC), 1999. Identification and Description of Essential Fish Habitat, Adverse Impacts, and Recommended Conservation Measures for Salmon. Amendment 14 to the Pacific Coast Salmon Plan.


U.S. Fish and Wildlife Service (USFWS), 2014. Federal Endangered and Threatened Species that Occur On or may be Affected by Projects on the Shasta Dam USGS 7.5 Topographic Quadrangle. April 16, 2014. Included as Attachment 1 of Appendix D.


Waldrop, 2014. Email correspondence from John Waldrop of the Shasta County Air Quality Management District. Email dated August 20, 2014.
