

Draft

# TURLOCK LAKE REHABILITATION PROJECT

Initial Study/Proposed Mitigated Negative Declaration

Prepared for  
Turlock Irrigation District

December 2022



Draft

# TURLOCK LAKE REHABILITATION PROJECT

## Initial Study/Proposed Mitigated Negative Declaration

Prepared for  
Turlock Irrigation District  
333 East Canal Drive  
P.O. Box 949  
Turlock, CA 95381  
(209) 883-8608 direct

December 2022

2600 Capitol Ave  
Suite 200  
Sacramento, CA 95816  
916.564.4500  
esassoc.com



Bend	Orlando	San Jose
Camarillo	Pasadena	Santa Monica
Delray Beach	Petaluma	Sarasota
Destin	Portland	Seattle
Irvine	Sacramento	Tampa
Los Angeles	San Diego	
Oakland	San Francisco	

# TABLE OF CONTENTS

---

## Turlock Lake Rehabilitation Project Initial Study/Proposed Mitigated Negative Declaration

<b>Chapter 1, Introduction</b> .....	<b>1</b>
1.1 Document Organization .....	1
1.2 Purpose of the Initial Study .....	2
1.3 Resources Not Considered in Detail .....	2
1.4 Summary of Findings .....	3
<b>Chapter 2, Project Description</b> .....	<b>5</b>
2.1 Introduction .....	5
2.2 Project Location .....	11
2.3 Description of the Proposed Project .....	11
2.4 Construction Process and Schedule .....	12
2.5 Project Operations and Maintenance.....	14
2.6 Responsible Agencies, Permits, and Approvals .....	14
2.7 References .....	14
<b>Chapter 3, Environmental Checklist and Discussion</b> .....	<b>17</b>
3.1 Aesthetics .....	17
3.2 Agriculture and Forestry Resources .....	20
3.3 Air Quality .....	24
3.4 Biological Resources .....	33
3.5 Cultural Resources .....	44
3.6 Energy .....	54
3.7 Geology and Soils.....	56
3.8 Greenhouse Gas Emissions .....	66
3.9 Hazards and Hazardous Materials.....	69
3.10 Hydrology and Water Quality .....	73
3.11 Noise .....	76
3.12 Recreation .....	81
3.13 Transportation .....	83
3.14 Utilities and Service Systems .....	87
3.15 Wildfire.....	89
3.16 Tribal Cultural Resources .....	91

**List of Figures**

Figure 2-1	Regional Project Setting .....	6
Figure 2-2	Project Location .....	7
Figure 2-3	Proposed Project Activities .....	10
Figure 3.2-1	FMMP Farmland .....	21

**List of Tables**

Table 2-1	Principal Observations during Dam Inspections .....	8
Table 2-2	Approximate Dimensions of Proposed Project Dams .....	9
Table 2-3	Construction Quantities for Dam Buttress at Dams C, H, J, L, Q, and S .....	13
Table 2-5	Regulatory Requirements, Permits, and Authorizations for Project Facilities .....	14
Table 3.3-1	Unmitigated Project Construction Emissions .....	29
Table 3.5-1	Test Trenching Summary .....	46
Table 3.11-1	Noise Levels from Construction .....	79

**List of Appendices**

Appendix A	CalEEMod Annual Emissions Report
Appendix B	Biological Resources Search Results

**Acronyms and Other Abbreviations**

Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
DSOD	California Division of Safety of Dams
MND	Mitigated Negative Declaration
TID	Turlock Irrigation District
USGS	U.S. Geological Survey

# CHAPTER 1

---

## Introduction

As lead agency under the California Environmental Quality Act (CEQA), Turlock Irrigation District (TID) has prepared this Initial Study to address the environmental consequences of the proposed Turlock Lake Rehabilitation Project (proposed project).

### 1.1 Document Organization

This document is organized into the following chapters:

- **Chapter 1, *Introduction***, describes the organization of this document and the purpose of the Initial Study and presents a summary of findings.
- **Chapter 2, *Project Description***, describes the proposed project, including the proposed project location, proposed project objectives, activities to be conducted under the proposed project, and permits and/or approvals that may be required before implementation of the proposed project.
- **Chapter 3, *Initial Study Environmental Checklist***, presents an analysis of potential impacts of the proposed project for the resource topics included in the CEQA Environmental Checklist (Appendix G of the State CEQA Guidelines). For each resource topic question, the following information is provided: (1) environmental setting; (2) a discussion of the potential effects of implementing the proposed project; (3) a significance finding; and (4) any mitigation measures recommended for incorporation into the proposed project to reduce identified significant impacts to a less-than-significant level. This chapter lists the references used in preparation of this Initial Study for each resource topic.

After completion of the required 20-day public comment period, and before approving the proposed project, TID will consider the Mitigated Negative Declaration (MND) together with any comments provided during the public comment period. TID will adopt the MND if, based on the whole of the record, (1) there is no substantial evidence that the proposed project will have a significant effect on the environment; and (2) it represents TID's independent judgment and analysis.

As part of the approval process, TID will also prepare and adopt a mitigation monitoring and reporting program for mitigation measures identified in the MND, as required under Public Resources Code Section 21081.6(c).

## 1.2 Purpose of the Initial Study

This Initial Study was prepared in accordance with Public Resources Code Section 21000 et seq. (CEQA) and Title 14, Section 15000 et seq. of the California Code of Regulations (the State CEQA Guidelines). The purpose of this Initial Study is to: (1) determine whether implementing the proposed project would result in potentially significant or significant effects on the environment; and (2) incorporate mitigation measures into the proposed project's design, as necessary, to eliminate the project's potentially significant or significant effects or reduce them to a less-than-significant level.

## 1.3 Resources Not Considered in Detail

The following resource topics were not considered in detail because no impact would occur under any of these categories.

### 1.3.1 Land Use and Planning

The proposed project site includes 8 dams located around the perimeter of Turlock Lake in unincorporated Stanislaus County. The proposed project is not located within a city or community and would be consistent with existing land uses, plans, policies, or regulations. Therefore, no impacts related to land use and planning would occur.

### 1.3.2 Mineral Resources

The proposed project requires remediation of 6 dams and an best management practice maintenance (i.e., vegetation clearing) of 2 more dams around the perimeter of Turlock Lake. Construction activity would occur largely within the footprint of existing dams and would not result in the loss of availability of a known mineral resource or affect a locally important mineral resource recovery site delineated on a local General Plan, Specific Plan, or other land use plan. Further, development of the proposed project would not preclude future excavation of a mineral resource should such extraction become viable. There would be no impact to mineral resources.

### 1.3.3 Population and Housing

The proposed project would result in the rehabilitation and maintenance of existing dams, returning operation of the Turlock Lake reservoir to the current California Department of Water Resources (DWR) Division of Safety of Dams (DSOD)-certified elevation levels. The proposed project does not involve new homes. Construction would be short-term and would not require additional workers outside of the existing workforce. Operation of the proposed project would be accomplished by existing TID workers. The proposed project is located directly on the perimeter of Turlock Lake and would not displace any housing or people. Therefore, no impacts related to population and housing would occur.

### 1.3.4 Public Services

The proposed project would not result in the construction of any new facilities or population that would generate a need for new or physically altered government facilities. Therefore, there would be no change in the demand for police, fire protection, or community amenities such as schools and parks compared to that which currently exists, and no impact would occur.

## 1.4 Summary of Findings

Based on the analysis in Chapter 3, implementing the proposed project would result in less-than-significant impacts on the following resource topics:

- Aesthetics
- Agricultural and Forestry Resources
- Energy
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Noise
- Utilities
- Wildfire
- Recreation
- Transportation

The proposed project would result in less-than-significant impacts on the following resource topics after incorporation of mitigation measures into the proposed project:

- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Tribal Cultural Resources

This page intentionally left blank

# CHAPTER 2

---

## Project Description

### 2.1 Introduction

The following discussion summarizes the background of the Turlock Lake Rehabilitation Project (proposed project) and provides relevant construction information for the project.

#### 2.1.1 Background

Davis Reservoir, later renamed Owens Reservoir and now called Turlock Lake, was constructed in 1913. Turlock Lake served as TID’s main storage reservoir until completion of the original Don Pedro Dam and Reservoir in 1923 (TID 2021). Turlock Lake is an off-stream reservoir in unincorporated Stanislaus County that receives water from the Tuolumne River via the Upper Main Canal and from McDonald Creek (**Figure 2-1**). Construction of the reservoir was completed by impounding the lake with 18 dams that enclose topographic saddles<sup>1</sup> around the reservoir’s perimeter. Seventeen of the dams at Turlock Lake are earthen, identified as Dams B–S (there is no Dam I), some of which contain buried concrete wave walls or retaining/splash walls on the upstream side (i.e., Dams B, C, D, E, H, J, L, and S). Dam A is a combined earthen and concrete dam, which includes a concrete powerhouse and outlet works structure in addition to an embankment saddle dam.

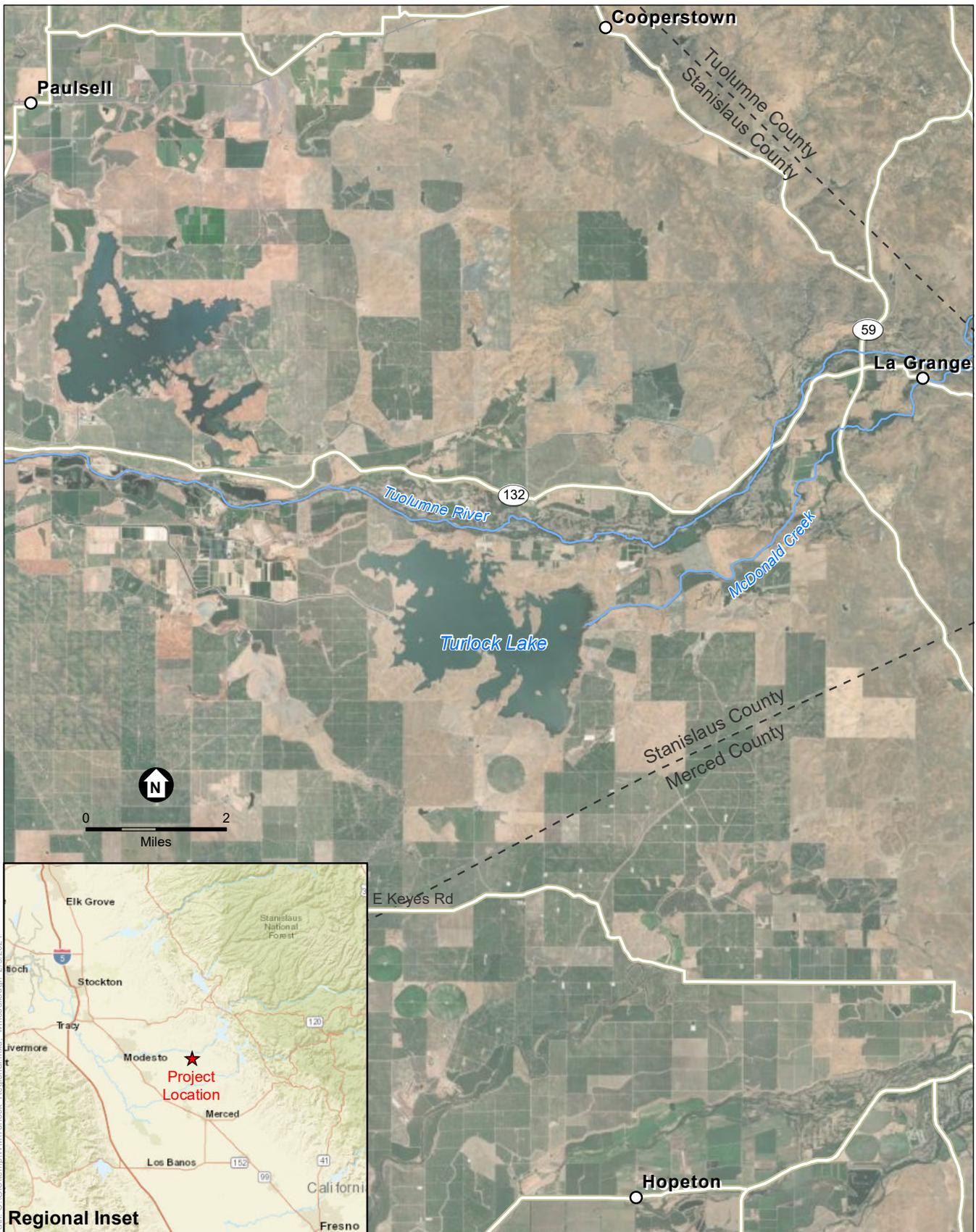
The reservoir regulates the supply of irrigation flows in TID’s system by releasing flows into the Turlock Main Canal through either the outlet works structure or the powerhouse within Dam A, on the west side of Turlock Lake. The other 17 dams are designated alphabetically in a clockwise direction around the lake, with 14 dams (Dams B–H and J–P) close to each other on the northwest and north sides of the lake, Dams Q and R located at the lake’s northeast corner, and Dam S situated on the lake’s west-southwest side, approximately 0.7 miles due south of Dam A. See **Figure 2-2** for the locations of the dams.

Turlock Lake currently has a DSOD-certified maximum reservoir elevation of 240.6 feet (U.S. Geological Survey [USGS] datum<sup>2</sup>), providing a maximum storage capacity of nearly 45,600 acre-feet. However, TID has been operating Turlock Lake 3 to 4 feet below this certified elevation because of concern about worsening seepage losses through the dams at higher pool elevations. For example, the historical cross section of Dam H indicates that additional fill was placed over the concrete facing on the upstream side of the dam in “1914 to 1918, to stop a

---

<sup>1</sup> A *topographic saddle* is a low point between two peaks.

<sup>2</sup> 238.6 feet based on the TID 1929 datum; 240.6 feet according to the USGS datum.

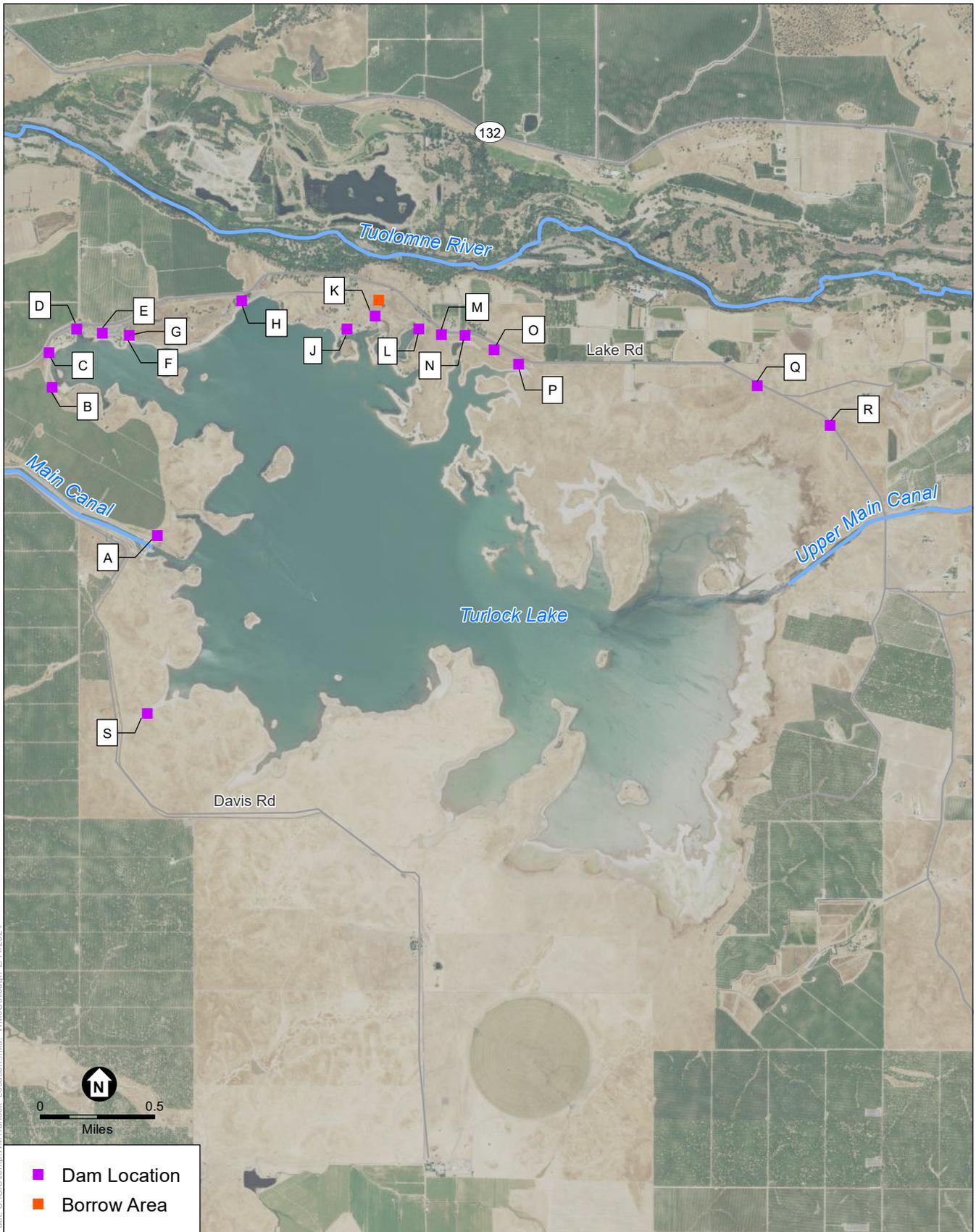


SOURCE: ESA, 2021

Turlock Lake Rehabilitation Project

**Figure 2-1**  
Regional Project Setting





SOURCE: ESA, 2021

Turlock Lake Rehabilitation Project

**Figure 2-2**  
Project Location

seepage leak” (Stantec 2019). The first available document that addresses the seepage issue is a memorandum dated June 11, 1928, about 14 years after construction, that corroborates the placement of the upstream fill and states that a small quantity of seepage was still evident (Perkins 1928). Besides the fill placed on the upstream side of Dam H before 1918, in the following decades (through 1932), fill was placed on the upstream concrete facing of the other larger dams (Hart 1932). The fill was dumped on the upper portions of the faces, allowing wave action to carry it down the slope.

Dam inspections by the California Department of Water Resources in the following years report varying amounts of seepage. An inspection report completed in 1939 indicates that during the winter of that year, Dams H and J were grouted, and the grouting was effective on Dam J but not Dam H. Another report, from 1946, indicates that remedial work was performed on Dams B, E, G, and H. The remedial work consisted of “excavating cutoff trenches at the upstream toes and backfilling with impervious material which has been carried up the face of the dams to their crests” (Engle 1946). Also in 1946, a large amount of select material was deposited as a “levee” on the faces of the reinforced concrete slope linings of Dams H and J.

## 2.1.2 Existing Facilities

In 2018 and 2019, TID evaluated all 18 of the dams around Turlock Lake (Dams A–H and J–S) for seepage issues and seismic stability and conducted visual inspections of the dams to locate possible indications of poor dam performance, such as areas of seepage, excessive vegetation, crack patterns in the asphalt pavement along the crest, activities by burrowing animals, and signs of instability. **Table 2-1** summarizes observations made during the dam inspections.

**TABLE 2-1  
PRINCIPAL OBSERVATIONS DURING DAM INSPECTIONS**

Inspection Date	Dams Inspected <sup>a</sup>	Reservoir Level Elevation (USGS) <sup>b</sup>	Ground Surface Conditions	Rainfall Record
December 19, 2018	H, M, N, O, P, Q, R, S	234.4 feet	Generally moist	1.30 inches from December 2 to December 18, 2018
December 20, 2018	E, F, G, H, J	234.4 feet	Generally moist; wet at downstream toes of Dams O, R, and S; locally wet on downstream side of Dam J	1.30 inches from December 2 to December 18, 2018
February 7, 2019	A, B, C, D, K, L	233.07 feet	Generally moist; wet at downstream toes of Dams C, K, and L	1.57 inches from January 6 to February 6, 2019

NOTES:

USGS = U.S. Geological Survey

a Inspection of Dam H started on December 19, 2018, and was completed on December 19, 2018. The embankments of Dam A are located at the outlet structure, as shown in Drawing No. 4-150 dated 1912.

b For reference, the contemporary “maximum high-water level” is at elevation 240.6 feet.

SOURCE: Stantec 2019.

The evaluation and inspections found that the elevations of the dam crests ranged from 243.6 feet to 247.2 feet (USGS datum). Reservoir levels on the days of the inspections varied from elevation 233.1 feet to elevation 234.4 feet, indicating that available freeboard ranged from about 9.2 feet to about 14.1 feet, depending on the dam.

As a result of the inspections, TID determined that Dams C, H, J, L, Q, and S should be retrofitted for seepage remediation and seismic stability (i.e., downstream buttress) and that vegetation clearing should take place (for dam safety purposes) at Dams C, D, E, H, J, and L. Work was deemed unnecessary at Dams A, B, F, G, K, M, N, O, P, and R. See **Figure 2-3** for the impact areas associated with the work described above.

The proposed project dams range from approximately 5.8 to 30.5 feet in height and from approximately 100 to 1,000 feet in length. Dams C, D, E, H, J, L, and S were constructed with an upstream reinforced concrete facing that includes a toe wall<sup>3</sup> and a top parapet wall.<sup>4</sup> **Table 2-2** shows the approximate dimensions and type of work proposed at each dam.

**TABLE 2-2  
APPROXIMATE DIMENSIONS OF PROPOSED PROJECT DAMS**

Dam	Type of Work	Lowest Crest Elevation (ft) (USGS) <sup>a</sup>	Bottom Elevation (ft) (USGS) <sup>b</sup>	Approximate Maximum Height (ft)	Approximate Crest Length (ft)
C	Buttress, vegetation clearing	245.3	219.7	25.6	1,000
D	Vegetation clearing	245.9	224.5	21.4	200
E	Vegetation clearing	246.3	232.0	14.3	500
H	Buttress, vegetation clearing	247.2	216.7	30.5	900
J	Buttress, vegetation clearing	245.7	222.8	22.9	1,000
L	Buttress, vegetation clearing	245.9	225.6	20.3	400
Q	Buttress	244.0	238.2	5.8	100
S	Buttress	245.7	233.2	12.5	200

NOTES:

ft = feet; USGS = U.S. Geological Survey

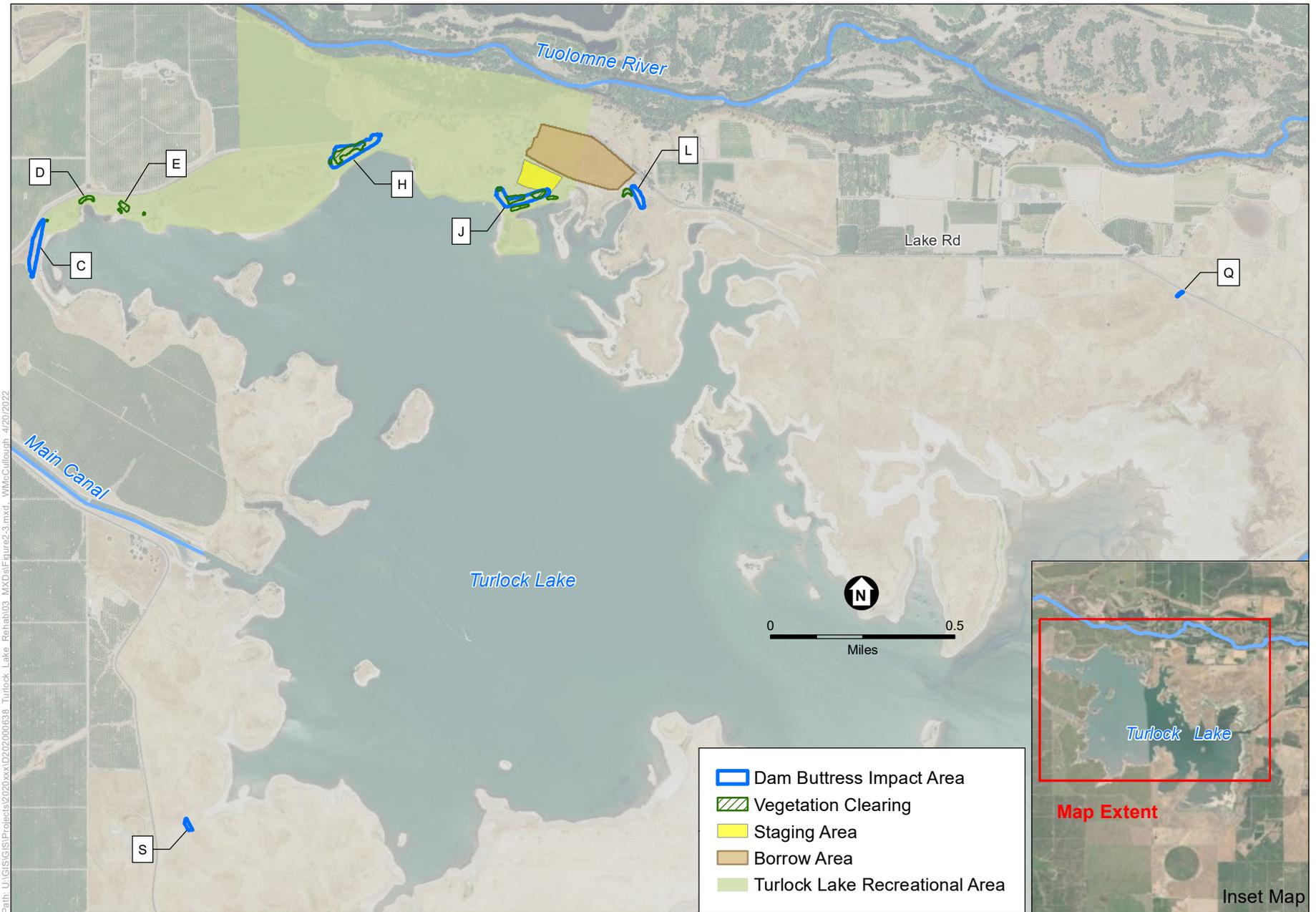
a Based on Drawing No. 253b dated April 27, 2007.

b Based on Historical Drawing No. 4-166.

SOURCE: Stantec 2019

<sup>3</sup> A *toe wall* is a low wall constructed at the bottom of an embankment to prevent slippage or spreading of the soil.

<sup>4</sup> A *parapet wall* is typically a barrier that is an extension of the wall at the edge of a structure (i.e., dam, roof, terrace, balcony, walkway, or other structure).



SOURCE: ESA, 20210

Turlock Lake Rehab Project

**Figure 2-3** Proposed Project Activities

## 2.2 Project Location

The proposed project includes eight of the 18 dams located around the reservoir perimeter of Turlock Lake, as shown in Figures 2-1 and 2-2. It is located in the eastern corner of Stanislaus County, approximately 1 mile from the county's border with Merced County.

### 2.2.1 Surrounding Land Uses and Setting

The project site is located within the Tuolumne River watershed, adjacent to and south of the Tuolumne River. The surrounding land use is agricultural and open space, with the Turlock Lake State Recreation Area positioned along the northern edge of Turlock Lake, surrounding Dams D through K (Figure 2-3). State Route (SR) 132, approximately 1 mile north of the proposed project site, runs directly west approximately 8.5 miles to the city of Waterford and approximately 7.5 miles east-northeast to the rural community of La Grange.

### 2.2.2 General Plan Designation and Zoning District

The project site is zoned as Agriculture 20 Acre (A-2-40). As defined in the Stanislaus County Code, Chapter 21.20, *General Agriculture District (A-2)*, Section 21.20.020, *Permitted Uses*, the A-2-40 district classification is intended to support and enhance agriculture as the predominant land use in the county's unincorporated areas. The Stanislaus County General Plan (2016) designates the area as agriculture.

## 2.3 Description of the Proposed Project

The proposed project would rehabilitate six of Turlock Lake's 18 embankment dams for seismic stability and seepage remediation via downstream buttressing. Dams C, H, J, L, Q, and S would be retrofitted for seepage and seismic stability improvements using the methods described in Section 2.3.1, *Dam Buttressing*. Clearing of trees and woody vegetation would occur at Dams C, D, E, H, J, and L for dam safety purposes, as described in Section 2.4.1, *Site Preparation, Staging, Access, and Haul Routes*. For additional information regarding site preparation, staging, and construction import and export quantities for the proposed project features, see Section 2.4, *Construction Process and Schedule*.

### 2.3.1 Dam Buttressing

The proposed project would include the placement of buttress fills<sup>5</sup> on the downstream slopes of Dams C, H, J, L, Q, and S (see Figure 2-3 for the locations of this work). Each buttress fill would reduce the risk of dam failure, enable the dam to perform satisfactorily, and retain the reservoir during an earthquake. For example, the height of the buttress (full height of the dam) would limit

<sup>5</sup> A *buttress fill* is a compact fill placed in an area where soft natural soils beneath a planned fill would be overstressed by the weight of the fill.

seismic deformation and loss of freeboard. The buttress would also include chimney drains and a filter-compatible sand and gravel toe drain to safely collect and control seepage.

Materials excavated from the borrow site shown on Figure 2-3 would be used to fill the buttresses. Each buttress fill would be approximately the full height of the dam, run the full length of the dam (from abutment to abutment), and would be up to 35 feet wide. The proposed chimney drains would be approximately 2 feet thick and the toe drain would be approximately 3 feet deep. It is anticipated that the chimney and toe drains<sup>6</sup> would consist of single-stage filter/drain material imported from a source within 25 miles of the project site.

In general, the proposed project would include the following seepage remediation and seismic stability improvements:

- Site preparation (as described in Section 2.4.1, *Site Preparation, Staging, and Access*)
- Preparation of foundations (i.e., grading and compacting)
- Excavation, hauling, spreading, and compacting of materials for each buttress
- Installation of chimney drain material (i.e., concrete sand and imported drain rock [0.75-inch rock])
- Installation of filter material below excavation of the buttress
- Downstream hydroseeding

See **Table 2-3** in Section 2.4.3, *Construction Quantities*, for the anticipated construction quantities of proposed infrastructure at Dams C, H, J, L, Q, and S.

## 2.4 Construction Process and Schedule

This section provides an overview of construction processes and schedules relevant to the proposed project.

### 2.4.1 Site Preparation, Staging, Access, and Haul Routes

Figure 2-3 shows the locations of staging and borrow areas for the proposed project. Initial site preparation would include vegetation clearing of the staging and borrow areas and all work areas on dam slopes. Vegetation clearing would involve removal of trees, for dam safety purposes, on the upstream slope of Dams C and L, the downstream slopes of Dams D and H, and both the upstream and downstream slopes of Dams E and J. Once construction has been completed, downstream hydroseeding would occur but the dams would not be revegetated with trees for dam safety purposes.

---

<sup>6</sup> *Drains* are applications of free-draining material that are typically installed within an embankment and designed to intercept and control water seepage.

TID anticipates mostly using existing paved and dirt roads during construction and remediation of the dams; however, the existing haul roads on the downstream toes of Dams C, H, J, and L will be covered by the new buttresses. These roads will need to be recut in the immediate footprint of the dams for use during construction and future operational needs.

To facilitate isolation of the proposed project sites from construction activities around the banks of the reservoir, construction would be completed in a dry state, with reservoir water elevation below 240 feet, and would not include any in-water work. Installation of cofferdams would not be required.

## 2.4.2 Construction Workforce and Equipment

Construction would require a crew size of approximately 10 workers. The specific equipment supporting construction of the proposed project would be identified based on requirements specified by the proposed project's construction contractor. However, TID anticipates that the following or similar types of equipment would be used on-site:

- Excavator
- Bulldozer
- 4 Dump trucks
- 2 Paddle wheel scrapers
- Forklift
- Compactor
- 4,000-gallon water truck
- Grader

## 2.4.3 Construction Quantities

Construction activities for the proposed project would require excavating buttress fill materials from the borrow site shown in Figure 2-3. Table 2-3 discusses the earthwork volumes and quantities of imported and exported materials required for the proposed project's activities.

**TABLE 2-3  
CONSTRUCTION QUANTITIES FOR DAM BUTTRESS AT DAMS C, H, J, L, Q, AND S**

Project Activity or Element	Dam C	Dam H	Dam J	Dam L	Dam Q	Dam S	Total
Buttress Foundation Preparation (cy) (removed, dried and replaced)	11,100	20,800	18,500	4,300	150	1,300	56,150
Buttress Fill from Borrow (cy)	13,900	24,500	12,400	3,700	75	900	55,475
Drain Filter Material (cy)	4,800	6,900	5,900	1,650	-	610	19,860
1-Foot-Diameter Perforated PVC Pipe (ft)	510	750	660	230	-	110	2,260
Top Soil Placement (cy)	2,875	3,100	2,400	700	65	315	9,455
Downstream Hydroseeding (sf)	91,700	124,800	95,100	28,400	2,600	9,800	352,400

NOTES: cy = cubic yards; ft = feet; PVC = polyvinyl chloride; sf = square feet

SOURCE: Stantec 2022

## 2.4.4 Construction Schedule and Phasing

Construction of the proposed project would require up to 8 months. Project construction would typically take place 5 days a week between 7 a.m. and 9 p.m. TID anticipates that project construction would occur during normal low-operation levels and into the non-irrigation season, between the months of September 2023 and April 2024. Construction would likely begin at Dam L, followed by J, H, C, S, and Q.

## 2.5 Project Operations and Maintenance

The Turlock Lake dams would be safely operated at the reservoir's irrigation season certified maximum elevation of 240.6 feet (USGS), which is approximately 6–7 feet higher than the reservoir level observed during the inspections and 3–4 feet higher than existing operation elevations. All other operations, including vegetation and rodent management practices, would remain consistent with existing operations.

## 2.6 Responsible Agencies, Permits, and Approvals

Table 2-5 summarizes the permits and/or approvals that may be required before construction of the proposed project.

**TABLE 2-5  
REGULATORY REQUIREMENTS, PERMITS, AND AUTHORIZATIONS FOR PROJECT FACILITIES**

Agency	Type of Approval
<b>State Agencies</b>	
California Department of Fish and Wildlife	California Fish and Game Code Section 1600 Lake or Streambed Alteration Agreement
Central Valley Regional Water Quality Control Board	Waste Discharge Requirement; NPDES General Permit for Stormwater Discharge Associated with Construction; General Order for Dewatering and Other Low Threat Discharges to Surface Waters Permit
State Historic Preservation Office	National Historic Preservation Act Section 106
Department of Water Resources Division of Safety of Dams	Dam Repair or Alteration permit
<b>Local Agencies</b>	
Stanislaus County	Stormwater Pollution Prevention Plan (SWPPP) permit
NOTES: N/A = not applicable; NPDES = National Pollutant Discharge Elimination System	
SOURCE: ESA 2021	

## 2.7 References

Engle, G.F. 1946. Inspection of Dam: Owens Reservoir Dam No. 68-3. March 14, 1946.

Hart, S.A. 1932. Memorandum to Mr. Hawley: Owens Reservoir #68-3. July 20, 1932.

Perkins, W.A. 1928. Owens Dams. Memorandum to Mr. Hyatt dated June 29, 1928.

Stanislaus County. 2016. Stanislaus County General Plan 2015. Adopted on August 23, 2016, by the Board of Supervisors. Available at: <https://www.stancounty.com/planning/pl/gp/current/gp-chapter2.pdf>. Accessed March 21, 2022.

Stantec. 2019. Final Technical Memorandum: Turlock Lake Dam Rehabilitation Project – Conceptual Evaluation and Cost Estimate. Prepared for Turlock Irrigation District. September 30, 2019.

Turlock Irrigation District. 2021. 2020 Agricultural Water Management Plan. Prepared by the Turlock Irrigation District. March 2021. Available at: <https://www.tid.org/irrigation/irrigation-information/ag-water-management-plan/>. Accessed June 9, 2022.

This page intentionally left blank

# CHAPTER 3

## Environmental Checklist and Discussion

### 3.1 Aesthetics

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

#### 3.1.1 Environmental Setting

Aesthetic or visual resources include the “scenic character” of a particular region and site. Scenic features can be either natural (e.g., vegetation and topography) or man-made (e.g., historic structures). Areas that are more sensitive to potential effects are usually readily observable, such as land adjacent to major roadways and hilltops.

#### Visual Environment

The proposed project site is located in unincorporated Stanislaus County, approximately 1 mile from the county’s border with Merced County. The area is generally flat and used primarily for agriculture and open space, with the Turlock Lake State Recreation Area positioned along the northern edge of Turlock Lake, surrounding Dams D through K (Figure 2-3). Interstate 5 (I-5), the only officially designated scenic highway in Stanislaus County, is approximately 33 miles to the southwest. SR 132, approximately 1-mile north of the proposed project site, runs directly west approximately 8.5 miles to the city of Waterford and approximately 7.5 miles east-northeast to the rural community of La Grange. The proposed project site is surrounded by parcels primarily used for agricultural, open space, and recreational uses along the northern edge of Turlock Lake, and existing roads surrounding the proposed project site include paved and dirt roads.

### 3.1.2 Discussion

- a) **No Impact.** No designated scenic vistas or notable geographic features have been identified near the proposed project site in the Stanislaus County General Plan (Stanislaus County 2016). As a result, no impact on a scenic vista would occur.
- b) **No Impact.** A review of the current California Department of Transportation (Caltrans) Map of Designated Scenic Routes indicates one officially designated state scenic highway in Stanislaus County, I-5 (Caltrans 2019). I-5 is officially designated as a scenic route in Stanislaus County from the San Joaquin County line to the Merced County line; however, the interstate is approximately 33 miles southwest of the proposed project site. The proposed project would not be visible to travelers on I-5 and would not affect the scenic quality of the landscape or intrude upon travelers' enjoyment of the view. Therefore, no impact on scenic resources would occur.
- c) **Less than Significant.** Implementation of the proposed project would result in temporary changes to local visual conditions associated with construction activities, such as site preparation, preparation of foundations (e.g., grading and compacting), excavation, hauling, spreading, stockpiling, and compacting of materials, installation of associated infrastructure (e.g., chimney drain material), installation of filter material, downstream hydroseeding, and the presence of equipment within the proposed project site. These impacts would be temporary in nature and would not extend beyond the anticipated 8 months of construction. Therefore, given the relatively short-term nature of these construction-related activities, construction-related visual impacts would be less than significant.

Completion of the proposed project would result in some permanent visual changes to the proposed project site. Construction activities associated with buttressing existing dams within the Turlock Lake reservoir for seismic stability and seepage remediation would create visual changes consistent with the existing agricultural, open space, and recreational nature of the area, which includes 18 existing embankment dams and associated infrastructure. Additionally, the dams proposed for rehabilitation would be in the same location (Figure 2-3), which would result in minor changes to visual impacts. Therefore, visual impacts from the proposed project would be less than significant.

- d) **No Impact.** Construction of the proposed project would occur during the daytime, typically 5 days a week between 7 a.m. and 9 p.m. and would not require nighttime lighting. The proposed project does not propose any new light sources or reflective surfaces that would represent potential sources of glare. Therefore, no impact related to new sources of light and glare would occur.

### 3.1.3 References

California Department of Transportation (Caltrans). 2019. List of Eligible and Officially Designated State Scenic Highways. Available at: <https://caltrans.maps.arcgis.com/apps/>

webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aaca. Accessed March 21, 2022.

Stanislaus County. 2016. Stanislaus County General Plan 2015. Adopted on August 23, 2016, by the Board of Supervisors. Available at: <https://www.stancounty.com/planning/pl/gp/current/gp-chapter2.pdf>. Accessed March 21, 2022.

---

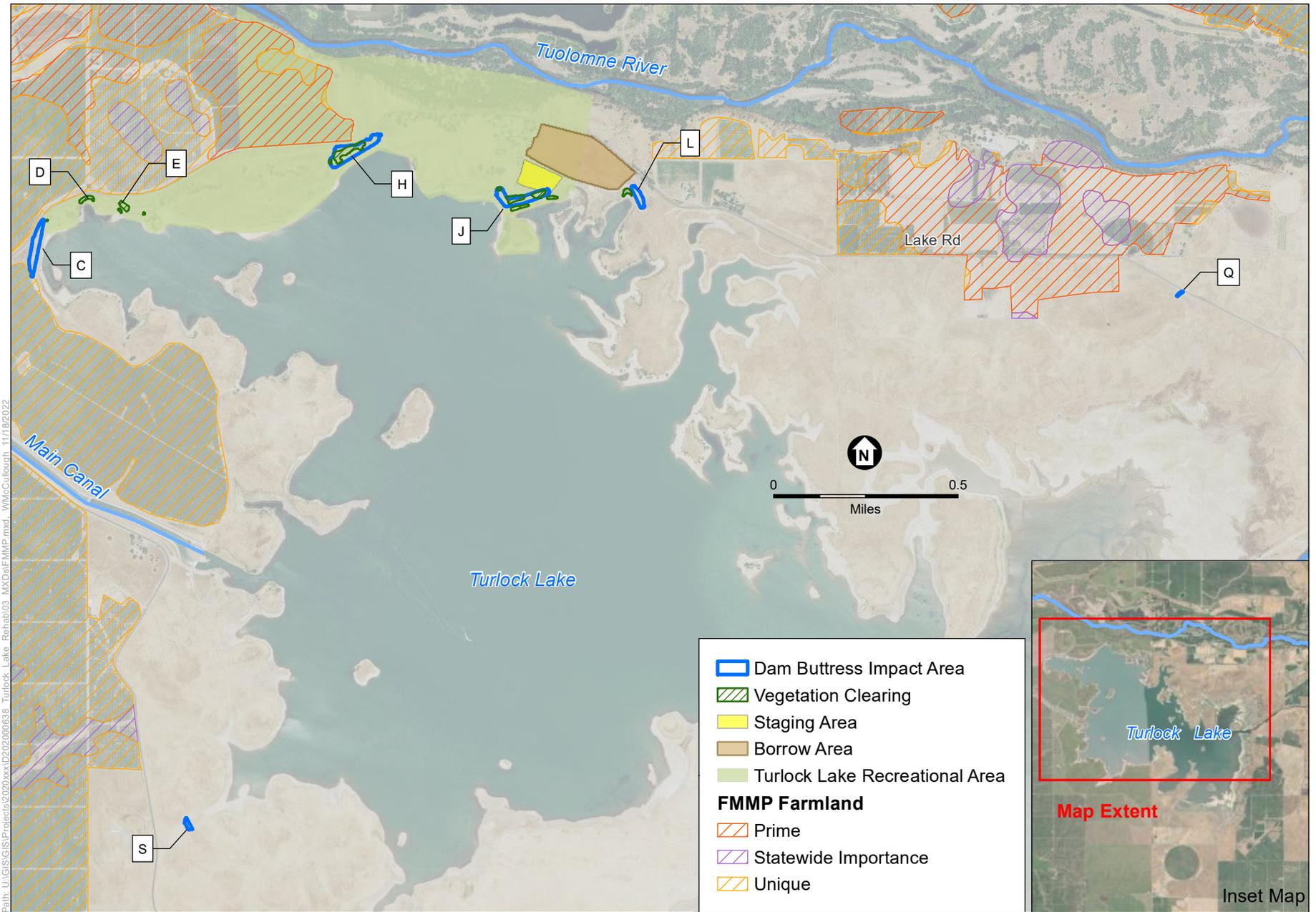
### 3.2 Agriculture and Forestry Resources

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

#### 3.2.1 Environmental Setting

Stanislaus County is one of California’s leading agricultural counties, with approximately 85 percent of the county’s total land acreage currently being used for agricultural purposes (Stanislaus County 2016). Stanislaus County ranked fifth overall in California agricultural sales from 2018 to 2019 (CDFA 2020).

The California Department of Conservation (DOC) administers the Farmland Mapping and Monitoring Program, California’s statewide agricultural land inventory. Through this mapping effort, DOC classifies farmland under four categories: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. The proposed project site contains Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. **Figure 3.2-1** shows the location and extent of designated farmland within the proposed project site. There is no forest land in or adjacent to the proposed project area. The proposed project site is designated by the Stanislaus County General Plan as Grazing Land, Urban and Built-Up Land, Water, Nonagricultural and Natural Vegetation, Unique Farmland, Farmland of Statewide Importance, and Prime Farmland (DOC 2016).



SOURCE: ESA, 20210

Turlock Lake Rehab Project

**Figure 3.2-1**  
FMMP Farmland

The Williamson Act enables governments to enter into contracts with private landowners to restrict specific land parcels to agricultural or related open space use. The proposed project site is currently in a Williamson Act contract, as are adjacent parcels (Conservation Biology Institute 2022).

### 3.2.2 Discussion

a, b, e) **Less than Significant.** The proposed project site is designated primarily as Unique Farmland and Prime Farmland, and a small portion is designated as Statewide Importance Farmland. In addition, the site is currently in a Williamson Act contract. As of 2018, Stanislaus County contained 250,420 acres of Prime Farmland, 121,930 acres of Unique Farmland, and 33,042 acres of Farmland of Statewide Importance (Stanislaus County 2019). Implementation of the proposed project would result in the rehabilitation of existing dams and operation of the Turlock Lake reservoir at California DSOD-certified elevation levels. None of the dams proposed for rehabilitation are located within designated Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Implementation of the proposed project would result in Dam C being retrofitted for seepage and seismic stability improvements (e.g., dam buttressing)—this dam is located adjacent to designated Unique Farmland within the proposed project site. However, rehabilitation of Dam C would not infringe on designated Unique Farmland because construction activities would take place within the existing dam’s footprint, which extends to the edge of Lake Road that is on the northwest side of Dam C. The proposed project would not result in the realigning of Lake Road. Therefore, while rehabilitation activities at Dam C would be located immediately adjacent to designated Unique Farmland within the proposed project site, the proposed project would not convert existing farmland to non-agricultural use or result in permanent impacts to designated farmland within the proposed project site.

The proposed project is located directly along the perimeter of Turlock Lake and involves existing dams. Because the proposed project would result in the rehabilitation of existing dams within the existing footprint of the dams and would not result in the conversion of existing farmland to non-agricultural use, the proposed project would not conflict with an existing Williamson Act contract. Therefore, this impact would be less than significant.

c, d) **No Impact.** The proposed project site is not zoned as forest land or timberland or zoned for timberland production. Implementation of the proposed project would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production, nor would it result in the loss of forest land or conversion of forest land to non-forest use. Therefore, no impact would occur.

### 3.2.3 References

California Department of Conservation (DOC). 2016. California Important Farmland Finder. Available at <https://maps.conservation.ca.gov/dlrp/ciff/>. Accessed March 25, 2022.

California Department of Food & Agriculture (CDFA). 2020. California Agricultural Statistics Review 2019-2020. Available at [https://www.cdfa.ca.gov/Statistics/PDFs/2020\\_Ag\\_Stats\\_Review.pdf](https://www.cdfa.ca.gov/Statistics/PDFs/2020_Ag_Stats_Review.pdf). Accessed March 25, 2022.

Conservation Biology Institute. 2022. Data Basin. Available at <https://databasin.org/maps/new/#datasets=20a568ac94f346d7908aa937947c4203>. Accessed March 25, 2022.

Stanislaus County. 2016. Stanislaus County General Plan and Airport Land Use Compatibility Plan Update Draft Program Environmental Impact Report. Available at <https://www.stancounty.com/planning/pl/gp/current/DraftEIR.pdf>. Accessed March 25, 2022.

\_\_\_\_\_. 2019. Important Farmland Data Availability 1984 - Present Historic Land Use Conversion. Available at <https://www.conservation.ca.gov/dlrp/fmmp/Pages/Stanislaus.aspx>. Accessed March 25, 2022.

---

### 3.3 Air Quality

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

#### 3.3.1 Environmental Setting

##### General Climate and Meteorology

The proposed project site is located in unincorporated Stanislaus County in the northern portion of the San Joaquin Valley Air Basin (SJVAB). The SJVAB is defined by the Sierra Nevada in the east (8,000 to 14,000 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 8,000 feet in elevation). The valley is basically flat with a slight downward gradient to the northwest. The valley opens to the sea at the Carquinez Strait, where the San Joaquin-Sacramento Delta empties into San Francisco Bay. The San Joaquin Valley could thus be considered a “bowl” open only to the north.

The SJVAB has an inland Mediterranean climate averaging over 260 sunny days per year. The valley floor experiences warm, dry summers and cool, wet winters. Summer high temperatures often exceed 100 degrees Fahrenheit, averaging in the low 90s in the northern valley and high 90s in the south. In the entire SJVAB, high daily temperature readings in summer average 95 degrees Fahrenheit. Over the past 30 years, the SJVAB averaged 106 days per year of 90 degrees Fahrenheit or hotter, and 40 days per year of 100 degrees Fahrenheit or hotter. The daily summer temperature variation can be as much as 30 degrees Fahrenheit.

In winter, as the cyclonic storm track moves southward, the storm systems moving in from the Pacific Ocean bring a maritime influence to the SJVAB. The high mountains to the east prevent the cold, continental air masses of the interior from influencing the valley. Winters are mild and humid. Temperatures below freezing are unusual. Average high temperatures in the winter are in the 50s, but highs in the 30s and 40s can occur on days with persistent fog and low cloudiness. The average daily low temperature is 45 degrees Fahrenheit.

## **Criteria Air Pollutants**

Concentrations of criteria air pollutant are used as indicators of ambient air quality conditions. Source types, health effects, and future trends associated with each air pollutant are described below along with the most current attainment area designations and monitoring data for the proposed project areas and vicinity.

### **Ozone**

Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gas (ROG) and nitrogen oxides (NO<sub>x</sub>). ROG and NO<sub>x</sub> are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately 3 hours. Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of ROG and NO<sub>x</sub> under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone.

### **Carbon Monoxide**

Ambient carbon monoxide (CO) concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence CO concentrations. Under inversion conditions, CO concentrations may be distributed more uniformly over an area that may extend some distance from vehicular sources. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses.

CO concentrations have declined dramatically in California due to existing controls and programs, and most areas of the state, including the proposed project region, have no problem meeting the CO state and federal standards. CO measurements and modeling were important in the early 1980s when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling results have not been a priority in most California air districts due to the retirement of older polluting vehicles, lower emissions from new vehicles, and improvements in fuels.

### **Nitrogen Dioxide**

Nitrogen dioxide (NO<sub>2</sub>) is a reddish-brown gas that is a by-product of combustion processes. NO<sub>2</sub> may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

Automobiles and industrial operations are the main sources of NO<sub>2</sub>, which is an air quality concern because it acts a respiratory irritant and is a precursor of ozone. NO<sub>2</sub> is a major component of the group of gaseous nitrogen compounds commonly referred to as NO<sub>x</sub>, which are produced by fuel combustion in motor vehicles, industrial stationary sources (such as industrial activities), ships, aircraft, and rail transit. Typically, NO<sub>x</sub> emitted from fuel combustion are in the form of nitric oxide (NO) and NO<sub>2</sub>. NO is often converted to NO<sub>2</sub> when it reacts with ozone or undergoes photochemical reactions in the atmosphere. Therefore, emissions of NO<sub>2</sub> from combustion sources are typically evaluated based on the amount of NO<sub>x</sub> emitted from the source.

### **Sulfur Dioxide**

Sulfur dioxide (SO<sub>2</sub>) is a combustion product of sulfur or sulfur-containing fuels such as coal and diesel. SO<sub>2</sub> is also a precursor to the formation of atmospheric sulfate, particulate matter and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain. Concentration rather than duration of exposure is an important determinant of respiratory effects. Exposure to high SO<sub>2</sub> concentrations may result in edema of the lungs or glottis and respiratory paralysis.

### **Particulate Matter**

PM<sub>10</sub> and PM<sub>2.5</sub> consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively (a micron is one-millionth of a meter). PM<sub>10</sub> and PM<sub>2.5</sub> represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility. Large dust particles (diameter greater than 10 microns) settle out rapidly and are easily filtered by human breathing passages. This large dust is of more concern as a soiling nuisance rather than a health hazard. The remaining fraction, PM<sub>10</sub> and PM<sub>2.5</sub>, are a health concern particularly at levels above the federal and state ambient air quality standards. PM<sub>2.5</sub> (including diesel exhaust particles) is thought to have greater effects on health, because these particles are so small and, thus, are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Recent studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air. Children are more susceptible to the health risks of PM<sub>10</sub> and PM<sub>2.5</sub> because their immune and respiratory systems are still developing.

Mortality studies since the 1990s have shown a statistically significant direct association between mortality (premature deaths) and daily concentrations of particulate matter in the air. Despite important gaps in scientific knowledge and continued reasons for some skepticism, a comprehensive evaluation of the research findings provides persuasive evidence that exposure to fine particulate air pollution has adverse effects on cardiopulmonary health (Pope and Dockery 2006). The California Air Resources Board (CARB) has estimated that achieving the ambient air

quality standards for PM<sub>10</sub> could reduce premature mortality rates by 6,500 cases per year (CARB 2002).

### **Lead**

Ambient lead concentrations meet both the federal and state standards in the proposed project areas. Lead has a range of adverse neurotoxin health effects, and was formerly released into the atmosphere primarily via leaded gasoline products. The phasing out of leaded gasoline in California resulted in decreasing levels of atmospheric lead. The proposed project would not introduce any new sources of lead emissions; consequently, lead emissions are not required to be quantified and are not further evaluated in this analysis.

### **Toxic Air Contaminants**

Non-criteria air pollutants, or toxic air contaminants (TACs), are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, diesel engines, dry cleaners, industrial operations, and painting operations. TACs are regulated differently from criteria air pollutants at both federal and state levels. At the federal level, these airborne substances are referred to as hazardous air pollutants (HAPs). The state list of TACs identifies 243 substances and the federal list of HAPs identifies 189 substances.

CARB identified diesel particulate matter (DPM) as a TAC in 1998, primarily based on evidence demonstrating cancer effects in humans. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and concentrations of DPM are higher near heavily traveled highways and rail lines with diesel locomotive operations. The risk from DPM as determined by CARB declined from 750 in one million in 1990 to 570 in one million in 1995; by 2000, CARB estimated the average statewide cancer risk from DPM at 540 in one million (CARB 2009). This calculated cancer risk values from ambient air exposure can be compared against the lifetime probability of being diagnosed with cancer in the United States, from all causes, which is more than 40 percent (based on a sampling of 17 regions nationwide), or greater than 400,000 in one million, according to the National Cancer Institute (NCI 2012).

### **Odorous Emissions**

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. Known as odor fatigue, a person can become desensitized to almost any odor and recognition only occurs with an alteration

in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors. Odor impacts should be considered for any proposed new odor sources located near existing receptors, as well as any new sensitive receptors located near existing odor sources. Generally, increasing the distance between the receptor and the odor source will mitigate odor impacts.

### ***Sensitive Receptors***

Some receptors are considered more sensitive than others to air pollutants. Reasons for greater sensitivity include preexisting health problems, proximity to emissions source, or duration of exposure to air pollutants. 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 infections and other air quality-related health problems than the general public. Residential areas are also sensitive to poor air quality because people usually stay home for extended periods of time. The distance to sensitive receptors from proposed project elements varies from 500 feet from the proposed borrow area to 900 feet from dams A, J, L, M, and N. All other dams are over 1,200 feet from the nearest residential receptor.

## **3.3.2 Discussion**

- a) **Less than Significant.** The applicable air quality plan is the San Joaquin Valley Air Pollution Control District's (SJVAPCD's) *2016 Ozone Plan for 2008 8-hour Ozone Standard* (SJVAPCD 2016) and *2018 Plan for the 1997, 2006, and 2012 PM<sub>2.5</sub> Standards* (SJVAPCD 2018). The current set of rules and regulations represents all feasible control measures for SJVAPCD sources. The SJVAPCD plans to achieve the California Ambient Air Quality Standards and National Ambient Air Quality Standards by the earliest practicable date as a result of local reductions. Exceedance of the SJVAPCD's current adopted thresholds of significance for criteria pollutant emissions would conflict with or obstruct the implementation of the *2016 Ozone Plan for 2008 8-hour Ozone Standard* and *2018 Plan for the 1997, 2006, and 2012 PM<sub>2.5</sub> Standards*.

The proposed project would result in an increase in criteria pollutant emissions generated by construction worker trips, off-road equipment operations, and truck trips during construction. There would be minor employee trips during maintenance activities. However, the increase in employee trips is not expected to be substantially greater than what currently exists. The increased mobile source emissions at the proposed project site are expected to result in a marginal increase in criteria pollutant emissions and would not conflict with or obstruct the implementation of the *2016 Ozone Plan for 2008 8-hour Ozone Standard* and *2018 Plan for the 1997, 2006, and 2012 PM<sub>2.5</sub> Standards*.

As described later under Impact b, project emissions of NO<sub>x</sub> (ozone precursor) would not be expected to exceed the SJVAPCD significance threshold during the duration of construction activities. The construction of the proposed project would be short-term and temporary, and the increase in criteria pollutant emissions from off- and on-road equipment exhaust would not conflict with the applicable air quality plans. Since

construction emissions are not expected to exceed the SJVAPCD or General Conformity *de minimums* thresholds for NO<sub>x</sub>, this impact would be a less-than-significant impact.

- b) **Less than Significant with Mitigation Incorporated.** The sources of construction-related pollutant emissions would include on-road worker trips and localized haul trips to and from the borrow area and off-road equipment. Construction activities are anticipated to be 8 months in total and would not generate substantial amounts of pollutant emissions.

Construction activities are short term and typically result in combustion exhaust emissions (e.g., vehicle and equipment tailpipe emissions), including ozone precursors (ROG and NO<sub>x</sub>), and PM from combustion and in the form of dust (fugitive dust). Emissions of ozone precursors and PM are primarily a result of the combustion of fuel from on-road vehicles and off-road equipment.

Pollutant emissions associated with construction of the proposed project would be generated from the following general construction activities: (1) ground disturbance from grading, excavation, etc.; (2) vehicle trips from workers traveling to and from the construction areas; (3) trips associated with delivery of construction supplies to, and hauling debris from, the construction areas; and (4) fuel combustion by on-site construction equipment. These construction activities would temporarily generate air pollutant emissions, including dust and fumes. The amount of emissions that would be generated on a daily basis would vary, depending on the intensity and types of construction activities that would occur simultaneously. Overall, construction activities associated with the proposed projects components would occur over a period of approximately 8 months.

Project construction emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2020.4.0 and are presented in **Table 3.3-1**. The table shows total construction emissions, which occur within a year, and compares them to the SJVAPCD significance thresholds for construction. See **Appendix A** for the complete CalEEMod results.

**TABLE 3.3-1  
UNMITIGATED PROJECT CONSTRUCTION EMISSIONS**

Project Construction Activities	Estimated Construction Emissions (tons/year)					
	CO	NO <sub>x</sub>	ROG	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
2023	2.2	2.8	0.29	<0.01	0.84	0.33
2024	2.1	2.7	0.29	<0.01	0.83	0.32
SJVAPCD Significance Threshold	100	10	10	27	15	15
Exceed Threshold?	No	No	No	No	No	No

As shown in Table 3.3-1, the annual construction emissions of CO, NO<sub>x</sub>, ROG, SO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> would not exceed the SJVAPCD significance thresholds for construction. For projects in which construction-related activities would disturb equal to or greater than 1-acre of surface area, SJVAPCD recommends demonstration of receipt of an SJVAPCD-

approved Dust Control Plan or Construction Notification form and the implementation of fugitive dust control measures. The fugitive dust control measures are included in **Mitigation Measure AQ-1** and would reduce fugitive dust emissions from construction activities and would be implemented as part of the proposed project (SJVAPCD 2015). Thus, with implementation of **Mitigation Measure AQ-1**, this impact would be less than significant for construction.

The proposed project would include vehicle trips during inspection activities. However, the employee trips required for periodic facility inspection to assess reservoir integrity would not be significantly more than existing employee trips, and would result in negligible increases in emissions. Therefore, this impact would be less than significant for operations.

**Mitigation Measure AQ-1:** Turlock Irrigation District and/or its contractor shall implement the following fugitive dust control standards for construction emissions (SJVAPCD 2015):

1. Apply water to unpaved surfaces and areas.
2. Use non-toxic chemical or organic dust suppressants on unpaved roads and traffic areas.
3. Limit or reduce vehicle speed on unpaved roads and traffic areas.
4. Maintain areas in a stabilized condition by restricting vehicle access.
5. Install wind barriers.
6. During high winds, cease outdoor activities that disturb the soil.
7. Keep bulk materials sufficiently wet when handling.
8. Store and handle materials in a three-sided structure.
9. When storing bulk materials, apply water to the surface or cover the storage pile with a tarp.
10. Do not overload haul trucks; overloaded trucks are likely to spill bulk materials.
11. Cover haul trucks with a tarp or other suitable cover, or wet the top of the load enough to limit visible dust emissions.
12. Clean the interior of cargo compartments on emptied haul trucks prior to leaving a site.
13. Prevent trackout by installing a trackout control device.
14. Clean up trackout at least once a day. If along a busy road or highway, clean up trackout immediately.
15. Monitor dust-generating activities and implement appropriate measures for maximum dust control.

- c) **Less than Significant.** Construction of the proposed project would take approximately 8 months to complete. The dam areas are separated by several hundreds of feet; work

duration in any one given dam area would be substantially less than the total 6-month period. Due to this relatively short period of exposure, TACs generated during construction would not be expected to result in concentrations causing significant health risks. In addition, construction-related activities associated with the proposed project would require only the minimal use of off-road equipment known to generate large amounts of TAC emissions. Additionally, almost all of the nearest receptors are over 900 feet away from the dam areas. Therefore, health risks associated with construction of the proposed project would be less than significant.

Normal operation of the proposed project would consist of periodic maintenance. However, employee trips required for periodic maintenance to clean the barriers would not be significantly more than to those generated under existing operations. As a result, exposure of sensitive receptors to substantial TAC emissions from the proposed project would be less than significant.

- d) **Less than Significant.** Construction of the proposed project would last for approximately 8 months and on-site diesel-powered equipment would only operate intermittently, up to approximately 14 hours per day. The use of on-site diesel-powered equipment can produce odorous exhaust, but use of the equipment at each of the proposed project sites would be temporary, and potential odors would not affect a substantial number of people in the vicinity of the proposed project sites given the rural nature of the proposed project sites. Therefore, construction of the proposed project would not create objectionable odors that would affect a substantial number of people, and odor impacts would result in a less-than-significant impact.

As a general matter, the types of land use development that pose potential odor problems include wastewater treatment plants, refineries, landfills, composting facilities, and transfer stations. Since the proposed project would consist of rehabilitating dams and no uses known to pose potential odor problems would occupy the proposed project sites, operation of the proposed project would not create objectionable odors that would affect a substantial number of people. The impact would be less than significant.

### 3.3.3 References

California Air Resources Board (CARB). 2002 (May 3). Staff Report: Public Hearing to Consider Amendments to the Ambient Air Quality Standards for Particulate Matter and Sulfates.

———. 2009. The California Almanac of Emissions and Air Quality – 2009 Edition. Chapter 5, Toxic Air Contaminant Emissions, Air Quality and Health Risk.

National Cancer Institute (NCI). 2012. Lifetime Risk (Percent) of Being Diagnosed with Cancer by Site and Race/Ethnicity, Both Sexes: 18 SEER Areas, 2007-2009 (Table 1.14). Available: [https://seer.cancer.gov/archive/csr/1975\\_2009\\_pops09/results\\_merged/topic\\_lifetime\\_risk\\_diagnosis.pdf](https://seer.cancer.gov/archive/csr/1975_2009_pops09/results_merged/topic_lifetime_risk_diagnosis.pdf). Accessed March 25, 2022.

Pope, C.A. 3<sup>rd</sup> and D.W. Dockery. 2006. Health Effects of Fine Particulate Air Pollution: Lines that Connect, *Journal of the Air & Waste Management Association*, 56:6, 709-742, DOI: 10.1080/10473289.2006.10464485.

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. Guidance for Assessing and Mitigating Air Quality Impacts, Available: <http://www.valleyair.org/transportation/GAMAQI-2015/GAMAQI1-30-15.pdf>. Accessed March 25, 2022.

———. 2016. 2016 Ozone Plan for 2008 8-hour Ozone Standard. Available: [http://valleyair.org/Air\\_Quality\\_Plans/Ozone-Plan-2016.htm](http://valleyair.org/Air_Quality_Plans/Ozone-Plan-2016.htm). Accessed March 25, 2022.

———. 2018. 2018 Plan for the 1997, 2006, and 2012 PM<sub>2.5</sub> Standards. Available: <https://ww2.arb.ca.gov/resources/documents/2018-san-joaquin-valley-pm25-plan>. Accessed March 25, 2022.

---

### 3.4 Biological Resources

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

#### 3.4.1 Environmental Setting

##### Data Sources/Methodology

Biological resources within the proposed project site were identified through a combination of database resources and a wetland delineation conducted by an Environmental Science Associates (ESA) biologist on February 17, 2021, and on April 7, 2022. The delineation was conducted on foot, and existing habitat types, plants, and waters and wetlands within and adjacent to the proposed project site were recorded.

Habitats present on the proposed project site were compared to the habitat requirements of the regionally occurring special-status species and used to determine which of these species have the potential to occur on or adjacent to the site. Plant nomenclature follows *The Jepson Manual: Vascular Plants of California (Second Edition)* (Baldwin et al. 2012), as revised by *Jepson eFlora* (Jepson Flora Project 2020). Common names of plant species are derived from *The Jepson Manual* or Calflora (2020).

The following primary data sources were referenced for this section:

- U.S. Fish and Wildlife Service (USFWS) *Information for Planning and Consultation (IPaC) Resource List* (USFWS 2022) (see **Appendix B**).
- California Natural Diversity Database, Rarefind 5 computer program (v5.2.14) (CDFW 2022) (see **Appendix B**).
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (v8-03 0.39) (CNPS 2022) (see **Appendix B**).
- California Department of Fish and Wildlife (CDFW) Special Animals List (CNDDDB 2022a).
- CDFW Special Vascular Plants, Bryophytes, and Lichens List (CNDDDB 2022b).

## Project Site Setting

The proposed project site is located within the Tuolumne River watershed, adjacent to and south of the Tuolumne River. The surrounding land use is agricultural and open space, with the Turlock Lake State Recreation Area positioned along the northern edge of Turlock Lake, surrounding Dams D through K (Figure 2-3). SR 132, approximately 1 mile north of the proposed project site, runs directly west approximately 8.5 miles to the city of Waterford and approximately 7.5 miles east-northeast to the rural community of La Grange.

## Vegetation/Habitat Types

Habitat types within the proposed project site consist of grasslands, valley foothill riparian, eucalyptus, and mixed riparian scrub habitats, ruderal/disturbed areas with dirt roads and road shoulders with scattered riparian areas consisting of scattered willows (*Salix* sp.) and Fremont cottonwoods (*Populus fremontii*).

## Annual Grassland

Grassland in the study area is dominated by annual grasses and herbs, mostly non-native species. Dominant plants include bromes (*Bromus diandrus* and *B. hordeaceus*), wild oat (*Avena barbata*), Italian ryegrass (*Festuca perennis*), bur clover (*Medicago polymorpha*), wild radish (*Raphanus sativus*), and black mustard (*Brassica nigra*). Grasslands have moderate to dense cover of annual species, and some are grazed by livestock. Isolated trees and shrubs occur in the grassland, including a few elderberries (*Sambucus nigra* subsp. *caerulea*), dispersed valley oaks (*Quercus lobata*), and some landscape trees such as Chinese hackberry (*Celtis sinensis*).

Many wildlife species use annual grasslands for refugia, nesting, and foraging. A variety of songbirds and raptors use grassland habitat for breeding, foraging on small rodents and insects, or both. Common species include American kestrel (*Falco sparverius*), grasshopper sparrow (*Ammodramus savannarum*), northern harrier (*Circus cyaneus*), western meadowlark (*Sturnella neglecta*), and white-tailed kite (*Elanus leucurus*). Reptiles in this community include Pacific rattlesnake (*Crotalus oreganus oreganus*), Pacific gopher snake (*Pituophis catenifer catenifer*), western fence lizard (*Sceloporus occidentalis*), and western skink (*Plestiodon skiltonianus*), which are often found in association with woody debris and rocks. Mammals such as black-tailed

jackrabbit (*Lepus californicus*), Botta's pocket gopher (*Thomomys bottae*), California ground squirrel (*Otospermophilus beecheyi*), and badger (*Taxidea taxus*) are common in grassland habitat.

## Valley Foothill Riparian

Valley foothill riparian habitat within the study area is limited to small stands of mature cottonwood (*Populus fremontii*) and Gooding's black willow (*Salix gooddingii*), with occasional young valley oaks along the margins of Turlock Lake. Understory plants include patches of Himalayan blackberry (*Rubus armeniacus*) and annual grasses and forbs discussed above in the *Annual Grassland* section.

Valley foothill riparian communities also provide habitat for a variety of reptiles and amphibians, including the California newt (*Taricha torosa*), California slender salamander (*Batrachoseps attenuatus*), Sierran tree frog (*Pseudacris sierra*), western pond turtle (*Actinemys marmorata*), and western toad (*Anaxyrus boreas*). Mammals that occur in this community include several species of bats, deer mouse (*Peromyscus maniculatus*), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis marsupialis*), western harvest mouse (*Reithrodontomys megalotis*), mule deer (*Odocoileus hemious*), bobcat (*Lynx rufus*), wild turkey (*Meleagris gallopavo*), and coyote (*Canis latrans*).

## Eucalyptus

Several stands of planted eucalyptus trees (*Eucalyptus* sp.) exist within the study area. These areas support an understory of annual grasses and forbs and a wildlife community similar to valley foothill riparian.

## Mixed Riparian Scrub

Like valley foothill riparian habitat, mixed riparian scrub is found along the margin of Turlock Lake, but this habitat type generally lacks large-canopy trees and is instead composed of dense shrubs. Common species include sandbar willow (*Salix exigua*) along with young Gooding's black willow and cottonwood trees.

Similar to valley foothill riparian habitat, mixed riparian scrub provides habitat for a diverse array of wildlife. Birds common to this habitat include bushtit (*Psaltriparus minimus*), California towhee (*Melospiza crissalis*), California quail (*Callipepla californica*), loggerhead shrike (*Lanius ludovicianus*), northern harrier, spotted towhee (*Pipilo maculatus*), and white-tailed kite. Large and small mammals use mixed riparian scrub for shelter, food, water, and movement.

## Sensitive Natural Communities, including Waters of the United States and Waters of the State

Sensitive natural communities are vegetation communities of limited distribution statewide or within a county or region and are often vulnerable to the environmental impacts of projects. Sensitive natural communities include those that are of special concern to resource agencies such as CDFW, the U.S. Army Corps of Engineers (USACE), or USFWS, or are afforded specific

consideration through CEQA, Section 1602 of the California Fish and Game Code, Section 404 of the federal Clean Water Act, and the Porter-Cologne Water Quality Control Act.

Turlock Lake itself is potentially considered a water of the U.S. and water of the state, however the project will not impact Turlock Lake as all major construction activities will occur on the downstream side of each rehabilitated dam and vegetation clearing will occur on the upstream side at only a few specific dam locations.

## Lacustrine

Only the upper margin of Turlock Lake is included in some of the study areas. The upper limit of the lake is defined by the lake's ordinary high water mark (OHWM), which is a line on the bank with shelving in some areas, a change in vegetation from wetland to upland species, and some deposited sediment and debris. Within the study areas where lake margin is present, the banks have a very gradual slope and include wetland vegetation such as rushes (*Juncus* spp.) and gumplant (*Grindelia* spp.).

The lake margin provides foraging, cover, and nesting sites for resident and migratory bird, mammal, reptile, and amphibian species. Common wetland bird species include great blue heron (*Ardea herodias*) and great egret (*A. alba*). Osprey (*Pandion haliaetus*) are also known to forage at Turlock Lake and nest in tall trees or custom nest structures.

## Seasonal Wetland

Seasonal wetlands occur in topographical low points that are subject to inundation during the fall, winter, and spring months followed by a summer dry period. Seasonal wetlands typically are dominated by wetland-adapted plants in the winter and spring months and may transition to species characteristic of the surrounding uplands in summer; thus, evidence of wetland-adapted plants may not be visible after late spring or early summer, and the recurrence of these plants in future years depends on climatic conditions. Common spikerush (*Eleocharis macrostachya*), great valley popcorn flower (*Plagiobothrys stipitatus*), meadow barley (*Hordeum marinum*), and Italian rye grass are common species in this habitat type.

Seasonal wetlands support a variety of invertebrate and amphibian species that in turn provide food for other wildlife species. They can provide foraging habitat for wintering shorebirds and waterfowl described in the *Lacustrine* section above.

## Wildlife Movement Corridors

Wildlife movement corridors are considered an important ecological resource by various agencies (CDFW and USFWS) and under CEQA. Movement corridors may provide favorable locations for wildlife to travel between different habitat areas such as foraging sites, breeding sites, cover areas, and preferred summer and winter range locations. They may also function as dispersal corridors, allowing animals to move between various locations within their range.

Topography and other natural factors, in combination with urbanization, can fragment or separate large open-space areas. Areas of human disturbance or urban development can fragment wildlife habitats and impede wildlife movement between areas of suitable habitat. This fragmentation creates isolated “islands” of vegetation that may not provide sufficient area to accommodate sustainable populations and can adversely affect genetic and species diversity. Movement corridors mitigate the effects of this fragmentation by allowing animals to move between remaining habitats, which in turn allows depleted populations to be replenished and promotes genetic exchange between separate populations.

The relatively open area around Turlock Lake could serve as a wildlife movement corridor in combination with the Tuolumne River Corridor immediately north of the lake. The proposed project activities would not interfere with wildlife movement.

## Special-Status Species

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

- (1) Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (Code of Federal Regulations Title 50, Section 17.12 [listed plants] and Section 17.11 [listed animals], and various notices in the *Federal Register* [proposed species]).
- (2) Species that are candidates for possible future listing as threatened or endangered under the federal Endangered Species Act (*Federal Register* Title 61, Number 40, February 28, 1996).
- (3) Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (California Code of Regulations Title 14, Section 670.5).
- (4) Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.).
- (5) Animal species of special concern to CDFW.
- (6) Animals fully protected under the California Fish and Game Code (Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).
- (7) Species that meet the definitions of rare and endangered under CEQA. CEQA Section 15380 provides that a plant or animal species may be treated as “rare or endangered” even if not on one of the official lists (State CEQA Guidelines, Section 15380).
- (8) Plants considered by CNPS and CDFW to be “rare, threatened or endangered in California” (California Rare Plant Rank 1A, 1B, and 2 in CNPS 2022).

A list of regionally occurring special-status species in the vicinity of the proposed project site was compiled based on data identified in the California Natural Diversity Database (CDFW 2022) and the USFWS (2022) and CNPS (2022) databases. A table documenting special-status species,

identifying their general habitat requirements, and assessing their potential to occur at the proposed project site is provided in **Appendix B**.

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

- **Unlikely:** The proposed project site does not support suitable habitat for a particular species and/or the site is outside of the species’ known range.
- **Low Potential:** The proposed project site only provides limited and/or low-quality habitat for a particular species. In addition, the known range for a particular species may be outside of the immediate proposed project site.
- **Medium Potential:** The proposed project site and/or immediate vicinity provides suitable habitat for a particular species.
- **High Potential:** The proposed project site and/or immediate proposed project area provide ideal habitat conditions for a particular species and/or known populations occur within or in the vicinity of the proposed project site.

Conclusions regarding habitat suitability and species occurrence are based on the analysis of existing literature and databases described previously and known habitats occurring within the proposed project site and regionally. Species considered unlikely or to have low potential are not discussed further. As described in Appendix B, special-status plants or wildlife species with potential to occur at the proposed project sites include valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), Swainson’s hawk (*Buteo swainsoni*), and bald eagle (*Haliaeetus leucocephalus*); other birds also have the potential to occur within the proposed project site or nearby and forage within or on the shores of Turlock Lake. Nesting birds regulated by the federal Migratory Bird Treaty Act (MBTA) or California Fish and Game Code have the potential to occur within the proposed project site.

### **Critical Habitat**

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

The proposed project site does not contain designated critical habitat for any federally listed species.

### 3.4.2 Discussion

#### a) **Less than Significant with Mitigation Incorporated.**

The proposed project site contains several elderberry (*Sambucus spp.*) shrubs, which may serve as host plants for the valley elderberry longhorn beetle, a federally threatened species. The proposed project area is within the range of the species, although the closest known occurrence is approximately 10 miles to the west. The sites will be surveyed for shrubs, which will be avoided or appropriately mitigated in compliance with USFWS protocols (USFWS 2017). When removal of occupied shrubs could result in a potentially significant impact, implementation of **Mitigation Measure BIO-1** would reduce the impact to a less-than-significant level.

Swainson's hawks, bald eagles, and other nesting birds regulated by the MBTA and the California Fish and Game Code may be affected either directly or indirectly by implementation of the proposed project.

Under the MBTA, most bird species and their nests and eggs are protected from injury or death. California Fish and Game Code Sections 3503, 3503.5, and 3800 prohibit the possession, incidental take, or needless destruction of birds and their nests and eggs.

Portions of the proposed project site and the immediate vicinity have the potential to support nesting birds. Direct impacts on nesting birds or their habitat could occur during initial proposed project activities, such as clearing and grubbing. Nesting birds could be adversely affected if active nesting, roosting, or foraging sites are either removed or exposed to a substantial increase in noise or human presence during proposed project activities. The impact would be less than significant if construction activities were to occur during the non-breeding season (i.e., from September 1 through January 31). However, construction activities conducted during the breeding season between February 1 and August 31 could adversely affect nesting birds. Therefore, this impact would be potentially significant. Implementation of **Mitigation Measure BIO-2** would reduce the impact to a less-than-significant level.

**Mitigation Measure BIO-1:** Prior to construction, the sites shall be surveyed for the presence of elderberry plants which are the host plant of the valley elderberry longhorn beetle. The survey shall be conducted by a qualified biologist in accordance with USFWS protocols (USFWS 2017). If elderberry plants with one or more stems measuring 1.0 inch or greater in diameter at ground level occur on or adjacent to the proposed project site or are otherwise located where they may be directly or indirectly affected by the proposed project, minimization and compensation measures, which include avoidance or transplanting existing shrubs, are required (see below).

Elderberry plants without stems measuring 1.0 inch or greater in diameter at ground level are unlikely to be habitat for the beetle because of the plants' small size and/or immaturity. Therefore, no mitigation measures are required for removal of elderberry plants with all stems measuring less than 1.0 inch in diameter at ground level.

### **Avoidance and Minimization Measures**

To reduce direct and indirect impacts on shrubs that would not be transplanted and that occur within 50 meters (165 feet) of the Project, the following measures would be implemented:

- **Fencing.** All areas to be avoided during construction activities would be fenced and/or flagged as close to construction limits as feasible.
- **Avoidance area.** Activities that may damage or kill an elderberry shrub (e.g., trenching, paving) may need an avoidance area of at least 6 meters (20 feet) from the dripline, depending on the type of activity.
- **Worker education.** A qualified biologist would provide training for all contractors, work crews, and any on-site personnel on the status of the VELB, its host plant and habitat, the need to avoid damaging the elderberry shrubs, and the possible penalties for non-compliance.
- **Construction monitoring.** A qualified biologist would monitor the initial groundbreaking activities, vegetation removal, installation of protective fencing, and would be present during all transplanting and trimming activities. Weekly site visits would also be conducted to ensure all mitigation measures are being implemented and maintained. Additional monitoring may be required per the USFWS BO.
- **Timing.** As much as feasible, all activities that could occur within 50 meters (165 feet) of an elderberry shrub would be conducted outside of the flight season of the VELB (March–July).
- **Trimming.** Trimming may remove or destroy VELB eggs and/or larvae and may reduce the health and vigor of the elderberry shrub. To avoid and minimize adverse effects on VELB when trimming, trimming would occur between November and February and would avoid the removal of any branches or stems that are 1 inch or larger in diameter unless they were approved and compensated for by following the USFWS requirements.
- **Chemical Usage.** Herbicides would not be used within the dripline of the shrub. Insecticides would not be used within 30 meters (98 feet) of an elderberry shrub. All chemicals would be applied using a backpack sprayer or similar direct application method.
- **Mowing.** Mechanical weed removal within the dripline of the shrub would be limited to the season when adults are not active (August–February) and would avoid damaging the elderberry shrub.
- **Erosion Control and Revegetation.** Erosion control would be implemented, and the affected area would be revegetated with appropriate native plants.
- **Dust Control.** Dust would be controlled by reducing speed limits to 10 miles per hour, regularly watering roads, and wetting down soil before removal and during placement.

## Transplanting

Affected elderberry shrubs with one or more stems measuring 1.0 inch or greater in diameter at ground level that could feasibly be transplanted in accordance with the 2017 Framework must be transplanted to a mitigation site as approved by USFWS. Elderberry compensation would be planted in the vicinity, but outside of the Project Area (off-site) because of construction timing. Sites would be designed and developed in accordance with the criteria listed below before any effects on VELB habitat.

- **Monitor.** A qualified biologist would be on-site for the duration of transplanting activities to assure compliance with avoidance and minimization measures and other conservation measures (as listed above).
- **Exit Holes.** Exit-hole surveys would be completed immediately before transplanting. The number of exit holes found, the GPS location of the plant to be relocated, and the GPS location where the plant is transplanted would be reported to USFWS and to the CNDDDB.
- **Timing.** Elderberry shrubs would be transplanted when the shrubs are dormant (November through the first 2 weeks in February) and after they have lost their leaves. Transplanting during the non-growing season would reduce shock to the shrub and increase transplantation success.
- **Transplanting Procedure.** Transplanting would follow the most current version of the ANSI A300 (Part 6) guidelines for transplanting shrubs (<http://www.tcia.org/>).
- **Trimming Procedure.** Trimming would occur between November and February and should minimize the removal of branches or stems that exceed 1 inch in diameter.

**Mitigation Measure BIO-2: Protect Special-Status Birds and Nesting Birds Regulated by the MBTA and California Fish and Game Code.** For construction activities occurring during the nesting season (February 1 to August 31), a qualified biologist shall conduct a preconstruction pedestrian-level survey for active nests within 500 feet of the proposed project site. The survey shall be conducted using binoculars, from publicly accessible areas outside of the proposed project site, no more than 7 days before the start of construction.

If no active nests are identified during the preconstruction survey, the biologist shall submit a letter report to TID for its records, and no further mitigation is necessary. If construction activities are to begin before February 1, it is assumed that no birds will nest on the proposed project site during active construction activities and no preconstruction surveys are required. If construction stops for a period of 1 week or longer at any time during the nesting season, preconstruction surveys shall be conducted before construction resumes.

If active nests are found within 500 feet of the proposed project site, TID shall wait until the nests are not active to start construction, or, if construction must occur while the nest is active, a qualified biologist shall prepare a plan for avoidance of impacts on active

- nests. The plan shall identify measures to avoid disturbance of the active nests. Depending on the conditions specific to each nest, and the relative location and rate of construction activities, it may be feasible for construction to occur as planned. Appropriate measures may include restricting construction activities, establishing appropriate buffers based on the species nesting, or having a qualified biologist with stop-work authority monitor the nest for evidence that parental behavior has changed during construction. The biologist would have the authority to stop work in the event that the birds are exhibiting unusual nesting behavior based on the construction activities. If construction activities are halted because of adverse effects on breeding efforts, construction shall not resume until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival.
- b) **Less than Significant.** Initial site preparation would include vegetation clearing of all work areas on dam slopes, including tree removal on the upstream slope of Dams C and L, the downstream slopes of Dams D and H, and both the upstream and downstream slopes of Dams E and J. It is anticipated that, once construction has been completed, the dams would not be revegetated with trees (for dam safety purposes). While these trees may be considered riparian trees, they provide limited habitat value and no sensitive species are known to occupy them.
- c) **Less than Significant with Mitigation Incorporated.** At the site of Dam C, a seasonal wetland (SW-3) has formed on the downstream side. This wetland is a localized depression that captures rain runoff during the wet season. Because this wetland does not directly abut Turlock Lake and is downstream of the lake, it is not considered a water of the U.S. but is considered a water of the state. Dam buttressing at this location will result in an impact of 0.04 acres to the wetland. Impacts and fill within this feature will require approvals from the Central Valley RWQCB and CDFW and may require mitigation. Therefore, this impact would be potentially significant. Implementation of **Mitigation Measure BIO-3** would reduce the impact to a less-than-significant level.
- Mitigation Measure BIO-3: Obtain Permit Approvals and Conduct Required Mitigation for Impacts to Waters of the State.** Impacts and fill within waters of the state will require obtaining permit approvals from the Central Valley RWQCB and CDFW and may require the completion of mitigation activities to replace losses to these features. Mitigation may include purchasing credits from agency-approved mitigation banks or conducting other mitigation activities. The proposed project shall obtain all necessary permits for impacts to waters of the state and complete any mitigation requirements.
- d) **No Impact.** The proposed project would not interfere with the movement of wildlife or fish and would not result in any barriers to the movement of upland wildlife. Therefore, no impact on wildlife movement would occur.
- e) **No Impact.** Stanislaus County does not have a tree ordinance. The proposed project is consistent with policies in the Conservation/Open Space Element of the *Stanislaus*

*County General Plan* (Stanislaus County 2015) that generally promote the conservation and improvement of riparian areas for wildlife. Therefore, no impact related to a conflict with local policies or ordinances for biological resources would occur.

- f) **No Impact.** No adopted habitat conservation plans, natural community conservation plans, or other local conservation plans cover the proposed project site. Therefore, no impact would occur.

### 3.4.3 References

- Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken (eds.). 2012. *The Jepson Manual: Vascular Plants of California*, second edition. Berkeley: University of California Press. Accessed April 2022.
- Calflora. 2020. Information on California Plants for Education, Research and Conservation [web application]. Berkeley, CA: The Calflora Database. Available: <http://www.calflora.org/>. Accessed April 2022.
- California Natural Diversity Database (CNDDDB). 2022a. Special Animals List. California Department of Fish and Wildlife. Sacramento, CA. April 2022.
- . 2022b. Special Vascular Plants, Bryophytes, and Lichens List. California Department of Fish and Wildlife. Sacramento, CA. April 2022.
- California Department of Fish and Wildlife (CDFW). 2022. California Natural Diversity Database (CNDDDB) Rarefind 5 computer program (v5.2.14). Biogeographic Data Branch, Sacramento, CA.
- California Native Plant Society (CNPS). 2022. *Inventory of Rare and Endangered Plants* (online edition, v8.03 0.39). Sacramento, CA.
- Jepson Flora Project (eds.). 2020. *Jepson eFlora*. Available: <http://ucjeps.berkeley.edu/eflora/>. Last updated December 23, 2021. Accessed April 2022.
- Stanislaus County. 2015. *Stanislaus County General Plan Conservation/Open Space Element (Chapter 3)*. Adopted August 23, 2016, by the Board of Supervisors.
- U.S. Fish and Wildlife Service (USFWS). 2022. *Information for Planning and Consultation Resource List*. Sacramento Fish and Wildlife Office, Endangered Species Division. Sacramento, CA.
- . 2017. Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*). U.S. Fish and Wildlife Service; Sacramento, California. 28 pp.

## 3.5 Cultural Resources

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

### 3.5.1 Environmental Setting

#### Background Research

ESA completed a records search at the Central California Information Center (CCaIC) of the California Historical Resources Information System on February 2, 2021 (File No. 011646N). The review included the proposed project site and a 0.5-mile radius. Previous surveys, studies, and site records were accessed. Records were also reviewed in the Built Environment Resources Directory for Stanislaus County, which contains information on places of recognized historical significance, including those evaluated for listing in the *National Register of Historic Places*, the *California Register of Historical Resources*, the *California Inventory of Historical Resources*, *California Historical Landmarks*, and *California Points of Historical Interest*. The purpose of the records search was to (1) determine whether known cultural resources have been recorded within the proposed project vicinity; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and preliminary evaluation of cultural resources.

The CCaIC records search indicated that no previously recorded cultural resources have been recorded on the proposed project site and three cultural resources (P-50-000206, -000227, -000228) have been previously recorded within 0.5 miles of the proposed project site. These three resources are all pre-contact archaeological sites. P-50-000206 is 0.3 miles north of the proposed project site and was recorded based on a verbal account from the landowner and has not been relocated since its documentation in 1954 (Bennyhoff 1954; Stewart 1994). P-50-000227 is a pre-contact habitation site with a bedrock milling feature surrounded by midden that was recorded 0.4 miles northeast of the proposed project site (Olsen 1972a). P-50-000228 is a pre-contact habitation site with groundstone and flaked stone tools, and was impacted prior to its initial recordation by the construction of residences and other support structures for State Parks (Olsen 1972b). P-50-000228 is northeast of the proposed project site. The location of P-50-000228 was meticulously surveyed during the pedestrian survey conducted for the proposed project, but no cultural material was identified. The site record prepared by Olsen (1972b) states that the cultural material is subsurface only.

The records search results indicated that the majority of the proposed project site has not been previously surveyed for cultural resources. One previous survey covered a small portion of the work proposed at Dam H and no cultural resources were identified (Woodward 1983).

## Cultural Resources Survey

An ESA archaeologist and an ESA architectural historian completed a pedestrian surface survey of the proposed project site on March 10, 2022. All areas of proposed ground disturbance were walked in transects to provide an overall assessment of existing conditions. Visibility was fair to good, generally 50 to 75 percent, within the dams where the rehabilitation work is planned. However, visibility was very poor, generally 0 to 15 percent, within the proposed borrow and staging areas. In the borrow and staging areas, dense vegetation and tall grasses obscured soil visibility. Soil throughout the proposed project site, where visible, was dry and light brown with gravel inclusions. The proposed project site includes a few areas that have been built or paved over, including some of the access roads to and over the dams.

No archaeological resources or other evidence of past pre-contact or indigenous use or occupation of the proposed project site was identified during the survey. One architectural resource, the Turlock Lake/Davis Reservoir was identified during the survey. This resource was recorded and is discussed below.

## Archaeological Testing Results

### Methods

ESA identified soils potentially sensitive for buried archaeological resources within the proposed project site during initial analysis of the proposed project. The result of this investigation is briefly summarized below but is described fully in the Archaeological Sensitivity Assessment below. To determine if these areas contained buried archaeological resources, ESA prepared an Archaeological Testing Plan and DPR 412A Application and Permit to Conduct Archaeological Investigations/Collections for California Department of Parks and Recreation form to conduct the testing with the portion of the proposed project site that is within Turlock Lake State Recreation Area (Zimmer and Sims 2022). Preliminary review of soil types, topography, and previously recorded archaeological resources indicated that portions of Dams H, J, and K, as well as portions of the borrow and staging areas had a high potential for the presence of pre-contact archaeological resources in undisturbed areas because they contained Hanford sand loams which date to the Middle and Late Holocene (Rosenthal and Meyer 2004). The records search also identified a pre-contact habitation site, P-50-000228, near the proposed project site within the Hanford sand loams.

### Results

On May 16–19, 2022, ESA completed 52 archeological test trenches on the approximately 100-foot test grid established throughout the entirety of the portion of the proposed project site identified as containing potentially sensitive soils. ESA archeologists directed the excavation of 3-foot-wide by 15-foot-long trenches in successive, shallow layers using an excavator fitted with

a flat-bladed bucket to avoid impacting cultural deposits or seriously compromising any feature associations should any resources be encountered. The trenching extended to the maximum depth of planned ground disturbance or until bedrock was reached for each location, at depths ranging from 2 to 12 feet below ground surface (bgs) (**Table 3.5-1**). One 5-gallon-bucked from every foot of the trench was screened for archaeological materials using a 1/4-inch mesh screen.

**TABLE 3.5-1  
TEST TRENCHING SUMMARY**

<b>Location</b>	<b>Number of Trenches</b>	<b>Maximum Trench Depth (ft)</b>
Borrow Area	15	5
Staging Area	20	3
Dam J	3	9
Dam H	14	12

Within the borrow and staging areas, stratigraphy encountered during trenching primarily consisted of Hanford fine sandy loam (lightly compact to compact sandy loams with varying gravel inclusions) that extended to the maximum depth of investigation (5 and 3 feet bgs, respectively). Three trenches placed near the foot of Dam J encountered Hanford fine sandy loam overlying fine sandstone bedrock of the Mehrten Formation at depths ranging from 6 to 9 feet bgs. Stratigraphy within the Dam H area consisted of Hanford sandy loam (lightly compact to compact sandy loam with varying gravel inclusions) overlying bedrock at 6 to 9 feet bgs. No evidence of buried soil horizons or other potentially archaeologically sensitive soils were observed during excavation, and no cultural material was identified in any of the excavated trenches.

## Archaeological Sensitivity Assessment

Landforms that predate the earliest estimated periods for human occupation of the region are considered to have very low potential for the presence of buried archaeological sites, while those that postdate human occupation are considered to have a higher potential for buried archaeological sites. The degree of buried site potential is inversely related to the estimated date range of a landform. Currently, archaeological research indicates that the earliest evidence for human occupation of California dates to the Late Pleistocene, which ended approximately 11,500 years before present. Therefore, the potential for buried archaeological deposits in landforms from or predating the Late Pleistocene is very low (Rosenthal and Meyer 2004).

In many places, the interface between older land surfaces and subsequent soil deposits are marked by a buried, “fossilized” land surface, or a paleosol. Paleosols are preserved, stable, land surfaces represented by a well-developed A-horizon, and thus have the potential to contain archaeological resources if the area was occupied or settled by humans (Rapp and Hill 2006:43). Because human populations have grown since the arrival of the area’s first inhabitants, younger paleosols (Late Holocene) are more likely to yield archaeological resources than older paleosols (prior to Late Holocene).

Overlying soils in the southwestern portion of the APE (Dam S) includes Pentz and Whitney sandy loams and (Dam A) Peters clay that date to the Pre-Quaternary, with very low buried archaeological site potential (Rosenthal and Meyer 2004:107, Appendix D; USDA 2022). The northwestern portion of the APE (Dams B, C, D, E, H, J, K, borrow and staging areas) includes Montpellier sandy loams, and Whitney sandy loams dating to the Early and Middle Pleistocene with very low buried archaeological site potential. The northeastern portion of the APE (Dams L, M, N, O, and P) includes Madera sandy loams dating to the Pre-Quaternary with very low buried archaeological site potential, according to Rosenthal and Meyer (2004:107, Appendix D).

Along the backside of Dams H, J, and K and the western portion of the staging area and borrow area, soils consist of Hanford sand loams which date to the middle to late Holocene and were identified by Rosenthal and Meyer (2004: Appendix D) as having a very high sensitivity for buried archaeological sites.

The underlying geology of the APE has four constituents: Turlock Lake Formation, Mehrten Formation, Riverbank Formation, and Modesto Formation (Wagner et al. 1991, see Figure 7). The Mehrten Formation is the oldest, dating to the early to middle Pliocene, and underlies Dams Q and R. The Turlock Lake Formation dates to the early Pleistocene and underlies dams A, B, C, D, E, and S. The Riverbank Formation dates to the middle Pleistocene and underlies dams J, K, L, M, N, O, P, the eastern end of Dam H, as well as the proposed staging and borrow areas. The Modesto formation dates to the late Pleistocene and underlies the majority of Dam H. All of these geologic formations are dated prior to the Holocene and therefore have a low sensitivity for buried archaeological sites (Wagner et al. 1991).

The proposed project site intersects a few historical streams and creeks (although most have since been channelized or moved with the construction of the dams for Turlock Lake) and is near the Tuolumne River, which does increase the sensitivity of the area for pre-contact archaeological resources, however the pedestrian surface survey and the subsurface archaeological testing did not identify any resources. The records search results of the proposed project site suggest that, prior to historic-era, there was indigenous occupation of the area, particularly the northern portion of the proposed project site nearest Tuolumne River. No pre-contact or indigenous resources were identified within the proposed project site; however, a pre-contact resource is recorded within 140 feet of the borrow area. Therefore, the landform, proximity to water resources, and proximity to known archaeological resources, suggest that the portion of the proposed project site including Dams A, B, C, D, E, H, L, M, N, O, P, Q, R, and S have a low potential for the presence of pre-contact archaeological resources in undisturbed areas.

The portions of Dams H, J, and K, as well as portions of the borrow and staging areas with Hanford loams have a high potential for the presence of pre-contact archaeological resources in undisturbed areas based on the soils present (Rosenthal and Meyer 2004). These areas were tested to the depth of proposed ground disturbance as part of the archaeological subsurface testing and no cultural material was identified. It is likely that portions of the areas identified by the soils analysis with high sensitivity have been previously disturbed by the construction of Turlock Lake and the associated dams. As a result of the archaeological testing, these areas have a low

sensitivity for buried pre-contact archaeological resources and the potential for the proposed project to impact significant pre-contact archaeological resources is low.

Evidence of historic-era settlement and land-reclamation activities have been documented near and within the proposed project site; however, these resources are mostly built-environment resources and there have been little to no geological, alluvial, or other human-caused processes that would bury these resources. Therefore, any such resources would likely be on the surface and would have been identified during pedestrian surveys, which have covered the entirety of the proposed project site. A historic aerial and map imagery review did not identify any structures or features previously constructed within the proposed project site, besides the road alignments and dam structures (NETR 2022). Based on this review, the potential for the presence of unrecorded, or previously unknown, historic-era archaeological resources is low.

Therefore, this analysis concludes that the proposed project site's sensitivity for previously unrecorded historic-era archaeological resources and pre-contact archaeological resources is low.

## Architectural Resources

As described above, the 18 dams associated with Turlock Lake were examined and recorded during the pedestrian survey. Due to the geographic proximity, similar age, and shared functionality of the dams, all 18 were recorded as one resource with multiple components: Turlock Lake/Davis Reservoir.

Davis Reservoir, later renamed Owens Reservoir and now called Turlock Lake, was constructed in 1913–1914. Alfred Davis was the rancher who owned the majority (1,400 acres) of the property purchased by TID to construct Turlock Lake/Davis Reservoir. The reservoir reflected his name from its completion in 1914 until 1917, when the reservoir was renamed the Owen Reservoir after T.A. Owen, one of the first directors of the TID, in recognition for his work for the TID. Turlock Lake served as TID's main storage reservoir until completion of the original Don Pedro Dam and Reservoir in 1923. In 1949, Governor Earl Warren signed legislation permitting TID to lease a portion of the northern end of Owen Reservoir for use as a state park. The bill for the proposed park covered 220 acres, and included construction of sanitary and camping facilities, landscaping, docking and boat facilities, beaches, and picnicking areas. The park opened summer 1950 and functioned as a recreation area until closure resulted from lack of funding due to COVID-19 in 2021.

Archival review, detailed in Sims et al. (2022),<sup>7</sup> determined that Turlock Lake/Davis Reservoir and its associated dams do not meet the requirements of the National Register of Historic Places (National Register) or the California Register of Historical Resources (California Register) Criteria A/1–D/4 -association with significant events (A/1), individuals (B/2), architecture (C/3), or ability to yield information important to history. Additionally, the dams do not retain sufficient physical integrity to reflect the original design. As such, Turlock Lake/Davis Reservoir and its associated dams do not appear to be eligible for the National Register or the California Register,

---

<sup>7</sup> The Cultural Resources Inventory Report (Sims et al. 2022) is a confidential document due to the sensitivity of cultural resources and may be provided to qualified persons upon request.

and would not be considered a historic property per Section 106, nor a historical resource under CEQA.

### 3.5.2 Regulatory Framework

#### **National Register of Historic Places**

The National Historic Preservation Act of 1966, as amended (U.S. Code Title 54, Section 306108), and its implementing regulations established the National Register as a comprehensive inventory of known historic resources throughout the United States. The National Register is administered by the National Park Service under the direction of the Secretary of the Interior. It includes buildings, structures, sites, objects, and districts that possess historic, architectural, archaeological, engineering, or cultural significance. A property is considered significant if it meets the criteria for listing in the National Register at Code of Federal Regulations Title 36, Section 60.4 (36 CFR 60.4).

#### **California Register of Historical Resources**

The California Register is “an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change” (PRC Section 5024.1(a)). Certain resources are determined by law to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register.

#### **Native American Heritage Commission**

The Native American Heritage Commission (NAHC) was created by statute in 1976. It is a nine-member body appointed by the governor to identify and catalog cultural resources (i.e., places of special religious or social significance to Native Americans, and known graves and cemeteries of Native Americans on private lands) in California. The NAHC is responsible for preserving and ensuring accessibility of sacred sites and burials, ensuring the disposition of Native American human remains and burial items, maintaining an inventory of Native American sacred sites located on public lands, and reviewing current administrative and statutory protections related to these sacred sites.

#### **California Public Resources Code Sections 5097.98 and 5097.99**

PRC Section 5097.98 (reiterated in CEQA Guidelines Section 15064.5(e)) identifies steps to follow in the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery. PRC Section 5097.99 prohibits obtaining or possessing any Native American artifacts or human remains that are taken from a Native American grave or cairn (stone burial mound).

## California Health and Safety Code Section 7050.5

California Health and Safety Code Section 7050.5 protects human remains by prohibiting the disinterment, disturbance, or removal of human remains from any location other than a dedicated cemetery.

### 3.5.3 Discussion

- a) **No Impact.** A significant impact would occur if the proposed project would cause a substantial adverse change to a historical resource through physical demolition, destruction, relocation, or alteration of the resource. As used in this analysis, *historical resources* refers to historic-era architectural resources or the built environment, including buildings, structures, and objects.

Based on the results of the records search, background research, surface survey, subsurface survey, and resource evaluation, one potential historical resource, the Turlock Lake/Davis Reservoir was identified in the proposed project footprint. ESA evaluated this potential resource and recommends that it is not eligible for the National Register or California Register. Therefore, there are no historic properties or historical resources in the proposed project site and no impact on historical resources of the built environment would occur.

- b) **Less than Significant with Mitigation Incorporated.** This section discusses archaeological resources, both as historical resources according to CEQA Guidelines Section 15064.5, as well as unique archaeological resources, as defined in California Public Resources (PRC) (CEQA) Section 21083.2(g). A significant impact would occur if the proposed project would cause a substantial adverse change to an archaeological resource through physical demolition, destruction, relocation, or alteration of the resource.

Based on the results of the records search, background research, and archaeological sensitivity assessment, no archaeological resources have been identified in the proposed project site. The archaeological sensitivity analysis found that the proposed project site has a high potential for encountering archaeological resources within portions of the work areas around Dams H, J, the borrow area, and the staging area. All other portions of the proposed project site have a low potential for encountering archaeological resources. An archaeological testing program was conducted within the sensitive soils at the four locations between May 16 and May 19, as detailed above. No cultural material was identified as a result of the subsurface testing (Sims et al. 2022)<sup>8</sup>. Therefore, based on the results of the test the entire proposed project site has a low potential for encountered archaeological resources.

---

<sup>8</sup> The Cultural Resources Inventory Report (Sims et al. 2022) is a confidential document due to the sensitivity of cultural resources and may be provided to qualified persons upon request.

Despite the low sensitivity, there is still the potential for the discovery of buried archaeological resources during ground-disturbing activities. Accordingly, the proposed project shall implement **Mitigation Measure CUL-1: Cultural Resources Awareness Training** and **Mitigation Measure CUL-2: Inadvertent Discovery of Cultural Resources** to determine, mitigate, and reduce any potential significant impacts. If any previously unrecorded archaeological resources are identified during proposed project ground-disturbing activities and were found to qualify as a historical resource per CEQA Guidelines Section 15064.5 or a unique archaeological resource, as defined in PRC (CEQA) Section 21083.2(g), any impacts to the resource resulting from the proposed project could be potentially significant. Any such potential significant impacts would be reduced to a less-than-significant level with implementation of **Mitigation Measure CUL-1** and **Mitigation Measure CUL-2**.

**Mitigation Measure CUL-1: Cultural Resources Awareness Training:** Before any ground-disturbing and/or construction activities, an archaeologist meeting or under the supervision of an archaeologist meeting the Secretary of the Interior Standards for Archeology shall conduct a training program for all construction and field personnel involved in ground disturbance. If a Native American tribe has expressed interest in the proposed project via tribal consultation as per Assembly Bill 52 consultation, they will be invited to participate in the training program. On-site personnel shall attend a mandatory pre-project training that shall outline the general archaeological sensitivity of the area and the procedures to follow in the event an archaeological resource and/or human remains are inadvertently discovered. A training program shall be established for new project personnel before they begin project work.

**Mitigation Measure CUL-2: Inadvertent Discovery of Cultural Resources:** If pre-contact or historic-era archaeological resources are encountered during project implementation, all construction activities within 100 feet shall halt, and a qualified archaeologist, defined as an archaeologist meeting the U.S. Secretary of the Interior's Professional Qualification Standards for Archeology, shall inspect the find within 24 hours of discovery and notify TID of their initial assessment. Pre-contact archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include building or structure footings and walls, and deposits of metal, glass, and/or ceramic refuse.

If TID determines, based on recommendations from a qualified archaeologist and a Native American representative (if the resource is pre-contact), that the resource may qualify as a historical resource or unique archaeological resource (as defined in CEQA Guidelines Section 15064.5) or a tribal cultural resource (as defined in PRC Section 21080.3), the resource shall be avoided, if feasible. Consistent with Section 15126.4(b)(3), this may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement.

If avoidance is not feasible, TID shall consult with appropriate Native American tribes (if the resource is pre-contact), and other appropriate interested parties to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource pursuant to PRC Section 21083.2, and CEQA Guidelines Section 15126.4. This shall include documentation of the resource and may include data recovery (according to PRC Section 21083.2), if deemed appropriate, or other actions such as treating the resource with culturally appropriate dignity and protecting the cultural character and integrity of the resource (according to PRC Section 21084.3).

- c) **Less than Significant with Mitigation.** Based on the records search and survey results, no human remains are known to exist within the proposed project site. It is possible that human remains would be encountered during construction of the proposed project. Therefore, the possibility of inadvertent discovery cannot be entirely discounted. In the event of the discovery of human remains during project construction activities, implementation of **Mitigation Measure CUL-3: Inadvertent Discovery of Human Remains** would reduce potential impacts to human remains.

**Mitigation Measure CUL-3: Inadvertent Discovery of Human Remains:** In the event of discovery or recognition of any human remains during construction activities, such activities within 100 feet of the find shall cease until the appropriate County Coroner has been contacted to determine that no investigation of the cause of death is required. The NAHC will be contacted within 24 hours if it is determined that the remains are Native American. The NAHC will then identify the person or persons it believes to be the most likely descendant from the deceased Native American, who in turn would make recommendations to the lead agency for the appropriate means of treating the human remains and any grave goods.

### 3.5.4 References

- Bennyhoff, 1954. Archaeological Site Survey Record, P-50-000206. On file, CCaIC, CSU Stanislaus, Turlock, California, 1954.
- Central California Information Center (CCaIC), Records Search File No. File No. 011646N. On file, ESA, February 2, 2021.
- Nationwide Environmental Title Research (NETR) Historic Aerials, Turlock Lake, California. Available at <https://historicaerials.com/viewer>. Accessed March 11, 2022.
- Olsen, W. H. 1972a. DPR 422 Form Set, P-5-000227. On file, CCaIC, CSU Stanislaus, Turlock, California.
- Olsen, W. H. 1972b. DPR 422 Form Set, P-5-000228. On file, CCaIC, CSU Stanislaus, Turlock, California.
- Rapp, G. and C.L. Hill. 2006. Geoarchaeology: The Earth-Science Approach to Archaeological Interpretation, 2<sup>nd</sup> ed., Yale University Press, New Haven, CT.
- Rosenthal, J.S. and J. Meyer. 2004. Cultural Resources Inventory of Caltrans District 10 Rural Conventional Highways, Volume III: Geoarchaeological Study, Landscape Evolution and

---

the Archaeological Record of Central California, prepared by Far Western Anthropological Research Groups, Inc. for Caltrans District 10.

Sims, A., K. Cleveland and P. Zimmer, Turlock Lake Rehabilitation Project, Stanislaus County, California, Cultural Resources Inventory Report. Prepared by Environmental Science Associates. Prepared for Turlock Irrigation District. 2022.

Stewart, S. 1994. Archaeological Site Record, P-50-000206. On file, CCaIC, CSU Stanislaus, Turlock, California.

USDA (U.S. Department of Agriculture). 2022. Natural Resources Conservation Service Web Soil Survey, Version 3.1, <http://websoilsurvey.sc.egov.usda.gov/app/WebSoilSurvey.aspx>, March 25, 2022.

Wagner, D.L., E.J. Bortugno, and R.D. McJunkin. 1991. Geologic Map of the San Francisco-San Jose Quadrangle, California, 1:250,000, California Division of Mines and Geology, Available online at [https://www.conservation.ca.gov/cgs/Documents/Publications/Regional-Geologic-Maps/RGM\\_005A/RGM\\_005A\\_SanFrancisco-SanJose\\_1991\\_Sheet1of5.pdf](https://www.conservation.ca.gov/cgs/Documents/Publications/Regional-Geologic-Maps/RGM_005A/RGM_005A_SanFrancisco-SanJose_1991_Sheet1of5.pdf), 1991.

Woodward, J. 1983. Waterline and Accessories (minor capital outlay) Archaeological Survey Report, Prepared by California Department of Parks and Recreation.

Zimmer, P. and A. Sims. 2022. Archaeological Testing Plan for the Turlock Lake Rehabilitation Project, Turlock, California. Prepared by Environmental Science Associates. Prepared for Turlock Irrigation District.

### 3.6 Energy

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

#### 3.6.1 Discussion

Consistent with Public Resources Code Section 21100(b)(3), this impact analysis evaluates the potential for the proposed project to result in a substantial increase in energy demand and wasteful use of energy during project construction, operation, and maintenance. The impact analysis is informed by Appendix G of the CEQA Guidelines. The potential impacts are analyzed based on an evaluation of whether construction energy use estimates for the proposed project would be considered excessive, wasteful, or inefficient.

- a) **Less than Significant.** During construction of the proposed Project, fuel consumption would result from the use of construction tools and equipment, truck trips to haul material, and construction workers’ commutes to and from the proposed project site. Construction of the proposed project is anticipated to last for 8 months.

Construction activities and corresponding fuel energy consumption would be temporary and localized, as the use of diesel fuel and heavy-duty equipment would not be a long-term condition of the proposed project. In addition, the proposed project has no unusual characteristics that would require using construction equipment or haul vehicles that would be less energy efficient than equipment and vehicles used at similar construction sites elsewhere in California. In conclusion, construction-related fuel consumption by the proposed project would not result in inefficient, wasteful, or unnecessary energy use compared with other construction sites in the region. This impact would be less than significant.

Once construction is complete, operational emissions would be minimal and related to periodic facility inspection to assess dam integrity. Because the proposed project’s operational impacts on energy resources would be driven primarily by limited maintenance activities, energy use would be negligible. This impact would be less than significant.

- b) **Less than Significant.** The transportation sector is a major end user of energy in California, accounting for approximately 39 percent of the state’s total energy consumption in 2018 (U.S. Energy Information Administration 2020). Energy is also consumed in connection with construction and maintenance of transportation infrastructure, such as streets, highways, freeways, rail lines, and airport runways.

In 2015, California's 30 million vehicles consumed more than 15 billion gallons of gasoline and more than 4.2 billion gallons of diesel, making California the second largest consumer of gasoline in the world (CEC 2016).

Existing standards for transportation energy are promulgated through the regulation of fuel refineries and products, such as the Low Carbon Fuel Standard, which mandated a 10 percent reduction in the non-biogenic carbon content of vehicle fuels by 2020. In 2018, CARB approved amendments to the regulation, which included strengthening and smoothing the carbon intensity benchmarks through 2030 in line with California's 2030 greenhouse gas emissions reduction target enacted through Senate Bill 32, adding new crediting opportunities to promote zero-emissions vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector. Other regulatory programs with emissions and fuel efficiency standards have been established by the U.S. Environmental Protection Agency and CARB, such as Pavley II/Low Emission Vehicle III from California's Advanced Clean Cars Program and the Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation. CARB has set a goal of 4.2 million zero-emissions vehicles on the road by the year 2030 (CARB 2021). Further, construction sites need to comply with state requirements designed to minimize idling and associated emissions, which also minimizes fuel use. Specifically, idling of commercial vehicles and off-road equipment is limited to 5 minutes in accordance with the Commercial Motor Vehicle Idling Regulation and the Off-Road Regulation (California Code of Regulations Title 13, Section 2485).

Stanislaus County has not implemented energy action plans. The proposed project is consistent with the state goals and would not impede progress toward achieving these goals.

The proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency or impede progress toward achieving any goals and targets. This impact would be less than significant.

### 3.6.2 References

- California Air Resources Board (CARB). 2021. 2020 Mobile Source Strategy. Available: <https://ww2.arb.ca.gov/resources/documents/2020-mobile-source-strategy>. Accessed March 2022.
- California Energy Commission (CEC). 2016. Summary of California Vehicle and Transportation Energy. Available: [http://www.energy.ca.gov/almanac/transportation\\_data/summary.html#vehicles](http://www.energy.ca.gov/almanac/transportation_data/summary.html#vehicles). Accessed March 2022.
- U.S. Energy Information Administration. 2020. California State Profile and Energy Estimates: Consumption by Sector. Available: <http://www.eia.gov/state/?sid=CA#tabs-2>. Accessed: March 2022.

### 3.7 Geology and Soils

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

#### 3.7.1 Environmental Setting

This analysis is based, in part, on the draft Turlock Lake Dam Rehabilitation Geotechnical Data Report by Stantec Consulting Services Inc. (Stantec) in October 2021 (Stantec 2021).

The proposed project area is located within the central portion of the Great Valley geomorphic province,<sup>9</sup> just east of the Coast Ranges (CGS 2002). The Great Valley is an elongate lowland approximately 50 miles wide and 400 miles long. It is bounded to the east by the Sierra Nevada Range and to the west by the Coast Range (Stantec 2021). The Great Valley rises from about sea level to approximately 400 feet in elevation at its northern and southern ends. The northern portion of the valley, referred to as the Sacramento Valley, is drained by the Sacramento River, while the southern portion of the valley, referred to as the San Joaquin Valley, is drained by the San Joaquin River. The Great Valley is filled with large volumes of sediments that have been eroded from the

<sup>9</sup> A geomorphic province is an area that possesses similar bedrock, structure, history, and age. California has 11 geomorphic provinces.

Sierra Nevada and Coast Range provinces. These sediments are nearly 6 miles deep at the southern end of the Great Valley (Leech 2006).

Current geologic mapping indicates that the surficial geology within the proposed project area consists of Pleistocene-age Riverbank (Qr), Modesto (Qm), and Turlock Lake (Qtl) Formations; and Miocene-age Mehrten Formation (Tm) (Wagner et al. 1991; Stantec 2021). Subsurface investigations performed by Stantec indicate that fill material is present in the immediate subsurface and alluvial deposits (derived from the Riverbank and Turlock Lake Formations) are present at depths between 1 and 70 feet below ground surface (bgs) (Stantec 2021).

The California Earthquake Hazards Zone Application (EQ Zapp) is an interactive map available on the California Geological Survey (CGS) website. The EQ Zapp allows users to view all available earthquake hazard zone data, including earthquake fault, liquefaction, and earthquake-induced landslide zones. Holocene-active faults are designated Earthquake Fault Zones (EFZs) because they display evidence of surface rupture within the last 11,700 years. As required by the Alquist-Priolo Earthquake Fault Zoning Act, the proposed project site is not within an established EFZ as delineated on an EFZ Map.

There are no known Holocene-active<sup>10</sup> faults or pre-Holocene<sup>11</sup> faults within the proposed project area (CGS 2010; Stantec 2021). The nearest known Holocene-active fault is the Cottonwood Arm section of the Ortigalita fault zone, approximately 45 miles southwest of the proposed project site. The Foothill fault system and the San Joaquin fault are pre-Holocene faults and are approximately 15 miles northwest and 35 miles west of the proposed project site, respectively (Stantec 2021).

Ground shaking due to fault rupture can cause damage to life and property. The extent of the damage varies by event and is determined by several factors, including (but not limited to): magnitude and depth of the earthquake, distance from epicenter, duration and intensity of the shaking, underlying soil and rock types, and integrity of structures.

There is a potential for strong seismic ground shaking due to the presence of the nearby Ortigalita fault zone. The 2014 Working Group on California Earthquake Probabilities<sup>12</sup> (WGCEP) concluded that there is a 1.91 percent probability that a magnitude ( $M_w$ ) 6.7 earthquake or higher could occur on the Ortigalita fault zone within the next 30 years (Field et al. 2015).

ShakeMap is a product of the United State Geological Survey (USGS) Earthquake Hazards Program; ShakeMap earthquake scenarios represent one realization of a potential future earthquake by assuming a particular magnitude and location. According to the ShakeMap that corresponds with an earthquake planning scenario generated by an estimated 7.1  $M_w$  earthquake

<sup>10</sup> Holocene-active faults show evidence of displacement within the Holocene Epoch, or the last 11,700 years are considered active (CGS 2008).

<sup>11</sup> Pre-Holocene faults have not shown evidence of displacement in the last 11,700 years (CGS 2008).

<sup>12</sup> Also referred to as WGCEP 2014, this is a working group comprised of seismologists from the U.S. Geological Survey (USGS), California Geological Survey (CGS), Southern California Earthquake Center, and California Earthquake Authority.

along the Ortigalita fault zone, the proposed project area would be subjected to modest to strong seismic ground shaking (USGS 2013).

A deterministic seismic hazard analysis was performed; the analysis assumed a Magnitude (M) 7.6 event within the Foothills fault system at a distance of approximately 15 miles, with a peak ground acceleration of approximately 0.29 g<sup>13</sup> experienced at the proposed project site (Stantec 2021).

Expansive soils are soils that possess a “shrink-swell” characteristic, also referred to as linear extensibility. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying; the volume change is reported as a percent change for the whole soil. This property is measured using the coefficient of linear extensibility (COLE) (NRCS 2017). The Natural Resources Conservation Service (NRCS) relies on linear extensibility measurements to determine the shrink-swell potential of soils. If the linear extensibility percent is more than 3 percent (COLE = 0.03), shrinking and swelling may cause damage to buildings, roads, and other structures (NRCS 2017). Changes in soil moisture can result from rainfall, landscape irrigation, utility leakage, roof drainage, and/or perched groundwater.<sup>14</sup> Expansive soils are typically very fine-grained and have a high to very high percentage of clay. Structural damage may occur incrementally over a long period of time, usually as a result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils.

The NRCS Web Soil Survey data indicates that the soils along the Turlock Lake shoreline have a widely variable linear extensibility rating, with the lowest rating at 0.7 percent and the highest at 9.9 percent. A majority of the soils along the shoreline have a low expansion potential (linear extensibility rating between 0.7 and 2.4 percent); however, the soils along the eastern and western shorelines have a very high expansion potential (linear extensibility rating between 0.7 and 6.4 percent) (NRCS 2021). The Geotechnical Data Report does not specifically state that expansive soils were encountered during subsurface investigations; however, there is mention of “fat clays” in the subsurface (Stantec 2021), which are considered expansive (Stratum Logics 2022).

Liquefaction is a phenomenon in which unconsolidated, water-saturated sediments become unstable due to the effects of strong seismic shaking. During an earthquake, these sediments can behave like a liquid, potentially causing damage to overlying structures. Lateral spreading is a type of minor landslide that occurs when unconsolidated liquefiable material breaks and spreads due to the effects of gravity, usually down gentle slopes.

The potential damaging effects of liquefaction include differential settlement, loss of ground support for foundations, ground cracking, heaving and cracking of structure slabs due to sand boiling, and buckling of deep foundations due to ground settlement. In general, a relatively high potential for liquefaction exists in loose, sandy soils that are within 50 feet of the ground surface and are saturated (below the groundwater table).

---

<sup>13</sup> The gravity of Earth is denoted by a lower-case *g* and stands for the net acceleration that is imparted to objects due to the combined effect of gravitation and the centrifugal force from Earth’s rotation.

<sup>14</sup> Perched groundwater is a local saturated zone above the water table that typically exists above an impervious layer (such as clay) of limited extent.

Although geologic mapping indicates a majority of the Turlock Lake shoreline is composed of outcrops of the Riverbank, Modesto, and Merhten Formations (Wagner et al. 1991), the subsurface geotechnical investigation indicates there are moderately to highly dispersive fill material and alluvial deposits in the immediate subsurface (Stantec 2021). Subsurface investigations further indicate that groundwater has been encountered between 16.5 to 58 feet bgs. While the Geotechnical Data Report does not specifically state that the subsurface materials had a high liquefaction potential (Stantec 2021), the reported soil conditions are conducive to liquefaction.

Additionally, landslides and other slope failures are not anticipated within the proposed project area because of the relatively flat surrounding area. Based on Google Earth imagery, there are no signs of previous landslides within or around the proposed project area. Additionally, based on a review of geologic maps of the area, there are no mapped historical landslides in the vicinity of the proposed project area (Wagner et al. 1991). According to the EQ Zapp, the proposed project site is not mapped within an established liquefaction or earthquake-induced landslide zone (CGS 2022).

Land subsidence is the gradual settling or sudden sinking of the earth's surface due to subsurface movement of earth materials. Subsidence in alluvial valley areas is typically associated with groundwater or petroleum withdrawal, and regional ground subsidence or settlement is typically caused by compaction of alluvial deposits or other saturated deposits in the subsurface (USGS 1999). The San Joaquin Valley has a history of land subsidence due to groundwater pumping and related compaction of sand and clay layers in Valley sediments. The proposed project area is not in an area that has experienced much land subsidence in the past (Sneed et al. 2018).

Paleontological resources are the mineralized (fossilized) remains of prehistoric plants and animals and the mineralized impressions (trace fossils) left as indirect evidence of the forma and activity of such organisms. These resources are located within sedimentary rocks or alluvium and are considered to be nonrenewable. Formations that contain vertebrate fossils are considered more sensitive because vertebrate fossils tend to be rare and fragmentary. Formations containing microfossils, plant casts, and invertebrate fossils are more common. A significant fossil deposit is a rock unit or formation that contains significant nonrenewable paleontological resources. This is defined as comprising one or more identifiable vertebrate fossils, large or small, and any associated invertebrate and plant fossils, traces, and other data that provide taphonomic, taxonomic, phylogenetic, ecologic, and stratigraphic information (ichnites and trace fossils generated by vertebrate animals such as trackways or nests and middens) that in turn provides datable material and climatic information. This definition excludes invertebrate or botanical fossils except when present within a given vertebrate assemblage. However, invertebrate and botanical fossils may be significant as environmental indicators associated with vertebrate fossils.

In its "Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources," the Society of Vertebrate Paleontology (SVP) defines, as follows, four categories of paleontological potential for rock units: high, low, undetermined, and no potential. High potential rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources. Low potential rock units that are poorly represented by fossil specimens in institutional collections, or based on general scientific consensus, only

preserve fossils in rare circumstances, and the presence of fossils is the exception not the rule. Undetermined potential rock units are those for which little information is available concerning their paleontological content, geologic age, and depositional environment. No potential rock units like high-grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites) will not preserve fossil resources (SVP 2010). It is important to note that while paleontological potential as defined above can provide a rough idea of whether subsurface fossils may exist, the uniqueness or significance of a fossil locality is unknown until it is identified to a reasonably precise level (Scott and Springer 2003). Therefore, any fossil discovery should be treated as potentially unique or significant until determined otherwise by a professional paleontologist.

Based on geologic mapping, the surficial geology within the proposed project area consists of Pleistocene-age Riverbank (Qr), Modesto (Qm), and Turlock Lake (Qtl) Formations and Miocene-age Mehrten Formation (Tm) (Wagner et al. 1991).

A search of the University of California Museum of Paleontology (UCMP) fossil locality online database indicates that there are 17 recorded fossil localities collected from the Merhten Formation at Turlock Lake. Of the 17 recorded fossil sites, at least 167 individual specimens have been collected (including the remains of horses, rhinoceroses, camels, pronghorns, beavers, badgers, other rodents, canids, and amphibians) (Wagner 1976; Biewer et al. 2016; Sankey et al. 2016; Balisi et al. 2018; UCMP 2022a) Additionally, more than 100 individual plant specimens have been recovered from the Mehrten Formation at Turlock Lake (UCMP 2022b). Although there are no recorded localities within the Riverbank, Modesto, or Turlock Lake Formations within the proposed project site, there is one Riverbank Formation locality and three Modesto Formation localities within Stanislaus County (UCMP 2022c). While not abundant in Stanislaus County, there are numerous Riverbank and Modesto Formation localities within California (UCMP 2022d).

Because of the abundance of fossils that have been recovered from the Riverbank, Modesto, and Mehrten Formations, these formations are considered to have a high potential to contain significant paleontological resources.

### 3.7.2 Discussion

- a.i) **No Impact.** The proposed project site is not located within an established EFZ. The proposed project would have no impact related to surface fault rupture.
- a.ii) **Less than Significant.** The proposed project site is in an area of California with relatively low seismic activity due to the distance from Holocene-active faults. However, as discussed above, the proposed project site could experience moderate to strong ground shaking in the event of an earthquake within the Ortigalita fault zone. If strong seismic ground shaking were to damage or destroy one or more of the dams at the proposed project site, this would result in a significant impact.

However, the dams at the proposed project site are under the jurisdiction of the DWR DSOD, who oversees the construction, repair, and alteration of dams within its

jurisdiction. Further, the construction, alteration, and repair of any structure constructed within the state is required to comply with the standards and regulations included in the most current version of the California Building Code (CBC).

Compliance with DSOD and CBC standards and regulations would reduce the impacts related to seismic ground shaking to a less-than-significant level.

- a.iii, a.iv, c) **Less than Significant.** As discussed above in the *Environmental Setting* section, the proposed project site is not within an area known to be susceptible to landslides or liquefaction. In addition, the proposed project would be subject to compliance with the DSOD and CBC standards and regulations. Therefore, the impacts related to liquefaction, landslides, and other soil instability issues would be less than significant.
- b) **Less than Significant.** Project construction would involve ground-disturbing earthwork, such as limited earthmoving, trenching, and grading. These activities could increase the susceptibility of soils to erosion by wind or water and subsequently result in the loss of topsoil. If not controlled and managed, the impact of soil erosion could be significant. However, a Stormwater Pollution Prevention Plan would be developed and implemented as part of the proposed project in accordance with a National Pollutant Discharge and Elimination System General Permit for Stormwater Discharge Associated with Construction and Land Disturbance Activities. This plan would include best management practices (BMPs) designed to control and reduce soil erosion. The BMPs may include dewatering procedures, stormwater runoff quality control measures, watering for dust control, and the construction of silt fences, as needed. During construction-related activities, soil compaction would be used to further reduce soil erosion. The implementation of these soil and erosion control measures would ensure that soil disturbance and loss would result in a less-than-significant impact.
- d) **Less than Significant.** As described previously, there are areas of very high soil expansion potential along the shoreline of Turlock Lake. If any new structures are constructed within expansive soils, they could be damaged and could result in a significant impact.

However, as discussed above, the proposed project would be subject to the standards and regulations of the DSOD and CBC. Included in these standards is the requirement for a project that proposes to construct, alter, or repair structures to undergo a geotechnical investigation to determine whether there are any geotechnical hazards present at a project site. The evaluation of expansive soils is required during this process to ensure that structures are not subject to the damaging effects of expansive soils. Compliance with the DSOD and CBC requirements would reduce impacts related to expansive soils to a less-than-significant level.

- e) **No Impact.** The proposed project would not include the use of septic tanks or alternative wastewater disposal systems; there would be no impact.

- f) **Less than Significant with Mitigation Incorporated.** A significant impact would occur if a project would destroy a unique paleontological resource or site, or a unique geologic feature. Paleontological resources are the fossilized evidence of past life found in the geologic record. Despite the tremendous volume of sedimentary rock deposits preserved worldwide, and the enormous number of organisms that have lived through time, preservation of plant or animal remains as fossils is an extremely rare occurrence. Because of the infrequency of fossil preservation, fossils—particularly vertebrate fossils—are considered to be nonrenewable resources. Because of their rarity, and the scientific information they can provide, fossils are highly significant records of ancient life.

Geologic mapping indicates that the Riverbank, Modesto, and Mehrten Formations are exposed at the surface at the proposed project site.

A records search of the UCMP online fossil locality database indicated that there have been at least 167 individual vertebrate fossil specimens recovered from 17 different localities from the Merhten Formation at Turlock Lake. Additionally, over 100 individual plant fossil specimens have been recovered from the Mehrten Formation at Turlock Lake. Although there have been no significant discoveries from the Riverbank or Modesto Formations at Turlock Lake, there are three localities in Stanislas County and numerous others throughout California. Due to the numerous significant discoveries from the Riverbank, Modesto, and Mehrten Formations, all of these formations are considered to have a high potential to contain significant paleontological resources.

As discussed in Section 2.3, *Description of the Proposed Project*, excavation associated with the proposed Project would be limited to excavation of fill material from the borrow area (depicted in Figure 2-3). The borrow area would be located in an area where the Riverbank Formation is exposed at the surface. Further, as the Modesto and Mehrten Formations are older (and, therefore, stratigraphically beneath) the Riverbank Formation, it is possible that deep excavations into the Riverbank Formation could expose the Modesto or Mehrten Formations; therefore, excavation into previously undisturbed deposits of the Riverbank, Modesto, and Mehrten Formations could encounter significant paleontological resources. If the excavation associated with the proposed project encounters and inadvertently disturbs or destroys significant paleontological resources, that would be a potentially significant impact.

To avoid potential impacts to significant paleontological resources, Mitigation Measure GEO-1 would be required to ensure that a qualified paleontologist develops worker awareness training for all construction personnel and proper salvage and treatment protocols are in place, in the event of a significant discovery. Implementation of Mitigation Measure GEO-1 would reduce the proposed project's impacts on significant paleontological resources to a less-than-significant level.

#### **Mitigation Measure GEO-1: Paleontological Training**

- a) **Project Paleontologist:** The Project Applicant shall retain a qualified professional paleontologist (qualified paleontologist) meeting SVP standards as

set forth in the *Definitions* section of Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources prior to the approval of demolition or grading permits. The qualified paleontologist shall attend the proposed project's kickoff meeting and proposed project progress meetings on a regular basis, shall report to the site in the event potential paleontological resources are encountered, and shall implement the outlined duties.

- b) **Worker Training:** Prior to the start of any ground-disturbing activity, the qualified paleontologist shall prepare paleontological resources sensitivity training materials for use during project-wide Worker Environmental Awareness Training (or equivalent). The paleontological resources sensitivity training shall be conducted by a qualified environmental trainer working under the supervision of the qualified paleontologist. In the event construction crews are phased, additional trainings shall be conducted for new construction personnel. The training session shall focus on the recognition of the types of paleontological resources that could be encountered within the proposed project site and the procedures to be followed if they are found, as outlined in an approved Paleontological Resources Monitoring and Mitigation Plan (discussed below). The Project Applicant shall retain documentation demonstrating that all construction personnel attended the training prior to the start of work on the site and shall provide the documentation upon request.
- c) **Significant Fossil Treatment.** If any find is deemed significant, as defined in the SVP standards, the qualified paleontologist shall salvage and prepare the fossil for permanent curation with a certified repository with retrievable storage following SVP standards.

### 3.7.3 References

- Balisi, M., X. Wang, J. Sankey, J. Biewer, and D. Garber, 2018. Fossil canids from the Mehrten Formation, Late Cenozoic of Northern California. *Journal of Vertebrate Paleontology*, DOI: 10.1080/02724634.2017.1405009.
- Biewer, J., J. Sankey, H. Hutchinson, and D. Garber, 2016. A fossil giant tortoise from the Mehrten Formation of Northern California. *PaleoBios*, 33: 1-13, March 8, 2016.
- California Geological Survey (CGS), 2002. California Geomorphic Provinces. Note 36.
- CGS, 2008. Guidelines for Evaluating and Mitigation Seismic Hazards in California. Special Publication 117A.
- CGS, 2010. 2010 Fault Activity Map of California. California Geological Survey, Geologic Data Map No. 6. Compilation and Interpretation by Charles W. Jennings and William A. Bryant. Graphics by: Milind Patel, Ellen Sander, Jim Thompson, Barbara Wanish and Milton Fonseca. Available: [www.conservation.ca.gov/cgs/cgs\\_history/PublishingImages/FAM\\_750k\\_MapRelease\\_page.jpg](http://www.conservation.ca.gov/cgs/cgs_history/PublishingImages/FAM_750k_MapRelease_page.jpg). Accessed May 24, 2022.
- CGS, 2022. California Earthquake Hazards Zone Application (EQ ZAPP). Earthquake Zones of Required Investigation. California Geological Survey. Available online: <https://maps.conservation.ca.gov/cgs/EQZApp/app/>. Accessed on March 30, 2022.

- Field, E. H., G.P. Biasi, P. Bird, T.E. Dawson, K.R. Felzer, D.D. Jackson, K.M. Johnson, T.H. Jordan, C. Madden, A.J. Michael, K.R. Milner, M.T. Page, T. Parsons, P.M. Powers, B.E. Shaw, W.R. Thatcher, R.J. Weldon II, and Y. Zeng, 2015. Long-Term Time-Dependent Probabilities for the Third Uniform California Earthquake Rupture Forecast (UCERF3). *Bulletin of the Seismological Society of America*, Vol. 105, No. 2A. pp. 511-543. April, 2015. doi: 10.1785/0120140093.
- Leech, M. 2006. *Geology of the Central California Coast: April 21-22, 2006* [field trip guide].
- Natural Resources Conservation Service (NRCS), 2017. Title - National Soil Survey Handbook. Part 618 – Soil Properties and Qualities. Section 618.41, Linear Extensibility Percent.
- NRCS, 2021. Web Soil Survey. Linear Extensibility – Eastern Stanislaus Area, California. Map. Scale 1:45,700. Available: <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>. Accessed March 28, 2022.
- Sankey, J., J. Biewer, J. Basuga, F. Palacios, H. Wagner, and D. Garber. 2016. A giant spike-toothed salmon, *Oncorhynchus rastrosus* and the “Proto-Tuolumne River” (early Pliocene) of Central California. *PaleoBios* 33: 1-16, November 14, 2016.
- Scott, E. and K. Springer. 2003. CEQA and Fossil Preservation in California. AEP 2004 Conference, AEP Spring 2004 CEQA Workshop Series.
- Sneed, M., J. Brandt, and M. Solt. 2018. Land Subsidence Along the California Aqueduct in the West-Central San Joaquin Valley, California, 2003–10: U.S. Geological Survey Scientific Investigations Report 2018–5144. [<http://dx.doi.org/10.3133/sir20135142>].
- Society of Vertebrate Paleontology (SVP). 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Prepared by: SVP Impact Mitigation Guidelines Revision Committee.
- Stantec Consulting Services Inc. (Stantec). 2021. Turlock Lake Dam Rehabilitation Geotechnical Data Report. Report – Rev. A Draft. Turlock Irrigation District, California. October 2021.
- Stratum Logics. 2022. Expansive Clays and Soft Soils. Available online at: <https://www.stratumlogics.com/expertise/expansive-clays-soft-soils/>. Accessed on April 12, 2022.
- University of California Museum of Paleontology (UCMP). 2022a. UC Museum of Paleontology Localities database. Vertebrate fossil localities from the Mehrten Formation.
- UCMP. 2022b. UC Museum of Paleontology Localities database. Plant fossil localities from the Mehrten Formation.
- UCMP. 2022c. UC Museum of Paleontology Localities database. Fossil localities from the Riverbank and Modesto Formations from Stanislaus County.
- UCMP. 2022d. UC Museum of Paleontology Localities database. Fossil localities from the Riverbank and Modesto Formations throughout California.

United State Geological Survey (USGS). 1999. Land Subsidence in the United States. Circular 1182

USGS. 2013. Earthquake Planning Scenario. M 7.1 Scenario Earthquake – Ortigalita. Accessed on March 30, 2022.

Wagner, H. 1976. A New Species of *Pliotaxidea* (Mustelidae: Carnivora) from California. *Journal of Paleontology* Vol. 50, No. 1 (January, 1976), pp. 107-127. Published By: SEPM Society for Sedimentary Geology.

Wagner, D.L., E.J. Bortugno and R.D. McJunkin. 1991. Geologic Map of the San Francisco-San Jose Quadrangle, California. California Geological Survey. Map. Scale 1:250,000.

---

### 3.8 Greenhouse Gas Emissions

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

#### 3.8.1 Discussion

a, b) **Less than Significant with Mitigation Incorporated.** The San Joaquin Valley Air Pollution Control District’s (SVJAPCD’s) greenhouse gas (GHG) guidance is intended to streamline CEQA review by pre-quantifying emissions reductions that would be achieved through the implementation of Best Performance Standards. A project is considered to have a less-than-significant cumulative impact on climate change if it meets any of the following conditions:

1. Comply with an approved GHG reduction plan.
2. Achieve a score of at least 29 using any combination of approved operational Best Performance Standards.
3. Reduce operational GHG emissions by at least 29 percent over business-as-usual (BAU) conditions (demonstrated quantitatively).

Because Stanislaus County currently has no adopted GHG reduction plan, Option 1 (listed above) cannot be applied. Options 2 and 3 both require projects to achieve GHG reductions consistent with the goal of Assembly Bill (AB) 32—to reduce statewide GHG emissions to 1990 levels by 2020 (equivalent to a 29 percent reduction over BAU conditions).

However, since publication of SVJAPCD’s GHG guidance in 2009, the California Supreme Court has considered the CEQA issue of determining the significance of GHG emissions, in its decision in *Center for Biological Diversity v. CDFW and Newhall Land and Farming (Center for Biological Diversity v. Department of Fish & Wildlife (2015) 62 Cal.4th 204)*. In the *Newhall* decision, the court questioned a common CEQA approach to GHG analyses for development projects that compared project emissions to the reductions from BAU that would be needed statewide to reduce emissions to 1990 levels by 2020, as required by AB 32. The court upheld the BAU method as valid in theory, but concluded that the method was applied improperly in the case of the Newhall project: The project’s target was incorrectly deemed consistent with the statewide emission target of 29 percent below BAU for the year 2020. In other words, the court said that the percent-below-BAU target developed by the AB 32 Scoping Plan is intended as a measure of the GHG reduction

effort required by the state as a whole, and it cannot necessarily be applied to the impacts of a specific project in a specific location.

The California Supreme Court provided some guidance for evaluating the cumulative significance of a proposed land use project's GHG emissions, but noted that none of the approaches could be guaranteed to satisfy CEQA for a particular project. The court's suggested "pathways to compliance" include:

- Use a geographically specific GHG emissions reduction plan (e.g., climate action plan) that outlines how the jurisdiction will reduce emissions consistent with state reduction targets, to provide the basis for streamlining project-level CEQA analysis, as described in State CEQA Guidelines Section 15183.5.
- Use the Scoping Plan's BAU reduction goal, but provide substantial evidence to bridge the gap between the statewide goal and the proposed project's emissions reductions.
- Assess consistency with AB 32's goal in whole or part by looking to comply with regulatory programs designed to reduce GHG emissions from particular activities. As an example, the court points out that projects consistent with a Senate Bill 375 sustainable communities strategy may need to reevaluate GHG emissions from cars and light trucks.
- Rely on existing numerical thresholds of significance for GHG emissions, such as those developed by an air district.

In light of the *Newhall* decision and the reliance of SVJAPCD's GHG guidance on the statewide percentage reduction of GHG emissions by 2020, the following assessment of the proposed project's potential GHG emissions impacts under CEQA uses a twofold approach:

1. Does the proposed project include reasonably feasible measures (i.e., Best Performance Standards) to reduce GHG emissions?
2. Although not strictly applicable to projects within the SJVAB, would the proposed project's emissions exceed the Bay Area Air Quality Management District's GHG mass emissions (or "bright line") threshold of 1,100 metric tons of carbon dioxide equivalent (CO<sub>2</sub>e) per year?

As discussed previously, operational GHG emissions for the proposed project would be generated primarily by on-road vehicular traffic for maintenance trips. However, employee trips required for periodic facility inspection to assess reservoir integrity would not be significantly greater than the trips generated under current operations. These trips would emit negligible amounts of GHGs. The work area is widespread, and thus a refueling truck, as compared to a centrally located fueling station, provides the most feasible means to refueling the equipment.

Project-related construction emissions calculated using the California Emissions Estimator Model version 2020.4.0 indicate that construction-related GHG emissions

would be 614 metric tons of CO<sub>2</sub>e in 2023 and 613 metric tons of CO<sub>2</sub>e in 2024, which would be below 1,100 metric tons of carbon dioxide equivalent per year. Construction of the proposed project would not result in a cumulatively considerable increase in GHG emissions and this impact would be less than significant. However, to be consistent with the intent of San Joaquin Valley Air Pollution Control District's GHG guidance, available Best Performance Standards would be implemented as part of **Mitigation Measure GHG-1** to further minimize this impact.

### **Mitigation Measure**

**Mitigation Measure GHG-1:** Turlock Irrigation District and/or its contractor shall implement the following best performance standards for construction emissions (AEP 2016):

- (1) Use alternatively fueled vehicles and equipment, including electrification, as well as alternative fuels where reasonably available and certified for use in construction equipment and vehicles (e.g., biodiesel blends, renewable diesel).
- (2) Reduce worker trips through organized ride sharing, where appropriate.
- (3) Use local sources of construction materials when economically feasible.

## 3.8.2 References

Association of Environmental Professionals (AEP). 2016. Final White Paper Beyond 2020 and Newhall, A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California. October 18, 2016. Page 36.

---

### 3.9 Hazards and Hazardous Materials

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

#### 3.9.1 Environmental Setting

##### Hazardous Materials

Materials and waste may be considered hazardous if they are poisonous (toxicity), can be ignited by open flame (ignitability), corrode other materials (corrosivity), or react violently, explode or generate vapors when mixed with water (reactivity). The term “hazardous material” is defined in law as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment.<sup>15</sup> In some cases, past uses can result in spills or leaks of hazardous materials to the ground, thereby resulting in soil and groundwater contamination. The use, storage, transportation, and disposal of hazardous materials are subject to numerous federal, state, and local laws and regulations.

<sup>15</sup> State of California, Health and Safety Code, Chapter 6.95, Section 25501(o).

## Fire Suppression

The California Department of Forestry and Fire Protection (CAL FIRE) Forest Resource Assessment Program published maps that delineate Very High Fire Hazard Severity Zones (VHFHSZs) in State Responsibility Areas (SRAs) and Local Responsibility Areas (LRAs).

Based on mapping by CAL FIRE (2007), the proposed project site is not within a mapped VSFHSZ, although there are mapped Moderate Fire Hazard Severity Zones (FHSZs) adjacent to Turlock Lake to the north, east, and southeast.

### 3.9.2 Discussion

- a, b) **Less than Significant.** During the construction phase, project construction equipment and materials would include fuels, oils and lubricants, cement, and concrete, all of which are commonly used in construction. The routine use, or an accidental spill, of hazardous materials used in construction could result in inadvertent releases, which could adversely affect construction workers, the public, and the environment.

Construction activities would be required to comply with numerous hazardous materials regulations designed to ensure that hazardous materials are transported, used, stored, and disposed of in a safe manner to protect worker safety and to reduce the potential for a release of construction-related fuels or other hazardous materials into the environment, including into stormwater and downstream receiving water bodies. Contractors would be required to prepare and implement Hazardous Materials Business Plans that would require that hazardous materials used for construction would be used properly and stored in appropriate containers with secondary containment to contain a potential release. The California Fire Code would also require measures for the safe storage and handling of hazardous materials.

As discussed in *Geology and Soils*, and *Hydrology and Water Quality*, construction contractors would be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) for construction activities according to the National Pollutant Discharge Elimination System's General Construction Permit requirements. The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; describe spill prevention measures, equipment inspections, equipment and fuel storage; delineate protocols for responding immediately to spills; and describe best management practices for controlling site runoff.

In addition, the transportation of hazardous materials would be regulated by the U.S. Department of Transportation, California Department of Transportation, and the California Highway Patrol. Together, federal and state agencies determine driver-training requirements, load labeling procedures, and container specifications designed to minimize the risk of accidental release.

Finally, in the event of a spill that releases hazardous materials at the proposed project site, a coordinated response would occur at the federal, state, and local levels. In the

event of a hazardous materials spill, a hazardous materials response team and the police department would be simultaneously notified and sent to the scene to respond to and assess the situation.

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

- c) **No Impact.** There are no schools located within 0.25 miles of the proposed project sites. Therefore, relative to schools, there would be no impact.
- d) **No Impact.** A review of the State Water Resources Control Board (SWRCB) GeoTracker database and the Department of Toxic Substances Control (DTSC) EnviroStor database revealed that there are no hazardous material sites at or near the proposed project site (SWRCB 2022; DTSC 2022). The GeoTracker and EnviroStor review also indicated that the proposed project site itself is not on a list hazardous materials sites (in this case, the Cortese List). Therefore, there would be no impact.
- e) **No Impact.** No public airports or public use airports are located within 2 miles of the proposed project site. Therefore, relative to airport safety hazards, there would be no impact.
- f) **No Impact.** The proposed project would not require any road closures, nor would it include any activities that would obstruct any roads. As such, proposed project activities would not impair or physically interfere with any emergency response or evacuation plan. There would be no impact.
- g) **Less than Significant.** The proposed project site is not within a mapped VSFHSZ, although there are mapped Moderate FHSZ adjacent to Turlock Lake to the north, east, and southeast.

The use of construction equipment and the possible temporary on-site storage of fuels and/or other flammable construction chemicals could pose an increased fire risk resulting in injury to workers or the public during construction. However, contractors would be required to comply with hazardous materials storage and fire protection regulations, which would minimize potential for fire creation, and ensure that the risk of wildland fires during construction would be less than significant.

### 3.9.3 References

California Department of Forestry and Fire Protection (CAL FIRE). 2007. Fire Hazard Severity Zones in SRA, Stanislaus County.

Department of Toxic Substances Control (DTSC). 2022. EnviroStor database. Results for hazardous materials sites in and around Turlock Lake.

State Water Resources Control Board (SWRCB). 2022. GeoTracker Database. Results for hazardous materials sites in and around Turlock Lake.

---

### 3.10 Hydrology and Water Quality

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

#### 3.10.1 Environmental Setting

Turlock Lake is located in Lower San Joaquin River watershed (Hydrologic Unit Code, HUC 8) and is filled by snowmelt, seasonal rains, and diversions from the Tuolumne River (Calisphere 2022). The lake serves as Turlock Irrigation District's balancing reservoir to store irrigation water. The proposed project site is characterized as a Mediterranean-type climate with hot, dry summers and cool, wet winters, with most of the precipitation occurring between November and March. Refer to Section 2.1.1 for additional background on Turlock Lake.

#### 3.10.2 Discussion

a, b, e) **Less than Significant.** The proposed project would not require the use of groundwater and would not include any activities that would impede groundwater recharge. Construction of the proposed project would involve the use of heavy equipment, and construction activities would include, but not be limited to, excavation, grading, and earthmoving. In general, construction activities have the potential to cause increased rates of erosion and sedimentation. In addition, the use of heavy machinery during construction

could result in the potential accidental release of fuels, oils, solvents, hydraulic fluid, and other construction-related fluids to the environment, thereby degrading water quality.

Construction activities would be required to comply with numerous regulations designed to reduce the potential for a release of construction-related fuels or other hazardous materials into the environment, including stormwater and downstream receiving water bodies. Contractors would be required to prepare and implement Hazardous Materials Business Plans (HMBPs) that would require that hazardous materials used for construction would be used properly and stored in appropriate containers with secondary containment to contain a potential release.

As discussed in the *Geology and Soils*, and *Hazards and Hazardous Materials* sections, construction contractors would be required to prepare an SWPPP for construction activities according to the National Pollutant Discharge Elimination System General Construction Permit requirements. The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; it would also describe spill prevention measures, equipment inspections, equipment, fuel storage, protocols for responding immediately to spills, and BMPs for controlling site runoff.

Management of dewatering activities in accordance with the General Order for Dewatering and Other Low Threat Discharges to Surface Waters Permit would minimize the risk of impacting the water quality of receiving waters. Therefore, this impact is considered less than significant.

- c.i-iv) **No Impact.** The proposed project would not alter the existing drainage pattern of the area. The proposed project activities would not result in a change in the amount or location of drainage. As described previously, the proposed project would not result in substantial erosion or siltation on- or off-site post-construction. There would be no impact.
- d) **Less than Significant.** As discussed above, the proposed project is not within a mapped Federal Emergency Management Agency (FEMA) flood hazard zone. However, there is a mapped flood hazard zone just to the north of Turlock Lake, along the Tuolumne River.

A seiche is a phenomenon similar to a tsunami except that they occur in large, enclosed bodies of water—like Turlock Lake. Disturbances in the body of water (e.g., caused by strong seismic ground shaking) can cause a seiche. The key requirement for formation of a seiche is that the body of water be at least partially bounded, allowing the formation of the standing wave. As the proposed project is in an area with minimal seismic activity, the chances of a seiche being formed in Turlock Lake is low.

The proposed project is over 100 miles east of the Pacific Ocean and therefore would not be subject to inundation from a tsunami.

As the proposed project would not include storing hazardous materials or other pollutants on-site and is not in an area subject to inundation by a flood, tsunami, or seiche, the impact would be less than significant.

### 3.10.3 References

Calisphere. 2022. Outlet gate to Turlock Lake, 1914. Stanislaus Region History and Culture Image Collection. California State University, Stanislaus. Available: <https://calisphere.org/item/ark:/13030/kt6b69q9f5/>. Accessed May 2022.\_\_\_\_

## 3.11 Noise

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

### 3.11.1 Environmental Setting

Sound is mechanical energy transmitted by pressure waves through a medium such as air, while noise is defined as unwanted sound. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that deemphasizes the frequencies below 1,000 Hertz<sup>16</sup> (Hz) and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA).<sup>17</sup>

### Effects of Noise on People

The effects of noise on people can be placed into three categories:

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

Environmental noise typically produces effects in the first two categories. Workers in industrial plants generally 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 exists in individual thresholds of annoyance, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

<sup>16</sup> Hertz is a unit of frequency equivalent to one cycle per second

<sup>17</sup> All noise levels reported herein reflect A-weighted decibels unless otherwise stated.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so called “ambient noise” level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- In carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived.
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference when the change in noise is perceived but does not cause a human response.
- 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.

The human ear perceives sound in a nonlinear fashion; hence the decibel scale was developed. Because the decibel scale is nonlinear, two noise sources do not combine in a simple additive fashion, but rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

### **Noise Attenuation**

Stationary “point” sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate of 6 dBA to 7.5 dBA per doubling of distance from the source, depending upon environmental conditions (i.e., atmospheric conditions and noise barriers, either vegetative or manufactured, etc.). Widely distributed noises, such as a large industrial facility spread over many acres or a street with moving vehicles (a “line” source), would typically attenuate at a lower rate, approximately 3 to 4.5 dBA per doubling distance from the source (also dependent upon environmental conditions) (Caltrans 2013). Noise from large construction sites would have characteristics of both “point” and “line” sources, so attenuation would generally range between 4.5 and 7.5 dBA per doubling of distance.

### **Vibration**

Vibration is an oscillatory motion through a solid medium in which the motion’s amplitude can be described in terms of displacement, velocity, or acceleration. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration (FTA 2018). Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration.

## **Existing Ambient Noise Environment**

The noise environment in the area surrounding the proposed project site is characterized by rural roadways, rural agricultural noise, and scattered residences. It includes low-volume traffic noise from tractors, large trucks, and other farm equipment as well as both on- and off-road passenger vehicles. The ambient noise environment in the vicinity of the proposed project site was estimated using a relationship population density and ambient noise determined during a research program by the U.S. Environmental Protection Agency (USEPA). The USEPA determined that residents in rural or other non-urban areas are estimated to be exposed to outdoor ambient noise levels ranging from 35 to 50 dBA Ldn<sup>18</sup> (USEPA 1974). Since the area surrounding the Project site can be categorized as rural or other non-urban area, it is assumed that ambient noise levels would range between 35 and 50 dBA Ldn.

## **Sensitive Receptors**

Human response to noise varies considerably from one individual to another. Effects of noise at various levels can include interference with sleep, concentration, and communication; physiological and psychological stress; and hearing loss. Given these effects, some land uses are considered more sensitive to ambient noise levels than others. In general, residences, schools, hotels, hospitals, and nursing homes are considered to be the most sensitive to noise. Commercial and industrial uses are considered the least noise-sensitive. Sensitive receptor land uses in the vicinity of the proposed Project include residences. The distances to sensitive receptors from proposed project elements vary from 500 feet from the proposed borrow area to 900 feet dams A, J, L, M, and N. All other dams are over 1,200 feet from the nearest residential receptor.

### **3.11.2 Discussion**

- a) **Less than Significant.** For assessment of temporary construction noise impacts, construction activities that could occur outside of the Stanislaus County construction exempt hours would constitute a significant impact. Chapter 10.46 of the Stanislaus County Code limits construction noise to 75 dBA at any receiving property line between the hours of 7 p.m. and 7 a.m. Implementation of this code requirement will limit construction noise to a level determined to be acceptable by the County.

On-site construction activities could take place between 7 a.m. and 9 p.m., with the latter 2 hours occurring outside of the exclusion window pursuant to Chapter 10.46.

The Federal Highway Administration's Roadway Construction Noise Model was used to determine the noise generated by construction activities for the proposed project. The model assumed simultaneous operation of the two noisiest pieces of construction

---

<sup>18</sup> Also abbreviated DNL, it is a 24-hour day and night A-weighted noise exposure level which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dB to take into account the greater annoyance of nighttime noises.

equipment.<sup>19</sup> **Table 3.11-1** shows the predicted noise levels from the two noisiest pieces of equipment (grader and scraper) at each of the three nearest sensitive receptors. As shown in 3.11-1, construction noise from the construction would be below the 75 dBA nighttime criterion for residential sensitive receptors established by Chapter 10.46 of the County Code. Therefore, the proposed project would not generate a substantial temporary increase in ambient noise levels in the vicinity of the proposed project site in excess of the nighttime construction criteria for the county. This impact would be less than significant.

**TABLE 3.11-1  
NOISE LEVELS FROM CONSTRUCTION**

Receptor	Loudest Two Noise Sources	Usage Factor <sup>b</sup> (percent)	Distance to Receptor (feet)	Adjusted L <sub>eq</sub> Level (dBA) <sup>c</sup>	Exceed Exterior 75 dBA Nighttime Standard?
Lake Road Residences near Borrow area	Grader/Scraper	40	500	63	No
Davis Road Residences near Dam S	Excavator/Crane	40	1,000	57	No
Davis Road Residences near Dam A	Excavator/Crane	40	900	58	No

NOTES:

- a L<sub>eq</sub> represents the constant sound level. The reported existing level is the lower-end estimate of the roadside noise level for the area.  
 b Usage factor is the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.  
 c The L<sub>eq</sub> level is adjusted for distance and percentage of usage.

SOURCE: Data compiled by Environmental Science Associates in 2022.

The proposed project is located in rural areas adjacent to land in agricultural use. Normal activities in the proposed project areas would entail low-volume traffic noise from tractors, large trucks, and other farm equipment, as well as both on- and off-road passenger vehicles.

The proposed project areas have existing conditions of ambient noise from rural agricultural noise and scattered residences. Operation of the proposed project would not involve noise that differs from what is currently experienced under existing conditions. Consequently, it is expected that there would be no permanent substantial noise increases from the proposed project over existing conditions, nor would noise levels generated by maintenance activities exceed the county's exterior noise standards at the nearest sensitive receptor. Therefore, this impact would be less than significant.

- b) **Less than Significant.** Since the operation of the proposed project would not include any activities that would generate significant levels of vibration, it is not anticipated that the operation of the proposed project would expose the nearest sensitive receptor or structure

<sup>19</sup> The model inputs include acoustical use factors, maximum (L<sub>max</sub>) values, and equivalent (or average) (L<sub>eq</sub>) values at various distances depending on the sensitive receptor location analyzed.

to vibration levels that would result in annoyance. Therefore, only vibration impacts from on-site construction activities are evaluated.

For adverse human reaction, the analysis applies the “strongly perceptible” threshold of 0.9-inch/second PPV for transient sources. For risk of architectural damage to historic buildings and structures, the analysis applies a threshold of 0.12-inch/second PPV (Caltrans 2013). A threshold of 0.3-inch/second PPV is used to assess damage risk for all other buildings. There are no historic structures in the vicinity of proposed project that could be adversely affected by proposed project construction-related vibration.

The potential use of a bulldozer during proposed project construction would be expected to generate the highest vibration levels during construction. Vibration levels for bulldozers are typically 87 VdB or 0.089-inch/second PPV at 25 feet, which is a typical estimate for a wide range of soil. Under typical propagation conditions, vibration levels at residences 500 feet from the bulldozing activities, which represents the location of the nearest receptor, would be 48 VdB, which is well below the FTA threshold of 72 VdB for human annoyance and would be 0.001-inch/sec PPV, which is well below the 0.20-inch/sec PPV for building damage. Therefore, this impact would be less than significant.

- c) **No Impact.** No private airstrips or public airport or public use airports are located within 2 miles of the proposed project areas. Therefore, the proposed project would not expose people working in the proposed project areas to excessive noise levels, and there would be no impact.

### 3.11.3 References

California Department of Transportation (Caltrans). 2013. Technical Noise Supplement to the traffic Noise Analysis Protocol. September 2013.

Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment. September 2018.

U.S. Environmental Protection Agency (USEPA). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, March 1974, Available at: <https://nepis.epa.gov/Exe/ZyPDF.cgi/2000L3LN.PDF?Dockey=2000L3LN.PDF>. Accessed March 2022.

## 3.12 Recreation

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

### 3.12.1 Environmental Setting

There are 5 regional parks, 22 neighborhood parks, 8 special-interest parks, and 9 miscellaneous parks and open space assets within Stanislaus County (Stanislaus County 2018). These parks comprise the County's existing 6,516 acres of parks and open space that vary in size and amenities.

The proposed project site contains the Turlock Lake State Recreation Area positioned along the northern edge of Turlock Lake, surrounding Dams D through K (Figure 2-3). The recreation area is bounded on the north by the Tuolumne River and on the south by Turlock Lake (California Parks and Recreation 2022). It spans 26 miles along the shoreline of Turlock Lake and the foothill country leased from the Turlock Irrigation District in 1950. Facilities and activities within the area typically include overnight camping, river access, swimming, fishing, hunting, boating, canoes, kayaks, paddleboards, windsurfing, and vehicle/boat parking. A portion of the recreation area is restricted to duck hunters from approximately September 25 through February 15 each year. On May 13, 2021, California State Parks announced the temporary full closure of Turlock Lake State Recreation Area that took effect on May 14, 2021 (California Parks and Recreation 2021).

### 3.12.2 Discussion

- a) **Less than Significant.** The proposed project would include construction activities within the Turlock Lake State Recreation Area. Construction activities associated with the rehabilitation of Dams C, H, and J include dam buttressing. These activities, including the location of the proposed project's staging and borrow areas, would result in the temporary closure of recreational facilities within the Turlock Lake State Recreation Area along the northern portion of the proposed project site. However, while proposed project construction activities would interrupt recreational uses within the immediate area of several of the proposed project components, recreational use in the proposed project vicinity would continue, given the overall availability of recreational opportunities within the surrounding area. Additionally, as of May 13, 2021, California State Parks announced the temporary full closure of Turlock Lake State Recreation Area that took effect on May 14, 2021, and is still in place today. Given the temporary full closure of Turlock Lake State Recreation Area, and the short-term nature of project construction, recreational

areas would be temporarily closed for up to 8 months during construction and would be reopened upon completion of the proposed project. It is not anticipated that existing recreation users would instead use other recreational resources such that substantial physical deterioration of the facility would occur or be accelerated.

The proposed project would result in the rehabilitation of existing dams of Turlock Lake via buttressing. As a result, the proposed project would not increase the population by introducing new housing or employment opportunities, and thus would not 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. Therefore, this impact is less than significant.

- d) **No Impact.** The proposed project does not include recreation facilities. Construction activities would be temporary in nature and occur for up to 8 months and would not require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. Therefore, no impact would occur.

### 3.12.3 References

Stanislaus County Parks & Recreation. 2018. Stanislaus County Parks & Recreation Master Plan 2018. Available at <https://www.stancounty.com/parks/pdf/stanislaus-county-parks-and-recreation-master-plan-2018.pdf>. Accessed March 21, 2022.

California Department of Parks and Recreation. 2021. Turlock Lake State Recreation Area Temporarily Closed. May 13, 2021. Available at <https://www.parks.ca.gov/NewsRelease/1017>. Accessed March 21, 2022.

California Department of Parks and Recreation. 2022. Turlock Lake State Recreation Area. Updated May 13, 2021. Available at [https://www.parks.ca.gov/?page\\_id=555](https://www.parks.ca.gov/?page_id=555). Accessed March 21, 2022.

---

### 3.13 Transportation

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

#### 3.13.1 Environmental Setting

The proposed project site is located in southeast Stanislaus County, approximately 16.5 miles east of the city of Modesto. The proposed project setting is a mix of rural agricultural land uses. Transportation facilities in the vicinity of the proposed project area are consistent with a rural agricultural setting.

#### Highways

There are no major highways in the proposed project vicinity. The nearest major highway, State Route (SR) 99 is located approximately 17 miles to the west of the proposed project site.

#### ***State Route 132/Yosemite Boulevard***

SR 132/Yosemite Boulevard is the nearest highway to the proposed project site, running generally east-west from Interstate 580 (I-580) along the west side of the San Joaquin Valley, near the proposed project site along the north side of the Tuolumne River, and east to its terminus at an interchange with SR 49 in Coulterville, approximately 20 miles east-northeast of the proposed project site. SR 132 provides regional access to the proposed project site from areas to the north and east, via Roberts Ferry Road, which connects to Lake Road, that runs along the north side of the Turlock Lake reservoir.

#### County Roadways/Traffic Types

County roadways in the proposed project vicinity are limited to rural local roadways, that serve as land access facilities in the agricultural areas of the county, with a single lane of traffic in each direction and unpaved roadway shoulders. The network of county roadways around the proposed project site do not include pedestrian or bicycle facilities.

### ***Lake Road***

Lake Road is designated as a Major Collector Road in the Stanislaus County General Plan. It extends generally east-west and runs along the north side of Turlock Lake, running from Hickman, 8 miles west of the proposed project site, to its terminus with SR 132/Yosemite Boulevard, approximately 3.6 miles to the northeast of the proposed project site (Stanislaus County 2016). Lake Road provides access to the Turlock State Recreation Areas and would be the primary route of access to each area of the proposed project site.

### ***Davis Road***

Davis Road is designated as a Local Road in the Stanislaus County General Plan. The road extends south-eastward from Lake Road and runs along north side of Turlock Lake from Lake Road to its intersection with South Polanco Place near the edge of Turlock Lake, and further south to its terminus with Silver Ridge Road. Davis Road provides access to major collector roads, including Lake Road and Keyes Road, facilitating access to the Turlock State Recreation Areas.

### ***Laverne Potts Road***

Laverne Potts Road is designated as a Local Road in the Stanislaus County General Plan and extends westward from Lake Road above the intersection between Lake Road and Coyote Run. Laverne Potts Road provides direct access to the north edge of Turlock Lake.

### ***Coyote Run***

Coyote Run is designated as a Local Road in the Stanislaus County General Plan. The road extends south from Lake Road, running adjacent to Los Cerritos Road to its terminus. Coyote Run extends less than a mile from its intersection at Lake Road.

### ***Los Cerritos Road***

Los Cerritos Road is designated as a Minor Collector Roadway in the Stanislaus County General Plan, and extends south from Lake Road to the east of the proposed project site, providing access from areas to the south of the proposed project site, including the neighboring Merced County.

## **Other Transportation Facilities**

### ***Transit***

There are no transit facilities and no known transit routes near the proposed project site.

### ***Railroads***

No railways exist within the near vicinity of the proposed project site. The Turlock-Denair Amtrak Station is located approximately 20 miles from Turlock Lake, and the Modesto Amtrak Station is located approximately 24 miles from Turlock Lake.

## Airports

Turlock Municipal Airport is located just over 20 miles southwest from Turlock Lake, and Modesto City-County Airport is approximately a 25-mile distance west from Turlock Lake. Other airports are located at similar distances to the proposed project site, including the Merced-Castle Airport located 16 miles to the south and Oakdale Airport located 15.5 miles to the northwest. The proposed project site is not located within airport approach, overflight, or policy areas.

### 3.13.2 Discussion

- a) **Less than Significant.** The proposed project would not conflict with regulations implemented which address the circulation system in the surrounding vicinity. Construction from the proposed project would temporarily generate increases in vehicle trips on area roadways and a minimal increase in truck trips. However, considering the 6-month length of the construction period, the capacity of local roads used to access the proposed project site would not be substantially reduced. No decreased level of service would occur; therefore, impacts from the proposed project would be less than significant.
- b) **Less than Significant.** Section 15064.3 of the State CEQA Guidelines establishes specific considerations for evaluating a project's transportation impacts. The State CEQA Guidelines identify vehicle miles traveled (VMT)—the amount and distance of automobile travel attributable to a project—as the most appropriate measure of transportation impacts. Other relevant considerations may include the effects of the proposed project on transit and nonmotorized travel. A qualitative analysis of the proposed project evaluates the availability of transit near the proposed project site as well as other factors. As noted above in the *Environmental Setting* section, the proposed project is set in a mix of rural and agricultural land uses, with access to primarily rural local roadways in its vicinity, but no access to transit. The project would not expand the use capacity or variety of recreational uses at Turlock Lake. Operation of the proposed project would not be anticipated to add new vehicle trips related to operation of the reservoir. For this reason, the proposed project would not be anticipated to have a substantive impact related to operational VMT. Therefore, the impact would be less than significant.
- c) **Less than Significant.** Construction activity related to hauling and grading fill material would not result in a high number of anticipated construction trips relative to traffic volumes on nearby roadways. This lack of frequency of construction trips in combination with their limited duration warrants a less-than-significant impact from proposed project construction.

In addition, operation of the proposed project site resulting from construction would not pose hazards due to any geometric design features or incompatible uses. No expansion or change of use of existing roadways surrounding the proposed project site will occur as a

result of proposed project construction, thus creating no hazards and resulting in a less-than-significant impact.

- d) **Less than Significant.** No roadway or lane closures would result from the construction or operation of the proposed project. Increases in traffic volumes on local roadways providing access to the proposed project area could cause intermittent and temporary slowdowns in traffic flow during construction, although truck trips associated with proposed project operation are not expected to cause access on local roadways to deteriorate. For these reasons, the proposed project would not result in inadequate emergency access, and this impact would be less than significant.

### 3.13.3 References

Stanislaus County. 2016. Stanislaus County General Plan and Airport Land Use Compatibility Plan Update, Draft Program Environmental Impact Report. April 2016.

---

### 3.14 Utilities and Service Systems

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

#### 3.14.1 Environmental Setting

The Fink Road Sanitary Landfill is a Class III landfill for nonhazardous municipal solid waste and is owned by Stanislaus County and operated by the Stanislaus County Department of Environmental Resources. As of March 1, 2017, the Fink Road Sanitary Landfill, the sole permitted landfill in the county, had a permitted capacity of 14,640,000 cubic yards and a remaining capacity of 7,184,701, and is permitted through 2023 (CalRecycle 2019).

#### 3.14.2 Discussion

a, b, c, d) **No Impact.** The purpose of the proposed project is to rehabilitate several dams at Turlock Lake to structurally and geotechnically sound conditions via dam buttressing. As such, the proposed project would not include the relocation or construction of new or expanded facilities (i.e., water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities). As the proposed project would not require the use of water supplies (except for the hydroseeding process during construction), it would not result in a strain of the available water supply. Further, the proposed project would not require the produce wastewater that would require treatment by a local provider and would not produce waste in excess, such that it exceeds the capacity of local infrastructure. Due to the nature of the proposed project, there would be no impact as it relates to these criteria.

- e) **Less than Significant.** The proposed project would generate minimal waste from temporary construction activities and vegetation removal. The landfill that serves the proposed project areas has the capacity to accept waste generated by the proposed project. Therefore, the impact would be less than significant.

### 3.14.3 References

California Department of Resources Recycling and Recovery (CalRecycle). 2019. Facility/Site Summary Details: Fink Road Landfill (50-AA-0001). Available: <https://www2.calrecycle.ca.gov/SolidWaste/Site/Summary/3733>. Accessed May 30, 2019.

---

### 3.15 Wildfire

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

#### 3.15.1 Environmental Setting

CAL FIRE Forest Resource Assessment Program published maps that delineate VHFHSZs in SRAs and LRAs. Based on mapping by CAL FIRE, the Project site is not within a mapped VHFHSZ, although there are mapped Moderate FHSZ in an SRA adjacent to Turlock Lake to the north, east, and southeast (CAL FIRE 2007)

#### 3.15.2 Discussion

- a) **No Impact.** The proposed project would not require any road closures, nor would it include any activities that would obstruct any roads. As such, proposed project activities would not impair or physically interfere with any emergency response or evacuation plan. There would be no impact.
- b) **Less than Significant.** Initial site preparation for the proposed project would include vegetation clearing of the staging and borrow areas and all work areas on dam slopes, including tree removal on the upstream slope of Dams C and L, the downstream slopes of Dams D and H, and both the upstream and downstream slopes of Dams E and J. It is anticipated that once construction has been completed, for dam safety purposes, the dams would not be revegetated with trees. Removing vegetation would lower on-site fuel sources for wildfires. As discussed in the *Hazards and Hazardous Materials* section, contractors would be required to comply with hazardous materials storage and fire protection regulations, which would minimize potential for fire creation, and ensure that the risk of wildland fires during construction would be less than significant.

- c) **Less than Significant.** The proposed project would include dam buttressing. These activities would not require the installation of infrastructure that would exacerbate the fire risk at the proposed project site or otherwise result in a temporary or long-term impact to the environmental. This impact would be less than significant.
  
- d) **No Impact.** The proposed project would not exacerbate the fire risk at the proposed project site. The purpose of the proposed project is to repair the dams at Turlock Lake, and this would not require drainage changes or improvements that would increase the run-off at the proposed project site. As such, the proposed project would not expose people or structures to downslope or downstream flooding or landslides, and there would be no impact.

### 3.15.3 References

California Department of Forestry and Fire Protection (CAL FIRE). 2007. Fire Hazard Severity Zones in SRA, Stanislaus County. October 2007.

---

### 3.16 Tribal Cultural Resources

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

#### 3.16.1 Environmental Setting

ESA contacted the NAHC on February 3, 2021, to request a search of the NAHC's Sacred Lands File and a list of Native American representatives who may have knowledge of tribal cultural resources in the proposed project site, or interest in the proposed project. The NAHC replied to ESA by email on March 8, 2021, with the statement that the Sacred Lands File has no record of sacred sites within the proposed project site. The NAHC's response included a list of 12 Native American representatives from 8 tribes who may have knowledge of tribal cultural resources in the proposed project site, or be interested in the proposed project. TID also has a list of 16 Native American representatives from 11 tribes who have previously been consulted for nearby TID projects. Some of these individuals and tribes overlapped, but all 24 Native American representatives from 12 tribes who were identified in the lists were contacted and invited to be consulted with regarding the proposed project under AB 52 between March 7 and March 10, 2022.

On March 7, 2022, Darrel Cruz of the Washoe Tribe of Nevada and California responded that the tribe was not interested in being consulted regarding the proposed project.

As of May 26, 2022, no additional tribes have responded to the request for consultation. No tribal cultural resources have been identified within the proposed project area as a result of the NAHC Sacred Lands File request or tribal consultation.

See Section 5.5, *Cultural Resources*, for a summary of ESA's CCaIC records search, background research, and archaeological sensitivity analysis.

## 3.16.2 Regulatory Framework

### Native American Heritage Commission

NAHC was created by statute in 1976. It is a nine-member body appointed by the governor to identify and catalog cultural resources (i.e., places of special religious or social significance to Native Americans, and known graves and cemeteries of Native Americans on private lands) in California. The NAHC is responsible for preserving and ensuring accessibility of sacred sites and burials, ensuring the disposition of Native American human remains and burial items, maintaining an inventory of Native American sacred sites located on public lands, and reviewing current administrative and statutory protections related to these sacred sites.

### California Public Resources Code and Tribal Cultural Resources

In 2014, the California Legislature enacted AB 52, which added provisions to the Public Resources Code (PRC) regarding the evaluation of impacts on tribal cultural resources under CEQA, and requirements to consult with California Native American tribes. In particular, AB 52 requires lead agencies to analyze project impacts on tribal cultural resources separately from archaeological resources (PRC Sections 21074 and 21083.09). AB 52 defines “tribal cultural resources” in PRC Section 21074 and requires lead agencies to engage in additional consultation procedures with respect to California Native American tribes (PRC Sections 21080.3.1, 21080.3.2, and 21082.3).

A *tribal cultural resource* is defined in PRC Section 21074 as either a site, feature, place, or cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

- 1) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k); or
- 2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in PRC Section 5024.1(c). In applying the criteria set forth in PRC Section 5024.1(c), the lead agency shall consider the significance of the resource to a California Native American tribe.

### California Public Resources Code Sections 5097.98 and 5097.99

PRC Section 5097.98 (reiterated in CEQA Guidelines Section 15064.5(e)) identifies steps to follow in the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery. PRC Section 5097.99 prohibits obtaining or possessing any Native American artifacts or human remains that are taken from a Native American grave or cairn (stone burial mound).

## 3.16.3 Discussion

- a.i) **Less than Significant with Mitigation Incorporated.** Based on the results of the tribal outreach efforts, no known tribal cultural resources listed or determined eligible for listing in the California Register, or included in a local register of historical resources as

defined in PRC Section 5020.1(k), pursuant to PRC Section 21074(a)(1), would be affected by the proposed project.

However, if any previously unrecorded archaeological resource were identified during ground-disturbing construction activities and were found to qualify as a tribal cultural resource pursuant to PRC Section 21074(a)(1) (determined to be eligible for listing in the California Register or in a local register of historical resources), any impacts of the proposed project on the resource could be potentially significant. Any such potentially significant impacts would be reduced to a less-than-significant level by implementing **Mitigation Measure CUL-1: Cultural Resources Awareness Training**, **Mitigation Measure CUL-2: Inadvertent Discovery of Cultural Resources**, and **Mitigation Measure CUL-3: Inadvertent Discovery of Human Remains** (see Section 3.5, *Cultural Resources*).

- a.ii) **No Impact.** Based on the results of tribal outreach efforts, the TID did not determine any resource that could potentially be affected by the proposed project to be a tribal cultural resource significant pursuant to criteria set forth in PRC Section 5024.1(c). Therefore, the proposed project is not anticipated to affect any such resources.

### 3.16.4 References

Central California Information Center (CCaIC). 2021. Records Search File No. File No. 011646N. On file, ESA, February 2, 2021.

Appendix A  
**CalEEMod Annual Emissions  
Report**



Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

**Turlock Dam Rehabilitation  
Stanislaus County, Annual**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Recreational	900.00	User Defined Unit	0.00	0.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	46
<b>Climate Zone</b>	3			<b>Operational Year</b>	2025
<b>Utility Company</b>	Turlock Irrigation District				
<b>CO2 Intensity (lb/MWhr)</b>	420.83	<b>CH4 Intensity (lb/MWhr)</b>	0.033	<b>N2O Intensity (lb/MWhr)</b>	0.004

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics -

Land Use -

Construction Phase - construction period per PD

Off-road Equipment -

Grading -

Trips and VMT - Average distance from Dam S to borrow area

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	130.00
tblConstructionPhase	PhaseEndDate	9/29/2023	3/31/2024
tblGrading	MaterialExported	0.00	175,900.00
tblOffRoadEquipment	LoadFactor	0.38	0.38

Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblTripsAndVMT	HaulingTripLength	20.00	3.50
tblTripsAndVMT	WorkerTripNumber	28.00	10.00

**2.0 Emissions Summary**

---

Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

**2.1 Overall Construction**

**Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.2925	2.8160	2.1586	6.8500e-003	0.7335	0.1019	0.8353	0.2341	0.0938	0.3279	0.0000	606.5967	606.5967	0.1742	0.0105	614.0827
2024	0.2860	2.6535	2.1289	6.8300e-003	0.7335	0.0959	0.8294	0.2341	0.0883	0.3224	0.0000	605.2523	605.2523	0.1742	0.0103	612.6776
<b>Maximum</b>	<b>0.2925</b>	<b>2.8160</b>	<b>2.1586</b>	<b>6.8500e-003</b>	<b>0.7335</b>	<b>0.1019</b>	<b>0.8353</b>	<b>0.2341</b>	<b>0.0938</b>	<b>0.3279</b>	<b>0.0000</b>	<b>606.5967</b>	<b>606.5967</b>	<b>0.1742</b>	<b>0.0105</b>	<b>614.0827</b>

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.2925	2.8160	2.1586	6.8500e-003	0.7335	0.1019	0.8353	0.2341	0.0938	0.3279	0.0000	606.5960	606.5960	0.1742	0.0105	614.0821
2024	0.2860	2.6535	2.1289	6.8300e-003	0.7335	0.0959	0.8294	0.2341	0.0883	0.3224	0.0000	605.2516	605.2516	0.1742	0.0103	612.6770
<b>Maximum</b>	<b>0.2925</b>	<b>2.8160</b>	<b>2.1586</b>	<b>6.8500e-003</b>	<b>0.7335</b>	<b>0.1019</b>	<b>0.8353</b>	<b>0.2341</b>	<b>0.0938</b>	<b>0.3279</b>	<b>0.0000</b>	<b>606.5960</b>	<b>606.5960</b>	<b>0.1742</b>	<b>0.0105</b>	<b>614.0821</b>

Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	10-1-2023	12-31-2023	3.1488	3.1488
2	1-1-2024	3-31-2024	2.9456	2.9456
		Highest	3.1488	3.1488

**2.2 Overall Operational**  
**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	7.6000e-004	7.0000e-005	8.2500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>7.6000e-004</b>	<b>7.0000e-005</b>	<b>8.2500e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.0000e-005</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>3.0000e-005</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>0.0161</b>	<b>0.0161</b>	<b>4.0000e-005</b>	<b>0.0000</b>	<b>0.0171</b>

Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

**2.2 Overall Operational**

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	7.6000e-004	7.0000e-005	8.2500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>7.6000e-004</b>	<b>7.0000e-005</b>	<b>8.2500e-003</b>	<b>0.0000</b>	<b>0.0000</b>	<b>3.0000e-005</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>3.0000e-005</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>0.0161</b>	<b>0.0161</b>	<b>4.0000e-005</b>	<b>0.0000</b>	<b>0.0171</b>

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

**3.0 Construction Detail**

**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	9/30/2023	3/31/2024	5	130	

**Acres of Grading (Site Preparation Phase): 0**

Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

**Acres of Grading (Grading Phase): 682.5**

**Acres of Paving: 0**

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

**OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	1	14.00	158	0.38
Grading	Rubber Tired Dozers	1	14.00	247	0.40
Grading	Off-Highway Trucks	4	14.00	402	0.38
Grading	Scrapers	2	14.00	367	0.48
Grading	Rough Terrain Forklifts	1	14.00	100	0.40
Grading	Plate Compactors	1	14.00	8	0.43
Grading	Graders	1	14.00	187	0.41

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	11	10.00	0.00	21,988.00	10.80	7.30	3.50	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

**3.2 Grading - 2023**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.7144	0.0000	0.7144	0.2289	0.0000	0.2289	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2845	2.6099	2.0529	6.1300e-003		0.1007	0.1007		0.0927	0.0927	0.0000	538.0845	538.0845	0.1736	0.0000	542.4254
<b>Total</b>	<b>0.2845</b>	<b>2.6099</b>	<b>2.0529</b>	<b>6.1300e-003</b>	<b>0.7144</b>	<b>0.1007</b>	<b>0.8150</b>	<b>0.2289</b>	<b>0.0927</b>	<b>0.3215</b>	<b>0.0000</b>	<b>538.0845</b>	<b>538.0845</b>	<b>0.1736</b>	<b>0.0000</b>	<b>542.4254</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.9400e-003	0.2054	0.0972	6.9000e-004	0.0165	1.1600e-003	0.0177	4.5500e-003	1.1100e-003	5.6600e-003	0.0000	66.4219	66.4219	4.8000e-004	0.0105	69.5469
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0700e-003	6.9000e-004	8.5100e-003	2.0000e-005	2.6000e-003	1.0000e-005	2.6100e-003	6.9000e-004	1.0000e-005	7.0000e-004	0.0000	2.0903	2.0903	7.0000e-005	6.0000e-005	2.1105
<b>Total</b>	<b>8.0100e-003</b>	<b>0.2061</b>	<b>0.1057</b>	<b>7.1000e-004</b>	<b>0.0191</b>	<b>1.1700e-003</b>	<b>0.0203</b>	<b>5.2400e-003</b>	<b>1.1200e-003</b>	<b>6.3600e-003</b>	<b>0.0000</b>	<b>68.5122</b>	<b>68.5122</b>	<b>5.5000e-004</b>	<b>0.0105</b>	<b>71.6574</b>

Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

**3.2 Grading - 2023**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.7144	0.0000	0.7144	0.2289	0.0000	0.2289	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2845	2.6099	2.0529	6.1300e-003		0.1007	0.1007		0.0927	0.0927	0.0000	538.0838	538.0838	0.1736	0.0000	542.4247
<b>Total</b>	<b>0.2845</b>	<b>2.6099</b>	<b>2.0529</b>	<b>6.1300e-003</b>	<b>0.7144</b>	<b>0.1007</b>	<b>0.8150</b>	<b>0.2289</b>	<b>0.0927</b>	<b>0.3215</b>	<b>0.0000</b>	<b>538.0838</b>	<b>538.0838</b>	<b>0.1736</b>	<b>0.0000</b>	<b>542.4247</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.9400e-003	0.2054	0.0972	6.9000e-004	0.0165	1.1600e-003	0.0177	4.5500e-003	1.1100e-003	5.6600e-003	0.0000	66.4219	66.4219	4.8000e-004	0.0105	69.5469
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0700e-003	6.9000e-004	8.5100e-003	2.0000e-005	2.6000e-003	1.0000e-005	2.6100e-003	6.9000e-004	1.0000e-005	7.0000e-004	0.0000	2.0903	2.0903	7.0000e-005	6.0000e-005	2.1105
<b>Total</b>	<b>8.0100e-003</b>	<b>0.2061</b>	<b>0.1057</b>	<b>7.1000e-004</b>	<b>0.0191</b>	<b>1.1700e-003</b>	<b>0.0203</b>	<b>5.2400e-003</b>	<b>1.1200e-003</b>	<b>6.3600e-003</b>	<b>0.0000</b>	<b>68.5122</b>	<b>68.5122</b>	<b>5.5000e-004</b>	<b>0.0105</b>	<b>71.6574</b>

Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

**3.2 Grading - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.7144	0.0000	0.7144	0.2289	0.0000	0.2289	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2781	2.4485	2.0246	6.1300e-003		0.0947	0.0947		0.0872	0.0872	0.0000	538.0593	538.0593	0.1736	0.0000	542.4000
<b>Total</b>	<b>0.2781</b>	<b>2.4485</b>	<b>2.0246</b>	<b>6.1300e-003</b>	<b>0.7144</b>	<b>0.0947</b>	<b>0.8091</b>	<b>0.2289</b>	<b>0.0872</b>	<b>0.3160</b>	<b>0.0000</b>	<b>538.0593</b>	<b>538.0593</b>	<b>0.1736</b>	<b>0.0000</b>	<b>542.4000</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.8800e-003	0.2043	0.0965	6.8000e-004	0.0165	1.1700e-003	0.0177	4.5500e-003	1.1200e-003	5.6700e-003	0.0000	65.1728	65.1728	4.7000e-004	0.0103	68.2388
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.8000e-004	6.1000e-004	7.8500e-003	2.0000e-005	2.6000e-003	1.0000e-005	2.6100e-003	6.9000e-004	1.0000e-005	7.0000e-004	0.0000	2.0202	2.0202	6.0000e-005	6.0000e-005	2.0388
<b>Total</b>	<b>7.8600e-003</b>	<b>0.2049</b>	<b>0.1043</b>	<b>7.0000e-004</b>	<b>0.0191</b>	<b>1.1800e-003</b>	<b>0.0203</b>	<b>5.2400e-003</b>	<b>1.1300e-003</b>	<b>6.3700e-003</b>	<b>0.0000</b>	<b>67.1930</b>	<b>67.1930</b>	<b>5.3000e-004</b>	<b>0.0103</b>	<b>70.2776</b>

Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

**3.2 Grading - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.7144	0.0000	0.7144	0.2289	0.0000	0.2289	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2781	2.4485	2.0246	6.1300e-003		0.0947	0.0947		0.0872	0.0872	0.0000	538.0587	538.0587	0.1736	0.0000	542.3994
<b>Total</b>	<b>0.2781</b>	<b>2.4485</b>	<b>2.0246</b>	<b>6.1300e-003</b>	<b>0.7144</b>	<b>0.0947</b>	<b>0.8091</b>	<b>0.2289</b>	<b>0.0872</b>	<b>0.3160</b>	<b>0.0000</b>	<b>538.0587</b>	<b>538.0587</b>	<b>0.1736</b>	<b>0.0000</b>	<b>542.3994</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.8800e-003	0.2043	0.0965	6.8000e-004	0.0165	1.1700e-003	0.0177	4.5500e-003	1.1200e-003	5.6700e-003	0.0000	65.1728	65.1728	4.7000e-004	0.0103	68.2388
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.8000e-004	6.1000e-004	7.8500e-003	2.0000e-005	2.6000e-003	1.0000e-005	2.6100e-003	6.9000e-004	1.0000e-005	7.0000e-004	0.0000	2.0202	2.0202	6.0000e-005	6.0000e-005	2.0388
<b>Total</b>	<b>7.8600e-003</b>	<b>0.2049</b>	<b>0.1043</b>	<b>7.0000e-004</b>	<b>0.0191</b>	<b>1.1800e-003</b>	<b>0.0203</b>	<b>5.2400e-003</b>	<b>1.1300e-003</b>	<b>6.3700e-003</b>	<b>0.0000</b>	<b>67.1930</b>	<b>67.1930</b>	<b>5.3000e-004</b>	<b>0.0103</b>	<b>70.2776</b>

Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

**4.0 Operational Detail - Mobile**

**4.1 Mitigation Measures Mobile**

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

**4.2 Trip Summary Information**

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

**4.3 Trip Type Information**

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Recreational	0.530702	0.051956	0.166139	0.152700	0.030655	0.007634	0.013363	0.016357	0.000829	0.000302	0.024359	0.001347	0.003656





Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

**5.3 Energy by Land Use - Electricity**

**Unmitigated**

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

**Mitigated**

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

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	7.6000e-004	7.0000e-005	8.2500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171
Unmitigated	7.6000e-004	7.0000e-005	8.2500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171

**6.2 Area by SubCategory**

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.6000e-004	7.0000e-005	8.2500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171
<b>Total</b>	<b>7.6000e-004</b>	<b>7.0000e-005</b>	<b>8.2500e-003</b>	<b>0.0000</b>		<b>3.0000e-005</b>	<b>3.0000e-005</b>		<b>3.0000e-005</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>0.0161</b>	<b>0.0161</b>	<b>4.0000e-005</b>	<b>0.0000</b>	<b>0.0171</b>

Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

**6.2 Area by SubCategory**

**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.6000e-004	7.0000e-005	8.2500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171
<b>Total</b>	<b>7.6000e-004</b>	<b>7.0000e-005</b>	<b>8.2500e-003</b>	<b>0.0000</b>		<b>3.0000e-005</b>	<b>3.0000e-005</b>		<b>3.0000e-005</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>0.0161</b>	<b>0.0161</b>	<b>4.0000e-005</b>	<b>0.0000</b>	<b>0.0171</b>

**7.0 Water Detail**

---

**7.1 Mitigation Measures Water**

Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

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

**7.2 Water by Land Use**

**Unmitigated**

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

Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

**7.2 Water by Land Use**

Mitigated

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

**8.0 Waste Detail**

---

**8.1 Mitigation Measures Waste**

Category/Year

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

Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

**8.2 Waste by Land Use**

Unmitigated

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

Mitigated

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

**9.0 Operational Offroad**

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

Turlock Dam Rehabilitation - Stanislaus County, Annual

**EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**

**10.0 Stationary Equipment**

---

**Fire Pumps and Emergency Generators**

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

**Boilers**

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

**User Defined Equipment**

Equipment Type	Number
----------------	--------

**11.0 Vegetation**

---

# Appendix B

## **Biological Resources Search Results**



# IPaC resource list

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

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

## Location

Stanislaus County, California



## Local office

Sacramento Fish And Wildlife Office

☎ (916) 414-6600

📠 (916) 414-6713

Federal Building  
2800 Cottage Way, Room W-2605  
Sacramento, CA 95825-1846

# Endangered species

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

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

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

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

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

Listed species<sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

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

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

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

## Mammals

NAME	STATUS
<p>San Joaquin Kit Fox <i>Vulpes macrotis mutica</i></p> <p>Wherever found</p> <p>No critical habitat has been designated for this species.  <a href="https://ecos.fws.gov/ecp/species/2873">https://ecos.fws.gov/ecp/species/2873</a></p>	Endangered

## Reptiles

NAME	STATUS
<p>Giant Garter Snake <i>Thamnophis gigas</i></p> <p>Wherever found</p> <p>No critical habitat has been designated for this species.  <a href="https://ecos.fws.gov/ecp/species/4482">https://ecos.fws.gov/ecp/species/4482</a></p>	Threatened

## Amphibians

NAME	STATUS
<p>California Red-legged Frog <i>Rana draytonii</i></p> <p>Wherever found</p> <p>There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available.  <a href="https://ecos.fws.gov/ecp/species/2891">https://ecos.fws.gov/ecp/species/2891</a></p>	Threatened
<p>California Tiger Salamander <i>Ambystoma californiense</i></p> <p>There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available.  <a href="https://ecos.fws.gov/ecp/species/2076">https://ecos.fws.gov/ecp/species/2076</a></p>	Threatened

## Fishes

NAME	STATUS
<p>Delta Smelt <i>Hypomesus transpacificus</i></p> <p>Wherever found</p> <p>There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available.  <a href="https://ecos.fws.gov/ecp/species/321">https://ecos.fws.gov/ecp/species/321</a></p>	Threatened

## Insects

NAME	STATUS
<p>Monarch Butterfly <i>Danaus plexippus</i></p> <p>Wherever found</p> <p>No critical habitat has been designated for this species.  <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a></p>	Candidate

**Valley Elderberry Longhorn Beetle** *Desmocerus californicus dimorphus* **Threatened**  
 Wherever found  
 There is **final** critical habitat for this species. The location of the critical habitat is not available.  
<https://ecos.fws.gov/ecp/species/7850>

## Crustaceans

NAME	STATUS
<b>Conservancy Fairy Shrimp</b> <i>Branchinecta conservatio</i> Wherever found There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. <a href="https://ecos.fws.gov/ecp/species/8246">https://ecos.fws.gov/ecp/species/8246</a>	<b>Endangered</b>
<b>Vernal Pool Fairy Shrimp</b> <i>Branchinecta lynchi</i> Wherever found There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. <a href="https://ecos.fws.gov/ecp/species/498">https://ecos.fws.gov/ecp/species/498</a>	<b>Threatened</b>
<b>Vernal Pool Tadpole Shrimp</b> <i>Lepidurus packardii</i> Wherever found There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. <a href="https://ecos.fws.gov/ecp/species/2246">https://ecos.fws.gov/ecp/species/2246</a>	<b>Endangered</b>

## Flowering Plants

NAME	STATUS
<b>Colusa Grass</b> <i>Neostapfia colusana</i> Wherever found There is <b>final</b> critical habitat for this species. Your location overlaps the critical habitat. <a href="https://ecos.fws.gov/ecp/species/5690">https://ecos.fws.gov/ecp/species/5690</a>	<b>Threatened</b>
<b>Fleshy Owl's-clover</b> <i>Castilleja campestris ssp. succulenta</i> Wherever found There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. <a href="https://ecos.fws.gov/ecp/species/8095">https://ecos.fws.gov/ecp/species/8095</a>	<b>Threatened</b>

Greene's Tuctoria *Tuctoria greenei* Endangered

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/1573>

Hairy Orcutt Grass *Orcuttia pilosa* Endangered

Wherever found

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

<https://ecos.fws.gov/ecp/species/2262>

Hartweg's Golden Sunburst *Pseudobahia bahiifolia* Endangered

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/1704>

Hoover's Spurge *Chamaesyce hooveri* Threatened

Wherever found

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

<https://ecos.fws.gov/ecp/species/3019>

## Critical habitats

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

This location overlaps the critical habitat for the following species:

NAME	TYPE
Colusa Grass <i>Neostapfia colusana</i> <a href="https://ecos.fws.gov/ecp/species/5690#crithab">https://ecos.fws.gov/ecp/species/5690#crithab</a>	Final
Hairy Orcutt Grass <i>Orcuttia pilosa</i> <a href="https://ecos.fws.gov/ecp/species/2262#crithab">https://ecos.fws.gov/ecp/species/2262#crithab</a>	Final
Hoover's Spurge <i>Chamaesyce hooveri</i> <a href="https://ecos.fws.gov/ecp/species/3019#crithab">https://ecos.fws.gov/ecp/species/3019#crithab</a>	Final
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> <a href="https://ecos.fws.gov/ecp/species/498#crithab">https://ecos.fws.gov/ecp/species/498#crithab</a>	Final

# Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

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

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

Additional information can be found using the following links:

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

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

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

NAME

BREEDING SEASON (IF A  
BREEDING SEASON IS INDICATED  
FOR A BIRD ON YOUR LIST, THE  
BIRD MAY BREED IN YOUR  
PROJECT AREA SOMETIME WITHIN  
THE TIMEFRAME SPECIFIED,  
WHICH IS A VERY LIBERAL  
ESTIMATE OF THE DATES INSIDE

WHICH THE BIRD BREEDS  
ACROSS ITS ENTIRE RANGE.  
"BREEDS ELSEWHERE" INDICATES  
THAT THE BIRD DOES NOT LIKELY  
BREED IN YOUR PROJECT AREA.)

**Bald Eagle** *Haliaeetus leucocephalus*

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

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

Breeds Jan 1 to Aug 31

**Black Tern** *Chlidonias niger*

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

<https://ecos.fws.gov/ecp/species/3093>

Breeds May 15 to Aug 20

**Clark's Grebe** *Aechmophorus clarkii*

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

Breeds Jun 1 to Aug 31

**Common Yellowthroat** *Geothlypis trichas sinuosa*

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

<https://ecos.fws.gov/ecp/species/2084>

Breeds May 20 to Jul 31

**Golden Eagle** *Aquila chrysaetos*

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

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

Breeds Jan 1 to Aug 31

**Lawrence's Goldfinch** *Carduelis lawrencei*

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

<https://ecos.fws.gov/ecp/species/9464>

Breeds Mar 20 to Sep 20

**Nuttall's Woodpecker** *Picoides nuttallii*

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

<https://ecos.fws.gov/ecp/species/9410>

Breeds Apr 1 to Jul 20

**Oak Titmouse** *Baeolophus inornatus*

Breeds Mar 15 to Jul 15

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

<https://ecos.fws.gov/ecp/species/9656>

**Tricolored Blackbird** *Agelaius tricolor*

Breeds Mar 15 to Aug 10

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

<https://ecos.fws.gov/ecp/species/3910>

**Yellow-billed Magpie** *Pica nuttalli*

Breeds Apr 1 to Jul 31

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

<https://ecos.fws.gov/ecp/species/9726>

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

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

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

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

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

### Breeding Season (■)

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

### Survey Effort (|)

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

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

### No Data (—)

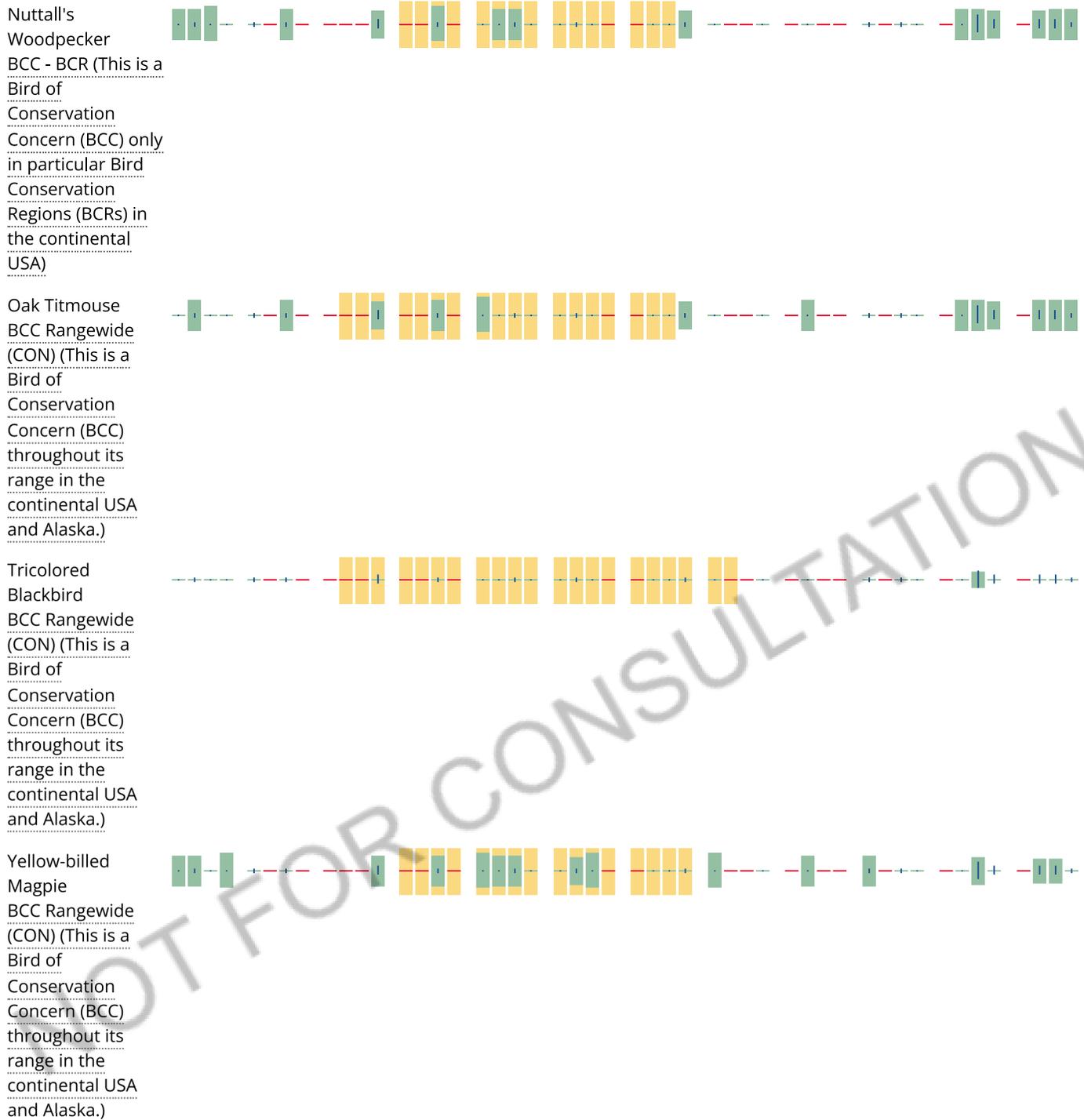
A week is marked as having no data if there were no survey events for that week.

### Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.







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

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

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

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

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

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

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

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

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

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

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

### **What are the levels of concern for migratory birds?**

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

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

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

### **Details about birds that are potentially affected by offshore projects**

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

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

### What if I have eagles on my list?

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

### Proper Interpretation and Use of Your Migratory Bird Report

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

## Facilities

### National Wildlife Refuge lands

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

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

# Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

## Wetlands in the National Wetlands Inventory

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

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

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

### Data limitations

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

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

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

### Data exclusions

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

### Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in

activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

CALIFORNIA DEPARTMENT OF  
**FISH and WILDLIFE** *RareFind*

**Query Summary:**

Quad **IS** (Paulsell (3712066) **OR** Cooperstown (3712065) **OR** La Grange (3712064) **OR** Montpelier (3712056) **OR** Turlock Lake (3712055) **OR** Snelling (3712054) **OR** Cressey (3712046) **OR** Winton (3712045) **OR** Yosemite Lake (3712044))

Print

Close

## CNDDDB Element Query Results

Scientific Name	Common Name	Taxonomic Group	Element Code	Total Occs	Returned Occs	Federal Status	State Status	Global Rank	State Rank	CA Rare Plant Rank	Other Status	Habitats
Agelaius tricolor	tricolored blackbird	Birds	ABPBXB0020	955	11	None	Threatened	G1G2	S1S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_EN-Endangered, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern	Freshwater marsh, Marsh & swamp, Swamp, Wetland
Agrostis hendersonii	Henderson's bent grass	Monocots	PMPOA040K0	26	1	None	None	G2Q	S2	3.2	null	Valley & foothill grassland, Vernal pool, Wetland
Ambystoma californiense pop. 1	California tiger salamander - central California DPS	Amphibians	AAAAA01181	1265	39	Threatened	Threatened	G2G3	S3	null	CDFW_WL-Watch List, IUCN_VU-Vulnerable	Cismontane woodland, Meadow & seep, Riparian woodland, Valley & foothill grassland, Vernal pool, Wetland
Antrozous pallidus	pallid bat	Mammals	AMACC10010	420	5	None	None	G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive, WBWG_H-High Priority	Chaparral, Coastal scrub, Desert wash, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Riparian woodland, Sonoran desert scrub, Upper montane coniferous forest, Valley & foothill grassland
Athene cunicularia	burrowing owl	Birds	ABNSB10010	2011	3	None	None	G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Coastal prairie, Coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, Valley & foothill grassland
Bombus morrisoni	Morrison bumble bee	Insects	IIHYM24460	86	1	None	None	G4G5	S1S2	null	IUCN_VU-Vulnerable	null
Branchinecta lynchi	vernal pool fairy shrimp	Crustaceans	ICBRA03030	795	76	Threatened	None	G3	S3	null	IUCN_VU-Vulnerable	Valley & foothill grassland, Vernal pool, Wetland
Branchinecta mesovallensis	midvalley fairy shrimp	Crustaceans	ICBRA03150	144	17	None	None	G2	S2S3	null	null	Vernal pool, Wetland
Buteo swainsoni	Swainson's hawk	Birds	ABNKC19070	2541	6	None	Threatened	G5	S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Great Basin grassland, Riparian forest, Riparian woodland, Valley & foothill grassland
Calycadenia hooveri	Hoover's calycadenia	Dicots	PDAST1P040	37	11	None	None	G2	S2	1B.3	null	Cismontane woodland, Valley & foothill grassland

Castilleja campestris var. succulenta	succulent owl's-clover	Dicots	PDSCR0D3Z1	99	27	Threatened	Endangered	G4? T2T3	S2S3	1B.2	null	Vernal pool, Wetland
Charadrius montanus	mountain plover	Birds	ABNNB03100	90	1	None	None	G3	S2S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern	Chenopod scrub, Valley & foothill grassland
Circus hudsonius	northern harrier	Birds	ABNKC11011	54	1	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Coastal scrub, Great Basin grassland, Marsh & swamp, Riparian scrub, Valley & foothill grassland, Wetland
Clarkia rostrata	beaked clarkia	Dicots	PDONA050Y0	74	10	None	None	G2G3	S2S3	1B.3	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Cismontane woodland, Valley & foothill grassland
Corynorhinus townsendii	Townsend's big-eared bat	Mammals	AMACC08010	635	1	None	None	G4	S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive, WBWG_H-High Priority	Broadleaved upland forest, Chaparral, Chenopod scrub, Great Basin grassland, Great Basin scrub, Joshua tree woodland, Lower montane coniferous forest, Meadow & seep, Mojavean desert scrub, Riparian forest, Riparian woodland, Sonoran desert scrub, Sonoran thorn woodland, Upper montane coniferous forest, Valley & foothill grassland
Cryptantha hooveri	Hoover's cryptantha	Dicots	PDBOR0A190	4	1	None	None	GH	SH	1A	null	Interior dunes, Valley & foothill grassland
Cryptantha mariposae	Mariposa cryptantha	Dicots	PDBOR0A1Q0	9	1	None	None	G2G3	S2S3	1B.3	BLM_S-Sensitive	Chaparral, Ultramafic
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	Dicots	PDCUS01111	6	1	None	None	G5T4?	SH	2B.2	null	Marsh & swamp, Wetland
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	Insects	IICOL48011	271	3	Threatened	None	G3T2	S3	null	null	Riparian scrub
Dipodomys heermanni dixonii	Merced kangaroo rat	Mammals	AMAFD03062	21	11	None	None	G4T2T3	S2S3	null	null	Valley & foothill grassland
Downingia pusilla	dwarf downingia	Dicots	PDCAM060C0	132	25	None	None	GU	S2	2B.2	null	Valley & foothill grassland, Vernal pool, Wetland
Emys marmorata	western pond turtle	Reptiles	ARAAD02030	1404	4	None	None	G3G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable, USFS_S-Sensitive	Aquatic, Artificial flowing waters, Klamath/North coast flowing waters, Klamath/North coast standing waters, Marsh & swamp, Sacramento/San Joaquin flowing waters, Sacramento/San

												Joaquin standing waters, South coast flowing waters, South coast standing waters, Wetland
<i>Eremophila alpestris actia</i>	California horned lark	Birds	ABPAT02011	94	1	None	None	G5T4Q	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Marine intertidal & splash zone communities, Meadow & seep
<i>Eryngium racemosum</i>	Delta button-celery	Dicots	PDAPI0Z0S0	26	1	None	Endangered	G1	S1	1B.1	null	Riparian scrub, Wetland
<i>Eryngium spinosepalum</i>	spiny-sepaed button-celery	Dicots	PDAPI0Z0Y0	108	8	None	None	G2	S2	1B.2	BLM_S-Sensitive	Valley & foothill grassland, Vernal pool, Wetland
<i>Eumops perotis californicus</i>	western mastiff bat	Mammals	AMACD02011	296	3	None	None	G4G5T4	S3S4	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, WBWG_H-High Priority	Chaparral, Cismontane woodland, Coastal scrub, Valley & foothill grassland
<i>Euphorbia hooveri</i>	Hoover's surge	Dicots	PDEUP0D150	29	2	Threatened	None	G1	S1	1B.2	null	Vernal pool, Wetland
<i>Falco columbarius</i>	merlin	Birds	ABNKD06030	37	1	None	None	G5	S3S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Estuary, Great Basin grassland, Valley & foothill grassland
<i>Haliaeetus leucocephalus</i>	bald eagle	Birds	ABNKC10010	329	3	Delisted	Endangered	G5	S3	null	BLM_S-Sensitive, CDF_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern, USFS_S-Sensitive, USFWS_BCC-Birds of Conservation Concern	Lower montane coniferous forest, Oldgrowth
<i>Icteria virens</i>	yellow-breasted chat	Birds	ABPBX24010	100	1	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Riparian forest, Riparian scrub, Riparian woodland
<i>Lagophylla dichotoma</i>	forked hare-leaf	Dicots	PDAST5J070	7	1	None	None	G2	S2	1B.1	null	Cismontane woodland, Valley & foothill grassland
<i>Lasiurus blossevillii</i>	western red bat	Mammals	AMACC05060	128	4	None	None	G4	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, WBWG_H-High Priority	Cismontane woodland, Lower montane coniferous forest, Riparian forest, Riparian woodland
<i>Lasiurus cinereus</i>	hoary bat	Mammals	AMACC05030	238	5	None	None	G3G4	S4	null	IUCN_LC-Least Concern, WBWG_M-Medium Priority	Broadleaved upland forest, Cismontane woodland, Lower montane coniferous forest, North coast coniferous forest
<i>Lepidurus packardi</i>	vernal pool tadpole shrimp	Crustaceans	ICBRA10010	329	3	Endangered	None	G4	S3S4	null	IUCN_EN-Endangered	Valley & foothill grassland, Vernal pool, Wetland
<i>Linderiella occidentalis</i>	California linderiella	Crustaceans	ICBRA06010	508	29	None	None	G2G3	S2S3	null	IUCN_NT-Near Threatened	Vernal pool
<i>Lytta molesta</i>	molestan blister beetle	Insects	IICOL4C030	17	1	None	None	G2	S2	null	null	Vernal pool, Wetland
<i>Monardella leucocephala</i>	Merced monardella	Dicots	PDLAM180C0	3	2	None	None	GX	SX	1A	null	Valley & foothill grassland
<i>Mylopharodon conocephalus</i>	hardhead	Fish	AFCJB25010	33	5	None	None	G3	S3	null	CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Klamath/North coast flowing waters, Sacramento/San Joaquin flowing waters
<i>Myotis yumanensis</i>	Yuma myotis	Mammals	AMACC01020	265	3	None	None	G5	S4	null	BLM_S-Sensitive, IUCN_LC-Least Concern, WBWG_LM-Low-Medium Priority	Lower montane coniferous forest, Riparian forest, Riparian woodland,

													Upper montane coniferous forest
Navarretia nigelliformis ssp. radians	shining navarretia	Dicots	PDPLM0C0J2	102	11	None	None	G4T2	S2	1B.2	BLM_S-Sensitive		Cismontane woodland, Valley & foothill grassland, Vernal pool, Wetland
Neostapfia colusana	Colusa grass	Monocots	PMPOA4C010	66	26	Threatened	Endangered	G1	S1	1B.1	null		Vernal pool, Wetland
Northern Hardpan Vernal Pool	Northern Hardpan Vernal Pool	Herbaceous	CTT44110CA	126	5	None	None	G3	S3.1	null	null		Vernal pool, Wetland
Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	Fish	AFCHA0209K	31	2	Threatened	None	G5T2Q	S2	null	AFS_TH-Threatened		Aquatic, Sacramento/San Joaquin flowing waters
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	Monocots	PMPOA4G060	47	6	Threatened	Endangered	G1	S1	1B.1	null		Vernal pool, Wetland
Orcuttia pilosa	hairy Orcutt grass	Monocots	PMPOA4G040	35	7	Endangered	Endangered	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden		Vernal pool, Wetland
Pandion haliaetus	osprey	Birds	ABNKC01010	504	1	None	None	G5	S4	null	CDF_S-Sensitive, CDFW_WL-Watch List, IUCN_LC-Least Concern		Riparian forest
Perognathus inornatus	San Joaquin pocket mouse	Mammals	AMAFD01060	140	5	None	None	G2G3	S2S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern		Cismontane woodland, Mojavean desert scrub, Valley & foothill grassland
Pseudobahia bahiifolia	Hartweg's golden sunburst	Dicots	PDAST7P010	27	17	Endangered	Endangered	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden		Cismontane woodland, Valley & foothill grassland
Sagittaria sanfordii	Sanford's arrowhead	Monocots	PMALI040Q0	126	1	None	None	G3	S3	1B.2	BLM_S-Sensitive		Marsh & swamp, Wetland
Sidalcea keckii	Keck's checkerbloom	Dicots	PDMAL110D0	50	1	Endangered	None	G2	S2	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden		Cismontane woodland, Ultramafic, Valley & foothill grassland
Spea hammondii	western spadefoot	Amphibians	AAABF02020	1422	15	None	None	G2G3	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened		Cismontane woodland, Coastal scrub, Valley & foothill grassland, Vernal pool, Wetland
Taxidea taxus	American badger	Mammals	AMAJF04010	594	1	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern		Alkali marsh, Alkali playa, Alpine, Alpine dwarf scrub, Bog & fen, Brackish marsh, Broadleaved upland forest, Chaparral, Chenopod scrub, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub, Desert dunes, Desert wash, Freshwater marsh, Great Basin grassland, Great Basin scrub, Interior dunes, lone formation, Joshua tree woodland, Limestone, Lower montane coniferous forest, Marsh &

													swamp, Meadow & seep, Mojavean desert scrub, Montane dwarf scrub, North coast coniferous forest, Oldgrowth, Pavement plain, Redwood, Riparian forest, Riparian scrub, Riparian woodland, Salt marsh, Sonoran desert scrub, Sonoran thorn woodland, Ultramafic, Upper montane coniferous forest, Upper Sonoran scrub, Valley & foothill grassland
Tuctoria greenei	Greene's tuctoria	Monocots	PMPOA6N010	50	4	Endangered	Rare	G1	S1	1B.1	null		Vernal pool, Wetland
Vireo bellii pusillus	least Bell's vireo	Birds	ABPBW01114	503	2	Endangered	Endangered	G5T2	S2	null	IUCN_NT-Near Threatened, NABCI_YWL-Yellow Watch List		Riparian forest, Riparian scrub, Riparian woodland
Vulpes macrotis mutica	San Joaquin kit fox	Mammals	AMAJA03041	1020	1	Endangered	Threatened	G4T2	S2	null	null		Chenopod scrub, Valley & foothill grassland

### Search Results

26 matches found. Click on scientific name for details

Search Criteria: Quad is one of [3712066:3712065:3712064:3712054:3712055:3712056:3712046:3712045:3712044]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
<a href="#"><u><i>Agrostis hendersonii</i></u></a>	Henderson's bent grass	Poaceae	annual herb	Apr-Jun	None	None	G2Q	S2	3.2	 ©2005 Steve Matson
<a href="#"><u><i>Calycadenia hooveri</i></u></a>	Hoover's calycadenia	Asteraceae	annual herb	Jul-Sep	None	None	G2	S2	1B.3	No Photo Available
<a href="#"><u><i>Castilleja campestris</i> var. <i>succulenta</i></u></a>	succulent owl's-clover	Orobanchaceae	annual herb (hemiparasitic)	(Mar)Apr-May	FT	CE	G4? T2T3	S2S3	1B.2	No Photo Available
<a href="#"><u><i>Clarkia rostrata</i></u></a>	beaked clarkia	Onagraceae	annual herb	Apr-May	None	None	G2G3	S2S3	1B.3	No Photo Available
<a href="#"><u><i>Cryptantha hooveri</i></u></a>	Hoover's cryptantha	Boraginaceae	annual herb	Apr-May	None	None	GH	SH	1A	No Photo Available
<a href="#"><u><i>Cryptantha mariposae</i></u></a>	Mariposa cryptantha	Boraginaceae	annual herb	Apr-Jun	None	None	G2G3	S2S3	1B.3	No Photo Available
<a href="#"><u><i>Cuscuta obtusiflora</i> var. <i>glandulosa</i></u></a>	Peruvian dodder	Convolvulaceae	annual vine (parasitic)	Jul-Oct	None	None	G5T4?	SH	2B.2	No Photo Available
<a href="#"><u><i>Delphinium hansenii</i> ssp. <i>ewanianum</i></u></a>	Ewan's larkspur	Ranunculaceae	perennial herb	Mar-May	None	None	G4T3	S3	4.2	No Photo Available
<a href="#"><u><i>Downingia pusilla</i></u></a>	dwarf downingia	Campanulaceae	annual herb	Mar-May	None	None	GU	S2	2B.2	No Photo Available
<a href="#"><u><i>Eryngium racemosum</i></u></a>	Delta button-celery	Apiaceae	annual/perennial herb	(May)Jun-Oct	None	CE	G1	S1	1B.1	No Photo Available
<a href="#"><u><i>Eryngium spinosepalum</i></u></a>	spiny-sepaled button-celery	Apiaceae	annual/perennial herb	Apr-Jun	None	None	G2	S2	1B.2	No Photo Available
<a href="#"><u><i>Euphorbia hooveri</i></u></a>	Hoover's spurge	Euphorbiaceae	annual herb	Jul-Sep(Oct)	FT	None	G1	S1	1B.2	No Photo Available

<u><i>Fritillaria agrestis</i></u>	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3	S3	4.2	 © 2016 Aaron Schusteff
<u><i>Hesperevax caulescens</i></u>	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.2	 © 2017 John Doyen
<u><i>Jepsonia heterandra</i></u>	foothill jepsonia	Saxifragaceae	perennial herb	Aug-Dec	None	None	G3	S3	4.3	 © 2014 Belinda Lo
<u><i>Lagophylla dichotoma</i></u>	forked hare-leaf	Asteraceae	annual herb	Apr-May	None	None	G2	S2	1B.1	 © 2010 Chris Winchell
<u><i>Monardella leucocephala</i></u>	Merced monardella	Lamiaceae	annual herb	May-Aug	None	None	GX	SX	1A	No Photo Available
<u><i>Navarretia nigelliformis</i> ssp. <i>radians</i></u>	shining navarretia	Polemoniaceae	annual herb	(Mar)Apr-Jul	None	None	G4T2	S2	1B.2	No Photo Available
<u><i>Neostapfia colusana</i></u>	Colusa grass	Poaceae	annual herb	May-Aug	FT	CE	G1	S1	1B.1	No Photo Available
<u><i>Orcuttia inaequalis</i></u>	San Joaquin Valley Orcutt grass	Poaceae	annual herb	Apr-Sep	FT	CE	G1	S1	1B.1	No Photo Available
<u><i>Orcuttia pilosa</i></u>	hairy Orcutt grass	Poaceae	annual herb	May-Sep	FE	CE	G1	S1	1B.1	 © 2003 George W. Hartwell
<u><i>Pseudobahia bahiifolia</i></u>	Hartweg's golden sunburst	Asteraceae	annual herb	Mar-Apr	FE	CE	G1	S1	1B.1	No Photo Available
<u><i>Sagittaria sanfordii</i></u>	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	G3	S3	1B.2	 ©2013 Debra L.

<a href="#"><i>Sidalcea keckii</i></a>	Keck's checkerbloom	Malvaceae	annual herb	Apr-May(Jun)	FE	None	G2	S2	1B.1	No Photo Available
<a href="#"><i>Tuctoria greenei</i></a>	Greene's tuctoria	Poaceae	annual herb	May-Jul(Sep)	FE	CR	G1	S1	1B.1	 ©2008 F. Gauna
<a href="#"><i>Wolffia brasiliensis</i></a>	Brazilian watermeal	Araceae	perennial herb (aquatic)	Apr-Dec	None	None	G5	S2	2B.3	 © 2021 Scot Loring

Showing 1 to 26 of 26 entries

#### Suggested Citation:

California Native Plant Society, Rare Plant Program. 2022. Rare Plant Inventory (online edition, v9-01 1.5). Website <https://www.rareplants.cnps.org> [accessed 30 March 2022].

#### CONTACT US

Send questions and comments to [rareplants@cnps.org](mailto:rareplants@cnps.org).

 Developed by  
Rincon Consultants, Inc.

#### ABOUT THIS WEBSITE

[About the Inventory](#)  
[Release Notes](#)  
[Advanced Search](#)  
[Glossary](#)

#### ABOUT CNPS

[About the Rare Plant Program](#)  
[CNPS Home Page](#)  
[About CNPS](#)  
[Join CNPS](#)

#### CONTRIBUTORS

[The Calflora Database](#)  
[The California Lichen Society](#)  
[California Natural Diversity Database](#)  
[The Jepson Flora Project](#)  
[The Consortium of California Herbaria](#)  
[CalPhotos](#)