

# **RECREATION ACCESS AND SAFETY ASSESSMENT STUDY REPORT**

## **LA GRANGE HYDROELECTRIC PROJECT FERC NO. 14581**



**Prepared for:**  
**Turlock Irrigation District – Turlock, California**  
**Modesto Irrigation District – Modesto, California**

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Attachment B	August 17, 2016 comments provided by the Central Sierra Environmental Resource Center regarding the June 30, 2016 Site Visit Debrief Meeting Notes
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Attachment D	Photographs of Site #2 taken during the June 30, 2016 site visit
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## List of Acronyms and Abbreviations

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ac-ft .....	acre-foot
BLM .....	Bureau of Land Management
BOR .....	Bureau of Reclamation
CCSF .....	City and County of San Francisco
CDFG .....	California Department of Fish and Game, now CDFW
CDFW .....	California Department of Fish and Wildlife
cfs .....	cubic feet per second
CG .....	Conservation Groups
Districts .....	Turlock Irrigation District and Modesto Irrigation District
FERC .....	Federal Energy Regulatory Commission
FLA .....	Final License Application
FPA .....	Federal Power Act
GIS .....	geographic information system
ILP .....	Integrated Licensing Process
ISR .....	Initial Study Report
LGDD .....	La Grange Diversion Dam
LPs .....	licensing participants
M&I .....	municipal and industrial
MID .....	Modesto Irrigation District
NMFS .....	National Marine Fisheries Service
NPS .....	National Park Service
O&M .....	operation and maintenance
PAD .....	Pre-Application Document
PSP .....	Proposed Study Plan
QA/QC .....	quality assurance/quality control
RM .....	river mile
RSP .....	Revised Study Plan
SD2 .....	Scoping Document 2
SPD .....	Study Plan Determination
TAF .....	thousand acre-feet
TID .....	Turlock Irrigation District
TM .....	technical memorandum
USFWS .....	United States Fish and Wildlife Service
USGS .....	United States Geological Survey
USR .....	Updated Study Report

## **1.0 INTRODUCTION**

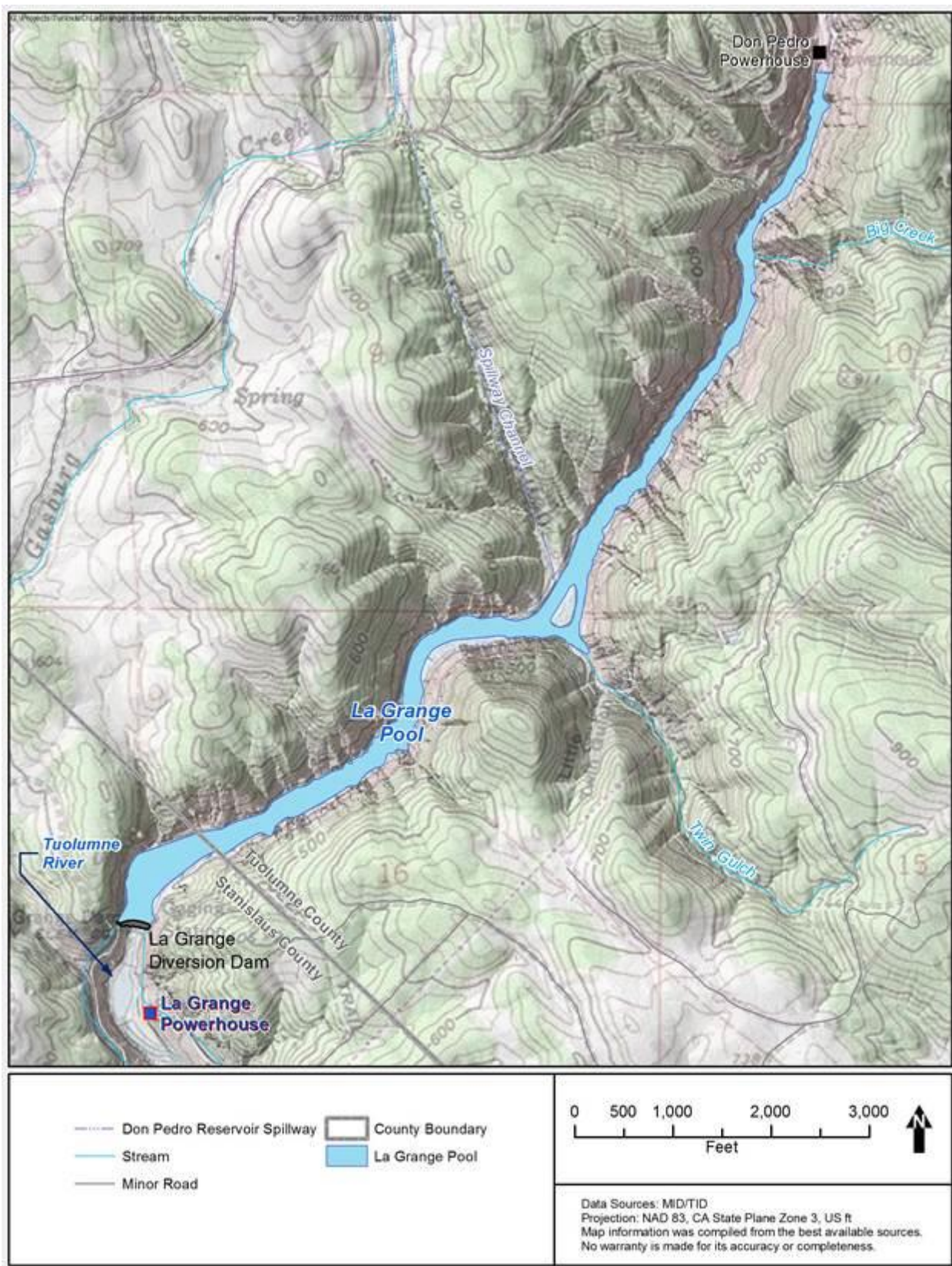
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### **1.1 Background**

The Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) own the La Grange Diversion Dam (LGDD) located on the Tuolumne River in Stanislaus County, California (Figures 1.1-1 and 1.1-2). LGDD is 131 feet high and is located at river mile (RM) 52.2 at the exit of a narrow canyon, the walls of which contain the pool formed by the diversion dam. Under normal river flows, the pool formed by the diversion dam extends for approximately one mile upstream. When not in spill mode, the water level upstream of the diversion dam is between elevation 294 feet and 296 feet approximately 90 percent of the time. Within this 2-foot range, the pool storage is estimated to be less than 100 acre-feet of water.

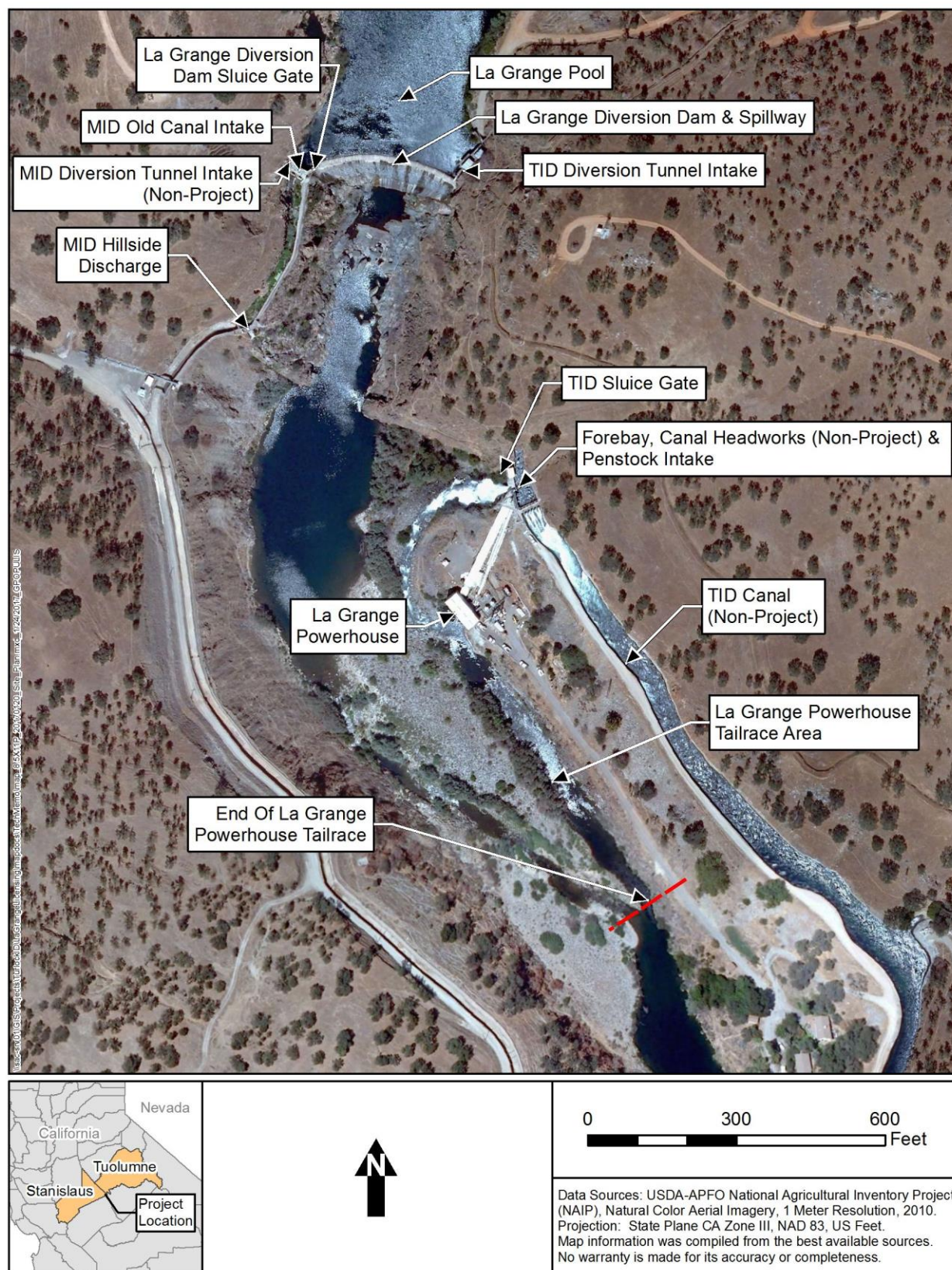
The drainage area of the Tuolumne River upstream of LGDD is approximately 1,550 square miles. Tuolumne River flows upstream of LGDD are regulated by four reservoirs: Hetch Hetchy, Lake Eleanor, Lake Lloyd (known as Cherry Lake), and Don Pedro. The Don Pedro Hydroelectric Project (Federal Energy Regulatory Commission [the Commission or FERC] No. 2299) is owned jointly by the Districts, and the other three dams are owned by the City and County of San Francisco (CCSF). Inflow to the La Grange pool is the sum of releases from the Don Pedro Project, located 2.3 miles upstream, and very minor contributions from two small intermittent streams downstream of Don Pedro Dam.

LGDD was constructed from 1891 to 1893 displacing Wheaton Dam, which was built by other parties in the early 1870s. LGDD raised the level of the Tuolumne River to permit the diversion and delivery of water by gravity to irrigation systems owned by TID and MID. The Districts' irrigation systems currently provide water to over 200,000 acres of prime Central Valley farmland and drinking water to the City of Modesto. Built in 1924, the La Grange hydroelectric plant is located approximately 0.2 miles downstream of LGDD on the east (left) bank of the Tuolumne River and is owned and operated by TID. The powerhouse has a capacity of slightly less than five megawatts. The La Grange Hydroelectric Project (La Grange Project or Project; FERC No. 14581) operates in a run-of-river mode. The LGDD provides no flood control benefits, and there are no recreation facilities associated with the Project or the La Grange pool.



**Figure 1.1-1. La Grange Hydroelectric Project location map.**





**Figure 1.1-2. La Grange Hydroelectric Project site plan.**



## 1.2 Licensing Process

In 2014, the Districts commenced the pre-filing process for the licensing of the La Grange Project by filing a Pre-Application Document with FERC<sup>1</sup>. On September 5, 2014, the Districts filed their Proposed Study Plan to assess Project effects on fish and aquatic resources, recreation, and cultural resources in support of their intent to license the Project. On January 5, 2015, in response to comments from licensing participants, the Districts filed their Revised Study Plan (RSP) containing three study plans: (1) Cultural Resources Study Plan; (2) Recreation Access and Safety Assessment Study Plan; and (3) Fish Passage Assessment Study Plan<sup>2</sup>.

On February 2, 2015, FERC issued the Study Plan Determination (SPD), approving or approving with modifications six studies (Table 1.2-1). Of those six studies, five had been proposed by the Districts in the RSP. The Districts note that although FERC's SPD identified the Fish Passage Barrier Assessment, Fish Passage Facilities Alternatives Assessment, and Fish Habitat and Stranding Assessment below La Grange Diversion Dam as three separate studies, all three assessments are elements of the larger Fish Passage Assessment as described in the RSP. The sixth study approved by FERC, Effects of the Project and Related Activities on the Losses of Marine-Derived Nutrients in the Tuolumne River, was requested by the National Marine Fisheries Service (NMFS) in its July 22, 2014 comment letter.

**Table 1.2-1. Studies approved or approved with modifications in FERC's Study Plan Determination.**

No.	Study	Approved by FERC in SPD without Modifications	Approved by FERC in SPD with Modifications
1	Recreation Access and Safety Assessment		X
2	Cultural Resources Study		X
3	Fish Passage Barrier Assessment		X <sup>1</sup>
4	Fish Passage Facilities Alternatives Assessment		X
5	Fish Habitat and Stranding Assessment below La Grange Dam		X
6	Effects of the Project and Related Activities on the Losses of Marine-Derived Nutrients in the Tuolumne River	X <sup>2</sup>	

<sup>1</sup> Page A-1 of Appendix A of FERC's SPD states that FERC approved with modifications the Fish Passage Barrier Assessment. However, the Districts found no modifications to this study plan in the SPD and page B-7 of the SPD states that "no modifications to the study plan are recommended."

<sup>2</sup> FERC directed the Districts to conduct the study plan as proposed by NMFS.

In the SPD, FERC recommended that, as part of the Fish Passage Facilities Alternatives Assessment, the Districts evaluate the technical and biological feasibility of the movement of anadromous salmonids through La Grange and Don Pedro project reservoirs if the results from Phase 1 of that study indicate that the most feasible concept for fish passage would involve fish

<sup>1</sup> On December 19, 2012, Commission staff issued an order finding that the La Grange Hydroelectric Project is required to be licensed under Section 23(b)(1) of the Federal Power Act. Turlock Irrigation District and Modesto Irrigation District, 141 FERC ¶ 62,211 (2012), aff'd Turlock Irrigation District and Modesto Irrigation District, 144 FERC ¶ 61,051 (2013). On May 15, 2015, the U.S. Court of Appeals for the District of Columbia Circuit denied the Districts' appeal and affirmed the Commission's finding that the La Grange Hydroelectric Project requires licensing. Turlock Irrigation District, et al., v. FERC, et al., No. 13-1250 (D.C. Cir. May 15, 2015).

<sup>2</sup> The Fish Passage Assessment Study Plan contained a number of individual, but related, study elements.

passage through Don Pedro Reservoir or La Grange pool. On September 16, 2016, the Districts filed the final study plan with FERC. On November 17, 2016, the Districts filed a letter with FERC after consulting with fish management agencies (i.e., NMFS and the California Department of Fish and Wildlife [CDFW]) regarding the availability of test fish and a determination that no fish would be available to support conducting this study in 2017. On January 12, 2017, the Districts filed a letter with FERC stating that with FERC's approval, they intend to conduct the study in 2018 if the results from the Fish Passage Facilities Alternatives Assessment indicate that upstream or downstream fish passage at La Grange and Don Pedro projects would require anadromous fish transit through one or both reservoirs.

In addition to the six studies noted in Table 1.2-1, the SPD required the Districts to develop a plan to monitor anadromous fish movement in the vicinity of the Project's powerhouse draft tubes to determine the potential for injury or mortality from contact with the turbine runners. The Districts filed the Investigation of Fish Attraction to La Grange Powerhouse Draft Tubes study plan with FERC on June 11, 2015, and on August 12, 2015, FERC approved the study plan as filed.

On February 2, 2016, the Districts filed the Initial Study Report (ISR) for the La Grange Project. The Districts held an ISR meeting on February 25, 2016, and on March 3, 2016, filed a meeting summary. Comments on the meeting summary and requests for new studies and study modifications were to be submitted to FERC by Monday, April 4. One new study request was submitted; NMFS requested a new study entitled Effects of La Grange Hydroelectric Project Under Changing Climate (Climate Change Study). On May 2, 2016, the Districts filed with FERC a response to comments received from licensing participants and proposed modifications to the Fish Passage Facilities Alternatives Assessment and the La Grange Project Fish Barrier Assessment. On May 27, 2016, FERC filed a determination on requests for study modifications and new study. The May 27, 2016 determination approved the Districts' proposed modifications and did not approve the NMFS Climate Change Study.

On February 1, 2017, the Districts filed the Recreation Access and Safety Assessment Study Report in the Updated Study Report (USR). On February 16, 2017, the Districts held a USR meeting. In response to comments received at the USR meeting, the Districts reviewed the risk assessment tables in the study report. The Districts determined that although the tables in Attachments E and F correctly described rapidly increasing water "flows" (i.e. velocities) as a potential hazard, the tables incorrectly described increasing water "levels" as a potential hazard. The tables have now been corrected. Correcting these errors did not result in any changes to the risk rating levels described in this report.

This study report describes the objectives, methods, and results of the Recreation Access and Safety Assessment implemented by the Districts in accordance with FERC's SPD. Documents relating to the Project licensing are publicly available on the Districts' licensing website at [www.lagrange-licensing.com/](http://www.lagrange-licensing.com/).

### 1.3 Study Plan

FERC's Scoping Document 2 issued on September 5, 2014, identified potential effects of Project operations on the adequacy of existing public access to support future recreation use, and the potential cumulative effects of Project operations on recreation. The Districts included a Recreation Access and Safety Assessment Study Plan (Recreation Study) in the Proposed Study Plan filed with FERC on September 5, 2014.

On October 6, 2014, the Districts held a study plan meeting with licensing participants. Based on comments provided by licensing participants at the study plan meeting regarding the Recreation Study, the Districts amended the study plan's risk assessment form to better reflect activities that may take place at the Project. The study plan was also amended to state that depending on the initial results of the Recreation Study, the Districts may complete a facilities siting assessment for any recreational activities deemed to be feasible by the study.

On February 2, 2015, FERC's SPD approved with modifications the Districts' revised Recreation Study. In its SPD, FERC directed the Districts to expand the study area to include an examination of the west (right) bank of the Tuolumne River along this reach for potential public access routes.

## **2.0                    STUDY GOALS AND OBJECTIVES**

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The goals of this study are: (1) to identify and characterize public use and potential recreation opportunities in the study area; and (2) to assess the public safety risk of identified recreation opportunities in the study area.



### **3.0                    STUDY AREA**

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The study area, as modified by FERC's SPD and conditions encountered in the field, includes the Tuolumne River from approximately RM 51.2 (which is approximately 1/4 mile downstream of USGS gage 11289650) upstream to Don Pedro Dam, located at RM 54.8. The study area includes any potential public access ways that may be reasonably safe and feasible along the river left (east) and river right (west) banks of the Tuolumne River along this reach.

## 4.0 METHODOLOGY

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### 4.1 Assess Recreation Access

Existing public access routes and site characteristics in the study area were first identified and assessed via desktop study. The desktop study included reviewing existing aerial photographs, property ownership data, and topography data and soliciting input from TID and MID staff. Site characteristics assessed included proximity to public roads, public trails, and considerations of slopes adjacent to the pool and the river.

On June 30, 2016, a site visit was conducted to gather site-specific information. Observations during the site visit were used to help produce descriptions of each potential public access route, including route length, terrain, and a qualitative description of the route. Site conditions along access ways and along the pool and river were recorded and photographed to aid in assessing recreation potential.

Licensing participants were invited to attend the June 30, 2016 site visit. Individuals representing TID, MID, the Central Sierra Environmental Resource Center, Don Pedro Recreation Agency, Tuolumne River Trust, the Bureau of Land Management (BLM), and the California Department of Fish and Wildlife participated. At the conclusion of the site visit, a debrief meeting was conducted with attendees. On August 17, 2016, meeting notes summarizing discussions at the debriefing meeting were forwarded to licensing participants for 30-day review and comment (Attachment A). Comments on the debrief meeting notes were received from the Central Sierra Environmental Resource Center (Attachment B).

### 4.2 Assess Risk to Public Safety

The desktop study generally concluded that site access and site use would involve risks due to the steepness of the local terrain along the project area and pool hydraulic conditions. The subsequent public safety assessment process included the following seven steps:

- (1) **Establish Boundaries of Site Components (Areas).** Boundaries were defined for the three components: (1) Upstream Area; (2) Intake Area; and (3) Downstream Area.
- (2) **Identify Public Activities within Each Component.** Through site visit observations and input from TID and MID staff, information was compiled regarding the types and level of public activities currently associated with each component and the potential for future public activities.
- (3) **Identify Hazards within Each Component.** Through site visit observations and input from TID and MID staff on project operations of both the La Grange facilities and the upstream Don Pedro facilities, information was obtained regarding hazards within each component.
- (4) **Identify Existing Risk Treatments (Measures) and Their Effectiveness.** Applying the site visit observations and the input from TID and MID staff, an evaluation of the existing risk treatment (measures) was performed.
- (5) **Assign Incident Likelihood Ratings (ILR).** ILR was assigned based on Table 4.2-1.

- (6) **Assign Incident Consequence Ratings (ICR).** ICR was assigned based on Table 4.2-2.
- (7) **Determine Risk Rating and Assign Risk Level.** Risk level was assigned based on Table 4.2-3.

The tables below describe the various factors considered in the overall risk assessment in accordance with the study plan requirements. Table 4.2-1 identifies incident ratings, Table 4.2-2 contains ratings of public hazard, and Table 4.2-3 contains the risk level characterization.

**Table 4.2-1. Incident likelihood ratings.**

Description	Definition of Likelihood	ILR
Very Frequent	More than 10 occurrences <sup>1</sup> in the hazardous area in any one of the last 3 years, <i>or</i> 25 or more occurrences in total in the last 3 years	5
Frequent	More than 2 occurrences in the hazardous area in any one of the last 3 years	4
Occasional	Any occurrences in the hazardous area in the last 6 years	3
Possible	Any occurrences in the hazardous area in the last 10 years	2
Remote	No known occurrences in last 10 years	1

<sup>1</sup> Occurrence refers to the presence of members of the public (i.e., not workers or contractors) in the hazardous area of the component under consideration, whether or not an “incident” occurs. Occurrences are estimated from known incidents, anecdotal evidence, and additional knowledge about public presence in the area.

**Table 4.2-2. Incident consequence ratings.**

Anticipated Incident Consequence	Anticipated Nature of Public Exposure to Identified Hazard/Hazardous Area	ICR
Fatality	Fatality	5
Critical	Permanent Partial or Total Disability	4
Major	Medical Treatment; Stranding (rescue required)	3
Minor	First Aid; or Stranding (self-rescue possible)	2
Insignificant	No Attention Required	1

**Table 4.2-3. Risk level based on the risk rating.**

ILR		ICR				
		Insignificant	Minor	Major	Critical	Fatality
		1	2	3	4	5
Remote	1	Low	Low	Low	Low	High
Possible	2	Low	Low	Low	Medium	High
Occasional	3	Low	Low	Medium	Medium	High
Frequent	4	Low	Medium	Medium	High	High
Very Frequent	5	Medium	Medium	High	High	High

## 5.0 ASSESSMENT OF RECREATION ACCESS AND RISK

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### 5.1 Results of the Desktop Analysis

Property ownership in the study area and vicinity is presented in Figure 5.1-1. The existence of privately-owned land currently limits the public's ability to access portions of the river left (east) shoreline. Significant portions of the river right (west) bank upstream of the dam, and both banks of the river immediately downstream of the dam, are owned by TID or MID or are administered by the BLM. This combination of Districts' ownership and public land may present opportunities for public access, subject to considerations of risk, safety, and environmental impact.

Currently, there is no public access to the study area upstream of the diversion dam. Downstream of La Grange Diversion Dam, access for fishing and other activities is available to individuals by walking along La Grange Dam Road, which is gated near where the main canal crosses Highway 132. Individuals also walk and wade upstream from a public access point in the town of La Grange near the Old La Grange Bridge.

Upstream of the La Grange Diversion Dam, an analysis of the shoreline and proximity to public roads, topography, and bank slope indicates there are significant constraints to providing public access (Figure 5.1-2). The shoreline vicinity is generally steep and rocky, and the La Grange pool in several reaches is in a canyon setting between Don Pedro Dam and La Grange Diversion Dam. Areas upstream of RM 54.2 are within one-half mile of Bonds Flat Road, which is the nearest public road, and areas upstream of approximately RM 53.4 are within one mile of Bonds Flat Road. An assessment of bank slope up to 20 percent in grade, located within one mile of Bonds Flat Road and within 75 feet of the high water line, indicates that although slopes directly along the river bank are generally less than seven percent in grade, which is a preferred slope for walking trails (NPS 1996), slopes steepen quickly as you move away from the river bank. Between RM 53.2 and RM 53.5, near the cut which acts as the spillway channel of the Don Pedro Project, the approach to the shoreline, while still steep, is slightly wider in comparison to the upstream and downstream canyon portions of the reach.

Figure 5.1-3 depicts the results of a similar analysis for the area downstream of the La Grange Diversion Dam. Areas downstream of approximately RM 51.6 are within one half-mile from Highway 132, while areas downstream of approximately RM 52.2 are within one mile of Highway 132. An assessment of bank slope up to 20 percent in grade, located within one mile of Highway 132 and within 75 feet of the high water line, indicates that slopes along the riverbank in this reach are generally less steep than slopes along the riverbank upstream of the diversion dam. In particular, significant portions of the shoreline between La Grange Diversion Dam and RM 51.2, especially on river left, lie within approximately one-half mile from Highway 132 and have shoreline slopes of less than six percent. Although river right is within one-half mile of Highway 132, public access from the road to the river is prevented by the MID irrigation canal.

Based on the desktop analysis, two areas were chosen to be assessed during the site visit: (1) the shoreline on river right from RM 53.2 to 53.5 ("Site Visit 1" in Figure 5.1-1); and (2) the shoreline on river left between RM 51.2 and La Grange Diversion Dam ("La Grange Powerhouse" in Figure 5.1-1).



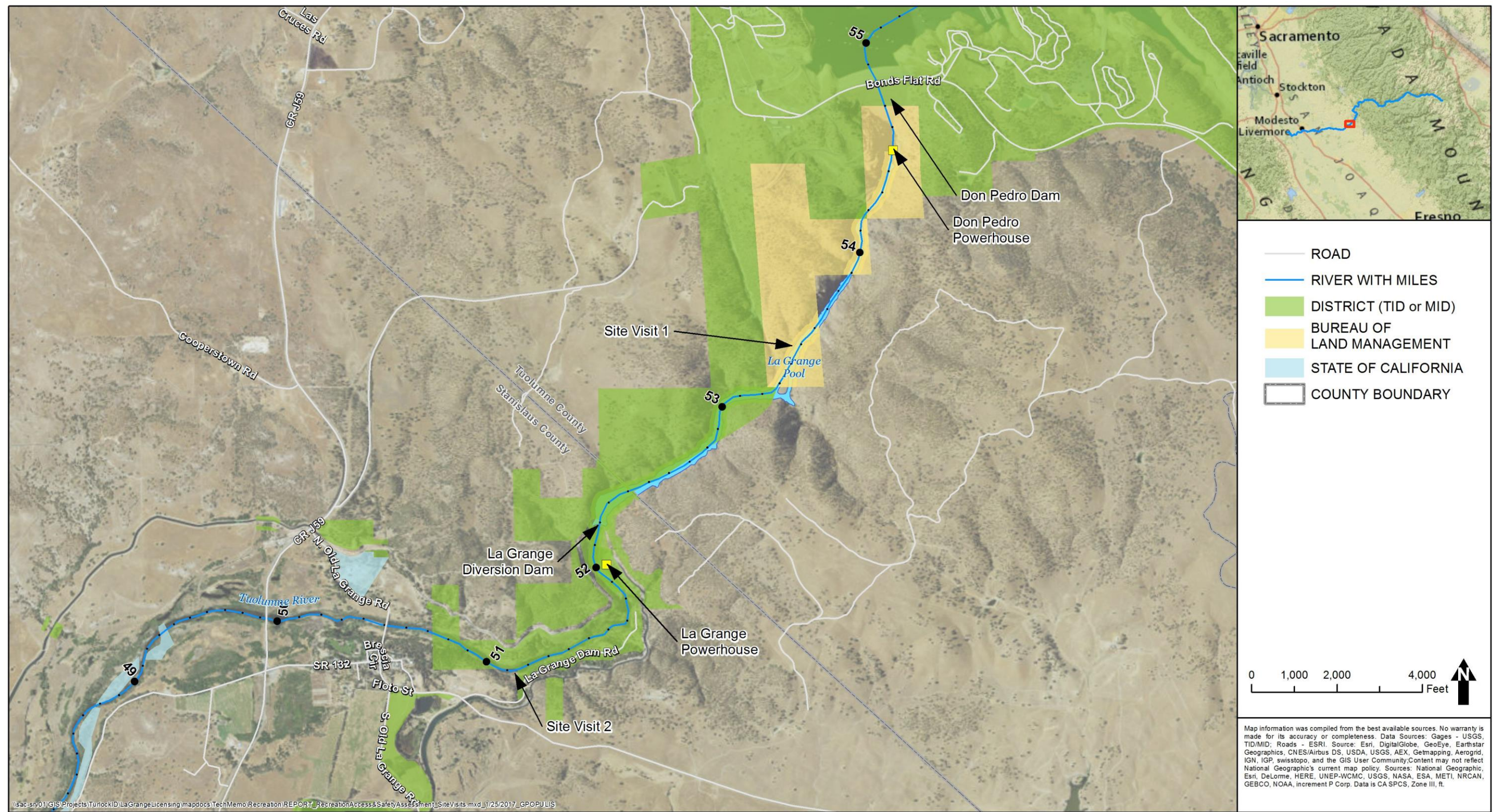


Figure 5.1-1. Property ownership in the study area and vicinity.



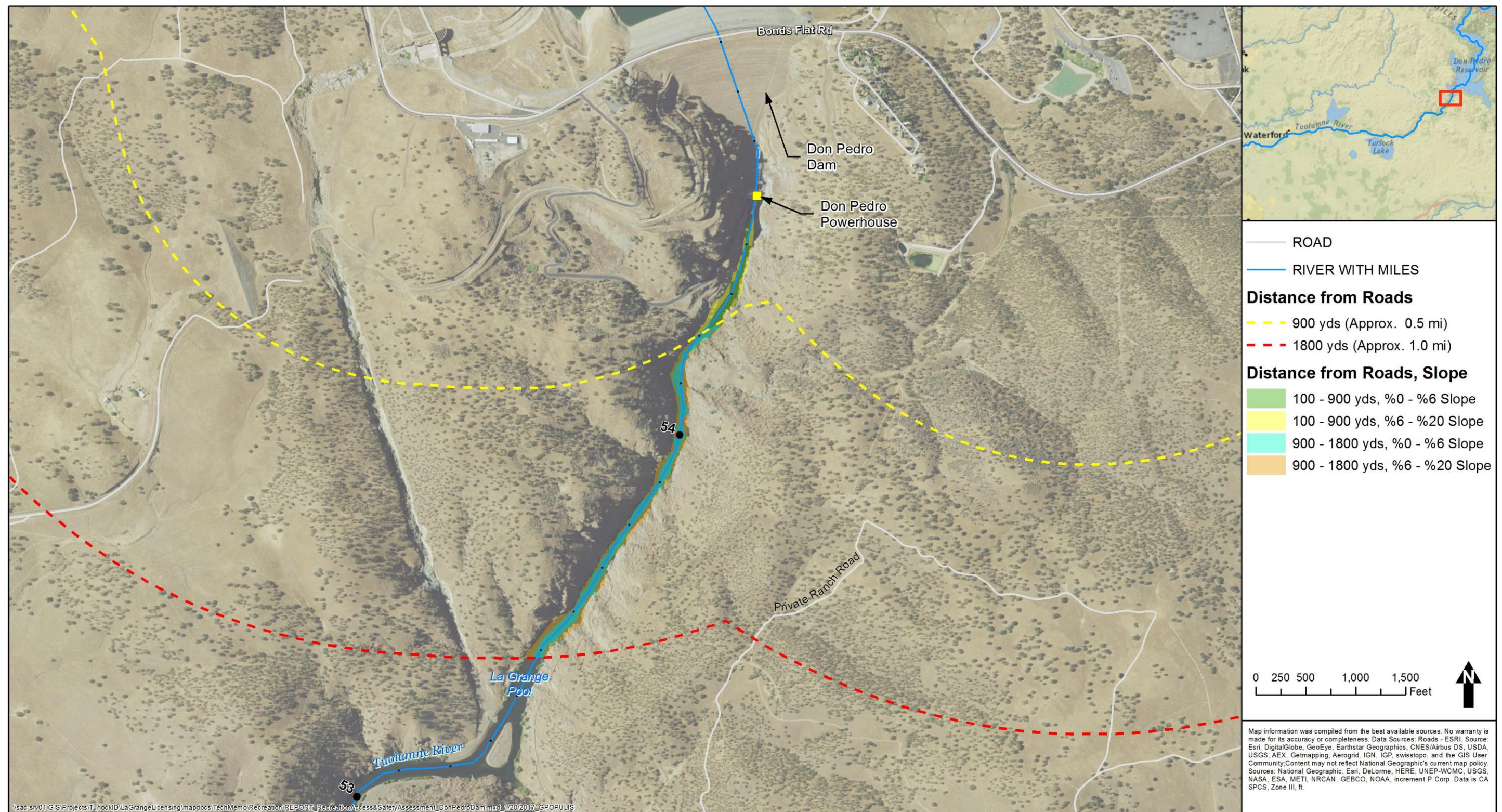


Figure 5.1-2. Analysis of bank slope and distance to Bonds Flat Road for the area upstream of the La Grange Diversion Dam.



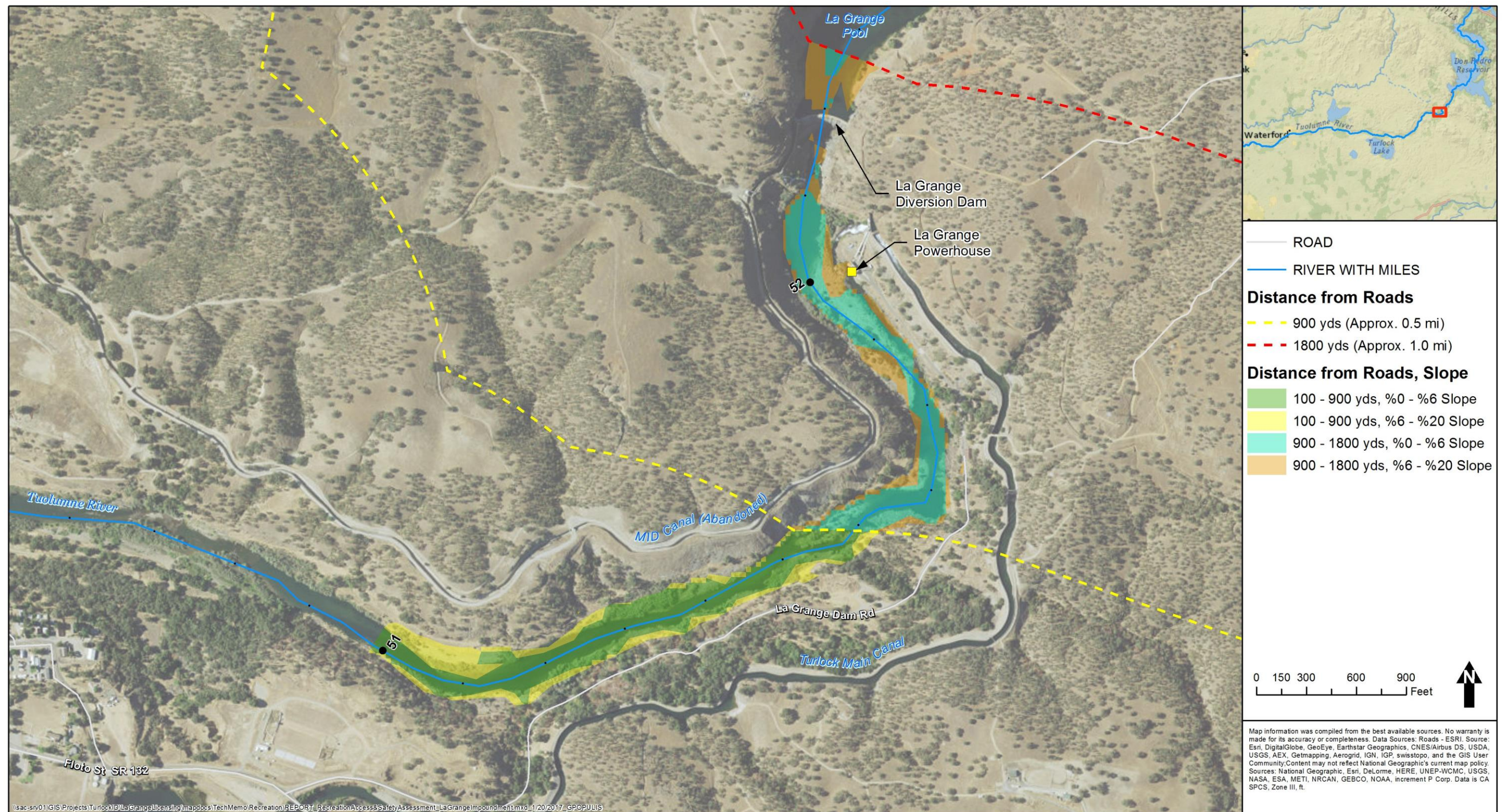


Figure 5.1-3 Analysis of bank slope and distance to Highway 132 for the area downstream of the La Grange Diversion Dam.



## **5.2 Results of the Recreation Access Assessment Site Visit**

During the site visit, two areas were assessed for recreation potential. The assessment included documenting evidence of existing access and use, the potential for public access over land owned by the Districts or administered by the BLM, and recreation opportunity potential.

### **5.2.1 First Location - Site Visit 1**

Individuals wishing to access the reach of river between RM 53.2 and 53.5 (see Figure 5.1-1) by vehicle must use the Districts' private, secured Don Pedro powerhouse access road. Because this road provides access to both the powerhouse and the toe of the dam, the Districts maintain a locked gate at the beginning of the road to ensure project security and prevent trespassing in this secure area. Once inside the gate, the powerhouse access road skirts an elevated contour before descending steeply towards the Don Pedro powerhouse. From the Districts private, secured paved road, the shoreline area of the La Grange pool from RM 53.2 to 53.5 would be accessible by foot. There is no access road to this reach of the shoreline and the general slope is steep, exceeding more than 60 percent slope in some areas. Potential recreation opportunities in the water in this reach include fishing from a boat, boating under power, canoeing, kayaking, rowing, and swimming. Potential recreation opportunities along the shoreline in this reach include fishing, walking, climbing, picnicking, hiking, and birdwatching. Photographs of this area taken during the site visit are presented in Attachment C.

### **5.2.2 Second Location - La Grange Powerhouse Area**

The shoreline on river left between La Grange Diversion Dam at RM 52.2 and RM 51.2 (Figure 5.1-3) is currently accessible by foot and by boat. Public access by vehicle to this reach is prohibited to maintain project security and project safety and to prevent trespassing. TID maintains a locked gate at the top of La Grange Dam Road (a private road maintained by the Districts) to prevent unauthorized vehicles from accessing the powerhouse area and the area immediately downstream of the dam, TID water conveyance structures (intakes and canals), and an employee residence. The powerhouse, water conveyance structures, and residence present significant constraints to providing safe and reasonable public access to this area while maintaining project security.

During the site visit, a flat nearshore area ("Site Visit 2" in Figure 5.1-1) was observed at approximately RM 51.2. Photographs of this area taken during the site visit are presented in Attachment D. Due to project security concerns, public vehicles are prohibited from accessing this area by virtue of the locked gate on La Grange Dam Road. Potential recreation opportunities in the water in this reach include fishing from a boat, boating under power, canoeing, kayaking, rowing, and swimming. Potential recreation opportunities along the shoreline include fishing, walking, climbing, picnicking, hiking, and birdwatching.



### 5.3 Results of the Public Safety Assessment

To evaluate public safety and project security concerns, the study area was subdivided into the Upstream Area, the Intake Area, and the Downstream Area, defined as the following:

- **Upstream Area** – The area between Don Pedro Dam and a point approximately 100 yards upstream of the TID and MID diversion tunnel intakes<sup>3</sup>.
- **Intake Area** – The area between a point approximately 100 yards upstream of the TID and MID diversion tunnel intakes and the diversion dam.
- **Downstream Area** – The area between the diversion dam and the USGS gaging station located just below the tailrace of TID's powerhouse.

The following descriptions of the Upstream Area, the Intake Area, and the Downstream Area are based on observations documented during the June 30, 2016, site visit and discussions with TID and MID staff.

#### 5.3.1 Upstream Area

Public activities associated with the Upstream Area have been limited to occasional use by the adjacent private property owner. General public use has not occurred historically; however, public use is not currently prohibited.

The adjacent land owner on river left has access to the shoreline via an unimproved road that drops to the river through Twin Gulch, an intermittent stream/dry gulch area located approximately one mile upstream of the La Grange Diversion Dam. The low lying land adjacent to the river could be used to launch a car top boat or other small watercraft. The area contains a picnic table and shows signs of vehicle access to near the edge of the shoreline. At this point, the La Grange pool more closely resembles a river with relatively high water velocities. A TID sign at this location warns a potential water user that a diversion dam exists approximately one mile downstream representing a significant hazard (e.g., dangerous when spilling).

Additional in-place risk treatments include a tailwater boat barrier downstream of Don Pedro Dam and fencing and a gate exist along the nearby, upstream BLM-administered lands. Trail access to the river-right, while steep, may be feasible, subject to satisfactory resolution of project security concerns related to powerhouse security and safety of the 600 feet high Don Pedro Dam. However, the normal operation of the Don Pedro hydroelectric plant during the irrigation season is to either release continuous high flows or to release flows on a peaking schedule. This results in high velocities through the entire reach of the La Grange pool, or under peaking, rapid changes from lower to high water velocities. While shoreline activities could be considered reasonably safe, in-water activities have an ICR of high risk.

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<sup>3</sup> The distance of 100 yards is based on FERC's General Guidelines for Public Safety at Hydropower Projects (FERC 1992).

### **5.3.2 Intake Area**

Potential public access to the Intake Area would be via the upstream reach of the La Grange pool. Access from the shore is unlikely due to steep slopes and private property. Because public use of the river upstream of La Grange Diversion Dam is not prohibited, it cannot be ruled out that individuals could access the general vicinity of the diversion tunnel intakes. The public hazards in this Intake Area are extreme. One of the hazards associated with the Intake Area is the diversion dam overflow spillway. The La Grange spillway has a unique configuration in that there are no abutments; the spillway extends from canyon wall to canyon wall. This area spills when the forebay inflow exceeds the hydraulic capacity or gate settings of the TID and MID diversion tunnel intakes. Flow velocities in the area are frequently high. An individual or boat within the Intake Area is subject to being swept over the spillway and falling over about 100 feet to the rocks below.

The other, potentially even greater hazard, are the TID and MID diversion tunnel intakes. The intakes are on either bank and located about 100 feet upstream of the spillway. Velocities near the intakes are high and accelerate as the flow approaches the submerged tunnels. Persons in a boat or individuals swept towards the tunnels have little chance of survival. Submerged trashracks installed on the tunnel intakes, while likely preventing direct access into the tunnels, would impinge a boat or an individual against the submerged racks. The area along the shoreline in the Intake Area is steep and rocky with little opportunity for egress onto the surrounding shore.

A TID sign warning water users of the nearby diversion dam and the associated hazard (i.e., dangerous when spilling) exists at the river left, a low lying area on private property approximately one mile upstream from the structure. In addition, a boating boom and warning sign are in-place approximately 200 yards upstream of the tunnel intakes and spillway. Given the site topography, project configuration, and the hazards associated with the normal operation of project facilities, the incident consequence rating (ICR) is rated as high risk.

### **5.3.3 Downstream Area**

When fishing in the Downstream Area, individuals are able to walk to areas immediately below the powerhouse discharge and the diversion dam. Flows in the tailrace area, including immediately below the powerhouse discharge, and in the bypassed reach below the diversion dam, can vary due to operational activities, forced outages, and seasonal variations in upstream flows.

Safety signs are installed throughout the dam and powerhouse area to warn users of potential hazards. Signs in English and in Spanish warn individuals of the potential for the spillway to activate without notice. Signs also warn that dangerous fluctuations in the river current may result in injury or death and river entry is not recommended. Near the forebay, signs warn users that the area is extremely dangerous and water may be discharged without notice. Additional signs are installed to warn users that industrial machinery and equipment located throughout the area may start automatically and without warning. The most significant potential risk appears to be to individuals using the Downstream Area for fishing in close proximity to the diversion dam or powerhouse at the time of a spill event or an increase in flows. In addition, plant and project security issues associated with allowing public access directly to the powerhouse or dam infrastructure must be recognized.

### 5.3.4 Risk Assessment Based on Current Public Use

The Risk Assessment Forms presented in Attachment E provide the details and results associated with each step of the risk assessment process. Risk levels were determined for each public activity potentially associated with the Upstream Area, the Intake Area, and Downstream (Table 5.3-1).

**Table 5.3-1. Risk rating level for current public activity potentially associated with the Upstream Area, Intake Area, and Downstream Area.**

Risk Level	Activity
<b>Upstream Area</b>	
High	<ul style="list-style-type: none"> <li>Fishing from Boat</li> <li>Boating (under power)</li> <li>Canoeing / Kayaking / Rowing</li> <li>Swimming / Diving</li> </ul>
Medium	<ul style="list-style-type: none"> <li>Walking / Hiking</li> <li>Picnicking</li> <li>Bird watching</li> </ul>
Low	<ul style="list-style-type: none"> <li>Fishing from Shore</li> <li>Climbing</li> </ul>
<b>Intake Area</b>	
High	<ul style="list-style-type: none"> <li>Fishing from Boat</li> <li>Boating (under power)</li> <li>Canoeing / Kayaking / Rowing</li> <li>Swimming / Diving</li> </ul>
Medium	<ul style="list-style-type: none"> <li>None at this time</li> </ul>
Low	<ul style="list-style-type: none"> <li>None at this time</li> </ul>
<b>Downstream Area</b>	
High	<ul style="list-style-type: none"> <li>Fishing from Boat</li> </ul>
Medium	<ul style="list-style-type: none"> <li>Fishing from Shore</li> <li>Walking / Hiking</li> <li>Bird watching</li> </ul>
Low	<ul style="list-style-type: none"> <li>Boating (under power)</li> <li>Canoeing / Kayaking / Rowing</li> <li>Swimming / Diving</li> <li>Climbing</li> </ul>

### 5.3.5 Risk Assessment Based on Potential Increased Public Use

Assuming that some increased public use of the Upstream Area and the Downstream Area could occur if use at the two potential areas identified during the site visits increased, an evaluation was performed to determine the potential risk levels associated with increased use. Given that all identified public activities associated with the Intake Area have a current risk level of “high”, an additional assessment of the Intake Area based on increased usage was not performed.

## 5.3.5.1 Upstream Area

Assessment of projected future use of the Upstream Area was based on the following factors:

- Increased public use of the Upstream Area would not influence the ICR associated with each public activity; therefore, the ICR associated with the increased use assessment is the same as the ICR associated with the current use assessment.
- Assuming an increase in use by the public, the incident likelihood rating (ILR) for each activity was increased to a “5” (*more than 10 occurrences in the hazardous area in any one of the last 3 years, or 25 or more occurrences in total in the last 3 years*) in this assessment. Note that an “occurrence” represents a single visit by a single person on a given day. For example, 5 individuals visiting on a given day and then returning the following day would represent 10 occurrences.

Attachment F presents the results of the increased-use public safety risk assessment for the Upstream Area. Risk levels were determined for each public activity potentially associated with the Upstream Area under the increased use scenario (Table 5.3-2).

**Table 5.3-2. Risk rating level for Upstream Area activities under increased use scenario.**

Risk Level	Activity
High	<ul style="list-style-type: none"> <li>▪ Fishing from Boat</li> <li>▪ Boating (under power)</li> <li>▪ Canoeing / Kayaking / Rowing</li> <li>▪ Swimming / Diving</li> <li>▪ Climbing</li> </ul>
Medium	<ul style="list-style-type: none"> <li>▪ Fishing from Shore</li> <li>▪ Walking</li> <li>▪ Hiking</li> <li>▪ Picnicking</li> <li>▪ Bird watching</li> </ul>
Low	<ul style="list-style-type: none"> <li>▪ None at this time</li> </ul>

## 5.3.5.2 Downstream Area

An evaluation was performed to determine the potential risk levels associated with increasing the public use of the Downstream Area (Table 5.3-3 and Attachment F). This evaluation assumed the following factors:

- Increased public use of the Downstream Area would not influence the ICR associated with each public activity; therefore, the ICR associated with the increased use assessment is the same as the ICR associated with the current use assessment.
- Assuming that future public access will be provided in the Downstream Area of the La Grange project, the ILR for the majority of the activities was increased to a “5”. Due to the rocky, shallow conditions downstream of the dam, it is unlikely that boating will occur near the tailrace; however, the potential exists for an individual to bring a smaller boat upstream to the tailrace area. Therefore, “boating (under power)” may increase slightly due to public access. It is expected that “climbing” may slightly increase along with increased access at the site.



**Table 5.3-3. Risk rating level for Downstream Area activities under increased use scenario.**

Risk Level	Activity
High	<ul style="list-style-type: none"> <li>▪ Fishing from Boat</li> <li>▪ Boating (under power)</li> <li>▪ Canoeing / Kayaking / Rowing</li> <li>▪ Swimming / Diving</li> </ul>
Medium	<ul style="list-style-type: none"> <li>▪ Fishing from Shore</li> <li>▪ Walking / Hiking</li> <li>▪ Climbing</li> <li>▪ Bird watching</li> </ul>
Low	<ul style="list-style-type: none"> <li>▪ None at this time</li> </ul>

## 6.0 DISCUSSION AND FINDINGS

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Public use of the shoreline upstream of La Grange Diversion Dam is currently limited by a lack of access and project security concerns. Project safety concerns remain a high priority. If project security and safety concerns can be addressed, it may be possible to accommodate public use of the shoreline upstream of the La Grange Diversion Dam, on river right at approximately RM 53.3; as such, the Districts have provided an initial recreation assessment for this site. Use of this area would be restricted to land-based activities only. Assuming project safety concerns can be addressed, accommodating public use in this area may entail constructing a walking trail that begins at Don Pedro Recreation Agency headquarters (DPRA), continues along the elevated contour, descends toward the river, and terminates at the shoreline. The trail would be open during daylight hours only. Individuals wishing to access the trail would park in the existing DPRA parking lot. Utilizing the existing parking lot would eliminate needing to relocate the existing security gate and build a new parking lot. Establishing the trailhead at DPRA would also allow the Districts to maintain a visitor log. Visitors would be required to check-in at DPRA when they arrive and to check-out when they return from using the trail. Maintaining a visitor log would allow the Districts to monitor trail usage and to confirm at the end of each day that all users have returned. Requiring users to check-in would also allow the Districts to limit use of the trail, if necessary. The following improvements would also be necessary:

- Install information signage at trailhead.
- Provide signage at the base of the trail to indicate potential hazards associated with the spillway, rapidly changing river flows resulting in strong currents, tunnel intakes, and lack of egress.
- Provide signage to delineate private property in the area.

Members of the public currently access the reach downstream of La Grange Diversion Dam by walking along La Grange Dam Road and/or by wading and boating upstream from a public access point near the Old La Grange Bridge, where a public parking lot is located. Given that the public already accesses and uses the reach below La Grange Diversion Dam, and that hazardous conditions exist immediately below the dam, it is unnecessary and inappropriate to provide additional access this area.

## **7.0 STUDY VARIANCES AND MODIFICATIONS**

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This Recreation Access and Safety Assessment study was conducted following the methods included in the RSP, as modified by FERC in SPD. One variance occurred during the study. Based on conditions identified during the site visit, the study area was extended downstream to approximately 1/4 mile downstream of the USGS no. gage 11289650 below the tailrace of TID's powerhouse to encompass potential public access points in reasonably close proximity to the Project with favorable topography, public safety, and land ownership characteristics.

## 8.0 REFERENCES

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Federal Energy Regulatory Commission (FERC). 1992. Guidelines for Public Safety at Hydropower Projects. (Appendix 6 Updated November 29, 2011). Washington DC: FERC Division of Dam Safety and Inspections. March 1992.

National Park Service (NPS). 1996. A Handbook for Trail Design, Construction, and Maintenance. April 1996. Available at <https://www.nps.gov/noco/learn/management/upload/Handbook-complete-2.pdf>.

**RECREATION ACCESS AND SAFETY ASSESSMENT  
STUDY REPORT**

**ATTACHMENT A**

**JUNE 30, 2016 SITE VISIT DEBRIEF MEETING NOTES**

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**La Grange Hydroelectric Project Licensing (FERC No. 14581)**  
**Recreation Access and Safety Assessment**

**Site Visit Debrief Meeting Notes**

On June 30, 2016, the Districts held a site visit as required by the FERC-approved Recreation Access and Safety Assessment study plan. The purpose of the site visit was to gather site-specific information to be used along with existing aerial photography, topographic data, and property ownership data to produce site assessments and descriptions of potential public access routes at the La Grange Hydroelectric Project (La Grange Project or Project). The site visit began at approximately 8:00 am and concluded at approximately 11:15 am. Individuals who attended the site visit are listed in Table 1.0. The site visit entailed visiting two locations (Figure 1.0, at back): (1) a site along La Grange pool (“La Grange Pool Location”) and (2) the La Grange powerhouse.

**Table 1.0**                      **Site visit attendees.**

<b>No.</b>	<b>Name</b>	<b>Organization</b>
1	Steve Boyd	Turlock Irrigation District
2	Anna Brathwaite	Modesto Irrigation District
3	John Buckley	Central Sierra Environmental Resource Center
4	Chris Collett	Don Pedro Recreation Agency
5	Nancy Craig	HDR, consultant to the Districts
6	Jesse Deason	HDR, consultant to the Districts
7	Greg Dias	Modesto Irrigation District
8	Peter Drekmeier	Tuolumne River Trust
9	Jim Eicher	Bureau of Land Management
10	Art Godwin	Turlock Irrigation District
11	Danielle Hanson	HDR, consultant to the Districts
12	Abimael Leon	California Department of Fish and Wildlife
13	Jim McCoy	Don Pedro Recreation Agency
14	Bill Paris	Modesto Irrigation District

The purpose of these meeting notes is to summarize discussions at the debrief meeting held at the conclusion of the site visit, during which time Ms. Nancy Craig solicited comments from attendees.

Mr. John Buckley said that when there are desirable locations that can provide safe recreation at low cost, he asked that the Districts please think about doing so. In particular, he noted some potential river access sites a short distance downstream of the USGS gaging station and the existing residence located below the La Grange Project powerhouse (see Downstream Location on Figure 1.0). Mr. Buckley said allowing public access to this location would not be particularly burdensome, and could allow for safe access that maintains both security at the Project and residential privacy. He said providing access to this location would likely require relocating the security gate, which is currently located at the turnoff from La Grange Dam Road and prevents public access, to a location farther along the road and closer to the Project facilities.

Mr. Buckley said he also sees value in providing trail access to the La Grange Pool Location, and perhaps installing a small educational sign at the head of the trail. He recognized that there may

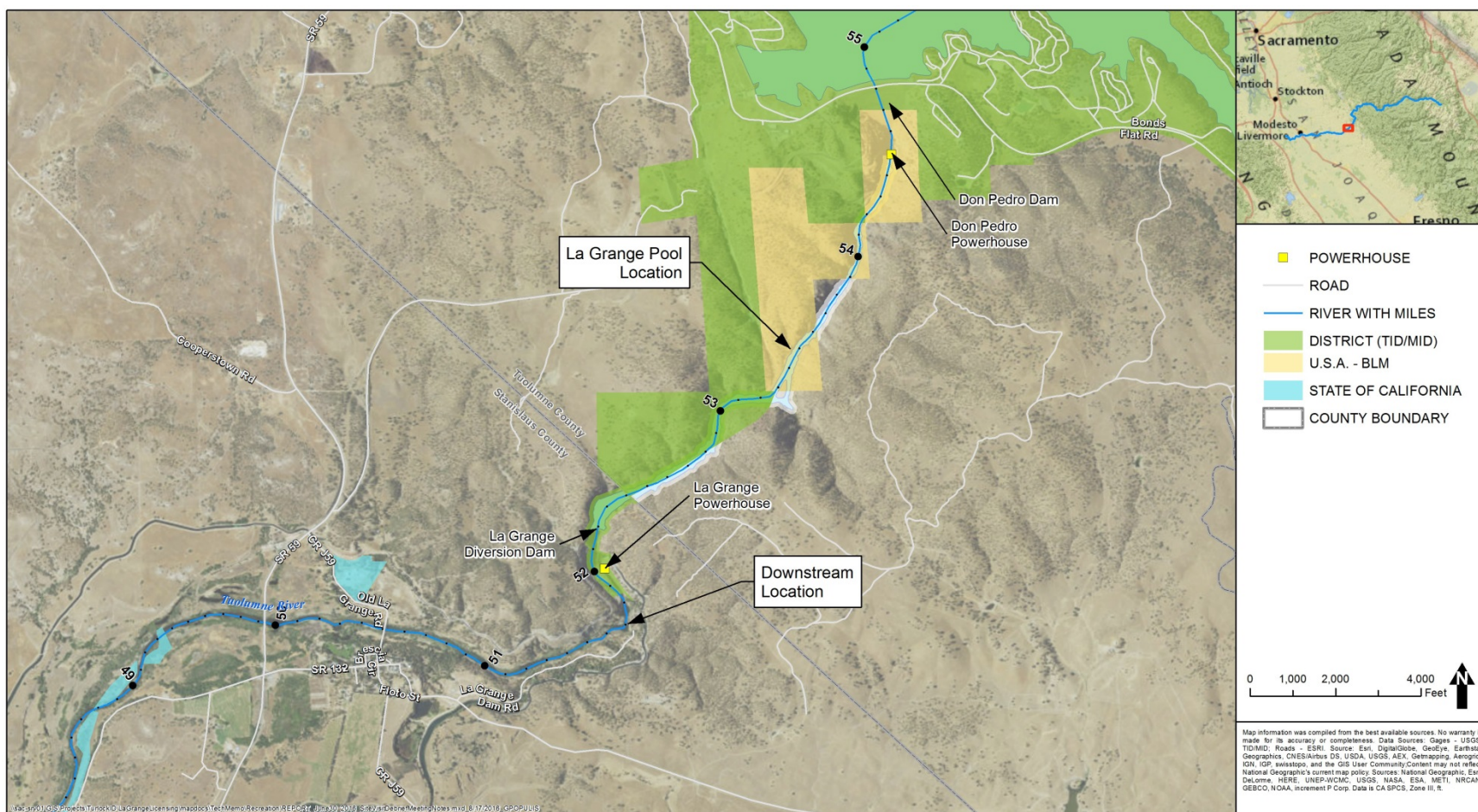


be constraints to this option as well, given that providing access to this site would also require relocating a security gate.

Mr. Jim Eicher said the route we walked to the La Grange Pool Location was very steep, but that there is a lot of open space which could provide an opportunity to build a contoured trail, or perhaps switchbacks. This trail could provide fishing access and vantage points.

Mr. Eicher said the old ditch on the east side of the river, observable from the La Grange Pool Location, is an interesting cultural and historic feature and has potential to serve as a level hiking trail. He said more information is needed on where the ditch begins and ends, as well as the current condition of the ditch. He said if developing the ditch as a trail is not feasible, the ditch still provides an opportunity for cultural interpretation and education.

Mr. Eicher agreed with Mr. Buckley that the Downstream Location has recreation potential, and that it would be appropriate to provide only a limited number of parking spaces. Mr. Eicher agreed that recreationists should be kept away from Project facilities and the existing residence.



**RECREATION ACCESS AND SAFETY ASSESSMENT  
STUDY REPORT**

**ATTACHMENT B**

**AUGUST 17, 2016 COMMENTS PROVIDED BY THE CENTRAL SIERRA  
ENVIRONMENTAL RESOURCE CENTER REGARDING THE JUNE 30,  
2016 SITE VISIT DEBRIEF MEETING NOTES**

**From:** John Buckley [<mailto:johnb@cserc.org>]

**Sent:** Wednesday, August 17, 2016 4:38 PM

**To:** Staples, Rose; [greg.dias@mid.org](mailto:greg.dias@mid.org); [seboyd@tid.org](mailto:seboyd@tid.org); Craig, Nancy; Deason, Jesse

**Cc:** Peter Drekmeier; James Eicher; [abimael.leon@wildlife.ca.gov](mailto:abimael.leon@wildlife.ca.gov); Meg Layhee; Patrick Koepele; Theresa Simsiman; [epeterson@co.tuolumne.ca.us](mailto:epeterson@co.tuolumne.ca.us); Daniel Richardson

**Subject:** Re: Suggested additions and comments related to the meeting notes for La Grange recreation site visits

From John Buckley  
CSERC

Please look over the attached comments to consider their benefit for recreation and as additional input from the field session.

Photos attached are also requested to be part of legal record. Photo #1 shows participants along La Grange Pool. Photo #2 shows the attractive nature of the pool area. Photo #3 shows the rockwork of the canal/ditch on the canyon wall across from the Pool.

John Buckley  
CSERC

Photo #1 Participants at the site most likely to be favored for recreational visits to La Grange Pool.





Photo #2 La Grange Pool with island in the river.



Photo #3 (note rock work - historic canal wall on far canyon slope above river)





**Central Sierra Environmental Resource Center**  
Box 396, Twain Harte, CA 95383 • (209) 586-7440 • fax (209) 586-4986  
Visit our website at: [www.cserc.org](http://www.cserc.org) or contact us at: [johnb@cserc.org](mailto:johnb@cserc.org)

August 16, 2016

Feedback to Nancy Craig and Licensees concerning the debrief meeting at the La Grange recreation fieldtrip session.

#### 1) PARKING TRAILHEAD SITE DOWNSTREAM FROM LA GRANGE POWERHOUSE

As we drove from the La Grange Project powerhouse location, we passed a fairly open, flat area (between the road and the river) that appeared suitable for a public parking area for recreational access to the river (10 parking spaces or less). If the goal is to keep recreational members of the public from driving in further along the road closer to the powerhouse or to prevent any disturbance of the residence, then moving the security gate back slightly closer to the residence could allow public access to the potential parking location.

If such a trailhead parking site was smoothed out, graveled or paved, and bordered with barriers between the parking and the slope down to the river, a relatively minor trail down to the river could provide adequate access for fishing, kayaks/canoes, or wildlife viewing.

Options for enhancement might consider whether either a portable restroom or small permanent restroom would be justified at the site, and whether or not the extension of a water line from the residence area to provide a drinking fountain or water at a restroom would or would not be justified.

#### 2) LA GRANGE POOL LOCATION AS A HIKING OR FISHING ACCESS DESTINATION

At the first recreational site visit some distance below Lake Don Pedro, various participants on the hike down to the La Grange Pool location acknowledged the scenic beauty of the blue oak woodland, the attractive nature of the pool area itself, and the extremely interesting cultural ditch rock wall that had historic significance that could be seen on the south side of the river. Informal discussions at the Pool location included recreational satisfaction from observing ospreys flying back and forth at the site, the obvious value of that Pool location as a good fishing destination worth walking to, and the broad area along the north shore of the river that was available for either picnic tables, benches, or other low cost amenities for recreational visitors.

As at the La Grange Pool location, a recreational assessment might consider whether a minimal outhouse restroom might be located 100' or more back from the riverbank at that flat adjacent to La Grange Pool to provide sanitary benefit. The possibility of a discrete educational and public safety awareness signboard at the flat next to La Grange Pool was also recommended. Any recreational trail to the site or trash clean up/maintenance at the La Grange Pool site was recommended to be very minimal to avoid burdening Licensees while still providing desirable recreational access.

*John Buckley*

John Buckley, executive director



**RECREATION ACCESS AND SAFETY ASSESSMENT  
STUDY REPORT**

**ATTACHMENT C**

**PHOTOGRAPHS OF SITE 1 TAKEN DURING  
THE JUNE 30, 2016 SITE VISIT**

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**Photograph C-1. Private unimproved road maintained by the Districts. From here, site visit attendees walked downhill to the shoreline.**



**Photograph C-2. View from the elevated contour.**





**Photograph C-3. View of the shoreline vicinity, looking upstream.**



**Photograph C-4. View of the shoreline, looking upstream.**





**Photograph C-5. View of the shoreline, looking downstream and across river.**



**Photograph C-6. View of the shoreline, looking downstream.**

**RECREATION ACCESS AND SAFETY ASSESSMENT  
STUDY REPORT**

**ATTACHMENT D**

**PHOTOGRAPHS OF SITE 2 TAKEN DURING  
THE JUNE 30, 2016 SITE VISIT**

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**Photograph D-1. View of the shoreline, looking downstream.**



**Photograph D-2. View of the shoreline, looking upstream. The La Grange powerhouse can be seen in the distance.**





**Photograph D-3. View from the shoreline, looking across the Tuolumne River.**

**RECREATION ACCESS AND SAFETY ASSESSMENT  
STUDY REPORT**

**ATTACHMENT E**

**PUBLIC SAFETY SITE RISK ASSESSMENT –  
CURRENT PUBLIC USE**

Date	Name	Signature
30 Jun 2016	Danielle Hanson	

UPSTREAM AREA (CURRENT USE)

Describe the boundary of the Component: River reach between Don Pedro Dam and a point approximately 100 yards upstream of the TID intake.

Location Name	LA GRANGE
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																										Risk Level at the Time of Assessment																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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		Rapidly increasing water levels	Rapidly increasing water flows	Strong currents or undertows	Frequently dry riverbed	Presence of spillway with sluicagate	Automatic Emergency Operation of Spillway Gate	Presence of spillway with stop-logs	Presence of overflow spillway or dam	Presence of discharge valve/pipe	Submerged hydraulic jump	Submerged underwater structures	Remote control flow equipment	Automatic control flow equipment	Steep or slippery banks	Falling from height >3 metres	Pinching or crushing	Thin ice	Changing flow/depth may result in Stranding	Floating debris	Flow or level changes as a result of maintenance	Unsecured mechanical/electrical equipment	Unsecured or exposed live electrical conductors	Inadequate guardrails/handrails for public	Open holes or tripping	Other (define)	Other (define)	Signage	Public Education (Local Initiatives)	Safety Buoys	Safety Booms	Audible Danger Signalling Devices	Visual Danger Signalling Devices	Fencing	Barricades (Vehicle or People)	Security Patrols	24/7 Video Surveillance	Operational Controls (Procedures)	Write a letter to the Adjacent Property Owner	Other (define)	Other (define)	Incident Likelihood Rating (ILR)	Incident Consequences Rating (ICR)		Risk Rating	Risk Level																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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From Water	Fishing from Boat		X	X							X	X	X						X	X							X		X	X										3	5	15	High	Public activities on the shoreline have been historically limited to occasional use by the adjacent private property owner. The adjacent land owner has access to the shoreline through a low lying area on private land, which is located approximately one mile upstream of La Grange Diversion Dam.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	Boating (under power)		X	X							X	X	X						X	X							X		X										2	5	10	High	See "Fishing from Boat" above.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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Date	Name	Signature
30 Jun 2016	Danielle Hanson	

INTAKE AREA (CURRENT USE)

Describe the boundary of the Component: Area between a point approximately 100 yards upstream of the TID river left intake and La Grange Diversion Dam.

Location Name	LA GRANGE
---------------	-----------

Activity Location within the Hazardous Area	Activity Description	Potential Hazard																										Risk Reduction Measures Present at the Time of Assessment														Risk Assessment				Comments			
		Rapidly increasing water levels	Rapidly increasing water flows	Strong currents or undertows	Frequently dry riverbed	Presence of spillway with sluicagate	Automatic Emergency Operation of Spillway Gate	Presence of spillway with stop-logs	Presence of overflow spillway or dam	Presence of discharge valve/pipe	Submerged hydraulic jump	Submerged underwater structures	Remote control flow equipment	Automatic control flow equipment	Steep or slippery banks	Falling from height >3 metres	Pinching or crushing	Thin ice	Changing flow/depth may result in Stranding	Floating debris	Flow or level changes as a result of maintenance	Unsecured mechanical/electrical equipment	Unsecured or exposed live electrical conductors	Inadequate guardrails/handrails for public	Open holes or tripping	Other (define)	Other (define)	Signage	Public Education (Local Initiatives)	Safety Buoys	Safety Booms	Audible Danger Signalling Devices	Visual Danger Signalling Devices	Fencing	Barricades (Vehicle or People)	Security Patrols	24/7 Video Surveillance	Operational Controls (Procedures)	Write a letter to the Adjacent Property Owner	Other (define)	Other (define)	Incident Likelihood Rating (ILR)	Incident Consequences Rating (ICR)	Risk Rating	Risk Level				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	1	2	3	4	5	6	7	8	9	10	11	12	13	14	ILR	ICR	RR	RL				
From Water	Fishing from Boat		X	X					X	X		X			X					X	X						X															1	5	5	High	Potential public access to the Intake Area is via the Upstream Strea; access from shore is unlikely due to steep slopes and private property. The primary hazard associated with Intake Area is the diversion dam overflow spillway that spills when the forebay inflow exceeds the hydraulic capacity (or gate settings) of the TID and MID intakes. An individual or boat within the forebay could be swept over the spillway to the tailrace area below. In addition, the TID and MID diversion intakes pose a potential drowning hazard. Given the trashracks that are installed on the intakes, it is unlikely that an individual could enter either intake; however, given the flow velocities associated with water entering the intakes, the potential exists for an individual to become impinged on the trashracks and drown. Given the rocky and steep slopes associated with the forebay area, it would be very difficult for an individual to exit the forebay onto the surrounding shore.			
	Boating (under power)		X	X					X	X		X			X					X	X						X															1	5	5	High	See "Fishing from Boat" above.			
	Sailing																																															Given remoteness of area -- unlikely that such activities would occur.	
	Windsurfing																																															Given remoteness of area -- unlikely that such activities would occur.	
	Canoeing/Kayaking/Rowing		X	X					X	X		X			X						X	X					X																1	5	5	High	See "Fishing from Boat" above.		
	Waterskiing																																															Given remoteness of area -- unlikely that such activities would occur.	
	Swimming		X	X					X	X		X			X						X	X					X																1	5	5	High	See "Fishing from Boat" above.		
	Jet Ski		X	X					X	X		X			X						X	X					X																				Given remoteness of area -- unlikely that such activities would occur.		
	Scuba Diving																																															Possible activity, but no indication of such use.	
	Swimming/Diving		X	X					X	X		X			X						X	X					X																1	5	5	High	See "Fishing from Boat" above.		
From Shore/Structure	Fishing from Shore																																															Given the steeper terrain on the river right shoreline, and the private property on the river left side of the reach, current shore-related public and recreational activities do not occur.	
	Walking																																																See "Fishing from Shore" above.
	Climbing																																																See "Fishing from Shore" above.
	Camping																																																See "Fishing from Shore" above.
	Picnicking																																																See "Fishing from Shore" above.
	ATV / Dirt Biking																																																See "Fishing from Shore" above.
	Hiking																																																See "Fishing from Shore" above.
	Skiing																																																See "Fishing from Shore" above.
	Snowshoeing																																																See "Fishing from Shore" above.
	Driving																																																See "Fishing from Shore" above.
	Biking																																												</				

Date	Name	Signature
30 Jun 2016	Danielle Hanson	

DOWNSTREAM AREA (CURRENT USE)

Describe the boundary of the Component: Area between La Grange Diversion Dam and a point parallel to the downstream of the USGS gage. Includes area immediately downstream of powerhouse discharge, as well as the area bypassed by water used for power generation at the La Grange powerhouse.

Location Name	LA GRANGE
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Activity Location within the Hazardous Area	Activity Description	Potential Hazard																										Risk Reduction Measures Present at the Time of Assessment														Risk Assessment				Comments							
		Rapidly increasing water levels	Rapidly increasing water flows	Strong currents or undertows	Frequently dry riverbed	Presence of spillway with spillway gate	Automatic Emergency Operated Spillway Gate	Presence of spillway with stop-logs	Presence of overflow spillway or dam	Presence of discharge valve/pipe	Submerged hydraulic jump	Submerged underwater structures	Remote control flow equipment	Automatic control flow equipment	Steep or slippery banks	Falling from height >3 metres	Pinching or crushing	Thin ice	Changing flow/depth may result in Stranding	Floating debris	Flow or level changes as a result of maintenance	Unsecured mechanical/electrical equipment	Unsecured or exposed live electrical conductors	Inadequate guardrails/handrails for public	Open holes or tripping	Other (define)	Other (define)	Signage	Public Education (Local Initiatives)	Safety Buoys	Safety Booms	Audible Danger Signalling Devices	Visual Danger Signalling Devices	Fencing	Barricades (Vehicle or People)	Security Patrols	24/7 Video Surveillance	Operational Controls (Procedures)	Write a letter to the Adjacent Property Owner	Other (define)	Other (define)	Incident Likelihood Rating (ILR)	Incident Consequences Rating (ICR)	Risk Rating	Risk Level								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	1	2	3	4	5	6	7	8	9	10	11	12	13	14	ILR	ICR	RR	RL								
From Water	Fishing from Boat	X	X	X	X						X									X	X																						5	3	15	High	Primary access to the downstream area for fishing is provided by individuals walking upstream from the public road. Once in the area, individuals fish from shore or wade into the tailwaters. When fishing in the downstream area, individuals have direct access to areas immediately below the powerhouse discharge and the diversion dam, can vary due to operational activities, forced outages, and variations in upstream flows. Most significant potential risk appears to be to individuals using the area for fishing in close proximity to the diversion dam or powerhouse at the time of a spill event or increase in flows.						
	Boating (under power)	X	X	X	X						X									X	X																						2	3	6	Low	Given the rocky and shallow nature of the river downstream of the tailrace area, unlikely to have boats in the tailrace. However the potential exists for a individual to bring a smaller boat upstream to the tailrace area.						
	Sailing																																														The tailrace area is not conducive to this activity.						
	Windsurfing																																														The tailrace area is not conducive to this activity.						
	Canoeing/Kayaking/Rowing	X	X	X	X						X									X	X																							2	3	6	Low	See "Boating (under power)" above.					
	Waterskiing																																														The tailrace area is not conducive to this activity.						
	Swimming	X	X	X	X						X									X	X																							2	3	6	Low	Unlikely to have individuals use the tailrace or downstream area specifically for swimming or diving. However, individuals who are in the tailrace area for fishing may wade into the water during warmer summer months.					
	Jet Ski																																															The tailrace area is not conducive to this activity.					
Scuba Diving																																															Unlikely to have individuals use the tailrace area for scuba diving.						
Swimming/Diving	X	X	X	X						X										X	X																									2	3	6	Low	Unlikely to have individuals use the tailrace or downstream area specifically for swimming or diving. However, individuals who are in the tailrace area for fishing may wade into the water during warmer summer months.			
From Shore/Structure	Fishing from Shore	X	X	X	X										X	X			X		X																								5	2	10	Medium	See "Fishing from Boat" above.				
	Walking	X	X	X	X										X	X			X		X																											5	2	10	Medium	See "Fishing from Boat" above.	
	Climbing	X	X	X	X										X	X			X		X																											1	4	4	Low	No indications of public use of shoreline areas for climbing; however, areas exist near powerhouse discharge that may be attractive to individuals who participate in this activity.	
	Camping																																																	No indication that camping has occurred historically near tailrace area or that such activities will be allowed in the future.			
	Picnicking																																																	See "Fishing from Boat" above.			
	ATV / Dirt Biking																																															No indication that such activities have occurred historically along tailrace shorelines or that such activities will be allowed in the future.					
	Hiking	X	X	X	X										X	X			X		X																										5	2	10	Medium	See "Fishing from Boat" above.		
	Skiing																																																	Given the local climate and river flows, the tailrace does not provide winter recreational opportunities.			
	Snowshoeing																																																	Given the local climate and river flows, the tailrace does not provide winter recreational opportunities.			
	Driving																																																	See "Fishing from Boat" above.			
	Biking																																																	Given remoteness of area and lack of established trails, unlikely that biking near the tailrace will occur in the future.			
	Scuba Diving																																																	Unlikely to have individuals use the tailrace area for scuba diving.			
	Swimming / Diving																																																	Unlikely to have individuals use the tailrace specifically for swimming or diving. However, individuals who are in the tailrace area for fishing may wade into the water during warmer months.			
	Accessing electrical equipment																																																	No facility related electrical equipment associated with the tailrace area.			
	Accessing mechanical equipment																																																	No facility related mechanical equipment associated with the tailrace area.			
Bird watching	X	X	X	X											X	X			X		X																												5	2	10	Medium	See "Fishing from Boat" above.

**RECREATION ACCESS AND SAFETY ASSESSMENT  
STUDY REPORT**

**ATTACHMENT F**

**PUBLIC SAFETY SITE RISK ASSESSMENT –  
INCREASED PUBLIC USE**



Date	Name	Signature
30 Jun 2016	Danielle Hanson	

UPSTREAM AREA (FUTURE USE)

Describe the boundary of the Component: River reach between Don Pedro Dam and a point approximately 100 yards upstream of the TID intake.

Location Name	LA GRANGE
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Activity Location within the Hazardous Area	Activity Description	Potential Hazard																										Risk Reduction Measures Present at the Time of Assessment														Risk Assessment				Comments			
		Rapidly increasing water levels	Rapidly increasing water flows	Strong currents or undertows	Frequently dry riverbed	Presence of spillway with sluicagate	Automatic Emergency Operation of Spillway Gate	Presence of spillway with stop-logs	Presence of overflow spillway or dam	Presence of discharge valve/pipe	Submerged hydraulic jump	Submerged underwater structures	Remote control flow equipment	Automatic control flow equipment	Steep or slippery banks	Falling from height >3 metres	Pinching or crushing	Thin ice	Changing flow/depth may result in Stranding	Floating debris	Flow or level changes as a result of maintenance	Unsecured mechanical/electrical equipment	Unsecured or exposed live electrical conductors	Inadequate guardrails/handrails for public	Open holes or tripping	Other (define)	Other (define)	Signage	Public Education (Local Initiatives)	Safety Buoys	Safety Booms	Audible Danger Signalling Devices	Visual Danger Signalling Devices	Fencing	Barricades (Vehicle or People)	Security Patrols	24/7 Video Surveillance	Operational Controls (Procedures)	Write a letter to the Adjacent Property Owner	Other (define)	Other (define)	Incident Likelihood Rating (ILR)	Incident Consequences Rating (ICR)	Risk Rating	Risk Level				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	1	2	3	4	5	6	7	8	9	10	11	12	13	14	ILR	ICR	RR	RL				
From Water	Fishing from Boat		X	X								X	X	X						X	X							X		X											5	5	25	High	Public activities on the shoreline have been historically limited to occasional use by the adjacent private property owner. The adjacent land owner has access to the shoreline through a low lying area on private land, which is located approximately one mile upstream of La Grange Diversion Dam.				
	Boating (under power)		X	X								X	X	X						X	X							X		X											5	5	25	High	See "Fishing from Boat" above.				
	Sailing																																																Given remoteness of the reach-- unlikely that such activities would occur.
	Windsurfing																																																Given remoteness of the reach-- unlikely that such activities would occur.
	Canoeing/Kayaking/Rowing		X	X								X	X	X							X	X						X		X											5	5	25	High	See "Fishing from Boat" above.				
	Waterskiing																																																Given remoteness of the reach-- unlikely that such activities would occur.
	Swimming		X	X								X	X	X							X	X						X		X											5	5	25	High	See "Fishing from Boat" above.				
	Jet Ski																																																Given remoteness of the reach-- unlikely that such activities would occur.
Scuba Diving																																																Given remoteness of the reach-- unlikely that such activities would occur.	
Swimming/Diving		X	X									X	X	X						X	X							X		X											5	5	25	High	See "Fishing from Boat" above.				
From Shore/Structure	Fishing from Shore		X	X								X	X	X	X				X									X		X	X											5	1	5	Medium	See "Fishing from Boat" above.			
	Walking		X	X								X	X	X	X				X									X		X	X											5	1	5	Medium	See "Fishing from Boat" above.			
	Climbing		X	X								X	X	X	X				X																							5	4	20	High	No indications of public use of shoreline areas for climbing; however, areas do exist that may be attractive to individuals who participate in this activity.			
	Camping																																																No indication that camping has occurred historically along the shorelines or that such activities will be allowed in the future.
	Picnicking		X	X								X	X	X	X				X									X		X											5	1	5	Medium	See "Fishing from Boat" above.				
	ATV / Dirt Biking																																																No indication that such activities have occurred historically along the shoreline or that such activities will be allowed in the future. Potential for adjacent land owner to engage in such activities near the shoreline.
	Hiking		X	X								X	X	X	X				X									X		X											5	1	5	Medium	See "Fishing from Boat" above.				
	Skiing																																																Given the local climate and river flows, the area does not provide winter recreational opportunities.
	Snowshoeing																																																Given the local climate and river flows, the area does not provide winter recreational opportunities.
	Driving																																																Given remoteness of the reach-- unlikely that such activities would occur.
	Biking																																																Given remoteness of area and lack of established trails, unlikely that biking will occur in the future.
	Scuba Diving																																																Given remoteness of the reach-- unlikely that such activities would occur.
	Swimming / Diving		X	X												X	X												X		X											5	3	15	High	See "Fishing from Boat" above.			
	Accessing electrical equipment																																																No facility related electrical equipment associated with the area
	Accessing mechanical equip.																																																No facility related mechanical equipment associated with the area
	Bird watching		X	X									X	X	X	X				X									X		X											5	1	5	Medium	See "Fishing from Boat" above.			



Date	Name	Signature
30 Jun 2016	Danielle Hanson	

DOWNSTREAM AREA (FUTURE USE)

Describe the boundary of the Component: Area between La Grange Diversion Dam and a point parallel to the downstream of the USGS gage. Includes area immediately downstream of powerhouse discharge, as well as the area bypassed by water used for power generation at the La Grange powerhouse.

Location Name	LA GRANGE
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Activity Location within the Hazardous Area	Activity Description	Potential Hazard																										Risk Reduction Measures Present at the Time of Assessment														Risk Assessment				Comments
		Rapidly increasing water levels	Rapidly increasing water flows	Strong currents or undertows	Frequently dry riverbed	Presence of spillway with spillway gate	Automatic Emergency Operated Spillway Gate	Presence of spillway with stop-logs	Presence of overflow spillway or dam	Presence of discharge valve/pipe	Submerged hydraulic jump	Submerged underwater structures	Remote control flow equipment	Automatic control flow equipment	Steep or slippery banks	Falling from height >3 metres	Pinching or crushing	Thin ice	Changing flow/depth may result in Stranding	Floating debris	Flow or level changes as a result of maintenance	Unsecured mechanical/electrical equipment	Unsecured or exposed live electrical conductors	Inadequate guardrails/handrails for public	Open holes or tripping	Other (define)	Other (define)	Signage	Public Education (Local Initiatives)	Safety Buoys	Safety Booms	Audible Danger Signalling Devices	Visual Danger Signalling Devices	Fencing	Barricades (Vehicle or People)	Security Patrols	24/7 Video Surveillance	Operational Controls (Procedures)	Write a letter to the Adjacent Property Owner	Other (define)	Other (define)	Incident Likelihood Rating (ILR)	Incident Consequences Rating (ICR)	Risk Rating	Risk Level	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	1	2	3	4	5	6	7	8	9	10	11	12	13	14	ILR	ICR	RR	RL	
From Water	Fishing from Boat	X	X	X	X						X									X	X																				5	3	15	High	Primary access to the downstream area for fishing is provided by individuals walking upstream from the public road. Once in the area, individuals fish from shore or wade into the tailwaters. When fishing in the downstream area, individuals have direct access to areas immediately below the powerhouse discharge and the diversion dam. Flows in the area, including immediately below the powerhouse discharge and the diversion dam, can vary due to operational activities, forced outages, and variations in upstream flows. Most significant potential risk appears to be to individuals using the area for fishing in close proximity to the diversion dam or powerhouse at the time of a spill event or increase in flows.	
	Boating (under power)	X	X	X	X						X									X	X																				5	3	15	High	Given the rocky and shallow nature of the river downstream of the tailrace area, unlikely to have boats in the tailrace. However the potential exists for a individual to bring a smaller boat upstream to the tailrace area.	
	Sailing																																											The tailrace area is not conducive to this activity.		
	Windsurfing																																											The tailrace area is not conducive to this activity.		
	Canoeing/Kayaking/Rowing	X	X	X	X						X									X	X																				5	3	15	High	See "Boating (under power)" above.	
	Waterskiing																																											The tailrace area is not conducive to this activity.		
	Swimming	X	X	X	X						X									X	X																				5	3	15	High	Unlikely to have individuals use the tailrace and downstream area specifically for swimming or diving. However, individuals who are in the tailrace area for fishing may wade into the water during warmer summer months.	
	Jet Ski																																											The tailrace area is not conducive to this activity.		
Scuba Diving																																											Unlikely to have individuals use the tailrace area for scuba diving.			
Swimming/Diving	X	X	X	X						X									X	X																					5	3	15	High	Unlikely to have individuals use the tailrace and downstream area specifically for swimming or diving. However, individuals who are in the tailrace area for fishing may wade into the water during warmer summer months.	
From Shore/Structure	Fishing from Shore	X	X	X	X										X	X			X		X																				5	2	10	Medium	See "Fishing from Boat" above.	
	Walking	X	X	X	X										X	X			X		X																					5	2	10	Medium	See "Fishing from Boat" above.
	Climbing	X	X	X	X										X	X			X		X																					2	4	8	Medium	No indications of public use of shoreline areas for climbing; however, areas exist near powerhouse discharge that may be attractive to individuals who participate in this activity.
	Camping																																											No indication that camping has occurred historically near tailrace area or that such activities will be allowed in the future.		
	Picnicking																																											See "Fishing from Boat" above.		
	ATV / Dirt Biking																																											No indication that such activities have occurred historically along tailrace shorelines or that such activities will be allowed in the future.		
	Hiking	X	X	X	X										X	X			X		X																				5	2	10	Medium	See "Fishing from Boat" above.	
	Skiing																																											Given the local climate and river flows, the tailrace does not provide winter recreational opportunities.		
	Snowshoeing																																											Given the local climate and river flows, the tailrace does not provide winter recreational opportunities.		
	Driving																																											No indication that such activities have occurred historically		
	Biking																																											Given remoteness of area and lack of established trails, unlikely that biking near the tailrace will occur in the future.		
	Scuba Diving																																											Unlikely to have individuals use the tailrace area for scuba diving.		
	Swimming / Diving																																											Unlikely to have individuals use the tailrace specifically for swimming or diving. However, individuals who are in the tailrace area for fishing may wade into the water during warmer months.		
	Accessing electrical equipment																																											No facility related electrical equipment associated with the tailrace area.		
	Accessing mechanical equipment																																											No facility related mechanical equipment associated with the tailrace area.		
Bird watching	X	X	X	X											X	X			X		X																				5	2	10	Medium	See "Fishing while Wading" above.	