

4.1.11 Recreation Facilities Demand Analysis and Condition Assessment Study

4.1.11.1 Project Nexus

Continued recreation is an important benefit of most hydropower projects, and FPA regulations require consideration for protection and enhancement of recreational opportunities. FERC's policies include ensuring that the ultimate development of recreation resources at licensed projects is consistent with area recreation needs and with the primary Project purpose. To plan for future needs for recreation within the proposed Project boundary, data on existing recreation facilities and their respective conditions is necessary to make informed decisions about the development needs required through the term of the new Project FERC license.

4.1.11.2 Existing Information and Need for Additional Information

Existing, relevant, and reasonably available information regarding recreational resources within the proposed Project boundary is provided in Section 4.9 of the Licensees' PAD. Existing data includes a basic inventory of Project-related recreation facilities, maps showing locations of existing recreational trails, statistics on visitor use, and management guidelines and regional needs assessments from relevant regional resource management plans, including the State Comprehensive Outdoor Recreation Plan and the Angeles and LPNF's Land and Resource Management Plan. The Licensees also have historical annual occupancy information for the Pyramid Lake recreation facilities. Project recreation use information is collected every six years for FERC Form 80 reporting and the most recent reporting year was 2014. Recreation user data is continuously collected every year. The Licensees also filed an updated *Recreation Plan* in May 2016.

In addition, the Licensees have been continuously working with the Pyramid Lake concessionaire to improve and maintain existing Project recreation facilities in a safe and functional manner. However, there may be additional opportunities to provide accessibility or other upgrades to meet future user needs. Typically, accessibility evaluations follow guidelines associated with the Architectural Barriers Act Accessibility Standards (ABAAS), the Forest Service Outdoor Recreation Accessibility Guidelines (FSORAG), and the Forest Service Trail Accessibility Guidelines (FSTAG) on NFS lands as well as the Americans with Disabilities Act on other lands. The accessibility assessment will also follow the U.S. Forest Service FERC relicensing conditions from section 4(e) of the FPA, which guide development of recreational facilities and require consideration of the needs of people with disabilities in the design and construction of project facilities and access. Information, which will be provided by this *Recreation Study*, will include a detailed condition assessment and inventory of Project recreation facilities. Additionally, an overnight camping demand analysis has recently been performed for the Pyramid Lake area as part of the removal of Hardluck Campground from the Project Recreation Plan. FERC's letter, dated February 22, 2017, to DWR approved the filing of the August 2016 Hardluck Campground Demand Analysis. FERC also noted that development of a replacement campground for Hardluck Campground

was not required at this time. However, FERC recognized that since this Project is currently undergoing relicensing, the need for recreation opportunities previously provided at Hardluck Campground should be explored within the context of the ongoing relicensing process. The recreation demand analysis proposed in this *Recreation Study* will augment the information gathered in the Hardluck Campground Demand Analysis study and expand the geographic scope to identify user preferences and recreation needs within the proposed Project boundary and downstream of Pyramid Dam in and around the Frenchman Flat's Day Use area.

4.1.11.3 Study Goals and Objectives

The goal of this *Recreation Study* is to develop a detailed condition assessment and inventory of Project-related recreation facilities to evaluate the facility offerings, configurations and conditions to help establish whether recreation needs are being met within the proposed Project boundary and to identify the areas with barrier free access. A demand analysis will contribute to the *Recreation Study* and be compared to the condition assessment and inventory to further evaluate existing and projected recreation needs within the *Recreation Study* area. This *Recreation Study* will comprise the following elements: (1) Project Existing Recreational Facility Inventory, Condition, and Carrying Capacity Assessment; (2) Project Existing Recreational Facilities Accessibility Assessment; and (3) Project Recreation Demand Analysis. The information from the condition assessment, accessibility assessment, and demand analysis will be evaluated to determine potential future improvements to or expansion of recreation facilities within the proposed Project boundary. Additional information, which will be provided by this *Recreation Study*, will include an inventory and comprehensive assessment of Project-related recreation facilities.

The objective of this *Recreation Study* is to gather sufficient data necessary to fill recognized gaps in available information about the existing recreational facilities. This information will be used to determine whether potential future improvements to recreational facilities within the proposed Project boundary, such as additional opportunities for providing accessibility, are warranted.

4.1.11.4 Study Methods

Study Area

The area of focus for the recreation facilities condition assessment and demand analysis consists of existing Project recreation areas within the proposed Project boundary surrounding Quail Lake and Pyramid Lake. The *Recreation Study* area will also include the non-Project day use area, Frenchman's Flat, downstream of Pyramid Lake in the assessment of recreation demand. Project facilities will be assessed within the context and categorization outlined in FERC's Project Recreation Facilities Tables and As-Built Site Plan Drawing Guidance (FERC 2014).

The Project lands around Elderberry Forebay are not part of this *Recreation Study* since the Forebay is closed to the public due to safety concerns posed by fluctuating water levels. Figures 4.1-16 to 4.1-19 show the areas and facilities that will be studied. For the recreation demand component, the analysis area will expand to include relevant recreation demand studies for California, and make some use of national data sets on user trends and preferences.

Study Sites

Pyramid Lake is popular with boaters and fishermen. In addition, the lake, its surrounding shorelines, and adjacent areas are popular with swimmers, hikers, and picnickers, particularly during the summer months. As shown in Figure 4.1-17 and described below, recreation facilities on and around Pyramid Lake include: boat-in sites, a visitor center, picnic areas, boat launches and public docks, and swim beaches. Los Alamos Campground provides overnight and group campgrounds for Pyramid Lake visitors.

Recreational facilities at Quail Lake are owned and operated solely by DWR. A large, graveled parking area with portable restrooms, signage, and trash receptacles are located at the west end of the lake, adjacent to State Route 138 and the outlet structure. Project lands surrounding Quail Lake are fenced and recreational access to the lake is walk-in only. Natural surface trails lead to the lake from the parking area. A graveled service road, which is closed to privately-owned vehicles but open to hikers and fishermen, surrounds the lake (Figure 4.1-18). Quail Lake provides only non-contact recreation opportunities; no boating or swimming is permitted there.

The following recreation-related facilities will be evaluated as part of this *Recreation Study*. Existing inventory, condition, capacity, and accessibility assessments will be conducted for each facility listed below. All of the facilities and amenities listed in Table 2b of the Project's Recreation Plan Update filed with FERC May 20, 2016 (FERC 2016) will be inventoried (see Table 4.1-9). In addition, Frenchman's Flat recreation facilities and amenities, downstream of Pyramid Dam, will be inventoried in the same manner as Project facilities (Figure 4.1-19). Updated recreation facilities tables for facilities within the proposed Project boundary will be prepared and included as part of the license application documents. Observed use information will also be documented during visits to each of these individual facilities and amenity locations.

Pyramid Lake Recreation Facilities:

- Emigrant Landing Boat Launch
- Emigrant Landing Swim and Picnic Area
- Emigrant Landing Picnic and Fishing Area No. 1
- Emigrant Landing Picnic and Fishing Area No. 2

- Vista Del Lago Visitor Center
- Vaquero Day Use Area
- Spanish Point Boat-in Picnic Area
- Serrano Boat-in Picnic Area
- Bear Trap Boat-in Picnic Area
- Yellow Bar Boat-in Picnic Area

Other Recreation Facilities:

- Quail Lake access point (parking, temporary restrooms, shoreline fishing)
- Los Alamos Campground and Group Campground
- Frenchman's Flat Day Use Area

Table 4.1-9. Approved Recreation Facilities for Pyramid Power Drop

Project Number	Development	Recreation Amenity Name	Recreation Amenity Type	Recreation Status	Notes
P2426	Pyramid Power Drop	Bear Trap Day Use Area	Picnic Area	Constructed	3 shade ramadas, typically 1 picnic table per ramada; 1 restroom with vault toilet; typically 1-2 barbecues; trash receptacle; boat dock; shoreline fishing
P2426	Pyramid Power Drop	Emigrant Landing Day Use Area	Boat Launch Area	Constructed	8-lane boat launch ramp; 2 public boat docks; 1 sheriff boat dock; administrative building; 7 shade ramadas with typically 2 picnic tables per ramada; 2 restrooms with flush toilets; parking for approximately 24-26 single vehicles with trailers; 1 interpretive display; parking for 55-60 single vehicles, typically 2-3 ADA; 2 floating restrooms that are deployed on the lake as needed; 5 portable ramadas that are deployed to recreation areas as needed
P2426	Pyramid Power Drop	Emigrant Landing Day Use Area	Interpretive Display	Constructed	Informational sign
P2426	Pyramid Power Drop	Emigrant Landing Day Use Area	Picnic & Fishing Area 1	Constructed	6 shade ramadas, with typically 2 picnic tables and typically 1 barbecue per ramada; shoreline fishing; restroom with flush toilets; parking for approximately 53-55 single vehicles with trailer; parking for approximately 45-50 single vehicles, typically 2-3 ADA
P2426	Pyramid Power Drop	Emigrant Landing Day Use Area	Picnic & Fishing Area 2	Constructed	16 shade ramadas, with typically 2 picnic tables and typically 1 barbecue per ramada; shoreline fishing; restroom with flush toilets; parking for approximately 70-75 single vehicles with trailers, typically 4-5 ADA
P2426	Pyramid Power Drop	Emigrant Landing Day Use Area	Swim & Picnic Area	Constructed	Swim beach; 24 shade ramadas, with typically 2 picnic tables and 1 barbecue per ramada; 2 restrooms with flush toilets; parking for approximately 130- 135 single vehicles, approximately 1 ADA
P2426	Pyramid Power Drop	Los Alamos Campground	Campground	Constructed	93 camp sites, with typically 1 picnic table and 1 fire ring per site, 4 ADA; 4 restrooms with flush toilets; 5 portable ramadas that are deployed to recreation areas as needed; trailer dump station; potable water; trash receptacles

Table 4.1-9. Approved Recreation Facilities for Pyramid Power Drop (continued)

Project Number	Development	Recreation Amenity Name	Recreation Amenity Type	Recreation Status	Notes
P2426	Pyramid Power Drop	Los Alamos Campground	Group Camps	Constructed	3 group sites with maximum occupancy of 40 people and parking for typically 8- 10 vehicles per site; each site includes a large shade ramada, typically containing 4-5 picnic tables, fire pits, and trash receptacles; restroom with flush toilets
P2426	Pyramid Power Drop	Serrano Day Use Area	Picnic Area	Constructed	6 shade ramadas, typically 1-2 picnic tables and typically 1 barbecue per ramada; restroom with vault toilets; trash receptacles; boat dock; shoreline fishing
P2426	Pyramid Power Drop	Spanish Point Day Use Area	Picnic Area	Constructed	12 shade ramadas, typically 1-2 picnic tables and typically 1 barbeque per ramada; restroom with vault toilets; trash receptacles; shoreline fishing
P2426	Pyramid Power Drop	Vaquero Day Use Area	Picnic Area	Constructed	15 shade ramadas with typically 1 picnic table and typically 1 barbecue per site, one ADA site; trash receptacles; 2 restrooms with flush toilets, ADA; parking for 140-150 single vehicles, typically 8 ADA
P2426	Pyramid Power Drop	Vaquero Day Use Area	Boat Launch Area	Constructed	2-lane, non-motorized watercraft launch ramp; boat dock
P2426	Pyramid Power Drop	Vaquero Day Use Area	Swim Area	Constructed	Swim beach
P2426	Pyramid Power Drop	Vista del Lago Visitors Center	Visitor Center	Constructed	18,500 square-foot visitor building; exhibits and displays; parking for 150- 160 single vehicles, typically 5 ADA, and 10 busses; potable water within facility
P2426	Pyramid Power Drop	Yellow Bar Day Use Area	Picnic Area	Constructed	10 shade ramadas with typically 1-2 picnic tables per site, 3 sites are ADA; restroom with vault toilets, ADA; boat dock; trash receptacle; shoreline fishing
P2426	Quail Lake	Quail Lake	Access Point	Constructed	Access point with gravel parking lot and 2 temporary/portable restrooms; shoreline fishing

Source: FERC 2016

Key:

ADA = Americans with Disabilities Act

General Concepts and Procedures

- Personal safety is the most important consideration of each fieldwork team. Fieldwork will only occur in safely accessible areas and under conditions deemed safe by the field crews. Locations within the study area that cannot be accessed in a safe manner (e.g., locations containing dense vegetation or unsafe slopes) and areas inundated when the surveys are performed, will not be surveyed; these areas will be identified in the data summary and an explanation for survey exclusion will be provided.
- The *Recreation Study* will begin after FERC issues its Study Plan Determination.
- The *Recreation Study* does not include the development of requirements for the new license, which will be addressed outside of this study.
- The *Recreation Study* specifically focuses on the recreation resources within the proposed Project boundary surrounding Pyramid and Quail Lakes and the study area for the *Recreation Study* is specific to that resource.
- If required for the performance of the *Recreation Study*, the Licensees will make a good faith effort to obtain permission to access private property well in advance of initiating the study. The Licensees will only enter private property if permission has been provided by the landowner.
- The Licensees will acquire all necessary agency permits and approvals prior to beginning fieldwork for the *Recreation Study*.
- Field crews may make variances to the *Recreation Study* in the field to accommodate actual field conditions and unforeseen problems. Any variances from the *Recreation Study* will be noted in the data resulting from the *Recreation Study*.
- To prevent the introduction and transmittal of amphibian chytrid fungus and invasive aquatic species (e.g., quagga mussels, zebra mussel, and Asian clams), field crews will be trained on, provided with, and use materials (e.g., Quat) for decontaminating their boots, waders, and other equipment when leaving or traveling between water-based study sites. Field crews will follow DWR's Quagga and Zebra Mussel Rapid Response Plan and CDFW's Aquatic Invasive Species Decontamination Protocol which can be found at the following link: (<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=43333>). All boats used during the study will follow cleaning protocols, including inspections before and after use. All decontamination requirements in place at Project reservoirs including those of DWR's *Quagga and Zebra Mussel Rapid Response Plan* for the SWP will be strictly followed (DWR 2010).

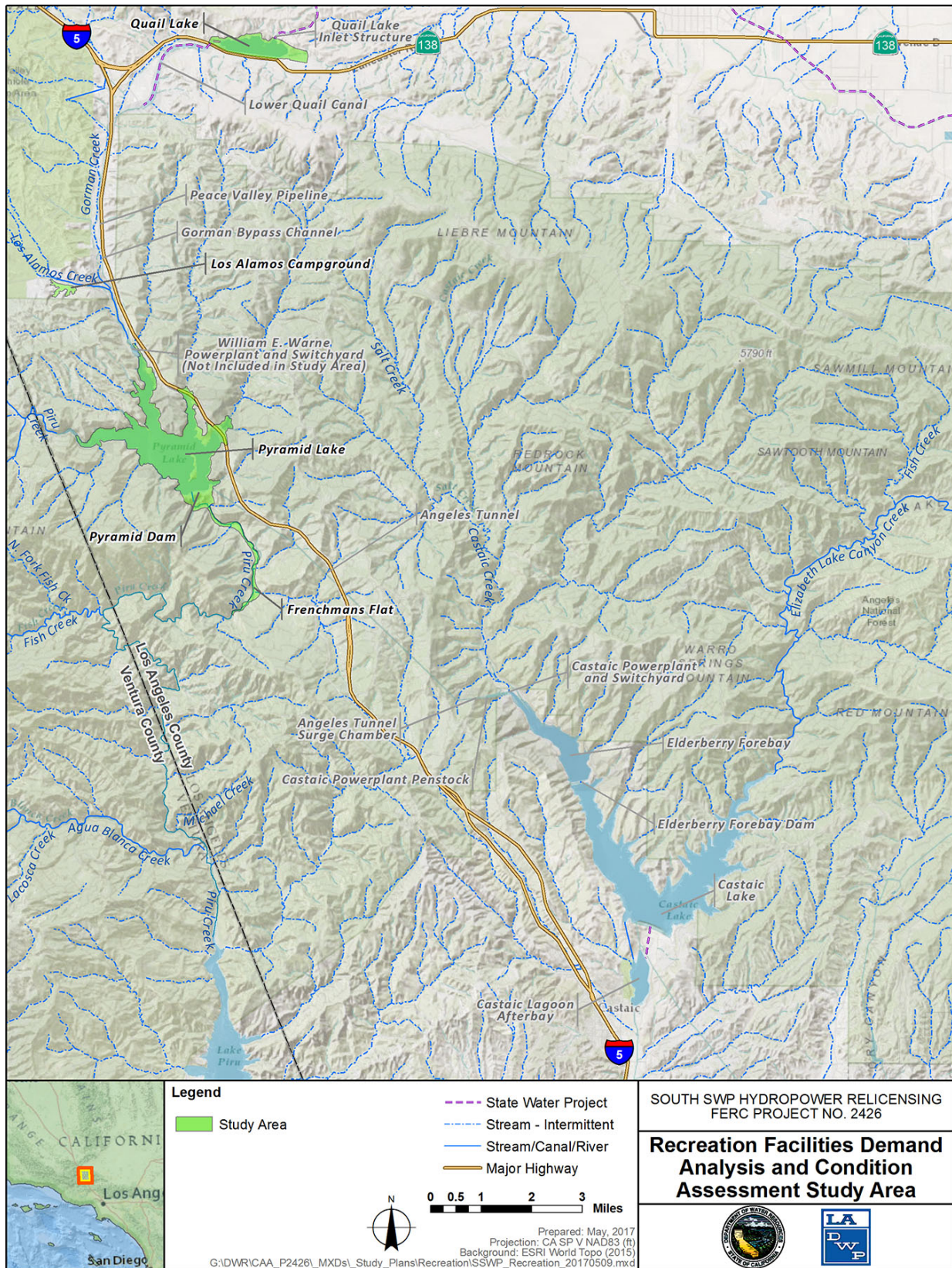


Figure 4.1-16. Recreation Study Area

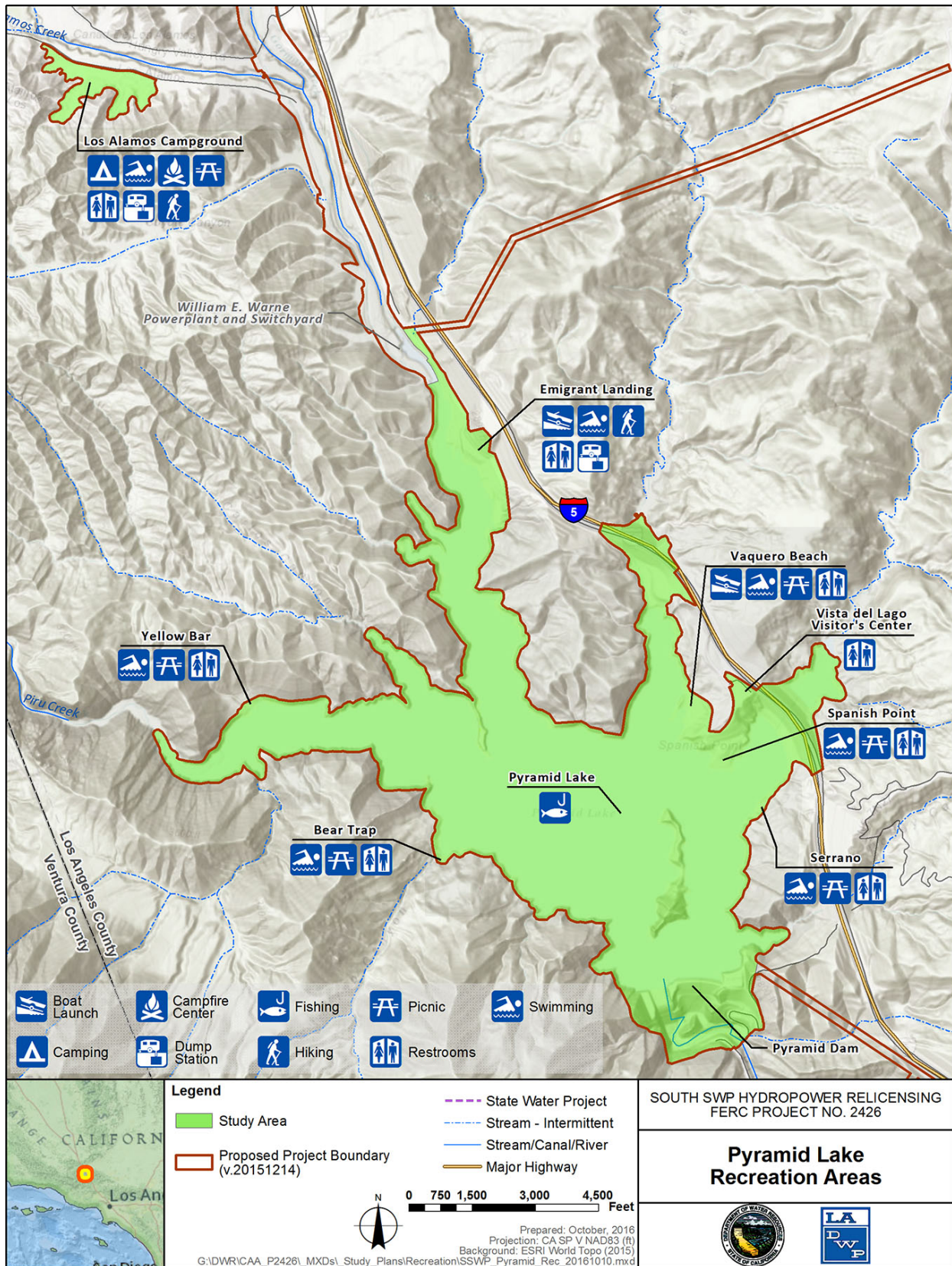


Figure 4.1-17. Pyramid Lake Recreation Areas

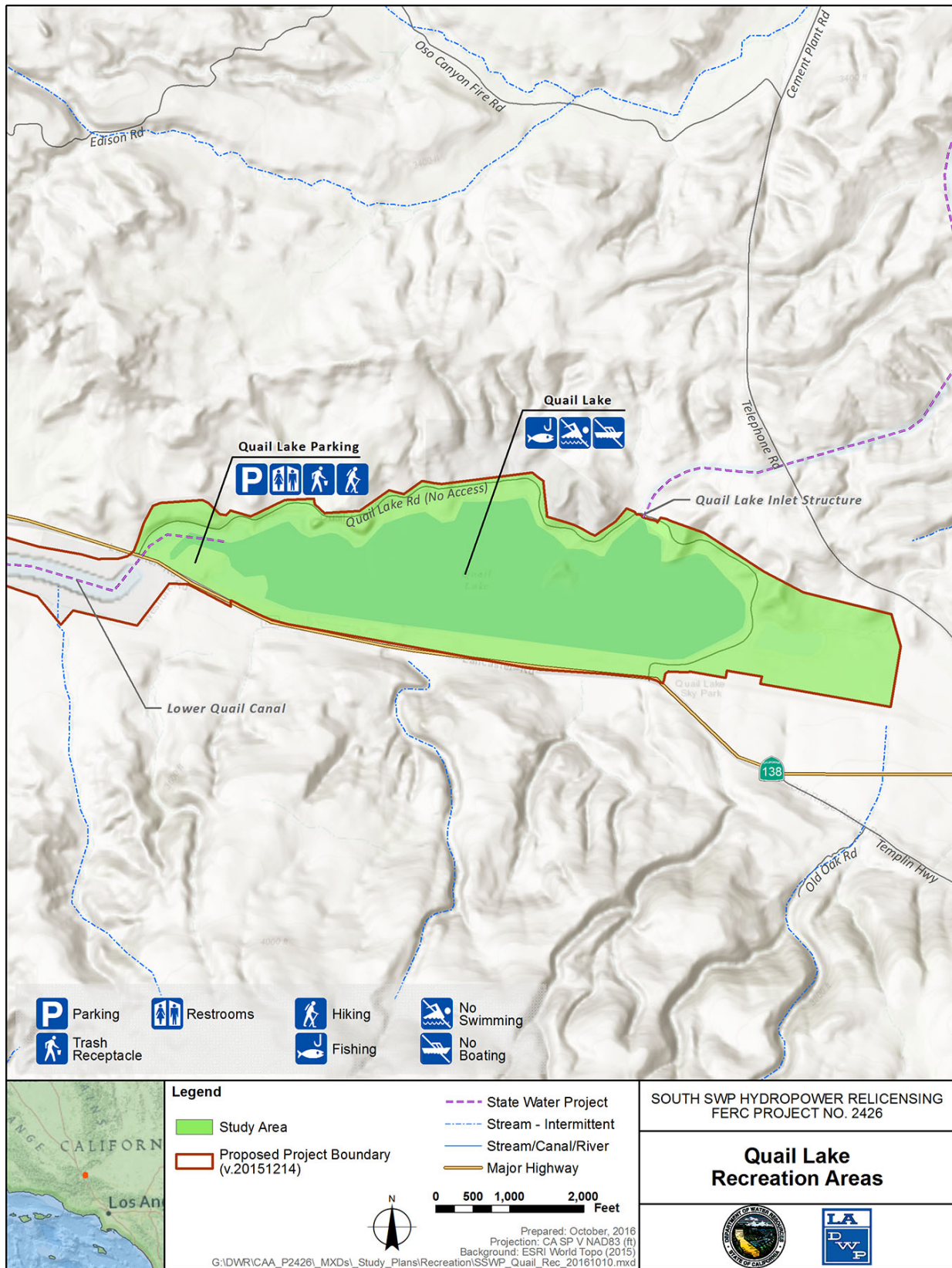


Figure 4.1-18. Quail Lake Recreation Areas

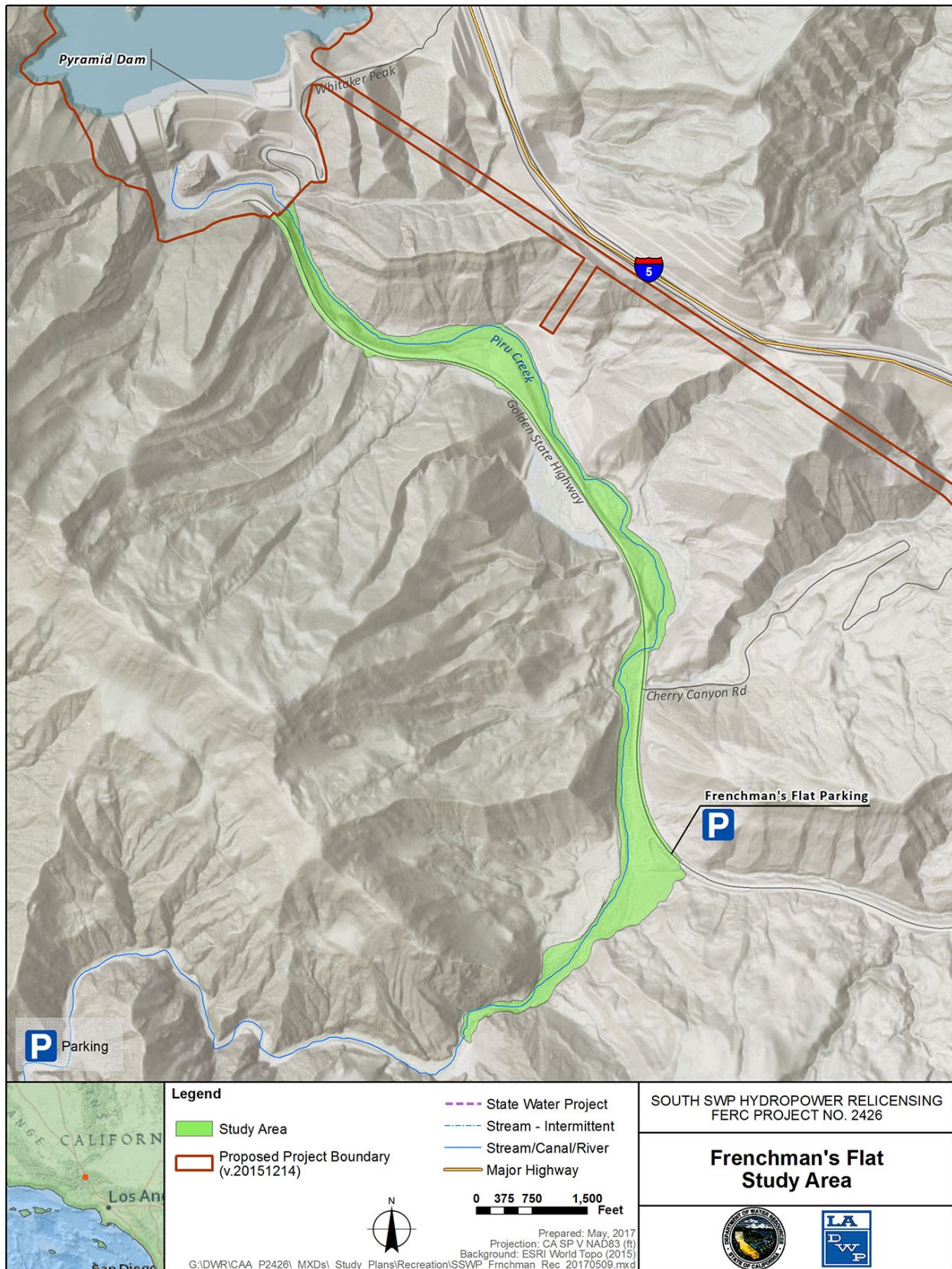


Figure 4.1-19. Frenchman's Flat Study Area

Methods

This *Recreation Study* has three components: (a) existing facility inventory, condition assessment, and carrying capacity analysis; (b) recreational facilities accessibility assessment; and (c) a recreation demand analysis.

Existing Facility Inventory, Condition Assessment, and Carrying Capacity Analysis

The Existing Facility Inventory, Condition Assessment, and Carrying Capacity Analysis portion of this *Recreation Study* will consist of three steps: (1) conduct site condition assessments; (2) field reconnaissance; and (3) carrying capacity analysis. These steps are described in more detail below.

Step 1 – Conduct Site Condition Assessments. This *Recreation Study* will inventory the number and type of components that are provided at the recreation facilities listed in Section 4.1.11.4 above, and will provide updated information with respect to what is described in the Project's *Updated Recreation Plan* (May 2016). The facility inventory and carrying capacity analysis will inform the demand analysis and will also evaluate the condition of each of the listed facilities.

The existing facility inventory will include assessments of parking areas, and the location and number of parking spaces, picnic and camping units, boat and trailer parking spaces, accessible parking spaces, and facility components. Trailheads and trails will be inventoried for signage, types of improvements, general widths, and general trail conditions. Trails will be mapped at 1:24,000-scale using the National Map Accuracy Standard of +/- 40 feet based on aerial imagery and existing GIS datasets.

Buildings within the *Recreation Study* area will be evaluated for accessibility, health and safety needs, and general energy efficiency (obvious insulation or air exchange issues, existing renewable energy, etc.). Table 4.1-10 lists the buildings that will be evaluated as part of this *Recreation Study*.

Table 4.1-10. Buildings Within the Recreation Study Area

Building ID	Building Name	Category	Building Type	Ownership	Square Feet	Year Constructed
A4010R1	Northshore Fishing Site	Service	Basic	National Forest (FS)	83	1986
A3017R	Bear Trap Boat In Site	Service	Basic	National Forest (FS)	55	1974
A3019ES	Emigrant Landing Entrance Station	Service	Complex	National Forest (FS)	267	1984
A3019K	Emigrant Landing Kiosk Building	Service	Complex	National Forest (FS)	110	1975
A3019A D	Emigrant Landing Office Building	Office	Complex	National Forest (FS)	1717	1984
A3019ST 1	Emigrant Landing Storage Building 1	Storage	Basic	National Forest (FS)	190	1984
A3019ST 2	Emigrant Landing Storage Building 2	Storage	Basic	National Forest (FS)	0	1975
A3019ST 3	Emigrant Landing Storage Building 3	Storage	Basic	National Forest (FS)	0	1975
A3019R8	Emigrant Landing Lower Parking Lot Restroom 8	Service	Complex	National Forest (FS)	480	2001
A3019R9	Emigrant Landing Lower Parking Lot Restroom 9	Service	Complex	National Forest (FS)	660	2001
A3019R1	Emigrant Landing Lower Parking Lot Restroom 1	Service	Complex	National Forest (FS)	395	1974
A3019R2	Emigrant Landing Lower Parking Lot Restroom 2	Service	Complex	National Forest (FS)	0	1974
A3019R3	Emigrant Landing Lower Parking Lot Restroom 3	Service	Complex	National Forest (FS)	0	1974
A3019R7	Emigrant Landing Restroom 7	Service	Complex	National Forest (FS)	120	1974
A3019R5	Emigrant Landing Upper Parking Lot Restroom 5	Service	Complex	National Forest (FS)	375	1974
A3019R6	Emigrant Landing Upper Parking Lot Restroom 6	Service	Complex	National Forest (FS)	375	1974
A3019R4	Emigrant Landing Upper Parking Lot Restroom 4	Service	Complex	National Forest (FS)	440	1974
A4032R	Fishermans Point Restroom	Service	Basic	National Forest (FS)	525	1995

Table 4.1-10. Buildings Within the Recreation Study Area

Building ID	Building Name	Category	Building Type	Ownership	Square Feet	Year Constructed
A4013R1	Lake Restroom 1 (floating)	Service	Basic	National Forest (FS)	154	1927
A3011R4	Los Alamos Campground 4	Service	Basic	National Forest (FS)	270	1973
A3011R1	Los Alamos Campground Restroom 1	Service	Basic	National Forest (FS)	270	1974
A3011R2	Los Alamos Campground Restroom 2	Service	Basic	National Forest (FS)	270	1974
A3011R3	Los Alamos Campground Restroom 3	Service	Basic	National Forest (FS)	270	1974
1697	Los Alamos Chlorine/Pump House	Industrial	Complex	National Forest (FS)	80	1983
2523	Los Alamos Gas House	Storage	Complex	National Forest (FS)	240	1983
A3020R1	Los Alamos Group Campground	Service	Basic	National Forest (FS)	270	1984
2340	Los Alamos Office / Garage	Storage	Complex	National Forest (FS)	2814	1983
A3035R1	Piru Ponds Interp. Site Restroom	Service	Basic	National Forest (FS)	47	1994
1692	Pyramid Lake Treatment	Industrial	Complex	National Forest (FS)	200	1974
A3018R	Serrano Boat In Site	Service	Basic	National Forest (FS)	55	1974
A3014R	Spanish Point Restroom	Service	Basic	National Forest (FS)	540	1973
A3034ES	Vaquero Entrance Station	Service	Complex	National Forest (FS)	96	1997
A3034R1	Vaquero Restroom	Service	Basic	National Forest (FS)	240	1997
A3034R2	Vaquero Restroom	Service	Basic	National Forest (FS)	240	1997
A3034ST	Vaquero Storage	Storage	Basic	National Forest (FS)	161	1997
A3015R	Yellow Bar Restroom	Service	Basic	National Forest (FS)	55	1974

Source: USFS Comments on PSP, April 2017, Engineering Study Request (Study 21)

Paved roads leading to the Project-related recreation amenities that are identified in Table 4.1-9 will be inventoried to document road surface and condition, pull-outs, intersections, and other information about any obvious road conditions or features. GPS data of the locations of road maintenance problems on these roads will be collected and photographs will be taken to show representative conditions and problem areas. The roads to be inventoried include segments identified by the USFS and recommended by FERC for inclusion listed in the June 14, 2017 Study Plan Determination:

ID	NAME	BEGIN_TERMINI	END_TERMINI	SEG_LENGTH	OBJECTIVE_MAINT_LEVEL
7N32	Los Alamos	East of Power Plant Bridge	Trailer Compound	3.15	4 - Moderate Degree of User Comfort
7N32A	Los Alamos C.G. System	7n32 (Sect. 17 of Quad 3)	Ent Dws Off Los Alamos Rd	0.77	5 - High Degree of User Comfort
7N26B0	Spanish Pt Rd	7n26	Interstate Hwy 5	0.4	1 - Basic Custodial Care (Closed)
6N20	Frenchman Flat Rd	Fh 57	Nw Sec 13	0.1	2 - High Clearance Vehicles
7N32A1	Los Alamos C.G. System Loop	7n32a	Campground Loop	0.38	5 - High Degree of User Comfort
7N27	Pyramid Lake Entrance/ Parking	Entrance Gate	Beach Area	0.75	5 - High Degree of User Comfort
7N32B	Los Alamos Work Center	7n32 (Sect. 17 of Quad 3)	Ent Off Los Alamos Rd	0.15	5 - High Degree of User Comfort
5N04K	Fisherman's Parking Area	5n04.1	Just South of The Dam	0.35	5 - High Degree of User Comfort
7N32A2	Los Alamos C.G. System Loop	7n32a	Campground Loop	0.35	5 - High Degree of User Comfort

Data collection of the physical conditions of buildings and roads will be performed using standardized data sheets that will be developed prior to study implementation and discussed with and reviewed by the Forest Service. GPS data will be collected with Esri Collector and the pre-approved data sheets will be loaded to the data collection device (iPad) prior to field data collection. This will assure geographic reference to the tabular data. The data sheets will also document whether the building is open to the public or supports the maintenance of a public recreation facility. Each inventory component will have its own data sheet within the Collector application.

Step 2 – Field Reconnaissance. The field reconnaissance will include a physical condition inspection of existing Project recreation facilities, designated Project trails, user-created trails, and general trail conditions. The reconnaissance will also identify observable use patterns and field verify if recreation amenities are constructed and in a condition that serves user needs with common access points and travel routes. Observable resource impacts at developed and dispersed user created Project recreational sites will be noted.

Field reconnaissance surveys to gather facility information at each of the recreation sites in the Pyramid Lake and Quail Lake areas will take several days. User created sites (sites that are frequented by recreation users but not identified as an established facility) will be identified for observable use and wear patterns.

The following steps will be taken to complete the facilities inventory:

1. Gather background data: Compile and map current facilities and upload data to GPS unit or GPS enabled application. Develop a data dictionary template for data collection to streamline collection methods, and create organization and consistency of collected data. Prepare field maps.
2. Orient the field crew with the study area for the *Recreation Study*, review field research techniques to ensure consistent inventory methods and coordinate logistics and field crew mobilization.
3. Complete reconnaissance level field research: Conduct fieldwork to create a detailed inventory on the conditions of existing recreation facilities and other user created sites within the study area for the *Recreation Study* with observable wear patterns.
4. Assemble the results and create maps of data collected in the field.
5. Prepare data and perform quality assurance.

Step 3 – Carrying Capacity Analysis. A component of the *Recreation Study* provides an overall assessment of the types and levels of recreational use in the study area for the *Recreation Study* to determine if use levels are compatible with the capacity of existing Project recreation facilities. Maintaining use levels within a recreation site's capacity is important in terms of protecting natural, cultural, and recreation resources, as well as helping to assure public safety, providing predictability and helping to assess management alternatives.

Recreation carrying capacity can be evaluated by considering several factors together to estimate a level of use beyond which impacts exceed common recreation industry and Forest Service standards. Three types of capacity will be evaluated: (1) biophysical/ecological; (2) social; and (3) physical/spatial aspects including management components. These primarily qualitative analyses focus on the capacity of existing developed recreation facilities in the study area for the *Recreation Study*. To develop capacity conclusions, this assessment will evaluate each developed site with respect to:

- Biophysical/Ecological Capacity – Relative impacts on the ecosystem, such as impacts to wetlands or riparian communities, observed soil erosion, vegetation damage, and observed trash accumulation and sanitary problems, among others. By design, developed/hardened recreation sites typically have fewer ecological

concerns compared to dispersed use areas. The relative level of this factor can be noted and elaborated on in the condition assessment component.

- Social Capacity – Reported social impacts of recent and past visitor’s recreation experience, such as perceived crowding, actual and/or perceived conflict, and overall satisfaction.
- Physical/Spatial Capacity – Identification of the number of units from the inventory component combined with recreation management considerations (including law enforcement) that will inform physical capacity (the number of people who can typically use a site at one time), and include a spatial capacity component. The Licensees will evaluate the general ability to enhance a site through new amenities or enlarge the site beyond its existing boundaries, including aspects related to law enforcement, visitor safety, and others.

The concept of recreation carrying capacity was originally developed out of biological models that attempted to determine the capability of a given environment (e.g., range, pasture) to sustain a specific number of animals over time. While density-related information is an important factor in capacity, in actuality, many management issues regarding recreation carrying capacity decision-making are not necessarily density dependent. Rather, recreation carrying capacity issues are also related to the ecological, social, and managerial aspects of recreational opportunities.

The full suite of recreation carrying capacity types will be assessed at each developed recreation site in the study. For each developed site in the study area for the *Recreation Study*, qualitative and quantitative data will be used to identify ecological, social, and/or management capacity impacts and establish an existing capacity parameter (expressed in qualitative terms including “below,” “approaching,” “at,” or “exceeding” capacity). Additionally, where appropriate, any primary limiting factors for each site will be noted.

The Carrying Capacity Analysis methods will include:

- Utilize physical information from the site assessments and field reconnaissance.
- Gather Form 80 data
- Gather visitation data from concessionaire
- Use visitor questionnaire and interviews (from the demand analysis described in Section 3.1.4.7) to gather information about social capacity and perceived crowding
- Interviews with recreation providers and law enforcement officials to gather information about use levels, user patterns, and issues related to law enforcement and road traffic considerations including any parking concerns,

traffic management and periodic road backups outside of entry points. Concerns related to existing levels of peak use will be documented during these interviews.

- Use information developed by other studies to understand other potential constraints around the immediate area (e.g. biological, cultural, etc.).
- Combine quantitative information on physical capacity, user data with management information and more qualitative information regarding user needs to establish an existing capacity parameter for each developed site.

Existing Facility Accessibility Assessment

Project-related recreation facilities (see Section 4.1.11.4 above) and signs at Project-related recreation facilities will be assessed for applicable accessibility requirements. Evaluating outdoor recreation facilities per the ABAAS, the FSORAG, and the FSTAG will be a common technique to establish the level of accessibility at the recreation facilities, most of which are on Federal lands.

The facility inventory assessment and facility accessibility assessment field work will be completed concurrently. Information will be collected using digital technology. A GPS unit or tablet GPS application will be used to gather facility information that has been pre-loaded with all known existing features. A data dictionary designed to provide an inventory on existing conditions of all recreation facilities within the *Recreation Study* area will be created and used to maintain consistency and organization of data collected. The condition assessment will be qualitative based on a range of repair/replacement/ maintenance needs to acceptable appearance and function to evaluate the condition of recreation facilities. Travel routes within and between recreation areas will be evaluated to determine how well they meet the U.S. Access Board criteria for Outdoor Recreation Access Routes. Photos will be taken of facilities, signs, trailheads, etc. and cataloged based on feature type or location. Other user created sites with observable wear patterns within the *Recreation Study* area will also be cataloged for further evaluation within the *Recreation Study*.

The USFS Accessibility Database will be checked prior to conducting field reconnaissance for any existing accessibility data that has been previously collected within the proposed Project boundary.

Recreation Demand Component

The Recreation Demand Component of this *Recreation Study* will consist of 6 steps: (1) observational survey; (2) visitor use questionnaire; (3) review of research publications and existing information; (4) assessment of regional uniqueness and significance of the primary recreation opportunities within the *Recreation Study* area; (5) interviews with user groups and recreation providers; and (6) a regional demand assessment. The steps are described in more detail below.

Step 1 – Observational Survey. Observed recreation use occurring in the *Recreation Study* area based on observational surveys will be used to estimate existing use. The observational surveys will be conducted during at least three different use periods (weekday, weekend and holiday weekend/or opening of fishing season) spread evenly across the March – October recreation season with each facility being visited twice in a survey day, morning and afternoon. Surveys will be conducted at the following facilities).

- Emigrant Landing Boat Launch
- Emigrant Landing Swim and Picnic Area
- Emigrant Landing Picnic and Fishing Area No. 1
- Emigrant Landing Picnic and Fishing Area No. 2
- Vista Del Lago Visitor Center
- Vaquero Day Use Area
- Quail Lake access point (parking, temporary restrooms, shoreline fishing)
- Los Alamos Campground and Group Campground
- Frenchman’s Flat Day Use Area

The observation data that will be recorded includes but is not limited to vehicle counts, vehicle, boat ramp or other observed facility crowding or line ups, angler counts, boat counts, trail user counts, campground usage, and day use area usage. Observational count data sheets will be provided to the Forest Service for review, discussion and comment at least 30 days prior to submitting final forms to the Commission for approval.

Step 2 – Visitor Use Questionnaire. A concise visitor use and experience questionnaire will be fielded at Emigrant Landing, Vista Del Lago, Los Alamos Campground, Frenchman’s Flat day use area, and Quail Lake recreation sites where people are present. Survey instruments will include the questions from the 2005 satisfaction “gold” form from the U.S. Forest Service National Visitor Use Monitoring (NVUM) program. Survey staff will perform surveys at each location in the morning and afternoon, for up to two hours per visit. The survey will be conducted at least three times; once on a mid-summer weekday, once on a holiday weekend and once on a typical summer weekend. The survey form will be available in English, Spanish and Mandarin Chinese languages and bi-lingual Spanish/English and Mandarin/English speaking staff (if possible) will be available to assist with obtaining participant input from recreationists and visitors. A review of past visitor data will be assessed to determine appropriateness of target survey dates with considerations for current season use patterns and any potential unexpected conditions considered. The questionnaire will be crafted to collect information from recreationists about recreation, activity participation, accessibility

needs, areas visited, group size, user conflicts, perceived crowding, visitor profile (i.e., male/female, age, race) and preferences, visual impressions, and satisfaction with or desire for recreational opportunities and facilities in the *Recreation Study* area.

The questionnaire and sampling plan will be developed to attempt to account for all types of users including those who frequent remote boat-in sites. It will also include a question or series of questions relating to visitor's perceptions of safety while recreating in the *Recreation Study* area. Additionally, as recommended by FERC in its study plan determination, the survey instrument will include a question (or questions) that will attempt to assess the level of demand for riverine camping experiences similar to those previously offered at Hardluck Campground. The visitor use questionnaire survey instrument, the interview sampling schedule, and description of the targeted number of interview responses will be provided to the Forest Service for review, discussion and comment at least 30 days prior to submitting final forms to the Commission for approval. The questionnaire will provide an opportunity for visitors to express any potential concerns over the current state of, and future possibilities for recreation in the *Recreation Study* area.

Step 3 – Review of Research Publications and Existing Information. Recent relevant California-based user preference surveys and other outdoor recreation surveys about recreation demand will be gathered and reviewed. These reviews include but are not limited to the 2007 California Outdoor Recreation Survey and 2012 *Survey of Public Opinions and Attitudes on Outdoor Recreation in California*, as well as more current surveys that analyze the project outdoor recreation participation rates and growth trends in the greater Los Angeles area to help address how the Project recreation facilities are helping to meet demands of the greater area. Demand and user preference studies at various scales, covering California, but especially those addressing southern California, will be reviewed for their applicability to the *Recreation Study* area. Recreation activity and participation trends information will be examined from the existing demand studies and reports, as well as USFS reports, FERC Form 80 filings, and data collected by the Licensees.

Existing use data of recreation occurring in the *Recreation Study* area from current and previous concessionaires will be collected for use in the regional demand assessment.

Step 4 – Assessment of Regional Uniqueness and Significance of the Primary Recreation Opportunities within the Recreation Study Area. Regional uniqueness and significance of the *Recreation Study* area's primary recreation opportunities will be evaluated. Site specific factors that contribute to the uniqueness of the *Recreation Study* area can inform the demand analysis and needs assessment. Within the region of the area generally covered by the ANF and LPNF, an inventory of water based recreation facilities will be compiled using Forest Planning and other recreation planning documents. The strategies, goals, and objectives established in the LMP will be reviewed to guide the assessment. Where available, information will be gathered for sites including types of designation, types of recreation opportunities available, visitation statistics (including information on visitor's origin), and general popularity for regional

outdoor recreation areas. NVUM results (from the visitor use questionnaire) and methods will be used to establish user patterns in the National Forest to further inform the assessment.

Step 5 – Interviews with User Groups and Recreation Providers. Interviews will be conducted with a variety of identified regional and local recreation providers and user groups associated with recreation in the *Recreation Study* area and in the Project vicinity. These entities, where willing, will then be interviewed to gather additional information on current use, user preferences and needs, perceived regional uniqueness and significance of recreation opportunities within the *Recreation Study* area, existing data, demand for riverine camping experiences similar to those lost during the closure of Hardluck Campground, and observations in the *Recreation Study* area for both existing and potential future users.

Structured interviews with recreation providers and user groups will include Rocky Mountain Recreation Company, local recreation user groups (including those representing anglers, people with accessibility needs, mountain bikers, and hikers), boating vendors, rental agencies, and local landowners. In addition, an attempt will be made to interview the former concessionaire for Pyramid Lake, Parks Management Company. Some of these interviews will be done as focus group sessions where applicable. Interviews will also be conducted with key recreation management personnel, such as law enforcement officers, USFS personnel, police and fire prevention officials, and others that are closely associated with management or participation in recreation activities in the region. The interviews will provide an opportunity for representatives to provide any additional information on current or projected future recreational use within the *Recreation Study* area.

Step 6 – Regional Demand Assessment. The recreation demand analysis will compare demand with the existing supply of recreation opportunities and use patterns. This study will attempt to project recreation use and demand within the *Recreation Study* area through the term of the new license. This projection will be made using projected growth rates of the *Recreation Study* area's primary activities, projected growth rates of populations of the South Coast counties from which most of the *Recreation Study* area visitors originate, and historical trends of existing recreation use within the *Recreation Study* area. A gap analysis will be performed by comparing relative demand to supply, with consideration for trends and cultural variations in user groups based on research and forecasts of population growth. By comparing this information to a detailed inventory of existing recreation opportunities and utilizing information gathered in the observational surveys, visitor use questionnaires, carrying capacity assessment, structured interviews, and focus groups, it will be possible to determine whether there is a need for modifications to existing facilities or for the development of additional facilities and recreation amenities.

Quality Assurance and Quality Control

Field data will be collected in a manner that promotes high quality results and shall be subject to appropriate QA/QC procedures. Utilizing a small field crew for the existing facilities inventory and condition assessment (approximately 4 people each day) that work together will eliminate potential errors in data collection. All GIS data used in the field will be verified prior to the start of the field survey and field checked for accuracy and completeness. Existing recreation facilities that will be included in the reconnaissance field survey are those included in Tables 2b and 2c of the *Updated Recreation Plan* (May 2016) for South SWP Hydropower FERC Project No. 2426. These tables are comprised of recreation amenities within the *Recreation Study* area as defined in the FERC issued document, *Project Recreation Facilities Tables, and As-Built Site Plan Drawing Guidance* (July 2014).

Analysis

The information gathered by the *Recreation Study* will be evaluated and compared to what is described in the *Updated Recreation Plan* (May 2016). The information will assess the suitability of facilities in terms of meeting the changing needs of recreation users in the *Recreation Study* area. The analysis will include developing existing and projected visitor-use estimates, along with existing and projected demand (including unmet demand) for recreational opportunities and the *Recreation Study* sites listed in section 4.1.11.4 above. The facility inventory assessment data collected will be analyzed to identify short- and long-term improvements needs over the term of the new license. For example, the Existing Facility Accessibility Assessment will be analyzed to determine if potential improvements to existing facilities are needed to improve barrier-free opportunities and if there are opportunities to better conform to current accessibility standards. The Recreation Demand Analysis will provide relevant information about user preferences and needs as related to recreation facilities provided by the Project.

Reporting

Recreation Study results, as well as other existing and relevant information will be included, to the extent completed and ready for inclusion, in the Licensees' ISR, USR, DLA, and FLA.

Consistency of Methodology with Generally Accepted Scientific Practices

An inventory of recreation opportunities and facilities, and using existing and collected information during a site visit, is consistent with generally accepted practices employed during hydropower relicensing proceedings in California including Bucks Creek (FERC Project No. 619) and Southern California Edison's Big Creek Hydroelectric Project (FERC Project No. 2175). Evaluating outdoor recreation facilities per the Architectural Barriers Act Accessibility Guidelines is a common technique to establish the level of accessibility at outdoor recreation areas and recreation facilities on NFS lands.

4.1.11.5 Schedule

The *Recreation Study* will begin after FERC issues its Study Plan Determination. The Licensees anticipate the schedule below will be followed to complete the *Recreation Study*.

Fieldwork Preparation	August – October 2017
Fieldwork	March – October 2018
Data QA/QC Review	March 2018 – February 2019
Data Analysis and Reporting	February 2018 – June 2019

4.1.11.6 Level of Effort and Cost

Based on the work effort described above, the Licensees estimate the current cost to complete this *Recreation Study* will range between \$460,000 and \$630,000.

4.1.11.7 References

DWR. 2016. Updated Recreation Plan. South SWP Hydropower. FERC Project No. 2426

DWR. 2010. The Quagga and Zebra Mussel Rapid Response Plan for the State Water Project. 93 pp. CONFIDENTIAL/PRIVILEGED – Not for Public Distribution.

FERC. 2014. Project Recreation Facilities Tables, and As-Built Site Plan Drawing Guidance.

United States Access Board. Architectural Barriers Act Standards Chapter 10: Recreation Facilities. <<https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-aba-standards/aba-standards/chapter-10-recreation-facilities>>

USFS. Accessibility documents: Forest Service Outdoor Recreation Accessibility Guidelines and Forest Service Trail Accessibility Guidelines. <<http://www.fs.fed.us/recreation/programs/accessibility/>>