

RECLAMATION

Managing Water in the West

Draft Final Conceptual Site Plans Report

Lake Berryessa Concession Concept Plans

Napa County, California



U.S. Department of the Interior
Bureau of Reclamation
Sacramento, California

May 2014

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Lake Berryessa Concession Concept Plans

Draft Final Conceptual Site Plans Report
Napa County, California

Prepared by

**United States Department of the Interior
Bureau of Reclamation
Mid Pacific Region, Central California Area Of**



**U.S. Department of the Interior
Bureau of Reclamation
Sacramento, California**

May 2014

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Abbreviations and Acronyms

Ft	Feet
In	Inches
L	Liter
LBSTMP	Lake Berryessa Shoreline Trail Management Plan
LDGMBF	Layout & Design Guidelines for Marina Berthing Facilities
MG	Million gallons
MSL	Mean Sea Level
NCZCO	Napa County Zoning Code of Ordinances
PG&E	Pacific Gas and Electric
RRFDG	Reclamation's Recreation Facility Design Guidelines
Reclamation	Bureau of Reclamation
ROD	Record of Decision
RV	Recreational Vehicle
SRAFSR	SRA Fire Safe Regulations
SWC	Stormwater Control Area
USGS	United States Geological Survey
VSP	Visitors Service Plan

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Chapter 1

Introduction

The Department of the Interior Bureau of Reclamation (Reclamation) is undertaking the Lake Berryessa Concession Concepts Project to assess the market demand and future needs for outdoor recreation at Lake Berryessa. The goal is to assess market demand for recreation at Lake Berryessa, develop conceptual site design layouts of facilities with associated infrastructure to a 30 percent design level, and evaluate the financial feasibility of the proposed facilities and services. This project, combined with Reclamation's other commercial service planning efforts at Lake Berryessa, will culminate in the development and management of necessary and appropriate long-term recreation facilities and services at Lake Berryessa.

1.1 Lake Berryessa

Lake Berryessa is part of the Solano Project, a federal water project owned by Reclamation, which provides municipal and irrigation water to Solano County. The reservoir is also used for flood control, hydropower, fish and wildlife, and recreation. Lake Berryessa is in Napa County, 70 miles northeast of San Francisco, 65 miles west of Sacramento, and approximately 20 miles from the center of Napa Valley's wine country. Five existing recreation areas are the subject of this project:

- Putah Canyon
- Monticello Shores
- Berryessa Point
- Spanish Flat
- Steele Canyon

Figure 1-1 shows the location of the recreation areas at Lake Berryessa.

Lake Berryessa Concession Concept Plans
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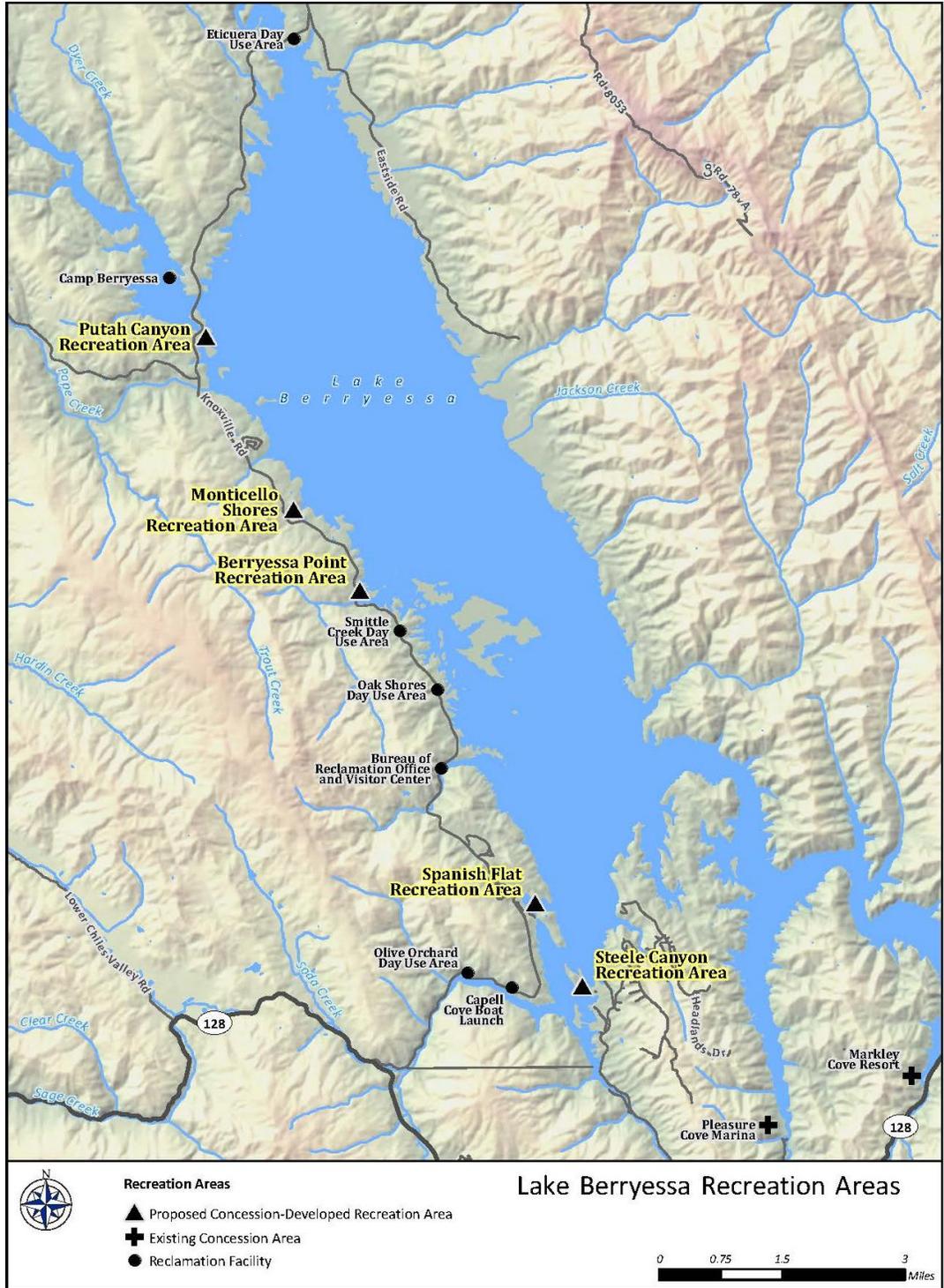


Figure 1-1. Lake Berryessa Recreation Areas

1.2 Conceptual Site Plans Scope

The scope of the Conceptual Site Plans task focuses on site layouts for the proposed recreation services and facilities. The history of land development at Lake Berryessa, including footprints of previously developed improvements related to recreation, and other studies including environmental issues and trail management plans, have been incorporated into the site planning process.

Development of the site plans is based on a market assessment of anticipated future demands for outdoor recreation facilities, and field observations during site visits by Reclamation staff and others. Each site has been analyzed for its potential to accommodate the types and quantities of desired facilities. Initially, the site planning scope included analyzing the unique landscape features of each site such as existing built conditions, variable topography, flood concerns, access issues, drainage and erosion, vegetation and views, plus gaining an understanding of the landscape's ability to provide water and handle wastewater. Using this base information, the overall goal of the site design plans is to ultimately achieve a balance between long term demands for recreation facilities, and preserving and promoting the special landscape character and environmental qualities that make the Lake Berryessa region a unique place to visit and enjoy.

The conceptual site plans were designed following Reclamation's Recreation Facility Design Guidelines (RRFDG) (April 2013), the Future Recreation Use and Operations of Lake Berryessa Record of Decision (ROD) (June 2006), and other design guidelines and standards as identified in Chapter 3.

The concept site plans will be incorporated into the Request for Proposal/Prospectus for concessionaires for recreation area development at Lake Berryessa. The Prospectus will include required services and a list of authorized services. Required services are facilities, services and activities that the concessionaire will be required to offer; these services are not optional and must be provided. Authorized services are facilities, services and activities that the concessionaire can choose to offer. Any services not included in either category is not allowed without a contract amendment or written authorization from Reclamation.

1.3 Relationship to Market Assessment

The Market Assessment provided the starting point for the site plan design. Development of the site plans used the recreation services and facilities in the Market Assessment as the basis of the site planning and design process for each of the five recreation areas. The Market Assessment lists proposed quantities of services and facilities to meet unmet future demand at Lake Berryessa; and, the site designs attempt to locate, arrange, layout, and fit the services and facilities into the landscape of each recreation area property.

The Market Assessment focuses on the demand for recreation facilities. However, the site planning and design process begins to highlight other items and conditions that are not necessarily driven by the market. These are items such as site access, parking, circulation, and the handling of stormwater, potable water and wastewater, plus site environmental, management and safety concerns. Other legal and long-term planning concerns such as right-of-way and easement issues, trail connections, stormwater quantity, environmental review matters, and other important topics that are not ‘market-driven’ factors start to become incorporated, and are reflected in, the site planning and design process.

1.4 Relationship to Financial Feasibility Evaluation

The financial feasibility evaluation is the next step in the concession concept planning process. The financial evaluation compares capital costs, operating expenses, and revenues to determine the financial viability of the proposed recreation areas. The site plans quantify the recreation services and facilities that can fit at each recreation area given the areas boundary and topography. These quantities are inputs into the financial feasibility evaluation. The site plans, in addition to the infrastructure designs, also provide the information needed to estimate construction costs of the recreation developments. These costs are also incorporated into the financial feasibility evaluation. The results of the financial feasibility evaluation are used to adjust the site plans to identify financially viable services and facilities at each recreation area.

1.5 Report Organization

This report is organized into the following chapters:

- Chapter 1 Introduction
- Chapter 2 Proposed Facilities and Services
- Chapter 3 Site Design Guidelines and Considerations
- Chapter 4 Conceptual Site Plans
- Chapter 5 Conclusions and Next Steps
- Appendix A Conceptual Site Plan Drawings
- Appendix B RRFDG Figures

Chapter 2

Proposed Facilities and Services

This chapter defines the overall required and authorized facilities and services to be provided at Lake Berryessa. Chapter 4 lists the quantities of required and authorized facilities and services at each site. This chapter defines what the facilities are and any assumptions related to their conceptual plan. For the most part, these definitions and features do not change regardless of which recreation area the facility or service is located. Chapter 4 identifies any exceptions to this by recreation area.

2.1 Proposed Facilities and Services

Table 2-1 lists and defines the types of facilities and services recommended at Lake Berryessa. The required and authorized facilities and services are identified by recreation area in Chapter 4 and shown on the conceptual site layouts for each recreation area in Appendix A. All services must meet accessibility requirements.

Table 2-1. Description of Facilities and Services to be Provided at Lake Berryessa Recreation Areas

Facility/Service	Description
Camping	
Tent Site	Tent only sites are required to have a picnic table and fire pit. A tent site can be with or without a 12-ft x 12-ft elevated (max 18-in) level pad. All tent sites are spaced a minimum of 75-ft apart as measured between living areas. A parking space and water spigot are nearby. <i>Authorized services</i> include 1 parking space at the tent sites.
Overnight Group Use Area	Area identified for temporary clustered tent only sites with a central group area with several picnic tables and fire pits. Size varies to accommodate 20-50 people. Parking is nearby. <i>Authorized services</i> include an upright barbeque (BBQ) and an additional parking space.
RV Site	RV sites are required to have a picnic table and fire pit, and are required to have water, sewer, and electric hook ups. Sites are typically 1,800 to 2,200 square ft for most RV parking spaces and 2,800 to 3,200 square ft for larger accessible double unit RV parking spaces. See Figures B-1 and B-4 per RRFDG (see Appendix B). <i>Authorized services</i> include an upright BBQ.

Table 2-1. Description of Facilities and Services to be Provided at Lake Berryessa Recreation Areas

Facility/Service	Description
Standard Site	<p>Standard sites can serve tents, vehicles with trailers, or RVs and are required to have the following: a picnic table, a fire pit, parking for one trailer and car. Sites can be pull-through or back in. Water, sewer, and electric hook ups are required at some standard sites, as shown on the site plans. Sites are typically 1,800 to 2,200 square ft for most combined trailer/tent site parking spaces and 2,800 to 3,200 square ft for larger accessible double unit combined trailer/tent site parking spaces and generally 100-ft long x about 30-ft wide for pull-through campsite parking spaces. See Figures B-5 and B-6 per RRFDG (see Appendix B). Water spigot is nearby.</p> <p><i>Authorized services include utility hookups for all standard sites and an upright BBQ.</i></p>
Hike-in/Boat-in Tent Only Site <i>(Authorized Service Only)</i>	<p>Tent-only sites accessible only via hiking or boat-in. Each site includes a picnic table and fire pit. Sites are typically 100-ft apart. Water spigot nearby. No designated parking space. Sites are near the shoreline where boat can be anchored to a mooring.</p>
Floating Campsite <i>(Authorized Service Only)</i>	<p>Campsites on water spaced about 400-ft apart. These sites accommodate up to 15 people and have a table, propane barbecue grill, food locker, accessible restroom, covered living area and an upper sun deck/sleeping area with room for tents. Typically 20x24 ft. Drinking water must be brought in by visitors.</p>
Lodging	
Cabins	<p>Overnight structure, constructed on-site, set on a foundation or otherwise permanently placed. Site about 2,500 square ft or more. Cabins are above the 455 ft contour.</p> <p>Cabin includes restroom, sink, stove, table, sitting area, and one or two beds. Daily housekeeping service is provided. Required units sleep up to 4 adults. Picnic table and fire pit are located outside. Includes water, sewer, and electric hookups and one parking space.</p> <p><i>Authorized services include an additional parking space, upright BBQ, additional furniture and amenities, or larger cabins that sleep more.</i></p>
Park Models	<p>Movable structure designed for long-term or semi-permanent placement. Since they are movable, they are typically located in areas between the 440 and 455 ft contours, and in the 100-ft buffer zone above the 455 ft contour. Park models must remain under 400 square ft for transport and to be defined as a recreation vehicle, not a manufactured home. Site is about 2,500 square ft or more.</p> <p>Park model includes restroom, sink, stove, table, sitting area, and one or two beds. Daily housekeeping service is provided. Required units sleep up to 4 adults. Picnic table and fire pit are located outside. Includes water, sewer, and electric hookups and one parking space.</p> <p><i>Authorized services include an additional parking space, upright BBQ, additional furniture and amenities, or larger park models that sleep more above the 455 ft contour.</i></p>

Table 2-1. Description of Facilities and Services to be Provided at Lake Berryessa Recreation Areas

Facility/Service	Description
Yurts	<p>Round, semi-permanent, tent-like structure. Consists of a durable fabric, tension band, and a wood frame set upon a platform. Site about 2,500 square ft or more. Yurts are movable structures and can be below the 455 ft contour. Yurts include basic furniture, including cots or bunk beds, shelf with drawers, table, and couch. Housekeeping is not provided as a daily service. Picnic table and firepit are located outside. Sleeps up to 4 adults. No sewer, water, or electric hookups. Water spigot and comfort stations nearby. One required parking space is located near the structure.</p> <p><i>Authorized services</i> include an additional parking space, upright BBQ, additional furniture and amenities, housekeeping service, and water, sewer, and electric hookups.</p>
Rustic Cabins	<p>Constructed on-site, set on a foundation or otherwise permanently placed. Site about 2,500 square ft or more. Rustic cabins are above the 455 ft contour. Includes cots or bunk beds and a shelf for some storage. Housekeeping is not provided as a daily service. Sleeps up to 4 adults. Picnic table and firepit located outside. No sewer, water, or electric hookups. Water spigot and comfort stations nearby. One required parking space is located near the structure.</p> <p><i>Authorized services</i> include an additional parking space and upright BBQ.</p>
Tent Cabins	<p>Constructed of wood and canvas. Site about 2,500 square ft or more. Tent cabins are above the 455 ft contour. Includes cots or bunk beds. Picnic table and firepit located outside. Sleeps up to 4 adults. No sewer, water, or electric. Water spigot and comfort stations nearby. One required parking space is located near the structure.</p> <p><i>Authorized services</i> include an additional parking space and upright BBQ.</p>
Boating	
Marina	<p>Marina building includes cashier with service desk, waiting area with benches and tables, and restrooms. The marina building can be constructed on ground or be floating. The marina building can be combined with a restaurant and retail sales. If on ground, accessibility can be provided by a lift service. An accessible 12 ft wide gangway is an <i>authorized service</i>. Per the LDGMGF, the parking requirement is 0.6 parking spaces per boat slip. The marina parking lot is close to the marina building.</p> <p>Marina building and services are required at Putah Canyon, Steele Canyon, and Spanish Flat. Marina is an <i>authorized service</i> at Monticello Shores and Berryessa Point.</p> <p>At Putah Canyon, the marina is a 1,200-square ft floating marina and is combined with the required restaurant and retail service.</p> <p>At Steele Canyon the marina building is on ground and combined with the required retail service in a 3,150-square ft building.</p>
Primary and Secondary Boat Docks	<p>The primary dock is a 12-ft wide dock from the marina to the secondary docks with the individual boat slips. The secondary docks are less than 300 ft long and are 8-ft wide. The boat slips are accessed from the secondary docks.</p>

Table 2-1. Description of Facilities and Services to be Provided at Lake Berryessa Recreation Areas

Facility/Service	Description
Boat Slip	Boat slips are uncovered and accommodate various sizes of boats for both private boats and boat rentals. Each slip is off of an 8-ft wide secondary dock or the 12-ft wide primary dock. The finger floats of the boat slips are 2-ft wide and are 20-ft long for standard boats and 40-ft long for houseboats. The slips are located assuming a reservoir low water elevation of 400 ft so that a minimum water depth of 9-ft remains underneath each slip during low water conditions per RRFDG Chapter III Section H.1.a. <i>Authorized services</i> include covered boat slips and water spigots at each boat slip.
Boat Rental	Boat rental service desk is located in the marina building or in a small structure near the boat ramp, depending on the type of boats or watercraft available for rent. Boat rentals are a required service at Putah Canyon, Monticello Shores, Spanish Flat, and Steele Canyon. Fuel storage and dispenser are a required service where boat rentals are available. <i>Authorized services</i> include additional kayaks, canoes, paddle boats, and paddle boards.
Boat Launch, Vehicle and Boat Trailer Parking and Kiosk	Boat launches are single or multi-lane with courtesy docks per two lanes. Boat launch ramps are required at all five recreation areas and in the same locations as existing launches. Each lane is 15-ft wide minimum. Information kiosk, fish cleaning station, and a comfort station are located nearby. Boat trailer parking lots have 30-ft wide two-way access on either side of parking spaces. Parking spaces are 12-ft wide x 55-ft long minimum for cars with trailers. Majority of boat trailer parking is within 600-ft of top of launching ramp. For information kiosk; see Figure A-4 per RRFDG (see Appendix B). An <i>authorized service</i> is an extension of the boat launch at Spanish Flat to accommodate lower water levels.
Fish Cleaning Station	Includes a 20-ft x 20-ft roof for shade and shelter, a pre-manufactured 96-in x 60-in cutting table with sink and pre-rinse water supply, electrical service for lights and outlets for automatic cutting utensils, and automatic disposer leading to a sewer connection for fish carcasses. Table is positioned in the center of a 22-ft x 22-ft concrete pad with 5-ft clear accessible space provided all around the table.
Courtesy dock	Movable dock, typically 6-ft wide x 50-ft long that is part of a boat launch ramp for loading and unloading, and to mark launching lanes on the ramp.
Boat Exclusion Area	Buoys are used to identify areas where boaters are prohibited from entering.
Day Use	
Individual Day Use Site	Individual site with a picnic table and upright BBQ. A parking lot is nearby to service multiple individual day use sites. Comfort station and water spigot are nearby.
Group Day Use Area	Large sites, typically with a group shelter with multiple picnic tables, table and sink, and a larger upright BBQ to accommodate groups of 20 or 50 people. Includes water hookup.
Playground	Site includes varied children's playground equipment with safety surfacing. Playground area and infrastructure are accessible.
Open Space/Recreation Area	Open area near an accessible playground that generally includes various recreation options, such as recreation courts, bocce ball, tennis, basketball, or volleyball.
Trail Connection	A trail connection is an identified location where trails are anticipated to eventually connect. There is a sign and parking nearby.

Table 2-1. Description of Facilities and Services to be Provided at Lake Berryessa Recreation Areas

Facility/Service	Description
Multi-Use Special Events Center <i>(Authorized Service Only)</i>	Large building for special day-use events, such as seminars, conferences, school group gatherings, reunions, weddings, retreats, etc. Includes central reception area, kitchen, restrooms, storage room, and additional small conference rooms. Assumes total occupancy for approximately 100 people and parking for approximately 50 cars (NCZCO requires 0.5 parking spaces per person for 'conference center'). Approximately 3,050 square ft.
Lake	
Lake Access	Area where campers and day users can access the lake.
Amenities	
Restaurant	<p>Restaurant services are required at Putah Canyon and Steele Canyon and authorized at Monticello Shores, Berryessa Point, and Spanish Flat. Restaurants may offer varying levels of food service, such as sit-down/full service or fast-casual/take-out, such as a sandwich counter, small café, or grill. Full-service restaurant sizes may vary and serve up to 40 customers. Serving beer, wine, and/or liquor is an <i>authorized service</i>.</p> <p>At Putah Canyon, the required restaurant is in the floating marina and is a take-out counter with sandwiches, salads, or other café items. An <i>authorized</i> use is seasonal operation of the restaurant.</p> <p>At Steele Canyon, the required restaurant is separate from the marina building and assumes about 20 customers at 2,592-square ft. Additional seating can be located outside on a deck. About 22 parking spaces are needed per NCZCO requirements of 1 parking space per 120-square ft of building.</p> <p>At Monticello Shores, Berryessa Point, and Spanish Flat, the <i>authorized</i> restaurant is a take-out sandwich shop/grill in a separate building or located in the marina service building that can be operated seasonally or year-round.</p>
Retail Store	<p>Retail building and service selling food snacks, ice, beverages, recreation supplies, wood, or other items for camping and boating activities. Retail can be combined with the marina building or a restaurant.</p> <p>At Putah Canyon, the retail store is combined with the marina portion of the building, and assumes about 30% of the 1,200 square ft structure. About 1-2 parking spaces are needed per NCZCO requirements of 1 parking space per 250-square ft of retail.</p> <p>At Steele Canyon, the retail store is combined with the marina building, and assumes about 30% of the 3,150-square ft structure. About 4 parking spaces are needed per NCZCO requirements of 1 parking space per 250-square ft of retail.</p> <p>Retail is an <i>authorized service</i> at Monticello Shores, Berryessa Point, and Spanish Flat.</p>

Table 2-1. Description of Facilities and Services to be Provided at Lake Berryessa Recreation Areas

Facility/Service	Description
Facilities/ Infrastructure	
Entry Station	Small building located at vehicle entrance to recreation area for visitor registration, fee collection, etc. At least 2 entry lanes and one exit lane. Setback a minimum of 150-ft. off Knoxville Road or main public right-of-way. Includes 2 parking spaces, one of which is a van-accessible parking space with access to the entry station. Vehicle turnaround space is typically identified for vehicles to immediately exit. The station building is approximately 52 square ft. Figure A-1a per RRFDG (see Appendix B). A self service fee depository is also included at the entry station area. Approximately 25-square ft. Figure A-2 per RRFDG (see Appendix B). <i>Authorized services</i> are a gate and one-way spike strips.
Restroom	At all sites, men's and women's restrooms are located inside buildings that have other uses (such as the marina, concessionaire offices, multi-purpose building, restaurants, and single building retail stores), and are open during normal business hours. All restrooms are accessible with toilet stalls, sinks, soap dispenser, towel dispenser or hand dryer, and waste receptacle.
Vault Toilet	Prefabricated, accessible 2-unit vault toilet buildings are typically located in areas that do not have underground water service or sewer. Use of sweet-smelling technology. Building footprint is approximately 250 square ft. Figure D-4d per RRFDG (see Appendix B). An <i>authorized service</i> is electric hookup and replacing vault toilets with comfort stations with toilets only.
Comfort Station with Toilets only	Accessible restroom typically located where campers are not anticipated to use them. Each has water, sewer, and electric hookups. Building footprint is approximately 700 square ft. Figure D-3 of RRDFG.
Comfort Station with Toilets and Family Room only	Accessible restroom typically located in or near camp site areas. Each has water, sewer and electric. One dish washing sink is included. Building footprint is approximately 925 square ft. Figure D-3 of RRDFG. An authorized service is comfort station with toilets, family room, and showers only.
Comfort Station with Toilets, Family Room and Showers only	Accessible restroom typically located in or near camp site areas. Each has water, sewer, and electric and accessible shower stalls. One dish washing sink is included. Building footprint is approximately 925 square ft. Figure D-3 of RRDFG (see Appendix B).
Comfort Station with Toilets, Family Room, Showers and Laundry	Accessible restroom typically located in or near campsite areas. Each has full water, sewer, and electric, accessible shower stalls, and laundry facility including washer and drier units, folding tables, vending machines. Building footprint is approximately 1,100 square ft. One dish washing sink is included. Figure D-3 of RRDFG (see Appendix B). Laundry is only provided at Putah Canyon and Steele Canyon.
Fuel and Sanitary Dock and Land Based Storage Facility	A dock for fuel dispensing and sanitary waste collection is provided off of the boat dock. The fuel and sanitary service dock typically serves a minimum of 2 boats at a time per RRFDG Chapter III Section H.1. k. Storage tanks for bulk fuel and collected sanitary waste are located at a nearby land based storage facility on the shoreline near the gangway to the dock. Footprint size of the pad for both storage tanks is about 30-ft x 40-ft. These tanks are accessed by fuel and sanitary trucks. The tanks are located together and included as one service. Sanitary services are only required where houseboats are used at Putah Canyon and Steele Canyon. Monticello Shores and Spanish Flat have only a fuel dispenser and a fuel storage.

Table 2-1. Description of Facilities and Services to be Provided at Lake Berryessa Recreation Areas

Facility/Service	Description
RV Dump Station	Includes an area for disposal of stored sewage, a water source to flush sewage holding tanks, and separate potable water source. Pull through space for RVs. Figures C-1a and C-1b of RRFDG (see Appendix B).
Small Boat Repair/ Yard Shop	Building and service yard area for boat repairs. Where marinas are located, the building is combined with a tow service. At Steele Canyon and Putah Canyon, these are 30-ft x 60-ft buildings with nearby service yard for maintenance, repairs, and storage.
Concessionaire Office	Building or park model-structure for supervisor, administrative, and maintenance personnel.
Dry Boat Storage	At Steel Canyon, two separate 4-story, 3 sided buildings, each with a sloped roof provide storage space for about 100 stacked boats. A fork-lift operation will move boats. An <i>authorized service</i> is a fully enclosed building. At Putah Canyon, an open land area is provided that will store a grouping of about 20-30 boats on trailers. A tractor with universal boat trailer operation will move boats.
Camp Host Site	An RV site or a standard site with full hookups, picnic table, and fire pit. An upright BBQ is an authorized service. At Berryessa Point, the camp host site has water and electric hookup only.
Employee Housing	Multiple park models to house seasonal or permanent employees. At Steele Canyon, there are 10 park models. Employee housing is an <i>authorized service</i> at Putah Canyon with 6 park models.
Parking and Access	
Vehicle Parking, Access and Walkways	Vehicle parking space is a minimum of 10-ft x 20-ft. Pedestrian walkways are a minimum of 5-ft wide.
Vehicle with Boat Trailer Parking	Parking areas have 30-ft wide two-way drive lanes. Each parking space is 12-ft x 55-ft. per RRFDG Chapter III Section H.7.
Access Drives	Primary access drives are generally designed for two-way traffic, 24-ft wide, with 20-ft wide lane (per SRAFSR Art. 2, 1273.01) and 2-ft wide shoulders on each side. Secondary access drives are generally for one-way traffic, 14-ft wide, with 12-ft wide lane (per SRSFSR Art. 2, 1273.08) and 1-ft wide shoulders on each side. Surface materials shall support legally loaded, non-permitted commercial vehicles and provide an all-weather driving surface (per SRFFSR Art. 2, 1273.02)

LDGMBF – Layout and Design Guidelines for Marina Berthing Facilities (July 2005)

NCZCO – Napa County Zoning Code of Ordinances

RRFDG – Recreation Facility Design Guidelines (April 2013)

SRAFSR – SRA Fire Safe Regulations (updated 2012)

2.2 Infrastructure

Extensive infrastructure is required to support the recreation facilities and services at each recreation area. Infrastructure includes electric, roads and parking, fuel storage tanks, potable water, wastewater, and stormwater. The site plans identify roads as either 1-way or 2-way and are designed for efficient circulation throughout the sites.

The conceptual site plans also show layouts at each recreation area for the major facilities associated with potable water supply, wastewater collection and treatment, and stormwater collection. These include water storage tanks, groundwater wells, package water treatment systems or evaporation ponds, treated wastewater storage ponds, spray fields, and stormwater detention areas. The Infrastructure Design Report includes details and conceptual plans for all infrastructure at the recreation areas.

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Chapter 3

Site Design Guidelines and Considerations

This chapter identifies design guidelines and standards used in development of the conceptual site plans. This chapter also lists site planning considerations specific to the Lake Berryessa recreation areas.

3.1 Visitors Service Plan (VSP) Record of Decision (ROD)

Reclamation issued the Future Recreation Use and Operations of Lake Berryessa, referred to as the VSP ROD, in June 2006. Specific for site planning purposes, the VSP ROD specifies the types of facilities that may be developed within geographic locations at each recreation area. The locations correspond with elevations above mean sea level (MSL) related to critical reservoir operations. Elevation 440 ft represents the top of the active conservation pool for water supply and water quality purposes; and elevation 440-455 ft is the reservoir surcharge capacity for flood control purposes. Based on VSP ROD requirements and subsequent discussions with Reclamation staff, the following design criteria were applied to the conceptual site plans.

- No permanent structures or dump stations below elevation 455 ft. Any restrooms, showers, laundry, or fuel storage tanks below 455 ft are to be flood-proofed.
- A 100-ft buffer zone above the 455 ft contour will not contain wastewater treatment infrastructure.
- Water supply tanks need to be on highest ground.
- Boats are presumed to have safe access to docks and slips with 9-ft of water depth at slips, if lake level is low, down to 400 ft.
- Marina building, restaurants, retail stores, maintenance and service buildings, multiuse center, and other structures will have floor elevations at 456 ft or higher.

3.2 Reclamation Recreation Facility Design Guidelines

The conceptual site plans were designed following Reclamation's Recreation Facility Design Guidelines (RRFDG) (April 2013). These guidelines provided design information to support general siting, layout, and sizing of proposed facilities.

3.3 Design Standards, Guidelines, and Assumptions

In addition to the VSP ROD and RRFDG, further design standards and assumptions used in development of the conceptual site plans include the following. Design standards, guidelines, and assumptions for infrastructure are included in the Conceptual Infrastructure Design Report.

3.3.1 Site Design Guides

- The Knoxville Road right-of-way is assumed to be a minimum of 50-ft wide. Any new curb cuts or utility crossings proposed to access Reclamation property will need to be approved by the appropriate review authorities/agencies.
- Layout and Design Guidelines for Marina Berthing Facilities by California Department of Boating and Waterways dated July 2005 (LDGMBF).
- SRA Fire Safe Regulations – Recommended Change to SRA Fire Safe regulations California Code of Regulation title 14. 1270 Fire Safe Regulations updated 2012 (SRAFSR)
- National Fire Protection Association (NFPA) Standards 303 Fire Protection Standard for Marinas and Boatyards (2011 Edition) and 307 Standard for the Construction and Fire Protection of Marine Terminals, Piers, and Wharves (2011 Edition)
- At Steele Canyon, the electrical easement information was obtained from an easement document #1159-17, dated October 1946, covering Pacific Gas and Electric's (PG&E) 115 KV electric transmission line.
- Reclamation's Lake Berryessa Shoreline Trail Management Plan dated September 2012 (LBSTMP).
- Recreation area boundary lines were obtained from United States Geological Survey (USGS) maps marked with delineated boundary lines as provided by Reclamation in January 2014.
- Topographic and property line survey data was performed by American Photomapping Services and compiled from photography: 201163, dated October 20, 2011.
- Bathymetric data was obtained from the Solano County Water Agency database, dated August 21, 2013.
- A maximum distance of 500-ft is the assumed maximum distance for the path of travel to public toilet facilities wherever a tenant space is

provided for public utilization per the International Plumbing Code, Minimum Public Facilities, Section 403.6.

- A minimum 200-ft “no wake” zone beyond landing floats such as docks is the assumed minimum distance per the California Boating Law by the Department of Boating and Waterways, Sacramento, CA dated January 2012 Section 655.2 (2)(C).
- A minimum 100-ft buffer zone line above contour 455-ft will not contain aeration ponds, sewage infrastructure, or overnight-use facilities for annual occupancy per Napa County requirements and VSP ROD Appendix A.
- Architectural Barriers Act Accessibility Guidelines; Outdoor Developed Areas by United States Access Board.
- California Environmental Protection Agency State Water Resources Control Board, data sheet titled: Low Impact Development – Sustainable Stormwater Management, offers site design guidelines and techniques to mimic a site’s predevelopment stormwater hydrology by using naturally vegetated Stormwater Control Areas (SWC) that infiltrate, filter, store, evaporate and detain runoff close to the source of rainfall.
- Napa County Zoning Code of Ordinances (NCZCO) (Ordinance No. 1384) Chapter 18.110, off-street parking and loading facilities requirements are used to determine number of parking spaces at restaurants, retail stores, laundry facilities, and ‘conference centers’ (multi-use center).
- Reclamation has provided areas excluded from development at the Putah Canyon and Monticello Shores recreation areas because of past Underground Storage Tanks and ongoing monitoring efforts.

3.4 Site Layout Considerations

The site plans fit all proposed recreation facilities and services within the existing boundaries for each of the recreation areas. The following considerations were made in the general site layout for the recreation areas to minimize visual impacts from the lake and preserve existing natural environmental quality:

- Existing access drives are generally followed to minimize earthwork disturbance and maintain native trees and vegetation.
- Existing boat ramps are kept in place.

- Tall water tanks do not exceed height of tree lines.
- Major retaining walls are not proposed, graded slopes would be planted with natural grasses.
- Existing native trees and vegetation would be maintained wherever possible.
- Cut banks would be minimized wherever possible.
- Tent and RV sites are designed so that visitors have adequate space between each other, given the steep slopes and attempts to minimizing grading. Accessibility and safety are also considered in the tent and RV site design.
- Each tent site has a fire pit, a picnic table, and a parking space, either in a nearby lot or at the tent site.
- At some sloping tent sites, a 12-ft x 12-ft elevated level pad for pitching a tent may be furnished.
- The ‘center living area’ of each tent site is typically not placed closer than 75-ft to an adjacent tent site.
- At least 1 of every 4 tent sites, RV sites, and standard sites is accessible.
- At RV sites, the picnic table and fire pit are placed on the passenger door side of the parked vehicle, when the vehicle is ‘backed-in’ to the parking space.

Buildings with common use activities are encouraged such as:

- Marina is combined with a boat rental, retail sales, and public bathroom component.
- Each restaurant has a bathroom and is located as part of, or near, the marina.
- Concessionaire maintenance, small boat repair and boat storage areas are combined at one location where possible.
- Laundry, showers, and comfort stations are combined where possible.
- Family rooms within comfort stations are located only where campers are anticipated to use the comfort station facility.
- A fish cleaning station, comfort station and kiosk are boat ramps.

- RV dump stations are typically located in areas convenient to the site entrance and where RVs park.

To facilitate efficient and safe vehicle circulation at each recreation area, the below general standards are followed for each site:

- With the exception at Putah Canyon, locations of existing access drives and curb cuts onto Knoxville Road are used for new access drives to the maximum extent possible.
- With the exception of Steele Canyon, the entry control buildings have convenient sliding glass window access for vehicles as they both enter and leave the site.
- Access drives are typically two-way with 2-ft wide shoulders or one-way with one foot wide shoulders.
- A minimum 50-ft inside turning radius is furnished wherever RVs or vehicles with camper or boat trailers are expected to maneuver. This includes access to RV sites, standard sites, and boat ramps.
- Day use facilities are located away from campsites and they are designed separate from overnight facilities to minimize day-users from sharing the same access drives as campers.
- Steep topography is common in the region, and steep slope access drives are considered necessary in some locations. Since common access drives in the region are noted to exist at grades above 17%, a 16% grade is considered the maximum gradient proposed for public access. On several sites, concessionaire staff have access to, and will need to have vehicles capable of 20%+ grades to access infrastructure facilities or other more distant areas of the property.
- At each boat ramp, an area is provided for vehicles with trailers to queue-up while the ramp is being used by others.
- Wherever possible, at each boat ramp, vehicles with trailers are encouraged to approach the top of ramp so that the ramp is passed on the left side, thereby allowing drivers to more easily ensure the area is clear of obstructions and so they can peer over their left shoulder to visibly watch their trailer as they back-up into their launch lane.
- Boat trailer parking areas are generally separated from other campground parking and circulation areas by the use of traffic islands and/or landscape buffer strips.
- Boat trailer parking areas are positioned close to boat launch areas.

- Fish cleaning stations and comfort stations with car parking spaces are positioned close to boat launch and boat trailer parking areas.
- Convenient parking is also provided at each comfort station, vault toilet, laundry facility, playground, and day use area.
- A counter-clockwise circulation pattern is generally encouraged at publicly accessed buildings and campground access drive loops and cul-de-sacs to ensure safe drop-off and pick-up on the passenger side of vehicles, and to minimize crossing of traffic at intersections.
- Intersections of campground access drives are encouraged to be positioned either directly across from each other to ensure driving maneuvers and intentions are clear to other drivers.
- Wherever possible, grade changes along access drives, boat ramp areas, maintenance access areas, camp sites, and delivery routes are planned to have continuous vertical curves to minimize the potential of vehicles with trailers to ‘bottom-out’ or hang-up’ on transitional finished grade surfaces.
- Every effort is made to reduce or eliminate ‘blind corners’ where buildings may be positioned adjacent to areas of vehicle circulation and where pedestrians may congregate.
- Accessible parking spaces with access aisles are clearly identified with signs.

Approximately 80% of the total available land area on all of these sites has slopes steeper than 10%. This creates significant topographic challenges when planning for new facilities needing relatively flat conditions such as large or long buildings/infrastructure improvements, large parking areas, long accessible routes, and large stormwater control areas. While the required earthwork issues are important to recognize when implementing these conceptual plans, efforts have been made to minimize the concerns by accomplishing the following to the extent possible:

- Cuts and fills below the 455 ft contour are minimized. Due to the potential of reservoir flooding and the top elevation of the dam, the 455 ft elevation is a benchmark for cuts and fills, whereby all finished earthwork below that elevation should be, at a minimum, balanced on a contour- by-contour basis.
- Proposed new facilities such as parking areas, campgrounds, access drives, boat ramps, utility corridors, and areas for infrastructure improvements will be in the same general locations as previous

development as much as practical in order to minimize development costs and environmental disturbance.

- In areas where extensive grading is required, retaining walls are not proposed at this time and final slopes will have a similar gradient to adjacent slopes or slopes of nearby natural areas. The finished slopes will be stabilized with retaining soil cover, native vegetation and will blend-in with the surrounding landscape. This will be done to the extent possible; however, based on further site design, retaining walls may be necessary.
- Each site will likely require a net removal of earth material. Soils will be stockpiled locally for remediation of failed or removed retaining walls.
- In general, most of the required earthwork is not visible from the lake. Shoreline vegetation will be protected wherever possible and consideration will be given to replacing exotic non-native vegetation with more native species.
- There are several retaining walls, concrete pads, stairs, and other potential safety hazards that will need to be removed prior to development.

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Chapter 4

Conceptual Site Plans

This chapter presents a general overview of the site layouts, facilities, and services provided at each recreation area. Table 4-1 at the end of this chapter quantifies the facilities and services per recreation area as determined possible by the conceptual siting task. Appendix A includes the conceptual site layout drawings for each recreation area.

4.1 Putah Canyon Recreation Area

Putah Canyon Recreation Area is designed as a marina and campground complex, with day use opportunities. The northern portion of the property has all of the required facilities. The southern portion near Pope Canyon Road has only a few proposed improvements that include camping or day use, which are identified as authorized services.

At the northern area of the site, east of Knoxville Road, the campground complex consists of overnight RV sites with full hookups, standard sites, tent only sites, and park models. South of the campground complex on the peninsula is the existing 6-lane boat launch and parking lot. This area also serves as the primary day use area, including a large group day use shelter. The marina complex is on the west side of Knoxville Road and consists of 201 boat slips, reuse of an existing boat ramp for marina use only, new restaurant, retail shop, watercraft rentals, and parking areas. There is also a dry boat storage parking area, concessionaire's office building and smaller building for boat maintenance with tow service near the marina.

On both the east and west sides of the northern portion, site grading and earthwork is needed to accommodate the relatively flat parking areas and stormwater control areas. The area west of the existing 6-lane boat ramp is prohibited from development due to known and documented contaminated subsurface soil conditions.

The following are unique site design characteristics for the Putah Canyon site plan.

Site Layout (Northern Portion)

- Sewer, power, and water would be available on this portion of the property.
- There are two new site entry stations here because the property is geographically separated by Knoxville Road. Both entry stations are

visible to each other, and each building is placed a minimum of 150-ft from Knoxville Road to allow for queuing of vehicles as they enter the properties.

- New facilities east of Knoxville Road are primarily camping and day use with significant improvements to the existing boat ramp area. Related facilities include:
 - Day use areas concentrated on the southern peninsula, west and north of the existing boat ramp
 - Boat trailer parking is close to the existing boat launch on the peninsula.
 - A RV/camper trailer dump station, and comfort station with showers, laundry, and vending machine facilities are centrally located.
 - At the northern portion of the property, there is a trail connection.
- New facilities west of Knoxville Road are focused on a floating marina complex. Related facilities on this side include:
 - Parking spaces lined near the gangway to the floating marina building.
 - 201 required boat slips, 15 required houseboat slips, and a fuel and sanitary waste removal on the dock.
 - Land-based boat with trailer storage area for 30 boats on trailers.
 - Near the trailer storage area is a combined boat repair and tow service facility, and the concessionaire offices.
 - Day use areas along the shoreline.
 - Single lane boat ramp is for marina use only.
- Authorized services at Putah Canyon Northern Portion include:
 - Upgrade of all standard sites without utilities to standard sites with utilities.
 - Employee housing south of the dry boat storage area. Employee housing includes 6 park models and shared picnic tables and barbeque. Parking is adjacent to the park models.
 - Playground near the lake access on the east side of Knoxville Rd.

- A second fish cleaning station near the marina.
- A separate boat repair building near the concessionaire office.
- A group day use shelter on the east side of Knoxville Rd, north of the boat ramp.

Site Layout (Southern Portion - Authorized Only)

- The only publicly accessible day use or camping facilities in this area are located east of Knoxville Road. A one-way vehicle access drive can be provided via an existing service road curb cut north of the Pope Canyon intersection. The exit is located toward the south at an existing curb cut near the bridge crossing over Pope Canyon.
- Since there is no sewer or water hook-up proposed in this area, a 2-unit vault toilet would serve as the comfort station facility for the campground or day use area.
- Public recreation facilities are limited to tent-only overnight camping or day use sites, and an iron ranger would serve to collect fees, and employees would check the area daily. Two access gates would block the area from vehicle access when necessary.

4.2 Monticello Shores Recreation Area

Monticello Shores Recreation Area is designed as a destination area for camping and lodging at Lake Berryessa, with a range of overnight options including tent-only, standard and RV sites, park models, cabins, yurts, rustic cabins and tent cabins. Monticello Shores would have water, wastewater, and power available on site. Required sewer services are limited to the facilities mostly north of the wastewater treatment facilities. The area to the south is served by vault toilets. There are two comfort stations with showers and extra parking that are available for use by all visitors to the recreation area at the northern portion. Additional sewer services, including comfort stations and associated piping, are an authorized service for the southern parts of the recreation area. Wastewater infrastructure is further detailed in the infrastructure plans and Conceptual Infrastructure Design Report. The following are unique site design characteristics for the Monticello Shores site plan.

Site Layout

- The new site entry building is placed about 250-ft from Knoxville Road to allow for queuing of vehicles. If vehicles need to immediately exit the property, there is a turnaround after the building.

- The boat trailer parking lot is a long, linear loop arrangement, placed in close proximity to a 4-lane boat launch ramp and parallel to the shoreline. There are individual day use sites along the parking lot.
- Most of the existing Blue Oak trees on the 2 peninsulas near the new boat ramp are preserved to the maximum extent possible by only allowing tent camping with a nearby parking lot for campers and one-way access loop drive through the campground, in a manner similar to existing conditions. A walking path to campsites is provided to further minimize site disturbance. Vault toilets serve these tent only sites and water spigot is located at the boat trailer parking lot.
- The majority of RV sites are located just north of the entrance to minimize RV travel through the northern campsites. Four additional RV sites are located further north. The RV sites have water and electric hookups.
- Much of the shoreline along the access road heading north of the entry station is for tent sites and rustic lodging, including yurts, rustic cabins, and tent cabins.
- At the northern part of the property is a series of standard pull-through sites leading to an access loop with park models and cabins. The standard sites have sewer, water, and electric utilities and the park models and cabins each have an en-suite bathroom.
- Two comfort stations with showers are located north and south of the standard sites with additional parking.
- Most of the two-way access drive route matches the existing route.
- Authorized services and facilities at Monticello Shores include:
 - Extended sewer service to the southern portion of the recreation area.
 - Extended water service to the peninsula with tent-only sites north of the boat trailer parking.
 - Upgrades of vault toilets to comfort stations with toilets and comfort stations with toilets and showers.
 - Upgrade of all standard sites without utilities to standard sites with utilities and addition of sewer hookups to RV sites.
 - 20 hike-in/boat-in tent only sites.

- One overnight group use area to serve 50 people.
- 3 floating campsites.
- Marina building on land with parking and a dock with 50 boat slips.
- Combined retail and restaurant building with parking.

4.3 Berryessa Point Recreation Area

Berryessa Point Recreation Area is proposed as a RV park. There is a one-lane boat launch primarily for use by the visitors with RVs. Berryessa Point would have water and power available on site. There would be no sewer service and the recreation area would only have vault toilets. There would be an RV dump station for RV sanitary removal. The following are unique site design characteristics for the Berryessa Point site plan.

Site Layout

- An iron ranger would be stationed at the new site entry location. The camp-host would be in charge of checking entries during the day.
- Up to 41 RV sites are situated near the entrances on the peninsula and immediately to the north. Because the focus of this site is an RV park, the RV sites are placed closer together than RV.
- 17 individual day use sites along the peninsula.
- A RV dump station is along the 2-way access drive near the RV sites.
- Authorized facilities at Berryessa Point include:
 - An entry station.
 - A special events area for small events or gatherings that includes a gazebo or day use shelter at the end of the peninsula.
 - A floating marina, combined with retail and a take-out counter style restaurant, with 50 boat slips.
 - A fuel dispenser on the marina dock with fuel storage nearby.
 - Additional vault toilets to serve authorized services.

4.4 Spanish Flat Recreation Area

Spanish Flat Recreation Area is a mix of recreation activities, including camping, lodging, boating, and day use. Spanish Flat would have water, wastewater, and power available on site.

Although this site has the most acreage of all 5 sites, the majority of the property north of the site entry is inaccessible to vehicles due to steep topography and the lack of potential areas to develop convenient and efficient water crossings. Recreation uses north of the site entry, if allowed, are limited to strenuous hiking only.

A major focus of this site is the floating marina with boat rental services and the campground peninsula leading into the reservoir. The following are unique site design characteristics for the Spanish Flat site plan.

Site Layout

- The new site entry building is placed down the hill from the exit off of Knoxville Road to allow additional space for improved and safer queuing of vehicles as they enter the site off the main road. The building also has a nearby accessible parking area.
- A vehicle turnaround immediately after the entry station is provided if vehicles need to exit the property.
- The existing two-way access drive from the entry station to site facilities is retained as much as possible for vehicle access to lower site elevations; however, site grading and earthwork fill would be required.
- After leaving the entry station, the first turn on the left leads to a small peninsula overlooking a small cove of the reservoir. This area will be parking for the floating marina with 75 boat slips. A boat rental service will operate out of the marina.
- A boat trailer parking lot with a new 2-lane boat ramp is placed at the bottom of the 2-way access drive. The boat trailer parking lot is designed as a linear loop arrangement, parallel to the shoreline, and placed in close proximity to the launch ramp.
- A day use area is placed between the boat trailer lot and the edge of water and offers water views.
- Although earthwork associated with the new boat trailer parking lot would not be visible from the lake, this parking lot design creates a flat area along the shoreline that would require a graded vegetated slope that needs to be stabilized with natural grasses.

- Between the boat ramp area and peninsula are day use sites, the camp host site, and an RV dump station in a small turn-around area. Reclamation is installing the RV dump station in the proposed location.
- The peninsula to the east is accessed via a 2-way access drive that follows the footprint of the existing access drive.
- A concessionaire office marks the entrance to the major campground facilities at the site.
- A series of loop access drives provides vehicle access to the RV/camp trailer sites, and other camping facilities such as rustic cabins, yurts, park models, pull-through sites and tent only sites.
- The majority of camp sites have filtered views of the water. Efforts will be made to preserve much of the existing vegetation as possible. Comfort stations are be provided nearby.
- The RV/camp with trailer sites are at the same location as previous conditions; however, the density is reduced to minimize environmental impact and discourage a crowded feel.
- Accessible comfort stations with parking spaces are placed along the loop access drives that connect the camping areas.
- The access loops are arranged so that vehicle circulation is typically in a counter-clockwise direction for easier and safer loading and unloading of vehicles.
- Authorized facilities at Spanish Flat include:
 - Upgrade of standard site without utilities to standard sites with utilities.
 - A playground near the boat trailer parking lot.
 - A restaurant and retail store combined with the floating marina.
 - Extension of the boat ramp to accommodate new water levels and a new 2-lane boat ramp.

4.5 Steele Canyon Recreation Area

Steele Canyon Recreation Area is designed with similar facilities proposed at Putah Canyon, including marina, boating, camping, lodging, and day use. The boat ramp and boat trailer parking area remain at the existing location, but a

new marina and restaurant area offer numerous boat slips, a retail shop, watercraft rentals, and parking areas. Elevations of the new boat trailer parking areas needs to be similar to the elevations at the top of the boat ramps, and all buildings, the dock, and day use areas near the shoreline must have accessible routes to their associated parking areas.

The campground area consists of numerous overnight RV sites with full utilities, standard sites with or without utilities, tent only sites. Lodging includes park models and cabins. Group sites for both overnight and day use are provided.

Steele Canyon also has an authorized multi-use events center, for planned group events like seminars, small conferences, school group gatherings and possibly family reunions, weddings or other similar venues or activities. For this building and associated parking lot, site grading and earthwork would be needed to accommodate the flat topographic requirements and stormwater control areas.

The following are unique site design characteristics for the Steele Canyon site plan.

Site Layout

- The new site entry building is located in the same area as existing, but has a new accessible parking area and a new vehicle turnaround that allows vehicles to immediately exit the area.
- An RV dump station is located along the 2-way access drive between the site entry station and the boat storage facility.
- The boat launch remains in the existing location, and nearby is a larger parking lot for vehicles with boat trailers. South of the parking lot is an access loop with RV sites.
- An information kiosk, a fish cleaning station, and comfort station with parking are provided in the area.
- The 2-way access drive continues past a new concession maintenance/yard storage building, combined with tow service, a small boat repair building, and a covered, 4-story dry boat storage building that is anticipated to house about 100 boats. The boats would be lifted by forklift, and the exterior pavement would need to be designed to accommodate loads. Boats will be moved between the boat ramp and building by a concessionaire operated tractor pulled universal boat trailer system. The dry storage facility has one open wall for ease of access because of the placement of the buildings to reduce grading. There would be fencing around the facility.

- Elevations around the new concession maintenance/yard storage building are designed to limit adjustments to the existing 455 ft contour. The finished floor elevation is anticipated to be at 456 ft.
- Continuing north, on the 2-way access drive, a major campground for RVs and camp trailers is sited up-gradient, to the east and northeast. Standard sites are located around an access loop on the small peninsula.
- An employee housing area is located in a centrally located, but relatively elevated portion of the property, complete with its own access drive and parking area.
- The 2-way access drive meets at a 4-way stop intersection near the middle of the campground area. This provides a convenient and safe location for the primary comfort station with showers and laundry. A playground and an area for recreation courts are nearby.
- No buildings or structures are located within 25-ft of the centerline of the existing electric towers per PG&E requirements.
- Proceeding westerly on the 2-way access drive, the marina and restaurant buildings are ahead on the left. Related facilities on this portion of the site include:
 - Marina boat rentals and retail store in one building, and a separate restaurant building, each with nearby parking, drop off areas, and service bay driveways.
 - Boat slips with fuel and sanitary waste removal facilities.
 - Elevations around the new marina and restaurant buildings are designed to limit adjustments to the existing 455 ft and lower contours. The finished floor elevation of the buildings is about 465 ft.
- Further west on the larger northern peninsula, there are more overnight accommodations such as cabins and park models. In this area, vehicle access to the most remote cabins is steep at about 10-14% and narrow at 14-ft wide, but upon arrival, the reward in distant water views and isolation make the trip worthwhile.
- Authorized facilities at Steele Canyon include: upgrades of standard site without utilities to standard sites with utilities, a multi-use center, 100 additional boat slips, 4 additional launch lanes at the existing boat ramp with 2 courtesy docks, a new RV dump station, 5 hike-in/boat-in tent only sites, and 3 floating campsites.

4.6 Quantified Facilities and Services Summary by Site

Table 4-1 summarizes the number of **required** facilities and services proposed at each site based on the conceptual site plans. Table 4-2 summarizes the number of **authorized** facilities at each site.

Table 4-1. Proposed Quantities of Required Facilities at Each Recreation Area

Facilities	Putah Canyon	Monticello Shores	Berryessa Point	Spanish Flat	Steele Canyon	Total
Camping						
Tent sites	22	130	0	49	13	214
Standard Sites without Utilities	19	4	0	10	32	65
Standard Sites with Utilities	0	8	0	0	19	27
RV Sites with Utilities	18	21	41	12	22	114
Hike-in/Boat-in tent sites	0	0	0	0	0	0
Overnight Group Use Area (50 occupants)	0	0	0	0	0	0
Overnight Group Use Area (20 occupants)	0	0	0	0	1	1
Camp Host Site with Utilities	1	1	1	1	1	5
RV Dump Station	1	1	1	0	0	3
Playground and Group Area	0	0	0	0	1	1
Iron Ranger	0	0	1	0	0	1
Lodging						
Park Models	6	28	0	0	12	46
Cabins	0	9	0	0	15	24
Yurts	0	6	0	3	0	9
Rustic Cabins	0	4	0	4	0	8
Tent Cabins	0	5	0	3	0	8
Floating Campsite	0	0	0	0	0	0
Boating						
Launch Lane Boat Ramp	7	2	1	2	6	18
Courtesy Dock	4	1	1	1	3	10
Boat Slips	201	0	0	75	178	454
Houseboat Slips	15	0	0	0	32	47
Kiosk (Boat Ramp Sign)	1	1	1	1	1	5
On-Shore Fuel and/or Sanitary Storage Tank	1	1	0	1	1	4
Fuel Dispensing and/or Sanitary Connection	1	0	0	1	1	3
Fish Cleaning Station	1	1	0	1	1	4
Employee Housing (Park models)	0	0	0	0	10	10
Marina Service and Building	1	0	0	1	1	3
Concessionaire Building	1	0	0	1	1	3
Boat Repair, Yard Shop, or Tow Service	1	0	0	0	1	2
Dry Boat Storage (# boats)	30	0	0	0	100	130
Boat Rental Service	1	1	0	1	1	4
Day Use						
Individual Day Use Site	31	8	17	21	10	87

Table 4-1. Proposed Quantities of Required Facilities at Each Recreation Area

Facilities	Putah Canyon	Monticello Shores	Berryessa Point	Spanish Flat	Steele Canyon	Total
Group Day Use Area	0	0	0	0	1	1
Boat Exclusion Zone	2	0	0	1	1	4
Kiosk (Trail Connection)	1	1	1	1	1	5
Multi-Use Special Events Center	0	0	0	0	0	0
Lake						
Lake Access	2	1	0	1	1	5
Amenities						
Restaurant	1	0	0	0	1	2
Retail Store	1	0	0	0	1	2
Facilities/Infrastructure						
Entry Station	2	1	0	1	1	5
Entry Station Vault Toilet	1	1	0	0	1	3
Vault Toilet	0	9	2	3	0	14
Comfort Station, toilets only	4	0	0	3	2	9
Comfort Station, toilets and family room	0	0	0	0	2	2
Comfort Station, toilets, family room, and showers	0	2	0	1	1	4
Comfort Station, toilets, family room, showers, and laundry	1	0	0	0	1	2
Access Road Close Gate	0	1	0	1	0	2
Parking						
Vehicle Parking at Marina	112	0	0	45	115	272
Vehicle with Boat Trailer Parking	55	49	44	33	75	256

Table 4-2. Proposed Quantities of Authorized Facilities at Each Recreation Area

Facilities	Putah Canyon	Monticello Shores	Berryessa Point	Spanish Flat	Steele Canyon	Total
Camping						
Tent sites	20	0	0	0	0	20
Standard Sites without Utilities	0	0	0	0	0	0
Standard Sites with Utilities	0	0	0	0	0	0
RV Sites with Utilities	0	0	0	0	0	0
Hike-in/Boat-in tent sites	0	20	0	0	5	25
Overnight Group Use Area (50 occupants)	0	1	0	0	0	1
Overnight Group Use Area (20 occupants)	0	0	0	0	0	0
Camp Host Site with Utilities	0	0	0	0	0	0
RV Dump Station	0	0	0	1	1	2
Playground and Group Area	1	0	0	1	0	2
Iron Ranger	1	0	0	0	0	1
Lodging						
Park Models	0	0	0	0	0	0
Cabins	0	0	0	0	0	0
Yurts	0	0	0	0	0	0

Table 4-2. Proposed Quantities of Authorized Facilities at Each Recreation Area

Facilities	Putah Canyon	Monticello Shores	Berryessa Point	Spanish Flat	Steele Canyon	Total
Rustic Cabins	0	0	0	0	0	0
Tent Cabins	0	0	0	0	0	0
Floating Campsite	0	3	0	0	3	6
Boating						
Launch Lane Boat Ramp	0	0	0	2	4	6
Courtesy Dock	0	0	0	1	2	3
Boat Slips	0	50	50	0	100	200
Houseboat Slips	0	0	0	0	0	0
Kiosk (Boat Ramp Sign)	0	0	1	0	0	1
On-Shore Fuel and/or Sanitary Storage Tank	0	0	1	0	0	1
Fuel Dispensing and/or Sanitary Connection	0	1	1	0	0	2
Fish Cleaning Station	1	0	1	0	1	3
Employee Housing (Park models)	6	0	0	0	0	6
Marina Service and Building	0	1	1	0	0	2
Concessionaire Building	0	0	0	0	0	0
Boat Repair, Yard Shop, or Tow Service	1	0	0	0	0	1
Dry Boat Storage	0	0	0	0	0	0
Boat Rental Service	0	0	0	0	0	0
Day Use						
Individual Day Use Site	20	0	0	0	0	20
Group Day Use Area	1	1	0	0	0	2
Boat Exclusion Zone	0	1	0	0	0	1
Kiosk (Trail Connection)	1	1	1	1	1	5
Multi-Use Special Events Center	0	0	0	0	1	1
Gazebo/Group Use Shelter	0	0	1	0	0	1
Lake						
Lake Access	0	0	0	0	0	0
Amenities						
Restaurant	0	1	1	1	0	3
Retail Store	0	1	1	1	0	3
Facilities/Infrastructure						
Entry Station	0	0	1	0	0	1
Entry Station Vault Toilet	0	0	0	0	0	0
Vault Toilet	1	0	0	0	0	1
Comfort Station, toilets only	0	1	0	0	2	3
Comfort Station, toilets and family room	0	4	0	0	1	5
Comfort Station, toilets, family room, and shower	0	6	0	0	0	6
Comfort Station, toilets, family room, shower, and laundry	0	0	0	0	0	0
Access Road Close Gate	2	0	0	0	0	2