ENVIRONMENTAL COMPLIANCE AND FACILITY CONDITION ASSESSMENT REPORT, SEVEN CONCESSION AREAS LAKE BERRYESSA, CALIFORNIA

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December 19, 2002

A Report Prepared for:

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ENVIRONMENTAL COMPLIANCE
AND FACILITY CONDITION ASSESSMENT REPORT
SEVEN CONCESSION AREAS
LAKE BERRYESSA, CALIFORNIA

Kleinfelder Job No: C40368601
December 30, 2002

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EXECUTIVE SUMMARY

Kleinfelder Inc (Kleinfelder) on behalf of the Bureau of Reclamation Sacramento Region (Reclamation) has prepared this engineering and condition assessment evaluation of improvements within the concession areas located on Federal land at Lake Berryessa, California. The assessment of the seven concession areas--Putah Creek Resort, Rancho Monticello, Lake Berryessa Marina, Spanish Flat Resort, Steele Park Resort, Pleasure Cove Resort, and Markley Cove Resort-- included buildings, waste water systems, potable water systems, roads, parking lots, boat ramps, electrical systems, shoreline development, marinas and environmental hazards. The assessment yielded recommendations for each system at each resort for removal or retention for possible future reuse. Recommendations are supported by planning level cost estimates for improving the service life of facilities and achieving compliance with current construction codes.

Kleinfelder assembled a team of senior professional specialists and began by preparing lists of regulatory and code compliance criteria. The team utilized information provided by Reclamation, performed detailed site visits of each resort, and prepared topographical mapping for future engineering use. The mapping product was compiled at 1"=200' with a 5' contour interval using NAD 83/NAVD 88 control monuments. The topographic maps provided were compiled in both metric units and standard English units (feet). Per Reclamation guidance, the NAD83/NAVD88 control monuments, established at the lake by Reclamation, were utilized for the basis of the coordinate systems. Unfortunately, these datums were not the basis for either of the previous topographic mapping products provided by Reclamation. This means that the new mapping products produced by MPS cannot be registered to the older products without some manipulation. The process to correct the datum conflicts would consist of a horizontal datum shift and rotation (NAD 27 to NAD 83), as well as a vertical translation of about 3 feet (NGVD 29 to NAVD 88). There would be some inherent loss of accuracy, primarily in the vertical component, in the conversion process, however, since the topographic mapping was performed for planning level assessments only, the merged product would still be suitable for this level of engineering analysis.

The buildings were evaluated first and were reported separately. A summary of that separate report is included in this report as Chapter 3. Primary findings of the building condition assessment was estimated service life for buildings. Cost estimates to replace or bring buildings to code was not included in Kleinfelder's scope of work and has not been provided. The other improvements are assessed for each resort in this report. The assessments provide comparison against code criteria if constructed at present. Costs are based on upgrade or removal and replacement of systems depending on condition and based on meetings with Reclamation concerning the envisioned future use plan.

Wastewater systems were found in general to be of very poor quality. The team found that for each concession the sewers are in a generally deteriorated condition and need replacement. Each sewer line should be individually tested to determine the useful service life of the components. Each of the lift stations was found to be unacceptable. The lift stations would require, at a minimum, additional reliable pumping capacity, new instrumentation and controls, a functional alarm system, and standby power facilities in order to be adequate. In addition, the structures housing the pump stations are generally substandard. These conditions make these lift stations unreliable; coupled with the location of many of the stations, the risk of failure leading to contamination of the lake is considered very high. The force mains connecting these lift stations to the wastewater retention ponds are questionable and should be replaced unless proven sound through testing. The ponds where used, are undersized. Spray disposal that is being performed should be ceased immediately because the wastewater that is being discharged is minimally treated and the potential for human pathogenic contact is very high. Rather than replace all of the sewerage in kind, studies are recommended regarding alternatives such as combined systems or pumping to publicly-owned systems.

Potable water systems were found to be in better condition than the sewerage. Residual chlorine testing at the taps must be conducted before any upgrades to the water treatment or storage facilities are planned. For systems to be retained, verification of minimal leakage is needed. Recommended improvements include additional onsite storage tanks to extend the chlorine contact times, and storage tanks and better mixers to increase the effectiveness of the polymer solution for turbidity removal. Some of the existing storage tanks were observed to be leaking.

Marinas were found to be in generally substandard condition. The concessionaire marinas include the wide use of non-encapsulated foam billet floats. Many of the docks are not recommended for further use due to the cost involved with upgrading them with encapsulated foam billets and new decking. It is more economical to use a new dock that meets current guidelines and Reclamation’s specifications. Many deficiencies in the fueling systems were noted relative to today's code. Most common was piping that used improper materials and is inadequately supported. Other issues included lack of filling procedures/alarm and/or containment at the shore tank and minor leaks.

An engineering evaluation of pavements and road was made. The remaining life of existing pavements is estimated to range from near zero to approximately eleven years. To achieve a design life of 20 years all existing pavements require rehabilitation varying from overlays to complete reconstruction. Realignment, widening, additional parking, striping, and additional controls should all be considered. Detailed recommendations for specific road segments are contained in the resort specific sections of this report. Serious concerns regarding fire truck access exist with regard to some dwellings on gravel roads or short driveways.

Electrical systems ranged in service capability from inadequate to suitable for long term use and each system had components which ranged from poor to good condition. Code violations were often noted, some of which are of immediate concern.

Shoreline developments in current use include wood (both treated and non-treated), shotcrete, masonry block, poured-in-place concrete, and gabion baskets. The majority of the walls are at or very near failure due to material deterioration, significant cracking, out ward tilting, or foundation failure. Retaining structures which appear to have a long remaining service life are noted in the report.

A hazardous materials/waste environmental assessment did not reveal significant concerns with regards to hazardous materials. Hazardous findings were limited to paints, oils, used oil being recycled, and small quantities of weed killer. The larger environmental concerns are with the sewage systems.

The costs for upgrade or removal and replacement of systems at each concession area are summarized in the following table.

Cost Matrix Summary

Improvement	Putah Creek	Rancho Monticello	Berryessa Marina	Spanish Flat	Steele Park	Pleasure Cove	Markley Cove	Totals
Roads/Parking Lots	121,450	412,950	141,200	123,750	167,550	163,700	112,500	1,243,100
Electrical Systems	37,500	19,000	31,000	24,500	42,000	19,000	21,000	194,000
Potable Water	121,500	108,500	247,500	185,000	0	69,500	153,000	885,000
Waste Water	633,500	1,721,000	473,500	744,000	350,000	1,029,000	482,500	5,433,500
Dock Facilities	115,100	104,850	1,245,580	892,680	636,600	74,080	584,160	3,653,050
Boat Launch Ramps	80,100	61,100	91,600	98,900	51,100	28,300	86,300	497,400
Trailer Removal (2)	*	*	*	*	*	*	*	9,800,000
Shoreline/Retaining Wall(2)	*	*	*	*	*	*	*	2,100,000
Roadway Removal(2)	*	*	*	*	*	*	*	3,500,000
Sum Totals	987,700	2,014,450	2,089,180	1,945,080	1,079,700	1,219,880	1,326,960	27,306,050
Construction Staging (2.5%)	24,693	50,361	52,230	48,627	26,993	30,497	33,174	682,651
Subtotal	1,012,393	2,064,811	2,141,410	1,993,707	1,106,693	1,250,377	1,360,134	27,988,701
Contingencies (15%)	151,859	309,722	321,211	299,056	166,004	187,557	204,020	4,198,305
Totals	**$1,164,000**	**$2,375,000**	**$2,463,000**	**$2,293,000**	**$1,273,000**	**$1,438,000**	**$1,564,000**	**$32,187,000**

Notes:

1) Totals are year 2002 costs.

2) Estimates made only as total for seven concession areas

1 INTRODUCTION

The Bureau of Reclamation Sacramento Region (Reclamation) retained Kleinfelder Incorporated (Kleinfelder) to prepare an engineering and condition assessment evaluation of improvements and site conditions within the seven (7) concession areas located on Federal land at Lake Berryessa, California (Plate 1) The seven concession areas, or resorts, are:

1. Putah Creek Resort
2. Rancho Monticello
3. Lake Berryessa Marina
4. Spanish Flat Resort
5. Steele Park Resort
6. Pleasure Cove Resort
7. Markley Cove Resort

The total affected area encompasses approximately 400 acres. The assessments included buildings, waste water system(s), potable water system(s), roads, parking lots, boat ramps, electrical system(s), shoreline developments (retaining walls, stair ways, etc.), marinas (docks, slips and fueling systems) and detrimental environmental activities.

The work was performed in two phases. A Building Condition Assessment was performed first and was reported separately. This work is summarized briefly in Section 2 of this report. The second phase of work was the remainder of the facility conditions assessment. The criteria for the assessments is summarized in Section 3 of this report and Sections 4 through 10 present the findings on a resort by resort basis.

1.1 Project Objectives

The purpose of the Facility Condition Assessment was to conduct a planning level engineering evaluation of concessionaire improvements constructed on Federal land within the seven concession management areas at Lake Berryessa. The engineering evaluation of the improvements' condition yielded recommendations for demolition/removal or retention for possible future reuse. Recommendations are supported by planning level cost estimates. Cost estimates provide guidance on the costs for improving the service life of facilities and achieving compliance with current construction codes. Some facilities were designated by Reclamation not to be retained because of their obvious condition problems, poor location, or other reasons determined by the government. Those facilities so designated were not included as part of this effort. Cost estimates for removal, demolition, upgrade or rehabilitation of the existing buildings was not part of this assessment except for a representative cost on abandoned trailer removal. Finally, a further objective of this work is to provide information of use in future design efforts for new facilities.

1.2 Approach

To perform this Facility Condition Assessment Kleinfelder assembled a highly qualified team of senior professionals from within Kleinfelder and other area firms. These team members are summarized below:

TEAM MEMBERS
LAKE BERRYESSA FACILITY ASSESSMENT

KLEINFELDER	**ASSIGNMENT**
Randy Wheeler	Project Manager
Tom Ries	Shoreline Development
David Cook	Hazardous Materials
John Nicolini	Building Condition Assessment
Terry Craven	Roads and Parking Lots
WINZLER & KELLY	**Engineering Evaluation**
Kent Von Aspern	Waste Water
Alex Culick	Potable Water
Craig Lewis	Boat Launch/Marinas
Larry Lewis	Boat Launch/Marinas
Benjamin Jordan	Waste/PotableWater
Tiffany Pham	Marinas/Boat Launch Ramps
Tanya Voisin	Waste/Potable Water Systems
Sam Fedeli	Boat Dock Fueling Systems
MOUNTAIN PACIFIC SURVEY	
Peter Lynch	Survey, Mapping, GIS
ELECTRODESIGN	
Thomas Numelin	Electrical Systems

The team members began the assessment process by reviewing background data made available by Reclamation. This information included the following:

- *Inventory for Engineering Evaluation & Condition Assessment Report by resort*.
  This report, prepared by Ms. Cheryl Riley of the U.S. Department of the Interior, Bureau of Reclamation, contained a summary of existing buildings and structures, including color photographs, of each of the buildings to be surveyed.

- *Topographic maps of each facility* (for survey and mapping phase).
  Electronic and hardcopy versions of previous topographic maps prepared by others, were

provided to Kleinfelder and Mountain Pacific Survey. The topographic maps provided were compiled in both metric units and standard english units (feet). Per Reclamation guidance, the NAD83/NAVD 88 control monuments established at the lake by Reclamation, were utilized for the basis of the coordinate systems. Unfortunately, these datums were not the basis for either of the previous topographic mapping products provided by Reclamation.

1.2.1 Site Visits

The Kleinfelder team conducted site visits and inspections at each resort to assess and present site conditions. These limited inspections of permanent concession structures were used to identify and address deteriorated or otherwise unsatisfactory component and material conditions. Our inspections included opinions specific to useful service life expectancy and identify deferred maintenance items, which are considered above and beyond the standard of normal maintenance and/or repairs over the long term. As it applied to this assessment, "Long Term" was defined as determining system or component usefulness beyond the year 2009 and going forward approximately 15 years (2024).

1.2.2 Mapping

The aerial mapping effort at Lake Berryessa was undertaken in early May of 2002 and performed by Mountain Pacific Survey of Fairfield, California. Upon completion of the initial research required to develop the appropriate datum and GPS control network, field crews placed and controlled ground targets to facilitate the aerial mapping effort. The aerial consultant flew the site and compiled the required mapping at the selected areas. The mapping product was compiled at 1"=200' with a 5' contour interval using NAD 83/NAVD 88 control monuments.

More detailed discussion on the survey and mapping is provided in Chapter 11 of this report.

1.2.3 Data Evaluation and Cost Estimates

Site visits and background data yielded observations for comparison against standards and criteria for such facilties if constructed today. These criteria and evaluation procedures are described in more detail in Section 3 of this report.

All costs associated with the preliminary estimate are based on present worth of the removal and replacement costs of subject items and are considered suitable for a planning level study. The determination of items to be removed or replaced is based on meetings with the Bureau of Reclamation concerning the envisioned future use plan. The unit material costs for the improvements were developed from both discussions with potential vendors and suppliers and from estimates developed for projects with similar items. The cost information includes labor costs based on prevailing rates in the project region. The costs also reflect current codes, standards, guidelines and regulating agencies. In the case where an improvement fitting the

future use plan may be retained, the costs presented reflect the upgrade to current codes and standards.

The cost information provided represents the future plan for the concession areas as understood through meetings with the Bureau of Reclamation. It will be necessary to update the information as the project scope evolves and escalate the cost data for use at the termination of the concession contracts.

2 BUILDING CONDITION ASSESSMENT

The Building Condition Assessment was performed first for this study and was reported separately. The reader is refered to Kleinfelder's *Facility Condition Assessment, Seven Concession Areas, Lake Berryessa Resort, Volume I and Volume II*, dated November 19, 2001, for the detailed discussion of the Building Condition Assessment. Kleinfelder's *Facility Condition Assessment* is intended to be used as a cross-reference guide for identifying general concessions identified within this document.

Kleinfelder conducted site condition assessments and feasibility analysis on all structures identified in the Inventory for Engineering Evaluation & Condition Assessment by resort provided by U.S. Department of the Interior, Bureau of Reclamation. With exception to those facilities, structures or improvements that had been previously removed from further consideration, Kleinfelder completed an engineering evaluation and condition assessment on each of the scheduled facilities currently owned by the concessionaires.

Kleinfelder examined each building considering such items as: location, materials, general repair, observed construction standards, general seismic event consideration, and accessibility for those with handicaps and deferred maintenance. The facility inspections were visual inspections of the concessions and their component parts. Our inspections of the concessions were broken up into five primary categories: (1) Primary Systems – Foundations and Substructures, Structural System, Exterior Wall System, Roof System; (2) Secondary Systems – Ceiling System, Floor Coverings, Interior Wall and Partition Systems; (3) Service Systems – HVAC, Plumbing, Electrical and Lighting; (4) Fire Detection and Emergency Provision; and (5) Infrastructure Components.

The building condition assessment made note of the following standards:

Building Condition Assessment

- ASCE Standards – ANSI 11-90
- Americans with Disabilities Accessibility Act Guidelines (ADAAG – Current)
- American with Disabilities Act (ADA-Current 1990
- International Facilities Management Association (IFMA)
- National Roofing Contractors Association (NRCA – Current)
- National Fire Protection Association (NFPA – Current Standards)
- National Electric Code (NEC-Current)
- National Electric Safety Code (NESC-Current)
- Standard Guide for Baseline Property Condition Assessment Process (ASTM E-1480 and E-2018)
- Uniform Mechanical Code (UMC-Current)
- Uniform Plumbing Code (UPC-Current)
- Uniform Building Code

The condition assessment was based on professional judgment and the standards applied varied greatly depending on the nature and intended end use of the facility. The assessments included only generalized visual inspection and observation of the subject facilities. It did not include, and specifically excluded, observation of inaccessible areas, testing of any nature (either destructive or non-destructive), a detailed structural, electrical or mechanical evaluation of the subject property unless otherwise discussed herein. This report did not provide an in depth study of Fire and Life Safety deficiencies.

The Building Conditions Assessment did not include cost estimates for upgrade of the facilities. Cost estimates were left for Bureau of Reclamation staff to prepare independently. Primary findings of the Building Condition Assessment was estimated service life for buildings. Table 1 is a summary of the estimated service life assessments for each resort.

Table 1
Building Condition Assessment Service Life Summary

Structure ID	Description	Est. Service Life (yrs)
	PUTAH CREEK RESORT	
PUCR #1	Front Gate Kiosk	<10
PUCR #2	Grocery Store	<15
PUCR #3	Video Arcade	<15
PUCR #4	Fuel Tanks	N/A
PUCR #5	26 Unit Motel	<15
PUCR #6	Management Office/Restaurant/Lounge	<15
PUCR #12	Maintenance Building & Restrooms	<15
PUCR #13	Laundry & Restrooms	<15
PUCR #14	Campground Kiosk	<10
PUCR #16	Campground Restrooms (Entrance)	<15
PUCR #17	Campground Restrooms (North End)	<15
PUCR #18	Campground Concession Building	<10
PUCR #19	Pump House	<10
PUCR #20	Maintenance Building/Storage	<10
PUCR #21	Water Treatment	<10
PUCR #22	Gazebo	<15
	RANCHO MONTICELLO RESORT	
RAMO #1	Front Entrance Kiosk	< 10
RAMO #2	Main Office	> 15
RAMO #3	Store and Restaurant	< 15
RAMO #4	Storage Unit Behind Store	< 10
RAMO #5	Storage	< 10
RAMO #6	Boat Rental and Maintenance Garage	>15
RAMO #7	Day Use Area Restrooms	< 10
RAMO #8	Boat Marina Gas Dock	< 10
RAMO #9	Boat Garage Storage Units	< 10
RAMO #10	Sewer Treatment/Maintenance Shops	< 15
RAMO #11	Campground “A” Restrooms	< 10
RAMO #12	Lakeshore Cabins	< 15
RAMO #13	Lakeshore Cabins	< 15
RAMO #14	RV Campground Restrooms	< 10
RAMO #15	Small Pump House	< 10
RAMO #16	Road 12 Sewage Treatment Building	< 10
RAMO #17	Road 8 Sewage Treatment Building	< 10
RAMO #18	Road 6 Sewage Treatment Building	< 10
RAMO #19	Water Treatment Plant	> 15

Table 1 cont.
Building Condition Assessment Service Life Summary

Structure ID	Description	Est. Service Life (yrs)
	LAKE BERRYESSA RESORT	
LMB #1	Main Entrance Kiosk	< 10
LMB #2	Snack Bar/Store/Office	< 15
LMB #3	Storage Sheds (Store)	< 10
LMB #4	Ice House	< 10
LMB #5	Maintenance and Fuel Garage	< 10
LMB #6	Boat Dock Office	< 10
LMB #7	Cabin Area Restrooms/Laundry	< 15
LMB #8	Day-Site Area Restrooms	< 15
LMB #9	Manager's Residence	> 15
LMB #10	Trailer Area Laundry and Restrooms	< 15
LMB #11	Campground Restrooms	< 10
LMB #12	Houseboat Rental	< 10
	SPANISH FLAT RESORT	
SPFL #1	Kiosk	< 10
SPFL #2	Office	< 15
SPFL #3	Office Shed	< 10
SPFL #4	Maintenance Shop	< 10
SPFL #5	Boat Marina	< 10
SPFL #6	Store and Storage	< 15
SPFL #8	Restrooms and Showers by Store	< 15
SPFL #9	Small Pump House	< 10
SPFL #12	Sunrise Restrooms	< 15
SPFL #13	Sunrise Point Restrooms	< 15
SPFL #14	Trailer Area Restroom	< 15
SPFL #17	Garages	< 10
SPFL #18	Sewer Treatment	< 10

Table 1 cont.
Building Condition Assessment Service Life Summary

Structure ID	Description	Est. Service Life (yrs)
	STEELE PARK RESORT	
STPA #1	Main Gate Kiosk	< 10
STPA #3	Harbor Cove Restaurant and Store	
STPA #4	Boat Dock Marina	< 10
STPA #5	Freezer and Two Storage Sheds	< 10
STPA #7	RV Restrooms	
STPA #8	Danny's Boat Rental	< 10
STPA #9	Boat Storage Sheds	
STPA #10 - #16	Fenced Yard w/ Boat and Miscellaneous Storage	> 15
	Exceptions: #10, #11, #13 and #14	<10
STPA #17 – #18	Main Boat garages	> 15
STPA #19	Miscellaneous Use Building	< 10
STPA #20	Trailer Area Restrooms and Laundry	< 10
STPA #21	Main Office and Ice Cream Shop	< 15
STPA #22	Captains Lounge Restaurant	< 15
STPA #23	Day Use Kiosk	< 10
STPA #24	Handball Court	< 10
STPA #25	Pump House	< 10
STPA #26	Day Use Area Restrooms and Laundry	< 10
STPA #27	Projection Room	< 10
STPA #28	Building by Boat Berth Parking (Storage)	< 10
STPA #29	Small Storage Building by Tennis Courts	< 10
STPA #30	30 Swimming Pool Building	< 10
STPA #31	Garden and Lakeshore Rental Cottages	< 10
STPA #41	Motel Rooms 1-12	< 15
STPA #42	Motel Rooms 14-25	< 15
STPA #43	Maid Service Kiosk	< 10

Table 1 cont.
Building Condition Assessment Service Life Summary

Structure ID	Description	Est. Service Life (yrs)
	PLEASURE COVE	
PLCO #1	Management Office	< 10
PLCO # 5 and #6	Storage Sheds	< 10
PLCO #7	Large Single Shed	> 10
PLCO #8	Campground Showers	> 10
PLCO #9	Campground Bathrooms	< 10
PLCO #10	Unfinished Campground Bathrooms	> 15
PLCO #11	Water Treatment Building	> 10
PLCO #12	Front Entrance Kiosk	< 10
PLCO #13	Shed (Across From Manager)	< 10
PLCO #14	Managers Residence	> 15
PLCO #16	Boat Shop	> 15
PLCO #17	Showers/Restroom Launch Area	< 10
PLCO #18	Grocery Store/Restaurant	< 10
PLCO #19	Ghetto Restrooms/Showers/Laundry	< 10
	MARKLEY COVE RESORT	
MACO #1	Main Office/Store- Office Trailer	> 15
MACO #3	Maintenance Shop	< 10
MACO #4	Boat Marina/Shop	< 15
MACO #5	Water Treatment Plant	> 15
MACO #6	Main Pump House	< 10
MACO #7a and 7b	Pump House	< 10

3 STANDARDS, CRITERIA AND PROCEDURES

3.1 Standards and Criteria

Kleinfelder and our subcontractors used the following applicable regulations, policies, standards and guidelines for each portion of the Facility Condition Assessment:

3.2 Roads/Parking Lots

The facility condition assessment includes evaluation of the roadways within the seven resort areas. The resort areas combine for more than 15 miles of roadway.[1] To economically evaluate this length of road Kleinfelder employed a statistical approach to roadway characterization. Following an initial site inspection, roads were identified on topographic maps and were classified as either collector or secondary. Collectors include the main roads through resorts as well as roads that collect traffic from lesser roads. All other paved roads were classified as secondary. This study did not include gravel roads or short driveways that serve only two or three dwellings. Tables 2-8 provide the results of the conditions assessment for roads/parking lots.

Sampling locations were selected based on random sampling procedures. Twenty sampling locations were identified in each resort, 10 on collector roads and 10 on secondary roads. All sampling locations consisted of 50-foot long pavement segments regardless of the width of the pavement. Sampling locations were identified in the field by pacing or measuring from adjacent surface features as shown on the topographic maps, and should be considered very approximate. At each sampling location the pavement condition was visually rated and the pavement geometry and roadside conditions were noted. The results of this statistical sampling process were used, in combination with a reconnaissance level site inspection, to form the basis of the conclusions and recommendations that are contained herein. Plates 2-8 refer to sampling locations and other observations regarding roads and parking lots on a resort by resort basis.

A summary of the criteria and standards used in the evaluation of pavements is as follows:

Roads and Parking Lots

[1] *USBR estimates of the length of paved roads at each resort are shown on the bottom of Tables 2 through 8. Kleinfelder did not perform survey services but we estimated roadway length based on available topographic maps. Our estimates are also presented on the subject tables. Kleinfelder's estimates are significantly higher than those of the USBR.*

- Napa County Code Sections:
- Title 10 Vehicles and Traffic
- Title 12 Streets, Sidewalks and Public Places
- Title 17 Subdivisions
- Napa County Adopted Road and Street Standards (Aug 2, 1999)
- Pavement Condition Index (PCI) as documented in USA-CERL Technical Report M-90-05
- 1998 California Building Code
- American Association of State Highway and Transportation Officials (AASHTO)

The evaluation process is described in more detail in the following sections. Results of the evaluations are provided in the resort by resort discussion in later sections of this report. A summary of the pavement condition assessment is presented in Tables 2 through 8 (Appendix A).

3.2.1 Roadway Geometry

An overview of roadway geometry was made during our site reconnaissance. Roadway geometry was also recorded at each sampling location. Because federal lands are immune from state and local regulations, Napa County has not reviewed the design or construction of any of the roads in the seven concession areas. Also, most roads were constructed before the current county regulations were adopted. Kleinfelder reviewed roadway geometry for compliance with Napa County Street Standards and with recommendations of the American Association of State Highway and Transportation Officials (AASHTO).

Napa County Standards.

Information that is contained in this report section is based primarily on the "Napa County Adopted Road and Street Standards," revised August 2, 1999 and on conversations with Mr. Larry Bogner of the Napa County Department of Public Works.

Private roads must be built to same standards as public roads. For private developments that were constructed prior to the adoption of current design standards (1971) Napa County does not normally enforce regulations retroactively. However, an upgrade to current design standards would be required under the following conditions. 1) If significant improvements are made (50% of the value of the current improvements over a five-year period). 2) A use permit is obtained. 3) There is construction of a new road or the extension of an existing road. 4) New subdivisions are permitted in the development. 5) Conditional certificates of compliance are obtained. In addition, if applications are submitted for new building permits all roads that service the affected property typically need to be improved to county standards.

Napa County does not have regulations specifically pertaining mobile home parks or resorts. The three types of minor roads in the Napa County Standards that best apply to the existing site usages are as follows.

1) Loop Road and Non Continuing Minor. Serves abutting property; traffic volume up to 250 vehicles per day.
2) Cul-de-Sac. Serves as an access road to abutting property; traffic volume up to 250 vehicles per day.
3) One Way Loop Roads. Special purpose roads depending upon site circumstances; maximum length ½ mile in hill areas (average slope of 10% or more); traffic volume up to 150 vehicles per day.

County requirements pertaining to these three road types are presented in Table 9. For use with this table, any developments which have an average lot size of less than ¾ acre per dwelling and/or in which 90% of the lots have frontages less than 115 feet are classified as high density. A high-density classification would appear to apply to all of the seven resort areas. In high-density areas, full on-street parking is required, consisting of two parallel parking lanes. In addition, fully improved Portland Cement curbs and sidewalks are required. These criteria would require paved roadways (including traffic lanes, parking lanes and sidewalks) that are at least 40 feet wide, compared to an average of 20 feet or less in all resorts. Additionally extensive drainage improvements would be required. Requirements for high-density developments are not compatible with existing roadways and would require virtually complete demolition and reconstruction of most resort areas.

However, the county code contains provisions that provide flexibility for developments that are not in strict compliance with street standards, but which satisfy the intent of the code. Because these permits are discretionary, it is not possible to fully characterize the County's requirements. Engineering studies would be necessary to estimate traffic flows, the number of parking spaces required and other drainage and geometric considerations. For comparison purposes we have included in Table 9 (in appendix A) the county's requirements for low-density developments. It is possible that the County would accept these standards, if sufficient off-street parking is provided.

AASHTO Guidelines

This section is primarily based on "Guidelines for Geometric Design of Very Low-Volume Local Roads," American Association of State Highway and Transportation Officials, 2001.

A very low-volume local road is a road that has a design average daily traffic volume of 400 vehicles per day or less. The AASHTO manual provides nine subclasses of low volume roads. (When roads meet the definition of more than one of the subclasses it is recommended that the road should be evaluated using the design guidelines applicable to each functional class, and the higher of the applicable design guidelines should be applied.)

The two most applicable road subclasses are:

"*Rural Recreational and Scenic Roads*. Recreational and scenic roads serve specialized land uses including parks, tourist attractions and recreational facilities such as campsite or boat-launch ramps, and are found primarily in rural areas. Traffic is open to the general public, and their users are more likely than users of other functional subclasses of local roads to consist of unfamiliar drivers. Recreational and scenic roads do not generally carry significant volumes of truck traffic, but do serve recreational vehicles including motor homes, campers, and passenger cars pulling boats and other trailers. In many cases, these roads may carry highly seasonal traffic volumes. Recreational and scenic roads may accommodate a wide range in speeds and trip lengths may be fairly long. Such roads may be either paved or unpaved. The ability of vehicles in opposing directions to pass one another is an important design consideration. Access past parked vehicles is not a major concern because parking on rural roads is not common."

"*Urban Residential Streets.* Urban residential streets typically serve to provide access to single- and multiple-family residences in urban areas. Motorists using such streets generally include only residents and their visitors. Use of such streets by large trucks and other heavy vehicles is rare, except for occasional use by delivery and maintenance vehicles. Accessibility for fire trucks and school buses is an important consideration in the design of residential streets. The major functional requirements for very low-volume local roads in urban areas include the ability for vehicles in opposite directions to pass one another, the need for vehicles to pass parked or stopped vehicles, the need to provide access for fire trucks and other emergency vehicles, and the need to accommodate occasional larger delivery vehicles."

AASHTO guidelines typically do not require upgrading of the geometry of low volume existing roads unless there is evidence of a site specific safety problem. This is due to the fact that accidents are rare on this type of road because of very low traffic volumes and slow speeds.

3.2.2 Roadside Design

AASHTO: "Both the safety literature and the risk assessment conducted by Neuman indicate that run-off-the-road crashes on roads with very low traffic volumes occur so infrequently as to make any minimum clear zone width demonstrably not cost-effective.

Research has found that roadside clear zones provide very little benefit, and that traffic barriers are not generally cost effective, on roads with very low traffic volumes. However, there are no established criteria to identify those limited situations where provision of a roadside clear zone or a traffic barrier may be warranted.

Roadside clear zones and traffic barriers are not generally cost effective and need not generally be provided, except in situations where the engineering judgement of the designer identifies the need for the provision of a roadside clear zone or guardrail. Evidence of a site-specific safety problem that could indicate the desirability of providing a roadside clear zone or a guardrail can

include reported crashes or evidence of roadside encroachments. However, both roadside encroachments and crashes are generally very rare on very low-volume local roads."

3.2.3 Pavement Design Life

The design life for a well designed asphalt pavement is typically 20 years. Our experience is that actual life is somewhat greater, normally in the range of 25 to 30 years before major rehabilitation is required. Failure usually occurs gradually through fatigue or weathering. By tracking over time the amount of distress that a pavement shows, it is often possible to anticipate when major repairs are likely to be required.

3.2.4 Pavement Condition Index

All pavements in this project were visually rated in accordance with the Pavement Condition Index (PCI) method. This rating method was developed over a period of many years to result in a composite index that reflects the pavement condition based on observable defects. The method used is described more fully in the Micro PAVER Pavement Management System manuals, which were developed through funding from the US Federal Highway Administration and the American Public Works Association. This method is generally consistent with ASTM D5340 (Standard Test Method for Airport Pavement Condition Index Surveys) with the exception that some distress severity ratings have been modified to reflect the differences in usage between roadways and airfield pavements.

The PCI of a pavement is a measure of its present serviceability. A PCI rating of 100 reflects a pavement in nearly perfect condition. A rating of 10 or lower indicates a pavement with extensive failures that is in immediate need of repair. When combined with a knowledge of the pavement structure and performance history, the PCI can be used to develop a relatively reliable indicator of remaining pavement life. For this project no pavement coring or deflection testing was performed, and the history of existing pavements is not well known. We have combined the PCI ratings with our experience with similar pavements to develop a model of estimated remaining pavement life. These values should be considered very approximate and would normally be used in combination with physical testing to determine appropriate types of pavement remediation.

Pavements are highly variable. This appears to be due to a combination of three factors.

1) Poor Road Construction. Many of the roads appear to have been constructed on a poor subgrade, with minimal aggregate base. In many areas, subgrade soils appear to be expansive. Additionally, roads of significantly different ages were included in this survey.

2) Variable Traffic Levels. Many of the resorts have a single access road that serves the entire resort. These roads typically receive much more traffic at the entrance than at the more

distant end. Similarly, secondary roads are highly variable in the amount of traffic that they receive and number of dwelling units that they serve.

3) Poor maintenance. Preventive maintenance does not appear to be performed at any of the resorts. Maintenance appears to consist of repairing only the worst, totally failed areas of roadway. As a result some pavements are a conglomerate of aged failing areas and newer patched areas.

3.2.5 Pavement Thickness and Design Life

A well designed pavement is typically expected to have at least a 20-year design life. For reference purposes we estimated design pavement sections for the resort areas based on Caltrans methods for a 20-year design life. Collector roads were designed for a Traffic Index (TI) of 5 to 6, corresponding to approximately 2 to 10 trucks per day (garbage trucks, dump trucks, delivery trucks etc.) Smaller secondary roads were designed for a TI of 4 to 5, corresponding to approximately 1 to 10 trucks per week. For this range of traffic values, and a soil subgrade R-value of 5 (typical for this area), pavement thickness as summarized below:

Road Classification	Traffic Index	Asphalt Concrete/Aggregate Base AC/AB
Secondary	4	2.0”/8”
Collector	5	3.0”/9”

Any new pavements (road widening, curve modifications, turnarounds etc.) should be constructed to these thicknesses. Pavement coring was not performed and as such thicknesses of existing pavements were not measured. However, based on observations at potholes and road shoulders, it appears that few, if any, existing pavements meet the thicknesses shown in the preceding table. Because of thinner than desired pavement sections, and the fact that virtually all pavements show significant use, none of the roadways that we rated satisfy the Reclamation “long term” criteria of having a useful life through the year 2024.

3.3 Waste Water Systems

The evaluation of wastewater systems and recommendations made regarding these systems adhere to the standards and requirements promulgated by the Regional Water Quality Control Board. The evaluation of potable water systems and recommendations made regarding these systems adhere to the standards and requirements promulgated by the State of California Department of Health Services. In both cases, we have also adhered to the requirements of the local health department. Criteria and Standards are summarized as:

Waste Water Systems

- United States Code, Title 33, Subchapter III, Standards and Enforcement
- California Health and Safety Code, Part 13, Chapter 4
- California Water Code
- Napa County Code, Title 13

Wastewater treatment systems for six of the seven concession areas consist of storage ponds designed for zero discharge. Only Steele Park uses an alternative form of wastewater treatment; Steele Park uses the services of an activated sludge treatment facility operated by Napa County. At each of the other concession areas, wastewater is collected by local sewer systems and pumped to retention ponds. Some facilities have spray systems to reduce algae formation and increase dissolved oxygen (DO) levels in the ponds.

Several concession areas are using spray irrigation to dispose of wastewater from the retention ponds, especially during the summer months when park usage is highest. Typically, these sprays are applied to forested areas surrounding the ponds. Detailed discussions of the specific wastewater systems are presented in each separate concession area section of this report.

3.4 Potable Water Systems

The criteria and standards for the evaluation of potable water systems is summarized as:

Potable Water Systems

- United States Code, Title 33, Subchapter III, Standards and Enforcement
- California Health and Safety Code, Part 12
- California Water Code
- Napa County Code, Title 13

Potable water for Steele Park is provided by a municipal water system. At Spanish Flat, water treatment is provided off-site. Mixed media filters at Markley Cove, and pressure filters at each of the remaining concession areas are used to treat lake water. Polymer for flocculation and liquid chlorine for disinfecting are provided at each water treatment facility. Chlorine analyzers were provided at each treatment facility with alarms to notify the maintenance staff of low chlorine levels. Turbidimeters were provided at some facilities. Backwash water from the filters commonly drains to a small, excavated pit near the water treatment facility.

A detailed discussion of the specific water systems are presented in each separate concession area section of this report. An engineering evaluation inventory matrix for each resort is summarized in Table 10. An engineering evaluation inventory summary for the potable/wastewater systems is summarized in Table 11. Resort specific matrix summaries are presented in Tables 12 through 18 (Appendix A).

3.5 Electrical Systems

Most concession buildings have individual PG&E meters and are served by an overhead high voltage distribution system with pole-mounted transformers owned by PG&E that runs through the marina. Some small concession buildings are sub-fed from larger buildings via a resort-owned distribution system. Electrical power was generally found to be distributed throughout a wire and conduit type electrical system. Typically, branch conductors were generally enclosed in Electro-metallic tubing (EMT). All power wiring appeared to be copper. Criteria and standards for evaluating the electrical systems are:

Electrical Systems

- NFPA 70, National Electric Code, all relevant sections but in particular *Article 555, Marinas and Boatyards, and Article 553, Floating Buildings*
- NFPA 303, *Fire Protection Standard for Marinas and Boatyards*
- NFPA 30A, *Automotive and Marine Service Station Code*

Findings are provided for each resort in later sections of this report and summarized in Tables 19 through 25 (Appendix A).

3.6 Boat Launch Facilities

The seven marinas located at Lake Berryessa each have facilities for launching small boats from vehicle driven trailers. In evaluating the boat launch ramps, the Kleinfelder team considered access, traffic controls, slope, depth, retaining curbing, surface scoring, signing and maintenance. The courtesy docks were inspected to determine material, anchoring system, flotation billets and overall general condition. This report includes the assessed condition of the boat launch facilities as well as the efficiency and effectiveness. Criteria used includes:

Boat Launch Facilities

- Military Handbook 1025/5, "*Ferry Terminals and Small Craft Berthing Facilities*", September 1988.
- Department of Boating and Waterways, State of California, "*Layout and Design Guidelines for Small Craft Berthing Facilities*", Boating Facilities Division.
- Department of Boating and Waterways, State of California, "*Cal Boating Launching Facilities*", Boating Facilities Division.

Findings are provided for each resort in later sections of this report and summarized in Tables 12 through 18 (Appendix A).

3.7 Shoreline Developments

A senior geotechnical engineer walked the lakeside perimeter of the resorts to evaluate the condition of the various shoreline retaining structures. The retaining structures were evaluated

on their current structural condition, and their probable ability to function on an acceptable level to the year of 2030.

In nearly all situations, the retaining structures were found to be deficient for a number of reasons, including the following:

- Little, if any, engineering incorporated into their design;
- Substandard construction utilized during installation;
- Foundation failure due to settlement and/or foundation undermining due to wave erosion;
- Lack of back of wall drainage systems to control excessive hydrostatic pressures;
- Outward tilting of wall due to excessive lateral pressures, and resulting settlement of the backfill; and,
- Deteriorated or substandard construction materials: i.e., the use of non-galvanized metal for fasteners, pipes and cables; non-treated wood; exposed steel reinforcement; and, non-reinforced masonry construction.

Generally, the retaining structures appeared to be built by the individual tenants, on an "as needed" basis, without any building permits or construction inspection.

A summary of those shoreline development structures findings are presented in the resort specific sections of this report.

3.8 Marinas and Fuel Systems

The marinas and fuel docks are evaluated using the safety guidelines established by the California Boating and Waterways Commission and those required by state/county and Federal policy. The condition assessment includes evaluation of the flotation materials, construction materials, anchoring systems, electrical systems, sewer and water systems and fueling systems. It has been determined that future contracts will require encapsulated flotation billets. Unacceptable docks are identified. Criteria for evaluation include:

Marinas and Fuel Docks

- Military Handbook 1025/5, "*Ferry Terminals and Small Craft Berthing Facilities*", September 1988.
- Department of Boating and Waterways, "*Layout and Design Guidelines for Small Craft Berthing Facilities*", Boating Facilities Division.
- Uniform Fire Code
- 4) National Fire Protection Association (NFPA) 30: *Flammable and Combustible Liquids Code*
- NFPA 30A: *Automotive and Marine Service Station Code*
- NFPA 70: *National Electrical Code*
- NFPA 303: *Marinas and Boatyards*
- ANSI B31.1: *Fuel Piping Installation*

All seven resorts assessed at Lake Berryessa have floating docks with no anchor piling used. The floating docks are designed to support all vertical loads by buoyancy provided by the floats. The vertical loads include dead and live (transitory) loadings applied to the floats. The mooring lines provide the lateral load resisting system to counter the horizontal loading produced by wind forces on the boats and current forces on the docks.

The mooring lines are generally attached to the shore side of the main dock and on either side of the outboard end of the main dock. Altering the line lengths or altering the tension on hand winches where provided performs adjustments for the dock position due to the varying lake levels. Gangways or access ramps are used to gain entry to the main walkways of the floating docks. The typical dock arrangement consists of the gangway, a main walkway and the finger piers that define the berth boundaries. Vessels berthed at the resorts include a wide size range of craft from personal watercraft to houseboats with the majority being boats of approximately 20 feet in length. The berths range in length from 18 to 24 feet, with the majority at 20 feet.

Findings are provided for each resort in later sections of this report and summarized in Tables 12 through 18 (Appendix A).

3.9 Preliminary Environmental Survey

The Kleinfelder team conducted a preliminary environmental survey regarding known or suspected releases of hazardous substances on or near the subject site. A Recognized Environmental Condition is defined by the American Society of Testing and Materials (ASTM) *Standard Practice for Phase I Environmental Site Assessments*, *Phase I Environmental Site Assessment Process* (E1527-00), as "the presence or likely presence of hazardous substances or petroleum products under conditions that indicate a release into structures on the property or into the ground, groundwater or surface water of the property." A checklist form was used for the Preliminary Environmental Survey.

4 PUTAH CREEK RESORT

4.1 Waste Water Systems

Ponds:
There are three evaporation ponds. Each pond has six arms with two misters each. The misters are placed at a high elevation with steep sloping hills and are driven by Century 15 hp motors. The ponds are configured so flow can be directed to the least full pond, either though gravity or pumps. There is a wind gauge to shut off the misters during high winds to reduce the potential for human contact. An overflow pipe was observed on the backside of the hill where flows in excess of pond capacity could be discharged into the ravine.

The wastewater retention ponds at Putah Creek are considered undersized for the current resort development. This conclusion is based on the presence of discrete overflow pipes, implementation of spray disposal fields, and reports of the ponds being overtopped. Spray disposal that is being performed should be ceased immediately because the wastewater that is being discharged is minimally treated (spraying occurs during peak usage), the wastewater is not disinfected, and the potential for human pathogenic contact is very high.

Lift Stations:
There are two lift stations for the 180 hookups.
LS 1: Equipment at this lift station includes two Baldor pumps (one is new), a float system for level control, alarms, and a 3" diameter galvanized steel force main. They reportedly run all day on weekends.

LS 2: There are only a few washrooms or houses connected to this lift station. The pump was replaced last year. There is also a float system for level control and an alarm for high water.

Each of the lift stations was found to be unacceptable for continued use. The lift stations would require, at a minimum, additional reliable pumping capacity, new instrumentation and controls, a functional alarm system, and standby power facilities in order to be adequate. In addition, the structures housing the pump stations are substandard. These conditions make these lift stations unreliable. Coupled with the location of many of the stations, the risk of failure leading to contamination of the lake is considered very high.

New lift stations should be constructed using new equipment and materials. The force mains should also be replaced. These new facilities should be located and sized in conformance with planned future uses of the resorts.

Collection Systems:
The condition of the collection system was discussed with staff.. Flooding is reported indicating the collection system is undersized for the flows experienced. Flooding is so significant at Putah Creek that the maintenance staff places temporary risers on the manholes throughout the rainy season to keep the manholes from overflowing.

Based on the age of the sanitary sewers, the materials and construction methods commonly used when the systems were built, and the lack of regular maintenance and repairs, it is anticipated that the sewers are in a generally deteriorated condition. Putah Creek does not have mapping showing the size, length, or alignment of the pipelines, manhole locations, or other important information.

Miscellaneous.
Numerous problems, such as exposed polyvinyl chloride pipe (susceptible to ultraviolet degradation and failure) and spray mister heads that should be replaced, were observed. Exposed electrical wiring represents a safety hazard and should be corrected immediately. Maintenance activities such as weed removal and clay-lining repairs should be performed at the ponds.

4.2 Potable Water Systems

Treatment Plant:
This water treatment facility is comprised of four Everfilt Model SM30 filters that are reportedly backwashed every five days. The system is designed to run through all of the filters in series. Chlorine and polymer are added to the water. A Hach chlorine analyzer and turbidimeters are provided. An alarm system to measure the chlorine and clarity levels was broken at the time of our visit. The alarm system does not monitor the pressure through the filters or any of the electrical components of the plant.

Storage Tanks:
One storage tank for 250 hookups. The tank is made of redwood and is reinforced with steel bands. It is approximately 15’ in diameter and 10’ in height. A Mueller valve is provided to control the flow of water into and out of the tank. Some movement of the reinforcing bands was observed. Leakage on the backside of the tank was also noted.

4.3 Roads/Parking Lots

Pavement Section:
The collector road between the entry and the store has significant patched areas and areas of fatigue failures. Other collector roads are in better shape, containing limited fatigue failures, with most distress related to weathering and aging of pavements. Secondary access roads are in relatively good condition, particularly in the campground area that is west of Knoxville Road.

For a 20-year design life, all areas of severe alligator cracking should be excavated and replaced with compacted aggregate base and a 1-inch thick asphalt patch to match the level of the existing roadway. Collector roads should then receive an asphalt concrete overlay that is 2 inches thick. Secondary roads should receive an asphalt concrete overlay that is 1.5 inches thick; this may be reduced to one inch thick in the campground area that is west of Knoxville Road.

Geometry:
The width of most collector roads is adequate. No areas of severe curvature or overly steep grades were noted. After receiving an overlay these roads should be striped and signed.. Most secondary roads are not wide enough to accommodate two-way traffic. In some areas there is the potential to create one-way loops, but in at least three areas this does not seem practical and the roads should be widened to accommodate 2-way traffic with end of road turnarounds. Although site grades will permit this work it will be necessary to remove some trailers, power poles and other facilities. The radius of curvature of one or two curves may also need to be increased to permit fire truck access. Widening and curve reduction will require surveys to determine the appropriate roadway geometry.

Other Considerations:
None noted.

4.4 Electrical Systems

Most concession buildings have individual PG&E meters and are served by an overhead high voltage distribution system with pole-mounted transformers owned by PG&E that runs through the marina. Some small concession buildings are sub-fed from larger buildings via a resort-owned distribution system. Electrical services ranged from poor to good. Internal wiring condition ranged from fair to good. Generally, the electrical systems are adequate for current use, but not adequate for long term use. Several code viloations were noted during the site inspection.

4.5 Boat Launch Facilities

The boat launch ramp at Putah Creek Resort is approximately 134 feet wide and extends 140 feet to Elev. 423.4', the lake level at the time of the assessment. The launch ramp has a two launching lane capacity as rated by the resort, but appears capable of having a six lane capacity per the California Boating and Waterways Guidelines. A single 25-foot long boarding float extends out from the center of the launch ramp. The average slope of the ramp is 16.7 percent. It consists of a 3½-inch thick nonreinforced concrete slab. There is a construction joint located midway down the ramp, running parallel with the water. Scoring is present on the concrete, but is worn. There are several cracks running parallel and perpendicular to the water. The ramp's southern end is experiencing cracking and undermining by the water. Slope protection has been

put in place, but appears to only be slowing the deteriorating process. There is an adequate turnaround area at the top of the ramp.

There was a single courtesy dock present at the time of the site visit. The dock is 20 feet long with an 11-foot access ramp. The dock is held in position through of anchor lines secured to the ramp. The dock is constructed of timber decking with a plastic carpet wearing surface. Cleats and rub strips are present along the perimeter. The dock is in fair condition.

It is recommended that the ramp be retained, but the repairs must be made to the cracking and erosion on the southern end. The larger surface cracks can be filed by the use of epoxy injection and there should be a cutoff wall constructed along the southern edge to prevent future erosion and concrete deterioration. The broken concrete at the southern edge should be replaced. Additional slope protection should be used along both edges of the ramp to prevent future undermining of the concrete. Curbs may be poured along the edges to define the boundaries of the ramp.

It is recommended that the courtesy dock not be retained for future use because of its age and deterioration.

4.6 Shoreline Developments

The shoreline developments are a mixture of various construction types, including wood (both treated and non-treated), shotcrete, masonry block, poured-in-place concrete, and gabion baskets. For the most part, the majority of the walls were determined to be at/very near failure due to material deterioration, significant cracking, out ward tilting, or foundation failure. A section of gabion wall and a masonry block wall, as described below, appear to be acceptable structures.

The lake perimeter along the campground, on the westerly side of Berryessa-Knoxville Road, has a series of poured-in-place concrete and treated/redwood walls, exhibiting various degrees of failure. The concrete walls have no foundations to provide lateral resistance. They are essentially only “stem walls”. The wood walls have significant amounts of material degradation.

The following is a listing of retaining structures that appear to be acceptable structures, having a reasonable design life, if properly maintained:

- Southeasterly of Unit No. 130: gabion wall
- Northeasterly of Unit No. 131: masonry block wall

4.7 Marinas and Fuel Systems

4.7.1 Dock Facilities

There are twelve berthing docks located at this resort with 128 available slips. All slips are comprised of a cable-secured, floating dock system, as are all docks on Lake Berryessa. There is a single fueling dock (Dock #1) and one courtesy dock located at the boat launch ramp. Docks #4, #7, #9 and #10 are covered. The slip size varies from 8'-0" wide to 14'-0" wide and is defined by adjacent fingerfloats. All fingerfloats are approximately 22'-0" feet in length. The general condition of the docks is that the decking boards are loose or need replacing in many locations and the buoyancy systems for the floats consists of non-encapsulated open-cell foam which have partially deteriorated.

The fuel dock is in fair to poor shape. The floating dock consists of concrete floats, supporting timber stringers. The decking consists of a 2-1/2" thick concrete slab. The main walkway to the fuel dock has timber decking. The floats are currently providing 12"-13" of freeboard. The fuel dock is held in position by wire cables secured to the deck and held fast at lake bottom by concrete ballast. Currently tied to the fuel pier is a five slip dock. This is in poor condition. The foam billet floats have deteriorated and the plywood decking is in bad condition.

The floats that have been in place for many years are deteriorating due to the environmental conditions.

Wire cables and concrete ballast at the ends of the last fingerfloats secure the docks. Adjustment for the dock position due to lake level is made possible by a winch located on the shore, running a wire cable secured to the first fingerfloats.

The fuel dock (Dock #1) and the attached berthing dock are both showing signs of deterioration and should not be retained for future use. The berthing dock is in poor condition and will only deteriorate with time. All of the remaining docks (#2 through #8) utilize non-encapsulated open-cell foam floats that are showing evidence of deterioration. The freeboard of these docks varies along the length of the finger floats and the walkway. Generally, the timber decking is in fair to poor condition with many of the fasteners loose or missing. The gangways accessing the floating docks from the shoreline are generally in poor condition. Due to the condition of all docks at this resort and the cost necessary to upgrade them to an acceptable level, it is recommended that none of the docks be retained for future use.

4.7.2 Fueling Services

There is one fuel dock here with a single dispenser located on the end of a Tee shaped dock. There is a double compartment storage tank on shore. The tank holds supreme unleaded and regular unleaded. There is a dispenser at the storage tank for ground vehicles. The tank is piped

to both dispensers. Each dispenser has a hose and service station type nozzle for each fuel. The dispenser at the dock is out of service.

The storage tank is located on shore adjacent to the grocery/deli store. This is a flat paved area. The storage tank is an above grade, horizontal, cylindrical double wall tank that sits on a concrete slab with a curb around it. The tank has two-4,000 gallon compartments. Tank appurtenances for each compartment include a primary vent, emergency vent, fill line, vapor recovery line, product dispensing pump, manhole and stick sampling hatch. Each compartment has a level gage. There is a ladder for access to the top of the tank. There is no leak detection monitoring system for the tank. There is no containment parking area for the tank truck and ground vehicles.

All of the tank piping is routed along the top of the tank toward the front of the tank where it comes down to ground level. Each tank compartment has a 3-inch fill line, 3-inch vapor line and 2-inch product dispensing line. The fill line has a coupler, gate valve and swing check valve. The vapor line has a coupler. The pump dispensing line contains an on/off solenoid valve, ball valve and 1 ½ inch branch line for the dock dispenser. All of this piping is located over a metal containment area within the concrete curbed area. The ground vehicle dispenser is located within this area, also. The containment area has an open drain, which drains, into the concrete curbed area, however this area does not have a drain.

The piping to the fueling dock is underground and is flexible double wall piping. The connection to this piping at the tank is made in the well. The piping to the dispenser on the dock has been removed. It was single wall galvanized pipe installed on the dock walkway. We were told that a flexible line broke at the dispenser a few years ago with a resulting fuel spill. The dispenser has been out of service since then.

4.8 Preliminary Environmental Assessement

A site visit was conducted to assess and photograph present site conditions. Ms. Melpo Petsas, resort manager, was interviewed regarding site history and operations. Results of the interview and site observations are presented in the following site observations table.

SITE OBSERVATIONS

General Observations	Remarks	Observed	Not
Current Use	Resort with motel, restaurant, store boat facilities and mobile homes	X	
Past Use			X
Structures	Numerous buildings, restrooms, kiosks, office, restaurant, store	X	
Terrain	Varied	X	
Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Hazardous chemical and petroleum products in connection with known use.			X
Aboveground storage tanks (ASTs)	Unleaded gasoline near store. approximately 4,000 gallon. Numerous small propane tanks around site	X	
Underground storage tanks (USTs)			X
Odors			X
Pools of Liquid			X
Drums	Four 55-gallon drums near AST	X	
Hazardous chemical and petroleum products in connection with unknown use.			X
Unidentified substance containers			X

SITE OBSERVATIONS (CONTINUED)

Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Chemical storage or agricultural chemical mixing areas			X
Asbestos, and lead based paints	Not assessed		
Polychlorinated biphenyls (PCBs)			X
Pits, Ponds, or Lagoons	Waste water ponds on hill above site.	X	
Stained soil or pavement			X
Stressed vegetation			X
Hazardous Waste Storage	Miscellaneous small quantities of paints, oils and grease in maintenance area.	X	
Solid Waste			X
Waste Water		X	
Process waste water			X
Wells	Groundwater monitoring wells near store/boat dock area	X	
Dry wells			X
Surface water	Waste water ponds on hill above site	X	
Storm basins/catch			X

SITE OBSERVATIONS (CONTINUED)

Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Storm drains			X
Drains and sumps			X
Septic system	Adjacent to motel.	X	
Loading and unloading areas			X
Burned or buried debris	Debris located on hill beneath the waste water ponds	X	

In summary, the environmental survey revealed recognized environmental conditions at the site. The site is currently undergoing groundwater testing/observations related to a leaking fuel storage tank near the store. Numerous groundwater monitoring wells were observed. In addition, small quantities of paints, oils, greases, were observed near the maintenance area.

5 RANCHO MONTICELLO RESORT

5.1 Waste Water Systems

Ponds:
There are ten evaporation ponds on four separate systems, called Day Park, Road 6, Road 8, and Road 12.

Day Park:
This system has three ponds with 2 sprinkler heads per pond. There are spray fields for disposal of pond effluent that reportedly run all the time in the summer but not in the winter. The lift station can pump to any of the ponds. The pumps to the spray fields are 1-2 years old.

The ponds were lined with bentonite clay in January 2001. According to the staff person who guided us during the inspection, the ponds never overload, but this is contrary to the need for the spray disposal system. Duckweed was a problem in 1996. The pumps get clogged with leaves on occasion. There are no wind sensors and the misters are manually controlled. There is a 3" force main from the lift station and 1" pipes between ponds. There are some grading problems near Pond #3.

Road 6:
There are two ponds at this location. The misters at these ponds were not operating properly during the inspection. The mister for Pond #1 was turned off and the one on pond #2 was a solid stream. These ponds get oil and grease run off from the highway. There are sprayers to dispose of pond effluent on the hillside, but the spray field was dry during inspection.

Road 8:
There are two ponds for this system. Electrical power at this site was removed, but some exposed electrical wires remain. Discharge from the lift station is sprayed into Pond #1 to control algae growth. There are exposed, damaged joints in the overflow pipe between the two ponds; a joint failure would result in both ponds emptying down the hillside.

Road 12:
This system is composed of three ponds with zero, one, and two misters. During inspection, there was water in the roadway below the ponds, but the maintenance crew did not know the source. They are planning to increase the embankments to provide additional freeboard. Freeboard was added in 1997, but subsequent overflows still occurred. There is minimum pressure when the misters and spray fields are turned on. There are 1" pipes between the ponds

that are used for equalization. Flow moves between the ponds by gravity only; there is no pumping between them.

Lift Stations:
There are four lift stations for 470 hookups. They follow the same naming convention as the ponds.

Day Park:
This station can pump 60-80 gal/min when the screen is clean, using a 6.5" diameter Berkeley pump, model B1-1/2 TPLS. The force main is a 4" diameter pipeline. Flow doubles on rainy days.

The lift station is located near a picnic area. There are three chambers to the station, with the lift station sitting on chamber number three. Ventilation appears to be adequate to control odors. This station is equipped with a light alarm on top.

Road 6:
This station also has three chambers. Using a 5 horsepower, Berkeley pump it can pump 40 gal/min when the screen is clean through the 2" diameter force main. The lift station is checked daily. Flow metering is based on a run-time electrical meter.

Road 8:
This is the smallest lift station at Rancho Monticello Resort. This station also has three chambers, with the lift station on chamber number three. The pump is a Baldor Model R433A and can pump 40 gal/min when the screen is clean. This lift station is housed by cinder blocks. Although the cinder blocks have been resealed, leaks through the walls are very likely. This lift station sits relatively close to the lake on a mild slope and the water level in the lake has reached a level just 2.5" below the concrete pad on multiple occasions. The phone dial out alarm system does not work.

Road 12:
This station has the smallest lift with the highest capacity. It has three chambers, which are approximately 12'x12'x12'. The 10 horsepower Baldor pump is capable of pumping 40 gal/min when the screen is clean. Pump station flows are measured using an electric run-time meter. A mercury switch activates the start and stop of the pump. If the water level in the wetwell reaches a predetermined set point, an alarm light located on top of the pump station illuminates. There is no pager and the dial out phone system does not work. Sandbags surround the station prevent the lake water from entering the lift station.

On occasion, the maintenance crews have used a chemical additive to aid biological digestion of the wastewater, but the digester is too slow to be effective. Currently there is only one pump but the resort has a back up in storage, which would reportedly take approximately one hour to change.

As a general statement, each of the lift stations was found to be unacceptable for continued use. The lift stations would require, at a minimum, additional reliable pumping capacity, new instrumentation and controls, a functional alarm system, and standby power facilities in order to be adequate. In addition, the structures housing the pump stations are substandard. These conditions make these lift stations unreliable; coupled with the location of many of the stations, the risk of failure leading to contamination of the lake is considered very high.

The force mains connecting these lift stations to the ponds are also questionable. Force mains that are less than 4 inches in diameter are susceptible to plugging in wastewater applications. New lift stations should be constructed using new equipment and materials. The force mains should also be replaced. These new facilities should be located and sized in conformance with planned future uses of the resorts.

Miscellaneous:
Numerous problems such as exposed polyvinyl chloride pipe (susceptible to ultraviolet degradation and failure), non-operating pumps, and spray mister heads that should be replaced were observed. Exposed electrical wiring represents a safety hazard and should be corrected immediately. Maintenance activities such as weed removal and clay-lining repairs should be performed at the ponds.

5.2 Potable Water Systems

Treatment Plant:
This plant is larger than the treatment plants at the other resorts. It is equipped with an alarm for high chlorine levels (but not pressure) hooked up to a pager system, a light outside to indicate high turbidity, and shuts off if chlorine is too low. There is a booster pump to get water through the filters, as gravity is not enough. The pipes and valves are all composed of plastic. The 3 Sta-Rite water conditioners and one Water King are set up in serial alignment. The polymer and chlorine solutions are mixed daily and fed into the treatment system through static in-line mixers.

This water treatment facility also has a larger chlorine tank outside the main building to contain the larger volumes of mixed chlorine required. The maintenance staff reports that they have a problem with solids settling in the bottom of the tank. This facility also has a standby diesel generator for emergency power.

Storage Tanks:
Two storage tanks for 600 hookups.
Tank 1: This tank, which was erected in 1996, is approximately 15’ high and 20’ in diameter. It is stainless steel and operates on a feed/fill system. This tank is connected with Tank #2 through a 2” steel line. The maintenance staff reported that there was a buckling problem when they first placed this tank into operation as they erroneously thought that Tank #1 was higher than Tank

#2. An extended standpipe (7') was added to the top of Tank #1, but the buckling at the top of the tank was not repaired. There are sensors 6" from the top to control the water levels in the tanks. On weekends, the fill pumps run all weekend in manual mode to try to keep up with demand.

Tank 2: This tank is also a stainless steel tank, constructed in 1996. It is feed by a 6" asbestos concrete pipe and a separate pump. Water levels are balanced between Tank #1 and Tank #2. No alarm has been installed on this tank; a neighbor will phone if the tank is observed to overflow. A crack was visible on the bottom of the tank and the cement pad is breaking up. There was also an exposed pipe that reportedly froze and burst at Christmas a few years ago.

5.3 Roads/Parking Lots

Pavement Section:
As indicated in Table 3, the collector roads and secondary roads are in poor condition. For a 20-year design life, all areas of severe alligator cracking should be excavated and replaced with compacted aggregate base to match the level of the existing roadway. Collector roads should then receive an asphalt concrete overlay that is 3 inches thick. Secondary roads should receive an asphalt concrete overlay that is 2 inches thick.

Geometry:
The width of most collector roads is adequate. No areas of severe curvature or overly steep grades were noted. After receiving an overlay these roads should be striped and signed.

Most secondary roads are not wide enough to accommodate two-way traffic. In most areas there is the potential to create one-way loops by appropriate signing (without the need for new road construction). In three or four areas this does not appear to be practical and it will be necessary to widen the pavement to accommodate 2-way traffic and install fire truck turnarounds at the ends of roads. In addition, several curves will need to have their radius of curvature increased to permit fire truck access. Although site grades will generally allow these improvements, they will require the removal or relocation of some trailers. In some areas it will also be necessary to remove trailers in order to provide adequate parking for residents and guests. These areas of roadway modification will need surveys to determine the appropriate roadway geometry. No areas of overly steep grades were noted. After alignment modifications and an overlay, secondary roads should be signed

Other Considerations:
Near the north end of the site a significant landslide has been repaired (the approximate location is indicated on Plate 3). The repair consists of a gabion wall that was constructed near the toe of the landslide. This wall is poorly constructed and because the road in this area has not been paved it is not clear whether landslide movement has stabilized. We recommend additional geotechnical studies to determine the extent of the landslide and the adequacy of repairs.

5.4 Electrical Systems

Most concession buildings have individual PG&E meters and are served by an overhead high voltage distribution system with pole-mounted transformers owned by PG&E that runs through the marina. Some small concession buildings are sub-fed from larger buildings via a resort-owned distribution system. Electrical services ranged from poor to good. Internal wiring condition ranged from fair to good. Generally, the electrical systems are adequate for current use, and most are adequate for long term use.

5.5 Boat Launch Facilities

The boat launch ramp located here has a six launching lane capacity. It is approximately 141½ feet wide and extends 135 feet to the waterline. It has an eight launching lane capacity per the Guidelines[2]. Two 30'-6" courtesy docks extend from the ramp, secured by chain anchor lines running from the ramp. The ramp consists of a 4-inch thick concrete slab and has a 14.6 percent slope. Construction joints are present on approximately 15'-0" centers running perpendicular to the water. Scoring is present on the surface and concrete deterioration is present in some areas. As with the ramp at Putah Creek, concrete is breaking up at the edges of the ramp and some erosion beneath the slab is present. There are several areas that have been patched and some large cracks are present.

The access ramps for both courtesy docks are of recent construction and are in good condition. They consist of galvanized steel frame and pipe handrails with a pressure treated timber decking. Galvanized pipe pontoons support the docks. There appears to be some rust on the pontoons, but they are in fair condition, with the docks level. The pontoon floats support timber cross members, which in turn support timber decking. The decking is showing effects of the environment with some deterioration evident. The docks are held in position by two chain anchor line attached to the shore side of the dock. The other ends are secured to the concrete launch ramp. Adjustments for changing lake levels can be made by varying the chain length.

Although the ramp is currently in usable condition, deterioration is present and will increase with time. The ramp may be retained but repair is required for future use. Shore protection should be used in the areas immediately adjacent to the ramp. The cracks should be filled by an epoxy injection method and the broken concrete repaired. Cutoff walls should be used at the ramp boundaries to prevent future erosion due to the changing water levels. The turnaround area at the head of the ramp is adequate and there is parking in the area beyond the ramp apron.

It is recommended that the courtesy ramps not be retained for future. Extrapolating the rate of deterioration forward and taking into account the amount of maintenance required, it is not economically feasible to retain the dock.

5.6 Shoreline Developments

A large variety of retaining wall construction methods are present at this resort, consisting of rip rap, gabion baskets, wood (both treated and non-treated), poured-in-place concrete, masonry block, tie-back walls, and a combination of all of the above.

Excepted as noted below, the majority of the structures are at or very near to the end of their service life, due to wood rot, excessive lateral movements, foundation undermining from wave erosion, lack of back drains to control excessive hydrostatic pressures, and corrosion of metal fasteners. Some new/rebuilt wooden walls were noted, however, such wood construction is expected to have a relatively short service life.

The following is a listing of retaining structures that appear to be acceptable structures, having a reasonable design life, if properly maintained:

- Road "F", approximate units C1 through C5: a 5'± tall masonry block wall
- Road "10", approximate units 380 through 389: a 4' to 5' tall masonry block wall

All other shoreline developments are not recommended for future use and should be removed.

5.7 Marinas and Fuel Systems

5.7.1 Dock Facilities

The docks owned by the concessionaire are located on and adjacent to the boat launch ramp and include a single fuel dock with a building structure and two courtesy docks. The fuel dock supporting the building structure and the fuel pump is in good condition. The building is a store operated by an attendant for the fuel dispenser. The construction appears to be relatively recent. There is a timber gangway leading to the dock supporting the building. The decking on the gangway is treated timber and is in good condition. The decking for the building float is fiberglass and plastic composite. The floats are plastic encapsulated foam. The building appears to be slightly out of level, so several of the floats may be leaking. The building is in good condition from an external visual inspection. The wall panels and roofing are in good condition.

The building dock is attached to the fuel dock. The decking for the fuel dock consists of precast concrete panels in good uncracked condition. The fuel line for the pump runs down the center of the dock in a recess covered by grating. The floats supporting the dock are concrete-encapsulated foam and appear to be in good condition. The rubstrips and timber fendering are all in good condition. The store and fuel docks are held in position by two anchors located on either side of the end of the fuel dock. There are two additional chain anchor lines running from the shore to either side of the building float. Adjustments for varying lake levels are made by adjusting the chain anchor line length.

There are several utility lines running from the shore to the dock. They include the fuel line, power and water.

5.7.2 Fueling Services

A single dispenser located on the end of the fuel dock. The dispenser has two fueling hoses with hand held service station type nozzles. There is a single compartment storage tank on shore. The tank holds regular unleaded. The tank is piped to the dispenser on the dock.

The storage tank is located on shore adjacent across from the grocery store. This is a flat paved area. The storage tank is an above grade, horizontal, cylindrical double wall tank that sits on a concrete slab. The tank capacity is 4,000 gallons. The tank appurtenances include a primary vent, emergency vent, fill line, vapor recovery line, manhole and product dispensing pump. Stick gauging is accomplished by removing a plug on the on the vapor line where it enters the tank. There is a ladder for access to the top of the tank. There is no tank level gage. There is no leak detection monitoring system for the tank. There is no containment parking area for the tank truck.

The tank piping includes a 3-inch fill line, 3-inch vapor line and 1 ½ inch product dispensing line. The fill line has a couple, plug valve and swing check valve. The vapor line has a coupler. There is no containment for this piping. The pump discharge line contains an on/off solenoid valve, check valve, gate valve and cartridge type filter. This piping connects to flexible double wall piping in a valve box. This double wall piping is routed to the fueling dock. The double wall piping is connected to the dock piping in a valve box on the dock. A hose connection with a ball valve is made to a 1-½ inch steel pipe, which is in a piping containment trough with a grate over it on the dock. There is no leak detection monitoring system for the double wall piping.

The courtesy docks located at the boat launch ramp are not recommended for future use because of the condition of the timber decking. Docks #2, #3 and #4 should be removed due the condition of the decking and the non-encapsulated open cell foam floats.

The resort owned floating fuel dock and store are in fair to good condition. It is recommended that both be retained for future use provided maintenance is performed at regular intervals.

For the storage tank, provide an overfill alarm to sound an alarm at 85 percent of tank capacity in accord with California Fire Code, Appendix ll-F 5.4 Overfill Prevention. The tank is allowed to be filled to 90 percent, but there is a warning at 85 percent. The fill line has a shut off device at 90 percent full.

A permanent sign should be provided at the fill point for the tank documenting the filling procedure in accord with California Fire Code, Appendix ll-F 5.4 Overfill Prevention. The

filling procedure should require the person filling the tank to determine the amount required to fill it to 90 percent of capacity before commencing the filling operation.

The tank foundation is unsatisfactory. It has experienced undermining under the waterside corner. The subgrade material is gone and not providing support. This must be repaired to prevent tank settlement.

5.8 Preliminary Environmental Assessement

A site visit was conducted to assess and photograph present site conditions. Mr. Peter White, resort owner, was interviewed regarding site history and operations. Results of the interview and site observations are presented in the following table. Results of the preliminary environmental assessent are summarized in the following site observations table:

SITE OBSERVATIONS

General Observations	Remarks	Observed	Not
Current Use	Resort with motel, restaurant, store boat facilities and mobile homes	X	
Past Use			X
Structures	Numerous buildings, restrooms, kiosks, office, restaurant, store	X	
Terrain	Varied	X	
Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Hazardous chemical and petroleum products in connection with known use. Fill dirt from an unknown source.			X
Aboveground storage tanks (ASTs)	Unleaded gasoline near store. Numerous small propane tanks around site	X	
Underground storage tanks (USTs)	Reportedly removed.		X
Odors			X
Pools of Liquid			X
Drums	Used oil recycling.	X	
Hazardous chemical and petroleum products in connection with unknown use.			X
Unidentified substance containers			X

SITE OBSERVATIONS (CONTINUED)

Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Chemical storage or agricultural chemical mixing areas			X
Asbestos, and lead based paints	Not assessed		
Polychlorinated biphenyls (PCBs)			X
Pits, Ponds, or Lagoons	Waste water ponds on hill above site.	X	
Stained soil or pavement			X
Stressed vegetation			X
Hazardous Waste Storage	Miscellaneous small quantities of paints, oils and grease in maintenance area.	X	
Solid Waste			X
Waste Water		X	
Process waste water			X
Wells			X
Dry wells			X
Surface water	Waste water ponds on hill above site	X	
Storm basins/catch	Discharged to lake.		X

SITE OBSERVATIONS (CONTINUED)

Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Storm drains			X
Drains and sumps			X
Septic system	Septic dump station	X	
Loading and unloading areas			X
Burned or buried debris			X

In summary, the environmental survey did not reveal recognized environmental conditions at the site. Small quantities of paints, oils, greases, were observed near the maintenance area. In addition, a used oil recycling bin was noted on site.

6 LAKE BERRYESSA MARINA

6.1 Waste Water Systems

Ponds:
There are five evaporation ponds. Each pond has two misters, but the misters are not functional (they spray a single stream instead of a mist). The ponds are clay lined. A large quantity of toilet paper had accumulated by the pumps. Many portable toilets are located throughout the campground, which would reduce the amount of wastewater being pumped to the ponds.

The wastewater retention ponds at Lake Berryessa Marina are undersized for the current resort development. This conclusion is based on the presence of discrete overflow pipes, implementation of spray disposal fields, and reports of the ponds being overtopped. Spray disposal that is being performed should be ceased immediately because the wastewater that is being discharged is minimally treated (spraying occurs during peak usage), the wastewater is not disinfected, and the potential for human pathogenic contact is very high.

Lift Stations:
There are two lift stations for 120 hookups.
LS 1: There are two submersible pumps that transport sewage for approximately 8 trailers with washrooms.

LS 2: This lift station has two underground septic tanks. Residual lime or powdered chlorine was evident around the lift station at the time of inspection, indicating a recent overflow and attempt to disinfect the area.

Each of the lift stations was found to be unacceptable for continued use. The lift stations would require, at a minimum, additional reliable pumping capacity, new instrumentation and controls, a functional alarm system, and standby power facilities in order to be adequate. In addition, the structures housing the pump stations are substandard.

Imhoff Tank:
This tank, which was built in the early 1970s, is approximately 16’ by 20’ in plan and 20’ deep. It is equipped with a generator, two Baldor pumps, a mercury switch to activate the system, and an alarm system with bells and lights. The tank is covered with plywood. A four-foot cinder-block wall surrounds the tank. A pitched wooden roof on timber supports covers the structure. Security fencing around the perimeter is provided.

Lake Berryessa Marina does not have a map showing the size, length, or alignment of the pipelines, manhole locations, or other important information.

6.2 Potable Water Systems

Treatment Plant:
The large filter (Kellog-American) and four smaller ones (Everfilt) located at this treatment plant are automatically backwashed daily. No alarm is in place. The capacity of the treatment facility was reported to be approximately 25,000 gallons per day, but the logs at a glance showed numbers far exceeding that number (up to 86,000 gpd delivered). The submersible pump for the lake water intake was reported to be three feet from the surface.

Storage Tanks:
Three storage tanks for 270 hookups.
Two tanks are situated in the same vicinity. There is a 4000 gal redwood and a 2000 gal high-density polyethylene tank that are sealed with plastic liners. The straps on both tanks have been displaced. There are 2-10 horsepower pumps to get water up the hill. The third tank is a lined, concrete unit. It has a booster pump to route the water to the other storage tanks, which sit at a higher elevation. It is equipped with high and low water level sensors to control the pumping process.

6.3 Roads/Parking Lots

Pavement Section:
Collector roads are in fair condition, with limited areas of fatigue failure. Secondary access roads are also in fair condition, but are more variable than the collector roads. Some secondary roads appear to be relatively new. For a 20-year design life, all areas of severe alligator cracking should be excavated and replaced with compacted aggregate base and a 1-inch thick asphalt patch to match the level of the existing roadway. Collector roads should then receive an asphalt concrete overlay that is 2 inches thick. Secondary roads should receive an asphalt concrete overlay that is 1.5 inches thick.

Geometry:
The width of most collector roads is adequate, with the exception of the last few hundred feet of the northerly road, where some widening is recommended. No areas of severe curvature or overly steep grades were noted. After receiving an overlay these roads should be striped and signed. Most secondary roads are not wide enough to accommodate two-way traffic. However, in nearly all areas there is either the potential to create one-way loops, or the roads are short, less than 200 feet long. There are, however, two areas where we would recommend widening the road to accommodate 2-way traffic and constructing a fire truck turn around at the end of the road. There are also several areas where trailers are very close together and parking is

inadequate, resulting in cars being parked on the road. There is one location where the radius of a curve needs to be increased to permit fire truck access. Although the site grades will generally permit these modifications, in several areas it appears that it will be necessary to remove some trailers. One or two areas were noted where grades were in the range of 20%. All of the above noted areas should be surveyed to determine the appropriate roadway geometry. After geometric modifications and overlays are complete these roads should be signed.

Other Considerations.
None noted.

6.4 Electrical Systems

The resort is served by an overhead high voltage distribution system with pole-mounted transformers owned by PG&E that runs through the marina. The main PG&E service point is near the office/store. Power is distributed to nearby concession buildings from this distribution point via a resort-owned distribution system. More distant concession buildings generally have individual PG&E meters. Electrical services ranged from poor to good. Internal wiring condition ranged from fair to good. Generally, the majority of the electrical systems are adequate for current use, but not adequate for long term use. Several code viloations were noted during the site inspection.

6.5 Boat Launch Facilities

The boat launch ramp at this resort is approximately 128 feet wide and 107 feet from the top of slope to the water line at the time of the assessment. The resort rates the ramp as having a two launching lane capacity. The ramp is constructed of a 3-inch thick asphaltic concrete pavement and has an average slope of approximately 15.6 percent. The wearing surface is not scored and appears to be in fair condition. As with the other resorts, the ramp edges are showing signs of deterioration. The turnaround area at the head of the ramp is adequate.

There is a single, approximately 225 foot long courtesy dock located at the ramp. The dock contains no berths and is for short-term boat mooring. Access to the float is made by a gangway ramp. Non-encapsulated foam billets provide flotation for the dock and gangway. The decking is timber topped with plywood. The dock is held in position and adjusted through the use of anchor chain lines secured to a concrete block. The dock appears to be in fair to poor condition with varying freeboard indicating deterioration of some of the floats and the decking showing wear.

The ramp appears to be in acceptable condition. The location and accessibility of the ramp are acceptable. There is adequate parking space on the peninsula above the top of the ramp. Slope

protection along the ramp edges should be considered to prevent future erosion and curbs may be needed to define the ramp boundaries.

The boat launch ramp may be retained at this location. The courtesy dock should not be retained for future use given its state deterioration and the non-encapsulated foam floats.

6.6 Shoreline Developments

The only slope protection/retaining structures determined to have expected reasonable design lives, are the structures around the peninsula for the resort support facilities (restaurant, store, rentals, etc). The northerly side of the peninsula has boulder rip rap that has been stabilized with shotcrete. The easterly and southerly sides have a pressure-treated wood tie-back wall, with a gravel and rock backfill. No other retaining structures were determined to have a significant performance life.

The following is a listing of retaining structures that appear to be acceptable structures, having a reasonable design life, if properly maintained:

- Spaces 41 through 49, including boat trailer parking strip: shotcrete and boulder rip rap, appears to be very stable.

- Spaces 15 through 36: pressure-treated timber and lagging tie-back wall, 10’ to 15’ high, rock and gravel backfill material.

All other shoreline developments are not recommended for future use and should be removed.

6.7 Marinas and Fuel Systems

6.7.1 Dock Facilities

This resort has a total of 261 slips including a facility for personal watercraft and houseboat rentals. Dock #1 is adjacent to the timber bulkhead wall contains 13 slips. The floats are enclosed corrugated metal pipes. The access ramp decking is timber and the dock has composite decking. The ramp is pinned to the main dock through the use of a pipe hinge. There is a gated entry. The dock is held in position by the use of two chain anchor lines attached to the front of the main dock from the shore. The fingerfloat rub protection consists of corrugated fire hose nailed to timber. Overall the main dock and fingers appear to be in fair condition. The access ramp needs to be replaced and a more permanent means of securing the dock should be implemented.

Dock #2 is the personal watercraft rental dock. The rental office is located at the end of the access ramp. The dock and decking are both constructed of timber. The floats are non-encapsulated foam showing deterioration. Several of the slips have been converted into personal watercraft storage and there are storage boxes located near some of the slips. A shop or storage shed is located near the end of the dock. It has electricity and appears to have fuel storage. There are plywood ramps for use by the personal watercraft bolted within some of .the berths by means of a pipe hinge.

The dock is in poor condition overall. The decking is in poor condition and the fingerfloats do not maintain a level freeboard. The protective strips on the float edges are in poor condition. The access ramp is in deteriorated condition, with the foam floats showing advanced damage.

Dock #4 contains the houseboat rental facilities for the resort. The main walkway has three segments. The first is the access ramp, constructed of timber decking and encapsulated floats, extending from the edge of the boat launch ramp. There is no handrailing on this ramp. The ramp is connected to another walkway segment, constructed with timber and utilizing the encapsulated floats. Two separate floats are located on either side of this section. One supports a storage shed, and the second contains a pump for the sewer cleanout. Corrugated steel pipe pontoons support both of these floats. The third and final segment of the main walkway is constructed of composite decking and modular enclosed floats. The sewage-holding tank is located beneath this float. There are vents located on the top of the deck. Protective timbers run the length of both sides of the float. There is no fendering or rub strips. This section of the dock is in very good condition with a consistent freeboard.

Dock #5 contains 20 covered berthing slips. There is a gated entry at the on the shore side of the main dock. An access ramp extends 150 feet from the shore to the main dock. The ramp appears to be in poor condition. The floats are non-encapsulated foam showing signs of deterioration. The access ramp does not have a consistent freeboard. The timber decking is worn and loose in some places and the handrailing is loose. The ramp is secured by the use of two anchor chain lines. The main dock utilizes composite decking and a combination corrugated metal pipe pontoons of non-encapsulated foam for floats. Chain anchor lines secure the main dock. They are secured to ballast on the lake bottom.

The fuel dock is a separate dock located at the end of the main dock and is constructed of plastic composite decking. The flotation system consists of plastic encapsulated floats. The fuel dock appears to be in fair condition.

Overall, Dock #5 is in fair condition. The decking is in fair condition, but the freeboard varies over the length and width of the dock. The rub strips and protective components of the dock are in poor condition. The access ramp is considered to be in fair to poor condition.

Dock #6 is covered and contains 40 berths. There is a security gate located on the front of the main dock. Dock #6 consists of two separate 128-foot sections pinned together. The dock and

access walkway are constructed of galvanized light gauge steel framing with composite 2x6 decking. The floats are encapsulated polyethylene tubs similar to those used on Dock #4. The dock hardware is in very good condition as is the entire dock. The covered structure is comprised of steel decking and galvanized steel framing, all in very good condition. The dock maintains a consistent freeboard indicating little water absorption by the floats. The access walkway and the ramp do not have handrailing. The dock is held in position by the use of anchor chain lines running the dock to the shore from either side of the access walkway. Winches are used along either side of the length of the main dock to control the anchor line tension.

Dock #7 contains 40 uncovered berthing slips. The dock is similar in composition and configuration to Dock #6 with the exception being the lack of a roofing structure. There is a gated entry to the main dock. As with Dock #6, the main dock is in very good condition. The 30-foot access ramp extending from the shore is in poor condition, however. The timber decking is in bad shape, as are the non-encapsulated foam floats. There are no handrails. The ramp is held in position through the use of two anchor chain lines secured on the shore to trees.

Dock #8 is covered and has a 24 berthing slip capacity. There are two uncovered berths. The dock has a gated entry. The components include 2x12 timber decking and timber dock framing. The floats are non-encapsulated foam. The roofing structures consist of separate galvanized steel supporting frames and steel decking roofs. This dock is in fair to poor condition overall. The decking, although protected, is worn and the floats are showing deterioration. The freeboard is not consistent across the dock dimensions. The roofing structure is in fair condition with some surface rust apparent.

Dock #10 is a covered, 28 slip capacity dock. There is a gated entry. The dock components consist of timber framing and decking with non-encapsulated foam floats. The roofing structure is similar to Dock #8 in a similar condition. As with Dock #8, the decking is showing wear and the floats have deteriorated slightly. The measured freeboard is slightly inconsistent across the dock. The protective rub strips along the fingerfloats are in poor condition. Two anchor chain lines running from the main walkway to the shore secure the dock. In addition, the outer end of he main walkway is anchored.

Dock #12 is similar to #10 with the exception of four berths being uncovered.

Due to the extensive use of non-encapsulated foam flotation billets at this resort and the deterioration that has occurred, many of the docks are not recommended for future service.

It is recommended that all docks with the exception of the houseboat rental dock (#4), the fuel dock at the end of Dock #5, Dock #6 and #7 should not be retained for long term use. The access ramp to Dock #7 and the houseboat rental dock should be replaced as they are constructed with non-encapsulated foam billets and timber decking that will deteriorate over time.

6.7.2 Fueling Services

There is a fuel dock located at the end of the Dock #5. There are two dispensers located on the ends of a Tee shaped dock. Parking stalls are located on each side of the walkway from the main dock. There is a double compartment storage tank on shore. The tank holds supreme unleaded and regular unleaded. There is a dispenser at the storage tank for ground vehicles. The tank is piped to the two dispensers on the dock and the dispenser at the tank. The dock dispensers have a hose and service station type nozzle for each fuel. The hoses are connected to hose reels for added hose length. The dispenser at the tank has a single hose for regular unleaded.

The dispensers at the dock have a containment sump with a float that can trip a mechanical valve in the dispenser piping to stop fueling operations. There is a spill response kit on the fueling dock.

The storage tank is located on shore adjacent to the grocery store. This is a sloping paved area. The storage tank is an above grade, horizontal, cylindrical double wall tank that sits on a concrete slab with a curb around it. The tank has two compartments. The compartment for unleaded supreme is 2,000 gallons and the compartment for unleaded regular is 4,000 gallons. Tank appurtenances for each compartment include a primary vent, emergency vent, fill line, vapor recovery line, gage hatch, product dispensing pump and sight gage. In addition, the 4,000-gallon compartment contains a secondary emergency vent and a piping connection for the dispenser at the tank. There is no ladder for access to the top of the tank. There is no leak detection monitoring system for the tank. There is no containment parking area for the tank truck and ground vehicles.

Each tank compartment has a 3-inch fill line, 3-inch vapor line and 2-inch product dispensing line. The fill line has a coupler, shut off valve and containment sump with a hand pump to return spills to the tank. The vapor line has a coupler. The pump dispensing line does not contain an on/off solenoid valve. Two 1 ½ inch galvanized lines are routed above grade toward the fueling dock. The piping is attached to a perimeter wooden walkway. The piping terminates in a wooden valve box with a ball valve. Hose connections are made here and the hoses are routed down the shoreline to the boat dock. A connection is made on the dock to galvanized steel piping which is located in a piping trough in the walkway. A hose connection is made again to the fueling dock steel piping at the end of the walkway. The piping to the two dispensers is routed under the fueling dock. Shut off valves are located at the hose connections. There is an emergency shut off switch on the boat dock.

The on-shore piping does not conform to the California Fire Code, Section 5202. The piping is 1 ½ inch Schedule 40 galvanized steel pipe with threaded joints. Valves are bronze, threaded. The threaded joints are corroded and are not made up properly. Some of the joints are leaking. Threaded pipe should be gauged to check for conformance to American Standard taper pipe

threads before being made up. Bronze valves are a low-melt material. This piping is suitable for potable water, but not for fuel piping. The piping is inadequately supported.

Suitable fuel piping for this service would be 1 ½ inch Schedule 80 black steel pipe with socket weld joints or threaded joints. The threaded joints would be gauged. Socket weld joints are preferred. Threaded joints would be used where necessary for equipment connections. Valves would be steel. The piping would be painted and attached to substantial supports.

The dock piping does not conform to the California Fire Code, Section 5202. Dock piping is the same material as on shore piping. Connection to shore piping is made with fuel hose. There is a substantial length of fuel hose attached to the floating dock nearest shore and is used in lieu of hard piping. Hose couplings are threaded. The piping is in a covered piping trough on the second floating dock, but is under the floating fuel dock and is not accessible.

Suitable fuel piping for this service would be flexible double wall pipe in a ducted metal jacket. Leak detection is not required. Final connection to the dispensers would be made in a sump box. This type of piping is specially designed for marina installations.

6.8 Preliminary Environmental Assessement

A site visit was conducted to assess and photograph present site conditions. Ms Sally Vaughn, resort manager, was interviewed regarding site history and operations. Results of the interview and site observations are presented in the following table. Results of the preliminary environmental assessent are summarized in the following site observations table:

SITE OBSERVATIONS

General Observations	Remarks	Observed	Not
Current Use	Resort with motel, restaurant, store boat facilities and mobile homes	X	
Past Use			X
Structures	Numerous buildings, restrooms, kiosks, office, restaurant, store	X	
Terrain	Varied	X	
Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Hazardous chemical and petroleum products in connection with known use. Fill dirt from an unknown source.			X
Aboveground storage tanks (ASTs)	Unleaded/Super/Premium gasoline near store.	X	
Underground storage tanks (USTs)			X
Odors			X
Pools of Liquid			X
Drums	.		X
Hazardous chemical and petroleum products in connection with unknown use.			X
Unidentified substance containers			X

SITE OBSERVATIONS (CONTINUED)

Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Chemical storage or agricultural chemical mixing areas	Small quantities of pesticides/herbicides such as Roundup	X	
Asbestos, and lead based paints	Not assessed		
Polychlorinated biphenyls (PCBs)			X
Pits, Ponds, or Lagoons	Waste water ponds.	X	
Stained soil or pavement			X
Stressed vegetation			X
Hazardous Waste Storage			X
Solid Waste			X
Waste Water		X	
Process waste water			X
Wells			X
Dry wells			X
Surface water	Waste water ponds on hill above site	X	
Storm basins/catch			X

TABLE 7 (CONTINUED)
SITE OBSERVATIONS

Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Storm drains			X
Drains and sumps			X
Septic system			X
Loading and unloading areas			X
Burned or buried debris			X

In summary, the environmental survey did not reveal recognized environmental conditions at the site. Small quantities of pesticides/herbicides such as Roundup are used on site.

7 SPANISH FLAT RESORT

7.1 Waste Water Systems

Ponds:
There is one evaporation pond. The pond is oval, approximately 45' wide and 150' long. Weeds are prevalent throughout the pond. There was an excess amount of algae and odor observed during our inspection. The mister spray system has been disconnected, possibly due to the high winds at this location and the potential for human contact by the wastewater. The maintenance man did not know where the pond inlet was located. A plugged AC pipe was the only potential inlet pipe that we could find. The wastewater retention pond is undersized for the current resort development. Spray disposal that is being performed should be ceased immediately because the wastewater that is being discharged is minimally treated (spraying occurs during peak usage), the wastewater is not disinfected, and the potential for human pathogenic contact is very high.

The force mains connecting the lift stations to the ponds are suspected of leaks and should be tested, repaired or replaced if needed.

Lift Stations:
There are two lift stations for 100 hookups.

LS 1: This is the main lift station at Spanish Flats. An Oakville pump is the lead pump with a Baldor as the back up. These pumps were not permanently mounted. There was an exposed pipe leading to the storage tank. The maintenance staff takes daily run-time readings. Audible and visual high-water alarms are provided. The force main is a 3" diameter steel pipe to the evaporating pond.

LS 2: This is a submersible station with two pumps. Pump starts and stops are controlled by a simple float system. The maintenance crew does not take run-time readings at this station. This station gets minimal use. An eroded pipe, probably the pump station force main, was visible.

The lift stations was found to be unacceptable for continued use. The lift stations would require, at a minimum, additional reliable pumping capacity, new instrumentation and controls, a functional alarm system, and standby power facilities in order to be adequate.

7.2 Potable Water Systems

Treatment Plant:
Water treatment is supplied off-site.

Storage Tanks:
Two storage tanks for 300 hookups. Both tanks are 15' high and 15' in diameter. These cinder block tanks sit side by side. Both tanks leak. The slabs are cracked with creek style weeds growing through them. There are unprotected electrical lines. The steel bands reinforcing the tanks are old and rusted.

7.3 Roads/Parking Lots

Pavement Section:
Between the entry and the store the collector road is in poor condition. Other areas of the collector road are in good to excellent condition. With the exception of the two large parking areas at the marina and at the store, secondary roads are in very good condition. For a 20-year design life, collector roads between the entry and the store should have areas of alligator cracking overexcavated and replaced with compacted aggregate base. This section of road should then receive a 3 inch thick asphalt concrete overlay. In all other roadways the areas of severe alligator cracking should be excavated and replaced with compacted aggregate base and a 1 inch thick asphalt patch to match the level of the existing roadway. Collector roads should then receive an asphalt concrete overlay that is 1.5 inches thick. Secondary roads should receive an asphalt concrete overlay that is 1.5 inches thick in the main parking areas and 1 inch thick elsewhere.

Geometry:
The width of most collector roads is adequate. No areas of severe curvature or overly steep grades were noted. After receiving an overlay these roads should be striped and signed. Most secondary roads are not wide enough to accommodate two-way traffic. However, in virtually all areas there is the potential to create one-way loops, significant widening is not anticipated. There is, however, at least one curve that needs to have its radius of curvature increased to permit fire truck access. In addition, there are several areas that are very congested and because of inadequate parking people tend to park on the narrow streets, hindering traffic flow. Surveys will be necessary to determine the appropriate roadway and parking geometry, but it appears that some trailers will need to be removed to reduce curves and to increase parking. No areas of overly steep grades were noted. After geometric modifications and an overlay, these roads should be signed.

Other Considerations:
The entry road appears to have significant fills in the first 500 feet or so. Settlement or creep of this fill appears to be responsible for some of the observed roadway distress. Occasional maintenance should be anticipated in this area.

7.4 Electrical Systems

Most concession buildings have individual PG&E meters and are served by an overhead high voltage distribution system with pole-mounted transformers owned by PG&E that runs through the marina. Some small concession buildings are sub-fed from larger buildings via a resort-owned distribution system. Electrical services ranged from poor to good. Internal wiring condition ranged from fair to good. Generally, the electrical systems are code compliant and adequate for current use, but not adequate for long term use. Several code viloations were noted during the site inspection

7.5 Boat Launch Facilities

The boat launch ramp at Spanish Flat Resort has a good location, accessibility and adequate parking. It is approximately 176 feet wide and 110 feet to the water line at the time of the site visit. There is sufficient width to accommodate 10 launch lanes. It is constructed of 4-inch thick asphaltic concrete pavement. The slope is 16.7 percent on average. The pavement shows some signs of sub base subsidence, particularly at one edge. The short retaining wall that defines the edge of the ramp has buckled and the pavement is coming apart and being undermined.

There are courtesy docks located at the ramp, secured to the pavement through the use of anchor lines. They both have non-encapsulated open-cell foam floats in a deteriorated condition. The docks consist of galvanized steel framing in sections filled with the floats and topped with composite and timber decking. The dock with composite decking has additional cover of plywood. The decking in both cases is in poor condition. There are anchors located at the water end of the docks and on the shore side.

The future use of the launch ramp is recommended but repairs must be made to the south end of the ramp. The sub-base material should be replaced where eroded and boundary walls should be provided with sufficient depth to prevent future erosion of the underlying material. The broken concrete should then be replaced. The location and accessibility of the ramp are acceptable. The site has space for adequate parking and turnaround area.

The boat launch ramp can be retained to support the continued use of marina facilities at this resort. The courtesy docks have deteriorated foam billets and timber decking and should be discarded.

7.6 Shoreline Developments

There were a minimal number of retaining structures along the lake perimeter. In the vicinity of Unit 291 was a combination of a short section of newly constructed wood wall adjacent to terraces having several failed low wood walls. The newly constructed section is expected to have a relatively short service life due to its wood construction.

The other general area of wall structures was in the vicinity of Unit No. 218, where the walls were deteriorated, failed, wooden structures.

The following is a listing of retaining structures that appear to be acceptable structures, having a reasonable design life, if properly maintained:

- None noted.

7.7 Marinas and Fuel Systems

7.7.1 Dock Facilities

There are twelve docks located at Spanish Flat Resort. The docks have a capacity of 158 boat slips. Dock #1 is a covered, 20 slip capacity dock. The floats are steel-pipe encapsulated and the decking is 2x8 timber. The steel on the cover supporting structure shows oxidation. Much of the decking has lost its coating and there are many cracked and loose boards. The protective rubstrips for the slips are in fair to poor shape. The float system consists of corrugated metal pipe. The freeboard for the dock is a consistent 19 inches. Access to the dock from the shore is provided by a timber ramp. The dock is held in position by chain anchor line running from the main walkway to the shore. The ends are set in concrete.

Dock #2 is an uncovered dock containing 32 slips. The decking consists of 2x6 timber supported by a galvanized steel frame. Non-encapsulated foam floats provide buoyancy. The floats have deteriorated somewhat. The decking is in fair to good condition and the rubstrips are in good condition. Freeboard for the dock is 16 inches. Access to the dock is provided by timber ramp.

The boat repair/rental building (Dock #3), fuel dock and aluminum boat rental (Dock #4) are all tied together. There is at present a boat lift floating dock located adjacent to the store. The fuel dock consists of non-encapsulated foam floats supporting 2" thick precast concrete panels. Adjacent to the fuel dock is located the store and boat repair shop. Again non-encapsulated foam floats are utilized with timber decking. The floats appear to be in poor condition with deterioration evident. The decking is also in poor condition. The aluminum boat rental slips are located next to the store. There are four slips. The fingerfloats are pinned to the main walkway by use of pipe hinges. Again, the non-encapsulated foam floats used for this dock are in poor condition as is the timber decking. The main dock supporting the store and shop is held in position by two chain anchor line running from the concrete ballast on shore to the dock.

The boat and personal watercraft rental dock (#5) appears to be in fair condition. There are six slips total. A plywood ramp cantilevers from the end of the dock for use by the personal watercraft. The floats are non-encapsulated open-cell foam. Some floats look relatively new. The fingerfloats that define the slips are pinned to the main walkway by use of pipe hinges. The

decking is 2x6 timber and is in fair condition with much of the coating gone. The dock is held in position by anchors located at the outer fingerfloats and moored to the land by two ropes on either side of the main walkway.

Dock #6 has 34 covered slips with an access gate. The cover is fabric supported by galvanized framing and timber stringers. It is fair to good condition. The floats are non-encapsulated open-cell foam in a deteriorated state. The dock consists of galvanized steel framing. The decking consists of 2x6 timber. The decking at this dock is in a better condition because of the protection provided by the cover. Several of the fingerfloats have a lower freeboard because of the float deterioration. The dock is anchored on both sides of the outmost fingerfloat and on either side of the access ramp.

Dock #7 has 36 slips. Access from the shore to the dock is by a six-foot wide ramp covered in timber decking. There is a gate at the entrance of the dock. The main walkway and fingerfloats are covered in 2"x4" aluminum decking manufactured by Hallsten Corp. The decking appears to be in good condition showing only slight signs of oxidation. Buoyancy for the dock is provided by corrugated metal pipe (CMP) pontoons. The dock is held in position by two anchor lines at the end of the main walkway and on the shore side by tow lines running diagonally on either side of the ramp to the shore. Overall, due to the metal CMP floats and the aluminum decking, the dock is in good condition.

Dock #8 contains 24 slips with plastic decking and enclosed plastic floats providing buoyancy. The dock is constructed of timber, which appears to be in good condition. The main walkway is pinned together in segments, as are the fingerfloats connected to the walkway. The dock has a consistent 13-inch freeboard. There is an access gate to the dock. Access to the dock from the shore is made by a timber ramp. This is in poor condition. The dock is anchored with chain lines secured to ballast at intervals along the dock length. Two anchor line run from either side of the main walkway to the shore at diagonals. The construction and materials appear to be fairly recent and the dock, with the exception of the access ramp, is in good condition.

Dock #8A is virtually identical in construction, slip capacity and dimensions to Dock #8. There is also a lockable access gate to the dock. Access to the dock is gained by a timber ramp similar to Dock #8. Overall condition is the same as Dock #8.

Dock #9 is a courtesy dock with non-encapsulated foam floats showing advanced deterioration. The plywood decking is in poor condition. The dock is anchored at the end and on the shore side.

Dock #10 has a total of four slips and is covered with composite decking. The floats are non-encapsulated foam showing evidence of some deterioration. The decking is in fair condition. The dock is constructed of timber. The protective rubstrips appear to be in fair to poor condition. The dock is anchored to shore by two ropes running from either side of the access walkway. There is an access gate.

All docks with the exception of four (gas dock, Dock #7, #8 and #8A) should not be retained for long term use because of use of non-encapsulated foam floats and the deterioration currently present.

7.7.2 Fueling Services

There are two fuel dispensers located on the end of fuel dock. The dispensers have two fueling hoses with hand held service station type nozzles. There are two single compartment storage tanks on shore connected by piping to act as one tank. The tanks hold regular unleaded. The tanks are piped to the dispensers on the dock. There is a third tank here dedicated to ground fuel vehicles.

There are two dock storage tanks are located on shore. This is a flat paved area. The storage tanks are above grade, horizontal, rectangular, concrete encased, double wall tanks that sit on a concrete slab with a curb. The tank capacity is 2,000 gallons each. The tank appurtenances include a primary vent, emergency vent, gauge hatch, fill line and vapor recovery line. The tanks are connected to each other with a 2-inch line. One tank has a product dispensing pump. There is no ladder for access to the top of the tank. There is no tank level gauge. There is no leak detection monitoring system for the tank. There is no containment parking area for the tank truck or ground vehicles.

There is a third ConVault tank here for ground vehicles. Capacity is 1,000 gallons. It is equipped with a Fill-Rite model 702 pump and dispenser and fueling hose with a service station type nozzle. This tank is for the concessionaire's use for lawn mowers, backhoe, trucks, etc.

The pump discharge line contains a ball valve. There is no on/off solenoid valve on the pump discharge. The piping to the dock is a single, above grade 1 ½ inch galvanized pipe for part of the way. A hose is connected to this piping with a ball valve and the hose is routed to the fueling dock where it connects to a single steel pipe, again with a ball valve. The pipe is routed under the dock to the two dispensers.

The on-shore piping does not conform to the California Fire Code, Section 5202. The piping is 1 ½ inch Schedule 40 galvanized steel pipe with threaded joints. Valves are bronze, threaded. The threaded joints are corroded and are not made up properly. Threaded pipe should be gauged to check for conformance to American Standard taper pipe threads before being made up. Bronze valves are a low melt material. This piping is suitable for potable water, but not for fuel piping. The piping is inadequately supported.

Suitable fuel piping for this service would be 1 ½ inch Schedule 80 black steel pipe with socket weld joints or threaded joints. The threaded joints would be gauged. Socket weld joints are preferred. Threaded joints would be used where necessary for equipment connections. Valves would be steel. The piping would be painted and attached to substantial supports.

The dock piping does not conform to the California Fire Code, Section 5202. Dock piping is the same material as on shore piping. In addition, the piping is painted. Connection to shore piping is made with fuel hose. Hose couplings are threaded. The piping is under the floating dock and is not accessible.

Suitable fuel piping for this service would be flexible double wall pipe in a ducted metal jacket. Leak detection is not required. Final connection to the dispensers would be made in a sump box. This type of piping is specially designed for marina installations.

7.8 Preliminary Environmental Assessement

A site visit was conducted to assess and photograph present site conditions. Mr. Vince Renyer, resort manager, was interviewed regarding site history and operations. Results of the interview and site observations are presented in the following table. Results of the preliminary environmental assessent are summarized in the following site observations table:

SITE OBSERVATIONS

General Observations	Remarks	Observed	Not
Current Use	Resort with motel, restaurant, store boat facilities and mobile homes	X	
Past Use			X
Structures	Numerous buildings, restrooms, kiosks, office, restaurant, store	X	
Terrain	Varied	X	
Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Hazardous chemical and petroleum products in connection with known use. Fill dirt from an unknown source.			X
Aboveground storage tanks (ASTs)	Unleaded/Super/Premium gasoline near store.	X	
Underground storage tanks (USTs)			X
Odors			X
Pools of Liquid			X
Drums	.		X
Hazardous chemical and petroleum products in connection with unknown use.			X
Unidentified substance containers			X

SITE OBSERVATIONS (CONTINUED)

Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Chemical storage or agricultural chemical mixing areas		X	x
Asbestos, and lead based paints	Not assessed		
Polychlorinated biphenyls (PCBs)			X
Pits, Ponds, or Lagoons	Waste water ponds.	X	
Stained soil or pavement			X
Stressed vegetation			X
Hazardous Waste Storage			X
Solid Waste			X
Waste Water		X	
Process waste water			X
Wells			X
Dry wells			X
Surface water	Waste water ponds	X	
Storm basins/catch			X

SITE OBSERVATIONS (CONTINUED)

Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Storm drains			X
Drains and sumps			X
Septic system			X
Loading and unloading areas			X
Burned or buried debris			X

In summary, the environmental survey did not reveal recognized environmental conditions at the site.

8 STEELE PARK RESORT

8.1 Waste Water Systems

Ponds:
The wastewater for this facility is treated on a contract basis by Napa County. The treatment plant has three concrete-lined evaporation ponds, and activated sludge process, and spray fields that are located offsite.

Lift Stations:
There are four lift stations for 200 hookups. All the stations in Steele Park have alarms.
LS 1: This station has two 5 hp submersible pumps. The pumps operate in an alternating lead/lag fashion to balance run-time and maximize the life of the pumps. Pump starts and stops are controlled by a float system. The force main is a 4" diameter cast iron discharge pipe. The maintenance staff uses bacteria eaters weekly to control odors.

LS 2: This is the main pump station for this resort. The cottages and motels are tributary users to this station. It also receives gravity feed from the other stations at Steele Park if they encounter any problems. The maintenance crew plans to build a retaining wall around this station. The main duty pump is a 75 HP Vaughan pump with a Baldor Motor. Two older 10HP Moyno pumps are available for backup.

LS 3: This station is for RV use only. There are two pumps but only one is hooked up. There was a bad sewage odor at this station during our inspection.

LS 4: This station is for RV and restaurant use. It is equipped with a 1967 Kennedy pump controlled by new floats. The valves are checked periodically. There is a retaining wall around the pump.

Lift stations need additional reliable pumping capacity, new instrumentation and controls, and standby power facilities in order to be adequate

8.2 Potable Water Systems

Treatment Plant:
Water is supplied by an offsite facility.

Storage Tanks:

Offsite storage tank for 300 hookups.

8.3 Roads/Parking Lots

Pavement Section:
With the exception of the heavily used portion of the road near the resort entrance, pavements are in good condition. For a 20-year design life, areas of alligator cracking in the first 2000 feet of the entry road should be overexcavated and replaced with compacted aggregate base. This section of road should then receive a 3 inch thick asphalt concrete overlay. In all other roadways the areas of severe alligator cracking should be excavated and replaced with compacted aggregate base and a 1-inch thick asphalt patch to match the level of the existing roadway. Collector roads should then receive an asphalt concrete overlay that is 1.5 inches thick. Secondary roads should receive an asphalt concrete overlay that is 1-inch thick.

Geometry:
The main collector roads have adequate width for two-way traffic. After receiving an overlay this road should be striped and signed. Secondary roads typically are either relatively short or can be converted into one-way loop roads. Some fire truck turn-arounds will be necessary but there appears to be ample space for this construction. In the area near locations S5, S6 and S7 (see Plate 6) there appears to be a need for additional parking which could require the removal a few trailers. One curve was noted that needs to have its radius of curvature increased to permit fire truck access. Surveys will be necessary to determine the appropriate roadway and parking geometry in these areas. No areas of overly steep grades were noted. After geometric modifications and an overlay these roads should be signed.

There are additional areas of dwelling units that are served by gravel roads that may have inadequate fire truck access, but these were not included in our study.

Other Considerations:
There are some areas of old fill near the park entrance that have settled, giving the road a hummocky ride.

8.4 Electrical Systems

Most concession buildings have individual PG&E meters and are served by an overhead high voltage distribution system with pole-mounted transformers owned by PG&E that runs through the marina. Some small concession buildings are sub-fed from larger buildings via a resort-owned distribution system. Electrical services ranged from poor to good. Internal wiring condition ranged from fair to good. Generally, the electrical systems are code compliant and adequate for current use, but not adequate for long term use. Several code viloations were noted during the site inspection

8.5 Boat Launch Facilities

The boat launch ramp present at this resort is composed of a 3½-inch thick concrete slab at a 15.6 percent slope. There is sufficient capacity for 10 launch lanes and parking to accommodate the vehicles. The ramp is approximately 187 feet wide and extends 135 feet to the waterline at the time of the site visit. At the time of the assessment, there were three courtesy docks present. The docks have timber decking and non-encapsulated foam billets.

The ramp appears to be in fair condition overall. There are several cracks running perpendicular to the water. The ramp does not appear to be experiencing any erosion of its underlying material. The cracks should be repaired by an epoxy injection method to seal the surface. Curbs may be utilized to define the ramp boundaries.

The Bureau has stated that it is desirable to retain the boat launch ramp to support the slip rentals and marina facilities. The courtesy docks should be discarded as they have deteriorated exposed foam flotation billets and deteriorated timber decking.

8.6 Shoreline Developments

There were a number of retaining structures along the lake perimeter. Most were of wood or treated-wood construction, with some being of masonry block and poured-in-place concrete construction. The walls were at, or very near to the end of their service life, due to deterioration of the wood and failure due to excessive lateral loading. Evaluation of several walls noted that there was no foundation keyway for lateral resistance, or back wall drainage system to control excessive hydrostatic pressures. Some recent wall reconstruction was noted, however, the elements used were all untreated wood, which is expected to have a service life of only a few years.

The following is a listing of retaining structures that appear to be acceptable structures, having a reasonable design life, if properly maintained:

- No significant structures noted.

8.7 Marinas and Fuel Systems

8.7.1 Dock Facilities

There are a total of ten docks at this resort. The docks at this resort utilize a combination of flotation devices. There are non-encapsulated foam billets, plastic encapsulated floats and one-piece float/decking docks (EZ-Dock).

Dock #1 is approximately 296 feet long, contains 50 berthing uncovered slips and has timber decking and non-encapsulated foam billets. The timber decking appears to in fair to poor condition due to its exposure to the environment. The access walkway from the main walkway has composite deck with open-cell non-encapsulated foam floats.

Dock #2 is the fuel dock. Access to the fuel dock from the main walkway is provided by a 44-foot long ramp topped with timber decking. Plastic encapsulated floats provide the ramp's buoyancy. The fuel dock is approximately 68 feet long and contains two fuel dispensers. The fuel dispensers are covered by a roof structure. The dock was timber decking and plastic encapsulated floats. A hand winch located at the end of the dock controls the dock position.

Dock #3 consists of the main 163-foot long walkway, providing access to Dock #1 and Dock #2 and the Bait shop (Dock #3A). Adjacent to the Bait shop is a two-slip berth. Dock #3 has composite decking and a galvanized steel frame with plastic encapsulated floats. It appears to be in good condition. The Bait shop is located on a dock with timber decking and non-encapsulated foam floats. The adjacent berths are located within a dock with timber decking and closed-cell non-encapsulated foam floats.

Dock #4 is located adjacent to the boat launch ramp. It is constructed of one-piece polyethylene hollow modular sections. It is anchored in position with vertical lines at the end of the fingers. The dock is approximately 70 feet long and contains four slips with capacity for eight small boats. The dock appears to be in good condition. The access ramp from the shore is a simple plywood sheet.

Dock #4A is a 32-foot long, four berth dock. It is constructed of timber decking and non-encapsulated foam floats. It appears to be in fair condition.

Dock #5 and #6 are of similar construction and configuration, each being approximately 290 feet in length and containing 52 covered berthing slips. There is a locked gated entry. The roofing structure consists of light gauge metal framing with a sheet metal roof. The docks have timber decking and plastic encapsulated foam floats. The access ramps of a similar construction. The docks appear to be in fair condition with some of the decking showing deterioration. The gangways leading to main walkways appear to be in poor condition.

Dock #7 has identical construction to #5 and #6. It is 172 feet in length and contains 32 covered berthing slips. There is a gated entry at this location also. The dock is in a similar condition to #5 and #6.

Dock #8 is similar in construction to the composite modular dock #4. It is approximately 90 feet long and contains eight slips for small boats.

At the time of the site visit, there were four docks located on the northern section of the resort adjacent to the restaurant. These were constructed of the composite modular system found on Dock #4 and #8. It was not evident whether these are privately owned.

8.7.2 Fueling Services

There is one fuel dock here with a two dispensers located on the end of a single dock. There is a store located on a walkway perpendicular to the fueling dock. There is a double compartment storage tank on shore. The tank holds regular unleaded gasoline and diesel fuel. There is a dispenser at each end of the storage tank for ground vehicles. The tank is piped to the two dispensers on the dock and the dispensers at the tank. The dispensers on the dock are for gasoline. Each dock dispenser has a hose and service station type nozzle.

The storage tank is located on shore across from the restaurant. This is paved area. The storage tank is an above grade, horizontal, cylindrical double wall tank that sits on a concrete slab. The tank has two compartments. The compartment for unleaded regular is 11,155 gallons and the compartment for diesel fuel 877 gallons. Tank appurtenances for each compartment include a primary vent, emergency vent, fill line, gage hatch, product dispensing pump, and suction line to the ground fuel dispenser and sight gage. In addition, the 11,155-gallon compartment contains a secondary emergency vent, manhole and vapor recovery line. and a piping connection for the dispenser at the tank. There is no ladder for access to the top of the tank. There is a leak detection monitoring system for the tank. There is no containment parking area for the tank truck and ground vehicles.

The diesel compartment has a 3-inch fill line and 1-inch fuel line to the ground fuel dispenser.

The gasoline compartment has a 3-inch fill line, 3-inch vapor line, 2-inch product dispensing pump and 1 inch fuel line to the ground fuel dispenser. The fill line has a coupler, shut off valve and containment sump with a hand pump to return spills to the tank. The vapor line has a coupler. The pump dispensing line contains an on/off solenoid valve.

The gasoline is routed underground in a double wall line toward the fueling dock. It comes out of the ground in a valve box. An above grade 1 ½ inch galvanized steel line continues down the shoreline toward the fueling dock. A transition is made to a hose, which connects to galvanized piping on the dock. The piping is attached to a perimeter wooden walkway to the store and fuel dock There are three hose connections made at transitions. The piping is routed on top of the fueling dock to the dispensers in a wooden tunnel. Shut off valves are located at the hose connections. There is an emergency shut off switch on the fueling dock.

This is a two compartment tank. Provide overfill alarms to sound an alarm at 85 percent of tank capacity in accord with California Fire Code, Appendix ll-F 5.4 Overfill Prevention. The tank is

allowed to be filled to 90 percent, but there is a warning at 85 percent. The fill line has a shut off device at 90 percent full.

A permanent sign should be provided at the fill point for the tank documenting the filling procedure in accord with California Fire Code, Appendix ll-F 5.4 Overfill Prevention. The filling procedure should require the person filling the tank to determine the amount required to fill it to 90 percent of capacity before commencing the filling operation.

All docks with the exception of the gas dock, Dock #3 (main walkway to gas dock), and Dock #5, #6 and #7 should not be retained. These docks all utilize non-encapsulated foam floats that have deteriorated and have decking showing wear.

The dock piping does not conform to the California Fire Code, Section 5202. The piping is 1 ½ inch Schedule 40 galvanized steel pipe with threaded joints. Valves are bronze, threaded. The threaded joints are corroded and are not made up properly. Threaded pipe should be gauged to check for conformance to American Standard taper pipe threads before being made up. Bronze valves are a low melt material. This piping is suitable for potable water, but not for fuel piping. Connection to shore piping is made with fuel hose. Hose couplings are threaded. The piping is connected to the side of the first two floating docks. The piping is inadequately supported. The piping is in a covered piping trough on the floating fuel dock and is accessible.

Suitable fuel piping for this service would be flexible double wall pipe in a ducted metal jacket. Leak detection is not required. Final connection to the dispensers would be made in a sump box. This type of piping is specially designed for marina installations.

It is recommended that Dock #3, Dock #2 (fuel dock) and Docks #5, #6 and #7 be retained for future use. All of these docks contain plastic encapsulated foam floats and appear to be in at least fair condition. The decking at Docks #5 through #7 may need to be replaced as the timber continue to deteriorate. The future replacement may utilize plastic composite decking which has a lower maintenance cost.

8.8 Preliminary Environmental Assessement

A site visit was conducted to assess and photograph present site conditions. Mr. David Hanson, resort manager, was interviewed regarding site history and operations. Results of the interview and site observations are presented in the following table. Results of the preliminary environmental assessent are summarized in the following site observations table:

SITE OBSERVATIONS

General Observations	Remarks	Observed	Not
Current Use	Resort with motel, restaurant, store, boat facilities and mobile homes	X	
Past Use			X
Structures	Numerous buildings, restrooms, kiosks, office, restaurant, store	X	
Terrain	Varied	X	
Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Hazardous chemical and petroleum products in connection with known use. Fill dirt from an unknown source.			X
Aboveground storage tanks (ASTs)		X	
Underground storage tanks (USTs)			X
Odors			X
Pools of Liquid			X
Drums	.		X
Hazardous chemical and petroleum products in connection with unknown use.			X
Unidentified substance containers			X

SITE OBSERVATIONS (CONTINUED)

Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Chemical storage or agricultural chemical mixing areas			X
Asbestos, and lead based paints	Not assessed		
Polychlorinated biphenyls (PCBs)			X
Pits, Ponds, or Lagoons	Waste water ponds.	X	
Stained soil or pavement			X
Stressed vegetation			X
Hazardous Waste Storage			X
Solid Waste			X
Waste Water	Waste water ponds	X	
Process waste water			X
Wells			X
Dry wells			X
Surface water	Waste water ponds	X	
Storm basins/catch			X

SITE OBSERVATIONS (CONTINUED)

Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Storm drains			X
Drains and sumps			X
Septic system			X
Loading and unloading areas			X
Burned or buried debris			X

In summary, the environmental survey did not reveal recognized environmental conditions at the site.

9 PLEASURE COVE

9.1 Waste Water Systems

Ponds:
There are four evaporation ponds for Pleasure Cove. During our inspection, these ponds were bright green due to the presence of algae. Pond #4 is unlined and does not have mist sprayers. Pond #1 is the largest. Ponds #2 and #3 have pumps for a sprinkler system. The wastewater retention ponds at Pleasure Cove are considered to be undersized for the current resort development.

Lift Stations:
There are three lift stations for 90 hookups.
LS by Women's Washrooms: This station contains two new Baldor pumps, configured in an alternating lead/lag system. There are three chambers that are enclosed by a wood hut with cut out windows for ventilation. A visual alarm alerts neighbors in case of high water. The force main for this lift station pumps to Ponds #2 and #3.

The chamber is cleaned once or twice a year to remove accumulated solids. The maintenance staff reports that there is not much infiltration or inflow, but there are no flow records to verify this claim.

LS Green Hut: This is an older, three chamber lift station that pumps wastewater to Pond #4. An alternating lead/lag set-up is used for the two centrifugal pumps with Dayton motors. A visual alarm is used to alert neighbors of a high-water condition.

LS by dumpsters: This old, three chamber station leads to Pond #1. An alternating lead/lag set-up is used for the two centrifugal pumps with Dayton motors. The audio and visual alarm at this station alerts the neighbors through loud ringing and visual illumination.

The lift stations would require additional reliable pumping capacity, new instrumentation and controls, a functional alarm system, and standby power facilities in order to be adequate. In addition, the structures housing the pump stations are damaged.

9.2 Potable Water Systems

Treatment Plant:
There are four filters at this plant, three of which run in serial. The clarifiers and pipes were replaced in 2000. There is a separate chlorine storage tank and finished water storage tanks.

Flow meters are located near the storage tanks. A visual alarm and radio are used for monitoring the polymer feed. Water samples are taken daily. Reportedly, the filters are backwashed daily. The backwash pipes drain into the lake. At the time of our site visit, the plant was not operating.

Storage Tanks:
Three storage tanks for 300 hookups. The tanks are approximately the following sizes:

- Tank #1 – 18.5' high, 10' diameter
- Tank #2 – 10' high, 12' diameter
- Tank #3 – 10' high, 12' diameter.

Tank #1 leaks. There is no overflow tank. Tank #1 is connected to Tanks #2 and #3. Only Tanks #2 and #3 have distribution lines. There are control valves in place for emptying the tanks for cleaning purposes. Chlorine residual levels are recorded at the tanks and the trailers. The County also takes chlorine measurements on a regular basis.

9.3 Roads/Parking Lots

Pavement Section:
As indicated in Table 7, roads are generally in poor condition. Ratings would be even worse if some areas had not already been reconstructed. Areas of alligator cracking should be excavated and replaced with compacted aggregate base. A 3-inch thick overlay should then be placed on all collector roads and a 2-inch thick overlay on all secondary roads. Additionally we note that several areas of pavement appear to be supported on fills that are settling or creeping downslope. Future maintenance may be required in some areas.

Geometry:
The main collector road generally has adequate width for two-way traffic. The few locations of inadequate width can be widened during paving. A fire truck turn around is necessary at the end of this road. The entire roadway should be posted no parking and should be striped after paving.

The width of the secondary road that is south of sampling location S6 (see Plate 7) is too narrow for two-way traffic, but there is adequate room for widening. Construction of a fire truck turn around at the end of this road may require the removal of a couple of trailers. Secondary roads that are north of S6 cannot be easily widened, but can either be converted into one-way loops or else they are very short and serve only a few dwellings. However in the congested area surrounding locations S7 and S8 there is insufficient parking space and residents currently park on the roads, blocking traffic. Even if converted to one-way, these roads are very narrow and must be marked no parking so that it will be necessary to provide parking in another location or to remove some trailers to increase the amount of parking space in this area. There are also a couple of sharp corners at intersections in this area that may require moving or removing some trailers to provide an adequate fire truck turning radius. Surveys will be necessary to determine

the appropriate roadway and parking geometry in these areas. No areas of overly steep grades were noted. After geometric modifications and an overlay secondary roads should be signed.

There are additional areas of dwelling units that are served by gravel roads that may have inadequate fire truck access, but these were not included in our study.

Other Considerations:
Because of the topography of the ravine where this resort is located, most roadways have been constructed by excavating into already steep slopes and placing fill on the downhill side (also on very steep slopes). In some cases cut slopes are more than 20 feet high. In areas of gravel roads towards the north end of the property there are some newer cuts that are more than 30 feet high and are nearly vertical. Although no evidence of major landslides was observed, numerous areas of sloughing and soil pop-outs have occurred. In addition, several areas of roadway appear to be located on old fills that show signs of settlement or creep. It should be assumed that many roadway areas will require high maintenance and occasional removal of small landslides. There also appears to be a significant risk of larger landslides. We recommend a geologic survey of this resort.

9.4 Electrical Systems

Most concession buildings have individual PG&E meters and are served by an overhead high voltage distribution system with pole-mounted transformers owned by PG&E that runs through the marina. Some small concession buildings are sub-fed from larger buildings via a resort-owned distribution system. Electrical services ranged from poor to good. Internal wiring condition ranged from fair to good. Generally, the electrical systems are code compliant and adequate for current use, but many systems are not adequate for long term use. Several code viloations were noted during the site inspection. A summary of the findings are presented in Table 24.

9.5 Boat Launch Facilities

The boat launch ramp at this resort consists of a 3½-inch thick concrete slab at a 12.5 percent slope. There are horizontal construction joints at approximately 10-foot centers. The plan dimensions are approximately 81½ feet width by 128 feet extending to the waterline. The ramp has a four launch lane capacity. There are two courtesy docks located at the ramp. Both are constructed of painted timber decking and exposed open-cell foam flotation billets. The first is an 80-foot long dock and the second contains four berthing slips. Both are showing deterioration.

The ramp appears to be in fair condition overall. There are several cracks possibly due to shrinkage of the concrete. The ramp does not appear to be experiencing any erosion of its underlying material. As with many of the previous ramps, any large cracks should be repaired

and curbs should be used to protect the adjacent areas. The ramp slope is acceptable. The turnaround area may be congested due to its proximity to the hillside. Parking capacity is acceptable along the road parallel to the shore.

The boat launch ramp will be retained as part of the camping facilities envisioned for this resort location. It is recommended that both courtesy docks not be retained for future use as they have exposed foam floats in an advanced state of deterioration.

9.6 Shoreline Developments

The shoreline had wood retaining walls at the north end of the trailer development at the dock, and a minimal wall around the pump station equipment building. There was evidence of some recent repair work on the walls, however, they were generally at, or very near to, the end of their service life, due to outward tilting and wood deterioration.

The following is a listing of retaining structures that appear to be acceptable structures, having a reasonable design life, if properly maintained:

- None noted.

9.7 Marinas and Fuel Systems

9.7.1 Dock Facilities

The Pleasure Cove Resort has a total of seven docks containing 82 uncovered berthing slips. Dock #1 was under construction at the time of the site visit. It is constructed of a galvanized steel frame with plastic pontoon floats. It has 22 berthing slips.

Dock #3 has gated entry and contains 23 berthing slips and has the fueling facilities located at outer end of the main walkway. The fueling facility is not a separate float at this resort and does not have floats that are impervious to gasoline spills. The fuel facilities and the remainder of the dock have painted timber decking with open-cell exposed foam flotation billets. The dock position is held through the use of mooring lines secured to the shore and chains with hand winches to control the tension on the outboard end of the main walkway.

Dock #4 is contains no berths and appears to be part of a dock that has come apart or is in the process of being repaired. It is composed of timber decking and exposed open-cell flotation billets.

Dock #5 is approximately 212 feet long and contains 28 berths. It has a gated entry. The dock is constructed of painted timber decking and exposed open-cell flotation billets.

Dock #6 has a gated entry and is approximately 55 feet long. It has a total of five berthing slips. It is topped with timber decking. The two floats leading to the main walkway has exposed open-cell foam floats, but the main walkway and fingerfloats have plastic encapsulated floats.

Dock #7 is a newer dock that berthed a single houseboat at the time of the site visit. It appears to be identical in construction to the new Dock #1 adjacent to the boat launch ramp. It contains no berths and is approximately 35 feet long with the access floats approximately 24 feet long.

Due to the state of deterioration of the exposed open-cell flotation billets prevalent at this resort, it is recommended that only Dock #1 and Dock #7 be retained for future use. They both utilize plastic encapsulated pontoon-type floats and are either new or in very good condition.

9.7.2 Fueling Services

There is one fuel dock here with a two dispensers. There is a store located on the fuel dock with an attendant for issuing gasoline to boats. The fueling dock is located at the end of a boat dock. There are two storage tanks on shore. One tank holds unleaded premium gasoline and the other tank holds unleaded regular gasoline. The tanks are piped to the two dispensers on the dock. The dispensers have two hoses with service station type nozzles. Each hose has a fuel cartridge type filter.

There are two dock storage tanks located on shore. This is flat unpaved gravel area adjacent to a paved road. The tanks are located about 30 feet from the road. The storage tanks are above grade, horizontal, rectangular, steel, double wall tanks that sit on a common concrete slab. One tank capacity is 2,000 gallons and stores premium unleaded gasoline. The other tank capacity is 1,000 gallons and stores regular unleaded gasoline. The tank appurtenances include a primary vent, emergency vent, product dispensing pump, sight gauge, fill line and vapor recovery line. Each tank has stairs for access to the fill nozzle. There is no leak detection monitoring system for the tank. There is no containment parking area for the tank truck.

Each tank has a 4-inch vapor line coupler, a large vertical cone with cover attached to the fill nozzle to catch spills from the filling hose and a 2 inch product dispensing pump. The pump dispensing line does not contain an on/off solenoid valve. The pump discharge lines reduce to 1-½ inch lines and the lines are routed toward the fueling dock underground. The lines are tape wrapped galvanized threaded pipe. The underground piping is not double wall piping. The lines come out of the ground near the fueling dock and are connected to two hose reels. Two hoses are routed down the shoreline to the boat dock. A connection is made on the dock to galvanized steel piping which is located in a piping trough in the walkway of the boat dock. A hose connection is made again to the fueling dock steel piping at the end of the walkway. The piping to the two dispensers is routed under the fueling dock. Shut off valves are located at the hose connections.

The on-shore piping does not conform to the California Fire Code, Section 5202. The piping is 1 ½ inch Schedule 40 galvanized steel pipe with threaded joints. Valves are bronze, threaded. The threaded joints are corroded and are not made up properly. Threaded pipe should be gauged to check for conformance to American Standard taper pipe threads before being made up. Bronze valves are a low melt material. Except for the piping at the tank, the piping is buried. The buried piping has a tape wrap. There is no cathodic protection. This piping is suitable for potable water, but not for fuel piping.

Suitable fuel piping for this service at the tank would be 1 ½ inch Schedule 80 black steel pipe with socket weld joints or threaded joints. The threaded joints would be gauged. Socket weld joints are preferred. Threaded joints would be used where necessary for equipment connections. Valves would be steel. The piping would be painted.

Suitable buried piping for this service would be double wall plastic piping with leak detection.

The dock piping does not conform to the California Fire Code, Section 5202. Dock piping is the same material as on shore piping tank piping. Connection to shore piping is made with fuel hose. There is a substantial length of fuel hose attached to the floating dock nearest shore and is used in lieu of hard piping. Hose couplings are threaded. The piping is in a covered piping trough on the second floating dock and on the floating fuel dock and is accessible.

Suitable fuel piping for this service would be flexible double wall pipe in a ducted metal jacket. Leak detection is not required. Final connection to the dispensers would be made in a sump box. This type of piping is specially designed for marina installations.

9.8 Preliminary Environmental Assessement

A site visit was conducted to assess and photograph present site conditions. Mr. Steve Petty, resort manager, was interviewed regarding site history and operations. Results of the interview and site observations are presented in the following table. Results of the preliminary environmental assessent are summarized in the following site onbservations table:

SITE OBSERVATIONS

General Observations	Remarks	Observed	Not
Current Use	Resort with restaurant, store, boat facilities and mobile homes	X	
Past Use			X
Structures	Numerous buildings, restrooms, kiosks, office, store	X	
Terrain	Varied	X	
Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Hazardous chemical and petroleum products in connection with known use. Fill dirt from an unknown source.	Small quantities of oil for equipment	X	
Aboveground storage tanks (ASTs)	Gasoline AST.	X	
Underground storage tanks (USTs)			X
Odors			X
Pools of Liquid			X
Drums	Used oil recycled by SafteyClean	X	
Hazardous chemical and petroleum products in connection with unknown use.			X
Unidentified substance containers			X
Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Chemical storage or agricultural chemical mixing areas	Small quantities of Roundup	X	

SITE OBSERVATIONS (CONTINUED)

Asbestos, and lead based paints	Not assessed.		
Polychlorinated biphenyls (PCBs)	Pole mounted transformers	X	
Pits, Ponds, or Lagoons	Waste water ponds.	X	
Stained soil or pavement			X
Stressed vegetation			X
Hazardous Waste Storage			X
Solid Waste			X
Waste Water		X	
Process waste water			X
Wells			X
Dry wells			X
Surface water	Waste water ponds	X	
Storm basins/catch	Storm drains.	X	

SITE OBSERVATIONS (CONTINUED)

Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Storm drains			X
Drains and sumps			X
Septic system			X
Loading and unloading areas			X
Burned or buried debris			X

In summary, the environmental survey did not reveal recognized environmental conditions at the site. Small quantities of pesticides/herbicides such as Roundup are used on site. In addition, a used oil recycling bin is located on site. The used oil is collected by SafteyClean.

10 MARKLEY COVE

10.1 Waste Water Systems

Ponds:
There are two evaporation ponds for this resort located at the top of a steep, nearly inaccessible hill. Even though the ponds were dry (moist), the maintenance man said it was the wettest that he had ever seen it. Weeds are growing extensively in both ponds.

Currently the wastewater is directed into only one pond. The State Water Resource Control Board wanted one end of line capped so water would always feed into just one pond, with overflow to the other pond.

The force mains connecting lift stations to these ponds are suspected of leaking and should be tested and repaired if needed. Almost no flow is reaching the ponds, although the pumps run almost constantly. The only way that this can happen is if the force main is losing all of the pumped flow through leaks.

It is impossible to determine whether the ponds are adequately sized because the wastewater is not reaching the ponds. As a minimum, weed removal and clay lining of the ponds would be necessary before the ponds could be placed back into service.

Lift Stations:
There is one lift station for 50 hookups.
LS 1: This lift station directs the wastewater from the trailers to the main lift station. It has two single stage rotary Moyno pumps. There are no alarms for this station. It uses a lead and lag set-up.

Main LS: This is the main pump house for this facility. There are two 5HP Moyno pumps (with one backup pump) operating in a lead/lag arrangement. It has pressure monitors that are checked weekly to notify the maintenance staff of a force main plug. It also has an additional flow monitor. During the winter months, there are reportedly some electrical reliability problems.

House Boat LS: This lift station is manually operated to pump out the houseboats, using a Sears utility water pump, to a holding tank. A Moyno pump is used to pump the sewage from the holding tank to the main lift station. The "force main" is a flexible hose that is severely worn. The end of the hose in uncapped.

Office LS: Two submersible pumps (1 hp and 1/3 hp) are located at this pump station. The building is vented but had no alarms.

The lift stations was found to be unacceptable and would require additional reliable pumping capacity, new instrumentation and controls, a functional alarm system, and standby power facilities in order to be adequate. New lift stations should be constructed using new equipment and materials.

10.2 Potable Water Systems

Treatment Plant:
This resort has a different style treatment facility than the other resorts. Instead of pressure filters, this facility uses concrete settling tanks with mixed media filters, which are open on top. There is a local alarm for chlorine levels, but not turbidity. The filters are backwashed from the storage tank.

Storage Tanks:
There is only one storage tank for the 50 hookups at this resort. It is an old, 6,000-gallon brewery tank purchased from a brewery and installed more than 10 years ago. Lately the tank has reportedly been overflowing and leaking. The float system is not working. The feed line and backflow line are the same. The resort checks the chlorine levels in the treatment process daily but not the residual levels. Napa County tests the water monthly.

10.3 Roads/Parking Lots

Pavement Section:
As indicated in Table 8, all roads are in extremely poor condition. With the exception of a short area near the entry it appears that most of the pavements are less than an inch thick and consist of either an asphalt macadam or penetration asphalt layer. At best, most of the existing pavements could serve a base for the construction of a new pavement.

For the 300 feet or so closest to the entry it would be possible to repair existing areas of alligator cracking and then install a 3-inch thick asphalt overlay. In all other areas we recommend proof rolling all pavement areas and removing any sections that pump or weave. We then recommend placing a thin leveling course of aggregate base over the existing pavement and constructing new asphalt pavements that are at least three inches thick in collector areas and 2 inches thick in secondary areas.

Geometry:
Virtually all roads are two way roads, with little opportunity to create one-way loops. In most areas between the entrance and sampling location number C7 (Plate 8) the existing road is extremely narrow but the road bench is wide enough to permit widening to accommodate 2-way

traffic. (It would then no longer be possible to store boat trailers along the side of the road as is currently done).

North of sampling locations C8 and S9 the roads become extremely narrow (10 feet to 12 feet) with a steep cut slope on one side and mobile homes on the other. Not only is there no room to add a second lane, there is also virtually no space for parking. Cars presently park on the roadway, making fire truck access difficult or impossible. Although inspection of gravel roads was beyond the scope of our services we point out that there are many additional dwellings along the gravel road that continues to the north of this area. These are at significant risk due to the lack of fire truck access.

At the present time all improvements that are north of the where the road forks (approximately 100 feet south of locations C8 and S9) are substandard, and dwellings are at risk due to the lack of fire truck access. Bringing roads in this location up to even minimal safety standards will require either very expensive grading and new retaining walls; or else most trailers will need to be removed so that the road could be widened into the areas that are currently occupied by trailers. *We recommend closure of this area until a plan is developed to increase road width and parking.*

Although a survey was not performed, one area of extreme roadway curvature was noted between sampling locations C6 and C7. This curve will probably need to be flattened to allow fire truck access, or it may be desirable to close the road before reaching this curve. A fire truck turnaround will be necessary wherever this road terminates. An additional turnaround is necessary on the secondary road south of location S8 (see Plate 8). There are a couple of sharp corners at intersections that may require some modification to provide adequate fire truck access. Surveys will be necessary to determine the appropriate roadway and parking geometry in these areas. No areas of overly steep grades were noted. After geometric modifications and road reconstruction all roads should be striped and signed.

Other Considerations:
Because of the topography of this ravine where this development is located, most roadways have been constructed by excavating into already steep slopes, and placing fill on the downhill side of the road (also on very steep slopes). In some cases cut slopes are more than 30 to 40 feet high. Although no evidence of major landslides was observed, numerous areas of sloughing and soil pop-outs have occurred. It should be assumed that this entire area will require high maintenance and occasional removal of small landslides. There also appears to be a significant risk of larger landslides. We recommend a geologic survey of this area.

10.4 Electrical Systems

Most concession buildings have individual PG&E meters and are served by an overhead high voltage distribution system with pole-mounted transformers owned by PG&E that runs through

the marina. Some small concession buildings are sub-fed from larger buildings via a resort-owned distribution system. Electrical services ranged from poor to good. Internal wiring condition ranged from fair to good. Generally, the electrical systems are not code compliant, not adequate for current use, and not adequate for long term use. Several code viloations were noted during the site inspection.

10.5 Boat Launch Facilities

The boat launch ramp is approximately 56 feet wide and extends 131 feet to the waterline. The ramp has a two launch lane capacity and a 15.6 percent average slope. It is constructed of a four-inch concrete slab with worn horizontal grooves. There are two boarding floats present. The ramp is experiencing erosion of the underlying material and deterioration of the concrete on its edge.

The ramp appears to be in fair to poor condition overall. There is significant erosion and concrete deterioration on one side and several cracks are present possibly due to shrinkage of the concrete. The ramp may be retained to support the houseboat operations, but repairs are recommended.

Slope protection should be placed on the left edge of the ramp to prevent future undermining of the concrete. The washed out sub-base material should be replaced and the concrete surface repaired. Curbs should be utilized to prevent vehicle traffic on the surrounding areas. Any medium to large sized cracks should be filled with epoxy.

10.6 Shoreline Developments

Retaining walls generally consisted of non-treated wood construction, with a number of masonry block walls. The wood walls were typically failing (outward tilting) due to inadequate lateral resistance design, and due to material deterioration. There were a few wood walls currently in good condition, such as those at Unit Nos. 50, 46, and 37. Such wood-constructed walls, however, will not have a long service life

The following is a listing of retaining structures that appear to be acceptable structures, having a reasonable design life, if properly maintained:

- Unit No. 25: a three-level masonry block wall
- Unit Nos. 38 through 42: masonry block wall having light rip rap toe protection
- Unit Nos. 44 and 45: concrete/masonry block wall

All other shoreline developments are not recommended for future use and should be removed.

10.7 Marinas and Fuel Systems

10.7.1 Dock Facilities

There are a total of nine docks at this resort. Docks #1 through #6 are connected in a string that extends approximately 950 feet into the water. There are a total of 129 covered berthing slips in this string. The resort has total of 173 slips.

Access to Dock #1 is possible by a newer 83-foot long aluminum gangway. The gangway is in very good condition. The gangway leads to an access float constructed of two-inch thick concrete decking, galvanized steel framing and plastic encapsulated floats. Dock #1 is 62 feet long and has a total of 10 slips. It is covered, has timber decking with galvanized framing and plastic floats. The roofing structure consists of galvanized steel framing with corrugated steel roofing.

Dock #2 is 19 feet long and contains two slips. The decking consists of two-inch thick concrete panels supported a galvanized steel frame. Plastic encapsulated pontoons provide buoyancy. The roofing structure here is identical to Dock #1

Dock #3 is 313 feet longs and contains 50 berthing slips. The decking, dock frame and floats are identical to Dock #2. Hand winches are provided on either side of the main walkway at intervals to apply tension to the anchor lines.

Dock #4 follows next in the string. It is 181 feet in length and contains 28 berthing slips. Roofing and dock construction are identical to Docks #2 and #3.

Dock #5 provides berthing for the houseboats. The dock is 344 feet long and contains 39 berthing slips. The berths are 40 feet in length and are uncovered. The dock construction is identical to Docks #2 through #4.

Dock #6 is the final dock in the string and consists of the fish pen. It is uncovered and is 30 feet square in dimension. The precast concrete deck panels are used here with the same framing and floats.

Dock #7 consists of the fueling station, store and storage shed. Its decking consists of plywood in poor condition. Buoyancy is provided by a combination of plastic encapsulated floats and corrugated steel pipe pontoons. Access to the dock is provided by an aluminum elevated gangway.

Dock #8 and #9 are located on the northern end of the resort. Dock #8 is 154 feet long and contains 28 slips. There is an elevated gangway to the access float, which is 72 feet long. Personal watercrafts are berthed along the access ramp. Dock #9 is 97 feet long with 16 slips.

There is an elevated gangway here also, leading onto an access float which is 72 feet long. Both docks are covered and have diagonal timber decking and non-encapsulated open-cell foam flotation billets. The fingerfloats have greatly varying freeboards indicating deterioration of the floats, which can also be visually seen. The decking is splintered and coming up in some locations. The roofing framing is in poor condition.

The gas dock, boat repair dock and Dock #8 and #9 should not be retained for long term use due to their age and deterioration.

10.7.2 Fueling Services

There is one fuel dock present with one dispenser. There is a store located on the fuel dock with an attendant for issuing gasoline to boats. There is one storage tank on shore. The tank holds unleaded regular gasoline. The tank is piped to the dispenser on the dock. The dispenser has two hoses with service station type nozzles. A cartridge type fuel filter is located in the dock piping. The dispensers contain a product dispensing pump.

The storage tank is located on shore in an unpaved dirt area, which was excavated out of the side of a steep hill. The storage tank is an above grade, horizontal, cylindrical double wall tank that sits on two 4 ft x 8 ft concrete footings. The tank capacity is 5,000 gallons. The tank appurtenances include a primary vent, emergency vent, fill line, vapor recovery line and level gauge. Stick gaging is accomplished by removing a plug on an external vertical line. There is no ladder for access to the top of the tank. There is no leak detection monitoring system for the tank. There is no containment parking area for the tank truck.

The tank piping includes a 3-inch fill line with a 2-inch coupler, 3-inch vapor line with a 1-½ inch coupler and a 2-inch product dispensing line. There is no containment for this piping and no product dispensing pump at the tank. The product dispensing line is reduced to 1 ½ inch threaded piping and is routed toward the fueling dock. The piping is a mix of galvanized and black steel pipe. The piping is above grade on supports. It is routed under a gravel road through a 4-inch PVC casing pipe. A transition to hose is made and the hose is routed down the shoreline to the fuel dock where a hose reel is located. The hose reel is connected to 1 ½ inch galvanized threaded pipe on the dock and is routed under the dock to the dispenser. There is an emergency electrical shut off at the store on the fueling dock. Shut off valves are provided at the hose connections on the dock and at the dispenser.

The on-shore piping does not conform to the California Fire Code, Section 5202. The piping is 1 ½ inch Schedule 40 and is a combination of black steel and galvanized steel pipe with threaded joints. The black steel pipe is painted. Valves are bronze, threaded. The threaded joints are corroded and are not made up properly. Threaded pipe should be gauged to check for conformance to American Standard taper pipe threads before being made up. Bronze valves are a low melt material. This piping is suitable for potable water, but not for fuel piping. Pipe

supports are inadequate. Road crossings are unsatisfactory. The piping cannot be maintained under the road. The piping is routed over a dry grass area, which is a fire danger.

Suitable fuel piping for this service at the tank would be 1 ½ inch Schedule 80 black steel pipe with socket weld joints or threaded joints. The threaded joints would be gauged. Socket weld joints are preferred. Threaded joints would be used where necessary for equipment connections. Valves would be steel. The piping would be painted.

We recommend burying the on shore piping. It is a difficult overland route for above grade piping. Supporting the piping is difficult and the dry grasses represent a fire danger. Suitable material for buried piping would be double wall plastic pipe with leak detection.

The dock piping does not conform to the California Fire Code, Section 5202. The piping is 1 ½ inch Schedule 40 galvanized steel pipe with threaded joints. Valves are bronze, threaded. The threaded joints are corroded and are not made up properly. Threaded pipe should be gauged to check for conformance to American Standard taper pipe threads before being made up. Bronze valves are a low melt material. This piping is suitable for potable water, but not for fuel piping. Connection to shore piping is made with fuel hose. There is a hose reel on the first floating dock. Hose couplings are threaded. The piping is routed under the first floating dock and under the fuel dock and is not accessible.

Suitable fuel piping for this service would be flexible double wall pipe in a ducted metal jacket. Leak detection is not required. Final connection to the dispensers would be made in a sump box. This type of piping is specially designed for marina installations.

The dock dispenser has a fuel pump. We recommend putting a pump at the tank and replacing this dispenser. This would eliminate the possibility of siphoning fuel from the elevated storage tank, if a line broke.

10.8 Preliminary Environmental Assessement

A site visit was conducted to assess and photograph present site conditions. Ms. Linda Frazier, resort owner, was interviewed regarding site history and operations. Results of the interview and site observations are presented in the following table. Results of the preliminary environmental assessent are summarized in the following site observations table:

SITE OBSERVATIONS

General Observations	Remarks	Observed	Not
Current Use	Resort with store, boat facilities and mobile homes	X	
Past Use			X
Structures	Numerous buildings, restrooms, kiosks, office, store, boat ramp, docks, etc	X	
Terrain	Varied	X	
Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Hazardous chemical and petroleum products in connection with known use. Fill dirt from an unknown source.	Small quantities of paint	X	
Aboveground storage tanks (ASTs)	Gasoline AST.	X	
Underground storage tanks (USTs)			X
Odors			X
Pools of Liquid			X
Drums	Used oil recycled by SafteyClean	X	
Hazardous chemical and petroleum products in connection with unknown use.			X
Unidentified substance containers			X
Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Chemical storage or agricultural chemical mixing areas	Small quantities of Roundup	X	

Asbestos, and lead based paints	Not assessed.		
Polychlorinated biphenyls (PCBs)			X
Pits, Ponds, or Lagoons	Waste water ponds.	X	
Stained soil or pavement			X
Stressed vegetation			X
Hazardous Waste Storage	Used oil recycling	X	
Solid Waste			X
Waste Water		X	
Process waste water			X
Wells			X
Dry wells			X
Surface water	Waste water ponds	X	
Storm basins/catch			X
Interior and exterior observations or environmental conditions that may involve the use, storage, disposal or generation of hazardous substances or petroleum products.		**Observed**	**Not Observed**
Storm drains			X
Drains and sumps			X
Septic system			X
Loading and unloading areas			X
Burned or buried debris			X

In summary, the environmental survey did not reveal recognized environmental conditions at the site. Small quantities of paint are stored and used on site. In addition, a used oil recycling bin is located on site. The used oil is collected by SafteyClean.

11 SURVEY AND MAPPING

Mountain Pacific Surveys (MPS) conducted topographic mapping at selected areas around Lake Berryessa. MPS utilized provided topographic maps as the baseline for the updated survey.

The aerial mapping effort at Lake Berryessa was undertaken in early May of 2002. Upon completion of the initial research required to develop the appropriate datum and GPS control network, field crews placed and controlled ground targets to facilitate the aerial mapping effort. The aerial consultant flew the site and compiled the required mapping at the selected areas. The mapping product was compiled at 1"=200' with a 5' contour interval using NAD 83/NAVD 88 control monuments.

Aerial mapping for the sewage pond areas for Markley Cove, Putah Creek Resort, and Pleasure Cove was provided. Access roads to the sewage ponds were reflected on the maps. The survey also located the two new boat storage buildings at Steele Park. The location of these sewage ponds relative to the specific resorts are not on the same datum and therefore, cannot be accurately plotted on the topographic maps.

Electronic and hardcopy versions of previous topographic maps prepared by others, were provided by Reclamation to Kleinfelder and Mountain Pacific Survey. The topographic maps provided were compiled in both metric units and standard English units (feet). Per Reclamation guidance, the NAD83/NAVD88 control monuments, established at the lake by Reclamation, were utilized for the basis of the coordinate systems. Unfortunately, these datums were not the basis for either of the previous topographic mapping products provided by Reclamation. This means that the new mapping products produced by MPS cannot be registered to the older products without some manipulation. The process to correct the datum conflicts would consist of a horizontal datum shift and rotation (NAD 27 to NAD 83), as well as a vertical translation of about 3 feet (NGVD 29 to NAVD 88). There would be some inherent loss of accuracy, primarily in the vertical component, in the conversion process, however, since the topographic mapping was performed for planning level assessments only, the merged product would still be suitable for this level of engineering analysis.

Copies of the topographic survey maps for each resort are included in Appendix C for reference.

12 COST ESTIMATES

Kleinfelder and its subcontractors conducted a planning level analysis of costs associated in support of demolition and removal, replacement and/or rehabilitation of existing systems, improvements and unacceptable environmental conditions. We considered factors derived from the condition assessment, engineering feasibility analysis, evaluation of natural site conditions and understanding of constraints and opportunities as the basis for preparing our cost analysis.

The analysis included reasonable costs that would be associated in meeting redevelopment objectives, engineering recommendations using accepted standards, health and safety codes and protection of resource values. The analysis for improvements such as roads, parking lots and shoreline developments were estimated based on current rates.

The cost analysis included estimated costs to remove shoreline improvements and to rehabilitate those sites to a near original condition. The cost analysis included costs associated with the removal and disposal of a representative sample of trailers and mobile homes on long-term sites.

The cost estimate matrix is summarized for each resort and presented in Table D-1 (Appendix D). Representative costs associated with each resort are summarized individually and presented in Tables D-2 through D-8 (Appendix D).

12.1 Waste Water/Potable Systems

The planning level cost analysis included treatment facility upgrades, lift stations, demolition of existing facilities, pond upgrades, and storage tanks. These costs are summarized in Table D-1.

12.3 Roads/Parking Lots

Tables D-9 through D-15 in Appendix D, contain our cost estimates of construction costs to bring pavements into minimum compliance with the recommendations that are contained in this report. Costs are based on our recent experience with paving projects as well as with conversations with local paving contractors. These estimates reflect the cost of grading, paving, striping and signing. They do not include any costs associated with survey or design of street improvements. They do not include any costs associated with reducing housing density or construction of new off-street parking. They also do not include the cost of improvements to potentially unstable slopes, if future geologic studies reveal that such repairs are necessary. Finally, these costs are based on very approximate estimates of the total quantities of work involved. More detailed surveys and engineering designs would be required to improve the accuracy of these estimates.

For the purposes of our estimates the following unit prices were used.

Item	Unit Cost	Extended Unit Cost
Asphalt Pavement	$42/ton	$27,500 per mile per inch of thickness (20' wide) $16,500 per mile per inch of thickness (12' wide)
Aggregate Base	$12/ton	$7,800 per mile per inch of thickness (20' wide)
Repair of failed areas and surface preparation prior to paving		$10,000 per mile (20' wide) $6,000 per mile (12' wide)
Grading to reduce sharp curves, not including pavement		$1000 each
Construction of fire truck turnarounds, including pavement		$2000 each
Striping & Signing		$1000 per mile of road
Retaining Wall		$25/square foot of wall

12.4 Electrical Systems

The planning level cost analysis for the electrical systems includes those costs necessary to upgrade the existing electrical systems to meet current code standards. The cost matix summary is presented in Tables D-1 and D-16 and summarized in Tables D-17 through D-23, Appendix D.

12.5 Boat Launch Facilities

The planning level cost analysis for the boat launch facilties included surface repair, slope protection, new courtesty docks and signage. The cost estimates are based on present day labor rates plus material cost estimates for the required upgrades. The cost matrix summary for these facilities is presented in Table D-1 and summarized in Tables D-2 through D-8, Appendix D.

12.6 Marinas and Fuel Systems

The planning level cost analysis for the marinas and fuel systems included the removal of nonretainable docks, new floating docks, electical utilities, fire protection, waster pumpout systems, removal of fueling facilities, and construction of new fueling facilities. The cost matrix summary for these facilities is presented in Table D-1 and summarized in Tables D-2 through D-8, Appendix D.

12.7 Miscellaneous Costs (Trailers, Shorelines, etc)

This cost estimate includes demolition of all trailer homes (including capping utilities, removing concrete pad, and driveway), demolition and removal of all material (retaining walls made out of concrete wood, rubbish, cable, and etc) on the edge of the water, and demolition and removal of roads. The demolition of the trailer homes would be performed using excavators with grapples.

Demolition of trailer homes includes trailer home, utilities below grade, removal of the concrete pads, retaining walls (associated with trailer home) and driveways. Approximately 90% of the material from the demolition of trailer homes would be taken to landfill. Approximately 5% of the material would be recycled. The other 5%, including concrete that would come from concrete pad below trailer home, would also be recycled. The planning level costs do not include any abatement of asbestos or lead based paint. The following breakdown is as follows:

12.7.1 Mobile Home Trailer Removal

Demolition of trailer homes including restrooms, information booths, store/restrooms averaging around 200 units per resort (there are a total of seven resorts):

- $9,800,000 (total), or approximately $7,000 per unit

12.7.2 Shoreline Development/Retaining Wall Removal

Demolition and removal of all material (retaining walls made out of concrete wood, rubbish, cable, and etc) on the edge of the water:

- $2,100,000 (total) or approximately $300,000 per resort

12.7.3 Demolition and Removal of Roadways

Demolition and removal of roads:

- $3,500,000 (total) or approximately $500,000 per resort.

Total cost would be approximately $15,400,000.

Cost estimate includes equipment, labor, transportation, and dump fees. Excludes removing trees, bonds, insurance, asbestos or lead abatement.

13 SUMMARY AND RECOMMENDATIONS

13.1 Water/Waste Water Systems

Based on the age of the sanitary sewers, the materials and construction methods commonly used when the systems were built, and the lack of regular maintenance and repairs, it is anticipated that the sewers are in a generally deteriorated condition and need replacement. For a sanitary sewer component to be kept, additional assessment would be needed. This would likely include limited flow monitoring to quantify infiltration and inflow and to determine system capacities; smoke testing to identify specific sources of inflow; and closed-circuit television inspection to identify infiltration sources and structural damage.

Lift Stations: Each of the lift stations was found to be unacceptable. The lift stations would require, at a minimum, additional reliable pumping capacity, new instrumentation and controls, a functional alarm system, and standby power facilities in order to be adequate. In addition, the structures housing the pump stations are often substandard and/or damaged. These conditions make these lift stations unreliable; coupled with the location of many of the stations, the risk of failure leading to contamination of the lake is considered very high. New lift stations should be constructed using new equipment and materials.

Force Mains. The force mains connecting these lift stations to the ponds are also questionable. The force mains should also be replaced. These new facilities should be located and sized in conformance with planned future uses of the resorts.

Ponds: The wastewater retention ponds are considered to be undersized for the current resort development. This conclusion is based on the presence of discrete overflow pipes, implementation of spray disposal fields, and reports of the ponds being overtopped. Spray disposal that is being performed should be ceased immediately because the wastewater that is being discharged is minimally treated (spraying occurs during peak usage), the wastewater is not disinfected, and the potential for human pathogenic contact is very high. Additional ponds are needed such that proper operation can be achieved.

Miscellaneous. Numerous problems such as exposed polyvinyl chloride pipe (susceptible to ultraviolet degradation and failure), non-operating pumps, and spray mister heads that should be replaced were observed. Exposed electrical wiring represents a safety hazard and should be corrected immediately. Maintenance activities such as weed removal and clay-lining repairs should be performed at many of the ponds.

The wastewater treatment strategy that has been implemented at Steele Park – contract operation of a secondary treatment facility by Napa County – should receive further consideration for the other resorts. It is recommended that a study be completed to evaluate the benefits of improving the ponds at each of the various facilities vs. construction of a larger treatment plant located somewhere on the western side of the lake. Various combinations of these strategies, for example constructing a wastewater treatment plant to process the wastewater generated at the resorts between Rancho Monticello and Spanish Flat Resort, with improvements to the ponds at Putah Creek Resort completed separately, should be a part of the study. Preliminary siting of any combined treatment facility should also be included.

13.1.1 Water Systems

Distribution Systems: Residual chlorine testing at the taps must be conducted before any upgrades to the water treatment or storage facilities are planned. For systems to be retained, verification of minimal leakage is needed. Leak testing can be performed with pressure measurements at the fire hydrants, and the upgrade should include the elimination of system leaks, determination of fire fighting pressures, and verification of adequate treatment.

Treatment Facilities: In general, the structures housing the water treatment facilities are of a higher quality than the wastewater lift station structures. The pressure filters were found to be relatively new and in reasonable condition. The chlorine analyzers, the turbidimeters, and the feed pumps were also new and/or in good condition.

Recommended improvements include additional onsite storage tanks to extend the chlorine contact times, storage tanks and better mixers to increase the effectiveness of the polymer solution for turbidity removal, and the addition of standby power (except at Rancho Monticello, which already has a diesel generator). Significant improvements to the instrumentation, monitoring, and alarm systems are needed. Containment structures for the backwash water, with discharge to the sanitary sewer system, are also recommended.

Steele Park and Spanish Flat Resort already obtain their water supplies from offsite sources. This strategy should be considered for the other resorts on the west side of the lake, as well. One possibility would be to combine all of the pressure filters from each of the resorts into one location. Based on the demand requirements of the future developments, additional filters might also be required. The instrumentation and control improvements, alarm system, additional tanks, standby power, and backwash improvements would still be required, but the requirements for a single facility (as opposed to several) would be fewer.

Storage Tanks: It was not possible to inspect the interior of the water tanks during our inspections, but many of the storage tanks were observed to be leaking. A program for repairing the leakage is needed. Reinforcing cables were often displaced and structural damage was visible on one tank at Rancho Monticello. Exposed piping should be protected from vandalism and freezing. Valves should be exercised regularly and repaired when leaking.

13.1.2 Water/Waste Water Management Strategies

It is recommended that the Bureau consider formation of a Maintenance District to operate and maintain both the water and wastewater systems. In this manner, appropriately trained and licensed personnel would be responsible for water treatment and distribution, water quality monitoring and testing, and wastewater collection, treatment, and disposal.

Licensing requirements for the wastewater facilities would include a Grade IV or V Wastewater Treatment Operator. For the water system, a Grade III or IV Water Treatment Operator would be required. The licensed operators and staff could be Bureau of Reclamation employees, could be Napa County employees, or could be provided on a contract basis with one of the companies that provides contract operations services for water and wastewater treatment facilities. The cost of the Maintenance District could be included in future lease agreements.

13.2 Boat Launch Ramps

The boat launch ramps located at the resorts are generally in fair condition, however, as constructed, the boat launch ramps do not uniformly meet the current California Boating and Waterways Guidelines criteria for minimum 6" slab thickness for the freshwater lake application. They are typically of a thickness less than the recommended amount. Several of the ramps exceed the recommended 15 percent slope and are constructed with materials other the recommended Portland cement concrete. It is not clear whether steel reinforcing is present in the concrete ramps as a minimum steel ratio is recommended. The Guidelines also recommend the use of V-grooves to ensure traction for the hauling vehicles. Due to deterioration of the concrete, or simply the lack of, the ramps generally do not meet this requirement.

Although not specifically recommended by the guidelines, the use of a curb defining the boundaries of the launch ramp is advised to avoid damage to the adjacent ground by vehicles.

Some of the ramps are displaying obvious deterioration of the topping or slab, with erosion of the underlying sub-base present in a few previously noted cases along the perimeters of the ramp. There are also cracks or spalling in almost all of the ramps with concrete surfaces. These defects should be repaired to maintain the integrity of the concrete and the underlying material.

The width of the ramps is adequate, and in most cases there appears to be clearance for vehicles at the top of the ramp.

In general, on-shore signage for the launch ramps is not provided and would be a benefit to the recreational boaters. In many cases, buoys were absent defining a five mile per hour zone to prevent excessive wake and to define a boundary between the swimming area and the fairway for the launch ramp as stated in the Guidelines[2].

13.3 Marinas, Docks and Fuel Systems

The foremost deficiencies at the concessionaire marinas include the wide use of non-encapsulated foam billet floats. The floats generally have been in use for a long period, have undergone significant deterioration and do not meet the current guidelines for docks. There is water absorption and deterioration in many of the floats, and they cannot retain a consistent freeboard with the main walkways in many cases. It appears that because of this deterioration, many of the finger piers and walkways do not provide adequate freeboard per the California Boating and Waterways Guidelines. The recommended freeboard is 15 to 20 inches, with the lower end being used to prevent water overtopping of the deck when the design live load is applied.

It is understood that for the future improvements at the resorts, Reclamation wishes to use encapsulated foam billets as flotation for the docks. There is a general trend away from the use of exposed flotation billets because of the environmental impact due to their deterioration fouling the waterways. The Oregon State Marine Board has adopted their use as mandatory for new dock construction. The California Boating and Waterways Guidelines state that flotation devices that use new expanded polystyrene (EPS) must have an encasement around the flotation material. The encasement material may be a solid polyethylene pontoon. The encased foam material, called "bead-board" is an open-cell foam. The Guidelines do not recommend exposed foam for public projects. The Guidelines also state the fuel docks must have the encasement to prevent degradation from gasoline spills.

Many of the docks have not been recommended for further use due to the cost involved with upgrading them with encapsulated foam billets and new decking. It is more economical to use a new dock that meets current guidelines and Reclamation's specifications.

The majority of the decking material used on the docks is timber. It appears to have been in place for a long period of time and is showing deterioration due to the environment. Another common problem noted is the pulling out of fasteners in the decking. The timber used for the decking is probably not pressure treated and is succumbing to the ultraviolet rays and the wave action.

The gangways and access ramps for many of the docks are generally in poor condition due to their flotation material and decking. Most do not meet the specified criteria for the handrails or securing lines.

Several of the docks do not meet dimensional criteria per the California Boating and Waterways *"Layout and Design Guidelines for Small Craft Berthing Facilities*". The finger piers do not meet the recommended width criteria for the berth length.

Many deficiencies in the fueling systems were noted relative to today's code. Most common was piping that used improper materials and is inadequately supported. Other issues included lack of filling procedures/alarm and/or containment at the shore tank and minor leaks.

A preliminary estimate has been made to approximate the cost associated with bringing the marina facilities up to current guidelines and standards, taking into consideration the Bureau's desired future plan for the seven Concession areas. The Cost Estimate is located in Appendix D.

13.4 Roads/Parking Lots

This section contains our conclusions and recommendations for repair/modification necessary to bring roadways into substantial compliance with applicable codes and guidelines and to extend the life of existing roadways by approximately 20 years. These recommendations are based on statistical sampling and a visual, reconnaissance level review of site conditions. Final design for any of these features should include physical testing of pavements, an accurate survey of all roadways, traffic estimates, and more detailed engineering evaluations.

13.4.1 Pavement Geometry.

We recommend modifying existing roadway geometry only where safety related problems are identified. Those areas include:

- *Road width.* Two-way roads that are narrower than 18 feet should be widened or changed to one-way roads. Exceptions may be made for driveways that serve only a few dwelling units. Minimum four foot wide shoulders should be provided wherever possible.

- *Curvature.* Horizontal curves should have a minimum centerline radius of 50 feet. Existing curves that are sharper than this should have their curvature reduced, or else the width of shoulders should be increased, to provide adequate fire truck access.

- *Parking and Turnarounds.* All two-way roads that are less than 28 feet wide should be posted "No Parking" on both sides. Virtually all roads are less than 28 feet wide. All one way roads that are narrower than 16 feet should be posted "No Parking" on both sides and should have turnouts at least every 500 to 1000 feet. Most one-way roads are narrower than 16 feet. All dead end roads (including driveways) that are longer than approximately 200 feet should have a fire truck turnaround.

Because this criteria will eliminate most parking on road shoulders, in many areas the existing housing density will be too high for the amount of available parking. Typically a minimum of two parking places should be provided for every dwelling unit. Assessment of the number of parking spaces that are necessary or available in each resort was not performed as a part of this study. However, we did note areas where the absence of parking spaces was particularly acute,

resulting in cars being parked on roads or road shoulders in a manner that seriously obstructs traffic and could prevent fire truck access in an emergency.

- *Striping.* All two-way roads should be painted with a center stripe to direct traffic during foggy or adverse weather.

- *Signing.* All roads should be signed to reflect speed limits, parking restrictions, one way traffic, intersections and similar items.

Detailed recommendations for specific road segments are contained in the resort specific sections of this report. *We emphasize that our work considers only paved roads that serve more than three or four dwellings. Serious concerns regarding fire truck access exist with regard to some dwellings on gravel roads or short driveways. We recommend that the Fire Marshal provide a more detailed inspection of access to all dwellings.*

13.4.2 Pavement Thickness

The remaining live of existing pavements is estimated to range from near zero to approximately eleven years. To achieve a design life of 20 years all existing pavements require rehabilitation varying from overlays to complete reconstruction. Calculated thickness for new pavements are contained in Section 3.4.5. For calculating rehabilitation measures we assigned the following pavement equivalencies to the existing pavements.

PCI of Existing Pavement	New pavement section that would be approximately equivalent to the existing aged section	
	AC	AB
60-80	1”	9”
40-60	0.5”	9”
10-40	0”	9”
0-10	0”	6”

For pavements where the PCI is greater than 40, we recommend the following:

- Excavate areas of severe alligator cracking, rutting or depression.
- Repair these areas with compacted crushed rock and a one-in thick AC patch.
- Apply an AC overlay on all roadways (including the patched areas). The thickness of the overlay is determined by the road classification and the PCI.

For pavements where the PCI is less than 40, we recommend the following:

- Excavate areas of severe alligator cracking, rutting or depression.
- Repair these areas with compacted crushed rock.
- Apply an AC overlay that is roughly equivalent to a new pavement thickness (existing roadway is assumed to provide support equivalent to an aggregate base layer).

In Markley Cove Resort, where most pavements appear to consist of less than one inch of asphalt or macadam with little or no aggregate base, we recommend constructing essentially new pavements, assuming that the existing roadways provide support equivalent to no more than approximately six inches of aggregate base. These recommendations are summarized in the following table:

Recommended Pavement Rehabilitation				
Resort	**Area**	**PCI**	**% High Severity Distress**	**Recommended Repair**
Putah Creek	Collector Roads	46	2.2	Patching + 2.5" Overlay
Putah Creek	Secondary/East of Knoxville Rd	40	7.5	Patching + 1.5" Overlay
Putah Creek	Secondary/West of Knoxville Rd	78	0	Patching + 1" Overlay
Rancho Monticello	Collector Roads	21	19	3" Overlay
Rancho Monticello	Secondary Roads	25	12	2" Overlay
Lake Berryessa Marina	Collector Roads	43	8.5	Patching + 2.5" Overlay
Lake Berryessa Marina	Secondary Roads	42	17.1	Patching + 1.5" Overlay
Spanish Flat	Collector - to Store	34	4.7	3" Overlay
Spanish Flat	Collector - Other	68	0	Patching + 2" Overlay
Spanish Flat	Secondary Roads	62	8.1	Patching + 1" Overlay
Steele Park	Collector - Entry	12	19.2	3" Overlay
Steele Park	Collector - Other	66	4.6	Patching + 2" Overlay
Steele Park	Secondary Roads	68	0.5	Patching + 1" Overlay
Pleasure Cove	Collector Roads	32	13	3" Overlay
Pleasure Cove	Secondary Roads	25	24.2	2" Overlay
Markley Cove	Collector Roads	5	>50	3" AC/3"AB
Markley Cove	Secondary Roads	9	>50	2"AC/2"AB

13.5 Preliminary Site Assessments

The Kleinfelder team conducted a preliminary environmental survey regarding known or suspected releases of hazardous substances at each of the resorts. A Recognized Environmental Condition is defined by the American Society of Testing and Materials (ASTM) *Standard*

Practice for Phase I Environmental Site Assessments, *Phase I Environmental Site Assessment Process* (E1527-00), as "the presence or likely presence of hazardous substances or petroleum products under conditions that indicate a release into structures on the property or into the ground, groundwater or surface water of the property." Interviews with key resort staff was performed to gain an understanding of what processes are utilized at each resort and to document area of potential environmental concern. A checklist form was used for the Preliminary Environmental Survey. Results of the environmental survey did not reveal significant concerns with regards to hazardous materials. Hazardous findings were limited to paints, oils, used oil being recycled, and small quantities of pesticides/herbicides/insecticides. The larger environmental concerns are with the sewage systems.

14 REFERENCES

- USBR (date) *Inventory for Engineering Evaluation & Condition Assessment* by resort provided by U.S. Department of the Interior, Bureau of Reclamation (Cheryl Riley's report).

- Kleinfelder 2001, *Facility Condition Assessment, Seven Concession Areas, Lake Berryessa Resort, Volume I and Volume II*, November 19, 2001

- Winzler & Kelly, 2002. *Environmental Compliance and Facility Condition Assessment, Seven Concession Areas, Concession Facilities Assessment Report*, June 2002.

15 GLOSSARY OF TERMS

Term	Definition
Dock	A facility located on the lake, which is designed to accommodate the parking and/or water storage of watercraft.
Freeboard	The vertical distance from the top of the deck of a dock to the water surface.
Encapsulated	A physical barrier between the polystyrene foam flotation and the water.
Treated Wood	Pressure treated, dimensional lumber or plywood, by a commercial supplier with preservative for use in waterways.
Gangway	A variable slope structure, which provides pedestrian access between shore and a floating structure.
"Gauged Joints"	A method of checking the tolerances in the threads done by the pipe fitter to make sure the joint is tight.
Berth or Berthing Slip	A waterside area defined by floating walkways and fingerfloats, the purpose for which is the wet storage of a boat.
Fingerfloat	A fingerlike floating structure attached perpendicular to a main walkway, which physically defines a berth and provides direct pedestrian access to and from a berthed boat.
Main Walkway	A floating structure to which several fingerfloats are attached, thereby providing direct access between the berths and shore.
Fuel Dock	A floating structure used to dispense gasoline and related service to boats.
Courtesy Dock	A floating structure located alongside a launching ramp, designed for short-term moorage of boats, and to facilitate pedestrian access to and from boats in the water.
Design High Water	A selected high water level based on hydrologic data and other appropriate records, which is to be used as a safe and practical upper limit for the design and construction of a boat launch ramp.
Design Low Water	A selected low water level based on hydrologic data and other appropriate records, which is to be used as a safe and practical lower limit for the design and construction of a boat launch ramp.
Launching Lane	A clearly delineated section of a launching ramp, designed to accommodate the launching or retrieval of one boat at a time; a launching ramp will consist of one or more launching lanes.
Launching Ramp	An inclined paved surface consisting of one or more launching lanes, extending into a fairway, and upon which boats are launched into and retrieved from the water.
Slope of Ramp	A measure of the steepness of a launching ramp, determined by dividing a launching ramp's vertical drop by its horizontal projection, multiplied by 100. The slope will be expressed as a percentage.
Fairway	A waterway into which a launching ramp extends, and into which boats are launched and from which boats are retrieved.

APPENDIX A - TABLES

Table 2
Pavement Condition Summary
Putah Creek

Resort Name	Section	Sample	Roadway Width (Feet)	Traffic Flow	Striping?	Pavement Condition Index	Verbal Rating	Est. Life Remaining (Years)	Comments
Putah Creek	Collector Road	1	21	2-way	no	57	Good	8	
		2	28	2-way	no	8	Failed	0	
		3	22	2-way	no	3	Failed	0	
		4	20.5	2-way	no	67	Good	11	
		5							Selected in error - Secondary Road
		6	24	2-way	no	57	Good	8	Moved south of selected area due to recent surface seal.
		7	18	2-way	no	56	Good	8	
		8	18	2-way	no	61	Good	9	
		9	16	1-way	no	40	Fair	5	
		10	13.5	1-way	no	65	Good	10	
Average of Collector Roads						**46**	**Fair**	**6**	
Putah Creek	Secondary Road	1	11.5	2-way	no	11	Very Poor	0	
		2	11	2-way	no	18	Very Poor	1	
		3	11	1-way	no	14	Very Poor	1	
		4	18	2-way	no	83	Very Good	15	Campground Area, very little usage
		5	11.5	1-way	no	88	Excellent	17	Campground Area, very little usage
		6	12	1-way	no	60	Good	9	Campground Area, very little usage
		7	12	1-way	no	82	Very Good	15	Campground Area, very little usage
		8	12	2-way	no	52	Fair	7	
		9	12	1-way	no	63	Good	10	
		10	19	2-way	no	81	Very Good	14	
Average of Secondary Roads						**55**	**Good**	**8**	

Length of paved road included in rating	
USBR Estimate	1.5 miles
Kleinfelder Estimate	Primary = 0.8 miles
	Secondary = 1.5 miles
	Total = 2.3 miles

Comments

Some fatigue related distress, but a lot of the distress is weathering/raveling. Pavements are either very old, or may have been constructed with relatively poor quality asphalt.

Table 3
Pavement Condition Summary
Rancho Monticello

Resort Name	Section	Sample	Roadway Width (Feet)	Traffic Flow	Striping?	Pavement Condition Index	Verbal Rating	Est. Life Remaining (Years)	Comments
Rancho Monticello	Collector Road	1	20.5	2-way	no	21	Very Poor	2	Thin overlay
		2	20.5	2-way	no	2	Failed	0	
		3	20	2-way	no	24	Very Poor	2	Affected by speed bump
		4	20	2-way	no	12	Very Poor	1	
		5	20	2-way	no	56	Good	8	
		6	18	2-way	no	11	Very Poor	0	Thin overlay
		7							In landslide area, all gravel, no pavement
		7A	19.5	2-way	no	0	Failed	0	Outside of landslide, maybe affected by construction.
		8	20	2-way	no	26	Poor	3	
		9	19.5	2-way	no	14	Very Poor	1	
		10	36	2-way	no	15	Very Poor	1	
Average of Collector Roads						**21**	**Very Poor**	**2**	
Rancho Monticello	Secondary Road	1	10.5	2-way	no	39	Poor	5	
		2	9.5	1-way	no	36	Poor	4	
		3	14	2-way	no	19	Very Poor	2	
		4	11.5	2-way	no	13	Very Poor	1	
		5	10.5	2-way	no	8	Failed	0	
		6	11	2-way	no	0	Failed	0	
		7		2-way					In landslide area, all gravel, no pavement
		7A	11	2-way	no	2	Failed	0	
		8	8.5	2-way	no	69	Good	11	
		9	9.5	2-way	no	68	Good	11	
		10	9.5	1-way	no	0	Failed	0	Looks like thin layer of AC over soil, no visible AB.
Average of Secondary Roads						**25**	**Poor**	**3**	

Length of paved road included in rating	
USBR Estimate	4.5 miles
Kleinfelder Estimate	Primary = 1.7 miles
	Secondary = 5.1 miles
	Total = 6.8 miles

Comments

Pavements have extensive fatigue related distress. It does not appear that pavements were constructed with an adequate base. In some areas it appears that pavement may have been placed directly on the soil subgrade.

Table 4
Pavement Condition Summary
Lake Berryessa Marina

Resort Name	Section	Sample	Roadway Width (Feet)	Traffic Flow	Striping?	Pavement Condition Index	Verbal Rating	Est. Life Remaining (Years)	Comments
Lake Berryessa Marina	Collector Road	1	24	2-way	no	13	Very Poor	1	
		2	24	2-way	no	74	Very Good	12	
		3	25	2-way	no	41	Fair	5	
		4	28	2-way	no	75	Very Good	13	
		5	21	2-way	no	34	Poor	4	
		6	20	2-way	no	31	Poor	3	
		7	22	2-way	no	40	Fair	5	
		8	20	2-way	no	17	Very Poor	1	
		9	18	2-way	no	67	Good	11	Very steep side slope, recent overlay, road could be failing
		10	15	2-way	no	44	Fair	6	
Average of Collector Roads						**43**	**Fair**	**6**	
Lake Berryessa Marina	Secondary Road	1	23	2-way	no	67	Good	11	
		2	18	2-way	no	7	Failed	0	
		3	20	2-way	no	33	Poor	4	
		4	12	1-way	no	46	Fair	6	
		5	13	1-way	no	8	Failed	0	
		6	11	1-way	no	5	Failed	0	
		7	17	1-way	no	22	Very Poor	2	
		8	10	2-way	no	67	Good	11	
		9	14	2-way	no	95	Excellent	20	
		10	10	1-way	no	68	Good	11	
Average of Secondary Roads						**42**	**Fair**	**5**	

Length of paved road included in rating	
USBR Estimate	1.5 miles
Kleinfelder Estimate	Primary = 0.9 miles
	Secondary = 1.9 miles
	Total = 2.8 miles

Comments

Table 5
Pavement Condition Summary
Spanish Flat

Resort Name	Section	Sample	Roadway Width (Feet)	Traffic Flow	Striping?	Pavement Condition Index	Verbal Rating	Est. Life Remaining (Years)	Comments
Spanish Flat	Collector Road	1	23	2-way	no	5	Failed	0	
		2	24	2-way	no	20	Very Poor	2	
		3	20	2-way	no	70	Very Good	11	
		4	20	2-way	no	38	Poor	5	
		5	19	2-way	no	35	Poor	4	
		6	20.5	2-way	no	73	Very Good	12	
		7	19	2-way	no	49	Fair	7	
		8	18	2-way	no	97	Excellent	22	
		9	16	2-way	no	59	Good	9	
		10	20	2-way	no	64	Good	10	
Average of Collector Roads						**51**	**Fair**	**7**	
Spanish Flat	Secondary Road	1	60+	2-way	no	16	Very Poor	1	Excess loose gravel, hard to rate
		2	40+	2-way	no	23	Very Poor	2	Excess loose gravel, hard to rate
		3	12	2-way	no	37	Poor	5	
		4	11.5	2-way	no	78	Very Good	14	
		5	10.5	2-way	no	41	Fair	5	
		6	10.5	2-way	no	81	Very Good	14	
		7	9.5	2-way	no	89	Excellent	17	
		8	11	1-way	no	95	Excellent	20	
		9	10	2-way	no	78	Very Good	14	
		10	10	2-way	no	84	Very Good	15	Camping area, very little use
Average of Secondary Roads						**62**	**Good**	**9**	

Length of paved road included in rating	
USBR Estimate	2.5 miles
Kleinfelder Estimate	Primary = 0.9 miles
	Secondary = 2.1 miles
	Total = 3.0 miles

Comments
Entry road is very rutted/deteriorated. Secondary roads are in very good condition. Some dwelling areas are very congested; no room for parking so people park on the narrow streets. Some very sharp curves.

Table 6
Pavement Condition Summary
Steele Park

Resort Name	Section	Sample	Roadway Width (Feet)	Traffic Flow	Striping?	Pavement Condition Index	Verbal Rating	Est. Life Remaining (Years)	Comments
Steele Park	Collector Road	1	31	2-way	no	6	Failed	0	Entry, very high traffic
		2	20.5	2-way	no	6	Failed	0	Entry, very high traffic
		3	20	2-way	no	16	Very Poor	1	
		4	21	2-way	no	20	Very Poor	2	
		5	23.5	2-way	no	99	Excellent	24	
		6	23.5	2-way	no	0	Failed	0	
		7	19.5	2-way	no	58	Good	9	
		8	24.5	2-way	no	70	Very Good	11	
		9	20	2-way	no	83	Very Good	15	
		10	20	2-way	no	86	Excellent	16	
Average of Collector Roads						**45**	**Fair**	**6**	
Steele Park	Secondary Road	1	30+		no	100	Excellent	27	RV parking, very little traffic
		2	50+		no	60	Good	9	
		3	10.5	2-way	no	100	Excellent	27	Boat Storage area, very little use
		4	60+		no	57	Good	8	
		5	9.5		no	62	Good	9	Area is highly variable, some very bad areas
		6	14	2-way	no	44	Fair	6	
		7	13	2-way	no	12	Very Poor	1	
		8	20	2-way	no	65	Good	10	
		9	12	2-way	no	83	Very Good	15	
		10	13	2-way	no	100	Excellent	27	Very Light Traffic
Average of Secondary Roads						**68**	**Good**	**11**	

Length of paved road included in rating	
USBR Estimate	2.0 miles
Kleinfelder Estimate	Primary = 1.1 miles
	Secondary = 2.7 miles
	Total = 3.8 miles

Comments
Overall pavements look good. Some failures in heavily traveled areas near entrance. Road widths generally okay.

Table 7
Pavement Condition Summary
Pleasure Cove

Resort Name	Section	Sample	Roadway Width (Feet)	Traffic Flow	Striping?	Pavement Condition Index	Verbal Rating	Est. Life Remaining (Years)	Comments
Pleasure Cove	Collector Road	1	21	2-way	no	55	Good	8	
		2	18	2-way	no	4	Failed	0	
		3	22	2-way	no	0	Failed	0	
		4	23	2-way	no	56	Good	8	
		5	20	2-way	no	11	Very Poor	0	
		6	18	2-way	no	16	Very Poor	1	
		7	18.5	2-way	no	100	Excellent	27	Newer pavement, has been reconstructed
		8	18	2-way	no	73	Very Good	12	Very steep side slope, pop-outs
		9	18	2-way	no	3	Failed	0	Worst pavement in area, not representative
		10	15	2-way	no	0	Failed	0	Steep slope below road, probably movement
Average of Collector Roads						**32**	**Poor**	**4**	
Pleasure Cove	Secondary Road	1	19	2-way	no	100	Excellent	27	Newer pavement, has been reconstructed
		2	17	2-way	no	13	Very Poor	1	
		3	14	2-way	no	4	Failed	0	
		4	20	2-way	no	4	Failed	0	
		5	22	2-way	no	5	Failed	0	Has been overlaid and overlay is failing.
		6	16	2-way	no	14	Very Poor	1	
		7	12	2-way	no	18	Very Poor	1	
		8	12.5	2-way	no	51	Fair	7	
		9	9	2-way	no	14	Very Poor	1	
		10	11	2-way	no	25	Poor	3	
Average of Secondary Roads						**25**	**Poor**	**3**	

Length of paved road included in rating	
USBR Estimate	2.0 miles
Kleinfelder Estimate	Primary = 1.4 miles
	Secondary = 0.5 miles
	Total = 1.9 miles

Comments
Pavements in very poor condition, some areas have been reconstructed. Many areas look like road is supported on fills that are settling or creeping. A few areas of very steep cuts on west side of project. Evidence of erosion/sloughing.

Table 8
Pavement Condition Summary
Markley Cove

Resort Name	Section	Sample	Roadway Width (Feet)	Traffic Flow	Striping?	Pavement Condition Index	Verbal Rating	Est. Life Remaining (Years)	Comments
Markley Cove	Collector Road	1	17	2-way	no	36	Poor	4	One side of road has overlay.
		2	15	2-way	no	0	Failed	0	
		3	10	2-way	no	10	Very Poor	0	
		4	11	2-way	no	0	Failed	0	
		5	11	2-way	no	0	Failed	0	Pavement thickness < 1"
		6	11	2-way	no	0	Failed	0	Pavement thickness < 1"
		7	11	2-way	no	0	Failed	0	Pavement thickness < 1"
		8	10	2-way	no	0	Failed	0	Pavement thickness < 1"
		9	11	2-way	no	1	Failed	0	
		10	13	2-way	no	6	Failed	0	
Average of Collector Roads						**5**	**Failed**	**0**	
Markley Cove	Secondary Road	1	17	2-way	no	31	Poor	3	
		2	20	2-way	no	0	Failed	0	
		3	18	1-way	no	17	Very Poor	1	
		4	54	2-way	no	12	Very Poor	1	Boat ramp
		5	11	2-way	no	0	Failed	0	Pavement thickness < 1"
		6	10	2-way	no	0	Failed	0	Pavement thickness < 1"
		7	10	2-way	no	0	Failed	0	Pavement thickness < 1"
		8	10	2-way	no	0	Failed	0	Pavement thickness < 1"
		9	11	2-way	no	0	Failed	0	Longitudinal cracks, probable settlement or slippage
		10	12	2-way	no	34	Poor	4	
Average of Secondary Roads						**9**	**Failed**	**0**	

Length of paved road included in rating	
USBR Estimate	0.5 miles
Kleinfelder Estimate	Primary = 0.9 miles (0.7 usable)
	Secondary = 0.4 miles (0.3 usable)
	Total = 1.3 miles (1.0 usable)

Comments
All pavements are in very poor condition. Numerous areas where road is one-way width with two-way traffic. Entire west edge of project has very steep excavated slopes with evidence of extensive sloughing/erosion.

Table 9
Roadway Design Criteria/Requirements

Design Criteria	Napa County Requirements				AASHTO Guidelines	
	High Density, avg. lot < ¾ acre and/or 90% of lots have < 115 feet of frontage		Low Density, avg. lot > ¾ acre and/or 90% of lots have > 115 feet of frontage		Recreational and Scenic Roads	Urban Residential Streets, 2 to 6 dwelling units per acre.
	Loop, Non Continuing Minor & Cul-de-Sac	One Way Loop Road	Loop, Non Continuing Minor & Cul-de-Sac	One Way Loop Road		
Min. roadway width, little or no on-street parking.	Not allowed[1]	Not allowed[1]	20 feet	10 feet, with turnouts.	18 feet[3]	28 feet[3]
Min. roadway width, frequent parking on one side.	Not allowed[1]	Not allowed[1]	Not Specified	Not Specified	N/A	34 feet[3]
Min. roadway width, parking on both sides.	30 feet if <1000 feet long, 32 feet otherwise[1]	24 feet[1]	Not Specified	Not Specified	N/A	Engineers Judgment
Sidewalks and/or shoulders.	6 ft combined sidewalk and shoulder, each side[2]	8 ft combined sidewalk and shoulder, each side[2]	4 foot shoulder, each side	4 foot shoulder, each side	Not Required	Not Required
Minimum Longitudinal Slope	0.50%	0.50%	0.50%	0.50%	None	None
Maximum Longitudinal Slope	20%	20%	20%	20%	Not Specified	Not Specified
Min. curve radius (to centerline), design speed = 15mph	50 feet	50 feet	50 feet	50 feet	70 feet[4]	40 feet[4]
Min. stopping sight distance, design speed = 15mph	75 feet	75 feet	75 feet	75 feet	65 feet[5]	65 feet[5]
Dead End Roads	40’ radius cul-de-sac or 60’ hammerhead	40’ radius cul-de-sac or 60’ hammerhead	40’ radius cul-de-sac or 60’ hammerhead	40’ radius cul-de-sac or 60’ hammerhead	Not discussed	Not discussed

1 “Full street parking, consisting of two parallel parking lanes is required adjacent to all lots for all high-density developments (defined as an average lot size of less than ¾ acre and/or in which 90% of the lots have frontages less than 115 feet).”
2 “Fully improved Portland cement concrete sidewalks are required on both sides of all roads in high density developments (defined as an average lot size of less than ¾ acre and/or in which 90% of the lots have frontages less than 115 feet).”
3 “The cross section widths of existing roads need not be modified except in those cases where there is evidence of a site-specific safety problem.”
4 “For improvement projects on existing very low volume local roads, the existing horizontal curve geometry should be considered acceptable unless there is evidence of a site specific safety problem related to the horizontal curvature.
5 “Given the geometry of stopping sight distance on horizontal and crest vertical curves, the costs for even marginal or incremental improvements make reconstruction of very low-volume local roads to increase stopping sight distance not cost effective except in unusual cases. For improvement projects at existing intersections between very low-volume roads, the existing intersection sight distance may generally remain in place unless there is evidence of a site-specific safety problem related to intersection sight distance. … accidents associated with limited sight distance are extremely rare events.”

Table 10
Engineering Evaluation Inventory Matrix by Resort

Feature/System/Structure	Putah Creek	Rancho Monticello	Berryessa Marina	Spanish Flat	Steele Park	Pleasure Cove	Markley Cove	Total
Waste Water System								
No. Evaporation Ponds	3	9 - 4 systems	3	1	Off Site[2]	4	2	24
No. Lift Stations	2	9	2	3	4	3	1	24
No. Hookups	180	470	120	100	200	90	50	12,103
Potable Water Systems								
No. Hookups	250	600	270	300[5]	200[4]	300	50	1,970
No. Storage Tanks	1	2	1	1	Off Site	3	1	8
No. Provided by Utility District	0	0	0	0	1	0	0	1
Roads/Parking Lots								
Miles of Paved Roads (miles)	2.3	6.8	2.8	3.0	3.8	1.9	1.3	21.9
Miles of Unpaved Roads[6]	1/2	1/2	0	1/4	1/2	2 1/2	1/2	4 3/4
Sqft. Public Parking Lots[6]	50,000	20,000	20,000	30,000	150,000	50,000	40,000	360,000
Electrical System								
% Resort Owned	0%	50%[7]	100%	100%	0%	0%	100%	
% Utility Company	100%	50%[7]	0%	0%	100%	100%	0%	
No. of Utility Poles[8]	10	40	15	20	10	30	8	133
Boat Launch								
No.of Ramps	2	1	1	1	1	1	2	8
No. of Launch Lanes[9]	3	4	2	2	4	2	2	19
Elevation (depth) of Ramp (ft.)	50	50	60	50	40	40	30	~320
Lineal Feet of Boat Dock (ft.)	30	60	60	30	80	120	80	460
Primary Structures								
No. of Public Use Buildings	6	613	7	10	9	5	1	45
No. Storage/Mainenance Bldgs.	4	3	2	1	1	3	2	16
Shoreline Developments								
Lineal Feet of Development	4,000	10,000	2,000	2,000	2,000	10,000	1,000	31,000
Marinas/Fuel Docks								
Linear feet of Boat Docks	400	300 (800 private)	800	400	600	private)	800	3700 (1,800 private)
No. of Boat Slips	80	60 (200 private)	150	80	120	60 (226 private)	150	700
No. of Fueling Stations	1 (closed)	2	2	2	2	1	1	11

Notes:
1 - Only two being used and in difficult locations
2 - Same primary ponds on govt. but system is municipal
3 - Estamates based on USBR analysis of campsites, RV Parks and light trailers etc.
4 - Munucipal water system - Delivery off of main is concessionnairs
5 - From tank the system is the responsibility of the concessionnaire
6/7/8 - Estimate from USBR
9 - How actually being used and not just widths. Somewhat impacted by courtesy docks

Table 11
Engineering Evaluation Inventory Summary - Potable Water/Wastewater Systems

	Quantity							Service Condition							Code Compliant?						
	Putah Creek	Rancho Monticello	Berryessa Marina	Spanish Flat	Steele Park	Pleasure Cove	Markley Cove	Putah Creek	Rancho Monticello	Berryessa Marina	Spanish Flat	Steele Park	Pleasure Cove	Markley Cove	Putah Creek	Rancho Monticello	Berryessa Marina	Spanish Flat	Steele Park	Pleasure Cove	Markley Cove
Wastewater System																					
Evaporation Ponds	3	10 - 4 system	5	1	Off Site2	4	2	F	F	P	P	N/A	P	P	Y	N	Y	Y	N/A	N	Y
Lift Stations	2	4	3	2	4	3	4	P	F	F	P	F	P	P	Y	Y	Y	Y	Y	Y	Y
Sanitary Sewers	?	?	?	?	?	?	?	P	F	?	?	?	?	?	N	?	?	?	?	?	?
No. Hookups	180	470	120	100	200	90	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potable Water System																					
Treatment System	4 filters	4 lrg filters	1 lg, 4 sm filters	Off Site	Off Site	4	Mixed Media	S	S	F	N/A	N/A	P	S	Y	Y	Y	N/A	N/A	Y	N
Storage Tanks	1	2	3	2	Off Site	3	1	F	F	F	P	N/A	P	P	Y	Y	Y	Y	N/A	Y	Y
Distribution System	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
No. Hookups	250	600	270	300	300	300	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 11 cont.
Engineering Evaluation Inventory Summary - Potable Water/Wastewater Systems

	Adequate for Present Use?							Adequate for Long Term Use?							Notes						
	Putah Creek	Rancho Monticello	Berryessa Marina	Spanish Flat	Steele Park	Pleasure Cove	Markley Cove	Putah Creek	Rancho Monticello	Berryessa Marina	Spanish Flat	Steele Park	Pleasure Cove	Markley Cove	Putah Creek	Rancho Monticello	Berryessa Marina	Spanish Flat	Steele Park	Pleasure Cove	Markley Cove
Wastewater System																					
Evaporation Ponds	N	N	N	N	Y	N	N	(3)	(3)	(3)	(3)	(1)	(3)	(3)	1	1, 3, 7	1,3	1, 3		1, 3, 7, 9	1, 3, 8
Lift Stations	N	Y	N	N	Y	N	N	(3)	(3)	(3)	(3)	(3)	(3)	(3)	2,3,4	2, 3, 4	2,3,4	2, 3, 4	2, 3, 4	2, 3	2, 3, 4
Sanitary Sewers	N	?	?	?	?	?	?	(3)	?	?	?	?	?	?	5,6	5,6	6	6	6	6	6
Potable Water System																					
Treatment System	N	Y	(2)	N/A	N/A	N	N	(3)	(2)	(2)	N/A	N/A	(2)	(2)	1, 10, 11, 12	1, 12	1, 10, 11, 12	N/A		1, 10, 11, 12	1, 11, 12, 15
Storage Tanks	Y	Y	(2)	N	N/A	N	N	(2)	(2)	(2)	(3)	N/A	(2)	(2)	1, 12			2, 3		3	1, 3
Distribution System	?	?	?	?	?	?	?	?	?	?	?	?	?	?	13, 14	13, 14	13, 14	13, 14	13, 14	13, 14	13, 14

Notes:

1 - Inadequate capacity
2 - Inadequate reliable capacity
3 - Antiquated equipment
4 - Susceptible to overflow potentially leading to lake contamination
5 - High I/I reported
6 - Sanitary sewer system evaluation recommended
7 - Uses spray disposal fields
8 - No flow is reaching the ponds, indicating a probable severe force main leak
9 - Unlined pond(s)
10 - Backwash improvements recommended
11 - Control system improvements recommended
12 - Alarm system improvements recommended
13 - Distribution system leak evaluation recommended
14 - Tap measurements of chlorine residuals recommended
15 - Turbidity measurement required

Service Condition Rating
Good -G
Satisfactory - S
Fair - F
Poor - P

Adequate for Long Term Use?
(1) Acceptable for future use
(2) Acceptable for future use with repair
(3) Unacceptable for future use

Table 12
Engineering Evaluation Matrix
Putah Creek Resort

Docks		Slips		Floats			Decking		Dock Access				Launch Ramp						Fuel								Electrical	Condition	
Dock Identification	Length of dock (lineal feet)	Number of Berthing Slips	Covered	Float Material	Freeboard (inches)	Condition	Decking	Condition	Ramp Type	Gated Entry	Float Material	Condition	Number	Length of Ramp (feet)	Number of Launch Lanes	Slope (%)	Surface Condition	Courtesy Dock Condition	Number of Storage Tanks	Condition	On Shore Piping (lineal feet)	Condition	Dock Piping (lineal feet)	Condition	Number Of Dispensers	Condition		Overall Condition Rating	Recommendation
CD1	20	0		NOF	18	F-P	PLY	F										F									No Elec.	F	(3)
1	81	5		C		P	C,T	F-P	T			P															(3)	P	(3)
2	136	20		NOF		F-P	T	P	T			P															No Elec.	P	(3)
3	136	20		NOF		F-P	T	P	T			P															No Elec.	P	(3)
4	152	20		NOF		F-P	T	P	T	x		P															No Elec.	P	(3)
5	119	20	x	NOF		F-P	T	P	T	x		P															No Elec.	P	(3)
6	130	17		NOF		F-P	T	P	T			P															No Elec.	P	(3)
7	76	10	x	NOF		F-P	T	P	T	x		P															No Elec.	P	(3)
																												P	(3)
													1	140	6	16.7	F	P										F	(2); repair surface
																			1	G	400	S	400 (1)	N/A	1	S		S	(2); retain for new dock
Total	848	112																											

Abbreviations:

Float Type
Non-encapsulated open-cell foam - NOF
Non-encapsulated closed-cell foam - NCF
Polyethylene modular - POL
Plastic encapsulated floats - PEF
Corrugated steel pipe - STL
Concrete - C

Docks
Gas Dock -GD
Courtesy Dock - CD
Building Dock - BD

Ramp Type
Timber - T
Alum. - AL

Decking Material
Timber - T
Composite - PC
Aluminum - AL
Concrete - C
Polyethylene modular - POL
Plywood -PLY

Fueling Services
(1) Dock piping has been removed
(2) Slab needs repair

Condition Rating
Good -G
Satisfactory - S
Fair - F
Poor - P

Recommendation
Acceptable for future use - (1)
Acceptable for future use with repair - (2)
Unacceptable for future use - (3)

Table 13
Engineering Evaluation Matrix
Rancho Monticello Resort

Docks		Slips		Floats			Decking		Dock Access				Launch Ramp						Fuel								Electrical	Condition	
Dock Identification	Length of dock (lineal feet)	Number of Berthing Slips	Covered	Float Material	Freeboard (inches)	Condition	Decking	Condition	Ramp Type	Gated Entry	Float Material	Condition	Number	Length of Ramp (feet)	Number of Launch Lanes	Slope (%)	Surface Condition	Courtesy Dock Condition	Number of Storage Tanks	Condition	On Shore Piping (lineal feet)	Condition	Dock Piping (lineal feet)	Condition	Number Of Dispensers	Condition		Overall Condition Rating	Recommendation
GD	41	0		C	16	G	C	G-S	T			P															(2)	G	(2)
BD	20	0		P	16	S-F	PC	S																			(2)	S-F	(2)
CD1	68	0		NOF		F-P	T	P	T			P															No Elec.	F	(3)
CD2	47	0		NOF		F-P	T	P	T			P															No Elec.	F	(3)
1	261	31		NOF		F-P	T	P	T	x		P															No Elec.	F	(3)
2	253	30		NOF		F-P	T	P	T	x		P															No Elec.	F	(3)
3	233	27		NOF		F-P	T	P	T			P															No Elec.	F	(3)
4		64		NOF		F-P	T	P	T	x		P															No Elec.	F	(3)
5		12																									No Elec.	F	(3)
6		10																									No Elec.	F	(3)
7		16																									No Elec.	F	(3)
													1	135	8	14.6	F-P	S-F										F-P	(2); repair surface
																			1	G (2)	150	G	80	G	1	G		G	(2); make repairs
Total	922	190																											

Abbreviations:

Float Type
Non-encapsulated open-cell foam - NOF
Non-encapsulated closed-cell foam - NCF
Polyethylene modular - POL
Plastic encapsulated floats - PEF
Corrugated steel pipe - STL
Concrete - C

Docks
Gas Dock -GD
Courtesy Dock - CD
Building Dock - BD

Ramp Type
Timber - T
Alum. - AL

Decking Material
Timber - T
Composite - PC
Aluminum - AL
Concrete - C
Polyethylene modular - POL
Plywood -PLY

Fueling Services
(1) Dock piping has been removed
(2) Slab needs repair

Condition Rating
Good -G
Satisfactory - S
Fair - F
Poor - P

Recommendation
Acceptable for future use - (1)
Acceptable for future use with repair - (2)
Unacceptable for future use - (3)

Table 14
Engineering Evaluation Matrix
Lake Berryessa Resort

Docks		Slips		Floats			Decking		Dock Access				Launch Ramp						Fuel								Electrical	Condition	
Dock Identification	Length of dock (lineal feet)	Number of Berthing Slips	Covered	Float Material	Freeboard (inches)	Condition	Decking	Condition	Ramp Type	Gated Entry	Float Material	Condition	Number	Length of Ramp (feet)	Number of Launch Lanes	Slope	Surface Condition	Courtesy Dock Condition	Number of Storage Tanks	Condition	On Shore Piping (lineal feet)	Condition	Dock Piping (lineal feet)	Condition	Number Of Dispensers	Condition		Overall Condition Rating	Recommendation
1	115	13		STL	16-20	F	T	F-P	T																		No Elec.	F-P	(3)
2, BD	292	26		NCF	VARIES	P	T,PLY	F-P	T		NCF	P															(3)	F-P	(3)
CD3	225	0		NCF		P	T	P	T			P						F-P									No Elec.	P	(3)
4	133	0		PEF	20-22		T,PC	S	T		PEF																No Elec.	S-F	(2)
GD5	299	20	x	STL		F	PC	F	T		NCF	P															GD(1) (3)	F	GD(2), (3)
5A	414	60																									No Elec.		(3)
6	326	40	x	PEF	20	G	PC	G	T	x	PEF	G															No Elec.	G	(1)
7	286	40		PEF	20	G	PC	G	T	x	NCF	P															No Elec.	G-S	(2), replace access ramp
8	169	24	x	NCF	VARIES	F-P	T	F-P	T	x																	No Elec.	F-P	(3)
9																											No Elec.		
10	186	28	x	NCF	VARIES	F-P	T	F-P	T	x																	No Elec.	F-P	(3)
11																											No Elec.		
12	186	28	x	NCF	VARIES		T	F-P																			No Elec.	F-P	(3)
13	127	18	x	NCF	VARIES		STP	F	T																		No Elec.	F-P	(3)
14	101	10		NCF	VARIES		T	P																			No Elec.	F-P	(3)
15	111	12		NCF	VARIES		T	P																			No Elec.	F-P	(3)
													1	110	2	15.6	F	P										S-F	(2); repair surface
																			1	G	800	P	800	P	2	G		F	(2), replace onshore piping
Total	2,969	319																											

Abbreviations:

Float Type
Non-encapsulated open-cell foam - NOF
Non-encapsulated closed-cell foam - NCF
Polyethylene modular - POL
Plastic encapsulated floats - PEF
Corrugated steel pipe - STL
Concrete - C

Docks
Gas Dock -GD
Courtesy Dock - CD
Building Dock - BD

Ramp Type
Timber - T
Alum. - AL

Decking Material
Timber - T
Composite - PC
Aluminum - AL
Concrete - C
Polyethylene modular - POL
Plywood -PLY
Steel Plate - STP

Fueling Services
(1) Dock piping has been removed
(2) Slab needs repair

Condition Rating
Good -G
Satisfactory - S
Fair - F
Poor - P

Recommendation
Acceptable for future use - (1)
Acceptable for future use with repair - (2)
Unacceptable for future use - (3)

Table 15
Engineering Evaluation Matrix
Spanish Flat Resort

Docks		Slips		Floats			Decking		Dock Access				Launch Ramp						Fuel								Electrical	Condition	
Dock Identification	Length of Dock (lineal feet)	Number of Berthing Slips	Covered	Float Material	Freeboard (inches)	Condition	Decking	Condition	Ramp Type	Gated Entry	Float Material	Condition	Number	Length of Ramp (feet)	Number of Launch Lanes	Slope (%)	Surface Condition	Courtesy Dock Condition	Number of Storage Tanks	Condition	On Shore Piping (lineal feet)	Condition	Dock Piping (lineal feet)	Condition	Number Of Dispensers	Condition		Overall Condition Rating	Recommendation
1	48	20	x	STL	19	F	T	P	T	x																	No Elec.	F-P	(3)
2	225	32		NCF	16	F-P	T	S-F	T	x																	No Elec.	F-P	(3)
GD3	141	0		PEF	16	F	C	S																			(2)	F	(2)
BD4	54	4		NOF	16-20	P	PLY																				No Elec.	F-P	(3)
5	84	6	x	NOF	16	F-P	T	F	T	x																	No Elec.	F	(3)
5A	192	60		NCF	16-20	F	T	F	T	x																	No Elec.	F	(3)
6	220	34	x	NOF		P	T	F	T	x																	No Elec.	F	(3)
7	234	36		STL	18	S-F	AL	S	T	x																	No Elec.	S	(1)
8	161	24		PEF	14	S	PC	S	T	x		P															No Elec.	S	(1)
8A	161	24		PEF	14	S						P															No Elec.	S	(1)
CD9	56	0		NOF		P	PLY	P																			No Elec.	P	(3)
10	66	4		NOF	18	F	T	F		x																	No Elec.	F	(3)
CD11	63	0		NOF		P	PLY	P																			No Elec.	P	(3)
CD12	64	0		NOF		P	T	P																			No Elec.	P	(3)
													1	110	10	16.7	F-P	P										F	(2); repair surface
																			2	G	150	P	200	P	2	G		S	(2); repair on shore piping
Total	1,769	244																											

Abbreviations:

Float Type
Non-encapsulated open-cell foam - NOF
Non-encapsulated closed-cell foam - NCF
Polyethylene modular - POL
Plastic encapsulated floats - PEF
Corrugated steel pipe - STL
Concrete - C

Docks
Gas Dock -GD
Courtesy Dock - CD
Building Dock - BD

Ramp Type
Timber - T
Alum. - AL

Decking Material
Timber - T
Composite - PC
Aluminum - AL
Concrete - C
Polyethylene modular - POL
Plywood -PLY

Fueling Services
(1) Dock piping has been removed
(2) Slab needs repair

Condition Rating
Good -G
Satisfactory - S
Fair - F
Poor - P

Recommendation
Acceptable for future use - (1)
Acceptable for future use with repair - (2)
Unacceptable for future use - (3)

Table 16
Engineering Evaluation Matrix
Steele Park Resort

Docks		Slips		Floats			Decking		Dock Access				Launch Ramp						Fuel								Electrical	Condition	
Dock Identification	Length of Dock (lineal feet)	Number of Berthing Slips	Covered	Float Material	Freeboard (inches)	Condition	Decking	Condition	Ramp Type	Gated Entry	Float Material	Condition	Number	Length of Ramp (feet)	Number of Launch Lanes	Slope (%)	Surface Condition	Coutesy Dock Condition	Number of Storage Tanks	Condition	On Shore Piping (lineal feet)	Condition	Dock Piping (lineal feet)	Condition	Number Of Dispensers	Condition		Overall Condition Rating	Recommendation
1	319	50		NOF	14	F-P	T	F-P																			No Elec.	F-P	(3)
GD2	112	0	x	PEF	18	S-F	T	F																			(1)	F	(2)
3	186	0		PEF		S	PC	G-S																			No Elec.	S	(2)
3A	48	2	x	NCF	16	F	PLY	F																			No Elec.	F	(3)
4	79	12		POL	22	S	POL	S	PLY																		No Elec.	S	(3)
CD1	32	0		NOF		F-P	T	F																				F-P	(3)
CD2	32	0		NOF		F-P	T	F																				F-P	(3)
CD3	32	0		NOF		F-P	T	F																				F-P	(3)
4A	39	4		NCF	18	S	T	S-F																			No Elec.	S-F	(3)
5	382	52	x	PEF	16-18	S	T	F	T	x																	(1)	S-F	(2)
6	360	52	x	PEF	16-18	S	T	F	T	x																	(1)	S-F	(2)
7	224	32	x	PEF	16-18	S	T	F	T	x																	(1)	S-F	(2)
8	88	8		POL	22	S	POL	S																			No Elec.	S	(3)
9	108	16																									No Elec.		(3)
													1	135	10	15.6	S-F	F-P										F	(2); repair surface
																			1	G	300	S	400	P	2	G		S-F	(2); replace dock piping
Total	2,041	228																											

Abbreviations:

Float Type
Non-encapsulated open-cell foam - NOF
Non-encapsulated closed-cell foam - NCF
Polyethylene modular - POL
Plastic encapsulated floats - PEF
Corrugated steel pipe - STL
Concrete - C

Docks
Gas Dock -GD
Courtesy Dock - CD
Building Dock - BD

Ramp Type
Timber - T
Alum. - AL

Decking Material
Timber - T
Composite - PC
Aluminum - AL
Concrete - C
Polyethylene modular - POL
Plywood -PLY

Fueling Services
(1) Dock piping has been removed
(2) Slab needs repair

Condition Rating
Good -G
Satisfactory - S
Fair - F
Poor - P

Recommendation
Acceptable for future use - (1)
Acceptable for future use with repair - (2)
Unacceptable for future use - (3)

Table 17
Engineering Evaluation Matrix
Pleasure Cove Resort

Docks		Slips		Floats			Decking		Dock Access				Launch Ramp						Fuel								Electrical	Condition	
Dock Identification	Length of Deock (lineal feet)	Number of Berthing Slips	Covered	Float Material	Freeboard (inches)	Condition	Decking	Condition	Ramp Type	Gated Entry	Float Material	Condition	Number	Length of Ramp (feet)	Number of Launch Lanes	Slope (%)	Surface Condition	Courstesy Dock Condition	Number of Storage Tanks	Condition	On Shore Piping (lineal feet)	Condition	Dock Piping (lineal feet)	Condition	Number Of Dispensers	Condition		Overall Condition Rating	Recommendation
1	105	22		PEF		G	T	G																			No Elec.	G	(1)
CD1	78	0		NOF		P	T	F-P																			No Elec.	F-P	(3)
2	88	4		NOF		F-P	T	F-P																			No Elec.	F-P	(3)
GD3	190	23		NOF	14	P	T	F																			(2)	F-P	(3)
4	16	0		NOF		P	T	F-P																			(3)	P	(3)
5	243	28		NOF		P	T	F																			No Elec.	F	(3)
6	59	5		PEF		G-S	T	F			NOF	F-P															No Elec.	S-F	(2)
7	120	1		PEF		G	T	G																			No Elec.	G	(1)
													1	128	4	12.5	S-F	P										F	(2); repair surface
																			2	G	500	P	600	P	2	G		S	(2); replace on shore piping
Total	899	83																											

Abbreviations:

Float Type
Non-encapsulated open-cell foam - NOF
Non-encapsulated closed-cell foam - NCF
Polyethylene modular - POL
Plastic encapsulated floats - PEF

Docks
Gas Dock -GD
Courtesy Dock - CD
Building Dock - BD

Ramp Type
Timber - T
Alum. - AL

Decking Material
Timber - T
Composite - PC
Aluminum - AL
Concrete - C

Fueling Services
(1) Dock piping has been removed
(2) Slab needs repair

Condition Rating
Good -G
Satisfactory - S
Fair - F
Poor - P

Recommendation
Acceptable for future use - (1)
Acceptable for future use with repair - (2)
Unacceptable for future use - (3)

Table 18
Engineering Evaluation Matrix
Mareley Cove Resort

Docks		Slips		Floats			Decking		Access Dock					Launch Ramp						Fuel								Electrical	Condition	
Dock Identification	Length of Dock (lineal feet)	Number of Berthing Slips	Covered	Float Material	Freeboard (inches)	Condition	Decking	Condition	Ramp Type	Dock Length (lineal feet)	Gated Entry	Float Material	Condition	Number	Length of Ramp (feet)	Number of Launch Lanes	Slope (%)	Surface Condition	Courtesy Dock Condition	Number of Storage Tanks	Condition	On Shore Piping (lineal feet	Condition	Dock Piping (lineal feet)	Condition	Number Of Dispensers	Condition		Overall Condition Rating	Recommendation
CD1	60	0		NOF		F	PLY	S-F	T																			No Elec.	S-F	(3)
CD2	60	0		NOF		F	PLY	S-F	T																			No Elec.	S-F	(3)
1	207	10	x	PEF	16	G-S	T	S	AL		x	P	G															No Elec.	G-S	(1)
2	19	2		PEF	16	G	C	G																				No Elec.	G	(1)
3	313	50	x	PEF	16	G	C	G																				No Elec.	G	(1)
4	181	28	x	PEF	16	G	C	G																				No Elec.	G	(1)
5	344	39		PEF	16	G	C	G																				No Elec.	G	(1)
6	30	0		PEF	16	G	C	G																				No Elec.	G	(1)
GD7	90	0		PEF,STL	14	F	PLY	F-P	AL																			(3)	F	(3)
8	242	28	x	NCF	varies	P	T	P	AL	72		NOF	F-P															No Elec.	P	(3)
9	209	16	x	NCF	varies	F-P	T	P	AL	68		NOF	F-P															No Elec.	P	(3)
														1	131	2	15.6	F-P	S-F										F-P	(2); repair surface
																				1	F	150	P	200	P	1	P		P	(3)
Total	1,755	173																												

Abbreviations:

Float Type
Non-encapsulated open-cell foam - NOF
Non-encapsulated closed-cell foam - NCF
Polyethylene modular - POL
Plastic encapsulated floats - PEF

Docks
Gas Dock -GD
Courtesy Dock - CD
Building Dock - BD

Ramp Type
Timber - T
Alum. - AL

Decking Material
Timber - T
Composite - PC
Aluminum - AL
Concrete - C

Fueling Services
(1) Dock piping has been removed
(2) Slab needs repair

Condition Rating
Good -G
Satisfactory - S
Fair - F
Poor - P

Recommendation
Acceptable for future use - (1)
Acceptable for future use with repair - (2)
Unacceptable for future use - (3)

Table 19
Electrical Services Summary
Putah Creek

FACILITY #	FACILITY	UTILITY	ELECTRIC SERVICE CONDITION	INTERNAL WIRING CONDITION	CODE COMPLIANT?	ADEQUATE FOR PRESENT USE?	ADEQUATE FOR LONG TERM USE?	NOTE
PUCR1	FRONT GATE KIOSK	PG&E	POOR	FAIR	NO	NO	NO	1
PUCR2	GROCERY STORE	PG&E	FAIR	FAIR	YES	YES	NO	
PUCR3	VIDEO ARCADE	PG&E	FAIR	FAIR	YES	YES	NO	
PUCR4	FUEL TANK	FED FROM PUCR2	FAIR	FAIR	NO	NO	NO	2
PUCR5	MOTEL	PG&E	FAIR	FAIR	YES	YES	NO	
PUCR6	MANAGEMENT OFFICE	PG&E	FAIR	FAIR	YES	YES	NO	
PUCR7	TRAILER 153	FED FROM PUCR2	POOR	UNKNOWN	YES	YES	NO	
PUCR8	TRAILER 154	FED FROM PUCR5	POOR	UNKNOWN	NO	NO	NO	3
PUCR9	TRAILER 155	FED FROM PUCR5	POOR	UNKNOWN	YES	YES	NO	
PUCR10	TRAILER 23	PG&E	POOR	UNKNOWN	YES	YES	NO	
PUCR11	TRAILER 39	PG&E	POOR	UNKNOWN	YES	YES	NO	
PUCR12	MAINT. BUILDING & RESTROOMS	FED FROM PUCR6	POOR	FAIR	YES	YES	NO	
PUCR13	LAUNDRY & RESTROOMS	FED FROM PUCR5	POOR	FAIR	NO	NO	NO	4
PUCR14	CAMPGROUND KIOSK	PG&E	POOR	UNKNOWN	NO	NO	NO	5
PUCR15	TRAILER 156A	PG&E	UNKNOWN	UNKNOWN				6
PUCR16	CAMPGROUND ENTRY RESTROOMS	PG&E	FAIR	FAIR	YES	YES	NO	
PUCR17	CAMPGROUND RESTROOMS NORTH	PG&E	FAIR	FAIR	YES	YES	NO	
PUCR18	CAMPGROUND CONCESSION	FED FROM PUCR17	POOR	FAIR	NO	YES	NO	7
PUCR19	PUMP HOUSE	PG&E	GOOD	GOOD	YES	YES	YES	
PUCR20	MAINT. BUILDING	PG&E	GOOD	UNKNOWN	YES	YES	YES	
PUCR21	WATER TREATMENT	PG&E	GOOD	FAIR	YES	YES	YES	
PUCR22	GAZEBO	FED FROM PUCR5	FAIR	UNKNOWN	YES	YES	NO	

NOTES

1 OVERHEAD SERVICE NOT TO CODE (USES ROMEX AND INCORRECTLY SUPPORTED)
2 HAZARDOUS AREA WIRING AT TANK NOT TO CODE (SEAL OFFS MISSING)
3 CODE VIOLATION (30 AMP - SERVICE UNDERSIZED)
4 CODE VIOLATION (OVERHEAD SERVICE HAS INADEQUATE CLEARANCE FROM MOTEL)
5 CODE VIOLATION (SERVICE CABLES UNPROTECTED-NOT IN CONDUIT)
6 TRAILER REMOVED FROM SITE
7 CODE VIOLATION (OVERHEAD FEED USING ROMEX)

Table 20
Electrical Services Summary
Rancho Monticello

FACILITY #	FACILITY	UTILITY	ELECTRIC SERVICE CONDITION	INTERNAL WIRING CONDITION	CODE COMPLIANT?	ADEQUATE FOR PRESENT USE?	ADEQUATE FOR LONG TERM USE?	NOTE
RAMO 1	FRONT ENTRANCE KIOSK	FED FROM RAMO 2	GOOD	GOOD	YES	YES	YES	
RAMO 2	MAIN OFFICE	PG&E	GOOD	GOOD	YES	YES	YES	
RAMO 3	STORE & RESTAURANT	PG&E	GOOD	GOOD	YES	YES	YES	
RAMO 4	STORAGE UNIT BEHIND STORE	FED FROM RAMO 3	GOOD	UNKNOWN	YES	YES	YES	
RAMO 5	FREEZER	FED FROM RAMO 3	GOOD	UNKNOWN	YES	YES	YES	
RAMO6	BOAT RENTAL & MAINTAINANCE	PG&E	GOOD	UNKNOWN	YES	YES	YES	
RAMO 7	DAY USE RESTROOMS	PG&E	GOOD	FAIR	YES	YES	YES	
RAMO 8	BOAT MARINA GAS DOCK	FED FROM RAMO 3	POOR	FAIR	NO	NO	NO	1
RAMO 9	BOAT GARAGE STORAGE UNITS	PG&E	POOR	UNKNOWN	YES	YES	NO	
RAMO 10	SEWAGE TREATMENT	PG&E	GOOD	FAIR	YES	YES	YES	
RAMO 11	CAMPGROUND A - RESTROOM	PG&E	FAIR	FAIR	YES	YES	NO	
RAMO 12	LAKESHORE CABINS	FED FROM RAMO 11	FAIR	UNKNOWN	YES	YES	NO	
RAMO 13	LAKESHORE CABINS	FED FROM RAMO 11	FAIR	UNKNOWN	YES	YES	NO	
RAMO 14	RV CAMPGROUND RESTROOM	PG&E	GOOD	FAIR	YES	YES	NO	
RAMO 15	SMALL PUMP HOUSE	PG&E	GOOD	UNKNOWN	YES	YES	YES	

NOTES

1 SHORE POWER UMBILICAL HAS CODE VIOLATIONS (SPLICES AND SUPPORTS)

Table 21
Electrical Services Summary
Lake Berryessa Resort

FACILITY #	FACILITY	UTILITY	ELECTRIC SERVICE CONDITION	INTERNAL WIRING CONDITION	CODE COMPLIANT?	ADEQUATE FOR PRESENT USE?	ADEQUATE FOR LONG TERM USE?	NOTE
LABE 1	ENTRANCE KIOSK	RESORT OVHD FEED	POOR	GOOD	NO	NO	NO	1
LABE 2	SNACKBAR /STORE /OFFICE	PG&E	FAIR	GOOD	YES	YES	NO	2
LABE 3	STORAGE SHEDS	FED FROM LABE 2	FAIR	FAIR	YES	YES	NO	
LABE 4	ICE HOUSE	FED FROM LABE 2	FAIR	FAIR	YES	YES	NO	
LABE 5	MAINTENANCE & FUEL GARAGE	FED FROM LABE 2	POOR	POOR	NO	NO	NO	3
LABE 6	BOAT DOCK OFFICE	FED FROM LABE 2	GOOD	GOOD	YES	YES	YES	
LABE 7	CABIN AREA RESTROOMS/LAUNDRY	FED FROM LABE 2	FAIR	FAIR	YES	YES	NO	
LABE 8	DRY-SITE AREA RESTROOMS	PG&E	FAIR	FAIR	YES	YES	NO	
LABE 9	MANAGERS RESIDENCE	PG&E	GOOD	GOOD	YES	YES	YES	
LABE 10	TRAILER AREA LAUNDRY	RESORT OVHD FEED	POOR	FAIR	NO	NO	NO	3
LABE 11	CAMPGROUND RESTROOM	PG&E	FAIR	FAIR	YES	YES	NO	
LABE 12	HOUSEBOAT / JET SKI RENTAL	FED FROM SHORE PNL	POOR	FAIR	NO	NO	NO	4

NOTES

1 OVERHEAD SERVICE NOT TO CODE (USES ROMEX WIRE & INCORRECTLY SUPPORTED)
2 THE STORE ELECTRICAL SERVICE EQUIPMENT ALSO DISTRIBUTES POWER TO THE TRAILERS, GAS DOCK,RESTROOMS AND MAINTENANCE BUILDINGS
3 OVERHEAD SERVICE IS NOT TO CODE (SUPPORTS, TERMINATIONS)
4 THE "BEACH HOUSE" SHACK AT THE END OF THE DOCK IS FED BY A LENGTH OF ROMEX CABLE DRAPED THRU THE WATER. THIS HAZARDOUS CONDITION REQUIRES IMMEDIATE REPAIR

Table 22
Electrical Services Summary
Spanish Flat Resort

FACILITY #	FACILITY	UTILITY	ELECTRIC SERVICE CONDITION	INTERNAL WIRING CONDITION	CODE COMPLIANT?	ADEQUATE FOR PRESENT USE?	ADEQUATE FOR LONG TERM USE?	NOTE
SPFL 1	KIOSK	FED FROM SPFL 2	GOOD	GOOD	YES	YES	YES	
SPFL 2	OFFICE	PG&E	GOOD	GOOD	YES	YES	YES	
SPFL 3	OFFICE SHED	FED FROM SPFL 2	GOOD	GOOD	YES	YES	YES	
SPFL 4	MAINTENANCE SHOP	PG&E	POOR	FAIR	NO	NO	NO	1
SPFL 5	BOAT MARINA	FED FROM SPFL 4	FAIR	FAIR	YES	YES	NO	
SPFL 6	STORE	PG&E	FAIR	FAIR	YES	YES	NO	
SPFL 7	MANAGERS RESIDENCE	PG&E	GOOD	UNKNOWN	YES	YES	YES	
SPFL 8	REST ROOMS & SHOWERS	PG&E	FAIR	FAIR	YES	YES	NO	
SPFL 9	SMALL PUMP HOUSE	PG&E	FAIR	FAIR	YES	YES	NO	
SPFL 10	TRAILER # 160	PG&E	FAIR	FAIR	YES	YES	NO	
SPFL 11	TRAILER # 175	PG&E	FAIR	FAIR	YES	YES	NO	
SPFL 12	SUNRISE RESTROOMS	PG&E	FAIR	FAIR	YES	YES	NO	
SPFL 13	SUNRISE POINT RESTROOMS	RESORT	FAIR	UNKNOWN	YES	YES	NO	
SPFL 14	TRAILER AREA RESTROOMS	PG&E	FAIR	FAIR	YES	YES	NO	
SPFL 15	TRAILER # 68	RESORT	FAIR	FAIR	YES	YES	NO	
SPFL 16	TRAILER # 62	RESORT	FAIR	FAIR	YES	YES	NO	
SPFL 17	GARAGES	NO ELECTRICAL						
SPFL 18	SEWAGE TREATMENT	PG&E	FAIR	POOR	NO	NO	NO	2

NOTES

1 NUMEROUS CODE VIOLATIONS (ENCLOSURES, SUPPORTS, WIRING) AT ELECTRICAL BACKBOARD BEHIND MAINTENANCE SHOP
2 NUMEROUS CODE VIOLATIONS (OPEN WIRING)

Table 23
Electrical Services Summary
Steele Park Resort

FACILITY #	FACILITY	UTILITY	ELECTRIC SERVICE CONDITION	INTERNAL WIRING CONDITION	CODE COMPLIANT?	ADEQUATE FOR PRESENT USE?	ADEQUATE FOR LONG TERM USE?	NOTE
STPA 2	MAIN GATE TRAILER	PG&E	GOOD	GOOD	YES	YES	YES	
STPA 3	HARBOR COVE RESTAURANT & STORE	PG&E	GOOD	FAIR	YES	YES	YES	
STPA 4	BOAT DOCK MARINA	PG&E	GOOD	GOOD	YES	YES	YES	
STPA 5	FREEZER & STORAGE SHEDS	PG&E	FAIR	FAIR	YES	YES	NO	
STPA 7	RV RESTROOMS	FED FROM STPA-4	FAIR	FAIR	YES	YES	YES	
STPA 8	DANNY'S BOAT RENTAL	PG&E	FAIR	UNKNOWN	YES	YES	YES	
STPA 9	BOAT STORAGE SHEDS	NO POWER						
STPA 10	BOAT STORAGE SHEDS	FED FROM STPA-4	POOR	POOR	NO	NO	NO	1
STPA 11	BOAT STORAGE SHEDS	FED FROM STPA-10	POOR	POOR	NO	NO	NO	1
STPA 12	BOAT STORAGE SHEDS	FED FROM STPA-10	POOR	POOR	NO	NO	NO	1
STPA 13	BOAT STORAGE SHEDS	FED FROM STPA-10	POOR	POOR	NO	NO	NO	1
STPA 14	BOAT STORAGE SHEDS	FED FROM STPA-10	POOR	POOR	NO	NO	NO	1
STPA 15	BOAT REPAIR GARAGE	FED FROM STPA-10	POOR	POOR	NO	NO	NO	2
STPA 16	BOAT STORAGE SHEDS	NO POWER						
STPA 17	NEW BOAT GARAGES	PG&E	GOOD	GOOD	YES	YES	YES	
STPA 18	NEW BOAT GARAGES	NO POWER						
STPA 19	MISC. USE BUILDING	PG&E	FAIR	FAIR	YES	YES	YES	
STPA 20	TRAILER AREA RESTROOMS	FED FROM STPA 19	FAIR	FAIR	YES	YES	NO	
STPA 21	MAIN OFFICE & ICE CREAM SHOP	PG&E	GOOD	GOOD	YES	YES	YES	
STPA 22	RESTAURANT/BAR	FED FROM STPA 21	FAIR	FAIR	YES	YES	NO	
STPA 23	DAY USE KIOSK	PG&E	FAIR	FAIR	YES	YES	NO	
STPA 24	HANDBALL COURT	PG&E	FAIR	FAIR	YES	YES	NO	
STPA 25	PUMP HOUSE	PG&E	FAIR	FAIR	YES	YES	NO	
STPA 26	DAY USE AREA	FED FROM STPA 23	FAIR	UNKNOWN	YES	YES	NO	
STPA 27	PROJECTION ROOM	FED FROM STPA 23	FAIR	UNKNOWN	YES	YES	NO	
STPA 28	STORAGE BLDG @ BOAT BERTH	PG&E	FAIR	UNKNOWN	YES	YES	NO	
STPA 29	SMALL STORAGE BLDG @ TENNIS CT	PG&E	FAIR	UNKNOWN	YES	YES	NO	
STPA 30	SWIMMING POOL BUILDING	PG&E	FAIR	UNKNOWN	YES	YES	NO	
STPA 31	LAKESHORE RENTAL COTTAGES	PG&E	GOOD	UNKNOWN	YES	YES	YES	
STPA 32	LAKESHORE RENTAL COTTAGES	PG&E	GOOD	UNKNOWN	YES	YES	YES	
STPA 33	LAKESHORE RENTAL COTTAGES	PG&E	GOOD	UNKNOWN	YES	YES	YES	
STPA 34	LAKESHORE RENTAL COTTAGES	PG&E	GOOD	UNKNOWN	YES	YES	YES	
STPA 35	LAKESHORE RENTAL COTTAGES	PG&E	GOOD	UNKNOWN	YES	YES	YES	
STPA 36	LAKESHORE RENTAL COTTAGES	PG&E	GOOD	UNKNOWN	YES	YES	YES	
STPA 37	LAKESHORE RENTAL COTTAGES	PG&E	GOOD	UNKNOWN	YES	YES	YES	
STPA 38	LAKESHORE RENTAL COTTAGES	PG&E	GOOD	UNKNOWN	YES	YES	YES	
STPA 39	LAKESHORE RENTAL COTTAGES	PG&E	GOOD	UNKNOWN	YES	YES	YES	
STPA 41	MOTEL ROOMS 1-12	PG&E	GOOD	UNKNOWN	YES	YES	YES	
STPA 42	MOTEL ROOMS 14-25	PG&E	GOOD	UNKNOWN	YES	YES	YES	
STPA 43	MAID SERVICE KIOSK	FED FROM STPA 37	POOR	UNKNOWN	NO	NO	NO	1

NOTES

1 BOAT SHED WIRING IS UNSAFE / HAZARDOUS. MANY SERIOUS CODE VIOLATIONS (SUPPORTS, SPLICES, TERMINATIONS & CLEARANCES)

2 BOAT REPAIR SHOP HAS UNSAFE / HAZARDOUS WIRING. MANY CODE VIOLATIONS (OPEN WIRING, EXPOSED CONDUCTORS)

Table 24
Electrical Services Summary
Pleasure Cover Resort

FACILITY #	FACILITY	UTILITY	ELECTRIC SERVICE CONDITION	INTERNAL WIRING CONDITION	CODE COMPLIANT?	ADEQUATE FOR PRESENT USE?	ADEQUATE FOR LONG TERM USE?	NOTE
PLCO 1-1	MANAGEMENT OFFICE	PG&E	GOOD	GOOD	YES	YES	YES	
PLCO 1-2	GATE MANAGER TRAILER	PG&E	GOOD	UNKNOWN	YES	YES	YES	
PLCO 1-3	TRAILER #3	PG&E	FAIR	UNKNOWN	YES	YES	NO	
PLCO 1-4	TRAILER #4	PG&E	GOOD	UNKNOWN	YES	YES	YES	
PLCO 1-5	STORAGE SHED	NO ELECTRICAL						
PLCO 1-6	STORAGE SHED	NO ELECTRICAL						
PLCO 1-7	STORAGE SHED	NO ELECTRICAL						
PLCO 1-8	SHOWERS	FED FRON PLCO 1-4	FAIR	FAIR	YES	YES	NO	
PLCO 1-9	RESTROOMS	FED FROM PLCO 1-4	POOR	POOR	NO	NO	NO	1
PLCO 1-10	UNFINISHED RESTROOMS	NO ELECTRICAL						
PLCO 1-11	WATER TREATMENT BUILDING	FED FROM CAMPGROUND	GOOD	UNKNOWN	YES	YES	YES	
PLCO 1-12	FRONT ENTRANCE KIOSK	PG&E	FAIR	FAIR	YES	YES	NO	
PLCO 2-0	SHED ACROSS FROM OFFICE	FED FROM PLCO 2-6	FAIR	FAIR	YES	YES	NO	
PLCO 2-1	MANAGERS RESIDENCE	FED FROM PLCO 2-6	GOOD	UNKNOWN	YES	YES	YES	
PLCO 2-2	TRAILER #2 HILLTOP	FED FROM PLCO 2- 6	FAIR	UNKNOWN	YES	YES	NO	
PLCO 2-4	(N) STORE(WAS BOAT MAINT.)	PG&E	GOOD	GOOD	YES	YES	YES	
PLCO 2-5	SHOWERS / RESTROOM	FED FROM PLCO 2-6	FAIR	FAIR	YES	YES	NO	
PLCO 2-6	(N) OFFICE (WAS STORE)	PG&E	FAIR	FAIR	YES	YES	NO	
PLCO 2-7	GHETTO RESTROOM/LAUNDRY	PG&E	FAIR	FAIR	YES	YES	NO	
PLCO 2-8	TRAILER #46 HILLTOP	PG&E	GOOD	UNKNOWN	YES	YES	YES	
PLCO 2-9	TRAILER #4 HILLTOP	PG&E	FAIR	UNKNOWN	YES	YES	NO	
PLCO 2-10	TRAILER #1 HILLTOP	PG&E	FAIR	UNKNOWN	YES	YES	NO	
PLCO 2-12	TRAILER #2 SPRING ROAD	PG&E	GOOD	UNKNOWN	YES	YES	YES	

NOTES

1 MANY CODE VIOLATIONS (OVERHEAD FEEDS USING ROMEX, POOR SUPPORTS AND TERMINATIONS, EXPOSED WIRING)

Table 25
Electrical Services Summary
Markley Cove Resort

FACILITY #	FACILITY	UTILITY	ELECTRIC SERVICE CONDITION	INTERNAL WIRING CONDITION	CODE COMPLIANT?	ADEQUATE FOR PRESENT USE?	ADEQUATE FOR LONG TERM USE?	NOTE
MACO 1	MAIN OFFICE / STORE	PG&E	POOR	GOOD	NO	NO	NO	1
MACO 2	OFFICE TRAILER	PG&E	POOR	UNKNOWN	NO	NO	NO	1
MACO 3	MAINTENANCE SHOP	PG&E	FAIR	UNKNOWN	NO	NO	NO	1
MACO 4	BOAT MARINA / SHOP	PG&E	POOR	FAIR	NO	NO	NO	2
MACO 5	WATER TREATMENT BLDG	PG&E	GOOD	GOOD	YES	YES	YES	
MACO 6	UNKNOWN (PUMP HOUSE)	PG&E	POOR	POOR	NO	NO	NO	3

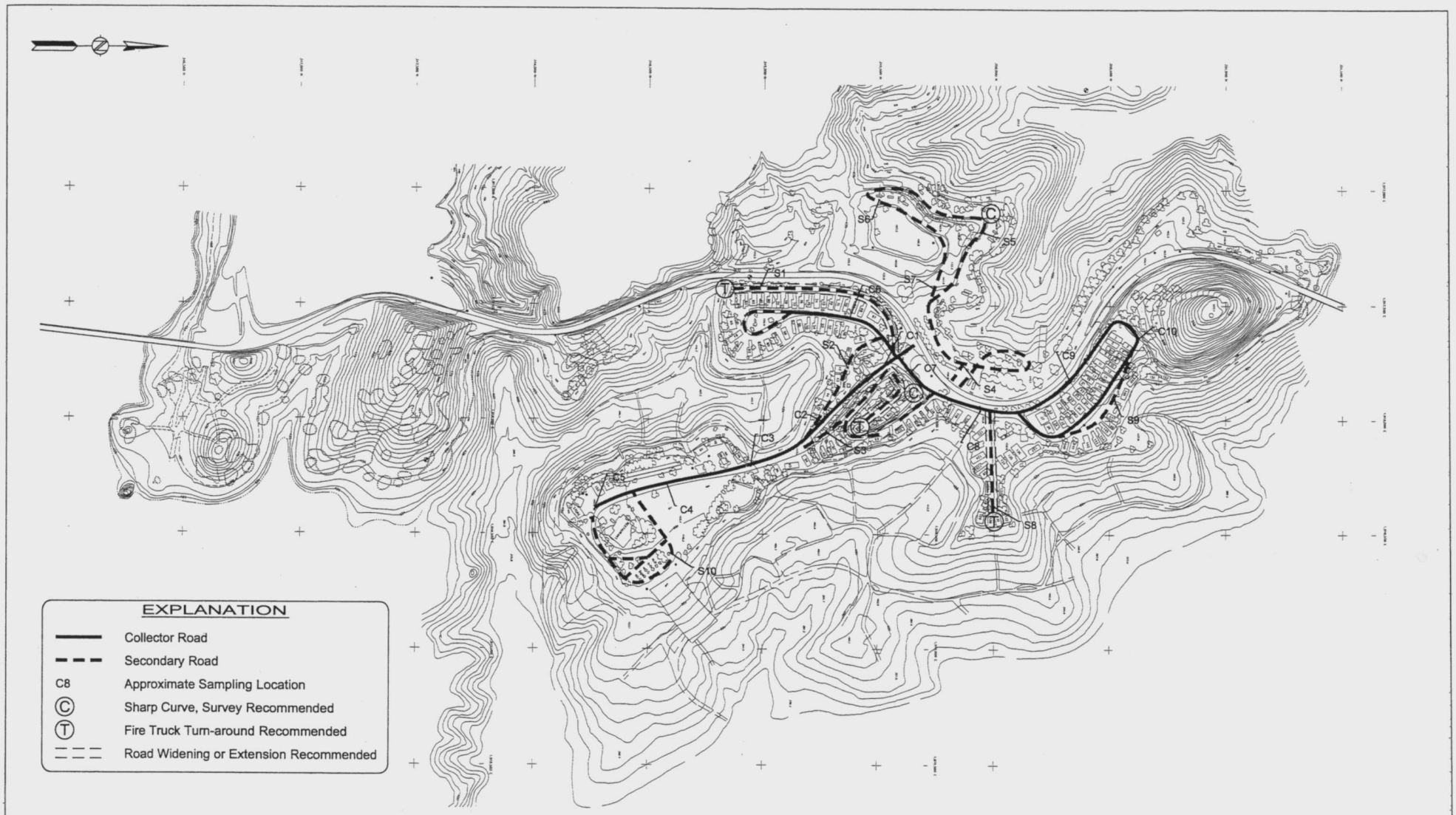
NOTES

1 THIS PG&E METER AND SERVICE PANELS BEHIND THE BUILDING ARE IN EXTREMELY POOR CONDITION AND UNSAFE. MANY SERIOUS CODE VIOLATIONS (EXPOSED WIRING, OPEN EQUIPMENT)
THIS SET OF PANELS FEED THE STORE,OFFICE,TRAILER AND MAINTENANCE SHOP. THE STORE ITSELF IS NEW AND IN GOOD CONDITION.

2 THE SHORE POWER UMBILICAL AND ASSOCIATED SERVICE ARE IN EXTREMELY POOR CONDITION AND UNSAFE. MANY CODE VIOLATIONS (CABLE TYPES, SPLICES).

3 THIS PUMP HOUSE HAS VERY UNSAFE WIRING WITH MANY CODE VIOLATIONS (EXPOSED WIRING, OPEN PANELS)

APPENDIX B - PLATES



Base: Bureau of Reclamation

KLEINFELDER

PROJECT NO. C40-3686-01/A20 DATE JUN 2002

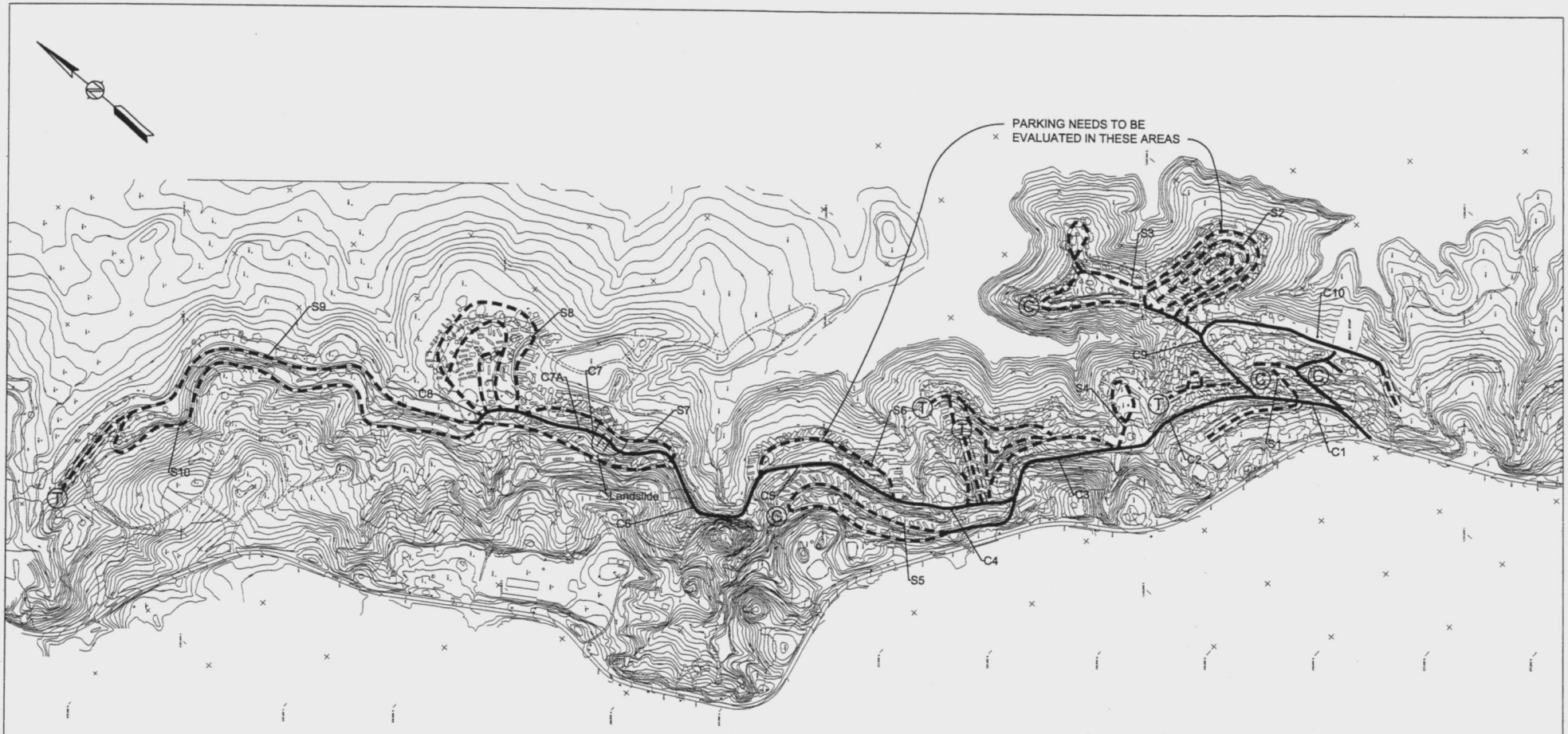
SITE PLAN

Putah Creek Resort

USBR Lake Berryessa, California

PLATE

2



EXPLANATION

- Collector Road
- Secondary Road
- C8 — Approximate Sampling Location
- Ⓒ — Sharp Curve, Survey Recommended
- Ⓣ — Fire Truck Turn-around Recommended
- Road Widening or Extension Recommended

Base: Bureau of Reclamation

KLEINFELDER

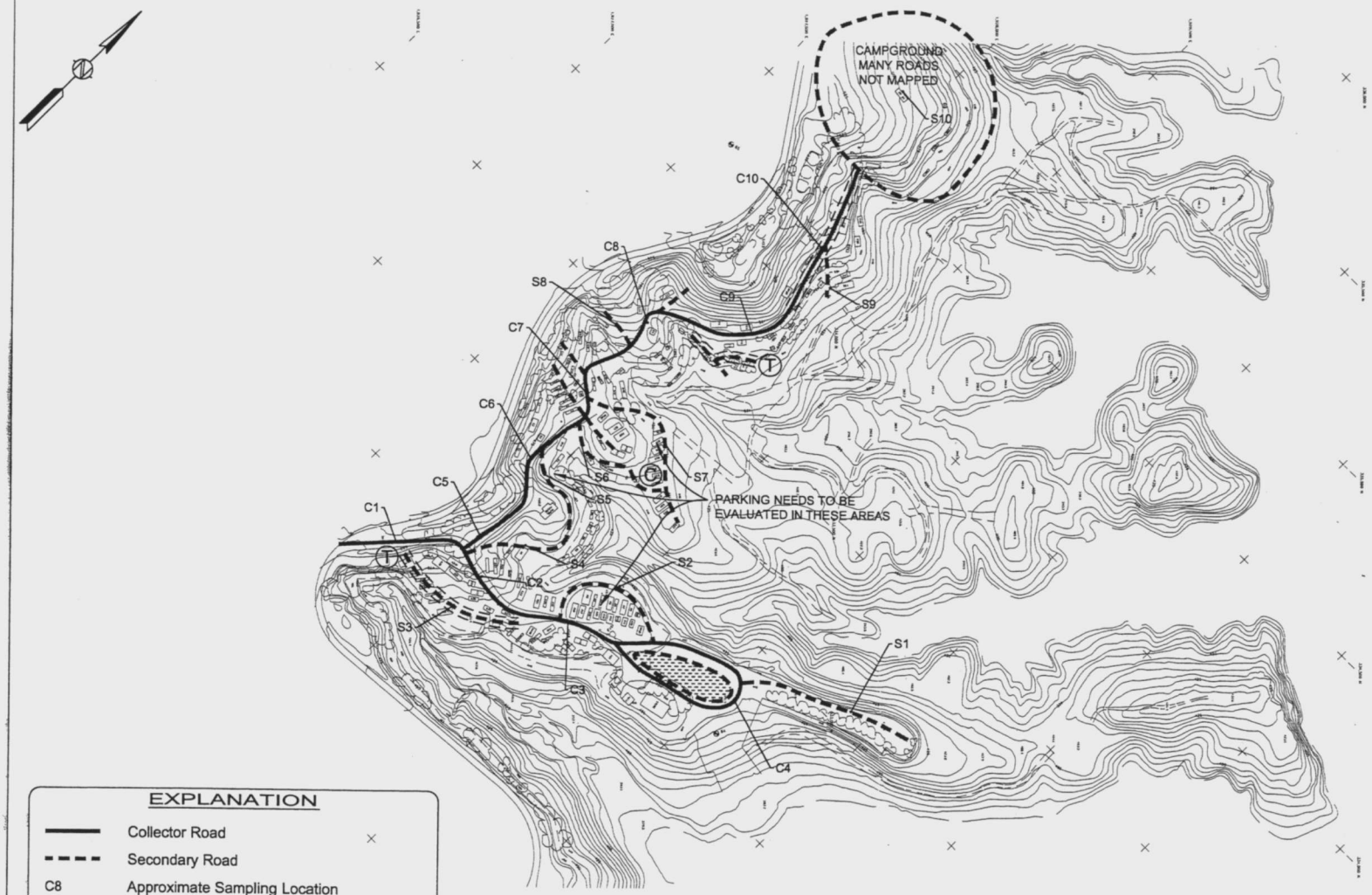
PROJECT NO. C40-3686-01/A20 DATE JUN 2002

SITE PLAN

Rancho Monticello Resort

USBR Lake Berryessa, California

PLATE 3



EXPLANATION

- Collector Road
- Secondary Road
- C8 — Approximate Sampling Location
- Ⓒ — Sharp Curve, Survey Recommended
- Ⓣ — Fire Truck Turn-around Recommended
- Road Widening or Extension Recommended

400 200 0 400

scale feet

Base: Bureau of Reclamation

KLEINFELDER

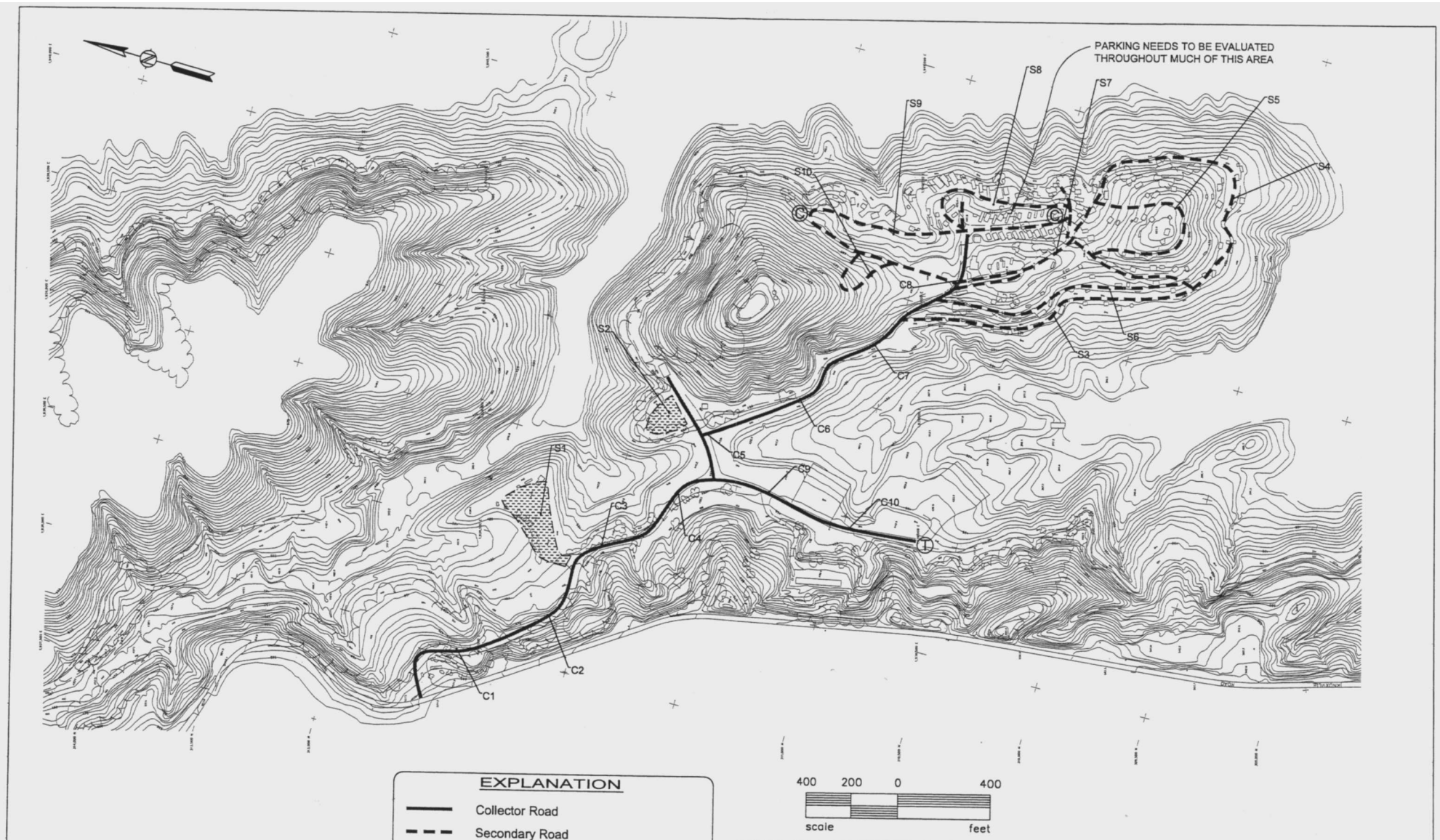
PROJECT NO. C40-3686-01/A20 DATE JUN 2002

SITE PLAN

Lake Berryessa Marina Resort

USBR Lake Berryessa, California

PLATE 4



Base: Bureau of Reclamation

KLEINFELDER

PROJECT NO. C40-3686-01/A20 DATE JUN 2002

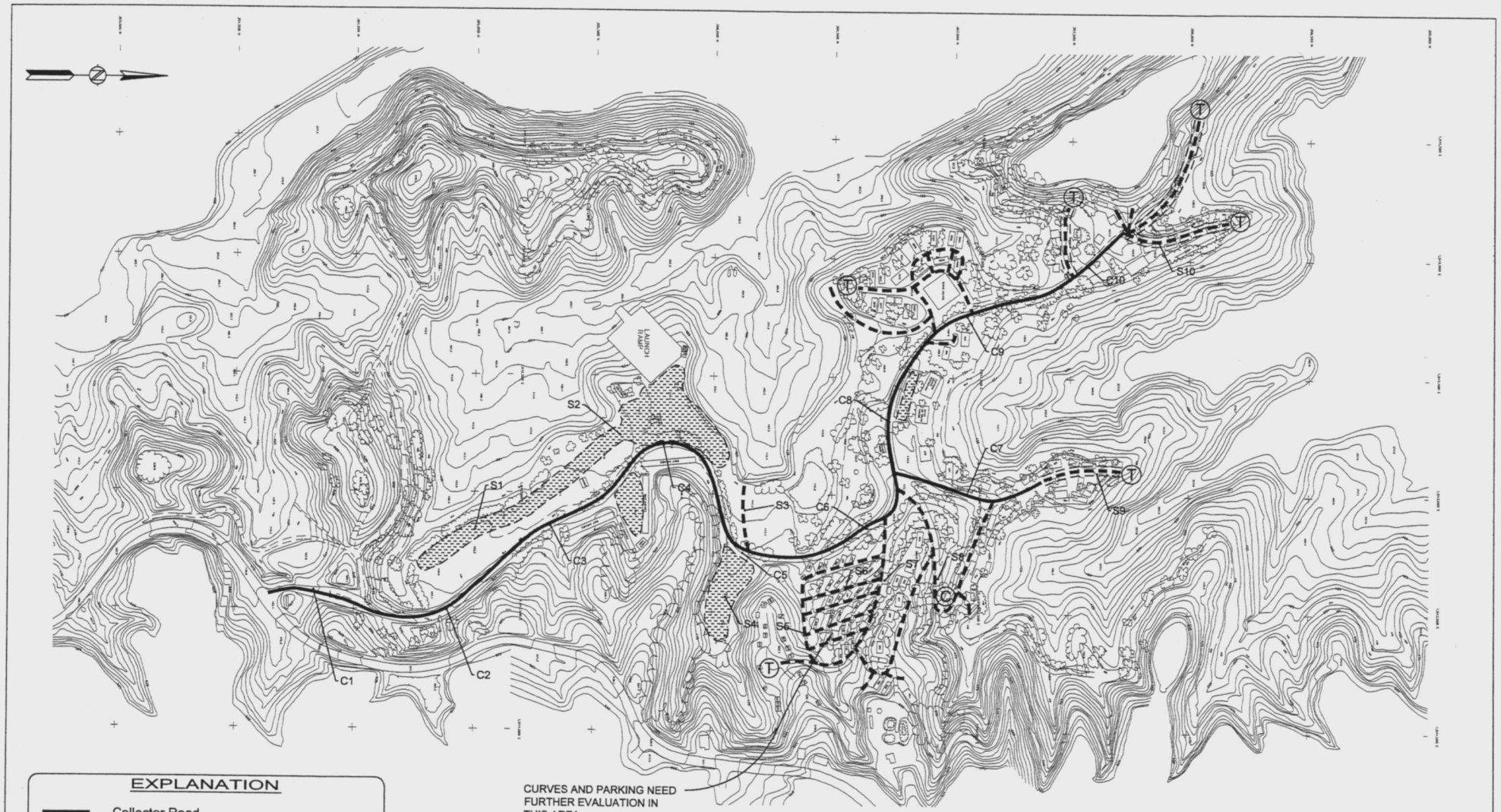
SITE PLAN

Spanish Flat Resort

USBR Lake Berryessa, California

PLATE

5



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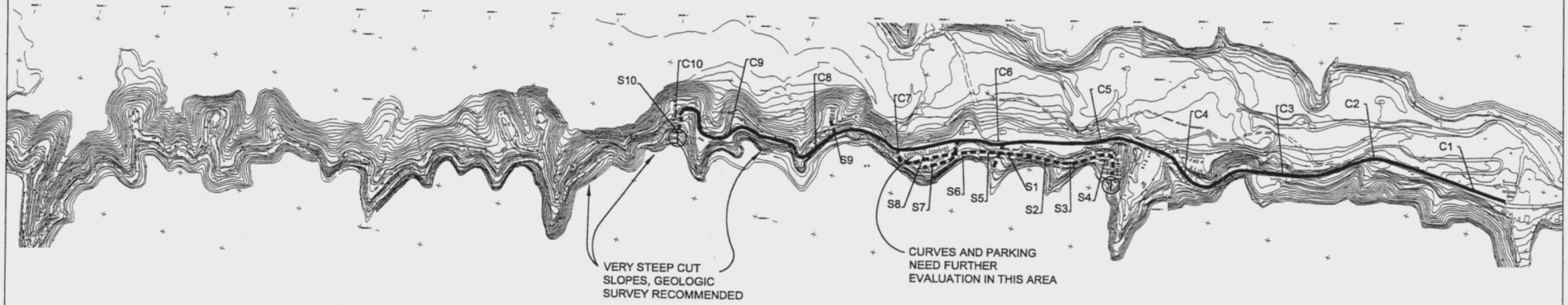
PROJECT NO. C40-3686-01/A20 DATE JUN 2002

SITE PLAN

Steele Park Resort

USBR Lake Berryessa, California

PLATE 6



EXPLANATION

- Collector Road
- Secondary Road
- C8 — Approximate Sampling Location
- (T) — Fire Truck Turn-around Recommended
- Road Widening or Extension Recommended

800 400 0 800

scale feet

Base: Bureau of Reclamation

KLEINFELDER

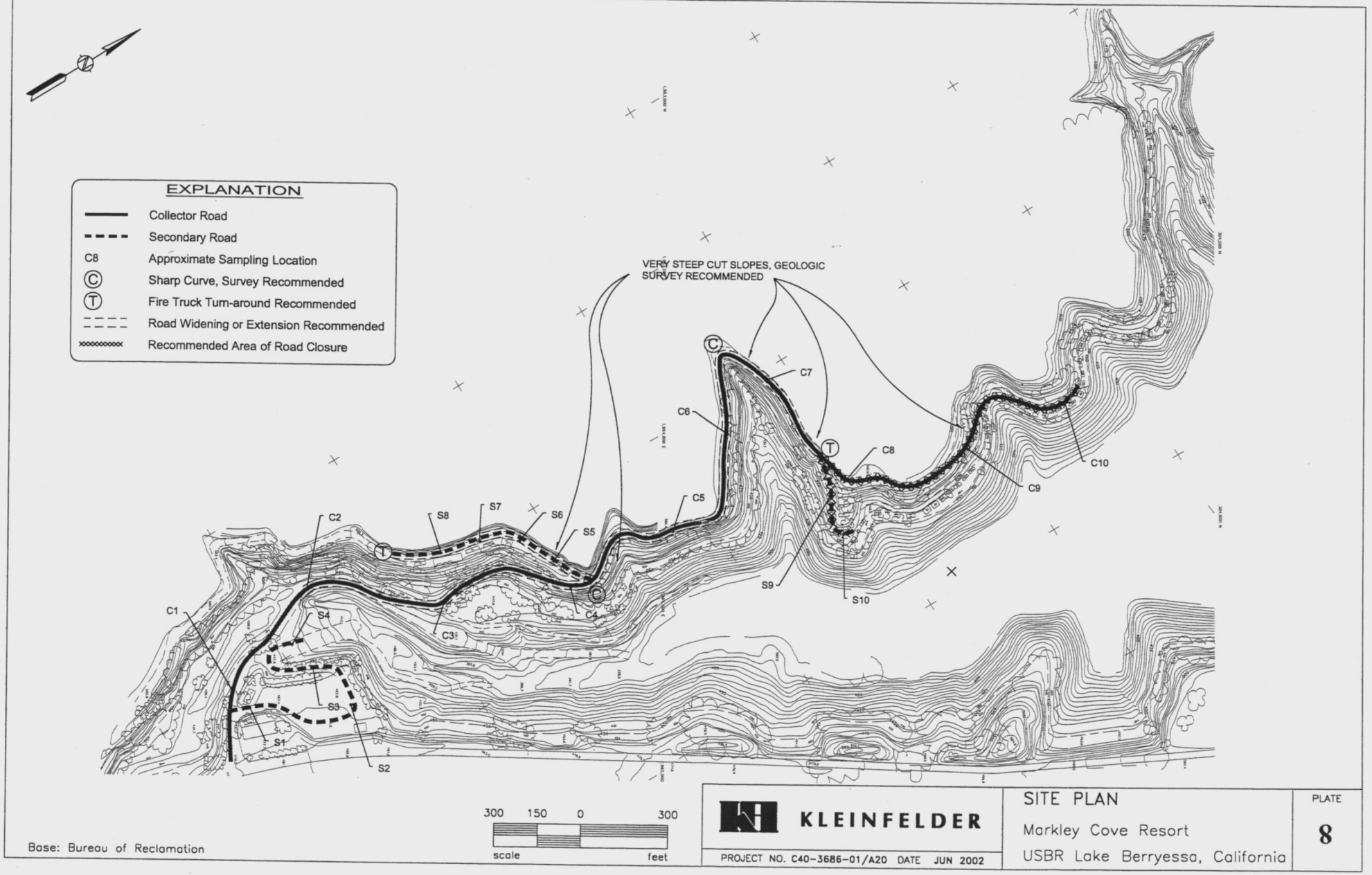
PROJECT NO. C40-3686-01/A20 DATE JUN 2002

SITE PLAN

Pleasure Cove Resort

USBR Lake Berryessa, California

PLATE 7



Base: Bureau of Reclamation

KLEINFELDER

PROJECT NO. C40-3686-01/A20 DATE JUN 2002

SITE PLAN

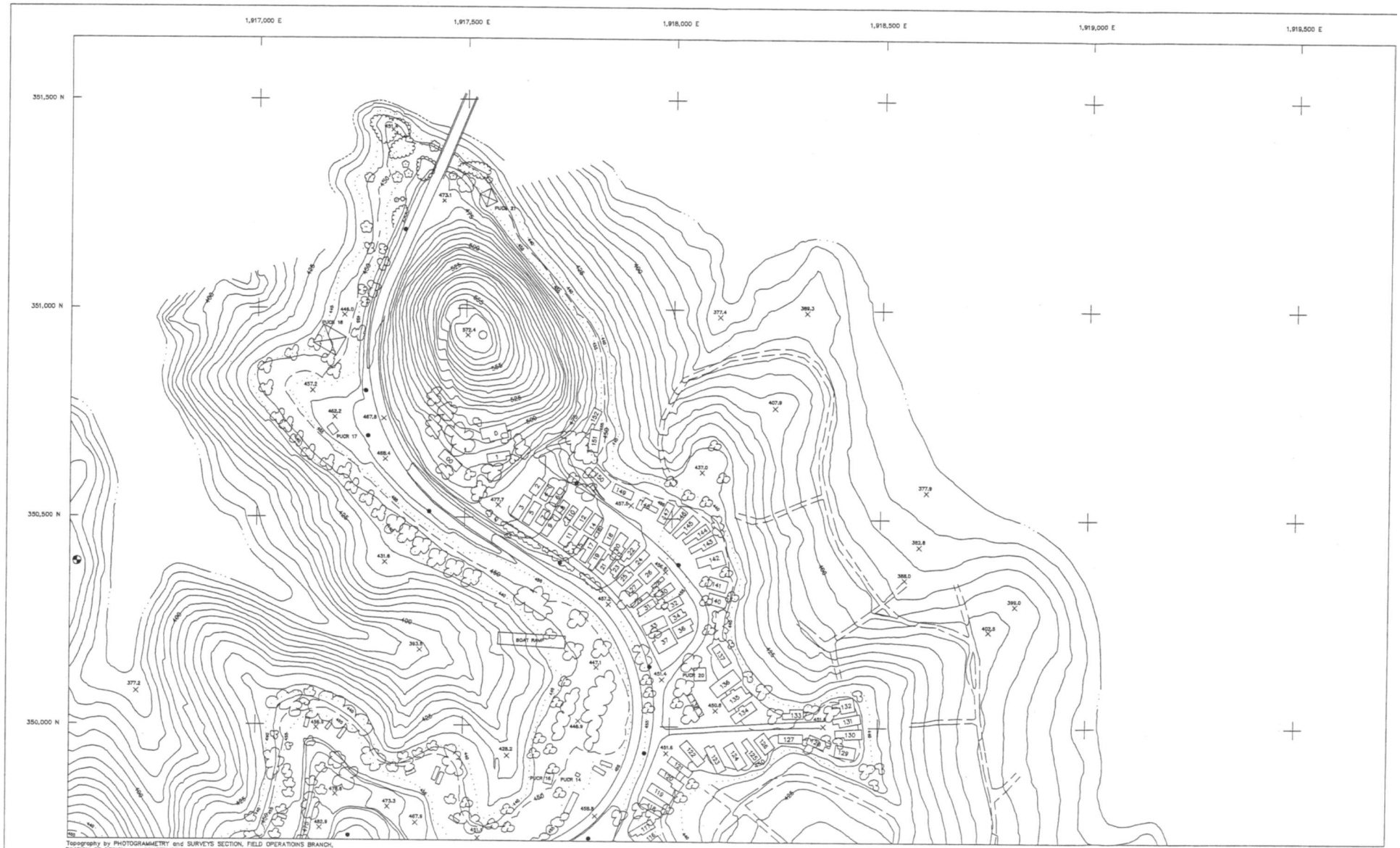
Markley Cove Resort

USBR Lake Berryessa, California

PLATE

8

APPENDIX C – TOPOGRAPHIC SURVEY MAPS



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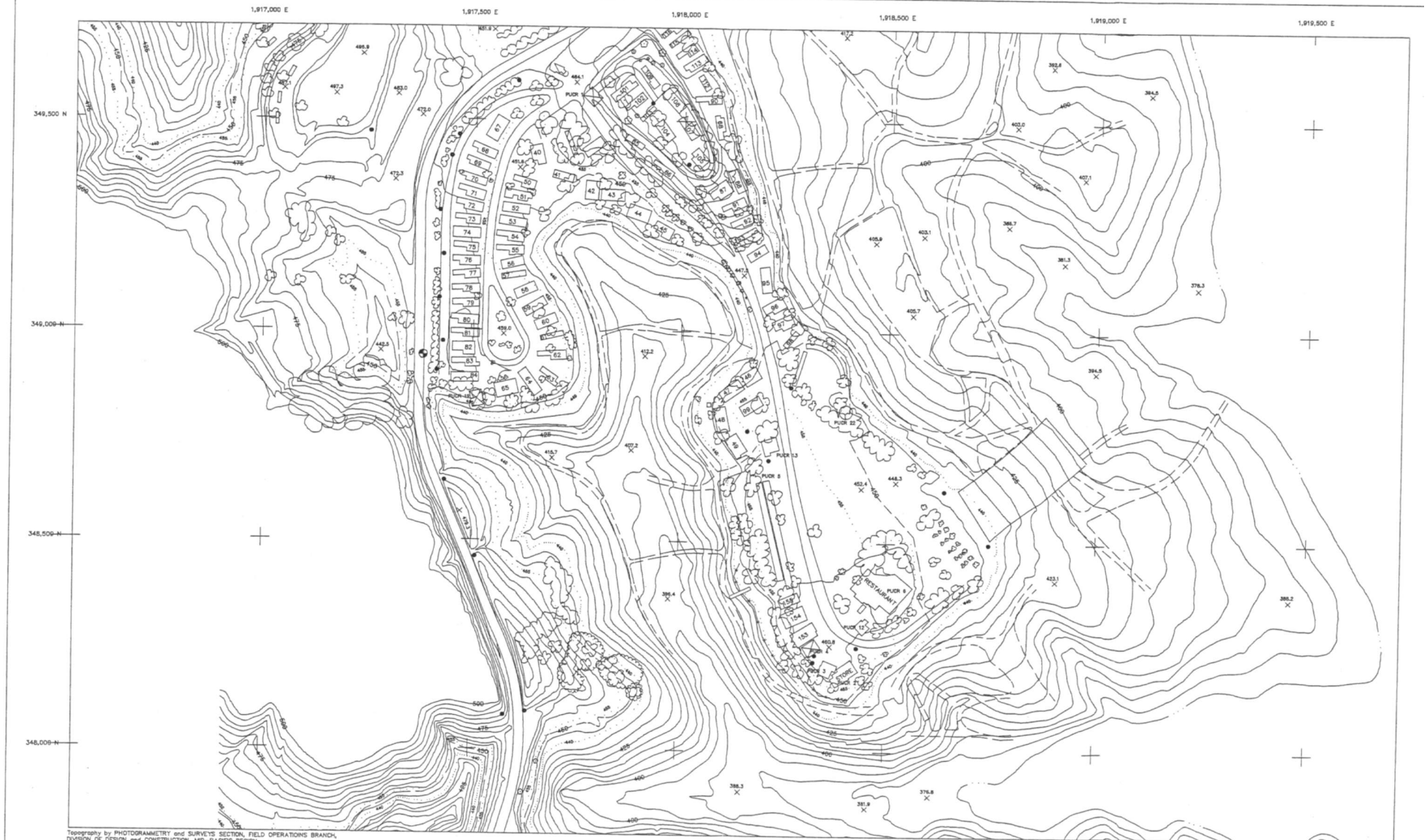
SOLANO PROJECT
LAKE BERRYESSA RECREATION RESORTS

PUTAH CREEK PARK TOPOGRAPHY

SACRAMENTO, CA	SHEET 1 OF 3	413-208-1404



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DIVISION OF DESIGN and CONSTRUCTION, MID-PACIFIC REGION
compiled from photography BR-BRA-11, flown 9-20-91
AutoCad drawings filename1405.DWG

APPROXIMATE BUILDING LOCATION BASED UPON 2002 FIELD OBSERVATION.

100 0 100 200 300
SCALE OF FEET

CONTOUR INTERVAL 5 FEET

N

SHEET INDEX

1404
1405
1445

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LAKE BERRYESSA RECREATION RESORTS

PUTAH CREEK PARK TOPOGRAPHY

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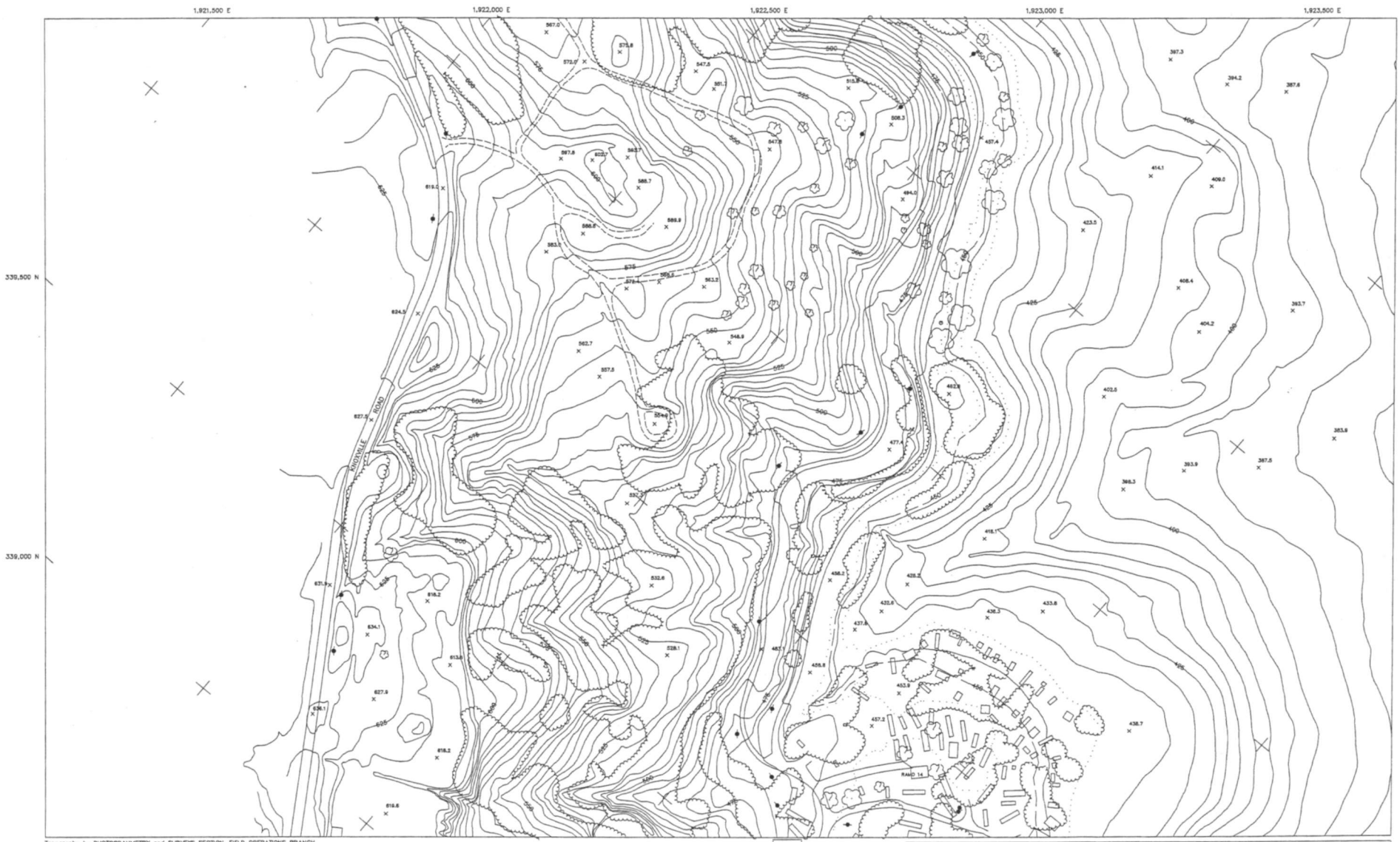

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DIVISION OF DESIGN and CONSTRUCTION, MID-PACIFIC REGION
Compiled from photography BR-BRA-11, dated 9-20-91

APPROXIMATE BUILDING LOCATION BASED UPON 2002 FIELD OBSERVATION.

100 0 100 200 300
SCALE OF FEET

CONTOUR INTERVAL 5 FEET

SHEET INDEX

1453
1425
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1429

Designed _____ Technical Approval _____
Drawn _____ Submitted _____
Checked _____ Admin Approval _____

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SOLANO PROJECT
LAKE BERRYESSA RECREATION RESORTS

RANCHO MONTICELLO
TOPOGRAPHY

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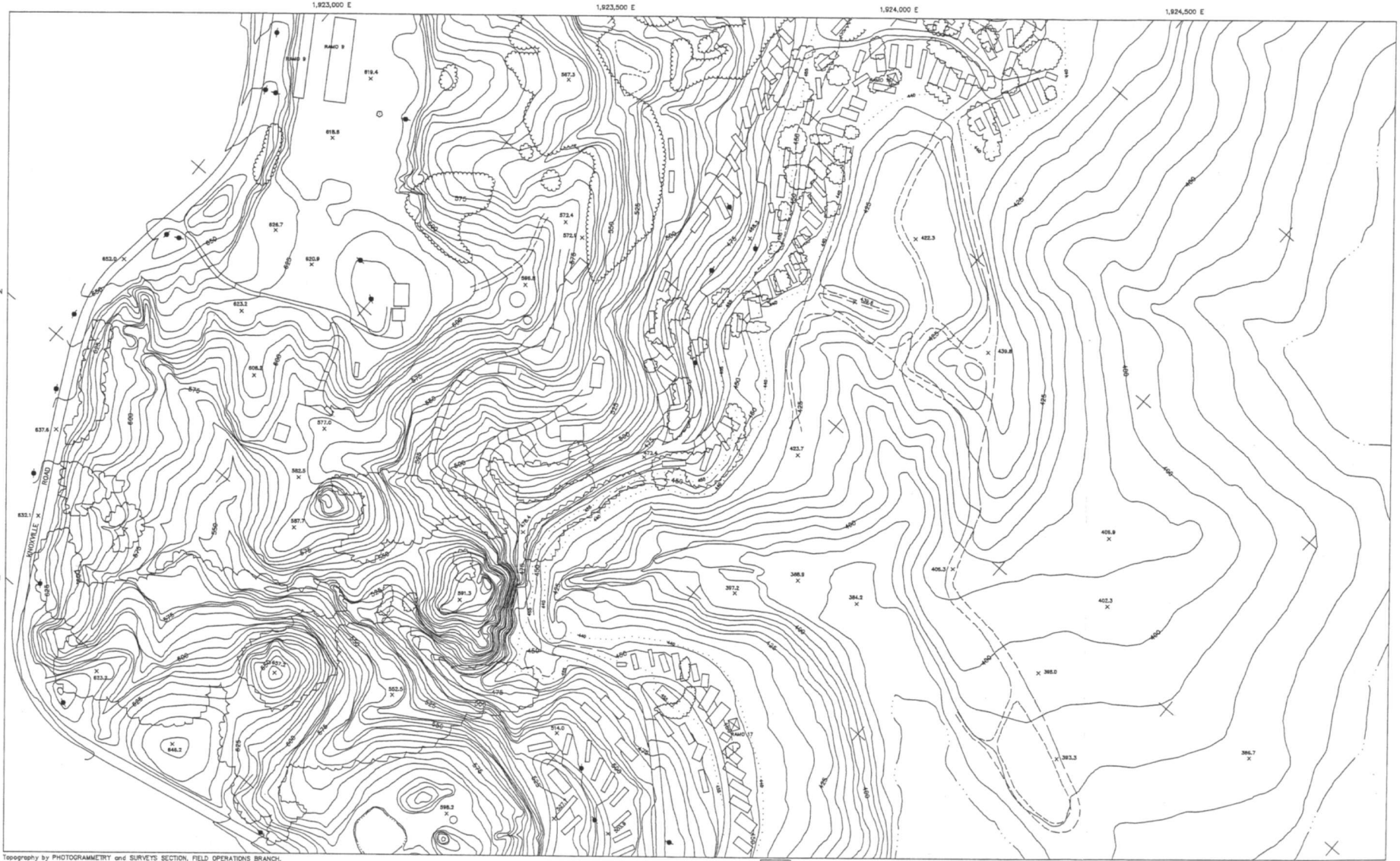

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DIVISION OF DESIGN and CONSTRUCTION, MID-PACIFIC REGION
compiled from photography BR-BRA-11 flown 9-20-91

APPROXIMATE BUILDING LOCATION BASED UPON 2002 FIELD OBSERVATION.

100 0 100 200 300
SCALE OF FEET

CONTOUR INTERVAL 5 FEET

SHEET INDEX

1453	
1452	
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Designed _____ Technical Approval _____
Drawn _____ Submitted _____
Checked _____ Admin Approval _____

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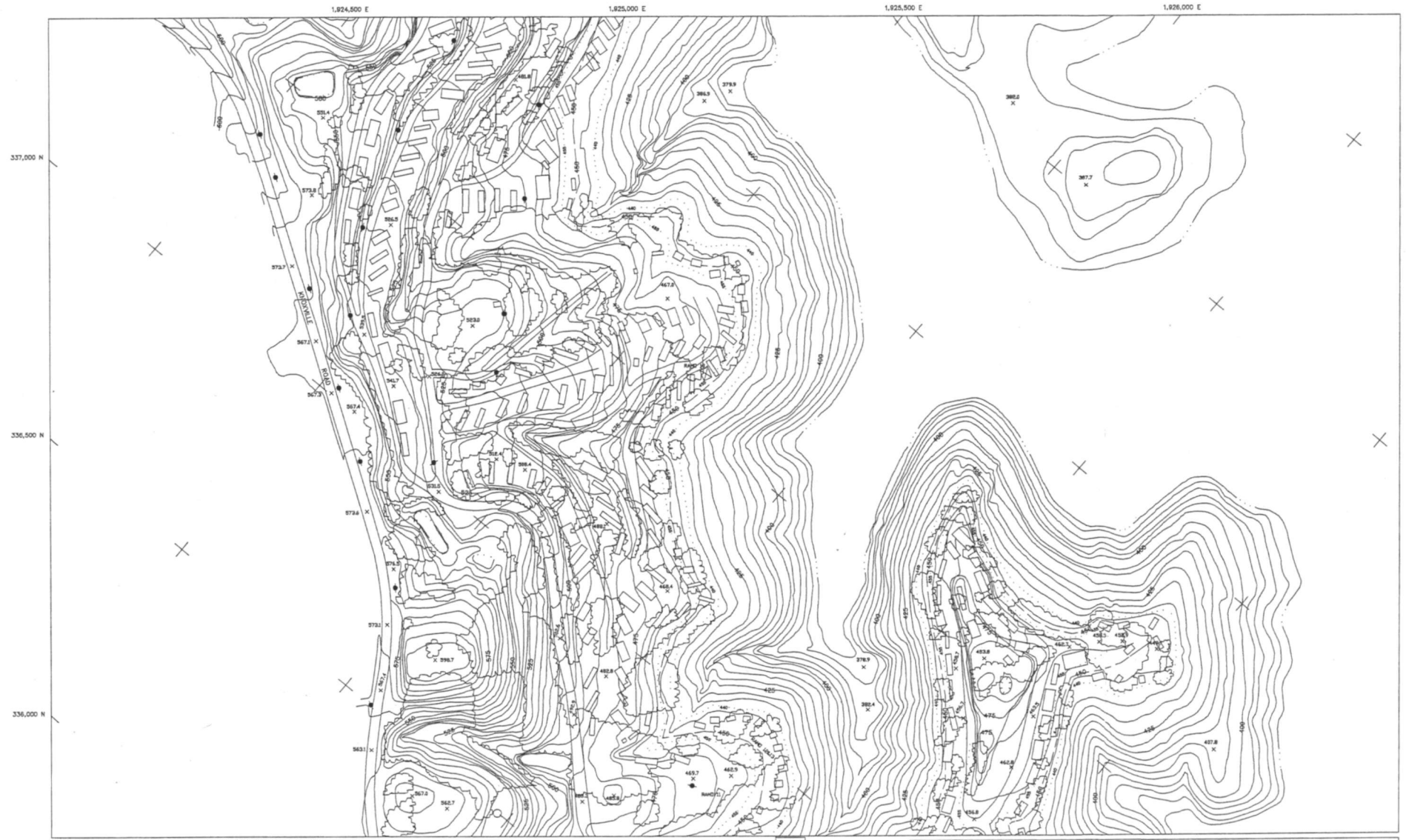
SOLANO PROJECT
LAKE BERRYESSA RECREATION RESORTS
RANCHO MONTICELLO
TOPOGRAPHY
SACRAMENTO, CA | 1992 SHEET 3 OF 8 | 413-208-1426



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compiled from photography BR-BRA-11flown 9-20-92

APPROXIMATE BUILDING LOCATION BASED UPON 2002 FIELD OBSERVATION.

100 0 100 200 300
SCALE OF FEET

CONTOUR INTERVAL 5 FEET

SHEET INDEX

1453
1452
1426
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1428
1429

Designed _____ Technical Approval _____
Drawn _____ Submitted _____
Checked _____ Admin Approval _____

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SOLANO PROJECT
LAKE BERRYESSA RECREATION RESORTS

RANCHO MONTICELLO TOPOGRAPHY

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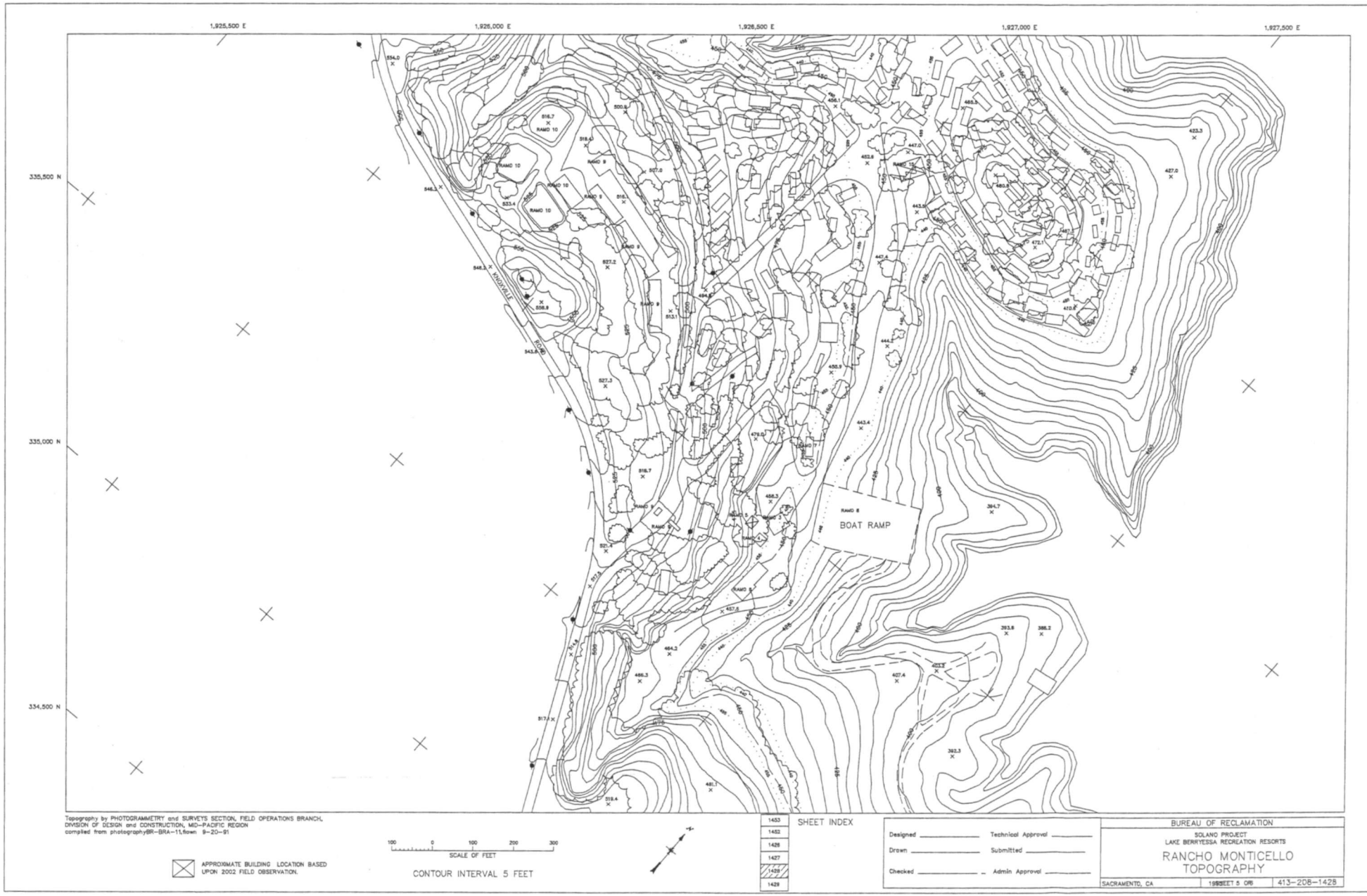

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compiled from photographyBR-BRA-11,flown 9-20-91

APPROXIMATE BUILDING LOCATION BASED UPON 2002 FIELD OBSERVATION.

100 0 100 200 300
SCALE OF FEET

CONTOUR INTERVAL 5 FEET

SHEET INDEX

1453
1452
1426
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1429

Designed _____ Technical Approval _____
Drawn _____ Submitted _____
Checked _____ Admin Approval _____

BUREAU OF RECLAMATION
SOLANO PROJECT
LAKE BERRYESSA RECREATION RESORTS

RANCHO MONTICELLO TOPOGRAPHY

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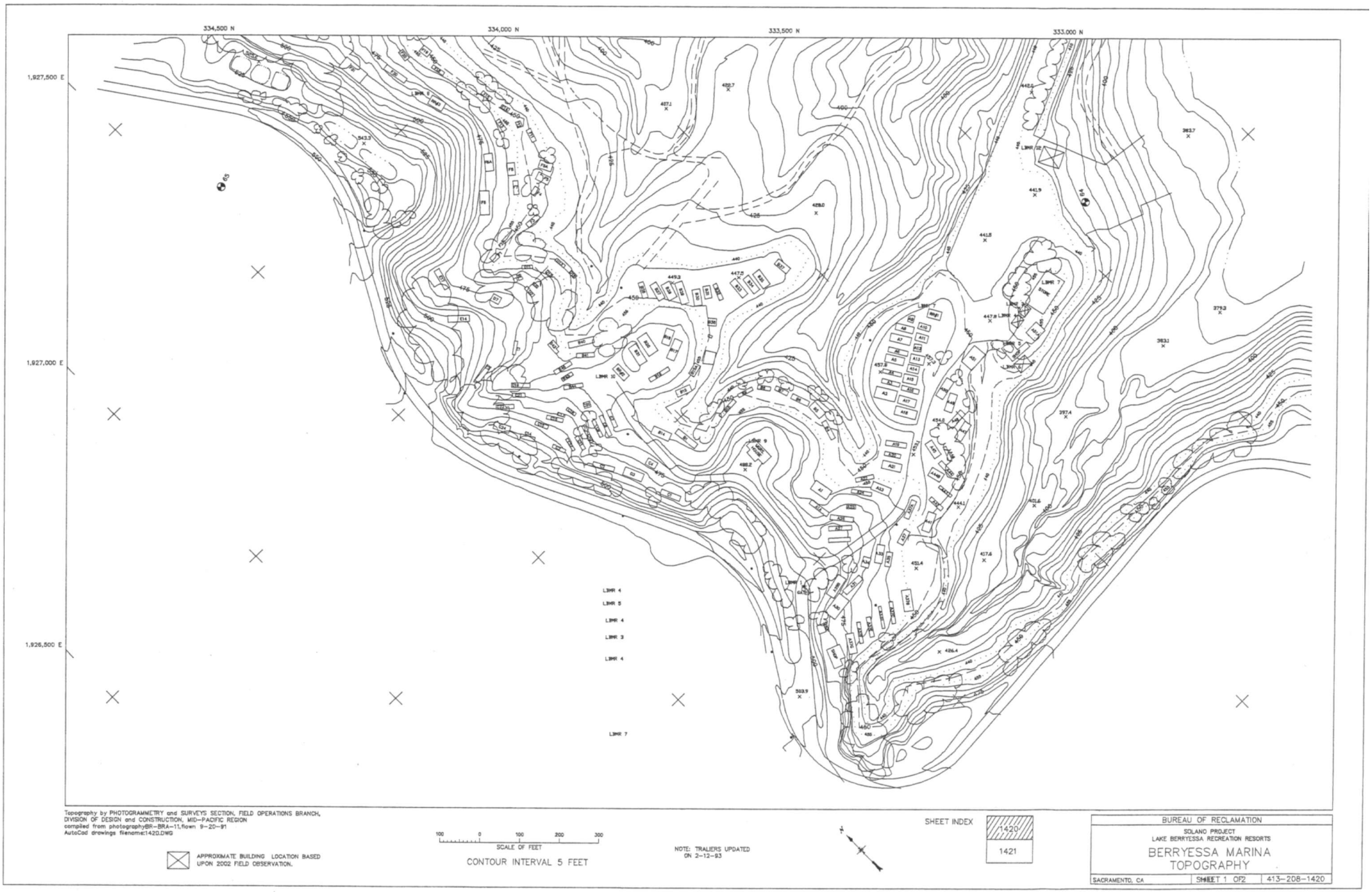

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AutoCad drawings filename:1420.DWG

APPROXIMATE BUILDING LOCATION BASED UPON 2002 FIELD OBSERVATION.

100 0 100 200 300
SCALE OF FEET

CONTOUR INTERVAL 5 FEET

NOTE: TRAILERS UPDATED ON 2-12-93

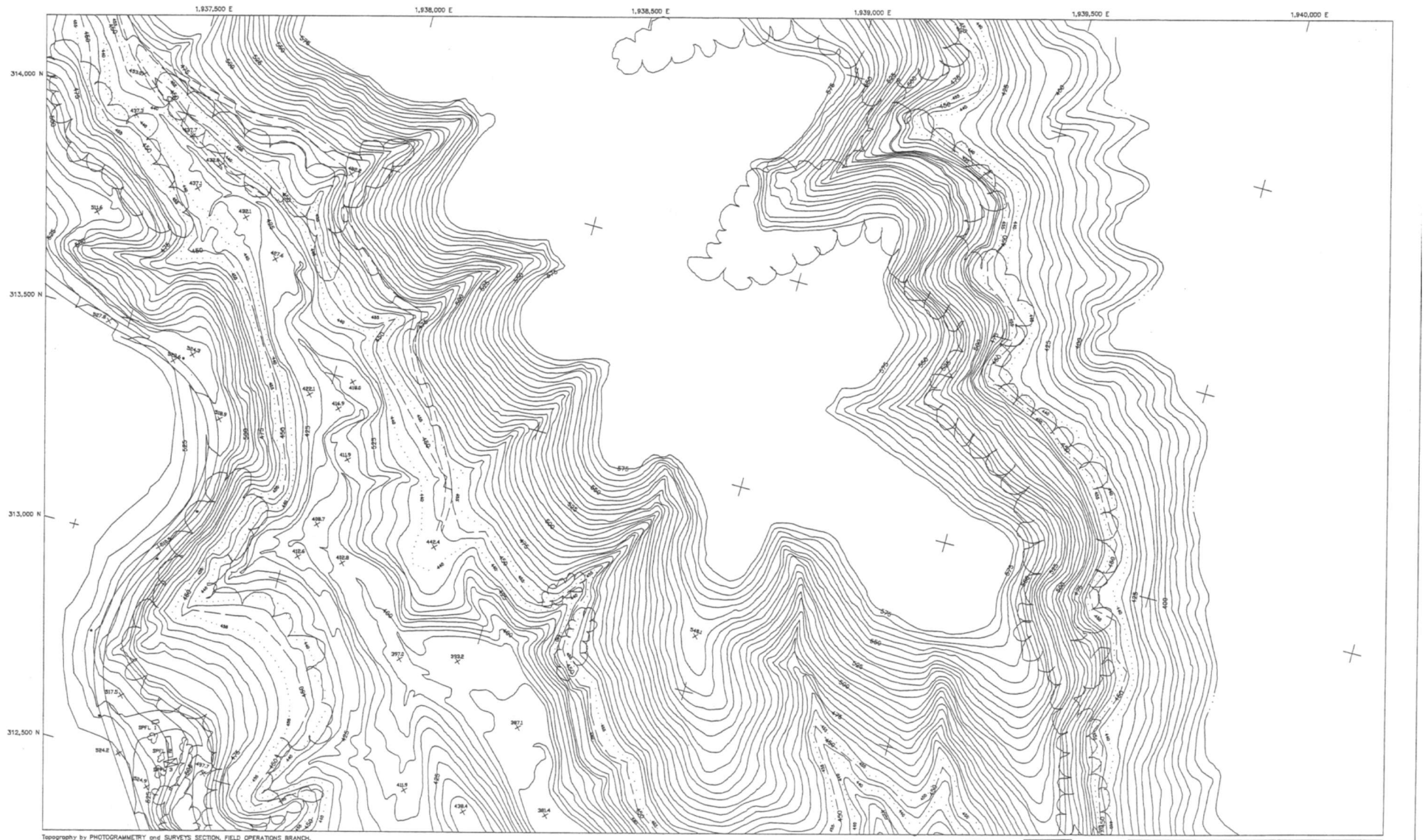
SHEET INDEX

1420
1421

BUREAU OF RECLAMATION
SOLANO PROJECT
LAKE BERRYESSA RECREATION RESORTS

BERRYESSA MARINA TOPOGRAPHY

SACRAMENTO, CA	SHEET 1 OF 2	413-208-1420



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APPROXIMATE BUILDING LOCATION BASED UPON 2002 FIELD OBSERVATION.

100 0 100 200 300
SCALE OF FEET

CONTOUR INTERVAL 5 FEET

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1408

BUREAU OF RECLAMATION
SOLANO PROJECT
LAKE BERRYESSA RECREATION RESORTS

SPANISH FLAT RESORT TOPOGRAPHY

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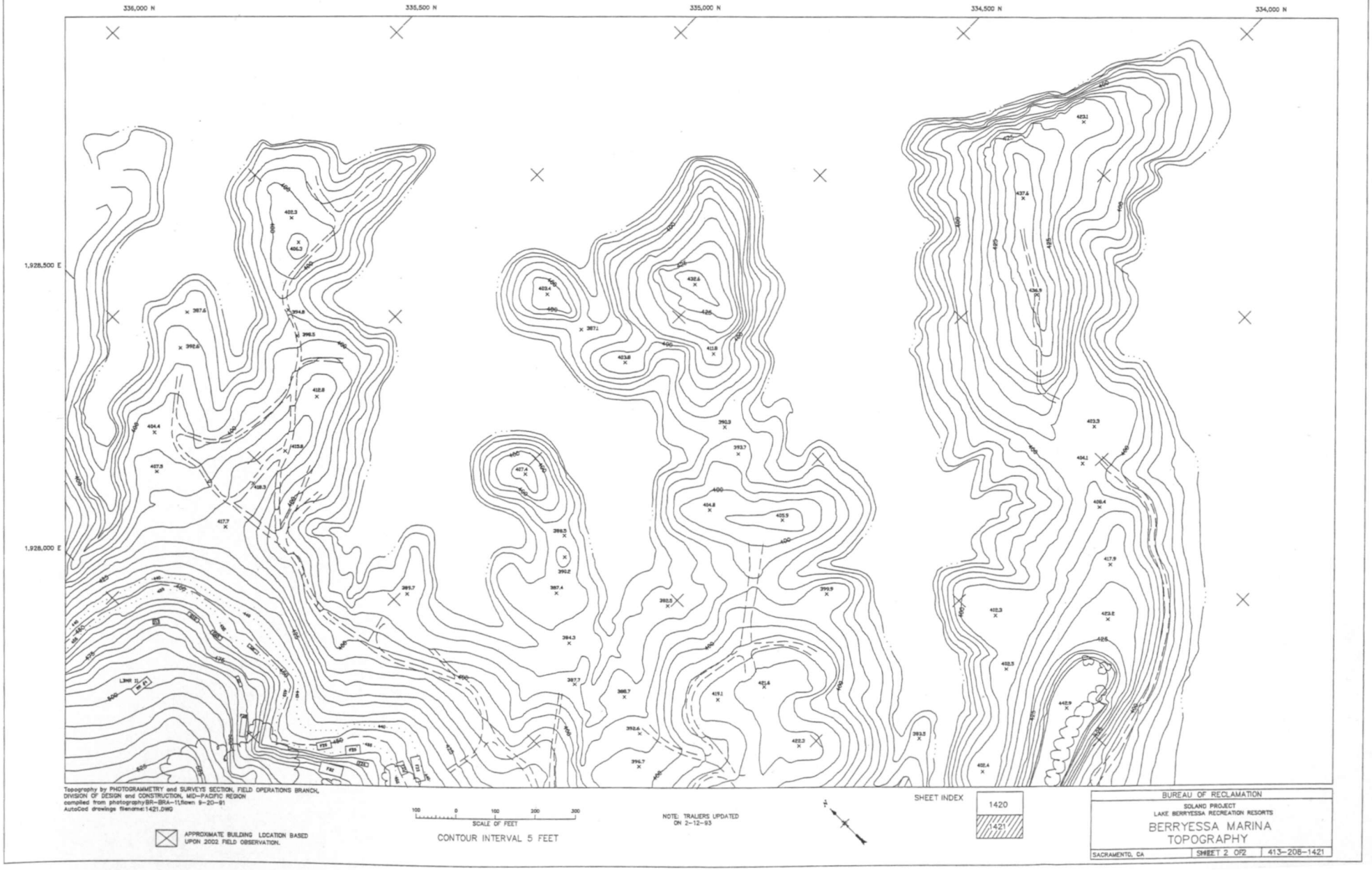
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SCALE OF FEET
CONTOUR INTERVAL 5 FEET
NOTE: TRAILERS UPDATED ON 2-12-93
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BERRYESSA MARINA
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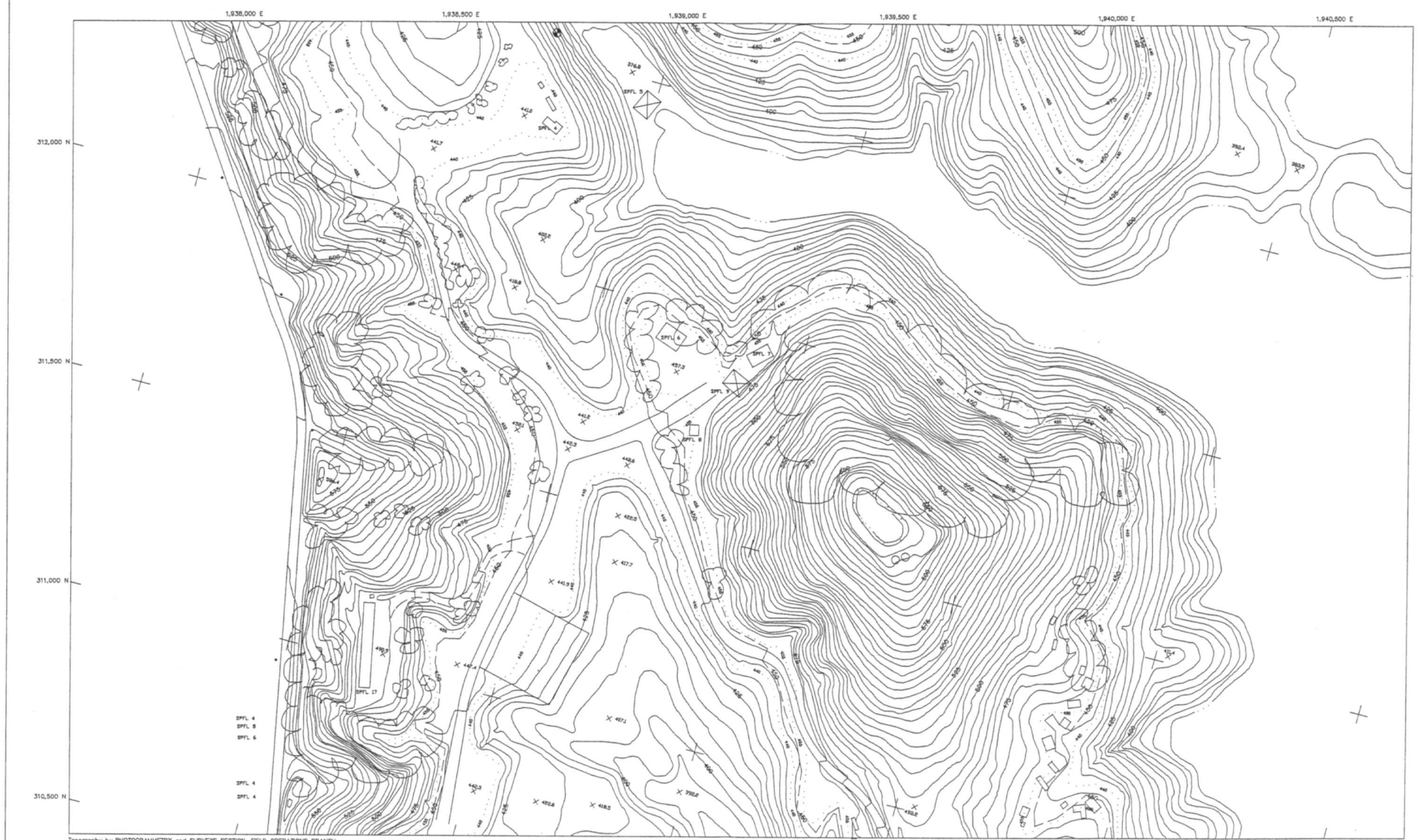

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APPROXIMATE BUILDING LOCATION BASED UPON 2002 FIELD OBSERVATION.

100 0 100 200 300
SCALE OF FEET

CONTOUR INTERVAL 5 FEET

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SPANISH FLAT RESORT TOPOGRAPHY

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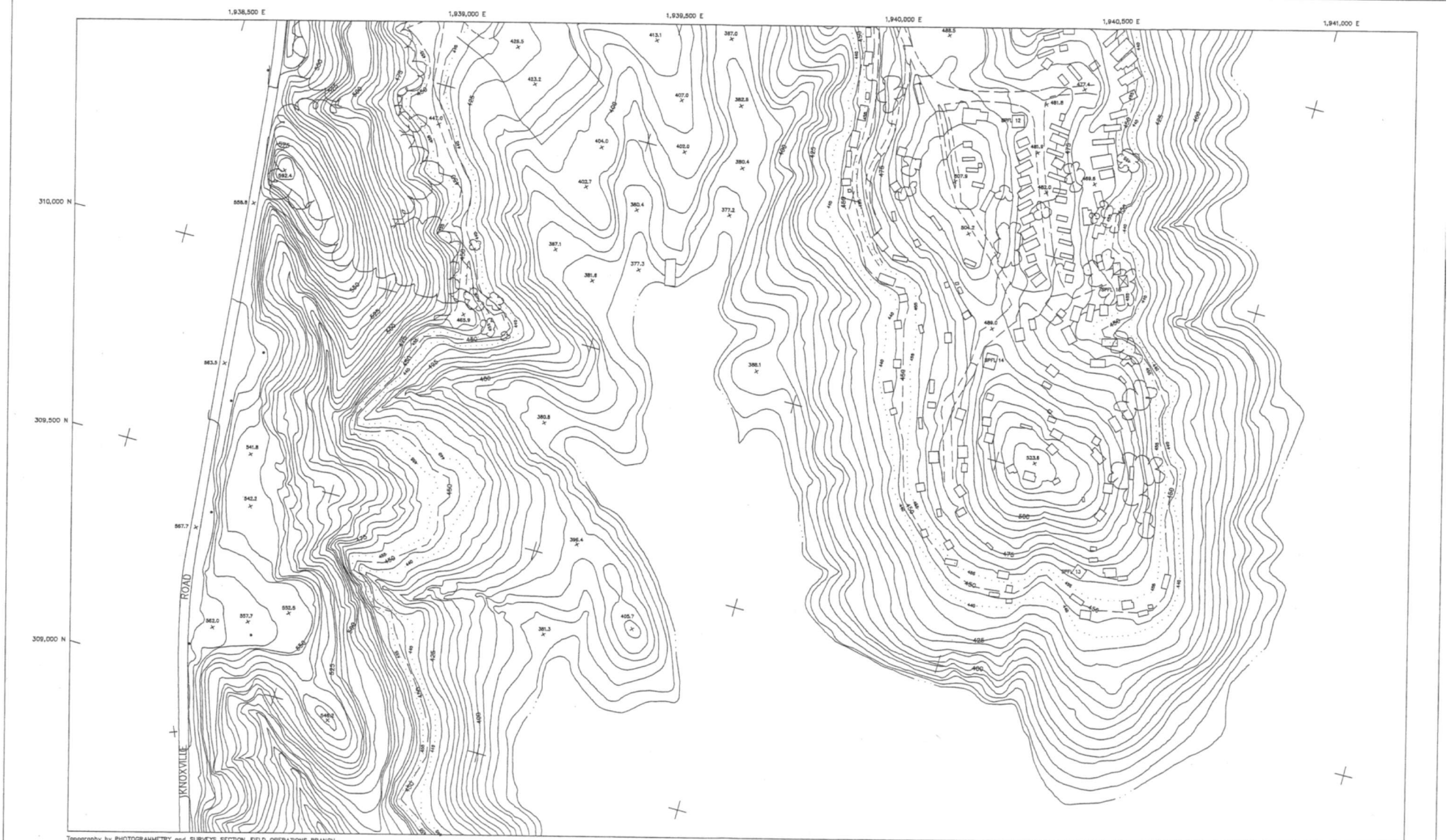

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compiled from photography BR-BRA-11 flown 9-20-91

APPROXIMATE BUILDING LOCATION BASED UPON 2002 FIELD OBSERVATION.

100 0 100 200 300
SCALE OF FEET

CONTOUR INTERVAL 5 FEET

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SPANISH FLAT RESORT TOPOGRAPHY

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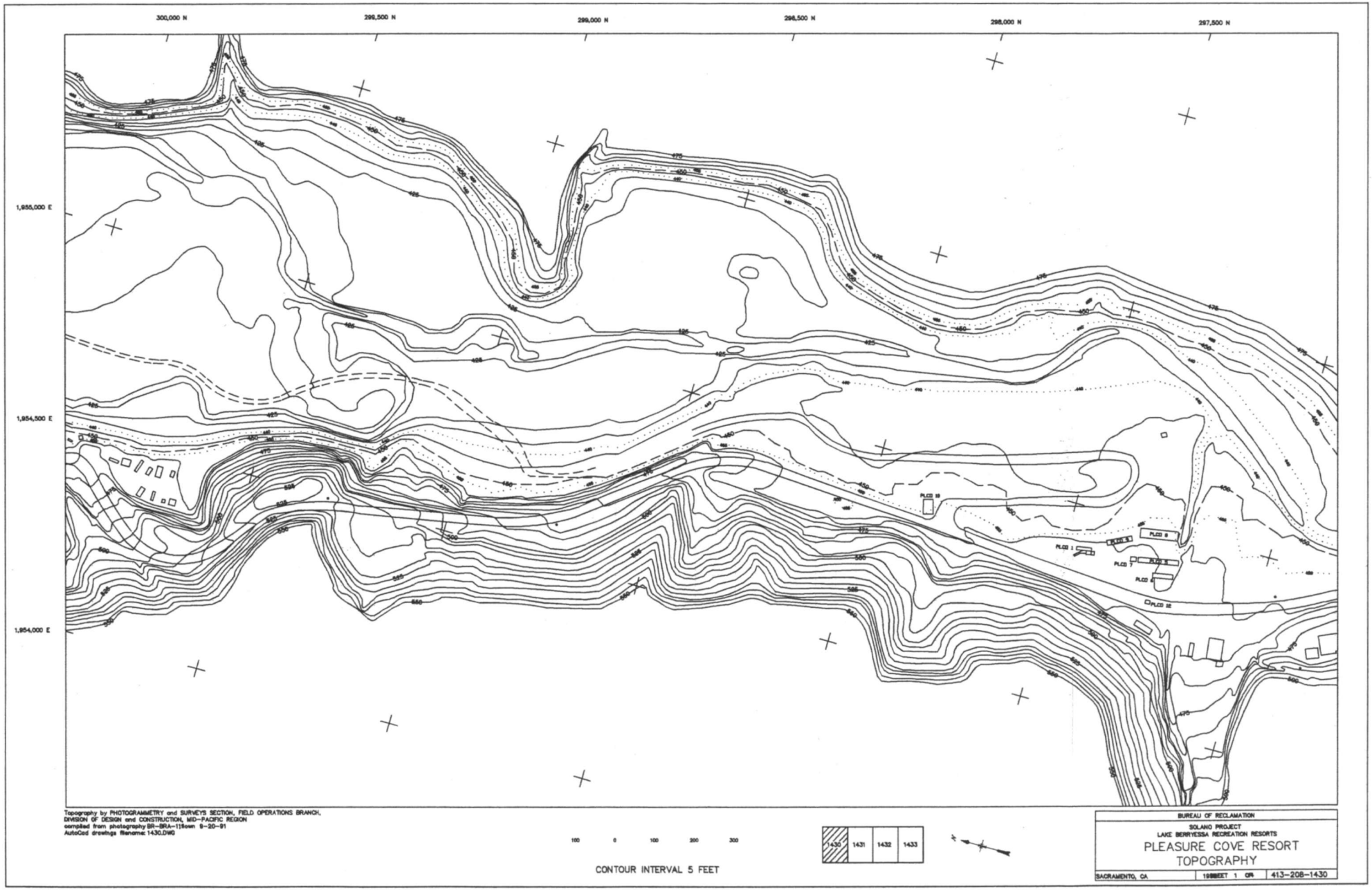

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100 0 100 200 300

CONTOUR INTERVAL 5 FEET

1430	1431	1432	1433

BUREAU OF RECLAMATION
SOLANO PROJECT
LAKE BERRYESSA RECREATION RESORTS

PLEASURE COVE RESORT
TOPOGRAPHY

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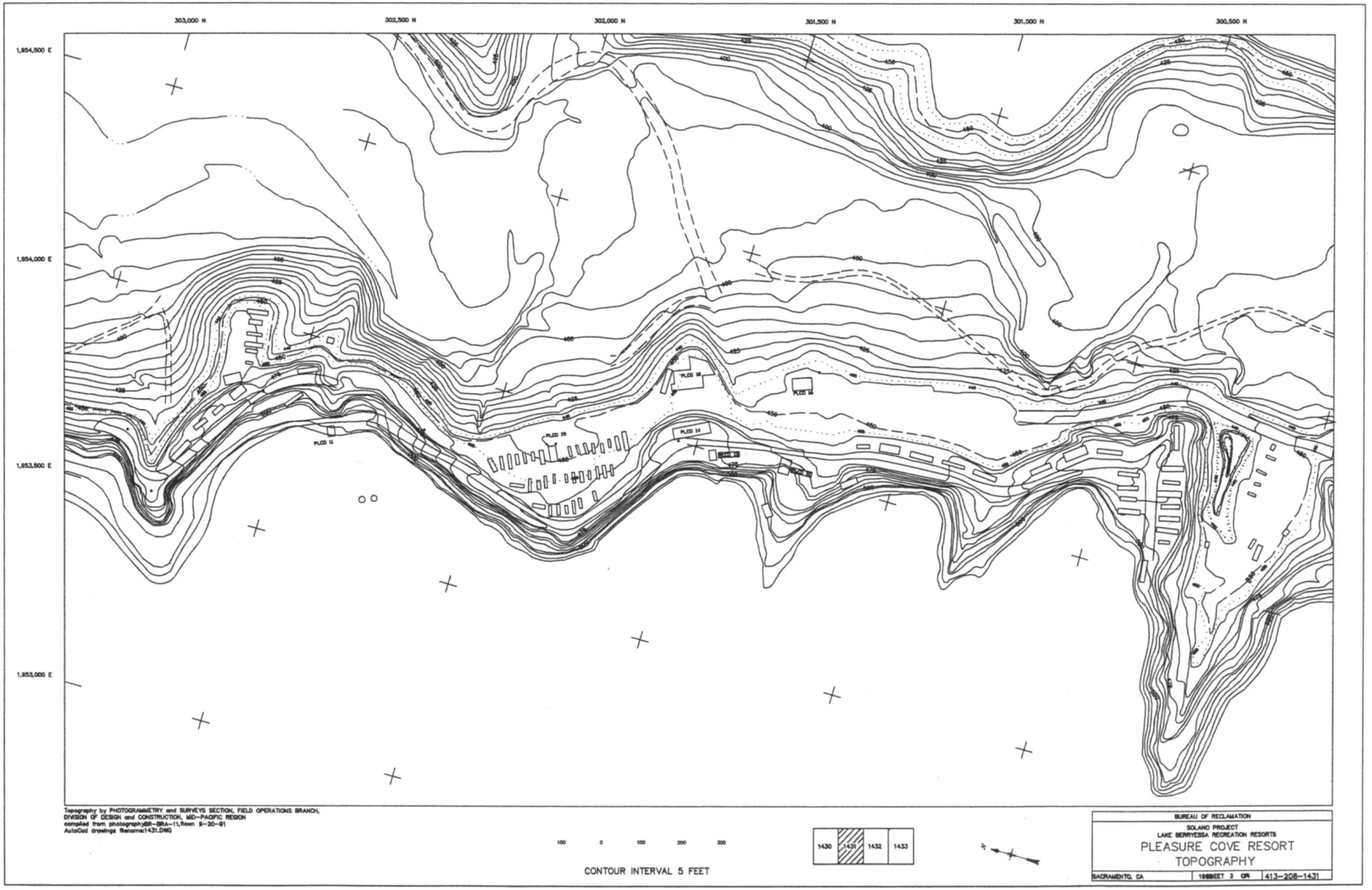

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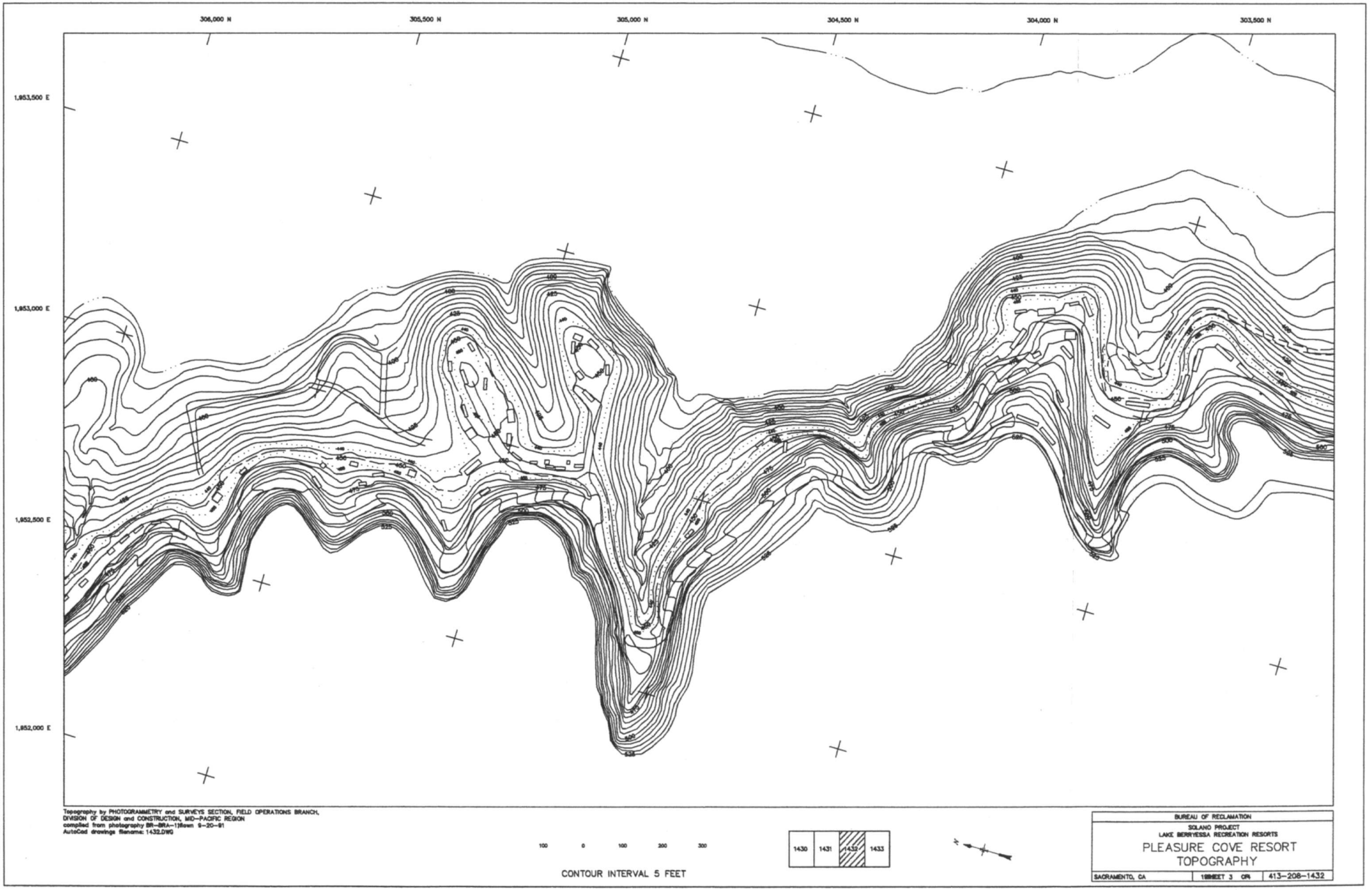
CONTOUR INTERVAL 5 FEET

BUREAU OF RECLAMATION
SOLANO PROJECT
LAKE BERRYESSA RECREATION RESORTS

PLEASURE COVE RESORT
TOPOGRAPHY

SACRAMENTO, CA	19 SHEET 2 OF	413-208-1431



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100 0 100 200 300

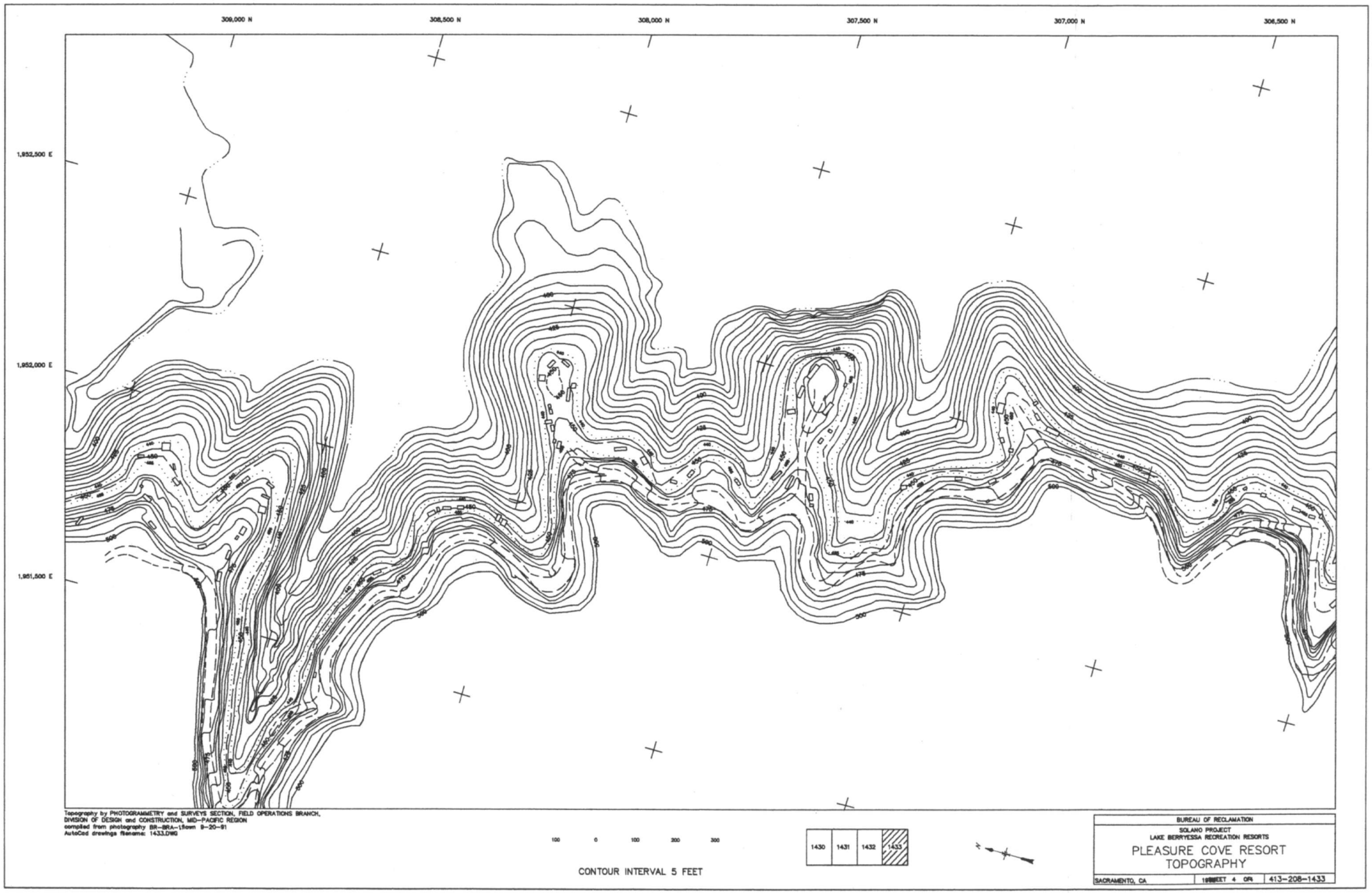
CONTOUR INTERVAL 5 FEET

1430	1431	1432	1433

BUREAU OF RECLAMATION
SOLANO PROJECT
LAKE BERRYESSA RECREATION RESORTS

PLEASURE COVE RESORT
TOPOGRAPHY

SACRAMENTO, CA	SHEET 3 OF	413-208-1432



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100 0 100 200 300

CONTOUR INTERVAL 5 FEET

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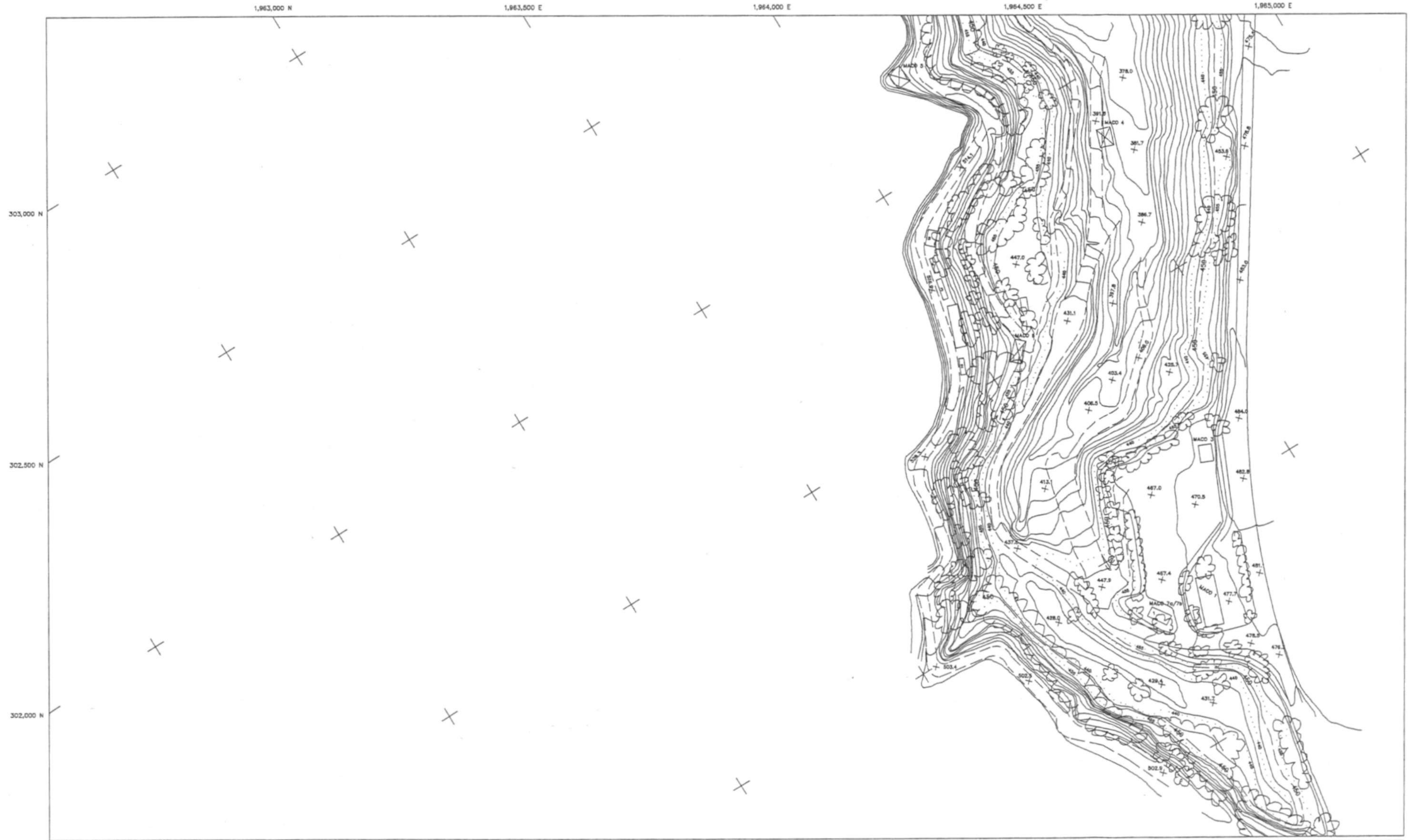
BUREAU OF RECLAMATION
SOLANO PROJECT
LAKE BERRYESSA RECREATION RESORTS

PLEASURE COVE RESORT TOPOGRAPHY

SACRAMENTO, CA	SHEET 4 OF	413-208-1433



Topography by PHOTOGRAMMETRY and SURVEYS SECTION, FIELD OPERATIONS BRANCH,
DIVISION OF DESIGN and CONSTRUCTION, MID-PACIFIC REGION
compiled from photography BR-BRA-11, flown 9-20-91

☒ APPROXIMATE BUILDING LOCATION BASED UPON 2002 FIELD OBSERVATION.

100 0 100 200 300
SCALE OF FEET

CONTOUR INTERVAL 5 FEET

NOTE: TRAILER NUMBERS ADDED ON 2-11-93

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BUREAU OF RECLAMATION
SOLANO PROJECT LAKE BERRYESSA RECREATION RESORTS MARKLEY COVE TOPOGRAPHY

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APPENDIX D – COST ESTIMATE SPREADSHEETS

Table D-1
Cost Matrix Summary

Improvement	CONCESSION AREA								Total
	Misc. Costs	Putah Creek	Rancho Monticello	Berryessa Marina	Spanish Flat	Steele Park	Pleasure Cove	Markley Cove	
Roads/Parking Lots	*	*	*	*	*	*	*	*	
	*	121,450	412,950	141,200	123,750	167,550	163,700	112,500	1,243,100
Electrical Systems	*	*	*	*	*	*	*	*	
Electrical Utilities	*	37,500	19,000	31,000	24,500	42,000	19,000	21,000	194,000
Potable Water	*	*	*	*	*	*	*	*	
Treatment Facility Upgrades	*	89,000	34,000	220,000	N/A	N/A	45,000	64,000	452,000
Storage Tanks	*	30,000	72,500	22,500	175,000	N/A	22,000	86,500	408,500
Demolition of Existing Facilities	*	2,500	2,500	5,000	10,000	N/A	2,500	2,500	25,000
Waste Water	*	*	*	*	*	*	*	*	
Pond Upgrades	*	307,000	928,000	142,500	387,500	N/A	692,000	127,500	2,584,500
Lift Stations	*	296,500	728,000	281,000	326,500	310,000	287,000	325,000	2,554,000
Demolition of Existing Facilities	*	30,000	65,000	50,000	30,000	40,000	50,000	30,000	295,000
Dock Facilities	*	*	*	*	*	*	*	*	
Remove Nonretainable docks	*	114,600	95,850	133,200	94,200	67,020	68,580	52,200	625,650
New floating docks	*	N/A	N/A	1,018,280	764,280	535,780	N/A	418,360	2,736,700
Electrical Utilities	*	N/A	N/A	15,500	5,000	N/A	N/A	15,000	35,500
Fire Protection	*	N/A	N/A	9,600	7,200	4,800	N/A	3,600	25,200
Waste Pumpout System	*	N/A	N/A	N/A	N/A	N/A	N/A	60,000	60,000
Remove Fueling Facilities	*	500	N/A	N/A	N/A	N/A	5,500		6,000
New Fueling Facilities	*	N/A	9,000	69,000	22,000	29,000	N/A	35,000	164,000
Boat Launch Ramps	*	*	*	*	*	*	*	*	
Repair surface	*	15,000	15,000	10,000	30,000	5,000	5,000	25,000	105,000
Slope Protection	*	19,000	N/A	7,600	22,800	N/A	N/A	15,200	64,600
New courtesy docks	*	45,600	45,600	73,500	45,600	45,600	22,800	45,600	324,300
Signage		500	500	500	500	500	500	500	3,500
Miscellaneous Costs		*	*	*	*	*	*	*	
Trailer Removal	9,800,000	*	*	*	*	*	*	*	
Shoreline/Retaining Wall Removal	2,100,000	*	*	*	*	*	*	*	
Roadway Removal	3,500,000	*	*	*	*	*	*	*	
Sum Totals	15,400,000	1,109,150	2,427,900	2,230,380	2,068,830	1,247,250	1,383,580	1,439,460	27,306,550
Construction Staging (2.5%)	385,000	27,729	60,698	55,760	51,721	31,181	34,590	35,987	682,664
Subtotal	15,785,000	1,136,879	2,488,598	2,286,140	2,120,551	1,278,431	1,418,170	1,475,447	27,989,214
Contingencies (15%)	2,367,750	170,532	373,290	342,921	318,083	191,765	212,725	221,317	4,198,382
Total	$18,152,750	$1,307,411	$2,861,887	$2,629,060	$2,438,633	$1,470,196	$1,630,895	$1,696,763	$32,187,596

Notes:

1) Totals are year 2002 costs. Prices will be escalated for inflation if construction is to take place after 2009.

Table D-2
Cost Matrix Summary - Marina Facilities
Putah Creek Resort

No.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL
	DOCKS AND RELATED ITEMS				
1	Removal & Disposal of Deteriorated Docks	19,100	SF	$6.00	$114,600
				SUBTOTAL	$114,600
	BOAT LAUNCH RAMPS				
1	Repair Boat Launch Ramp		LS		$15,000
2	Place Rip-Rap slope protection	500	SY	$38.00	$19,000
3	Replace Courtesy Docks	2	EA	$22,800.00	$45,600
4	Launch Ramp Signage		LS		$500
				SUBTOTAL	$80,100
	MARINA FUELING SYSTEM				
1	Demolition		LS		$500
				SUBTOTAL	$500
				SUBTOTAL	$195,200
				CONSTRUCTION STAGING (2.5%)	$4,880
				SUBTOTAL	$200,080
				CONTINGENCIES (15%)	$30,012
				TOTAL PUTAH CREEK	$230,092

Table D-3
Cost Matrix Summary - Marina Facilities
Rancho Monticello Resort

No.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL
	DOCKS AND RELATED ITEMS				
1	Removal & Disposal of Deteriorated Docks	15,975	SF	$6.00	$95,850
				SUBTOTAL	$95,850
	BOAT LAUNCH RAMPS				
1	Repair Boat Launch Ramp		LS		$15,000
2	Replace Courtesy Docks	2	EA	$22,800.00	$45,600
3	Launch Ramp Signage		LS		$500
				SUBTOTAL	$61,100
	MARINA FUELING SYSTEM				
1	Tank Alarm	1	EA	$2,000.00	$2,000
2	Remove/Install Tank		LS		$3,000
3	Tank Foundation		LS		$4,000
				SUBTOTAL	$9,000
				SUBTOTAL	$165,950
				CONSTRUCTION STAGING (2.5%	$4,149
				SUBTOTAL	$170,099
				CONTINGENCIES (15%)	$25,515
				TOTAL RANCHO MONTICELLO	$195,614

Table D-4
Cost Matrix Summary - Marina Facilities
Lake Berryessa Resort

No.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL
	DOCKS AND RELATED ITEMS				
1	Removal & Disposal of Deteriorated Docks	22,200	SF	$6.00	$133,200
2	Floating Dock Replacement (1)	21,100	SF	$38.00	$801,800
3	Misc. Hardware		LS		$80,000
4	Dock Anchoring	8	EA	$5,000.00	$40,000
5	Electrical Utilities Upgrade		LS		$15,500
6	Fire Protection System	8	EA	$1,200.00	$9,600
7	New access docks	960	SF	$38.00	$36,480
8	New Aluminum Gangways (4' width)	8	EA	$5,500.00	$44,000
9	New Security Gates	8	EA	$2,000.00	$16,000
				SUBTOTAL	$1,176,580
	BOAT LAUNCH RAMPS				
1	Repair Boat Launch Ramp		LS		$10,000
2	Place Rip-Rap slope Protection	200	SY	$38.00	$7,600
3	Courtesy Docks	1	EA	$73,500.00	$73,500
4	Launch Ramp Signage		LS		$500
				SUBTOTAL	$91,600
	MARINA FUELING SYSTEM				
1	Demolition		LS		$7,000
2	Tank Alarm	1	EA	$2,000.00	$2,000
3	On-shore Piping	800	LF	$25.00	$20,000
4	Dock Piping	800	LF	$50.00	$40,000
				SUBTOTAL	$69,000

SUBTOTAL	$1,337,180
CONSTRUCTION STAGING	$33,430
SUBTOTAL	$1,370,610
CONTINGENCIES (15%)	$205,591
TOTAL BERRYESSA MARINA	$1,576,201
TOTAL PER BERTH	$4,941

Number of Berths = 319

Notes:

(1) Floating dock costs include polyethylene encapsulated polystyrene floats with prefabricated galv. ste and composite decking

(2) Uncovered docks used for cost estimate

Environmental/permitting costs are not included.

Table D-5
Cost Matrix Summary - Marina Facilities
Spanish Flat Resort

No.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL
	DOCKS AND RELATED ITEMS				
1	Removal & Disposal of Deteriorated Docks	15,700	SF	$6.00	$94,200
2	Floating Dock Replacement (1)	15,840	SF	$38.00	$601,920
3	Misc. Hardware		LS		$60,000
4	Dock Anchoring	6	EA	$5,000.00	$30,000
5	Electrical Utilities Upgrade		LS		$5,000
6	Fire Protection System	6	EA	$1,200.00	$7,200
7	New access docks	720	SF	$38.00	$27,360
8	New Aluminum Gangways (4' width)	6	EA	$5,500.00	$33,000
9	New Security Gates	6	EA	$2,000.00	$12,000
				SUBTOTAL	$870,680
	BOAT LAUNCH RAMPS				
1	Repair Boat Launch Ramp		LS		$30,000
2	Place Rip-Rap slope protection	600	SY	$38.00	$22,800
3	Courtesy Docks	2	EA	$22,800.00	$45,600
4	Launch Ramp Signage		LS		$500
				SUBTOTAL	$98,900
	MARINA FUELING SYSTEM				
1	Demolition		LS		$2,500
2	Tank Alarm	1	EA	$2,000.00	$2,000
3	On-shore Piping	200	LF	$25.00	$5,000
4	Dock Piping	250	LF	$50.00	$12,500
				SUBTOTAL	$22,000

	SUBTOTAL	$991,580
Number of Berths = 244	CONSTRUCTION STAGING	$24,790
	SUBTOTAL	$1,016,370
	CONTINGENCIES (15%)	$152,455
	TOTAL SPANISH FLAT	$1,168,825
	TOTAL PER BERTH	$4,790

Notes:

(1) Floating dock costs include polyethylene encapsulated polystyrene floats with prefabricated galv. ste and composite decking

(2) Uncovered docks used for cost estimate

Environmental/permitting costs are not included.

Table D-6
Cost Matrix Summary - Marina Facilities
Steele Park Resort

No.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL
	DOCKS AND RELATED ITEMS				
1	Removal & Disposal of Deteriorated Docks	11,170	SF	$6.00	$67,020
2	Floating Dock Replacement (1)	10,560	SF	$38.00	$401,280
3	Misc Hardware		LS		$50,000
4	Dock Anchoring	4	EA	$5,000.00	$20,000
5	Dock Decking Repair	1	LS		$25,000
6	Electrical Utilities Upgrade		LS		$0
7	Fire Protection System	4	EA	$1,200.00	$4,800
8	New access docks	250	SF	$38.00	$9,500
9	New Aluminum Gangways (4' width)	4	EA	$5,500.00	$22,000
10	New Security Gates	4	EA	$2,000.00	$8,000
				SUBTOTAL	$607,600
	BOAT LAUNCH RAMPS				
1	Repair Boat Launch Ramp		LS		$5,000
2	Courtesy Docks	2	EA	$22,800.00	$45,600
3	Launch Ramp Signage		LS		$500
				SUBTOTAL	$51,100
	MARINA FUELING SYSTEM				
1	Demolition		LS		$3,000
2	Tank Alarm	1	EA	$2,000.00	$2,000
3	On-shore Piping		LS		$4,000
4	Dock Piping	400	LF	$50.00	$20,000
				SUBTOTAL	$29,000
			SUBTOTAL		$687,700
			CONSTRUCTION STAGING		$17,193
			SUBTOTAL		$704,893
			CONTINGENCIES (15%)		$105,734
			TOTAL STEELE PARK		$810,626

Notes:

(1) Floating dock costs include polyethylene encapsulated polystyrene floats with prefabricated galv. steel and composite decking

(2) Uncovered docks used for cost estimate

Environmental/permitting costs are not included.

Table D-7
Cost Matrix Summary - Marina Facilities
Pleasure Cove Resort

No.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL
	DOCK AND RELATED ITEMS				
1	Removal & Disposal of Deteriorated Docks	11,430	SF	$6.00	$68,580
				SUBTOTAL	$68,580
	BOAT LAUNCH RAMPS				
1	Repair Boat Launch Ramp		LS		$5,000
2	Courtesy Docks	1	EA	$22,800.00	$22,800
3	Launch Ramp Signage		LS		$500
				SUBTOTAL	$28,300
	MARINA FUELING SYSTEM				
1	Demolition		LS		$5,500
				SUBTOTAL	$5,500.00
			SUBTOTAL		$102,380
			CONSTRUCTION STAGING		$2,560
			SUBTOTAL		$104,940
			CONTINGENCIES (15%)		$15,741
			TOTAL PLEASURE COVE		$120,680

Table D-8
Cost Matrix Summary - Marina Facilities
Markley Cove Resort

No.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL
	DOCKS AND RELATED ITEMS				
1	Removal & Disposal of Deteriorated Docks	8,700	SF	$6.00	$52,200
2	Floating Dock Replacement (1)	7,920	SF	$38.00	$300,960
3	Dock Hardware		LS		$40,000
4	Dock Anchoring	3	EA	$5,000.00	$15,000
5	Electrical Utilities Upgrade		LS		$15,000
6	Fire Protection System	3	EA	$1,200.00	$3,600
7	Waste Pumpout System	1	LS		$60,000
8	New access docks	1,050	SF	$38.00	$39,900
9	New Aluminum Gangways (4' width)	3	EA	$5,500.00	$16,500
10	New Security Gates	3	EA	$2,000.00	$6,000
				SUBTOTAL	$549,160
	BOAT LAUNCH RAMP				
1	Repair Boat Launch Ramp		LS		$25,000
2	Place Rip-Rap slope protection	400	SY	$38.00	$15,200
3	Courtesy Docks	2	EA	$22,800.00	$45,600
4	Launch Ramp Signage		LS		$500
				SUBTOTAL	$86,300
	MARINA FUELING SYSTEM				
1	Demolition		LS		$3,500
2	Tank Alarm	1	EA	$2,000.00	$2,000
3	Tank Piping/Pump		LS		$5,500
4	On-shore Piping (buried)	200	LF	$35.00	$7,000
5	Dock Piping	150	LF	$50.00	$7,500
6	Dispenser	1	EA	$9,500.00	$9,500
				SUBTOTAL	$35,000

SUBTOTAL	$670,460
CONSTRUCTION STAGING	$16,762
SUBTOTAL	$687,222
CONTINGENCIES (15%)	$103,083
TOTAL MARKLEY COVE	$790,305
TOTAL PER BERTH	$4,568

Number of Berths = 173

Notes:

(1) Floating dock costs include polyethylene encapsulated polystyrene floats with prefabricated galv. s and composite decking

2) Courtesy dock cost based on 60' long x 10' wide estimate

(2) Uncovered docks used for cost estimate

Environmental/permitting costs are not included.

Table D-9
Cost Estimate for Road Improvements

Cost Estimate for Road Improvements								
Resort	Location	Condition	Recommended Repair	Quantity	Unit	Unit Cost	Total Cost	Comments
Putah Creek Resort	Collector Roads	Pavement Deterioration	Limited Patching + 2.5" Overlay	0.8	miles of road (~20 feet wide)	$78,750	$63,000	
		Lack of Traffic Control	Striping & Signing	0.8	miles of road	$1,000	$800	
	Secondary Roads East of Knoxville Rd.	Pavement Deterioration	Limited Patching + 1.5" Overlay	0.3	miles of road (~20 feet wide)	$51,250	$15,375	
		Pavement Deterioration	Limited Patching + 1.5" Overlay	0.7	miles of road (~12 feet wide)	$30,750	$21,525	
		Sharp Curves	Regrade	1	each	$1,000	$1,000	
		Dead End Road w/o Turnaround	Construct "T"	3	each	$2,000	$6,000	
		Lack of Traffic Control	Signing	1	miles of road	$1,000	$1,000	
	Secondary Roads West of Knoxville Rd.	Pavement Deterioration	Limited Patching + 1" Overlay	0.5	miles of road (~12 feet wide)	$22,500	$11,250	
		Sharp Curves	Regrade	1	each	$1,000	$1,000	
		Lack of Traffic Control	Signing	0.5	miles of road	$1,000	$500	
	Total Estimate						$121,450	

Table D-10
Cost Estimate for Road Improvements

Cost Estimate for Road Improvements								
Resort	Location	Condition	Recommended Repair	Quantity	Unit	Unit Cost	Total Cost	Comments
Rancho Monticello Resort	Collector Roads	Pavement Deterioration	3" Overlay	1.7	miles of road (~20 feet wide)	$92,500	$157,250	
		Lack of Traffic Control	Striping & Signing	1.7	miles of road	$1,000	$1,700	
		Landslide	New Retaining Wall	1000	square feet of wall face	$25	$25,000	
	Secondary Roads	Pavement Deterioration	2" Overlay	0.5	miles of road (~20 feet wide)	$65,000	$32,500	
		Pavement Deterioration	2" Overlay	4.6	miles of road (~12 feet wide)	$39,000	$179,400	
		Sharp Curves	Regrade	4	each	$1,000	$4,000	
		Dead End Road w/o Turnaround	Construct "T"	4	each	$2,000	$8,000	
		Lack of Traffic Control	Signing	5.1	miles of road	$1,000	$5,100	
	Total Estimate						$412,950	

Table D-11
Cost Estimate for Road Improvements

Cost Estimate for Road Improvements								
Resort	Location	Condition	Recommended Repair	Quantity	Unit	Unit Cost	Total Cost	Comments
Lake Berryessa Marina Resort	Collector Roads	Pavement Deterioration	Limited Patching + 2.5" Overlay	0.9	miles of road (~20 feet wide)	$78,750	$70,875	
		Lack of Traffic Control	Striping & Signing	0.9	miles of road	$1,000	$900	
	Secondary Roads	Pavement Deterioration	Limited Patching + 1.5" Overlay	0.2	miles of road (~20 feet wide)	$51,250	$10,250	
		Pavement Deterioration	Limited Patching + 1.5" Overlay	1.7	miles of road (~12 feet wide)	$30,750	$52,275	
		Sharp Curves	Regrade	1	each	$1,000	$1,000	
		Dead End Road w/o Turnaround	Construct "T"	2	each	$2,000	$4,000	
		Lack of Traffic Control	Signing	1.9	miles of road	$1,000	$1,900	
	Total Estimate						$141,200	

Table D-12
Cost Estimate for Road Improvements

Cost Estimate for Road Improvements								
Resort	Location	Condition	Recommended Repair	Quantity	Unit	Unit Cost	Total Cost	Comments
Spanish Flat Resort	Collector Roads	Pavement Deterioration	3" Overlay	0.4	miles of road (~20 feet wide)	$92,500	$37,000	
		Pavement Deterioration	Limited Patching + 2.0" Overlay	0.5	miles of road (~20 feet wide)	$65,000	$32,500	
		Dead End Road w/o Turnaround	Construct "T"	1	each	$2,000	$2,000	
		Lack of Traffic Control	Striping & Signing	0.9	miles of road	$1,000	$900	
	Secondary Roads	Pavement Deterioration	Limited Patching + 1" Overlay	2.1	miles of road (~12 feet wide)	$22,500	$47,250	
		Sharp Curves	Regrade	2	each	$1,000	$2,000	
		Lack of Traffic Control	Signing	2.1	miles of road	$1,000	$2,100	
	Total Estimate						$123,750	

Table D-13
Cost Estimate for Road Improvements

Cost Estimate for Road Improvements								
Resort	Location	Condition	Recommended Repair	Quantity	Unit	Unit Cost	Total Cost	Comments
Steele Park Resort	Collector Roads	Pavement Deterioration	3" Overlay	0.4	miles of road (~20 feet wide)	$92,500	$37,000	
		Pavement Deterioration	Limited Patching + 2.0" Overlay	0.7	miles of road (~20 feet wide)	$65,000	$45,500	
		Lack of Traffic Control	Striping & Signing	1.1	miles of road	$1,000	$1,100	
	Secondary Roads	Pavement Deterioration	Limited Patching + 1" Overlay	0.5	miles of road (~20 feet wide)	$37,500	$18,750	
		Pavement Deterioration	Limited Patching + 1" Overlay	2.2	miles of road (~12 feet wide)	$22,500	$49,500	
		Dead End Road w/o Turnaround	Construct "T"	6	each	$2,000	$12,000	
		Sharp Curves	Regrade	1	each	$1,000	$1,000	
		Lack of Traffic Control	Signing	2.7	miles of road	$1,000	$2,700	
	Total Estimate						$167,550	

Table D-14
Cost Estimate for Road Improvements

Cost Estimate for Road Improvements								
Resort	Location	Condition	Recommended Repair	Quantity	Unit	Unit Cost	Total Cost	Comments
Pleasure Cove Resort	Collector Roads	Pavement Deterioration	3" Overlay	1.4	miles of road (~20 feet wide)	$92,500	$129,500	
		Dead End Road w/o Turnaround	Construct "T"	1	each	$2,000	$2,000	
		Lack of Traffic Control	Striping & Signing	1.4	miles of road	$1,000	$1,400	
	Secondary Roads	Pavement Deterioration	2" Overlay	0.3	miles of road (~20 feet wide)	$65,000	$19,500	
		Pavement Deterioration	2" Overlay	0.2	miles of road (~12 feet wide)	$39,000	$7,800	
		Dead End Road w/o Turnaround	Construct "T"	1	each	$2,000	$2,000	
		Sharp Curves	Regrade	1	each	$1,000	$1,000	Survey and traffic plan required, additional curves may require modification
		Lack of Traffic Control	Signing	0.5	miles of road	$1,000	$500	
	Total Estimate						$163,700	

Table D-15
Cost Estimate for Road Improvements

Cost Estimate for Road Improvements								
Resort	Location	Condition	Recommended Repair	Quantity	Unit	Unit Cost	Total Cost	Comments
Markley Cove Resort	Collector Roads	Pavement Deterioration	New pavement, 3" AC over 3" AB	0.7	miles of road (~20 feet wide)	$116,000	$81,200	0.2 miles of roadway to be abandonded
		Dead End Road w/o Turnaround	Construct "T"	1	each	$2,000	$2,000	
		Sharp Curves	Regrade	2	each	$1,000	$2,000	
		Lack of Traffic Control	Striping & Signing	0.7	miles of road	$1,000	$700	
	Secondary Roads	Pavement Deterioration	New pavement, 2" AC over 2" AB	0.3	miles of road (~20 feet wide)	$81,000	$24,300	0.1 miles of roadway to be abandonded
		Dead End Road w/o Turnaround	Construct "T"	1	each	$2,000	$2,000	
		Lack of Traffic Control	Signing	0.3	miles of road	$1,000	$300	
	Total Estimate						$112,500	

Table D-16
Cost Matrix Summary - Electrical Systems

Improvement	CONCESSION AREA							Total
	Putah Creek	Rancho Monticello	Berryessa Marina	Spanish Flat	Steele Park	Pleasure Cove	Markley Cove	
ELECTRICAL UTILITIES	37,500	19,000	31,000	24,500	42,000	19,000	21,000	194,000
Sum Totals	37,500	19,000	31,000	24,500	42,000	19,000	21,000	194,000
Construction Staging (5%)	1,875	950	1,550	1,225	2,100	950	1,050	9,700
Subtotal	39,375	19,950	32,550	25,725	44,100	19,950	22,050	203,700
Contingencies (15%)	5,906	2,993	4,883	3,859	6,615	2,993	3,308	30,555
Total	$45,281	$22,943	$37,433	$29,584	$50,715	$22,943	$25,358	$234,255

Notes:

* Costs currently being prepared

1) Totals are year 2002 costs. Prices will be escalated for inflation if construction is to take place after 2009.

Table D-17
Electrical Services Cost Summary
Putah Creek

FACILITY #	FACILITY	UTILITY	COST TO UPGRADE	NOTE
PUCR1	FRONT GATE KIOSK	PG&E	$ 500.00	1
PUCR2	GROCERY STORE	PG&E	$ 7,500.00	
PUCR3	VIDEO ARCADE	PG&E	$ 1,000.00	
PUCR4	FUEL TANK	FED FROM PUCR2	$ 1,500.00	2
PUCR5	MOTEL	PG&E	$ 1,000.00	
PUCR6	MANAGEMENT OFFICE	PG&E	$ 4,500.00	
PUCR7	TRAILER 153	FED FROM PUCR2	$ 1,000.00	
PUCR8	TRAILER 154	FED FROM PUCR5	$ 1,000.00	3
PUCR9	TRAILER 155	FED FROM PUCR5	$ 1,000.00	
PUCR10	TRAILER 23	PG&E	$ 1,500.00	
PUCR11	TRAILER 39	PG&E	$ 1,500.00	
PUCR12	MAINT. BUILDING & RESTROOMS	FED FROM PUCR6	$ 2,500.00	
PUCR13	LAUNDRY & RESTROOMS	FED FROM PUCR5	$ 6,000.00	4
PUCR14	CAMPGROUND KIOSK	PG&E	$ 1,500.00	5
PUCR15	TRAILER 156A	PG&E		6
PUCR16	CAMPGROUND ENTRY RESTROOMS	PG&E	$ 1,500.00	
PUCR17	CAMPGROUND RESTROOMS NORTH	PG&E	$ 1,500.00	
PUCR18	CAMPGROUND CONCESSION	FED FROM PUCR17	$ 500.00	7
PUCR19	PUMP HOUSE	PG&E		
PUCR20	MAINT. BUILDING	PG&E		
PUCR21	WATER TREATMENT	PG&E		
PUCR22	GAZEBO	FED FROM PUCR5	$ 2,000.00	
			$ 37,500.00	

NOTES

1 OVERHEAD SERVICE NOT TO CODE (USES ROMEX AND INCORRECTLY SUPPORTED)
2 HAZARDOUS AREA WIRING AT TANK NOT TO CODE (SEAL OFFS MISSING)
3 CODE VIOLATION (30 AMP - SERVICE UNDERSIZED)
4 CODE VIOLATION (OVERHEAD SERVICE HAS INADEQUATE CLEARANCE FROM MOTEL)
5 CODE VIOLATION (SERVICE CABLES UNPROTECTED-NOT IN CONDUIT)
6 TRAILER REMOVED FROM SITE
7 CODE VIOLATION (OVERHEAD FEED USING ROMEX)

Table D-18
Electrical Services Cost Summary
Rancho Monticello

FACILITY #	FACILITY	UTILITY	COST TO UPGRADE	NOTE
RAMO 1	FRONT ENTRANCE KIOSK	FED FROM RAMO 2	$ -	
RAMO 2	MAIN OFFICE	PG&E	$ -	
RAMO 3	STORE & RESTAURANT	PG&E	$ -	
RAMO 4	STORAGE UNIT BEHIND STORE	FED FROM RAMO 3	$ -	
RAMO 5	FREEZER	FED FROM RAMO 3	$ -	
RAMO6	BOAT RENTAL & MAINTAINANCE	PG&E	$ -	
RAMO 7	DAY USE RESTROOMS	PG&E	$ -	
RAMO 8	BOAT MARINA GAS DOCK	FED FROM RAMO 3	$ -	1
RAMO 9	BOAT GARAGE STORAGE UNITS	PG&E	$ 4,000.00	
RAMO 10	SEWAGE TREATMENT	PG&E	$ -	
RAMO 11	CAMPGROUND A - RESTROOM	PG&E	$ 1,500.00	
RAMO 12	LAKESHORE CABINS	FED FROM RAMO 11	$ 6,000.00	
RAMO 13	LAKESHORE CABINS	FED FROM RAMO 11	$ 5,000.00	
RAMO 14	RV CAMPGROUND RESTROOM	PG&E	$ 2,500.00	
RAMO 15	SMALL PUMP HOUSE	PG&E		
			$ 19,000.00	

NOTES

1 SHORE POWER UMBILICAL HAS CODE VIOLATIONS (SPLICES AND SUPPORTS)

Table D-19
Electrical Services Cost Summary
Lake Berryessa Resort

FACILITY #	FACILITY	UTILITY	COST TO UPGRADE	NOTE
LABE 1	ENTRANCE KIOSK	RESORT OVHD FEED	$ 1,500.00	1
LABE 2	SNACKBAR /STORE /OFFICE	PG&E	$ 15,000.00	2
LABE 3	STORAGE SHEDS	FED FROM LABE 2	$ 1,000.00	
LABE 4	ICE HOUSE	FED FROM LABE 2	$ 1,500.00	
LABE 5	MAINTENANCE & FUEL GARAGE	FED FROM LABE 2	$ 2,000.00	3
LABE 6	BOAT DOCK OFFICE	FED FROM LABE 2	$ -	
LABE 7	CABIN AREA RESTROOMS/LAUNDRY	FED FROM LABE 2	$ 2,000.00	
LABE 8	DRY-SITE AREA RESTROOMS	PG&E	$ 2,000.00	
LABE 9	MANAGERS RESIDENCE	PG&E	$ -	
LABE 10	TRAILER AREA LAUNDRY	RESORT OVHD FEED	$ 2,000.00	3
LABE 11	CAMPGROUND RESTROOM	PG&E	$ 2,000.00	
LABE 12	HOUSEBOAT / JET SKI RENTAL	FED FROM SHORE PNL	$ 2,000.00	4
			$ 31,000.00	

NOTES

1 OVERHEAD SERVICE NOT TO CODE (USES ROMEX WIRE & INCORRECTLY SUPPORTED)
2 THE STORE ELECTRICAL SERVICE EQUIPMENT ALSO DISTRIBUTES POWER TO THE TRAILERS, GAS DOCK,RESTROOMS AND MAINTENANCE BUILDINGS
3 OVERHEAD SERVICE IS NOT TO CODE (SUPPORTS, TERMINATIONS)
4 THE "BEACH HOUSE" SHACK AT THE END OF THE DOCK IS FED BY A LENGTH OF ROMEX CABLE DRAPED THRU THE WATER. THIS HAZARDOUS CONDITION. REQUIRES IMMEDIATE REPAIR

Table D-20
Electrical Services Cost Summary
Spanish Flat Resort

FACILITY #	FACILITY	UTILITY	COST TO UPGRADE	NOTE
SPFL 1	KIOSK	FED FROM SPFL 2	$ -	
SPFL 2	OFFICE	PG&E	$ -	
SPFL 3	OFFICE SHED	FED FROM SPFL 2	$ -	
SPFL 4	MAINTENANCE SHOP	PG&E	$ 2,500.00	1
SPFL 5	BOAT MARINA	FED FROM SPFL 4	$ 3,500.00	
SPFL 6	STORE	PG&E	$ 5,000.00	
SPFL 7	MANAGERS RESIDENCE	PG&E	$ -	
SPFL 8	REST ROOMS & SHOWERS	PG&E	$ 1,500.00	
SPFL 9	SMALL PUMP HOUSE	PG&E	$ 500.00	
SPFL 10	TRAILER # 160	PG&E	$ 1,000.00	
SPFL 11	TRAILER # 175	PG&E	$ 1,000.00	
SPFL 12	SUNRISE RESTROOMS	PG&E	$ 1,500.00	
SPFL 13	SUNRISE POINT RESTROOMS	RESORT	$ 1,500.00	
SPFL 14	TRAILER AREA RESTROOMS	PG&E	$ 1,500.00	
SPFL 15	TRAILER # 68	RESORT	$ 1,000.00	
SPFL 16	TRAILER # 62	RESORT	$ 1,000.00	
SPFL 17	GARAGES	NO ELECTRICAL	$ -	
SPFL 18	SEWAGE TREATMENT	PG&E	$ 3,000.00	2
			$ 24,500.00	

NOTES

1 NUMEROUS CODE VIOLATIONS (ENCLOSURES, SUPPORTS, WIRING)
AT ELECTRICAL BACKBOARD BEHIND MAINTENANCE SHOP

2 NUMEROUS CODE VIOLATIONS (OPEN WIRING)

Table D-21
Electrical Services Cost Summary
Steele Park Resort

FACILITY #	FACILITY	UTILITY	COST TO UPGRADE	NOTE
STPA 2	MAIN GATE TRAILER	PG&E	$ -	
STPA 3	HARBOR COVE RESTAURANT & STORE	PG&E	$ -	
STPA 4	BOAT DOCK MARINA	PG&E	$ -	
STPA 5	FREEZER & STORAGE SHEDS	PG&E	$ 2,000.00	
STPA 7	RV RESTROOMS	FED FROM STPA-4	$ -	
STPA 8	DANNY'S BOAT RENTAL	PG&E	$ -	
STPA 9	BOAT STORAGE SHEDS	NO POWER	$ -	
STPA 10	BOAT STORAGE SHEDS	FED FROM STPA-4	$ 2,000.00	1
STPA 11	BOAT STORAGE SHEDS	FED FROM STPA-10	$ 2,000.00	1
STPA 12	BOAT STORAGE SHEDS	FED FROM STPA-10	$ 1,000.00	1
STPA 13	BOAT STORAGE SHEDS	FED FROM STPA-10	$ 2,000.00	1
STPA 14	BOAT STORAGE SHEDS	FED FROM STPA-10	$ 2,000.00	1
STPA 15	BOAT REPAIR GARAGE	FED FROM STPA-10	$ 7,000.00	2
STPA 16	BOAT STORAGE SHEDS	NO POWER	$ -	
STPA 17	NEW BOAT GARAGES	PG&E	$ -	
STPA 18	NEW BOAT GARAGES	NO POWER		
STPA 19	MISC. USE BUILDING	PG&E	$ -	
STPA 20	TRAILER AREA RESTROOMS	FED FROM STPA 19	$ 2,000.00	
STPA 21	MAIN OFFICE & ICE CREAM SHOP	PG&E	$ -	
STPA 22	RESTAURANT/BAR	FED FROM STPA 21	$ 10,000.00	
STPA 23	DAY USE KIOSK	PG&E	$ 2,000.00	
STPA 24	HANDBALL COURT	PG&E	$ 500.00	
STPA 25	PUMP HOUSE	PG&E	$ 1,500.00	
STPA 26	DAY USE AREA	FED FROM STPA 23	$ 1,500.00	
STPA 27	PROJECTION ROOM	FED FROM STPA 23	$ 1,000.00	
STPA 28	STORAGE BLDG @ BOAT BERTH	PG&E	$ 1,000.00	
STPA 29	SMALL STORAGE BLDG @ TENNIS CT	PG&E	$ 1,500.00	
STPA 30	SWIMMING POOL BUILDING	PG&E	$ 2,000.00	
STPA 31	LAKESHORE RENTAL COTTAGES	PG&E	$ -	
STPA 32	LAKESHORE RENTAL COTTAGES	PG&E	$ -	
STPA 33	LAKESHORE RENTAL COTTAGES	PG&E	$ -	
STPA 34	LAKESHORE RENTAL COTTAGES	PG&E	$ -	
STPA 35	LAKESHORE RENTAL COTTAGES	PG&E	$ -	
STPA 36	LAKESHORE RENTAL COTTAGES	PG&E	$ -	
STPA 37	LAKESHORE RENTAL COTTAGES	PG&E	$ -	
STPA 38	LAKESHORE RENTAL COTTAGES	PG&E	$ -	
STPA 39	LAKESHORE RENTAL COTTAGES	PG&E	$ -	
STPA 41	MOTEL ROOMS 1-12	PG&E	$ -	
STPA 42	MOTEL ROOMS 14-25	PG&E	$ -	
STPA 43	MAID SERVICE KIOSK	FED FROM STPA 37	$ 1,000.00	1
			$ 42,000.00	

NOTES

1 BOAT SHED WIRING IS UNSAFE / HAZARDOUS. MANY SERIOUS CODE VIOLATIONS (SUPPORTS, SPLICES, TERMINATIONS & CLEARANCES)

2 BOAT REPAIR SHOP HAS UNSAFE / HAZARDOUS WIRING. MANY CODE VIOLATIONS (OPEN WIRING, EXPOSED CONDUCTORS)

Table D-22
Electrical Services Cost Summary
Pleasure Cover Resort

FACILITY #	FACILITY	UTILITY	ELECTRIC SERVICE CONDITION	INTERNAL WIRING CONDITION	CODE COMPLIANT?	ADEQUATE FOR PRESENT USE?	ADEQUATE FOR LONG TERM USE?	COST TO UPGRADE	NOTE
PLCO 1-1	MANAGEMENT OFFICE	PG&E	GOOD	GOOD	YES	YES	YES	$ -	
PLCO 1-2	GATE MANAGER TRAILER	PG&E	GOOD	UNKNOWN	YES	YES	YES	$ -	
PLCO 1-3	TRAILER #3	PG&E	FAIR	UNKNOWN	YES	YES	NO	$ 1,000.00	
PLCO 1-4	TRAILER #4	PG&E	GOOD	UNKNOWN	YES	YES	YES	$ -	
PLCO 1-5	STORAGE SHED	NO ELECTRICAL						$ -	
PLCO 1-6	STORAGE SHED	NO ELECTRICAL						$ -	
PLCO 1-7	STORAGE SHED	NO ELECTRICAL						$ -	
PLCO 1-8	SHOWERS	FED FRON PLCO 1-4	FAIR	FAIR	YES	YES	NO	$ 2,000.00	
PLCO 1-9	RESTROOMS	FED FROM PLCO 1-4	POOR	POOR	NO	NO	NO	$ 2,000.00	1
PLCO 1-10	UNFINISHED RESTROOMS	NO ELECTRICAL						$ -	
PLCO 1-11	WATER TREATMENT BUILDING	FED FROM CAMPGROUND	GOOD	UNKNOWN	YES	YES	YES	$ -	
PLCO 1-12	FRONT ENTRANCE KIOSK	PG&E	FAIR	FAIR	YES	YES	NO	$ 1,500.00	
PLCO 2-0	SHED ACROSS FROM OFFICE	FED FROM PLCO 2-6	FAIR	FAIR	YES	YES	NO	$ 500.00	
PLCO 2-1	MANAGERS RESIDENCE	FED FROM PLCO 2-6	GOOD	UNKNOWN	YES	YES	YES	$ -	
PLCO 2-2	TRAILER #2 HILLTOP	FED FROM PLCO 2- 6	FAIR	UNKNOWN	YES	YES	NO	$ 1,000.00	
PLCO 2-4	(N) STORE(WAS BOAT MAINT.)	PG&E	GOOD	GOOD	YES	YES	YES	$ -	
PLCO 2-5	SHOWERS / RESTROOM	FED FROM PLCO 2-6	FAIR	FAIR	YES	YES	NO	$ 1,500.00	
PLCO 2-6	(N) OFFICE (WAS STORE)	PG&E	FAIR	FAIR	YES	YES	NO	$ 4,500.00	
PLCO 2-7	GHETTO RESTROOM/LAUNDRY	PG&E	FAIR	FAIR	YES	YES	NO	$ 2,000.00	
PLCO 2-8	TRAILER #46 HILLTOP	PG&E	GOOD	UNKNOWN	YES	YES	YES	$ -	
PLCO 2-9	TRAILER #4 HILLTOP	PG&E	FAIR	UNKNOWN	YES	YES	NO	$ 1,500.00	
PLCO 2-10	TRAILER #1 HILLTOP	PG&E	FAIR	UNKNOWN	YES	YES	NO	$ 1,500.00	
PLCO 2-12	TRAILER #2 SPRING ROAD	PG&E	GOOD	UNKNOWN	YES	YES	YES	$ -	
								$ 19,000.00	

NOTES

1 MANY CODE VIOLATIONS (OVERHEAD FEEDS USING ROMEX, POOR SUPPORTS AND TERMINATIONS, EXPOSED WIRING)

Table D-23
Electrical Services Cost Summary
Markley Cove Resort

FACILITY #	FACILITY	UTILITY	COST TO UPGRADE	NOTE
MACO 1	MAIN OFFICE / STORE	PG&E	$ 10,000.00	1
MACO 2	OFFICE TRAILER	PG&E	$ 1,000.00	1
MACO 3	MAINTENANCE SHOP	PG&E	$ 2,500.00	1
MACO 4	BOAT MARINA / SHOP	PG&E	$ 2,500.00	2
MACO 5	WATER TREATMENT BLDG	PG&E	$ -	
MACO 6	UNKNOWN (PUMP HOUSE)	PG&E	$ 5,000.00	3
			$ 21,000.00	

NOTES

1 THIS PG&E METER AND SERVICE PANELS BEHIND THE BUILDING ARE IN EXTREMELY POOR CONDITION AND UNSAFE. MANY SERIOUS CODE VIOLATIONS (EXPOSED WIRING, OPEN EQUIPMENT)
THIS SET OF PANELS FEED THE STORE,OFFICE,TRAILER AND MAINTENANCE SHOP. THE STORE ITSELF IS NEW AND IN GOOD CONDITION.

2 THE SHORE POWER UMBILICAL AND ASSOCIATED SERVICE ARE IN EXTREMELY POOR CONDITION AND UNSAFE. MANY CODE VIOLATIONS (CABLE TYPES, SPLICES).

3 THIS PUMP HOUSE HAS VERY UNSAFE WIRING WITH MANY CODE VIOLATIONS
(EXPOSED WIRING, OPEN PANELS)

APPENDIX E – RESPONSE TO COMMENTS

Project No.: C40368601
Date: November 7, 2002

Mr. Stephen Rodgers
U.S. Department of the Interior
Bureau of Reclamation
5520 Knoxville Road
Napa, California 94558

RE: Response to Comments,
Draft Report
Lake Berryessa Facility Condition Assessment Report

Steve,

Kleinfelder has received both written and verbal comments from Reclamation and from David Dornbusch & Associates. Our reponse to comments are provided below. We will revise the draft report to incorporate these comments and issue a final report upon concurrence from you that these comments have been adequately addressed. If you have any further questions, please contact me at 707-429-4070.

Sincerely,
KLEINFELDER, INC.

Randy L. Wheeler
Project Manager

RLW/mlc

RESPONSE TO COMMENTS
DRAFT REPORT
LAKE BERRYESSA FACILITY CONDITION ASSESSMENT REPORT

Dornbusch & Associates Comments received via email (September 20, 2002)

(1) Future Plan: On p. 11, the report said, "The cost information provided represents the future plan for the concession areas..." I assume that "future plan" refers to the USBR's preferred alternative, as your report referenced by the words "desired future plan,"on p. 105, paragraph 3. True?

Response: Correct. Although specific information regarding detailed plans for such things as building placement, concession types, locations, etc, were/are not available at this time, these future plans could alter our planning level cost analysis significantly.

(2) Roads: How was it determined which roads to *demolish and remove* versus the roads to be *repaired and modified*? Does the "demolition and removal of roads" refer only to roads that are not needed for the preferred USBR alternative, and therefore are removed and not replaced? Are some of the roadway geometrics beyond being susceptible to repair and modification, and are therefore removed? Both?

Resonse: We made no recommendations regarding demolition and removal of roads since we have no information on what the final design/use/ etc for each facility will be. We made recommendations for repair/modifications to existing roads to bring them up to code.

(3) Are any of the removed roads (for which costs are estimated under Miscellaneous Costs, Table D-1) replaced with new roads for which costs are estimated separately in the first line entry (Table D-1)? I ask that because on p.105, the report says the roadway conclusions and recommendations (and therefore I presumed the costs) are "for repair/modification necessary…" So, it seemed to me that road improvements involve only repair and modification, and not replacement as well.

Response: Correct. Our cost estimates involved only repair and modification, and not replacement (i.e., demo/remove)

(4) Referring to the Pavement Geometry section (13.4.1, p.105): Do the words "We recommend..." mean the costs of the road and parking lot improvements (Table D-1) were estimated to meet the recommendations? Or, do the recommendations go beyond the repair and modifications for which costs were estimated?

Response: The costs summarized on Table D-1 and shown on tables D-9 through D-15 take into account the recommendations on page 105, with the exception of roadway width. We didn't estimate costs for roadway width (or roadway widening), since we don't know what the final design will be and which roads will be one-way and what roads will be two-way. Tables 2 through 8 show the roadway width and the overall classification of these roads.

(5) Costs not Addressed: I understand that you performed a planning level study, and therefore did not include some cost estimates - such as for asbestos and lead paint abatement. However, having inspected the sites, could your staff offer any comments about the nature and possible magnitude of problems that might become evident in the future and might represent significant costs, *or visa versa*?

For example, might asbestos and lead paint be a costly problem, or do the potential asbestos and lead paint problems go away with the trailers when they're hauled away? Are there some, few, or no underground fuel tanks that might have leaking problems? Are there areas were you suspect contaminants might have been spilled into the ground?

In short, are there any possible conditions that might become expensive problems and deserve special study?

Response: Our building condition assessment was to provide limited inspections of permanent concession structures in an effort to identify and address deteriorated or otherwise unsatisfactory building component and material conditions. Our inspections include opinions specific to useful service life expectancy and identify deferred maintenance items, which are considered above and beyond the standard of normal maintenance and/or repairs over the long term. Due to the range of the age of the buildings at each resorts and the age of the trailors, there is the potential for asbestos/lead based paint to be present in the building materials of these structures. During our building inspection survey, we did not make note of any hazardous materials issues (such as asbestos or lead-based paint issues). If the buildings, trailers, etc are to be demolished, then an asbestos survey will be required. Asbestos/LBP abatement specifications typically are required for the demo contractor so that proper health and safety issues can be addressed. The potential asbestos/LBP issues do not simply go away when the trailers are hauled away. As for potential underground storage tanks, based on the interviews conducted with each resort owner/manager, only the Putah Creek Resort has an underground stroage tank issue (contamination from previous underground storage tanks). However, based on the information supplied by the resort owners/managers, this was the only resort that had underground stroage tank issues.

<u>USBR Verbal Comments:</u>

(1) Provide section headers on each page for each resort.

Response: Kleinfelder can provide this header information on each resort specific page.

(2) Wastewater Table Summary. Expand the summary table for the wastewater systems to include such items as overall condition of wastewater system (poor, fair, good, etc) for each components such as lift stations, ponds, etc.

Response: Kleinfelder will provide an updated summary table for the wastewater systems.

(3) Topographic Maps – the topographic map for Pleasure Cove was not included in Appendix B. The topographic maps do not appear to have legends on them.

Response: The topographic map for Pleasure Cove will be included in the final report. The topographic maps do not have legends due to the original USBR AutoCAD files didn't have legends in the original files.

(4) Task 5 – Preliminary Environmental Survey – Most issues or contents specified in the scope of work were not addressed in this section of the report, or the resport specific sections, such as endangered species, natural hazards, cultural resources, slide potential, etc.

Response: The scope for Task was originally written and scoped to do a preliminary facility environmental assessment, which was intended to assist Reclamation in scoping the full Environmental Assessment (EA) or Environmental Impact Study (EIS) in compliance with NEPA. The execution of Task 5 was significantly delayed by lack of funding and by the time funding became available, the EIS had been awarded to another firm, and the scoping for the EIS already completed. For this reason Task 5 was refocused to address environmental hazards due to past use of hazardous materials. This was an issue that David Dornbusch was vitally interested in and important to the overall costing issue of code compliance for each facility. Task 5 consisted of a site visit, observations of environmental conditions, interviews, and assessment of past practices and the potential for the use of hazardous materials at each facility. These changes were discussed with Bruce Waddlington and fit the project needs to a greater extent. It was felt at the time that the hazardous materials assessment fit the scope. Budget for either assessment is approximately the same consisting of site visits, etc.

(5) Executive Summary – Prepare an executive summary to summarize the overall conditions, costs to bring them up to current standards, and costs to remove structures.

Response: Kleinfelder will prepare an executive summary for the report. The executive summary will be an overview of the facility conditions, relative costs to bring the facilities up to current standards and costs to remove or demolish such structures. Note that our cost estimate specifically excludes costs associated with rehabilitation, upgrades, or demolition of the existing permanent structures that were surveyed as part of the building condition assessment.

(6) Standards related to Spray Fields – Are there any standards, codes or criteria that address the legality of using/operating spray fields.

Response: According to Winzler & Kelley, *"There are no direct codes that specifically deal with the spray fields, or with any other wastewater disposal technology. The common philosophy of the regulators is not to regulate specific technologies, but to specify the requirements that the treatment facility must meet. The user/operator is then free to use any generally accepted technology to meet those requirements. For all entities that dispose of wastewater -- called a "discharger" -- the discharge must be permitted unless it falls into one of several very specific exemptions (which the Lake Berryessa concessionaires do not). Requirements of dischargers are identified in the Code sections (Clean Water Act, Title 33, U.S. Code, Section 1251, California Water Code, Sections 13260-13274, and the Porter-Cologne Water Quality Control Act, Ch. 4, Article 5. INDIVIDUAL DISPOSAL SYSTEMS). As long as the concessionaires are not discharging wastewater (treated or not) from the ponds, they are not a discharger. As soon as they hook up a spray field, they become a discharger. As a part of the permit, the Regional Water Quality Control Board will specify the allowable upper limits of key constituents of the discharge (typically Biological Oxygen Demand [BOD], suspended solids, and coliform). The only way to meet the coliform limits is by disinfecting the effluent".*

USBR Written Comments – September 25, 2002, Bruce Wadlington

(1) General 2: Throughout the report in all the sections on Marine Fuel, it keeps referring to "threaded joints" that need to be *gaged*. I have never seen this term and have no idea what it means. It is not in the glossary.

Response: The definition of "gaged" joints will be included in the glossary. The term "gaging" threaded joints is a method of checking the tolerances in the threads done by the pipe fitter to make sure the joint is tight. In the context of our report, we were referring to the loose joints in the fuel lines to the marina fuel docks which appeared to be poorly fitted.

(2) Page 21, Section 3.4.1: There is a reference to Table 9 but there is no Table 9 in the report.

Response: Table 9 was inadvertantly left out of the report and will be included in the final version. This table summarizes the Napa County Guidelines and AASHTO Guidelines with regards to roadway geometry. Reference to Table 9 will be inserted into page 22, Section 3.4.1, last paragraph.

(3) Page 30, Section 4.4: There is a reference to Table 11, but I believe it should be Table 10 since 11 refers to Rancho Monticello.

Response: The correct reference should be Table 10.

(4) Page 31, Section 4.6: Are the 6 trailer sites we told the concessionaire to eliminate in the areas that Kleinfelder indentified as "properly maintained". Does the $3.5M on page 100 for road demolition refer to ALL roads in the resorts

Response: The $3.5M cost for removal of roads only covers the roads that are located within the trailer park areas.

(5) Page 98, Section 12, Cost Estimates and Table D-1: This is a little confusing. It seems that there are costs mixed together in the TOTAL for both road demolition and for road/parking lot repair.

Response: The costs summarized in Table D-1 and detailed in Tables D-9 through D-15, represent the costs to repair and/or modify the listed roads to meet current codes and standards and to meet the recommendations presented within the text of the report (for each resort). The costs summarized in Tables D-9 through D-15 do not include costs associated with roadway demolition or removal. The costs for roadway removal under "Miscellaneous Costs, Table D-1" reflect the costs associated with the removal of the roadways located within the trailer park areas.

(6) Action Items: In my review of the report, the following items that seem to require some immediacy in regard to Kleinfelder's comments.

Page 28 Spary disposal at Putah Creek
Page 37 Road 8 system, damaged joints in the overflow pipe
Page 48 Spray disposal at lake Berryessa Marina
Page 54 Violation of CFC, Section 5202
Page 59 Spray disposal at Spanish Flat
Page 80 Section 9.3, significant risk of landslides (Pleasure Cove)
Page 87 Waste water at Markley Cove, possible big sewage leak on force main system
Page 89 Closing os some roadsat Markley Cove because of fire hazard
Page 90 Elecrtical code violations at Markley Cove

Response: Kleinfelder is working on a separate cost estimate and scope of work to address the issues of "hazard determination".