SECOND DRAFT

SIZING AND SITING ENVIRONMENTAL STUDY FOR THE PARDEE RESERVOIR ENLARGEMENT PROJECT

VOLUME I

Prepared for:

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This report summarizes the environmental work completed to date by ENTRIX for the Pardee Reservoir Enlargement Project. The environmental work focused on several key resource areas evaluated based upon limited project design and operational information.

Conclusions in this report are preliminary pending additional studies and agency consultation, but provide valuable information for the early planning of the project allowing for project design modification to minimize impacts to key environmental resources. Resource areas investigated in this effort include biological (botanical and wildlife), recreational, and cultural resources. The following summarizes studies conducted to date, by resource topic.

Investigation of botanical resources included documenting in the project area the abundance and distribution of: (1) plant communities, including special plant communities protected by the resource agencies, up to an elevation of 700 feet; and (2) special status plant species, protected by the resource agencies, up to an elevation of 630 feet. Wetland delineation, according to Army Corps of Engineers protocol, would be addressed in the next phase of the study.

Detailed evaluation of potential impacts to wildlife resources within the inundation zone of a new reservoir was deferred at this stage of project planning, with the exception of wintering bald eagles. If the project is pursued further by the District, detailed surveys for special status wildlife species would be performed following agency consultation to assess potential project impacts.

The recreational resources analysis relied on review of existing literature and aerial photographs, interviews with District staff, and site visits by resource specialists. Recreational studies were concentrated on identifying and evaluating impacts to key whitewater resources of the Electra Run. Due to the preliminary and conceptual nature of the project at the time, no information was solicited from recreationists using any of the potentially affected recreational resources.

Cultural resources within the project area, up to an elevation of 700 feet, were identified primarily through a records and literature search. Field surveys below Pardee Dam and within the footprint of proposed project facilities were conducted to identify cultural resources. Overall, approximately 50 percent of the project areas has been surveyed for cultural resources. It is likely that the type of resources found by previous researchers in the

project area reflects the range of resources expected in unsurveyed areas. The cultural resource analysis utilized this information to characterize potential impacts to cultural resources from various project alternatives. Additional field studies to characterize cultural resources in the remainder of the project area would be conducted in the next phase of the project.

Potential impacts and mitigation opportunities associated with these resources were presumed to vary significantly with the elevation of the reservoir (sizing) and the location of the new facilities (siting). For this report, the remaining CEQA/NEPA environmental resource categories were not considered and are less likely to involve significant impacts which cannot be mitigated to less-than-significant levels. The following provides a brief overview of the project concepts evaluated to date and the initial findings of the environmental review process.

INITIAL PROJECT CONCEPT- RAISE PARDEE DAM

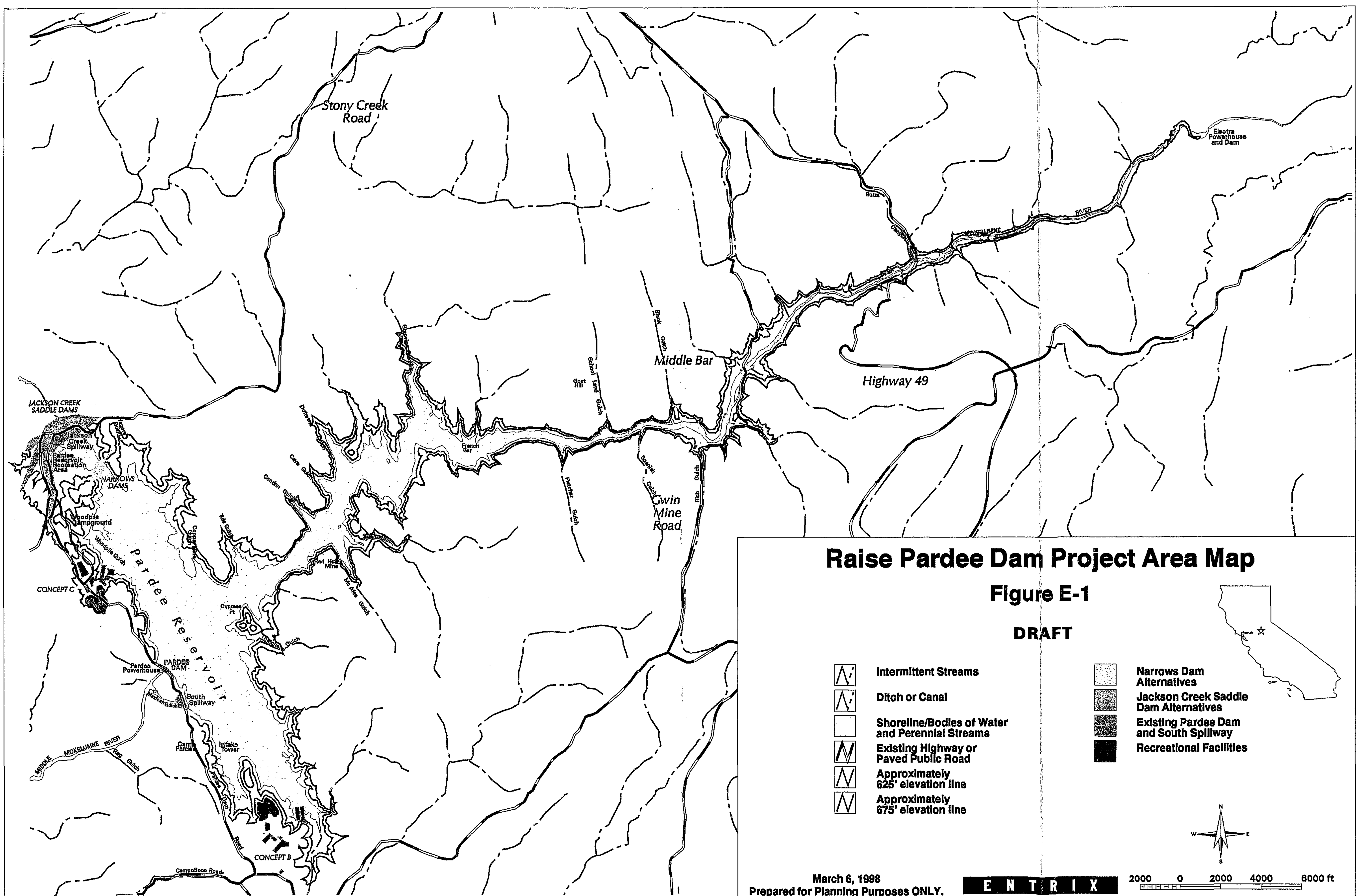
Initially, the District directed ENTRIX and the engineering consultant to evaluate the reservoir storage project concept developed in the updated Water Supply Management Program (WSMP), known as the Raise Pardee Dam Project. The purpose of this effort was to identify major environmental and engineering constraints which could potentially affect the ability of the District to permit the project in a timely or cost-effective manner.

The initial project concept (Figure E-1), described in detail in Section 2, consisted of:

- increasing the height of the existing main dam;
- constructing a new dam at the northern arm of the reservoir; and,
- constructing a new recreation facility.

The WSMP previously determined that increasing the maximum reservoir elevation to approximately 625 feet could meet the District's need for water through the year 2020. However, the current environmental constraints analysis was expanded to evaluate reservoir elevations up to 675 feet in order to identify environmental constraints associated with greater storage requirements potentially resulting from: higher instream flow requirements in the Lower Mokelumne River as part of the on-going FERC proceedings, revisions to the District's projected future water demands, or the inclusion of water needs associated with partnership projects.

The environmental constraints analysis for the Raise Pardee Dam Project addressed two distinct study objectives related to reservoir sizing and facility siting. The first study objective was to identify the incremental increases in environmental impacts associated with



Raise Pardee Dam Project Area Map

Figure E-1

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- Intermittent Streams
- Ditch or Canal
- Shoreline/Bodies of Water and Perennial Streams
- Existing Highway or Paved Public Road
- Approximately 625' elevation line
- Approximately 675' elevation line
- Narrows Dam Alternatives
- Jackson Creek Saddle Dam Alternatives
- Existing Pardee Dam and South Spillway
- Recreational Facilities

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raising the water surface elevation of Pardee Reservoir from 568 feet to 675 feet, referred to as the reservoir sizing analysis. The second study objective was to identify the environmental impacts associated with the construction of new project facilities, referred to as the facility siting analysis. Section 3 describes the sizing and siting analyses in detail.

RESERVOIR SIZING ANALYSIS

The most sensitive issues identified in association with the sizing analysis were potential significant impacts to whitewater resources (Electra Run) and cultural resources (Wildermuth House and a potential Traditional Cultural Property). The project could have unavoidable significant impacts to the Electra Run which would require off-site, like-kind mitigation. Impacts to the Wildermuth House and a potential Traditional Cultural Property appear to be mitigable to less-than-significant, however, these resources are well-known and could provide a source of public controversy. These and other impacts are highlighted by resource area below.

Botanical Resources

- Significant impacts to special plant communities including freshwater marsh, mixed serpentine chaparral, cottonwood riparian forest, valley oak riparian forest, white alder riparian forest, willow scrub, and valley oak woodland would occur at reservoir elevations from the 568-foot elevation to the 675-foot elevation. The reduction of special plant communities ranges from approximately 97 acres to 174 acres at elevations of 625 feet and 675 feet, respectively.
- Impacts to these special plant communities could potentially be mitigated to a less-than-significant level through enhancement of on-site or off-site resources, development of off-site resources or through participation in a mitigation bank.
- No step functions in impact were found between 568 feet and 675 feet elevations within this range of elevations (i.e., the relationship of impacts to increases in reservoir elevation was relatively constant).

Recreational Resources

- At a water surface elevation of 601 feet, approximately 0.43 mile of whitewater resource would be inundated, including Class II moving water and at least one Class II+ rapid. However, because very few boaters run this stretch of river and nearly all of the whitewater characteristics would be preserved, this impact is considered to be less-than-significant.

- At elevations between 601 feet and 613 feet, half of the whitewater resource would be lost, including six of the 12 rapids. On-site mitigation could be implemented to reduce this significant impact to less-than-significant.

- At water levels of 614 feet or above, the impact would change from a reduction of the resource to a loss of the entire resource, an unavoidable significant impact. The loss of this resource would require off-site replacement of a like-kind resource.

- Loss of the Middle Bar Bridge, at elevation 575 feet, would be a significant impact which could be mitigated to a less-than-significant level by construction of a fishing pier.

Cultural Resources

- A total of 34 historic properties were identified, of which 20 could be considered for eligibility by the State Office of Historic Preservation.

- The majority of the potentially eligible properties (17 of 20) are located between elevations of 568 feet and 610 feet.

- The most sensitive resources from a public relations perspective are the Wildermuth House, located at elevation 625 feet, and a potential Traditional Cultural Property located at a higher elevation.

- Potential significant impacts to cultural resources could be mitigated to a less-than-significant level through data recovery, research, excavation, and negotiations with Native American groups.

FACILITY SITING ANALYSIS

The environmental constraints analysis for the facility siting included the evaluation of two dam sites alternatives on the northern arm of the resource reservoir and two recreational facility site alternatives. Relatively few significant impacts were identified in this preliminary environmental assessment for biological, recreation and cultural resources, and all significant impacts appear to be mitigable to less-than-significant levels. The preferred alternatives were determined based upon additional assumptions regarding water quality and aesthetics, as follows.

Dam Sites

Four configurations were considered at both the Jackson Creek Saddle Dam and Narrows Dam for a total of eight alternatives (Figure E-1). The preferred site was determined to be at the existing Jackson Creek Spillway, primarily due to potential water quality concerns resulting from the Narrows site. The Narrows Dam Alternative would create a separate body of water between the Narrows Dam and the existing Jackson Creek Spillway. Due to its separation from Pardee Reservoir, the water quality in this isolated water body could deteriorate, limiting its use for recreation. In addition, extensive reservoir drawdowns associated with the construction of the Narrows Dam Alternative could also potentially affect water quality downstream in the lower Mokelumne River, resulting in potential impacts to biological resources.

New Recreational Facility

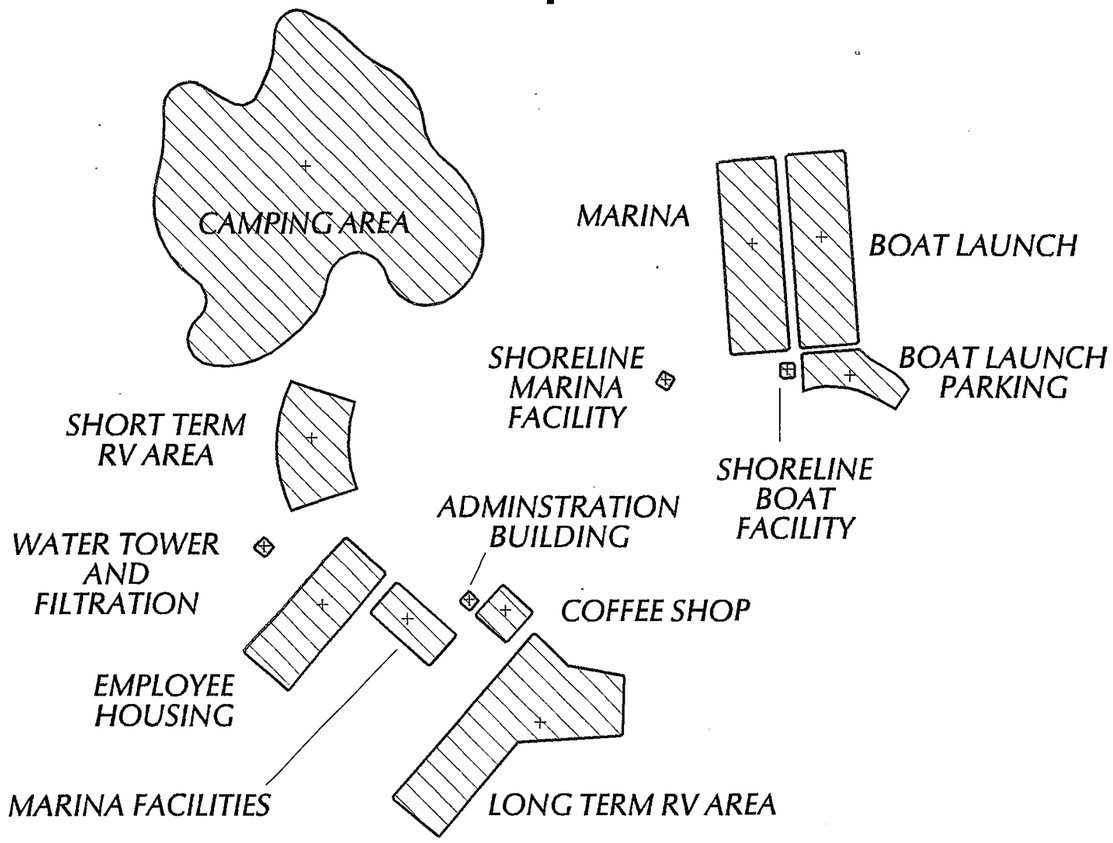
The proposed project would result in the inundation of the existing recreational facility. Two alternative concepts were considered in this evaluation to replace the existing facility: Concept B, the Southern Recreational Facility, and Concept C, the Northern Recreational Facility (Figure E-1 and Figure E-2). Concept B, the southern recreation facility, is the preferred concept based primarily on aesthetics, including the sense of seclusion in this area, the site's distance from the main access road, and the lack of visual contact with dam structures. This site also offers the opportunity for interpretive programs at the Wildermuth House and adjacent unique natural resource areas, as well as proximity to the proposed Coast-to-Crest Trail.

PREFERRED PROJECT CONCEPT- DOWNSTREAM DAM

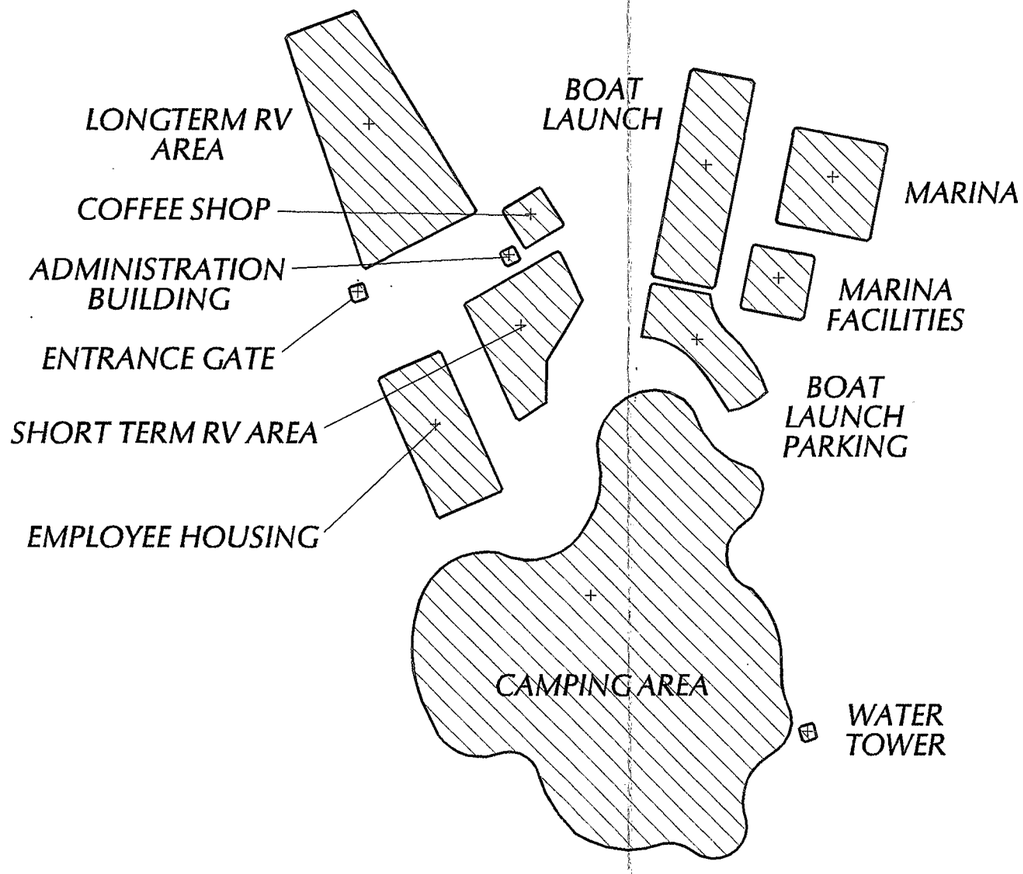
Due to the environmental and engineering concerns associated with the initial project, the project team investigated the feasibility of an alternative project concept. This effort resulted in the identification of a new design concept, the Downstream Dam Alternative, in which a new Main Dam, spillway, and saddle dams located about one mile downstream would be constructed and would impound a larger reservoir. The Downstream Dam Alternative (Figure E-3) is described in detail in Section 4, and consists of:

- construction of a new Main Dam, spillway, and powerhouse in the Mokelumne River gorge approximately one mile downstream of the existing Pardee Dam;
- construction of two small saddle dams on the northern edge of the Mokelumne River gorge near the proposed dam site.

Proposed Southern Recreational Facility
Concept B



Proposed Northern Recreational Facility
Concept C



Pardee Reservoir
Proposed Recreation Concepts
B and C
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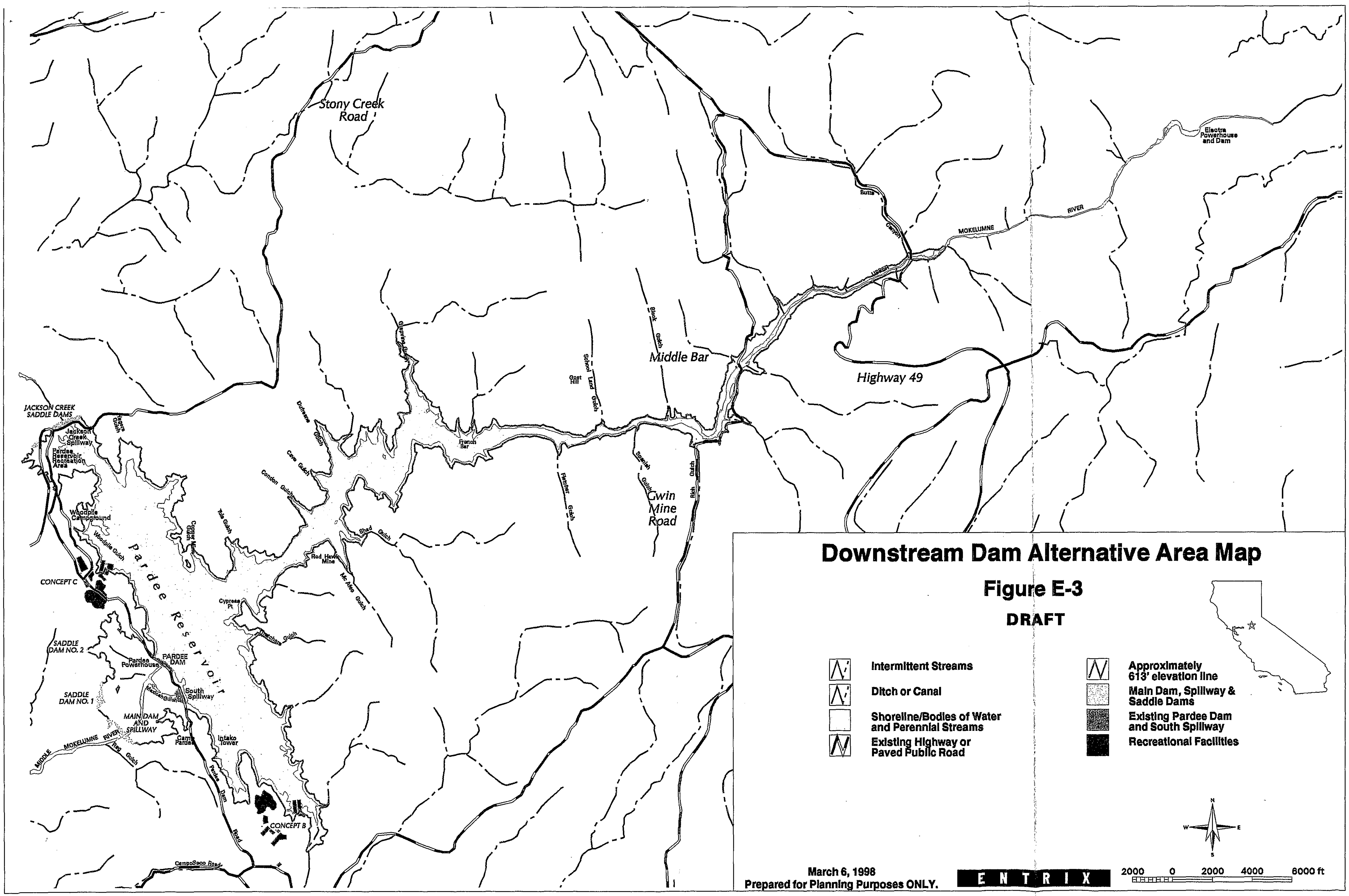

Downstream Dam Alternative Area Map

Figure E-3

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- construction of two saddle dams at the northern arm of the reservoir near the existing Jackson Creek Spillway;
- construction of a new recreational facility; and,
- operation of the reservoir water surface elevation at 601 feet or below during the summer to protect the Electra whitewater run and up to 613 feet during the winter for flood control.

Two study objectives were addressed in the environmental impact analysis for the Downstream Dam Alternative (Section 5). The first study objective was to identify environmental impacts associated with the enlargement of Pardee Reservoir from the current elevation of 568 feet up to a maximum elevation of 613 feet (reservoir sizing analysis). The second study objective was to identify the environmental impacts associated with the construction of the proposed project facilities (facility siting analysis). The results of the sizing and siting analyses are described below.

RESERVOIR SIZING ANALYSIS

The key findings of the reservoir sizing analysis are described in detail in Section 5. Relatively few significant impacts were identified, and the significant impacts appear to be mitigable to a less-than-significant level. The following briefly summarizes the findings for botanical, wildlife, recreation and cultural resources.

Botanical Resources

- The reduction of approximately 77 acres of special plant communities including freshwater marsh, mixed serpentine chaparral, cottonwood riparian forest, valley oak riparian forest, white alder riparian forest, willow scrub, and valley oak woodland, would result in a significant impact. Implementation of mitigation measures, such as the enhancement of on-site or off-site resources, or participation in a mitigation bank could reduce this impact to a less-than-significant level.

- Five plant species identified on the CNPS conservation lists were located within the study area including Mariposa cryptantha (*Cryptantha mariposae*), Ewan's larkspur (*Delphium hansenii* spp. *ewanianum*), Bisbee Peak rush-rose (*Helianthemum suffrutesences*), foothill jepsonia (*Jepsonia heteranda*), and Bacigalupi's yampah (*Perideridia bacigalupii*). Due to the widespread distributions of the plants in the study area, and abundance of suitable habitat in surrounding areas, impacts to these plant species are considered to be less-than-significant.

Wildlife Resources

- Special status wildlife surveys were limited to bald eagles. No significant impacts to wintering bald eagles were identified.

Recreational Resources

- An increase in the recreational opportunities (specifically boating and fishing) would be provided by the enlarged reservoir.

- Middle Bar Bridge would be inundated at elevation 575 feet. This significant impact could be mitigated to a less-than-significant level by construction of a replacement pier.

- Protects whitewater resources (Electra Run and Sierra Club Slalom Race) by maintaining summer reservoir water surface elevations at less than or equal to 601 feet.

Cultural Resources

- At the maximum elevation of 613 ft, 20 eligible cultural resources, including the Pardee Dam and Reservoir, Middle Bar Bridge, a number of prehistoric Native American occupational sites, historic mining areas and settlements, would be inundated. Potential mitigation measures such as data recovery, research, excavation and consultation with Native American groups could reduce these potentially significant impacts to a less-than-significant level.

- The Wildermuth House and the potential Traditional Cultural Property would be protected.

FACILITY SITING ANALYSIS

The facility siting analysis included the evaluation of biological, recreational, and cultural resources impacts associated with the construction of a new Main Dam (the Downstream Alternative), two saddle dams near the new Main Dam, two saddle dams (near the Jackson Creek Spillway), and a new recreational facility. Relatively few significant impacts were identified, and all significant impacts could be mitigated to a less-than-significant level. The following briefly summarizes the findings for each resource.

Botanical Resources

- One special status plant population (foothill jepsonia) was located within the new Main Dam site footprint. However, due to the widespread distribution of this

species within the study area, and the abundance of suitable habitat in areas surrounding the project location, impacts to this population are considered less-than-significant.

Wildlife Resources

- Four potential impacts are associated with the Jackson Creek Saddle Dams, including removal and/or significant disturbance of a known great blue heron rookery, removal of a snag (potential habitat for special-status bat species), and reduction of potential red-legged frog and VELB habitat. Of these, only impacts to the heron rookery would be considered significant and would require mitigation.

Recreation Resources

- There are no authorized recreational uses or facilities within the vicinity of the Main Dam, the Pardee Saddle Dams, or the Jackson Creek Saddle Dams, therefore, no recreation impacts would occur.

Cultural Resources

- Construction of the Main Dam would impact portions of two historic ditches. These sites have not been formally evaluated for importance or eligibility, but it is assumed that impacts to these resources would be considered less-than-significant.

- Replacement of the Jackson Creek Spillway would impact three historical properties, two of which are not eligible for NRHP. The existing Jackson Creek Spillway itself is a contributing element of the NRHP-eligible Pardee Reservoir, and impacts to this represent an unavoidable significant impact. Mitigation for the spillway would involve the completion of a finding of effect document. Mitigation would reduce this impact to a less-than-significant level. Impacts to the other historical properties would be considered less-than-significant.

CONCLUSIONS

The information contained in the Sizing and Siting Report, including the project description and initial environmental analysis for the Downstream Dam Alternative, would serve as the framework for the District to initiate the formal CEQA/NEPA process for the Pardee Reservoir Enlargement Project. The formal permitting process would require the evaluation of impacts to other environmental resource areas, as outlined in Section 6, Other Considerations.

In summary, the Downstream Dam Alternative is a viable storage project that would:

- meet the District's need for water,
- reduce environmental impacts,
- protect key resources, and
- reduce obstacles to gaining regulatory approval.