

DESIGN DRAWING NO. 4

HARRY L. ENGLEBRIGHT LAKE
YUBA RIVER, CALIFORNIA

MASTER PLAN

CHAPTER I - INTRODUCTION

1. Project authorization. - Harry L. Englebright Dam and Lake were authorized by the River and Harbor Act of 1935 (49 Stat. 1028) as a unit of the Sacramento River Debris Control Project. Construction of recreation facilities at Englebright Lake and provision of services to the public by concessionaire is in accordance with Section 4 of the Flood Control Act of 1944 (58 Stat. 887) and subsequent amendments.
2. Project purposes. - Englebright Dam was authorized primarily for storage of debris resulting from hydraulic mining operations. Hydraulic mining in California was halted in 1884 by a decree of the United States Circuit Court, because the uncontrolled deposition of hydraulic mining debris was impairing downstream channels for navigation and flood-carrying purposes. Pursuant to regulations adopted by the California Debris Commission, created by Act of Congress in 1893, mining companies engaged in hydraulic mining must make payments to the Federal Government equivalent to the quantity of material excavated for which storage space is available at government-constructed debris restraining reservoirs. Englebright Dam was to provide for resumption of hydraulic mining, but no further mining operation requiring storage of debris at Englebright Lake have been licensed by the California Debris Commission since completion of the dam in 1941. Englebright Lake has, however, made available a head of water useful for generation of hydroelectric power and use of the falling water for power generation is made by the Pacific Gas and Electric Company and the Yuba County Water Agency. Project lands and water are also utilized for water-oriented outdoor recreation.
3. Purpose of master plan. - This Master Plan describes in detail the conservation, enhancement, development, use and management of all project lands, waters, forests and other resources. The plan is written to serve the public interest throughout the life of the project. It identifies all the resources of the project and depicts the relationships of the land and water uses to these resources. Facility development, operation, and management are described and discussed.
4. Prior design memoranda. - Prior pertinent design memoranda include:
 - 2B - "Master Plan for Administration and Public Use Development", approved by OCE 28 July 1958.

2B-C1 - "Recreational Development at Areas 1, 3 and Joe Miller Ravine", approved by OCE 7 February 1964.

3 - (Letter Design Memorandum) "Supplemental Recreation Lands", approved by OCE 8 June 1972.

3A - (Real Estate Design Memorandum) "Supplemental Recreation Lands", approved by OCE 21 May 1973.

Another document pertinent to this Master Plan is the "Environmental Assessment" dated 28 February 1974, available in Sacramento District files.

5. Application of public laws.

a. Public Law 74-409, the River and Harbor Act of 1935 which authorized Englebright Dam as a unit of the Sacramento River Debris Control Project.

b. Public Law 78-534, Flood Control Act of 1944, as amended, which authorized the Corps of Engineers to construct, operate, maintain and lease to others recreation resource developments at lakes, as well as the construction of certain public works on rivers and harbors for flood control, and for other purposes.

c. Public Law 85-624, Fish and Wildlife Coordination Act, approved 12 August 1958, which provided for more effective integration of a fish and wildlife conservation program with Federal water-resource developments, and for other purposes.

d. Public Law 88-29, Outdoor Recreation--Federal-State Programs, approved 28 May 1963, promotes the coordination and development of effective programs relating to outdoor recreation, and for other purposes.

e. Public Law 89-72, Federal Water Projects Recreation Act, approved 9 June 1965. This act established a Federal policy that requires that Federal recreation development include non-Federal participation of 50 percent cost-sharing and assumption of all operation, maintenance and replacement costs for new recreation and fish and wildlife enhancement at Federal reservoirs.

f. Public Law 91-190, National Environmental Policy Act of 1969, approved 1 January 1970. This act established a national policy for environmental quality and requires that an environmental evaluation be made to consider environmental impact of proposed actions and other provisions.

6. Scope of master plan. - This Master Plan supersedes the previous "Master Plan for Administration and Public Use Development, Harry L. Englebright Reservoir", dated January 1958. It is intended to serve as a guide for the further development of public use facilities and protection of scenic,

biological and recreational resources consistent with the authorized purposes of the project and other project uses. This updated Master Plan proposes upgrading of areas presently being used for recreation, for public health and safety, future recreation developments and additional land acquisition. It incorporates recreation developments and acquisition of lands for areas as previously approved in Design Memorandum No. 2B-C1, Letter Design Memorandum No. 3 and Real Estate Design Memorandum No. 3A.

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CHAPTER II - PROJECT DESCRIPTION

7. Location. - Englebright Lake is located on the Yuba River in the foothills of the Sierra Nevada about 18 miles upstream from the City of Marysville, California (plate 1). The Yuba River in the reservoir area forms the boundary between Yuba and Nevada Counties. Access is via a three-mile paved county road (Hooney Flat Road) connecting with State Highway 20 one mile east of Smartville and via a six-mile paved county road (Pleasant Valley Road) connecting with State Highway 20 ten miles west of Grass Valley. The extent of project lands and waters is shown on plate 2.

8. Project data. -

a. Basin hydrologic and climate summary. - The Yuba River basin above Englebright Dam encompasses 1,107.3 square miles. The average annual runoff of the river at this point is about 2,231,000 acre-feet. The minimum flow of record at Smartville, a few miles downstream from Englebright Dam, was about 6 cubic feet per second (c.f.s.) on September 23, 1941; the maximum instantaneous peak flow was about 161,500 c.f.s. on December 23, 1955. Runoff from the Yuba River basin is largely derived from snowmelt, consequently, the major runoff occurs during the late spring and early summer months. The volume of runoff varies greatly with the maximum season of record, 1906-1907, calculated to have been 4,544,000 acre-feet and the minimum, 1923-1924, being 714,000 acre-feet. Under natural conditions, the North Fork Yuba River would contribute about 46 percent of the mean seasonal runoff above the Smartville gauge while the Middle Fork Yuba River would contribute about 16 percent and South Fork Yuba River about 31 percent. Deer Creek and other intermediate drainages contribute the remaining 7 percent.

The climate of the Englebright Lake area is characterized by hot, dry summers and cool, wet winters typical of the western foothills of the Sierra Nevada. The average annual temperature is 60°F with January's mean maximum being 52°F and mean minimum 36°F and July's mean maximum being 95°F and mean minimum 62°F. Temperatures in excess of 110°F can occur during the summer months and below freezing temperatures can occur from November to March. The average annual precipitation is 32.35 inches with most of this occurring from October through May. An average of 0.2 inches of snow falls at the lake annually. The average monthly and seasonal precipitation at the dam appears in the following tabulation:

Average Monthly Precipitation (inches)

Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
.01	.02	.29	1.96	3.17	5.28	6.26	5.94	4.31	2.74	1.39	.48

Seasonal Average = 32.35 inches.

Winds are generally light and variable from the west or south. In the summer a warm, up-canyon wind generally prevails. Strong winds occasionally strike the area particularly during intense winter storms. Such a storm in 1965 badly damaged the concessionaire's marina facilities.

b. Reservoir characteristics. - Englebright Lake, at gross pool (527 feet MSL, USGS datum), is 9 miles long, has a surface area of 815 acres, a shoreline 24 miles long, and contains 70,000 acre-feet of water. Inactive pool is at elevation 430 feet with a surface area of 350 acres, length of 3 miles and a capacity of 20,000 acre-feet. The mean pool during the 1971 through 1974 recreation seasons (May through mid September) was at elevation 521 feet and a surface area of 766 acres. Total project lands equal 3,329 acres of which 1,783 acres are held in fee or are withdrawn public domain and 1,546 acres are in flowage easement.

Feature	Elevation: :(feet MSL):	Area :(acres):	Storage : capacity :(acre- feet)	Length of : shoreline :(miles)	Length of : pool :(miles)
Gross pool	527	815	70,000	24	9.2
Normal recreation pool	521	766	65,250	22	8.8
Minimum operating pool	450	390	25,000	13	6.3
Inactive pool	438	350	20,000	11	5.9

c. Project structures. -

Dam

Type	Concrete arch with overflow spillway
Maximum height	260 feet
Crest length	1,142 feet
Crest elevation	540 feet MSL
Diameter of outlet tunnels	Left abutment - 9 feet Right abutment - 14 feet
Spillway crest elevation:	
Principal	527 feet MSL
Auxiliary	542 feet MSL

Power facilities (privately owned)

Capacity of power plants:

Narrows I	9,350 kw
Narrows II	46,700 kw

9. Reservoir operation. - The reservoir is operated for hydraulic mining debris control and power generation. However, since project completion, there has been practically no upstream hydraulic mining activity, consequently, reservoir storage has been used entirely for power generation and for incidental recreation. The debris which has been deposited is minimal and does not affect the use of the reservoir for other purposes. The Pacific Gas and Electric Company owns Narrows I powerplant and the Yuba County Water Agency owns Narrows II powerplant and both have a contractual right to control reservoir storage and the pool elevation behind the dam between elevation 527 feet MSL (maximum pool) and 450 MSL feet (minimum operating pool), depending upon demand. Historically, power use has resulted in a drawdown of 30 to 40 feet during the latter half of the recreation season, and on several occasions, by as much as 77 feet by October. However, since completion of New Bullards Bar Dam on the North Fork Yuba River in January 1970, recreation season drawdown has averaged 6 feet and has rarely exceeded 15 feet. International Engineering Company, consultants to the Yuba County Water Agency, has stated that the August through October reservoir elevation should fluctuate between elevation 527 feet and 512 feet during normal stream flow years for the first 15 years of operation (until 1985). This projection was also endorsed by the Pacific Gas and Electric Company. Chart 1 presents the end-of-month storage elevations for Englebright Lake between the 1955 and 1974 water years. The area-capacity curve for Englebright Lake is presented on Chart 2. The Yuba County Water Agency is also required, by agreement with the California Department of Fish and Game, to release sufficient water from Englebright (which may pass through the powerhouse) to maintain a flow of at least 70 c.f.s. during a "critical dry year" over Jaguarre Point Dam for the maintenance of fishlife. During "normal water years" flows in the Yuba River at the confluence with the Feather River must be 400 c.f.s. from 1 October to 31 December and 245 c.f.s. from 1 January to 31 March.

10. Visitation. -

a. Existing. - Annual visitation records were started for Englebright Lake in 1955. However, accurate visitation records have been kept only since 1964 when 103,200 visitor days were recorded. Since 1964, visitation has fluctuated considerably with the highest annual visitation recorded in 1965 with 131,970 visitor days. Annual visitation from 1964 through 1974 is shown in the following tabulation (decline in use in 1971 is attributed to New Bullards Bar Lake's first year of operation and in 1974 to greater than normal drawdowns during the recreation season for powerhouse maintenance):

Englebright Lake Annual Visitation

1964-1974

Year	<u>Attendance</u>
1964	103,200
1965	131,970
1966	125,370
1967	108,500
1968	101,220
1969	114,170
1970	117,500
1971	92,340
1972	125,710
1973	115,320
1974	75,850

Combined data from Corps of Engineers recreation use surveys conducted from 1964 through 1968 indicate the pattern of use at Englebright to be as shown in the following tabulation:

Item	: Spring :	: Summer :	: Fall :	: Weighted
% of visitors on weekends	64	52	51	56
Number of persons per vehicle	3.1	3.6	3.0	3.4
% vehicles with boat trailers	20	27	13	24
% fishing	21	13	16	16
% camping on project	2	7	2	5
% picnicking	49	63	40	56
% swimming	20	56	1	38
% waterskiing	19	50	3	34
% pleasure boating	30	27	16	27
% sightseeing	27	10	26	17

Note: Since the same individual often participates in more than one activity, the sum of the percentages exceeds 100.

Boating accounts for more than half of the visitor use at Englebright Lake. Limited vehicular access makes boats imperative for participation in most recreation activities. Nearly 100 houseboat-like fishing barges are permanently moored on the lake. These, together with over 100 cruisers of various sizes, either permanently or seasonally moored on the lake, contribute to a large proportion of the boating use.

b. Projected. - The upper limit of recreational use at the project-- the "Maximum Practical Use" -- depends upon the amount of water surface area available in the boat access recreation areas and the amount of developable land available in the vehicular access areas. Maximum practical use of Englebright Lake is estimated to be 265,000 people which could be attained between the year 1984 and 1990 depending upon the base for making population projections. Greater detail on estimated recreation use is presented in paragraphs 30 and 47. Actual increases from present use levels to the potential total annual use of 265,000 depends also on the amount of future recreation developments which are made available to support this use. Without such developments as are identified in this plan, little increase in present use levels is anticipated, or desirable.

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CHAPTER III - PROJECT STATUS (JULY 1975)

11. Project development and operation chronology. - The Harry L. Englebright Dam and Lake was completed in 1941. Until 1970 the lake generally remained nearly full for at least half the year but was subject to more than 50 feet of drawdown during late summer and early fall of most years. In January 1970, New Bullards Bar Dam was completed which provided additional storage flexibility at Englebright and has resulted in a maximum drawdown of 27 feet of Englebright Lake (except during a powerhouse repair in the fall of 1974 when lake drawdown exceeded 40 feet). There has normally been not more than 10 feet of drawdown during the recreation season. Prior to 1970, the lake spilled between 3 and 8 months of each year. Since the completion of New Bullards Bar, however, the lake has spilled an average of only 10 days per year.

12. Chronology of expenditure for public use and environmental development. -

a. Federal government. - Capital expenditures by the Federal Government for public use development at Englebright Lake have totalled \$353,300. Operation and maintenance expenditures by the Federal Government for public use of Englebright averages about \$60,000 annually.

b. Non-Federal public. - There has been no capital expenditures by non-federal public entities at Englebright Lake.

c. Private recreational investment. - Expenditures by the marina concessionaire have totalled about \$300,000.

CHAPTER IV - RECREATION AND ENVIRONMENTAL

RESOURCES OF THE PROJECT AREA

13. *Geologic.* - Englebright Lake occupies a narrow steep-sided canyon. Only a few small areas with less than 15 percent slope are found around the lake perimeter. There are occasional bluffs several hundred feet high. The geology of the lake is surrounded by metavolcanics of Jurassic-Triassic age which are commonly referred to as greenstone. A band of granitic intrusive rocks, primarily granodiorite, is situated in the middle portion of the lake. The geology of the upper portion of the lake consists of more basic and slightly older intrusive rock. Several small waterfalls cascading down steep ravines are visible from the lake. While none are present within the project boundary, remnants of hydraulic mining of Eocene auriferous gravels, with their steep, exposed cliffs and examples of extreme erosion, are present in the vicinity of Timbuctoo and French Corral.

14. *Archeologic.* - Englebright Lake lies within the geographic territory of the Nisenan people. This Indian group is more commonly known as the Southern Maidu. Historically the Southern Maidu controlled the entire American River drainage plus the Bear and Yuba Rivers. Linguistically the people belonged to the large language family of Penutian speakers who ethnographically held the interior valleys and hills. The Nisenan were hunter-gatherers whose economic subsistence was based on the acorn and augmented by wild game and fish. By necessity, villages in the foothills were placed on flat terraces above streams or on ridge tops separating drainages. There are four recorded sites in close proximity to the project area; however, none lie within the boundaries of the project.

15. *Historic.* - Captain John A. Sutter received a land grant from the Mexican government in 1841 which included the Englebright Lake area. In 1842 the eastern portion of the land grant was sublet to Theodore Cordua and later sold to Michael Nye and William Foster and was subsequently called "Nye's Ranch". Gold was discovered on Deer Creek in 1848 and a great influx of miners descended upon the region. The entire Yuba River under what is now Englebright Lake was scoured for traces of the precious metal, and remains of numerous placer and hardrock mines are still in evidence along its shoreline. Hydraulic mining was introduced to the Yuba River at Timbuctoo in 1854. This process produced tremendously devastated areas and led to court action in 1884 prohibiting the uncontrolled deposition of debris from hydraulic mining. A subsequent attempt to revive hydraulic mining led to the construction of Englebright Dam in 1941. Evidence of the area's mining past - dry-laid rock walls, foundations, an old cemetery and mine tailings - is scattered along the lake shoreline, particularly along the upper arms. The most significant historical feature is the covered bridge at Bridgeport. This bridge, built in 1862 (California Registered Historical Landmark No. 390) is one of the oldest covered spans in the west. It is the longest single span, wooden covered bridge

in the United States. The bridge was in continuous use as the Pleasant Valley Road crossing of the South Fork Yuba River until completion of a short bypass section of road and a new highway bridge in 1972. The covered bridge was repaired and renovated by local people when the new road and bridge was constructed and is maintained as an historical feature of interest.

16. Ecologic. - A detailed "Environmental Assessment" was prepared in 1974 for Englebright Lake and is available in Sacramento District files. The lake is located in the Sierra foothill region of Yuba and Nevada Counties. Situated at approximately 527 feet in elevation, the lake is bordered almost exclusively by intermittent areas of grassland, chaparral, oak woodland and pine, although upper reaches of the reservoir have remnant riparian vegetation.

Since lands surrounding Englebright are generally undeveloped, indigenous wildlife occur throughout the area. Purchase of land in fee and in flowage easement around the lake by the Corps of Engineers has insured the perpetuation of the vegetative and wildlife qualities of the area. Development of public recreation areas at the lake has been limited, and is generally compatible with wildlife usage and maintenance of the natural setting.

Because access to most picnic and camping areas around the lake requires a boat, the impact of recreation on the terrestrial environment has been greatly minimized. Since peak level of recreation use is governed by the number of watercraft that may safely and attractively utilize the 815 acres of the lake's surface, the impact of recreation on the terrestrial environment is significantly less than if extensive land access and land oriented recreational facilities were provided.

a. Vegetation. - Six vegetative cover types occur in the foothill area around Englebright Lake. They are: chaparral, grassland, oak woodland-grass, oak woodland-chaparral, oak woodland-yellow pine, and riparian. Oak woodland-grass and oak woodland-chaparral are the predominant types. These cover types are characterized by such plant species as valley oak (Quercus lobata), interior live oak (Q. wislizenii), coffeeberry (Rhamnus californica), wild oats (Avena sp.), rye grass (Lolium sp.) and chamise (Adenostoma fasciculata). On north-facing slopes, yellow pine (Pinus ponderosa), pacific madrone (Arbutus menziesii) and big leaf maple (Acer macrophyllum) commonly occur.

b. Fish and wildlife. - Prior to completion of New Bullards Bar Dam the fishery at Englebright Lake was affected by frequent and often extensive pool fluctuation which exposed spawning and feeding shoals. The recent situation of more stabilized flow released from New Bullards Bar has probably enhanced the fishery environment in Englebright Lake. Common fish species in Englebright include smallmouth bass (Micropterus

dolomieu), bluegill (Lepomis macrochirus), white catfish (Ictalurus catus), Sacramento western sucker (Catostomus occidentalis), and rainbow trout (Salmo gairdneri).

Excellent wildlife habitat occurs around Englebright. The variety of vegetative cover types and associated plant species provide necessary food, resting and escape cover. Black-tailed deer (Odocoileus hemionus columbianus) populations vary in density from 10 to 30 per square mile. Other game species include black bear (Ursus americanus), California valley quail (Lophortyx californicus), mourning dove (Zenaidura macroura) and brush rabbit (Sylvilagus bachmani). Numerous other non-game mammals, birds and reptiles occupy the study area.

c. Vectors. - Due to fluctuating water levels and water circulation, mosquito problems are of little importance at Englebright. These factors aid in keeping suitable mosquito habitat to a minimum.

17. Environmental and scenic quality. - The Englebright Lake project area is typical of the foothills of the western Sierra Nevada. The area is interspersed with semi-open grass and oak-woodlands. The environmental setting and scenic qualities are described as follows:

a. Topography. - Englebright Lake lies in the narrow steep-sided Yuba River canyon. The gross pool, at a surface elevation of 527 feet, is 9 miles in length with a surface area of 815 acres. It varies in width from 250 to 5,200 feet and the upper portions of the lake branch up to the North and South Forks of the Yuba River.

b. Land use. - The principal land uses in the Englebright Lake area are grazing, recreation and lumbering. The majority of lumbering is done in the higher elevations above Englebright. Land subdivision for second homes and small acreage estates is occurring in several locations near the lake and the numerous areas throughout the foothill region of Yuba and Nevada Counties.

c. Scenic quality. - The rolling hills, steep slopes, and occasional rock outcrops, together with a varied vegetative cover, provide pleasant surroundings for many people. The long, narrow canyon typical of the middle portions of the lake is an enclosed type of landscape. The narrowness of the canyon and the viewer's position at the bottom of the canyon tend to emphasize foreground detail. Rock outcrops, individual trees and lighting effects on sides of the canyon become visually prominent. A look up or down the lake becomes focalized by the canyon walls. Ridges block or partially block the middle and distant views; consequently, the contrast between undisturbed ridge lines and the sky assumes more importance. Changing cloud forms, reflections, and special lighting effects such as back-lighting on ridges, further enhance the view.

The lake splits and opens slightly at the confluence of the North and South Forks of the Yuba River. Views from this enclosed landscape area are directed up these canyons. The absence of roads and structures and the canyon bottom viewing position promote a sense of remoteness seldom found in other Sierra foothill reservoirs.

d. Water quality. - Water in the Englebright Lake-Yuba River region is basically of good quality. Flows entering the Englebright Lake from the North Fork of the Yuba River are regulated by New Bullards Bar Dam upstream. South Fork flows are for the most part unimpeded. Water sources consist primarily of creeks and lakes located in the higher elevations which derive their water from annual snow melt. Some water quality parameters and their values obtained near the mouth of the Yuba River include: total dissolved solids, which range from 39 to 141 mg/l; bicarbonate, 23 to 96 mg/l; and pH, 6.6 to 8.0. Water is diverted for irrigation purposes downstream from Englebright Dam. In the South Fork of the Yuba River, during the summer months when water flow is low, water temperature high, and recreational use great, water quality deteriorates somewhat due to pollution by humans.

18. Recreation. - Recreation use of Englebright Lake and adjacent parcels of federal land is almost exclusively boat oriented. Automobile access points are few which imparts a unique recreation flavor to the reservoir not found at most California reservoirs - virtually complete seclusion from automobiles while enjoying a remote surrounding. Despite limited vehicular access, a full spectrum of water oriented recreation is available at Englebright. Picnicking, camping, swimming, waterskiing, boating, sightseeing and fishing opportunities are available. These activities are expected to be continued and enhanced under the development plan proposed in this Master Plan. Opportunities for historical interpretation and equestrian and hiking trails would be provided. Existing recreation facilities are summarized in the following tabulations:

Facility/Area	Picnic Table	Restroom fixtures			Trash Cans	Launch Lane	Marina	Parking	
		Flush	Vault	Portable				Car	Car-Trailer
Dixon Hill	2			1	x				
Missouri Bar	6			2	x				
Point Defiance	10			6	x				
Boston Bar	2			1	x				
Long Point	2			1	x				
Joe Miller Ravine	-		4	-	x				
Headquarters	16	6		2	x	2	x		32
Shoreside rest	15			19	x	2		48	26

CHAPTER V - FACTORS INFLUENCING AND CONSTRAINING RESOURCE DEVELOPMENT AND MANAGEMENT

19. General. - The development and management of resources at Englebright Lake is primarily influenced by demography, topography, accessibility, distance from population centers, population trends, nearby reservoirs, reservoir operation, environmental quality, and the character of the recreation opportunities. Of these influencing factors, accessibility and topography are the most constraining to the development and management of the project lands and waters. These constraints are not formidable, and in fact, contribute to the unique recreational flavor of the lake. On the other hand, recreation development may be severely constrained by difficulty in obtaining local agreements for cost-sharing and operation and maintenance necessary to qualify for Federal funding. The selection, in March 1975, of Parks Bar as the damsite for the authorized Marysville Lake Project is the severest constraint on extensive recreation development because the lake behind Parks Bar Dam would inundate Englebright Lake. Detailed advance planning studies on this project are currently underway and based upon an optimistic construction schedule, the new dam at the Parks Bar site could be completed by 1987.

20. Demography. - The land surrounding Englebright Lake is sparsely populated. The 1970 census indicates that 3,700 individuals reside within the four enumeration districts abutting the reservoir. Most of the residents are engaged in agriculture, principally beef production. There has recently been an increase in retirement and second-home construction, particularly at Lake Wildwood and in Penn Valley, which may increase the demand upon the lake area because of the leisure time available to this type of resident. Even though the lake area itself is sparsely populated, it is situated between the more densely populated agricultural communities of the Sacramento Valley and the lumbering communities of the Sierra Nevada mountains. Residents of these population centers are drawn to Englebright for the water-oriented recreation offered.

21. Topography and geology. - The lake is confined in a narrow, steep-walled canyon having limited amounts of land available for recreational development. The steep slopes and occasional bluffs do, however, lend a particularly attractive atmosphere to the lake. Precipitous slopes preclude most land-related recreation use particularly in the central and upper portions of the lake. The topography not only limits recreation development and use, but severely impedes access. Road construction to the reservoir would be difficult and costly and is a primary reason for the lack of anything but primitive recreational facilities. The soils in the area are moderately to well drained and should present no problems to effective waste disposal. However, any type of construction activity adjacent to the lake entailing large earth movement is subject to subsequent land instability. This situation is evidenced by the slide and slippage problems at the lower parking lot and the launching ramp at Joe Miller Ravine. Inadequate level land for vehicular parking immediately adjacent to the developed recreation

areas, particularly at Headquarters, results in a hike of some distance down a steep hill to reach the lake. Even with the severe constraints placed on resource development and management by the steep topography, it is that topography which makes the lake particularly attractive to boat-oriented recreation.

22. Accessibility. -

a. Vehicular and boat. - Lack of vehicular access to Englebright Lake could be regarded as either a detriment or a benefit. A 3 mile secondary road from State Highway 20 provides the only direct vehicular access to the reservoir. Vehicle access is possible to both sides of the North Fork arm at Rice's Crossing, but trespass across private land on one-way dirt roads is involved. Pleasant Valley Road which is narrow, winding and in poor repair, crosses project land at Bridgeport, but it does not provide any direct access to the lake. Portions of Pleasant Valley Road have been recently improved: a 4 mile relocation necessitated by construction of Anthony House Reservoir (Lake Wildwood); and the construction of a new bridge and approaches across the South Fork Yuba River at Bridgeport. The Pleasant Valley Road will need to be widened and improved to handle the increased traffic load anticipated to be generated by land acquisition and installation of facilities at Bridgeport as proposed in paragraph 41d. Lack of improvement of this route will place constraints on utilization of the Bridgeport area. The access situation is a disadvantage to recreators not possessing boats, but it in turn, provides more attraction to boat owners because of the implied exclusive nature which requires boat access for enjoyment. No immediate road improvements are scheduled for the lake area.

b. Land ownership. - Accessibility is also constrained by the presence of 1,546 acres of project land which remains in private ownership and over which the Corps of Engineers retains a flowage easement (plate 2). On the lands acquired in easement, the Government has acquired no right to permit public use for recreation. An example of the easement right acquired is quoted as follows:

"A perpetual easement in favor of the United States of America over and through the land herein described for the purpose of creating, operation and maintaining a reservoir for the storage of hydraulic mining debris and all other debris, natural and otherwise, which may come and/or flow therein and thereon from the watershed at and above said land and for the storage of water thereon, with the right, power and privilege of carrying out said purposes and all other uses incident thereto and connected therewith, as the United States of America may deem necessary and required to carry out and exercise said within created permanent easement, together with the right, power and privilege to overflow said land either permanently or intermittently for uses and purposes as desired by said United States of America, together with the right, power and privilege to go upon said land from time to time, as the occasion may require and place thereon and/or remove therefrom

or destroy natural and/or artificial structures and/or obstructions which, in the opinion of the United States of America or its representatives in charge may be necessary and required, together with the right of ingress and egress thereto and therefrom, over and across portions of the realty under search and other realty, as reserved in the Deed dated April 6, 1944, recorded October 11, 1944, in Book 92, Page 251, Official Records, executed by Capital Company, to William C. Cunningham and America A. Cunningham, his wife as Joint Tenants. (Affects Parcel No. 1)."

Acquisition of additional rights in the land to permit public use of the lakeshore and associated resources appears desirable. Some of the easement lands have good potential for development and use as public recreation areas, and public use has been occurring by means of boat access. Other easement lands have potential for hunting and fishing and for improvement and use of fish and wildlife resources. The United States Fish and Wildlife Service has recommended purchase of such additional rights in the lands as are needed to implement these increased public benefits. Nevada County has indicated its intent to participate with the Corps in public recreation developments to assist in implementing the increased public benefits.

Certain land owners whose lands are affected by the easements have indicated their desire to sell and/or develop portions of the easement lands for subdivisions or other developments. Such developments in close proximity to the lake would conflict with the project's natural resources and recreation potential. Ordinarily, the lands that were acquired by easement would be acquired in fee under the Army-Interior Joint Land Acquisition Policy adopted in 1962. It appears desirable to increase the public interest in such lands to bring the Harry L. Englebright Lake project up to this standard.

A portion of the flowage easement lands are owned by the Regents of the University of California. The Corps and the Regents have entered into a lease agreement which permits the Corps to utilize a 100-foot strip of land above gross pool for recreation purposes. The lease allows the Corps to furnish basic recreation facilities and requires the Corps to operate and maintain the facilities. A similar lease agreement is being negotiated in the Point Defiance area. Flowage easement lands also underlie the marina concession at Joe Miller Ravine. The Corps has full control over the marina operation since it is situated on the water surface but cannot collect lease fees because the land is held in flowage easement. This has contributed to confusion in the administration of the marina concession agreement.

23. Area of influence. - Chart 3 indicates the per capita use rates for 1964-1966 for Englebright Lake. These use rates indicate that the primary recreation market area is within the 1 hour travel zone (50 miles) of the lake which includes the counties of Butte, Colusa, Nevada, Placer, Sutter, and Yuba. The 1970 population of this zone was 298,900 people. The State of California Department of Finance, using Series D-150 projections (birth-rate - 2.45, net in-migration - 150,000), projects a 1980 population of

342,200 and a 1990 population of 409,700 people in these counties. Using Series E-0 projections (birthrate = 2.11, net in-migration = 0) the 1980 population would be 334,400 and the 1990 population, 370,300 people.

24. Related recreational and historical areas. - Within a 50 road-mile radius of Englebright Lake are 10 other reservoirs offering public water-oriented recreation. The largest is Lake Oroville with approximately 15,500 surface acres. The others, are New Bullards Bar, Merle Collins, Combie, Rollins, Camp Far West, **Clementine, Spaulding, Thermalito Afterbay, and Thermalito Forebay.** Lake Wildwood and Lake of the Pines are two private lakes associated with recreation subdivisions in the area and provide a limited private recreation resource. Two authorized Federal reservoirs, Marysville and Auburn, will also be located within the 50 mile radius. Other nearby recreation areas, offering somewhat different recreational opportunities, include: the Yuba, Bear, North Fork American and Feather Rivers; Tahoe and Plumas National Forests; Gray Lodge and Spenceville Wildlife Management Areas; the South Yuba Recreation Area (Bureau of Land Management); and the Malakoff Diggins State Historic Park. All of these available recreation areas complement the variety of choices available to residents and visitors in the Englebright area. The authorized Marysville Lake, California project at the Marysville site would be situated immediately downstream from Englebright Lake and would provide substantial competition for use particularly by boaters and waterskiers. Englebright Lake is somewhat unique in its steep forested canyon setting and dependence upon boat access as opposed to the future Marysville Lake (at the Marysville site) setting in more gentle oak-grassland setting with easy road and automobile access. The period during which Englebright Lake would attain its ultimate or maximum practical use would be extended due to use of Marysville Lake if constructed as anticipated by 1987. If, however, Marysville Dam is constructed at the Parks Bar site, Englebright Lake would be inundated by 1987 (see paragraph 33).

25. Reservoir plan of operation. - Since completion of New Bullards Bar Dam in 1970, water surface elevations during the recreation season at Englebright Lake have essentially been stable and within 15 feet of maximum pool. This manner of reservoir operation is expected to continue through 1985 (see paragraph 9). Lake related water and land based recreation opportunities are substantially enhanced by this manner of lake operation when compared to the severe drawdowns of 50 or more feet that were common at Englebright prior to completion of New Bullards Bar.

26. Bridge replacements. - Two bridge replacements affect project management. Rice's Crossing bridge deck was removed during project construction and the bridge has never been replaced. Automobile access to the Yuba County shore is over a long circuitous route of poor quality, private gravel and dirt roads to the previous bridge abutments. Nevada County shore access is of better quality but still involves travel over gravel roads across private lands. While replacing the bridge could assist fire control access and other needs, the lack of the bridge discourages increased public auto travel in this remote portion of the project. There are no plans for replacement of this bridge.

The historic covered bridge across the South Fork of the Yuba River at Bridgeport was replaced in 1972 by a modern highway bridge as part of local improvement of the Pleasant Valley Road. The covered bridge was abandoned as a public thoroughfare but is still open for historic purposes. The covered bridge was refurbished in 1972 with the expenses paid by local contributions. This bridge is a designated historical site on the National Register of Historic Places. It is the longest single span covered bridge in the United States according to a recent reconnaissance cultural survey obtained for the Marysville project. It has been recognized by the American Society of Civil Engineers as a historic engineering site. There are several items of possible historical significance such as dry-laid rock walls, building foundations and mine shafts adjacent to the covered bridge area and further studies should be carried out to determine possible needs for protection and management of these resources located on project lands in relation to the increased public travel made possible by the bridge and road improvements and in relation to increased public use under the plans proposed in this master plan.

27. Water quality. - The water quality of Englebright Lake is good and presents no constraint to management and development of the lake's resources. The low concentration of nutrients contributes to a low production of phytoplankton and zooplankton which, in turn, results in small game fish populations. Deficient waste disposal systems in houseboats probably contributes contaminants to the lake particularly in the moorage areas. However, pump-out facilities are proposed (paragraph 39d and 53) for the marina to control this situation. The intensive recreation use made of the South Fork Yuba River in the vicinity of Bridgeport has the potential to cause some water quality problems particularly in the late summer low flow period. Provision of adequate sanitary facilities as proposed in paragraphs 39, 40 and 41 should reduce the potential for degradation of water quality.

28. Preproject exploitation of resources. - Preproject exploitations of the mineral resources of the project lands is still in evidence. Old mining roads, flumes, foundations and mines occur at scattered localities around the lake, particularly at Bridgeport, Rice's Crossing, and Little Hong Kong. Most of these areas are overgrown with vegetation and present no constraints to development of the recreation resource potential except for some safety hazards near old placer mines. Upstream extraction of mineral resources was the primary purpose for construction of Englebright Dam. The upstream portion of the lake still contains evidence of hydraulic mining with deposits of fine, whitish sand on the shoreline and the lake bottom. There are no upstream placer mining operations in progress, and although there are occasional small vacuum dredge-type gold mining in the streams of the basin none produce sediment in sufficient quantities to constrain resource management.

29. Informal access. - Because of ready automobile access by the public to the Bridgeport area via the Pleasant Valley Road, there is a considerable and increasing amount of public use in the area. Although all the usable lands along the South Fork of the Yuba River in this location

are within the project limits, the Government has only an easement interest and the public has no right to use the lands. Acquisition of additional interest in lands to permit public use and a development and management program as proposed in the master plan are urgently needed to prevent and control the problems now occurring. Piles of household garbage and wrecked automobiles are scattered over the site and present health and safety problems. Several old placer mine pits occur in the area and would require contouring. Water quality may be affected during low flow summer periods by pastureland usage and irrigation and perhaps by individual residential sewage systems in the area.

30. Anticipated attendance. - The anticipated future attendance at Englebright Lake was projected using the per capita use rates for 1964-1968 developed by the Corps of Engineers (chart 3) and using population projections provided by the California Department of Finance (see paragraph 23). Adjustments to the per capita rate were made to coincide with the population projections because they were by county rather than distance from Headquarters. The anticipated visitation curve, through 1990, appears in chart 4. The maximum practical use for Englebright Lake (265,000) is also shown on chart 4 and is further detailed in paragraph 47. Such attendance is predicated on the premise that the authorized Marysville Dam will not be constructed at the Parks Bar site. The participation rates for the lake, by activity, are expected to remain the same as described in paragraph 10 except for camping which would increase from 5 percent with provision of additional facilities. The anticipated participation rates and the expected design day visitation (paragraph 47) are used to estimate facility requirements (paragraph 48) to enable orderly development of the recreation sites. As evidenced by examination of chart 4 the amount of land and water surface available for recreation use and development leaves an unfilled demand in the market area for water-oriented recreation and maximum practical use of the available land and water would be attained shortly after installation of facilities.

31. Application of legislative and administrative requirements for cost-sharing. - Federal policy for allocation of funds to construct new recreation facilities at completed projects such as Englebright, requires participation by a non-Federal public body. The non-Federal agency must provide 50 percent of the first cost and all operation and maintenance. This policy is based on the policy established by Congress in 1965 under the Federal Water Project Recreation Act, Public Law 89-72, which requires this participation for projects authorized by Congress subsequent to that act. Both Nevada and Yuba County were contacted concerning participation in construction and operation and maintenance of new recreation facilities. Yuba County informally declined and Nevada County formally declined to participate in cost-sharing with the Corps in recreation development at Englebright. This lack of cost-sharing limits recreation improvements to upgrading for public health and safety, which will be carried out by the Corps of Engineers with annual operation and maintenance funds appropriations.

32. Environmental and ecological features. - The attractive environment in which the lake is located contributes significantly toward the general enjoyment of the project area. Recreation development, particularly on those sites in the upper portion of the reservoir containing riparian vegetation, is somewhat constrained by a need to exercise particular care to avoid destruction of wildlife habitat. The environmental and ecological features of the Englebright Lake area are described in more detail in the Environmental Assessment.

33. Marysville Lake. - On 2 April 1975, the District Engineer concluded that a dam located at the Parks Bar site would be the more feasible plan. Accordingly, General Design Memorandum - Phase I is based on the Marysville project being constructed with a dam located at the Parks Bar site. The gross pool elevation of this lake would be 560 feet (33 feet above the gross pool of Englebright Lake) necessitating the removal of Englebright Dam and the inundation of much of the existing and potential recreation sites at Englebright Lake. Marysville Lake at the Parks Bar site would fluctuate approximately 25 feet during the recreation season but recreation season drawdowns could be as much as 60 feet below maximum pool elevation. Paragraphs 40 and 41 detail two categories of development-one includes developments prior to completion of Parks Bar Dam (earliest completion date 1987) which can be amortized and justified within that period or which would be useable and continue in operation under the Parks Bar plan; the other category includes developments needed over the long term if Parks Bar Dam is not built.

