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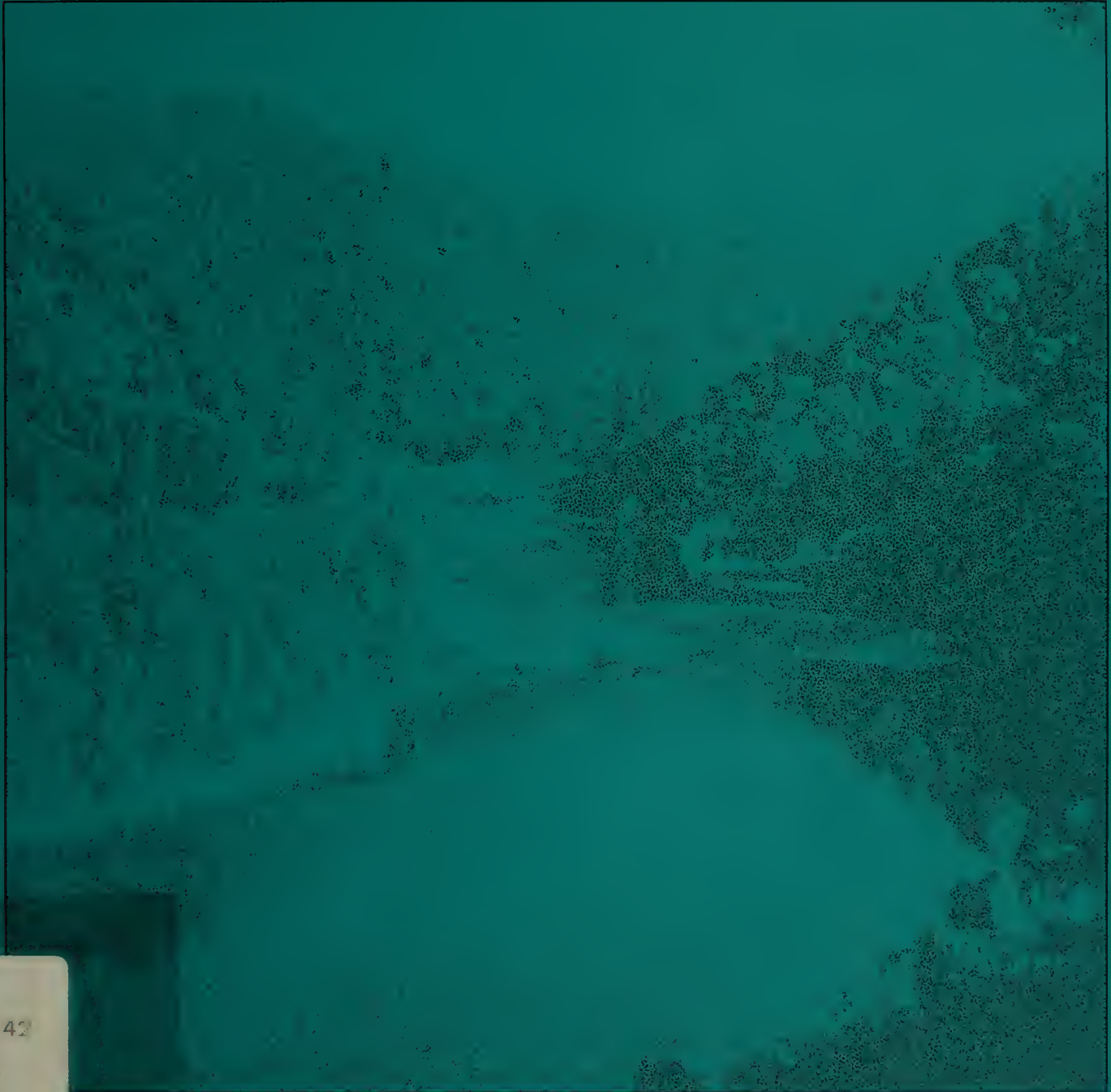
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63 Natoma Street
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May 1990



American River National Recreation Area Feasibility Study



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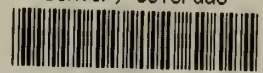
American River National Recreation Area Feasibility Study Report

May 1990

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EXECUTIVE SUMMARY

AMERICAN RIVER NATIONAL RECREATION AREA STUDY

Introduction

In 1989, Congress directed the Bureau of Land Management (BLM) to conduct a study of a possible National Recreation Area (NRA) on the American River in California. The study was to be completed September 30, 1990.

To accomplish this objective, BLM set up a study team in Folsom, California and began contacting as many interested or affected groups, agencies, and individuals as possible. Through these and other sources, data were gathered on the area, its managing agencies, its resources, and its uses. A Steering Committee and Executive Committee were set up to advise the team during the study and during the drafting of this report.

This draft study is now available for public review for a 60-day period. Public hearings will be scheduled and all written and oral comments are welcomed. BLM will use this information to complete the final report for submission to Congress.

NATIONAL RECREATION AREAS

Before summarizing the purpose and findings of the study, it may be helpful to describe what an NRA designation means. According to a 1988 Congressional Research Service (CRS) report, Congress began designating NRAs in 1964, even though they had been administratively established by federal land management agencies since 1936. Today, there are 33 designated NRAs across the country, including three in California; Whiskeytown-Shasta-Trinity NRA, Golden Gate NRA, and Santa Monica Mountains NRA.

NRAs range from areas where the primary focus is high-density recreation use to areas where resource protection is the primary management focus. However, CRS notes, "Each Act designating an NRA is unique, tailored to the characteristics of the area, the general management philosophy of the administering

agency, and the determinations of the Congress as to what other activities (and their extent) may be allowed."

PURPOSE OF THE STUDY

Congressional direction on the purpose of the study was clearly stated in House Report 101-120 that accompanied Public Law 101-121. It stated that BLM was to prepare a study "for the purpose of determining the feasibility and desirability of designating a National Recreation Area (NRA) within the American River watershed in association with a flood control or multi-purpose dam located at or near the site of the Auburn Dam."

The House Report language expanded on that direction by specifying four key points:

- the study "shall assume the potential floodability of the NRA as a result of the construction of a multi-purpose dam or the eventual enlargement of a facility built primarily or exclusively for flood control in the near term;"
- the study "shall include the 42,000 acres designated as the total property taken by the original Auburn Dam on the North Fork of the American River;"
- the study "may include additional lands contiguous to the 42,000 acres, upstream to Euchre Bar within the U.S. Forest Service, and along the South Fork of the American River from Salmon Falls bridge on Folsom Lake to Chili Bar;"
- the study "shall define the best relationship between the NRA and the existing Nimbus/Folsom complex and the Lower American River."

CRITERIA FOR DESIGNATION OF NATIONAL RECREATION AREAS

The study describes the criteria that have been used by agencies to evaluate the suitability of an area for NRA designation. The most frequently used and consistent criteria were developed by the National Park Service in 1978 and are used in this American River study. These are:

- "National Recreation Areas should be spacious areas containing outstanding natural and/or cultural features and providing significant recreation opportunities.

— “National Recreation Areas should be located and designed to achieve comparatively heavy recreation use and should usually be located where they can contribute significantly to the recreation needs of urban populations.

— “National Recreation Areas should provide recreation opportunities significant enough to assure national, as well as regional visitation.

— “The scale of investment, development, and operational responsibility should be sufficiently high to require either direct Federal involvement or substantial Federal participation to assure optimum public benefit.”

STUDY FINDINGS

The results of the study indicate that the American River Study Area is nationally significant and meets the criteria for establishment of an NRA. This conclusion holds irrespective of which water or dam option is selected. The opportunity for an NRA exists for the area in the current state and under any water alternative.

As for feasibility, an American River NRA is possible and reasonable. The area is suitable for NRA designation, and increased tourism and recreational expenditures most likely would occur under any of the water project scenarios currently under consideration. Such a designation also appears to be desirable due to the benefits of providing the coordinated management, protection, and national stature implicit in NRA designation. A decision to create an American River

NRA would dedicate these lands for the recreational use and enjoyment of the American people.

The preferred boundary of such an NRA would include all five study area segments. As a second choice, the boundary would include the North Fork Wild River and Auburn Project segments, most logically the South Fork segment, and, optionally, the Folsom Lake State Recreation Area and American River Parkway Segments. Management of the NRA would most probably be a mix of those federal, state and local agencies currently providing recreation opportunities within the area, with overall NRA coordination through one of the federal agencies within this mix.

PUBLIC INVOLVEMENT

This draft study is now ready for public review and comment. All points of view are welcomed, but those most beneficial to the study process should focus on the adequacy of the document regarding the feasibility and desirability of designating an American River NRA under the various water alternatives as stated by Congress.

A 60-day public review period will include full opportunities for written comments, along with oral testimony to be taken at three public hearings to be held in Auburn, Placerville, and Sacramento. Times, locations, and dates for these hearings will be announced through BLM news releases and can be obtained by calling BLM offices in Folsom (916) 985-4474 or Sacramento (916) 978-4746. Copies of the document can also be obtained by calling the same numbers.






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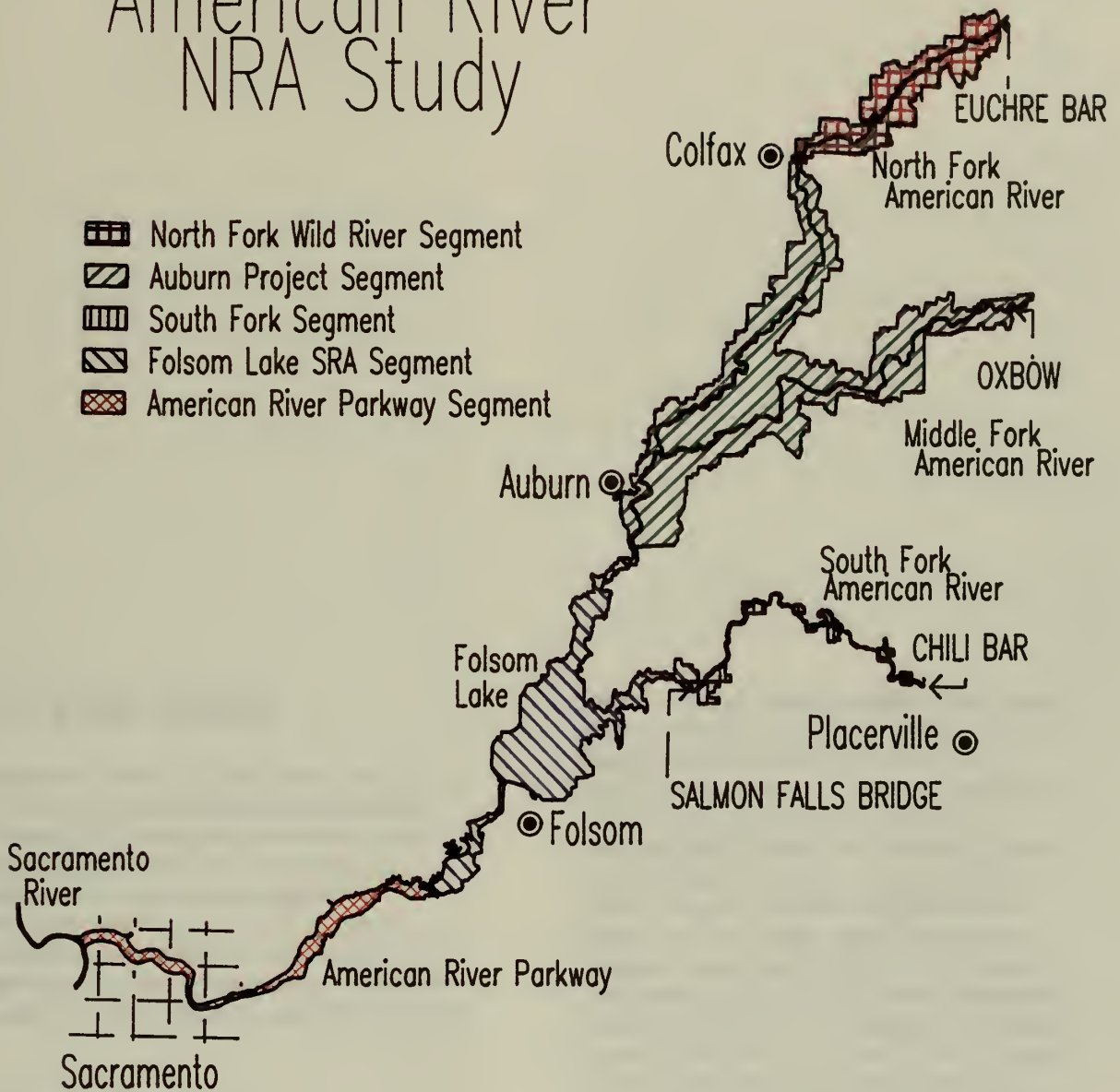
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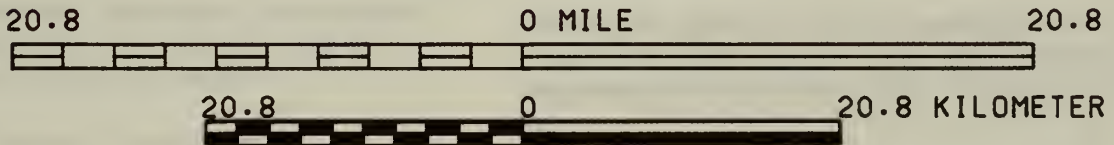
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American River NRA Study

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-  South Fork Segment
-  Folsom Lake SRA Segment
-  American River Parkway Segment



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Chapter One Introduction

Authority for Study

The authority for this study is Public Law 101-121 (October 3, 1989), the appropriations legislation for the Department of the Interior and related agencies for the fiscal year 1990. As part of the budget increase for recreation resources management, \$300,000 was included for a study of a possible National Recreation Area (NRA) on the American River in California. The study was to be a cooperative effort, conducted by the Bureau of Land Management (BLM).

Purpose of Study

The purpose, conditions, and extent of this study are explicitly stated in Public Law 101-121. In the language of the House Report, the study is

“...for the purpose of determining the feasibility and desirability of designating a National Recreation Area (NRA) within the American River watershed in association with a flood control or multi-purpose dam located at or near the site of the Auburn Dam. Such a study shall assume the potential floodability of the NRA as a result

of the construction of a multi-purpose dam or the eventual enlargement of a facility built primarily or exclusively for flood control in the near term; shall include the 42,000 acres designated as the total property to be taken by the original Auburn Dam on the North Fork of the American River; may include additional lands contiguous to the 42,000 acres, upstream to Euchre Bar within the U.S. Forest Service, and along the South Fork of the American River from Salmon Falls bridge on Folsom Lake to Chili Bar; and shall define the best relationship between an NRA and the existing Nimbus/Folsom complex and the Lower American River.”

The rationale behind the study is made clear in the remarks of Congressman Vic Fazio, who stated in the *Congressional Record* (H 3611 July 12, 1989) that it was

“...essential that the study of the national recreation area in the American River watershed be funded in fiscal year 1990 in order for the information to be available to the Sacramento community in the same timeframe as the information generated by two separate studies currently being

conducted by the Bureau of Reclamation and the Army Corps of Engineers on options for expanding flood protection to the Sacramento community. The Bureau of Reclamation study will be completed sometime in the summer of 1990 and the Army Corps of Engineers study is expected to be completed in September 1990. The BLM study will be completed by the end of fiscal 1990 as well.

The results of this study are essential for the Sacramento community to make an informed decision about which of the upstream flood control options proposed by the Bureau and the Army Corps of Engineers is most appropriate. The NRA study will generate information that will show the value of the land and other resources that would potentially be either occasionally inundated by a flood control only/dry dam or largely inundated by a multipurpose dam...."

The study's purpose was further clarified by remarks, also contained in the *Congressional Record* (H 3655 July 12, 1989), made by Congressmen Shumway, Fazio, and Matsui:

Mr. Fazio: "We don't know if an NRA proposal is or is not compatible with the various flood control options, including the multipurpose options. That's what the study is to determine. It is not intended to bias the debate toward or against a multipurpose project or an expandable dry dam option in any way."

Mr. Shumway: "The study, then, is not to look at whether an NRA is preferable in lieu of a multipurpose dam, but rather only looks at the possibility of an NRA in conjunction with a multi-purpose dam or an expandable flood control dam which is inundated in its second stage."

Mr. Matsui: "This study does not envision that an NRA would be designated at cross purposes to any of the flood control options including a multipurpose project. Indeed there are a number of Bureau of Reclamation multipurpose projects which have NRA's designated in association with them, such as Shasta and Lake Berryessa."

The purpose of the current study can best be understood with some reference to the background of the

Auburn Dam Project. In 1965, the Auburn-Folsom South Unit of the Central Valley Project was authorized by Public Law 89-161. The principal facilities authorized by this statute were Auburn Dam and the Folsom South Canal, although other, smaller dams were also included. As described by the authorization, Auburn Dam was to span the American River about three miles below the confluence of the North and Middle Forks. The proposed double curve concrete arch dam was to have a structural height of 700 feet (Bureau of Reclamation, 1972), impounding a maximum of 2.3 million-acre-feet of water and containing a 300 megawatt electrical generating powerplant. In operation, the dam was to provide water, power, and flood control capacity. It also would have helped stabilize the fluctuations of Folsom Reservoir, located immediately downstream, and would have provided the central feature of a new State Recreation Area.

Acquisition of the required project lands began in 1966, access road construction began in 1967, and construction of the dam commenced in 1974. In 1975, while the dam foundation was under construction, the Oroville earthquake increased concerns over the issue of reservoir-induced seismic activity. Because of the proximity of the dam site to a geologic fault, a public review of the proposed dam's safety was conducted, and construction was halted when the foundation was complete in 1978. The Secretary of the Interior decided on December 30, 1980 that a safe dam could be constructed at the proposed Auburn dam site, if the dam was of concrete gravity design rather than the arch style of the original proposal. In the meantime, however, the rules for cost-sharing on this type of project had changed, and no sponsor for the project's non-federal shares was available. As a consequence, work on the Auburn project, even though still authorized, was suspended.

The potential flood control function of the Auburn Dam was abruptly brought into focus in February 1986, when a series of major winter storms caused record-breaking flows down the American and into Folsom Reservoir. The objective release from Folsom Dam of 115,000 cubic feet per second (cfs) was exceeded for about two days, reaching a maximum of 130,000 cfs. As a result of this flood exceeding design capacity, there was damage to the levee system of the lower American River, and many low-lying areas were endangered.

A statistical analysis conducted in 1961 had indicated that Folsom Dam, operated with 400,000 acre feet of storage reserved for flood control and a maximum outflow of 115,000 cfs, was capable of controlling a 120-year flood. A subsequent analysis, conducted after the 1986 flood, indicated that the peak flows of

February could be expected to reoccur once every 70 years. The analysis also indicated that during a 100-year flood event, projected releases from Folsom Dam would reach 234,000 cfs causing massive failure of the downstream levee system. It appeared that additional flood control measures would need to be implemented just to achieve the 100-year-plus level of protection originally thought to be provided by Folsom Dam.

The importance of finding a solution to this problem was underscored by Corps of Engineers' estimates that more than 350,000 people and more than \$16 billion worth of property are located within the newly-delineated 200-year flood plain. Following up on the Corps' work, the Federal Emergency Management Agency (FEMA) in November 1989, adopted new maps designating a greatly enlarged area for a 100-year flood in Sacramento. The new floodplain maps could have had significant economic consequences, as Sacramento's ability to participate in the National Flood Insurance Program would have been severely limited. However, in 1988 special legislation was enacted that prohibited FEMA from using the new floodplain mapping to impose new flood insurance rates and extended the existing rates for up to four years. During this period, the Sacramento Community was to work toward achieving flood protection.

The Corps of Engineers has developed for the community a number of flood control alternatives that would provide, at a minimum, the FEMA-mandated 100-year level of protection. Among the alternatives proposed were various combinations of measures including increasing the flood control storage in Folsom Reservoir, lowering the spillway of Folsom Dam, and increasing the channel capacity of the lower American in order to handle a higher objective release. However, the major entities involved in mapping a strategy for flood protection (City and County of Sacramento, State of California Department of Water Resources, and the local Congressional delegation) decided that a 200-year level of protection was more appropriate for a metropolitan area where flooding would cause catastrophic losses.

Most water experts agree, this 200-year level of protection can only be achieved by providing an additional 500,000 acre-feet of flood control storage space on the American above Folsom Reservoir, with this storage to be provided by construction of a dam near Auburn.

The authorized Auburn Dam Project, discussed earlier, would provide the storage if ever completed, but construction cannot proceed without local sponsors. Consequently, the Corps has outlined alterna-

tives involving smaller-sized dams to be constructed at or near the Auburn dam site that would provide the required flood-control storage. These alternative designs, described in detail later in this chapter, vary in function and in terms of benefits provided beyond flood control. Local agencies are expected to reach a consensus regarding which dam alternative to endorse, and the Corps will prepare a report on the selected plan.

Concern over the effects of a dam on recreational opportunities is one of the major issues being considered during the selection process. The dam's potential effects and the opportunity to provide for preservation or enhancement of recreational resources in the context of a dam project provide the central purpose for this NRA feasibility study.

Scope of Study

Following this introductory chapter, the body of the report will be covered in the remaining five chapters.

Chapter Two will address the eligibility of the defined area, in general, for NRA status, through the application of established NRA criteria.

Chapter Three will identify the dam alternatives, define the study area segments, and address the desirability of the area for NRA status under each alternative, through analysis of: 1) availability of recreational opportunities and presence of recreational attributes; and 2) amount of protection afforded significant cultural and natural features.

Chapter Four will consider issues relating to: 1) current land and recreation management of the study area; 2) the agencies responsible for present management and potentially available for future management; and 3) cooperative management approaches in existing NRAs.

Chapter Five will deal with potential effects of an NRA designation.

Chapter Six will summarize the findings of this study.

Description of Study Area

The study area includes: 1) the 42,000 acres within the authorized Auburn Dam project; 2) contiguous BLM-administered and National Forest lands upstream along the North Fork of the American to Euchre Bar -both those within the 1/2-mile-wide Wild and Scenic River corridor and adjacent lands within

the river viewed; 3) publicly owned lands and lands with public easements along the South Fork of the American from Salmon Falls Bridge to Chili Bar; 4) the Folsom Lake State Recreation Area, including Lake Natoma; and 5) the American River Parkway from Nimbus Dam to Discovery Park.

In total, this area comprises about 81,000 acres, covering approximately 127 square miles. From the area's northeast corner at Euchre Bar to its southwestern corner in downtown Sacramento is 57 air miles. In overall extent, the area measures a maximum of 44 miles north-south by 41 miles east-west. The area includes land within the cities of Sacramento and Folsom in Sacramento County, and Auburn in Placer County. It is within one mile of the communities of Colfax and Foresthill, also in Placer County. In El Dorado County, the area is about two miles from the community of Georgetown and the same distance from the city of Placerville, the county seat. The area lies immediately adjacent to both Interstate Highway 80, a major east-west transcontinental route, and U.S. 50, the other major trans-Sierra Nevada route in the area. Bisecting the area is State Route 49, the principal north-south highway of the Sierra Foothills.

From the western shore of Folsom Lake downstream to its confluence with the Sacramento River at Discovery Park, the American River flows through an area that has been fully developed for residential, commercial, and industrial uses. This area is entirely built-over, and with the exception of the county-administered American River Parkway, it is almost entirely in private ownership and given over to high density use.

East of Folsom Lake, in the lower foothills of the Sierra, the cities of Auburn and Placerville are commercial and industrial centers with a high density of residential use. Other communities in these portions of Placer and El Dorado Counties (Foresthill, Colfax, Georgetown, Lotus, etc.) have limited commercial areas, little industrial use, and a moderate residential density. The rural areas are characterized by low-density residential use, along with the traditional uses of mining (now limited mainly to a few mineral materials) and agriculture (limited by a scarcity of suitable land to some grazing, irrigated pasture, and raising of orchard/vineyard crops). In these lower foothill areas are found the majority of the two counties' populations, most of which are in the category of "rural nonfarm." Publicly-owned land in this area is dominated by the 26,000 acres acquired for the Auburn Dam project, but scattered BLM-administered lands are also present, concentrated along the North Fork and in the vicinity of Iowa Hill.

At the eastern margin of the study area, in the upper foothills, the growing of commercial timber is the principal land use. Residential use is slight, and commercial land use is small. Although some of the timber land is in private ownership, the majority of land is part of the Tahoe and Eldorado National Forests and is administered by the U.S. Forest Service.

Topographically, the study area encompasses terrain ranging from the nearly-flat floor of the Sacramento Valley, at an elevation of less than 100 feet, to the upper foothills of the Sierra Nevada, at an elevation of about 4,000 feet. The Sierra topography is a result of geological upheaval followed by weathering and erosion. Through these processes the American River drainage has been incised into a tilted fault block that slopes gently from east to west. The resulting picture is that of a gently rolling upland dissected by deep, steep-sided, V-shaped canyons.

Major erosion channels are the deeply-incised North, Middle, and South Forks of the American. Between these steep canyons are the rolling to flat-topped ridges of the Foresthill and Georgetown Divides. On the South Fork, there is a limited area of rolling, rather than canyon, topography adjacent to the river in the vicinity of Lotus and Coloma.

The three forks of the American River comprise a major drainage basin with a generally mountainous watershed that extends to the crest of the Sierra Nevada at its eastern limit. Headwaters of the primary streams are located at the extreme eastern limits of the basin at elevations above the 7,000 foot level. This places a good deal of the drainage in the snowshed areas, and close to half the annual runoff is contributed by melting snow. This situation sustains spring runoff well beyond the period of precipitation and into the late spring and early summer. By mid-summer, however, flows drop quickly and remain low until the precipitation-sustained flow begins again in late fall or early winter.

Water flow in the major forks is, to some extent, regulated by a series of reservoirs in the South and Middle Fork drainages. These dams were designed with power generation as their primary function and have limited utility for flood control. Typically, the minor drainage basins in the study area depend directly on precipitation to sustain their flows, with the result that the bulk of the seasonal runoff occurs in winter and early spring, with summer flows being low to non-existent. Water quality of the American River is high, and is suitable for agricultural, industrial, and recreational use, and, with treatment, for domestic use.

The climate of the study area is characterized by generally moderate temperatures with cool, wet winters and hot, dry summers. Weather systems typically move across the area from west to east, and storms moving inland from the Pacific during winter are the primary source of precipitation. There is considerable variance in the amount of total annual precipitation, but most (90 percent) falls from November to April, with nearly half received during a 60-day period in winter. It is rare for there to be any measurable rainfall during the summer months, and there is usually not any significant winter snow below the 2,000 foot elevation. Total annual precipitation is about 30 inches at Folsom Lake, 35 inches at Auburn, 40 inches at Placerville, and 50 inches at Foresthill.

Corresponding to the seasonality of rainfall, humidity is high (more than 65 percent) during winter and spring, and low (less than 50 percent) in summer and fall. Summer high temperatures average in the 90 degree Fahrenheit levels and commonly exceed 100 degrees; average low temperatures are in the 50s and 60s. Winter average highs are in the 50s with lows around freezing. The frost-free season (last to first frost) at Auburn averages 275 days.

Prevailing winds are from the southwest, usually resulting in light and variable flows in the canyons. Although some haze is typically visible in the canyons, air quality is generally high; the local phenomenon of ozone exceeding allowable federal standards is largely attributable to its transport via wind from the populous Sacramento Valley.

Although the study area downstream from Folsom Dam bears little resemblance to its natural state, in the Sierra foothills native vegetation predominates. At lower elevations, the oak woodland community dominates the landscape. It is typified by open stands of oaks, interspersed with grasses and herbaceous growth, with buckeye and laurel found in the moister areas. Heading east through the study area, chaparral is first encountered in the vicinity of Auburn. This association is common on dry, steep slopes with poor, thin soils at elevations of 1,000 feet to 4,000 feet.

It is a fire-oriented community, manifested as a thick growth of evergreen shrubs such as manzanita, chamise, ceanothus, and toyon; digger pine is also commonly associated. Continuing east and ascending in elevation, one finally enters the yellow pine forest. In its purest state, this is a continuous forest dominated by ponderosa pine, incense cedar, Douglas-fir, and sugar pine. This community is most commonly found at 2,000 foot to 4,000 foot elevations and is often intermingled with chaparral. The riparian vegeta-

tion of the stream courses (wild grape, blackberry, willow, alder, cottonwood, sedges, etc.) cross-cuts all these zones.

As might be expected in a well-watered area of moderate temperatures and thick vegetation, wildlife in the study area is abundant. Common to the area are a number of songbirds, resident gamebirds (quail, wild turkeys), migratory birds (mourning doves, bandtailed pigeons), and migratory waterfowl (mallards, mergansers). Large mammals include deer, black bear, and cougar. Small mammal species include rabbits and gray squirrels, with predators represented by coyotes, gray foxes, river otters, bobcats, raccoons, skunks, and weasels.

Warm summer water temperatures in the South Fork have resulted in the bulk of the fishery being comprised of non-sport species (squawfish, sucker, hardhead), though a few sportfish (rainbow and brown trout) may be found in the deeper holes. The principal gamefish of the North and Middle Forks are rainbows, browns, and smallmouth bass, though the usual assemblage of non-game species are also present. Kokanee salmon stocked in Folsom Lake migrate a short distance upstream from the reservoir to spawn, while in the reservoir itself fishermen pursue rainbows, bass, sunfish, and catfish. Similar species are found in Lake Natoma. The Lower American supports an important anadromous fishery including chinook salmon, steelhead trout, striped bass and American shad, and is established as an outstandingly remarkable feature (National Park Service, 1983). Commonly sighted reptiles and amphibians include newts, salamanders, frogs, toads, lizards, and snakes.

The study area is rich in historical remains, reflecting its prominent role in California's gold rush era. However, prehistoric Native American archeological sites are rarely found in the river canyons, and when present, they are usually manifested only as grinding rocks. This could be due simply to lack of Native American habitation, or equally likely, it could be that grinding rocks were the only type of prehistoric site durable enough to withstand the destructive forces of periodic flooding and the ravages of nineteenth century gold mining.

Gold was first discovered in California in 1848 at Coloma, now a state historic park, a location within the study area on the South Fork. Almost immediately a frantic search for the yellow metal was pursued into the adjacent forks of the American. In the four decades following the discovery, all streams in the study area had been thoroughly mined by increasingly efficient techniques. The attractiveness of this area to miners, and the intensity of mining that went on here,

is documented by the fact that, at one time during the gold rush, the Middle Fork of the American had the highest population density in California.

The physical evidence of all this activity is reflected today in the abundance of historical remains throughout the study area. Types of features to be found include those directly related to mining, such as mines, prospects, tailings, dams, ditches, etc., as well as those indirectly related such as the remains of towns, camps, cabins, roads, bridges, etc.

The study area clearly stands out as a relatively unspoiled natural landscape surrounded by the urbanized areas of the Sacramento Valley and the rapidly developing subdivisions of the Sierra foothills. Given this situation, it is not surprising that a number of recreation areas are to be found here.

From its confluence with the Sacramento upstream to Nimbus Dam, the lower American is a federal and state Wild and Scenic River with immediately adjoining lands being operated jointly by the City and County of Sacramento as the American River Parkway. A number of locations along the Parkway are developed as urban parks, and a nationally-renowned bike trail runs its length. Floating the river is a very popular summer pastime. Upstream of Nimbus is Folsom Lake State Recreation Area which includes both Lake Natoma, a small afterbay reservoir with developed facilities especially well-suited for rowing activities, and Folsom Lake, a reservoir with 11,500 acres of surface area formed by the construction of Folsom Dam in 1955. The shore of Folsom Lake is well-supplied with campgrounds, picnic areas, boat ramps, beach facilities, and trails. The reservoir receives heavy, though somewhat seasonal, use.

The Auburn Dam project lands on the North and Middle Forks upstream from Folsom are managed by California Department of Parks and Recreation as Auburn State Recreation Area. Within this unit is a boating facility at Lake Clementine, as well as equestrian trails, picnicking areas, and primitive campsites. Whitewater rafting is a popular seasonal pastime, though overall use of the area is much lighter than in the downstream parks. The South Fork upstream from Folsom Lake is one of the most popular whitewater rafting rivers in the country, and includes Marshall Gold Discovery State Historic Park at Coloma. Total recreation within the study area is estimated in excess of seven million user-days.

Alternatives to be Studied

The authorizing legislation directed this study to "assume ... construction of a multi-purpose dam or the

eventual enlargement of a facility built primarily or exclusively for flood control...." Using the options outlined in the Corps of Engineers' (1989) latest *Information Paper on Alternatives* as a basis, this study evaluates NRA feasibility and desirability under each of the following three options:

1) Flood Control Only Detention Dam.

This would be a 483 foot high flood control detention dam of concrete gravity design, constructed by roller compaction techniques. It would have a straight axis alignment and would be located on the downstream side of the Auburn Dam foundation. The dam would have a flood control capacity of 545,000 acre-feet, but there would be no permanent reservoir pool behind the dam, giving this alternative its common name -the "dry dam." On occasions when winter storms caused a high rate of inflow, the dam would temporarily back up water. It is estimated that, on the average, once every five years a small pool would form behind the dam for one to two days. Less frequently, there would be longer periods of inundation, and in the event of a 200-year flood, the reservoir would fill and remain full for up to 12 days. When full, all river canyon land below approximately the 900 foot elevation contour would be inundated. This occasional flooding of the canyons might have some minor effects on the vegetation, but the natural environment of the canyons upstream of the dam would remain essentially unchanged. Year-round access to, and use of, the canyons would still be feasible. For operation of this dam, 19,000 acres of land would be required (including 5,000 acres to be acquired), resulting in the disposal or transfer of 14,200 acres of unneeded Auburn Project land as surplus.

Instead of being built to the specifications outlined above, this dam could also be built to allow an "expandable" option. By widening the cross-section of the dam and installing penstocks and sluices, this dam would be suitable for future expansion into a configuration similar to the authorized Auburn Dam. Until expanded, environmental effects of this option on the river canyons would be identical to those outlined above. Were the dam to be expanded, the effects would be the same as those for the Auburn Dam, an alternative discussed in Option 3. All lands already acquired for the Auburn Project would be retained (26,100 acres) with additional acquisitions (15,600 acres) being necessary at the time of expansion.

2) Local Benefits Minimum Pool Dam.

This dam would have a location, design, and construction similar to the flood control only dam described above; however, a 130,000 acre-foot year-round minimum pool would be maintained behind the dam. The impoundment would provide an opportunity for a run-of-the-river electrical generating plant at the dam, would provide gravity flow of water into Placer County's Auburn-Ophir tunnel, and would reduce the pump lift for water to the Georgetown area.

Water surface elevation for the permanent pool would be 715 feet, approximately the elevation of Lake Clementine. Total storage capacity of the facility would be 710,000 acre-feet, with the upper 580,000 acre-feet dedicated to flood control. The area above the minimum pool, i.e. the space reserved for flood control, would be subjected to occasional brief inundation under the same circumstances and at the same frequency as for the flood control only alternative. Maximum reservoir pool elevation would be slightly above 900 feet, but the environment in the zone down to the minimum pool level (715 feet) would remain essentially unchanged. Within the 2,000 acre permanent reservoir area, the existing natural environment will be completely lost, a total of 22 miles of American River canyons being affected. Requirements for acquisition, disposal, and retention of lands are the same as for the flood control only dam.

This dam could also be constructed to be "expandable." As was the case with the first alternative, expansion of this dam to its full potential would produce effects identical to those outlined for Auburn Dam, described in Option 3. Land requirements are the same as for the first expandable alternative, described in Option 1.

3) Multi-purpose Authorized Auburn Dam Project.

Under the current authorization, this would be a 653 foot high conventional concrete gravity dam with straight axis alignment. Total storage capacity would be 2.3 million acre-feet, with 620,000 acre-feet of this capacity reserved for flood control. The associated power plant would have a generating capacity of 300 megawatts, and water supplies to Placer and El Dorado counties would be enhanced. Maximum reservoir pool elevation would be about 1,140 feet, although there would be considerable fluctuation below this level. When full, about 10,000 acres

of land would be inundated, covering 48 miles of stream channel in the forks of the American. To enable completion of this project, the 26,100 acres of land already acquired would be retained and additional lands would be added to bring the total to the 42,000 acres originally authorized.

Public Involvement and Concerns

To inform the public about the purpose, goals, and progress of this study, a series of presentations were made to various individuals and organizations. These are listed below:

DATE OF BRIEFING	ORGANIZATION BRIEFED
8/23/89	Tahoe National Forest Management Team
8/30/89	Corps of Engineers Study Management Team
9/01/89	Eldorado National Forest Management Team
10/03/89	Bureau of Reclamation
10/10/89	Auburn Dam Council - Executive
10/11/89	Business Industry Development Committee of Auburn
10/12/89	American River Authority
10/13/89	Auburn Dam Council - Membership
10/25/89	American River Coalition
10/26/89	Corps of Engineers Executive Committee - also present SWIM, SAFCA, City and County Sacramento
10/27/89	Congressman Fazio's Staff
11/02/89	Corps of Engineers Staff
11/02/89	American River Land Trust
11/06/89	Dave Cruz, Corps of Engineers
11/13/89	State Parks - American River District
11/20/89	Tahoe National Forest Management Team
11/22/89	California State University-Sacramento Students - Environmental Field Studies Class
12/05/89	American River Coalition - including representatives of Friends of the River, Sierra Club, California Native Plant Society, Protect American River Canyons, Western River Guides Association, Cal Trout, Audubon Society
12/12/89	Eldorado National Forest Management Team
12/14/89	County of Sacramento
12/15/89	California State University, Sacramento
1/12/90	Goldhounds/Mother Lode Miners
1/30/90	Colfax City Council
1/30/90	Tom Sloan - California Department of Water Resources, Division of Flood Management
2/09/90	Jeff Harris, Administrative Assistant to Congressman Fazio
2/15/90	Congressman Fazio NRA Update
2/28/90	NRA Steering Committee
3/01/90	Bea Cooley - American River Coalition
3/06/90	Jeff Harris, Administrative Assistant to Congressman Fazio
3/07/90	Steve Shiflett, California Water Resources Board
3/07/90	Andy Grow, Aide to Grantland Johnson
3/12/90	Telecon with Mike Fluty, Placer County Board of Supervisors
3/13/90	Telecon with Illa Collins, Sacramento County Board of Supervisors
3/14/90	NRA Executive Committee Meeting
3/19/90	California Department of Parks and Recreation Director and Staff
3/27/90	Placer County Board of Supervisors
4/06/90	NRA Steering Committee Meeting
4/16/90	NRA Executive Committee Meeting

The general public was informed of these same matters by the distribution of press releases and information packages sent to local newspapers, radio, and television stations in the three county (Sacramento/Placer/El Dorado) area. A newsletter on the progress of the study distributed to all individuals and organizations indicating a desire to be on the mailing list, also helped to keep the public informed.

Two advisory committees were also formed. The Executive Committee, whose function is to review and comment upon the report, consists of:

Ed Hastey, State Director
Bureau of Land Management

Lawrence Hancock, Regional Director
Bureau of Reclamation

COL LeCuyer, District Engineer
U.S. Army Corps of Engineers

Stanley T. Albright, Western Regional Director
National Park Service

Cathy Kennard, Deputy Secretary of Operations
State of California, Resources Agency

Paul Barker, Regional Forester
U.S. Forest Service

Grantland Johnson, Chairman
Board of Supervisors, Sacramento County

George Beland, Chairman
Board of Supervisors, Placer County

Robert Dorr, Chairman
Board of Supervisors, El Dorado County

Congressman Robert Matsui
3rd Congressional District

Congressman Vic Fazio
4th Congressional District

Congressman Norman Shumway
14th Congressional District

Senator John Garamendi
5th Senatorial District

Senator Leroy Greene
6th Senatorial District

Senator John Doolittle
1st Senatorial District

Assemblyman Tim Leslie
5th Assembly District

Assemblyman Norman Waters
7th Assembly District

Assemblyman Lloyd Connelly
6th Assembly District

Assemblyman Phil Isenberg
10th Assembly District

A Steering Committee, designed to take a more active role in the study process by meeting periodically to gather and analyze data, review studies, review public comments, ascertain facts, and provide counsel to the study team, consists of:

Gary Bilyeu, Forest Planner
Eldorado National Forest

Rick Carunchio, Assistant Director
Sacramento County, Department of Parks and Recreation

Bill Center
River Management Advisory Committee

Dr. Bea Cooley
American River Coalition

Bill Edgar, Executive Director
Sacramento Area Flood Control Agency

Doc Livingston
Motherlode Miners

David Martinez, District Planner
California Department of Parks and Recreation

Joseph Mehrten
Auburn Dam Council

Merritt Rice
U.S. Army Corps of Engineers

Mike Schaefer
Bureau of Reclamation

Ron Stockman
Mother Lode Goldhounds

Nancy Stone, National Park Service
River & Trail Conservation Assistance

Larry Walrod, Director
Division of Planning, El Dorado County

Fred Yeager, Planning Director
Placer County

The principal means used to identify issues of public concern was a series of three public meetings held January 17, 1990 in Auburn, January 23, 1990 in Sacramento, and January 24, 1990 in Placerville.

The turnout at these scoping sessions was primarily those supporting a free-flowing river, no dam or reservoir, and an NRA designation to enhance the area's recreational values as they saw them. While local news media were fully informed on the scoping sessions, times, and dates, there have been some subsequent concerns received by BLM that these meetings were not widely publicized and therefore not "representative" of local public opinion.

As a point of clarification, the purpose of the scoping meetings was only to identify public issues of concern to be considered in the study. This information is added to a wide variety of other data from the broad array of other public briefings, contacts, etc. to ensure all points of view are considered.

As such, the scoping comments summarized below identify only the issues brought up by those attending, and does not "count" all of their opinions, such as whether there should or should not be a dam, which is not at issue in this NRA study.

In general, the issues expressed by the public at the scoping sessions include the following:

1. A number of people stated that the inundation of the canyons and loss of free-flowing rivers would adversely affect the area's biological diversity, natural values, environmental education potential, and numerous recreation opportunities.
2. If the area were not inundated and was designated an NRA, a number of those commenting stated that the benefits could be better resource protection, more intensive manage-

ment, better public access, more public enjoyment, and additional public financial support. In summary, it was stated that NRA designation would be beneficial to the population at large, particularly those in the area's metropolitan areas.

3. Some people called the recreational benefits of a dam-created reservoir "redundant" and "one-dimensional."

4. A number of those commenting concluded that the area "obviously" meets the NRA eligibility criteria.

5. It was suggested by some that the NRA boundary be drawn to include adjoining lands of special significance.

6. Several people expressed concern about the effects of an NRA on private property within the potential NRA boundary.

7. Another issue raised by other speakers was concern about which federal agency would ultimately manage the NRA.

8. Several people stated that construction of an interpretive/informational center would encourage public recreation and improve the recreational experience in the area.

9. A number of people expressed concern that the results of the NRA study would not be considered when a decision is made about which dam alternative should be authorized.

10. It was suggested by some that the NRA should help to stabilize the water level at Folsom Reservoir.

11. Several people stated that the NRA study should fully analyze the economic effects of such a designation.

Chapter Two

National Recreation Area Eligibility

National Recreation Area Background

In the *Report for Congress - National Recreation Areas* (1988), the Congressional Research Service summarized the philosophy and process underlying the creation of NRAs:

“National Recreation Areas (NRAs) have been designated by Acts of Congress since 1934, and were established administratively as early as 1936. As first conceived, these areas were to provide for high capacity, all purpose recreation in pleasant outdoor settings on Federal lands. They differed from some other Federal land management units by focusing upon providing recreation opportunities rather than on protection of natural resources. Over time, the authorized uses for new NRAs have changed, and the more recent ones emphasize resource protection.

Lands which Congress has designated as National Recreation Areas (NRAs) generally allow for several uses, although, as the title implies, recreation is the predominate

use intended for these areas. Each Act designating an NRA is unique, tailored to the characteristics of the area, the general management philosophy of the administering agency, and the determinations of the Congress as to what other activities (and their extent) may be allowed. One can see the variability in management and uses among the areas [see Table 2-1].

Congress has authorized NRAs to be administered by three agencies, the National Park Service (NPS) and the Bureau of Land Management (BLM) of the Department of the Interior (USDI), and U.S. Forest Service (USFS), Department of Agriculture (USDA). National Park Service NRAs total about 3.5 million acres in 15 units, and the 13 administered by the Forest Service total 1.5 million acres. The single NRA administered by the BLM (in Alaska) is authorized at approximately one million acres.

The detail and complexity of management policy for National Recreation Areas has changed since the cooperative agreement between the National Park Service and the

Bureau of Reclamation put Lake Mead National Recreation Area into operation in 1936. An important step in the evolution from cooperative agreements to detailed legislation for NRAs came in March 1963 from the Recreation Advisory Council. The council was established by President Kennedy in 1962 by Executive Order 11017, and consisted of the Secretaries of Interior, Agriculture, Defense, Commerce, and Health, Education and Welfare, as well as the Administrator of the Housing and Home Finance Agency. *Policy Circular No. 1* of the Council set out the 'Federal executive branch policy governing the selection, establishment and administration of national recreation areas.' Policies set by the Council were binding upon the member Departments and, in the Council's phrase, 'commended to others.' As an executive branch initiative, the document held only informational value for the Congress.

The Preamble in the Circular outlines several qualities for the National Recreation Areas including:

1. Provide for Federal investment in outdoor recreation that is more clearly responsive to recreation demand than other investments that are based primarily upon considerations of preserving unique natural or historical resources, the need to develop and conserve public lands and forests, or the requirements of major water resource development undertakings;
2. Be areas which have natural endowments that are well above the ordinary in quality and recreation appeal, being of lesser significance than the unique scenic and historic elements of the National Park System, but affording a quality of recreation experience which transcends that normally associated with areas provided by State and local governments.
3. The scale of investment, development, and operational responsibility should be sufficiently high to require either direct Federal involvement, or substantial Federal participation to assure optimum public benefit.
4. Within National Recreation Areas, outdoor recreation shall be recognized as

the dominant or primary resource management purpose. If additional natural resource utilization is carried on, such additional use shall be compatible with fulfilling the recreation mission, and none will be carried on that is significantly detrimental to it.

In summary, criteria purposed in the NRAs created by Congress have often differed from the 1963 Policy Circular on establishment and administration of National Recreation Areas. This seems to be particularly true of National Recreation Areas authorized during the 1980s."

As the above citation makes clear, the means by which an NRA is created is through legislative designation. The details of this process are summarized by Laurie Mitchell in her *Discussion Paper -National Recreation Area Study* (1988) prepared for Mono County:

How is a NRA Established?

"Each NRA is established by an act of Congress. NRA legislation establishes the boundaries of each NRA and specifies the management objectives for that NRA as well as who will administer it, and what land uses will and will not be allowed within its boundaries. Most legislation also includes authorization for appropriations for land acquisition and development of recreational facilities.

Legislation for some NRAs is very brief and follows a fairly standard format. Legislation for other areas is more detailed and tailored to the needs of the specific area involved. The following section provides an overview of existing legislation, summarizes what is standard practice for most NRAs, and discusses examples of unique approaches found in the legislation.

Overview of Existing Legislation

NRA Objectives

This section of the legislation is crucial because it determines the manner in which the area will be managed. The objectives are divided into two sections - a section stating the purpose [for which] the area is

being established, and a section detailing the management objectives for the area. The first is a general goal while the second elaborates on that goal to provide specific objectives for the management of the recreation area. Some legislation is brief on both these points while other legislation is much more detailed and site specific. The briefer versions follow a standard pattern with slight modifications. An example of this is taken from the legislation for the Mount Baker NRA in Washington:

Purpose: 'In order to assure the conservation and protection of certain natural, scenic, historic, pastoral, and fish and wildlife values and to provide for the enhancement of the recreational values associated therewith, the Mount Baker National Recreation Area....is hereby established.'

Management Objectives: The Secretary is mandated to administer the area 'in such manner as will best provide for 1) public outdoor recreation; 2) conservation of scenic, natural, historic, and other values contributing to public enjoyment; and 3) such management, utilization, and disposal of natural resources on federally owned lands within the recreation area which are compatible with and which do not significantly impair the purposes for which the recreation area is established.'

Although all NRA legislation contains the broad objectives discussed above and provides that managing agency with a certain amount of discretion to interpret those objectives, some legislation also contains more detailed objectives to ensure that specific concerns are addressed in the management plan.

The level of detail in a given piece of legislation will depend on the issues and concerns raised by local and national interest groups as well as on the political maneuvering. Although NRA legislation is flexible enough to be responsive to the needs of a given area this does not occur automatically. The sensitivity and foresight of those involved in NRA planning determine how carefully crafted the legislation is, which in turn determines how the area will be managed."

With that paper as a preamble, the following table summarizes a few of the primary characteristics of 33 existing NRAs. As the table illustrates, there is considerable variance on all the characteristics. In size, the NRAs range from Pine Ridge, the smallest at 6,600 acres, to Lake Mead, the largest at 1,496,601 acres. Broken down incrementally, the size distribution is:

0 - 19,000 acres	- 5
20 - 49,000 acres	- 10
50 - 99,000 acres	- 4
100 - 199,000 acres	- 8
200 - 999,000 acres	- 3
1,000,000 plus acres	- 3

The proportion of acreage in federal versus non-federal ownership, within the boundaries of the 23 designated NRAs for which data are available, is:

100% Federal	- 6
75 - 99% Federal	- 8
50 - 74% Federal	- 3
24 - 49% Federal	- 4
< 24% Federal	- 2

In location, existing NRAs are relatively evenly distributed among the major regions of the country:

Eastern Seaboard/Appalachia	- 8
Midwest	- 2
Prairies	- 5
Intermountain/Great Basin	- 8
Pacific Coast	- 10

The environmental features(s) within the NRAs providing the primary focus for recreation are:

Reservoir/Lake	- 13
River	- 6
Natural Landscape	- 11
Ocean Beach	- 3

Primary land uses surrounding these NRAs and providing a setting for the recreational use in each are:

Urban/Suburban	- 5
Rural	- 13
Natural/Undeveloped	- 15

Formal Criteria for NRA Designation

The first official publication of explicit criteria governing NRA selection was contained in "Federal Execu-

TABLE 2-1

NRA NAME	ADMIN AGENCY	ACREAGE (FED/non-FED)	PRIMARY RECREATIONAL FEATURES	SETTING	LOCATION
Allegheny	FS	23,100 (unavailable)	natural area, undeveloped	rural	PA
Amistad	NPS	57,292 (57,292/0)	reservoir, watersports	rural	TX
Arapaho	FS	36,235 (36,235/0)	lakes & reservoirs, watersports	natural	CO
Bighorn Canyon	NPS	120,278 (68,485/51,723)	reservoir, watersports	natural	MT,WY
Big South Fork	NPS	122,960 (16,860/106,100)	free flowing river, natural area	rural	TN,KY
Chattahoochee River	NPS	8,700 (3,627/5,073)	river, watersports	urban	GA
Chicksaw	NPS	9,522 (9495/27)	reservoir, watersports, mineral springs	rural	OK
Coulee Dam	NPS	100,390 (100,390/0)	reservoir, watersports	rural	WA
Curecanti	NPS	42,114 (42,114/0)	reservoir, watersports	natural	CO
Cuyahoga Nalley	NPS	32,460 (14,440/18,020)	riparian environment, natural area	suburban	OH
Delaware Water Gap	NPS	66,650 (54,087/12,563)	river, natural area, hiking	rural	PA,NJ
Flaming Gorge	FS	185,645 (185,645/0)	reservoir, watersports	natural	UT,WY
Gateway	NPS	26,311 (20,376/5,935)	beaches, marshes	urban	NY
Gauley River	NPS	unavailable	free-flowing river, whitewater	rural	WV
Glenn Canyon	NPS	1,236,880 (1,193,671/43,209)	reservoir, watersports	natural	AZ,UT
Golden Gate	NPS	72,815 (27,197/45,618)	beaches,historic/cultural,natural	urban	CA
Hells Canyon	FS	652,488 (unavail.)	river, wilderness	natural	OR,ID
Lake Chelan	NPS	61,890 (61,135/755)	lake, watersports, scenic	natural	WA
Lake Mead	NPS	1,496,601 (1,468,389/28,212)	reservoir, watersports	natural	NV,AZ
Lake Meredith	NPS	7,768 (unavail.)	reservoir, watersports, ORV	natural	TX
Mount Baker	FS	8,600 (8,600/0)	geologic, scenic, hiking, skiing	natural	WA
Mount Rogers	FS	154,000 (109,000/45000)	scenic, cultural/historic, trails	rural	VA
Oregon Dunes	FS	32,150 (unavail.)	beaches, scenic, ORV	rural	OR
Pine Ridge	FS	6,600 (unavail.)	natural area, undeveloped	rural	NB
Rattlesnake	FS	60,000 (unavail.)	natural area, wilderness, trails	rural	MT
Ross Lake	NPS	117,574 (105,132/12,442)	reservoir	natural	WA
Santa Monica Mtns.	NPS	150,000 (9,703/140,297)	natural area, cultural/historic	suburban	CA
Sawtooth	FS	756,019 (unavail.)	scenic, lakes, wilderness	natural	ID
Spruce Knob-Seneca Rocks	FS	100,000 (39,672/60,328)	natural area, scenic	rural	WV
Whiskeytown	NPS	42,503 (42,428/75)			
Shasta-Trinity	FS	209,554 (164,927/44,627)	reservoir, watersports	natural	CA
White Mtns.	BLM	1,000,000 (unavail.)	river,scenic, wilderness	natural	AK
White Rocks	FS	3,400 (unavail.)	natural area, hiking, wilderness	rural	VT
Winding Stair	FS	48,425 (unavail.)	scenic, natural area, wilderness	rural	OK

tive Branch Policy Governing the Selection, Establishment, and Administration of National Recreation Areas” by the Recreation Advisory Council, *Circular No. 1*, March 26, 1963.

In 1978 the National Park Service condensed the qualities identified in the 1963 Circular into four specific criteria. These criteria are the guiding principles for this study.

1. “National Recreation Areas should be spacious areas containing outstanding natural and/or cultural features and providing significant recreation opportunities.” [Identified in this study as Criteria 1A, 1B, and 1C.]

2. “National Recreation Areas should be located and designed to achieve comparatively heavy recreation use and should

usually be located where they can contribute significantly to the recreation needs of urban populations.” [Identified in this study as Criteria 2A and 2B.]

3. “National Recreation Areas should provide recreation opportunities significant enough to assure national, as well as regional visitation.” [Identified in this study as Criterion 3.]

4. “The scale of investment, development, and operational responsibility should be sufficiently high to require either direct Federal involvement or substantial Federal participation to assure optimum public benefit.” [Identified in this study as Criterion 4.]

Application of Criteria

CRITERION 1A - SPACIOUSNESS

The total area being studied for NRA designation in this report includes 81,000 acres. Of this total, Auburn Dam project lands represent 41,700 acres; lands along the North Fork upstream from Colfax-Iowa Hill Bridge represent 10,000 acres; lands along the South Fork from Salmon Falls Bridge to Chili Bar represent 4,400 acres; lands within the Folsom Lake State Recreation Area represent 19,200 acres; and lands within the American River Parkway represent 6,000 acres.

Were an NRA to be designated in conjunction with a dam constructed at the Auburn site, the minimum size for the project area - associated with a flood-control only structure - would be about 19,000 acres. Even if an NRA was comprised of only these minimal project lands, it would come close to meeting the original Recreation Advisory Council spaciousness criterion of 20,000 acres. Realistically, the proposed NRA would include at least the current Auburn project lands, thus being over twice the size of the suggested "minimum." The likely alternatives of also including additional federal lands would only increase the margin by which the minimum was exceeded. Therefore, however Congress might configure an American River NRA, it would certainly fall comfortably within the size range of existing NRAs and would unquestionably meet the criterion of spaciousness.

CRITERION 1B - OUTSTANDING FEATURES

As far as natural features are concerned, the predominant scenic resources are the canyons themselves. This dramatic topography can best be viewed from prominence like Pointed Rocks, near Cool, or Lovers Leap, which offers a panoramic overlook of many miles of the North Fork canyon and which features a 2,400-foot sheer drop to the river below. In 1876, Ben Frank, editor and publisher of the *Dutch Flat Forum*, a weekly newspaper, wrote about the view from Lovers Leap:

"Here are the rocks towering above us, and we are on the verge of a lofty height, a sheer wall below us, down which we glance to the chasm 2,600 feet, where houses are dots and men are specks on the earth's surface. There winds the American river like a belt of precious metal as its yellow waters glisten in the sun. To

the right, and the left... the great canyon, dark, hazy, rich in foliage, awful in depth and distance, opens up to the vision and then diminishes, and is lost in its own shadings miles away, while the mountains forming its walls rise far above and beyond us, the forest on their top fringe a new and elevated horizon against the sky. It is a glorious scene."

Many of the tributary streams run into the forks of the American at a very steep gradient, creating a situation conducive to cascades and waterfalls. These occur in many locations. Because the tributaries have, for most of the year, a somewhat limited flow, the falls are not of large size or sweeping scale. They are, instead, found in confined settings, but have significant scenic values. The two best known sets of falls are Devils Falls, adjacent to Yankee Jims Road on Lower Shirttail Canyon, and Codfish Falls, on Codfish Creek just above the North Fork downstream from Ponderosa Way.

These tributaries are similar, on a much smaller scale, to the topography of the great river canyons. In the bottoms of many tributaries, flanking the rocky and rapidly-running creeks, are lush growths of diverse riparian vegetation. Such areas provide marked contrast to the otherwise uniformly dry, brushy slopes of the larger area. These special scenic qualities of the tributaries are best manifested in Otter Creek, Canyon Creek, Dardanelles Creek, and American Canyon - all flowing west into the Middle Fork - and Shirttail and Indian Creeks, which flow west into the North Fork.

The many rapids for which the main stems of the American are known, provide another set of scenic features, with Ruck-A-Chucky in the Middle Fork and Chamberlain Falls on the North Fork being especially noteworthy examples. The Resources Agency of the State of California (cited by the Bureau of Reclamation, 1972) rated nine miles of the North Fork American River above Ponderosa Way as having superior boating quality and outstanding scenic quality. Another type of natural feature is represented by Lime Rock, a well-known landmark consisting of a prominent limestone outcrop, which towers over the North Fork Canyon east of Auburn.

Other outstanding natural features of the study area relate to its biological resources. Due to the presence of the rivers and the lack of human encroachment, the study area supports a biological density and diversity far exceeding that of the surrounding uplands. Significant wildlife phenomena are the fall spawning run of salmon up the Lower American, the late-winter

congregation of California newts ("Firebellies") in American Canyon, and the presence in the study area of large colonies of dog-faced butterflies - an unusual occurrence in the Sierra region. Also of biological interest is the Anderson Island Heron Preserve in Folsom Lake. Standing on Moody Ridge, overlooking the North Fork near Lovers Leap, is the largest California black oak in the State. With a crown spread and height of about 100 feet, the tree's girth is 29.5 feet - the largest ever recorded for this species. The tree's age is estimated at 350 to 450 years.

Turning now to cultural features, it was mentioned in Chapter One how evidence of Native American occupation is not abundant in the river canyons. It is well known that the rivers provided a focus for many Native American activities, but surviving evidence of these activities is limited to the recorded presence of grinding rocks at several locations. Less durable remains of other types may well have been destroyed by mining or flooding. Various Native American occupation sites, and other types of archeological sites representing a wide range of prehistoric activities, are found on the divides, up the tributaries, and surrounding Folsom Lake. The upland portion of the study area contains frequent occurrences of this type of cultural resource.

Of much greater abundance and significance, however, are the historic sites of the study area. The following sites are nationally significant:

Coloma Gold Discovery Site - Gold was first discovered in California by James Marshall on January 24, 1848 at this site. This event was a major turning point in western American history and played a pivotal role in shaping the nation as we know it today. The site is now included within Marshall Gold Discovery State Historic Park, at Coloma on the South Fork. Along the South Fork, historic values relating to the discovery of gold and the gold rush era have been established as an outstandingly remarkable feature (National Park Service, 1983). Also within the park are many restored historic buildings, a museum and visitors center, the Marshall Monument (erected in 1890, the oldest state monument in California), and a plaque commemorating the Coloma Road (built in 1847, the site of the first stage line in California). By way of many exhibits, the gold discovery, the historic technologies of mining, the development of the town of Coloma, and the life of James Marshall are interpreted for the public.

Folsom Powerhouse - Located adjacent to Lake Natoma within Folsom Lake State Recreation Area, this hydroelectric facility was a pioneer alternating-

current generating plant and the site of the first long-distance transmission of electricity in the world. Completed in 1895, the plant sent power to Sacramento through 22 miles of copper wires. Within the historic powerhouse structure are turbines, generators, and a switchboard. A forebay, penstocks, and other facilities are adjacent, while the remains of the canal and dam are nearby. The site has outstanding physical integrity and is interpreted to the public by exhibits and volunteer docents.

Cape Horn - This location on the transcontinental railroad east of Colfax provided the railroad builders with their first major topographic obstacle. Proceeding eastward in 1866, construction was stalled here until Chinese laborers introduced pioneering techniques that were to be employed for the remainder of the alignment through the Sierra. It was only by virtue of the ingenuity exercised and the methods developed here that construction along the chosen route was feasible and the nation could be first linked by rail.

Horseshoe Bar (including adjacent American and Gray Eagle Bars) - During the gold rush, this mining camp on the upper Middle Fork was home to Andrew S. Hallidie, a young Scottish blacksmith who pioneered the use of wire cable in California. Here he first employed the cable in ore transport systems and suspension bridges, and then went on to later design and build the San Francisco cable car system. Horseshoe Bar is also the site of the first bedrock tunnel in the state. This tunnel was driven in 1850 to divert water from one mile of river bed to allow gold mining. Due to faulty design, the scheme failed, but a second, larger tunnel built in 1888 still carries the flow of the Middle Fork (known today as Tunnel Chute).

Mountain Quarries Company Railroad Bridge - Built in 1911, this 170-foot-long, three-span, reinforced concrete bridge was the longest concrete bridge in the world when it was built. It spans the North Fork below the Middle Fork confluence and was part of a seven-mile-long private railroad that carried limestone from the quarry near Cool to the Southern Pacific in Auburn. Despite its innovative design and construction, the bridge has proved durable and displays excellent physical integrity. The Limestone Quarry itself is also an interesting historic site.

North Fork Dam - This concrete arch dam impounds 14,600 acre-foot Lake Clementine. Constructed on the North Fork in 1939 as part of a system of debris control dams, it is the first concrete dam built by the Corps of Engineers.

Historic sites significant at the state level are:

Stevens Trail - A gold-rush-era toll road connecting the communities of Colfax and Iowa Hill via a bridge across the North Fork, this trail retains good integrity and is still used by hikers.

Camp Flint - Originally built as a State Relief Agency "unemployed camp" in 1932, this site on the outskirts of Auburn was eventually used as a prisoner-of-war camp for German and Italian prisoners captured during World War II; only one original structure remains.

Dardanelles Hydroelectric Plant - This facility, built on the north bank of the Middle Fork in 1901, was the first hydroelectric generating facility in Placer County; it has recently been reconstructed.

Robbers Roost - An alias for Lime Rock on the North Fork above Lake Clementine, this location served as a lookout for highwaymen terrorizing the Auburn-Forest Hill Turnpike during the early 1860s; it is associated with several colorful local legends.

Mammoth Bar - Once a major gold-mining camp on the Middle Fork, this site was the location of an early wire suspension bridge (possibly built by Hallidie) and was a major focus for large-scale placer mining. It is the site of the first successful use of an hydraulic elevator and is the location for one of the earliest applications of hydroelectric power in 1888.

Grand Flume - (Louisiana Bar to Murderers Bar) - This location on the lower reaches of the Middle Fork was home to several large settlements of miners who engaged in widespread placer mining during the early gold rush. It is the site of the earliest attempt at organized, large-scale riverbed mining. During the entire summer of 1850, 400 miners cooperated to construct a two-mile-long flume of wood and canvas. A few days before its completion, an unseasonably early flood completely destroyed the structure.

Of documented significance at the local level are:

- several gold-rush-era historic roads that are still in use as hiking trails (Old Auburn-Forest Hill Stage Road; Roanoke Trail);
- a well preserved early nineteenth century gold dredge on the Middle Fork ("Doodlebug Dredge");
- the South Canal and the North Fork Ditch near Folsom Lake, both of which are historically important water transport features;
- a number of individual historic structures, such as

Grizzly Bear House (roadhouse) and Butcher Ranch (livestock raising) along the Auburn-Forest Hill Road; and

- the remains of numerous mines, mine camps, mining settlements, mining features, and bridges, including many of both documented and undocumented significance. Those documented settlements that are of potential archeological significance include: American Canyon, Cherokee/Poverty Bar, Shirttail Canyon, Bunch Canyon, Oregon Bar, and Maine Bar.

CRITERION 1C - SIGNIFICANT RECREATIONAL OPPORTUNITIES

An in-depth inventory of the study area's recreational opportunities is set forth in Chapter Three, so the summary below will cover only the outstanding opportunities for selected popular activities.

Bicycling - The Jedediah Smith National Recreation Trail provides more than 30 miles of fully-developed, hard-surface bikeway along the American River, connecting Discovery Park (Downtown Sacramento) with Beals Point (Folsom Lake). Additionally, trails for mountain bike use have been designated in both the Folsom Lake and Auburn State Recreation Areas.

Boating

1) Canoeing - Lakes Natoma and Clementine are both attractive to flat-water canoeists, while the lower portions of the Middle (nine miles) and North (four miles) Forks provide challenges for downriver canoeing (Class II). The Lower American offers 23 miles of Class I river.

2) Powerboating/Waterskiing - Folsom Lake provides abundant resources for speedboaters and skiers, and Clementine is also a lake used for these activities.

3) Rafting/Kayaking - the study area provides a tremendous resource for whitewater enthusiasts with a 20-mile-run of Class III water on the South Fork and 15 miles of Class III to V and nine miles of Class II on the Middle Fork. The recreation values relating to whitewater boating along the South Fork have been established as an outstandingly remarkable feature (National Park Service, 1983). The upper 14 miles of the North Fork are rated Class V, the next five miles IV to V, and the final nine Class II. The Lower American through the American River Parkway (designated by both federal and state Wild and Scenic Rivers

systems as a Recreational River) offers outstandingly remarkable recreation opportunities; river floating by raft or "inner tube" accounts for 250,000 recreation days annually (National Park Service, 1983).

4) Rowing - Lake Natoma is in constant use for recreational, training, and competitive rowing sports.

5) Sailing - While some sailing takes place on Lakes Natoma and Clementine, it is Folsom Lake that provides the most favorable conditions and is best suited for serious sailing.

Camping - Both State Park units, Folsom and Auburn, contain a variety of developed campgrounds as well as undeveloped and hike-in sites.

Fishing - Though limited access restricts use, the entire lengths of the North, Middle, and South Forks contain fishable numbers of sporting species. Folsom Lake supports a diverse fishery and is heavily fished, Lakes Natoma and Clementine less so. The Lower American's anadromous fishery draws great numbers of anglers and is an outstandingly remarkable feature (National Park Service, 1983).

Horseback Riding - The renowned Western States Trail, of which a 50-mile segment extending from Beals Point at Folsom Lake to Foresthill has been designated a National Recreation Trail, provides a fully-developed equestrian route from Foresthill down the Middle Fork to Auburn, while the Pioneer Express Trail runs along the west side of Folsom Lake, tying into the equestrian trail down the American River Parkway. By use of this trail system, the rider can travel from Foresthill to Sacramento, within the confines of the study area, without leaving the saddle.

Nature Study - The main interpretive center for nature study in the area is the Effie Yeaw Nature Center on the American River Parkway. This is a full-service facility with a variety of community-oriented programs. The entire study area, being predominantly a natural landscape supporting a native ecosystem, is well-suited for nature study. Its proximity to water results in biological abundance as well as diversity.

Off-Highway Vehicle Use - A designated area at Mammoth Bar on the Middle Fork is managed for OHV activities, and this area is very popular for this activity.

Gold Panning - The North and Middle Forks within the lands withdrawn for the Auburn Project offer one of the few local opportunities for recreational gold panning. This area allows modern-day "forty-niners" to participate in an historically meaningful activity within

the original gold-rush setting and location. A chance to prospect and otherwise engage in historic re-enactment within the authentic historic setting enhances the quality of this recreational experience.

Picnicking - The developed parks of the Lower American River (Discovery, Goethe, Hoffman, etc.) offer public picnic areas with full facilities, and California Department of Parks and Recreation operates a number of popular, fully developed picnic areas at Folsom Lake.

Swimming - Along with other types of beach-related recreation, this is a popular summertime activity at Folsom Lake. A great deal of swimming also takes place along the Lower American, at Lake Natoma, and along the forks in the canyons wherever there is public access.

In conclusion, by virtue of its being spacious, its possessing a great number of outstanding cultural and natural features, and its offering a wide variety of recreational opportunities, the study area clearly meets NRA Criterion 1.

CRITERION 2A - ANTICIPATED HEAVY USE

Within an 85-mile radius of the study area, that is, within approximately two hours driving time, the projected 1991 population is 9,330,000. Within a 250-mile radius the projected 1991 population is 12,870,000. Few other locations, particularly in the West, could match these numbers for an NRA's service area.

Further, the average rate of population growth, 1980-1991, for counties within an 85-mile radius is 29 percent. Average rate of growth over the same period for the three counties within the study area (Sacramento, Placer, and El Dorado) is an astonishing 42 percent. Sacramento is the sixth fastest-growing, among the thirty most populous, metropolitan areas in the country.

The study area is especially accessible to the surrounding population because of its location adjacent to major transportation corridors. Interstate Highway 80 lies along the northwest margin of the area and brings it within a two-hour drive from much of the San Francisco Bay Area, even less from Reno. U.S. Highway 50 provides similarly convenient freeway access to the South Fork. Bay Area residents traditionally account for much of the recreational use within the area.

When planned improvements to the transportation system are completed in the near future, public accessibility will be further expanded. Work on improving the Auburn-Foresthill road is in progress, and El Dorado County plans to improve Sliger Mine Road within the foreseeable future. The California Department of Transportation's latest report for State Route 49 in District 3 indicates a proposed realignment from Placerville to Coloma, bypassing Placerville and greatly facilitating access to the South Fork from the Highway 50 freeway. Having the greatest potential effect, however, would be the realignment of State Route 49 necessitated by construction of a dam at the Auburn site. A new "high bridge" would place the heart of the study area only minutes from Interstate 80.

Even prior to the recent surge in population growth, the California Department of Parks and Recreation said in its *General Plan* (1978) for the Auburn and Folsom units:

"Local interest in outdoor recreation is intense. Bicycling has increased dramatically in the area, both for local transportation and recreation. Some ten thousand bicyclists have been counted on the American River Parkway during a single weekend. There is continued demand for equestrian trails, and per capita ownership of horses in the region is among the highest in the state. All forms of boating continue to be important in the area. The boat registration of El Dorado, Nevada, and Placer Counties — about one boat per 16 to 20 persons — is twice the statewide average of one boat per 44 persons.

As a whole, all indications are that there will be a continued increase in the demand for outdoor recreation in the Auburn-Folsom region".

A further indication of heavy use within a future NRA are the current use levels of the existing recreation areas. On the South Fork, river rafting and attendance at Marshall Gold Discovery State Historic Park combine to account for nearly 700,000 visitor days annually. At Folsom Lake, visitation has recently been down as low as 1.6 million user days per year - largely due to adverse water levels; past use has been in the 2.5 million range. Auburn State Recreation Area draws about a half-million visitors annually, while the American River Parkway receives 5.5 million visitor days of use annually. These figures compare favorably with use at similarly-situated existing NRAs.

CRITERION 2B - MEETS NEEDS OF URBAN POPULATION

In 1974, the *California Outdoor Recreation Resources Plan* recognized that:

"The rapid development of urban sprawl around the Sacramento metropolitan area presents some severe problems. Not only is the overall quality of life being jeopardized by the reduction of open space, but recreational lands are being irretrievably lost as well."

To counteract this situation, the plan recommended, in priority order, the development of recreation areas that:

- 1) are associated with natural lakes or rivers;
- 2) are natural areas;
- 3) are multi-purpose;
- 4) are associated with reservoirs; and
- 5) provide trail systems

These conclusions were reached based on estimates of recreation demand for the area. Among the activities included in the demand estimates were several that could apply to an NRA. For these activities, demand was greatest for bicycling and swimming, though it is not clear how much of this demand was for recreation in an urban context in specialized, man-made facilities. The remaining relevant activities, in decreasing order of demand, were: picnicking, nature walks, fishing, horseback riding, powerboating, hunting, waterskiing, camping, hiking, and non-power boating.

A more recent study that focuses on the recreation preferences and needs of Californians is the California Department of Parks and Recreation's *Public Opinions and Attitudes on Outdoor Recreation* (1987). This study surveyed public participation and opinion with respect to 38 recreational activities. Of these, it appeared there were 18 opportunities that could be offered in a proposed NRA. The relevant activities were: walking, bicycling, horseback riding, hunting, developed camping, primitive camping, trail hiking, nature study, picnicking, beach activities, swimming in lakes/streams, sailboating/windsurfing, non-power boating, power boating, water skiing, freshwater fishing, dirt-biking, four-wheeling. Scores for the top one-half of the activities are displayed in the table below.

These data indicate that the opportunities present in the NRA study area (See Criterion 1C) are those for which there is the greatest demand by the surrounding population. The study also points out that "nature

oriented parks or preserves" and "backcountry natural areas" are the two types of recreation areas most preferred by Californians. Therefore, it seems clear that the NRA study area has the potential to meet the public's recreation needs.

CRITERION 3 - QUALITIES SIGNIFICANT ENOUGH TO DRAW REGIONALLY AND NATIONALLY.

Visitor origin data from the California Department of Parks and Recreation and El Dorado County indicate that the scenic and recreational values of the study area motivate visitation from well beyond the local area. At Folsom Lake and Lake Natoma - where beach swimming, flat-water boating, picnicking, cycling, fishing, and walking are all popular activities - ninety-five percent of the day use visitors are local (Sacramento/Central Valley Metropolitan Population Centers). These are the most popular activities and those for which overall local demand is greatest. Even though Folsom's facilities get a tremendous amount of use, they largely represent opportunities which are duplicated elsewhere within a reasonable distance and thus, in a sense, may be too "common" to motivate regional or national visitation. Camping at Folsom State Recreation Area, however, may represent something more of a "special" opportunity, as only about one-third of the overnight visitors are from the Central Valley. Of the remainder, one-third come from the Bay Area, and the rest from other areas.

Visitor origin data from the South Fork indicate a broader range of users. At Marshall Gold Discovery State Historic Park, exclusively a day use area with a well-developed picnic area, only one-third of the visitors are of local origin. Nearly one-quarter are from Southern California metropolitan population centers, and one-fifth are from the San Francisco Bay Area. Another 10 percent are from out-of-state (California Department of Parks and Recreation, 1978). The historical significance of this site is so great, that visitors are attracted from a wide area.

The same holds true for river rafting on the South Fork. According to a recent survey (El Dorado County Planning Department, 1982), only 17 percent of the rafters were from the local three county (Sacramento, Placer, El Dorado) area. Nearly one-half were from the San Francisco Bay Area, and over one-quarter were from Southern California. The remaining eight percent were from elsewhere in California or out-of-state. The outstandingly remarkable recreation values relating to whitewater boating (National Park Service, 1983) represent an opportunity for which visitors will travel a considerable distance. No visitor origin data is available for whitewater boating on the Middle and North Forks, but it is likely that they also draw visitors from long distances.

Participant origin data from competitive equestrian and mountain running events along the Middle Fork also indicate regional and national importance. The Tevis Cup (endurance trail ride) and the Western States Endurance Run (footrace), both one-day, 100-

Table 2-2

Activity	Avg Days Per Participant	Total Est. Household Participation Days (millions)	Latent Demand Rating	Public Support Rating	Needs Assessment Priority
Walking	40.6	149.6	high	high	1
Beach	16.7	69.0	high	high	1
Cycling	11.1	46.0	high	high	1
Swimming	10.9	42.6	mod	mod	4
Nature Study	10.5	31.5	high	high	1
Picnicking	9.5	31.6	high	high	1
Camping (Composite)	8.0	26.5	high	high	1
Fishing	6.9	19.5	high	mod	3
Hiking	3.6	14.8	mod	mod	4

mile annual events using the Western States Trail, draw entrants from across the country, as well as considerable international participation. Likewise, competitive rowing and canoeing events on Lake Natoma lure participating teams from a wide area.

It is possible that other qualities of the study area - if they were better known, more accessible, or effectively interpreted - are sufficiently special/rare/outstanding to draw visitors from afar. Examples might be the scenic values of the upper canyons, especially the North Fork. Of equally "special" status is the concentration of historic sites and remains in the canyons, especially the Middle Fork.

In summary, all available evidence indicates that the study area does possess "recreational opportunities significant enough to assure national, as well as regional visitation."

CRITERION 4 - NEED FOR FEDERAL INVOLVEMENT TO ASSURE OPTIMUM PUBLIC BENEFIT

This criterion is to determine if the scale of investment, development, and operational responsibility is sufficient to require increased federal participation in the study area. There is already a strong federal presence in this area with substantial investment, developmental, and operational responsibilities. The issue is how the addition of an NRA would relate to increased recreation emphasis.

Maintenance of minimum flows in the Lower American and minimum water levels at Folsom Lake are both essential for recreation in these two areas. It is apparent that federal decisions which regulate these flows and levels should be made with due consideration of their recreational effects. An NRA designation could result in more emphasis on recreation as an element of water management decisions.

Secondly, there could be benefits in consistency, integration, and coordination if overall recreation management for the entire river system were handled under an NRA designation. Management of recreation within the study area is presently divided among the City and County of Sacramento, California Department of Parks and Recreation, El Dorado County, BLM, and Forest Service; California Department of Parks and Recreation management is on Bureau of Reclamation lands. This management mosaic has sometimes resulted in uneven development, inconsistent policies, and variable enforcement. An integrated management of the area would result from NRA designation, with overall management and coordination being carried out through the NRA manager, even though direct management of various portions could remain in the hands of local or state agencies. To the extent this consolidation resulted in a clearly unified policy and direction for recreation, the public would benefit.

Third, an NRA designation would provide an opportunity to fully develop the recreational potential of the study area. An NRA designation could provide the direction and resources necessary to make available to the public these under-utilized opportunities.

Evaluation of Eligibility

In general, therefore, the study area fully meets the NRA eligibility criteria. It is sufficiently spacious, it has an abundance of outstanding natural and cultural features, and it offers a wide variety of recreational opportunities. It lies within and adjacent to a fast-growing metropolitan area of over a million and within an short drive for many more millions. It provides the types of recreation most in demand by local residents, while at the same time offering qualities outstanding enough to attract visitors from a distance. It has the potential to provide even more public benefit under an NRA designation. Following the established NRA criteria, the area certainly possesses all the qualities envisioned by the federal government in the NRA concept, perhaps conforming even more closely than many established NRAs.

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Chapter Three Recreation Tradeoffs By Water Alternatives

Introduction

In this chapter, recreation opportunities, resource attributes, and natural and cultural features are identified for the study area in terms of both the existing recreation environment and under the different dam alternatives. For effective portrayal and analysis, the study area is divided into five river/land area segments: the North Fork Wild River, the Auburn Project, the South Fork, Folsom Lake State Recreation Area, and the American River Parkway. Following an inventory of recreation resources for each of the five segments is an analysis of the effects on recreation for the Auburn Project under each inundation scenario. An analysis of the desirability under each dam alternative is then presented, with discussions on what recreation opportunities are gained and lost, and what patterns of use are likely to occur. A comparison of public recreation needs and the effects of recreation under each dam alternative is also presented. Finally, the desirability of designation of a National Recreation Area is analyzed under various boundary scenarios.

Description of Study Area Segments

NORTH FORK WILD RIVER SEGMENT

The North Fork Wild River segment is bound on the west by the upper boundary of the Auburn Project and on the east by Euchre Bar, 14 miles upstream. Between these western and eastern boundaries, the segment includes the corridor of the Wild River and the contiguous lands in the river viewshed. The North Fork Wild River segment is approximately 10,000 acres. The natural environment of the North Fork is comprised of steep canyon walls and cliffs, several remote gorges and a few small valleys. Ponderosa pine forest occupies much of the segment, with some steep hillsides occupied by oak woodland/chaparral.

Ownership of lands within the North Fork segment is 88 percent federal and 12 percent private. Sixty percent of the segment is BLM land and 28 percent is National Forest System land. Land use in the North Fork canyon is primarily recreational, with some mining activities occurring.

The segment is characterized by a deeply incised canyon with the river itself being 2,000 feet to 2,400 feet below the rim. This section of the North Fork is a Congressionally-designated Wild River and a State-designated Wild Trout Stream. Features include scenic, recreation, cultural and water quality values. The river flows through a narrow gorge lined with a wide variety of vegetation and geologic features. The National Park Service California River Inventory (1983) states that the North Fork "river corridor comprises some of the most spectacular and distinctive gorges and canyon lands found in the Middle Sierra." Historical features in the segment include the Stevens Trail, American View, Cape Horn, and several Native American archeological sites.

The primary recreation activities and supporting attributes offered by the North Fork Wild River segment are summarized in Table 3-1.

Recreation Resources

Visitors to the North Fork Wild River segment recreate in a semi-wilderness setting. River access is possible from the lower terminus of the segment near the Colfax-Iowa Hill bridge, or by a strenuous descent by trail from a few locations along the canyon rim. Whitewater river rafting, hiking, backpacking, swimming, recreational gold panning, fishing, nature study and picnicking are among the most popular activities in the segment. Most visitation to the segment occurs from spring through early summer and early autumn.

Whitewater recreation through the segment involves a Class V river, which means that the navigability is

possible by experts only, and only under certain conditions with regard to the rate of flow. Typically, the whitewater run of the North Fork Wild River segment (termed the "Giant Gap Run") is navigable only during the spring and early summer. The river gorge is also traversed during the late summer to early fall period by a few groups of rugged "gorge scramblers" who pioneer a route through the canyon by hiking, scrambling and swimming. Fishing the North Fork for native brown trout is also enjoyed by a few hardy anglers. Trails leading to the North Fork are used by hikers, backpackers, pack and saddle stock users, gold panners, and by whitewater recreationists gaining access to the river at Euchre Bar.

The canyon rim above the North Fork is used for various forms of recreation. Among the most scenic locations within the entire study area is Lovers Leap, a precipice that looms nearly perpendicular to the river some 2,400 feet below (see Chapter Two). Persons taking the view from here can also visit a giant oak, which is within easy walking distance of the overlook. This oak, among the largest of all black oaks in the nation, has a circumference of 29.5 feet, which exceeds that of any other black oak.

AUBURN PROJECT AREA SEGMENT

The Auburn Project segment, encompassing the area within the Bureau of Reclamation withdrawal boundary for the Auburn Dam Project, includes sections of both the North and Middle Forks of the American River. The western boundary of the segment is Folsom Lake along the North Fork. The eastern

Table 3-1. Primary Recreation Opportunities and Facilities: North Fork Wild River

Whitewater Recreation		Pack and Saddle Stock Use	
miles of river	14	miles of equestrian trails	14
Hiking/backpacking		Fishing	
Miles of trails	30	miles of river open to anglers	14
Cultural and Historical Observation		Gold Panning	
no. of features	>4	miles of river open	14
River Access			
road access points	1		
trail access points	9		

boundaries of the segment are the Colfax-Iowa Hill Bridge on the North Fork, and Oxbow on the Middle Fork.

The Auburn Project segment is 42,000 acres in size and includes 48 miles of river. The natural environment of the segment is characterized by two prominent canyons (the North and Middle Forks) that converge before entering a single narrow canyon above the Auburn Dam site and Folsom Lake. River canyons in the segment are extremely steep and rugged, and except for several wide river bars, the canyons are devoid of any true valleys. Lake Clementine on the North Fork is a 280-acre reservoir that represents the only water impoundment in the segment at present. Approximately 80 percent of the segment is occupied by oak woodland/chaparral and 20 percent by ponderosa pine forest. Areas of riparian habitat exist along both rivers and along tributary streams, and include a particularly unique and diverse assortment of plant and animal species.

Land ownership in the Auburn Project segment is 84 percent federal and 16 percent private. Federal lands acquired or withdrawn by the Bureau of Reclamation in the segment are managed by California Department of Parks and Recreation, which operates under an interim agreement initiated in 1977 and renewed annually. California Department of Parks and Recreation developed a General Plan for the Auburn Project in 1978 under the assumption that Auburn Dam would be built as originally planned. Because of this, there has been very little development in the area to support recreation. Land use in the segment is primarily recreational, with minimal mining and residential inholdings.

Natural features within the Auburn Project are numerous and varied. As presented in Chapter Two, the Auburn Project includes noteworthy scenic, botanical, zoological, and geological features highlighted by the canyons themselves. Outstanding cultural and historical features of the segment, as listed in Chapter Two, include Horseshoe Bar, Mountain Quarries Company Railroad Bridge, North Fork Dam, Camp Flint, Dardanelles Hydroelectric Plant, and Lime Rock. The segment has a total of 1,589 documented historic and prehistoric archeological sites (McCarthy, 1989). The most important recreational opportunities and existing recreation support facilities and attributes are summarized in Table 3-2.

Visitors to the Auburn Project segment recreate mostly in primitive and semi-primitive settings. There are 11 points along the rivers within the segment which are accessible by motor vehicle and the segment has a total of 72 miles of trails for hiking (of

these, 15 miles are open to mountain bicyclists and 66 miles are suitable for equestrian use). Approximately 20 percent of all visitation to the area occurs in the vicinity of the confluence of the North and Middle Forks; in this area, there are no recreation developments except for parking and trails. Camping in the segment is limited to 19 semi-developed campsites, approximately 80 primitive campsites, and an undetermined number of backcountry river campsites. Visitor attendance in the Auburn Project segment is estimated to be 500,000 annually (California Department of Parks and Recreation, 1989a).

Equestrian Recreation

The Auburn Project segment is popular for horseback riders and other stock users. The area trails offer a variety of riding opportunities, from endurance training and events to relaxed trail riding. The Western States Trail traversing this segment is the route used for the famous Tevis Cup Ride from Squaw Valley to Auburn.

Whitewater Recreation

Both the North and Middle Forks of the American are popular rivers for whitewater recreation. California Department of Parks and Recreation, manager of whitewater recreation within the segment, has witnessed a steady increase since 1979 in commercial river rafting, particularly on the Middle Fork. The North Fork below the Colfax-Iowa Hill Bridge offers 9.5 miles of Class IV and V whitewater and is a challenging and exciting river run in a fairly remote setting.

In general, the Middle Fork is technically less demanding than the North Fork. The Middle Fork offers whitewater recreationists 24 miles of Class II and Class III river, with some opportunities for advanced whitewater (Class IV to VI); however, many commercial outfitters prefer to portage the advanced sections rather than navigate them. The lower 9 miles of the Middle Fork (Class II) is suitable for less experienced river rafters, canoeists and families with small children.

Special Events

The Auburn Project is the site of several special events ranging from a 100-mile endurance run to a Native American gathering. There are a total of 11 special events held annually in the area: seven are equestrian, two are endurance runs, one is a combination of bicycling and running, and one is a cultural gathering. Most notable of these events are the Tevis Cup Ride and the Western States Endurance Run; both events utilize the Western States Trail that traverses through the Auburn Project segment along

Table 3-2. Primary Recreation Area Opportunities and Attributes Auburn Project Area Segment

Whitewater Recreation		River Access	
miles of suitable river	34	public road access points	11
		trail access points	11
Equestrian Recreation		Fishing	
miles of suitable equestrian trails	66	miles of river open to anglers	43
Hiking/Backpacking		Off-Road Vehicle Use	
miles of trails	72	acres of area open	900
Picnicking		Gold Panning	
no. of sites	10	miles of river open	42
Flatwater recreation		Mountain Bicycling	
total no. of acres	280	miles of trails open	15
waterskiing acres	190		
restricted speed acres	90	Camping	
Swimming/sunbathing		no. of semi-developed sites	19
miles of accessible shoreline	3	no. of primitive sites	80
Cultural and Historical Observation			
no. of significant or outstanding features	20		

portions of the North and Middle Forks. The Western States Trail is designated a National Recreation Trail. Both events have entrants from across the nation. The Tevis Cup Ride, initiated in 1955, draws approximately 250 riders annually. The Western States Endurance Run, following roughly the same 100-mile route as the Tevis Cup Ride, was founded in 1974, and has since become so popular that the limit of 400 participants has often been reached.

SOUTH FORK OF THE AMERICAN RIVER SEGMENT

The South Fork segment is bound on the west by the boundary of Folsom Lake State Recreation Area near Salmon Falls Bridge. The eastern boundary of the segment is Chili Bar, some 21 miles upstream from Folsom Lake. Between these western and eastern boundaries is a corridor that follows the river, with parcels of federal, state, county and private lands.

The South Fork segment is approximately 4,400 acres in size. The natural environment of the South Fork is characterized by rolling hills of ponderosa pine forest in the eastern half and oak woodland/chaparral in the western half, with the lowest areas comprised of some valley grassland ecosystems. Riparian areas along the river and along tributary streams offer an oasis for plants unable to survive the drier slopes.

Ownership of lands within the South Fork segment is approximately 40 percent public and 60 percent private. Approximately 82 percent of the public lands are administered by BLM, 17 percent by California Department of Parks and Recreation, and one percent are under the ownership of El Dorado County. Privately owned lands are primarily rural residential in the South Fork segment, but some small farms and ranches also exist. These ranches and farms use the land mostly for grazing, fruit orchards, and vineyards. Commercial development is primarily in Coloma and Lotus.

The South Fork segment is diverse in terms of scenic attributes. Murphy Mountain rises 1,100 feet above Coloma and is one of the more impressive mountains of the area. The lower portion of the river corridor flows into a narrow canyon known as "The Gorge." Outstanding cultural features within the South Fork segment include those within Marshall Gold Discovery State Historic Park at Coloma. The South Fork segment from the Folsom Lake State Recreation Area boundary to Chili Bar is listed in the Nationwide Rivers Inventory and as such is established as having potential for national designation as a wild, scenic or recreational river (National Park Service, 1983).

The most important recreational opportunities offered by this unit and the most significant recreational facilities are summarized in Table 3-3:

Whitewater Recreation

The South Fork of the American is the most popular river for commercial whitewater rafting in the western United States (Mandel et al, 1989; National Park Service, 1983). The recreation values relating to whitewater boating along the South Fork have been established as an outstandingly remarkable feature (National Park Service, 1983). Annually, more than

100,000 visitors float the river by inflatable raft through the services of commercial outfitters. The number of commercial river rafters is controlled by El Dorado County, which manages whitewater recreation on the river. The South Fork of the American is serviced by over 70 commercial river-running companies (National Park Service, 1983).

Private rafting on the river accounts for approximately 20,000 users annually. Kayaking on the South Fork also occurs, but because of the specialized nature of this sport, the number of kayakers is estimated at 10,000 annually.

The physical capacity for whitewater boating on the South Fork as a recreational river is estimated to be 218,000 annually; as a semi-wilderness river, the physical capacity for whitewater boating is estimated to be 126,000 annually (El Dorado County Planning Department, 1982b, November). These estimates indicate that while the existing use along the South Fork is high, additional facilities for recreation could permit a substantial increase in whitewater recreation.

Table 3-3. Primary Recreation Opportunities and Facilities: South Fork of the American River Segment

Whitewater Recreation		Camping	
miles of river	21	no. of developed sites	511
		no. of primitive sites	45
Picnicking		Bicycling	
no. of sites	121	miles of bikeway	0
no. of areas	7	miles of trails	0
Cultural and Historical Observation		Horseback Riding	
no. of exhibits or features	42	miles of equestrian trails	0
Hiking/Walking		Fishing	
miles of trails	2.5	miles of river open to anglers	21
		Gold Panning and Dredging	
		miles of river open	5

Cultural and Historical Observation

The South Fork of the American offers significant cultural and historical values from the gold rush era. So extensive are these opportunities that an estimated 425,000 visitors participate in cultural and historical observation at Marshall Gold Discovery State Historic Park annually.

The South Fork of the American River hosts approximately 700,000 recreationists annually. Of these, approximately 65 percent are visitors to Marshall Gold Discovery State Historic Park and the other 35 percent recreate along other portions of the river corridor.

FOLSOM LAKE STATE RECREATION AREA

This state park unit, encompassing the two reservoirs known as Folsom Lake and Lake Natoma, is centered on the confluence area of the North and South Forks. It is bound on the upstream side by the proposed Auburn dam site and on the downstream by the American River Parkway. The park unit includes approximately 19,000 acres, but the majority of this area is occupied by the lakes themselves with the boundaries of the unit generally close to the shoreline. The natural environment surrounding Folsom Lake is characterized by rolling hills covered with oak woodland or brush, while Lake Natoma is situated in a valley environment with riparian vegetation. In many areas, rural and suburban residential development has proceeded right up to the park boundary, with an especially high density of residential, commercial, and light industrial use adjacent to Lake Natoma.

The lands for the Folsom Project were purchased by the Corps of Engineers who built Folsom Dam. They turned the Dam and land jurisdiction responsibilities over to the Bureau of Reclamation in 1955 so the multi-purpose Folsom Dam could be operated as an integral part of the Central Valley Project. Folsom Dam was built to provide for flood control, water storage, and hydroelectric power. Nimbus Dam, located seven miles downstream from Folsom, is a small afterbay dam impounding Lake Natoma. In 1956 California Department of Parks and Recreation entered into an agreement with the Bureau of Reclamation for operation of the recreational facilities of the two reservoirs. The State developed a master plan the next year, and a year later the first permanent recreation facilities were completed. In the years since, there has been regular construction of the new facilities and upgrading of existing ones, with an updated general plan published in 1978 and 1988.

Generally, the south and west shores of Folsom Lake are the most intensively developed for recreation, while at Lake Natoma, the greatest number of facilities are along the northwest shore.

Outstanding natural features of the unit include the Anderson Island Heron Preserve and a remarkable wintertime congregation of Canada geese. Outstanding cultural features are the Folsom Powerhouse, the South Canal, and the North Fork Ditch. The most important recreational opportunities offered by this unit and the most significant recreational facilities are summarized in Table 3-4.

The quality of Folsom Lake as a boating resource is augmented by nine boat launch ramp sites, with a total of 30 lanes, and a marina. Lake Natoma has three launch ramp sites yielding a total of nine lanes. Planned maximum boating density is 17 acres per boat at Folsom Lake and four acres per boat at Lake Natoma. Much of the picnicking and all of the camping take place in fully developed facilities. Similarly, the swimming/sunning activities are concentrated at developed beaches. The riding/hiking trail that runs along the west shore of Folsom Lake and the north shore of Lake Natoma is a part of the Pioneer Express Trail, and the paved bikeway running from Beals Point to Nimbus Dam is the eastern most segment of the Jedediah Smith National Recreation Trail.

Folsom Lake supports a diverse and relatively productive sportfishery heavily used by local anglers. Fishing at Lake Natoma is considerably less productive and it is correspondingly less popular. The area below high water line at Folsom Lake is open to vehicle use, which at times of drawdown provides a popular recreational opportunity.

Folsom Lake State Recreation Area is one of the most popular units in the state park system, with visitation in many years running near 2.5 million. Most of this visitation occurs in the summer, motivated by hot weather, and is oriented toward water-based recreation. During these peak use periods, the major recreational facilities are full to capacity. Lake Natoma receives about 500,000 visitors annually, with a similar seasonally crowded cycle of use.

In addition to the most popular activities, Lake Natoma receives regular use for rowing competition and training, while Folsom Lake attracts jet skiers and sailboarders.

Table 3-4. Primary Recreation Opportunities and Facilities Folsom Lake State Recreation Area

	Folsom	Natoma
Speedboating/skiing flatwater acres of surface area	12,900	0
Restricted speed flatwater acres of surface area	600	500
Whitewater runs miles of river	0	0
Picnicking no. areas, no. tables	7/600	4/100
Camping no. campground, no. sites	2/150	1/020
Nature study interpretive facilities	0	0
Gold panning	0	0
Hiking miles of trail	50	8
Bicycling miles of paved path miles of trail	9 5	8 0
Equestrian miles of trail	40	8
Swimming/sunning beach miles of suitable shore	1	1/2
Fishing acres of surface area	11,500	500

AMERICAN RIVER PARKWAY

The American River Parkway segment is a 23-mile-long river corridor that extends from Nimbus Dam at Lake Natoma to Discovery Park at the confluence of the American and Sacramento Rivers. The river corridor is an open space greenbelt that bisects the metropolitan area of Sacramento and occupies approximately 6,000 acres. The natural environment of the segment is characterized by a broad river channel with dense riparian vegetation, including many large trees lining the banks of the river. Urban development surrounding the segment is often separated from the river by either bluffs or levees, and in many locations the surrounding urban development is screened from view by vegetation.

The County of Sacramento is the managing agency for the entire American River Parkway segment, and owns 92 percent of its lands. The fairgrounds for the California State Fair (Cal Expo) are located within the American River Parkway segment, although they are managed separately. The American River Parkway was first conceived in 1915 when the City of Sacramento drew a river corridor park onto a plan map. The Sacramento County Board of Supervisors initiated land acquisition proceedings along the river in 1959, and in 1962, an American River Parkway plan was adopted (Sacramento Board of Supervisors, 1985). Flows in the Lower American River segment are controlled by the Bureau of Reclamation through releases at Folsom and Nimbus dams.

Outstanding natural features of the segment, as presented by the National Park Service California River Inventory (1983), include the river's scenic qualities, the fisheries resources of chinook salmon, steelhead trout, striped bass and American shad, approximately 135 species of birds, and the river's lush riparian vegetation. Historic, archeological and cultural features of the segment include 26 identified sites of the Nisenan Maidu Indians; two are on the National Register of Historic Places. The segment's Indian sites and the river corridor's natural setting within a densely populated urban area provide a significant opportunity for historical and nature education. The American River through the segment is designated as a Recreational River in both the State and Federal Wild and Scenic Rivers Systems. Recreation and fishery values have been classified as outstandingly remarkable features within the American River Parkway (National Park Service, 1983). The primary recreation activities and supporting attributes offered by the American River Parkway segment are summarized in Table 3-5.

The American River Parkway segment offers the Sacramento metropolitan area a unique recreation resource in that the river corridor is a relatively pristine environment surrounded by dense urban development. There are 28 automobile access points, 16 boat launch areas, and a total of 68 access points for bicyclists, pedestrians and equestrians. The segment contains several developed parks and an extensive trail system. There are a total of eight roadway crossings of the river between Discovery Park and Nimbus Dam, and considering the population density of the area, these crossings are quite dispersed and unobtrusive to the overall setting.

The total recreational attendance of the American River Parkway segment is estimated at four million annually with the primary activities being biking, swimming, jogging, fishing, and rafting (Sacramento County Board of Supervisors, 1979). Approximately 75 percent of the segment's use occurs between March and September.

Physical Description of Inundation by Dam Alternatives

The three dam alternatives are described in Chapter One. The following discussion builds on that information.

FLOOD CONTROL ONLY DETENTION DAM

Studies by the Army Corps of Engineers (1989) estimate that it would be necessary to impede the riverflow as a flood control regulatory measure once every five to seven years. The impoundment would typically remain less than three weeks. The impoundment or flood pool size would vary with flood intensity. For added perspective, the Auburn Project coffer dam, breached during the 1986 flood, had a spillway plug elevation of 715 feet and impounded water which covered the Highway 49 bridge, at 586 feet elevation, four times between 1978 and 1986. The 1986 flood created a pool almost equal to the spillway elevation at Lake Clementine which is 716 feet elevation.

The flood control reservoir capacity, at the 900-foot contour, would be reached during a 200-year flood event and would require 12 days to drain. Under this maximum condition, the water pool would extend to the Yankee Jims road bridge on the North Fork and Dardanelles Creek on the Middle Fork. Maximum pool size is 4,500 acres.

Table 3-5. Primary Recreation Opportunities and Facilities American River Parkway Segment

Whitewater Recreation miles of river	23	Equestrian Recreation miles of equestrian trails	25
Picnicking no. of areas	12	Fishing miles of river open to anglers	23
Natural and Cultural Interpretation no. of exhibits or features	31	Golfing no. of courses	2
Hiking/walking/jogging miles of trails	50	Boating no. of launch areas	16
Recreation access points automobile	28	Field Games no. of fields	2
pedestrian	68		
equestrian	21		
Bicycling mi. of bikeway	25		

An "expandable" flood control dam is a variation of this alternative, which if increased to the maximum extent, would equate to the multi-purpose dam described below.

A single purpose, non-expandable project would require 19,000 acres of land. The "expandable" feature would require 42,000 acres, identical with the authorized project.

LOCAL BENEFITS MINIMUM POOL

This alternative would provide for a minimum pool level at 715 feet, the same as the dam height at Lake Clementine and would extend to Paradise Canyon immediately downstream from Ruck-A-Chucky Rapids on the Middle Fork. An additional flood storage capacity of 580,000 acre-feet would exist to form a maximum pool level to the 930-foot contour. The maximum pool would reach to Salvation Ravine, one mile upstream from the Yankee Jims road on the North Fork, and to the Tahoe Forest Boundary near Kanaka Gulch on the Middle Fork.

The flood storage area between the 715 and 930-foot contours would be utilized on the same frequency as described for water impoundment under the flood control dam alternative, i.e. some additional impoundment exceeding the minimum pool level on a frequency averaging once each five to seven years and a pool reaching the maximum level on a frequency of once in 200 years.

The minimum pool, 2,000 acres in size, inundates 22 miles of river on both forks. The maximum pool is 5,300 acres in size and would temporarily inundate 39 river miles.

Implementation of this alternative would require about the same acreage as the non-expandable flood control alternative. If this alternative is designed for expansion, project acreage will be 42,000 acres.

MULTI-PURPOSE AUTHORIZED DAM PROJECT

This alternative would result in a 10,000 acre reservoir extending to the Colfax-Iowa Hill bridge on the North Fork, a distance of 24 river miles from the dam, and to

Oxbow Reservoir, 24 river miles from the North Fork-Middle Fork confluence when the reservoir is at its maximum pool level, an elevation of 1,140 feet.

Regulation of water storage to provide for flood control and water releases for consumption and power generation coupled with the steep canyon gradients will result in considerable fluctuation of the water level, up to 300 feet vertically. In the North Fork arm at a drawdown of 300 feet, or to an elevation of 840 feet, the area between Sorefinger Point, which is two miles upstream of the Ponderosa Way bridge, and the Colfax-Iowa Hill bridge would be exposed. In the Middle Fork arm the area between the vicinity of Fords Bar and Oxbow would be exposed.

Near Auburn, the water level would almost reach the California Department of Parks and Recreation headquarters on Highway 49 and residential tracts such as on Robie Point in Auburn. The lower portion of the old workings at the Speckels quarry near Cool would be inundated. Lake Clementine at 716 feet elevation would lie below the usual drawdown zone.

The project land area would be 42,000 acres.

Effects on Recreation in Auburn Project Lands Under Various Inundation Scenarios

FLOOD CONTROL ONLY DETENTION DAM

Natural Features

The following areas, each possessing outstanding scenic values, fall partially or fully within the area that would be subject to occasional flooding: American Canyon, Ruck-A-Chucky Rapids, Otter Creek and Canyon Creek. However, all of these are far enough upstream that their qualities should not be significantly affected. There would be temporary impairment of values during the rare flooding episodes, but as waters recede, the values would be restored. The areas would not be available for enjoyment during flood periods and access would be difficult shortly thereafter. Nevertheless, no significant permanent or long-term adverse effects on the values of these areas are expected.

Cultural Features

The following outstanding cultural sites fall partially or fully within the area that would be subject to occa-

sional flooding: Limestone Quarry, Mountain Quarries Railroad ("No Hands") Bridge, Old Stage Road/Auburn-Foresthill Turnpike, "Doodlebug" Gold Dredge, Mammoth Bar, North Fork Dam, and Grand Flume. Historic sites of potential archeological significance that fall within the floodable zone include: American Canyon, Cherokee/Poverty Bar, Oregon Bar, and Maine Bar. A total of 224 historic sites of all types and of several levels of significance have been recorded within this zone.

The effects of flooding on the above sites will be variable. Sites in downstream locations that display substantial structural remains, such as the Mountain Quarries Bridge and the bridge and toll house foundations on the Auburn-Foresthill Turnpike, would suffer adverse effects. The remaining sites, by their nature and location, would probably not be affected by occasional brief inundation.

Recreation Opportunities

Under the Flood Control Only alternative, the mosaic of recreation opportunities would remain largely unaffected. Occasional inundation of the canyons to approximately the 900-foot elevation would temporarily close the area for all use until flood waters recede and the area dries enough to permit reentry. This condition would likely occur, it is estimated, once every five to seven years. The inundation would last up to three weeks while the flood conditions subside and accumulated flood waters recede. This occasional inundation would likely occur between November and April, a non-peak period for recreational use.

Besides temporary inundation of the canyons rendering the area "off-limits," effects of this alternative on recreation would be limited mainly to facility development/design. Since there are no recreation developments (except for trails and roads) within the inundation zone, any future facility development such as restrooms, picnic areas and campgrounds would require a design that could endure the inundation. Recreation facility developments such as visitor centers, ranger stations, housing, etc., would not be feasible within the inundation zone. It should be mentioned that these kinds of developments are not likely to be constructed in the inundation zone even if occasional inundation was not a factor. Damage to facilities placed within the inundation zone would be negligible if designed correctly; restrooms and picnic areas exist presently at Discovery Park in the American River Parkway. These facilities have occasionally been inundated by flood waters and have suffered no significant damage.

The effects of occasional inundation could alter the ecology of the area to a small degree. Vegetation would most likely survive even the most extended inundation, but shifts in the vegetative composition could occur, probably to a more water-dependent association. Animals within the inundation zone may not fare as well as the plants. Burrowing mammals, microfauna, and insects may be in a state of dormancy during the inundation and many would likely perish. Some birds, particularly those nesting in the inundation zone, would be affected.

Prior to the breaching of the Bureau of Reclamation coffer dam at the Auburn Dam site in the 1986 flood, the North and Middle Fork Canyons were inundated to the Highway 49 Bridge on four separate occasions. There were no lasting effects to the canyons except when the coffer dam breached, causing a sudden rampage of the impounded water down the canyon. This surge of flowing water did cause substantial alteration of certain areas. No such surge of impounded water would occur with a permanent flood control dam.

In general, recreation opportunities offered under the Flood Control Only option would coincide with the present condition of the area. No additional flatwater recreation would be offered. The overall spectrum of recreation opportunities available within the study area would remain the same as it is today.

LOCAL BENEFITS MINIMUM POOL

Natural Features

That portion of American Canyon within 300 vertical feet of its confluence with the Middle Fork would be lost to inundation by the minimum pool reservoir. This outstanding natural feature would be irrevocably altered, resulting in an impairment of the scenic values of the area.

The canyon area downstream of North Fork Dam and Lake Clementine would be inundated. This includes the North and Middle Forks confluence area, which is within the area where most day use presently occurs.

Areas within the zone occasionally subject to inundation during flood episodes (715-foot elevation to 930-foot elevation) are: American Canyon, Ruck-A-Chucky Rapids, Otter Creek, and Canyon Creek. As was the case for the Flood Control Only option, the scenic values of these areas are not likely to suffer significant long-term or permanent adverse effects as a result of occasional brief flooding.

Cultural Features

Outstanding historic sites directly affected by inundation under the permanent minimum pool include: Mountain Quarries Railroad Bridge, Old Stage Road/Auburn Foresthill Turnpike (portion of road and all of bridge/tollhouse remains), Limestone Quarry (lowest portion), North Fork Dam (except crest), Mammoth Bar, and Grand Flume. An additional historic site of potential archeological significance within the permanent inundation zone is Cherokee/ Poverty Bar. A total of 56 known historic sites of all types and several levels of significance fall within the permanent pool area.

In the case of sites whose primary significance is their archeological value, the effects of permanent inundation can be less than total destruction. However, all the outstanding cultural sites are significant through their historic association, and these sites can essentially be considered eliminated within the minimum pool area.

Between the 715-foot and 930-foot elevation contours, in a zone subject to occasional flooding under this alternative, is the "Doodlebug" Dredge, the majority of the Limestone Quarry Site, and a portion of the Old Stage Road/Auburn-Foresthill Turnpike. Other known historic sites of potential archeological significance falling in the floodable zone are American Canyon, Oregon Bar, and Maine Bar. A total of 191 historic sites of all types and several levels of significance fall within this zone of occasional inundation. Effects on the major sites within this zone are expected to be negligible.

Recreation Opportunities

Under the Local Benefits Minimum Pool Dam alternative, the variety of recreation opportunities would be changed. The permanent pool would inundate a total of 22 miles within the North and Middle Fork canyons and would directly affect recreation activities that occur in these areas, particularly in the confluence region where approximately 20 percent of recreation in the project area presently occurs. Most recreation opportunities, including whitewater recreation, recreational gold panning/dredging, observation of cultural and historical sites, and stream fishing would be available upstream of the minimum pool. Many recreation opportunities not presently offered in the Auburn Project would be gained. The recreation opportunities gained by creation of a reservoir would add to those presently offered at Folsom Lake State Recreation Area, while reducing those opportunities unique to the area.

The topography of the reservoir site is such that there would be virtually no flat land adjacent to the shore. Anticipated operation of the Minimum Pool Reservoir does not include any water level fluctuations except during periods of flood conditions. With a relatively stable level, shoreline vegetation resembling the vegetation at Lake Clementine would become established. Generally, because of steep topography, shoreline recreational development would be more difficult.

Flatwater. The reservoir created by the minimum pool dam would add 1,700 acres of reservoir surface area to that of Lake Clementine for a total of approximately 2,000 acres of flatwater. The minimum pool reservoir in combination with existing Lake Clementine, if zoned using the criteria used for the Auburn Reservoir Plan (California Department of Parks and Recreation, 1988), would provide 1,000 acres of restricted speed boating, and 1,000 acres for waterskiing/powerboating. The estimated density of boats for the two reservoirs (figured at 20 acres per boat) would yield a capacity for 50 boats in a "ski zone" and 50 boats in a "restricted" speed area. This would result in a maximum net increase over the existing condition (at Lake Clementine) of 75 boats for both zones (33 in the "ski" zone and 42 in the "restricted" zone).

Whitewater Recreation. Opportunities for whitewater recreation would continue, with a 24 percent loss of existing whitewater in the Auburn Project area. Two whitewater runs would be lost through permanent inundation: the 6.7 mile Class II run from Greenwood Bridge to Mammoth Bar and the 2.4 mile Class II run from Murderers Bar to the confluence (this represents 68 percent of all Class II whitewater in the Auburn Project segment). The Greenwood Bridge to Mammoth Bar river segment is well suited for families and other private parties not wishing to be professionally guided down the river, beginner to intermediate kayakers, and canoeists. This river segment is one of the only suitable areas on the Upper American for canoeing. Whitewater recreation along the North Fork would be unaffected.

Recreational Gold Panning and Dredging. A total of 15 miles of stream now open to gold panning and dredging would be eliminated; this represents a 36 percent reduction from what is currently available.

Sunning and Swimming. The minimum pool reservoir would reduce river shoreline suitable for sunning and swimming by two miles; this represents a 73 percent reduction in what is presently available. Most of the sunning and swimming areas that would be lost are along the North Fork from the North Fork Dam

(Lake Clementine) to below the confluence in the vicinity of the City of Auburn.

The shoreline of a minimum pool reservoir would be prohibitively steep for swimming and sunning, and construction of beaches impractical. Floating docks like those proposed for Auburn Reservoir might be desirable.

Fishing. A total of 17 miles of fair-quality stream fishery with moderately good access would be inundated, resulting in a 40 percent reduction of stream fishery; the remaining 60 percent of stream fishery is presently difficult to access. A minimum pool reservoir would add 1,700 acres of fair reservoir fishing to the existing 280 acres of fair reservoir fishing at Lake Clementine, for a total of approximately 2,000 acres. Boat access for fishing on the reservoir would be good, but land access for bank and shoreline fishing would be extremely limited. The net increase in fishing boat capacity would be at least 42 boats during waterskiing season and up to 75 boats during the rest of the year.

Trails. Six separate trail segments would be inundated under the minimum pool reservoir: the Western States Trail in two sections in the vicinity of the confluence (two river crossings would also be inundated), Quarry Road Trail, Clarks Pool Trail, Lower Clementine Trail, and portions of the Old Stage Coach Road Trail. These trails include nearly all mountain bicycling trails and some of the most popular sections of equestrian and hiking trails in the Auburn Project segment. New trails that could be constructed under this alternative would probably be aligned some distance from the shore of the reservoir, and access to the water would be limited because of the steep canyon topography.

Equestrian Recreation. If funds are available for construction, the minimum pool dam alternative would involve re-routing popular equestrian routes, and in particular, the Western States Trail through the project area. This situation would render endurance rides less feasible, as opportunities for river crossing and water access would be reduced.

Picnicking. Canyon picnicking would be eliminated within the reservoir. Construction of picnicking areas could mitigate this loss with a developed site picnicking opportunity. Dispersed, informal picnicking in canyon areas would continue in areas away from the reservoir. Any new picnic grounds constructed near the reservoir could not be oriented toward water-based recreation as the topography is too steep, while canyon picnicking would likely continue near the rivers and be oriented toward water-based recreation (typically on large rocks, small beaches, etc.).

Hiking and Backpacking. The present hiking environment within the canyons, would be significantly affected. A new trail system above the minimum pool elevation of 716 feet would be needed. Opportunities for overnight backpacking within the area would still be possible and most backcountry river camps are above the minimum pool elevation.

Camping. Most of Cherokee Bar and the camp near Ruck-a-Chucky Rapids would be inundated.

Nature Study and Appreciation. With a minimum pool reservoir, nature study, birding, and other nature appreciation opportunities would remain, but in the vicinity of the reservoir the existing unique and diverse assortment of plant and animal species, particularly those common to riparian habitats, would be less abundant; this would be the area downstream from Lake Clementine and to Cherokee Bar on the Middle Fork. Habitat for numerous species of passerine and raptorial birds would be inundated. Some species of waterfowl and birds now relatively common along these portions of the rivers would be displaced.

Mammals, reptiles, and amphibians now fairly common in the canyons would lose habitat, and their numbers reduced. Opportunities for environmental education would be less diverse at a reservoir setting.

Cultural and Historical Observation. As discussed under cultural features, the cultural and historical resources of the area would be reduced, and the opportunity for enjoyment of these resources would be proportionately affected.

AUTHORIZED PROJECT AUBURN DAM

Natural Features

With the exception of Pointed Rocks Vista, Devils Falls, and Lime Rock, all or significant segments of the outstanding natural features listed in the narrative are located below the 1,140-foot elevation high water line and would be inundated. The list includes: American Canyon, Ruck-A-Chucky Rapids, Otter Creek, Canyon Creek, Codfish Falls, Shirttail Creek Canyon, Indian Creek, Dardanelles Creek, and Chamberlain Falls. These features would be either changed or irrevocably altered.

Cultural Features

Of those outstanding historic sites identified on Auburn Project lands, four would be unaffected by inundation - Butcher Ranch, Grizzly Bear House,

Camp Flint, and Robbers Roost - and one would be partially affected - Roanoke Trail. The remaining outstanding sites lie fully below the high water line: Limestone Quarry, Horseshoe Bar/Tunnel Chute, Mountain Quarries Railroad Bridge, Old Stage Road/Auburn Foresthill Turnpike, "Doodlebug" Dredge, Dardanelles Hydroelectric Plan, North Fork Dam, Mammoth Bar, and Grand Flume. All the identified historic sites of potential archeological significance would also be inundated: American Canyon, Cherokee/Poverty Bar, Shirttail Canyon, Bunch Canyon, Oregon Bar, and Maine Bar. A total of 460 known historic sites of all types and various levels of significance would be inundated. Those sites whose significance was primarily archeological could potentially be inundated without sustaining damage, but substantial adverse effects should still be expected.

Recreation Opportunities

Under the authorized Auburn Dam alternative, the mosaic of recreation opportunities would be greatly altered from the present condition of the area. Most existing recreation opportunities, including whitewater recreation, recreational gold panning/dredging, cultural and historical observation, and stream fishing, would be largely eliminated. However, many recreation opportunities not presently offered in the Auburn Project Area would be gained. Many of the recreation opportunities gained by creation of a reservoir would add to those presently offered at Folsom Lake State Recreation Area. The character of recreation opportunities lost because of inundation are irreplaceable.

The topography of the area is such that there would be virtually no flat land near the shore of the reservoir (California Department of Parks and Recreation, 1988). Anticipated operation of an Auburn Reservoir would result in water level fluctuations of up to 300 vertical feet. Generally, the problems of steep topography and water level fluctuations would make shoreline recreational development difficult.

Flatwater Recreation. The reservoir created by the authorized Auburn Dam Project would have a maximum of 10,000 acres of surface area, and would eliminate 280-acre Lake Clementine. At Auburn Reservoir, 2,400 acres of non-power boating, 4,200 acres of restricted speed boating, and 3,400 acres for waterskiing/ powerboating is planned (California Department of Parks and Recreation, 1988). At the planned density of 29 acres per boat, the reservoir would have a capacity for 117 boats in the "ski zone," and 145 boats in the restricted area. This would result in a maximum net increase over the existing condition (at Lake Clementine) of 238 boats. The upper reaches of the reservoir would be relatively narrow

Table 3-6. Natural and Cultural Features On Auburn Project Lands

Outstanding Natural Features	Outstanding Historic Sites	Historic Sites of Potential Archeological Significance
Pointed Rocks Vista American Canyon Ruck-A-Chucky Rapids Otter Creek Canyon Creek Lime Rock Codfish Falls Shirttail Creek Canyon Devils Falls Indian Creek Chamberlin Falls Rapid Dardanelles Creek	Horseshoe Bar Limestone Quarry Grand Flume Mammoth Bar Robbers Roost "Doodlebug" Dredge Butcher Ranch Roanoke Trail North Fork Dam Camp Flint Grizzly Bear House Mountain Quarries Railroad Auburn/Forest Hill Turnpike Dardanelles Powerplant	American Canyon Cherokee/Poverty Bar Shirttail Canyon Bunch Canyon Oregon Bar Maine Bar

and would provide "sixteen miles of scenic 'river-like' waterway zoned for 'quiet' uses. . . ." (California Department of Parks and Recreation, 1988; p. 91). Unlike Lake Clementine, where the water level remains constant, the level of Auburn Reservoir would fluctuate up to 300 vertical feet. This drawdown could reduce the surface area of the reservoir to as little as 4,000 acres, thereby reducing the boat capacity by 60 percent. These fluctuations would also be expected to interfere with boat launch and marina operations, as they do at Folsom Lake.

Whitewater Recreation. All existing whitewater runs in the Auburn Project (two on the North Fork and three on the Middle Fork) would be lost to inundation at maximum reservoir level. In all, 38 miles of navigable whitewater (9.5 miles of Class IV-V, 15.0 miles of Class III-IV, 13.4 miles of Class II) would be affected. There would be limited whitewater opportunity on both forks under certain drawdown conditions; however, it would be unpredictable, and altered in many respects by the effects of inundation.

The reduction in availability of whitewater recreation opportunities would have a major impact on both the commercial and non-commercial sectors of the whitewater recreation community. Companies dependent on the three forks of the American could no longer exist. As with the present, a few companies

would continue to remain viable by virtue of their South Fork business. Most would find it necessary to be successful in locating other business opportunities on other California or out-of-state rivers to survive. Noncommercial boating in the Sacramento area would largely be limited to the South Fork of the American. The South Fork presently serves over 100,000 boaters per year. With the additional demand created by displaced whitewater recreationists from the North and Middle Forks, a mandatory noncommercial permit system would probably need to be implemented.

Recreational Gold Panning and Dredging. All 42 miles of stream open to gold panning and dredging would be eliminated except within the drawdown zone.

Sunning and Swimming. All existing areas for sunning and swimming would be eliminated. The steep topography surrounding the proposed reservoir would not be conducive for beach construction. The development plan for the proposed Auburn reservoir (California Department of Parks and Recreation, 1988) includes installation of floating docks; this facility would provide at least one location for sunning and swimming. The feasibility of this sort of facility is ultimately dependent upon the extent of water level fluctuation.

Fishing. Inundation of the canyons would result in elimination of 43 miles of stream fishing (smallmouth bass, rainbow and brown trout); periods of drawdowns would temporarily restore some stream fishing. An Auburn Reservoir would replace the existing 280 acres of reservoir fishing at Lake Clementine with 10,000 acres of reservoir fishing (rainbows and kokanee), for a net increase of 9,720 acres. Assuming that boat launch and marina facilities are constructed as planned, boat access for fishing on the reservoir would be good, but land access for bank and shoreline fishing would be poor. Because of the colder water temperatures in an Auburn Reservoir, the number of available sportfishing species would be less than at Folsom Lake and the catch per angler would likely be less. Boat capacity (29 acres per boat) for fishing the reservoir would be 145 boats during waterskiing season and a theoretical capacity of 262 boats for the remainder of the year, when the reservoir is full. Reservoir fluctuation would typically reduce the available surface area to the extent that there would be only a negligible increase in boat capacity during the non-summer season. The maximum net increase in fishing boat capacity would vary from 137 boats to 237 boats. For comparative purposes, Folsom Lake at plan density, has a capacity of 767 boats when it is full.

Trails. Auburn Reservoir would inundate two-thirds of the existing trails in the project area. Three trail segments not directly affected by inundation are: the trail from the new Foresthill Bridge to Lower Clementine Road, the Western States Trail from Foresthill to the vicinity of Fords Bar, and the equestrian and hiking trail from Sliger Mine to Browns Bar Ravine. The proposed trail system of the Auburn Project General Plan (California Department of Parks and Recreation, 1988) includes 120 miles of riding and hiking trails in the area. If the plan were implemented, these trails would generally be located some distance from the shore of the reservoir, and access to the water would be limited because of the steep canyon topography.

Equestrian Recreation. The proposed development plan for Auburn Reservoir anticipates the replacement of the trail system eliminated by inundation. If implemented, this would involve re-routing trails, including the Western States Trail. Equestrian recreation in the area would be best suited for local users on short, relaxed riding as opposed to endurance rides over a variety of terrain.

Picnicking. The proposed development plan for Auburn State Recreation Area (California Department of Parks and Recreation, 1988) provides for developed picnicking areas complete with tables, barbe-

cues, restrooms, and parking at a total of 10 separate areas (245 sites total). The proposed picnicking areas, if developed, would generally not be located in close proximity to water; this condition contrasts with the existing environment where, despite the lack of developed areas, picnicking is a popular activity typically occurring adjacent to water and often in conjunction with beach activities (swimming, sunning, wading etc.).

Hiking and Backpacking. The hiking environment within the canyons would be largely eliminated by inundation. Of the 72 existing miles of trail, 14 miles would not be flooded. The proposed development plan for Auburn Reservoir (California Department of Parks and Recreation, 1988) plans for construction of several hillside trails. Proposed trail development includes some access to small side canyons, reservoir "arms", and view points. If the plan is implemented, there would be a net increase in the miles of trail within the area, but the overall hiking environment would be quite different. Five overnight "trail" camps (see *Camping* below) are proposed for a total overnight backpacking capacity of 50 people (California Department of Parks and Recreation, 1988).

Camping. All existing primitive campgrounds would be inundated by the reservoir, while the semi-developed campground at Mineral Bar would be unaffected. The development plan for Auburn State Recreation Area (California Department of Parks and Recreation, 1988) proposes two fully developed campgrounds for a total of 280 sites. If the plan is implemented, there would be a net increase of 181 sites from the present undeveloped condition. Proposed campgrounds could not be located for easy access to the reservoir because of topographic limitations. The development plan also proposes five "trail" campgrounds and six boat-in campgrounds: three situated onshore and three floating offshore (120 boats total). The anticipated water level drawdown would greatly affect the camping opportunities for both the boat and trail camps.

Nature Study and Appreciation. With an Auburn Reservoir, nature study, birding, and other nature appreciation opportunities would remain, but the existing unique and diverse assortment of plant and animal species, particularly those common to riparian habitat, would be greatly reduced. The existing prime habitat for numerous species of passerine and raptorial birds would be inundated (Bureau of Reclamation, 1972). Species of waterfowl and birds now relatively common along the rivers, would also be largely absent at a reservoir. Mammals, reptiles and amphibians now fairly common in the canyons would lose critical habitat, and their numbers would be

greatly reduced since the area surrounding the 10,000 acre reservoir has an established wildlife population in place (Bureau of Reclamation, 1972). Opportunities for environmental education would be less diverse at a reservoir setting.

Cultural and Historical Observation. As discussed under cultural features, the cultural and historical resources of the area would be reduced, and the opportunity for enjoyment of these resources would be proportionately reduced. A comparison of cultural features affected by each dam alternative can be found in Table 3-7.

Desirability by Water Alternative

The desirability of a National Recreation Area relative to the three water alternatives can best be addressed by answering the question: What kind of an NRA will it be? An NRA based upon a free-flowing river (the Flood Control Only Detention Dam alternative); an

NRA based upon a reservoir (the Authorized Project Auburn Dam alternative); or an NRA based upon some of both (the Local Benefits Minimum Pool alternative)?

An NRA based on the Flood Control Only option is the closest to the current or existing condition of the North and Middle Fork canyons. Since the detention dam would only retain water during actual flood conditions - an estimated two to three weeks once every five to seven years - the recreation impacts would be confined to the time of flooding and for the period of time thereafter required for the affected area to dry sufficiently to allow reentry and use. The impacts would be temporary dislocation at the time of flooding, and changes that would be necessary in the design, construction, and maintenance of access roads and recreation trails and facilities subject to periodic inundation. Some vegetation shifts might occur in the ecosystem, but it is anticipated these would be of minimal recreation impact and would not interfere with nature appreciation activities within the area.

Table 3-7. Summary of Direct Effects Solely from Inundation

Type of Feature	Degree of Effect	Number of Features Affected		
		Flood Control Only Dam	Minimum Pool Dam	Authorized Auburn Dam
Outstanding Natural Features (n=12)	No Direct Effect	8	8	3
	Negligible/Minor	4	4	0
	Major/Loss	0	0	9
Outstanding Historical Sites (n=14)	No Direct Effect	7	7	4
	Negligible/Minor	5	1	0
	Major/Loss	2	6	10
Historical Sites of Archeological Significance (n=6)	No Direct Effect	2	2	0
	Negligible/Minor	4	3	0
	Major/Loss	0	1	6
Historic Sites of Various Types & Levels of Significance (n=1,589)	No Direct Effect	1,365	1,342	1,129
	Negligible/Minor	224	191	0
	Major/Loss	0	56	460

Note: Effects and impacts from related projects not considered.

Similarly, the suitability of a Flood Control Only NRA to respond to other priority recreational needs in the State of California (walking, bicycling, developed camping, picnicking, beach activities - as identified in a 1987 Public Opinion and Attitude Survey on Outdoor Recreation in California by the California Department of Parks and Recreation (see Table 2-2) - would be unaffected, except on the same temporary basis.

From a recreation point of view, an NRA with an adequate planning, development, and operating budget would enhance the existing recreation opportunities of the canyons and free-flowing river environment to more than offset the temporary effects of periodic (once every five to seven years) flooding.

An NRA with the Flood Control Only option has the least recreation impact or shift from existing condition and use, and of the three water alternative options, maximizes preservation of and recreation opportunities associated with the canyons and free-flowing river.

An NRA based upon the authorized Auburn Project trades 48 miles of free-flowing river and canyon recreation base for 10,000 acres of reservoir recreation. Whitewater boating, gold panning and recreational dredging (in the heart of historic Mother Lode country), river fishing, river sunning and swimming would be eliminated, along with 58 miles of canyon-based equestrian, hiking and mountain biking trails, and existing picnic and campground developments. In its place, given implementation of the California Department of Parks and Recreation General Plan, the Auburn reservoir would provide power boating and water skiing opportunities, reservoir fishing, sunning and swimming, and new developed campgrounds, trails, and picnic areas.

Several constraints apply to these new developments, however. The new reservoir shoreline would be unsuitable for beaches, developed campgrounds, or other on-site water-oriented facilities due to steep reservoir canyon walls and 300-foot water level fluctuations that would be part of the reservoir water management program. The desirability and attractiveness of reconstructed facilities and trails would be less than in their present river-based locations. Birdwatching and nature study opportunities would remain, although these activities would occur in a less diverse ecosystem and be less appealing. The outdoor special events of the Tevis Cup and Western States 100 Run would be eliminated or rerouted. Finally, according to the General Plan, 66 percent of the reservoir surface would be zoned for restricted speed power boating or nonpower boat use.

An NRA with the authorized Auburn Project option represents the greatest shift from existing condition and use, and of the three water alternative options maximizes reservoir-based recreation opportunities and activities.

An NRA based upon the Local Benefits Minimum Pool option provides for some free-flowing river (22 miles) and some reservoir (2,000 acres). As such this option provides a point of balance between the Flood Control Only and Authorized Auburn Project options, a "middle of the road" (or water) alternative. By the same token, the tradeoff specified in this option is evident only as an outcome of Local Benefits Minimum Pool dam decision, since there is no inherent rationale from a recreation perspective as to how much free-flowing river and canyon should be traded off for how much reservoir to produce a "best mix" NRA.

The Local Benefits Minimum Pool option would accommodate an estimated 75 additional power boats, while decreasing whitewater boating opportunities by 9.1 miles or 24 percent. Gold panning and recreational dredging opportunities would decrease 36 percent. Most existing mountain bike trails would be eliminated, and many, or a portion of many, equestrian trails. Two miles of river swimming and sunning beach area would be eliminated. As with the authorized Auburn Project option, new trails and facilities in new locations would need to be constructed to retain or increase existing capacity.

An NRA with the Local Benefits Minimum Pool option provides a blend of both the free-flowing river canyon and developed reservoir recreation. The particular mix would be determined by the characteristics of the proposed minimum pool dam.

CONSIDERATIONS IN ASSESSING DESIRABILITY OF AN AMERICAN RIVER NRA BY THE WATER OPTIONS

Further considerations in assessing the desirability of an American River NRA by the three water options are, first, that while many analyses have been conducted on the economic feasibility of water development and dam alternatives for the American River, little information exists on the economics of the recreation use and preservation values. Available data on the preservation value of 11 free-flowing rivers in Colorado, for example, show that residents are willing to pay an average of \$95 per household, or \$112.6 million per year, for preservation of those rivers (Walsh, Sanders and Loomis, 1985). It is safe

to assume that a significant preservation value for the American River in a free-flowing state currently exists; its estimated dollar value, however is unknown. Second, substitution of sites is also a factor to consider in assessing the value and desirability of specific recreation activities. It should be noted that the Folsom Lake Reservoir in particular, and the Lake Oroville and Lake Berryessa Reservoirs, to name reasonably close ones, are reasonably accessible for recreation use to the same population which would primarily use a reservoir at Auburn. On the other hand, the whitewater opportunities available for boating in the 48 miles of river canyon are a considerably more scarce resource, both locally and in the western United States.

Finally, developed facilities for picnicking, camping, and trails can, given sufficient budget, be developed at any reasonably feasible locations in an NRA. What cannot be built is the larger environmental setting in which they are located or of which they are a part - especially for the more setting-dependent facilities and activities.

Desirability by Segment

The Auburn Project study area segment comprises 42,000 acres or 52 percent of the total study area and the segment that makes an American River NRA feasible. The Auburn Project segment is that portion of the NRA directly affected by inundation under the water alternatives, and is the most thoroughly discussed and analyzed segment in this report.

The North Fork Wild River segment, approximately 10,000 acres, adds a 14-mile stretch of nationally-designated Wild River to the Auburn Project segment, and incorporates the total recreation use of the North Fork into the NRA. A highly scenic segment, it adds a wild or primitive component to the NRA, and a notable scenic overlook (Lovers Leap). Predominantly in federal ownership, the North Fork segment is perhaps the most obviously suitable and easiest segment to designate.

The South Fork segment, approximately 4,400 acres or five percent of the study area, has the largest percentage of private land, developed properties, residences, and commercial areas. It is also the heaviest-used fork in the study area for whitewater boating activities (the most popular commercial whitewater river in the western United States, Mandel; et al 1989) which makes it a suitable segment to include in an American River NRA. The South Fork

segment also includes the town of Coloma, where gold was first discovered in California. The site is now preserved in the Marshall Gold Discovery State Historical Park. Thus, the South Fork segment would add historical, as well as recreational, values to the NRA.

The Folsom Lake State Recreation Area segment - approximately 19,000 acres of reservoir and shoreline close to the Sacramento metropolitan area - a heavily used recreation unit in the California State Park System (2.5 million visitor days annually), and as such would add a well-established reservoir-based recreation complex to the NRA.

Since Folsom Lake provides public recreation as an existing unit of the California State Park System, however, a case can also be made for acknowledging Folsom Lake's recreation contribution to the region and adjoining an American River NRA upstream, i.e., beginning with the Auburn Project segment. The question becomes whether to coordinate Folsom Lake State Recreation Area as part of an overall American River NRA, or whether to designate an NRA adjacent to Folsom Lake and coordinate recreation on the American River without an overall NRA umbrella. From the standpoint of providing on-the-ground recreation opportunities, either arrangement is feasible.

The American River Parkway segment, approximately 6,000 acres or eight percent of the study area, provides greenbelt, river access, and day use facilities (including a popular bicycling trail) from the Folsom Lake State Recreation Area segment to and through metropolitan Sacramento. It is a highly popular recreation area located close to the daily lives and activities of thousands of people, as its four million annual visitor use days reflect. The American River Parkway is an intensively-used recreation area dedicated to providing recreation opportunities for the public, and would be a significant addition to an American River NRA.

On the other hand, the American River Parkway segment shares in common with the Folsom Lake State Recreation Area segment the fact that the Parkway is already secured and dedicated to the provision of outdoor recreation for the public, and is a self-sufficient functioning unit, in this case, of the Sacramento County Department of Parks and Recreation. From a perspective of maximizing a best conceivable NRA, the Parkway should probably be included. From a perspective of providing the public with the best possible recreation opportunities along

the American River, an NRA upstream of the American River Parkway (and Folsom Lake) segment, and coordinated with the Parkway, would provide equivalent opportunities.

In summary, a decision to establish an NRA would provide a mechanism for the overall coordination of the Auburn Project and North Fork segments (52,000 acres), and most logically the South Fork segment (for a total of 56,400 acres). It could either include or be adjacent to the Folsom Lake State Recreation Area segment (19,000 acres) and the American River Parkway segment (for an NRA total of 81,000 acres).

Chapter Four

Overview of Management

Introduction

Management of the three forks of the American River system downstream to the confluence to the Sacramento River involves federal, state, county, and municipal jurisdictions. Management objectives vary from one managing agency to the next because of individual agency mission and goals. To a large extent, the same recreational activities occur in each segment and recreationists may cross jurisdictional boundaries during the course of a day. Commercial whitewater rafting found on all forks of the American River system and trail use are examples.

The first section of this chapter addresses, by study area segment, the existing managing agencies and

their respective boundaries within each segment. The second section is a review of each agency's mission. The third section discusses the management approaches currently found in National Recreation Areas.

Present Land Management and Regulatory Jurisdiction within the Study Area

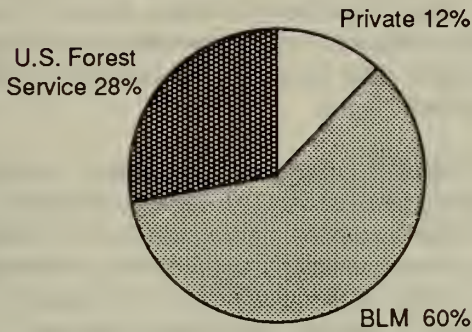
Direct land management authority and authority to regulate land use within the study area is shared by all levels of government; federal, state, county and municipality.

Federal	State	County	Municipal
Forest Service (USFS)	California Department of Parks & Recreation	Placer	Sacramento
Bureau of Land Management (BLM)	Cal Expo Board	El Dorado	Auburn
Bureau of Reclamation (USBR)		Sacramento	Folsom

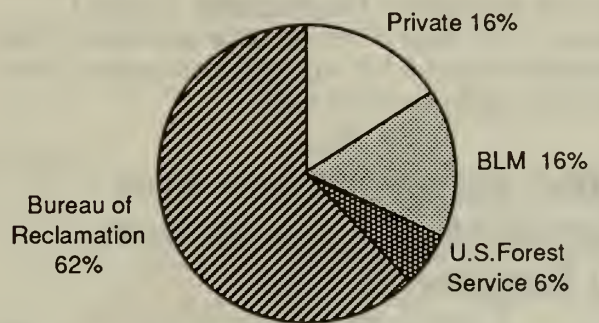
TABLE 4-1. STUDY AREA LAND MANAGEMENT REGULATORY JURISDICTION WITHIN THE STUDY AREA

STUDY AREA SEGMENT	OWNERSHIP	JURISDICTION	LAND MANAGEMENT OR REGULATORY	BASIS FOR JURISDICTION
NORTH FORK WILD RIVER	Federal	Forest Service Bureau of Land Mgt.	Land Management Land Management	National Forest System Land Public Domain Land; Memorandum of Understanding with USFS for managing whitewater recreation
	Private	Placer County	Regulatory	General Plan
AUBURN PROJECT	Federal	Forest Service Bureau of Land Mgt. Bureau of Reclamation State Parks & Rec.	Land Management Land Management Land Management Land Management	National Forest System Land on the Middle Fork Public Domain Land on the North and Middle Forks Auburn Dam Project Acquisitions Cooperative Agreement with USBR for Recreation Management and Law Enforcement on Auburn Project Lands. Manage whitewater recreation on National Forest System Lands through USBR.
	Private	Placer County El Dorado County City of Auburn	Regulatory Regulatory Regulatory	General Plan General Plan General Plan
	Federal	Bureau of Land Mgt.	Land Management	Public Domain Land
SOUTH FORK	State	State Parks & Rec.	Land Management	Marshall Gold Discovery Historical Park
	Private	El Dorado County	Regulatory	General Plan
	Federal	Bureau of Reclamation Bureau of Land Mgt.	Land Management Land Management	Central Valley Project Public Domain Land
FOLSOM SRA	State	State Parks & Rec.	Land Management	Management Agreement with USBR; State Owned Land
	County	El Dorado	Land Management	Lotus Park
	Private	City of Folsom Sacramento County Placer County El Dorado County	Regulatory Regulatory Regulatory Regulatory	General Plan General Plan General Plan General Plan
AMERICAN RIVER PARKWAY	State	Cal Expo Board	Land Management	State Lands
	County	Sacramento	Land Management	General Plan
	Private	City of Sacramento City of Folsom	Regulatory Regulatory	General Plan General Plan; Agreement with City of Sacramento

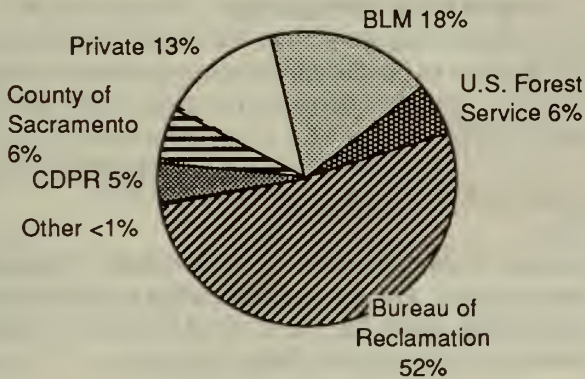
**Figure 4 - 1
LAND OWNERSHIP IN STUDY AREA**



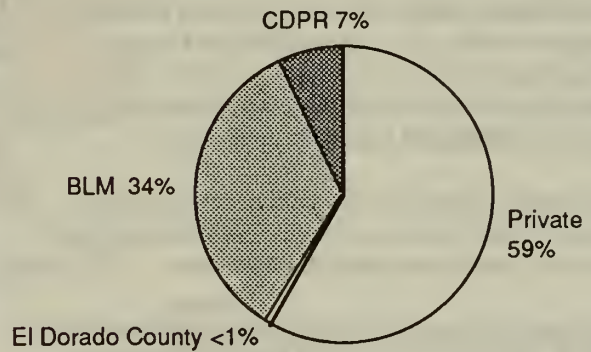
**North Fork Wild River
10,000 acres**



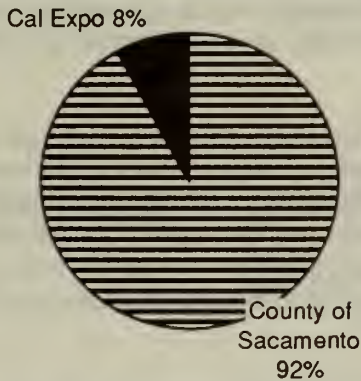
**Auburn Project Area
41,700 acres**



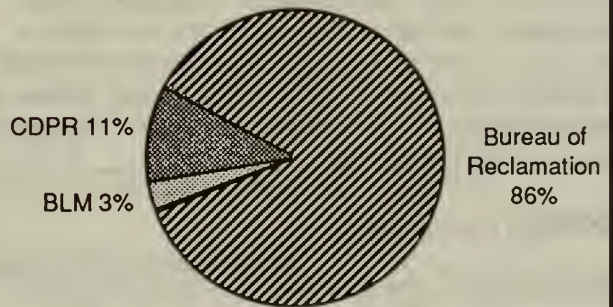
**STUDY AREA:
81,000 ACRES**



**South Fork of the
American River
4,400 acres**



**American River Parkway
6,000 acres**



**Folsom Lake State
Recreation Area
19,200 acres**

In addition to the land management and regulatory authorities listed above, enforcement authority is also embodied in the California Department of Forestry and Fire, state and county law enforcement groups, local fire districts, etc.

The following discussion highlights land management within the segments of the study area. Table 4-1 presents a summary of the jurisdictional portion of this discussion. Figure 4-1 is a graphic illustration of land ownership within the study area.

Land Management and Regulatory Jurisdiction by Segment

NORTH FORK WILD RIVER

Federal

Forest Service - The study area includes a two-mile river segment within the Tahoe National Forest extending from Euchre Bar to Green Valley. This segment is part of the North Fork American Wild River which is both state and federally designated.

Canyon lands adjacent to the wild river corridor that are under Forest Service authority are managed with emphasis on complementing the wild river.

Principal management guidelines are contained in the North Fork American Wild River Management Plan and the Tahoe National Forest Land and Resource Management Plan (Draft).

Bureau of Land Management - The BLM manages public lands 1,000 feet upstream of the Colfax-Iowa Hill bridge to the Tahoe National Forest boundary, a distance of 12 miles. The BLM manages the whitewater outfitter-guide activity on its lands as well as the two-mile National Forest segment between the forest boundary and Euchre Bar.

County

Placer County - The Wild River portion of the study area is entirely in Placer County (See page 47).

AUBURN PROJECT

Federal

Forest Service - The Tahoe and Eldorado National Forests are located along the Middle Fork in the upper arm of the study area. The two National Forests have four miles of common boundary, along this fork. The Eldorado National Forest extends downstream an additional eight miles from the west boundary of the Tahoe National Forest.

The Forest Service continues to administer National Forest System land, about 2,400 acres, within the Auburn Project boundary. However, since the Middle Fork river mileage under Forest Service jurisdiction is a minority portion of the total between Oxbow and Mammoth Bar, California State Parks manages whitewater outfitter-guide activity on National Forest System land through a Forest Service and Bureau of Reclamation agreement.

Bureau of Land Management - The Bureau of Reclamation has withdrawn, for project purposes, 7,200 acres of public land formerly administered by the BLM. The BLM currently manages 6,500 acres within the project area for which withdrawal action is pending. In addition, BLM administers public lands adjoining the project area.

Bureau of Reclamation - The Bureau of Reclamation has acquired, through fee acquisition and public land withdrawal, about 26,000 acres of the 42,000 acres within the Auburn Dam Project boundary.

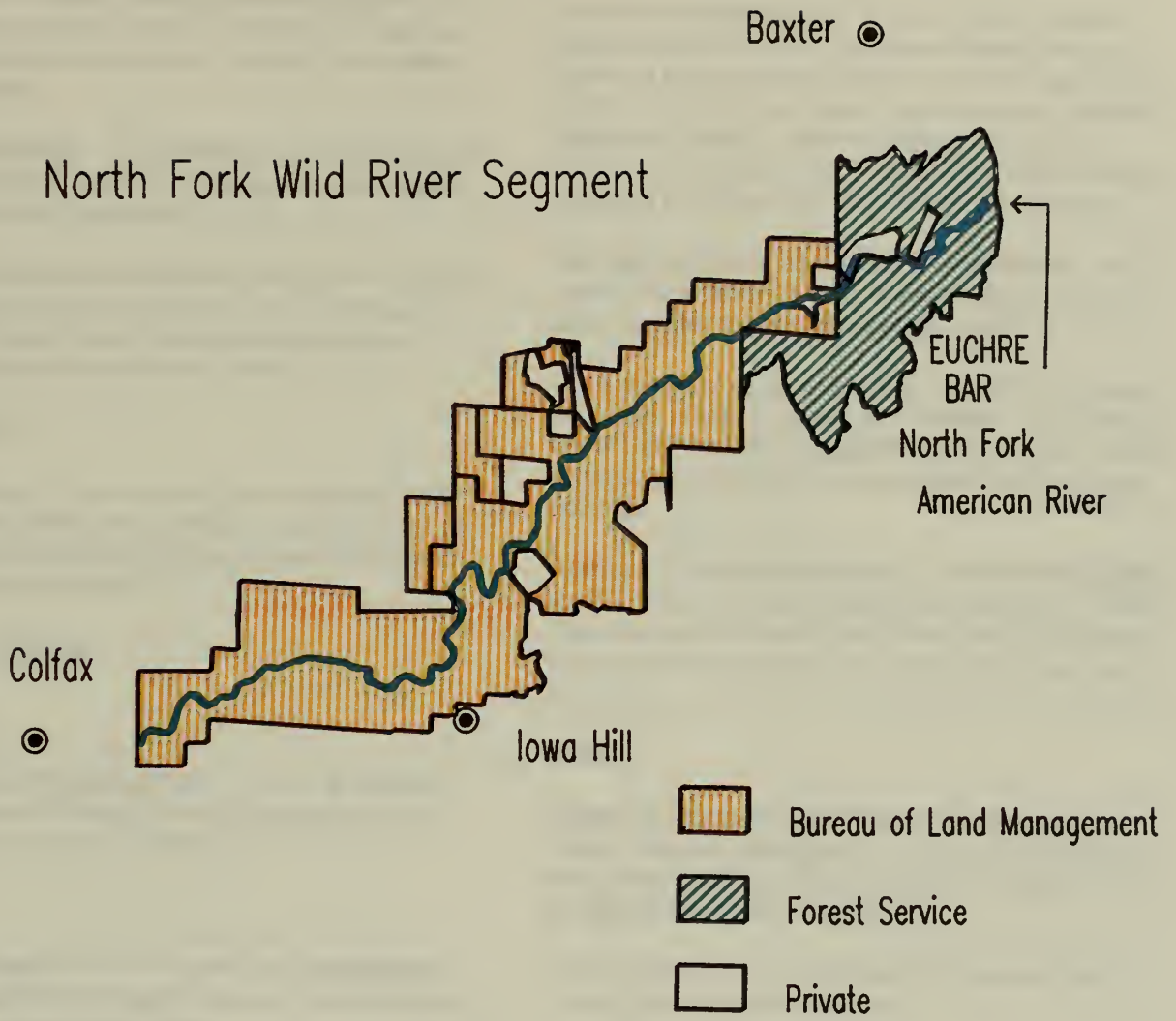
State

California Department of Parks and Recreation - State Parks manages lands acquired by the Bureau of Reclamation under an interim agreement initiated in 1977.

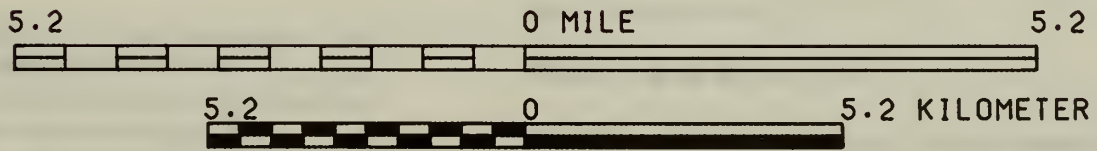
State Parks agreed in 1966 to manage project lands upon completion of Auburn Dam. A General Plan for the Auburn State Recreation Area was approved by the State Parks and Recreation Commission in 1979. A planning effort is underway at this time to develop an interim management plan for Auburn project lands.

County

Placer County - The Middle Fork separates Placer and El Dorado counties upstream from its confluence with the North Fork.



SCALE 1 : 125000



The North Fork is the boundary between Placer and El Dorado counties, downstream from its confluence with the Middle Fork.

The most common zoned parcel size for unacquired private land in Placer County within the current Auburn Dam project boundary is 20 acres. There are a few parcels zoned smaller at 10 acres and others up to 160 acres.

El Dorado County - The present Auburn Dam project boundary extends easterly from the dam site almost to Highway 49 in the vicinity of Cool.

There is some residential development on unacquired private lands within the Auburn Dam project boundary. There is significant residential development adjacent to project lands in the vicinity of Cool.

Municipal

City of Auburn - The Auburn Dam project boundary includes land within the city limits of Auburn, most of which has been acquired by the Bureau of Reclamation (See map on page 51).

SOUTH FORK

Federal

Bureau of Land Management - The BLM manages eight parcels which are scattered between Salmon Falls and the vicinity of Chili Bar.

State

California Department of Parks and Recreation - The Marshall Gold Discovery Historic Park at Coloma is part of the State Park system.

County

El Dorado County - Private ownership of land predominates along the South Fork. Land uses include rural riverfront residential development, commercial development related to river and other recreational use, and agriculture. River management is guided by the South Fork of the American River Management Plan, part of the County's General Plan. The county also owns and manages Lotus Park (See map on page 53).

FOLSOM LAKE STATE RECREATION AREA

Federal

Bureau of Reclamation - Folsom Lake is a multi-purpose (flood control, power, and water) reservoir operated by the Bureau of Reclamation as part of the Central Valley Water Project. Lake Natoma, formed by Nimbus Dam, is a power afterbay to Folsom Reservoir. It is part of the Folsom Lake State Recreation Area as well as the American River Parkway.

The area within the acquisition line at Folsom Lake is about 17,000 acres in size, of which about 12,000 acres is water surface at maximum pool.

The Lake Natoma area is 1,300 acres in size of which 500 acres is water surface at maximum pool. It lies within Sacramento County and is bordered by several communities within the county as well as the City of Folsom.

Bureau of Land Management - There are two public lands parcels included in the project boundary. They have been withdrawn by the Bureau of Reclamation and are included under State Recreation Area management.

State

California Department of Parks and Recreation - State Parks has managed Folsom State Recreation Area since entering into an agreement with the Bureau of Reclamation in 1956.

The State has also added lands to the State Park through its acquisition program.

A General Plan for the Folsom Lake State Recreation Area was approved by the State Parks and Recreation Commission in 1979.

County and Municipal

Counties of El Dorado, Placer, and Sacramento and the City of Folsom - Jurisdictional boundaries of these governing bodies are contiguous to various segments of the Folsom Lake State Recreation Area. (See map on page 55).

AMERICAN RIVER PARKWAY

State

Cal Expo - The Cal Expo floodplain is within the Parkway and under the jurisdiction of the Cal Expo Board of Directors.

County

County of Sacramento - The County of Sacramento manages the Parkway from Discovery Park on the American River to Lake Natoma, a distance of 23 miles, including a segment within the City of Sacramento. This river segment is classified, designated, and administered as a recreation river under both the State and Federal Wild and Scenic River Systems.

The American River Parkway Plan is a recreation element of the Sacramento County General Plan.

Municipal

City of Sacramento - The portion of the Parkway within the City of Sacramento is managed by Sacramento County (See map on page 57).

Agency Mission Statements

Agencies from all three levels of government are major providers of outdoor recreation opportunities in the Sacramento Valley and the outlying foothill regions. Currently, there are three federal agencies, two state agencies, and three county governments managing lands within the NRA study area. To gain a better understanding about each agency's role in managing the lands within the NRA study area, a general description of missions, mandates, and responsibilities follow in this chapter.

FEDERAL AND STATE

Both federal and state managing agencies have specific governing mandates, goals, objectives, and management capabilities designed to carry out their stated missions. On the federal level, the Bureau of Land Management (BLM), the United States Forest Service and the National Park Service, have legally mandated resource responsibilities that include outdoor recreation management. The BLM and the U.S. Forest Service operate under a Multiple Use - Sustained Yield concept. The National Park Service operates under the principle concept of providing recreation opportunities in a manner which leaves the area unimpaired for the enjoyment of future genera-

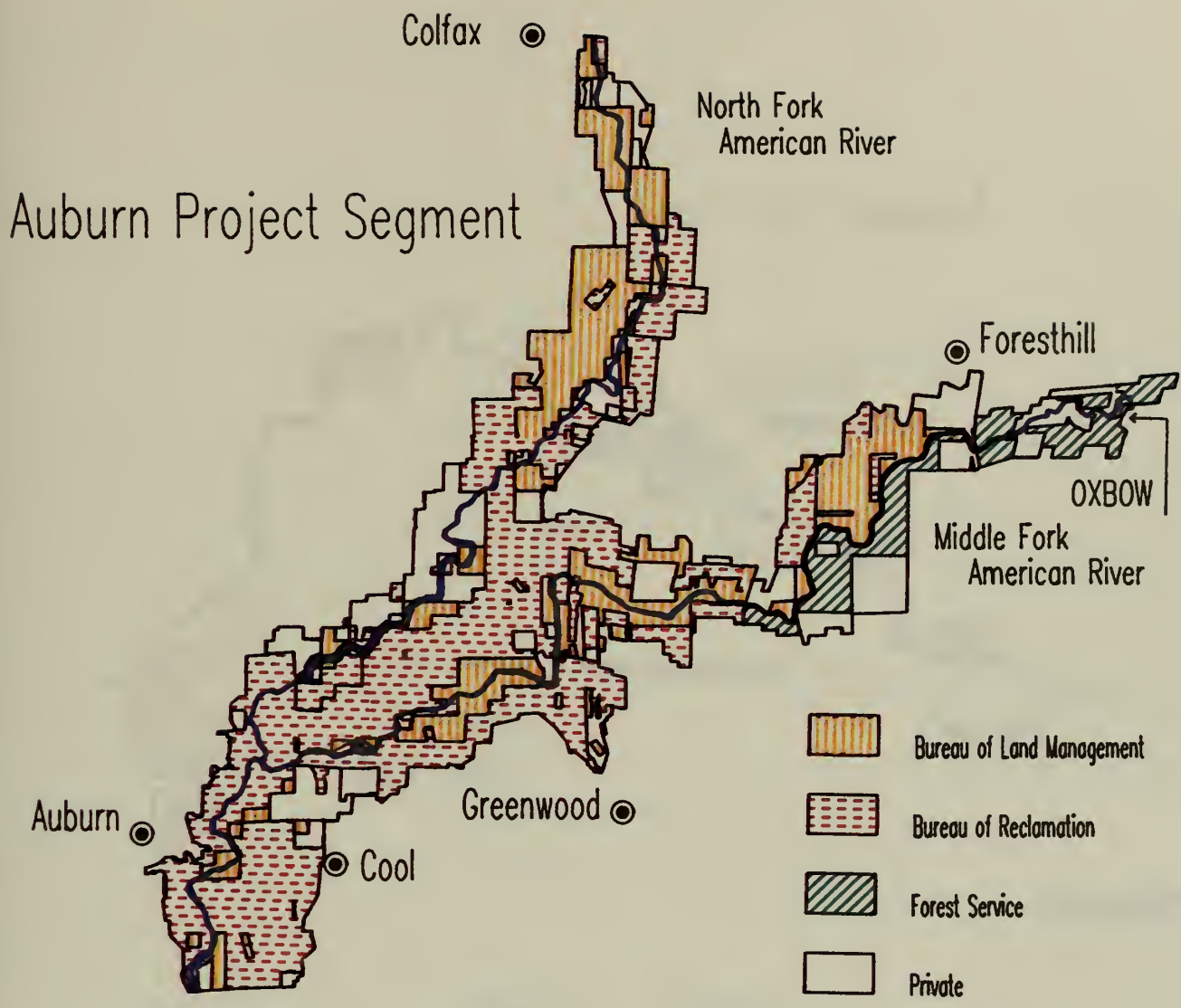
tions. The Bureau of Reclamation does not have a resource management mandate and therefore recreation management at most project sites is handled through another federal or state agency. The State of California has appointed the Department of Parks and Recreation to carry out its legally mandated outdoor recreation responsibilities.

Bureau of Reclamation

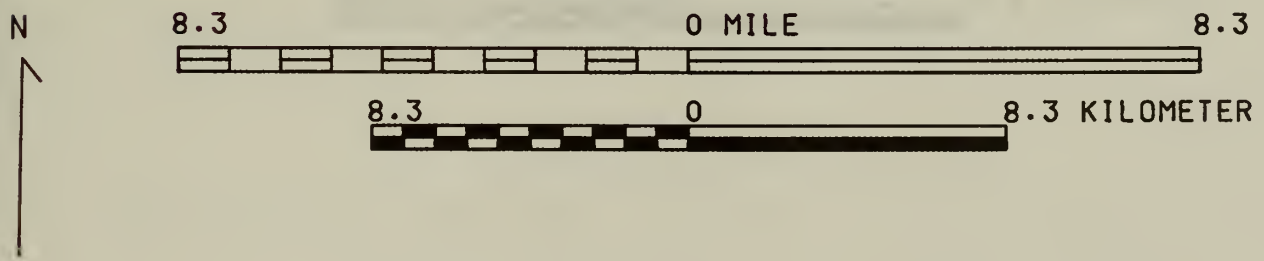
The Bureau of Reclamation plans, constructs, and operates multi-purpose water supply and conservation projects associated with the reclamation of arid or semi-arid lands. The Reclamation Act of 1902 (43 U.S.C. 371 et seq.) and subsequent amendments and supplemental acts provides the basic guidelines for the agency. The Bureau:

1. Develops plans for regulations, conservation, and utilization of water and the related resources.
2. Conducts basin-wide water resource studies and development of new sources of fresh water supplies, power capacity, and energy.
3. Designs and constructs projects authorized by Congress.
4. Repairs and rehabilitates existing projects.
5. Operates and maintains Reclamation-constructed facilities that are not transferred to local organizations, and reviews operation and maintenance of Reclamation-built facilities that have been transferred to local organizations.
6. Administers the Small Reclamation Projects Act of 1956 for loans for construction, rehabilitation of irrigation systems and the repayment of those contracts.
7. Shares in planning, engineering and construction management expertise with other agencies, departments or governments on a cost reimbursable basis.

The Bureau has also been involved in the development of both recreation and fish and wildlife enhancement projects associated with water projects. The management of recreation resources at reclamation project sites is usually handled under a memorandum of understanding with other federal agencies and by agreement, lease, or license with nonfederal agencies. Facility development is through a cost-sharing agreement with the managing agency.



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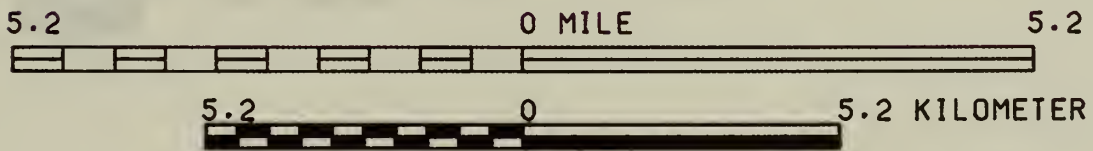


South Fork Segment

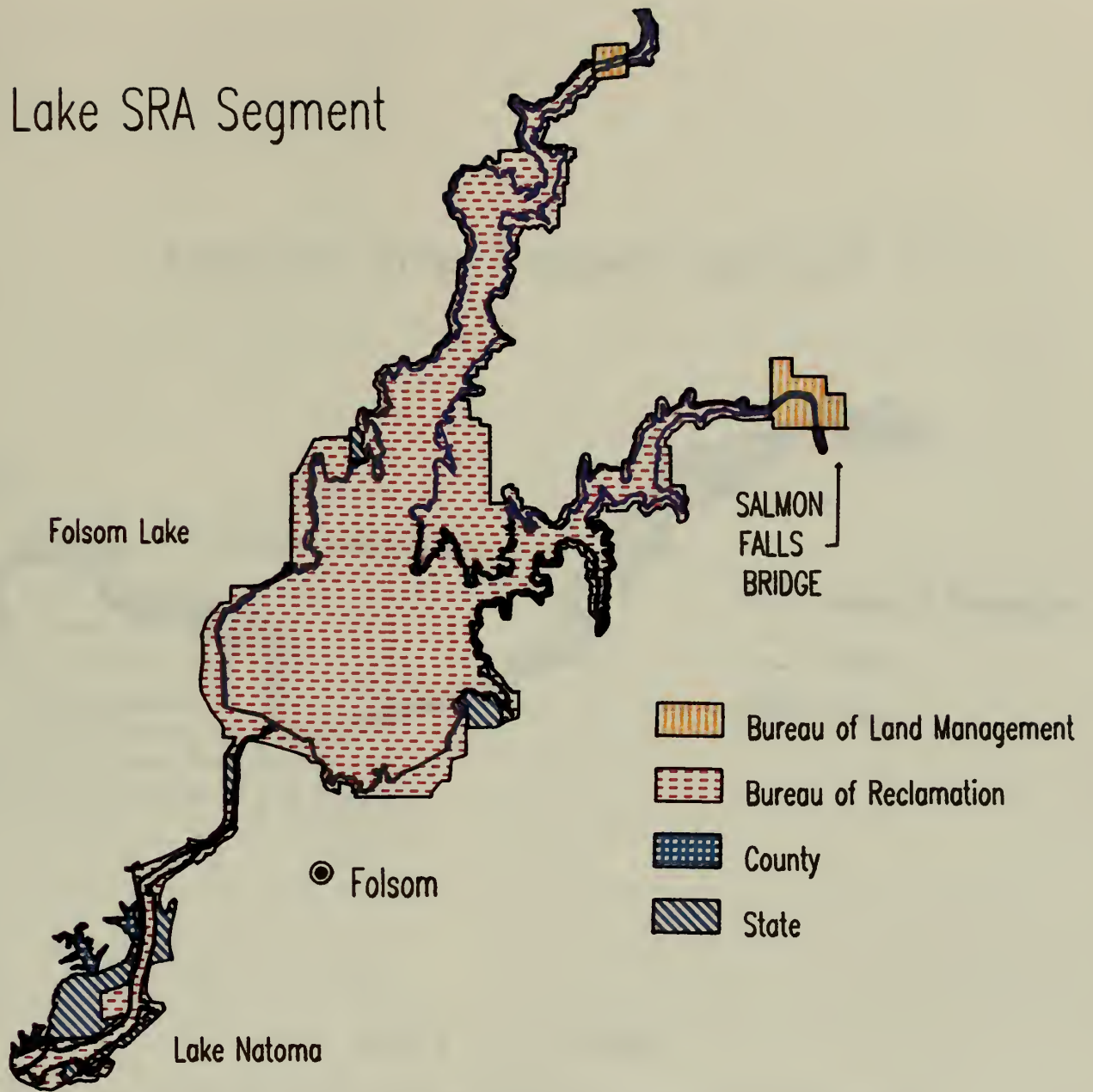


Placerville©

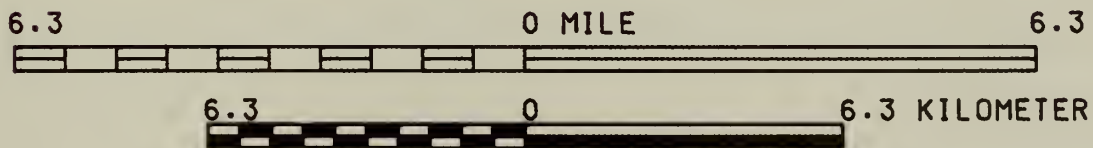
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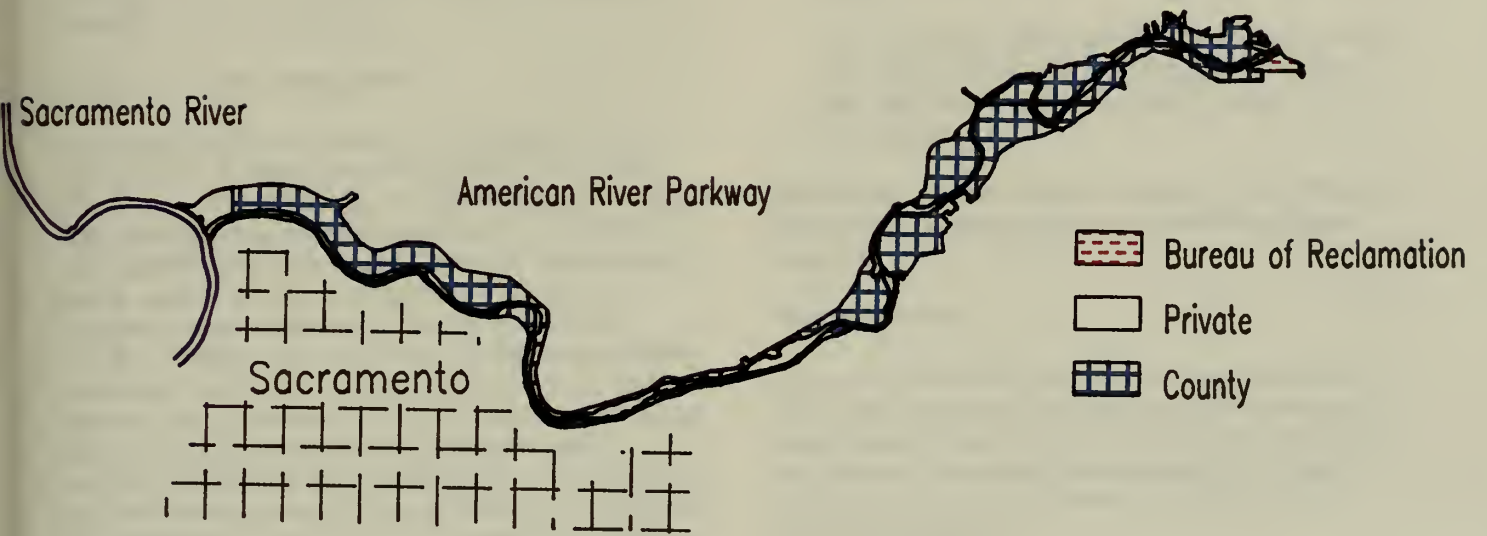
Folsom Lake SRA Segment



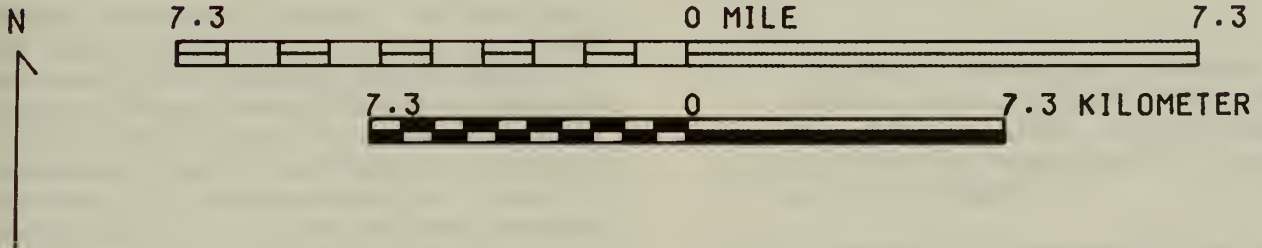
SCALE 1: 150000



American River Parkway Segment



SCALE 1: 175000



The Bureau does not usually manage its project areas for recreation and resource protection because it has no national resource management and law enforcement authority. This is reflected at the Folsom/Nimbus Lake Complex and the Auburn project lands where the Bureau has administrative jurisdiction but contracts with the State of California for recreation management and resource protection. Along with operating Folsom Dam, the Bureau manages land use activities such as easements and permits on the Auburn Project lands. The California Department of Parks and Recreation is operating under a 50-year agreement to manage the Folsom/Nimbus Lake Complex, and it manages the Auburn Project lands under an annual agreement.

Bureau of Land Management

BLM is guided by the Federal Land Policy and Management Act, Public Law 94-579 October 21, 1976 (FLPMA). FLPMA provides the basic mission for BLM and establishes policy guidelines and criteria for its management of public lands. Congress directs that public lands are to be managed on the basis of multiple use and sustained yield. As defined by FLPMA, multiple use "means the management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people—making the most judicious uses of the land that take into account the long-termed and nonrenewable resources, including but not limited to recreation, range, timber minerals, watershed, wildlife and fish, and natural, scenic, scientific and historical values."

Sustained yield "means the achievement and maintenance in perpetuity of a high level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use.

Areas administered by BLM vary from desert mountain ranges, whitewater rivers, alpine tundra, coniferous forests, sand dunes, and deserts, to ocean beaches offering a variety of recreation opportunities in diverse natural settings. Nationally recognized areas under direct BLM administration include Wilderness Areas, Conservation Areas, Scenic Areas, Historic Trails, a National Recreation Area and Wild and Scenic Rivers. BLM manages almost a third of the 119 nationally designated Wild and Scenic Rivers representing over 2,000 river miles. Outside of the national system, but important to wildlife, watershed, and other recreational values, are 100 other floatable river segments totaling over 7,000 miles.

In California, where it manages over 17 million acres of land, BLM focuses its recreation management effort on 60 Special Recreation Management Areas (SRMAs). The Wild North Fork of the American River

is ranked among the BLM's top five SRMAs in the State. The BLM Folsom Resource Area manages the whitewater recreation activities on this fork under a Memorandum of Understanding with the Tahoe National Forest. The management objectives for the North Fork American Wild River are:

1. To protect, enhance, and maintain the recreational, scenic, cultural, and natural resource values of the river system while providing a quality recreation experience.
2. To provide for dispersed recreation opportunities.
3. To provide adequate numbers of personnel to insure visitor safety, administer use, and monitor the resource values to ensure they are not degraded.

The Bureau of Reclamation manages the BLM public lands which were withdrawn for the Auburn Dam Project.

Forest Service

The U. S. Forest Service is the largest single land managing agency in California, with more than 20 million acres of land under its jurisdiction. Generally, the national forest lands are located in the higher elevations of the Sierra Nevada, Klamath, and Siskiyou mountains.

The U.S. Forest Service has the federal responsibility for national leadership in forestry. Its mission is to provide a continuing flow of natural resource goods and services to help meet the needs of the Nation and to contribute to the needs of the international community. To accomplish this the Forest Service has adopted the following objectives:

1. Provide a sustained flow of renewable resources - outdoor recreation, forage, wood, water, wilderness, wildlife, and fish in a combination which best meets the needs of society now and in the future.
2. Administer the nonrenewable resources of the National Forest System to help meet the nation's needs for energy and mineral resources.
3. Promote a healthy and productive environment of the nation's forests and rangelands.
4. Develop and make available scientific and technological capabilities to advance renewable

natural resource management use and protection.

5. Further natural resource conservation through cooperation with other federal and state and local governments.

In addition to timber management, outdoor recreation, grazing, fish and wildlife management, and watershed management are responsibilities under the provisions of the Multiple Use-Sustained Yield Act of 1960. The Forest Service outdoor recreation policy is to plan and manage recreation in a context that considers the resource attributes, use patterns, and management practices of nearby federal, state, and local entities. Those activities that harmonize with the natural settings of the National Forest are emphasized and given priority over those that may detract from it. The Forest Service administers 15 National Recreation Areas, as well as numerous National Wild and Scenic Rivers, National Trails, and Wilderness Areas. It operates more than a thousand campgrounds and 400 picnic sites in California alone. Almost two-thirds of all recreation visits on all federal lands of California are spent in national forests. The Tahoe and Eldorado National Forests contract annually to maintain their respective trail systems within the Auburn project lands. Special Use permits are issued to guides and outfitters and for special recreation events crossing national forest lands. The Forest Service has transferred the management of whitewater recreation on the Middle Fork to the Bureau of Reclamation who contracts that work to the California Department of Parks and Recreation.

California Department of Parks and Recreation

The California Department of Parks and Recreation's primary mission is for management and perpetuation of the natural, cultural, and recreational resources, for the benefit of present and future generations. The Department manages four distinct programs; the State Park System, the Off-Highway Motor Vehicle Recreation Program, Financial Assistance, and Historic Preservation.

There are eight classifications forming the State Park System program:

1. State Parks
2. State Recreation Areas
3. State Beaches

4. State Historic Parks

5. State Reserves

6. State Urban Recreation Areas

7. State Wayside Campgrounds

8. State Historic Monuments

State recreation areas are established to help meet the non-neighborhood recreational needs of the public. Although the main emphasis is on outdoor recreation, the State's role is not restricted to that purpose. Lands are selected specifically for recreational purposes, for their ability to serve recreational needs on a large scale, and for the ability of their resources to withstand heavy visitor use. In state recreation areas, the recreational potential is the primary resource, with natural or cultural values supporting and enhancing the recreational setting. In state recreation areas, planning and resource management activities are aimed at providing optimum recreational opportunities, in both quality and quantity. In planning and developing facilities in state recreation units, the precautions necessary in other classifications to protect the integrity of primary resources and values do not apply to the same degree. Protective standards have a different emphasis because the primary values of state recreation units are recreational opportunities rather than natural features.

The State Park System includes approximately 1,250,000 acres of land providing 12,000 campsites, 10,000 picnic sites, as well as 57 boat ramps, 2,300 boat slips, and 2,700 miles of trails. The State Park System offers over 280 different units experiencing nearly 60 million visitors annually. There are 36 existing State Recreation Areas; two of these, Folsom and Auburn, are found within the boundary of the NRA study area, as is Marshall Gold State Historic Park. The State of California contracts with the Bureau of Reclamation to manage the Auburn Project lands and the Folsom/Nimbus Complex for recreational use and resource protection. The State Parks manages whitewater boating activities on the Middle and lower North Fork of the American Rivers. The Bureau of Reclamation has recently contracted with State Parks in developing an interim management plan for the Auburn project lands. When adopted, this plan would remain in effect until the 2.3 million-acre-foot Auburn Dam is built. The scheduled completion date for the plan is June 1991.

County and Local Mandates

The State of California requires each city and county to adopt a comprehensive long-term general plan for the physical development of the community. There are seven elements which must be included in a general plan; 1. land use, 2. circulation, 3. housing, 4. conservation, 5. open space, 6. noise, and 7. safety. In addition, each county and city may adopt optional elements such as a recreation element. The counties of Sacramento, El Dorado, and Placer have adopted recreation as an element or sub-element of their general plans. The general plan is but one phase of the planning process. Detailed analysis of local situations and problems usually lead to more detailed plans for the community. Two such detailed plans pertain to portions of the NRA study area: the American River Parkway Plan adopted in 1985 by the Sacramento Board of Supervisors, and the South Fork of the American River Management Plan adopted in 1984, and amended in 1989, by the El Dorado Board of Supervisors.

Sacramento County

The American River Parkway has been identified through the Sacramento County General Plan as the single most important recreational amenity in the county. To protect the river corridor from development and to preserve an open space linear greenbelt, the Sacramento County Board of Supervisors decided in 1962 to develop a detailed plan for the American River Parkway. With revisions to this plan in 1976 and again in 1984, the American River Parkway Plan has evolved into a comprehensive recreation plan implemented by the Sacramento County Parks and Recreation Department. The Parkway Plan is a policy document providing guidelines for preservation, recreational use, development, and administration. There are five specific goals and 11 specific policy concepts identified in the plan. Within the 11 major policy concepts, there are more than 100 specific policies listed to guide administration of the Parkway. The five goals identified in the 1984 American River Parkway Plan are:

- A. "To provide, protect and enhance for public use a continuous open space greenbelt along the American River extending from the Sacramento River to Folsom Dam.
- B. To provide appropriate access and facilities so that present and future genera-

tions can enjoy the amenities and resources of the Parkway which enhance the enjoyment of leisure activities.

- C. To preserve, protect, interpret and improve the natural, archaeological, historical and recreational resources of the Parkway, including an adequate flow of high quality water, anadromous and resident fishes, migratory and resident wildlife, and diverse natural vegetation.

- D. To mitigate adverse effects of activities and facilities adjacent to the Parkway.

- E. To provide safety and protection within and adjacent to the Parkway."

El Dorado County

El Dorado County is currently rewriting its General Plan. The South Fork of the American River Management Plan will be amended as a separate component of the recreation element section of the general plan. The River Management Plan focuses specifically on the section of the South Fork from Chili Bar to the Salmon Falls Bridge, one of the segments included in this study. On August 10, 1976, the El Dorado County Board of Supervisors adopted an ordinance making it unlawful to "float, swim or travel in said waterway by any artificial means." A subsequent court ruling declared the ordinance invalid because it would effectively ban all public use of the river. Based upon the decision of the Court, and the desire of the County Board of Supervisors to manage the river, the County Planning Department prepared the South Fork of the American River Management Plan. The River Management Plan addresses goals and objectives of landowners and boaters, commercial and non-commercial uses, ancillary river land uses, monitoring and law enforcement, and funding sources to implement the plan.

Placer County

Placer County is currently updating its General Plan. Completion is expected within three years. A majority of the land found within the study area in Placer County is federally owned. Therefore, Placer County doesn't have a site specific recreation management plan for lands within the study area. Under the Recreation Element of the 1971 Placer County General Plan, recreation use potential and environmental impacts were assessed by establishing a land classification system. Those federal and private lands found

along the North and Middle Forks of the American River were classified as Class V - Primitive Area. The characteristics found in Primitive Areas were defined as:

“those lands that are extensively natural, wild and undeveloped, with a setting removed from the sights, sounds, and smells of civilization. The area must be large enough and so located as to give the user the feeling that they are enjoying a wilderness experience. Class V lands are those lands above 7,000 feet in elevation as well as all lands over 40% in slope.”

Even though the General Plan was written in 1971, the Auburn Project lands have virtually remained unchanged; therefore the Primitive classification still applies. Recommended recreation activities for lands now included within the Auburn Project area were limited to those that could be pursued without benefit of road access. The plan also recommended against the developments of permanent habitations or recreation facilities. Development of trail systems were found to be acceptable in the American River Canyon.

NRA Management Approaches

SINGLE AGENCY

Management would be exercised by or through a single federal agency. The NRA criterion for direct federal involvement or substantial federal participation does not preclude establishment of an administrative relationship between federal, state, or local governments, such as the interagency management agreements existing for Folsom Lake and for Auburn Project lands between the Bureau of Reclamation and California Department of Parks and Recreation.

Management by a single agency is the most common approach in the 33 existing NRAs. However, the study area is unique because of the number of land managing agencies within its boundaries and because of the existing high level of emphasis being given to recreation by these agencies.

Typically NRAs managed by a single agency have been designated where single federal agency administration existed prior to designation and in association with an existing recreational attraction such as an existing reservoir, undeveloped urban land, urban or wildland river settings, a special interest area within

the boundary of an established federal unit, or a portion of a National Forest.

Several NRAs, especially among those in the eastern United States, have been formed from lands regulated by a multiplicity of state and local governments with little or no federal public land when the NRA was authorized. To a significant extent, NRA establishment in these cases was to “preserve” a unique recreational opportunity from certain urban encroachment.

The size of an NRA may be a consideration in determining management alignment, but size is probably less important than other factors such as in-place agency recreation management infrastructure, land ownership, agency mission, financial capability, or uniformity and simplification which may be more easily attained under single agency management.

MULTI-AGENCY

Management would be exercised through two or more federal, state, or county agencies. Current land and recreation management within the study area fits this description.

It is feasible under certain circumstances to reduce the number of managing agencies in a given area. From a recreation perspective, streamlining in this way typically equates to improved efficiency and uniformity. Conversion from multi-agency to single agency management within the study area is theoretically possible, but not practical.

Reducing the number of land managing or regulatory agencies in the study area is likely to be precluded for a number of reasons pertaining to why individual agencies should maintain a management or regulatory presence. The extensive commitment that the California Department of Parks and Recreation, Sacramento County and El Dorado County have made to their recreation programs as evidenced by investments in land and improvements and by long-standing interagency agreements is an example of this in the Folsom Lake State Recreation Area, American River Parkway, and South Fork segments of the study area. There are similar examples in each segment of the study area.

The opportunity for some form of consolidation may be greatest in the Auburn Project and North Fork Wild River segments where federal public land ownership is more extensive, recreation development is on a lower scale, and the land base is largely in federal ownership. If management changes are deemed

desirable, NRA objectives may be met by streamlining recreation management instead of reducing the number of land managing agencies within the study area.

The following may be useful mechanisms for streamlining recreation management:

Interagency Agreements

Interagency agreements are a means of consolidating management responsibilities to the extent the respective agencies agree is appropriate. There are currently operating agreements for whitewater recreation management in the North Fork Wild River and Auburn Project segments of the study area. Similarly, Sacramento County manages lands in the American River Parkway within the City of Sacramento and California Department of Parks and Recreation manages recreation for the Bureau of Reclamation.

Interagency agreements may be used to accomplish other objectives. For example, although integration has not been accomplished, federal and state managing agencies within the Santa Monica Mountains NRA realize there would be operating efficiencies associated with sharing a headquarters facility and visitor center and have this type of integration as a future goal.

Advisory Groups

A provision for an advisory group, including its size and composition, has been included in enabling legislation several times. Advisory groups become increasingly useful as the management situation becomes more complex, such as along the 48 miles of river which is the central feature of the Chattahoochee River NRA in the Atlanta metropolitan area. Conversely, such an organization might be less important even under multi-agency management where each agency has an autonomous division of the NRA. Examples of the latter are urban river versus rural or river canyon, river oriented recreation versus lake oriented recreation, and river canyons versus foothill or forested uplands.

Joint Power Authority

There are no examples of joint powers arrangements within the existing network of NRAs.

Federal Property Transfer

Congress has authorized federal agency property transfers to occur within several NRAs. The following is an excerpt from the Hells Canyon, Oregon Dunes, and Spruce Knob-Seneca Rocks NRA legislation:

“Notwithstanding any other provision of law, any Federal property located within the boundaries of the recreation area may, with the concurrence of the agency having custody thereof, be transferred without consideration to the administrative jurisdiction of the Secretary for use by him in implementing the purposes of this Act.”

Chapter Five

Effects of NRA Designation

Public interest in an area under consideration as an NRA often generates questions about what the effects of such a designation will be. These often include: "How is private property affected? Will I be permitted to develop my land? Will I be able to continue using my property in the same way I have in the past? Will land values be affected? Will public use increase? What are the economic effects?"

Answers to these questions depend on the specific enabling legislation passed by Congress and the implementation of this direction by the managing agency. Until this step has been completed, replies to such questions are speculative. Simply stated, specific details of NRA management are put into effect through a management plan following designation by Congress.

However, some indication of the effects which might accompany designation can be derived from existing NRAs. Some of the effects which cannot be described or quantified precisely may also be addressed in a useful manner through the use of estimates or in general terms.

This chapter explores some of the effects of NRA designation under the headings of Land Acquisition, Private Land Regulation, Land Value Effects, Eco-

nomic Implications, Recreation, and Protection and Management of Other Resources.

Land Acquisition

When designated, some NRAs have contained few private land inholdings while others have included extensive tracts of private land. The Gauley River NRA was formed without federally managed land in the key portion of the NRA. The Santa Monica Mountains NRA contained almost no federal land when designated.

Mitchell (1988) summarized this topic in a report for Mono County, California in the following manner:

"All NRA legislation authorizes the acquisition of any land or interests in lands (including mineral interests and scenic easements) necessary to accomplish the purposes of the legislation. A 'scenic easement' is defined as 'the right to control the use of the land in order to protect the aesthetic values for the purposes of the Act, but shall not preclude the continuation of any use exercised by the owner as of the date of the Act.'

Lands may be acquired by donation, purchase with donated or appropriated funds, exchange, bequest, or other means. Federal property located within a recreation area is transferred to the administrative jurisdiction of the agency managing the recreation area. [NOTE: The study team found that legislation often leaves the matter of land transfers between federal agencies to the respective agencies and makes concurrence a condition.] Land owned by a state or its political subdivisions can be acquired only through donation or exchange. The bulk of private lands are acquired through scenic easements and land exchanges. No private lands or interest in private lands can be acquired without the consent of the owner if the use of that land is certified as conforming to the applicable land use regulations. [NOTE: The study team identified an exception to this statement. Legislation commonly authorizes acquisition of land clearly required for public use to achieve NRA objectives without owner consent.] Private lands that do not conform may be acquired by condemnation.

Most legislation authorizes the appropriation of funds for the acquisition of lands and interest in lands. However, more recent legislation omits any authorization for appropriations."

The following are excerpts of specific direction pertaining to land acquisition from a number of NRA enabling legislation documents. They demonstrate a variety of ways and varying degrees of specificity in which the subject of landownership within an NRA may be addressed in enabling legislation. The excerpts are grouped by the type of direction being given.

ACQUISITION METHOD

"The Secretary shall acquire by purchase with donated or appropriated funds, by gift, exchange, condemnation, transfer from any Federal agency, or otherwise, such lands, waters, or interests therein within the boundaries of the recreation area as he determines to be needed or desirable for the purposes of the Act." (Spruce Knob-Seneca Rocks NRA)

"With respect to improved properties, as defined, the Secretary may acquire scenic easements or such other interest as, in his judgment, are necessary for the purposes of the recreation area." (Cuyahoga Valley NRA)

ACQUISITION LIMITATION

"Fee title to improved properties shall not be acquired unless such lands are being used, or are threatened with uses, which are detrimental to the purposes of the recreation area, or unless such acquisition is necessary to fulfill the purposes of the Act." (Santa Monica Mountains NRA)

"There are hereby authorized to be appropriated no more than \$1,200,000 for the acquisition of land and interest in land." (Lake Mead NRA)

"Acquisition is authorized....PROVIDED, that acquisitions of lands or interests therein for access to and utilization of public property, and for recreation and other facilities, shall not exceed five per centum of the total acreage of all private property within the recreation area as of the effective date of the Act." (Sawtooth NRA)

"The total area within the recreation area may not exceed six thousand three hundred acres." (Chattahoochee River NRA)

ACQUISITION CONDITION

"The Secretary may utilize condemnation proceedings to acquire private lands or interests therein only in cases where, in his judgment, all reasonable efforts to acquire such lands or interests therein by negotiations have failed, and in such cases he shall acquire only such title, as in his judgment, is necessary to accomplish the objectives of this Act." (Sawtooth NRA)

"The owner of an improved property, as a condition of acquisition, may retain for himself, heirs and assigns, a right to use and occupancy of the improved property for noncommercial residential or agricultural purposes, for a definite term of not more than twenty-five years, or in lieu

thereof for a term ending at the death of the owner or the death of his spouse, whichever is later." (Cuyahoga Valley NRA)

In recent years the trend has been away from acquisition of inholdings through eminent domain proceedings unless the private land is clearly required for public purposes, either for public recreation use or to otherwise meet the intent of the legislation.

Scenic easements are an acquisition of a partial interest with fee title remaining in private ownership. These easements serve useful purposes at less cost than acquisition in fee, but are not always a desirable alternative.

Private Land Regulation

Recreation is the predominant public use intended for an NRA. Therefore, regulation or control of land use within the NRA is usually required in some form to achieve this end.

The 1988 Mono County report summarized the subject in the following way:

"The administration of private lands within an NRA including the use, subdivision, and development of those lands, can be regulated in one of two ways. The preferred method is to use the county regulatory process to ensure that private land use is compatible with the purposes of the NRA. For cases in which this proves to be unfeasible, federal regulations are developed for the same purpose. When the county regulatory process is used the managing agency is given the authority to approve the zoning ordinance and any amendments to it."

A number of NRAs include residential subdivisions. There are several which include full service communities. Lakehead, California in the Whiskeytown-Shasta-Trinity NRA and Stanley, Idaho within the Sawtooth NRA are examples of the latter.

From a recreational perspective, a linear river segment of an NRA should ideally be a continuous river segment, especially when there are linear uses such as rafting. However, there are options. The Chattahoochee River NRA is an example of a fragmented recreation area consisting of 16 separate units along a 48-mile segment of the Chattahoochee River near Atlanta.

Land Value Effects

There are no clear indicators on the issue of land value effects. The focus is usually on whether property values will depreciate or stagnate as a result of land and property being included within the NRA. An accelerated rate of property value appreciation would generally be considered acceptable.

The Auburn project, whether a water impounding or flood retention project, would have its own influence on the value of property in the project vicinity independent of NRA influences. In this region of California neither type of Auburn project is likely to have a negative effect on local land values.

In relation to the NRA, property values may be affected by the legislation and subsequent management actions to achieve NRA objectives. Zoning or ordinances pertaining to private land and property within an NRA could affect values in either direction or not at all. Regulation of paint colors, type of construction materials, sign sizes, and building height are examples of minor controls which would have little or no effect on values. Regulation of lot densities within subdivisions or a prohibition of commercial property development, except where it is to serve recreation use, are examples of regulations more likely to affect values. It may be assumed that regulatory actions will not be required to any appreciable extent within the Auburn project boundary largely because lands which are key to reservoir operation and recreational use are publicly owned at this time or are included in the acquisition plan for the project. This assumption is based on no disposal of federally owned lands under various Auburn Dam alternatives.

It is not foreseeable that property adjacent to the American River Parkway and Folsom Reservoir would be affected at all if these two segments were included in an NRA. The same should generally be applicable to existing uses of developed land adjacent to the South Fork as well. There may be justifiable arguments for easements, such as for access at various points or for aesthetic purposes along the South Fork, but not for major changes in land use. Landowners are compensated for easements.

The following clause has been included in legislation several times. It provides a means of resolving adverse effects on property owners.

"In exercising his authority to acquire property under this Act, the Secretary shall give prompt and careful consideration to any offer made by an individual owning

property within the recreation area to sell such property, if such individual notifies the Secretary that the continued ownership of such property is causing, or would result in, undue hardship." (Arapaho, Cuyahoga Valley, Santa Monica Mountains and Sawtooth NRAs)

Economic Implications

1. Commodity Production

NRA designation and management plan implementation at some of the existing NRAs resulted in land use changes. In a local context these changes may have been significant, altering the goods or commodities being produced. Commodity production in the canyon lands of this study area is relatively low. A high percentage of the land within the Auburn Project and North Fork Wild River segments is currently in public ownership, therefore designation would not cause a significant change in ownership or management emphasis.

Forest products, grazing, and mining are examples of land-based commodity and income producing activities in the study area. There is precedence for continuation of these uses within NRAs. The same uses can also be eliminated to accomplish NRA objectives. In most NRAs agrarian uses such as crop farming have been deemed compatible. Legislation establishing the Santa Monica Mountains NRA in the populous southern California area provides for continuation of agricultural uses, together with [agricultural] structures, existing at the date of designation to continue unless detrimental to the NRA or unless the land is needed to fulfill the purposes of the NRA. The rationale for land use changes should be based on identified needs for changes required to meet NRA objectives.

2. Tax Revenue

Establishment of an NRA on lands acquired for the dam and reservoir would have no additional affect on ad valorem tax revenue. Additional acquisition for NRA purposes would remove land from the tax roll and make it subject to federal in-lieu-of taxes payments, an amount likely to be somewhat less than private land value taxes.

If zoning ordinances and easements have the effect of reducing the value of property, the

revenue derived from property taxes would be affected similarly.

An increase in the amount of recreational use would generate some local sales tax revenue from the retail, tourism, and service sectors.

3. Recreation Spending

There have been no formal economic studies of the effects that recreational spending associated with use of Auburn Project lands has on the local area. There are also no economic projections for recreational spending under the various project alternatives.

A study made by the California Department of Parks and Recreation entitled *The Recreation and Leisure Industry's Contribution to California's Economy* (1984) indicated the following daily expenditures (excluding travel costs) for certain recreation activities which also occur on project lands.

Horseback Riding	\$15.32
Picnicking	2.50
Hiking and Backpacking	.31
Camping	8.68
Off-Road Vehicles	36.40
Fishing	32.00
Hunting	65.00

Recreation

1. Levels of Use

NRAs to a large extent created or significantly enhanced recreational opportunities and as a result appreciably affected patterns of use. Recreation use at NRAs established around existing reservoirs, along popular river corridors, or encompassing unique attractions tends to be affected imperceptibly by the act of designation. The study area compares to the latter situation because it is comprised largely of public land which is available for and being used for a wide range of recreational activities. There would be significant differences between recreation associated with a flood retention reservoir and recreation in conjunction with a reservoir with permanent storage. The differences at Auburn are more likely to be a function of which project alternative is selected than of NRA status.

Options or alternatives likely to be considered during development of a management plan would

differ somewhat as to their overall effect upon the intensity and distribution of recreation use, but there are not likely to be appreciable differences in this respect between feasible implementation alternatives.

2. Regulation

NRA designation does not include a pre-established set of guidelines governing permissible recreational activities or eliminating others, as occurs with Wilderness or Wild River designation where uses such as mechanical means of transportation are usually prohibited. This type of regulation could be included in the legislation, but if it is needed at all, the proper place for addressing the subject for an NRA is usually at the management plan level. Similar to land use zoning, there are reasons for recreation activity zoning, such as to accomplish recreation objectives, provide for public safety, protect resources, etc. For example, off-highway vehicle use, hang-gliding, or hunting are permissible activities within an NRA, but would not be appropriate in all settings.

Recreation within the Folsom Lake State Recreation Area and the American River Parkway occurs in a more structured atmosphere than in the remainder of the study area. Examples include more controlled access points, closer regulation of activities and behavior, etc. Any dam alternative which includes water storage will increase the need for management within the Auburn Project to move in a direction more comparable to that at Folsom Lake and the Parkway. This will occur both with or without NRA designation.

3. Group Conflicts

Conflicts resulting from user group incompatibilities are as much a fact of life in recreation as they are in other aspects of our lives. They exist between user groups in the study area today and can be expected to increase along with higher levels of use with or without water storage at Auburn. NRA designation is not likely to create or worsen these inherent social occurrences, but designation is likely to offer an improved avenue for resolving or mediating them than would otherwise exist.

4. Future Value

The impetus for support of designation of several existing NRAs was an interest in stemming the impending loss of a recreational resource to

urban development. In the American River Parkway, Sacramento County made long-term commitments to preserving this significant recreation resource in 1959. Although the forks of the American River are still somewhat remote compared to rivers in the eastern U.S., urbanization in the surrounding area is increasing. A significant value of an NRA under the flood control dam alternative is the mechanism placed into effect to provide for a continuing recreation opportunity in essentially a natural setting. An NRA in conjunction with an expandable dam alternative accomplishes the same thing until expansion occurs and then would become a reservoir-featured NRA. Linking recreational opportunities, such as the segments of the study area, is a contemporary way of providing for future recreation.

5. Status Associated with an NRA

Congressional designation elevates recreational significance of each NRA. This status typically affects the managing agency's priorities for allocation of operational resources between the designated and non-designated areas it manages.

There is precedence for an NRA to include state and county park lands within its boundary. The Santa Monica Mountains NRA legislation established a procedure for state and local governmental bodies to follow in applying for federal grant funding for certain limited purposes, including for acquisition of lands, waters, and interests therein. The Study Team found no evidence of Congressional funding to states and local governmental bodies for operating parks within an NRA.

Protection and Management of Other Resources

Conservation and protection of resources is identified as a key objective in the enabling legislation for each NRA. The legislation directs the managing agency(ies) to administer the NRA in accordance with applicable laws, rules, and regulations and it usually also provides some specific resource management direction.

The following is a summary of how NRA legislation addresses resources and resource use applicable to the study area.

1. Timber, Grazing, Mining

These resource uses, when applicable to an NRA, are usually addressed under a section of the legislation entitled *Administration*. Continuation, if deemed acceptable, is provided for by legislative language such as the following text addressing the conditional acceptability of timber, grazing and mining.

".....the management, utilization, and disposal of natural resources on federally owned lands such as timber, grazing, and mineral resources insofar as their utilization will not substantially impair the purposes for which the recreation area is established."
(Sawtooth NRA)

The enabling legislation for the Hells Canyon NRA contains a section entitled *Recreation Area, Traditional And Valid Uses* which provides additional clarity. This section states:

"Ranching, grazing, farming, timber harvesting, and the occupation of homes and lands associated therewith, as they exist on the date of enactment of this Act, are recognized as traditional and valid uses of the recreation area."

Where lands within the NRA have been subject to the U.S. mining laws, the legislation will contain a section entitled *Mining* if Congress intends to withdraw lands within the NRA from location, entry, and patent under the mining laws. When Congress takes this action, which is common, it is largely to protect lands, recognized for their recreation importance, from mineral appropriation or patent. Lands often remain subject to mineral, gas and oil, and geothermal development under the leasing laws, but are protected from disposal under these laws.

Enabling legislation for the Sawtooth NRA included a unique section to prevent mining patents. Federal lands were withdrawn from location, entry, and patent under the mining laws as of the date of the Act, subject to valid existing rights, and the legislation included a section which terminated the right to patent a mining claim based on rights pre-dating the legislation. The language of the section is:

"Patents shall not hereafter be issued for locations and claims heretofore

made in the recreation area under the mining laws of the United States."

Congress again used an unusual approach to address mining in the Flaming Gorge NRA. The legislation withdrew the area from location, entry, and patent but permitted the Secretary discretion to permit removal of these same nonleasable category of minerals in the manner prescribed by Section 10 of the Act of August 4, 1939. This Act includes the following language applying to approval of mining when it is:

"...not incompatible with the purposes for which lands or interests are being administered, and shall be on such terms and conditions as in his judgment will adequately protect the interest of the United States and the project for which said lands or interest in lands are being administered."

Most of the federal lands within the Auburn project boundary have been withdrawn or application for withdrawal has been made for project purposes. Wild River legislation withdrew lands within that boundary on the North Fork. Therefore, only a small land area within the study area on the North and Middle Forks is subject to location, entry, and patent at this time except for where rights pre-date withdrawal actions. There are public lands on the South Fork both subject to and withdrawn from location, entry, and patent under the mining laws.

2. Hunting and Fishing

Frequently a section of the legislation entitled *Hunting and Fishing* is used to indicate this expression of intent as well as to recognize the continuing applicability of the laws and authority of the State. Hunting is usually prohibited in National Park Service NRAs, but the Park Service does not need authority via the NRA legislation to prohibit this activity.

Legislation which gives zoning authority to the Secretary of Agriculture or Interior also may include authority to prohibit these activities, to restrict them to portions of the NRA, and confine them to limited periods of time which the Secretary may establish after consultation with the state fish and game agency. In NRAs where the Secretary does not need individual authority to regulate hunting and fishing to manage the area, any special regulatory measures required to achieve NRA objectives are cooperatively accom-

plished under state and county authority to enact laws and ordinances and the legislation is silent on the subject of federal authority to regulate these activities.

3. Law Enforcement

The following section from the Hells Canyon NRA legislation is usually included in this or similar form in legislation for NRAs managed by the Forest Service or Bureau of Land Management:

"Nothing in this Act shall diminish, enlarge, or modify any right of the States of Idaho, Oregon, or any political subdivision thereof, to exercise civil and criminal jurisdiction within the recreation area or of rights to tax persons, corporations, franchises, or property, including mineral or other interests, in or on lands or waters within the recreation area."

4. Ecosystems Maintenance

The Sierra foothills and canyons provide essential habitat for many species. This habitat is increasingly being encroached upon to accommodate the growing population of California. In recent years the importance of home range habitat sufficient in size to permit indigenous species to maintain their genetic diversity and viability has come more sharply into focus. Habitat in the river canyons is especially productive in terms of the range of species which depend on it. In addition, the canyons provide a linear linkage of similar habitat.

While the canyon ecosystem is largely unfragmented today because of developmental limitations associated with its topography, some of the Auburn project lands and lands adjacent to the South Fork are both excellent wildlife habitat and suitable for development.

In addition to public recreational benefits, NRA designation could also provide a correlating benefit of maintaining a high level of biodiversity on the lands within its boundary managed for multiple resources.

Chapter Six Summary

In previous chapters, this report has examined the suitability of the study area for NRA status. The area's attributes, features, location, and potential have been considered, and the study area as a whole has been evaluated (Chapter Two). This report has also investigated the extent to which the qualities of the area would be affected by various proposed dam projects, and the effects, both beneficial and adverse, have been discussed. The findings of this analysis (Chapter Three) indicate that, irrespective of which dam alternative is implemented, the recreational potential of the area is substantial.

The report has gone on to describe existing recreation management responsibilities within the study area, the background and orientation of those agencies currently involved in management, as well as those that could potentially be involved in future NRA management, and the ways in which various agency responsibilities have been assigned and successfully integrated in existing NRAs (Chapter Four). Potential effects of an NRA designation were then considered (Chapter Five) and none were identified as being sufficiently adverse to render an NRA designation infeasible.

In summary, the conclusion of this report based on these factors is that the study area is suitable for an NRA. The next important step is to outline the

general attributes of an American River NRA, should one be created by Congress. If an NRA designation is made, the legislation creating the NRA and the management plan prepared pursuant to the legislation, will set the final form. The following discussion, based on the information gathered and analyzed in the course of this study, attempts to envision what form an American River NRA might take with respect to: 1) area to be included within the boundaries; 2) agencies that may be involved in administration and the extent of their responsibility; and 3) opportunities for management and development.

Boundaries

An NRA whose boundaries included all the study area segments would result in a significant recreational resource that included nearly the full run of a major U.S. river, with all its diverse environmental associations. This configuration would include all major ecological zones from the Sierra, through transitional areas, to the Sacramento Valley. This NRA would make available to the public, in a single recreation area, the total progression of a river, i.e., the varying stages of the water as it flows downward through the elevational stair-steps of the various environments.

An NRA of this configuration would provide the public with a corresponding diversity of recreational experiences in a single administrative unit. The recreationist on foot could find opportunities ranging from hiking and backpacking in a remote wilderness setting, to walking and jogging virtually in his own suburban backyard. Boaters would appreciate activities ranging from challenging whitewater rafting runs to more placid family canoeing on Lake Natoma. Such an NRA would include the majority of the water-based recreation that is conveniently available to the Sacramento metropolitan area, including the most popular California State Park unit (Folsom Lake State Recreation Area) and the most popular whitewater rafting run in the western United States (the South Fork). These outdoor recreational opportunities are augmented by the presence of many highly significant historic sites.

Chapter Two concluded that the study area as a whole was suitable for NRA designation. The qualities displayed by the study area segment were reviewed in Chapter Three, and were found to possess the recreational and contributing attributes needed for NRAs. Ultimately, then, the decision regarding which segments would be feasible to include in an American River NRA should probably relate to the rationale for federal involvement or participation. As may be recalled from Chapter Two, this rationale varies by segment.

On the North Fork Wild River, an NRA designation would benefit public recreation by increasing the area of natural environment that could be protected, thus ensuring the integrity of the river viewshed. It could also allow enhancement of the existing situation through upgrading of facilities and improvement of features. These opportunities for optimizing public benefit provide sufficient rationale for NRA status.

Within the Auburn Project area of the North and Middle Forks, an NRA designation would facilitate long-term recreation management on these lands. Recreation development is currently restricted under terms of the existing general plan until Auburn Dam is built and the 2.3 million-acre-foot reservoir is filled. Since no major facilities can be built except as provided for in the general plan, California Department of Parks and Recreation is currently developing an interim management plan.

Twelve years have elapsed since dam construction was suspended, however, and during this time recreational demand in the area has risen dramatically while recreational development at Auburn has been on indefinite hold. By designating this area an NRA based on the potential of floodability rather than a given water alternative, implementation of planned

improvements and developments could be initiated. In addition, an NRA would retain in public ownership, and devote to recreation as a needed public purpose, those current project lands that might be candidates for disposal under some proposed dam alternatives.

On the South Fork, there has been a direct legal challenge to recreational use, and accelerated residential development currently is encroaching on the river canyon, threatening a major recreational resource. In the current conditions of rapidly-occurring subdivision and construction, the long-term benefits of preserving the river for recreational use may be overlooked. Sacramento County has long been recognized for its foresight in preserving the natural qualities of the Lower American along the Parkway. As the areas adjoining the river have become more fully developed, the recreational opportunities offered by the American River became more and more valued. If a similar type of protection could be offered the South Fork, through an NRA designation, there would be significant public benefits. This provides a good rationale for including the South Fork in an NRA.

Folsom Lake State Recreation Area has been developed and operated under the terms of a general plan that provides for full realization of the area's recreational potential. To a certain extent, however, the development has emphasized shoreline facilities based on assumptions of reasonable water level stability - a stability that was to be provided by Auburn Dam being built. Instead, water levels have, for various reasons, fluctuated dramatically, interfering with full public benefit from the existing facilities. If including Folsom Lake within an NRA could help deal with these problems, there would be reasonable rationale for such a designation.

It is very unlikely, however, that lake level stability could be assured without Auburn Dam operated to provide for Folsom's stability at the expense of other competing uses. Also somewhat unlikely is the possibility of Congress appropriating additional operating funds for a unit that is already a leader in recovering operating costs from its user fee revenues. Legislative changes at the federal level that would require consideration of recreation in making water allocation decisions at Folsom, could benefit public recreation, and an NRA designation could possibly provide the vehicle to effect such changes.

Lands within the American River Parkway are the most heavily used, most highly developed, and most fully utilized for recreation of all the study area segments. The level of development and quality of management appear to be providing the public with

maximum benefit in terms of recreational opportunities. An important aspect of federal involvement that could provide the Parkway with significant public benefit would be assurance of minimum instream flows.

Overall, an NRA that embraced the entire study area would be desirable for a number of reasons. At the present time, however, feasibility considerations may argue for a more limited area being suitable for NRA designation. Based on expected benefits and limited by uncertainties over dam construction, the rationale for NRA designation is best along the North Fork Wild River, within the Auburn Project lands, and on the South Fork.

Administration and Agency Jurisdiction

In Chapter Four, this report suggested that, for an NRA created within the study area, the most feasible management approach might be a multi-agency arrangement, where land and recreation management would be exercised through two or more federal, state, or county agencies. Given the extent of existing commitments in some areas by the current managing agencies, there was good rationale for their continued presence. In other areas where the scale of existing commitment was less, the streamlining advantages of consolidating responsibility in one agency seemed to merit consideration.

By applying this principle, it was concluded that the American River Parkway and Folsom Lake State Recreation Area, if they were to be included in an NRA, would most likely continue to be administered as they now are, by Sacramento County and California Department of Parks and Recreation, respectively. Even though the scale of El Dorado County's improvements on the South Fork is less than the first two instances cited, the county's level of commitment to the whitewater rafting program is high. The same principle would argue for the county's continued presence, as it most certainly would for California Department of Parks and Recreation at Coloma.

The situation on the Auburn Project lands and on the North Fork Wild River was seen as less amenable to a clear conclusion, and in fact depends on a number of issues yet to be resolved; namely the dam alternative that might be chosen, the scale and type of recreational development that might be implemented at Auburn, etc. Designations for wholly different recreational land uses on different portions of the Auburn lands (high density/developed versus dis-

persed/wilderness character) could also constitute a basis for determining agency jurisdiction, as could the pattern of land ownership (upstream lands being mostly withdrawn public land and downstream lands mostly acquired Bureau of Reclamation project lands). The possible future roles of the California Department of Parks and Recreation and the federal NRA-managing agency, and the advantages of one management alternative over another, can probably only be properly evaluated once some of the unresolved questions are answered.

Also to be resolved in the legislative process of NRA creation is the issue of which federal agency would be assigned overall responsibility for coordinating management of the NRA. As Chapter Four indicated, the federal agencies most likely to be called on to fulfill this role are those currently managing land within the area, the Forest Service and Bureau of Land Management.

Irrespective of which federal agency might assume the role of overall management, it is clear that one of its main responsibilities would be effective coordination of recreation not only within the NRA area, but also with counterpart managing agencies upstream and downstream. Of equal importance would be working closely with the agencies managing the commodity most important to American River recreation - water. No matter how an American River NRA might be configured, recreational considerations in various jurisdictions are closely linked by the river, and decisions in one area can have a significant effect in another. Communication, coordination, consultation, and consensus are essential for providing maximum recreational benefit to the public.

Conclusion

In conclusion, the study results indicate that the American River Study Area is nationally significant and meets the criteria for establishment of an NRA. This conclusion is based upon the fact that the study area "provides a unique combination of natural, cultural, and recreational resources that collectively offer outstanding opportunities for public use and enjoyment" (National Park Service, 1988), and holds irrespective of which water or dam option is selected. The preferred NRA boundary configuration would include all five study area segments. As a second choice the boundaries of the NRA would include the North Fork Wild River and Auburn Project segments, most logically the South Fork segment, and optionally, the Folsom Lake State Recreation Area and American River Parkway segments. Management of the NRA would most probably comprise a mix of those federal,

state and local agencies currently providing recreation opportunities within the area, with overall NRA coordination through one of the federal agencies within this mix.

The questions of "feasibility" and "desirability" of an American River NRA, also part of Congress' study direction, are more complex to address. Nonetheless, it is safe to conclude that an American River NRA is feasible - that is, it is possible, reasonable, the area is suitable, and increased tourism and recreational expenditures would most likely occur.

"Desirability," leads very quickly to the question, "Desirable for whom?" or "For what purpose or end?" In this regard much concern has been expressed during the course of this study about identifying an American River NRA with a particular water alternative, from "no dam" to the Auburn Project dam. It is important to recognize that the desirability of an American River NRA lies in its benefits of providing recreation emphasis and coordinated management for a major portion of the American River watershed, not in its strategic position to block or promote a type

of dam. The opportunity for an NRA exists as the area is now or under any water scenario, though the characteristics of the recreation opportunities would shift on the Auburn segment.

Should Congress choose to designate an American River NRA, a management plan ensuring protection of the resources and provisions of quality recreation opportunities can be based upon any dam or "no dam" alternative, and, for any alternative, can maximize the existing situation while providing for future floodability of the area. A decision to create an American River NRA is to dedicate these lands and waters for the recreational use and enjoyment of the American people.

Final resolution of "desirability" depends upon whether granting the recreational resources of the American River the coordinated management, protection, and national stature implicit in NRA designation is a worthwhile idea or not. The people of the Auburn-Placerville-Sacramento region, the State of California and the Nation now have the opportunity to discuss these options and decide which is best.

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