US Army Corps
of Engineers ®
San Francisco District

Final Lake Sonoma Master Plan

Sonoma County, California
U.S. Army Corps of Engineers
San Francisco District
Revised 2020

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APPROVAL

I reviewed this Master Plan and Environmental Assessment for Lake Sonoma and Warm Springs Dam for the guidance of future development for recreation and environmental stewardship efforts within the Lake Sonoma Project located near the City of Healdsburg, Sonoma County, California.

This Master Plan is technically sound, environmentally acceptable, and is in compliance with ER/EP 1130-2-550, Project Operations, Recreation Operations and Maintenance Policies.

Therefore, I approve this Master Plan for the Lake Sonoma and Warm Springs Dam Project, subject to updates, as needed.

4/13/20
Date

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John D. Cunningham
Lieutenant Colonel, U.S. Army
District Commander and Engineer

Executive Summary

The Lake Sonoma Master Plan (MP) provides the U.S. Army Corps of Engineers (USACE) a vision and direction to manage Lake Sonoma and its resources. The original MP for Lake Sonoma was approved in 1979, prior to the completion of the Warm Springs Dam in 1983. It served as the guiding document for USACE responsibilities to preserve, conserve, restore, maintain, manage, and develop the project lands and associated resources.

This revision to the 1979 MP and the associated National Environmental Policy Act (NEPA) Environmental Assessment (EA) describe the existing conditions at Lake Sonoma and identify recreational opportunities and measures to preserve and protect natural and cultural resources.

The MP and EA provide a synopsis of the history of the area and recreational development of Lake Sonoma. This MP presents a comprehensive inventory of natural, cultural, and recreational resources; land use classifications to guide future management and modernization of existing park facilities; resource objectives for each management unit (MU); and an evaluation of existing and future needs required to provide a balanced management plan to improve outdoor recreation opportunities and sustain natural resources. The MP makes recommendations for future improvements to Lake Sonoma's facilities based on the land use classifications. It provides guidance to balance recreation opportunities and the preservation of cultural and historic resources for current and future generations.

Public participation is an important aspect of the development of the MP. The USACE held public scoping meetings in the City of Ukiah and at the Lake Sonoma Visitor Center in Geyserville, California, in February 2018, to provide information to the public on the master planning process and to identify changes and future improvements the public would desire to see in the future at Lake Sonoma. Coordination with Tribal partners was also an integral part of the MP development process.

A formal public review period and public meeting were held in October and November 2019 to review and comment on the draft MP. The final MP and accompanying EA has incorporated additional Tribal input, public comments and feedback received during the public involvement process.

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ACRONYMS

AF	Acre-feet
ACHP	Advisory Council for Historic Preservation
ARPA	Archeological Resource Protection Act
BO	Biological Opinion
CALVEG	Classification and Assessment with Landsat of Visible Ecological Groupings
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CORP	California Outdoor Recreation Plan
CRMP	Cultural Resources Management Plan
DM	Design Memorandum
DSAP	Dam Safety Assurance Program
DSM	Dam Safety Modification
EA	Environmental Assessment
EM	Engineer Manual
EMS	Environmental Management System
EOPs	Environmental Operating Principles
EP	Engineer Pamphlet
ER	Engineer Regulation
ESA	Endangered Species Act
HQUSACE	Headquarters, U.S. Army Corps of Engineers
MOU	Memorandum of Understanding
MP	Master Plan
MPU	Maximum Practical Use
MU	Management Unit
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRHP	National Register of Historic Places
OHWM	Ordinary High Water Mark
O & M	Operations and Maintenance
OMP	Operational Management Plan
RWQCB	Regional Water Quality Control Board
SHPO	State Historic Preservation Officer
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SW	Sonoma Water (also known as Sonoma County Water Agency)
SWRCB	State Water Resources Control Board
T&E	Threatened and Endangered Species
USACE	United States Army Corps of Engineers
USC	United States Code
USBR	United States Bureau of Reclamation
USDA	United States Department of Agriculture
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service
VERS	Visitation Estimation Reporting System
WRDA	Water Resources Development Act

Chapter 1 – Introduction

1.1 PROJECT AUTHORIZATION

The Flood Control Act of 1962, Public Law 87-874, authorized the Dry Creek Dam and Channel Improvements, also known as the Warm Springs Dam and Lake Sonoma Project. The Chief of Engineers Report recommending authorization of the project is included in House Document No. 87-547.

1.2 PROJECT PURPOSE

The authorized purposes of the Warm Springs Dam and Lake Sonoma project are flood risk management, water supply, and recreation. Secondary benefits of the project include wildlife management and hydropower.

1.3 PURPOSE AND SCOPE OF THE MASTER PLAN

The Lake Sonoma Master Plan (MP) describes the resources, land uses, recreation facilities, operations and management of the project lands. USACE regulations and policies were followed in the preparation of this MP, which is a revision of the original 1979 Lake Sonoma MP.

MPs are required for civil works projects and other fee-owned lands for which the USACE has administrative responsibility for management of natural and historic resources. The MP provides a programmatic approach to the management of all of the lands included within the project boundary.

The MP is the basic guiding document outlining the responsibilities of USACE, pursuant to Federal laws, to preserve, conserve, restore, maintain, manage, and develop the project lands and associated resources. The MP is a planning document anticipating what could and should happen, with the flexibility to adapt to changing conditions over the life of the plan.

The primary goals are to prescribe an overall land management plan, resource objectives, and associated management concepts that (1) Provide the best possible combination of responses to regional needs, resource capabilities, and suitability, as well as expressed public interests or desires consistent with authorized project purposes; (2) Contribute to a high degree of recreation diversity within the region; (3) Emphasize the particular qualities, characteristics, and potentials of the project; and (4) Exhibit consistency and compatibility with national objectives and other state and regional goals and programs.

The MP identifies recreational opportunities and measures to preserve and protect natural and cultural resources. The MP also outlines development needs, analyzes special problems, and provides guidance on public use, water quality, invasive species, natural areas, and historic properties within the USACE boundaries. The MP does not address reservoir water levels beyond stating the allocations stipulated in the Water Control Manual.

Detailed management and administration functions are addressed in the Operational Management Plan (OMP), which translates the concepts of the MP into operational terms. Any action that is recommended in this MP that is pursued to a greater level of detail for consideration or implementation will have a separate document describing the appropriate level of design and corresponding environmental evaluation and compliance.

1.4 WATERSHED AND PROJECT DESCRIPTION

The Warm Springs Dam and Lake Sonoma Project consists of a dam across Dry Creek (a major tributary of the Russian River in Sonoma County, California), reservoir, spillway, outlet facilities, fish hatchery, and erosion protection measures on Dry Creek downstream of the dam.

Figure 1 shows a map of the Lake Sonoma project area. The project includes 17,615 acres of land and water, various public recreation facilities and approximately 8,000 acres of Wildlife Management Areas, which are managed by the California Department of Fish and Wildlife and operated in cooperation with the USACE. Lake Sonoma provides a variety of physical and biological resources enjoyed by recreationists using the lake.

Figure 2 shows the Russian River Watershed. The Warm Springs Dam works in conjunction with the Coyote Valley Dam upstream in the Russian River Watershed to hold back water for flood risk reduction and other purposes. Mendocino and Sonoma Counties use water in the watershed for residential, municipal, agricultural and industrial use. The City of Santa Rosa is allotted 50 million gallons of water per day from the two reservoirs (Coyote Valley Dam and Warm Springs Dam). The non-Federal partner in both USACE projects, Sonoma Water (SW), manages water supply.

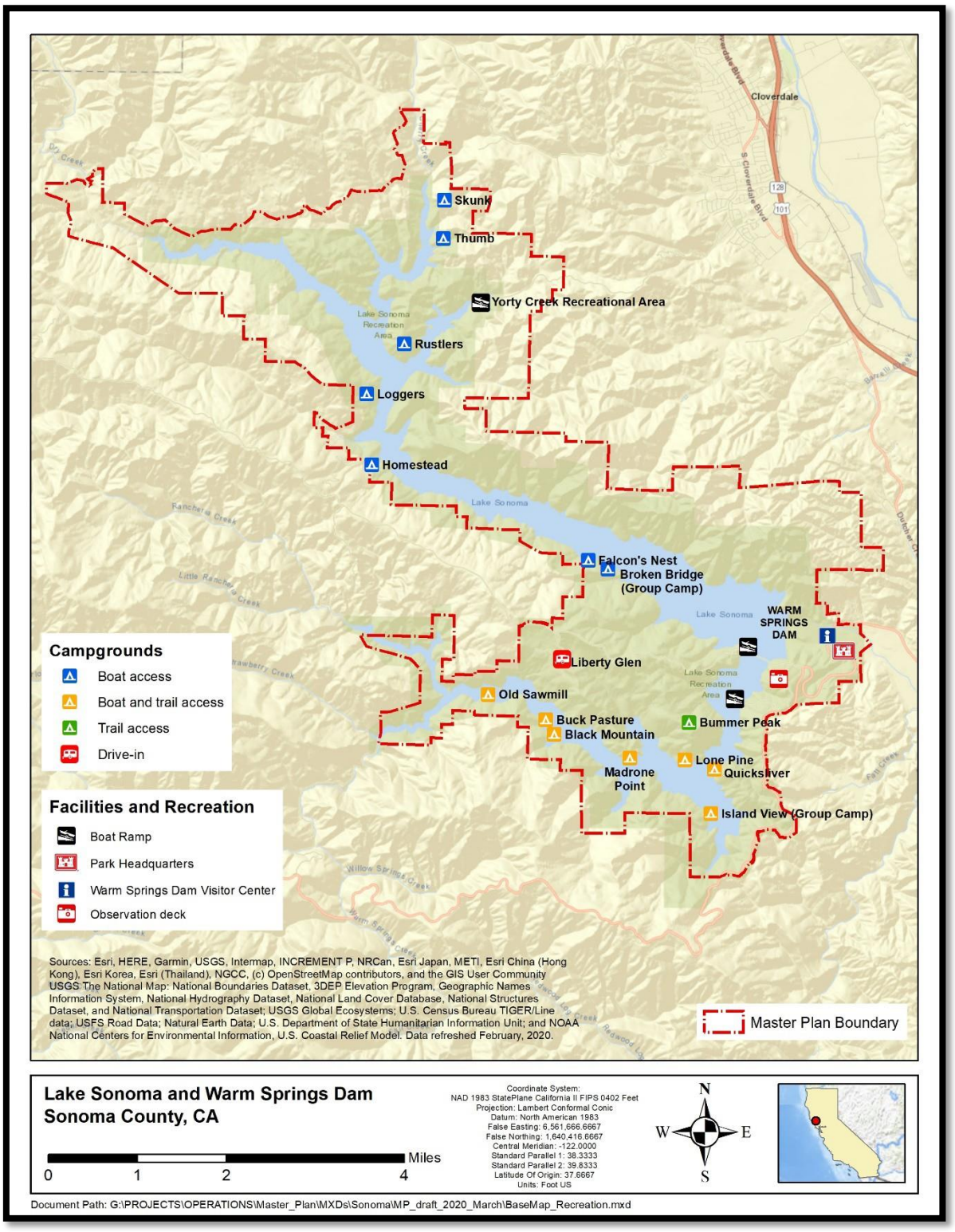

Figure 1 - Project Map of Lake Sonoma and Warm Springs Dam

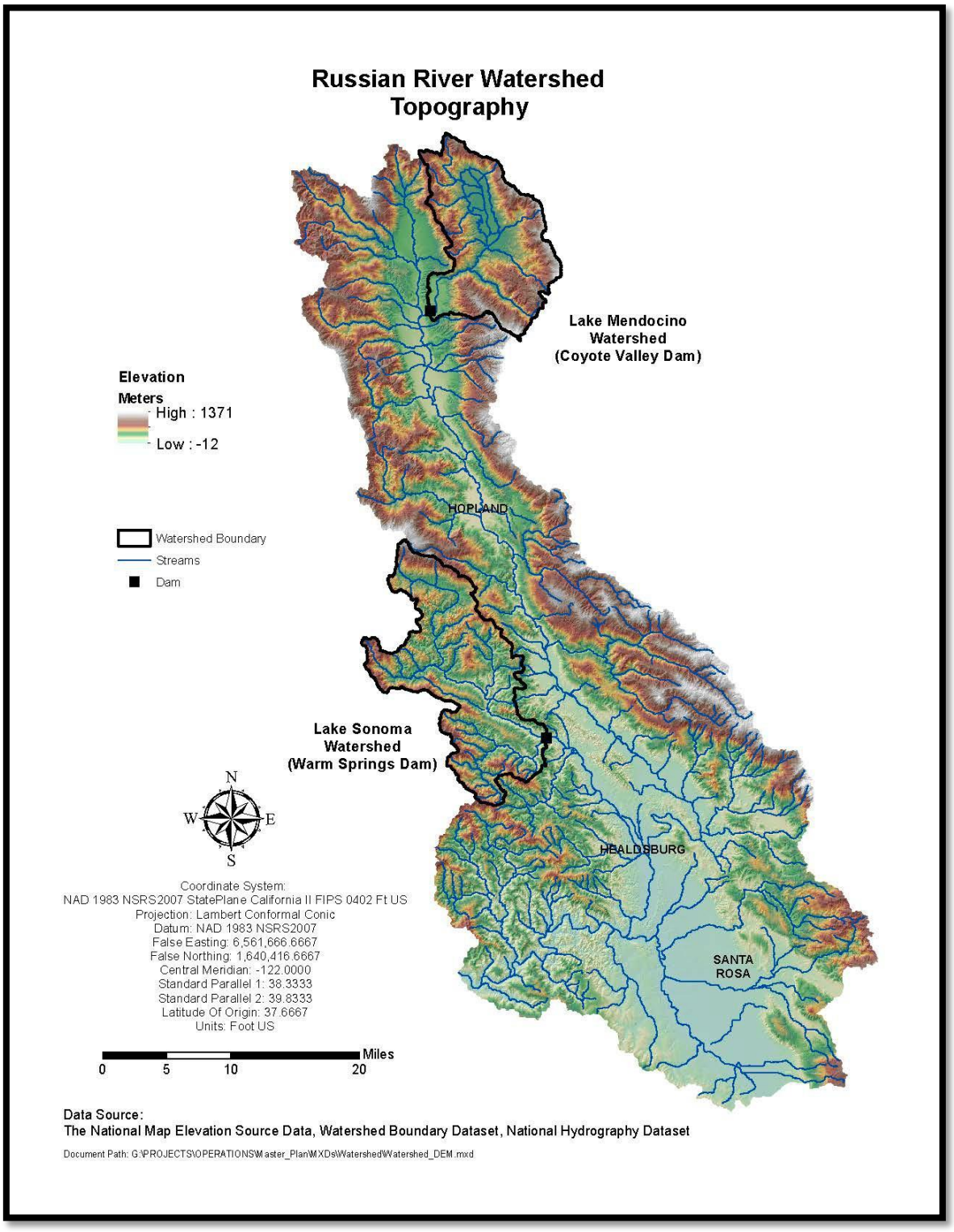

Figure 2 - Watershed map of the Russian River

1.5 MASTER PLAN HISTORY, PRIOR DESIGN MEMORANDA

A resolution of the House Committee on Public Works adopted July 1, 1958 authorized the study of Dry Creek for the purposes of "flood control, water conservation, and other purposes." Initial concepts for recreational development were set forth in a Preliminary MP (1966). During detailed reservoir design, presented in a General Design Memorandum, 1967, the project was modified to optimize benefits in accordance with Senate Document 87-97 (Policies, Standards, and Procedures in the Formulation, Evaluation, and Review of Plans for Use and Development of Water and Related Land Resources, 1962).

In 1979, Design Memorandum #14 presented a final MP that included recreational facilities associated with the construction of the project. This MP is a revision to the original 1979 MP, and incorporates information from the OMP signed in 2013. Table 1 shows a list of the prior Design Memoranda applicable to Warm Springs Dam and Lake Sonoma.

Table 1 - List of Prior Design Memoranda for Warm Springs Dam and Lake Sonoma

DM #	Title	Approved
1	Preliminary Master Plan	Jul-66
2	Hydrology and Hydraulics Analysis	Sep-67
3	General Design Memorandum	Mar-68
4	Relocations, Phase 1	Apr-67
5	Real Estate, Partial	Apr-67
6	Relocations, Phase 1 Supplement	Sep-67
7	Cemetery Relocation, Parcels	Jun-67
8	Real Estate, Final	Jun-68
9	Cemetery Relocation, Final	Dec-67
10	Geology	Nov-67
11	Relocations, Phase II	
	Supplement No. 1-Warm Springs Ck. And Cherry Ck. Bridge	Jul-68
	Supplement No.2 - Utilities	May-70
12	Administrative Facilities	Mar-68
13	Fish and Wildlife Facilities	
	Supplement No. 1	Jul-74
14	Spillway and Outlet Works	Sep-70
	Supplement No. 1	Jun-72
	Supplement No. 2	Oct-72
15	Lake Sonoma Master Plan	Jan-80
16	Soils, Construction Materials and Dam Embankment Design	Jan-71
17	Instrumentation	Jan-71
18	Reservoir Clearing	Jan-73
	Supplement No. 1	Jan-80
19	Dry Creek Channel Improvements	Jun-81
20	Concrete Aggregate Investigation	Jul-80
21	Project Overlook	Oct-79
22	Vegetation Management Overlook	n.d.
23	Boat Launch/Beach, Marina and Warm Springs Beach	n.d.
24	Buzzard Rock and Oak Knolls Campground	n.d.
25	Hot Springs Road Relocation Areas	n.d.
26	Interpretive Program	n.d.
	Monitoring of Initial Lake Filling	n.d.
	Warm Springs Dam Recreation Area	n.d.
28	Miscellaneous Recreation Facilities	n.d.

1.6 LISTING OF PERTINENT INFORMATION

Table 2 provides a list of pertinent information for Warm Springs Dam and Lake Sonoma.

Table 2 - Listing of Pertinent Information for Warm Springs Dam and Lake Sonoma

GENERAL PROJECT AREA	
Location	Confluence of Warm Springs Creek and Dry Creek, approximately 14 miles northeast of Healdsburg, in Sonoma County, California
Operating and Managing Agency	U.S. Army Corps of Engineers, San Francisco District
Authorized Purposes	Flood Control, Water Supply and Recreation
Authorization	Flood Control Act of 1962, Public Law 87-874
Construction Completed	1983
Drainage Area	130 square miles (337 square kilometers)
Capacity	381,000 acre-feet (af) (124 billion gallons)
Flood Management Allocation	130,000 af
Water Supply Allocation	212,000 af
Sediment Accumulation Allocation	26,000 af
Fishery Maintenance Allocation	13,000 af
MAIN DAM	
Type	Compacted Earthfill
Height	319 feet (97 meters)
Crest elevation	519 feet mean sea level (msl)
Crest length	3,000 feet (916 meters)
Crest width	30 feet (9 meters)
Volume	30 million cubic yards (23 million cubic meters)
SPILLWAY	
Type Gate	Ungated overflow
Crest Elevation	495 feet msl
Capacity	29,600 cubic feet per second (cfs)
RESERVOIR	
Elevations:	
Flood Pool	495 feet msl
Conservation Pool	451 feet msl
Minimum Pool	292 feet msl
OUTLETS	
Tunnel: Intake Length	500 feet (152 meters)
Tunnel: Intake Diameter	10.5 feet (3.6 meters)
Tunnel: Outlet Length	2,900 feet (884 meters)
Tunnel: Outlet Diameter	14.5 feet (4.3 meters)
Shaft: Height	207 feet (63 meters)
Shaft: Diameter	36 feet (11 meters) to 56 feet (17 meters)
Intake Levels (Elevations)	350 feet msl, 390 feet, msl, 430 feet msl
Intake Diameter	5 feet (1.5 meters)
FISH HATCHERY	
Operating and Maintaining Agency	California Department of Fish and Wildlife & USACE
Annual Production: Steelhead	300,000 yearlings
Annual Production: Silver (Coho) Salmon	110,000 yearlings

Chapter 2 – Project Setting and Factors Influencing Resource Management and Development

2.1 DESCRIPTION OF RESERVOIR

Warm Springs Dam is a rolled earth embankment located at the confluence of Warm Springs Creek and Dry Creek, approximately 14 miles northwest of Healdsburg (Sonoma County) and 70 miles northwest of San Francisco, California.

The dam crest elevation is 519 feet above mean sea level (msl). The top of the dam is about six feet above the maximum water surface in the reservoir. Curved on a 6,000 foot radius, the dam crest extends approximately 3,000 feet across the stream channel, and measures 30 feet wide. The upstream face of the dam is covered with rock for protection against wave action. The downstream face is covered with six inches of topsoil and seeded.

The reservoir has a capacity of 381,000 acre-feet (af) at the spillway crest and an elevation 495 feet msl. Of this total capacity, 130,000 af is allocated to flood risk management; 212,000 af to water conservation; 26,000 af to sediment accumulation during the 100-year economic life of the project; and 13,000 af for maintenance of minimum pool. With the water level at the spillway crest (495 feet msl), Lake Sonoma has a surface area of 3,600 acres, extends 12 miles up Dry Creek and 7 miles up Warm Springs Creek, and provides 73 miles of shoreline. With the pool at conservation level (450 feet msl), the impoundment covers 2,700 acres, extends nine miles along Dry Creek and four miles along Warm Springs Creek and provides 53 miles of shoreline. At minimum pool elevation (292 feet msl), the water surface area is 486 acres, extends five miles up Dry Creek and two miles up Warm Springs Creek and creates 17 miles of shoreline.

2.2 HYDROLOGY

The drainage above Lake Sonoma encompasses 130 square miles. Heavy winter rains can cause flood flows on upper Dry Creek. These flows have sharp, high peaks, are usually short in duration, have comparatively small volume, and can occur in rapid succession. The run-off is not greatly affected by snowmelt. Low flows prevail in the Dry Creek basin from June through October.

The northwest-trending Dry Creek basin is 32 miles long and seven miles across at its widest point, with elevations ranging from 3,000 feet at the drainage divide to 70 feet near the confluence with the Russian River. Dry Creek is the second largest tributary by area within the Russian River basin, but contributes the largest amount of annual runoff (USACE, 1984). Average annual precipitation in the basin is illustrated in Figure 3.

Warm Springs Dam reduces maximum stream flow to 8,000 cubic feet per second (cfs) on lower Dry Creek[1], which flows past 87 square miles of unregulated catchments downstream of the dam. Prior to the construction of the dam, Dry Creek near the Geyserville stream gage showed a median annual peak flow of 16,600 cfs second, with peak flows regularly exceeding 7,500 cfs. After dam completion, median annual peak flow fell to 3,900 cfs and dam operations did not exceed 7,500 cfs from water year 1984 to water year 2013.

[1] https://nwis.waterdata.usgs.gov/ca/nwis/peak/?site_no=11465200&agency_cd=USGS

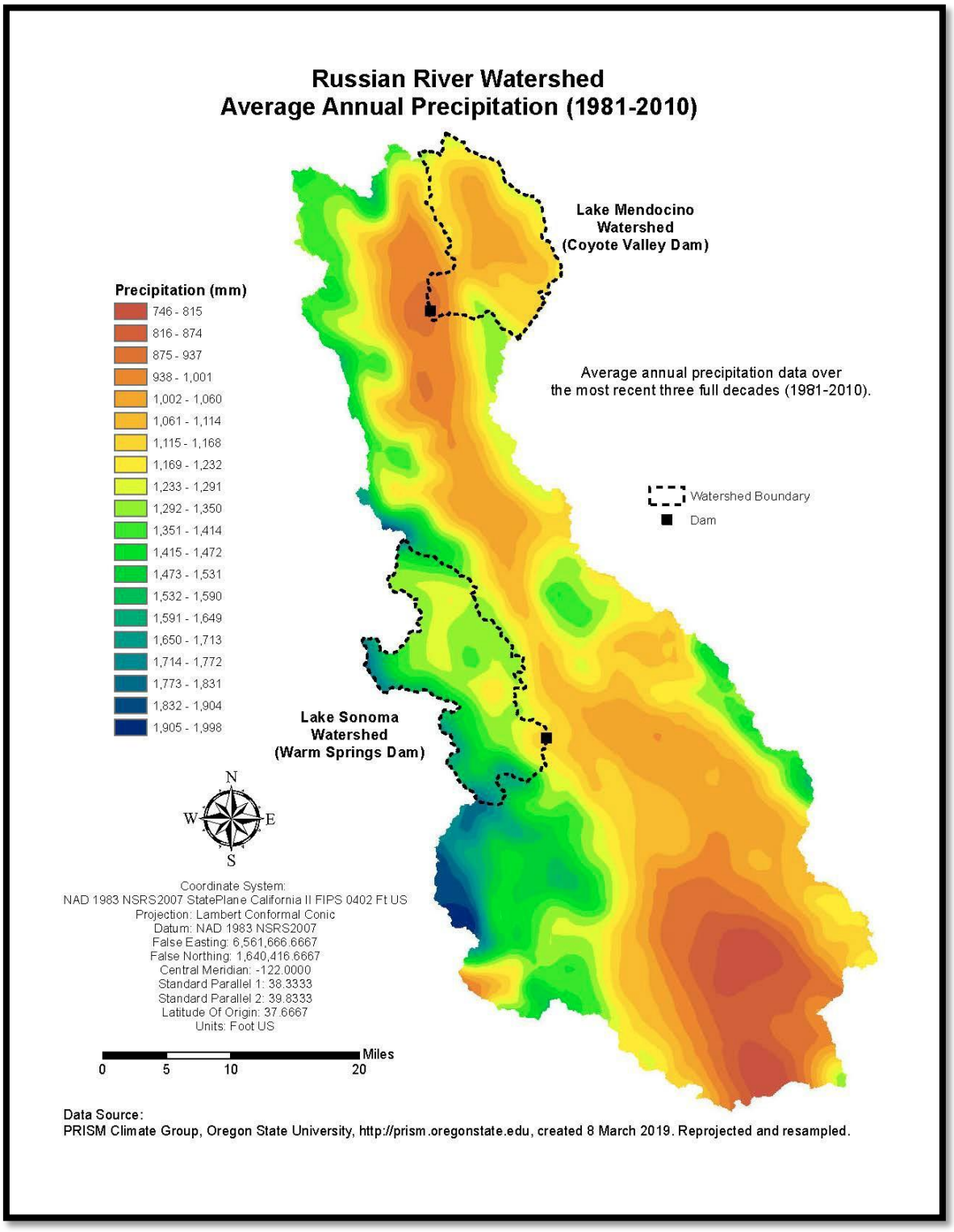

Figure 3 - Average Annual Precipitation in the Russian River Watershed

2.3 CLIMATE

The Dry Creek Valley has a temperate, semiarid climate characterized by cool wet winters and warm dry summers. Annual precipitation averages about 46 inches in the watershed. About 87 percent of the precipitation occurs during the months of November through April. Almost all precipitation occurs as rain. Area temperatures average 59 degrees Fahrenheit, and range from an average low of 36 degrees Fahrenheit in December to an average high of 90 degrees Fahrenheit in July (U.S. Climate Data, n.d.).[2] Figure 4 shows average precipitation in the Geyserville area, which is the closest gauge to the project location. Figure 5 shows the average annual mean temperature in the Russian River watershed.

The amount of rainfall falling on-site is affected by topographic variation. As moisture-laden air masses move in from the ocean, they are forced to rise over the mountains, where they cool, condense, and precipitate. Greatest precipitation will be associated with those higher ridges having a more direct access to the ocean. Lower precipitation is found in the sheltered valleys and on secondary lower ridges.

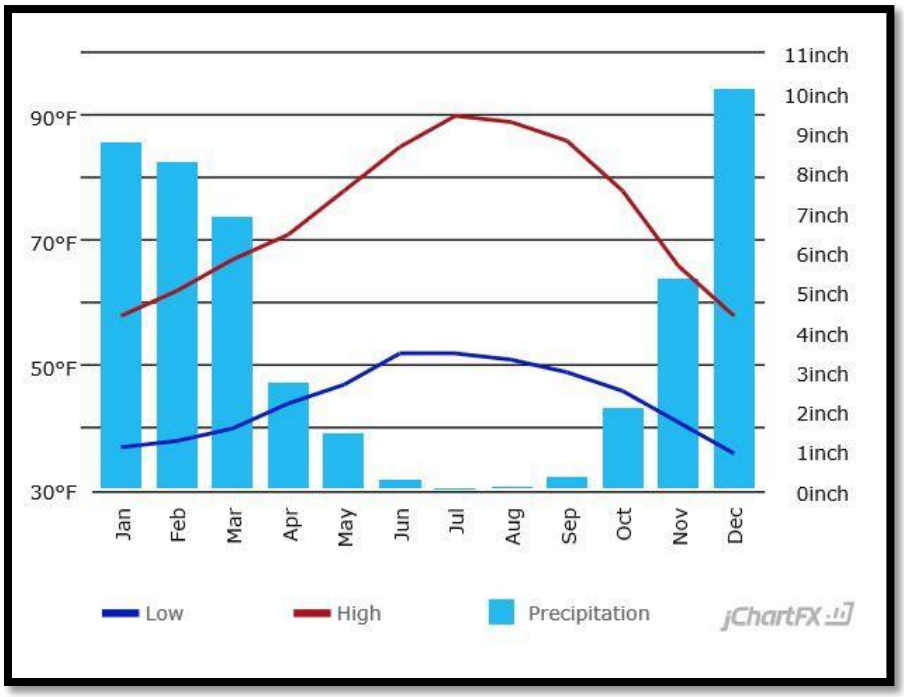

Figure 4 - Average Precipitation and Temperature Data for Geyserville, near Lake Sonoma

[2] https://www.usclimatedata.com/climate/geyserville/california/united-states/usca1900

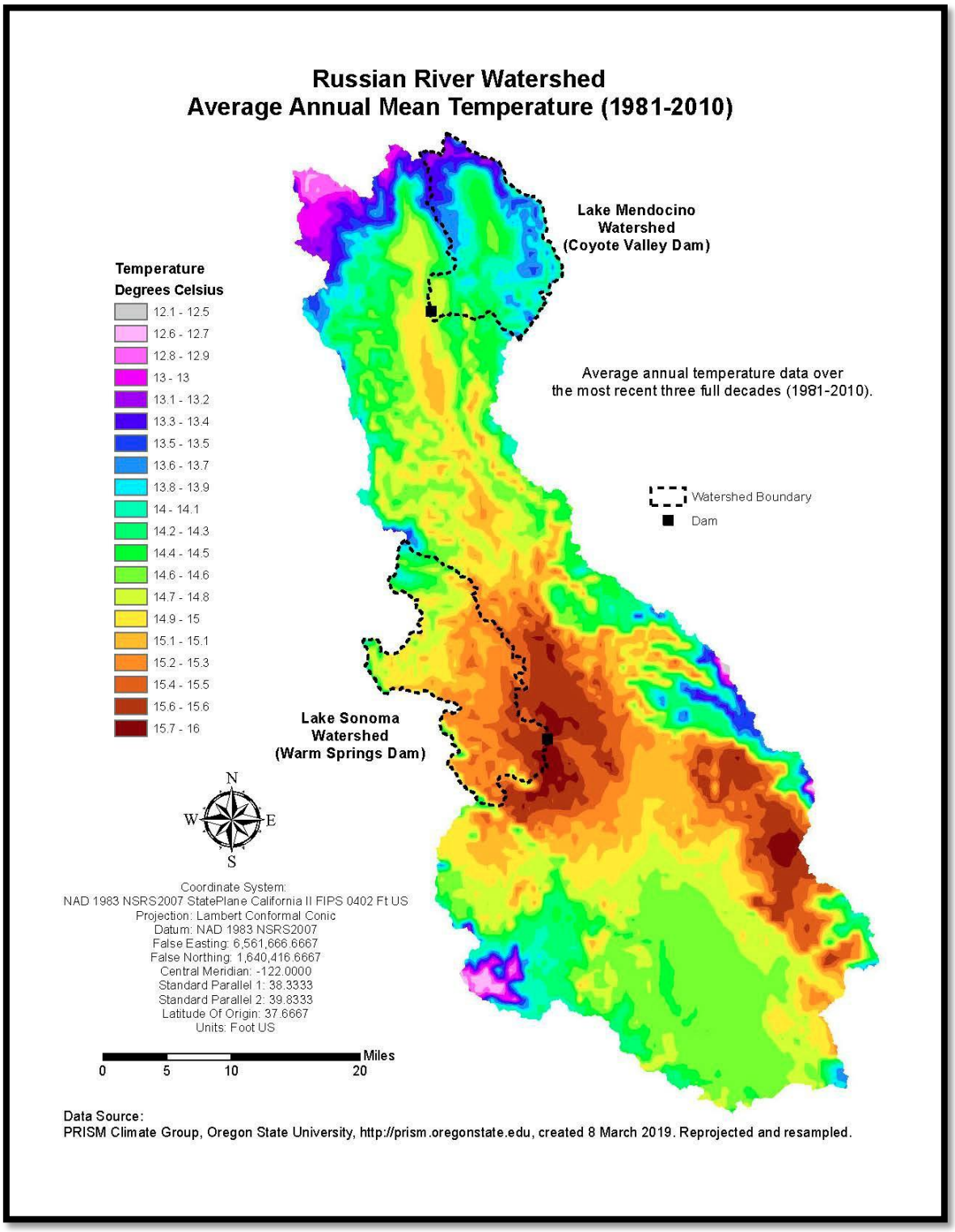

Figure 5 - Average Annual Mean Temperature in the Russian River Watershed

2.4 TOPOGRAPHY, GEOLOGY, SOILS, AND SEISMICITY

2.4.1 Topography

Steep terrain, cliffs, and rock outcrops occupy a large portion of the project boundary. Much of this area has a slope of over 25 percent. This makes much of the land unsuitable for intensive use. The region surrounding the project is a generally mountainous area lying within the Coast Ranges, with several inter-mountain valleys. Topographically, the Dry Creek drainage area is characterized by nearly parallel northwestward trending ridges, with a trellis type of drainage pattern following the intervening valleys and short dendritic (branching) tributary drainage cutting the ridges at sharp angles to the main valleys. Crests of the ridges reach 2,000 feet elevation.

Figure 6 illustrates the aspect of lands (North facing = 0 degrees, East Facing = 90 degrees, etc.) within the project area. Figure 7 illustrates the slope of lands within the project area.

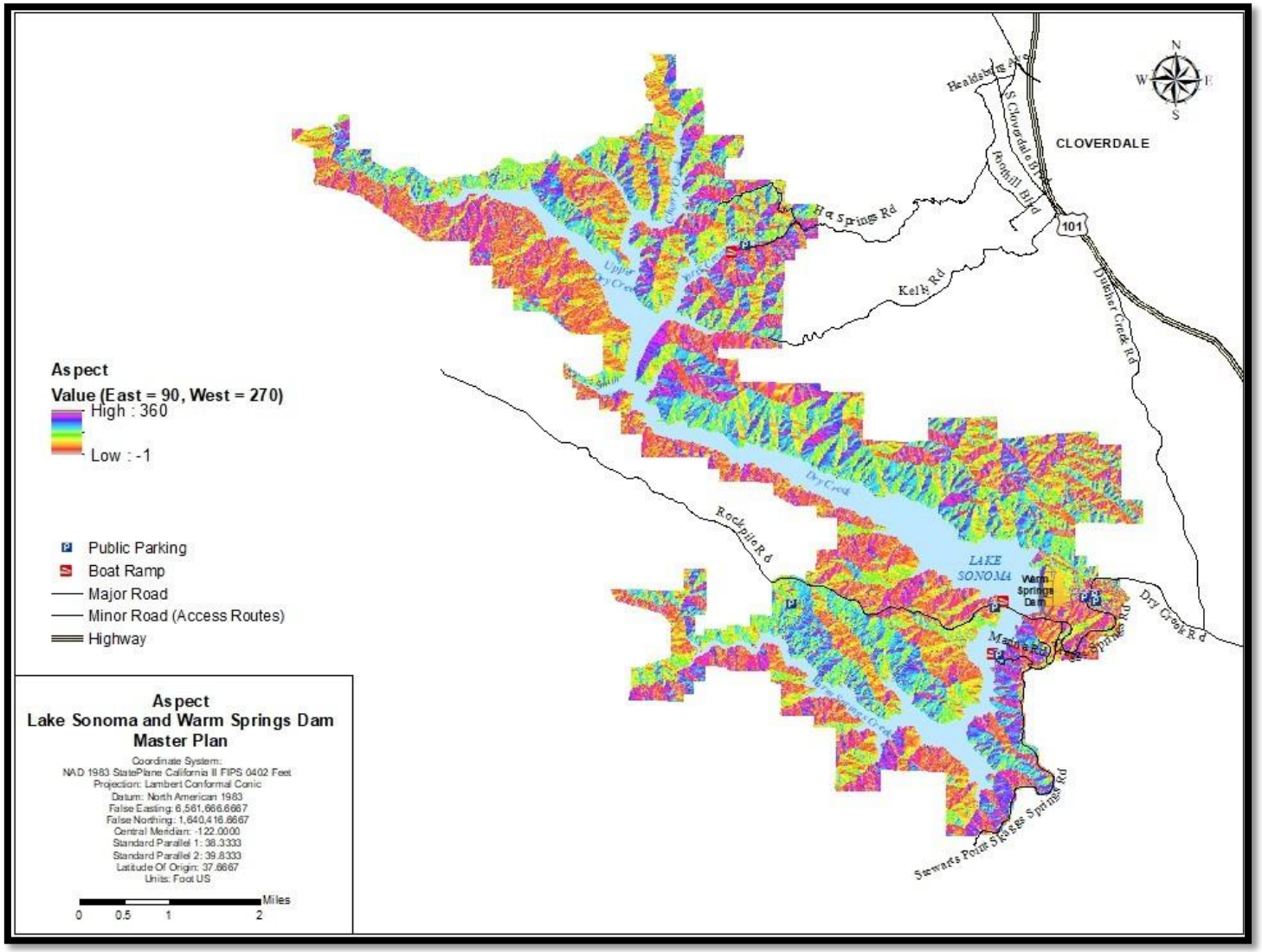

Figure 6 - Lake Sonoma Aspect Map

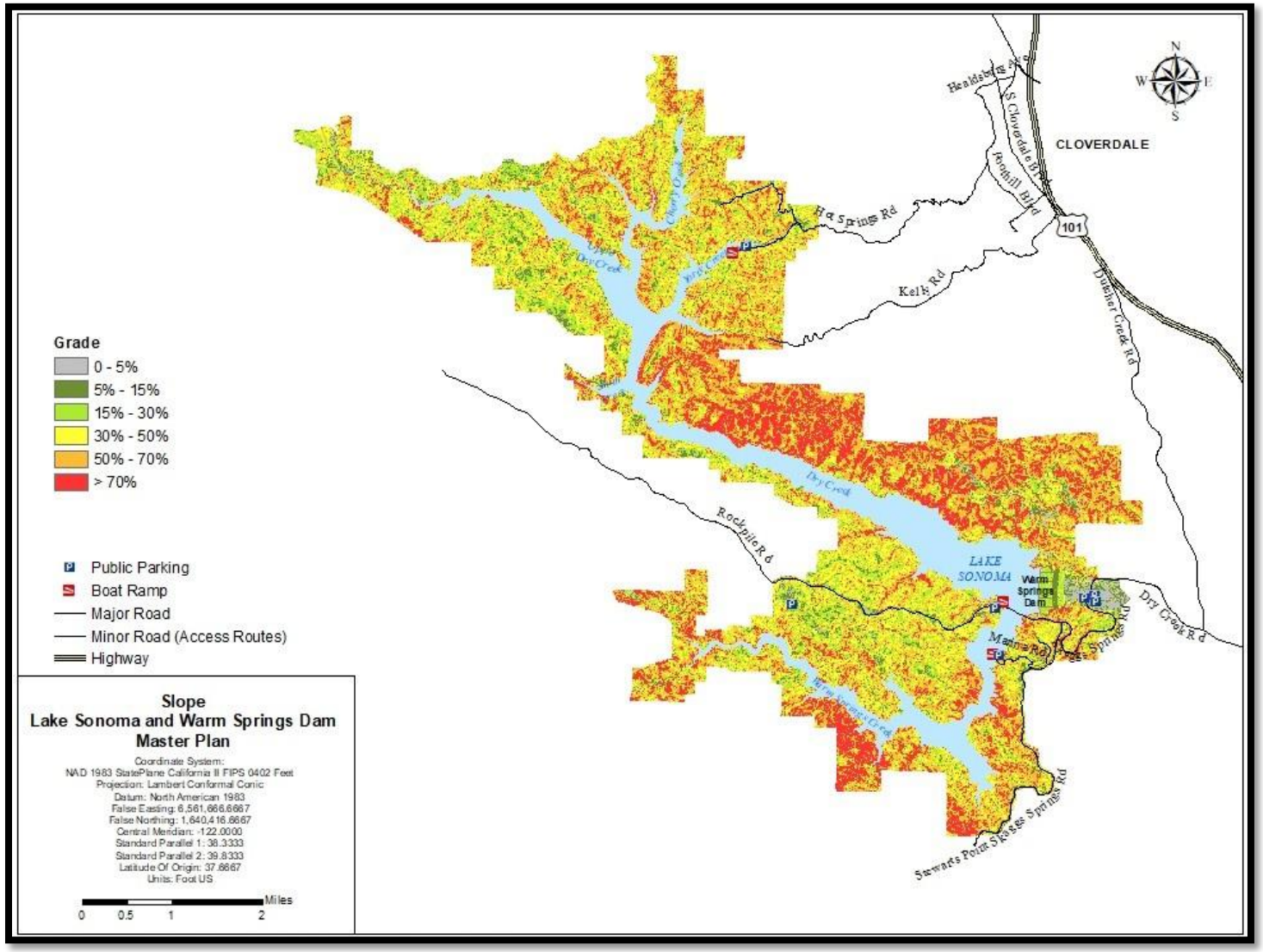

Figure 7 - Lake Sonoma Slope Map

2.4.2 Geology

Lake Sonoma is situated in steep-sided canyons cut into the Mendocino Plateau by Dry Creek and the Warm Springs side of Dry Creek Valley. Terrace deposits outcrop primarily along the northeastern side of Dry Creek valley and represent Pleistocene erosional remnants. Deposits of Sonoma volcanics underlie the terraces downstream from the dam, but are not present in the reservoir area. The major geologic feature in the area is a series of outcrops rising to an elevation of about 1,800 feet (1,350 feet above the conservation pool of Lake Sonoma). Other rock outcrops such as Black Mountain (see Figure 8) and Buzzard Rock on Warm Springs Creek are especially prominent when compared to the generally rounded, grassy slopes of the project area.

Figure 8 - Black Mountain Camp, viewed from Warm Springs Arm of Lake Sonoma

The presence of intrusive and volcanic rock of the Coast Range ophiolite within the Dry Creek Valley is thought to be caused from depositional contact with the sedimentary rock of the Great Valley Complex, and is limited to the western flank of the valley. Therefore, it can be assumed that underneath the alluvial deposits the bedrock of the Dry Creek Valley is composed of sedimentary rock associated with the Great Valley Complex (Harvey and Schumm, 1985).

2.4.3 Soils

Survey data for the Dry Creek watershed shows eight major soils groupings on the project area. The ridge tops and north slopes are generally characterized by moderately deep to deep soils of the Hugo and Josephine associations with occasional pockets of shallow soils of the Henneke-Montara and Maymen

associations. South facing slopes are generally made up of shallow to moderately deep soils of the Laughlin, Yorkville, and Los Gatos associations (USACE, 1979).

The soils found in the Lake Sonoma area are alluvial terraces and channels are sand, gravel, and cobbles of varying types originating from tributaries and the adjacent deposits from Coast Range ophiolite, Great Valley Complex, and Franciscan Complex assemblages (Inter-Fluve, 2010). The Yolo-Cortina-Pleasanton Association is the soil association found within Dry Creek Valley (Miller, 1972).

Figure 9 illustrates the soils and soil types within the project area.

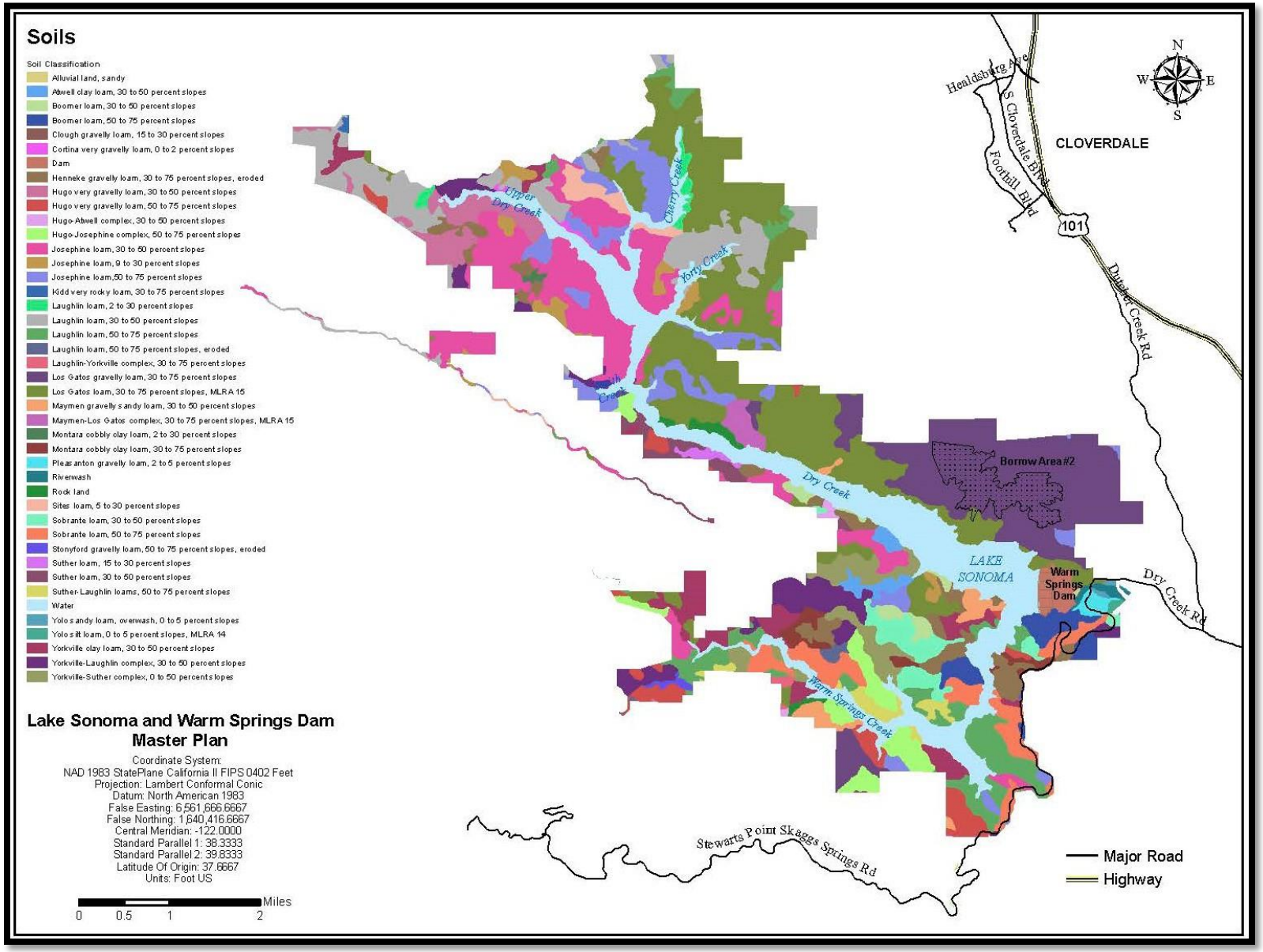

Figure 9 - Lake Sonoma Soil Types

2.4.4 Seismicity

The seismic environment in the Lake Sonoma area is characterized by the San Andreas Fault system, which lies at the boundary between the Pacific Plate and the North American Plate. The major active faults in the vicinity of the study area include the San Andreas, Rodgers Creek, Healdsburg, and Maacama Faults. The 1997 Uniform Building Code locates the study area and the greater San Francisco Bay Area within Seismic Risk Zone 4; areas within Zone 4 are expected to experience maximum magnitudes and damage in the event of an earthquake (International Conference of Building Officials, 1997).

Several strands of the Healdsburg Fault are located within and immediately adjacent to Dry Creek (Bryant, 1982). The Healdsburg fault system is a northwest trending, 1 to 2 kilometer wide extension of the Rodgers Creek fault to the south and is connected to the Maacama fault to the east by a lateral step-over (McLaughlin and Sarna-Wojcicki 2003). Although the Healdsburg fault is not listed as active under the California Alquist-Priolo (AP) Earthquake Fault Zoning Act (Bryant and Hart, 2007), both the Rodgers Creek and Maacama systems are zoned as active. Based on the evidence of structural relationship of the Healdsburg Fault to the Rodgers Creek and Maacama Fault systems, the Healdsburg Fault should be considered potentially active (Inter-Fluve, 2010).

Based on stereoscopic analysis of the aerial photos and digital imagery of the watershed, Inter-Fluve (2010) found that the Lake Sonoma area may be structurally controlled along traces of the Healdsburg fault or other features inferred to be associated with the fault. Several sections of lower Dry Creek basin have unusually low sinuosity for a stream in a dominantly alluvial drainage; Inter-Fluve interpreted these reaches to coincide with or parallel mapped strands of the Healdsburg fault.

2.5 WATER QUALITY AND WATER MANAGEMENT

As stewards of a significant percentage of the nation's aquatic environment, the USACE is responsible for preserving, protecting, and, where necessary, restoring water quality altered by its projects. This requires a comprehensive understanding of the interactions of uses and users of the resource.

The USACE Water Quality Management Program for Civil Works Projects is described by Engineer Regulation (ER) 1110-2-8154, *Water Quality Management*, USACE's primary water quality regulation. ER 1110-2-8154 encourages a holistic ecosystem approach to water quality management.

The release of water from Lake Sonoma is not only regulated for flow, but also for temperature. Water released from the lake through a combination of inlet structures positioned at various depths provides for water temperatures that are suitable for hatchery operations. These temperatures are consistent in lower Dry Creek. At the USGS Dry Creek stream gage below Lambert Bridge (USGS 11465240) in 2012, 2013 and 2014, maximum temperatures were observed to range from approximately 54°Fto 62°F.

SW holds water right permits issued by the State Water Resources Control Board (SWRCB) to divert Dry Creek flows and to re-divert water stored and released from within Lake Sonoma. The Lake Sonoma conservation pool holds 245,000 af, which constitutes the principal municipal, domestic and industrial water supply for most of the lower Russian River and parts of Sonoma and Marin counties (SWRCB, 1986; NMFS, 2008). Whenever the lake elevation is within the water conservation pool, Sonoma Water directs the USACE to release from Lake Sonoma into Dry Creek and downstream into the Russian River. In 1986, the SWRCB released Decision 1610, which updated all minimum instream flow requirements for normal, dry and critically dry water years for the Russian River basin. In normal water years, the California State mandated minimum instream flow requirement in Dry Creek between Warm Springs Dam and the Russian River varies between 105 cfs in winter months and 80 cfs in the summer months. In dry and critically dry year conditions, the required summer instream flow on Dry Creek is 25 cfs. Flow rates are typically higher than these limits, because of water supply requirements downstream of the Dry Creek and the mainstem Russian River confluence or because of flood risk management operations. Sonoma Water sets release levels to meet water supply needs in accordance with its water rights permits, SWRCB Decision 1610, and the NMFS 2008 Biological Opinion for Water Supply, Flood-control Operations, and Channel Maintenance, which sets maximum flow levels to avoid take of endangered species.

2.6 RESOURCE ANALYSIS

2.6.1 Fish and Wildlife Resources

According to the 1979 MP, the estimated present annual spawning migration in the total Dry Creek drainage included 8,000 steelhead trout and 300 Coho salmon.

As Warm Springs Dam blocked the annual upstream migration of steelhead trout and Coho salmon to spawning areas, a fish hatchery was built to mitigate fishery losses. The hatchery is also utilized to support a Chinook salmon egg collection facility located below Lake Mendocino.

Agreements between Sonoma Water, the State of California Department of Fish and Wildlife (CDFW) and the USACE allow for additional water releases from the dam for the benefit of fisheries.

To compensate for loss of wildlife habitat resulting from filling Lake Sonoma and for the 180 acres of additional habitat taken for roads, parking areas and similar permanent features, a wildlife management area was established on approximately 3,200 acres of land, located adjacent to the reservoir in the Pritchett Peaks area north of Dry Creek. Another wildlife management area is located to the west of Cherry Creek along upper Dry Creek. In total, approximately 8,000 acres is set aside for wildlife management.

2.6.2 Vegetative Resources

Vegetation communities and wildlife habitats at Lake Sonoma include a mosaic of herbaceous-, shrub-, and tree-dominated types, as well as aquatic and developed types. Broad vegetative community categories within the watershed include scrubs and chaparrals, oak savannas and woodlands, coniferous forests and woodlands, grasslands, vineyards, and riparian communities. Historically, these communities provided habitat for a rich diversity of terrestrial and wetland plant and animal species. Although many of the species that historically occupied the watershed are still present, some are now non-existent, extremely rare, or have had their numbers substantially reduced. Such loss or reduction in species diversity is attributed to habitat loss and a variety of other complex factors (Sonoma County Water Agency and Circuit Rider Productions, Inc., 1998).

Classification and Assessment with Landsat of Visible Ecological Groupings (CALVEG) identifies three dominant vegetation communities in the Dry Creek Valley and several vegetation communities in the surrounding hills. The dominant vegetation communities in the surrounding hillsides at Lake Sonoma as classified by CALVEG and the CDFW's California Wildlife-Habitat Relationships System, include: vineyard, montane hardwood, redwood, montane hardwood-conifer, Douglas-fir, and mixed chaparral. Developed and landscaped riparian forest and woodland are the primary vegetation communities in the project area. Riparian vegetation occupies lands adjacent to streams, creeks, and rivers where water may be permanent or ephemeral. The composition of riparian vegetation is greatly influenced by the physical processes of the adjacent aquatic habitat; species that are found in the active channel are usually not the same as those found on the floodplain. The vegetated sections of stream banks within the project area are dominated by an overstory of red, arroyo, and sandbar willows (Salix laevigata, S. lasiolepis, and S. exigua), white alders (Alnus rhombifolia), cottonwood (Populus fremontii); and occasional box-elders (Acer negundo), buckeyes (Aesculus californica), and coast live oaks (Quercus agrifolia).

Typical understory species around Lake Sonoma include a mixture of Himalayan blackberry (Rubus armeniacus), California blackberry (Rubus ursinus var. ursinus), escaped grape (Vitis vinifera), mugwort (Artemisia douglasiana), and periwinkle (Vinca major). A few open areas without an overstory component exist within the project area. These open areas are typically dominated by annual grasses (Avena fatua, Bromus diandrus, Hordeum murinum, Lolium multiflorum) and other herbaceous plants (Verbascum thapsus, Melilotus albus, Hirschfeldia incana).
Figure 10 is a vegetation map of the Lake Sonoma project area.

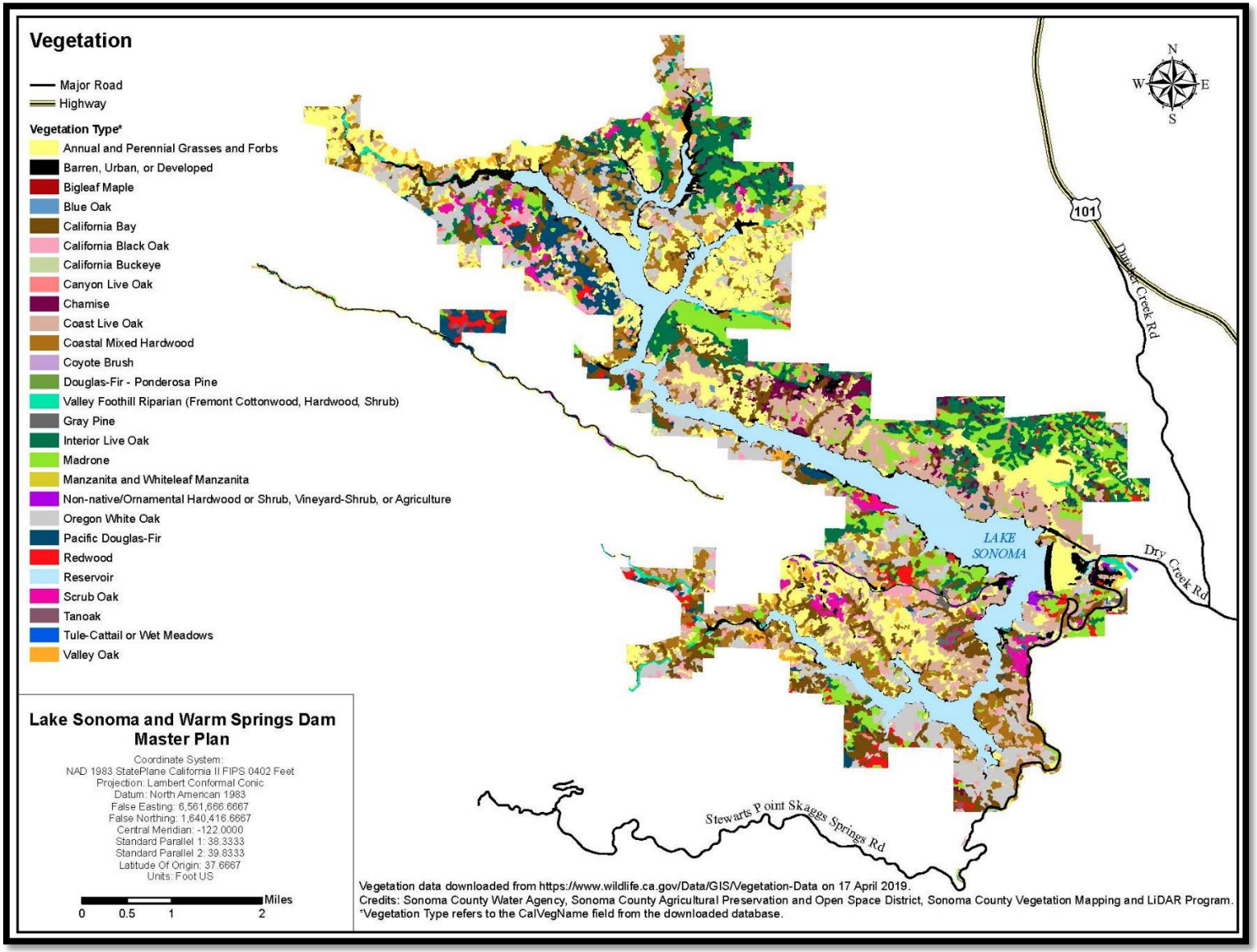

Figure 10 - Vegetation map of Lake Sonoma

2.6.3 Threatened and Endangered Species

The species list obtained from the USFWS contained two terrestrial species with a potential to be present in the project area, the marbled murrelet (Brachyramphus marmoratus) and the northern spotted owl (Strix occidentalis caurina). Both of these species require closed canopy old-growth conifer forest for habitat, primarily redwood for the murrelet.

Lake Sonoma is 30 kilometers from the coast. Marbled murrelets have only rarely been found nesting this far inland in California. There are some pockets of coniferous forest that could be suitable as habitat in the unlikely event that any birds venture this far inland to nest. These areas could also contain potential marginal habitat for the spotted owl, which requires closed-canopy forest with multiple layers. The land being added to Lake Sonoma donated by the Save the Redwoods League contains some developed second-growth redwood forest. This land will be classed as Environmentally Sensitive area to afford the greatest protection. Other areas of mature conifer forest are present at Lake Sonoma high on the north facing slopes. They are a significant distance from the areas used by visitors and are difficult to access since no roads lead to them. No critical habitat for either the marbled murrelet or the northern spotted owl is present within the boundaries of the project area.

Three federally-listed fish species and their critical habitats have the potential to occur in the Lake Sonoma area, including: California Coastal Chinook salmon (federal threatened), Central California Coast coho salmon (federal endangered), and Central California Coast steelhead (federal endangered). In addition, critical habitat for all three species is present within the watershed. Critical habitat includes habitat which contains physical or biological features essential to conservation and those features that may require special management considerations or protection as well as specific areas outside the geographical area occupied by the species if the agency (NMFS) determines that the area itself is essential for conservation (NMFS 1999). Construction of Warm Springs Dam created a barrier to the passage of salmonids and they no longer occur above the dam. The hatchery at Lake Sonoma and the egg collection facility at Lake Mendocino were created to mitigate for the loss of salmonid habitat in the Russian River watershed from the construction of the dams.

The list identified Pennell's birds-beak (*Cordylanthus tenuis ssp. capilliaris*) as having the potential to be in the area. This plant is known from two populations at Camp Meeker and the Harrison Grade Ecological Reserve over 20 miles to the south of Lake Sonoma. The species is a root parasite that occupies serpentine flats among chaparral between 150 and 800 feet in elevation (USFWS 98). This plant has not been identified within the project boundaries.

Fifteen terrestrial animal species not Federally listed as threatened or endangered, but considered to be species of concern at the Federal or state level, have moderate-to high-potential to occur in the Lake Sonoma area. Table 3 shows a list of these special status species.

Continual monitoring of habitat is part of ongoing stewardship of the resource, per the Resource Objectives. At such a time as either a listed species is discovered, or a species known to be in the project boundary becomes listed, this MP will reflect the change in status. Table 3 provides a list of special status species and applicability to the Lake Sonoma project area.

Table 3 - Special Status Species and Applicability to Lake Sonoma

Species of Concern	Description of Status, Applicability to Lake Sonoma
Bald eagle (*Haliaeetus leucocephalus*)	Listed as endangered and fully protected by the State of California. A pair is known to have maintained an active nest at Lake Sonoma from 2001 to the present. May occasionally forage in the Russian River area.
Allen's hummingbird (*Selasphorus sasin*)	On the USFWS birds of conservation concern list and previously categorized as a Federal species of concern. Confirmed nesting in inland Sonoma County and the Dry Creek Valley.
Olive-sided flycatcher (*Contopus cooperi*)	Species of special concern in California. Observed in the vicinity of Lake Sonoma during summer bird surveys and is known to be a summer resident in Sonoma County.
Osprey (*Pandion haliaetus*)	On the California watch list, known to nest at Lake Sonoma, as well as throughout the Russian River. Possible breeding occurrences recorded in Dry Creek Valley; however, Dry Creek itself is largely covered by tree canopy and presents hazards because of a swift current, reducing the likelihood that osprey would forage in the immediate area.
Red-breasted sapsucker (*Sphyrapicus ruber*)	On the California (CDFW) special animals list and is common in the winter in Sonoma County. It was observed in the vicinity of Lake Sonoma during bird surveys.
Yellow warbler (*Dendroica petechia*)	Species of special concern by CDFW and a bird of conservation concern by USFWS. Considered a fairly common summer resident of riparian woodland from April through October.
Yellow-breasted chat (*Icteria virens*)	Species of special concern by CDFW. Is considered an uncommon summer resident, present from April to early September in thick riparian woodland with heavy undergrowth.
White-tailed kite (*Elanus leucurus*)	Fully protected species by the State of California and is a fairly common permanent resident and fall migrant in Sonoma County with numbers peaking in the winter.
Cooper's hawk (*Accipiter cooperii*)	On the California watch list. Is known to be a year-round resident of Sonoma County, and suitable breeding habitat was identified in the vicinity of Lake Sonoma.
Peregrine falcon (*Falco peregrinus anatum*)	On the USFWS list of birds of conservation concern. Is considered a fully protected species in California. Suitable foraging habitat is present at Lake Sonoma.
Merlin (*Falco columbarius*)	Categorized by CDFW as a state species of special concern. It is an uncommon winter migrant from September to April.
Loggerhead shrike (*Lanius excubitor*)	On the USFWS list of birds of conservation concern and categorized by CDFW as a state species of special concern. Considered an uncommon permanent resident in Sonoma County with numbers declining over the last few decades.
Pallid bat (*Antrozous pallidus*)	Federal species of concern. May roost in mature trees around Lake Sonoma.
Western pond turtle (*Actinemys [Emys] marmorata*)	California species of special concern. Suitable aquatic and upland habitat along with the lake area exists for this species.
Foothill yellow-legged frog (*Rana boylii*)	California species of special concern. 71 occurrences were reported in several locations throughout Sonoma County.

2.6.4 Invasive Species

The Lake Sonoma project area contains a number of invasive plant species that interfere with both economic activities and ecologic functions. Some of the species that most threaten native ecosystem function and structure include: giant reed (Arundo donax), yellow starthistle (Centaurea solstitialis), jubata and pampas grass (Cortaderia sp.), Scotch broom (Cytisus scoparius), cape-ivy (Delairea odorata), French broom (Genista monspessulana), Tamarisk species, Vinca species, water primrose (Ludwigia sp.), Spanish broom (Spartium junceum), pepperweed (Lepidium latifolium), and gorse (Ulex europaeus).

2.7 CULTURAL RESOURCES

The USACE has a continued responsibility for the protection, preservation, and management of the cultural resources within the boundaries of the project. The Dry Creek-Warm Springs region is the traditional homeland of the Mihilakawna, or Dry Creek Pomo, the Makahmo, or Cloverdale Pomo, and the Kashaya Pomo Native American groups. Historically, the region was used for mining and homesteaded for use as livestock grazing lands, and agriculture.

In 1985, at the conclusion of the late 1970s and early 1980s studies, a draft archaeological management plan was written; however, the plan was never implemented. The USACE completed the 2001 Cultural Resources Management Plan (CRMP) to guide management of known cultural resources by providing a summary of the cultural resources present in the recreation areas; noting their conditions and providing possible preservation recommendations; outlining USACE regulatory requirements to ensure proper cultural resources management responsibilities; and making recommendations for interpretive outreach opportunities (Newland, 2001).

2.7.1 Past Archeological Work at Lake Sonoma

According to Basgall and Bouey (1991), archaeological studies at Lake Sonoma began as early as 1947. The 1947 work was done as part of a proposed flood risk management dam on Dry Creek. The inventory methodology and area actually examined were never reported on and the work concluded with an erroneous statement that "no archaeological remains of any importance were found" in the lake area (Basgall & Bouey, 1991:2). This statement can be attributed to the standards of the time period and the high threshold of what constituted important archaeological remains. Later in 1964, prior to the establishment of Lake Sonoma and construction of the Warm Springs Dam, San Francisco State College (now California State University San Francisco) conducted a brief cultural resources reconnaissance survey of the lake area. The College identified several prehistoric sites; however, none were deemed significant enough to merit additional research through data recovery or additional mitigation measures.

Construction on the Warm Springs Dam began in 1967. Seven years into the project, construction was halted through the issuance of court order, which cited safety concerns and environmental effects including potential impacts to unidentified cultural resources. The cultural resources impact was of primary concern following the passage of two important pieces of Federal legislation: The National Environmental Policy Act (NEPA) of 1969 and the National Historic Preservation Act (NHPA) of 1966. Even with the construction of the dam underway, the USACE prepared an Environmental Impact Statement for Lake Sonoma and Warm Springs Dam. As part of the study, the USACE agreed to complete a comprehensive cultural resources inventory of the lake impoundment area and the dam area, and to mitigate potential adverse effects on the identified historic properties.

Archaeologists and historic archaeologists inventoried the Lake Sonoma project area between 1974 and 1984. The work focused on identifying cultural resource sites within the project area, evaluating potential project impacts, and providing management recommendations to minimize impacts or document information that would otherwise be lost. As a result of the inventory work, 120 cultural resources sites were identified within or near the project area that ranged from areas of prehistoric occupation to historic-era ranching sites. In addition to the cultural resources work, an ethnographic study was completed concurrently for the project area. The study recorded pre-contact, historic, and contemporary Native American use of the Lake Sonoma area. The collective works culminated in the identification of the Dry Creek-Warm Springs Valleys Archaeological District in 1977. The Dry Creek-Warm Springs Valleys Archaeological District includes lands managed by the USACE and private properties located downstream of Lake Sonoma and was originally made up of 85 prehistoric sites, 24 historic sites, and 8 ethnographic sites.

From August 2010 through September 2010, a Section 110 inventory and National Register of Historic Places (NRHP) eligibility recommendations for sites was conducted on fee-title land around Warm Springs Dam and Lake Sonoma. The goal was to relocate and conduct a condition assessment of previously recorded sites located above the current lake level of 440 feet above mean sea level and perform a judgmental survey of select areas to locate new historic properties. As a result, 34 archaeological sites including 28 previously recorded and 6 newly discovered sites were documented. The finalized report was completed in June 2011.

2.7.2 Protection of Cultural Resources

The archaeological studies at Lake Sonoma resulted in the identification of 99 sites within the established project boundary. The number of sites was determined through a record search for the 2001 CRMP (Newland, 2001). The records search was performed at the Northwest Information Center of the California Historical Resources Information System, which is housed at Sonoma State University. It appears that no additional archaeological studies have occurred in the project area since the record search was completed (Ungvarsky, 2019, personal communication). The record search also included viewing records housed at the USACE San Francisco District and at the Anthropological Studies Center of Sonoma State University. Several forms of traditional cultural properties and sacred sites exist or have existed within the project area. Among them are ethno-botanical resource sites, petroglyph sites, sacred rock outcrops, and burial locations.

The potential effects of any undertaking of the Federal government on the archaeological sites that contribute to the Dry Creek-Warm Springs Valleys Archaeological District must be taken into account as part of the NHPA Section 106 process, 36 C.F.R. § 800.3(a). More information and recommendations on cultural resources management and protection can be found in Chapter 6.

2.8 ECONOMICS

2.8.1 Employment

Key drivers of the Sonoma County economy include government and public administration, healthcare services, and manufacturing. Retail, healthcare services, and government are the top three generators of employment, together accounting for approximately a third of all jobs in the county. Farm employment accounts for 2.2 percent of jobs. Figure 11 provides an overview of employment by sector in the county and compared to the State of California as a whole. Tourism plays an important role in the economy and supports approximately 11 percent of employment. Visitors to Sonoma County spent an estimated $1.9 billion in 2017. Median household income in Sonoma County in 2017 was $80,409[3].

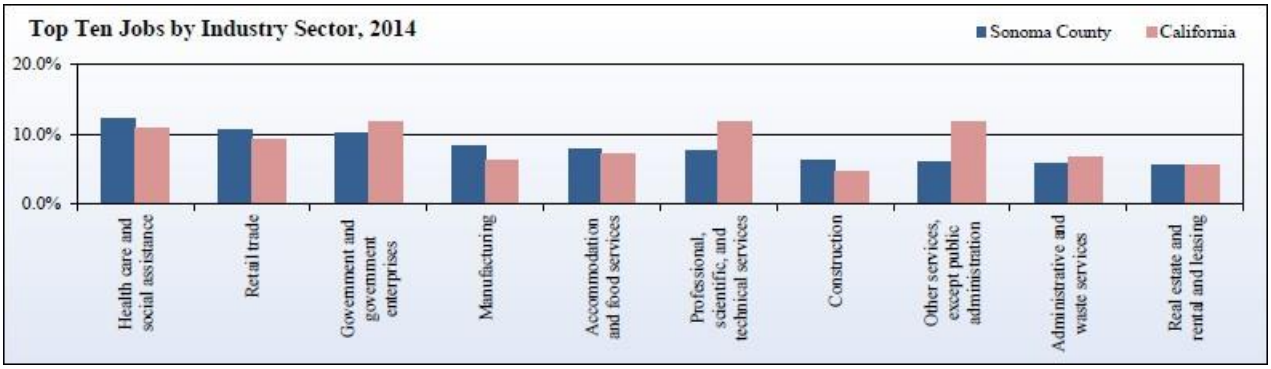

Figure 11 - Distribution of Jobs by Sector in Sonoma County and the State of California
Source: Center for Economic Development at the California State University, Chico

2.8.2 Population and Demographics

California has 67 cities with populations exceeding 100,000, of which 20 cities have populations exceeding 200,000. Cities are getting larger, squeezing out the open spaces for parks and disconnecting the state's biological resources. The five county market area illustrated in Figure 12, comprising the majority of the visitation base for Lake Sonoma, was home to approximately 1.1 million residents in 2018. The population in this market area is projected to grow approximately 10 percent, to nearly 1.2 million people by 2040, as indicated in Table 4. It is anticipated that growth in population will have a direct impact on visitor use at Lake Sonoma in the future.

[3] https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_1YR_S1903&prodType=table

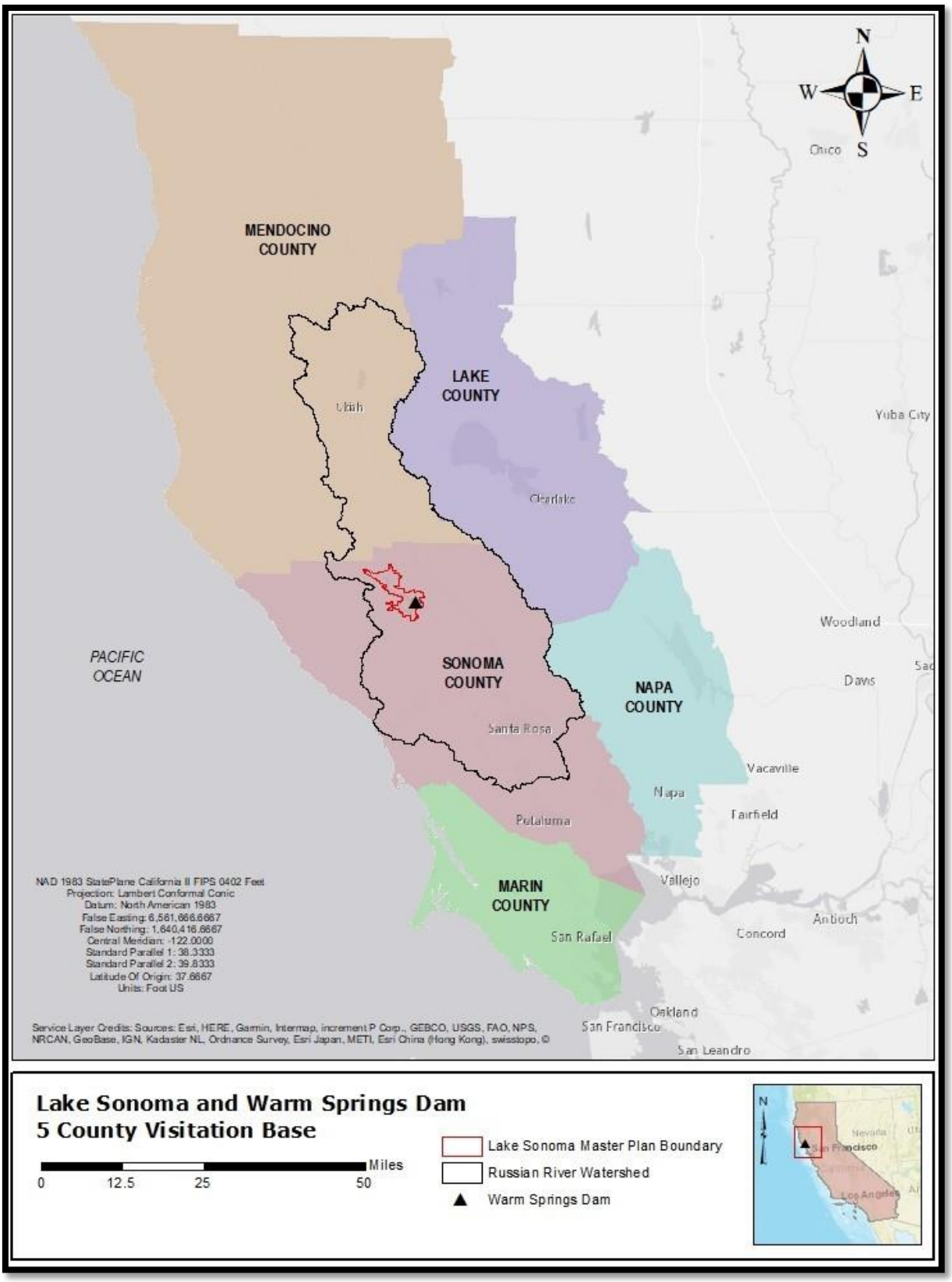

Figure 12 - Map of Northern California Counties: Sonoma, Mendocino, Napa, Lake and Marin

Table 4 - Current and Projected Population in Sonoma and Surrounding Counties

County	2018 Population	2020 Population Estimate	% Change 18-20	2040 Population Estimate	Population Growth (2018-2040)
Sonoma	503,332	515,486	2.4%	583,517	13.7%
Mendocino	89,299	90,175	1.0%	95,124	6.1%
Napa	141,294	143,800	1.8%	160,521	12.0%
Lake	65,081	65,302	0.3%	70,093	7.2%
Marin	263,886	265,152	0.5%	277,087	4.8%
Total	***1,062,892***	***1,079,915***	***1.6%***	***1,186,342***	***10.4%***

Source: State of California Department of Finance

2.9 RECREATION FACILITIES, ACTIVITIES AND NEEDS

2.9.1 Zones of Influence

Approximately 78 percent of the visitors to Lake Sonoma come from areas within 75 miles of the project. This is considered the market area for Lake Sonoma. The area encompasses Sonoma, Mendocino, Napa, Lake and Marin counties. The larger population centers of the San Francisco Bay Area and Sacramento metropolitan area lie to the south and east, respectively.

Other major lakes in the local vicinity include Clear Lake, a naturally occurring lake in Lake County; Lake Mendocino, operated by the USACE; and Lake Berryessa, operated by the U.S. Bureau of Reclamation. These lakes do not noticeably compete with Lake Sonoma for recreational use. Several state and county parks in the area offer excellent recreational opportunities for camping, horseback riding, hiking, and picnicking. Additionally, local wineries offer picnicking facilities and tours. Many visitors come to Lake Sonoma as an extension of wine tasting excursions in nearby Healdsburg and other surrounding areas.

2.9.2 Visitation Profile

Visitation records have been kept for Lake Sonoma since 1979, when the project was under construction. Since 1982, all data, including visitor hours and visits, have been entered into the Visitation Estimation and Reporting System (VERS). Based on VERS data, Lake Sonoma averages nearly two million visitor hours. The peak recreation months are in the summer, as shown in Table 5.

Table 5 - Average Monthly Visitation at Lake Sonoma, 1986 - 2012

MONTH	VISITOR HOURS	% OF ANNUAL
October	113,164	6%
November	81,165	4%
December	56,481	3%
January	63,662	3%
February	80,556	4%
March	113,868	6%
April	154,588	8%
May	244,992	12%
June	263,586	13%
July	329,522	17%
August	287,415	15%
September	187,161	9%
TOTAL	***1,976,160***	***100%***

Source: USACE Natural Resources Management Gateway, VERS data

Many events draw large numbers of visitors to the lake each year, such as the Iron Man competition and the annual Steelhead Festival. The 2018 Iron Man event reportedly nearly two thousand people and an estimated[4] $13 million dollars in revenue to the region. These events are often held in cooperation with partners and stakeholders (such as the Friends of Lake Sonoma), and high visibility and advertising serves as a draw to the region and a boost to the tourism economy.

2.9.3 Recreation Analysis

Surveys of recreational use at Lake Sonoma provided considerable data, which was used to estimate that peak month use would continue to be approximately 17 percent of the total annual use. Fifty percent of the visitation occurs on weekends.

California State Parks Office of Grants and Local Service (OGALS) develops the Statewide Comprehensive Outdoor Recreation Plan (SCORP), which is a statewide vision for parks, outdoor recreation, and open space. The SCORP provides guidance to all outdoor recreation providers, including Federal, state, local, and special district agencies that administer and manage outdoor recreational lands, facilities and services throughout California. The SCORP is also the primary tool for prioritizing Land and Water Conservation Fund grant allocations to local governments.

At the time of this MP revision, three elements from the SCORP were available and used to characterize the recreational trends and use in California and the area surrounding Lake Sonoma: The 2012 *Survey of Public Opinions and Attitudes on Outdoor Recreation*[5], the 2013 *Outdoor Recreation in California Regions*[6], and the 2015 SCORP[7].

Meeting the park and recreation needs for all current and future residents should be a goal of all park and recreation providers in California. To that end, it is essential that all park and recreation stakeholders have a basic understanding of both the state's demographics and the trends that are likely to influence the demand for outdoor recreation now and in the future.

One of the greatest challenges affecting park and recreation providers is the increase in population, as evidenced in the Economics section of this MP. Most of California's growth has been in its major metropolitan areas, including the San Francisco Bay Area, which will continue to affect recreational use and its impact on natural resources management at Lake Sonoma.

2.9.4 Recreational Carrying Capacity

The five year average (2014-2018) for visitor use of the lake and surrounding recreation lands is 515,000 annual visits, per USACE Visitation Estimation and Reporting System (VERS). Current methodologies for calculating visitation is aligned with other federal agencies that offer recreational opportunities and provides a consistent reporting mechanism.

The current visitation at Lake Sonoma is not an indication of possible future use, which is dependent upon facilities and staff capacity to serve the future visitation estimate. Maximum Practical Use (MPU) is an estimation tool, used to estimate the total capacity of land and water areas needed to accommodate anticipated visitation, while considering crowding and projected use patterns. The MPU is regarded as the amount of use which can exist without detriment to environmental resources or to the quality of recreational experiences. A description of the methodology for calculating MPU is available in the OMP.

According to the most current analysis in the 2013 Lake Sonoma OMP, the MPU for the lake and surrounding recreation land would be 800,000 annual visits if adequate recreational facilities are constructed. If no additional facilities are constructed, the MPU is currently 280,000 annual visits. Therefore, based on VERS data, current average visitation exceeds the current carrying capacity.

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[4] https://www.pressdemocrat.com/news/8318625-181/santa-rosa-ironman-triathletes-brave?sba=AAS
[5] http://www.parks.ca.gov/pages/795/files/2012%20spoa.pdf
[6] http://www.parks.ca.gov/pages/795/files/2013%20regions.pdf
[7] http://www.parks.ca.gov/?page_id=29741

2.10 REGIONAL ACCESS AND TRANSPORTATION

2.10.1 Road Access

The proximity of the project to U.S. Highway 101 places it at the northern end of the Golden Gate Corridor, the major north-south transportation and transit corridor linking the urbanized areas of Marin and Sonoma Counties to San Francisco. U.S. Highway 101 provides freeway services from a point just south of Cloverdale to Healdsburg, Santa Rosa, Petaluma and southward through Marin County to the Golden Gate Bridge and San Francisco. Access from U.S. Highway 101 to the project area is by county-designated arterial roads.

Traveling north along Highway 101, the first access point is Dry Creek Road, from its intersection with U.S. Highway 101 at Healdsburg. Further to the north, both Lytton Springs Road and Canyon Road connect U.S. Highway 101 to Dry Creek Road. Canyon Road at Geyserville provides the most direct access to the lake via Dry Creek Road.

Traveling south along U.S. Highway 101 from Cloverdale, the first improved access route is via Dutcher Creek Road, the only other county-designated collector from U.S. Highway 101 leading to Warm Springs Dam. Two unimproved roads, Hot Springs Road and Kelly Road (a private road), provide access from the Cloverdale area to the northern portion of the reservoir, including the Yorty Creek Recreation Area. Although Hot Springs Road is paved, it is narrow, winding, and is not built to accommodate trailers.

Access to the project from the coast and CA Highway 1 is via Stewarts Point-Skaggs Spring Road, a county-designated arterial. The Sonoma County General Plan has designated Stewarts Point-Skaggs Spring Road, Dry Creek Road and Dutcher Creek Road as Rural Scenic Highways.

2.10.2 Public Transportation

With the exception of Greyhound Bus Service along U.S. Highway 101 and Golden Gate Transit bus service along U.S. Highway 101 between San Francisco and Santa Rosa, there is limited transit service available in the area. Sonoma County Transit provides bus service from Santa Rosa to Cloverdale via Healdsburg. There is no public transportation serving the project area; the closest bus stop to the project is approximately 5.5 miles away at the intersection of Canyon Road and U.S. Highway 101. The Sonoma-Marin Area Rail Transit[8] currently extends to nearby Windsor, with expansion plans to Geyserville, Healdsburg and Cloverdale. It is not expected that the future train service will result in a significant impact on visitation to the lake.

2.10.3 Non-motorized Transportation

A popular bicycle touring route parallels U.S. Highway 101 south along Dutcher Creek Road and Dry Creek Road to the dam. This route coincides with the County-designated Roadway Bicycle touring route. There is not a dedicated bike bath that is used for commute or transportation to and from the project area.

2.11 REAL ESTATE

All land use zoning in the immediate vicinity of the project is under the jurisdiction of the County of Sonoma. According to the 1979 MP, original zoning in the project area was primarily for agriculture, with some limited recreation. Current zoning was reviewed for all lands contiguous to the project boundaries, including the lands to the east as far as U.S. Highway 101 and the south through the Dry Creek Valley toward the city of Healdsburg.

2.11.1 Real Estate Acquisition Policy

Under the Flood Control Act of 1962 (Public Law 87-874), Congress authorized the USACE to acquire lands for the flood risk management, water conservation, and recreation purposes of the project. Over the life of the project, the USACE analyzes lands for its needs in relation to the Project. The Government currently owns 14,316 fee acres within the Project

[8] https://sonomamarintrain.org/about-smart

boundary, and has easement rights on 153 acres. The USACE has management rights and responsibilities on Government owned lands. A more detailed description of the types of easements can be found in section 4.3 of this MP.

2.11.2 Real Estate Management

Periodic boundary inspections detect encroachments and trespassers. These are resolved at the lowest level possible. Unmarked monument boundaries and fence monument boundaries are surveyed where feasible. Project lands are made available to public agencies and individual interests under lease, permit, license, or easement agreement for industrial/commercial, public utility, scientific, or recreational purposes. The length of these agreements ranges between 5 and 50 years, depending upon the type of real estate instrument and purpose involved. Presently, there are 22 agreements to use Project lands. All requests for real estate related actions are made to the Lake Sonoma Park Manager, who makes a recommendation through the San Francisco District Chief, Operations and Readiness Division to the Sacramento District Chief, Real Estate Division. The Sacramento District Real Estate Division maintains all current information on real estate agreements. Other management activities include creating Geospatial (GIS) products and data for Civil Works property land tracts accountable or managed by the USACE to include fee, easement, licensed and disposed tracts. The real estate products and data support the USACE CorpsMap system.

2.11.3 Encroachments

Encroachments on USACE-managed Federal lands directly conflict with the Project's purpose. The USACE is, therefore, committed to resolving encroachments by the most expedient and effective means available. The intent is to recapture use of encroached upon public lands for Federal project operating purposes and general use and enjoyment of the public. The general policy is to require removal of encroachments, restore the premises, and collect appropriate administrative costs and fair market value for the term of unauthorized use.

2.12 PERTINENT PUBLIC LAWS AND POLICIES

Development and management of Federal reservoirs are regulated by a number of statutes and guided by USACE documents. A comprehensive list of Federal public laws and Executive Orders pertaining to authorization of the project, its present and future development, and the operation of project lands and waters, can be found in Appendix B.

Rules and regulations governing public use of water resources development projects administered by the USACE are contained in Title 36, Part 327 of the Code of Federal Regulations.

As stated in Title 36, Section 327.0 Applicability *"…All other federal, state and local laws and regulations are in full force and effect where applicable to water resources development projects".*
Section 327.1 (a) Policy states, *"It is the Policy of the Secretary of the Army, acting through the Chief of Engineers, to manage the natural, cultural, and developed resources of each project in the public interest, providing the public with safe and healthful recreational opportunities while protecting and enhancing these resources."*
Section 327.1 (c) Policy also states, *"The term "project" or "water resources development project" refers to the water areas of any water resources development project administered by the Chief of Engineers, without regard to ownership of underlying land, to all lands owned in fee by the Federal Government and to all facilities therein or thereon of any such water resources development project".*

Persons designated by the District Commander have the authority to issue citations for violations of rules and regulations governing public use of the USACE water resources development projects. If a citation is issued, the person charged with the violation may be required to appear before a U.S. Magistrate.

Except as otherwise provided in Title 36 or by Federal law or regulation, state and local laws and ordinances shall apply on project lands and waters. Enforcement of state and local laws, and ordinances will be handled by the appropriate state and local law enforcement agencies. These include, but are not limited to, the following:

- Operation and use of motor vehicles, vessels, and aircraft;
- Hunting, fishing, and trapping;
- Display or use of firearms or other weapons;
- Camping, starting or tending fires, and use of fireworks;
- Civil disobedience and criminal acts;
- Littering, sanitation, and pollution; and
- Control of animals.

Additional NEPA evaluation and planning will be required for any future development or proposal to ensure consistency with the MP, land use classifications, resource objectives for each management unit, and all applicable laws, regulations, and policies.

Chapter 3 – Resource Objectives

3.1 GOALS AND OBJECTIVES

In the context of this MP, goals express the overall desired end state of the resource and its management, while objectives are the specific tasks or actions necessary to achieve overall goals. The following excerpt from EP 1130-2-550, Chapter 3, expresses the goals for the Lake Sonoma MP:

GOAL A - Provide the best management practices to respond to regional needs, resource capabilities and suitability, and expressed public interests consistent with authorized project purposes.

GOAL B - Protect and manage project natural and cultural resources through sustainable environmental stewardship programs.

GOAL C - Provide public outdoor recreation opportunities that support project purposes and public demands created by the project itself, while sustaining project natural resources.

GOAL D - Utilize the particular qualities, characteristics and potentials of the project.

GOAL E - Provide consistency and compatibility with national objectives and other Federal, state, and local laws and regulations. Assure accountability for enforcement of these laws and regulations.

Objectives are clearly written statements that respond to identified issues and specify measurable and attainable activities for resource development and/or management of the lands and waters under USACE jurisdiction. The objectives stated in this MP support the goals, Environmental Operating Principles (EOPs), and applicable national performance measures.

The objectives are consistent with authorized project purposes, Federal laws and directives, regional needs, resource capabilities, and take public input into consideration. Recreational and natural resources carrying capacities are also accounted for during development of the objectives found in this MP. The objectives in this MP aim to maximize project benefits, meet public needs, and foster environmental sustainability for Lake Sonoma, to the best extent possible. The objectives were reviewed and screened by the MP Project Delivery Team, including USACE staff located at Lake Sonoma.

Although many objectives overlap, the objectives are generally divided into categories of Recreation, Natural Resources Management, Environmental Compliance, Visitor Information and Education, Economic, General Management, and Cultural Resources. Table 6 provides a list of objectives specific to Lake Sonoma, with marks for each of the goals that each objective aims to address. If implementation of any proposed action in this MP is considered, the list of resource objectives should be considered, along with an evaluation of the uses appropriate within the Land Classification for the area.

Table 6 - Resource Objectives for the Lake Sonoma Master Plan

Type		LAKE SONOMA MASTER PLAN - OBJECTIVES	MASTER PLAN GOALS				
			A	B	C	D	E
Recreation	R1	Evaluate the need for improved recreation facilities (i.e. campsites, picnic facilities, viewing areas, trails, dog off-leash area, courtesy docks, interpretive signs/exhibits, and parking lots) and increased public access on USACE-managed public lands and water for recreational activities (i.e. camping, walking, hiking, biking, fishing, wildlife viewing, etc.)	x		x		
	R2	Optimize recreational development on the land resources within the project boundary, while maintaining or improving the environmentally sustainable resources.	x		x		
	R3	Regularly monitor recreational resources to ensure the recreational experience, environmental quality, and public safety are maintained.	x		x		
	R4	Follow the Environmental Operating Principles associated with recreational use of waterways for all water-based management activities and plans.		x	x		x
	R5	Increase universally accessible facilities on Lake Sonoma.	x		x		x
	R6	Evaluate need for commercial facilities, including concessionaires, on public lands and waters.	x		x		
	R7	Evaluate flooding to address potential impact to recreational facilities (i.e. campsites, etc.). Note that water level management is not within the scope of the MP.	x	x	x	x	
	R8	Ensure consistency with the USACE Recreation Strategic Plan and seek out partnership opportunities.					x
Natural Resources Management	NRM1	Evaluate flood/conservation pool levels to optimize habitat conditions, as long as there is no interference with the Project's other authorized purposes, i.e. flood risk management and water supply. Note that water level management is not within the scope of the MP.	x	x		x	
	NRM2	Actively manage and conserve fish and wildlife resources, with an emphasis on special status species, by implementing ecosystem management principles.	x	x		x	x
	NRM3	Use watershed approach during decision-making process.					x
	NRM4	Optimize resources, labor, funds, and partnerships for protection and restoration of fish and wildlife habitats.		x			x
	NRM5	Optimize resources, labor, funds, and partnerships for the prevention, monitoring, and management of invasive species in Lake Sonoma, including zebra/quagga mussels.	x	x			x
	NRM6	Minimize activities that disturb the scenic beauty of the lake.	x	x	x	x	
	NRM7	Implement erosion reduction measures, such as planting vegetation whenever practical.	x	x			x
	NRM8	Identify and protect unique or sensitive habitat areas.	x	x		x	x
	NRM9	Increase visitor awareness of impacts caused by misuse of natural resources through improved public participation programs, media information programs, and interpretive activities	x	x	x	x	
	NRM10	Stop unauthorized uses of public lands such as building of unpermitted structures, clearing of vegetation, uncontrolled animals, unauthorized roadways, Off-Highway Vehicle use, trash dumping, wildlife poaching, and marijuana growing in the wildlife area by unknown parties.	x	x	x	x	x
	NRM11	Employ professionals in the fields of recreation, biology, forestry, landscape architecture, ecology, and related sciences to implement and monitor resource management programs.	x	x	x	x	
	NRM12	Protection of borrow area, wildlife management area, possible mitigation land. Additional protection for wildlife management areas.		x	x		
	NRM13	Improve, enhance, restore or rehabilitate vegetation and other environmental conditions, including existing structures and features, for wildlife, fisheries, recreation, aesthetics, woodland, and grassland to promote compatible multiple uses in the project boundary.	x	x	x		
Environmental Compliance	EC1	Ensure compliance with Engineer Regulation (ER) 200-2-2.	x	x			x
	EC2	Comply with the USACE sustainability requirements.		x			
	EC3	Improve the lake's water quality to sustain healthy fish and wildlife populations, habitat conditions, recreation opportunities, and avoid negative effects to public water supply, ensuring public health and safety.	x	x	x	x	x
	EC4	Include both point and non-point sources of water quality problems during decision-making.	x	x		x	x
	EC5	Improve coordination, communication, and cooperation between regulating agencies and non-governmental organizations to resolve and/or mitigate environmental problems.	x	x		x	x
	EC6	Address non-Federal sponsor's environmental quality needs, goals and missions.	x	x	x	x	x

Resource Objectives for Lake Sonoma Master Plan (continued)

Visitor Information and Education	VE1	Provide additional opportunities (i.e. town hall meetings) for collaboration between agencies, special interest groups, Tribes and the general public.	x			x	x
	VE2	Implement additional educational and outreach programs at the lake. Topics may include: water quality, history, cultural resources, water safety, recreation, nature, and ecology.	x	x	x	x	x
	VE3	Establish a network among local, state, Federal and Tribal entities concerning the exchange of lake policy and regulation-related information for public education and management purposes.	x			x	x
	VE4	Increase public awareness of special activities at the facility.	x	x	x		
	VE5	Promote the USACE water safety messaging.	x		x	x	x
	VE6	Educate visitors and volunteers on laws, regulations, and policies regarding, vegetation modification, earth moving activities, and control of animals (e.g. trail maintenance, erosion control, facility improvements, and leash laws).	x	x	x	x	x
	VE7	Address and incorporate education goals of the Dry Creek Band Pomo Indians.	x	x	x	x	x
Economic	E1	Balance economic and environmental interests at the Project.	x	x	x	x	x
	E2	Manage additional commercial development compatible with national USACE policy on both recreation and non-recreation outgrants on public lands classified for High Density Recreation.	x	x	x	x	x
	E3	Work with local communities to promote tourism and recreation use of the lake and lands to positively affect socioeconomic conditions In the region.	x	x	x	x	x
	E4	Provide for economic growth of the region, adjacent communities benefit from park activities. Increase use of project lands by the public. Provide advertising in town/wine region to draw more people to the lake.	x	x	x	x	x
General Management	GM1	Survey and mark the project boundaries to ensure they are clearly recognized in all areas.	x	x		x	
	GM2	Develop year round access to remote park lands in order to better manage all of the park resources during all seasons.	x	x		x	
	GM3	Establish access agreements with neighboring communities for their access to project lands.	x	x		x	
	GM4	Maintain consistency with the USACE Campaign Plan (national level), Implementation Plan (Regional level), and Operations Plan (District level).					x
	GM5	Ensure consistency with Executive Orders 13423 and 13514.					x
	GM6	Manage non-recreation outgrants, such as utility easements, in accordance with national guidance set forth in ER 1130-2-550.					x
	GM7	Ensure compliance with 36 CFR Section 327.					x
	GM8	Seek out partnership opportunities or other non-profits	x				
Cultural Resources	CR1	Increase public awareness of regional history.		x		x	x
	CR2	Maintain full compliance with Section 106 and 110 of the National Historic Preservation Act; the Archeological Resources Protection Act; and the Native American Graves Protection and Repatriation Act on public lands within the project boundary.		x		x	x
	CR3	Work with the Dry Creek Band of Pomo Indians to develop public outreach to educate the public regarding the traditional cultural landscapes and Native American interests	x	x			

Chapter 4 – Land Allocation, Land Classification, and Project Easement Lands

4.1 LAND ALLOCATION

Lands are allocated by their congressionally-authorized purposes. Unless there is a specific change indicated, the original acquisition of property and land allocation remains the same throughout the life of the project. There are only four land allocation categories applicable to USACE projects: *Operations, Recreation, Fish & Wildlife, or Mitigation*.

1. *Operations*. These are the lands acquired for the congressionally authorized purpose of constructing and operating the project. Most project lands are included in this allocation.

2. *Recreation*. These lands were acquired specifically for the congressionally authorized purpose of recreation. These lands are referred to as separable recreation lands. Lands in this allocation can only be given a land classification of "Recreation."

3. *Fish and Wildlife*. These lands were acquired specifically for the congressionally authorized purpose of fish and wildlife management. These lands are referred to as separable fish and wildlife lands. Lands in this allocation can only be given a land classification of "Wildlife Management."

4. *Mitigation*. These lands were acquired specifically for the congressionally authorized purpose of offsetting losses associated with development of the project. These lands are referred to as separable mitigation lands. Lands in this allocation can only be given a land classification of "Mitigation."

No changes to land allocation are recommended in this MP. Any proposed changes are to be fulfilled within the original land use allocation.

4.2 LAND CLASSIFICATION

Land classification designates the primary use for which project lands are managed. Project lands are zoned for development and resource management consistent with authorized project purposes and the provisions of the NEPA and other Federal laws.

Land Classification is a subset of allocated project land and is based on the current and expected management of the resource. Unless there is a specific change indicated, the land classification remains the same as stated in the former MP. A Management Unit (MU) may have multiple land use classifications, all of which must be consistent with the land allocation under which the Government purchased lands. The current classifications are defined as follows (USACE policy EP 1130-2-550): *Project Operations, High Density Recreation, Mitigation, Environmentally Sensitive Areas, Multiple Resource Management Lands,* and *Water Surface.*

1. *Project Operations*. This category includes those lands required for the dam, spillway, offices, maintenance facilities, and other areas that are used solely for the operation of the project.

2. *High Density Recreation.* Lands developed for intensive recreational activities for the visiting public, including day use areas and/or campgrounds. These could include areas for concessions (marinas, comprehensive resorts, etc.), and quasi-public development.

The planning team further defines the intent of a comprehensive resort development design as that which aesthetically blends in with the natural and open space landscape in the form of small cabins, a small lodge, and recreation equipment rental in

support of outdoor recreation activities (such as hiking, equestrian, mountain biking, wildlife viewing) on the federally managed lands.

3. *Mitigation*. This classification will only be used for lands with an allocation of Mitigation and that were acquired specifically for the purposes of offsetting losses associated with development of the project.

4. *Environmentally Sensitive Areas*. These are areas where scientific, ecological, cultural or aesthetic features were identified. Designation of these lands is not limited to just lands that are otherwise protected by laws such as the ESA, the NHPA, or applicable state statues. These areas must be considered by management to ensure they are not adversely impacted. Typically, limited or no development of public use is allowed on these lands. No agricultural or grazing uses are permitted on these lands unless necessary for a specific resource management benefit, such as prairie restoration. These areas are typically distinct parcels located within another, and perhaps larger, land classification, area.

5. *Multiple Resource Management Lands*. This classification allows for the designation of a predominant use, understanding that other compatible uses may also occur on these lands (e.g., a trail through an area designated as wildlife management). Land classification maps must reflect the predominant sub-classification, rather than just Multiple Resource Management.

(a) *Low Density Recreation*. These lands are designated for dispersed and/or low impact recreation use. Development of facilities on these lands is limited. Emphasis is on providing opportunities for non-motorized activities such as hiking, biking, fishing, sight-seeing, or nature study. Some limited facilities are permitted, including trails, parking areas and vehicle controls, as well as primitive camping and picnic facilities.

(b) *Wildlife Management*. These lands are designated specifically for wildlife management, although all project lands are managed for fish and wildlife enhancement in conjunction with other land uses. Wildlife management lands are actively managed or enhanced to create valuable habitat suitable for game and/or non-game species. These activities are conducted as identified by the managing agency's forest and wildlife management plans.

Wildlife lands are available for dispersed uses such as sightseeing, wildlife viewing, and nature study, hiking, and biking. Consumptive uses of wildlife, such as fishing are encouraged when compatible with the wildlife objectives for a given area and with Federal and state fish and wildlife management regulations.

(c) *Vegetative Management:* Management activities in these areas focus on the protection and enhancement of forest resources and vegetative cover. The USACE conducts active vegetation management activities, protects water quality, improves aesthetics, and enhances wildlife habitat.

(d) *Future or Inactive Recreation Areas:* This sub-classification addresses areas and lands for which recreation areas are either currently in the planning stages, are held in an interim status for future recreation possibilities, or are closed. These lands are managed for multiple purposes unless they are developed as recreation areas.

6. *Water Surface*. If the project administers a surface water zoning program, then it should be included in the MP.

(a) *Restricted*. Water areas restricted for project operations, safety, and security purposes.

(b) *Designated No-Wake*. To protect environmentally sensitive shoreline areas, recreational water access areas from disturbance, and for public safety.

(c) *Fish and Wildlife Sanctuary*. Annual or seasonal restrictions on areas to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning.

(d) *Open Recreation.* Those waters available for year round or seasonal water-based recreational use.

4.3 ACQUISITION OF NEW LANDS AND CHANGES TO LAND CLASSIFICATIONS

In 2009, a parcel of land was acquired by the USACE from the Save the Redwoods League. A description of the parcel is included in this MP, and will be incorporated into the next update of the OMP, consistent with the stipulations of land transfer. The map on Figure 13 illustrates the parcel, which will be included in the Management Unit (MU) #3 and managed under a classification of Ecologically Sensitive Area, in order to fulfill the obligations stipulated in the deed transfer. A copy of the deed is included in Appendix C of this MP.

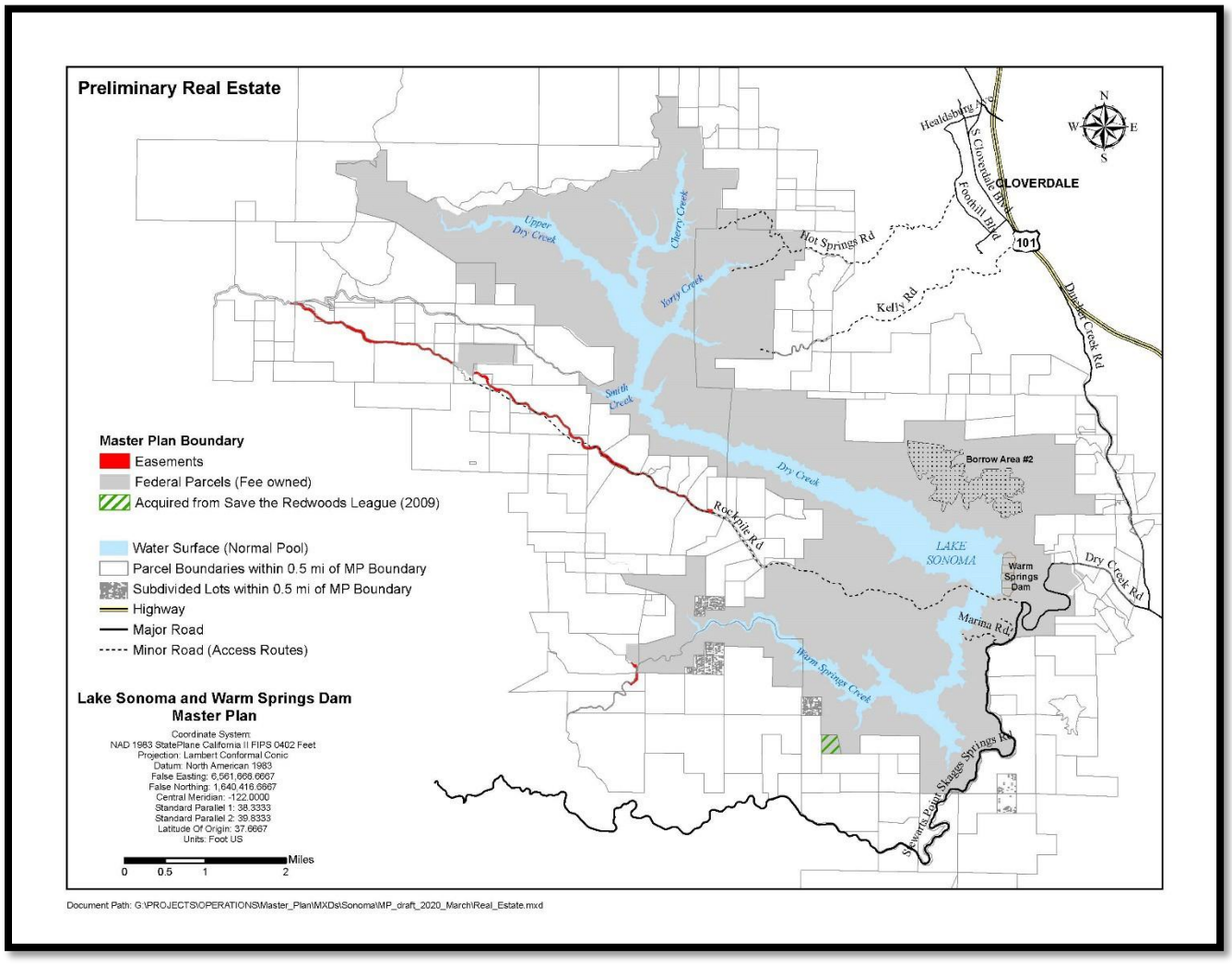

Figure 13 - Preliminary Real Estate map of Lake Sonoma project area.

In order to meet the current Land Classification definitions, maps included in the 1979 MP were reviewed and new classification language was applied to each Management Unit (MU). In some cases, small changes were made to account for new development around the project. Such changes resulted in lands that were classified as Wildlife Management or Low Density Use being reclassified as Recreation. However, there is no substantive change to the overall use of lands within specific management units. Approximately 3,200 acres of MU #7 (Pritchett Peaks Wildlife Management Area) was reclassified from Wildlife Management to Mitigation, to more firmly establish and articulate the environmental commitment to mitigate for the loss of habitat resulting from the impoundment of water. Approximately 200 acres of property reserved as a borrow area for dam construction, within the same MU, were classified as Wildlife Management. Approximately 12 acres of the former borrow area were reclassified as Operations. A description of the changes is found in Chapter 6, and the current wildlife management agreement with CDFW is in Appendix D. The map on Figure 13 illustrates the area that was initially designated for use of materials to construct the dam, also known as Borrow Area #2 in former planning and design documents.

The 1979 MP designated three types of use for water surface: Low, Moderate, and High Intensity Use. The current classifications for water surface allow for more detailed designations as needed, and the MU for this portion of the project is classified as *Operations, Water Surface,* and *High Density Recreation,* due to the existence of a marina that extends into the water surface.

The 1979 MP did not designate a use of Project Operations, but instead focused only on the aspects of anticipated recreational use upon project completion. The MP explained that primary and secondary resource use objectives for land use are assigned to areas of Lake Sonoma and classifications are assigned as a secondary objective. Figure 14 is a map of the Resource Use Plan from the 1979 MP, illustrating rough land use classifications.
Figure 15 and Figure 16 show the current land use classifications and management units, respectively. Table 7 provides a cross reference of original (1979) and current classifications for each MU.

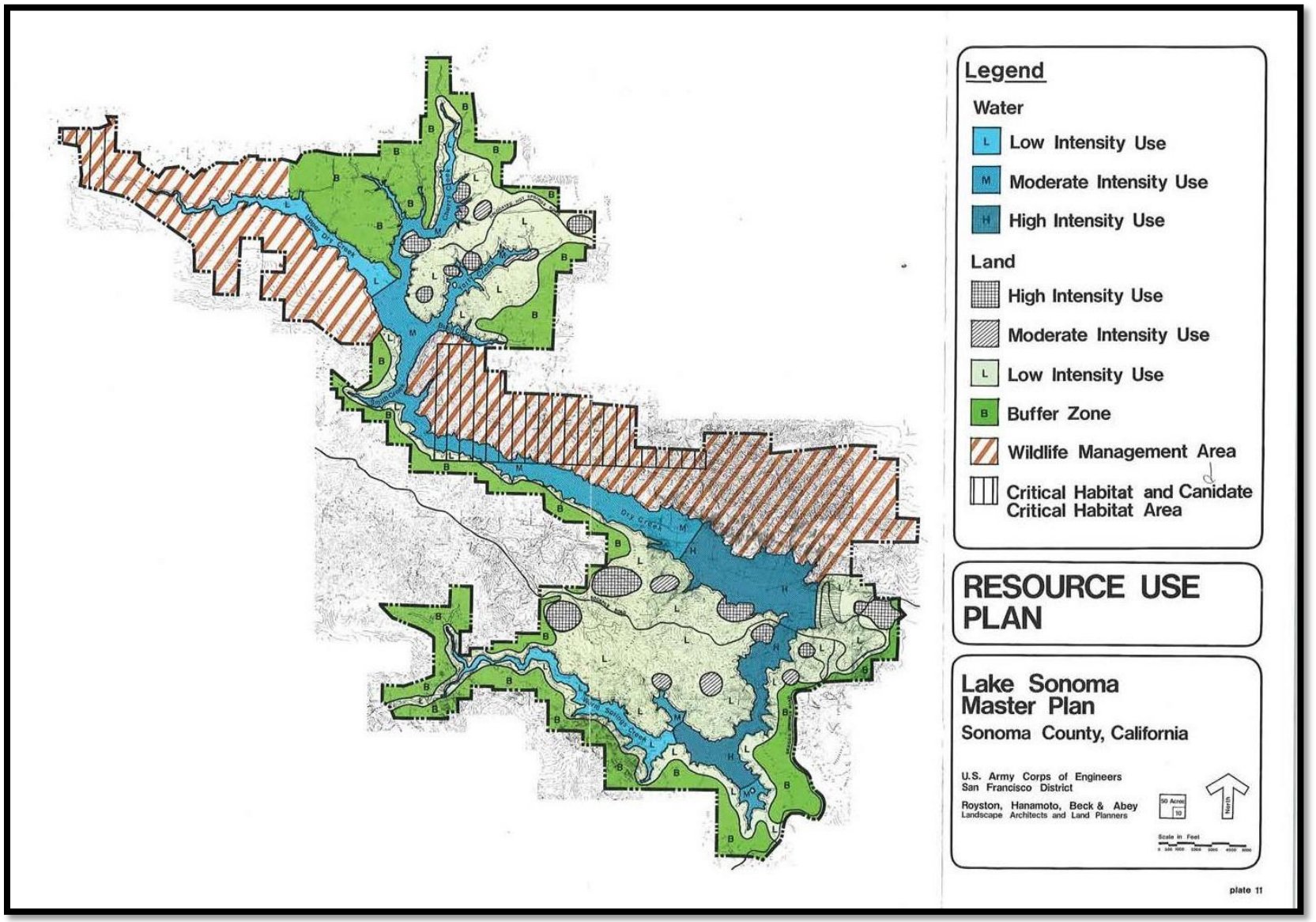

Figure 14 - 1979 Lake Sonoma Master Plan - Resource Use Plan

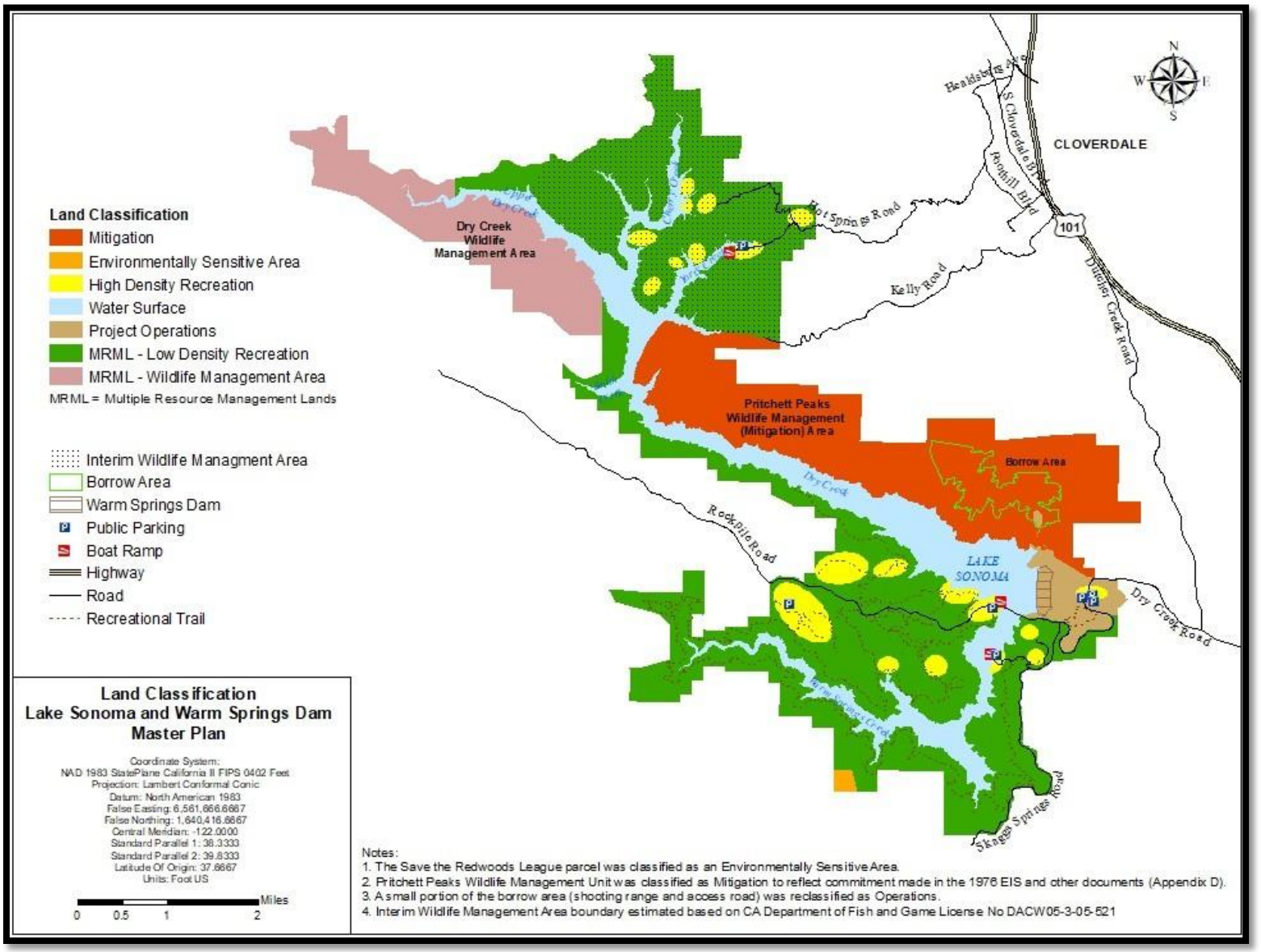

Figure 15 - Lake Sonoma Master Plan - Land Classifications

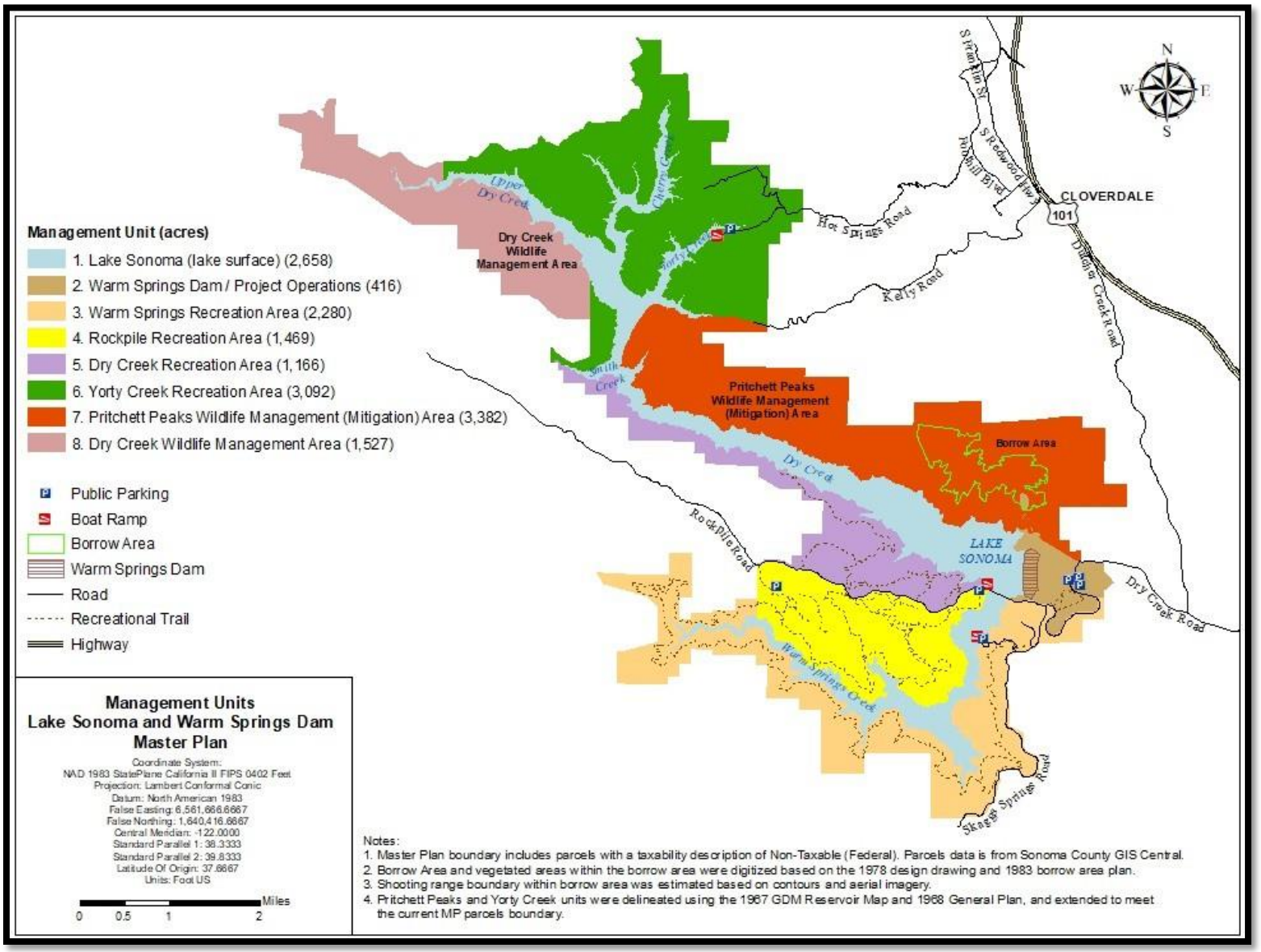

Figure 16 - Lake Sonoma Master Plan - Management Units

Table 7 - Comparison of 1979 Land Use Classifications and Current Land Use Classifications

Management Unit (MU) #	Management Unit Name	1979 Land Use Classifications	Current Land Use Classifications
MU#1	Lake Sonoma (lake surface)	*Water Surface: Low Intensity, Moderate Intensity, High Intensity Use*	*Operations; Water Surface, High Density Recreation*
MU#2	Warm Springs Dam (Dam, Control Tower, Spillway), Project Headquarters, Visitor Center and Fish Hatchery	*High Intensity Use; Moderate Intensity Use; Low Intensity Use*	*Operations; High Density Recreation*
MU#3	Warm Springs Recreation Area	*High Intensity Use; Moderate Intensity Use; Low Intensity Use; Buffer Zone*	*High Density Recreation; Multiple Resource Management Lands: Low Density Recreation, Future Recreation; Ecologically Sensitive Areas*
MU#4	Rockpile Recreation Area	*Low Intensity Use; Moderate Intensity Use*	*Multiple Resource Management Lands: Low Density Recreation, Future Recreation*
MU#5	Dry Creek Recreation Area	*High Intensity Use; Moderate Intensity Use, Low Intensity Use; Buffer Zone*	*High Density Recreation; Low Density Recreation; Multiple Resource Management Lands: Future Recreation*
MU#6	Yorty Creek Recreation Area	*High Intensity Use; Moderate Intensity Use; Low Intensity Use; Buffer Zone*	*High Density Recreation; Low Density Recreation; Multiple Resource Management Lands: Future Recreation*
MU#7	Pritchett Peaks Wildlife Management Area (East shore of Dry Creek)	*Wildlife Management Area; Critical Habitat Zones and Sensitive Wildlife Areas*	*Mitigation; Multiple Resource Management: Wildlife Management, Future Recreation, Low Density Recreation*
MU#8	Dry Creek Wildlife Management Area (North end of Dry Creek)	*Wildlife Management Area; Critical Habitat Zones and Sensitive Wildlife Areas*	*Multiple Resource Management: Wildlife Management, Future Recreation, Low Density Recreation*

4.3 PROJECT EASEMENT LANDS

All lands for which the USACE holds an easement interest, but not a fee title, are categorized as project easement lands. Planned use and management of easement lands will be in strict accordance with the terms and conditions of the easement estate acquired for the project. Easements are acquired for specific purposes and do not convey the same rights or ownership to the USACE as other lands.

(1) *Operations Easement*. The USACE retains rights to these lands necessary for project operations.

(2) *Flowage Easement*. The USACE retains the right to inundate these lands for project operations.

(3) *Conservation Easement*. The USACE retains rights to lands for aesthetic, recreation, and environmental benefits.

This MP does not distinguish between the different types of easement that the USACE holds at Lake Sonoma. The project boundary in this MP does not include lands for which USACE may have easements; only fee-owned lands are included in the project boundary, and the USACE makes no recommendations involving management of easement lands.

Chapter 5 – Resource Plan

5.1 RESOURCE PLAN

A wide variety of factors must be considered when developing project lands and resources, including physical characteristics, land and lake access, compatibility with adjacent land uses, existing and projected visitation levels and visitor-use pattern, the economics of operation and maintenance, and Federal, state and local initiatives. The overall objective in development at Lake Sonoma is to maximize the recreation benefits, while preserving the natural resources and scenic qualities.

The purpose of the MP is to provide a long-range view of area management and development. As such, it is important to (1) examine the various segments of the project and their potential for development and (2) examine each management area within the various segments and determine how each area can be developed to fit with the overall goals of Lake Sonoma. New and emerging recreation uses would be analyzed on a case-by-case basis for appropriate land use classifications. New and emerging uses may include uses in a new location, for example, identification of important vegetation collection sites beyond the immediate vicinity of Dry Creek in coordination with the Dry Creek and Cloverdale Pomo.

A Management by Unit approach is described in this MP, as set forth in Engineer Pamphlet (EP) 1130-2-550, Change 5, 2013. Chapter 3, *Project Master Plans and Operational Management Plans*. The following sections describe how project lands and resources are currently managed, with descriptions of the resource and development needs or special considerations for future management of the Management Unit.

5.2 MANAGEMENT UNITS

This section describes the MUs established for Lake Sonoma. A number is assigned to each MU within the project area. Implementation of any actions recommended in this section should draw from resource objectives articulated in Chapter 3 of this MP and help to satisfy identified regional needs and desires of agencies and the public, within the limits and capabilities of the management agency.

1979 Land Use Classification – This section lists the applicable classifications for each Management Unit, as was put forth in the 1979 Lake Sonoma Master Plan.

Current Land Use Classification – This section lists the current classification language for each Management Unit, based on guidance from EP 1130-2-550.

Location – This section provides a brief description of the location of the management unit in the project boundary.

Development Needs – This section provides a summary description of the techniques that can or should be undertaken to implement the area resource objectives. The concepts discussed under this component are not all-inclusive; rather, they convey an understanding of the range of development and management strategies that could be used to implement the resource objectives. The development needs will be further refined and detailed in subsequent planning and design documents, including OMPs. The ultimate decisions regarding the methods that are actually implemented will result from coordination between the USACE, state, local agencies, non-governmental organizations, and the public, where appropriate, and as opportunities arise. Any applicable environmental compliance associated with these decisions would be carried out at the time of consideration for implementing any development activities.

Special Considerations – This optional component is used when there are very specific issues that apply to the MU that may affect the overall management outcome of the unit.

5.2.1 MANAGEMENT UNIT #1 – LAKE SONOMA (LAKE SURFACE)

1979 Land Use Classification – *Water Surface Low Intensity Use, Moderate Intensity Use, High Intensity Use*

Current Land Use Classification – *Operations, Water Surface* and *High Density Recreation*.

Location /Acreage - Lake Sonoma is located on Dry Creek in the eastern foothills of the Coast Range, with a drainage area of 130 square miles.

Description –Steep terrain, cliffs, and rock outcropping occupy a large portion of the shoreline. Much of the eastern shoreline is precipitous, while the northern and western shores have generally rolling terrain with gentle to moderate slopes. Reservoir capacity is 381,000 af, with water allocations to flood risk management (130,000 af), water supply (212,000 af), sediment accumulation (26,000 af) and fishery maintenance (13,000 af). Figure 17 is a view of both arms of Lake Sonoma, from the project overlook.

Figure 17 - View of Lake Sonoma from the Overlook

The lake surface is divided into two arms, according to the two tributaries of the lake: Dry Creek Arm and Warm Springs Arm. Dry Creek Arm is the longer and larger of the two arms. The upstream portion can be characterized as a hand with several radiating fingers coming together in a large palm. The arm then begins to gradually widen as it nears Warm Springs Dam. This arm of the lake is calm in the fingers and palm and can become windy in the canyon approaching the dam. Wave action moves down the canyon towards the dam frequently making the wider portion of the arm unusable for water skiing and other towed activities. It would support activities like water skiing if trees were removed from the channel.

Warm Springs Arm is the smaller arm and is characterized by narrow channels and secluded fingers of lake water. Within this area is an open area that is suitable for water skiing and can become a safety concern on busy days when it is the only area of the lake not affected by winds. The small fingers provide good fishing opportunities and locations for houseboats. Table 8 shows a list of primitive boat-in or hike-in only campsites available around the lake, divided by the two arms.

Table 8 - Primitive Boat-In and Hike-In Campsites at Lake Sonoma

Primitive Boat-In and Hike-In Campsites at Lake Sonoma	
Dry Creek Arm	**Warm Springs Arm**
Broken Bridge	Bummer Peak
Falcons Nest	Quicksilver
Homestead	Lone Pine
Loggers	Madrone Point
Rustlers	Black Mountain
Skunk	Buck Pasture
Thumb	Old Sawmill

Development Needs – The area on the back arm of Dry Creek arm near Loggers camp, where the lake surface is normally calm, is currently closed to high-speed boat traffic. It is possible to open this area for water skiing, but doing so would require the removal of some submerged trees that pose a safety hazard.

Special Considerations – In 2000, during the peak recreation season, Colorado State University conducted a boating capacity study at Lake Sonoma. A draft report was received in 2001, followed by a stakeholders meeting. If implemented, management decisions informed by the survey data would likely change the design loads, establish limits or change use patterns of certain regions of the lake.

Zebra-Quagga mussels are an invasive species that have not yet been discovered in Lake Sonoma, but active management and monitoring is necessary to prevent the spread of mussels in the lake. The U.S. Fish and Wildlife Service analyzes plankton DNA to identify mussel DNA. Sonoma Water is instrumental with prevention of mussel introduction to Lake Sonoma by coordinating and funding onsite, physical boat inspections with an annual prevention summary since 2016.

The current Zebra-Quagga mussel inspection program at Lake Sonoma includes mussel DNA net drags, substrate inspections, and using mussel sniffing dogs. Inspection and management efforts are expected to expand in the future. There is discussion of mandatory inspection of boats before being allowed to launch at the lake.

5.2.2 MANAGEMENT UNIT #2 – WARM SPRINGS DAM (DAM, CONTROL TOWER, SPILLWAY), PROJECT HEADQUARTERS, VISITOR CENTER AND FISH HATCHERY

1979 Land Use Classification – *High Intensity Use, Moderate Intensity Use, Low Intensity Use*

Current Land Use Classification – *Operations, High Density Recreation*

Location – South end of the lake, below Warm Springs Dam, along Dry Creek Road.

Description – The area around the Warm Springs Dam is at the entrance to the project area, is the most visited portion of the project, and has the most buildings and infrastructure to accommodate visitors as well as project operations. This MU contains the Park Headquarters which is open to the public but visited less frequently than the Visitor Center. This MU also contains a maintenance yard and a District technical support staff office, which are not open to the public.

The Warm Springs Recreation Area is a highly landscaped area that includes covered picnic areas, a dog park, a disk golf course, and an outdoor gym area. This day use area accommodates large special events ranging from 2,000-14,000 participants.

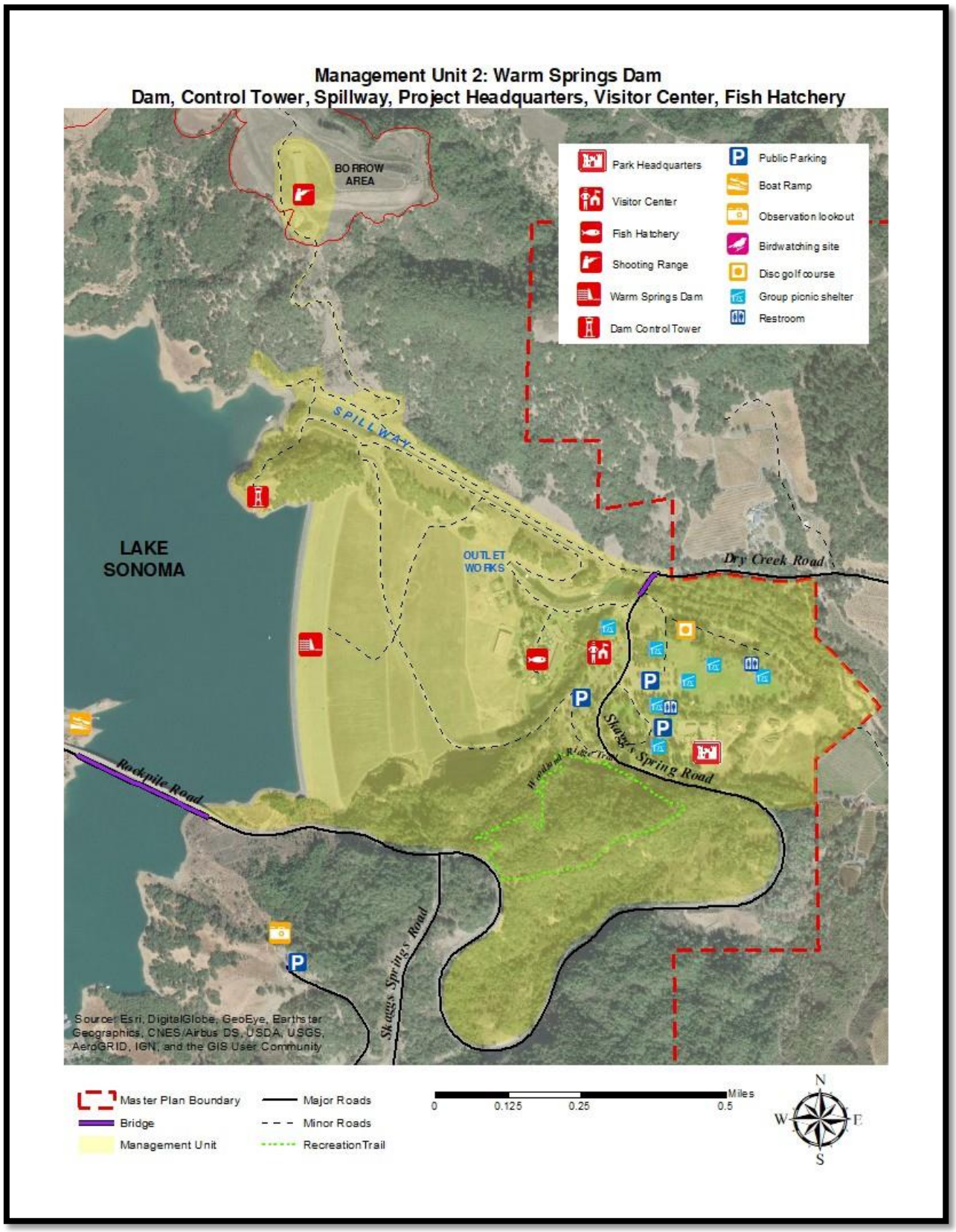

Figure 18 - Lake Sonoma Management Unit 2 - Warm Springs Dam

The Milt Brandt Visitor Center and the Congressman Don Clausen Fish Hatchery are both open to the public. Exhibits in both the visitor center and the hatchery tell the story of Warm Springs Dam, explain the natural and early history of Dry Creek Valley, and offer a variety of audio-visual and ranger-led programs. Volunteer docents staff the information desk, and a conference room to the side of the visitor center accommodates large group meetings and presentations.

Figure 19 - Lake Sonoma Milt Brandt Visitor Center entrance

Figure 20 - View of the Don Clausen Fish Hatchery from the Back of the Milt Brandt Visitor Center

The Don Clausen Fish Hatchery was built by the USACE to mitigate impacts to salmon and steelhead spawning grounds. It is operated under contract by the CDFW. Group tours are arranged through the Visitors Center, and a section of the hatchery is open to the public for viewing the operation, which also provides space for interpretive programs.

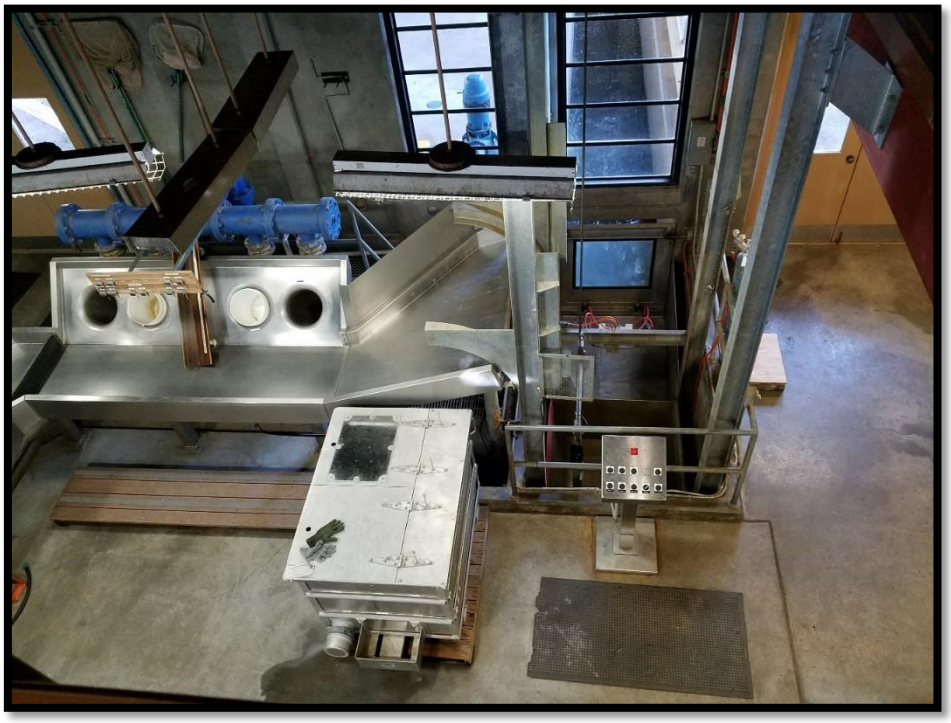

Figure 21 - View of egg collection facility from viewing area of the Don Clausen Fish Hatchery

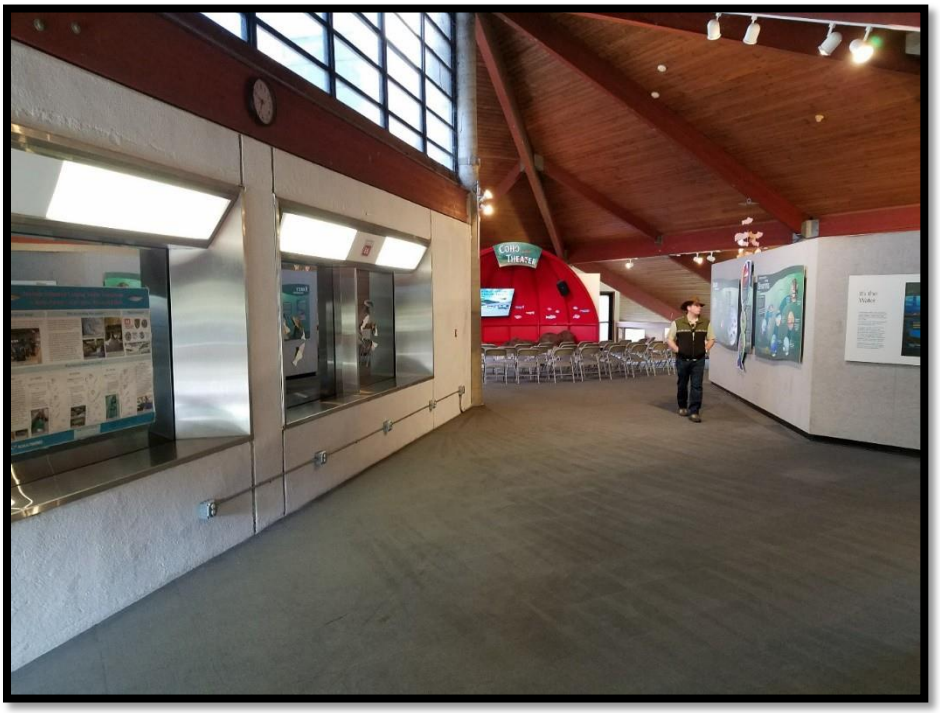

Figure 22 - Interpretive Program Area of the Don Clausen Fish Hatchery

Figure 23 - Salmonids Program: Egg Collection

Figure 24 - Salmonids Program: Tagging

Development Needs – Much of the development envisioned in the original 1979 MP has been built and is currently supporting both recreational and operational goals. Future proposed development or improvement may be described in this MP, but readers are also encouraged to review the original MP for additional information. Figure 25 shows recreational development envisioned for this area in the 1979 Master Plan.

Trails
Public comment included development of a comprehensive multiple use trail network that crosses multiple management units.

Dam and Spillway, Outlet Works
The road near the control tower of the dam is degrading and sliding. It is in need of repair or replacement with an alternate road to access the control tower.

Visitor Center and Hatchery
The footbridge from the visitor center to the hatchery is in need of repair or replacement. It is recommended that when this repair takes place, the new footbridge accommodate bird watching areas with viewing stands.

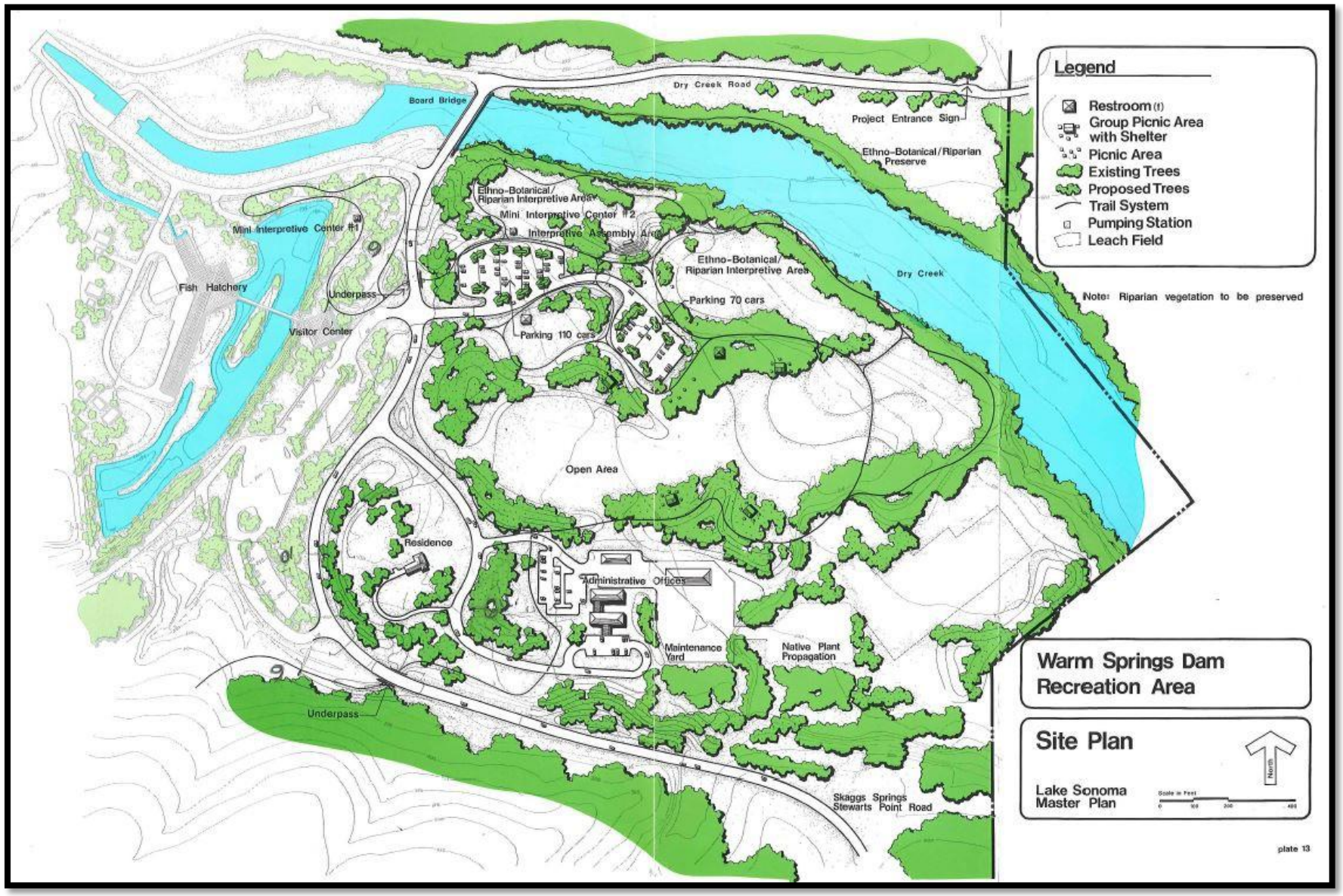

Figure 25 - 1979 Lake Sonoma Master Plan Site Plan for Warm Springs Dam

Recreation Areas
A new interpretive trail for school groups is recommended adjacent to Dry Creek Road, and accessible from the current recreation area.

Park staff reported a significant increase in attention from Sonoma County since the Ironman race event was hosted in this recreation area. Development of the area, including additional parking immediately across the road from the visitor center to accommodate such large groups, is consistent with the current land use classification.

This management unit serves as the gateway to the entire park and is the destination point for formal recreation activities like group picnics and social events. The area could be redesigned to cater to live events like weddings, reunions, etc. that would benefit from a gazebo, band stand trellis, or other architectural features. Additionally, adding a pavilion, water fountain, and shelter in the location of the outdoor gym would increase use in that area. Plant and tree identification signs along Woodland Ridge Trail may increase the interpretive quality of the visitor experience.

Rockpile Road / Bridge
Stairs leading to the water's edge near the south east part of the bridge should be maintained and improved, to increase the safety of visitors. An improved viewing area for visitors to watch nesting ospreys near the bridge is likely to increase bird watching visitation in this area.

Special Considerations –

Water drawn from a pollution control pond is used to irrigate the large group area to maintain a grassy space for recreation use. Water source is needed to keep grass alive in this large area.

A dance arbor in the lower area of the MU is maintained by the Dry Creek Band of Pomo Indians. This area is under a lease to the Tribe and is expected to be preserved and managed in its current use. Some annual events are hosted by the Tribe and are open to the public, but general use of the area is limited. Any consideration of any future proposed use will include close coordination and engagement with the Tribe beforehand.

A change in classification and management of a gun range located to the north and east of the dam (see Chapter 5, section 5.2.7 and Chapter 6, section 6.2) will withdraw it from MU #7 and incorporate this small portion of the former borrow area and the access road into this MU.

5.2.3 MANAGEMENT UNIT #3 – WARM SPRINGS RECREATION AREA

1979 Land Use Classification – *High Intensity Use, Moderate Intensity Use, Low Intensity Use, Buffer Zone*

Current Land Use Classification – *High Density Recreation, Multiple Resource Management Lands: Low Density Recreation, Future Recreation, Ecologically Sensitive Areas*

Location – South shore of Warm Springs Arm of Lake Sonoma, to the south and west of MU #2 (Warm Springs Dam and park headquarters).

Description – The south shoreline of the Warm Springs arm of Lake Sonoma is primarily a north facing slope, predominated by oak woodland. The eastern portion features a project observation deck known as The Overlook, marina concessionaire, equestrian facility, campgrounds and day use areas. The western portion is less used, and contains several boat-in or hike-in primitive campgrounds, and one group use campground accessible by trail only.

Starting at the northeast boundary of this MU, there are high use recreation activities. Moving east, this arm quickly becomes remote and more suitable for lower density recreation activities like hunting.

Primitive Boat-In and Hike-In Campsites at Lake Sonoma, along the Warm Springs Arm, include: Bummer Peak; Quicksilver; Lone Pine; Madrone Point; Black Mountain; Buck Pasture; and Old Sawmill. There is also a group camp (Island View) that accommodates 30-50 visitors.

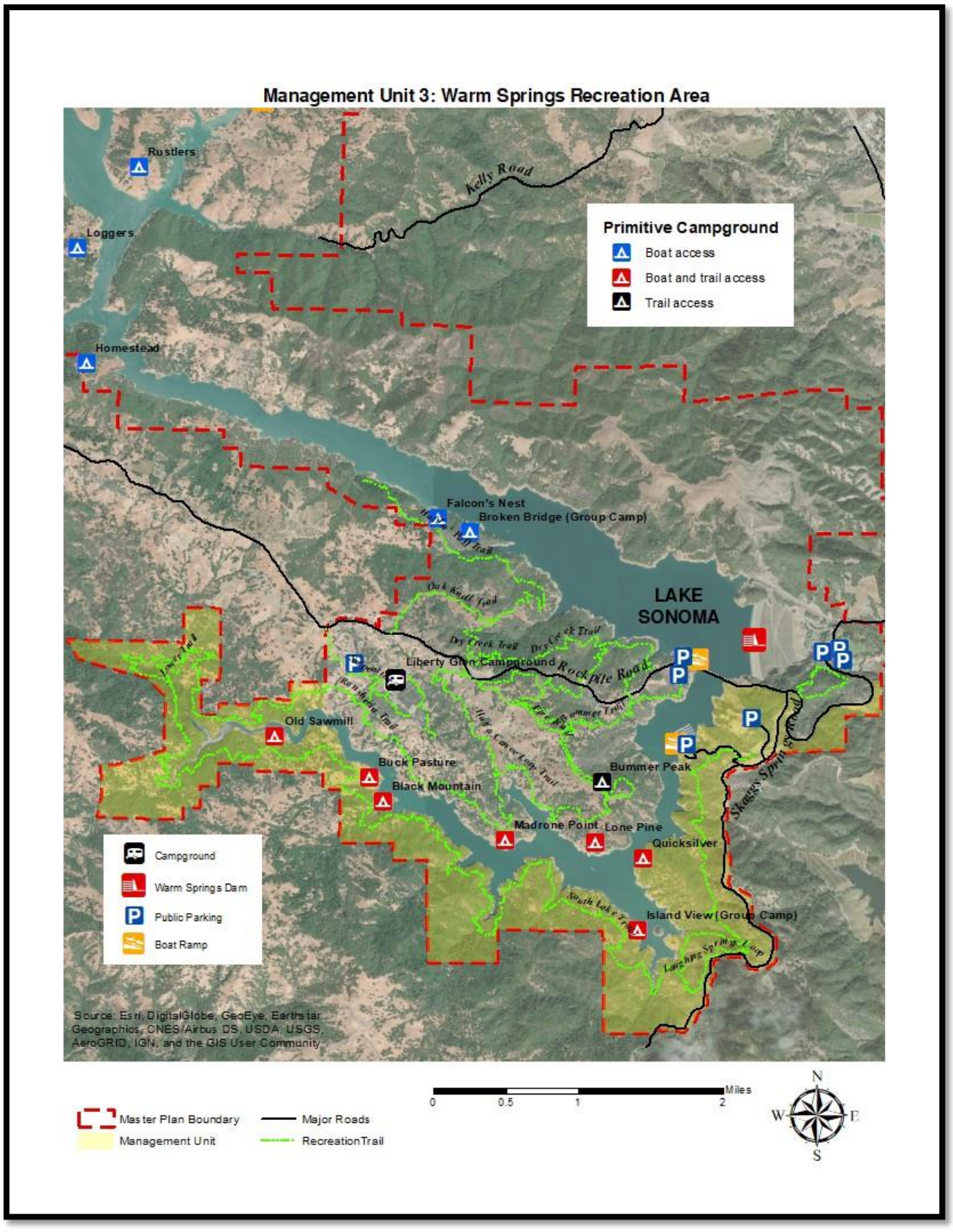

Figure 26 - Lake Sonoma Management Unit 3 - Warm Springs Recreation Area

Development Needs –

Trails
Public comment included development of a comprehensive multiple use trail network that crosses multiple management units.

Marina
The marina concessionaire has invested in covered slips and other improvements, in anticipation of growing demand for boats and visitors. The concessionaire expressed interest in expanding the marina to include a restaurant. Doing so would require removing language from the existing lease that prohibits restaurants.

Figure 27 - View of Lake Sonoma Marina looking east

Figure 28 - Marina Concession Store at Lake Sonoma

Figure 29 - Entrance to the Ranch at Lake Sonoma equestrian center

High-Density Area (eastern portion)
The northeast portion of this MU has the potential to contain a leased destination resort overlooking the lake and the wine growing valley below the dam. Coupled with the existing marina concessionaire and equestrian facilities, there is potential to develop a resort in this area for overnight accommodations.

The Overlook location is a popular viewing point of both the Dry Creek and Warm Springs Creek arms of the reservoir. The viewing structures and associated infrastructure at the site should be repaired and maintained, consistent with the Resource Objectives and Land Use Classification.

Public comment included interest in developing a zip line from the equestrian facility to the public boat ramp. The design and location would need to consider existing infrastructure. See Figure 29 for an image of the entrance to the equestrian center.

Low-Density Area (western portion)
The west portion of the MU could be developed to accommodate increased visitor use, while still retaining the primitive, low-density visitor use experience. Public comments included a proposal to expand current commercial operations to include the Old Quicksilver campground to offer an overnight equestrian camping experience. At the far west edge of this MU, an informal access point is a site that has development opportunities to add a new bridge, paved parking lot, and a campsite for horse camping.

Special Considerations – A portion of land was acquired by Save the Redwoods League and transferred to the USACE for inclusion into the south portion of this MU in 2009, and is designated as an Ecologically Sensitive Area, consistent with the stipulations of the land transfer. See Chapter 6 for more details and Appendix C for a copy of the deed transfer from Save the Redwoods League.

5.2.4 MANAGEMENT UNIT #4 – ROCKPILE RECREATION AREA

1979 Land Use Classification – *Low Intensity Use, Moderate Intensity Use*

Current Land Use Classification – *Multiple Resource Management Lands: Low Density Recreation, Future Recreation*

Location – Section south of Rockpile Road, west of the dam across the bridge.

Description – The south side of Rockpile Road includes the southern half of a peninsula that divides the two arms of Lake Sonoma. It is located above the Warm Springs Arm of Lake Sonoma. It is predominantly a south facing slope with grass and oak woodland interspersed with deep canyons. Most of the easily hiked trails are located here as well as the park's only vehicle accessible campground.

Figure 30 - Group Picnic Area at the Liberty Glen Campground

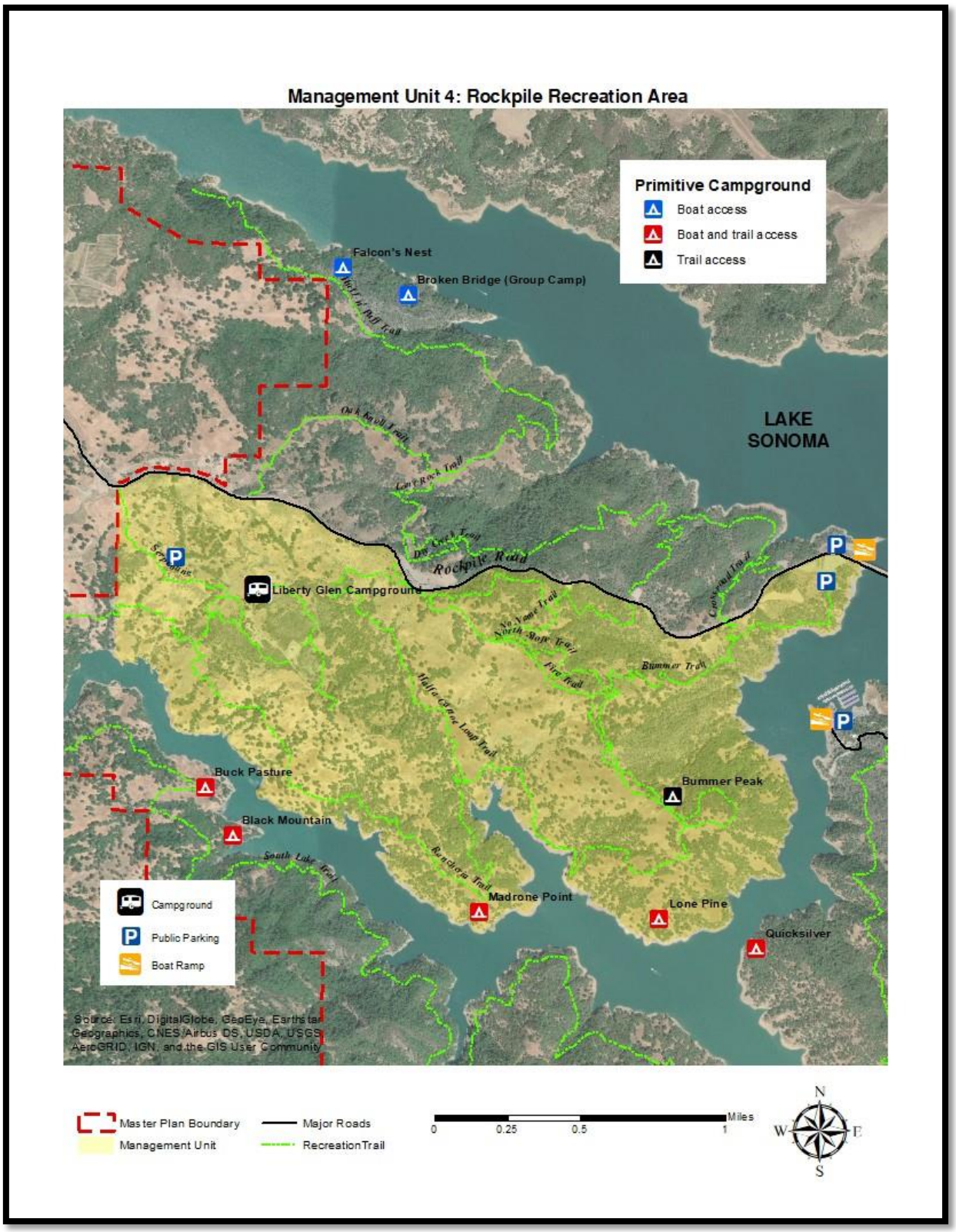

Figure 31 - Lake Sonoma Management Unit 4 - Rockpile Recreation Area

Development Needs –
Trails
Public comment included development of a comprehensive multiple use trail network that crosses multiple management units.

Liberty Glen Campground:
The Liberty Glen campground is located on a ridge, and Lake Sonoma is accessible via a one-mile trail. There are several single and double campsites, in addition to one cabin that is available to reserve. Flush toilets, showers, and drinking water are available within the campground. The Madrone Service Road, which provides access to Liberty Glen Campground, is in need of repair as the surface is cracking. It is recommended that the road be upgraded to an all-weather road. Since this is a high use campground, it is recommended that the road be repaired to provide adequate access to the campground. There is also pump equipment located along the road that is used for the campground and for firefighting; therefore, it is essential that this road be accessible.

Another recommendation is to convert campsites within Liberty Glen to full hookup, including sewer, water, and electric service. It is also recommended to add more substantial campground facilities such as the cabin pictured in Figure 32. It is recommended to improve the host campsites, and to repair the road within the campground. It is recommended to add a switchback trail along the Madrone Service Road that will provide easier access to the lake.

Figure 32 - Example of improved camping facility at Liberty Glen Campground, Lake Sonoma

Bummer Peak Campground:
It is recommended that this campground be eliminated. There are only two campsites that are very difficult to access. The access difficulty is challenging for USACE staff, especially with potential firefighting needs that might occur in the campground.

Rockpile Road:
The Rockpile Recreation area sees high visitation and has several development needs to meet current and anticipated future usage. The original 1979 MP called for development of a marina and a mini general store along the western shoreline of the lake just south of the Rockpile Road Bridge. The marina was ultimately constructed on the southeastern shoreline instead. The Rockpile Recreation Area abuts Rockpile Road to the south. Several improvements are needed in areas along the road.

1. The parking area at the air gun range is currently gravel. It is recommended that the parking area be paved as there are multiple trailheads in the area and it is frequently used by visitors.
2. There is currently a large dirt overflow parking lot located between the air gun range and the boat launch. It is recommended that this parking lot be paved, and a trail be added to provide additional access from the parking lot to the boat launch.

Boat Launch Area:
This area provides a boat launch and large parking lot. The trailhead for the Lake Sonoma Little Flat Trail is located in the area, in addition to a swimming beach.

1. The dock that is currently located near the boat launch is broken and poses many safety hazards. This is a high use area. So, it is recommended that the current dock be replaced.
2. There is a wooden staircase in the area that also poses a safety hazard. The wooden staircase should be replaced, ideally with a concrete staircase.
3. There is currently an informal swimming area located just south of Rockpile Road. This area should become a formal beach and swimming area with signage. Additional access from the parking lot to the swimming beach should be added as this is a very steep area.

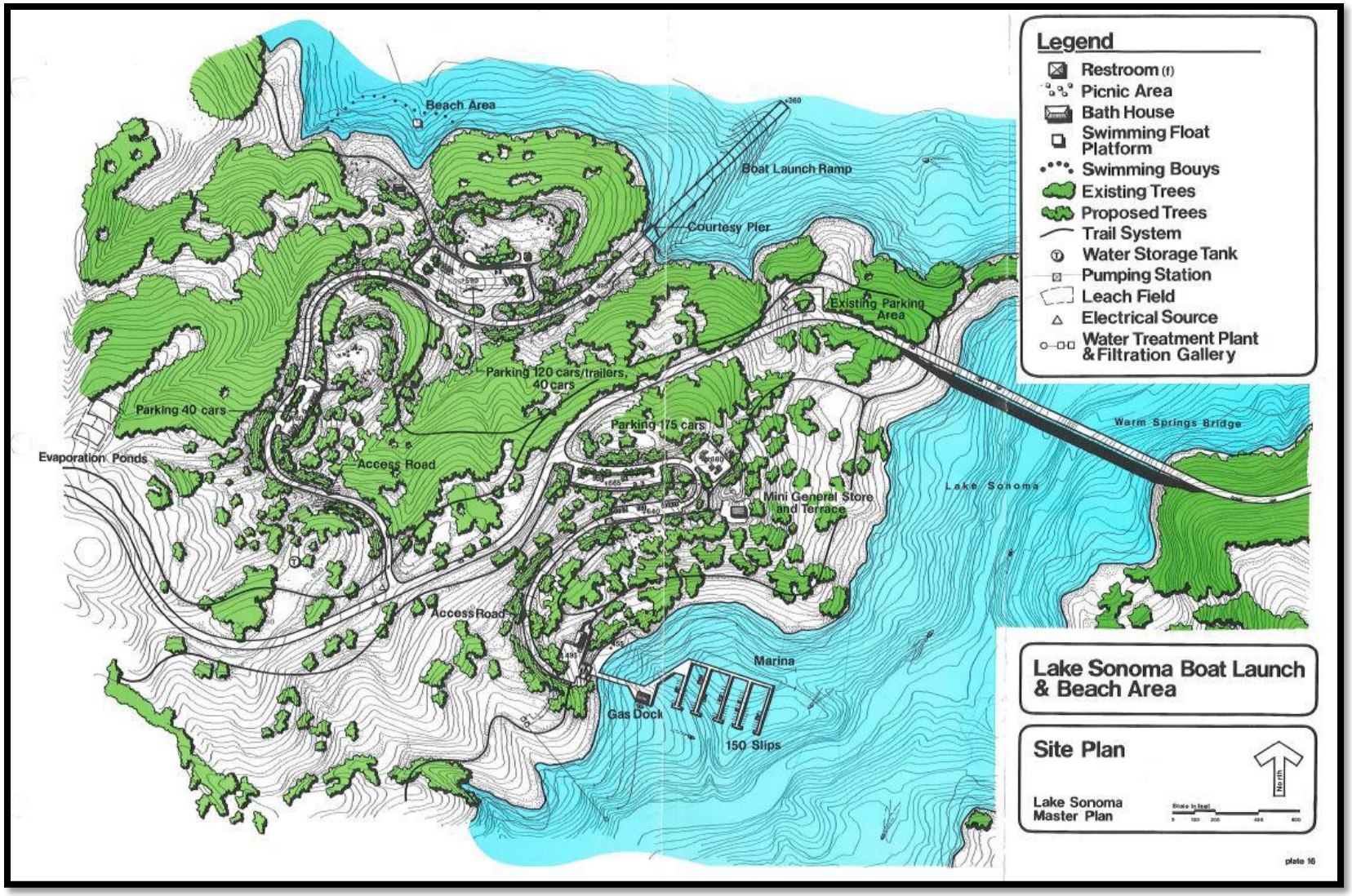

Figure 33 - 1979 Master Plan Site Plan for Lake Sonoma Boat Launch

Special Considerations – With website access to the National Recreation Reservation Service, Lake Sonoma's campgrounds are reaching a larger public. A balance of family campsites and group campsites will be needed, with an estimate of more than 350 family campsites needed to accommodate current and future use. The Rockpile Recreation area, and particularly Liberty Glen campground, provide space for growth in overnight camping accommodations.

5.2.5 MANAGEMENT UNIT #5 – DRY CREEK RECREATION AREA

1979 Land Use Classification – *High Intensity Use, Moderate Intensity Use, Low Intensity Use, Buffer Zone*

Current Land Use Classification – *High Density Recreation, Low Density Recreation, Multiple Resource Management Lands: Future Recreation*

Location – North side of Rockpile Road to the southern shoreline of Dry Creek.

Description – The south side of the Dry Creek arm of Lake Sonoma to Rockpile Road includes the northern half of the peninsula that divides the two arms of Lake Sonoma. It is predominantly a north facing slope with oak woodland, redwood and Douglas fir stands with some pure stands of madrone. The Dry Creek arm contains several hike-in or boat-in only primitive campsites.

The Dry Creek arm contains several boat-in only primitive campsites and one hike-in campsite. Other recreation features in this area include Little Flat Trailhead that serves as both a trailhead and overflow parking for the public boat ramp.

Grey Pine parking lot serves as a trailhead and access point to an air rifle range in the adjacent MU #4 (Rockpile Recreation Area). Lower Lone Rock parking lot is a horse staging area and group camp that includes a shade shelter, pit toilet and fireplace/food preparation area. A public archery range accessed by Lone Rock Trailhead is operated and maintained by Sonoma County Bowmen. The license was last renewed in 2016 and extends to 2021[9].

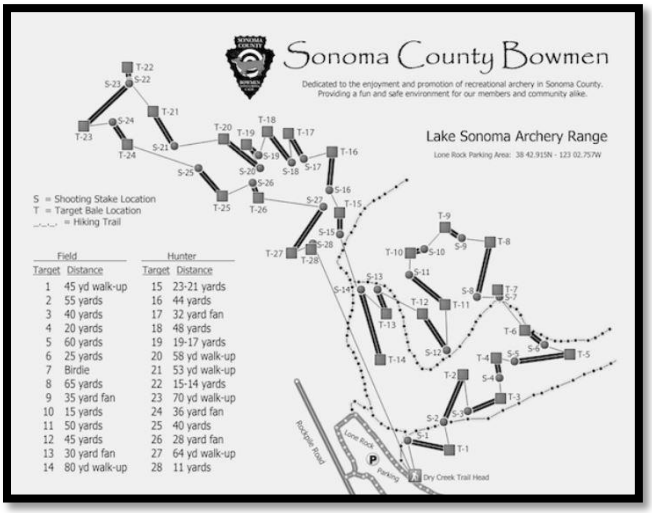

Figure 34 - Sonoma Public Archery Range

[9] http://www.scbarchery.net/ranges/range-lake-sonoma/

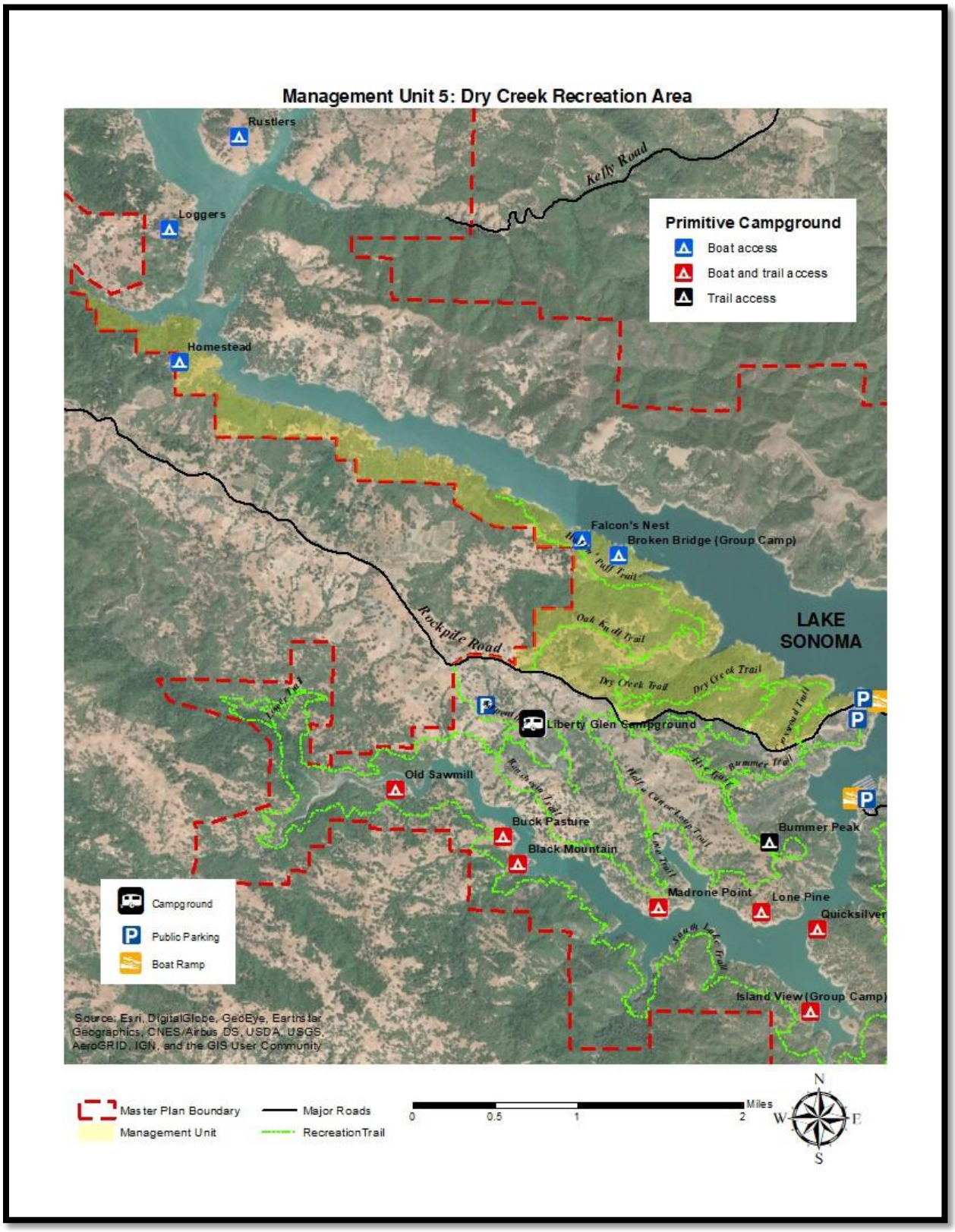

Figure 35 - Lake Sonoma Management Unit 5 - Dry Creek Recreation Area

Development Needs –

Beach Access
It is recommended that the trail for access to lakeside fishing near the current public boat launch be repaired and improved. A boat dock may also be added to the area adjacent to the boat launch. It is recommended to pave and stripe the parking areas next to the boat launch, further up the ridge in the Grey Pine area, and still further in the Lone Rock parking area. The original 1979 MP envisioned additional boat launch facilities, as well as an amphitheater, in the area encompassed by this MU.

Camping
Near Broken Bridge, cabins could be built to accommodate high-end camping.

Trails
Public comment included development of a comprehensive multiple use trail network that crosses multiple management units.

Special Considerations – none.

5.2.6 MANAGEMENT UNIT #6 – YORTY CREEK RECREATION AREA

1979 Land Use Classification – *High Intensity Use, Moderate Intensity Use, Low Intensity Use, Buffer Zone*

Current Land Use Classification – *High Density Recreation, Low Density Recreation, Multiple Resource Management Lands: Future Recreation*

Location – Northeastern part of the project area. This area is accessible from the town of Cloverdale via Hot Springs Road/Shady Lane.

Description – The Yorty Creek Recreation Area consists of a day use area, swimming beach, covered picnic sites, a playground, hiking trails and a car top boat launching ramp. Also within this unit are Rustler's, Thumb and Skunk boat-in campgrounds. Yorty Creek Recreation area is a high use formal recreation area, while the remainder of the area receives sparse use. The topography is primarily oak and grassland intermixed with dense chaparral.

Figure 36 - Panoramic View of Yorty Creek Recreation Area

Figure 37 - Day Use areas at Yorty Creek, Lake Sonoma

Figure 38 - Boat Launch at Yorty Creek, Lake Sonoma

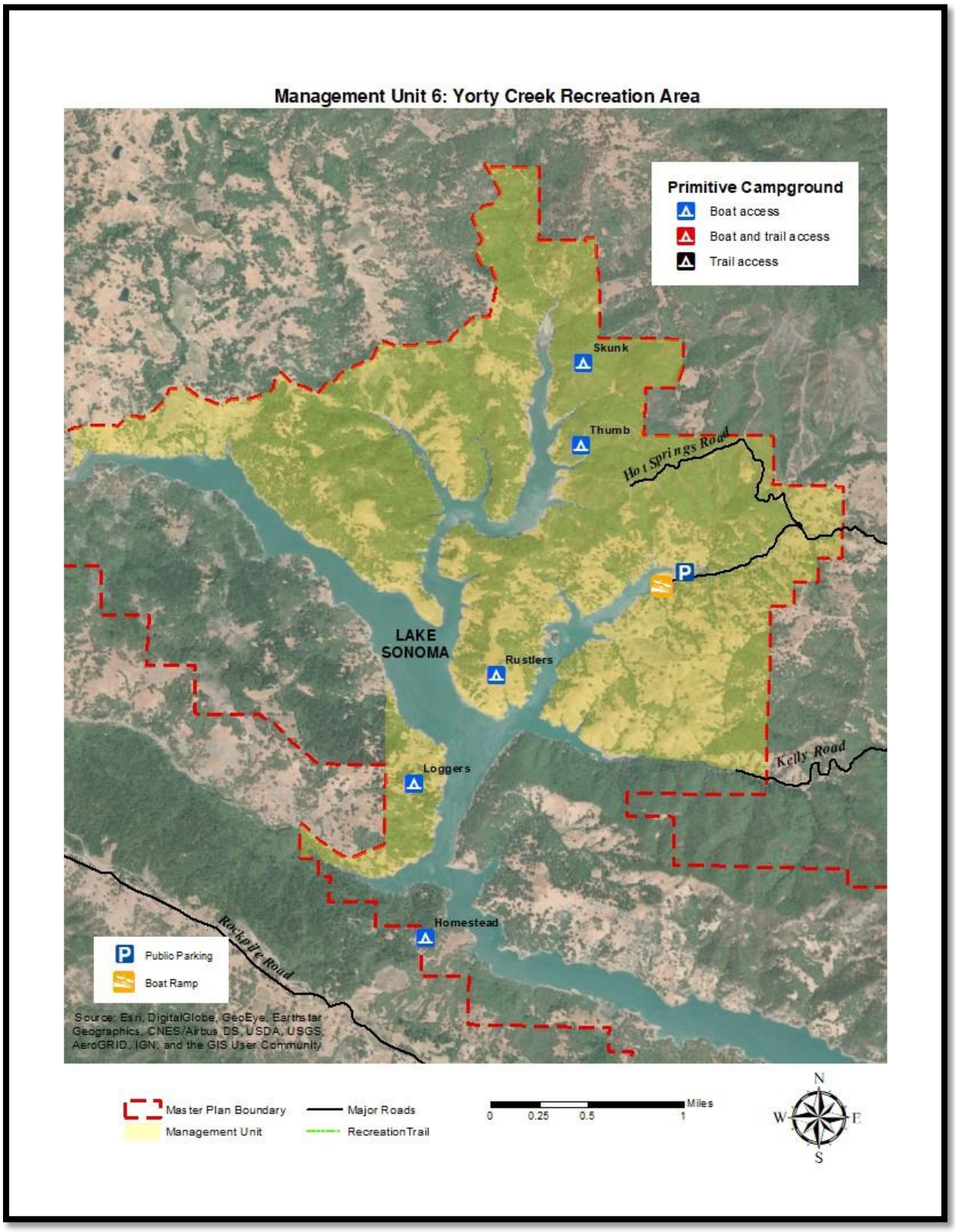

Figure 39 - Lake Sonoma Management Unit 6 - Yorty Creek Recreation Area

Development Needs – Yorty Creek Recreation Area plays an increasingly important role as a location for the gateway community of Cloverdale, and for potential visitation from Ukiah and other areas to the north on highway 101. This area has the potential for more formal recreation activities like camping, boat rentals, or value-added swimming activities. The project staff also recommends the development of a trail system linking the recreation area and campgrounds to improve the recreational experience of visitors and open the area to a more diverse recreational user group.

Parking Area / Beach Access / Boat Launch
There is currently no land access to the other side of the water from the parking lot. A pedestrian bridge would be needed to connect recreationists from the parking area to cross Yorty Creek to the north side of the area. Development of a shoreline trail from the parking area to Rustler's campground, and splitting off to Thumb and Skunk campgrounds is recommended. The original MP outlined a proposed shoreline trail for this area along the northern shoreline of Yorty Creek. A trail would allow visitors to park and hike to the three campgrounds, rather than the campgrounds being boat-in only. Development of trail systems would potentially increase the visitor use at these campgrounds.

It is recommended that USACE continue to maintain this area for recreational purposes such as boating, kayaking, standup paddle boarding (SUP), and other non-motorized water recreation purposes.

A second boat ramp/launch area may be developed as the existing ramp (see Figure 38) is often overcrowded during peak times. Additionally, an area may be designated to allow for boat access to the shore, particularly a roll on/roll off dock system for kayaks and canoes only. This will increase safety for kayakers/canoers as they will not need to compete with motorized boat use of the boat ramp.

It is recommended to designate dog-friendly areas along the beach at Yorty Creek by adding signage. Visitors currently bring their dogs to this area, but it is recommended that there be official designation of areas open to dogs.

Due to the heavy recreational use of the Yorty Creek area by kayakers, swimmers, and other non-motorized recreation, it is recommended that certain areas within Yorty Creek ban motorized boat use. Signs and maps of where motorized boats are not allowed should be posted at boat launches and other visitor service areas.

Road access to Yorty Creek Recreation Area is limited – a paved road connects to the parking area and boat launch, but no trailers are currently allowed on the access road, and the condition of the road is poor. Improvements made would involve extensive environmental and cultural assessment, and the result of improved roads would encourage the use of motorized boat traffic in this area.

Campgrounds
There are no recommendations to alter the current campgrounds (Skunk or Rustler's). It is recommended that the service road from the main parking area in the Yorty Creek Recreation Area leading to Skunk and Thumb campgrounds be improved, and that a trail be added to allow better access to the campground for hikers.

Development of a primitive hike-in campground northeast of the parking area, and primitive campsites just south of the main Yorty Creek parking/beach access area, close to the shoreline, are indicated in the 1979 MP, and are recommended. Situating a campground away from the lake in this MU would diversify the camping opportunities offered at Lake Sonoma.

Interpretive Education
An outdoor education center was initially envisioned in the area south and west of the boat launch, near Rustlers camp area, as illustrated in Figure 40 and Figure 41. Development of recreational facilities in this area may also support the consideration of interpretive and educational facilities.

Trails
Public comment included development of a comprehensive multiple use trail network that crosses multiple management units.

Special Considerations –

Currently, vehicle access is a prohibiting factor, as trailers are not permitted on the road. Development of the area for increased recreation use would likely necessitate a substantial investment in improved vehicle access. The 1979 MP envisioned many developments to enhance recreation in this area, including an equestrian area with a trail system, a more developed camping area near Cherry Creek (see Figure 42), and an outdoor education center to be run by Sonoma County. Investigation into these proposals is warranted, as this area is of interest and has a mix of high density and low density recreation.

As is the case with all of the proposed actions in this MP, any development recommendation considered will include an evaluation of recreational, biological and cultural resources in the area and an assessment of the lands for species of concern and/or sensitive habitat. Additionally, all consideration of development requires the appropriation of funds for both the study of feasibility and the design and construction of such facilities.

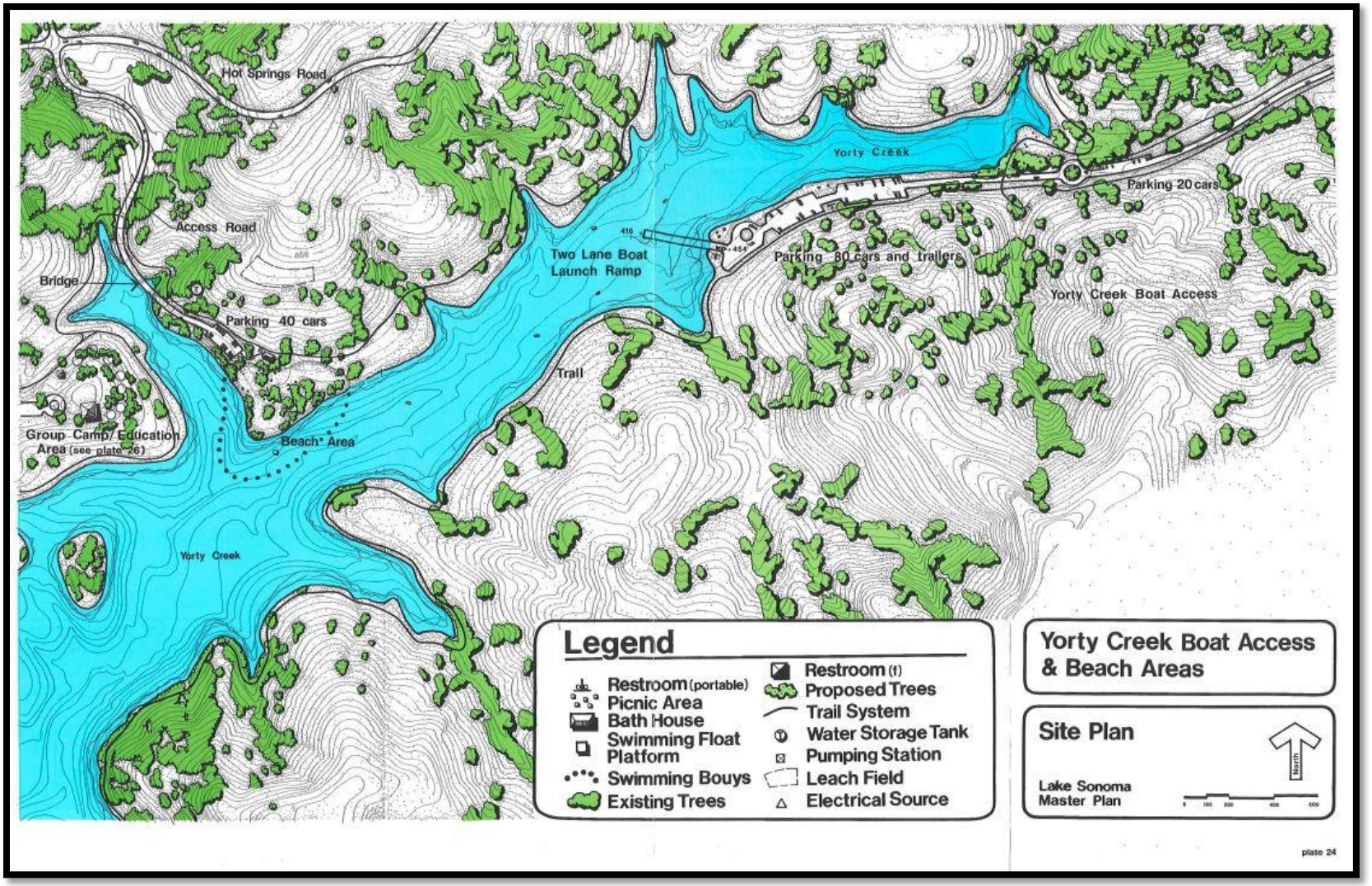

Figure 40 – 1979 Master Plan Site Plan for the Proposed Yorty Creek Boat Access and Beach Areas

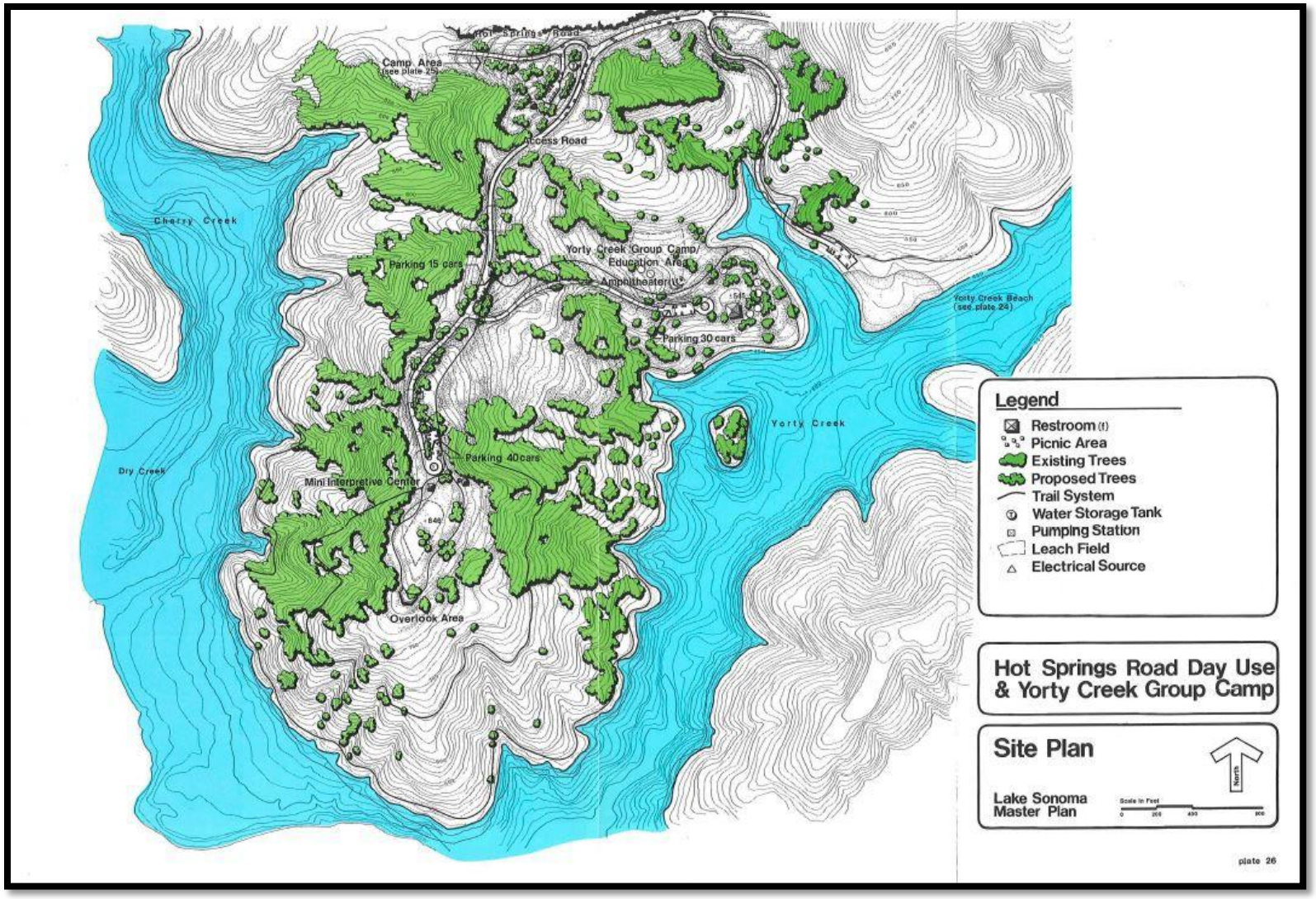

Figure 41 - 1979 Master Plan Site Plan for Hot Springs Road Day Use & Yorty Creek Group Camp

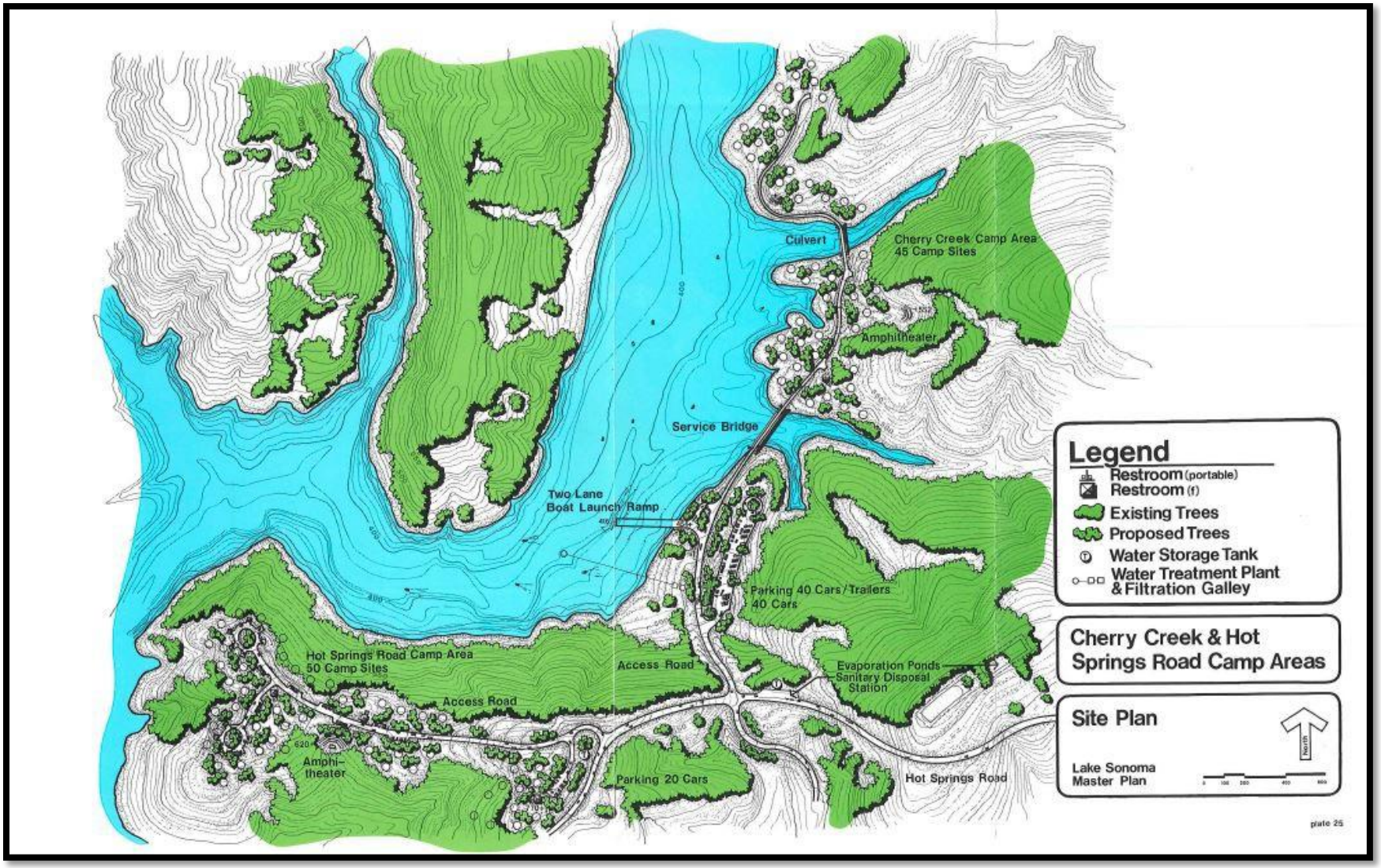

Figure 42 - 1979 Master Plan Site Plan for Cherry Creek Camp Areas

5.2.7 MANAGEMENT UNIT #7 – PRITCHETT PEAKS WILDLIFE MANAGEMENT AREA

1979 Land Use Classification – *Wildlife Management Area, Critical Habitat Zones and Sensitive Wildlife Areas*

Current Land Use Classification – *Mitigation; Multiple Resource Management: Wildlife Management, Future Recreation, Low Density Recreation*

Location – East shore of Dry Creek, to the north of the dam and the park headquarters.

Description – This MU has rugged, mountainous terrain that was originally set aside as mitigation for loss of wildlife habitat as a result of filling the lake and relocation of roads. This area is closed to the general public and receives very limited use in the form of special guided hunts and guided special use groups.

Figure 43 – Image of Pritchett Peaks Wildlife Management Area from Overlook

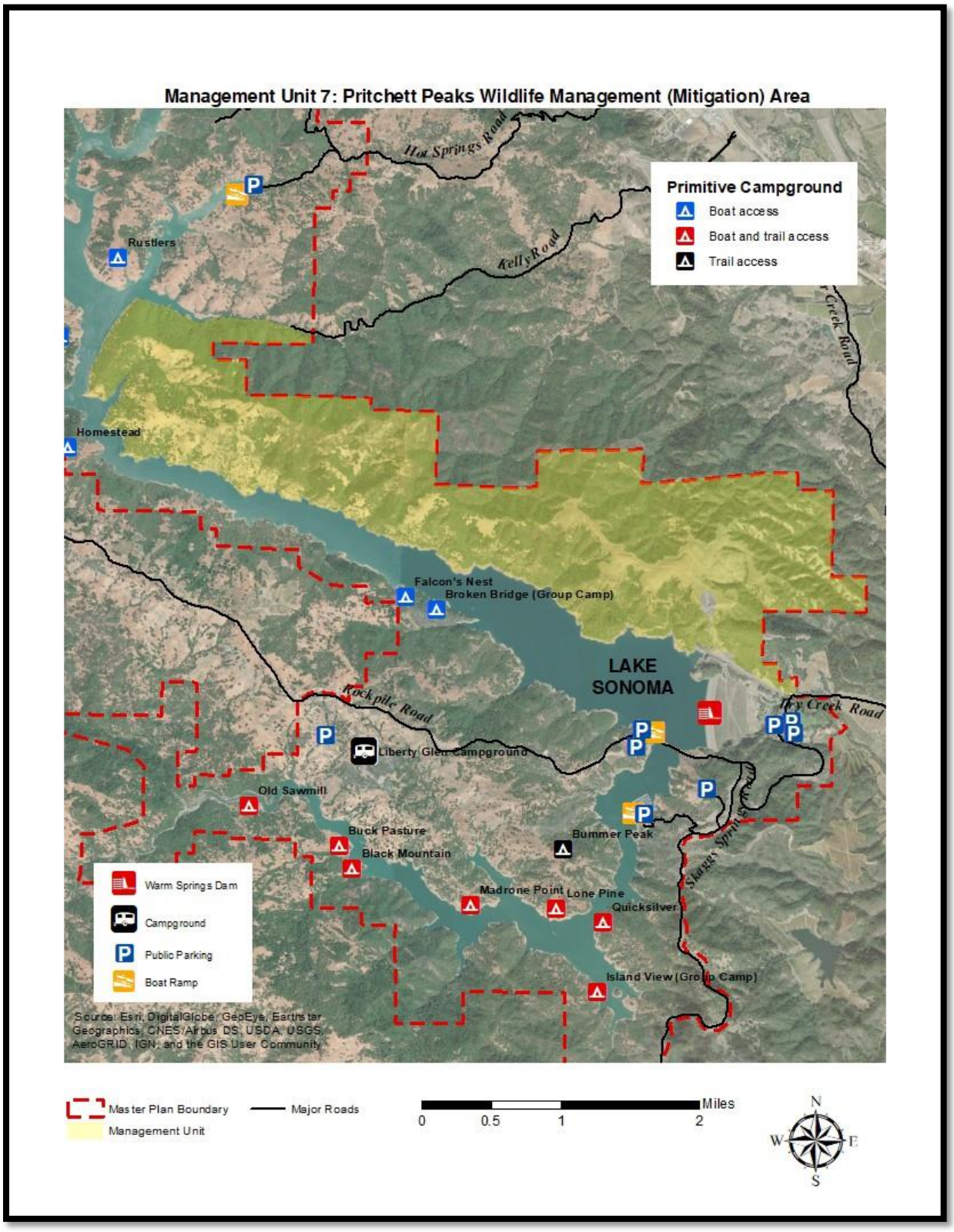

Figure 44 - Lake Sonoma Management Unit 7 – Pritchett Peaks Wildlife Management Area

Development Needs –

After the completion of the project, a firing range was established inside the established borrow area perimeter at the southeastern edge of the wildlife area. This firing range is not open to the public, but has been used by the County Sheriff's office, with permission from the USACE, for practice. This range is currently closed to all access, but there is a desire to reopen it. Plans have also been proposed to develop a solar power array in the area. Chapter 6 describes the change to the land classification of this area, from Wildlife Management to Operations, and a change of management from MU #7 to MU #2.

Trails
Public comment included development of a comprehensive multiple use trail network that crosses multiple management units.

Special Considerations –

There is a current separate parcel land north of MU#7 (Pritchett Peaks Wildlife Management Area) maintaining fee ownership of land by the Government, which will be retained for potential future development of radio repeaters.

The commitment to the public to provide mitigation for wildlife habitat lands lost as a result of filling the lake, and from relocated roads and development of facilities (see Section 6.2), is realized in this MU. Therefore, a classification of Mitigation is applied to most of the land in this MU, including the majority of the former borrow area designated as land to be used for dam construction.

5.2.8 MANAGEMENT UNIT #8 – DRY CREEK WILDLIFE MANAGEMENT AREA

1979 Land Use Classification – *Wildlife Management Area, Critical Habitat Zones and Sensitive Wildlife Areas*

Recommended Future Land Use Classification – *Multiple Resource Management: Wildlife Management, Future Recreation, Low Density Recreation*

Location – North end of Lake Sonoma, northwest of Yorty Creek Recreation Area

Description – This land borders the headwaters of Dry Creek and is a mixture of north and south facing slopes with varying vegetation. A boat-in campground (Loggers) is just past the southern border of this area and receives limited public use, largely from hunters in the winter months. The area can be accessed by Cooley Ranch Road. The USACE has an easement to access public property from the road.

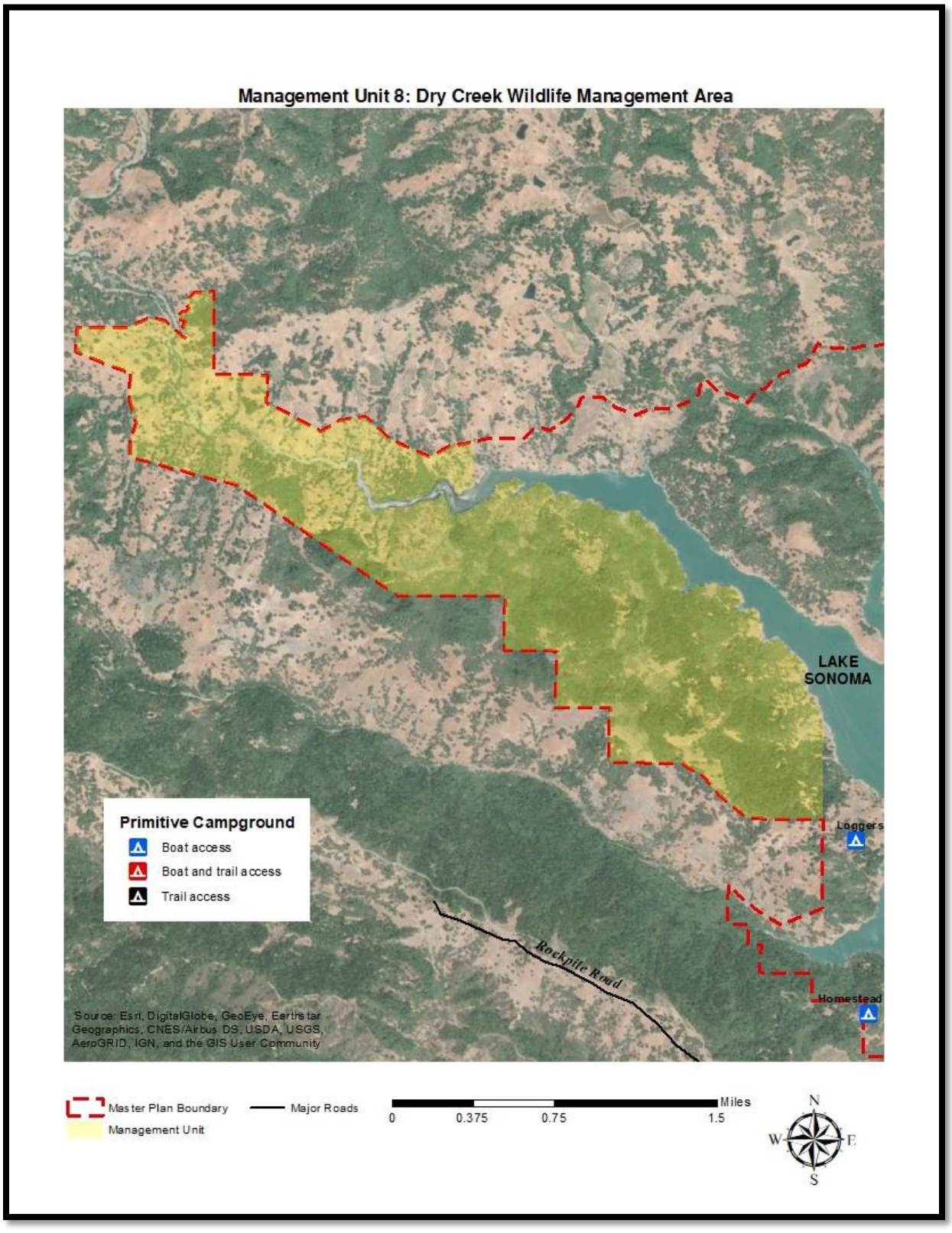

Figure 45 - Lake Sonoma Management Unit 8 – Dry Creek Wildlife Management Area

Development Needs –
Trails
Public comment included development of a comprehensive multiple use trail network that crosses multiple management units.

Special Considerations – Bald eagles have been seen in the area north of Loggers campground. Maintaining this habitat for eagles is an important resource objective and a stewardship goal of this MP.

Although the land ownership is Federal and the management agency in charge of the project is USACE, the State of California Department of Fish and Wildlife administers access to the Wildlife Management Areas, which are open during specific seasons for hunting deer and feral pigs. The 1979 MP suggests this resource agency controls the wildlife management area in its entirety. Some questions exist as to the ability of the State to allow or prohibit Federal action (e.g., closing of a campground), and the limit of authority in each management agency's responsibility. See Chapter 6 for more details.

Chapter 6 – Special Topics, Issues, and Considerations

This chapter discusses the special topics, issues, and considerations the PDT identified as critical to the future management of Lake Sonoma. Special topics, issues, and considerations are defined in this context as any problems, concerns, and/or needs that could affect or are affecting the stewardship and management potential of the lands and waters under the jurisdiction of the San Francisco District, Project Office Area of Responsibility (AOR).

6.1 ACCESS AND TRANSPORTATION

Currently, transportation to the project area is only available by automobile. Public comments indicated a desire to establish a bus route that would bring visitors to the project area, or that the local tourism interests establish some alternative transportation options for residents and visitors. Dutcher Creek Road, Canyon Road and Lytton Springs Road, all of which connect U.S. Highway 101 with Dry Creek Road, have all been upgraded. The Sonoma County General Plan includes the upgrading of the Stewarts Point-Skaggs Spring Road as an east-west artery, as well as Dry Creek Road. The Cloverdale bypass was constructed by the Department of Transportation and an intersection at Kelly Road was designed but not built, which would provide access to the northern portion of project area.

6.2 LAND CLASSIFICATION CHANGES, ADOPTION OF NEW PROJECT LANDS

A 3,200-acre portion of MU #7 (Pritchett Peaks Wildlife Management Area) will be classified as Mitigation, which accurately represents the agreements between the Department of the Army and the Department of the Interior, initially set forth in 1968, establishing the California Department of Fish and Wildlife (CDFW) as the management agency, with a renewed agreement currently in place until 2025. The 1976 Supplement to the Environmental Impact Statement reiterated the commitment to secure the 3,200 acres to compensate for the loss of wildlife habitat resulting from the inundation of the lands and from development of roads and other facilities, and the commitment stated inclusion of the 400 acres of borrow area. However, without the benefit of accurate mapping or a certainty of what areas would actually be disturbed (versus vegetation preserved or not used), the area had not been clearly delineated, and a total acreage was not confirmed until the revision of this MP. The Agreement with CDFW and background information are in Appendix D.

The MU #2 (Warm Springs Dam) will be expanded to the north by approximately 12 acres to include both the access road and a small portion of the former borrow area that was heavily disturbed by construction of the dam, and has been used recently as a firing range. This area will be classified as Operations to more accurately reflect the use and condition of the parcel. This portion of land is taken out of MU #7 (Pritchett Peaks Wildlife Management Area). The change in classification does not significantly affect the Mitigation lands set aside as compensation for loss of wildlife habitat, as the balance of 3,200 acres is maintained. The portion reclassified to Operations will continue to be managed as part of the wildlife management area under the CDFW agreement until the agreement is revised or expires in 2025. Future management of this area will be described in the revised OMP.

The USACE acquired from Save the Redwoods League approximately 40 acres of land, adjacent and to the south of MU #3 (Warm Springs Recreation Area). The lands will be managed according to the terms and conditions of the donation as well as the purpose for acquisition/donation (Appendix C). Consistent with the terms and conditions of the donation, this land will be incorporated into the MU#3 and classified as an Ecologically Sensitive Area. No development is recommended for the area. Lands adjacent to this parcel are classified as Low Density Recreation.

6.3 CULTURAL RESOURCES MANAGEMENT AND PROTECTION

Cultural Significant Plant Species.

The Dry Creek and Cloverdale Pomo made extensive use of the flora available to them for food, medicine, technical purposes and for ceremonial reasons. Acorns, Brodiaea bulbs, and a variety of berries and herbaceous plants were relied on throughout the year as a food source. Basket sedge (Carex barbarae), basket willow (Salix hindsiana), and Angelica (Angelica tomentosa and Lomatium califonicum) are plant resources of particular importance in the area.

The rhizomes of the sedge and the shoots of the willow are essential in the weaving of Pomo basketry. There were several important collection sites along Dry Creek for these plants that were inundated by the reservoir. These sites produced very high quality shoots and rhizomes due to their sandy nature. USACE coordinated with the local tribes in transplanting from areas to be inundated to Dry creek below the dam.

Angelica is used in a variety of ways by the Pomo and other northern California tribes. The leaf shoots are harvested in spring and eaten raw, boiled as greens or as a used as a seasoning. Angelica roots are collected in the fall for medicinal and ceremonial purposes. The harvest of Angelica is highly ritualized and is only performed by native doctors. It is considered dangerous if collected or used by others. True Angelica is preferred due to its potency, but Lomatium is used more frequently since it is more common and has less restrictions on harvesting. Lomatium's most valued use is as a protective talisman and it is carried for good luck in gambling and hunting. Efforts were made to relocate specimens from prime harvesting areas to be flooded to an area below the dam.

More information on this subject can be found in Ethnobotanical Resources of the Warm Springs Dam – Lake Sonoma Project Area prepared in 1979.

Table 9 presents the number of cultural resource sites by MU; however, some of the sites presented are in two different MUs. In these instances, the site was counted as being in the MU that contained the largest percentage of the site. The vast majority of the 99 previously recorded sites in the project area are within MU #1 (Lake Surface). MU #1 would have represented most of the relatively level areas adjacent to Dry Creek and Warm Springs Creek. These areas were in close proximity to water with riparian environment resources and aquatic subsistence making them attractive for prehistoric human use and habitation. These areas were also preferable for the historic use and habitation of the area as well. The close proximity of these sites to the creeks indicates that many of the sites in MU #1 are under water much of the time and/or were severely affected by erosion related to reservoir operation cycles.

Both MU #3 and MU #7 contained the next largest grouping of sites. Both of the MUs encompass the upland headwaters of Dry Creek and Warm Springs Creek. The sites in these areas are primarily along the upland portions of the creeks and on terraces above the creek. These area were likely preferred for prehistoric habitation because of access to water, subsistence sources, and hunting, as evidenced by the presence of at least one hunting blind. The area also contained lithic sources, as quarry sites were also identified in the areas.

Table 9 - Distribution of Cultural Resources by Management Unit

MU	MU Name	Site Count
1	Lake Sonoma (Lake Surface)	48
2	Warm Springs Dam, Control Tower, Spillway, Headquarters, Visitor Center, and Fish Hatchery	1
3	Warm Springs Recreation Area	16
4	Rockpile Recreation Area	6
5	Dry Creek Recreation Area	1
6	Yorty Creek Recreation Area	8
7	Pritchett Peaks Wildlife Management Area	1
8	Dry Creek Wildlife Management Area	18

Cultural resources at the lake and dam are a public and physical legacy that can contribute to the development and appreciation of regional and local history and prehistory. Local Native American Indian

Tribes have a special interest in these sites that relate to their history. The main management objectives for these resources is to protect their legacy from losses attributed to vandalism, theft and project undertakings, and to contribute to public appreciation of the legacy. This is especially relevant to sites within specific MUs as land use changes within these units may have adverse effects on existing historic properties.

Previous archaeological studies identified the majority of the sites comprising potential historic properties that are present within the boundaries of project area; however, several of these were early studies. Several of the previously identified sites (18) are unevaluated. It has yet to be determined the level of significance these sites hold archaeologically and to the Native American Community. Neither has it been determined if these sites are contributing or not contributing to the NR-District defined at the lake, nor have they been evaluated for their individual significance. Section 110 of NHPA states that "historic properties under the jurisdiction or control of the agency, are identified, evaluated, and nominated to the National Register" (NHPA Section 110 (a)(2)(A)). To fulfill the USACE's responsibilities under Section 110, the eligibility of these sites to the National Register should be formally evaluated. In addition, the previous archaeological studies in the project area are dated and older than 10 years. A Section 110 inventory for the lake area is highly recommended for a better understanding and management of historic properties managed as part of the USACE's responsibilities.

Cultural resources in the project area that are at the highest risk for deterioration from erosion and inundation need to be revisited to determine the level of adverse effects these agents are having on these resources. A Memorandum of Agreement (MOA) was executed in June 1976 outlining management strategies for sites within the project area. The MOA states that "Continued monitoring of the sites will be done to insure the integrity of protection, and that no cultural material is inadvertently exposed."

Several actions were identified in the MOA and were divided in two categories:
Construction Period and Project Operation Period. During Construction Period included specific action such as water quality analysis program formulation, historic audiovisual collection, ethnography, sedge and other plant relocation. During Project Operation period, included specific actions such as demonstrations, films and similar programs, exhibition preparation and water quality monitoring.

Currently, there is an effort to digitize the films and footage of the area pre-construction as well as sedge plantings documentation. Visits to inundated sites should be planned during lake draw-down periods. At that time, updates to the condition of the site, including vandalism and looting impacts to sites should be recorded. One possible monitoring effort might include placing reference points, such as stakes or metal rebar, on defined sites with a series of photographs taken from each reference point to document the site's current condition. A regular monitoring program at these sites should take place and documented using photographs from previously established reference points.

Cultural Resources within the project area are primarily afforded protection under three main laws: the *Archaeological Resources Protection Act of 1979 (ARPA)*, the *National Historic Preservation Act of 1966 (NHPA), and the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA)*. The ARPA applies to the Project's fee lands, and sets forth a process for permitting the excavation or collection of archaeological resources on public or Native American Indian lands and establishes criminal penalties, including fines and incarceration, for the unauthorized excavation or collection of such resources.

The NHPA applies to both fee and less-than-fee lands at Lake Sonoma. Section 106 of the NHPA requires Federal agencies to consider effects of their undertakings (actions that are funded or permitted by the government) on eligible (i.e. significant and with integrity) historic properties. For their undertakings, Federal agencies must identify and evaluate cultural resources for significance; consult with the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officer (SHPO), Native Americans, and the public; and seek resolution of any adverse effects their projects might have on significant resources. The Section 106 process shall be followed before any projects within the project area are undertaken. This means that future projects will either be designed in such a way that they do not damage or otherwise impact significant cultural resources; or the damage they may cause will be mitigated, potentially through archaeological data recovery or site protection projects. Section 110 requires that Federal agencies be good

stewards of the cultural resources located on their lands. This includes a responsibility to maintain and preserve any historic structures, to conduct surveys to identify cultural resources on their lands and evaluate the significance of those resources. Operationally, to achieve these objectives, the project staff should work closely with the San Francisco District archaeological staff.

The NAGPRA requires Federal agencies, and institutions that receive Federal funding, to return Native American "cultural items" to lineal descendants and culturally affiliated Indian Tribes and Native Hawaiian organizations. Cultural items include human remains, funerary objects, sacred objects, and objects of cultural patrimony. The act also establishes procedures for the inadvertent discovery or planned excavation of Native American cultural items on Federal or Tribal lands. Moreover, the Act makes it a criminal offense to traffic in Native American human remains without right of possession or in Native American cultural items obtained in violation of the Act.

6.4 INTERPRETATION AND EDUCATION

The feedback from public meetings and discussions with stakeholders and staff members supports the recommendation of increased signage, interpretive programming, and cultural and environmental education. The initial proposals of interpretive centers at both the Visitor Center (MU #2) and at Yorty Creek (MU #6) suggest that this desire has been long standing, even since the initial design of the project. Additional interpretive signage has been suggested along Dry Creek below the dam.

Figure 46 - Artistic interpretive signage at the entrance to the Dry Creek Band of Pomo dance arbor, along Dry Creek below Lake Sonoma and Warm Springs Dam

With increased visitation expected in the following decades, it is important to update, develop and implement interpretive plans for the project. Investment in this aspect of the project will be subject to financial limitations, but partnership with local agencies, entities, and interests may provide desired outcomes and education opportunities.

Chapter 7 – Agency and Public Coordination

In 2018, the USACE began revising the Lake Sonoma MP, the last version of which was approved in 1979. In addition to project site visits by key members of the study team, preliminary meetings were held with state and local government officials that have direct involvement in management of the resources of the Project.

The USACE held two separate public meetings in February 2018 in Ukiah, California and at the Lake Sonoma Visitor Center in Geyserville, California. The purpose of these meetings was to initiate the information seeking effort and gain public input to inform the long-range goals for the MP and the vision for management and development of project lands and water at Lake Sonoma. Input from user groups, Tribes, and concessionaires was incorporated into this MP.

The draft MP was circulated for public and agency review in fall of 2019. Comments on the MP and the accompanying EA further informed the final MP and EA, which are expected to be signed and published in spring of 2020.

The accompanying EA, found in Appendix A of this MP, lists all of the Federal and state agencies that might be included in the coordination process for a proposed project at Lake Sonoma. The table also lists the resources included in each agency's purview. It should be noted that similar agencies and groups exist at the local level and should be included in the planning process. Further agency coordination is critical to the success of this policy-based, programmatic document and associated NEPA documentation.

Additional NEPA evaluation and planning will be required for any future development or proposal to ensure consistency with the MP, land use classifications, resource objectives for each management unit, and all applicable laws, regulations, and policies.

Chapter 8 – Summary and Recommendation

8.1 SUMMARY OVERVIEW

The proposals made in this MP are for recommended courses of action to manage the natural resources at Warm Springs Dam and Lake Sonoma. Actions set forth in this MP can promote the future health and sustainability of the lake's natural resources while still allowing for continued use and development. The factors considered cover a broad spectrum of issues including public use, the environment, socioeconomic considerations, and staffing levels. Information on each topic was thoroughly researched and discussed before any recommendation was made.

This MP is a strategic land use management document that guides the comprehensive management and development of all project recreational, natural, and cultural resources throughout the life of the water resource project. It aims to establish the basic direction for development and management of the lake consistent with the capacity of the resources present and public needs. The plan is flexible in that MP supplements may be prepared through a formal process to address unforeseen needs or updated information. The MP will be reviewed annually and, as necessary, updated every five years, to facilitate the evaluation and utilization of new information as it becomes available, subject to funding. Section 8.5 describes the process for updating the MP. The overall MP provides guidelines for land use activities, improvement of environmental quality, and protection of cultural resources. Additionally, the MP provides USACE management with critical information necessary to determine funding levels for operations, maintenance, and staffing needs.

8.2 LAND CLASSIFICATIONS

As described in detail in Chapter 5, the PDT strived to achieve a balanced approach in making the land classification recommendations. The PDT took environmental constraints, regulations, ordinances, opportunities, and public concerns into consideration when determining land classification for the MP revision, which included, but was not limited to:

- Previous land classification
- Land allocations
- Environmental and cultural considerations
- Existing Federal, state, and local laws and regulations
- Development or non-development adjacent to USACE property
- Activities adjacent to USACE property
- Recreational trends and emerging needs
- Public and agency input
- Funding and staffing constraints

8.3 RECOMMENDATION

It is recommended that the Lake Sonoma MP be adopted and used to direct future decisions on management of the lands and resources at the project. The objectives within this MP are consistent with authorized project purposes, land allocations, and resource capabilities. The MP objectives accommodate Federal, state, and local needs. The MP represents sound stewardship of resources and will result in increased opportunities for public enjoyment of outdoor recreation activities.

8.4 USING THIS MASTER PLAN

This MP provides a vision for the future use of the lake resource, and it informs other plans that direct the management of Lake Sonoma, such as the OMP. This MP sets the stage for the update of many of the

USACE resource management plans. The Resource Objectives contained in this MP can serve as a basis for developing plans to manage resources within the project boundary. The Resource Objectives approved in this plan can serve as a basis for developing more specific management plans at the project. Regular supplements or updates to the MP may allow the project to maintain updated resource management plans.

The document also serves as a land use tool, since this MP provides USACE, other management partners, and the public with current Land Classifications, recommended future development, and resource objectives as they may be applied to project lands. The current classification of project lands allows the USACE, other management partners, and the public to visually evaluate the distribution of uses for project lands. Supplementing and/or revising the MP allows the USACE to respond effectively to development plans made internally or by outside parties.

This MP and the accompanying environmental documentation sets goals and objectives but does not establish detailed development plans. Additional NEPA evaluation and planning will be required for any future development or proposal to ensure consistency with the MP, land use classifications, resource objectives for each management unit, and all applicable laws, regulations, and policies.
As new recommendations for consideration emerge, they may be introduced in supplements or updates to the MP.

8.5 UPDATING THE MASTER PLAN

Regular reviews will help prepare for a general revision or significant update to the MP. Any revision or update will be accompanied by the appropriate NEPA documentation, if applicable. The revision may be as simple as revisiting the Resource Objectives, or it may be as complex as changing Land Classifications presented in this MP. The process through which the plan is evaluated and updated will follow guidance set forth in EP 1130-2-550.

The information obtained during regular revisions of this MP also serves to benefit other activities at the project. Data may be applied to updating a specific resource management plan, improving educational programs, or informing project staff about relevant issues. This MP emphasizes the need for coordination with regulatory agencies prior to implementing any element of the MP. Coordination also may occur in updating the MP and obtaining additional data sources to inform the plan.

Chapter 9 – References

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Appendix A – Environmental Assessment for 2019 Lake Sonoma Master Plan

1.0 INTRODUCTION

This environmental assessment (EA) is written in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321 *et seq*), as amended, the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA (40 C.F.R. § 1500-1508), and U.S. Army Corps of Engineers (USACE) Planning Regulations (Engineering Regulation (ER) 200-2-2). It presents an evaluation of the potential impacts associated with the proposed update to the Lake Sonoma Master Plan.

1.1 Project Location and Setting.

Lake Sonoma is located on Dry Creek, a major tributary to the Russian River, west of Healdsburg in Sonoma County, California. Warm springs dam is located 13.9 miles above the confluence of Dry Creek and the Russian River. The drainage area above the dam is about 130 square miles. Lake Sonoma is situated in steep-sided canyons cut into the Mendocino Plateau by Dry Creek and Warm Springs Creek. Most of the Lake Sonoma site consists of steep terrain, cliffs and rock outcrops with a slope of over 25 percent.

1.2 Purpose and Need for Action.

Master Plans are required for civil works projects and other fee-owned lands for which the USACE has administrative responsibility for management of natural and historic resources. The Master Plan provides a programmatic approach to the management of all of the lands included within the Lake Sonoma boundary. The Master Plan is the basic guiding document outlining the responsibilities of the USACE, pursuant to federal laws to preserve, conserve, restore, maintain, manage, and develop the project lands and associated resources. The Master Plan is a planning document anticipating what could and should happen, with the flexibility to adapt to changing conditions over the life of the plan. Detailed management and administration functions are handled in the Operational Management Plan (OMP), which translates the concepts of the Master Plan into operational terms.

The primary goals of the Master Plan are to prescribe an overall land management plan, resource objectives, and associated management concepts, which (1) Provide the best possible combination of responses to regional needs, resource capabilities, suitability, as well as expressed public interests or desires consistent with authorized project purposes; (2) Contribute towards providing a high degree of recreation diversity within the region; (3) Emphasize the particular qualities, characteristics, and potentials of the project; and, (4) Exhibit consistency and compatibility with national objectives and other state and regional goals and programs.

The Plan identifies recreational opportunities and measures to preserve and protect natural and cultural resources. The Plan also outlines development needs, analyzes special problems, and provides guidance on public use, water quality, invasive species, natural areas, and historic properties within the USACE boundaries. The Plan does not address reservoir water levels and should not be confused with the on-going Dam Safety Modification Project or the Water Control Manual.

1.3 Scope of the Action.

A preliminary master plan was prepared for public recreational development in March 1966 and was last updated in 1979. The proposed action (Agency-preferred Plan) would revise the 1979 Lake Sonoma Master Plan providing an updated land management plan and resource objectives for Lake Sonoma. It is focused on the management of land and water surface related to the project's purposes of recreation and the environmental stewardship of natural and cultural resources. The Master Plan does not make recommendations related to the management of Warm Springs Dam and associated operations.

The Master Plan presents current data on existing conditions, anticipated recreational use, type of facilities needed to service the anticipated use, and an estimate of future needs. Over the last 30 years, many of the construction projects from the 1979 update of the Master Plan have either been completed or have been found to not be the best use of project resources. Over that time, USACE has also updated its policies directing the development and implementation of master plans. This includes updating the prescribed categories of Land Classifications that must be used in master plans to define project lands. In order to meet these new directives and comply with USACE policy requiring regular updates to a Master Plan, the District proposes to revise the Master Plan at Lake Sonoma.

This EA addresses the proposed adoption and implementation of the revised Master Plan for Lake Sonoma. This EA further analyzes the potential impact that implementing the Master Plan would have on the natural, cultural, and human environment. This EA relies on the attached Lake Sonoma Master Plan for cross reference.

The intention of the proposed Master Plan update is to develop land classifications that will guide the sustainable development of resources within the Lake Sonoma Project in the future. It is not feasible to define the exact nature of potential impacts for all potential actions prior to the development of specific project proposals. Therefore, environmental consequences may be less than, or may, in fact, exceed what is described in this EA. To ensure future environmental consequences are identified and documented as accurately as possible, additional NEPA coordination will be conducted, as appropriate, for future projects that are proposed to be carried out in accordance with this proposed Master Plan update.

2.0 ALTERNATIVES

This section of the EA describes alternatives for updating the Master Plan. This EA examines two alternatives: the Agency-preferred Alternative (Proposed Action) of adopting the Master Plan update and a No Action Alternative in which the 1979 Master Plan would remain the management guidance document. The Preferred Alternative would update existing inventories, development needs and land use classification, while providing a programmatic approach to the future management of the reservoir.

During the past year, the District and other management partners have worked to develop options for classifying project lands and identifying Resource Objectives (Master Plan, Chapter 3) for these lands. The data collection, public comments, and findings of the planning team revealed that there was only one action alternative that would meet the purpose, need, and objectives of the master planning process. This alternative is the Proposed Action and is discussed in detail in Section 2.2 of this EA. The Proposed Action is the Agency-preferred Alternative because it would meet the need for sustainable management and conservation of natural resources within the project, while also providing for current and future quality outdoor recreational needs of the public, and meeting update USACE regulations associated with master plans.

2.1.1 No Federal Action.

Inclusion of the No Action Alternative is prescribed by CEQ regulations and serves as the benchmark against which Federal actions can be evaluated. Under the No Action Alternative, the District would not approve the adoption or implementation of the updated Lake Sonoma Master Plan and would not meet current USACE regulations or goals of making regular updates to a master planning document. The 1977 Master Plan would continue to provide the only source of comprehensive management guidance and philosophy for Lake Sonoma. Information provided in the 1977 plan is out of date and no longer adequately addresses the needs of the District, other management partners, or users of Lake Sonoma. Furthermore, the 1977 Master Plan does not include the revised Land Classifications. Future major developments or resource management policies would require approval on a case-by-case basis without the benefit of evaluation in the context of an overall plan.

2.1.2 Proposed Action: Adopt the updated Lake Sonoma Master Plan (Preferred Alternative).

Adoption of the proposed Master Plan update is the Agency-preferred Alternative. Under this Preferred Alternative, the District would adopt and implement the revised Lake Sonoma Master

Plan. The Master Plan seeks to replace the 1979 Master Plan and provide a balanced, up-to-date management plan that follows current Federal laws and regulations while sustaining Lake Sonoma's natural resources and providing outdoor recreational experiences. The proposed revised plan would update the land use classification of Lake Sonoma's Management Units (MU) from the 1979 system to be compliant with current USACE policy guidelines contained in ER-1130-2-550. The updated land classification and Management Units are shown in figures 13 and 14 in the main report. The revised plan also lays out future recommendations for management of both recreation and natural resources. These recommendations are summarized in table EA-1 below.

New and emerging recreation uses would be analyzed on a case-by-case basis for appropriate land use classifications. New and emerging uses may include uses in a new location, for example, identification of important vegetation collection sites beyond the immediate vicinity of Dry Creek in coordination with the Dry Creek and Cloverdale Pomo.

The primary element of the Preferred Alternative is the new land classifications that would be applied to all project lands. The proposed land classifications are accompanied by resource objectives which recommend future management actions on Lake Sonoma lands.

The land classifications presented in this Master Plan revision, as well as the recommended future uses, are consistent with the land classifications and policies included in the 1979 Master Plan. The intent of the land classification process is to fully utilize project lands in accordance with authorized project purposes, consideration of public desires, and regional and project specific resource requirements and capabilities. For many MUs, the land classification has solely been changed from the 1979 Master Plan classification to the corresponding land classification identified in current USACE master planning guidance contained in ER-1130-2-550. While the terminology has changed, the overall intent of how these specific MUs are to be used and managed remains the same. The updated classification system also allows for more detailed designations as needed. These changes in land classification are consistent with the land allocations that were adopted when the project was authorized. The changes are described in detail in Chapter 5 of the attached Master Plan and is summarized below

The 1979 MP designated three types of use for water surface and upland areas: Low, Moderate, and High Intensity Use. In addition, there were land use classifications for Critical Habitat, Wildlife Management and for Buffer Areas.

The land classification system and definitions used in the revised plan are identified in USACE policy (EP 1130-2-550) and would be as follows:

1. *Project Operations*. This category includes those lands required for the dam, spillway, offices, maintenance facilities, and other areas that are used solely for the operation of the project.

2. *High Density Recreation.* Lands developed for intensive recreational activities for the visiting public, including day use areas and/or campgrounds. These could include areas for concessions (marinas, comprehensive resorts, etc.), and quasi-public development.
The planning team further defined the intent of a comprehensive resort development design as that which aesthetically blends in with the natural and open space landscape in the form of small cabins, a small lodge, and recreation equipment rental in support of outdoor recreation activities (such as hiking, equestrian, mountain biking, wildlife viewing) on the federally managed lands.

3. *Mitigation*. This classification will only be used for lands with an allocation of Mitigation and that were acquired specifically for the purposes of offsetting losses associated with development of the project.

4. *Environmentally Sensitive Areas*. These are areas where scientific, ecological, cultural or aesthetic features were identified. Designation of these lands is not limited to just lands that are otherwise protected by laws such as the ESA, the National Historic Preservation Act or applicable state statues. These areas must be considered by management to ensure they are not adversely impacted. Typically, limited or no development of public use is allowed on these lands. No agricultural or grazing uses are permitted on these lands unless necessary for a specific resource management benefit, such as prairie restoration. These areas are typically distinct parcels located within another, and perhaps larger, land classification, area.

5. *Multiple Resource Management Lands*. This classification allows for the designation of a predominant use, understanding that other compatible uses may also occur on these lands (e.g., a trail through an area designated as wildlife management). Land classification maps must reflect the predominant sub-classification, rather than just Multiple Resource Management.

(a) *Low Density Recreation*. These lands are designated for dispersed and/or low impact recreation use. Development of facilities on these lands is limited. Emphasis is on providing opportunities for non-motorized activities such as hiking, biking, fishing, sight-seeing, or nature study. Some limited facilities are permitted, including trails, parking areas and vehicle controls, as well as primitive camping and picnic facilities.

(b) *Wildlife Management*. These lands are designated specifically for wildlife management, although all project lands are managed for fish and wildlife enhancement in conjunction with other land uses. Wildlife management lands are actively managed or enhanced to create valuable habitat suitable for game and/or non-game species. These activities are conducted as identified by the managing agency's forest and wildlife management plans.

Wildlife lands are available for dispersed uses such as sightseeing, wildlife viewing, and nature study, hiking, and biking. Consumptive uses of wildlife, such as fishing are encouraged when compatible with the wildlife objectives for a given area and with Federal and state fish and wildlife management regulations.

(c) *Vegetative Management:* Management activities in these areas focus on the protection and enhancement of forest resources and vegetative cover. The USACE conducts active vegetation management activities, protects water quality, improves aesthetics, and enhances wildlife habitat.

(d) *Future or Inactive Recreation Areas:* This sub-classification addresses areas and lands for which recreation areas are either currently in the planning stages, are held in an interim status for future recreation possibilities, or are closed. These lands are managed for multiple purposes unless they are developed as recreation areas.

6. *Water Surface*. If the project administers a surface water zoning program, then it should be included in the MP.

(a) *Restricted*. Water areas restricted for project operations, safety, and security purposes.

(b) *Designated No-Wake*. To protect environmentally sensitive shoreline areas, recreational water access areas from disturbance, and for public safety.

(c) *Fish and Wildlife Sanctuary*. Annual or seasonal restrictions on areas to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning.

(d) *Open Recreation.* Those waters available for year round or seasonal water-based recreational use.

The proposed changes in the land use classification nomenclature for the MUs are summarized in Table EA-1 below.

Table EA-1. Future Recommendations of Management Actions by Management Unit

Management Unit	Land Use Classification Name Change	Recommendations
Management unit I – Lake Sonoma (Lake Surface)	From Water Surface Low, Medium and High intensity use to Water Surface, Project Operations and High Density Recreation.	-Partner with stakeholder groups to develop a quagga and zebra mussel management plan at the lake that would minimize the potential for the introduction of these species and to respond rapidly if they are detected on site. -Remove submerged trees in the Dry Creek Arm near Logger's Camp and open the reach to water skiing.
Management Unit 2 – Dam Operations, Dam Control Tower and Spillway, Project Headquarters, Visitor Center and Fish Hatchery	From Low, Moderate and High Intensity use to Project Operations, High Density Recreation.	-Repair control tower access road or re-route the alignment. -Renovate the footbridge from the visitor center to the hatchery to include viewing stands for wildlife viewing. -Develop a new interpretive trail, accessible from the recreation area, running along Dry Creek Road. -Development of the recreation area to accommodate the larger crowds that occur during events. This includes expanding the existing parking lot and possibly the addition of a band-stand and gazebo. Improve the outdoor gym with the addition of a water fountain, shelter and pavilion. -Stairs should be constructed leading to a viewing platform at the southeast end of the Rockpile Road Bridge to increase the safety and viewing experience for those watching the osprey nests nearby. - Trails-Public comment included development of a comprehensive multiple use trail network that crosses multiple management units.
Management Unit 3 – Warm Springs South Shore	From Low, Moderate and High intensity use to High Density Recreation, Multiple Resource Management Lands: Low Density Recreation, Proposed Recreation	-There is the potential to develop a leased destination resort for overnight accommodations overlooking the lake and Dry Creek Valley. I t would be compatible with the marina and equestrian facilities nearby in this high density recreation area. -An informal lake access point at the east end of the Rockpile Road Bridge

		could be formalized with the addition of a paved parking lot and boat ramp. - Public comment included interest in developing a zip line from the equestrian facility to the public boat ramp. The design and location would need to consider existing infrastructure. The viewing structures and associated infrastructure at the site should be repaired and maintained, consistent with the Resource Objectives and Land Use Classification. -Public comments included a proposal to expand current commercial operations to include the Old Quicksilver campground to offer an overnight equestrian camping experience. At the far west edge of this MU, an informal access point is a site that has development opportunities to add a new bridge, paved parking lot, and a campsite for horse camping - Trails-Public comment included development of a comprehensive multiple use trail network that crosses multiple management units.
Management Unit 4 – Rockpile Recreation Area	From Low and Moderate Intensity use to Multiple Resource Management Lands: Low Density Recreation, Proposed Recreation	- Upgrade the Madrone Service road to an all-weather road to provide reliable access to the Liberty Glen campground and firefighting equipment. -Convert Liberty Glen campsites to full hookup including sewer, water and electric. -Repave the Liberty Glen Camping loops. -Add additional sites at Liberty Glen with camping cabins. Improve the host campsites at Liberty Glen. -Add a switchback trail providing for easier lake access by foot from the Madrone Service Road. -Take the Bummer Peak Camp out of service due to its inaccessibility and fire concerns. -The parking lot at the archery and air gun range should be paved to accommodate the high number visitors to the ranges and trailheads.

		-Pave the large dirt parking lot above the boat ramp and provide a trail, removing the existing stairs, to provide a safe connection to the boat ramp. -Replace the worn out dock at the boat launch. The informal swimming area to the south of the boat launch could be formalized with signage and a safe access trail. - Trails-Public comment included development of a comprehensive multiple use trail network that crosses multiple management units.
Management Unit 5 – Dry Creek Recreation Area	From Low, Moderate and High Intensity use, Buffer Zone to High Density Recreation, Low Density Recreation, Multiple Resource Management Lands: Proposed Recreation	-The lakeside fishing access trail near the boat launch should be repaired and improved. -An additional boat dock could be placed near the launch. -The parking areas at the boat launch should be paved and striped. -The unpaved parking areas at Grey Pine Flat and Little Flat should be paved and striped to accommodate overflow from the boat launch. -Camping cabins such as the one at Liberty Glen could be installed near Broken Bridge. -There is still the potential to include additional boat launch facilities and an amphitheater in this MU. - Trails-Public comment included development of a comprehensive multiple use trail network that crosses multiple management units.
Management Unit 6 – Yorty Creek Recreation Area	From Low, Moderate and High intensity use, Buffer Zone to High Density Recreation, Low Density Recreation, Multiple Resource Management Lands: Proposed Recreation	-A pedestrian bridge from the parking area across Yorty Creek is needed to provide access to the north side. -Develop a shoreline trail linking the parking area to the three boat-in camps (Rustler's, Skunk, and Thumb) to allow walk in campers to stay at these underutilized campgrounds. -USACE should pursue a formal agreement with a concessionaire to provide non-motorized recreation in the form of kayaks, canoes, stand-up paddleboards etc. -A second boat launch area should be

		developed to ease peak time overcrowding. -Develop a roll on/roll off launching area for human powered craft only. -Designate dog-friendly areas with signage along Yorty Creek. -Designate some portions of the Yorty Creek area for personal powered craft only and provide signage at all launch areas describing these restricted areas. -The service road from the parking area to Thumb and Skunk camps needs to be improved. -Develop a primitive hike-in environmental campground northeast of the parking lot. -Add several primitive hike-in campsites southwest of the parking lot close to the shoreline as indicated in the original Master Plan to be accessed by a new shoreline trail. -Look into the feasibility of developing the North Lake Equestrian -Area and trail system throughout the area and a campground with full amenities at Cherry Creek as envisioned in the original Master Plan. - Trails-Public comment included development of a comprehensive multiple use trail network that crosses multiple management units.
Management Unit 7 – Wildlife Management Area I (East shore of Dry Creek)	From Wildlife Management Area, Critical Habitat Zones and Sensitive Wildlife Areas to Multiple Resource Management: Wildlife Management, Proposed Recreation, Low Density Recreation	-Repair the boat dock and relocate it away from the spillway. -Release land allocation at Pritchett Peaks from federal ownership. -Remove the part of the borrow area historically used by the Sheriff's Department as a shooting range from this MU and put it MU2 Operations. The Sherriff's Department would conduct any coordination to permit and re-open this area as a shooting range for law enforcement officers. - Trails-Public comment included development of a comprehensive multiple use trail network that crosses multiple management units.

Management Unit 8 – Wildlife Management Area II (North end of Dry Creek)	From Wildlife Management Area, Critical Habitat Zones and Sensitive Wildlife Areas to Multiple Resource Management: Wildlife Management, Proposed Recreation, Low Density Recreation	- Trails-Public comment included development of a comprehensive multiple use trail network that crosses multiple management units.

2.2.1 Removal of Critical Habitat Areas.
Two areas of the project were designated as critical habitat zones for the peregrine falcon in the 1979 Master Plan. These zones were contiguous with adjacent non-federal lands that had the same designation. These areas were designated as such due to the rocky cliffs they contain which are ideal nesting habitat for peregrine falcons.
The peregrine falcon and its associated critical habitat were removed from the endangered species list on August 20, 1999 due to the success of recovery efforts. Accordingly, the lands labeled as Critical Habitat Zones in the 1979 Master Plan have been removed in the proposed update to the master plan (Proposed Action). No changes have been made to the way that the area will be managed and the peregrine falcon continues to nest in these cliffs and thrive at Lake Sonoma.

2.2.2 Addition of Lands.
The Save the Redwoods League donated a 40-acre parcel on the southern edge of the recreation area in 2009 for the purposes of preservation and restoration of natural habitat on the property, and for the protection of its conservation values. USACE is obligated to manage the parcel consistent with the purposes of donation.
The deed places the following restrictions on the use of the property

- USACE will not permanently alter the Property by the construction of roads, structures or other physical improvements unless essential to meet public health and safety, or public use needs that are consistent with the purposes of Donation.
- USACE will ensure the protection of the Property's hydrologic and aquatic systems and will not alter the Property's water courses or the free flow of water, unless consistent with the Purposes of Donation, except as necessary to protect public health and safety.
- USACE will not permit use of motorized vehicles outside of established public roadways or waterways, except to the extent necessary to achieve the "Purpose of Donation," or if essential to public health and safety.
- USACE will not issue any future grazing permits on the Property unless such grazing is necessary to achieve the Purposes of Donation, or for public health and safety, such as for fire control purposes.
- USACE will not permit any timber harvest on the Property except under emergency conditions such as fire, insect, and disease and in cases where needed for restoration purposes.

Under the Proposed Action (Preferred Alternative) the USACE would classify this added land as Environmentally Sensitive Area to ensure that the property is managed in accordance with the deed restrictions.

2.2.3 Changes to Land Use Classification.
The Environmental Impact Statement for the creation of the dam and reservoir committed USACE to setting aside 3200 acres of land to mitigate for the loss of the habitat that the project would cause through inundation and facilities construction. The Master Plan revision (Proposed Action) would reclassify 3200 acres of the Pritchett Peaks Wildlife Management Area (MU#7) from Wildlife Management to Mitigation

to better reflect this commitment. No change would occur to the management of these lands, which are essentially inaccessible to the public. The California Department of Fish and Wildlife (CDFW) would continue to manage the area under an existing land management agreement between USACE and CDFW for the 8,000-acre Lake Sonoma Wildlife Area.

Under the Proposed Action, the border between MU#7 and the Warm Springs Dam project Operations Area (MU#2) would also be realigned slightly. Twelve acres of land including the borrow pit at the south end of the borrow area, its access road, and a twelve foot band on each side of the road would be changed from a Wildlife Management to Operations classification. The borrow pit has been scraped to bare earth and is surrounded by berms on three sides. Extensive excavation has occurred throughout the borrow area which removed the surface soils and the resulting vegetation is sparse and of very poor quality. The actual borrow pit is devoid of vegetation.

The Sonoma County Sheriff's Department has used several sites in the borrow area as shooting ranges for training purposes in the past with the permission of USACE. Use of these ranges is no longer allowed. The Sherriff's Department has expressed an interest in maintaining a 100 yard range within the bermed confines of the borrow pit. Any planning, environmental coordination, and permitting efforts would be led by the Sheriff's Department if they were to pursue such an action. If established, the range would be for law enforcement officers only.

3.0 AFFECTED ENVIRONMENT

Lake Sonoma includes the lake, an approximately 8,000-acre Lake Sonoma Wildlife Area, which is managed by the California Department Fish and Wildlife and operated in cooperation with the USACE. Lake Sonoma provides a variety of physical and biological resources enjoyed by recreationists using the lake. This section discusses the existing physical and biological resources present at the lake.

3.1 Physical Environment

Physical resources in the Lake Sonoma region provide the climate, geology, soils, water flows, and water quality which support various biological and social resources at the lake. The physical resources are discussed below.

3.1.1 Climate. Lake Sonoma lies within a region of Mediterranean climate, characterized by warm, dry summers and cool, wet winters. Average monthly temperatures range from 47 degrees Fahrenheit in December to 71 degrees Fahrenheit (°F) in July (Figure EA-1). Mean annual precipitation ranges from 41 inches (Healdsburg) to 45 inches (Lake Sonoma), to greater than 60 inches in the coastal mountains that form the western boundary of the watershed. More than 90 percent of the precipitation falls between the months of October and April, with approximately 70 percent occurring between November and February (Western Regional Climate Center 2019). Snowfall is uncommon except in the highest elevations of the Coast Range.

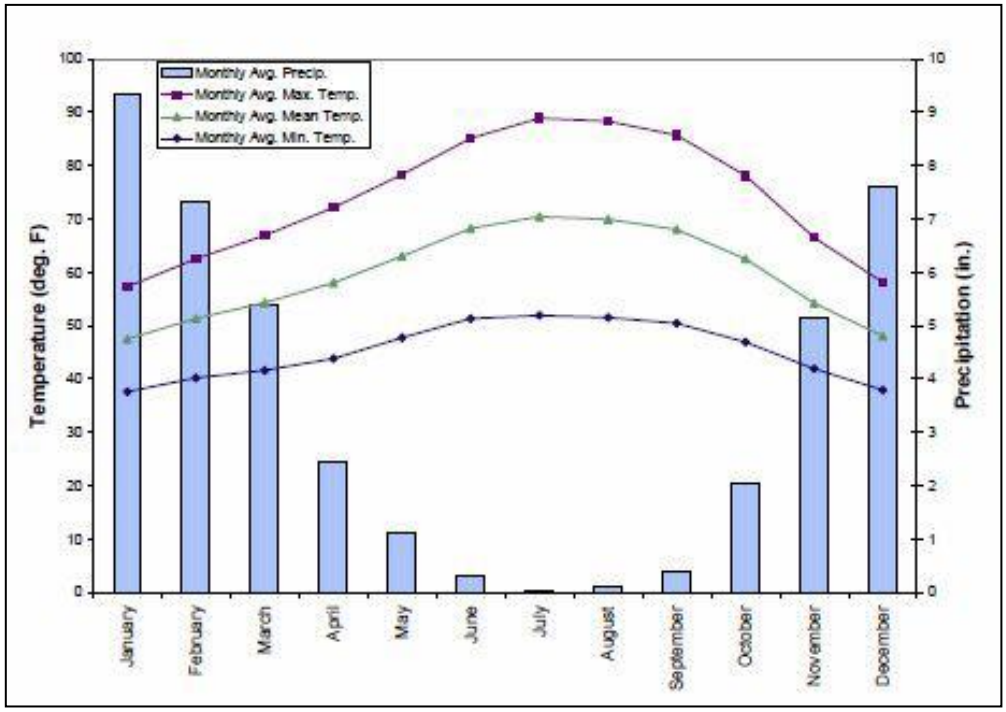


Figure EA-1. Mean monthly temperature and precipitation at Healdsburg (Station 043875) for the period 1893-2009.

3.1.2 Geology and Soils. The Lake Sonoma area is a structurally controlled valley bordered by the Great Valley Complex (Healdsburg terrane) to the east and Coast Range ophiolite and metamorphic rock units of the Franciscan Complex to the west (Inter-Fluve 2010). The sedimentary (Great Valley Complex) and volcanic and intrusive rock (Coast Range ophiolite) formations lie beneath the Quaternary alluvium of the lower Dry Creek floodplain. These alluvial deposits include the most recent stream channel and floodplain deposits and up to three terrace deposits dating back approximately 1,000 years (Harvey and Schumm 1985). The presence of intrusive and volcanic rock of the Coast Range ophiolite within the Dry Creek Valley is thought to be caused from depositional contact with the sedimentary rock of the Great Valley Complex, and is limited to the western flank of the valley. Therefore, it can be assumed that underneath the alluvial deposits the bedrock of the Dry Creek Valley is composed of sedimentary rock associated with the Great Valley Complex (Harvey and Schumm 1985).

The soils found in the Lake Sonoma area are alluvial terraces and channels are sand, gravel and cobbles of varying types originating from tributaries and the adjacent deposits from Coast Range ophiolite, Great Valley Complex, and Franciscan Complex assemblages (Inter-Fluve 2010). The Yolo-Cortina-Pleasanton Association is the soil association found within Dry Creek Valley (Miller 1972). Surficial soils exhibit various characteristics that depend on location, slope, parent rock, climate, and drainage.

3.1.3 Seismicity and Seismic Hazards. The seismic environment in the Lake Sonoma area is characterized by the San Andreas Fault system, which lies at the boundary between the Pacific Plate and the North American Plate. The major active faults in the vicinity of the study area include the aforementioned San Andreas Fault, as well as the Rodgers Creek, Healdsburg, and Maacama faults. The 1997 Uniform Building Code locates the study area and the greater San Francisco Bay Area within Seismic Risk Zone 4; areas within Zone 4 are expected to experience maximum magnitudes and damage in the event of an earthquake (International Conference of Building Officials, 1997).
Several strands of the Healdsburg fault are located within and immediately adjacent to Dry Creek (Bryant 1982). The Healdsburg fault system is a northwest trending, 1-2 kilometer wide extension of the Rodgers Creek fault to the south and is connected to the Maacama fault to the east by a lateral step-over

(McLaughlin and Sarna-Wojcicki 2003). Although the Healdsburg fault is not listed as active under the California Alquist-Priolo (AP) Earthquake Fault Zoning Act (Bryant and Hart 2007), both the Rodgers Creek and Maacama systems are zoned as active. Based on the evidence of structural relationship of the Healdsburg fault and the Rodgers Creek and Maacama fault systems, it should be considered potentially active (Inter-Fluve 2010).
Based on stereoscopic analysis of the aerial photos and digital imagery of the watershed, Inter-Fluve (2010) found that the Lake Sonoma area may be structurally controlled along traces of the Healdsburg fault or other features inferred to be associated with the fault. Several sections of lower Dry Creek basin have unusually low sinuosity for a stream in a dominantly alluvial drainage, and Inter-Fluve interpreted these reaches to coincide with or parallel mapped strands of the Healdsburg fault.

3.1.4 Hydrology. Lake Sonoma is formed by the Warm Springs Dam, which was constructed across Dry Creek (a major tributary of the Russian River). The lake is part of the Dry Creek basin watershed, which drains approximately 217 square miles from the interior coast ranges of northern Sonoma and southern Mendocino counties before entering the Russian River near the city of Healdsburg, 30 miles upstream of the Pacific Ocean (Figure EA-2); Harvey and Schumm 1985). This area includes a 130 square mile area regulated by Warm Springs Dam and 87 square miles of unregulated catchments downstream of the dam. The northwest-trending Dry Creek basin is 32 miles long and 7 miles across at its widest point, with elevations ranging from 3,000 feet at the drainage divide to 70 feet near the confluence with the Russian River. Dry Creek is the second largest tributary by area within the Russian River basin, but contributes the largest amount of annual runoff (USACE 1984).
Lake Sonoma and the Warm Springs Dam bisects and controls the upper 130 square miles of the basin (USACE 1984). The dam is located 13.9 miles upstream from the confluence of Dry Creek with the Russian River. Terrain upstream of the dam is steep and mountainous, with hillslopes exceeding 30 percent and channel slope ranging from 0.2 to 4 percent (Inter-Fluve 2010). Downstream of the dam, Dry Creek flows through a flat, relatively narrow alluvial valley with a channel slope ranging from 0.2 percent downstream near the Russian River to greater than 2 percent upstream near the dam (Inter-Fluve 2010). Major tributaries to Dry Creek are Cherry and Warm Spring creeks upstream of the dam and Pena and Mill creeks below the dam. Construction of Warm Springs Dam altered basin hydrology by reducing peak flows during wet periods and increasing base flow during dry periods. Dam emplacement also interrupted sediment transport, leading to incision and bed coarsening in downstream reaches (USACE 1987).

The watershed has a seasonal hydrology pattern consistent with the Mediterranean climate and regulation by Warm Springs Dam. Dam releases are the greatest during late-fall and early winter and the lowest from summer to early-fall.

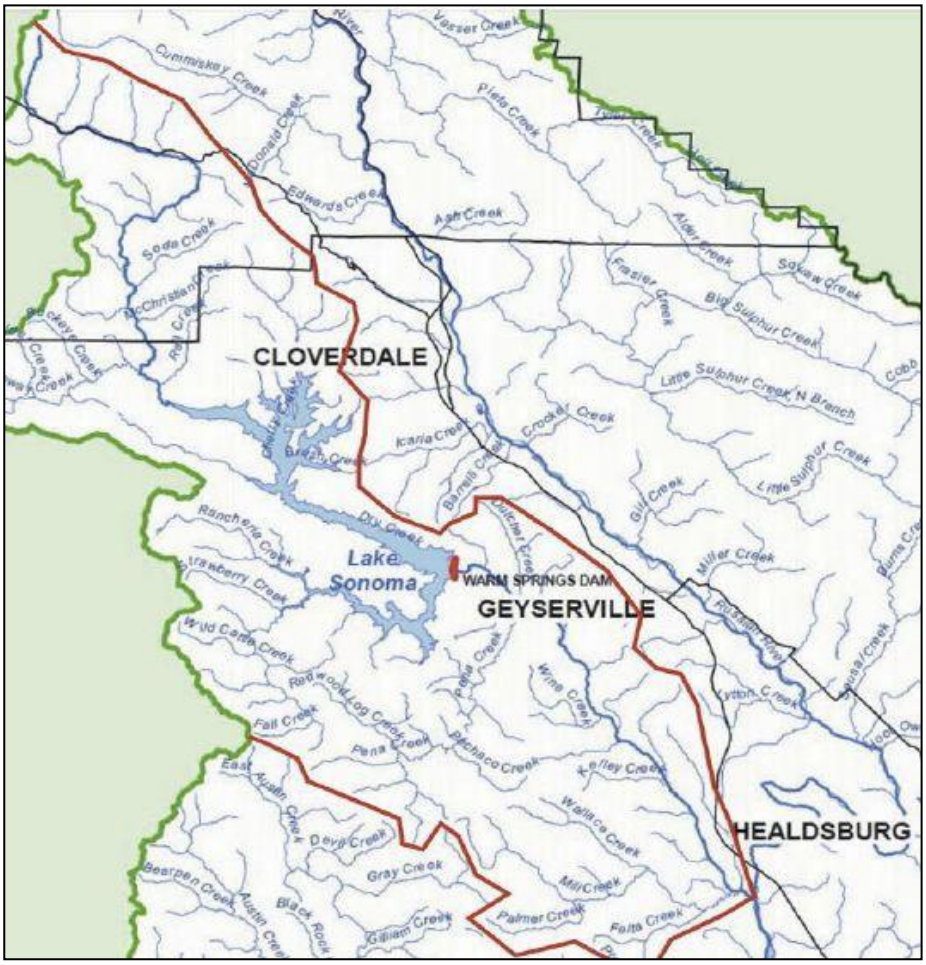


Figure EA-2. Dry Creek Watershed Boundary (in red)

Regional hydrology dominated by winter floods still occur in this November to March timeframe; however, the magnitude of such floods are severely reduced compared to the unregulated period preceding dam construction. Prior to the construction of Warm Springs Dam, Dry Creek near the Geyserville stream gage showed a median annual peak flow of 16,600 cubic feet per second, with peak flows regularly exceeding 7,500 cubic feet per second (Figure EA-3). After dam completion, median annual peak flow fell to 3,900 cubic feet per second and dam operations did not exceed 7,500 cubic feet per second from water year 1984 to water year 2013 (Figure EA-4).

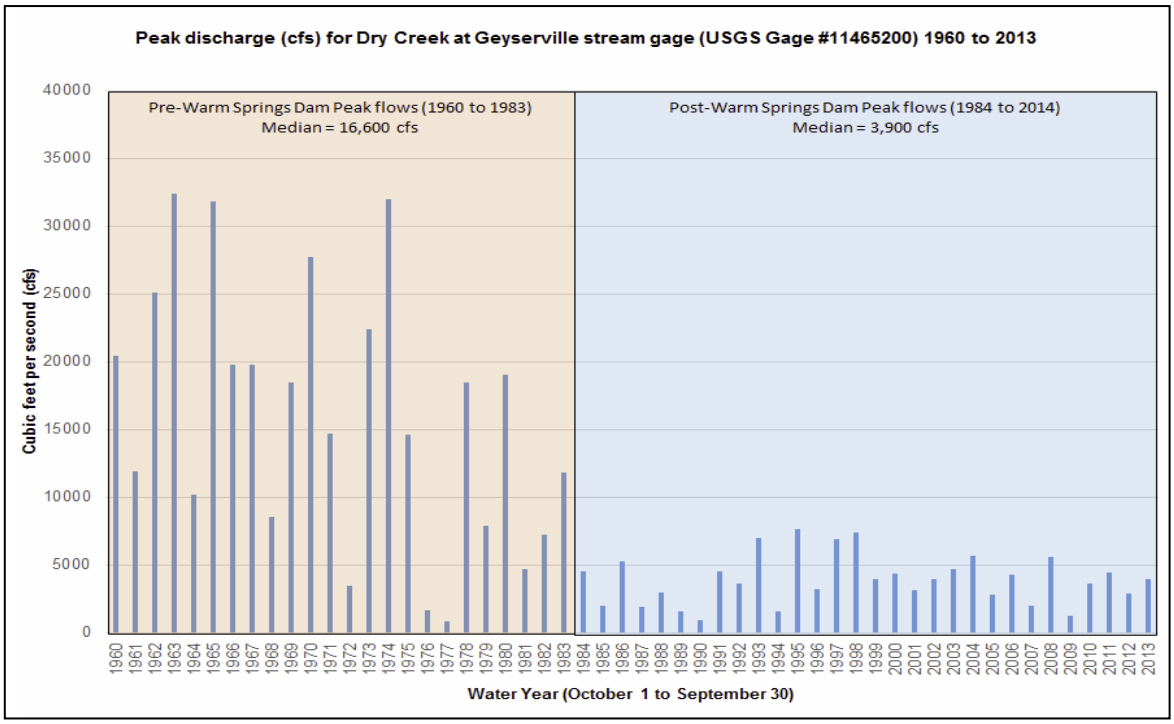


Figure EA-3. Pre- and Post-Warm Springs Dam Peak discharge (cfs) for Dry Creek at Geyserville stream gage (United States Geological SurveyGage #11465200) 1960 to 2013.

In addition to reducing the magnitude of peak flows by a factor of about four, regulation by Warm Springs Dam has substantially elevated base flow during the summer and fall seasons Sonoma County Water Agency (SCWA) holds water right permits issued by the State Water Resources Control Board (SWRCB) to divert Dry Creek flows and to re-divert water stored and released from within Lake Sonoma. The Lake Sonoma conservation pool holds 245,000 acre feet which constitutes the principal municipal, domestic, and industrial water supply for most of the lower Russian River and parts of Sonoma and Marin counties (NMFS 2008). Whenever the lake elevation is within the water conservation pool, the SCWA directs USACE to release from Lake Sonoma into Dry Creek and downstream into the Russian River. In 1986, the State Water Resources Control Board (SWRCB) released Decision 1610 which updated all minimum instream flow requirements for normal, dry, and critically dry water years for the Russian River basin. In normal water years, California State mandated minimum instream flow requirement in Dry Creek between Warm Springs Dam and the Russian River varies between 105 cubic feet per second in winter months and 80 cubic feet per second in the summer months. In dry and critically dry year conditions, the required summer instream flow on Dry Creek is 25 cubic feet per second. Typical flow rates are generally higher than these limits because of water supply requirements downstream of the Dry Creek and the mainstem Russian River confluence or because of flood control operations. The SCWA sets release levels to meet water supply needs in accordance with its water rights permits, SWRCB Decision 1610, and the biological opinion which sets maximum flow levels to avoid take of endangered species.

The release of water from Lake Sonoma is not only regulated for flow, but also for temperature. Water released from the lake through a combination of inlet structures positioned at various depths provides for water temperatures that are suitable for the hatchery operations. These temperatures persist in lower Dry Creek. At the USGS Dry Creek stream gage below Lambert Bridge (USGS 11465240) in 2012, 2013, and 2014, maximum temperatures were observed to range from approximately 54°F (12°C) to 62°F (17°C).

3.2 Biological Resources

Biological resources include the vegetation, fish, and wildlife present in and around Lake Sonoma. These resources are discussed below.

3.2.1 Vegetation Communities. Vegetation communities and wildlife habitats at Lake Sonoma include a mosaic of herbaceous-, shrub-, and tree-dominated types as well as aquatic and developed types. Broad vegetative community categories within the watershed include scrubs and chaparrals, oak savannas and woodlands, coniferous forests and woodlands, grasslands, vineyards, and riparian communities. Historically, these communities provided habitat for a rich diversity of terrestrial and wetland plant and animal species. Although many of the species that historically occupied the watershed are still present, some are now non-existent or extremely rare, or have had their numbers substantially reduced. Such loss or reduction in species diversity has been attributed to habitat loss and a variety of other complex factors (Sonoma County Water Agency and Circuit Rider Productions, Inc. 1998).

Classification and Assessment with Landsat of Visible Ecological Groupings (CALVEG) identifies three dominant vegetation communities in the Dry Creek Valley and several vegetation communities in the surrounding hills. The dominant vegetation communities in the surrounding hillsides in Lake Sonoma as classified by CALVEG and the CDFW's California Wildlife-Habitat Relationships System, include: vineyard, montane hardwood, redwood, montane hardwood-conifer, Douglas-fir, and mixed chaparral. Developed and landscaped riparian forest and woodland are the primary vegetation communities in the study area. Riparian vegetation occupies lands adjacent to streams, creeks, and rivers where water may be permanent or ephemeral. The composition of riparian vegetation is greatly influenced by the physical processes of the adjacent aquatic habitat; species that are found in the active channel are usually not the same as those found on the floodplain. The vegetated sections of stream banks within the study area are dominated by an overstory of red, arroyo and sandbar willows (*Salix laevigata, S. lasiolepis,* and *S. exigua*), white alders (*Alnus rhombifolia*), cottonwood (*Populus fremontii*) and occasional box-elders (*Acer negundo*), buckeyes (*Aesculus californica*), and coast live oaks (*Quercus agrifolia*).

Typical understory species around Lake Sonoma include a mixture of Himalayan blackberry (*Rubus armeniacus*), California blackberry (*Rubus ursinus* var. *ursinus*), escaped grape (*Vitis vinifera*), mugwort (*Artemisia douglasiana*), and periwinkle (*Vinca major*). A few open areas without an overstory component exist within the study areas. These open areas are typically dominated by annual grasses (*Avena fatua, Bromus diandrus, Hordeum murinum, Lolium multiflorum*) and other herbaceous plants (*Verbascum thapsus, Melilotus albus, Hirschfeldia incana*).

The quality and range extent of plant communities in the watershed have been affected by: habitat conversion and disruption of natural hydrological and geomorphological processes, timber harvest, altered flood frequency, fire suppression, lack of regeneration and disease, overgrazing, invasion by exotic plant species, and altered hydrology. The combination of flood regulation and water supply operations, in particular, has resulted in extensive vegetative colonization of formerly active bar surfaces, stabilizing succession trends and leading to homogenous mature stands.

Special Status Plant Species. A list of status species was requested from the USFWS and is included in Appendix EA-1. The list identified Pennell's birds-beak (*Cordylanthus tenius ssp. Capilliaris*) as having the potential to be in the area. This plant is known from two populations at Camp Meeker and the Harrison Grade Ecological Reserve over 20 miles to the south of Lake Sonoma. The species is a root parasite that occupies serpentine flats among chaparral between 150 and 800 feet in elevation (USFWS 98). This plant has not been identified in the project boundaries.

Invasive Plant Species. Lake Sonoma contains a number of invasive plant species that interfere with both economic activities and ecologic functions. Some of the species that most threaten native ecosystem function and structure include: giant reed (*Arundo donax*), yellow starthistle (*Centaurea solstitialis*), jubata grass and pampas grass (*Cortaderia sp.*), Scotch broom, (Cytisus scoparius), cape-ivy (*Delairea odorata*), French broom (*Genista monspessulana*), Tamarisk species, Vinca species, water primrose (*Ludwigia sp.*), Spanish broom (*Spartium junceum*), pepperweed (*Lepidium latifolium*), and gorse (*Ulex europaeus*).

Cultural Significant Plant Species.
The Dry Creek and Cloverdale Pomo made extensive use of the flora available to them for food, medicine, technical purposes and for ceremonial reasons. Acorns, Brodiaea bulbs, and a variety of berries and herbaceous plants were relied on throughout the year as a food source. Basket sedge (Carex barbarae), basket willow (Salix hindsiana), and Angelica (Angelica tomentosa and Lomatium califonicum) are plant resources of particular importance in the area.

The rhizomes of the sedge and the shoots of the willow are essential in the weaving of Pomo basketry. There were several important collection sites along Dry Creek for these plants that were inundated by the reservoir. These sites produced very high quality shoots and rhizomes due to their sandy nature. USACE coordinated with the local tribes in transplanting from areas to be inundated to Dry creek below the dam. Angelica is used in a variety of ways by the Pomo and other northern California tribes. The leaf shoots are harvested in spring and eaten raw, boiled as greens or as a used as a seasoning. Angelica roots are collected in the fall for medicinal and ceremonial purposes. The harvest of Angelica is highly ritualized and is only performed by native doctors. It is considered dangerous if collected or used by others. True Angelica is preferred due to its potency, but Lomatium is used more frequently since it is more common and has less restrictions on harvesting. Lomatium's most valued use is as a protective talisman and it is carried for good luck in gambling and hunting. Efforts were made to relocate specimens from prime harvesting areas to be flooded to an area below the dam.

More information on this subject can be found in Ethnobotanical Resources of the Warm Springs Dam – Lake Sonoma Project Area prepared in 1979.

3.2.2 Fisheries
Construction of Warm Springs Dam has decreased natural flow variability and simplified basic geomorphic processes below the dam. Along with land use impacts in the surrounding area, the dam has contributed to the reduction of aquatic habitat complexity along the lower Dry Creek mainstem important for native aquatic and riparian species. This has led to a reduction of aquatic areas with low velocity summer and winter flows for native species to rest and a reduction in cover for fish and wildlife. It has also resulted in a fish passage barrier from Dry Creek upstream of the dam.

Native fish species that currently inhabit, or that have historically inhabited Dry Creek, Cherry Creek, or Smith Creek include steelhead (*Oncorhynchus mykiss*), fall-run chinook salmon (*Oncorhynchus tshawytscha*), Central Coastal coho salmon (*Oncorhynchus kisutch*), coastal rainbow trout (*oncorhynchus mykiss irideus*), hardhead (*Mylopharodon conocephalus*), Pacific lamprey (*Entosphenus tridentata*), Sacramento pikeminnow (*Ptychocheilus grandis*), Sacramento sucker (*Catostomas occidentalis occidentalis*), and the Russian River tule perch (*Hysterocarpus traskii pomo*).
Numerous non-native species also inhabit the lake and tributaries, including: bluegill (*Lepomis macrochirus*), brown bullhead (*Ameiurus nebulosis*), common carp (*Cyprinus carpio*), golden shiner (*Notemigonus crysoleucas*), green sunfish (*Lepomis cyanellus*), largemouth bass (*Micropterus salmoides*), redear sunfish (*Lepomis microlophus*), smallmouth bass (*Micropterus dolomieu*), and western mosquitofish (*Gambusia affinis*) (UC Davis 2019).
Construction of the Warm Springs Dam created a barrier to upstream migration for anadromous salmonids resulting in the loss of spawning habitat above the dam. The Don Clausen Fish Hatchery at Lake Sonoma

traps 3,000 to 5,000 Steelhead adults annually. These efforts provide for the release of 300,000 steelhead smolt annually below the dam into Dry Creek.

There is also a coho salmon captive broodstock program that rears fish from egg through adulthood in order to maintain the species despite low numbers returning to spawn each year to the hatchery. Since 2008, the coho program has integrated wild coho stock from Lagunitas/Olema Creek to improve genetic diversity and species sustainability. Disease testing is conducted throughout the life cycle at the hatchery to help ensure healthy broodstock and progeny. The program releases approximately 200,000 Coho throughout the Russian River watershed each year with about 30,000 released directly into the main stem of Dry Creek at multiple different life-stages. To date, more than two million coho progeny have been released into the watershed from the broodstock program. These releases of coho and steelhead from the hatchery and captive broodstock programs are to mitigate for the loss of upstream spawning habitat due to the construction of Warm Springs Dam.

Additionally, habitat restoration projects have been implemented along Dry Creek below the dam as well as others in the planning stages.

Fish habitat in the area inundated by the dam has been significantly altered. Summertime temperatures raise the surface water temperature and oxygen is drawn from the cooler deep water, resulting in lowered dissolved oxygen throughout the lake. Water temperatures and oxygen levels no longer support cold water species such as rainbow trout. In addition, reservoir management normally causes 20 feet of annual variation in water levels. This prevents the establishment of emergent and submerged vegetation around the lake perimeter. The resulting lack of cover and food sources has created challenges for fisheries management at the lake. Various methods of providing cover along the shore have been employed in coordination with the California Department of Fish and Wildlife (CDFW), including the placement of brush structures, Christmas trees and concrete tiles.
Common species in Lake Sonoma now include largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), rainbow trout (*Oncorhynchus mykiss*), black crappie (*Pomoxis nigromaculatus*), channel catfish (*Ictalurus punctatus*), and a variety of non-game species.

Fish Stocking Practices. The fisheries program is managed and operated by both CDFW and USACE. CDFW personnel have overall responsibility for the steelhead salmon. USACE personnel have overall responsibility for the Coho salmon and for maintenance of the hatchery. CDFW can do minter maintenance to the hatchery per the contract with USACE. The CDFW, through their inland fisheries division, has the overall responsibility for the fishery program at Lake Sonoma, including the Don Clausen Fish Hatchery. The fish management program is supervised by professionally trained fisheries biologists. The goal of the state's fisheries program is to produce the best fishing possible for the maximum number of people. The fisheries management program is geared to test, evaluate and provide a greater variety of fishing opportunities by using techniques to primarily favor native species. The USACE's policy is to cooperate with and support studies and subsequent fisheries management recommendations of the reservoir fishery biologist where mutually beneficial and consistent with established goals.

3.2.3 Special Status Fish Species

As mentioned, three federally-listed fish species and their critical habitats have the potential to occur in the Lake Sonoma area, including: California Coastal Chinook salmon (federal threatened), Central California Coast coho salmon (federally endangered), and Central California Coast steelhead (federal endangered). In addition, critical habitat for all three species is present within the watershed. However, there is no critical habitat for any listed species at Lake Sonoma. Critical habitat includes habitat which contains physical or biological features essential to conservation and those features that may require special management considerations or protection as well as specific areas outside the geographical area occupied by the species if the agency (NMFS) determines that the area itself is essential for conservation. Although salmonids are not likely to be present upstream of the Warm Springs Dam barrier, the lake is managed to protect water quality requirements of salmonids. As such, listed salmonids are discussed herein.

Dry Creek historically supported populations of endangered CCC coho (*Oncorhynchus kisutch)* and threatened CCC steelhead (*Oncorhynchus mykiss)*. Coho and steelhead are present in Dry Creek year-round. Adult coho and steelhead enter Dry Creek to spawn in the late fall and winter. Eggs deposited in gravel nests called redds incubate through the winter and early spring, and fry emerge in springtime. Juvenile coho and steelhead rear in Dry Creek for a minimum of one year before migrating to the sea the following late winter or spring. Furthermore, Dry Creek currently supports a robust population of threatened CC Chinook salmon (*O. tshawytscha*).

Because of their complex life cycles and habitat requirements, salmonids are recognized as important proxy species for determining habitat suitability for a suite of native aquatic and riparian species. Furthermore, with respect to contemporary conditions in the Russian River basin, lower Dry Creek is seen as a potential resource that is a key component of the regional recovery plan for ESA-listed coho and steelhead. This is because of the relative abundance of cool streamflow during the late summer months, which is regarded as a limiting factor for recovery of these fish in a region where water is scarce during the summer months and typically has water temperatures adverse to salmonid survival. Therefore, the status of each species as well as an assessment of the habitat requirements for the various life stages of listed salmonids native to Dry Creek is provided below.

California Coastal Chinook Salmon Status. Chinook salmon in the Dry Creek watershed are part of the Evolutionarily Significant Unit (ESU) which includes coastal watersheds from Redwood Creek in the north (Humboldt County) down to and including the Russian River basin (Bjorkstedt, et al. 2005). Dry Creek is identified as critical habitat for recovery of this ESU (NMFS 2007). Chinook salmon in the CC ESU are currently all fall-run; however, historical information suggests that spring-run Chinook salmon existed in the northern part of their range (Bjorkstedt, et al. 2005).

Historical records indicate that since 1881 over eight million Chinook salmon were released in the Russian River watershed; most of these from out-of-basin stocks including the Sacramento, Mad, and Klamath Rivers. The DCFH began operation in 1980 to mitigate for the loss of spawning and rearing habitat for anadromous salmonids in upper Dry Creek following the construction of Warm Springs Dam. From 1980 to 1989 only 15 percent of the Chinook salmon juveniles planted in the Russian River watershed were from adults returning to the hatchery at Warm Springs Dam. Beginning in 1990 only locally returning fish were used for hatchery spawning. The enhancement goal for Chinook salmon returns at the hatchery was set at 1,750 adult/year. But from 1980-1999 the return rates were only 0-765 fish (USACE and SCWA 2004). The hatchery no longer produces Chinook salmon broodstock: since 2002 all fish returning to the hatchery are naturally produced in the Dry Creek watershed (Chase et al 2007).

California Central Coast Coho Salmon Status. Coho salmon within the Russian River basin are part of the central CCC ESU and are listed as endangered under the Federal ESA and by the California ESA (NMFS 2015). Critical habitat for CCC coho salmon encompasses all river reaches and estuarine areas accessible to coho salmon within the ESU's geographic area, including the Dry Creek watershed. Spence et al. (2008) categorized the CCC ESU and CCC coho salmon within the Russian River basin as having at least a high risk of extinction. Historical records indicate that coho salmon are native to the Russian River basin and spawned in Dry Creek, although it only provided marginal habitat compared to other tributaries closer to the coast (Hopkirk and Northen 1980).

The CCC Coho Salmon Recovery Plan (NMFS 2012) places CCC coho salmon within the North-Central California Recovery Domain and identifies the Russian River basin coho salmon as a historically functionally independent population within the Coastal diversity stratum. The CCC Coho Salmon Recovery Plan (NMFS 2012) lists the greatest threats to coho salmon in the Russian River basin as those related to urban development and water diversion and impoundment. The CCC Coho Salmon Recovery Plan (NMFS 2012) identified Dry Creek as a Core Area, which has the highest priority for near-term restoration projects and threat abatement actions.

The hatchery produced an average of 70,000 coho salmon annually between 1980 and 1998 (USACE and SCWA 2004). Broodstock sources for hatchery coho salmon included the Noyo, Klamath, Eel and Russian

rivers and some out-planting of coho salmon from Oregon and Washington into the Russian River occurred (USACE and SCWA 2004). Returns of adult coho salmon to the hatchery did not meet the enhancement goal of 1,000 fish per year leading to the termination of the program in 1998.

The Broodstock Program formed in 2001 with the goal of reestablishing self-sustaining runs of coho salmon in tributary streams of the Russian River (Obedzinski et al 2008). The program captures wild juvenile coho salmon, rears them to adulthood, and spawns them at hatchery, releasing their progeny into streams that historically supported coho salmon. In 2004, the Broodstock Program began releasing progeny into three streams in the Russian River basin: Mill (a tributary of lower Dry Creek), Ward, and Sheephouse creeks (Conrad et al 2006). Currently, the Broodstock Program releases coho salmon juveniles into mainstem Dry Creek, and several of its tributaries Grape, Peña, Mill, and Palmer creeks.

The SCWA began monitoring downstream migrating salmonids in Dry Creek in 2009. The number of coho salmon captured in downstream migrant traps and the number originating from Broodstock Program increased from 10 coho salmon (7 originating from the Broodstock Program) in 2009 to 214 (113 originated from the Broodstock Program) in 2011, and 780 juvenile coho salmon (760 originated from the Broodstock Program) in 2013 (Manning and Martini-Lamb 2011, 2012, and 2014). Preliminary migrant numbers for 2019 are 785 juvenile coho salmon.

California Central Coast Steelhead Status. Steelhead found in the Dry Creek basin belong to the CCC Distinct Population Segment (CCC DPS) (NMFS 2008), which includes coastal drainages from the Russian River to Aptos Creek and the drainages of San Francisco and San Pablo Bays, excluding the Sacramento-San Joaquin River watershed. The CCC DPS is federally listed as threatened under the ESA. Dry Creek is identified as critical habitat for the recovery of the CCC DPS (NMFS 2008). Steelhead are native to the Russian River basin, but stocking of out-of-basin fish has occurred since the 1890s and continued until 1982 (USACE and SCWA 2004).

The timing and magnitude of the steelhead run in Dry Creek are unclear. Steelhead spawn in Dry Creek tributaries from December through March and parr occur throughout the summer in mainstem Dry Creek (Obedzinski, Pecharich, Davis, Lewis, and Olin 2008). A downstream migrant trap operated by the SCWA at the mouth of Dry Creek from March through June captured between 2,082 and 5,422 juvenile steelhead per year over the past five years (Martini-Lamb and Manning 2014).

Although Dry Creek and its tributaries are generally accessible to salmonids, Warm Springs Dam is a complete barrier to migration, and some small seasonal dams on tributaries may block migration. Flow in Dry Creek, augmented by Warm Spring Dam releases, is usually sufficiently deep to allow fish to easily pass most shallow areas. Water temperatures are generally sufficiently cool and suitable for migrating adult salmonids. However, because of a loss of riparian vegetation resulting in increased solar inputs to the stream, water temperature in the lower portion of Dry Creek in the late summer is not optimal for adult Chinook salmon that sometimes immigrate as early as September. Nevertheless, the majority of adult Chinook salmon migrate in October and November, a time with generally adequate water temperatures. Coho salmon and steelhead migrate later in the fall and winter; water temperatures in Dry Creek are adequate for immigration of adult coho salmon and steelhead.

Limited rearing habitat hinders the conservation of coho salmon and steelhead. Although conditions will be favorable for spawning and migrations of both adults and smolt stages, growth and survival of juvenile salmonids is minimal in Dry Creek because suitable and optimal quality habitats are limited. Salmonid fry are weak swimmers that aggregate in shallow, low-velocity areas along stream margins (Chapman and Bjornn 1969; Everest and Chapman 1972; Bjornn and Reiser 1991). Current (and anticipated future) water releases from Warm Springs Dam in the summer and fall create high water velocities that severely limit the quantity and quality of salmonid rearing habitat in the Dry Creek mainstem. Beginning around 2010, SCWA and USACE initiated restoration work to develop low flow areas for the young Coho and Steelhead along Dry Creek below the dam to restore habitat and alleviate, to some degree, the water velocity. Sustained summer flows, manipulation of the creek's original channel and single channel characteristic of

lower Dry Creek resulted in consistent areas of velocity above a suitable range for refuge of juvenile coho during summer months.

Coho salmon redds, which are constructed from November through January, are more subject to scour because they are subjected to more frequent high winter flows. Such flows occurring in the latter part of the spawning and incubation season (January) have the greatest potential to scour the most redds and incubating alevins (USACE and SCWA 2004). In an evaluation of potential scouring of salmonid redds conducted by the SCWA, coho salmon redds had the highest frequency of scour potential in Dry Creek. Water temperatures are good in Dry Creek for incubation and Dry Creek provides adequate depth and flow for salmonid spawning. However, pool/riffle habitat, which serves as prime spawning habitat for steelhead and salmon, is limited. Still, lack of cover and complexity has not precluded relatively large numbers of Chinook salmon from spawning in Dry Creek. Stream bank erosion on Dry Creek has caused increased delivery of fine sediment, negatively affecting the quality of spawning habitat. The availability of spawning habitat in Dry Creek is less for coho than for steelhead or Chinook salmon because coho salmon use smaller gravels for spawning than steelhead or Chinook salmon (USACE and SCWA 2004). These smaller gravels may be transported out of the upper reach of Dry Creek more readily because of the high flows in this creek (USACE and SCWA 2004).

3.2.4 Wildlife

Lake Sonoma and the wildlife area provide habitat for several wildlife species. The availability of water, the diversity and abundance of plant life, and the complex vegetation structure provide a number of animal species with food, water, and cover as well as breeding and resting sites. Riparian corridors also and facilitate wildlife movement (i.e., dispersal, seasonal migration, and local movements within home ranges). Terrestrial mammals, such as mule deer (and the Coast Range subspecies, black-tailed deer), use the cover of the riparian forests and woodlands for protection from predators as they move between foraging areas. Similarly, amphibians and reptiles use the protective cover of this habitat as they disperse from their aquatic breeding sites. Migratory waterfowl use the waters and wetlands for their food supplies during their seasonal migration. Animals typically found in riparian habitats include birds, such as Bewick's wren (*Thryomanes bewickii*), spotted towhee (*pipilo maculatus*), and tree swallow (*Tachycineta bicolor*); mammals, such as brush rabbit (*Sylvilagus bachmani*), deer mice (*Peromyscus maniculatus*), dusky footed woodrat (*Neotoma fuscipes*), and raccoon (*Procyon lotor*); and amphibians such as foothill yellow-legged frog (*Rana boylii*) (Warner and Hendrix 1984).

Although many of the species that historically occupied the watershed are still present, some have had their numbers substantially reduced. Such loss or reduction in species diversity has been attributed to habitat loss and a variety of other complex factors. The riparian corridor of modern Dry Creek is narrower, the channel more incised, and the interaction with the floodplain greatly reduced compared to before European settlement. The overall effect in the Dry Creek Valley is degraded riparian habitat and greatly reduced acreage of both streamside and floodplain wetlands.

Large Mammals. Blacktailed deer and feral pigs are the most prevalent large mammal species. Deer and pigs are most abundant in the oak woodlands within the wildlife area where forbs, annual grasses, acorns and palatable shrubs provide ample food. Their populations are currently maintained by hunting which is permissible with a permit. Each year the California Department of Fish and Wildlife performs a population survey and then issues a limited number of hunting permits to maintain the populations at the desired sizes.

Many predatory mammals inhabit the interspersed chaparral/oak woodland/grassland plant communities. Occasionally observed are coyotes, bobcats,raccoons and weasels, preying upon abundant small mammal and bird populations. There have been rare sightings of mountain lions and black bears.

Small Mammals. Many species of rodents are common to all areas of the project. The brushier areas are inhabited by jackrabbits, ground squirrels, Sonoma chipmunks, and western harvest mice are frequently observed in the wooded camping areas. Many species of bats are common, preying on the insects attracted by the lake environment.

Avian Fauna. The project supports varied and abundant avian fauna throughout all seasons of the year. In the fall and winter months, the lake serves as habitat for migratory waterfowl, such as Clark's grebe, wood duck, and many other ducks and geese. Whereas great blue herons are year-long residents, along with feral domestic ducks and geese. Unlike the herons, the feral birds pose a management problem as they compete with native species for resources, and may transmit disease and parasites to them. Yet the domestic waterfowl are popular with the public, who continually add to their populations.

Turkeys inhabit the upland oak woodlands/grasslands, and feed on mast and other seeds from annual and perennial grasses and forbs. Turkeys (*Meleagris gallopavo*) were introduced to the area several years ago by the CDFW, and have since become an important game species in the wildlife area. The CDFW by-drawing-only hunts are held in the fall and spring. Fall turkey hunts are less successful as the turkeys cannot be called as easily.

In the open grasslands, towhees, Brewer's blackbird, cowbirds, robins, sparrows, goldfinches, meadowlarks, phoebes, king birds, juncos, thrush, kinglets, larks and warblers are all abundant during the various seasons.

Chaparral-covered hills provide habitat for quail, several hummingbird species, wrentits, California thrashers, and northern mocking birds.

Special Status Species. The species list obtained from the USFWS contained two species with a potential to be present in the project area, the marbled murrelet (Brachyramphus marmoratus) and the northern spotted owl (Strix occidentalis caurina). Both of these species require closed canopy old-growth conifer forest for habitat, primarily redwood for the murrelet.

Lake Sonoma is 30 kilometers from the coast. Marbled murrelets have only rarely been found nesting this far inland in California. There are some pockets of coniferous forest that could be suitable as habitat in the unlikely event that any birds venture this far inland to nest. These areas could also contain potential marginal habitat for the spotted owl, which requires closed-canopy forest with multiple layers. The land being added to Lake Sonoma donated by the Save the Redwoods League contains some developed second-growth redwood forest. This land will be classed as Environmentally Sensitive area to afford the greatest protection. Other areas of mature conifer forest are present at Lake Sonoma high on the north facing slopes. They are a significant distance from the areas used by visitors and are difficult to access since no roads lead to them. No critical habitat for either the marbled murrelet or the northern spotted owl is present within the boundaries of the project area.

Fifteen terrestrial animal species that are not federally listed as threatened or endangered, but are considered to be species of concern at the federal or state level, have moderate-to high-potentials to occur in the Lake Sonoma area. These species include:

- Bald Eagle (*Haliaeetus leucocephalus*), is state listed as endangered and fully protected. A pair is known to have maintained an active nest at Lake Sonoma from 2001 to the present. The species may occasionally forage in the Russian River area.
- Allen's hummingbird (*Selasphorus sasin*), currently included on the USFWS birds of conservation concern list and previously categorized as a federal species of concern, has been confirmed nesting in inland Sonoma County and the Dry Creek Valley.
- Olive-sided flycatcher (*Contopus cooperi*), a California species of special concern, has been observed in the vicinity of Lake Sonoma during summer bird surveys and is known to be a summer resident in Sonoma County.
- Osprey (*Pandion haliaetus*), a species on the California watch list, is known to nest at Lake Sonoma as well as throughout the Russian River. Possible breeding occurrences recorded in Dry Creek Valley

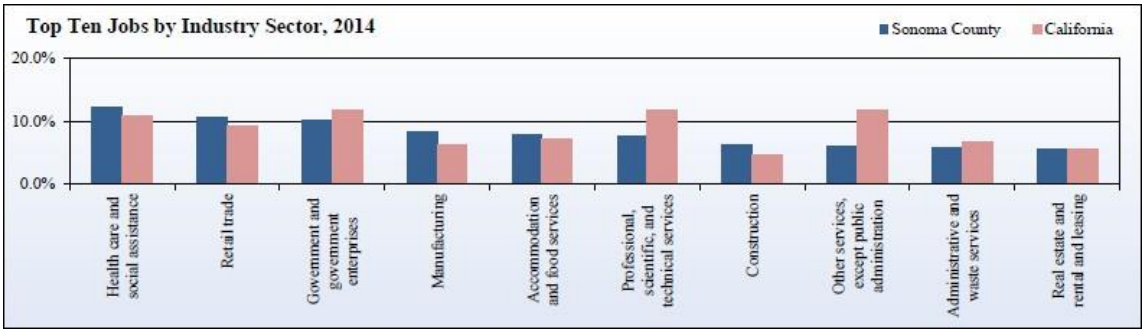
however Dry Creek itself is largely covered by tree canopy and presents hazards because of a swift current, reducing the likelihood that Osprey would forage in the immediate area.

- Red-breasted sapsucker (*Sphyrapicus ruber*) is on the CDFW special animals list and is common in the winter in Sonoma County. It has been observed in the vicinity of Lake Sonoma during bird surveys.
- Yellow warbler (*Dendroica petechia*), considered a species of special concern by CDFW and a bird of conservation concern by USFWS, is considered a fairly common summer resident of riparian woodland from April through October.
- Yellow-breasted chat (*Icteria virens*), considered a species of special concern by CDFW, is considered an uncommon summer resident, present from April to early September, in thick riparian woodland with heavy undergrowth.
- White-tailed kite (*Elanus leucurus*) is considered a fully protected species by the state of California and is a fairly common permanent resident and fall migrant in Sonoma County with numbers peaking in the winter.
- Cooper's Hawk (*Accipiter cooperii*), on the California watch list, is known to be a year-round resident of Sonoma County, and suitable breeding habitat has been identified in the vicinityof Lake Sonoma.
- Peregrine falcon (*Falco peregrinus anatum*) is included on the USFWS list of birds of conservation concern and is considered a fully protected species in California. Suitable foraging habitat is present at Lake Sonoma.
- Merlin (*Falco columbarius*), a species categorized by CDFW as a state species of special concern, is an uncommon winter migrant from September to April.
- Loggerhead shrike (*Lanius excubitor*), currently included on the USFWS list of birds of conservation concern and is categorized by CDFW as a state species of special concern, is considered an uncommon permanent resident in Sonoma County with numbers declining over the last few decades.
- Pallid bat (*Antrozous pallidus*) a federal species of concern, may roost in mature trees around Lake Sonoma.
- Western pond turtle (*Actinemys [Emys] marmorata*), Suitable aquatic and upland habitat along with the lake area exists for this California species of special concern.
- Foothill yellow-legged frog (*Rana boylii*), a California species of special concern, 71 occurrences have been reported in several locations throughout Sonoma County.

3.3 Socioeconomic Characteristics

Key drivers of the Sonoma County economy include government and public administration, healthcare services, and manufacturing. Retail, healthcare services, and government are the top three generators of employments, together accounting for approximately a third of all jobs in the county. Farm employment accounts for 2.2 percent of jobs. Figure provides an overview of employment by sector in the county and compared to the State of California on the whole. Tourism plays an important role in the economy of Sonoma County and supports approximately 11 percent of employment. Visitors to Sonoma County spent an estimated $1.9 billion in 2017.

Figure EA-4 - Distribution of Jobs by Sector in Sonoma County and the State of California



Source: Center for Economic Development at the California State University, Chico

3.3.1 Population and Demographics

California now has 67 cities with populations exceeding 100,000 and 20 cities with populations exceeding 200,000. Cities are getting larger, squeezing out the open spaces for parks and disconnecting the state's biological resources. In 2000, California had an average of 217.2 persons per square-mile compared to the US average of 79.6. The five county market area was home to approximately 1.1 million residents in 2018, and the population is projected to grow to an estimated 1.2 million people by 2040, as detailed in Table EA-2. Median household income across the counties in the market area is $74,452; provides a breakdown of income distribution by county.

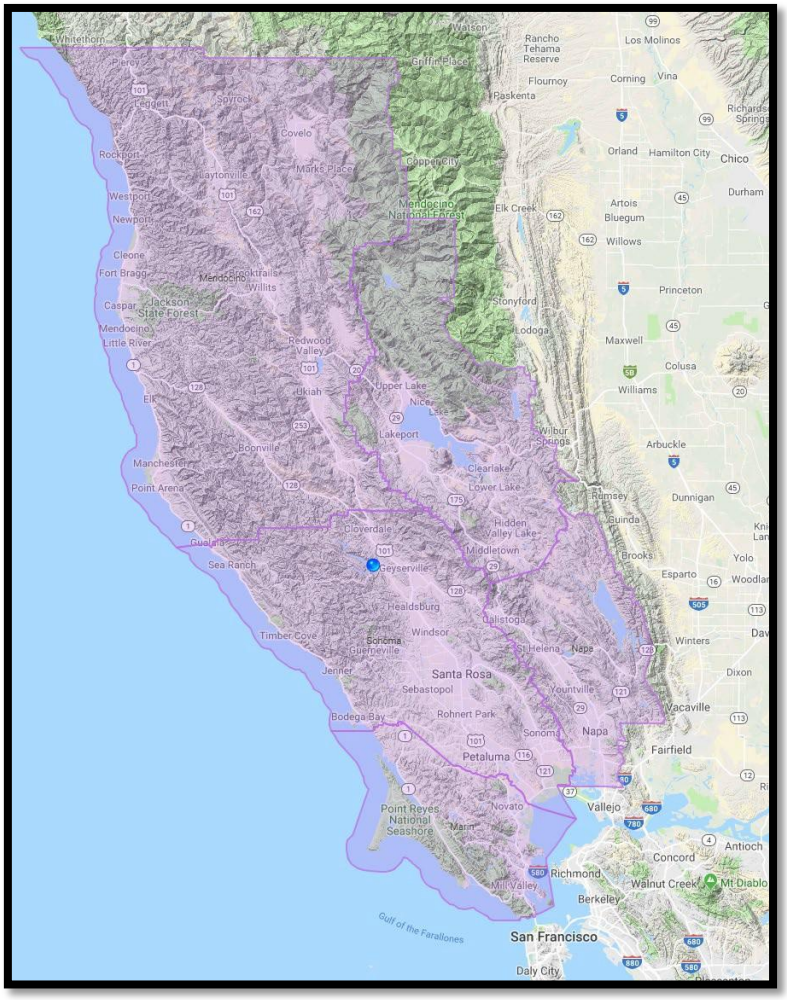


Figure EA-5 - Map of Northern California counties: Sonoma, Mendocino, Napa, Lake and Marin

Table EA-2 - Current and Projected Population in Sonoma and Surrounding Counties

County	2018 Population	2020 Population Estimate	% Change 18-20	2040 Population Estimate	Population Growth (2018-2040)
Sonoma	503,332	515,486	2.4%	583,517	13.7%
Mendocino	89,299	90,175	1.0%	95,124	6.1%
Napa	141,294	143,800	1.8%	160,521	12.0%
Lake	65,081	65,302	0.3%	70,093	7.2%
Marin	263,886	265,152	0.5%	277,087	4.8%
Total	***1,062,892***	***1,079,915***	***1.6%***	***1,186,342***	***10.4%***

Source: State of California Department of Finance

Table EA-3 - Household Income Distribution

	Sonoma		Mendocino		Napa		Lake		Marin		Total	
Income Range	**Households (HH)**	**Percent of Total**	**HH**	**Percent of Total**	**HH**	**Percent of Total**	**HH**	**Percent of Total**	**HH**	**Percent of Total**	**HH**	**Percent of Total**
Less than $25,000	30,857	16.3%	10,361	30.0%	7,243	14.7%	9,083	34.7%	13,300	12.7%	70,844	17.6%
$25,000 to $34,999	15,539	8.2%	4,377	12.7%	3,478	7.0%	3,793	14.5%	6,008	5.8%	33,195	8.2%
$35,000 to $49,999	23,022	12.2%	4,401	12.7%	5,779	11.7%	3,277	12.5%	8,887	8.5%	45,366	11.2%
$50,000 to $74,999	34,588	18.3%	6,410	18.5%	8,316	16.8%	4,059	15.5%	12,714	12.2%	66,087	16.4%
$75,000 to $99,999	25,349	13.4%	3,635	10.5%	6,413	13.0%	2,832	10.8%	11,122	10.7%	49,351	12.2%
$100,000 to $149,999	30,967	16.4%	3,576	10.3%	8,728	17.7%	1,929	7.4%	17,747	17.0%	62,947	15.6%
$150,000 to $199,999	14,650	7.7%	1,045	3.0%	4,245	8.6%	652	2.5%	11,224	10.8%	31,816	7.9%
$200,000 or more	14,071	7.4%	789	2.3%	5,173	10.5%	569	2.2%	23,398	22.4%	44,000	10.9%
Total	189,043	100%	34,594	100%	49,375	100%	26,194	100%	104,400	100%	403,606	100%

Source: US Census Bureau, American Community Survey

3.3.2 Cultural Resources

The term cultural resources is broadly defined as the buildings, structures, objects, sites, districts, and archeological resources associated with historic or prehistoric human activity. Cultural resources that are listed in, or eligible for listing in, the National Register of Historic Places (NRHP) are referred to as "historic properties." Such properties may be significant for their historic, architectural, scientific, or other cultural values and may be of national, state, or local significance.

Cultural resources are representative of broad patterns, themes, events and people in prehistory and history. Both pre and post construction archaeological studies have been completed at the dam and lake location, beginning in the 1940's, with a majority of the significant studies completed in the 1970's. Although some additional studies were completed in 2001 and 2010, few studies have been conducted since then. These past studies have determined that the environment was favorable during the prehistoric period with riparian and other inland resources accessible along the Russian River and other water sources flowing through the region. Past studies indicate that Native American occupation intensively occupied the region 2,000–5,000 years before the present. However Native American presence likely predated this time span, and in some cases continues into the present. Additionally, the research completed in the 1970's included an ethnographic study that recorded pre-contact, historic, and contemporary histories of Native American use of the Lake Sonoma area. Studies suggest that prehistoric populations increased over time in the region, with a shift from a hunter-gather regimen to more permanent settlements with the development of stable and predictable subsistence procurement and food storage. The sites types identified, indicate that loci attributed to Native American occupation were sought for proximity to available resources, accessibility, and protection from seasonal flooding in the area. Additionally, the lithic material procurement evident at the sites that have been studied indicates the area may have played a role in an important trade network between the Clear Lake Basin and the coast (Basgall and Bouey 1991, Newland 2001). The types of sites in the area are made up of lithic scatters, tool material procurement, habitation sites, rock art sites, and subsistence processing sites including bedrock mortars or other milling features. Several ethnobotanical resources, ethnographic sites, and historic-era sites have also been identified in the region. These collective works culminated in the identification of the Dry Creek-Warm Springs Valley Archaeological District in 1977. The District includes lands managed by the USACE and private properties located downstream of Lake Sonoma. The district originally consisted of 85 prehistoric sites, 24 historic sites, and 8 ethnographic sites, though some newly identified sites have been added to the district, and the destruction of others has been confirmed and recorded.

The most recent archaeological study conducted in the Lake Sonoma Recreation Area (LSRA) was completed in 2010 (Reddy et al. 2011) and consisted of revisiting 34 of the previously recorded archaeological sites to perform condition assessments and risk assessments. The study was completed pursuant to Section 110 of the National Historic Preservation Act (Section 110). Under Section 110, USACE is required to take responsibility for historic properties by establishing a program to identify, evaluate, and nominate (if appropriate) these sites to the National Register of Historic Places (NRHP). Identification and evaluation of these properties are to be performed by individuals qualified under the *Secretary of the Interior's Standards for Archaeology and Historic Preservation* (36 CFR 61 Appendix A). To comply with Section 110, a survey of USACE fee-title lands around Warm Springs Dam and Lake Sonoma Reservoir was completed (Reddy 2011). As part of this undertaking, an updated records search was completed for the project, which determined that 117 cultural resources had been previously identified in and around LSRA over a 50 to 60 year period (Basgall and Bouey 1991). A survey was performed in order to relocate the 48 previously recorded sites that were recorded at or above the 440-foot pool level of the reservoir at that time. This resulted in the relocation of 28 of the previously recorded sites, as well as the identification of six newly identified archaeological sites that had not been previously recorded within the project area. The report indicated that the remaining 20 sites that were recorded above the pool level had either been submerged by the reservoir or destroyed. The report provides National Register of Historic Places (NRHP) recommendations of eligibility for the 34 sites that were located, indicating that 21 of the sites are recommended as eligible for listing on the NRHP, 12 are recommended not eligible, and the eligibility of one was not able to be determined without further research. Finally, the 2010 study included

risk-assessment observations that were recorded to inform the Corps' management and protection of the cultural resources in the LSRA to comply with Section 110.
Recent archaeological studies in the region that have resulted in the development of cultural and chronological interpretations of the study area are not be presented here. The interested reader is referred to the most relevant of these outlining Native American prehistoric and historic-period occupation of the dam and lake area, Basgal and Bouey (1991) Jones and Klar (2007), Praetzellis et al. (1985), Newland (2001), and Reddy et al. (2011).

4.0 ENVIRONMENTAL CONCEQUENCES
This section of the EA describes the environmental consequences associated with the alternatives presented in Section 2.0. NEPA requires consideration of context, intensity, and duration of adverse and beneficial impacts (direct, indirect, and cumulative) and measures to mitigate for impacts. These elements are considered in the following impact analysis.

It is important to note that this EA assesses the impacts of adopting the land classifications included in the proposed Master Plan revision but not the recommendations for future management actions and opportunities mentioned in Table EA-2 for each MU. Adoption of the proposed Master Plan revision would help define the approval process for future actions affecting project lands, depending on whether the actions are 1) specifically included in the revised Master Plan, 2) not included in the revised Master Plan, but consistent with the Plan, or 3) not included and not consistent with the recommendations, objectives and policies stated in USACE regulations (USACE, 2009).The recommendations will be part of the Operational Management Plan and identified as actions which will be reviewed and completed at a later date. Because of the wide variety of possible future actions that could be proposed to carry out the MU recommendations, additional evaluation to determine consistency with the stated site objectives, the purpose and need and further NEPA analysis of potential resource impacts on a project-by project basis would be required as these tasks are undertaken.

Additional NEPA evaluation and planning will be required for any future development or proposal to ensure consistency with the MP, land use classifications, resource objectives for each management unit, and all applicable laws, regulations, and policies.

4.1 Environmental Impacts.
The implementation of the land classifications included in the revised Master Plan would not result in any irreversible environmental conditions. Environmental resource categories that experience impacts as a result of the No Action and Agency-preferred Alternative (to adopt the revised Master Plan) are displayed in table EA-7. Only resources that experience either a beneficial or possible adverse impact will be discussed further in Section 4.1.

Table EA-7. Environmental Impacts

	NO-ACTION IMPACTS			PREFERRED ALTERNATIVE		
Resource	**No Impact**	**Beneficial Impact**	**Adverse Impact**	**No Impact**	**Beneficial Impact**	**Adverse Impact**
Physical Environment						
Geology, Topography, Soils	X			X		
Water Resources	X			X		
Air Quality	X			X		
Climate	X			X		
Noise				X		
Hazardous Materials	X			X		
Recreation and Aesthetics					X	
Natural Resources						
Vegetation					X	
Fish and Wildlife					X	
Threatened and Endangered	X			X		
Wetlands	X			X		
Invasive Species	X				X	
Socioeconomics						
Community Growth	X			X		
Community Cohesion	X			X		
Displacement of People	X			X		
Environmental Justice	X			X		
Property Value/Tax Base	X			X		
Public Facilities & Services	X			X		
Employment	X			X		
Business Growth	X			X		
Farm Displacement	X			X		
Transportation	X			X		
Safety	X			X		
Cultural Resources	X			X		

4.1.1 Effects on Water Resources. Implementation of the No Action Alternative would not result in any changes the existing effects on water quality since the Master Plan would remain unchanged.

The land reclassifications and updated resource objectives to be implemented by the Agency-Preferred Plan would allow land management and land uses to be compatible with the goals of good stewardship of water resources. Therefore there would be no significant adverse impacts to water resources associated with the Proposed Action.

4.1.2 Effects on Climate. Implementation of the No Action Alternative would not result in changes to the existing climate at Lake Sonoma since the Master Plan would remain unchanged. Implementation of the Agency-Preferred Plan would not have a discernable effect on climate because lands will largely be operated in the same fashion as under the existing Master Plan.

It should be noted that, ongoing research by the USACE Institute for Water Resources on carbon sequestration potential of USACE-owned land and water demonstrates a potential to capture and store greenhouse gases in vegetation and in reservoir sinks. This could be a beneficial climate change mitigation opportunity in the future were it to be pursued.

4.1.3 Effects on Air Quality. Implementation of the No Action plan would not change existing air quality since the Master Plan would remain unchanged.

Existing operation and management of Lake Sonoma is compliant with the Clean Air Act and this would not change with the implementation of the proposed Master Plan revision. Therefore there would be no significant adverse impacts to air quality under the Proposed Action (Agency-Preferred Plan).

4.1.4 Effects on Noise. Implementation of the No Action Alternative would not result in changes to noise levels since the Master Plan would remain unchanged.

The Agency-Preferred Plan would have no effect on noise levels at Lake Sonoma. Areas within the project have limited noise sources mainly coming from recreational boat traffic with occasional short-term impacts from construction actions. Lands currently classified for intensive use or operations have the greatest potential to create noise within the project boundary, but there will be no expansion of such high density recreation areas with the updated Master Plan.

4.1.5 Effects on Recreation and Aesthetic Resources. Implementation of the No Action Alternative would not result in changes to recreation and aesthetic resources since the Master Plan would remain unchanged.

The Agency-Preferred Plan would not change land use classification in the recreation areas. Activities allowed in these areas and how they will be managed would remain the same. However, recommendations presented in the Resource Plan could improve the recreational experience at the lake. Therefore the Agency-Preferred Plan would likely have a beneficial effect on recreation. Any action taken on these recommendations would be evaluated as appropriate under NEPA prior to implementation.

4.1.6 Effects on Vegetation. Implementation of the No Action Alternative would not result in any effects to vegetation since the Master Plan would remain unchanged.

Under the Agency-Preferred Plan the District would update the natural resources conditions and management goals and objectives in the Master Plan, providing the basis for the development of an updated Operational Management Plan. With implementation of the Master Plan, vegetative resources would be better accommodated through analyzing natural resources based on current conditions, resource suitability, and trends occurring on the landscape. Following goals and objectives found in Chapter 3 of the Master Plan would benefit natural resources by improving the health of local habitats which in turn encourages wildlife diversity.

4.1.7 Effects on Fish and Wildlife. Implementation of the No Action Alternative would not result in any changes to existing conditions for fish and wildlife resources since the Master Plan would remain unchanged.

The Agency-Preferred Plan does not directly change the way fish and wildlife are managed at the lake. There are no additional management measures for fish and wildlife recommended in the Master Plan. The proposed Master Plan would update the goals and objectives underlying the management of fish and wildlife resources of the lake. Following these goals and objectives found in Chapter 3 of the Master Plan would benefit fish and wildlife by improving the health of local habitats and, in turn, encourages wildlife diversity. Therefore implementation of the Proposed Alternative could beneficially effect fish and wildlife resources.

4.1.8 Effects on Threatened and Endangered Species. Implementation of the No Action Alternative would not result in impacts to federally listed species since the Master Plan would remain unchanged.

There is a remote possibility that marbled murrelets or spotted owls might be occasionally present in the remote areas of coniferous forest at Lake Sonoma. The agency preferred plan does not change the way that these areas are managed. There would be no significant adverse impacts to any federally listed species associated with the proposed action.

4.1.9 Effects on Wetlands. Implementation of the No Action Alternative would not result in impacts to wetlands since the Master Plan would remain unchanged.

The Agency-Preferred Plan does not change the management of wetland areas at Lake Sonoma. There would be no significant adverse impacts to wetland habitat due to the implementation of the Agency-Preferred Plan.

4.1.10 Effects of Invasive Species. Implementation of the No Action Alternative would not result in changes to the existing level of invasive species at Lake Sonoma since the Master Plan would remain unchanged.

The District would continue to implement the existing invasive species control measures under the Proposed Alternative. In addition the updated Resource Plan recommends action to control the feral pigs in the Wildlife Management Area and to coordinate with stakeholder agencies to develop a plan to prevent the introduction of quagga and zebra mussels. These actions would be beneficial in the control of invasive species.

4.1.11 Effects on Socioeconomics. Implementation of the No Action Alternative would not result in impacts to low income or minority populations or children since the Master Plan would remain unchanged. Visitors would continue to come to Lake Sonoma from surrounding areas. Many visitors purchase goods such as groceries, fuel, fishing and camping supplies, locally, eat in local restaurants, stay in local hotels, and shop in local retail establishments. These beneficial effects would continue.

The Agency-Preferred Plan would maintain the beneficial effects realized under the No Action alternative. If the Resource Plan measures for improvement of the recreation areas were implemented, increased attendance at the lake could enhance these beneficial effects. There would be no adverse impacts on the economy in the area and no disproportionately high or adverse impacts on minority or low income populations or children as a result of the Agency-Preferred Plan.

4.1.12 Effects on Transportation. Implementation of the No Action Alternative would not result in impacts to transportation since the Master Plan would remain unchanged.

The Agency-Preferred Plan recommends upgrades to boat ramps, parking lots and other areas of congestion. Increased traffic from construction of these features, if implemented, could result in minor temporary local impacts on traffic and transportation, but impacts would likely be negligible. Should these recommendations be implemented, appropriate NEPA documentation and environmental compliance would be completed to evaluate and minimize such effects. The updated Resource Plan recommends the expansion and reconfiguration of entrance station areas, parking areas and boat ramps at various recreation areas and would have long-term beneficial impacts on in-park vehicular traffic flow, likely reducing congestion. The proposed alternative would have no adverse impact on regional transportation.

4.1.13 Effects on Safety. Implementation of the No Action Alternative would not result in impacts to safety since the Master Plan would remain unchanged.

The Agency-Preferred Plan would continue the existing safety plan in use at Lake Sonoma. The updated Resource Plan recommends augmenting the existing signage around the lake to increase visitor exposure to safety information with regard to water safety and awareness of wild land dangers such as poison oak, rattlesnakes, and large predators. These measures could have a beneficial effect on visitor safety at the lake.

4.1.14 Effects on Cultural Resources.

Any adverse effects on cultural resources that are listed or eligible for listing in the NRHP are considered to be significant. Cultural resources listed or eligible for listing in the NRHP are considered "historic properties" and must undergo particular evaluation of effects in order to determine if an undertaking, pursuant to 36 CFR 800.16 (y), is adverse. An undertaking would be considered to have an adverse effect on historic properties if it diminishes the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Types of effects include:

- Physical destruction, damage, or alteration of all or part of the historic property;
- Isolation of the historic property from or alteration of the character of the historic property's setting when that character contributes to the historic property's qualifications for the NRHP;
- Introduction of visual, audible, or atmospheric elements that are out of the character with the historic property or alter setting;
- Neglect of a historic property, resulting in its deterioration or destruction; and,
- Transfer, lease, or sale of the historic property.

Section 106 of the National Historic Preservation Act of 1966, as amended, 16 U.S.C. § 470, *et seq*. (Section 106) requires Federal agencies to take into account the effects of a proposed undertaking on properties that have been determined to be eligible for listing in, or are listed in, the National Register of Historic Places (NRHP). The development and possible change of these land use classification changes are an undertaking with the potential to effect historic properties. Several of the cultural resources identified within the project area are recommended as eligible for listing on the NRHP, and several others are in need of evaluation to determine their potential eligibility. Therefore, once land use changes are adopted through the lake management plan, the Corps will be required to carry out consultation with the SHPO and Native American tribes in order to assess the potential effects of each undertaking and to comply with Section 106.

4.2 Probable Adverse Effects Which Cannot be Avoided.

Implementation of the Preferred Alternative is not expected to result in unavoidable adverse impacts to any of the resources analyzed in this EA. The Resource Objectives and direction on agency coordination would help the District avoid, offset, and mitigate for any unforeseen impacts. Any anticipated impacts from the proposed master plan revision would be minor and localized and would not have significant long-term adverse impacts to project resources.

4.3 Relationship Between Short-Term Use and Long-Term Productivity.

The Master Plan is a land use planning document which will benefit productivity of Lake Sonoma lands and waters in the long term. While any future maintenance and construction activities may temporarily disrupt wildlife and human use in project areas, these would be evaluated via action specific NEPA and environmental compliance prior to implementation. Negative long-term impacts are not expected with the proposed Master Plan revision.

4.4 Irreversible or Irretrievable Commitment of Resources.

The commitment of man-hours required to write, coordinate and review the proposed Master Plan are irretrievable. Other than the aforementioned, none of the proposed actions are considered irreversible.

4.5 Relationship of the Project to Land-Use Plans.

Implementation of the Master Plan is a proposed land-use planning change. The Land-Use changes, which the Corps refers to as Land Classifications, are being changed to reflect current conditions and meet current regulations. The Master Plan is consistent with other State and regional goals and programs. If implemented, the District does not expect the Preferred Plan to alter or conflict with other authorized civil works projects.

4.6 Indirect and Cumulative Impacts of the Preferred Alternative.

The CEQ regulations that implement NEPA require assessment of cumulative impacts in the decision-making process for Federal projects. Cumulative impacts are defined as impacts which result when the impact of the Preferred Alternative is added to the impacts of other past, present and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7). The cumulative impacts associated with the Preferred Alternative and the No Action Alternative are described below.

Past, present, and reasonably foreseeable future actions have and continue to contribute to the cumulative impacts of activities in and around Lake Sonoma. Past actions include the construction and operation of the reservoir, the recreation sites surrounding the reservoir, as well as residential, commercial, and industrial facilities throughout the region. All of these developments have had varying levels of adverse impacts on the physical and natural resources in the region. Many of these developments, however, have had beneficial impacts on the region's socioeconomic resources. In addition, many of the historic impacts have been offset throughout the years by the resource stewardship efforts of the District, California Department of Fish and Wildlife, Sonoma Water and other management partners.

The most significant past action was the construction and development of the Lake Sonoma Reservoir. This change created new natural and physical conditions, which, through careful management by the District, and other management partners, have created new and successful habitats and other natural resource conditions. The construction of the project also had an impact on cultural resources. Impacts to cultural resources were coordinated with the State Historic Preservation Officer. This coordination included appropriate research and documentation of cultural resources. Since that time, the District, and other management partners have worked to preserve, protect, and document cultural resources within the project boundary. The District and the other management partners have also brought a wide variety of high-quality recreational opportunities to the reservoir.

Existing and future actions also contribute to the cumulative impacts in and around the reservoir. Existing and future actions include the operation of project facilities, and upgrades and maintenance of recreation sites. Continued project operations would result in the sustained maintenance and development of recreational facilities. These facilities would enhance the recreational offerings made by the District and other management partners. Such improvements would result in varying levels of impacts to the surrounding resources. Similarly, surrounding residential, commercial, and industrial development could result in varying levels of adverse impacts to many resources. Within the project boundary, adverse impacts would be offset through resource stewardship efforts. The programmatic approach to project management, included in this EA and attached Master Plan, would allow for future development plans and mitigation responses to be adapted to address any adverse actions. This would allow the District and other management partners at Lake Sonoma to continue to reduce the contribution of its activities to regional cumulative impacts through proactive actions and adaptive resource management strategies.

The Preferred Alternative would contribute minor increments to the overall impacts that past, present, and future projects have on the region, mainly through the implementation of the Land Classifications and Resource Objectives outlined in the proposed Master Plan.

4.7 Compliance with Environmental Quality Statutes. See Table EA-8

Table EA-8. Compliance with Environmental Protection Statutes and Other Environmental Requirements

Federal Policies	Compliance[1]
Archaeological and Historic Preservation Act, 16 U.S.C. § 469, *et seq*.	Full compliance
Clean Air Act, as amended, 42 U.S.C. § 1857h-7, *et seq*.	Full compliance
Clean Water Act, 33 U.S.C. § 1857h-7, *et seq*.	Full compliance
Endangered Species Act, 16 U.S.C. § 1531, *et seq*.	Full compliance
Federal Water Project Recreation Act, 16 U.S.C. § 460-1(12), *et seq*.	Full compliance
Land and Water Conservation Fund Act, 16 U.S.C. § 460/-460/-11, *et seq*.	Not applicable
National Environmental Policy Act, 42 U.S.C. § 4321, *et seq*.	Full compliance
National Historic Preservation Act, 16 U.S.C. § 470a, *et seq*.	Partial compliance
River and Harbors Act, 33 U.S.C. § 403, *et seq*.	Full compliance
Watershed Protection and Flood Prevention Act, 16 U.S.C. § 1001, *et seq*.	Not applicable
Wild and Scenic Rivers Act, 16 U.S.C. § 1271, *et seq*.	Full compliance
Flood Plain Management (EO11988)	Full compliance
Protection of Wetlands (EO11990)	Full compliance
Farmland Protection Act	Full compliance
Corps of Engineers Planning Guidance Handbook (ER 1105-2-100)	Full compliance
EO13112 Invasive Species	Full compliance

[1]Full compliance - Having met all requirements of the statute for the current stage of planning.
Not applicable - No requirements for the statute apply.

5.0 COORDINATION AND PUBLIC INVOLVEMENT

5.1 Scoping and Significant Issues.

In 2017, the USACE began the process of revising the Lake Sonoma Master Plan, which was last approved in 1979. On February 21, 2018, a public meeting was held to kick off the master planning process. The purpose of this meeting was to seek public input regarding (1) the long-range goals for the Lake Sonoma Master Plan Revision and (2) the management and development of project lands and water. Additional coordination with Tribal and other agency representatives was done during the planning process.

Issues/Concerns That Arose During Agency and Public Scoping

- Warm Springs Road, which provides access to the Yorty Creek area may not be able to support significantly increased recreational use at the lake. The road is single lane in sections, has deteriorating road edges in places, is steep in sections and has blind spots. Concern was expressed for the potential for a bottleneck in an emergency situation with emergency vehicles having to maneuver around exiting vehicles.
- Yorty Creek is at maximum capacity on busy weekends.
- Prehistoric and historic archaeological sites at Yorty Creek should be protected.
- Consider using natural long-term phytoremediation to improve water quality.
- Tribal Nations requested to meet separately with USACE to discuss culturally sensitive information.
- Continue to allow dogs and mountain bikes.
- Increase hiking trails in areas that are lacking.
- Request for more recreational opportunities, such as a zip line.

- Allow accommodations and restaurant for visitors who are not inclined to camp. The overlook area was suggested since it is nearing the end of its lifespan.
- Consider Sonoma Water's proposed Fish Flow Project be considered in future revisions of the Master Plan.
- Partner with Sonoma Water and the other agencies in the North Coast Mussel Prevention Consortium to educate the public about the importance of mussel inspections and protecting our waterways.
- Support the potential future expansion of the Hatchery Component Russian River Coho Broodstock Program.
- Seek opportunities to address erosion issues upstream of the reservoir.
- Provide additional interpretive signage and support for habitat restoration activities along Dry Creek.
- Partner with Sonoma Water and other relevant agencies to reduce fire risk and improve watershed health, water quality, and carbon sequestration through improved forest and vegetation management, installation of fire cameras, prescribed burns and other activities.
- Pursue funding and staffing to enable consistent vegetation management along trails, roads picnic areas, and campsites to reduce likelihood of fire ignition.
- Continue to support education opportunities such as the Lake Sonoma Steelhead Festival and the Headwaters to Ocean Program.

The list is not in order of importance. The list is also not exhaustive, but focuses on the issues that were mentioned the most during scoping and/or were specifically addressed in the Master Plan and this EA.

The master planning team used its experience and expertise to work through the issues that arose during public scoping and discussions with Lake Sonoma staff. Responses from the public were received and taken into consideration when considering management options. The USACE invited comments on this decision-making process from several Federal and State agencies as well. The USACE will endeavor to balance the needs of all user groups to the greatest extent possible within the constraints of the primary missions of flood risk management, recreation, and contractual agreements for water supply. The proposed solutions to issues and concerns are covered more extensively in the Master Plan.

The Draft Master Plan and Environmental Assessment were provided to the public and resource agencies for review and comment. A 30-day review period began on October 4, 2019 and ran until November 4, 2019. A public meeting was held on October 22, 2019 at the Lake Sonoma Visitor Center to explain and present the draft documents. All comments have been considered and the documents have been revised accordingly as appropriate.

6.0 LIST OF PREPARERS

District Personnel	Area of Expertise
Chris Schooley	Operations Project Manager
Eric Jolliffe	NEPA Documentation
Jonna Hildenbrand	Project Manager
Margaret Engesser	Project Manager
Wyndell Merritt	Master Planning
Kathleen Ungvarsky	Cultural Resources
Stefanie Adams	Cultural Resources
Rachael Marzion	GIS
Jack Pfertsh	Cultural Resources
Ruzel Ednalino	Cultural Resources
Jessica Tudor Elliott	Cultural Resources

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APPENDIX EA 1
USFWS SPECIES LIST

IPaC U.S. Fish & Wildlife Service

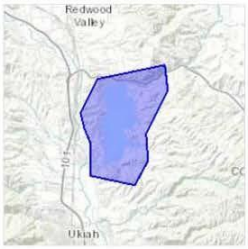
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Mendocino County, California



Local office

Arcata Fish And Wildlife Office

(707) 822-7201
(707) 822-8411

1655 Heindon Road
Arcata, CA 95521-4573

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
Marbled Murrelet Brachyramphus marmoratus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/4467	Threatened
Northern Spotted Owl Strix occidentalis caurina There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/1123	Threatened
Western Snowy Plover Charadrius alexandrinus nivosus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8035	Threatened
Yellow-billed Cuckoo Coccyzus americanus There is **proposed** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened

Flowering Plants

NAME	STATUS
Burke's Goldfields Lasthenia burkei No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4338	Endangered

Contra Costa Goldfields Lasthenia conjugens — Endangered
There is final critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/7058

Showy Indian Clover Trifolium amoenum — Endangered
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6459

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see maps of where birders and the general public have sighted birds in and around your project area, visit E-bird tools such as the E-bird data mapping tool (search for the name of a bird on your list to see specific locations where that bird has been reported to occur within your project area over a certain timeframe) and the E-bird Explore Data Tool (perform a query to see a list of all birds sighted in your county or region and within a certain timeframe). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
Ashy Storm-petrel Oceanodroma homochroa This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/7237	Breeds May 1 to Jan 15

Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	**Breeds Jan 1 to Aug 31**
Black Oystercatcher Haematopus bachmani This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9591	**Breeds Apr 15 to Oct 31**
Black Skimmer Rynchops niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234	**Breeds May 20 to Sep 15**
Black Swift Cypseloides niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	**Breeds Jun 15 to Sep 10**
Black Turnstone Arenaria melanocephala This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Black-chinned Sparrow Spizella atrogularis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9447	Breeds Apr 15 to Jul 31
Burrowing Owl Athene cunicularia This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9737	Breeds Mar 15 to Aug 31
California Thrasher Toxostoma redivivum This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31
Clark's Grebe Aechmophorus clarkii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Dec 31
Costa's Hummingbird Calypte costae This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9470	Breeds Jan 15 to Jun 10
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Lawrence's Goldfinch Carduelis lawrencei This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9464	Breeds Mar 20 to Sep 20
Lewis's Woodpecker Melanerpes lewis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9408	**Breeds Apr 20 to Sep 30**
Long-billed Curlew Numenius americanus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5511	**Breeds elsewhere**
Marbled Godwit Limosa fedoa This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	**Breeds elsewhere**

Nuttall's Woodpecker Picoides nuttallii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9410	Breeds Apr 1 to Jul 20
Oak Titmouse Baeolophus inornatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9656	Breeds Mar 15 to Jul 15
Rufous Hummingbird selasphorus rufus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds elsewhere
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White Headed Woodpecker Picoides albolarvatus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9411	Breeds May 1 to Aug 15
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
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Yellow-billed Magpie Pica nuttalli This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9726	Breeds Apr 1 to Jul 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in your project's counties during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. **The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.**
2. **To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.**
3. **The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.**

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the counties of your project area. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

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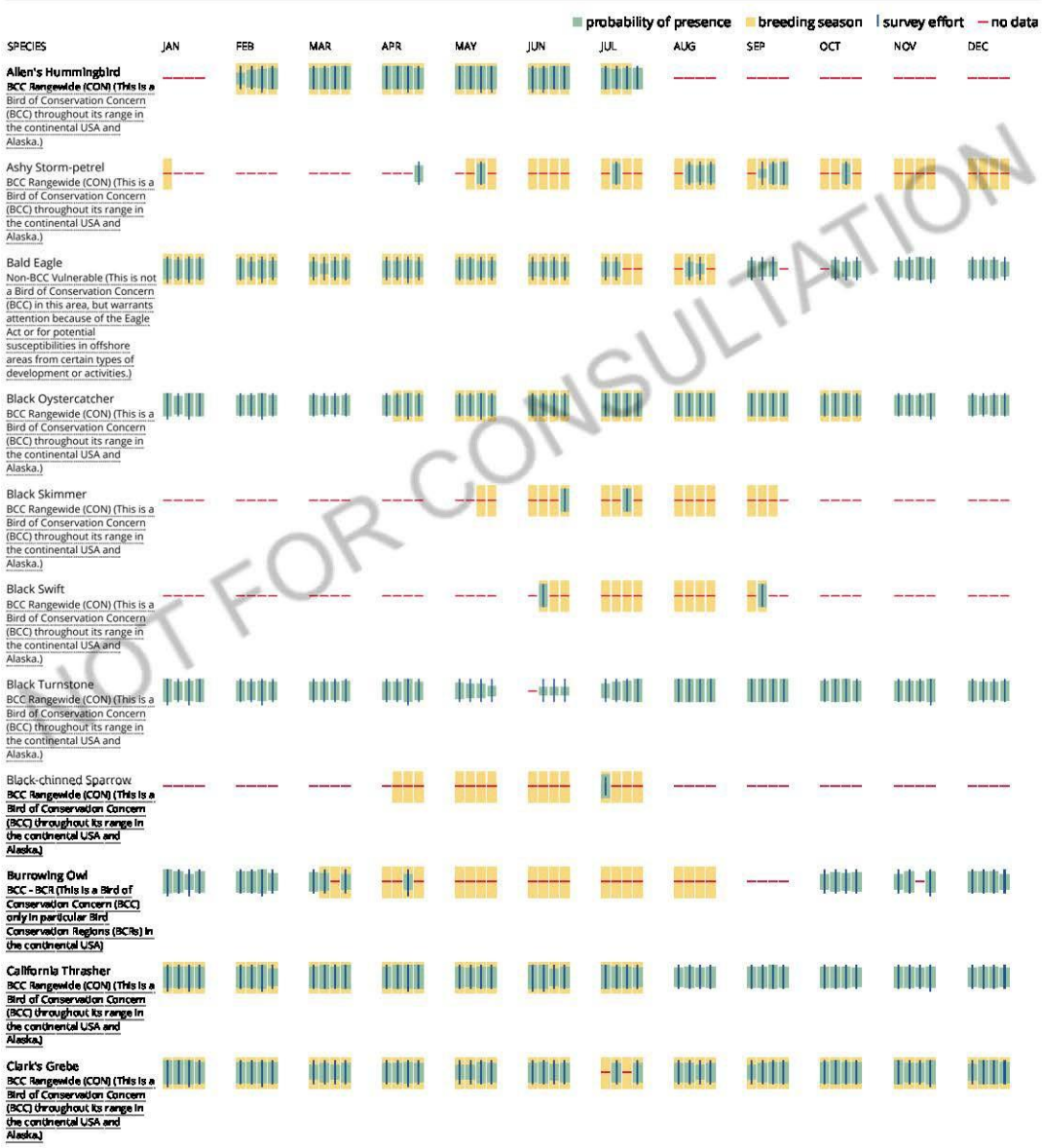

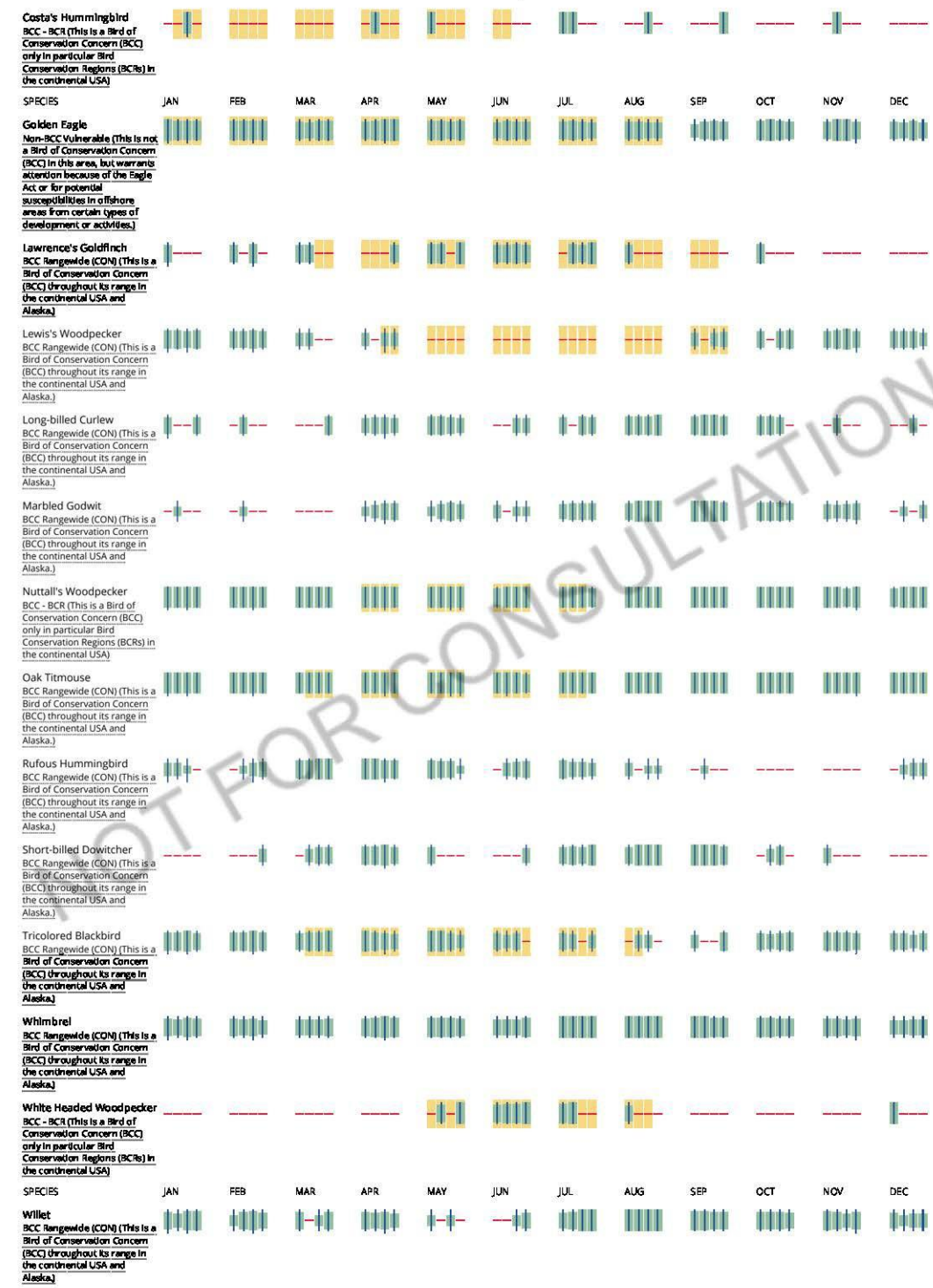

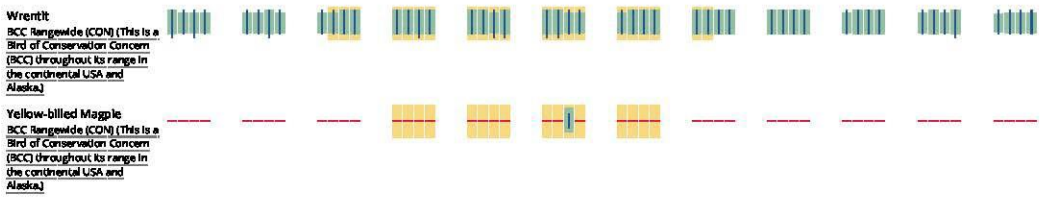

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

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What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the counties which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

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Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird entry on your migratory bird species list indicates a breeding season, it is probable that the bird breeds in your project's counties at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the BGEPA should such impacts occur.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

This location overlaps the following wetlands:

FRESHWATER POND
- PUSK

LAKE
- L1UBK
- L2USK
- L2USKx

RIVERINE
- R3USC

A full description for each wetland code can be found at the National Wetlands Inventory website: https://ecos.fws.gov/ipac/wetlands/decoder

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

IPaC U.S. Fish & Wildlife Service

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Sonoma County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
Marbled Murrelet Brachyramphus marmoratus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/4467	Threatened
Northern Spotted Owl Strix occidentalis caurina There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/1123	Threatened

Reptiles

NAME	STATUS
Green Sea Turtle Chelonia mydas No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6199	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Tidewater Goby Eucyclogobius newberryi There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/57	Endangered

Crustaceans

NAME	STATUS
California Freshwater Shrimp Syncaris pacifica No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7903	Endangered

Flowering Plants

NAME	STATUS
Pennell's Bird's-beak Cordylanthus tenuis ssp. capillaris No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3175	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see maps of where birders and the general public have sighted birds in and around your project area, visit E-bird tools such as the E-bird data mapping tool (search for the name of a bird on your list to see specific locations where that bird has been reported to occur within your project area over a certain timeframe) and the E-bird Explore Data Tool (perform a query to see a list of all birds sighted in your county or region and within a certain timeframe). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Allen's Hummingbird Selasphorus sasin **This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.** **https://ecos.fws.gov/ecp/species/9637**	**Breeds Feb 1 to Jul 15**
Ashy Storm-petrel Oceanodroma homochroa **This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.** **https://ecos.fws.gov/ecp/species/7237**	**Breeds May 1 to Jan 15**
Bald Eagle Haliaeetus leucocephalus **This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.** **https://ecos.fws.gov/ecp/species/1626**	**Breeds Jan 1 to Aug 31**
Black Oystercatcher Haematopus bachmani **This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.** https://ecos.fws.gov/ecp/species/9591	**Breeds Apr 15 to Oct 31**
Black Rail Laterallus jamaicensis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/7717	Breeds Mar 1 to Sep 15
Black Swift Cypseloides niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10
Black Turnstone Arenaria melanocephala This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Burrowing Owl Athene cunicularia This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9737	Breeds Mar 15 to Aug 31
California Thrasher Toxostoma redivivum This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31
Clark's Grebe Aechmophorus clarkii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Dec 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Lawrence's Goldfinch Carduelis lawrencei This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. **https://ecos.fws.gov/ecp/species/9464**	Breeds Mar 20 to Sep 20
Lewis's Woodpecker Melanerpes lewis **This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.** **https://ecos.fws.gov/ecp/species/9408**	**Breeds Apr 20 to Sep 30**
Long-billed Curlew Numenius americanus **This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.** **https://ecos.fws.gov/ecp/species/5511**	**Breeds elsewhere**
Marbled Godwit Limosa fedoa **This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.** **https://ecos.fws.gov/ecp/species/9481**	**Breeds elsewhere**

Nuttall's Woodpecker Picoides nuttallii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9410	**Breeds Apr 1 to Jul 20**
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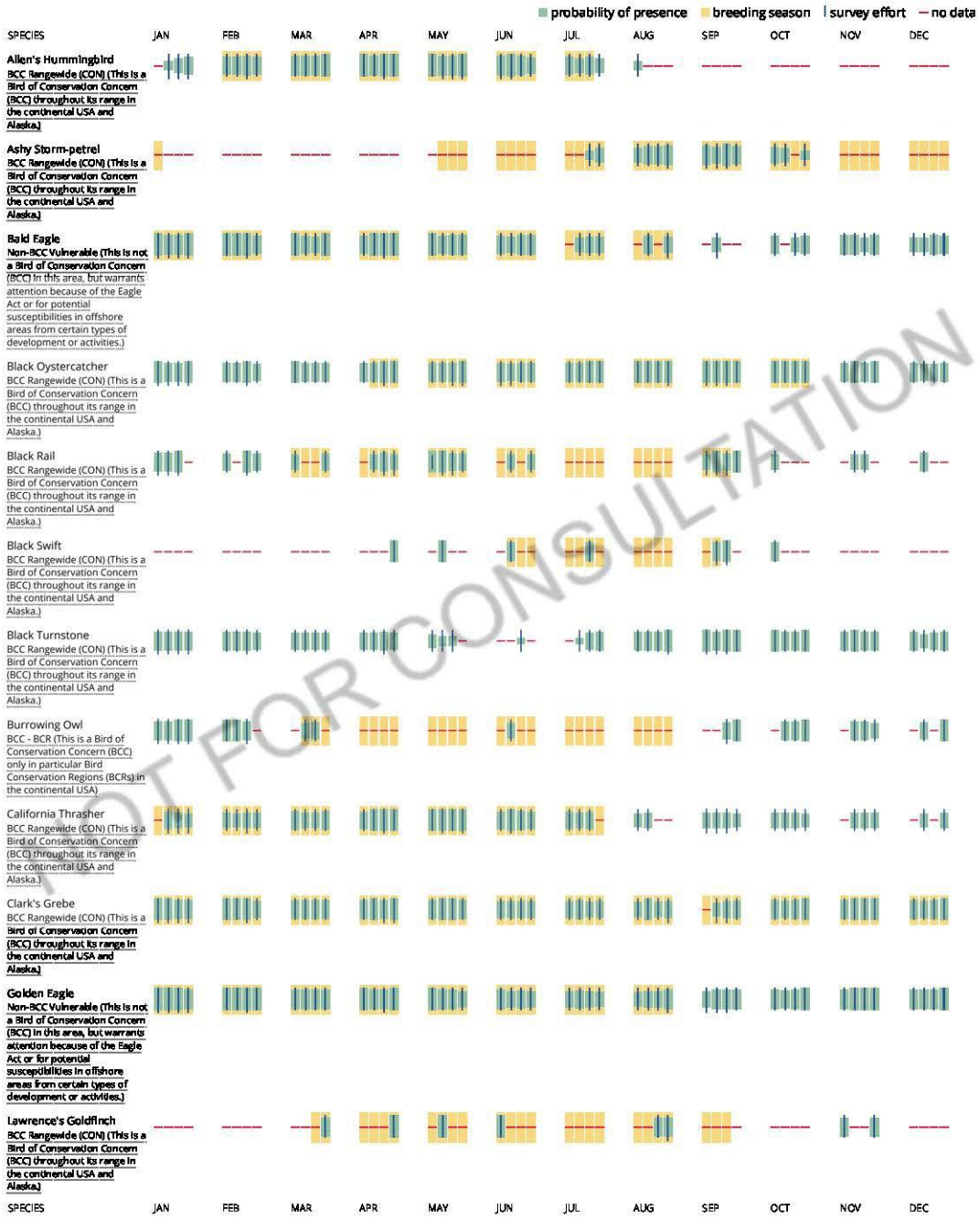

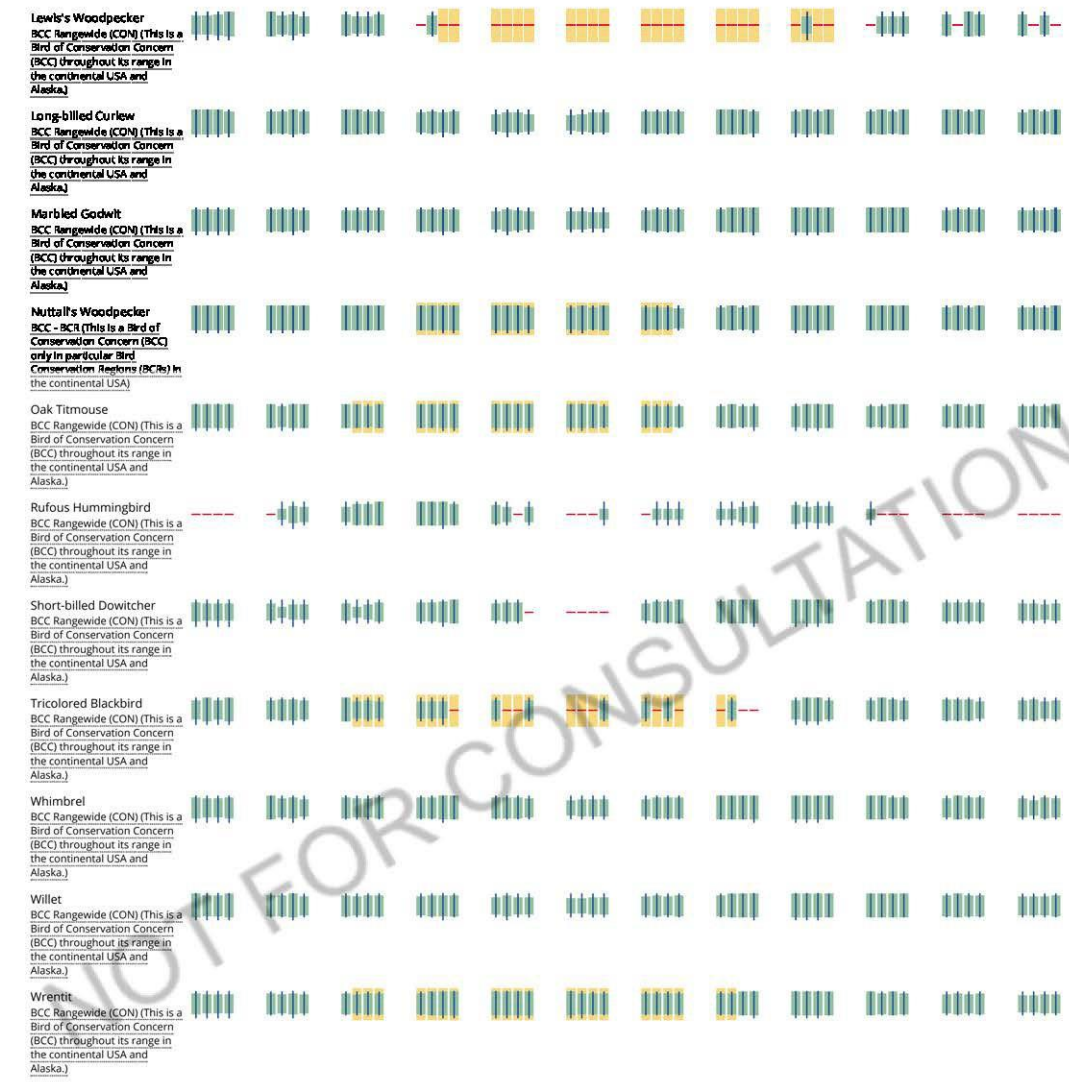

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Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird entry on your migratory bird species list indicates a breeding season, it is probable that the bird breeds in your project's counties at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the BGEPA should such impacts occur.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

This location overlaps the following wetlands:

FRESHWATER POND

PUS
PUBH
PUBK

LAKE
L

RIVERINE
R3USA
R3USC

A full description for each wetland code can be found at the National Wetlands Inventory website: https://ecos.fws.gov/ipac/wetlands/decoder

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX EA 2

FINDING OF NO SIGNIFICANT IMPACT

LAKE SONOMA MASTER PLAN
SONOMA COUNTY, CALIFORNIA

The U.S. Army Corps of Engineers, San Francisco District (Corps) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The final Master Plan and Environmental Assessment (MP/EA) dated **13 APRIL 2020**, for Lake Sonoma addresses updates to the existing master plan in Sonoma County, California.

The Final MP/EA, incorporated herein by reference, evaluated an action alternative that updates the land use classification system used in the master plan and make recommendations for future improvements to Lake Sonoma's facilities based on the updated land use classifications. The recommended plan is the proposed action, which includes:

- Adoption and implementation of the revised Lake Sonoma Master Plan. The proposed plan revises the 1977 plan currently in use by updating the land use classification system to be compliant with the master planning guidance in ER-1130-2-550.
- Updating existing inventories, management objectives, and development needs in light of the updated land use classification to provide a programmatic approach to the future management of Lake Sonoma.
- Inclusion of 40-acre parcel donated by the Save The Redwoods League to be classified as Environmentally Sensitive Area.
- Conversion of 12 acres of Wildlife Management Area to Operations classification.

In addition to a "no action" plan, one alternative (the proposed action) was evaluated. The alternative development process included the input of resource agencies, the public, local tribes and Lake Staff to update the management objectives and identify development needs for managing Lake Sonoma in the future.

For both alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table 1:

Table 1: Summary of Potential Effects of the Recommended Plan

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Recreation and Aesthetics	☒	☐	☐
Air quality	☐	☐	☒
Aquatic resources/wetlands	☐	☐	☒
Invasive species	☒	☐	☐
Fish and wildlife habitat	☒	☐	☐
Threatened/Endangered species/critical habitat	☐	☐	☒
Historic properties	☐	☐	☒
Other cultural resources	☐	☐	☒
Floodplains	☐	☐	☒
Hazardous, toxic & radioactive waste	☐	☐	☒
Hydrology	☐	☐	☒
Land use	☐	☐	☒
Navigation	☐	☐	☒
Noise levels	☐	☐	☒
Public infrastructure	☐	☐	☒
Socio-economics	☐	☐	☒
Environmental justice	☐	☐	☒
Geology, Topography, Soils	☐	☐	☒
Tribal trust resources	☐	☐	☒
Water quality	☐	☐	☒
Climate change	☐	☐	☒
Transportation	☐	☐	☒
Safety	☐	☐	☒

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan.

No compensatory mitigation is required as part of the recommended plan.

Public review of the draft MP/EA and FONSI was completed on November 4, 2019. All comments submitted during the public review period were responded to in the Final MP/EA and FONSI. A 30-day state and agency review of the MP/EA was completed on November 4, 2019.

Pursuant to section 7 of the Endangered Species Act of 1973, as amended, the Corps of Engineers determined that the recommended plan will have no effect on federally listed species or their designated critical habitat.

Pursuant to section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that historic properties would not be adversely affected by the recommended plan. The SHPO concurred with the determination on 16 January 2020**.**

All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed.

All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

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4/13/2020
Date

John. D. Cunningham
Lieutenant Colonel, U.S. Army
District Commander and Engineer

APPENDIX EA 3
Public Comment Summary

Lake Sonoma MP Public Comments for FINAL MP

Comment #	Resource/Reference	Comment	MP Modifications	EA Modifications
1	Appendix A - EA page 15	7500 with no units referenced	Same as EA Modifications. No response to comment necessary.	Added "cubic feet per second". No response to comment necessary.
2	Appendix A - EA page 17	Can minimum summer critical low flow be 25 cfs. What is identified in 2008 Biological Opinion?	No change to MP.	Response to Comments: Summer critical flows can be as low as 25 cubic feet per second under specific water year conditions as described in Decision 1610 (D1610). As the Master Plan identifies, the realities of minimum flows in the main stem of the Russian River and water supply demand require operational releases closer to 100 cubic feet per second in most summers. The 2008 BO discusses the minimum flows set forth in D1610 and does not change those requirements.
3	Appendix A - Table EA-1 Preferred Proposal	High density recreation areas. Last sentence references comprehensive resorts. The term comprehensive resorts opens the door to a tribal run casino on the lake front. For that matter it opens the door to a hotel with a bar. Do you really want more alcohol on the Lake. Recommend more definitive terms.	4.2 Land Classifications Changed to "The land classification system and definitions used in the revised plan are from USACE policy (EP 1130-2-550) and would be as follows:" Added the PDT further intent ofa comprehensive resort to 4.2 under #2 High Density Recreation definition. Comprehensive resort development design intent is to aesthetically blend with the natural and open space landscape in the form of small rental cabins, a small lodge, and recreation equipment rental in support outdoor recreation activities (such as hiking, equestrian, mountain biking, wildlife viewing) on the federallymanaged lands. "	2.1.2 Proposed Action Changed to "The land classification system and definitions used in the revised plan are from USACE policy (EP 1130-2-550) and would be as follows:" Added the PDT further intent of a comprehensive resort to 4.2 under #2 High Density Recreation definition. Comprehensive resort development design intent is to aesthetically blend with the natural and open space landscape in the form of small rental cabins, a small lodge, and recreation equipment rental in support outdoor recreation activities (such as hiking, equestrian, mountain biking, wildlife viewing) on the federally managed lands. "
4	Appendix A - Table EA-1 Preferred Proposal	Management unit #3 South Shore. Again terminology not specific enough to bar a casino /bar with a few rooms. I agree that a rustic cabin type resort would be awesome recommend some additional restrictive language to prevent future headaches.	4.2 Land Classifications Changed to "The land classification system and definitions used in the revised plan are from USACE policy (EP 1130-2-550) and would be as follows:" Added the PDT further intent ofa comprehensive resort to 4.2 under #2 High Density Recreation definition. Comprehensive resort development design intent is to aesthetically blend with the natural and open space landscape in the form of small rental cabins, a small lodge, and recreation equipment rental in support outdoor recreation activities (such as hiking, equestrian, mountain biking, wildlife viewing) on the federallymanaged lands. "	2.1.2 Proposed Action Changed to "The land classification system and definitions used in the revised plan are from USACE policy (EP 1130-2-550) and would be as follows:" Added the PDT further intent of a comprehensive resort to 4.2 under #2 High Density Recreation definition. Comprehensive resort development design intent is to aesthetically blend with the natural and open space landscape in the form of small rental cabins, a small lodge, and recreation equipment rental in support outdoor recreation activities (such as hiking, equestrian, mountain biking, wildlife viewing) on the federally managed lands. "
5	Appendix A - Table EA-1 Preferred Proposal	MU #4 - Liberty Glen Campground - Thoughts on improving campground road to water pumping/water purification building?	Same as EA Modifications. No change to MP.	Response to Comment: Upgrade of the Madrone Service road (includes access to service buildings) to an all-weather road is identified for Management Unit #4 Liberty Glen Campground. No change to EA.
6	Appendix A - Table EA-1 Preferred Proposal	MU # 7 - Pritchett Peaks - Was part of initial mitigation for the construction and impacts of destruction of the borrow area is. Can it be released from Federal holding?	Same as EA Modifications. No change to MP.	Response to Comments "The Master Plan retains all federally managed lands and upholds the commitment of the mitigation acreage." No change to EA.
7	Appendix A - page 20	CDFW personnel has responsibility of Steelhead salmon. USACE personnel have overall responsibility for coho salmon operations. USCE has overall responsibility for maintenance of the	No change to MP.	Section 3.2.2. - The fisheries program is managed and operated by both CDFW and USACE. CDFW personnel have overall responsibility for the steelhead

		hatchery, with CDFW can do minor maintenance per the contract.		salmon. USACE personnel have overall responsibility for the Coho salmon and for maintenance of the hatchery. CDFW can do minor maintenance to the hatchery per the contract with USACE.
8	Appendix A - page 21	"planted" used for CA Coastal Chinook salmon	No change to MP.	Section 3.2.3, Changed to "released"
9	Appendix A - page 23	Term "recently" when referring to 2013 statistics. Ben White has more recent release in 2016/2017 that should be referenced.	No change to MP.	Section 3.2.3- removed "most recently" and added sentence "Preliminary migrant numbers for 2019 are 785 juvenile coho salmon."
10	Appendix A - page 23	Contracts between USACE and NOAA with University to conduct annual Russian river watershed survey for returning Coho.	No changes to MP and No Response to Comment is necessary. Irrelevant to MP content.	No changes to EA and No Response to Comment is unnecessary. Irrelevant to MP content.
11		SWA, USACE, CDFW - extensive cooperation among the working group is the key to brood stock program.	No changes to MP and No Response to Comment is necessary. Irrelevant to MP content.	No changes to EA and No Response to Comment is unnecessary. Irrelevant to MP content.
12		Should we mention genetic studies to prevent inbreeding?	No change to MP.	Section 3.2.2, page 20 - Changed to - There is also a coho salmon captive brood stocking program that rears fish from egg through adulthood in order to maintain the species despite low numbers returning to spawn each year to the hatchery. Since 2008, the Coho program has integrated wild coho stock from Lagunitas/Olema Creek to improve genetic diversity and species sustainability. Random disease testing is conducted throughout the life cycle of the Coho. The program releases about 200,000 Coho at multiple life stages throughout the Russian River watershed each year with about 30,000 released directly into the main stem of Dry Creek. To date, more than two million coho progeny have been released. These releases of coho and steelhead from the hatchery and captive brood stock programs are to mitigate for the loss of upstream spawning habitat.
13		4th paragraph slightly incorrect. Due to protection of private property downstream, natural channel not allowed to meander. Should identify the work that began in 2010 to develop low flow areas.	No change to MP.	Section 3.2.3, - Changed to - "Beginning in 2010, Sonoma Water and USACE initiated restoration projects to develop low flow areas for the young Coho and Steelhead below the dam to restore habitat and alleviate to some degree the water velocity. Sustained summer flows, combined manipulation of the creek's original channel, and with the single channel ...
14		Last sentence on page 23- Current and future summer and fall releases are not the sole issue behind the high flows/releases from the dam. Recommend rewording to "high velocity water". Plus, the restoration efforts has already started to alleviate/mitigate to some degree the velocity issue.	No change to MP.	Changed to -"Beginning in 2010, Sonoma Water and USACE initiated restoration projects to develop low flow areas for the young Coho and Steelhead below the dam to restore habitat and alleviate to some degree the water velocity. Sustained summer flows, combined manipulation of the creek's original channel, and with the single channel ...
15		Page 24 - last paragraph of 3.2.3 references data used in the BO and why SWA & USACE have and will accomplish restoration. Recommend updating the paragraph to reflect the last decade of work in Dry Creek.	No change to MP.	Response: Inclusion of 2010 restoration work identifies work in Dry Creek - See Response to Comment #14 for wording.
16	3.2.1 Vegetation Communities	No mention of sedge, the tribes used to harvest and plant in various places. USACE mitigation for the dam included sedge beds by the creek just downstream of the outlet works where the general public cannot go. So should the sedge be listed?	No change to MP.	Sec. 3.2.1 Added - Vegetation of Cultural Significance The Dry Creek and Cloverdale Pomo made extensive use of the flora available to them for food, medicine, technical purposes and for ceremonial reasons. Acorns, Brodiaea bulbs, and a variety of berries and herbaceous plants were relied on throughout the year as a food source. Basket sedge (Carex barbarae), basket willow

				(Salix hindsiana), and Angelica (Angelica tomentosa and Lomatium califonicum) are plant resources of particular importance in the area. The rhizomes of the sedge and the shoots of the willow are essential in the weaving of Pomo basketry. There were several important collection sites along Dry Creek for these plants that were inundated by the reservoir. These sites produced very high quality shoots and rhizomes due to their sandy nature. USACE coordinated with the local tribes in transplanting from areas to be inundated to Dry creek below the dam. Angelica is used in a variety of ways by the Pomo and other northern California tribes. The leaf shoots are harvested in spring and eaten raw, boiled as greens or as a used as a seasoning. Angelica roots are collected in the fall for medicinal and ceremonial purposes. The harvest of Angelica is highly ritualized and is only performed by native doctors. It is considered dangerous if collected or used by others. True Angelica is preferred due to its potency, but Lomatium is used more frequently since it is more common and has less restrictions on harvesting. Lomatium's most valued use is as a protective talisman and it is carried for good luck in gambling and hunting. Efforts were made to relocate specimens from prime harvesting areas to be flooded to an area below the dam. More information on this subject can be found in Ethnobotanical Resources of the Warm Springs Dam – Lake Sonoma Project Area prepared in 1979.
17	3.2.2 Fishery	I should think the three plus miles of Dry Creek that have been restored and have shown positive benefits to the Coho already (according to Bob Coey from NOAA, Dave Manning from SWA and Eric Lawsen from CA DFW) should be mentioned. Also the joint USACE / SWA project to restore an additional 3 miles of Dry Creek. Tom Kendall told me just a week ago that the project was in design now.	No change to MP.	Added - Additionally, habitat restoration projects have been implemented along Dry Creek below the dam as well as ongoing exploration of additional habitat projects.
18		4th paragraph - I believe the number of coho progeny in total far exceed 80000, maybe 80K in one year. Ben White used to brief me on the numbers and I remember him stating before I retired that his crew was raising well over 100K that year.	No change to MP.	Section 3.2.2., Changed to - There is also a coho salmon captive broodstock program that rears fish from egg through adulthood in order to maintain the species despite low numbers returning to spawn each year to the hatchery. Since 2008, the coho program has integrated wild coho stock from Lagunitas/Olema Creek to improve genetic diversity and species sustainability. Disease testing is conducted throughout the life cycle at the hatchery to help ensure healthy broodstock and progeny. The program releases approximately 200,000 Coho throughout the Russian River watershed each year with about 30,000 released directly into the main stem of Dry Creek at multiple different life-stages. To date, more than two million coho progeny have been released into the watershed from the broodstock program. These releases of coho and steelhead from the hatchery and captive broodstock programs are to mitigate for the loss of upstream spawning habitat due to the construction of Warm Springs Dam.

19		Note I believe that SCWA has recently changed their name to SWA.	No changes to MP and No Response to Comment is unnecessary. Irrelevant to MP content.	No changes to EA and No Response to Comment is unnecessary. Irrelevant to MP content.
20	Cultural	40 acre Redwood plot deeded to USACE was transferred after the referenced surveys. Surveys would not have picked up any cultural resources.	No change to MP.	Response to Comments: The 40 acre Redwood parcel was transferred in 2006 and additional cultural surveys were conducted in 2010 & 2011 at Lake Sonoma project. Any proposed project on the parcel would require additional environmental impact analysis, including cultural resources. Already added in Section 4 "and further NEPA consideration" with " the purpose and need of the Master Plan, and environmental analysis and potential impacts".
21		Also might want to include in the recreation section, table EA-1 a possible future hiking trail through the redwoods 40 acre plot of land. Chris Schooley, Project Manager for Lake Sonoma, would be the key POC.	No change to MP.	Response to Comment: Development of a trail network would be explored as a specific development plan within the Operational Management Plan, the next level planning document. The terms of the deed and conditions of transfer to USACE allow for an interpretive type trail on this parcel. Additional evaluation to determine consistency with Master Plan objectives, land use classification, purpose and need, consistency with the terms of the deed and conditions of the transfer of the parcel and completion of environmental analysis would be necessary prior to any trail development.
22	Table EA-5	There is no "X" mark for wetlands in preferred alternative.	Same as EA Modifications	Table EA-7 -marked "X" under preferred alternative.
23	Fisheries	Did not see any mention of possible future repairs/clean-up of the low velocity flow channels and gravel beds USACE built on Lake Sonoma project land downstream of the outlet works. Built for restoration of the creek for Coho salmon.	Beyond the scope of the MP planning boundary. No changes to MP. No Response to comment necessary.	Beyond the scope of the MP planning boundary. No changes to EA. No Response to comment necessary.
24	Recreation	To clarify our earlier comments about the zipline and resort. The proposed location for the resort would be at the existing Overlook Area and would replace the deteriorating Overlook structure. The proposed location for the zipline would be starting from the Equestrian area and ending in the public boat launch parking area or the overflow public boat launch parking area (which is in Management Unit 4 and also is a high density area).	Section 5.2.3 MU #3 Added: The Overlook location is a popular viewing point of both the Dry Creek and Warm Springs Creek arms of the reservoir. The viewing structures and associated infrastructure at the site should be repaired and maintained, consistent with the Resource Objectives and Land Use Classification. Public comment included interest in developing a zip line from the equestrian facility to the public boat ramp. The design and location would need to consider existing infrastructure. See Figure 29 for an image of the entrance to the equestrian center.	Table EA-1- Changed to "The Overlook location is a popular viewing point of both the Dry Creek and Warm Springs Creek arms of the reservoir. The viewing structures and associated infrastructure at the site should be repaired and maintained, consistent with the Resource Objectives and Land Use Classification. Public comment included interest in developing a zip line from the equestrian facility to the public boat ramp. The design and location would need to consider existing infrastructure. See Figure 29 for an image of the entrance to the equestrian center.
25		Horseback Equestrian Camping Area reserved through The Ranch at Lake Sonoma located in Management Unit 3 at the Old abandoned Quicksilver campground. The back history on this comment is that when we originally started doing horseback rides inside the park, we began to have a big interest from both the public and our current customers for an overnight guided horse-camping experience. There is nothing like it available in the North Bay. We began to look for one of the perfect campgrounds on the lake, a short ride in, to do this at. We wanted to avoid boat in campgrounds which were heavily used as we realize many people would be unhappy with us reserving their annual dates and would not like the horses around, this also was a liability issue for us having our horses at night around the general public camping a few feet away. During one of our rides on the existing Southlake Trail, we found an old abandoned campground that was called Quicksilver. Apparently the site was closed due to underuse because of the steep bank access for boats and long distance from the lake for boaters to the actual campsites. A new Quicksilver was made around the corner across from Island View	Section 5.2.3 MU #3 Public comments included a proposal to expand current commercial operations to include the Old Quicksilver campground to offer an overnight equestrian camping experience. At the far west edge of this MU, an informal access point is a site that has development opportunities to add a new bridge, paved parking lot, and a campsite for horse camping.	Table EA-1- Added "Expand the current equestrian commercial operations to include the Old Quicksilver campground to offer an overnight equestrian camping experience." Public comments included a proposal to expand current commercial operations to include the Old Quicksilver campground to offer an overnight equestrian camping experience. At the far west edge of this MU, an informal access point is a site that has development opportunities to add a new bridge, paved parking lot, and a campsite for horse camping.

		and this site was shut down. From a horseback perspective this site is perfect. Plenty of space for ties or portable corrals (which we bought already) and the distance from the Lake is actually a good thing since we would not be boating in other than a few supplies for a multiple day trip. When we came to the previous management with the idea, they loved it and prepared a partnership MOU between us (The Ranch at Lake Sonoma) and them (The US Army Corps.) This MOU gave us the ability to reopen the campground located at Lat. 38.695947 Lon. -123.022731 for RLS patrons, in exchange for maintaining the trails and campground on which RLS operates including the Southlake Trail and participate in cooperative and mutually beneficial activities with the Corps. Such as Ranger Rides, etc. (Since this MOU we have done over $5,000+ of trail maintenance including re-cutting the trail to the campground per our MOU.) A copy of the MOU can be attached if need be to these comments. Please advise… Fast forward to today, the current management has put a hold on all MOU's that were signed by the previous management, otherwise we would have started utilizing and maintaining this campground already this last summer. Our intention was to use it as it is today and maintain it under current corps standards. There would be no necessary permanent upgrades as all of the camp sites are already graded, and there are 4 concrete pads for the porta potties. Even a couple of picnic tables are still there. On the map provided with this Master Plan revision the Old Quicksilver is actually where "Quicksilver" is pictured.		
26		Designated grazing areas within the park for Fire Control. At this time we are grazing our horses at a high cost in the winter months to neighbors on Rockpile for fire control. During the summer months all the horses are located at the ranch due to our busy season. The best grazing for fire control happens between the months of December-June. This would be a huge savings for our business here at Lake Sonoma and we believe it would also be a benefit to the park to keep high grasses under control. Many of the neighbors off Rockpile have cows and cannot spare the extra land for our horses to graze more areas. We have temporary shock-wire or wire fencing and can install it. We also have insurance already in place for Lake Sonoma for our horses so we are already covered in that manner. Also, since our horses are calm and friendly, they would make a better addition to the park for grazing rather than unknown cows/horses with possible behavior problems. We have personally seen some easy to access areas with high grasses such as the Old Skaggs rd. area, and Yorty Creek area, areas off Rockpile, etc. We would suggest maybe 3 different areas for rotational or seasonal grazing for fire control based on what Management thinks is the most critical areas.	-Expand the current equestrian commercial operations to include the Old Quicksilver campground to offer an overnight equestrian camping experience.	Response: Exploration of various vegetation treatment methodologies would be included in the vegetation management and wildland fire management plan t of the Operational Management Plan. Additional evaluation to determine consistency with Master Plan objectives and purpose and need as well as completion of environmental analysis would be necessary. No Change to EA and MP.
27		Continue the trail system up the Dry Creek Arm of Lake Sonoma. Starting from Falcon's Nest, continuing to the Homestead, up to Loggers and on to Rustler's, then Yorty Creek. The goal would be to be able to start at one side of the lake and finish on the other. Many areas along this stretch are quite beautiful and only seen if you have a boat. Not fair.	- Section 5, added to Management Units 2-8 Trails - Public comment included development of a comprehensive multiple use trail network that crosses multiple management units. Section 5.2.3 MU #3 Added to MU # 3Development Needs- "The Overlook location is a popular viewing point of both the Dry Creek and Warm Springs Creek arms of the reservoir. Repair and maintain the viewing structures and associated infrastructure at the site." Modified the zip line interest language. Modified the interest in expansion of current equestrian commercial operations.	- Updated Table EA-1, added to Management Units 2-8: Trails - Public comment included development of a comprehensive multiple use trail network that crosses multiple management units.
28		Possibly design either a bridge or a tunnel under or over Rockpile Rd. for horses/bikers/pedestrians so that when on Half a Canoe loop or at Liberty Glen patrons can stay on the trail without stepping on to the public roadway. Dry creek trail? No name trail? One of those. Many a scared horseperson and hiker have hurried across in front of us as we drive to town down Rockpile.	No change to MP.	Response to Comment: Investigate increased safety and signage of existing trails. Development of a comprehensive multiple use trail network and associated infrastructure would be explored as a specific plan within the Operational Management Plan. Additional evaluation to determine consistency with Master Plan objectives and purpose and need as well as completion of environmental analysis would be necessary. No Change to EA.

Appendix B – Pertinent Public Laws and Executive Orders

Development and management of federal reservoirs are regulated by a number of statutes and guided by USACE documents. The following sections provide a summary of the relevant policies and federal statutes.

USACE Authority.

Rules and regulations governing public use of water resources development projects administered by the USACE are contained in Title 36, Part 327 of the Code of Federal Regulations. As stated in Title 36, Section 327.0 Applicability *"...All other federal, state and local laws and regulations are in full force and effect where applicable to water resources development projects".* Section 327.1 (a) Policy states, *"It is the Policy of the Secretary of the Army, acting through the Chief of Engineers, to manage the natural, cultural, and developed resources of each project in the public interest, providing the public with safe and healthful recreational opportunities while protecting and enhancing these resources."* Section 327.1 (c) Policy also states, *"The term project or water resources development project refers to the water areas of any water resources development project administered by the Chief of Engineers, without regard to ownership of underlying land, to all lands owned in fee by the Federal Government and to all facilities therein or thereon of any such water resources development project".*

Persons designated by the District Commander have the authority to issue citations for violations of rules and regulations governing public use of the USACE water resources development projects. If a citation is issued, the person charged with the violation may be required to appear before a U.S. Magistrate. 33 C.F.R. § 327.25.

Civil Authority.

Except as otherwise provided in Title 36 or by federal law or regulation, state and local laws and ordinances shall apply on project lands and waters. Enforcement of state and local laws, and ordinances will be handled by the appropriate state and local law enforcement agencies. These include, but are not limited to, the following:

- Operation and use of motor vehicles, vessels, and aircraft;
- Hunting, fishing, and trapping;
- Display or use of firearms or other weapons;
- Camping, starting or tending fires, and use of fireworks;
- Civil disobedience and criminal acts;
- Littering, sanitation, and pollution
- Control of animals

Federal Authority.

The following federal public laws, Executive Orders, and cooperative agreements pertain to authorization of the project, present and future development, and operation of project lands and waters.

PUBLIC LAW 534, 78TH CONGRESS (58 STAT. 887), 22 DECEMBER 1944. Flood Control Act of 1944, as amended. This act authorizes the construction of certain public works on rivers and harbors for flood control and other purposes. Section 4 authorizes providing facilities at reservoir areas for public use, including recreation and fish and wildlife conservation. As amended in 1962 by Section 207 of Public Law 87-874, the act authorizes the USACE to develop and maintain park and recreation facilities at all water resources projects controlled by the Secretary of the Army.

PUBLIC LAW 1928, 84TH CONGRESS (70A STAT. 150), 10 AUGUST 1956. Section 2667 of this law authorizes the Secretary of a military department to lease non-excess land when it is advantageous to the United States. Grazing leases are also authorized under this provision. Sections 2668 and 2669 authorize the granting of easements and rights-of-way for many purposes, including transmission lines and gas, water, and sewer pipelines.

PUBLIC LAW 90-483 (82 STAT. 731), 13 AUGUST 1968, FLOOD CONTROL ACT OF 1968, AS AMENDED. Section 210 of this Act restricts the collection of entrance fees at the USACE lakes and reservoirs after 31 March 1970 to users of highly developed facilities requiring the continuous presence of personnel.

RIVERS AND HARBORS ACT of 1899 (30 Stat. 1151), 3 March 1899.
Because the USACE will be conducting any projects under the updated Master Plan, no authorization is required as the law specifically exempts the USACE from regulation under Section 10. However, activities by non-USACE entities in waters of the U.S. at Lake Mendocino are regulated under Section 10. Work such as a boat dock installation or water intake line requires a Section 10 permit application; for work that includes placing fill, a joint Section 404/10 permit application can be made.

EXECUTIVE ORDER 11644, 8 FEBRUARY 1972, USE OF OFF-ROAD VEHICLES ON PUBLIC LANDS; AMENDED BY EXECUTIVE ORDER 11989, 24 MAY 1977, OFF-ROAD VEHICLES ON PUBLIC LANDS. This Executive Order establishes a uniform federal policy regarding the use of vehicles such as trail bikes, snowmobiles, dune buggies, and other ORV on public lands. Section 3 provides guidance for establishing zones of use for such vehicles. This order was amended by Executive Order 11989. Currently the USACE restricts ORV use on project lands.

PUBLIC LAW 99-662 (100 STAT. 4082), 17 NOVEMBER 1986, WATER RESOURCES DEVELOPMENT ACT OF 1986. This legislation sets forth non-federal cost-sharing requirements for all water resources projects. Section 906 of this act supplements the responsibility and authority of the Secretary of the Army pursuant to the Fish and Wildlife Coordination Act. This section requires any mitigation for fish and wildlife losses to be undertaken or acquired before any construction of the project commences, or shall be undertaken or acquired concurrently with lands and interests in lands for project purposes. The USACE will coordinate with the USFWS when constructing any projects under the Master Plan and will address any fish and wildlife mitigation that is required before the construction of any project commences.

PUBLIC LAW 65-128 (40 STAT. 755), 13 JULY 1918, MIGRATORY BIRD TREATY ACT (MBTA), AS AMENDED. The MBTA of 1918 is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts and nests. All

migratory birds are governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent overutilization. Executive Order 13186 (2001) directs executive agencies to take certain actions to implement the act. When development proposed in the Master Plan is scheduled to occur, compliance with the MBTA will be considered along with environmental compliance for the specific activities.

PUBLIC LAW 76-567 (54 STAT. 250), 8 JUNE 1940, BALD EAGLE PROTECTION ACT OF 1940, AS AMENDED. This act prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles, including their parts, nests, or eggs. The act provides criminal penalties for persons who take, possess, sell, purchase, barter, offer to sell, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof. The act defines take as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. Individual projects proposed as a result of the Master Plan will adhere to the management guidelines developed by the USFWS to avoid disturbing bald eagles.

PUBLIC LAW 85-624 (72 STAT. 563), 12 AUGUST 1958, FISH AND WILDLIFE COORDINATION ACT. This law amends and renames the Fish and Wildlife Coordination Act of 10 March 1934. The 1958 act requires that: (1) fish and wildlife conservation receive equal consideration with other features of water resources development programs; (2) proposals for work affecting any body of water be coordinated with the USFWS and state wildlife agency; (3) recommendations of the USFWS and state wildlife agency be given full consideration; and (4) justifiable means and measures for wildlife purposes, including mitigation measures, be adopted. It also required that adequate provisions be made for the use of project lands and waters for the conservation, maintenance, and management of wildlife resources, including their development and improvement. The act provides that the use of project lands primarily for wildlife management by others be in accordance with a General Plan approved jointly by the Department of the Army, Department of the Interior, and state wildlife agencies. When site-specific proposals are made under the Master Plan, the USACE will coordinate with the USFWS and CDFW.

PUBLIC LAW 86-717 (74 STAT. 817), 6 SEPTEMBER 1960, CONSERVATION OF FOREST LANDS IN RESERVOIR AREAS. This law provides for the development and maintenance of forest resources on the USACE managed lands and the establishment and management of vegetative cover so as to encourage future resources of readily available timber and to increase the value of such areas for conservation.

PUBLIC LAW 87-88 (75 STAT. 204), 20 JULY 1961, FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS OF 1961, AS AMENDED. Section 2(b)(1) of this act gives the USACE responsibility for water quality management of the USACE reservoirs. This law was amended by the Federal Water Pollution Control Act Amendment of 1972, Public Law 92-500.

PUBLIC LAW 89-80 (79 STAT. 244), 22 JULY 1965, WATER RESOURCES PLANNING ACT. This act is a congressional statement of policy to meet rapidly expanding demands for water throughout the Nation. The purpose is to encourage the conservation, development, and use of water-related land resources on a comprehensive and coordinated basis by the federal, state, and local governments; individuals; corporations; business enterprises; and others concerned. The Master Plan is in accordance with this Public Law by providing a comprehensive evaluation of the existing water-

related land resources at Lake Mendocino and making recommendations for future management of such resources.

PUBLIC LAW 90-583 (82 STAT. 1146), 17 OCTOBER 1968, NOXIOUS PLANT CONTROL. This law provides for a control of noxious weeds on land under the control of the Federal Government. Resource objectives and development needs for management units include the control of noxious weeds.

PUBLIC LAW 91-190 (83 STAT. 852), 1 JANUARY 1970, NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (NEPA). Section 101 of this act establishes a national environmental policy. Section 102 requires that all federal agencies shall, to the fullest extent possible, (1) use a systematic, interdisciplinary approach that integrates natural and social sciences and environmental design arts in planning and decision making; (2) study, develop, and describe appropriate alternatives to recommend courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources; and (3) include an Environmental Impact Statement (EIS) in every recommendation or report on proposals for major federal actions significantly affecting the quality of the human environment. The Environmental Assessment attached to this Master Plan serves to ensure the Project's compliance with NEPA. Should specific or additional development be proposed, additional NEPA analysis may be required.

PUBLIC LAW 91-224 (84 STAT. 114), 3 APRIL 1970, ENVIRONMENTAL QUALITY IMPROVEMENT ACT OF 1970. This act assures that each federal department or agency conducting or supporting public works activities that affect the environment shall implement the policies established under existing law. The USACE ensures that activities at Lake Mendocino are in compliance with existing laws.

PUBLIC LAW 91-604 (84 STAT. 1676), 31 DECEMBER 1970, CLEAN AIR AMENDMENTS OF 1970, AS AMENDED. The purpose of this act is to protect public health and welfare by the control of air pollution at its source, and to set forth primary and secondary National Ambient Air Quality Standards (NAAQS) to establish criteria for states to attain, or maintain. Some temporary emission releases may occur during construction activities that are recommended under the Master Plan; however, air quality is not expected to be impacted to any measurable degree.

PUBLIC LAW 92-500 (86 STAT. 816), 18 OCTOBER 1972, THE FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972, AS AMENDED. This law amends the Federal Water Pollution Control Act and establishes a national goal of eliminating pollutant discharges into waters of the United States. Section 404 authorizes a permit program for the disposal of dredged or fill material in the Nation’s waters that is to be administered by the Secretary of the Army acting through the Chief of Engineers. This law was later amended by the Clean Water Act of 1977, Public Law 95-217, to provide additional authorization to restore the Nation’s water. The project is in compliance with this law. If any non-USACE construction activities involve the temporary or permanent placement of dredged or fill material into any water body or wetland area at Lake Mendocino, a permit pursuant to Section 404 is required.

PUBLIC LAW 92-574 (86 STAT. 1234), 27 OCTOBER 1972, NOISE CONTROL ACT, AS AMENDED. This act establishes a national policy to promote an environment for all Americans free from noise that jeopardizes their health and welfare. Federal agencies are required to limit noise

emissions to within compliance levels. Noise emission levels at sites where development was proposed in the updated Lake Mendocino Master Plan would increase above current levels temporarily during periods of construction; however, appropriate measures will be taken to keep the noise level within the compliance levels.

PUBLIC LAW 93-205 (87 STAT. 884), 28 DECEMBER 1973, ENDANGERED SPECIES ACT OF 1973, AS AMENDED. This law supersedes the earlier Endangered Species Conservation Act of 1969. It also directs all federal departments/agencies to carry out programs to conserve endangered and threatened species of fish, wildlife, and plants and to preserve the habitat of these species in consultation with the Secretary of the Interior. This act establishes a procedure for coordination, assessment, and consultation. This act was amended by Public Law 96-159. The USACE management and construction activities proposed by the Master Plan would have no effects on federal or state listed or candidate threatened and endangered species known to exist in Lake Mendocino areas for which the USACE is responsible.

PUBLIC LAW 93-523 (88 STAT. 1660), 16 DECEMBER 1974, SAFE DRINKING WATER ACT, AS AMENDED. This act amends the Public Health Service Water Act to assure that the public is provided with safe drinking water. This law states that all potable water at civil works projects will meet or exceed the minimum standards required by law. This act was amended by the Safe Drinking Water Act Amendments of 1986, Public Law 99-339, and Public Law 104-182. The Master Plan includes information related to management of the drinking water supply, which is management by Sonoma Water.

PUBLIC LAW 93-629, (88 STAT. 2148), 3 JANUARY 1975, FEDERAL NOXIOUS WEED ACT OF 1974, AS AMENDED. Section 15, added to the Act in 1990, Public Law 101-624, requires noxious weed control management on federal lands and sets forth the process by which it is to be accomplished. Resource objectives and development needs for management units in the Master Plan include the control of noxious weeds.

EXECUTIVE ORDER 11988, 24 MAY 1977, FLOODPLAIN MANAGEMENT. This Order outlines the responsibilities of federal agencies in the role of floodplain management. Each agency shall evaluate the potential effects of actions on floodplains and should not undertake actions that directly or indirectly induce growth in the floodplain, unless there is no practical alternative. Agency regulations and operating procedures for licenses and permits should include provisions for evaluation and consideration of flood hazards. Construction of structures and facilities on floodplains must incorporate flood proofing and other accepted flood protection measures. Agencies shall attach appropriate use restrictions to property proposed for lease, easement, right-of-way, or disposal to non-federal public or private parties.

Any development proposed in the Master Plan must be in compliance with South Pacific Division (SPD) Regulation 1110-2-5, Land Development Guidance at USACE Reservoir Projects, dated April 30, 2004. This regulation establishes SPD guidance for evaluating land development proposals within the USACE reservoir projects with authorized flood storage allocations. The USACE has responsibility to assure that the authorized project purposes are not compromised, that the public is not endangered, and that natural and cultural resources associated with project lands are not harmed, in accordance with applicable federal and state regulations. The criteria and procedures for evaluation of development proposals in this regulation are to assist in meeting these responsibilities and complying

with applicable laws and directives. Existing structures are exempted from this policy. However, significant modifications and/or replacement of existing structures are subject to this policy.

EXECUTIVE ORDER 11990, 24 MAY 1977, PROTECTION OF WETLANDS. This Order directs federal agencies to provide leadership in minimizing the destruction, loss, or degradation of wetlands. Section 2 states that agencies shall avoid undertaking or assisting in new construction located in wetlands unless there is no practical alternative. Prior to construction of any facilities proposed in the Lake Mendocino Master Plan, a site-specific NEPA analysis, including an assessment of potential impacts to wetlands, would be coordinated with federal and state agencies and Tribes. If a Section 404 permit is required, coordination regarding compliance with E.O. 11990 would be accomplished prior to permit issuance.

PUBLIC LAW 95-217 (91 STAT. 1566), 27 DECEMBER 1977, CLEAN WATER ACT OF 1977, AS AMENDED. This act amends the Federal Water Pollution Control Act of 1970 and extends the appropriations authorization. The Clean Water Act is a comprehensive federal water pollution control program that has as its primary goal the reduction and control of the discharge of pollutants into the Nation's navigable waters. The Clean Water Act of 1977 has been amended by the Water Quality Act of 1987, Public Law 100-4. Any action involving placement of fill in waters of the U.S. at Lake Mendocino by the USACE, a non-USACE entity, or any individual, with the exception of certain minor activities as discussed in 33 C.F.R Part 323.4, would require a Section 404 authorization and Section 401 water quality certification.

EXECUTIVE ORDER 12088, 13 OCTOBER 1978, FEDERAL COMPLIANCE WITH POLLUTION CONTROL STANDARDS. The purpose of this Order is to ensure federal compliance with applicable pollution control standards. Section 1-4, Pollution Control Plan, in which each agency was required to submit an annual plan for the control of environmental pollution to the Office of Management and Budget, was revoked by Executive Order 13148.

PUBLIC LAW 95-632 (92 STAT. 3751), 10 NOVEMBER 1978, ENDANGERED SPECIES ACT AMENDMENTS OF 1978. This law amends the Endangered Species Act Amendments of 1973. Section 7 directs agencies to conduct a biological assessment to identify threatened or endangered species that may be present in the area of any proposed project. This assessment is conducted as part of a federal agency's compliance with the requirements of Section 102 of the NEPA. The USACE would conduct biological assessments on proposed projects when necessary.

PUBLIC LAW 96-159 (93 STAT. 122), 28 DECEMBER 1979, ENDANGERED SPECIES ACT OF 1973, AS AMENDED. This amendment expanded the act to protect endangered plants. This amendment requires the publishing of a summary and map when proposing land as critical habitat and requires federal agencies to ensure projects "are not likely" to jeopardize an endangered species. In addition, it authorizes all those seeking exemptions from the act to get permanent exemptions for a project unless a biological study indicates the project would result in the extinction of a species. The USACE would ensure that any development or management activities proposed in the Master Plan are not likely to jeopardize an endangered species.

PUBLIC LAW 96-366 (94 STAT. 1322), 29 SEPTEMBER 1980, FISH AND WILDLIFE CONSERVATION ACT OF 1980. This law enables states to obtain funds to conduct inventories and conservation plans for nongame wildlife. It also encourages federal departments and agencies to use

their statutory and administrative authority to conserve and promote conservation in accordance with this act. The Master Plan promotes conservation at Lake Mendocino by including resource objectives and development needs that protect and enhanced wildlife habitat and reduce erosion.

PUBLIC LAW 96-510 (94 STAT. 2767), 11 DECEMBER 1980, COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA). Typically CERCLA is triggered by (1) the release or substantial threat of a release of a hazardous substance into the environment; or (2) the release or substantial threat of a release of any pollutant or contaminant into the environment that presents an imminent threat to the public health and welfare. To the extent such knowledge is available, 40 C.F.R Part 373 requires notification of CERCLA hazardous substances in a land transfer. Compliance with this act is required on a case-by-case basis for real estate activities such as easements, grants, etc.

PUBLIC LAW 99-339 (100 STAT. 642), 19 JUNE 1986, SAFE DRINKING WATER ACT AMENDMENTS OF 1986. These amendments provide further regulation regarding national primary drinking water, enforcement of these regulations, and variances and exemptions to the act. These amendments also provide for the protection of underground sources of drinking water and provide grants to Tribes in addition to contract assistance to carry out the function of these amendments. The Master Plan includes information related to management of the drinking water supply, which is managed by Sonoma Water.

PUBLIC LAW 100-4 (101 STAT. 7), 4 FEBRUARY 1987, WATER QUALITY ACT OF 1987. This Act amends the Federal Water Pollution Control Act to not only provide for renewal of the quality of the Nation's waters but also provide construction grant amendments, standards, enforcement, permits, and licenses. This act includes more provisions for monitoring non-point source pollution (contaminants that come from many different sources). The USACE has included water quality management within several environmental compliance objectives.

PUBLIC LAW 101-233 (103 STAT. 1968), 13 DECEMBER 1989, NORTH AMERICAN WETLANDS CONSERVATION ACT. This act establishes the North American Wetlands Conservation Council (NAWCC, 16 U.S.C. § 4403) to recommend wetlands conservation projects to the Migratory Bird Conservation Commission (MBCC). Section 9 of the act addresses the restoration, management, and protection of wetlands and habitat for migratory birds on federal lands. Federal agencies acquiring, managing, or disposing of federal lands and waters are to cooperate with the USFWS to restore, protect, and enhance wetland ecosystems and other habitats for migratory birds, fish and wildlife on their lands, to the extent consistent with their missions and statutory authorities. Prior to construction of any facilities proposed in the Master Plan, a site-specific NEPA analysis, including an assessment of potential impacts to wetlands, would be coordinated with federal and state agencies and tribes.

EXECUTIVE ORDER 12962, 7 JUNE 1995, RECREATIONAL FISHERIES. This Executive Order mandates that Federal agencies, to the extent permitted by law and where practicable, improve the quality, function, and sustainable productivity and distribution of U.S. aquatic resources for increased recreational fishing opportunities. The USACE will continue to cooperate with USFWS and DFG to manage fisheries Lake Mendocino.

PUBLIC LAW 104-182 (110 STAT. 1613), 6 AUGUST 1996, SAFE DRINKING WATER ACT AMENDMENTS OF 1996. These amendments strengthen protections on tap water, improve public access to tap water contaminant information, strengthen standards to protect public health from the most significant threats to safe drinking water, and provide money that communities need to upgrade drinking water systems. The Master Plan includes information related to management of the drinking water supply, which is managed by Sonoma Water.

EXECUTIVE ORDER 13112, 3 FEBRUARY 1999, INVASIVE SPECIES. This Executive Order directs federal agencies to act to prevent the introduction of, or to monitor and control, invasive (non-native) species; to provide for restoration of native species; to conduct research; to promote educational activities; and to exercise care in taking actions that could promote the introduction or spread of invasive species. Amended by Executive Order 13751, 5 December 2016. Recommendations regarding the management and prevention of invasive species are included in the Master Plan.

EXECUTIVE ORDER 13195, 18 JANUARY 2001, TRAILS FOR AMERICA IN THE 21ST CENTURY. This Executive Order requires federal agencies to protect, connect, promote, and assists trails of all types throughout the United States. Several trails are proposed as part of the Master Plan.

EXECUTIVE ORDER 13443, 16 AUG 2007, FACILITATION OF HUNTING HERITAGE AND WILDLIFE CONSERVATION. The purpose of this Order is to direct federal agencies that have programs and activities that have a measurable effect on public land management, outdoor recreation, and wildlife management, including the Department of the Interior and the Department of Agriculture, to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat. Currently, USACE prohibits hunting at Lake Mendocino for safety purposes.

PUBLIC LAW 59-209, 59TH CONGRESS (34 STAT. 225), 8 JUNE 1906, THE ANTIQUITIES ACT. This act makes it a federal offense to appropriate, excavate, injure, or destroy any antiquity, historic ruin, monument, or object of scientific interest located on lands owned or controlled by the United States without having permission from the Secretary of the department having jurisdiction thereof. Paleontological resources are regulated under this Act. The Master Plan includes recommendations for the management of historical and cultural sites and artifacts.

PUBLIC LAW 86-523 (74 STAT. 220), 27 JUNE 1960, RESERVOIR SALVAGE ACT, AS AMENDED. This act provides for (1) the preservation of historical and archaeological data that might otherwise be lost or destroyed as the result of flooding or any alteration of the terrain caused as a result of any federal reservoir construction projects; (2) coordination with the Secretary of the Interior whenever activities may cause loss of scientific, prehistorical, or archaeological data; and (3) expenditure of funds for recovery, protection, and data preservation. This act was amended by Public Law 93-291. Any construction proposed at the Lake Mendocino Project connected to operation and maintenance of the facility is reviewed in advance by the USACE Sacramento District cultural resources staff. In all cases, avoidance of historic properties is the preferred alternative. When such disturbance is unavoidable, suitable protection or data recovery will be implemented as required by the Act.

PUBLIC LAW 89-665 (80 STAT. 915), 15 OCTOBER 1966, HISTORIC PRESERVATION ACT, AS AMENDED. This act states a policy of preserving, restoring, and maintaining cultural resources and requires that federal agencies (1) take into account the effect of any undertaking on any site on or eligible for the NRHP; (2) afford the Advisory Council on Historic Preservation the opportunity to comment on such undertaking; (3) nominate eligible properties to the NRHP; (4) exercise caution in the disposal and care of federal property that might qualify for the NRHP; and (5) provide for the maintenance of federally owned sites on the NRHP. All ground-disturbing activities proposed on Lake Mendocino Project lands are coordinated in advance with the State Historic Preservation Officer (SHPO), ACHP, THPO, and any other interested parties under Section 106 of the Act.

EXECUTIVE ORDER 11593, 13 MAY 1971, PROTECTION AND ENHANCEMENT OF THE CULTURAL ENVIRONMENT. Section 2 of the Order outlines the responsibilities of federal agencies in accordance with the NEPA, the National Historic Preservation Act of 1966, the Historic Sites Act of 1935, and the Antiquities Act of 1906. Section 3 outlines specific responsibilities of the Secretary of the Interior including review and comment upon federal agency procedures submitted under this Order. The Lake Mendocino Cultural Resources Management Plan describes the USACE procedures for inventorying, managing, and protecting cultural resources at the Lake Mendocino project.

PUBLIC LAW 93-291 (88 STAT. 174), 24 MAY 1974 PRESERVATION OF HISTORICAL AND ARCHEOLOGICAL DATA. This Act amends the Reservoir Salvage Act, to provide for the preservation of historical and archaeological data (including relics and specimens), which might otherwise be lost as the result of the construction of a dam. Section 3(a) requires any federal agency to notify the Secretary of the Interior in writing when the agency finds, or is notified in writing by an appropriate historical or archaeological authority, that its activities in connection with any federal construction project or federally licensed project, activity, or program may cause irreparable loss or destruction of significant scientific, prehistorical or archeological data. Section 7(a) requires any federal agency responsible for a construction project to assist/transfer to the Secretary of the Interior such funds as may be agreed upon, but not more than 1 percent of the total appropriated project costs. The costs of survey, recovery, analysis, and publication shall be considered non-reimbursable project costs. The USACE will notify the Secretary of the Interior in writing if a USACE activity may destroy significant scientific, prehistoric, or archeological data.

PUBLIC LAW 95-341 (92 STAT. 469), 11 AUGUST 1978, AMERICAN INDIAN RELIGIOUS FREEDOM ACT (AIRFA) OF 1978. AIRFA protects the rights of Native Americans to exercise their traditional religions by ensuring access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites. No proposals in the updated Master Plan would adversely affect the protections offered by this act.

PUBLIC LAW 96-95 (93 STAT. 721), 31 OCTOBER 1979, ARCHAEOLOGICAL RESOURCES PROTECTION ACT (ARPA) OF 1979. This act protects archaeological resources and sites that are on public and Tribal lands, and fosters increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals. It also establishes requirements for issuance of permits by the federal land managers to

excavate or remove any archaeological resource located on public or Native American lands. All persons proposing to engage in archeological excavation on Lake Mendocino Project lands are required to coordinate with the USACE.

PUBLIC LAW 101-601 (104 STAT. 3048), 16 NOVEMBER 1990, NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT (NAGPRA). This Act provides for the protection of Native American and Native Hawaiian cultural items. It establishes a process for the authorized removal of human remains, funerary, sacred, and other objects of cultural patrimony from sites located on land owned or controlled by the Federal Government. NAGPRA requires federal agencies and federally assisted museums to return specified Native American cultural items to the federally recognized tribes or Native Hawaiian groups with which they are associated. Notification of all inadvertent discoveries of such items covered by the act is reported to the appropriate affiliated descendant or Tribe in order of precedence as set by the act. Any claims to such items are reviewed and the procedures to repatriate within the act are followed.

EXECUTIVE ORDER 12898, 11 FEBRUARY 1994, FEDERAL ACTIONS TO ADDRESS ENVIRONMENTAL JUSTICE IN MINORITY POPULATIONS AND LOW-INCOME POPULATIONS. Federal agencies shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States. Development and management activities proposed in the Master Plan are not anticipated to disproportionately impact minority or low-income populations.

EXECUTIVE ORDER 13006, 21 MAY 1996, LOCATING FEDERAL FACILITIES ON HISTORIC PROPERTIES. This Executive Order requires federal facilities, wherever operationally appropriate and economically prudent, to be located in historic properties and districts, especially those located in our central business areas. No activities under the Master Plan involve the development of federal facilities located in historic properties.

EXECUTIVE ORDER 13007, 24 MAY 1996, INDIAN SACRED SITES. This Executive Order requires that agencies avoid damage to sacred sites on federal land, and avoid blocking access to such sites for traditional religious practitioners. The Federal Government gives Tribes notice when an impact to a sacred site occurs. The USACE will coordinate with Tribes regarding future actions that may impact tribal sites at Lake Mendocino.

EXECUTIVE ORDER 13175, 6 NOVEMBER 2000, CONSULTATION AND COORDINATION WITH INDIAN TRIBAL GOVERNMENTS. This Executive Order requires regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with tribes, and to reduce the imposition of unfunded mandates upon tribes. Section 3 establishes policymaking criteria when formulating and implementing policies that have tribal implications. Section 5(a) says each agency shall have an accountable process to ensure meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications. Tribal coordination and Section 106 Consultation was done during the Master Plan process, allowing Tribes multiple opportunities to provide input into the Master Plan.

EXECUTIVE ORDER 13287, 3 MARCH 2003, PRESERVE AMERICA. This Executive Order encourages federal agencies to recognize and manage the historic properties in their ownership as assets that can support department and agency missions while contributing to the vitality and economic well-being of the Nation's communities. This Executive Order also encourages federal agencies to seek partnerships with state, tribal, and local governments, and the private sector in order to make more efficient and informed use of historic, prehistoric, and other cultural resources for economic development and recognized public benefits. The USACE has an ongoing relationship with the Coyote Valley Band of Pomo Indians at Lake Mendocino. The Master Plan makes recommendations for continuing this relationship through the operation of the Pomo Cultural Center.

Appendix C – Deed from Transfer of Land from Save The Redwoods League

RECORDING REQUESTED BY
First American Title Company

AND WHEN RECORDED MAIL DOCUMENT TO:
District Engineer/US Army Engineer Dist.
Sacramento Attn: Real Estate Division
1325 J Street
Sacramento, CA 95814

2010026067
OFFICIAL RECORDS OF SONOMA COUNTY
JANICE ATKINSON
FIRST AMERICAN TITLE CO.
03/30/2010 01:53 DEED
RECORDING FEE: $0.00
PAID
6 PGS

Space Above This Line for Recorder's Use Only

A.P.N.: 138-160-011-000

File No.: 4904-3351862 (df)

Grant Deed **R&T 11922 Deed to Public Agency Exempt from Transfer Tax**
Document Title

SEPARATE PAGE PURSUANT TO GOVT CODE 27361.6

No documentary transfer tax due

Attorney-Advisor

WHEN RECORDED RETURN TO:
District Engineer
U.S. Army Engineer District, Sacramento
ATTN: Real Estate Division
1325 J Street
Sacramento, California 95814

GRANT DEED
WARM SPRINGS DAM AND LAKE SONOMA
SONOMA COUNTY, CALIFORNIA
TRACT 2009

This **GRANT DEED** made and entered into by and between the **SAVE-THE-REDWOODS LEAGUE**, a California non-profit corporation also known as Save the Redwoods League, hereinafter referred to as the **GRANTOR,** and the **UNITED STATES OF AMERICA,** hereinafter referred to as the **GRANTEE,** acting by and through the Secretary of the Army, under and by virtue of the authority vested in him by Public Law 87-874, Flood Control Act of 1962, Dry Creek Dam and Channel Improvements, also known as the Warm Springs Dam and Lake Sonoma Project, and Title 10 U.S.C. 2672.

WITNESSETH THAT:

WHEREAS, the **GRANTOR** hold fee simple title to approximately 40 acres of land, more or less, in the County of Solano, State of California hereinafter called Tract 2009; and

WHEREAS, the Property is located adjacent to the Lake Sonoma Recreation Area, and there are no rights or privileges for the grazing of domestic livestock on the Property;

WHEREAS, the **GRANTOR** wishes to donate said Property to the **GRANTEE** without consideration to conserve the ancient redwood forest, open space, recreational and ecological values; and

WHEREAS, the **GRANTOR** has negotiated with the **GRANTEE** to donate Tract 2009 to the **GRANTEE** in order to conserve the ancient redwood forest, and protect, preserve, and restore natural habitat at the Warm Springs Dam and Lake Sonoma Project; and

WHEREAS, the Categorical Exclusion prepared on June 26, 2009, by the District Engineer, U.S. Army Corps of Engineers, Sacramento, California, in accordance with the

National Environmental Policy Act has found that this action does not threaten to violate Federal, State, Local, or Tribal law or requirements imposed for the protection of the environment.

NOW, THEREFORE, the **GRANTOR**, does hereby **REMISE, RELEASE AND GRANT** unto the **UNITED STATES OF AMERICA**, and its assigns, all their right, title and interest in and to Tract 2009 the following described property situated in Sonoma County, California:

Real property in the unincorporated area of the County of SONOMA, State of CALIFORNIA, described as follows:

THE SOUTHEAST ONE-QUARTER OF THE NORTHWEST ONE-QUARTER OF SECTION 26, TOWNSHIP 10 NORTH, RANGE 11 WEST, M.D.B.&M.

APN: 138-160-011-000

SAID conveyance is subject to existing easements for public roads and highways, public utilities, railroads and pipelines, the Williamson Act (California Government Code Section 51200 et seq) and mineral rights of record in third parties.

THE GRANTOR does hereby covenant with the **GOVERNMENT** that he is now seized in fee simple of the property hereby granted, that the Grantor has the right to convey said property, that said property is free and clear from all liens and encumbrances, except as may be specifically set forth herein, that the said Government shall enjoy the fee simple without any lawful disturbances; and said Grantor does hereby warrant the title against any lawful claims and demands by all persons that may be made hereafter.

IN WITNESS WHEREOF, the **GRANTOR** have caused these presents to be executed on this 23 day of September, 2009.

SAVE-THE-REDWOODS LEAGUE By: _____
Ruskin K. Hartley
Executive Director and Secretary

Date: sept 23, 2009

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ACKNOWLEDGMENT

State of California
County of San Francisco)

On Sept. 23, 2009 before me, Velma Gentzsch Notary Public
(insert name and title of the officer)

personally appeared Ruskin Hartley
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Velma Gentzsch

VELMA GENTZSCH
Commission # 1844653
Notary Public - California
San Francisco County
My Comm. Expires Apr 14, 2013

Comm # 1844653

Velma Gentzsch

CERTIFICATE OF ACCEPTANCE

This is to certify that the interest in real property conveyed by the foregoing Grant Deed, dated 9/23/09, from the **SAVE-THE-REDWOODS LEAGUE**, a California non-profit corporation also known as Save the Redwoods League, to the UNITED STATES OF AMERICA, is hereby accepted by the undersigned officer on behalf of the UNITED STATES OF AMERICA for itself, its successors and assigns. The Grantor consents to recordation thereof by its duly authorized officer.

Reviewed as to
Form and Content
Attorney

Dated: 11/10/09

Sharon Caine
Chief, Real Estate Division
U.S. Army Engineer District, Sacramento

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

State of California
County of Sacramento

On 11/10/2009 (Date) before me, Linda A. Shannon, Notary Public (Here Insert Name and Title of the Officer),
personally appeared — Sharon Caine (Name(s) of Signer(s))

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/she/they executed the same in ~~his~~/her/~~their~~ authorized capacity(~~ies~~), and that by ~~his~~/her/~~their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

LINDA A. SHANNON
Commission # 1863411
Notary Public - California
Sacramento County
My Comm. Expires Aug 31, 2013

Place Notary Seal Above

Signature _____ (Signature of Notary Public)

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

Description of Attached Document

Title or Type of Document: Grant Deed

Document Date: 11/10/2009 Number of Pages: 4

Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: Sharon Caine
☐ Individual
☑ Corporate Officer — Title(s): Chief, Real Estate Division
☐ Partner — ☐ Limited ☐ General
☐ Attorney in Fact
☐ Trustee
☐ Guardian or Conservator
☐ Other: _____
Signer Is Representing: US Army Corps of Engineers Sacramento District

RIGHT THUMBPRINT OF SIGNER
Top of thumb here

Signer's Name: _____
☐ Individual
☐ Corporate Officer — Title(s): _____
☐ Partner — ☐ Limited ☐ General
☐ Attorney in Fact
☐ Trustee
☐ Guardian or Conservator
☐ Other: _____
Signer Is Representing: _____

RIGHT THUMBPRINT OF SIGNER
Top of thumb here

Appendix D – Agreement with California Department of Fish and Wildlife for Management of Wildlife Mitigation Lands

Lake Sonoma, California
License No. DACW05-3-05-521

DEPARTMENT OF THE ARMY LICENSE
FOR WILDLIFE MANAGEMENT PURPOSES AT
LAKE SONOMA
SONOMA COUNTY, CALIFORNIA

THE SECRETARY OF THE ARMY, hereinafter referred to as the Secretary, under authority of Public Law 85-624, Title 16 U.S.C. 663, and Section 4, Act of Congress, December 22, 1944, as amended (16 U.S.C. 460d), and in accordance with the General Plan for Use of Project Lands and Waters for Wildlife Conservation and Management, dated June 15, 1968, and the Lake Sonoma Master Plan Design Memorandum Number 14, hereby grants to the State of California, Department of Fish and Game, hereinafter referred to as the grantee, a license for wildlife management purposes over, across, in and upon lands of the United States comprised of approximately 8,000 acres of land and water area referred to as the "Wildlife" and "Interim Wildlife" areas located above Lake Sonoma's conservation pool elevation of 451 feet, m.s.l., as shown on the map referred to as Exhibit "A", attached hereto and made a part hereof, hereinafter referred to as the premises.

THIS LICENSE is granted subject to the following conditions:

1. TERM

This license is granted for a period beginning upon execution hereof by the Secretary, and ending April 30, 2025, but revocable at will by the Secretary.

2. CONSIDERATION

The consideration for this license is the operation and maintenance of the premises by the grantee for the benefit of the United States and the general public in accordance with the conditions herein set forth.

3. NOTICES

All correspondence and notices to be given pursuant to this license shall be addressed, if to the grantee to State of California, Department of Fish and Game, Central Coast Region 3, Post Office Box 47, Yountville, California 94599; and if to the United States, to the District Engineer, Attention: Chief, Real Estate Division, 1325 J Street, Sacramento, California 95814-

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ORIGINAL

Lake Sonoma, California
License No. DACW05-3-05-521

2922; or as may from time to time otherwise be directed by the parties. Notice shall be deemed to have been duly given if and when enclosed in a properly sealed envelope, or wrapper, addressed as aforesaid, and deposited, postage prepaid, in a post office regularly maintained by the United States Postal Service.

4. AUTHORIZED REPRESENTATIVES

Except as otherwise specifically provided, any reference herein to "Secretary", "District Engineer", or "said officer" shall include their duly authorized representatives. Any reference to "grantee" shall include any duly authorized representatives.

5. SUPERVISION BY THE DISTRICT ENGINEER

The use and occupation of the premises shall be subject to the general supervision and approval of the District Engineer, hereinafter referred to as said officer, and to such rules and regulations as may be prescribed from time to time by said officer.

6. STRUCTURES AND EQUIPMENT

The grantee shall have the right, during the term of the license, to erect such structures and to provide such equipment upon the premises to accomplish the purposes of the license and as provided for in the annual Wildlife Management Plan. Those structures and equipment shall be and remain the property of the grantee, except as otherwise provided in the condition on **RESTORATION.**

7. ANNUAL MANAGEMENT PLANS

The grantee shall administer the premises in accordance with an annual Wildlife Management Plan, which shows the management and development activities to be undertaken by the grantee. No later than August 1st of each year, the grantee will submit the annual Wildlife Management Plan to be mutually agreed upon between the grantee and the said officer. Such annual Wildlife Management Plan shall include but is not limited to the following:

a. Plans for management, maintenance, and development activities to be undertaken by the grantee or jointly by the Corps of Engineers and the grantee, which shall include plans for any proposed structures and improvements.

b. The areas to be utilized for agricultural purposes.

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License No. DACW05-3-05-521

c. The variety and scope of crops to be planted, as well as any rotations.

d. The type of wildlife cover to be cultivated, if any.

e. The areas designated for various species of wildlife propagation.

8. WILDLIFE ACTIVITIES

a. With written approval from the Park Manager, or his/her designee, the grantee may plant or harvest crops, either directly, by service contract, by sharecrop agreements with local farmers, or by agricultural agreements to provide food and/or habitat for wildlife and for the development and conservation of land, and wildlife, forests, and other natural resources. Where feasible, contracts and agreements with third parties shall be by competitive bid procedures.

b. Any lands not being managed by the grantee for wildlife habitat will be made available for lease by the said officer for agricultural or grazing purposes under conditions that would not be incompatible with the grantee's use of the premises.

c. The grantee may take, trap, remove, stock or otherwise control all forms of wildlife on the premises, and may place therein such additional forms of wildlife as it may desire from time to time, and shall have the right to close the area, or any parts thereof from time to time, to hunting or trapping, provided that the closing of any area to such use shall be consistent with state laws for the protection of wildlife.

9. ACCOUNTS, RECORDS AND RECEIPTS

a. All monies received by the grantee from operations conducted on the premises may be utilized by the grantee for the administration, maintenance, operation and development of the premises. Beginning 5 years from the date of this license and continuing at 5-year intervals, any such monies not so utilized or programmed for utilization within a reasonable time shall be paid to the said officer. The grantee shall provide an annual statement of receipts and expenditures to the said officer. The said officer shall have the right to perform audits of the grantee's records and accounts.

b. Payment of direct expenses is authorized for planning and development of optimum wildlife habitat including planting of wildlife food plots, necessary timber clearing, erosion control or habitat improvements such as shelter, restocking of wildlife, and protection of endangered species. Payment of grantee's

employees who are directly engaged in such activities at the project is also authorized. However, proceeds will not be used for the payment of general administrative expenses.

c. Proceeds derived from the sale of fishing and hunting leases are not subject to this condition.

10. APPLICABLE LAWS AND REGULATIONS

The grantee shall comply with all applicable federal, state, county and municipal laws, ordinances and regulations wherein the premises are located.

11. CONDITIONAL USE BY GRANTEE

The exercise of the privileges herein granted shall be:

a. without cost or expense to the United States;

b. subject to the right of the United States to improve, use or maintain the premises;

c. subject to other outgrants of the United States on the premises;

d. personal to the grantee, and this license, or any interest therein, may not be transferred or assigned.

12. CONDITION OF PREMISES

The grantee acknowledges that it has inspected the premises, knows its condition, and understands that the same is granted without any representations or warranties whatsoever and without any obligation on the part of the United States.

13. PROTECTION OF PROPERTY

The premises shall at all times be protected and maintained in good order and condition by and at the expense of the grantee. The grantee shall be responsible for any damage that may be caused to the property of the United States by the activities of the grantee under this license, and shall exercise due diligence in the protection of all property located on the premises against fire or damage from any and all other causes. Any property of the United States damaged or destroyed by the grantee incident to the exercise of the privileges herein granted shall be promptly repaired or replaced by the grantee to a condition satisfactory to said officer, or at the election of said officer, reimbursement made therefore by the grantee in an amount necessary to restore or replace the property to a condition

satisfactory to said officer.

14. RESTORATION

On or before the expiration of this license or its termination by the grantee, the grantee shall vacate the premises, remove the property of the grantee, and restore the premises to a condition satisfactory to said officer. If, however, this license is revoked, the grantee shall vacate the premises, remove said property and restore the premises to the aforesaid condition within such time as the said officer may designate. In either event, if the grantee shall fail or neglect to remove said property and restore the premises, then, at the option of said officer, the property shall either become the property of the United States without compensation therefore, or said officer may cause the property to be removed and no claim for damages against the United States or its officers or agents shall be created by or made on account of such removal and restoration work. The grantee shall also pay the United States on demand any sum that may be expended by the United States after the expiration, revocation, or termination of this license in restoring the premises.

15. NON-DISCRIMINATION

a. The grantee shall not discriminate against any person or exclude them from participation in the grantee's operations, programs or activities conducted on the licensed premises, because of race, color, religion, sex, age, handicap or national origin.

b. The grantee, by acceptance of this license, is receiving a type of Federal assistance and, therefore, hereby gives assurance that it will comply with the provisions of Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d); the Age Discrimination Act of 1975 (42 U.S.C 6102); the Rehabilitation Act of 1973, as amended (29 U.S.C. 794); and all requirements imposed by or pursuant to the Directive of the Department of Defense (32 CFR Part 300) issued as Department of Defense Directive 5500.11 and 1020.1, and Army Regulation 600-7.

16. TERMINATION

This license may be terminated by the grantee at any time by giving the said officer at least thirty (30) days notice in writing.

17. NATURAL RESOURCES

The grantee shall cut no timber, conduct no mining

operations, remove no sand, gravel, or kindred substances from the ground, commit no waste of any kind, nor in any manner substantially change the contour or condition of the premises, except as may be authorized under and pursuant to the approved annual Wildlife Management Plan. The grantee may salvage fallen or dead timber; however, no commercial use shall be made of such timber. Except for timber salvaged by the grantee when in the way of construction of improvements or other facilities, all sales of forest products will be conducted by the United States and the proceeds therefrom shall not be available to the grantee under the provisions of this license.

18. ENVIRONMENTAL PROTECTION

a. Within the limits of their respective legal powers, the parties to this license shall protect the premises against pollution of its air, ground and water. The grantee shall comply with any laws, regulations, conditions, or instructions affecting the activity hereby authorized if and when issued by the Environmental Protection Agency, or any Federal, state, interstate or local governmental agency having jurisdiction to abate or prevent pollution. The disposal of any toxic or hazardous materials within the premises is specifically prohibited. Such regulations, conditions, or instructions in effect or prescribed by said Environmental Protection Agency, or any Federal, state, interstate or local governmental agency are hereby made a condition of this license. The grantee shall not discharge waste or effluent from the premises in such a manner that the discharge will contaminate streams or other bodies of water or otherwise become a public nuisance.

b. The grantee will use all reasonable means available to protect the environment and natural resources, and where damage nonetheless occurs from the grantee's activities, the grantee shall be liable to restore the damaged resources.

c. The grantee must obtain approval in writing from said officer before any pesticides or herbicides are applied to the premises.

19. HISTORIC PRESERVATION

The grantee shall not remove or disturb, or cause or permit to be removed or disturbed, any historical, archeological, architectural or other cultural artifacts, relics, remains or objects of antiquity. In the event such items are discovered on the premises, the grantee shall immediately notify said officer and protect the site and the material from further disturbance

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License No. DACW05-3-05-521

until said officer gives clearance to proceed.

20. DISCLAIMER

This license is effective only insofar as the rights of the United States in the premises are concerned; and the grantee shall obtain any permit or license which may be require by Federal, state, or local statute in connection with the use of the premises. It is understood that the granting of this license does not preclude the necessity of obtaining a Department of the Army permit for activities which involve the discharge of dredge or fill material or the placement of fixed structures in the waters of the United States, pursuant to the provisions of Section 10 of the Rivers and Harbors Act of 3 March 1899 (33 USC 403), and Section 404 of the Clean Waters Act (33 USC 1344).

21. PUBLIC USE

The water areas of the premises shall be open to public use (except where restricted in accordance with the Master Plan) without charge for usual recreational purposes, and that ready access to and from water areas along the shoreline of the premises shall be maintained for general public use, when such use is determined by the said officer not to be contrary to the public interest. However, no use of the premises shall be permitted that is inconsistent with state and Federal laws for fish and wildlife protection.

22. INGRESS AND EGRESS

Access to the premises by the grantee shall be on existing roads or trails. Construction of additional roads or trails, or improvements and/or extensions to existing roads or trails shall first be approved by said officer.

23. INTERIM WILDLIFE MANAGEMENT AREA

By amendment to this license, the Secretary may withdraw the designated Interim Wildlife Management Area from the licensed premises for development and/or recreational use in accordance with the Lake Sonoma Master Plan.

This license replaces license DACW05-3-84-592 in its entirety.

Lake Sonoma, California
License No. DACW05-3-05-521

THIS LICENSE is not subject to Title 10, United States Code, Section 2662, as amended.

IN WITNESS WHEREOF, I have hereunto set my hand by authority of the Secretary of the Army, this 8TH day of MARCH, 2005.

BY:

MARVIN D. FISHER
Chief, Real Estate Division
U.S. Army Engineer District, Sacramento

Reviewed as to Form and Content:

Attorney

THIS LICENSE is also executed by the grantee this 3RD day of March, 2005.

BY:
TITLE:

State of California
Department of Fish and Game

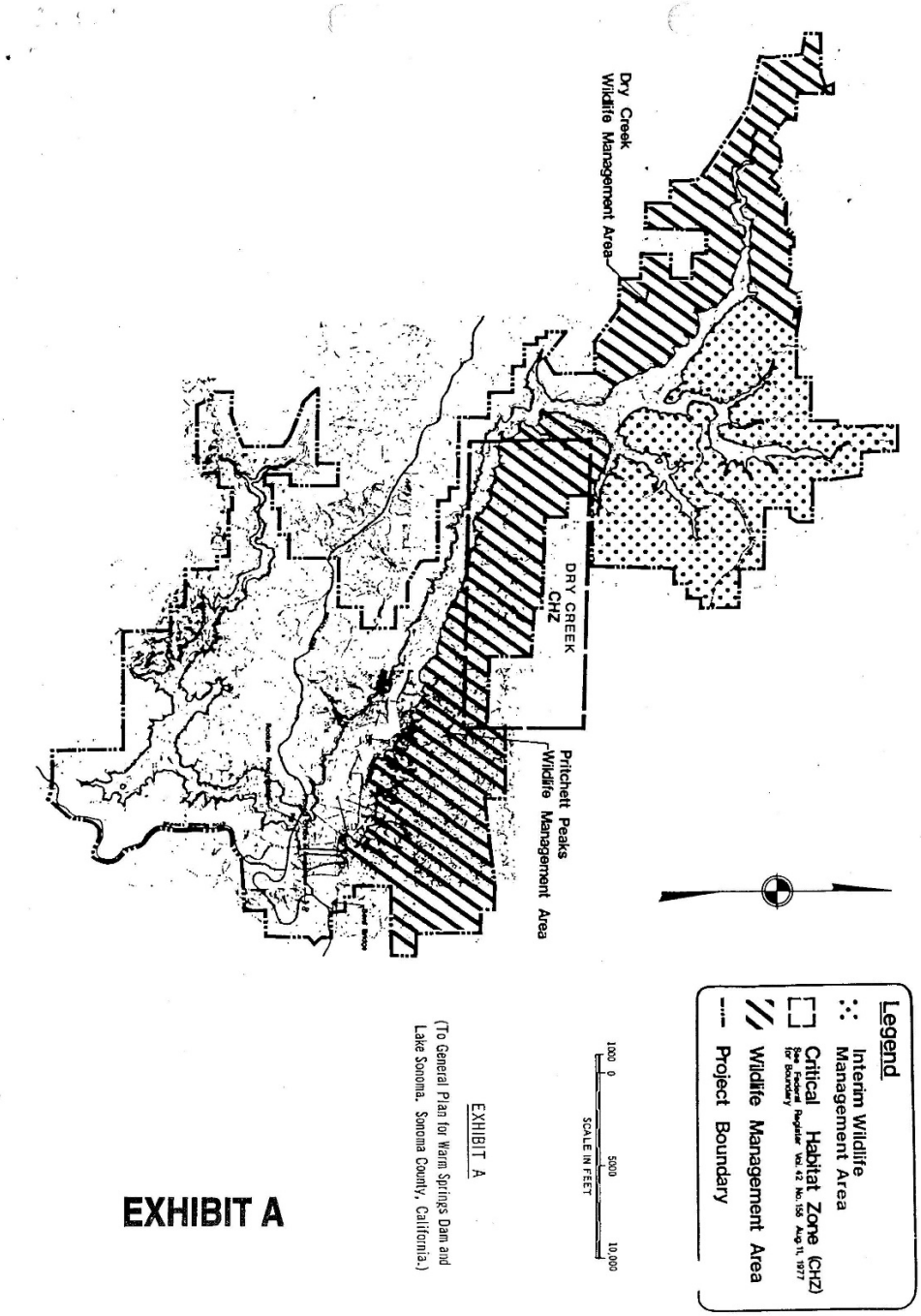
Dry Creek Wildlife Management Area
DRY CREEK CHZ
Pritchett Peaks Wildlife Management Area
Legend
Interim Wildlife Management Area
Critical Habitat Zone (CHZ)
Wildlife Management Area
Project Boundary
1000 0 5000 10,000
SCALE IN FEET
EXHIBIT A
(To General Plan for Warm Springs Dam and Lake Sonoma, Sonoma County, California.)

EXHIBIT A