

Chapter 3

Affected Environment and Environmental Consequences

Environmental Aspect	Analyzed in detail in this EA?	Comments
Agricultural Resources	No	Agricultural resources would not be impacted by proposed action.
Air Quality	Yes	Construction-related emissions could temporarily affect air quality in the local area, however regional effects are not anticipated from proposed action.
Biological Resources	Yes	Migratory birds and habitat including wetlands, are not likely to be affected by the Proposed Action.
Cultural Resources	Yes	No historical properties would be affected by the Proposed Action.
Environmental Justice	No	The proposed action would not disproportionately impact minority or low-income populations.
Indian Trust Assets	No	There are no Indian Trust Assets in the proposed action area, therefore there would be no impacts to this resource.
Land Use	Yes	The proposed action would occur in an area managed mostly for heavy recreation.
Mineral Resources	No	No important mineral resources are known or anticipated to occur in the study area.

Noise	Yes	Trail users and other visitors to the trail area could be affected by construction and operation noise.
Public Health and Safety	No	The proposed action would not affect the health and safety of the public.
Public Services	No	The proposed action would not be expected to increase the demand for public services in the area or otherwise affect public service providers.
Recreation	Yes	The proposed action would increase the amount of recreation opportunities in the area.
Socioeconomics	No	The proposed action would not affect the socioeconomics of the area.
Soils	Yes	The proposed action would include the disturbance of 3.6 miles of soil, thus impacting this resource.
Transportation and Circulation	Yes	Construction traffic would create an increase in use of the local roads and recreation traffic .
Utilities	No	The proposed action would have no impact on utilities.
Visual Resources	Yes	The proposed action would create a visible trail in a high concentrated recreation area. The proposed action would also increase visible

		recreation users utilizing the trail. Viewpoints of the area would be created by the proposed action as well.
Water Resources	Yes	The proposed action would involve construction activities near the shore of Lake Berryessa, as well as crossing wetlands, streams, and drainages. The proposed action may impact water quality.

Air Quality

Affected Environment

Napa County, is located in the San Francisco Bay Air Basin (SFBAB), where air quality is monitored and regulated by the Bay Area Air Quality Management District (BAAQMD). Air quality in the SFBAB is heavily influenced by weather conditions, particularly climate and wind patterns. Summers in the SFBAB are hot and dry in the inland areas, and winters are typically cool and wet. In summer, a northwest wind originates off the coastline and is drawn inland and over the lower portions of the San Francisco Peninsula, carrying pollutants from the San Francisco area. The mountains that surround Lake Berryessa are effective barriers to the prevailing northwesterly winds, but an up-valley wind frequently develops during warm summer afternoons which draw air from the San Pablo Bay. The wind patterns and topography contribute to the buildup of high concentrations of emitted pollutants in the Bay Area (BAAQMD 1999).

The U.S. Environmental Protection Agency (EPA) and the State have designated National and California Ambient Air Quality Standards, respectively, to protect public health and welfare. The California standards are more stringent than the national standards. Because of the buildup of high concentrations of pollutants, Napa County is designated as nonattainment for ozone under the national standards and is designated nonattainment for ozone, fine particle pollution (PM_{2.5}), and respirable particulate matter (PM₁₀) under the California standards. The nonattainment status means that air quality exceeds the national or California standards.

Air quality is monitored at one location in Napa County: the Napa-Jefferson Avenue monitoring station, approximately 15 miles south of Lake Berryessa. This monitoring station records measurements for ozone (hourly) and PM₁₀. Occasionally during hot summer afternoons, ozone concentrations approach and sometimes exceed the California standard. According to monitoring data from 2007-2009, Napa County experienced one day that exceeded the California one-hour standard (California Air Resources Board 2009). The highest PM concentrations occur in the winter, particularly during evening and nighttime hours. The County experienced one day that exceeded the California PM₁₀ measured standard between 2007-2009. The federal standard was not exceeded.

In Napa County, the primary sources of pollutants are motor vehicles, combustion products from fuel, consumer products, wood smoke, and construction-related dust (Bay Area Air Quality Management District 2000). Persons sensitive to air pollutants in or near the proposed action area include recreationists and Reclamation staff.

Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not approve to build the Oak Shores Trail. Air quality impacts would not exceed national or California standards, or contribute substantially to Napa County's existing nonattainment status.

Proposed Action

Air quality impacts associated with the proposed action would result in short term from construction-related emissions, including dust and vehicle emissions, and increased vehicle traffic to recreate on the proposed trail. Construction activities would result in the temporary generation of reactive organic gases, (contributing to ozone), oxides of nitrogen, and PM10 emissions from site preparation and compaction and from motor vehicle exhaust associated with construction equipment and employee commute trips.

The primary equipment used for the proposed action would be a trail dozer and a compactor. Emissions from the equipment, and dust from ground disturbance, in combination with motor vehicle exhaust, would be minimal and localized and would not affect the air quality of the greater SFBAB or contribute substantially to Napa County's existing nonattainment status. BMP's would be used to control and minimize the amount of dust from construction activities. These BMP's include: allowing ground disturbance to occur on the eleven-foot-wide trail footprint, seeding and laying straw down on disturbed areas as soon as possible after construction, and, if funding allows, mixing a soil stabilizer with aggregate on the trail.

An increase in mobile source emissions from construction-related activities would contribute to greenhouse gas emissions and, incrementally, to global climate change. However, the emissions associated with the proposed action by itself would not cause a noticeable impact to global climate change.

Biological Resources

Affected Environment

The proposed Oak Shores Trail follows 3.6 miles of the western shore of Lake Berryessa, crossing through annual grasslands, oak woodlands, and several drainages. These habitats support a diversity of plant and animal species. Portions of the habitats in and near the study area have been heavily disturbed by roads, trails, and other human activities, resulting in several populations of invasive plants. No special-status plants or animals, including federally listed threatened or endangered species, are expected to occur in the study area, based on a lack of suitable habitat. An elderberry plant (*Sambucus* sp.) survey was conducted in July, 2010, and there were no elderberry plants found along the proposed trail tread, or within 100 feet of the trail.

Common plants in the proposed action area include ripgut brome (*Bromus diandrus*), soft brome (*B. hordeaceus*), black mustard (*Brassica nigra*), medusahead grass (*Taeniatherum caput-medusae*), yellow star thistle (*Centaurea solstitialis*), wild oat (*Avena fatua*), manzanita, (*Arctostaphylos manzanita*), and chamise (*Adenostoma fasciculatum*). Overstory vegetation in the oak woodlands is predominately composed of valley oak (*Quercus lobata*), with the occasional interior live oak (*Q. wislizenii*), blue oak (*Q. douglasii*), and grey pine (*Pinus sabiniana*).

Several ephemeral drainages are present in the proposed action area. Ephemeral drainages are characterized as having seasonally running water and a visible drainage bed with high water marks and shelving.

The habitats in and around the proposed action area provide nesting, foraging, and resting habitat for a variety of birds, such as osprey, mallards, Canada geese, red-winged blackbirds, acorn woodpeckers, and killdeer, all species that nest in the area. Large and small woody debris are found throughout the proposed action area and provides upland game habitat, especially for quail. The proposed action area also provides movement corridors between the upland and riparian areas, particularly for reptiles, amphibians, and mammals.

Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not approve to build the Oak Shores Trail. There would be no impacts to biological resources under the No Action Alternative.

Proposed Action

Under the Proposed Action, biological resources may be impacted. During construction of the proposed trail, noise may disturb animals in the proposed action area. 3.6 miles of ground will be disturbed during construction and many native and invasive plants may be impacted. After the proposed trail has been constructed, animal species, such as deer, may utilize the trail as a corridor. No impacts on special-status animal or plant species are anticipated from the proposed action.

Ephemeral drainages would be crossed by the proposed trail. Two wet crossings and a puncheon would be built over the ephemeral drainages, to not impede the flow of water in the drainage, and to protect the drainage from foot traffic along the banks. The wet crossings would be constructed of rock which would be placed within the drainage and would allow water to flow between the rock crevices. The puncheon would be constructed of wood.

Other areas along the trail would be armored with retaining walls as needed to protect the trail from erosion, made of rock and wood. Compliance with Clean Water Act permitting and consultation with the Army Corps of Engineers would ensure minimal adverse impacts on water resources.

The trail will be aligned to avoid tree removals, when possible. During construction, it is estimated that less than five trees and several bushes will need to be removed. Several other trees and bushes will need to be pruned to provide a safe trail corridor for hikers and bikers. The width of the proposed trail cut with the trail dozer will be five feet, a total of eleven feet wide clearance of vegetation would be cleared of debris and an eight foot high clearance would be brushed.

In order to reduce invasive plants from growing in the disturbed areas, invasive plant control BMP's will be followed during and after project construction. These BMP's would include distribution of weed-free straw and native seed along disturbed areas. Any large machinery will be washed prior to entering the

proposed action area in order to prevent spreading non-native plant seed via tires and machinery surfaces. Large machinery includes the trail dozer.

Construction activities could disturb wildlife in the area and could have an adverse effect on nesting birds. Use of a trail dozer for trail construction would result in loud noises and possible ground vibrations that could temporarily disturb wildlife. Increased human presence in the area could also disturb wildlife during construction and operation. Removal of dense ground vegetation may remove nesting habitat for ground-nesting birds, mammals, and other wildlife. If construction is to take place during the nesting season, (February-August), a nesting survey will be conducted prior to construction. If an active nest is found near the proposed project area, the nesting area will be avoided. In the event it cannot be avoided, appropriate mitigation measures will be set and adhered to.

The proposed action is within highly recreated areas, therefore, the wildlife that are in these areas are used to human presence and noise. Wildlife that cannot adapt would likely avoid the proposed action area during construction and utilize the area again when construction is complete. The impact to biological resources from the proposed action would not be significant.

Following the construction of the proposed trail, recreation use could increase in the area. Due to the heavy use of the proposed action area, wildlife are already acclimated to human presence in the area. Therefore increased trail use would not cause a significant disturbance to wildlife. The proposed trail will not create a barrier to movement corridors, and wildlife will continue to be able to access the lake shore from upland areas.

Cultural Resources

Cultural resources is a term used to describe both 'archaeological sites' depicting evidence of past human use of the landscape through material culture and the 'built environment' which is represented in structures such as dams, roadways, and buildings. The term, 'cultural resources' may also apply to other types of resources that are not archaeological nor built environment in nature including but not limited to traditional cultural properties, sites of religious or cultural significance, and sacred sites. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation which outlines the Federal Government's responsibility to consider cultural resources. Other applicable cultural resources laws and regulations that could apply include, but are not limited to, the Native American Graves Protection and Repatriation Act (NAGPA), and the Archaeological Resources Protection Act (ARPA). Section 106 of the NHPA requires the Federal government to take into consideration the effects of an undertaking on historic properties listed or eligible for inclusion in the National Register of Historic Places (National Register). Those resources that are on or eligible for inclusion in the National Register are referred to as historic properties.

The Section 106 process is outlined in the Federal regulations at 36 CFR Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking will have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If

the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking will have on historic properties, and consult with the State Historic Preservation Office (SHPO), to seek concurrence on Reclamation's findings. Although the Section 106 and NEPA process are independent laws Reclamation uses the Section 106 process as its primary effort to identify impacts to cultural resources as they apply to NEPA.

Affected Environment

The Lake Berryessa area was first investigated in 1948 prior to construction of Monticello Dam by the Smithsonian Institution River Basin Survey. This survey located 150 archaeological sites, many of which are listed as midden on the site records indicating deposit of considerable significance.

An outcome of this survey was the excavation and further survey of Berryessa Valley and Elsasser and Treganza in 1956 and in 1957 – 1958 by Arnold and Reeve. A total of 46 sites and three adobe structures were recorded or noted, and six sites were excavated and reported. Aside from the three aforementioned adobe structures, all the archaeological sites located within a one mile radius of the western shore concession areas are noted as midden. Shortly after these surveys were conducted and the sites excavated, the reservoir was filled.

The next series of archaeological investigations were executed between 1976 and 1982 when D.L. True and M.A. Baumhoff conducted an archaeological survey of several areas along the western shore of Lake Berryessa. The result of this survey showed a wider range of archaeological sites than previously recorded. The sites found along the water-line and low water zone of the lake contained milling-grinding tools, pounding tools, scraping tools, cutting tools, a small number of projectile points, and miscellaneous cobble artifacts. These artifacts were spread across the landscape in loose association. It was surmised that this pattern exhibited a subsistence technology previously overlooked, possibly an older cultural horizon now termed the "Northern" Milling Stone Horizon (True, Baumhoff and Helen 1979). Several small-scale archaeological investigations have been conducted during the 1980s and 1990s with a few isolated prehistoric artifacts, one lithic scatter, and an historic work camp noted but not formally recorded.

At Oak Shores recreation area, True and Hellen (1983) conducted archaeological investigations prior to the development of the recreation area. The resulting report identified 16 individual artifacts noted as isolates. These artifacts include obsidian flakes, one projectile point, one mano fragment and one milling stone. All artifacts were collected by True and Hellen (1983) and are housed at the University of California Davis. True and Hellen (1983) note that all artifacts were identified below the high water mark of Lake Berryessa, which is consistent with True and Baumhoff's earlier work. Subsequent cultural resources surveys by Reclamation in 2010 for American with Disability Act enhancements recorded a small flake scatter within a picnic area of Oak Shores recreation area (Barnes 2010). The scatter is a diffuse lithic scatter located below the high water mark and not significant in nature. There is no evidence that the lithic scatter has any additional deposition or lateral contexts.

Environmental Consequences

No Action Alternative

If the no action alternative is selected, existing conditions would continue. Reclamation would continue to analyze impacts to cultural resources if actions on the ground constituted undertakings pursuant to Section 301(7) of the NHPA which would initiate Section 106 review. Under existing conditions, Reclamation would continue to utilize the Oak Shores area as only a picnic site destination without designated hiking trails. The no action alternative will result in no impact to cultural resources.

Proposed Action

Through continuing consultation with the SHPO, Reclamation has determined that the cultural resources identified during field efforts are not likely eligible for inclusion in the National Register of Historic Places. If the preferred action alternative is selected the action would result in no impact to cultural resources.

Land Use

Affected Environment

Land Use Setting

Lake Berryessa is located in a predominately rural, open space, natural area surrounded by mountains. Land uses around the lake include habitat conservation, recreation, agriculture, open space, and some commercial uses. The lake is operated and managed by Reclamation through concurrent jurisdiction with other federal, state, and county agencies and private entities. Reclamation land totals approximately 28,916 acres, including 19,250 acres of open water and 9,666 acres of shore and upland areas. Most of the proposed action area is currently used for recreation purposes.

Land Use Planning

Reclamation has prepared land use and resource management documents to provide direction on the management of Lake Berryessa and its' resources. The Lake Berryessa RAMP is an update to an older public use plan that provides details on the need for adequate public use facilities and direction on preventing resource degradation. The VSP EIS identifies and assesses various management alternatives for the re-development and management of visitor services, (commercial and non-commercial), to better serve traditional, short-term, non-exclusive, and diverse outdoor recreation opportunities at Lake Berryessa.

The RAMP designated five land use classifications at Lake Berryessa to balance the different types of uses and levels of development (U.S. Bureau of Reclamation 1992). Most of the action area is in a designated Class I – High Density Recreation Area, which is defined as an intensely developed and managed area intended for mass public use. Class I areas include facilities such as resorts, restaurants, marinas, campgrounds, restrooms, and day-use areas. The action area consists of the VC, a day-use-area, and a restroom.

Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not approve to build the Oak Shores Trail. There would be no impact to land uses under the No Action Alternative.

Proposed Action

Under the Proposed Action, the land use setting of the action area would not change. The proposed Oak Shores Trail would match the existing land use in the action area: intensely developed and managed. The current recreation use of the area would remain the same. The proposed action would not conflict with the RAMP and would follow the direction of the VSP ROD by creating a segment of the regional trail system at Lake Berryessa.

Noise

Affected Environment

Lake Berryessa is in a remote rural area with relatively low existing noise levels. However, during summer months and holiday weekends, higher-use commercial areas along the western shore (concession areas), would create a moderate amount of noise during the daytime. Most of this noise is generated from motorized watercraft, in and around the concession areas. Most of these resorts have now closed. A new contract has been awarded and signed by a concessionaire who is in the process of redeveloping the concession areas. It is anticipated that once these concession areas are redeveloped the noise will be similar to what it was in the past.

Napa County monitored noise levels in select locations throughout the county during 2004, including two locations near Lake Berryessa: Berryessa-Knoxville Road just south of the VC, and at the former Steele Park Resort's boat launch ramp. The noise levels measured were typical of a commercial area or vehicle traffic corridor. Traffic noise was the dominant source of noise.

The primary sources of noise in the vicinity of the action area are vehicles, swimmers, and motorized watercraft. No noise sensitive or major noise areas occur in the Lake Berryessa vicinity according to the Napa County General Plan (Napa County 2008).

Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not approve to build the Oak Shores Trail. There would be no impact to noise levels under the No Action Alternative.

Proposed Action

Under the Proposed Action, construction activities associated with the proposed action would generate temporary noise. The action area is in the vicinity of high recreation areas and noise is expected and common, construction noise would not likely be noticeable to recreationists. No other sensitive receptors, such as residents, would be affected by temporary noise from construction. Noise associated with trail use and traffic from trail users would be similar to current conditions.

Recreation

Affected Environment

Lake Berryessa is a popular recreation area, receiving up to a million visitors each year. The Lake attracts visitors for a variety of recreation opportunities: boating, water skiing, picnicking, camping, hiking, swimming, and fishing. Most of the recreation activities are water-dependent, therefore visitor use is higher in summer months. The majority of visitation occurs between Memorial Day and Labor Day weekends.

In the past, most of the recreation facilities were located at seven resorts. Facilities not associated with the concession areas include four free, public day-use areas, (Oak Shores, Smittle Creek, Elicuera Creek, and Olive Orchard), a free public boat launch (Capell Cove), and one official trail (Smittle Creek Trail). There are many unofficial and user-made footpaths around the Lake.

The action area is in the vicinity of the VC and Oak Shores. Current recreation opportunities in the action area include hiking, wildlife watching, boating, interpretive education, swimming, camping, fishing, and picnicking. Oak Shores is a heavily recreated areas.

Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not approve to build the Oak Shores Trail. The VSP ROD commits Reclamation to build a trail system around the Lake. The No Action Alternative would prevent Reclamation from complying with the VSP ROD. There would be no impact to recreation under the No Action Alternative.

Proposed Action

Under the Proposed Action, the trail construction would increase the amount of recreation opportunities at Lake Berryessa and encourage a variety of users to visit. The trail would accommodate hikers and bikers and may also encourage an increase in visitation to the VC. It would promote the public to use a sustainable trail in the proposed project area and not increase environmental impacts to undefined, unmaintained, user-created trails in the proposed project area. The construction of the trail would comply with the objectives of the VSP FEIS and ROD to create a trail system around the Lake. The trail would result in a long-term benefit to the Lake Berryessa recreation area.

Socioeconomics

Affected Environment

Napa County

According to the U.S. Census Bureau, the 2009 population in Napa County was 134,650. Eighty-eight percent of the population was White, 2.3 percent was Black or African American, 7.0 percent was Asian,

1.9 percent was American Indian and Alaska Native, and 0.6 percent was Native Hawaiian or Pacific Islander (U.S. Census Bureau 2010). The city of Napa is the largest incorporated and urban area in Napa County. Its population in 2010 was estimated at 77,106, approximately 56 percent of the county's total population (Napa Chamber of Commerce 2010).

Winters, Vacaville, Fairfield

Vacaville and Fairfield are incorporated cities in Solano County, and Winters is in Yolo County. Vacaville has an estimated population of 92,219, and Fairfield is slightly larger with an estimated population of 103,683. Winters has a population of 6,977.

San Francisco Bay Area

The San Francisco Bay Area is defined as the nine-county area comprising the Association of Bay Area Governments: Sonoma, Marin, Napa, Solano, Contra Costa, Santa Clara, Alameda, San Mateo, and San Francisco counties. According to the U.S. Census Bureau, the 2000 population of the Bay Area was 7 million, consisting of 58.7 percent White (19.7 percent of which was Hispanic or Latino), 7.3 percent Black or African American, 18.4 percent Asian, 0.7 percent American Indian and Alaska Native, 0.5 percent Hawaiian and Other Pacific Islander, and 9.5 percent of some other race (U.S. Census Bureau 2010). The remaining 4.9 percent was comprised of two or more races.

Sacramento Metropolitan Region

The Sacramento Metropolitan Region is defined as the six-county area comprising the Sacramento Area of Council Governments: El Dorado, Placer, Sacramento, Sutter, Yuba, and Yolo counties. According to the U.S. Census, the 2000 population of this region was 1.7 million (U.S. Census Bureau 2010). 70 percent of the population was White (of which 15.5 percent was Hispanic or Latino), 7.1 percent was Black or African American, 9.0 percent was Asian, 1.1 percent was American Indian and Alaska Native, 0.5 percent was Hawaiian and Other Pacific Islander, and 7.2 percent was some other race. The remaining 5.2 percent was comprised of two or more races.

Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not approve to build the Oak Shores Trail. There would be no impact to socioeconomics under the No Action Alternative.

Proposed Action

Construction of the trail under the Proposed Action will provide more recreation opportunities for the growing populations in and around the action area's vicinity. However, the trail would not encourage growth because the populations in the nearby regions are expected to increase regardless of the proposed action.

An increase in visitation to Lake Berryessa in response to the constructed trail would benefit the local economy. Visitors would likely stop in local businesses to purchase supplies, food, gas, and other items. Some visitors may also stay overnight in local facilities. No overall impact to socioeconomic resources in the county or region would occur from the proposed action.

Soils

Affected Environment

Erosion

Erosion is a natural process that loosens and removes sediment from hillslopes or channel beds and banks. This process is controlled by three primary factors: (1) topography (e.g., steeper slopes result in faster runoff conditions and an increase in transport capacity); (2) soil cover (e.g., vegetation, rocks, pavement, roofs); (3) flow regime (e.g., rainfall, runoff, irrigation). Modifications to slope, soil cover, and/or the flow regime can have a direct bearing on the nature and degree of erosion.

The shoreline of Lake Berryessa is susceptible to erosion through natural wind and waves, as well as from waves created by boaters.

Landslides

Landslides occur throughout the Lake Berryessa area. The intensity of landslides varies from low to moderate to occasionally high. Most commonly the slides are interpreted to be combined slump-earthflows and, less commonly, very rapid failures such as debris flows, mud flows, rock falls, and toppling. These mapped slides typically range in length from less than 100 feet to 200 feet. The steep slopes near the action area increases the potential for landslides in the action area.

Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not approve to build the Oak Shores Trail. There would be no impact to soil resources under the No Action Alternative.

Proposed Action

An area 3.6 miles long by eleven feet wide would have soil disturbance under the Proposed Action. This disturbance will include digging up to five feet and removing all vegetation along eleven feet of the proposed trail's path. This disturbance may increase the chances of erosion and landslides occurring in the proposed action area.

In general, the proposed trail footprint is designed to allow for proper drainage and prevent erosion. BMP's would be required in order to minimize the amount of soil disturbance, erosion, and landslides occurring from the proposed action. These BMP's include: constructing retaining walls to protect steep slopes; placing native seed along disturbed areas; placing weed-free straw along disturbed areas; using silt fences and/or straw waddles along steep areas of disturbance and construction of waterbars.

The proposed action could cause erosion and other soil impacts. The use of BMP's during and immediately following trail construction, and the sustainable trail design, would help alleviate these impacts.

Transportation and Circulation

Affected Environment

Regional access to Lake Berryessa is provided by State Route (SR) 121 and SR 128, which feed onto local county roads, (Berryessa-Knoxville Road, Pope Canyon Road, Steele Canyon Road, and Wragg Canyon Road). The local roads are paved, two-lane roads, designed for 25 to 55 miles per hour traffic. Primary access roads in the area operate below capacity except on weekends and holidays, and accident rates are comparable to those of other state roads on similar terrain.

The Berryessa-Knoxville Road provides the only access to the action area. This road is a two-lane, north-south county road that provides access to the north, south, and west shores of the Lake. Additionally, it provides access to four concession areas as well as the three public day use areas, a public launch ramp, several small stores, and three private residential developments. Traffic on Berryessa-Knoxville Road includes commercial, residential, and recreation users.

Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not approve to build the Oak Shores Trail. There would be no impact to transportation under the No Action Alternative.

Proposed Action

Under the Proposed Action, construction vehicles and equipment would result in a temporary increase in traffic on local roads. Construction traffic would involve transportation of construction equipment and materials and employees. The trail dozer and other large equipment and materials used during the proposed project construction would be staged at Reclamation's Lake Berryessa Recreation Resources Branch lower maintenance yard. Construction workers would likely park in designated parking areas at the VC and/or Oak Shores Day Use Area. This temporary increase in traffic due to trail construction would not result in substantial traffic or reduce the levels of service of the local roads. The proposed action is not anticipated to create a substantial increase in traffic on local roads or reduce the levels of service of the local roads.

Parking areas are available at both the VC and Oak Shores Day Use Area. After the construction of the trail, it is assumed that these parking areas may be impacted with an increase of recreationists wanting to utilize the trail. This increase in use is expected to be the greatest during the summer and on holiday weekends. The parking areas within Oak Shores Day Use Area are routinely full during high peak recreation seasons. However, the parking lot at the VC is rarely full. The Proposed Action may lead to more recreation users parking in the VC parking lot. If both the VC and Oak Shores Day Use Area parking areas are full, generally, the public begins parking along Berryessa-Knoxville Road. This could impact the flow of traffic along Berryessa-Knoxville Road during high recreation periods.

Visual Resources

Affected Environment

Lake Berryessa is a significant scenic and visual resource for visitors, travelers, and residents in the region. The area provides visitors a variety of high quality scenic vistas and panoramas of the lake and surrounding mountains. The majority of publicly accessible views are from local roadways, recreation areas, and concession areas. The length and configuration of Lake Berryessa's shoreline, the surrounding

topography, and wildlife habitat all provide substantial variety in both viewpoint orientation and available views from around the Lake.

Views from the proposed Oak Shores Trail across the Lake are of the eastern shore and the surrounding mountains. Ranch houses and associated outbuildings are visible from the proposed trail in some areas. The Berryessa-Knoxville Road is visible from many areas of the proposed trail, and the trail is in close proximity to the road in some places. The proposed trail is visible from the VC, the Oak Shores Day Use Area, and parts of the Berryessa-Knoxville Road.

Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not approve to build the Oak Shores Trail. There would be no impact to visual resources under the No Action Alternative.

Proposed Action

The Proposed Action will increase the amount of places to view quality scenic vistas and panoramas of and around Lake Berryessa. The proposed trail would be visible from many locations, including the VC, Oak Shores Day Use Area, and Berryessa-Knoxville Road. The proposed action area is within a highly recreated area, therefore, the impact to visual resources, (both from a trail user and from a non-trail user), would not be substantial.

Water Resources

Affected Environment

Surface Water Features

The action area is adjacent to the northwest shore of Lake Berryessa. At capacity, Lake Berryessa stores 1.6 million af of water, filling the reservoir to a water surface elevation of 440 feet above sea level. It is 23 miles long, three miles wide, and yields 165 miles of shoreline. It collects flows from a 568-square-mile drainage basin above Monticello Dam. Lake levels can fluctuate substantially, depending on hydrological and meteorological conditions, water demands, and hydropower needs. With the maximum water surface elevation controlled by the bell-shaped spillway ("glory hole") near the dam, lake levels may fluctuate from a maximum elevation of 455 feet to a minimum elevation of 253 feet.

Several small drainages flow into Lake Berryessa through the action area. There are culverts under Berryessa-Knoxville Road and in the Oak Shores Day Use Area that allow the seasonal flowing water in the drainages to flow into the Lake. Flow in the drainages originate in the surrounding hills and is primarily from rain. These drainages are considered waters of the U.S. and are subject to the U.S. Army Corps of Engineer's (USACE) jurisdiction under the Clean Water Act.

Water Quality

The Central Valley Regional Water Quality Control Board (RWQCB) designated several beneficial uses for Lake Berryessa in the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (RWQCB 2009). The designated beneficial uses of the Lake include municipal and domestic

supply, agricultural supply, hydropower generation (potential use), water contact recreation, non-contact water recreation, warm freshwater habitat, cold freshwater habitat, warmwater fish spawning, and wildlife habitat. For each beneficial use, the RWQCB identified appropriate water quality objectives to protect the Lake. Water quality conditions in Lake Berryessa are generally consistent with the water quality objectives identified in the basin plan to protect beneficial uses.

Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not approve to build the Oak Shores Trail. There would be no impact to water resources under the No Action Alternative.

Proposed Action

Under the Proposed Action, construction activities may result in discharges into the Lake that could affect water quality. Two wet crossings would be constructed in ephemeral drainages that would not impede the flow of water in the drainages and would protect the drainages from foot traffic along the banks. The wet crossings would be constructed of rock and the rocks would be placed within the drainage and would allow water to flow between the rock crevices.

Construction activities in and near the drainages and along the shoreline of the Lake may discharge sediment and other pollutants into the water, affecting water quality. The placement of fill, (including structures such as wet crossings), in waters of the U.S. would require a Section 404 permit and Section 401 water quality certification. Implementation of BMP's and compliance with these permits will ensure minimal long-term impacts to the drainages and water quality from the Proposed Action.

BMP's that may be required during, and immediately following, trail construction to minimize impacts to water quality include: placing silt fences and/or straw wattles along ephemeral drainages near the action area before construction to prevent sediment from getting into the drainages; prior to construction, placing silt fences and/or straw wattles along steep areas of disturbance to minimize sedimentation and erosion; placing weed-free straw along disturbed areas, following construction, to minimize erosion; placing native seed, following construction, along disturbed areas to encourage revegetation and thus decrease erosion; construction would not occur during the rainy season, (October-April), unless absolutely necessary in order to minimize sediment being washed into the Lake or drainages. If construction is to occur during the rainy season, a stormwater mitigation plan and map would need to be completed and reviewed by Reclamation prior to the start of construction. An NPDES permit/SWPPP will not be required because the trail is to be constructed in segments and each segment would have ground disturbance of less than an acre. Devices such as silt fences and straw wattles would remain in place following construction to ensure that the disturbed areas to settle and the threat of erosion/sedimentation is minimal.

The proposed trail was designed to reduce the longer term potential for trail users to disturb soils along riparian areas and to reduce the discharge of sediment into the Lake. The slope of the trail would allow for surface runoff across the trail to prevent water from ponding on the trail. As the trail becomes more compacted by trail use, surface runoff would be less likely to carry sediment and erode the trail. Once compacted, the runoff rate across the trail may increase slightly, resulting in increased runoff along the shore of the Lake.

Cumulative Effects

This proposed trail is one of many segments planned to be constructed in the future around Lake Berryessa. Per the VSP ROD, Reclamation will work with other governmental agencies, nonprofit groups, etc. to design and build a trail system surrounding the Lake. Some of these trails will connect to other public lands, and some of these trails will be developed within resort areas. Currently there are 115 miles of trail proposed to be constructed around Lake Berryessa. Many of the specific trails are still in the early planning stages.

This proposed action, when added to past, present, and future actions, (including other future trail projects), would not result in cumulative impacts to environmental resources. With implementation of BMP's, permits, mitigations, etc., the proposed action would not contribute to cumulative environmental impacts.

Chapter 4

List of Environmental Commitments

The following mitigation measures have already been incorporated, or may be incorporated, into the Proposed Action. These mitigation measures are in place in order to reduce impacts to the human environment and resources.

- Construction would not occur during the rainy season, (October-April), unless absolutely necessary. If construction is to occur during the rainy season, a stormwater mitigation plan and map may need to be completed and reviewed by Reclamation prior to the start of construction. An NPDES permit/SWPPP would not be required because the trail is to be constructed in segments and each segment would have ground disturbance of less than an acre.
- Stormwater mitigation measures/BMP's may be required to prevent erosion and sedimentation. These measures would be in place prior to construction and would be maintained throughout construction.
- Outslopes of the trail would be between two and four percent to allow for water runoff.
- Waterbars may be constructed to prevent erosion and allow for water runoff.
- Ground equipment, (trail dozer, etc.), would be washed prior to the start of construction and anytime the equipment leaves the proposed project area. This is to minimize the spread of invasive plants.

- If construction is to occur during bird nesting season, (February-August), a bird survey will be conducted prior to the start of construction. If an active nest is found near the proposed project area, nesting area will be avoided. In the event it cannot be avoided, appropriate mitigation measures will be set and adhered to.
- All trees to be cut will be marked and surveyed for nests prior to falling.
- Oak trees removed for project purposes will be replaced at a 2:1 ratio with 15 gallon blue oak trees.
- Brush that has been cut may be scattered out of sight of the trail.
- Aggregate material would be placed on the trail in order to minimize erosion, sedimentation, dust, and to comply with AGODA standards.
- Disturbed areas would be seeded with native grass seed to minimize erosion and the growth of non-native plant species. The amount of seed required per acre is 10 pounds.
- Disturbed areas would be placed with weed-free straw to minimize erosion, reduce the growth of non-native plant species, and prevent grass seed from drying out. Approximately 50 straw bales would be required per acre and the straw should be spread immediately after construction.
- Ground disturbance will only be permitted in the proposed project area.
- Retaining walls may be constructed along the proposed trail in order to minimize erosion.

Chapter 5

Consultation and Coordination

This section presents the agencies and parties that were consulted during development of the document, the applicable Federal, State, and local requirements the project will comply with, and the distribution list.

Consultation

Agencies and parties that were contacted during the development of this document:

- Regional Water Control Board
- US Army Corps of Engineers

Chapter 6

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Chapter 7

References

Barnes, A.J

2010 *Archaeological Investigation for a Recreation Facility Accessibility Improvement Project at Lake Berryessa, Napa county, California*. Unpublished cultural resources inventory on file with the Bureau of Reclamation, Sacramento, California (Project No. 10-CCAO-038.1).

Bay Area Air Quality Management District. 1999 BAAQMD CEQA Guidelines; Assessing the Air Quality Impacts of Projects and Plans.

http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/Plans/CEQA%20Guide/ceqa_guide.ashx

Bay Area Air Quality Management District. 2000. Bay Area 2000 Clean Air Plan and Triennial Assessment.

http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/Plans/2000%20Clean%20Air%20Plan/2000_cap.ashx

California Air Resources Board. 2009. Top 4 Measurements and Days Above the Standard.

<http://www.arb.ca.gov/adam/topfour/topfour1.php>

Central Valley Regional Water Quality Control Board. 2009. Water Quality Control Plan for the Sacramento and San Joaquin River Basins.

http://www.swrcb.ca.gov/rwqcb5/water_issues/basin_plans/sacsjr.pdf

Napa Chamber of Commerce. 2010. Demographics.

<http://napachamber.com/demographics.html>

Napa County. 2008. Napa County General Plan.

<http://www.countyofnapa.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=4294970296>

Nickels, A.M.

2010 *Continued Cultural Resources Investigations and Presence Absence Testing for the Development of Camp Berryessa, Lake Berryessa, Napa County, California*.

Unpublished report prepared for and by and on file with the Bureau of Reclamation, Sacramento, California. Project No. 09-CCAO-017.1

Nickels, A. M. and S. A. Overly

2009 *Class III Cultural Resources Inventory Report for Camp Berryessa, Lake Berryessa, Napa County, California*. Unpublished report prepared for and by and on file with the Bureau of Reclamation, Sacramento, California. Project No. 09-CCAO-017.1

Questa Engineering Corp. 2010. Plans for Construction of Oak Shores Park Trail.

Treganze, A. E. and A.B. Elsasser

1955 Salvage Archaeology at Sites Nap 74 and Nap 93 in the Monticello Reservoir Area, California Report prepared for National Park Service by contract with University of California Department of Anthropology and Archaeological Survey. On file with the Bureau of Reclamation, Mid-Pacific Regional Office.

True, D.L., M.A. Baumhoff, and J.E. Hellen

1979 Milling Stone Cultures in Northern California: Berryessa I. *Journal of California and Great Basin Anthropology*, Vol. 1, No. 1, Summer 1979.

1985 Milling Stone Cultures in Northern California: Berryessa II. *Journal of California and Great Basin Anthropology*.

True, D.L. and M.A. Baumhoff

1977 Archaeological Surveys of Lake Berryessa, Napa County California. On file with Bureau of Reclamation, Sacramento, California.

1982 Archaeological Investigations at Lake Berryessa, California. On file with Bureau of Reclamation, Sacramento, California.

True, D.L., and J.E. Hellen

1983 *Archaeological Surveys at Lake Berryessa California: Oak Shores Park*. Unpublished cultural resources inventory on file with the Bureau of Reclamation, Sacramento, California.

U.S. Access Board. 2009. Draft Final Accessibility Guidelines for Outdoor Developed Areas. <http://www.access-board.gov/outdoor/draft-final.htm>.

U.S. Bureau of Reclamation. 1992. Environmental Impact Statement, Lake Berryessa Reservoir Area Management Plan. Statement Number FES 92-12. U.S. Department of the Interior, Bureau of Reclamation.

U.S. Bureau of Reclamation. 2005. Future Recreation Use and Operations of Lake Berryessa, Final Environmental Impact Statement, Solano Project, Napa, California, Mid-Pacific Region. U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA.

U.S. Bureau of Reclamation. 2006. Record of Decision, Future Recreation Use and Operations of Lake Berryessa, Solano Project, Napa, California, Mid-Pacific Region. U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA.

U.S. Bureau of Reclamation. 2002. Recreation Facility Design Guidelines.
<http://www.usbr.gov/pmts/architecture/recfac/>.

U.S. Census Bureau. 2010. State and County QuickFacts.
<http://quickfacts.census.gov/qfd/states/06/06055.html>.

U.S. Forest Service. 2007. Trail Construction and Maintenance Notebook.
<http://www.fhwa.dot.gov/environment/fspubs/07232806/toc.htm>.