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## 10.0 CONSISTENCY WITH COMPREHENSIVE PLANS

Section 10(a)(2) of the Federal Power Act (FPA) requires the Federal Energy Regulatory Commission (Commission or FERC) to consider the extent to which a project is consistent with Federal and state comprehensive plans for improving, developing, and conserving waterways associated with the project. The FERC's List of Comprehensive Plans, revised September 2006 (FERC 2006) includes nine planning documents relevant to the four Big Creek Alternative Licensing Process (ALP) Projects under consideration: Mammoth Pool (FERC Project No. 2085); Big Creek Nos. 1 and 2 (FERC Project No. 2175); Big Creek Nos. 2A, 8 and Eastwood (FERC Project No. 67); and, Big Creek No. 3 (FERC Project No. 120). Note that in some cases more recent versions of the planning documents identified in the FERC's 2006 List of Comprehensive Plans are available and were used for this evaluation. These cases are identified with an asterisk (\*) as appropriate.

### 10.1 RELEVANT PLANS FROM FERC'S REVISED LIST OF COMPREHENSIVE PLANS

1. California Department of Fish and Game (CDFG). 1996. Steelhead Restoration and Management Plan for California. February 1996.
2. California Department of Parks and Recreation (CDPR). 1994. California Outdoor Recreation Plan (CORP). 1993. Sacramento, California. April 1994.\*
3. California Department of Parks and Recreation (CDPR). 1998. Public Opinions and Attitudes on Outdoor Recreation in California. Sacramento, California. March 1998.\*
4. California Department of Parks and Recreation (CDPR) (The Resources Agency). 1983. Recreation Needs in California. Sacramento, California. March 1983.
5. California Department of Water Resources (DWR). 1983. The California Water Plan: Projected Use and Available Water Supplies to 2010: Bulletin, 160-83. Sacramento, California. December 1983.
6. California Department of Water Resources (DWR). 1994. The California Water Plan Update: Bulletin 160-98. 1998.\*
7. California State Water Resources Control Board (State Water Board). 1995. Water Quality Control Plan Report. Sacramento, California. Nine volumes.\*
8. United States Department of Agriculture, Forest Service (USDA-FS). Sierra National Forest Land and Resource Management Plan. March 1992.
9. United States Department of Agriculture, Forest Service (USDA-FS). 2004. Sierra Nevada Forest Plan Amendment, Final Supplemental Environmental Impact Statement and Record of Decision (R5-MB-046-cd). Vallejo, California. January 2004.

## 10.2 LIST OF OTHER APPLICABLE PLANS

As part of this evaluation three additional planning documents that are not included on the FERC's List of Comprehensive Plans were also taken into consideration:

1. National Park Service (NPS). 1982. The Nationwide Rivers Inventory.
2. United States Department of Agriculture, Forest Service (USDA-FS). 2001. Final Environmental Impact Statement, Management Direction for the Ansel Adams, John Muir, and Dinkey Lakes Wildernesses. Amending the Land and Resource Management Plans for the Inyo and Sierra National Forests. United States Department of Agriculture, 2001 (USDA 2001).
3. United States Fish and Wildlife Service (USFWS). Undated. Fisheries USA: The Recreational Fisheries Policy of the U.S. Fish and Wildlife Service.

Pertinent goals and policies contained in each document were evaluated with respect to operation and maintenance of the four Big Creek Alternative Licensing Process (ALP) Projects. The evaluation found that, under the Proposed Action, operation and maintenance of the four Projects would not conflict with the goals and policies outlined in any of the identified comprehensive documents.

## 10.3 STEELHEAD RESTORATION AND MANAGEMENT PLAN FOR CALIFORNIA

Restoration of anadromous fish populations in California was mandated by The Salmon, Steelhead Trout, and Anadromous Fisheries Program Act of 1988. The CDFG developed the Steelhead Restoration and Management Plan for California (Steelhead Plan (McEwan and Jackson 1996)) as a feature of the program. The Steelhead Plan is a component of another CDFG document, Restoring Central Valley Streams, A Plan for Action (CDFG 1993), which presented a multi-species approach to restoration of anadromous fish populations in the Central Valley.

The California Central Valley Steelhead Evolutionarily Significant Unit (ESU), which includes steelhead in the San Joaquin River, is listed as threatened under the Federal Endangered Species Act (ESA). The Central Valley fall/late fall-run Chinook salmon (*Oncorhynchus tshawytscha*) are not listed, but are considered a candidate species under the Federal ESA. Spring-run Chinook in the Central Valley are listed as threatened under both the Federal and state ESAs. However, the Central Valley Spring-run Chinook Salmon ESU does not include the San Joaquin River because native populations have apparently been extirpated (National Marine Fisheries Service (NMFS) 1999, West Coast Chinook Salmon Biological Review Team 1997).

The Steelhead Restoration and Management Plan states "Management focus for Central Valley steelhead is to recover native and wild populations and restore hatchery-maintained runs." It states that natural production of steelhead in the Central Valley will continue to be limited due to inaccessibility of the headwaters, and a hatchery program needs to be implemented, if restoration of steelhead is to be achieved for the San Joaquin River Basin (McEwan and Jackson 1996).

Impassable dams on the San Joaquin River downstream of the seven Big Creek Projects, including Friant Dam and Kerckhoff Dam, prevent anadromous fish passage; therefore, these species are not found in the vicinity of the four Big Creek ALP Projects. The Commission correctly limited the geographic scope to the upper San Joaquin River basin above Millerton Reservoir in cumulative impact analyses completed for three Big Creek Projects: Big Creek No. 4 (FERC Project No. 2017); Portal Hydroelectric Power Project (FERC Project No. 2074), and Vermilion Valley Hydroelectric Project (FERC Project No. 2086) (FERC 2002; FERC 2004; and FERC 2005). In the Commission's Environmental Impact Statement (EIS) for the Big Creek No. 4 Project, it states:

“We did not include the San Joaquin River downstream of Friant dam because Millerton Reservoir has sufficient storage capacity to control the timing of discharge from Friant dam regardless of the timing of inflows.<sup>1</sup> All available conservation water outflows from Friant dam are currently used every year (Bureau, 2000). Therefore, any shifts in the timing or volume of flows from Friant dam are under the control of the Bureau, and not directly related to the operation of BC#4 (although downstream water rights and agreements influence the delivery of flow from the BCS).”

Under the Proposed Action, the timing and magnitude of flows leaving the Big Creek System (BCS) (downstream of the Big Creek No. 4 Project) are similar to the No Action Alternative. The higher instream flow releases recommended in the Proposed Action result in only a small change, relative to the volume of water routed for generation through the seven Big Creek Projects. The vast majority of water released downstream of the Big Creek No. 4 Project in non-spill years, and non-spill periods of spill years, passes through SCE's water conveyance system and the Project generation facilities rather than being released into the bypass reaches. As such, the temperature of water released downstream of Big Creek No. 4 will remain cool. The amount and timing will not appreciably change under the Proposed Action. Therefore, implementation of environmental measures recommended in the Proposed Action will not conflict with goals outlined in the Steelhead Restoration and Management Plan (CDFG 1996).

Additional information related to this topic of release temperatures is being developed by the U.S. Bureau of Reclamation (Bureau) for Millerton Reservoir and Friant Dam. This investigation may provide future information on potential effects of upstream operations on Millerton Reservoir. If information developed through this investigation shows that the four Big Creek ALP Projects affect anadromous fish or their habitat downstream of Friant Dam, these effects could subsequently be evaluated.

#### **10.4 CALIFORNIA OUTDOOR RECREATION PLAN**

The FERC's 2006 List of Comprehensive Plans cites the 1993 California Outdoor Recreation Plan (CORP), which was published in 1994 by the California Department of Parks and Recreation (CDPR). This plan has since been updated with the 2002 CORP,

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<sup>1</sup>“The combined flows from a complete breach of the BC#4 dam and the downstream Kerckoff Dam would be contained by the Millerton Reservoir without overtopping Friant dam (SCE 2000b).”

published in 2003. The following discussion is an analysis of Proposed Action consistency with this recent update of the CORP.

The 2002 edition of the CORP is a reference tool for planning statewide outdoor recreation leadership and actions for the next five years. The plan is updated approximately every five years to reflect current and expected changes in California's large and complex population and economy. Each revised edition takes into consideration the current demographic, economic, political, and environmental conditions in California, and then explores and analyzes the outdoor recreation issues that will be of major concern to public agencies in the next five years.

The 2002 CORP provides a policy foundation, information source, and action guide for state and local recreation development and implementation. The plan is based primarily on information collected from 2000 through 2002. The trends, policies, and proposed actions described in the CORP are very broad in scope and direction including topics such as funding, public access, and pressure on natural resources. In general, the plan promotes recreation projects that create partnerships and it seeks to mitigate trends that adversely affect resource conditions.

The four Big Creek ALP Projects enhance recreation in the basin by providing a diversity of recreation opportunities including: fishing, camping, water sports and day-use opportunities. Under the Proposed Action, new recreational measures are recommended to further enhance recreational opportunities and experiences in the vicinity of the four Big Creek ALP Projects. These new recreational measures address recreation facility rehabilitation; development of new recreational facilities; interpretative programs and signage; reservoir recreation; fish stocking; whitewater boating, and protection of other resources (i.e., environmental and cultural resources).

In summary, the Proposed Action is consistent with the policies and direction contained in the 2002 CORP.

## **10.5 PUBLIC OPINIONS AND ATTITUDES ON OUTDOOR RECREATION IN CALIFORNIA**

The FERC's 2006 List of Comprehensive Plans cites the 1998 Public Opinions and Attitudes on Outdoor Recreation in California, which was published in March 1998 by the California Department of Parks and Recreation (CDPR 1998; CDPR 2002). This survey has since been updated with data obtained in 2002 and published in 2003. The following discussion is an analysis based upon the most recent survey results.

The CDPR conducted telephone surveys of public opinions and attitudes towards outdoor recreation in California initially in 1987, and again in 1992, 1997, and 2002. For comparison purposes, the questions asked in each survey were kept similar. The data tracks outdoor recreation trends, shifts in public attitudes and values, and the demand for and participation in a variety of outdoor recreation activities. The 2002 telephone survey is included as an element of the CORP.

The survey included two lines of inquiry: public opinions; and the demand for and participation in outdoor recreation. The survey addressed a broad range of topics, but

in general it found that Californians believe outdoor recreation areas are important to their quality of life, and most support protecting the natural environments within outdoor recreation areas.

The four Big Creek ALP Projects enhance recreation in the basin by providing a diversity of recreation opportunities including: fishing, camping, water sports, and day-use opportunities. As described above under the Proposed Action, new recreational measures are recommended to further enhance recreational opportunities and experiences in the vicinity of the four Big Creek ALP Projects. These measures do not conflict with the opinions expressed by the survey respondents. Furthermore, the proposed recreation improvements specifically improve and protect natural environments and outdoor recreation areas, the two topics considered most important by the survey respondents. Therefore, the Proposed Action is consistent with the policies and direction contained in the 2002 opinion survey.

## **10.6 RECREATION NEEDS IN CALIFORNIA**

The CDPR report to the California legislature summarizes a statewide recreation needs analysis conducted between 1976 and 1982. The recommendations of the plan are summarized below:

- To meet increasing demand for outdoor recreation, opportunities for activities such as camping, fishing, hiking, and nature appreciation need to be provided in and near metropolitan areas.
- Accelerated development of State Park System facilities and programs near metropolitan areas is necessary to keep pace with projected increases in demand for outdoor activities.
- Legislative action is needed to modify (Roberti-Z'berg Open Space and Recreation) program criteria to reflect current needs analysis findings.
- Private recreation suppliers will need to assume a much larger role in satisfying recreation desires of California's urban residents. Studies need to be conducted by the legislature to develop incentives for the private sector to provide additional recreation services.
- The CDPR needs to implement pilot programs to alleviate constraints to full and equitable access to recreation opportunities.

The Proposed Action includes a variety of measures designed to improve and enhance recreation opportunities in the vicinity of the four Big Creek ALP Projects. For example, the Proposed Action includes improvements to existing recreation facilities to accommodate increased demand as well as to support activities of persons with disabilities. Sections 10.7 and 10.8 further discuss recreation enhancements associated with the Big Creek ALP Projects.

In summary, the continued operation of the four Big Creek ALP Projects is consistent with the plan recommendations, and will help meet demand by providing outdoor recreation activities near metropolitan areas.

## **10.7 THE CALIFORNIA WATER PLAN AND PLAN UPDATE**

The FERC's 2006 List of Comprehensive Plans identifies two California water planning documents: 1) the 1983 California Water Plan (DWR 1983); and 2) the California Water Plan Update, referred to as Bulletin 160-98 (DWR 1994). These are part of a series of periodically updated documents that describe California's changing water supply and demands. The most recent update entitled, "California Water Plan: Update 2005," is available on the DWR website (DWR 2006). The following discussion is an evaluation based upon the 2005 plan.

The 2005 California Water Plan Update provides details on water use and supply as of 1998 (DWR 2005). It presents a recent appraisal of statewide water uses for various beneficial purposes using a 2030 planning horizon, and identifies and analyzes options for improving water supply reliability. The 2005 Water Plan Update also provides a framework for water management in California, and includes a list of 14 recommendations to guide water managers for the next 25 years.

The majority of the 2005 California Water Plan Update focuses on California's consumptive water uses, such as agriculture and urban use. Water management for instream uses is acknowledged in the plan in Chapter 9, "Ecosystem Restoration". This chapter briefly addresses the future need to protect and enhance instream water uses such as fisheries, wildlife, aesthetics, and recreation. The plan update acknowledges that the data and analytical tools used to measure the adequacy of instream flows are insufficient to address ecosystem restoration and it provides a list of five recommendations to improve water management for ecosystem restoration. These recommendations are summarized below.

1. DWR, CDFG, and State Water Board should work together to publish comprehensive assessments of instream flow needs on California rivers, similar in scope to studies on the Feather and American rivers.
2. The Resources Agency and the California Environmental Protection Agency (CAL-EPA) should work with their respective departments, boards, and commissions to ensure and promote use of independent science to enhance their decision-making.
3. The Resources Agency should continue to support development and use of statewide databases, analytical tools and evaluation criteria.
4. The Resources Agency should support further scientific research on the relationship between flow dedication and water-independent actions to achieve desired restoration.

5. The CDFG, with the Department of Conservation and DWR, should investigate and resolve key issues regarding long-term coarse sediment supplies for ecosystem needs.

The continued operation of the four Big Creek ALP Projects conforms to the provisions of the goals and policies contained in the 1983 California Water Plan and the 2005 Water Plan Update. Under the Proposed Action, higher instream flow requirements in bypass streams, and other non-flow measures, are proposed to enhance fisheries, water quality, wildlife, aesthetics, and recreation. The proposed instream flow recommendations include: implementing new or higher minimum instream flows (MIFs); establishing channel riparian maintenance flows (CRMF) in selected bypass reaches through scheduled flow releases; or establishing time periods when diversions may not be operated; and scheduling pre-spill releases.

#### **10.8 WATER QUALITY CONTROL PLAN – CENTRAL VALLEY REGION, THE SACRAMENTO RIVER BASIN AND SAN JOAQUIN RIVER BASIN**

The FERC's 2006 List of Comprehensive Plans identifies a water-planning document published by the State Water Board entitled, "Water Quality Control Plan Report" (State Water Board 1995). The report includes nine volumes, organized by region, periodically updated to reflect changes in policies and regulations. The most recent update is entitled, "The Water Quality Control Plan (Basin Plan): Central Valley Region (Fourth Edition), The Sacramento River Basin and the San Joaquin River Basin" (RWQCB 1998). The updated 1998 version is available on the Regional Water Quality Control Board Website (<http://www.swrcb.ca.gov/>). This discussion relies on the 1998 update.

The objectives presented in the Basin Plan for the San Joaquin River Basin are designed to ensure the protection of the beneficial uses of water within the basin. These beneficial uses are more fully discussed in the CAWG 4, Chemical Water Quality, Technical Study Report (TSR) (SCE 2003; SCE 2004; Volume 4, SD-C (Books 8 and 21) and SD-D (Books 12 and 23)), and include:

- Municipal and Domestic Supply (MUN) – Uses of water for community, military, or individual water supply systems including but not limited to drinking water supply.
- Irrigation and Stock Watering-Agricultural Supply (AGR) – Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation (including leaching of salts), stock watering, or support of vegetation for range grazing.
- Hydropower Generation (POW) – Uses of water for hydropower generation.
- Water Contact Recreation (REC-1) – Uses of water for recreational activities involving physical contact with water, where the ingestion of water is reasonably possible. These uses include but are not limited to swimming, wading, water-skiing, whitewater activities, fishing, and use of natural hot springs.



- Non-Contact Water Recreation (REC-2) – Uses of water for recreational activities involving proximity to water, but where there is generally no physical contact with water, nor any likelihood of ingestion of water. These uses include, but are not limited to picnicking, sunbathing, hiking, beachcombing, camping, boating, hunting, sightseeing, and aesthetic enjoyment in conjunction with the listed activities.
- Warm Freshwater Habitat (WARM) – Uses of water that support warm water ecosystems including, but not limited to preservation or enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
- Cold Freshwater Habitat (COLD) – Uses of water that support cold water ecosystems including, but not limited to preservation or enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
- Wildlife Habitat (WILD) – Uses of water that support terrestrial or wetland ecosystems including, but not limited to preservation or enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), and wildlife water and food sources.

The Basin Plan also provides a list of water quality objectives that set limits or levels of water quality constituents or characteristics that are established for the protection of the beneficial uses of the river. The achievement of these objectives depends on applying them to controllable water quality factors. The applicant is responsible for: 1) identifying the water quality impacts caused by controllable factors from operations of the project; and 2) recommending measures that may be reasonably applied to control impacts to beneficial uses (including water quality). The water quality parameters identified for waters in the basin include bacteria, biostimulatory substances, chemical constituents, color, dissolved oxygen (DO), floating material, oil and grease, pH, pesticides, radioactivity, salinity, sediment, settleable material, suspended material, taste and odor, temperature, toxicity, and turbidity. Basin Plan water quality parameters are evaluated in Section 5.2.2, Water Quality. Detailed results of the water quality surveys are provided in CAWG 4, Chemical Water Quality, TSR (SCE 2003; SCE 2004; Volume 4, SD-C (Books 8 and 21) and SD-D (Books 12 and 23)).

Under existing Project operations, several water quality parameters occasionally did not comply with the Basin Plan water quality objectives at Project reservoirs and forebays and selected bypass reaches associated with the four Big Creek ALP Projects (see Table 5.2.2-2 in Section 5.2 Water Quality of this APDEA). The water quality parameters occasionally not meeting Basin Plan objectives include: nitrate/nitrite, pH, MtBE, iron, manganese, DO, water temperature, turbidity, trace metals, total petroleum hydrocarbons as diesel (TPH-D). Of these parameters, three (DO, temperature, turbidity) are considered to be controllable, Project-related effects.

Under the Proposed Action, four environmental measures are recommended to address compliance with water quality objectives in the Basin Plan, where factors are controllable. These measures include: higher MIF, implementation of a temperature-monitoring and management plan, implementation of a flow monitoring program and

implementation of sediment management prescriptions. The operation and maintenance of the four Big Creek ALP Projects under the Proposed Action, conforms to the Basin Plan objectives.

The following sections of this document describe each water quality parameter in question. The discussion is separated into three categories based on whether the deviations from Basin Plan objectives are considered to be (1) Non-Project related, (2) Project-related and uncontrollable, or (3) Project-related and controllable.

### **10.8.1 NON-PROJECT RELATED WATER QUALITY IMPACTS**

#### Nitrate/Nitrite

The Basin Plan objective (based on the USEPA drinking water standard) for nitrate/nitrite (10 milligrams per liter (mg/L)) was exceeded in two bypass reaches (one occurrence at each location) associated with the Big Creek Nos. 1 and 2 Project and Big Creek Nos. 2A, 8 and Eastwood Project during the 2002 water quality study. The bypass reaches include Big Creek from Dam 4 to Dam 5 and Big Creek from Dam 5 to the San Joaquin River. Nitrate concentrations were not detected at upstream sample sites and no likely Project-related source of nitrates is known that could contribute nitrates in these stream reaches. The observed exceedances are unlikely to be related to Project operations. No mitigation measures are recommended under the Proposed Action.

#### pH (alkalinity)

The Basin Plan objective for pH was not met at numerous locations associated with the four Big Creek ALP Projects. According to the Basin Plan, pH shall not be depressed below 6.5 or raised above 8.5. Further, changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses. The pH values observed in the vicinity of the four Big Creek ALP Projects were often below the lower limit of 6.5 and a few values were above the upper limit of 8.5. Low pH values were observed both upstream and downstream of Project facilities, indicating that the low pH conditions are generally not Project-related. The low pH in streams that flow from the base of reservoirs and forebays appears to reflect the lower pH values observed in the lower water column of these water bodies. High pH values in streams were only measured at five locations and were only slightly above the upper limit ranging from 8.66 to 8.77. These high pH values were observed upstream and downstream of Project facilities indicating that they are generally not Project-related.

Alkalinity is usually the primary factor that controls the pH values and buffering capacity of a water system. Surface waters within granitic watersheds (such as in the four Big Creek ALP Projects) typically have more acidic pH values. Alkalinity values less than 10 mg/L are considered very low and the pH of these waters is very susceptible to acid inputs (Wetzel 2001). The alkalinity of surface waters within the vicinity of the four Big Creek ALP Projects is generally very low (<10 mg/L on average), contributing to the observed low pH values. Low pH values in the vicinity of the four Big Creek ALP

Projects are not Project-related or controllable factors. No mitigation measures are recommended under the Proposed Action.

### Iron and Manganese

The Basin Plan objectives for total iron (0.3 mg/L) were exceeded at two locations associated with the Big Creek Nos. 1 and 2 Project and six locations associated with the Big Creek Nos. 2A, 8 and Eastwood Project. The Basin Plan objective for total manganese (0.05 mg/L) was exceeded at one location associated with the Big Creek Nos. 1 and 2 Project and two locations associated with the Big Creek Nos. 2A, 8 and Eastwood Project. These objectives are secondary Maximum Concentration Limits (MCLs) for drinking water, based on a taste and staining threshold for iron and on a taste and odor threshold for manganese. These criteria are of aesthetic rather than toxicological significance. Both iron and manganese naturally occur in the watershed. Detection of these constituents is attributable to background sources and is not considered Project-related.

The U.S. Environmental Protection Agency (USEPA) criterion for total iron concentrations in water, published in the Red Book for the protection of freshwater aquatic life, is 1.0 mg/L (EPA 1976). There were no iron concentrations exceeding 1.0 mg/L observed in the vicinity of the Projects. Therefore, iron concentrations do not represent a risk to aquatic organisms and do not impact beneficial uses of the water associated with the four Big Creek ALP Projects. No aquatic life criterion has been developed for manganese.

Iron and manganese are common in the rocks surrounding the four Big Creek ALP Projects and are therefore, commonly found in surface water. Therefore, some of the iron and manganese detected in the water samples is attributable to background sources and is not considered Project-related.

It should be noted that one of the designated beneficial uses for water in the vicinity of the four Big Creek ALP Projects is for municipal and domestic supply. However, the only surface water removed for drinking purposes is for SCE's administrative offices and company housing near Big Creek Powerhouse No. 1. Despite extensive testing and reporting, no water quality problems associated with iron and manganese in this domestic water supply have been reported. No mitigation measures are recommended under the Proposed Action.

### Total Petroleum Hydrocarbons as Diesel (TPH-D)

The Basin Plan objective for TPH-D (100 mg/L) was exceeded at one location associated with the Mammoth Pool Project (in Mammoth Pool Reservoir), one location associated with the Big Creek Nos. 1 and 2 Project (in Huntington Lake), and two locations associated with the Big Creek Nos. 2A, 8 and Eastwood Project (in Shaver Lake and Florence Lake). The objective is based on a taste and odor threshold criterion. It is assumed that recreational motorized boating was the source of TPH-D in

these waters. Motorized boating is not considered a Project-related impact, because boating activity is not related to SCE's operation and maintenance activities.

### Methyl Tertiary Butyl Ether (MtBE)

The Basin Plan objective for MtBE (5 µg/L) was exceeded at one location (Shaver Lake) associated with the Big Creek Nos. 2A, 8 and Eastwood Project during July and August of 2002. It is assumed that recreational motorized boating was the source of MtBE in these waters. Motorized boating is not considered a Project-related impact, because boating activity is not related to SCE's operation and maintenance activities. Since MtBE is now banned as a fuel additive, it is expected that it will no longer be introduced into the lake. No mitigation measures are recommended under the Proposed Action.

### Trace Metals

#### *Arsenic*

The Drinking Water standard for arsenic is 10 µg/L, based on the State MCL. Values exceeding this criterion were observed at three locations in the vicinity of Big Creek Nos. 2A, 8 and Eastwood: Camp 62 Creek (upstream of the South Fork San Joaquin River confluence), Pitman Creek (upstream of Dam 4) and the South Fork San Joaquin River (at Mono Crossing, downstream of Rattlesnake Crossing, and upstream of the San Joaquin River confluence). Arsenic is a naturally occurring, widely distributed metallic element and the observed concentrations are likely not Project-related.

#### *Copper*

The Drinking Water standard for total copper is 1 mg/L, based on the MCL for drinking water. All copper analytical results met the Basin Plan objective. However, the California Toxics Rule (CTR) and the National Toxics Rule (NTR) have established a more stringent dissolved copper criterion for the protection of freshwater aquatic life. The CTR and NTR set acute and chronic criteria that are hardness-dependent and calculated on a sample-by-sample basis. Two samples from the vicinity of Big Creek Nos. 1 and 2, four samples from the vicinity of Big Creek Nos. 2A, 8 and Eastwood, and one sample from the vicinity of Big Creek No. 3 exceeded the CTR criterion. These small concentrations do not adversely impact water quality in the Project vicinities. The sources of copper at these locations are unknown but likely not Project-related.

#### *Lead*

The Drinking Water standard for total lead is 15 µg/L. There were no analytical results exceeding this criterion. However, the CTR and NTR have established a more stringent lead criterion for the protection of freshwater aquatic life. The CTR and NTR have set acute and chronic dissolved lead criteria that are hardness dependent and calculated on a sample-by-sample basis. Two samples from the vicinity of Big Creek Nos. 1 and 2 and three samples from the vicinity of Big Creek Nos. 2A, 8 and Eastwood exceeded the CTR criterion. These small concentrations do not adversely impact water quality in

the Project vicinities. The sources of lead at these locations are unknown but likely not Project-related.

### *Mercury*

No samples from the Mammoth Pool exceeded the Drinking Water standard of 2 µg/L or the EPA's recommended ambient water quality criterion of 0.77 µg/L or California Toxics Rule (CTR). Three samples from the vicinity of Big Creek Nos. 1 and 2, 13 samples from the vicinity of Big Creek Nos. 2A, 8 and Eastwood, and one sample from the vicinity of Big Creek No. 3 exceeded the CTR criterion of 0.05 µg/L. The sources of mercury are unknown. However, mercury is a naturally occurring, widely distributed element. The study results indicate that low concentrations of mercury were in many of the water samples collected from the four Big Creek ALP Project vicinity waters. This included measurements taken both upstream and downstream of Project-facilities and are not considered Project-related.

### *Silver*

The Basin Plan objective for secondary MCL Drinking Water standard for silver is 100 µg/L. There were no analytical results exceeding this criterion. However, the CTR and NTR have established a more stringent silver criterion for the protection of freshwater aquatic life. The CTR and NTR have set an acute dissolved silver criterion that is hardness dependent and calculated on a sample-by-sample basis. One sample from the vicinity of Big Creek Nos. 2A, 8 and Eastwood and one sample from the vicinity of Big Creek No. 3 exceeded the CTR criterion. These small concentrations do not adversely impact water quality in the Project vicinities. The sources of silver at these locations are unknown but likely not Project-related.

### *Zinc*

The secondary MCL Drinking Water standard for Basin Plan objective for zinc is 5 µg/L. There were no analytical results exceeding this criterion. However, the CTR and NTR have established more stringent zinc criteria for the projection of freshwater aquatic life. The CTR and NTR have set an acute dissolved zinc criterion that is hardness dependent and calculated on a sample-by-sample basis. One sample from the vicinity of Big Creek Nos. 2A, 8 and Eastwood exceeded the CTR criterion. This sample was collected upstream of the Project facilities indicating that it is not Project-related.

## **10.8.2 PROJECT-RELATED NON-CONTROLLABLE WATER QUALITY PARAMETERS**

### Dissolved Oxygen (DO)

The Basin Plan specifies that DO concentrations in waters designated COLD should not fall below 7.0 mg/L. Ross Creek is an ephemeral stream, which experiences low DO levels as the stream dries-up upstream of the diversion during the warm summer months. This is a naturally occurring condition in Ross Creek and is not a Project-related effect. DO concentrations below the Basin Plan objective were observed occasionally at some stations during the 2002 water quality study in each of the Project

reservoirs and forebays associated with the Mammoth Pool Project, Big Creek Nos. 2A, 8 and Eastwood Project and Big Creek No. 3 Project, particularly in the lower portions of the water column. This is a natural occurrence in impounded waters, and is considered an uncontrollable non-Project related effect, and therefore no measures are proposed. Therefore, the Proposed Action is consistent with the Basin Plan.

### **10.8.3 PROJECT-RELATED CONTROLLABLE WATER QUALITY IMPACTS**

#### Dissolved Oxygen (DO) (All Projects)

Non-compliant DO concentrations were also observed at some stream monitoring stations (see Section 5.2.2, Water Quality). This is considered a controllable Project-related impact. Under the Proposed Action, two environmental measures are recommended to address compliance with the DO objective in the Basin Plan. These measures include higher MIF requirements and implementation of a flow monitoring program. Higher instream flows will result in decreased water temperatures, and increased turbulence and mixing, and therefore increase oxygen concentrations in the affected stream reaches. Therefore, the Proposed Action is consistent with the Basin Plan.

#### Water Temperature

The Basin Plan specifies that at no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F (2.8°C) above natural receiving water temperature. To determine if the Basin Plan 5°F water temperature warming criteria was exceeded, water temperatures upstream and downstream of Project diversions were evaluated. An increase in temperature greater than 5°F was observed in 18 stream reaches. Some of these increases may be attributable to natural downstream warming and low summer base flow.

Stream reaches identified as having a 5°F upstream to downstream temperature increase were further evaluated to determine if the observed daily mean and maximum temperatures were outside of the range of temperature criteria (evaluation criteria) for target aquatic species (i.e., daily mean of 20°C and daily maximum of 24°C for trout). The results of these analyses identified three stream reaches where downstream water temperatures increased by more than 5°F and exceeded the daily maximum water temperature criteria for aquatic species, they include:

1. San Joaquin River, Mammoth Pool Dam to Dam 6
2. San Joaquin River, Dam 6 to Redinger Lake
3. Big Creek, Dam 4 to Dam 5

Six stream reaches were identified where downstream water temperatures increased by more than 5°F and exceeded the mean daily preliminary water temperature criteria for aquatic species, they include:

1. San Joaquin River, Mammoth Pool Dam to Dam 6
2. Ross Creek, diversion to the San Joaquin River
3. Rock Creek, diversion to the San Joaquin River
4. Big Creek, Dam 4 to Dam 5
5. Big Creek, Dam 5 to the San Joaquin River
6. South Fork San Joaquin River, Florence to Mammoth Pool

Under the Proposed Action, three environmental measures are recommended to address compliance with temperature objectives in the Basin Plan. These measures include higher MIF requirements, implementation of a temperature monitoring and management program, and implementation of a flow monitoring program. Therefore, the Proposed Action is consistent with the Basin Plan.

#### Turbidity

The Basin Plan objectives for turbidity were exceeded at four locations associated with the Big Creek Nos. 2A, 8 and Eastwood Project and one location associated with Big Creek No. 3 Project.

Two of the elevated turbidity measurements were attributed to the Project. Both are in the Big Creek Nos. 2A, 8 and Eastwood Project streams, they are:

1. Hooper Creek, diversion to the South Fork San Joaquin River
2. Balsam Creek, forebay to Balsam Creek Diversion

These elevated turbidity levels may be related to current sediment management practices. The Proposed Action includes the implementation of Sediment Management Prescriptions that when implemented, would allow Basin Plan objectives to be met.

In three remaining cases the elevated turbidity levels are isolated occurrences that appear to be related to sampling error. These cases are not considered Project-related and are therefore not addressed in the Proposed Action.

### **10.9 SIERRA NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN**

The Sierra Forest Land and Resource Management Plan (LRMP) was developed by the USDA-FS to direct the management of the Sierra National Forest (SNF) (USDA-FS 1992). The goal of this plan is to provide a management program that reflects a variety of activities, allow use and protection of Forest resources, and fulfill legislative requirements while addressing local, regional, and national issues. The LRMP describes the desired future state of the SNF, provides forestwide management direction and prescriptions for individual management areas, and includes management

standards and guidelines. The LRMP applies to all National Forest lands administered by the SNF. The Sierra National Forest is scheduled to initiate a revision process for the LRMP in 2007.

The LRMP recognizes hydropower and recreation as two important beneficial uses of the SNF Forest. The four Big Creek ALP Projects support both of these beneficial uses. The environmental measures included as part of the Proposed Action were carefully developed in coordination with the Forest Service and considered the management direction, prescriptions, standards and guidelines contained in the LRMP. Accordingly, the continued operation and maintenance of the four Big Creek ALP Projects under the Proposed Action conforms to the goals and provisions of the LRMP.

### **10.10 SIERRA NEVADA FOREST PLAN AMENDMENTS**

The FERC's 2006 List of Comprehensive Plans includes the 2004 Sierra Nevada Forest Plan Amendment (SNFPA), Final Supplemental EIS, and the Record of Decision (ROD). This document augments the previously published 2001 Sierra Forest Plan Amendment, FEIS and ROD. This analysis relies on both amendments, which are used in tandem.

The 2001 SNFPA augments the Pacific Southwest Regional Guide, the Intermountain Regional Guide, and LRMP's for National Forests in the Sierra Nevada and Modoc Plateau, including the Sierra National Forest (USDA-FS 2001). The Forest Plan Amendment addresses the needs to: 1) sustain the desired condition of old forest ecosystems; 2) protect and restore riparian, aquatic, and meadow ecosystems; 3) combat noxious weeds; 4) improve fire and fuels management; and, 5) sustain desired conditions of lower west side hardwood ecosystems in the affected National Forests. A Record Of Decision (ROD) was submitted with the Final (FEIS), which included rationale regarding the decision basis for the preferred alternative. The preferred alternative applies a cautious approach for vegetation and fuels management in habitats for sensitive wildlife species, particularly those associated with old forest ecosystems, while recognizing the need to reduce the threat of fire to human communities.

The 2004 Forest Plan Amendment (Amendment) and associated documents address in detail three problem areas that were not adequately analyzed in the 2001 Forest Plan Amendment. These areas include: 1) old forest ecosystems and associated species; 2) aquatic, riparian and meadow ecosystems and associated species; and 3) fire and fuels management. The 2004 Forest Plan Amendment adopts an integrated strategy for vegetation management, designed to reduce the threat of wildfire to communities in the urban-wildland interface. It is also designed to modify fire behavior over the broader landscape. The 2004 Amendment does not address all management activities on National Forest System land. For example, the Amendment does not address recreation management or Wild and Scenic River management. These resource areas are addressed in the individual Forest Land and Resource Management Plans.



The Proposed Action includes a variety of environmental measures that were developed in coordination with the Forest Service and other resource agencies to protect, enhance, and improve forest ecosystems in accordance with the goals and guidelines contained in the 2001 and 2004 Sierra Nevada Forest Plan Amendments. Among other things, the Proposed Action includes measures to reduce the spread and introduction of noxious weeds and improve fire and fuels management, particularly with respect to Project facilities and roads. In addition, the Proposed Action includes measures to protect, restore, and enhance riparian, aquatic, and meadow ecosystems. For example, the Proposed Action includes a recommendation for new or higher MIF in bypass streams, and CRMF in certain streams, to enhance fisheries, water quality, riparian and meadow habitat, wildlife, aesthetics, and recreation. These proposed instream flow recommendations also include decommissioning of four small diversions, establishing time periods when diversions may be operated; and scheduling pre-spill releases for whitewater recreation enhancement.

In summary, the continued operation and maintenance of the four Big Creek ALP Projects under the Proposed Action conforms to the guidelines and goals contained in the 2001 and 2004 Sierra Nevada Forest Plan Amendments.

#### **10.11 THE NATIONWIDE RIVERS INVENTORY**

The Nationwide Rivers Inventory was completed by the National Park Service (NPS) under the authority of the Wild and Scenic Rivers Act in an effort to identify “potential wild, scenic, and recreational river areas within the nation” (NPS 1982; NPS 2006). The San Joaquin River was among the rivers the Department of Interior inventoried in 1982 for possible inclusion in the National Wild and Scenic River System, but it was not included in the final inventory. No portions of any stream or river in the San Joaquin River watershed have been designated as a component of the National Wild and Scenic Rivers System (16 USC 28 Section 1274).

There are no designated wild and scenic rivers directly or indirectly affected by operations of the four Big Creek ALP Projects.

In summary, the operation and maintenance of the four Big Creek ALP Projects under the Proposed Action would not conflict with the provisions of the Wild and Scenic Rivers Act.

#### **10.12 FISHERIES USA, THE RECREATIONAL FISHERIES POLICY OF THE USFWS**

The National Recreational Fisheries Policy (National Policy) was adopted in 1988. The U.S. Fish and Wildlife (USFWS) issued Fisheries USA (USFWS undated) to identify its responsibilities and role under the auspices of the National Policy. Policy elements relevant to recreational fisheries associated with the four Big Creek ALP Projects include the following:

- Protect, restore, and enhance fish populations and their habitats.

- Serve as an active partner (USFWS) with other Federal governmental agencies, States, Native American Tribes, conservation organizations, and the public in developing recreational fisheries programs.

The overall goals of this policy have been achieved through the development of environmental measures contained in the Proposed Action that protect, restore, and enhance fish populations and their habitats in the vicinity of the four Big Creek ALP Projects, and support recreational fishing. The Big Creek ALP also provided the venue for the USFWS to collaborate with other governmental agencies, Native American Tribes, conservation organizations, and the public during the development of recreational fisheries objectives and associated environmental measures. Therefore, the Proposed Action is consistent with the USFWS National Policy.

### **10.13 FINAL ENVIRONMENTAL IMPACT STATEMENT (FEIS)**

The FEIS provides direction for the Ansel Adams, John Muir, and Dinkey Lakes Wilderness areas. It amends the land and resource management plans for the Inyo and Sierra National Forests. The Forest Service FEIS amends the LRMP for the Sierra and Inyo National Forests and includes new management direction for the Ansel Adams, John Muir, and Dinkey Lakes Wilderness Areas, comprising 840,561 acres (USDA-FS 2001). The FEIS documents the results of the environmental analysis for four alternatives developed to manage these three designated Wilderness Areas. These alternatives are designed to respond to the objectives of assuring healthy ecosystems, an enduring wilderness resource, and compliance with the Wilderness Act of 1964.

The operation of the four Big Creek ALP Projects conforms to the goals and provisions of the Wilderness Management Plan. Only the Big Creek Nos. 2A, 8 and Eastwood Project has existing facilities located within designated Wilderness Areas. These facilities include small dams and diversion facilities at Tombstone and Crater creeks. Under the Proposed Action, the dam and ancillary features at Crater Creek (currently in service) and Tombstone Creek (currently out-of-service) will be decommissioned and removed, thereby improving the Wilderness character. In addition, two small dams and diversions at North and South Slide creeks (currently out-of-service) located immediately adjacent to a designated Wilderness Area will also be decommissioned and removed.

A portion of several bypass streams in the upper San Joaquin River Watershed associated with the Big Creek Nos. 2A, 8 and Eastwood Project are included within designated Wilderness Areas. Under the Proposed Action, higher instream flow requirements are proposed in these bypass streams to enhance fisheries, water quality, wildlife, aesthetics, and recreation. These proposed instream flow recommendations include implementing higher MIF requirements; and establishing CRMF in selected bypass reaches through scheduled flow releases or establishing time periods when diversions may be operated. These new instream flow schedules will improve the Wilderness character along the bypass streams.