

# **SMALL DIVERSIONS DECOMMISSIONING PLAN**

## **BIG CREEK HYDROELECTRIC SYSTEM**

**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)**

**BIG CREEK No. 3 (FERC Project No. 120)**

**FEBRUARY 2007**

**SUBMITTED BY  
SOUTHERN CALIFORNIA EDISON COMPANY**

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## 1.0 INTRODUCTION

This Small Diversions Decommissioning Plan (Plan) describes the approach for decommissioning six small diversions that are owned by the Southern California Edison Company (SCE) as part of the Big Creek Hydroelectric System. The Plan provides a description of: (1) the physical characteristics and location of each of the small diversions; (2) the decommissioning activities, staging areas and equipment to be used; (3) the permitting requirements; and (4) the proposed schedule. The objective of the Plan is to provide the information and details necessary for the Federal Energy Regulatory Commission (Commission or FERC) approval of the small diversion decommissioning and for regulatory agencies to issue any required permits.

The small diversions to be decommissioned include four back-country hydroelectric generation diversions (North and South Slide Creek diversions, Tombstone Diversion, and Crater Creek Diversion) and two domestic water diversions (Pitman Creek Diversion and Snow Slide Creek Diversion). These four back-country hydroelectric diversions are components of the Big Creek Nos. 2A, 8, and Eastwood Project (FERC Project No. 67) and the two domestic diversions are components of the Big Creek Nos. 1 and 2 Project (FERC Project No. 2175). SCE is relicensing both Project No. 67 and Project No. 2175 as part of the Big Creek Alternative Licensing Process (ALP). SCE has agreed to decommission these six small diversions as part of the ALP.

The decommissioning approaches include the dismantling of five diversions and abandoning one diversion in place. The diversions will be decommissioned because they (i) are currently not in service, (ii) are no longer needed for the operation and maintenance of the Project, or (iii) have been requested to be removed by resource agencies participating in the ALP. This Plan will maintain or restore natural flow to the affected streams.

All above-ground ancillary facilities associated with the small diversions (e.g. water conveyance pipe, support structures, stream gages) and other associated debris will be removed. The decommissioning activities and removal of materials will be conducted in an appropriate manner depending on the location of the diversion with regard to being in a Wilderness area and the material type.

Once the small diversions have been decommissioned SCE will provide notification to the State Water Resources Control Board (State Water Board), Division of Water Rights that the diversions are no longer in service and no longer necessary for Project operations. SCE will request the water rights associated with the diversions be transferred or cancelled.

## 2.0 PERMITTING

Decommissioning of the small diversions may require approval from the FERC and permits from the United States Department of Agriculture-Forest Service (USDA-FS) (Wilderness Variance and Special Use Permit), the California Department of Fish and

Game (CDFG) (1600 Stream Bed Alteration Agreement), the State Water Board (401 Water Quality Certificate), and the United States Army Corps of Engineers (COE) (Nationwide permit under Section 404 of the Clean Water Act), and consultation with the United States Fish and Wildlife Service (USFWS). These permits will be obtained, prior to initiation of work, if required.

Two small diversions (Crater Creek and Tombstone Creek diversions) are located in the designated Wilderness. Therefore, SCE will complete a Minimum Tools Analysis to document the need for the use of a helicopter to transport large unmanageable debris (e.g. water conveyance pipe) from the Wilderness. The Minimum Tools Analysis will be completed in accordance with the guidelines in the Minimum Tools Decision Guide (USDA 2005).

SCE will consult with the USDA-FS and other regulatory agencies regarding information needs and permitting requirements for the decommissioning activities. If additional information is needed in order to obtain approval of necessary permits, then SCE will prepare detailed descriptions of the decommissioning activities to be conducted for each small diversion. The additional information may include identification of: (1) worker, resource and fire protection measures; (2) work staging and work camp areas; (3) access needs; and (4) transportation and disposal measures. SCE will provide a detailed schedule identifying the start, duration and completion of decommissioning activities prior to commencement of work. Decommissioning activities will not commence until the USDA-FS and other regulatory agencies have approved the work activities and issued the necessary permits.

### **3.0 SMALL DIVERSIONS**

The small diversions that will be decommissioned are described below.

#### **3.1 CRATER CREEK DIVERSION**

The Crater Creek Diversion Dam and diversion channel are located approximately 1 mile west of Florence Lake at an elevation of 8,764.6 feet above mean sea level (msl) (Figure 1). The diversion is located within the John Muir Wilderness. The diversion is currently in service and diverts water from Crater Creek through a man-made diversion channel to Strawberry Creek. Diverted water flows down Strawberry Creek to Florence Lake where it is stored for hydroelectric generation.

The Crater Creek Diversion Dam consists of a 3-foot high concrete dam that is approximately 21 feet long. The Crater Creek diversion channel is a man-made channel of masonry rock wall construction that is approximately 550 feet long. A stream gage and control structure is located at the end of the man-made channel. The stream gage equipment is housed in a corrugated pipe structure located adjacent to the channel. The control structure that spans the stream is a mortar rock wall approximately 2 feet high and 10 feet long.

### **3.2 TOMBSTONE DIVERSION**

The Tombstone Creek Diversion Dam and associated water conveyance pipe are located approximately 0.5 mile north east of Florence Lake at an elevation of 7,673 feet msl (Figure 1). The diversion and water conveyance pipe are located in the John Muir Wilderness. The water conveyance piping is 14-inches in diameter and approximately 2,400 feet in length. This piping conveys water from the diversion dam to a natural channel that flows to Florence Lake. Diverted water is temporarily stored in Florence Lake for later use in downstream hydroelectric power plants.

The Tombstone Diversion Dam consists of a 5-foot high masonry rock wall dam that is 26.4 feet long. Flow from the diversion structure is controlled by a manually operated 24-inch head gate located on the upstream face of the dam. The Tombstone water conveyance piping is located above ground on granitic bedrock and is anchored to the bedrock using a series of steel piping support legs and concrete piers. The diversion is currently out-of-service.

### **3.3 NORTH SLIDE CREEK DIVERSION**

The North Slide Creek Diversion Dam is located approximately 1.5 miles north of Florence Lake at an elevation of 7,501.5 feet msl. The diversion is located outside of the John Muir Wilderness (Figure 1). Diverted water is conveyed from the diversion through underground piping to the Hooper Diversion flow conduit which flows into Florence Lake. Diverted water is stored in Florence Lake for hydroelectric generation purposes.

The North Slide Creek Diversion Dam consists of a 5-foot high masonry rock wall dam that is 19 feet long. Flow from the dam is controlled by a manually operated 14-inch head gate located on the upstream face of the dam. The North Slide Creek water conveyance pipe consists of a combination of 8-inch-diameter and 12-inch-diameter pipe approximately 1,000 feet long. The 12-inch-diameter pipe is also connected to an 8-inch-diameter pipe originating from the South Slide Creek Diversion. The 12-inch-diameter pipe conveys diverted water from both North and South Slide creeks diversions. The water conveyance pipe is located below ground.

The diversion is currently out-of-service and has not been operational for 21 years. Approximately 20 yards of fine sediment has filled the diversion pool behind the dam.

### **3.4 SOUTH SLIDE CREEK DIVERSION**

The South Slide Creek Diversion Dam is located approximately 1.5 miles south east of Florence Lake at an elevation of 7,501.5 feet msl. The diversion is located outside of the John Muir Wilderness (Figure 1). Diverted water is conveyed from the diversion through underground piping to the Hooper Diversion flow conduit which flows into Florence Lake. Diverted water is stored in Florence Lake for hydroelectric generation.

The South Slide Creek Diversion Dam consists of a 5-foot high masonry rock wall dam that is 22 feet long. Flow from the dam is controlled by a manually operated 14-inch head gate located on the upstream face of the dam. The former mortar rock wall diversion structure has been degraded by extreme weather and high flow events, and has not been operational for 21 years. The immediate area surrounding the diversion is overgrown with dense riparian vegetation. The diversion is currently out-of-service.

A combination of 8-inch-diameter and 12-inch-diameter pipe approximately 1,000 feet long is used to convey water from the diversion dam to the Hooper Diversion flow conduit which flows into Florence Lake. The 12-inch-diameter pipe is also connected to an 8-inch-diameter pipe originating from the North Slide Creek Diversion. The 12-inch-diameter pipe conveys diverted water from both North and South Slide creeks diversions. The water conveyance pipe is located below ground.

### **3.5 PITMAN CREEK DOMESTIC DIVERSION**

The Pitman Creek Domestic Diversion Dam is located approximately 1 mile east of the community of Big Creek (Figure 2). The diversion dam is a concrete structure, which historically provided water to SCE personnel and facilities in the community of Big Creek for domestic use, but has not been in operation for approximately 30 years. Associated with the diversion is a water conveyance system consisting of a steel pipe that is located above and below ground that previously delivered water to the community of Big Creek.

### **3.6 SNOW SLIDE CREEK DOMESTIC DIVERSION**

The Snow Slide Creek Domestic Diversion Dam is located approximately 1 mile east of the community of Big Creek (Figure 2). The diversion dam is a concrete structure, which historically provided water to SCE personnel in the community of Big Creek for domestic use but has not been in operation for approximately 30 years. Associated with the diversion is a water conveyance system consisting of above ground steel pipe that previously delivered water to the community of Big Creek.

## **4.0 DECOMMISSIONING ACTIVITIES**

Decommissioning these facilities will include removal of existing above ground structures (i.e., diversions and piping), except South Slide Creek Diversion, which is buried, no longer effectively diverts water, and will be left in place. Removal activities will be limited to those necessary to return the area to a natural condition without causing significant adverse effects. Ancillary facilities that are buried would require significant ground disturbance to remove; therefore, these underground facilities will remain in place. All work required for decommissioning will be completed during the late summer and early fall months after the snow has melted, allowing SCE safe access to these back-country facilities, and after the peak recreation season. A summary of the work to be completed at each facility is provided below.

#### **4.1 CRATER CREEK DIVERSION**

Decommissioning the Crater Creek Diversion, the diversion channel, and diversion channel stream gage will require the use of explosives and hand tools to break up the concrete diversion and the rock mortar walls along the diversion channel and stream gage control structure. The diversion structure will be broken up into small rock and mortar pieces that will be distributed on the ground surface in the immediate area around the former diversion, diversion channel and stream gage.

If consistent with the results of a Minimum Tools Analysis, which will be completed prior to beginning any activities, a helicopter will be utilized to remove the gage house materials as well as large sections of pipe. All materials that are airlifted from the decommissioning activities will be transported to SCE's Florence Work Camp as external loads, limiting the need for the helicopter to land at the diversion. At the work camp the material will be staged for transport and disposal to an appropriate facility. The remaining smaller debris (pipe, metal associated with the diversion, tools, and any remaining trash) of manageable size will be packed out by the decommissioning crews to a location outside the Wilderness. Due to the location of the diversion within the Wilderness, all work conducted will be done manually without the use of powered equipment, unless consistent with the results of a Minimum Tools Analysis, and permission is granted by the Forest Service.

#### **4.2 TOMBSTONE CREEK DIVERSION**

Decommissioning the Tombstone Creek Diversion will require the use of explosives and hand tools to break up the rock mortar wall diversion. The diversion structure will be broken up into small rock and mortar pieces that will be distributed on the ground surface in the immediate area around the former diversion. Ancillary features and remaining debris (pipe, metal associated with the diversion, tools, and any remaining trash) of small manageable size will be packed out by the decommissioning crews. Larger debris or pipe may be air lifted out using helicopter, if consistent with the results of a Minimum Tools Analysis.

The Tombstone Creek Diversion water conveyance pipe is known to be covered with an asbestos bearing material that coats the exterior surface of the pipe. Due to the potential exposure of workers to asbestos, a California State Certified Industrial Hygienist with the appropriate asbestos certification will be retained to develop a work plan that outlines all of the handling and disposal requirements to be implemented when working with the conveyance pipe. The asbestos work plan will be developed to ensure worker and public health and safety.

Upon removal of the water conveyance pipe, the concrete support piers associated with the pipe will be removed using explosives to break the concrete into small pieces which will then be distributed locally. Steel support poles used to elevate the pipe off the ground will be cut flush with ground surface and may be removed with a helicopter if consistent with the results of a Minimum Tools Analysis. All airlifted materials will be

transported to SCE's Florence Work Camp. At the work camp, the material will be staged for transport to an appropriate facility for disposal.

All remaining debris of manageable size (pipe, metal, tools, and trash) will be packed out by the decommissioning crews to a location outside the Wilderness. Due to the location of the diversion within the Wilderness all work will be manually conducted by crews without the use of powered equipment, unless consistent with the results of a Minimum Tools Analysis, and permission is granted by the Forest Service.

### **4.3 NORTH SLIDE CREEK DIVERSION**

The North Slide Creek Diversion will only require the use of explosives and hand tools to break up the rock and mortar wall diversion structure. The diversion structure will be broken up into small rock and mortar pieces that will be distributed on the ground surface in the immediate area around the former diversion. Ancillary features will be unbolted or torch cut into smaller manageable pieces that can be packed and transported from the area. All of the diversion piping at North Slide Creek Diversion is buried, and will be left in place. The ends (first 5 feet) of the diversion piping will be plugged using concrete. The diversion will be visually monitored once every five years to ensure that the piping that has been abandoned in place remains buried and sealed.

The diversion is currently impounding approximately 20 yds<sup>3</sup> of sediment. The intent, upon approval from the appropriate agencies, is to allow the sediment to be naturally re-distributed by high flows.

All above ground sections of pipe from the water conveyance system will be removed. All subsurface pipe will be abandoned in place and the ends will be appropriately sealed with concrete. All remaining debris, other than the rock and mortar wall debris, will be packed out by the decommissioning crews.

### **4.4 SOUTH SLIDE CREEK DIVERSION**

The diversion structure will be abandoned in place as it is already effectively breached and the removal of the structure would cause unnecessary damage to the stream channel and associated riparian vegetation. The stream channel in the immediate area of the former diversion is overgrown with riparian vegetation. Removing the remaining pieces of the diversion would result in greater adverse effect than allowing it to remain in place. The water conveyance system consists of a buried pipe that will be appropriately sealed with concrete and abandoned in place. The diversion will be visually monitored once every five years to ensure that the piping that has been abandoned in place remains buried and sealed.



#### **4.5 PITMAN CREEK DOMESTIC DIVERSION**

Removal of the Pitman Creek Domestic Diversion will require the use of explosives and hand tools to break up the concrete diversion structure. The diversion structure will be broken up into small rock and mortar pieces that will be distributed on the ground surface in the immediate area. Above ground ancillary features will be unbolted or torch cut into smaller manageable pieces that can be packed and transported from the area. Above ground water conveyance piping will be removed. Underground sections of water conveyance piping will be left in place and the ends will be plugged using concrete.

#### **4.6 SNOW SLIDE CREEK DOMESTIC DIVERSION**

Removal of the Snow Slide Creek Diversion will require the use of explosives and hand tools to break up the concrete diversion structure. The diversion structure will be broken up into small rock and mortar pieces that will be distributed on the ground surface in the immediate area. Above ground ancillary features will be unbolted or torch cut into smaller manageable pieces that can be packed and transported from the area. Above ground water conveyance piping will be removed. Underground sections of water conveyance piping will be left in place and the ends will be plugged using concrete.

### **5.0 SCHEDULE**

SCE proposes to complete the decommissioning of the six small diversions within five years following issuance of the new license order(s) assuming required permits are obtained. Decommissioning activities will be conducted during the timeframe between August and October to minimize effects upon recreation. The proposed schedule is outlined in the following:

#### Year One

- Conduct agency consultation in support of permitting.
- Prepare and submit permit applications and supporting documentation.
- A state certified hygienist will prepare a health and safety plan for handling and working with pipe coated with any asbestos containing material.

#### Year Two

- Decommission the Crater Creek Diversion, Diversion Channel and Diversion Channel Stream Gage. This activity is estimated to take approximately three months to complete.

### Year Three

- Decommission the Tombstone Diversion and water conveyance pipe. This activity is estimated to take approximately three months to complete.

### Year Four

- Decommission the North Slide Creek Diversion. This activity is estimated to take approximately one month to complete.

### Year Five

- Decommission the Pitman Creek and Snow Slide Creek domestic water diversions. This activity is estimated to take approximately one month to complete.

## **6.0 REPORTING**

A brief summary report will be prepared at the conclusion of each diversion decommissioning and will include pre- and post-decommissioning photo documentation. The objective of the report is to document the decommissioning activities that were completed. The report will be provided to the Commission and appropriate regulatory agencies for their records.

## **7.0 LITERATURE CITED**

United States of Agriculture-Forest Service (USDA-FS). 2005. Minimum Tools Analysis. 2005 Revision.

## **FIGURES**

## **Placeholder for**

**Figure 1 of 2. Small Diversion Decommission Plan: Florence Lake Area**

**Figure 2 of 2: Small Diversion Decommission Plan: Pitman Area**

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